thinknx

ThinKnx Manual v0.2

www.thinknx.com

Contents

1 Introduction

This manual serves as a reference guide for the correct usage of our ThinKnx technology.

The manual is split into three parts:

1. The first part consists in a detailed description of the system architecture, listing all hardware devices and software packages (for more details refer to Chapter 2 on page 7).

2. The second part is focused on the Configurator, the main software needed to create and manage a ThinKnx project.

3. The last part is a collection of practical examples which can provide the user with a considerable support through his experience.

An accurate reading of the first section is highly recommended to inexperienced users in order to completely understand the nature of the system. Skilled users can simply base on the second part and, if they just need to check the function of a specific object, they can focus on "System objects" section. If a demonstration of ThinKnx functions is required, the user can read the third section where a list of practical examples displays all the possible applications of ThinKnx technology to everyday life.

2   System Architecture

ThinKnx is a supervision system for home and building automation based on client-server architecture. The server part consists of one ThinKnx device (Compact, Micro, Rack or Touch) that represents the logical unit of the system and controls all the equipments connected to it. The client part consists of PCs, touch screens, tablets and smartphones connected to the LAN via Ethernet or WiFi: all these devices, through the ThinKnx software, communicate with the server to control the plant.
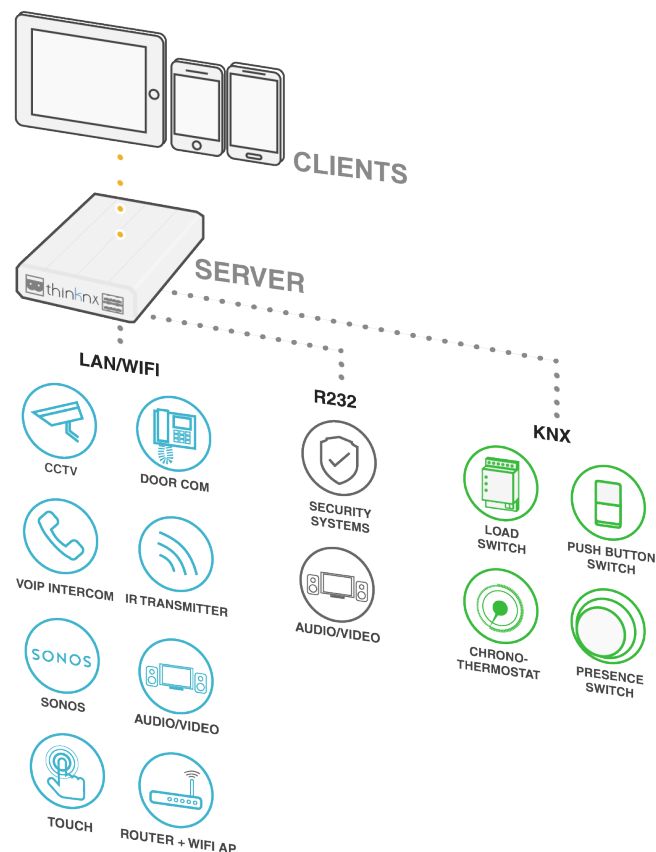
Figure 2.1: Scheme of a typical integrated installation

Figure 2.1 shows a standard installation of ThinKnx system in a KNX or Modbus plant. The ThinKnx server interfaces with KNX plant through its dedicated bus connector. It is also possible to interface with Modbus or other buses through RS232 or TCP . Additional functions can be added connecting devices to server through RS232 or TCP. For example, anti-theft systems, audio or video matrix, home theatre systems, etc. The ThinKnx server controls all the devices connected to it and, working as a gateway, allows interactions between the connected devices even if they are using different technologies. Indeed, clients don't communicate directly with devices but sends commands to ThinKnx server that forwards them to devices.

The gateway feature is a powerful tool that allows to control and integrate different devices and systems. Therefore, for example, Sonos Player or IR transmitter can be controlled from KNX plates simply configuring server logics. Anti-theft system, for example, can send telegrams on KNX or launch scenes

on particular events. When an intercom door station makes a call, ThinKnx clients ring and the server can perform actions on other devices or KNX. The power of these interactions between devices enhance the advantages and comfort of smartbuildings.

2.1 ThinKnx Solution Components

The solution proposed by ThinKnx is composed by hardware and software that represent the supervision system. During normal runtime, ThinKnx server is the logical unit of the supervision system and communicates with ThinKnx clients. The client part of ThinKnx solution consists of software applications for PCs, smartphones, tablets and touch screens.

During design phase, graphics and logics (the supervision "project") are configured using ThinKnx Configurator software. This tool is easy to use and permits to create and to customize the user interface, to define system logics and services and to commit the created project, loading logics on server and graphical interface on clients.

2.1.1 ThinKnx Servers

The ThinKnx servers range was born to cover all the possible installation cases of a supervision system. All the devices are able to interface directly with the KNX plant and have several communication ports to connect to the Ethernet and to other buses (like Modbus etc.) or to other devices like anti-theft systems (through RS232 or TCP/IP). They are also accurately designed for 24/7 operation and optimized for high reliability. In respect to the basic functions - that are included on every server model - additional facility can be activated by means of licenses.

ThinKnx Compact : It is the most versatile device. Support all kind of functions (Security, VoIP, Audio/Video). The right devices for the majority of plants.

- Fanless processing device optimized for continuous operation
- Mass memory on industrial Compact-Flash
- Power: 12-18 VDC - 1A Max
- 1x EIB/KNX port with direct connection through clips
- 1x network port
- 1x standard RS232 serial port with DE9P connector
- 2x USB port
- KNX telegrams led

ThinKnx Micro : In a very small device the ability to completely control KNX. Can be enhanced with VoIP function for intercom communication.

- Fanless processing device optimized for continuous operation
- Mass memory on MicroSD
- Power: 12-24 VDC - 1A Max
- 1x EIB/KNX port with direct connection through clips
- 1x network port
- KNX telegrams led
- Consumption 1 Watt

ThinKnx Micro ZWave : In a very small device the ability to completely control KNX and Z-Wave. Can be enhanced with VoIP function for intercom communication.

- Fanless processing device optimized for continuous operation

- Mass memory on MicroSD

- Power: 12-24 VDC - 1A Max

- Z-Wave transceiver

- 1x EIB/KNX port with direct connection through clips

- 1x network port

- KNX telegrams led

- Consumption 1 Watt

ThinKnx Envision : All-in-one Touch Server which allows to control the home or building using a high resolution touch screen.

- Quad-core ARM Cortex A9 CPU

- 1 GB DDR3 SDRAM

- Capacitive touch screen

- 7" screen 158x93mm visible area, 1024x600 resolution or 10" screen 217x136mm visible area, 1280x800 resolution

- Linux embedded operating system

- Power: 12-24 VDC - 1.5A Max

- 1x EIB/KNX port with direct connection through clips

- 1x network port

- Consumption: 10 W Max (for 7" screen) or 12 W Max (for 10" screen)

ThinKnx Rack : It is the most powerful and expandable device, designed for large buildings or demanding applications.

- Fanless processing device optimized for continuous operation

- Mass memory on industrial Compact-Flash

- External power supply 220V AC

- 1x EIB/KNX port with direct connection through clips

- 2x serial ports configurable for RS232 or RS485

- 1x serial port RS232 9 pins

- 4x USB ports

- 2x Ethernet ports

2.1.2 ThinKnx Clients

ThinKnx offers a wide range of native applications to allow tablets, smartphones, touch screens and PCs to interface with the supervision system. The choice to create native applications comes from the necessity to obtain the best possible performances during the Wi-Fi or 3G connection to ThinKnx servers, providing the user with an unprecedented experience.

ThinKnx Player for Windows : This application allows to control the building from any Windows device. Suitable even for the Windows 10 operating system, it includes settings that allows to disable the full-screen mode, to resize the application window and to visualize the mouse cursor, adapting the application to the device which the application is installed on, improving the user's experience. Usually used on Windows based touch screens.

ThinKnx Player for Mac : This application allows to control the building from any computer running Mac operating system. It offers the same functions of the Player for Windows application.

ThinKnx for iPad : This is the app for iPad that, connecting to ThinKnx servers, allows to manage automation directly from iOS tablets. It allows to control several buildings using a quick and intuitive project selector.

ThinKnx Pocket for iPhone : This is the app for iPhone that, connecting to ThinKnx servers, allows to manage automation directly from iOS phones. It allows to control several buildings using a quick and intuitive project selector.

ThinKnx for Android : This is the app for Android tablet and smartphone that coordinates the intelligent building through a Wi-Fi or 3G connection to ThinKnx servers. The interface is designed with attention to the smallest detail to adapt the graphics to the display size of the employed device.

2.1.3   ThinKnx Configurator

The ThinKnx Configurator software is the indispensable tool for the creation and development of a supervision project. It makes possible to create all the connections between the graphical user interface and all the devices integrated into the plant.

Following some simple steps and intuitive parameters, graphic interfaces can be deeply customized and are accessible from every client and device. Just as efficiently, it is possible to create logics and to set up all the system elements to obtain deep integrations between all the existing devices.

Finally, the same tool allows to upload the project on client devices and ThinKnx servers with differentiated exports based on the specific user.

Starting from the next chapter of this manual, all the features of ThinKnx Configurator will be explained.

2.2   How to Start

Always referring to Figure 2.1 on page 7 as a standard installation, this section explains the first steps to follow when installing ThinKnx server in the plant.

Once the server is connected to LAN it acquires an IP address provided from the DHCP service. To discover the IP address assigned to the server use the "Servers Manager" tool installed with ThinKnx Configurator software (see figure 2.2 on page 11). This software provides a list of all the ThinKnx server (ordered by serial number) detected on the LAN and for each of them shows its IP settings. After selecting the ThinKnx server installed, it is possible to disable the DHCP service and provide it with a static IP. Click on the "Apply server setup" to confirm the changes. This step is recommended to avoid the loss of the ip address in case the connection is lost: in fact on connection recovery, the DHCP server could not assign the same address, causing problems between server and clients.

If the server is connected on a network not served by a DHCP service, it will acquire as default address: **192.168.0.200**

! → It is highly recommended to disable DHCP service and use a static IP address. Otherwise, it is possible to run into clients connection problems when the DHCP lease expires.

The server can be reached and configured from its web interface. To open the server web interface just launch your preferred internet browser (Firefox or Chrome are tested browser) and digit: **http:\\serverip:5051**
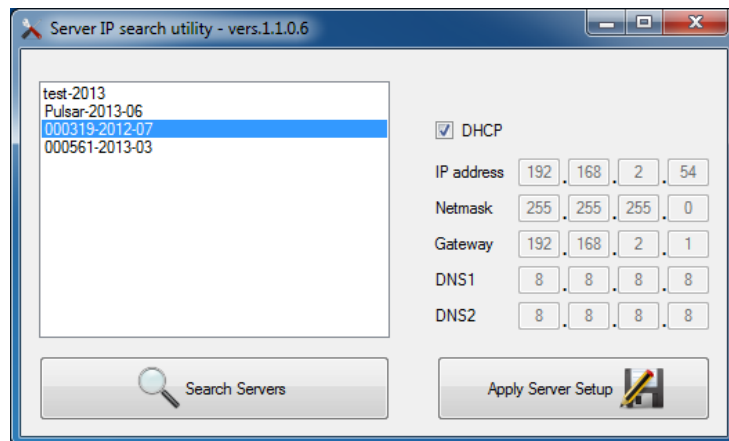
Figure 2.2: Server Manager: tool to discover servers on the network

You will be prompted for login. At the first access the following credentials must be used:
username: **service**
password: **password**

You will be request to change the password for the next access. Please take note of the new password as it will require an hard reset to recover it.

In addition to port 5051 TCP used for web interface, clients connect to the server through port 7550 TCP. If the final user requires remote control of the plant, it is mandatory to configure port forwarding on router. To allow clients to reach the server from outside the LAN open the port 7550 TCP on router and forward it to the server IP. If the user wants to manage the server remotely from its web page, also port 5051 must be opened on router and forwarded to the server.

The next step consists in creating the supervision project with the ThinKnx Configurator (for more details refer to Section 4.1 on page 25).

To enhance network performances and avoid errors, all the clients can connect to the server using two addresses, one local address to use inside the LAN and one host name or external address to use outside the LAN. In this way the problems regarding routers without NAT loopback are avoided. This two addresses can be set in the Configurator, in the wizard during project creation (for more details refer to Step 3 on page 26) or in the System object properties in a second time (for more details refer to Section 5.1 on page 37).

To interface objects with KNX plans, it is very useful to import the ETS project into Configurator project. In this way, all the groups configured in ETS will be shown in Configurator in a treeview. The ETS project must be exported in CSV format and imported in Configurator adding "ETS Project" object, following instructions in Section 5.2 on page 40.

The final step after configuring graphics and logics in Configurator, consists in loading the project on server and clients. If the PC running the Configurator is in the same LAN of the ThinKnx server, it is possible to directly upload the project on ThinKnx server and iOS clients (for more details refer to Figure 4.13 on page 31). Otherwise, it is always possible to export the project in a file and then upload it on server or clients manually (for more details refer to Figure 4.14 on page 32).

After uploading the project on ThinKnx server, the server needs a short time to restart. The first time clients try to connect to server they need authentication. This operation can be done on server web page (for more details refer to Figure 4.12 on page 31).

2.2.1   Installing ThinKnx Player on Mac computers

Figure 2.3

ThinKnx Player for Mac is an Air application, thus to be installed on Mac computers it requires Adobe Air software installed. Adobe Air sotfware can be found at https://get.adobe.com/air/ .

The ThinKnx Player for Mac can be found in the download page of www.thinknx.com and, after downloading and unzipping it, double click on the .air file to launch the installation. To know how to load projects on Mac clients refer to item 4.4 on page 32.

3   Main Concepts and User Interface

3.1   Main Concepts

3.1.1   Configurator

Configurator software is the dedicated tool used to design graphical user interface, clients behaviour and to configure all the ThinKnx server services and functions.

3.1.2   Project definition

A project can be defined as a folder containing all the configuration files and all the settings related to a specific plant. All files imported in the project (such as ETS, images, etc.) are copied and stored in the project folder. For more details refer to Chapter 4 on page 25.

3.1.3   Licences

The licences editor displays the list of selectable licences that can be purchased by the customer; bundles or single licences can be selected by ticking the box next to the item and, by clicking on any licence, a brief explanation of the selected item is displayed on the right side of the window.
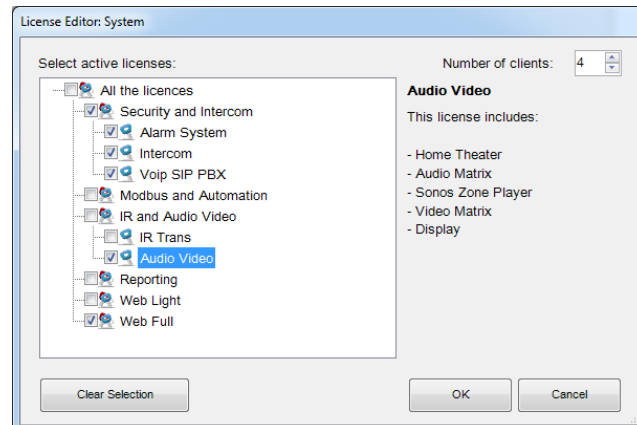
Figure 3.1: Licenses selection form

Licences selection can be adjusted in the editor contained in the wizard tool while creating the project (for more details refer to Section 4.1 on page 25 in particular to step 5). Any subsequent required modification can be performed from the main System object (for more details refer to Section 5.1 on page 37).

It is strongly advised to set licenses accordingly to the real available licenses. This will grant that a project exported without warning from configurator will run at once on the server. Suppose that for a particular project are available the following licenses: Security and Intercom package, Audio/Video licence and Web licence with 4 clients. Matching voices have to be ticked in the licences tree and the number of clients has to be typed in the box in the upper right.

If an IR transmitter object is added to the project, a window with the following warning is displayed on the screen:
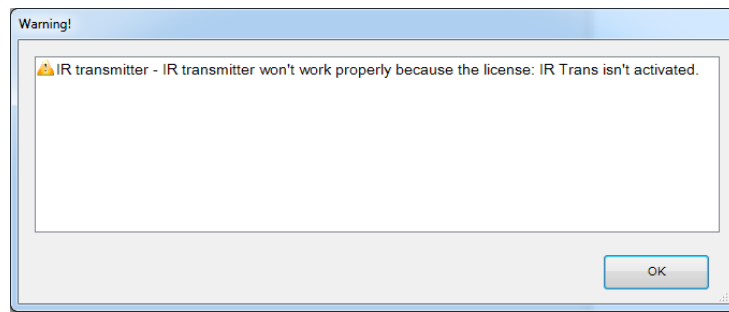
Figure 3.2: Not supported device for selected licenses warning

! → This warning indicates that the object at issue will not be working once the system will be activated but it will not block project exportation.

3.1.4 Creating, editing and deleting users

Users and groups allow to generate different settings and interface profiles in the same project. To create, edit or delete users or groups, select the "System" object and then click on the "Authorizations" property. Click on the button on the right to access the editor.
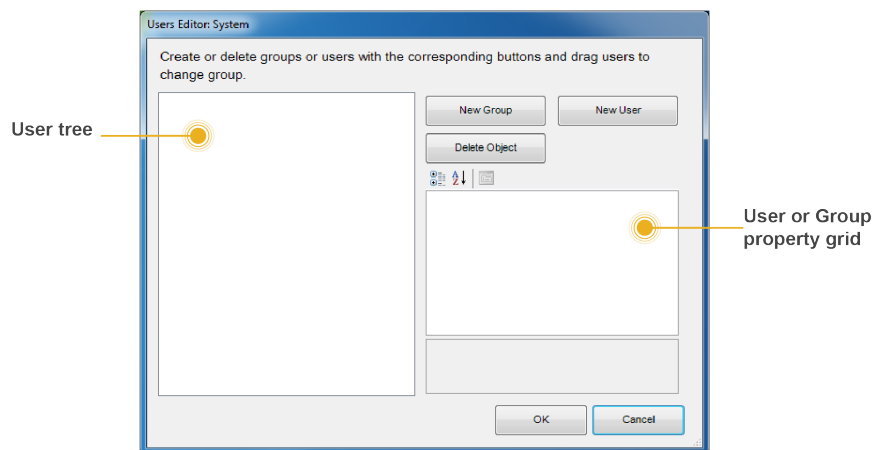
Figure 3.3: Users and groups editor form

To create a new group, click on the "New group" button. A new item with a fake name will be displayed in the users tree. To edit the name, click on the item and adjust the properties in the grid on the right.

All properties can be adjusted in the grid; they will be taken by each user added to this group.

Name : Group or user name.

ThinknxCloud password : Password associated to this user in the ThinknxCloud service.

Display cursor : If disabled, the cursor is will not displayed (valid only for Windows/MacOs clients).

Full screen : If enabled, the application will be displayed full screen (valid only for Windows/MacOs clients).

Sound on click : If enabled, a beep will be emitted at every mouse click.

Block swipe : Determines whether advanced gestures are supported by touch devices (not valid for iOS clients).

Show status bar : Determines if a status bar is displayed in client applications (only for iOS clients).

Reduce long press : If disabled, the user can interact with the client using the default longpress (f.e. 4 sec for iPad, 3 sec for Android); if enabled, the longpress activation time will be reduced to 1.5 sec.

SIP client : Determines if the VoIP function is enabled. If enabled, the following properties will be displayed:

SIP Ringtone : Allows to set the ringtone to be played on the client device when the device is called from another SIP device.

Use client random port : If enabled, use random listening port on clients in order to avoid any possible conflict between VoIP applications.

SIP protocol : Determines the protocol to be used for SIP messages sending. TCP is mandatory for iOS devices to work in background mode. The UDP protocol is mandatory for some PBX servers.

Register : Determines if the client will register on an SIP register (PBX). If enabled, the following properties will be displayed:

PBX system If enabled, the ThinKnx internal PBX will be used and the client will be one of the PBX user created on the PBX system object (refer to Section 5.8 on page 49). If disabled, the client will try to register to a third party PBX and the following properties will be displayed:

SIP username SIP client username used during registration process.

SIP password SIP client password used during registration process.

Register address IP address or hostname of the third party registrar (PBX).

Register port UDP port number of the third party registrar (PBX).

Inactivity timer : If enabled, this properties allows to configure a specific page that will be automatically reloaded by the client after a pre-set time interval if the user doesn't interact with the client; the "Inactivity interval", "Inactivity function" and "Inactivity page" properties will be displayed.

Inactivity interval : User's inactivity time interval after which the system automatically redirects to the selected page. (If the user taps the screen the inactivity timer is automatically reset.)

Inactivity function : Index of the function which the default page belongs to. (starting from 0)

Inactivity page : Index of the default page. (starting from 0)

To create a user already associated to a previously created group, select the destination group and click on the "New user" button. Doing so, the user takes the properties values from the group. To rename the user, select it from the users tree and adjust the "Name" property in the grid on the right.

To create an independent user, click on the "New user" button without selecting any group.

Users can be associated to a group at a later moment by dragging them on the desired group.

To delete a group or a user, click on the "Delete object" button after selecting it. Configurator requires a deleting confirmation; click on "Yes" if the item has to be cancelled.

Deleting a group, all associated users are automatically turned into independent users. If some objects integrated into the plant contain restrictions for the specific group or user, which has to be deleted, a warning message with the list of objects containing a restriction is displayed; if deleting is confirmed, restrictions for the group or user are removed too.
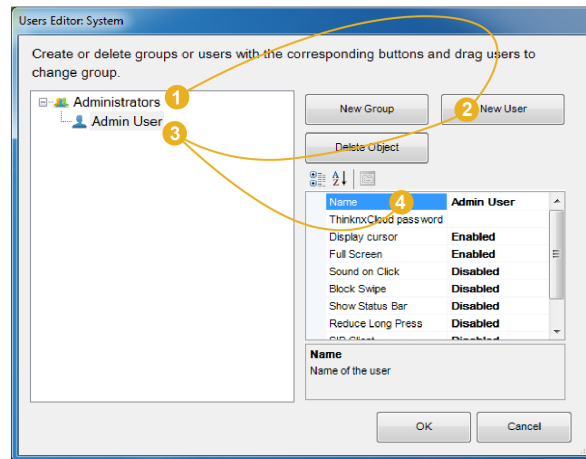
Figure 3.4: Add a new user to a group

3.1.5 KNX Groups

Within Thinknx system KNX groups can be divided into two main categories: read and write groups.

Read groups can contain many KNX addresses: addresses must be divided by ";". The status of the object will assume the value passed by the last telegram received by one of the addresses in the group.

Write groups have just one address. An asterisk placed before the group address set the simulation mode: in this mode the status of the object change, but no traffic will be generated on the KNX bus.

3.1.6 Restrictions setting

Suppose that a group of users has to be blocked in order to be prevented to visualize a specific function on clients. Select the function in the interface tree, select the "Restrictions" property in the grid and click on the button on the right.
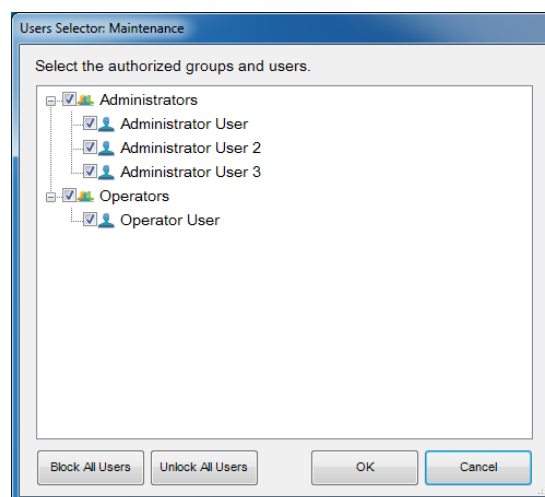
Figure 3.5: Restrictions editor for functions/pages/objects

In the restrictions editor all previously created users and groups are displayed. As default setting, any object does not contain restrictions on users so, when the editor is launched for the first time, all items are checked.

Suppose that all the users part of the "Operators" group have to be blocked, so unchecking the box displayed next to the group name is enough. Then click on "OK" button. Doing so, a restriction on "Operators" group will be set in the

selected function hence when the project is exported, the selected function will not be visible for users belonging to the "Operators" group.

Two more buttons, useful to speed the configuration process up, can be found in the editor: "Block all users", which sets a total restriction on the object (removes all ticks) and "Unlock all users", which removes any restriction previously set on the object.

Suppose that the "Administrator 3" user can only visualise one page in the selected function. A block on the other pages has to be set for "Administrator 3". To do that, place the cursor on single pages and open the restrictions editor. Set the restriction by unchecking the box near "Administrator 3".

Blocks can be set on all the objects contained in pages. The procedure is exactly the same: select the desired object in the interface tree, select the "Restrictions" property, open the editor and set the blocks.

! → All restrictions have a priority order: function, page, single object. If a restriction for a group of users is set on one function, the whole function will not be exported even if the same restriction is not set for the objects contained in that function.

3.1.7 Protection PINs

When all the project's objects must be visible to all the users but some of them still need protection, it is possible to apply a protection PIN on the object.

In the same project is possible to create a list of PINs to use in the client application to protect interface objects. To create, edit or delete PIN codes, select the "System" object and then click on the "Protection PINs" property displayed in the grid below; then click on the button on the right to access the editor.
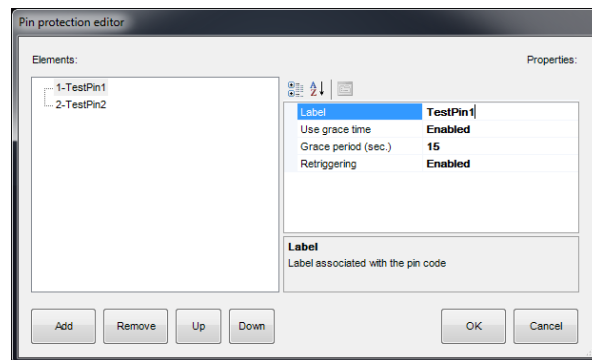
Figure 3.6: Protection PIN editor

To create a new PIN, click on the "Add" button. A new item with a fake name will be displayed in the list. To edit the name, click on the item and adjust the properties in the grid on the right.

Label : Name of the PIN code.

Use grace time : If enabled the inserted code will be valid for the period set in the "Grace period" property and it won't be asked until grace period expires.

Grace period (sec.) : Period in seconds during which the inserted code is valid.

Retriggering : If enabled, every time the user taps on the object while the grace period is valid, the grace time is renewed.

To associate PIN codes to functions, pages or interface objects, select the desired object in the interface tree, select the "Pin Protection" property in the

grid and enable it. The "PIN code" property will appear and just select the desired PIN code among the ones previously created in the System node.

! → The default value of the PIN code is *12345*

! → One PIN code can be associated to different objects but an object can contain only one PIN code.

! → PIN protection is valid only with user driven actions; actions like automatic page change are not subjected to PIN protection.

! → The user can change the PIN code directly from the client app. To reset all pins to the default values, connect to the server web page and press the "Reset all pins" button inside the "Server->Users" page

! → When "PIN protection" is set to "Enabled" and the "Switching type" property of the switch object assume one of following values, the grace time must be enabled and set.

- OFF on pression

- OFF on pression, ON on release

- ON on pression

- ON on pression, OFF on release

- Value on pression

- Value on pressione and on release

In the client app, at the first pression of the object the keypad will appear; once inserted the correct code, the switch unlocks. To execute the desired action, the user has to press the switch a second time, after the unlock procedure. The switch will stay unlocked within the "Grace period". After the "Grace period", since the switch will lock, the "PIN code" will be requested again.

3.2   User Interface

ThinKnx Configurator main window contains a toolbar with the main feature of project management, a working area that reproduce the final graphical interface and two treeview to manage interface and system objects. In the sections below all these components are explained in detail.
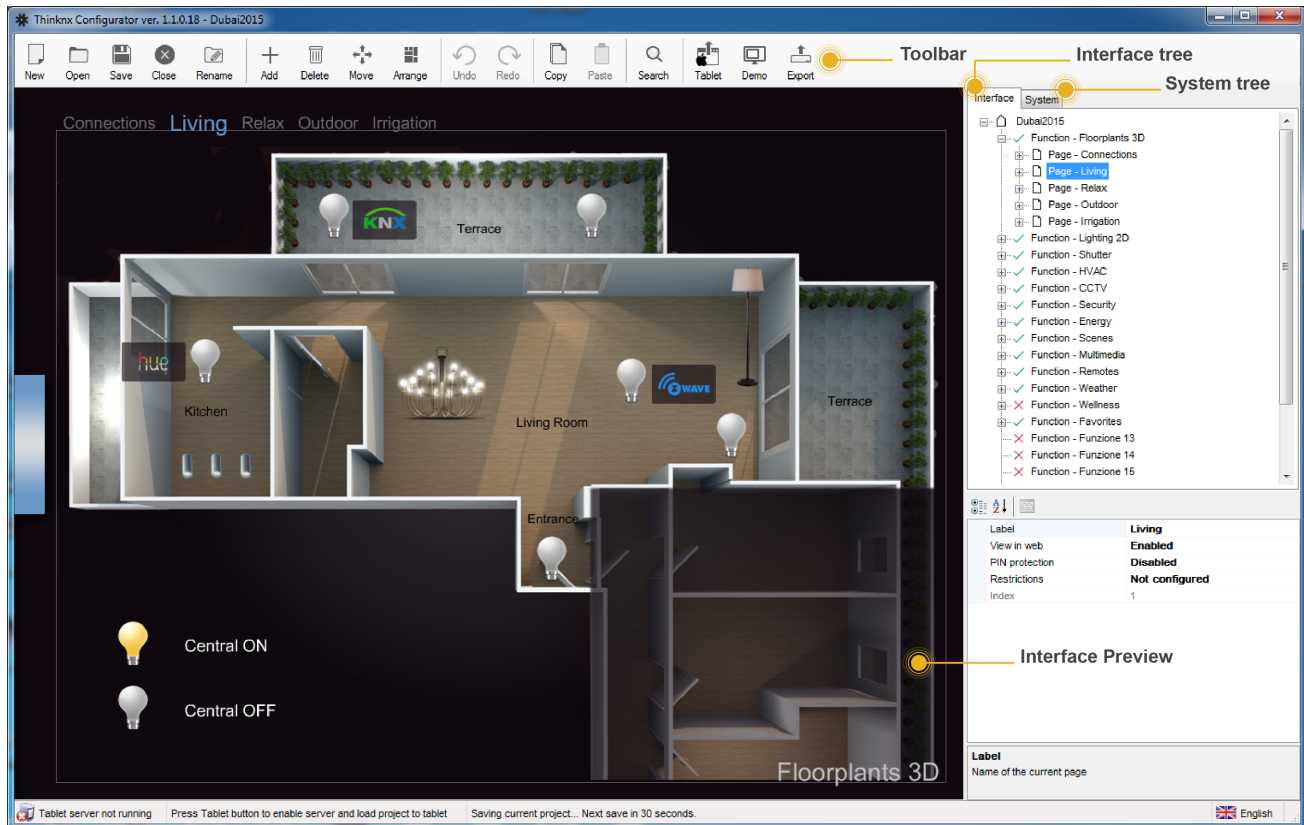
Figure 3.7: ThinKnx Configurator main window and its parts

Clicking on an interface object inside the graphic editor or from tree views it will become the focus of the operations and the list of its properties is shown on the right side of the window. It is possible to select multiple objects by clicking on them holding the SHIFT button down. The first selected object will appear with a white bounding box whilst the following selected objects will be bounded with a blue box. The first object will always be used as reference in every arrangement operation.

3.2.1   Toolbar

This bar is a menu that contains all the commands to manage and edit the project and the objects, search items within a project and export on clients or servers.

New :   Create a new project by clicking on this button and a wizard tool will be automatically launched. For more details refer to Section 4.1 on page 25.

Open :   By clicking on this button, a pop up window with the following functions will be displayed:

- *Open:* Open the selected project.

- *Import:* Import a previously save project file (with .erg extension).

- *Remove:* Remove the selected project from the list.

- *Rename:* Rename the selected project .

Save :   Save the current project.

Close :   Close the current project.

Rename :   Rename the current project.

Add :   Add graphic objects to the project.

Delete :   Remove the selected object.

Move :   Activate the moving function. A selected object can be moved just if this button is pressed.

Arrange :   Arrange graphic objects. This function allows to move groups of selected objects; by clicking on this button, the following window will be displayed:
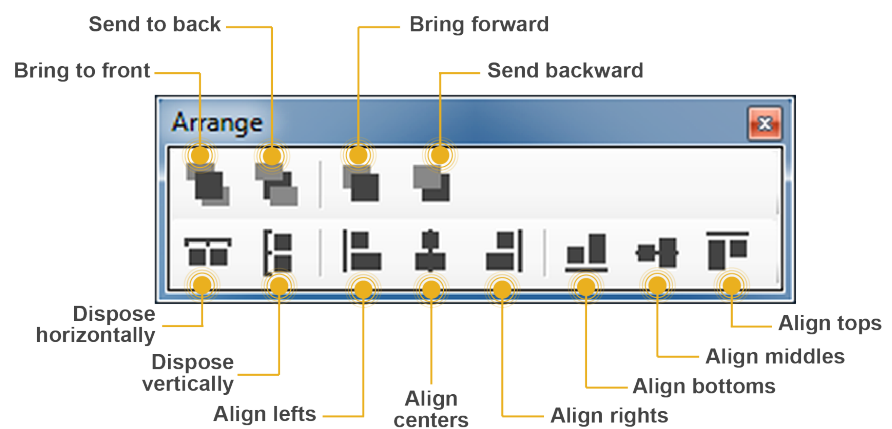
Figure 3.8: Objects arrange tool

- *Bring to front:* Move an object or a page before all the others.

- *Send to back:* Move an object or a page behind all the others.

- *Bring frontward:* Move an object frontward.

- *Send backward:* Move an object backward.

- *Dispose horizontally:* Equally distribute horizontal space between the first and the last selected object.

- *Dispose vertically:* Equally distribute vertical space between the first and the last selected object.

- *Align lefts:* Align all the objects to the left edge of the reference object.

- *Align centers:* Align all the objects to the vertical middle line of the reference object.

- *Align rights:* Align all the objects to the right edge of the reference object.

- *Align bottoms:* Align all the objects to the lower edge of the reference object.

- *Align middles:* Align all the objects to the horizontal middle line of the reference object.

- *Align tops:* Align all the objects to the upper edge of the reference object.

Some arrange tool actions require the selection of multiple objects. To select more than one object it is necessary to hold the SHIFT button down while clicking on the objects to select.

! → It is very important that the background images, such as floor plans or photographs, are always positioned on the far back (they always have to be on the first place of the objects list of the function in the Interface tree view). This is just to ensure that all the command objects such as light switches or shutter controls are in the foreground and are not covered by the picture (if the picture covers the button you will not be able to use them, even if it is a transparent part of the picture and you see the buttons).

Copy/Paste : Copy or paste pages or objects. They can be selected either on the interface preview or in the interface tree structure and can be pasted in a empty screen portion. Keyboard commands "Ctrl+C" and "Ctrl+V" can be used instead of the icon in the toolbar or the right click.

Search : Search group addresses within the project; shows a list of objects containing a specific KNX group.

Tablet : Activate tablet upload.

Demo : Activate demo mode; a project preview is displayed.

Export : Open export menu. For more details refer to Section 4.4 on page 31.

3.2.2 Interface editor

It provides the user with the option to graphically compose the user interface and to preview how it will look like on clients. It allows to select and move the objects in the interface. Every interface part has its own properties that can be modified from the property editor on the right-bottom side of the configurator window.
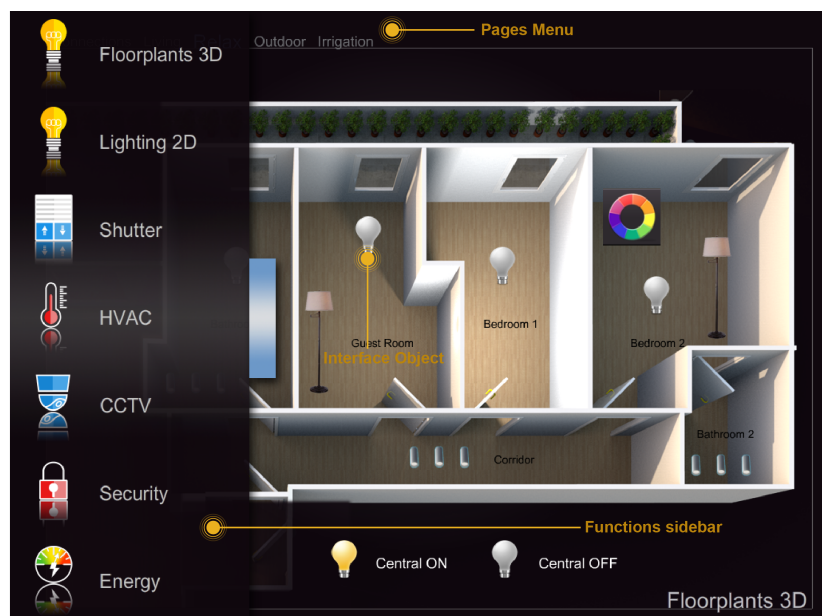
Figure 3.9: Interface main elements

User interface is basically composed by the following elements:

Functions : Function is a sort of chapter that can collect several graphical pages. The name of the selected function is always shown on the right-bottom side of the user interface. Properties can be easily adjusted from the settings window that is displayed on the right side by selecting and item from the list:

- *Status:* Permits to disable the function and to hide it from sidebar.

- *Label:* Name of the function.

- *Icon:* Select the desired icon file, this will show up automatically on the left side of the function description, with a standard resolution of 60x60 pixels.

- *Show in website:* Indicates if the function will be visualized on the web page. For more details refer to Section 5.12 on page 55.

- *Restrictions:* Permits to restrict the access to the function for specific users.

- *PIN Protection:* If enabled, the function is protected and the user must insert a PIN code to see the function. For more details refer to Section 3.1.7 on page 17.

- *PIN Code:* Pin code associated to the object.

Functions sidebar :   This bar appears by touching the blue tag located on the left side of the screen or dragging it to the right; a list of all the functions added to the project is displayed with the function name and the corresponding selected icon.

Pages :   Each function can contain different editable pages, each one labeled by a tab displayed on the upper side of the screen. Each page created, automatically shows up on the top bar starting from the left, the only limitation on the number of pages you can create is the number of characters that can be shown on the top bar. The longer the names of the pages, the less pages you can create. Properties can be easily adjusted from the settings window that is displayed on the right side by selecting and item from the list:

- *Label:* Name of the page.

- *Show in website:* Indicates if the page will be visualized on the web page. For more details refer to Section 5.12 on page 55.

- *Restrictions:* Permits to restrict the access to the function for specific users.

- *PIN Protection:* If enabled, the page is protected and the user must insert a PIN code to see the page. For more details refer to Section 3.1.7 on page 17.

- *PIN Code:* Pin code associated to the object.

Objects :   Each page can contain different editable objects. There are a number of graphical objects that represents standard operations that can be exerted (like switching on/off lights, commanding blinds, controlling HVAC). Every object has its own properties that can be customized. For more details refer to Chapter 6 on page 110.

3.2.3   Interface tab

Displays a treeview containing all the interface objects added to the current project; the main node represents the entire user interface while every first level child is a function. Children of a function are pages and objects are grouped inside their parent page. By right-clicking on one node it is possible to add all other interface objects, delete, copy or arrange the object (for more details refer to Chapter 6 on page 110).

Selecting an object from interface editor or interface tab, all its properties will be visualized in the property grid below the tab.
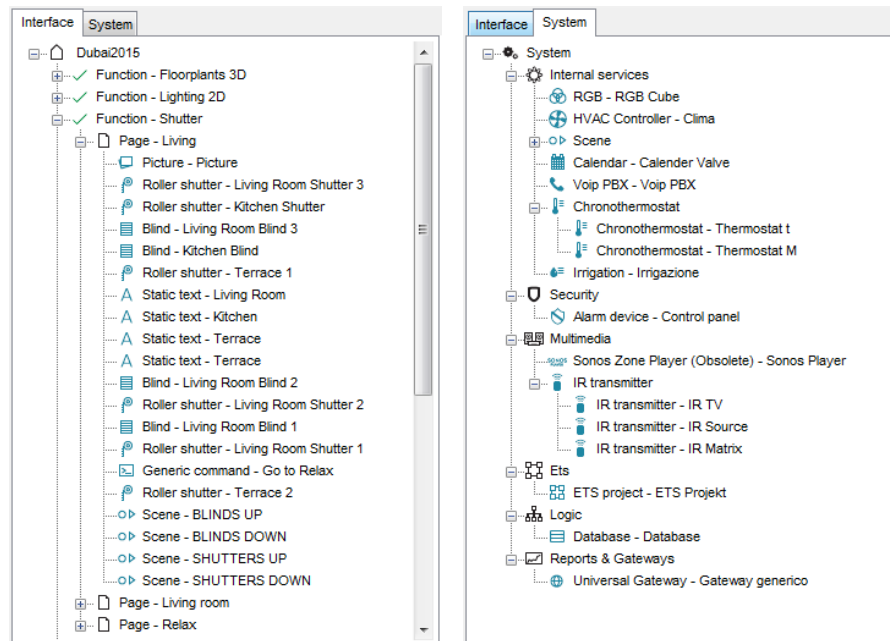
Figure 3.10: Interface objects and system objects tree views

Functions

Each function can be characterizezd by the following properties:

Status : Enable or disable function visualization

Label : Label of text that identify the function

Icon : Image to display ina the functions menu

Show in website : Enable or disable the function visualization into website.

Hide label on page : Hide the function label normally present on the bottom right corner of the screen, when the client is in landscape mode. In portrait mode, since the label works as a button, will appear anyway.

PIN protection : If enabled, object will require a PIN code to be operated. If "Enabled" the following property will appear:

PIN Code   PIN code to be used to protect the object

Restrictions : Restriction policies for exporting process.

Index : The index of the function. Cannot be modified.

3.2.4   System tab

Displays the system tree main node that contains all the most important data related to the project; by right-clicking on it, it is possible to add all other system

objects, which represent all customizable services provided by the system. For more details refer to Chapter 5 on page 37.

4 Project Management

A project can be defined as a folder containing all the configuration files related to a specific plant and all the settings needed to reconstruct user interface and system logics. New projects can be easily created directly using the Configurator software. Previously existing projects can be imported and edited (they can be renamed, optimised, deleted, etc).

4.1 Creating a project

Projects can be created using a dedicated wizard tool, which will be automatically launched by clicking on the "New" button in the toolbar above.

Step 1 : Enter the project name without spaces or diacritic signs (mandatory).
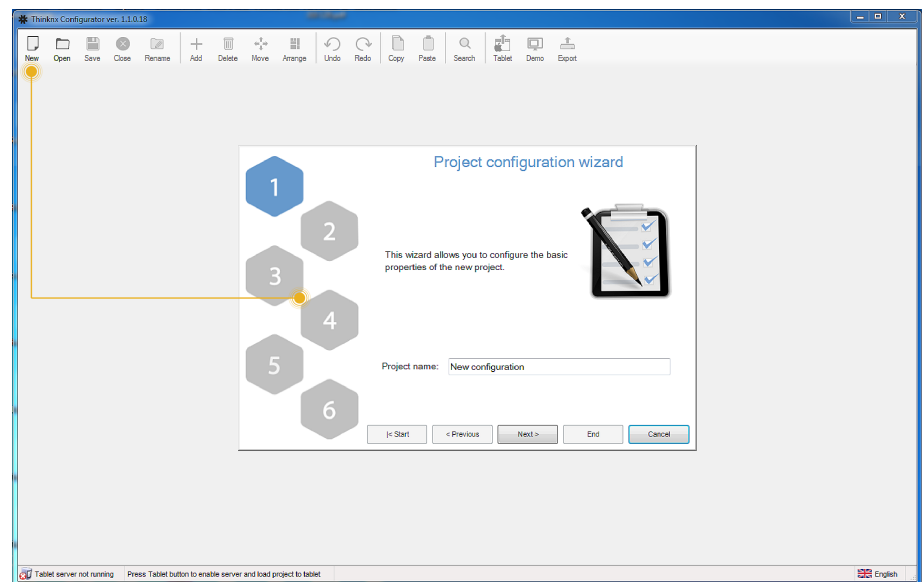
Figure 4.1: New project button and wizard first step

Step 2 : Select the server type (mandatory) and enter the device serial number (optional); go to the next phase by clicking on "Next" or conclude the wizard by clicking on "End"; all the following steps are optional .
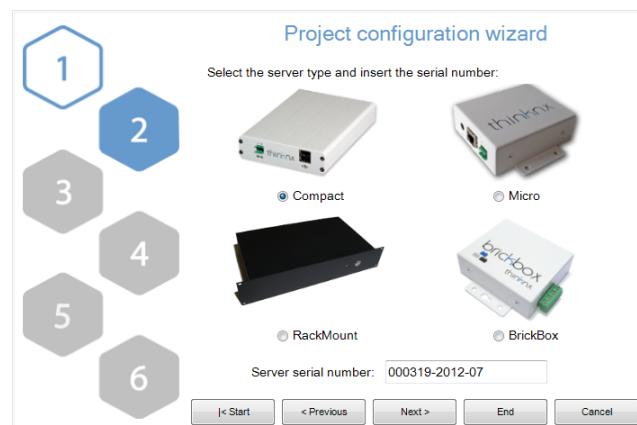
Figure 4.2: Step 2: server selection

Step 3 : Enter IP address to connect to the server using the local network or host name and port (if different from the predefined one) to use remote connection.

Figure 4.3: Step 3: connection settings

Step 4 : The name and even the geographic coordinates of the location where the server is installed should be typed in this section. These data will be used on clients when the geolocalization feature is active. These settings are mandatory if the sun calculator object is added to system. Check the box "Enable Time Server" to use the server as time and date source for KNX devices. Server will synchronize with NTP time server if an internet connection is available.

Figure 4.4: Step 4: server location settings

Step 5 : If the plant will be managed by different users and different user interfaces for each user has to be created than it is necessary to create users and groups to be used for export policies. It is possible clicking on the "Edit" button to access the users editor window. For more details about users creation refer to Section 3.1.4 on page 14.

Figure 4.5: Step 5: users creation for restrictions

Once all users and groups are set, a summary is displayed in the empty window. Click on "Next" to move to the next step.

Step 6 :   Selecting the active licences for the project permits that configurator checks while exporting whether objects and functions configured into the project will properly work once the project will be exported and uploaded on the server. In fact, if the project contains objects that are not included in licences purchased by the customer, they will not be working in the real installation.
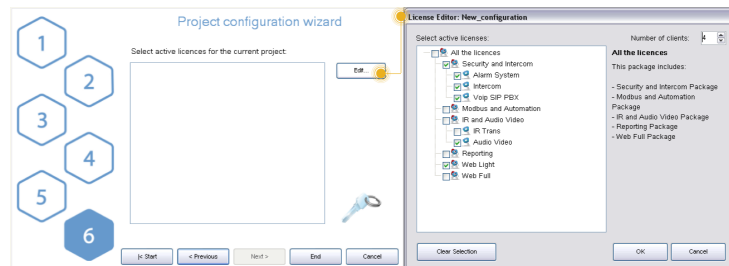
Figure 4.6: Step 6: project active licenses editor

Click on "Edit" button to access the licences editor. Single licences, and packages can be selected in the licences editor window. For more details refer to Section 3.1.3 on page 13.

To adjust the information set included into the wizard at a later stage, select the "System" object in the Configurator system tree and all the object properties will be displayed in the property grid below.

4.2   Managing a project

After a project has been successfully created, it can be managed using various buttons displayed in the configurator upper toolbar.

Figure 4.7: Project related buttons on configurator toolbar

Save :   Changes applied to the project will be saved.

Close :   Current project will be closed, while the Configurator homepage stays open.

Rename :   Current project name can be edited.

Open :   By clicking on this button, the following window will be displayed:
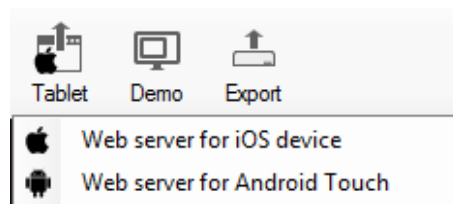
Figure 4.8
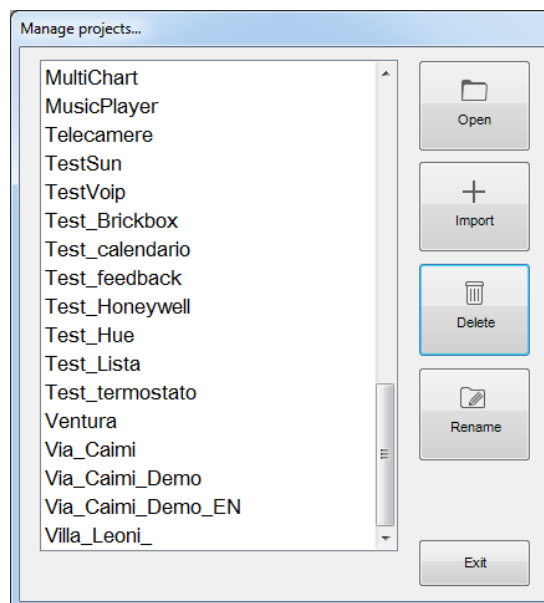
Figure 4.9: Project management form

Existing projects can be renamed, opened or deleted. Previously created files can be imported in the Configurator.

4.3 Cloud

To enable the use of ThinKnxCloud, open the server web page, select Server menu item and then select ThinKnxCloud. In the cloud page, click "Enable ThinKnxCloud" button. A popup will appear to set the maintainer password for the cloud. After the user fills these fields and clicks on the Enable button, the server enables the Cloud features which means project upload and data storage. After the enabling procedure is completed, the status of the cloud must change to Enabled and the user can see how much storage space is using on the cloud.

4.3.1 System object properties to set

Serial number: : serial number of the ThinKnx server, it is mandatory to use all the cloud features

ThinknxCloud: : it must be enabled

Password for ThinknxCloud: : it must contain the maintainer password previously set in the server web page

User's ThinKnxCloud password: : if the project requires the use of groups and users, each user configured must have a password associated to it. All the users passwords for the cloud must be different. To create the password, open the Authorizations property, select a user and fill the ThinKnxCloud password property with the password assigned to the user.

4.3.2 Uploading the project on ThinKnx Cloud

Once the cloud properties are set, to upload the project on the cloud, save the project, click on the Export button in the toolbar menu and select "Upload to the Cloud" menu item. All the clients versions of the project (one for each user) are uploaded to the ThinknxCloud server. If the project doesn't contain any users, only the main version is uploaded. A popup indicating the progress of the upload will appear.

4.3.3 Downloading the project from ThinKnx Cloud

To download the project, open ThinKnx or ThinKnx Pocket app and open the Settings page. Select the Cloud tab and fill the two fields below with the server serial number and the cloud password. If the projects contains multiple user, to download a specific version of the project insert the password associated to the user otherwise use the maintainer password (the one created in the server web page). When the user taps the Download button, the download starts. Different icons indicates whether the project has been downloaded from the Configurator or from the ThinKnx Cloud. To simplify the download procedure from Cloud, the serial number will be displayed for each project under the project name.

4.3.4   Dynamic DNS configuration

In case a fixed public ip address is not available this service grants to access your server even out from the local network. To configure the server open the server webpage from local address:
http://<server_ip_address>:5051.
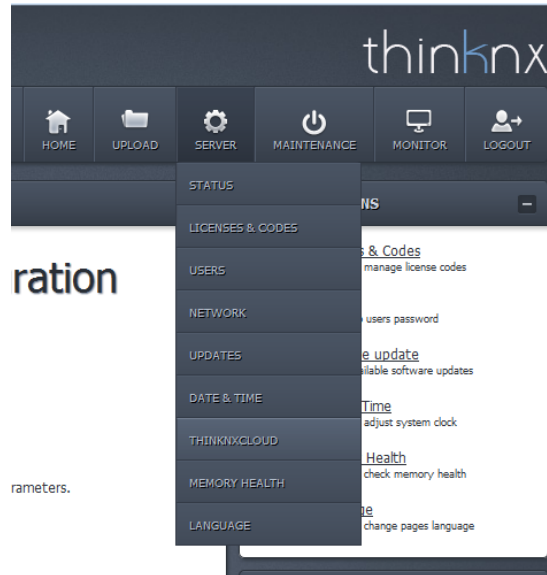
Figure 4.10

From the main menu, select "Server" and click on "ThinKnxCloud". To add a "ThinKnx ID", click on the button "Change MyThinKnx settings". It will appear a windows where to add the name of the device.
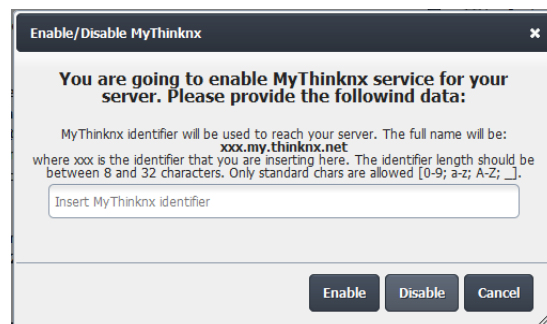
Figure 4.11

Clicking on the "Enable" button will set the new ThinKnx ID.

4.4   Exporting a project

When the project is complete it has to be deployed on the various devices like the server and the clients. The configurator has a special part dedicated to project exporting with several file formats depending on the addressee device. Project can also be exported simply to back it up or to transfer to another PC.

By right clicking on the "Tablet" button, the following menu will be displayed:

Web server for iOS device : Select this option if the project has to be exported on iOS devices.

Web server for Android Touch : Select this option if the project has to be uploaded on Android touch screen devices.

After selecting one of the option, click on the "Tablet" button and a web server, which allows to directly upload the project on the desired client, is automatically launched in the Configurator:
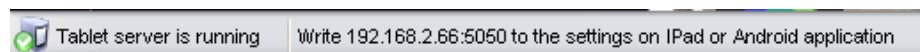
Figure 4.12

The displayed address has to be specified in the client application and the project will be automatically downloaded.

By clicking on "Export" button, the following options will be displayed:
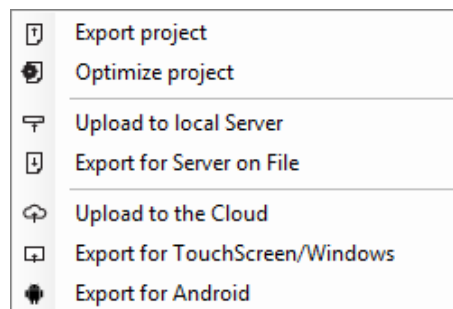
Figure 4.13

Export project : Export procedure allows to save the project created with the Configurator as a .erg file; it is particularly useful to store back up copies in a folder and to send projects from a Configurator to another.

Optimise project : Whenever an image or any kind of file is imported in the Configurator, it is automatically copied in a dedicated project folder so that the software does not operate on the original item, risking to affect the project if it is moved or deleted. Doing so, several unused files roll by the project folder; by clicking on this button they will be automatically removed, remarkably improving and simplifying clients performances.

Upload to local server : The project is uploaded to the server so that configurations can be saved and memory can be allocated for objects that require to be configured by the user. The project exported for server does not require any restriction.

Export for server on file : If the PC which the Configurator is running on is not in the same LAN as the server one, the software automatically creates a .srv file that can be manually uploaded to the web page.

Uploading procedure

1. After launching the browser and typing **http://'external IP':5051** the login page is displayed.

2. Login as service user (default password: "pass").

3. In the homepage, click on "Upload" button.

4. Click on "Select file" and then "Upload".
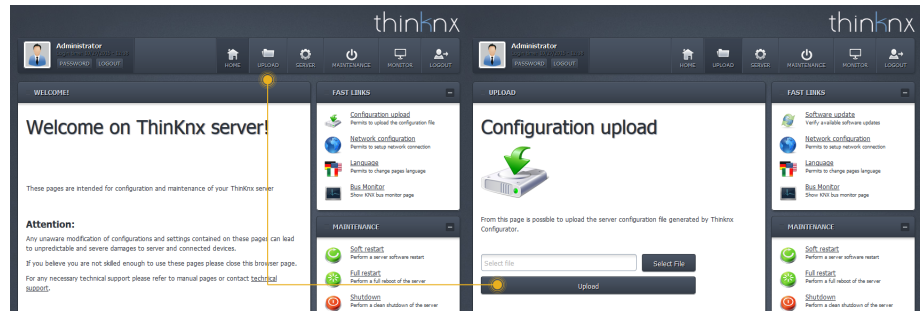
Figure 4.14

5. The server restarts automatically.

Upload to the Cloud : All the clients versions of the project (one for each user) are uploaded to the ThinknxCloud server. If the project doesn't contain any users, only the main version is uploaded. A popup indicating the progress of the upload will appear.

Export for touch screen : Generates a file with .tou extension, meant to be used with the Player for Windows software.

Export for Android : Generates a config.android file, meant to be used on Android devices and Mac OS computers. After clicking on this option and selecting the user, a pop up that explains the client uploading procedure will be automatically displayed.

Uploading procedure for Android devices

1. Connect the device to the PC via USB

2. Create a folder named "Thinknx" in the root folder of the device

3. Copy the config.android file in the folder just created

Uploading procedure for Mac computers

1. Create a folder named "Thinknx" in the user's "Documents" folder

2. Copy the config.android file inside the folder just created

4.4.1 Export for user

Export for user allows to configure different versions of the project to be uploaded to clients; the peculiar characteristics of each version can be defined by setting restrictions for users (for more details refer to Section 3.1.6 on page 16). The Configurator, if users have been configured in the project (for more details refer to Section 3.1.4 on page 14), requires to select which user will be the project exportation final addressee. Select the desired user and click on "OK".

4.4.2 Export procedure

After selecting one export modality, the Configurator automatically checks system properties to confirm that an IP address valid for the server has been set; otherwise the export cannot be finished. If components not corresponding to the selected licences have been configured in the project, the Configurator displays a warning message. The export can still be finished but the commands related to unlicensed objects will not be working. If the file has to be exported for touch-screen and Android, is required to specify where the file has to be saved. If the file has to be exported on iPad, the

Configurator directly exports the project and launches the web server so that the user can immediately connect.

4.4.3   Client Authentication

Once the project is loaded on the server and on clients, the client software opens a connection with the ThinKnx server. The first time the project is loaded on the client, it requires to be authenticated on the server.
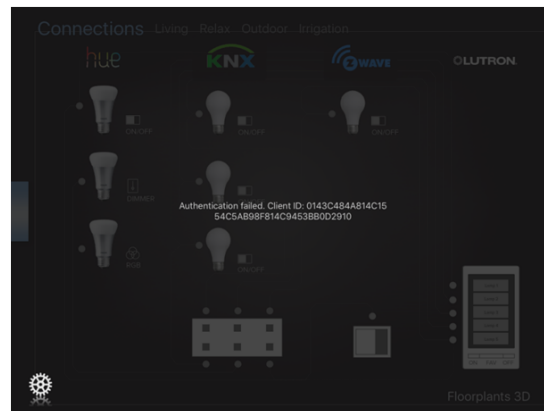
Figure 4.15

The client authentication is done on the server web page, browse in the "Server->Licenses & Codes" and copy the "Last connected client code" and check the "Enabled" box, as shown in the following figure:

Figure 4.16

4.4.4 Example

Four clients have to be used for four different functions: three of them shares the same needs, the fourth has fewer enabled functions. First of all, two groups have to be created: the first one contains the three users with similar needs, the other one will contain the user with limited functions; once users have been configured, restrictions have to be manually set on objects. Suppose that the example project has no external server address and contains the following elements:
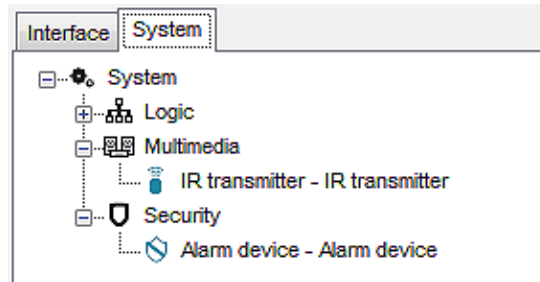
Figure 4.17

Figure 4.18

In the project have been only selected "Modbus and Automation" and "IR Audio and Video " licenses.

Figure 4.19

Launching the exportation, the Configuration displays the error window

containing messages that warns about the empty IP address slot and the missing licences.
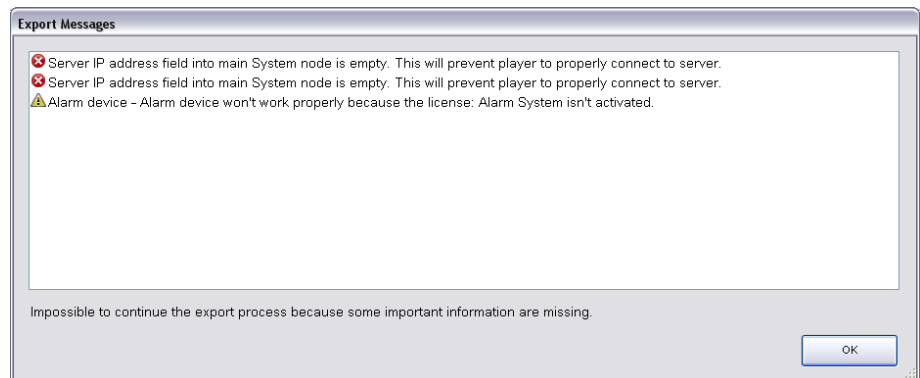
Figure 4.20

Since the IP address has not been set, the export cannot be continued. To set the IP address, select the "System" node from the system tree and type the external server address in the empty slot near the property name.

Once the missing information have been added, launching the export again, the error window is still displayed but it contains only the messages related to missing licences. In this case, click on "Yes" to proceed with the export anyway.

The Configurator, if users have been configured in the project, requires to select which user will be the project exportation final addressee. Select the desired user, for example "Operator User", and click on "OK".
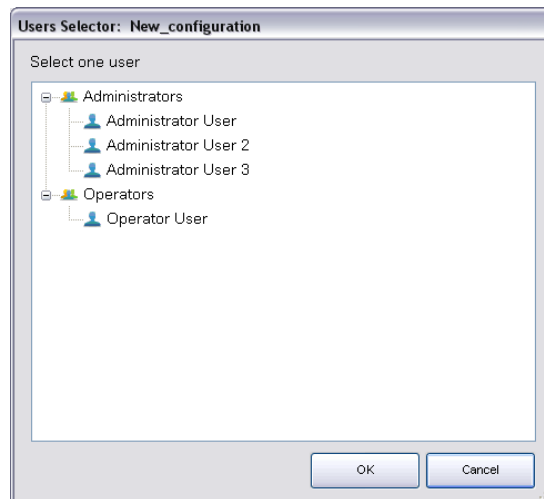
Figure 4.21

Once the project has been downloaded to client, for example to an iPad, that specific client will be allowed to display only a "reduced" project version, which has been exported for Operator User.

Of all configured functions, Operator User cannot visualise Rollers, Heating and Cameras since they contain a restriction.

5 System Objects

5.1 System Object

This object is the main node of the system tree and includes all the main features and data that describe the project. All other objects, which represents the configurable services provided by the server, can be added to the project by right clicking on this node.

By selecting the object, the following properties will be displayed in the grid below:

Label : Name of the object.

Server type : Type of server and hardware (ThinKnx Compact, Micro, Touch or Rack server).

Serial number : Server serial number printed on the box.

Password : Password for service user, to login on the web server page.

ThinknxCloud : If enabled, the cloud services are active. Enabling this option will allow to upload project directly on the Cloud and to store variables to database.

Password for ThinknxCloud : Maintainer password of the cloud services. It can be managed from the server web pages.

KNX address : Physical address (es. xx.xx.xxx) assigned to the server; if not specified it is automatically assigned by the system.

External IP address : IP address (for example 74.14.3.108) or hostname (for example pulsar.dyndns.org) needed to connect with the server from clients that do not operate in the server LAN. To setup the server with the ThinKnx cloud server refer to the Cloud section (Section 4.3.4).

Server client port : Number of the TCP port needed to remotely connect with the server (outside the server network). The default port is 7550.

Local IP address : IP address (for example 192.168.X.X) needed to connect with the server from clients that operate in the server LAN.

System name : Name to identify the project once it has been uploaded to the server.

Location : Name of the location where the system is installed.

Latitude : Latitude of the location where the server is installed. They are used to enable the iOS geolocalisation function.

Longitude : Longitude of the location where the server is installed. They are used to enable the iOS geolocalisation function.

Send command after reboot : It is possible to launch a command on server full reboot or soft restart after a predefined time interval. If soft restart is selected, the command will be executed also when a new project version will be uploaded. Sending command after a full restart could be useful to notify blackouts.

If the property "Send command after reboot" is not disabled, the following properties will appear:

Command delay   Time in seconds passed between the complete reboot of the server and the execution of the command.

Command   Command to send after the server reboots.

Time server :   If enabled, the server will send date and time information to the bus and "Time group" and "Date group" properties will be displayed:

Time Group   KNX time group address to receive or send time information.

Date group   KNX date group address to receive or send date information.

Licenses :   Active licences for the current project, for more details refer to Section 3.1.3 on page 13.

Users and Groups :   Groups and users for the customized exporting process, for more details refer to Section 3.1.4 on page 14.

Protection PINs :   List of PINs used to protect interface objects, for more details refer to Section 3.1.7 on page 17.

5.1.1 Object commands

Commands sent to the object and recallable from other objects:

Send KNX Bit telegram: This command is used to send a bit value; adjust the "KNX group" and "KNX value" (0 or 1) parameters displayed on the right.

Send KNX Byte Telegram: Send a byte value; adjust the "KNX group" and "KNX value" (from 0 to 255) parameters.

Send KNX Float 2 Byte Telegram: Send a float 2 byte value; adjust the "KNX group" and "KNX value" parameters.

Send KNX Float 4 Byte Telegram: Send a float 4 byte value; adjust the "KNX group" and "KNX value" parameters.

Send KNX String Telegram: Send a string 14 byte value; adjust the "KNX group" and "KNX value" parameters.

Make a pause for a fixed interval   Pause the system for a specified time interval configurable by adjusting the "Interval" parameter.

Change UI Function and Page: GENERAL   This command allows to configure a specific project page that will be recalled on all clients; adjust the "Function" and "Page" parameters.

Change UI Function and Page: SPECIFIC CLIENT   This command allows to configure a specific project page that will be recalled on a specific client; adjust the "Function" and "Page" parameters.

Send Push Notification   This command allows to send push notifications on the desired client; adjust the "Message" parameter to define the notification content.

Execute MS Windows Command: GENERAL   This command allows to launch an .exe file directly from the ThinKnx application on all Players for Windows; adjust the "Command" parameter.

Execute MS Windows Command: SPECIFIC CLIENT   This command allows to launch an .exe file directly from the ThinKnx application on a specific Player for Windows; adjust the "Command".

Recall iOS app with url   This property allows to launch a specific app on iOS devices directly from the ThinKnx app by typing the related url in the "URL used to recall iOS app" parameter (f.e.   http//www.google.com will automatically browse the google safari page).

Send Email to recipients   This command allows to send an email message using a default ThinKnx account; define the email subject, content and recipients by adjusting the parameters on the right.

Send DTMF tone during intercom call   This command allows to send a DTMF tone or a sequence of tones while an intercom call is running on the client.

5.2 ETS project
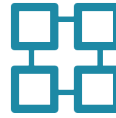
This object contains all KNX groups configured in the ETS software. It simplifies visualisation and selection of these groups within the Configurator thanks to a tree displaying. Following properties are displayed in the grid below:

CSV file : This property specifies the .csv file containing the project.

Label : Object name.

5.2.1 Exporting .csv from ETS

Launch ETS, then right click on "main groups" (ETS3) or "Group Addresses" (ETS4) and select the "export group addresses" option. With ETS 3 use default export parameters, in ETS 4 select CSV format and activate the "Export header information" flag.
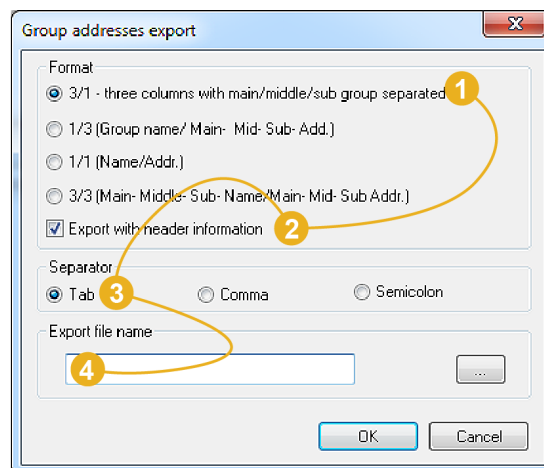
Figure 5.1: ETS 3 export parameters

5.2.2 Export .esf from ETS

With ETS 4 and later versions, the project can be exported in OPC.
From the ETS application, click on "Other -> Export OPC": the generated ".esf" file can be imported in the Configurator at a later time.

5.3   Scene

This service allows to define a list of actions to be performed by the server on user's demand or depending on a specific setting. These actions can be specified by the installer directly in the Configurator or in the client application by the user.

KNX group :   KNX group address used to recall the scene.

KNX Data Type :   Data type of the KNX group address used to recall the scene. The telegram used to recall the scene can be of two types: DPT 1 (Boolean - 1bit) or DPT 17-18 (Unsigned Integer - 1 byte). In case of 1 bit telegram, the scene is recalled whenever the ThinKnx server receives 1 on the KNX group; otherwise, in case of 1 byte telegram, the scene is recalled whenever the ThinKnx server receives the value specified in the following property.

Record :   This property has to be enabled when the user is creating a customized scene; if he is selecting actions from the default list, this property can be disabled.

Restartable :   If enabled, the selected scene can be restarted if launched when already running; it is useful when the scenes is full of pauses and it is particularly long-lasting; when the scenery is launched from KNX, this property has to be disabled because of telegram repetitions.

List of actions :   By clicking on the button displayed on the right, the action editor will be displayed; the user can add the desired number of action by clicking on "Add" button. Each action can be given a name and the related command can be selected by clicking on the button displayed on the right side of the dedicated slot.

5.3.1   Object commands

Commands sent to the object and recallable from other objects:

Launch scenery   Launches the selected scene.

Stop scenery execution   Stops the selected scene.

5.4 Calendar

This server service allows the user to program on/off KNX commands (switch objects) using client applications; it is also possible to memorize the temporization on server. Different switches can be associated to the same calendar.

Force state : If this property is enabled, the server periodically sends value "1" to the selected KNX group, basing on the pre-set timespan; the light automatically turns on if it has been manually switched off by the user. If enabled, the "Send interval" property will be displayed:

- [*Send interval*] Interval between two repeated messages

5.5   HVAC Controller

This object allows to control HVAC devices: a HVAC controller can control more than one device commanded using the same connection type.

Controller type : Selection among three possible models:

- *Mitsubishi AG 150:* Device IP address has to be typed in the empty slot to use this controller.

- *KNX interface simple:* This controller allows to set mode and speed using standard 1 byte objects.

- *KNX interface extended:* This controller allows to set mode and speed using 1 bit objects.

If "Controller type" is "Mitsubishi AG 150" the following property will appear to define the device address:

IP address   HVAC controller IP address.

Devices :   List of HVAC devices linked to the system.

5.5.1   Adding a HVAC device

Select the "Devices" property and click on the button displayed on the right to open the devices editor window; click on "Add" button and adjust the properties in the grid.

5.5.2   Mitsubishi device

Name :   Device name.

Device index :   Index associated to the device inside the controller.

On/off group :   On/off command control KNX group.

On/off fb group :   On/off command feedback KNX group.

Temp. setpoint KNX group :   Temperature setting control KNX group.

Temp. setpoint fb KNX group :   Temperature setting feedback KNX group.

Mitsubishi actual temp. KNX group :   KNX group of the actual room temperature read from Mitsubishi device (2 bytes). This value will be used by the regulator if the actual temp. KNX group is empty.

Enable regulator :   If enabled the regulator feature will be active thus the object will act as a thermostat.

If the property "Enable regulator" is set to "Enable" the following properties will appear too:

Regulator hysteresis   Value of the hysteresis used by the regulator.

Setpoint temperature offset   Value which represents the difference between the setpoint temperature and the temperature sent to the device.

Summer/Winter KNX group   KNX group used to determine the working modality of the regulator (1 bit - 0 = summer/cooling, 1 = winter/heating).

Actual temp. KNX group   KNX group address of the actual room temperature read from an external sensor and used by the regulator. If this field is empty the temperature considered will the one read by the Mitsubishi device (Mitsubishi actual temp. KNX group).

Enable regulator KNX group   KNX group to enable/disable regulator (1 bit).

5.5.3 KNX interface simple device

Name :   Device name.

Communication protocol :   It represents the protocol used to communicate with the device, there are four possible options:

- *ZENNIODD:* Select this option to control Daikin devices integrated with Zennio KLIC DD or KLIC DI.

- *ZENNIOIRSC:* Select this option to control devices integrated with Zennio IRSC.

- *INTESISBOX:* Select this option to control devices integrated with Intesis Box.

- *Generic:* Select this option to use any other KNX HVAC controller. In this case the byte values for Mode and Fan speed have to be manually typed in the fields below. Each controller has different values, ask the producer for the correct values to enter.

On/off group :   On/off command control KNX group.

On/off fb group :   On/off command feedback KNX group.

Fan group :   Fan speed control KNX group.

Fan fb group :   Fan speed feedback KNX group.

Temp. setpoint KNX group :   Temperature setting control KNX group.

Temp. setpoint fb KNX group :   Temperature setting feedback KNX group.

Mode group :   Mode control KNX group (1 byte).

Mode fb group :   Mode feedback KNX group (1 byte).

Value fan auto :   Value for fan AUTO modality. It will be sent to fan command group to set modality and, if received in fan feedback group, auto modality will be recognized (1byte value).

Value fan min :   Value for fan minimum speed modality. It will be sent to fan command group to set modality and, if received in fan feedback group, minimum speed modality will be recognized (1byte value).

Value fan middle :   Value for fan middle speed modality. It will be sent to fan command group to set modality and, if received in fan feedback group, middle speed modality will be recognized (1byte value).

Value fan max :   Value for fan maximum speed modality. It will be sent to fan command group to set modality and, if received in fan feedback group, maximum speed modality will be recognized (1byte value).

Value Auto Mode :   Value that corresponds to AUTO modality for mode group (1byte).

Value Cool Mode :   Value that corresponds to COOL modality for mode group (1byte).

Value Heat Mode :   Value that corresponds to HEAT modality for mode group (1byte).

Value Dry Mode :   Value that corresponds to DRY modality for mode group (1byte).

Value Fan Mode :   Value that corresponds to FAN modality for mode group (1byte).

Enable regulator : If enabled the regulator feature will be active thus the object will act as a thermostat.

If the property "Enable regulator" is set to "Enabled", the following properties will appear:

Regulator hysteresis   Value of the hysteresis used by the regulator.

Setpoint temperature offset   Value which represents the difference between the setpoint temperature and the temperature sent to the device.

Summer/Winter KNX group   Regulator working modality feedback KNX group (1 bit). 0 = summer/cooling, 1 = winter/heating.

Actual temp. KNX group   KNX group address of the actual room temperature read from an external sensor and used by the regulator. If this field is empty the regulator won't work!

Enable regulator KNX group   KNX group to enable/disable regulator (1 bit).

5.5.4 KNX interface extended device

Name : Device name.

Communication protocol : It represents the protocol used to communicate with the device, there are four possible options:

- *ZENNIODD:* Select this option to control Daikin devices integrated with Zennio KLIC DD or KLIC DI.

- *ZENNIOIRSC:* Select this option to control devices integrated with Zennio IRSC.

- *INTESISBOX:* Select this option to control devices integrated with Intesis Box.

- *Generic:* Select this option to use any other KNX HVAC controller. In this case the byte values for Mode and Fan speed have to be manually typed in the fields below. Each controller has different values, ask the producer for the correct values to enter.

On/off group : On/off command control KNX group.

On/off fb group : On/off command feedback KNX group.

Fan group : Fan speed control KNX group.

Fan fb group : Fan speed feedback KNX group.

Temp. setpoint KNX group : Temperature setting control KNX group.

Temp. setpoint fb KNX group : Temperature setting feedback KNX group.

Cool group : Cool modality control KNX group (1bit 1=Cool 0=No change).

Cool fb group : Cool modality feedback KNX group (1bit 1=Cool 0=No change).

Heat group : Heat modality control KNX group (1bit 1=Heat 0=No change).

Heat fb group : Heat modality feedback KNX group (1bit 1=Heat 0=No change).

Dry group : Dry modality control KNX group (1bit 1=Dry 0=No change).

Dry fb group : Dry modality feedback KNX group (1bit 1=Dry 0=No change).

Fan group : Fan modality control KNX group (1bit 1=Fan 0=No change).

Fan fb group : Fan modality feedback KNX group (1bit 1=Fan 0=No change).

Auto group : Auto modality control KNX group (1bit 1=Auto 0=No change).

Auto fb group : Auto modality feedback KNX group (1bit 1=Auto 0=No change).

Value fan auto :	Value for fan AUTO modality. It will be sent to fan command group to set modality and, if received in fan feedback group, auto modality will be recognized (1byte value).
Value fan min :	Value for fan minimum speed modality. It will be sent to fan command group to set modality and, if received in fan feedback group, minimum speed modality will be recognized (1byte value).
Value fan middle :	Value for fan middle speed modality. It will be sent to fan command group to set modality and, if received in fan feedback group, middle speed modality will be recognized (1byte value).
Value fan max :	Value for fan maximum speed modality. It will be sent to fan command group to set modality and, if received in fan feedback group, maximum speed modality will be recognized (1byte value).
Enable regulator :	If enabled the regulator feature will be active thus the object will act as a thermostat.

If the property "Enable regulator" is set to "Enabled" the following properties will appear:

Regulator hysteresis	Value of the hysteresis used by the regulator.
Setpoint temperature offset	Value which represents the difference between the setpoint temperature and the temperature sent to the device.
Summer/Winter KNX group	Regulator working modality feedback KNX group (1 bit). 0 = summer/cooling, 1 = winter/heating.
Actual temp. KNX group	KNX group address of the actual room temperature read from an external sensor and used by the regulator. If this field is empty the regulator won't work!
Enable regulator KNX group	KNX group to enable/disable regulator (1 bit).

5.6 Switch schedule

This server service allows the user to program until six daily temporisations for a switch object. The server checks events planning so that value 1 is sent to the switch object at the preset time.

! → A single Voip PBX object can be added to the system.

Force state : If this property is enabled, the server periodically sends value "1" to the selected KNX group, basing on the pre-set timespan; the light automatically turns on if it has been manually switched off by the user. If enabled, the "Send interval" property will be displayed:

- *Send interval*: Interval between two repeated messages

5.7   Chronotermostat

Daily and weekly boiler programs can be configured on the server using this object.

Force settings : If enabled, the chrono will repeat the value corresponding to the actual time. This will override any possible changes made manually from other devices.

Temperature mode : If disabled, the system works using a mode functioning logic; if enabled, the system works using the temperature functioning logic and the "Custom range" property will be displayed: If the property "Temperature mode" is set to "Enabled", the following properties will appear:

Custom range If this property is disabled, the system will use the standard temperature range (from 14° to 26°) during both summer and winter; if enabled, the "Seasonal ranges", "Winter range", "Winter min.temp." and "Winter max.temp." will be displayed:

If the property "Custom range" is set to "Enabled", the following properties will appear:

Seasonal ranges : If disabled, the configured temperature range will be used for both winter and summer. If the property "Seasonal ranges" is set to "Enabled", the following properties will appear:

- *Season group*: KNX group used to switch between heating and cooling modes.

- *Winter range*: This property allows to select a range width of 6° or 12°. (This option allows to determine the maximum temperature).

- *Winter min.temp.*: Customisable temperature value.

- *Winter max. temp.*: This value is automatically calculated by the system by adding the preconfigured range to the minum value.

- *Summer range*: This property allows to select a range width of 6° or 12°. (This option allows to determine the maximum temperature).

- *Summer min.temp.*: Customisable temperature value. (For summer).

- *Summer max.temp.*: This value is automatically calculated by the system by adding the preconfigured range to the minum value. (For summer).

Mode feedback group : KNX group (1 bit DPT1) used to send the running chrono modality where 1=chrono and 0=manual.

5.8   Voip PBX

PBX internal to ThinKnx servers (supported by Compact and Micro). This object allows to configure the PBX (extensions, ring groups and door stations).

PBX port :   This property allows to specify the PBX port if different from the default one (5060).

Accounts PBX :   This property represents the list of extensions to be registered in the PBX.

Ring groups :   This property represents the list of ring groups to be registered in the PBX. Ring groups allow to call more than one extension using a single number. The outdoor station can forward the call to several clients using a single number.

Intercom devices :   This property represents the list of intercom devices to be registered in the PBX.

5.8.1   Adding PBX accounts

Click on the button displayed on the right to open the PBX users editor window, then click on "Add" and adjust the properties in the grid:

Extension :   This property allows to specify the extension number used by the client to join the PBX.

Password :   This property allows to specify the password associated to the extension number.

5.8.2   Adding ring groups

Click on the button displayed on the right to open the ring groups editor window, then click on "Add" and adjust the properties in the grid:

Ring Group Number :   Number associated to this group in PBX. Group Numbers start from 9000

Accounts PBX :   PBX accounts associated to this ring group

5.8.3   Adding intercom devices

Click on the button displayed on the right to open the intercom devices editor, click on "Add" and adjust the properties in the grid:

Device type :   It can be selected from the following list:

- *2N Elios IP*
- *Mobotix M24*
- *TCS gateway*
- *TCS Native*
- *Generic IP doorstation*

Username web :   This property corresponds to on of the login parameters of intercom management web page.

Password web :   This property corresponds to on of the login parameters of intercom management web page.

Username PBX : This property corresponds to the extension used by the intercom to register in the PBX; it is automatically generated and it cannot be edited. For devices the numeration starts from 901.

IP address : Outdoor station address.

Port : Outdoor station port.

Intercom buttons : This property allows to configure the intercom button panel, associating to each button the extension or ring group to be called. Click on the button displayed on the right to open the intercom buttons editor, click on "Add" and adjust the properties in the grid:

Label Label associated to the button in the configurator.

Button number This property represents the button number on the panel.

Call single user If enabled, the call is sent to a single user when the button is pressed. If disabled, the call is sent to a ring group.

Ring Group PBX Ring group associated to this button.

5.9 Irrigation

The Irrigation object allows to manage different zones of the irrigation system, each of them controlled by a different KNX group. These zones can be combined for creating different irrigation programs, directly in the client application.

Zones : This property represents the list of zones of the irrigation system.

Enable/Disable KNX group : KNX group used to enable and disable the irrigation scheduling directly from KNX (DPT 1 - 1 = enable, 0 = disable). When the scheduling is disabled the irrigation can be controlled manually zone by zone.

Use rain sensor : If enabled, it is possible to block the irrigation programs in case of rain. The rain sensor must send a KNX telegram to block irrigation.

If the property "Use rain sensor" is "Enabled", the following properties will appear:

Rain KNX group : KNX group address used to receive notification from rain sensor (DPT1 - 1 = rain, 0 = no rain).

Delay after rain : Time to wait before re-enabling irrigation programs after rain event. In case of rain, events will be blocked for the rain duration time plus the time indicated in this field.

Water pump control : If "Enabled", the server will perform an OR on the status of the zones to detect if the pump must be turned on or off. If "Enabled" the following properties will appear:

Pump command KNX group : KNX group (DPT1) used to turn on and off the water pump of the irrigation system. (1=on, 0=off)

Pump status KNX group : KNX group (DPT1) of the status of the water pump. (1=on, 0=off)

Turn off delay : Time interval (in seconds) in which the server waits before turning off the pump. When the server detects that all the zones are off, waits for this time interval before sending the off to the pump. Meanwhile, if another zone turns on, it avoids to perform useless switchings on the pump.

5.9.1 Adding irrigation zone

Click on the button displayed on the right to open the zones editor window, then click on "Add" and adjust the properties in the grid:

Zone name : Name assigned to the zone (it will be displayed in the client application).

KNX on/off group : KNX group address used to turn on and off the zone (DPT1 - 1 = start irrigating the zone, 0 = stop irrigating the zone).

Default time : Default zone irrigation timespan in minutes. It can be changed from user during normal usage.

KNX feedback group : KNX group address used to detect the status of the zone (DPT1 - 1 = irrigating, 0 = pause).

5.10   RGB

This object allows the user to control a RGB lamp and create sequences of colors. The bus types supported are: KNX, Modbus and Philips Hue.

5.10.1   KNX configuration

Bus type :   If the selected option is "KNX", the following properties will be displayed:

RGB Data Type :   Control type for RGB. When "RGB 1 byte per color" is selected, 6 groups are defined in order to write and read values for each color.

Red group   Red color command KNX group address (1byte).

Red fb group   Red color feedback KNX group address (1byte).

Green group   Green color command KNX group address (1byte).

Green fb group   Green color feedback KNX group address (1byte).

Blue group   Blue color command KNX group address (1byte).

Blue fb group   Blue color feedback KNX group address (1byte).

When the "RGB Data Type" is set to "RGB 3 bytes", just 2 groups are defined for a single RGB.

RGB group   KNX group address to control RGB (3 bytes)

RGB fb group   KNX group address with feedback for RGB (3 bytes)

5.10.2   Modbus configuration

Bus type :   If the selected option is "Modbus", the following properties will be displayed:

Modbus Gateway :   Previously added "Modbus Gateway" object (selectable from the list displayed by right clicking on the main node). Please refer to the dedicated section below.

Red Datapoint :   Red Modbus Datapoint, it must be configured in the "Modbus Gateway" properties.

Green Datapoint :   Green Modbus Datapoint, it must be configured in the "Modbus Gateway" properties.

Blue Datapoint :   Blue Modbus Datapoint, it must be configured in the "Modbus Gateway" properties.

5.10.3   Philips Hue configuration

Bus type :   If the selected option is "Philips Hue", the following properties will be displayed:

Hue gateway :   Hue gateway previously added in the system object and selectable from the list displayed by right clicking on the main node.

Hue element :   Hue element, created inside the Hue Gateway, to control with the current object.

5.10.4   Object commands

Commands sent to the object and recallable from other objects:

Start RGB sequence shuffle with time in seconds Starts the preconfigured colour sequence in a random order; adjust the "Time" parameter on the right to select the time interval between two consecutive colours.

Start RGB sequence repeat with time in seconds Repeats the preconfigured colour sequence following the defined order; adjust the "Time" parameter on the right to select the time interval between two consecutive colours.

Stop the RGB sequence and turn off Stops the repetition of the colour sequence and turns the RGB lamp off.

5.10.4   Object commands

5.11   Email account

This object is needed to configure SMTP server parameters to send email messages from the server (used to send alerts, reports etc.).

SMTP server :   Default server hostname provided by the system.

Server port :   Default server listening port.

From :   E-mail address specified in the sender field; if this property is empty in the e-mail will appear noreply@thinknx.com in the from field.

Authentication :   Enable or disable SMTP user authentication by means of username and password.

If the property "Authentication" is set to "Enable", the following properties will appear:

Username   Email account login parameter.

Password   Email account login parameter.

Use SSL :   Use SSL inscription to connect with the server.

5.11.1   Object commands

Commands sent to the object and recallable from other objects:

Send Email to recipients   Allows to send an email message using a customisable personal account; define the email subject, content and recipients by adjusting the parameters on the right.

Subject   Subject of the mail message that will be sent to the specified recipients

Recipients   Recipients email addresses, separeted by ;

Content   Text content of the mail message.

5.12 Web UI

This server service allows to start a web server to control the plant from the web.

Users : This property represents a list of enabled users.

Web access : Enable or disable web access. This option can be used to disable web access without deleting all previously set parameters.

5.12.1 Adding web users

Click on the button displayed on the right to open the users editor window, click on "Add" and adjust the properties in the grid:

Username : Username that will be used to access the webpage. The password for the first access is "password". All users can change their own password on the first page of the web interface.

User access : Grant/deny this user the access to the web page.

5.13 Presence Simulator

This object is particularly useful to configure a list of actions that can simulate the presence of people even if the house is empty (f.e. turning lights on, starting the audio system etc.).

Actions : This property represents the list of simulated actions.

Max. duration : Maximum duration time of the simulation; if it is not manually stopped, it will automatically end after this specified time interval (in minutes).

Command group : KNX group that activates or deactivates the presence simulator.

Status group : KNX group that reads the simulator status.

Final command : Command used to end the simulation (f.e. all devices involved in the configured simulation return to the original status.)

Random order : If enabled, all the configured actions will be randomly performed by the system; if disabled, they will follow the pre-set order.

5.13.1 Adding a simulated action

Click on the button displayed on the right to open actions editor window, click on "Add" and then adjust the properties in the grid:

Start command : Command sent when the action starts.

Final command : Command sent when the action ends.

Medium duration : Interval between starting and ending command (in minutes).

5.13.2 Object commands

Commands sent to the object and recallable from other objects:

Start the presence simulator Starts the presence simulator sequence of actions.

Stop the presence simulator Ends the presence simulator sequence of actions.

5.14   Sun times and events

This service calculates sun position (sunset, sunrise, azimuth and elevation) starting from the geographic position of the plant. It is also possible to associate actions to sun positions.

Sun Actions :   List of actions to perform depending on sun positions.

Sunrise group :   KNX group used to send sunrise time (DPT 10).

Sunset group :   KNX group used to send sunset time (DPT 10).

Azimuth Group :   KNX group used to send sun azimuth position (DPT 9).

Elevation Group :   KNX group used to send sun elevation (DPT 9).

5.14.1   Adding actions

To define an action to perform when a predefined sun event occurs, click on the button displayed on the right of the "Sun Actions" property, click on "Add" and then adjust the properties in the grid:

Sun event :   Sun event (Civil dawn, Civil dusk, Noon, Sunrise, Sunset) associated to the action.

Action delay :   Server wait time (in minutes) before launching the action after the occurrence of the sun event. If this value is negative the action will anticipate the sun event.

Command :   Command performed by the server when the sun event occurs.

5.15 Alarm device

This object is used to integrate the central alarm in the project; it allows the server to arm or disarm the central, to read partitions or sensor status and to singularly control them. All alarm panels integrated in the system provide the user with the same graphical effect; they can be selected from the following list of models:

Device type :   This property allows to select the alarm panel model.

- *AVS Electronics XTream 640*
- *Bentel Absoluta*
- *Bentel Kyo 320*
- *Bentel Kyo Unit 8 Zones*
- *Bentel Kyo Unit 16 Zones*
- *Bentel Kyo Unit 32 Zones*
- *Brahms series B4 CMP16*
- *Brahms series B4 CMP32*
- *Brahms series B4 CMP64*
- *Elkron MP508 TG*
- *GE security/Aritech ATS*
- *Honeywell Galaxy Dimension*
- *Inim Smartliving 10100*
- *Inim Smartliving 1050*
- *Inim Smartliving 515*
- *Rokonet RP128*
- *Rokonet RP128 BRTE*
- *Siemens SPC*
- *Tecnoalarm TP16-256*
- *Tecnoalarm TP8-64*
- *Tecnoalarm TP8-88*
- *Urmet 1067*

Communication: :   This property allows to select the type of communication established with the server; it can be selected from the following list:

- *RS232:* Connected through serial cable.
- *RS232overTCP_IP:* Connected through link with TCP media converter.
- *TCP_IP:* Connected through network link.

If the property "Communication" is set to "RS232", the following properties will appear:

Serial Port   This property represents the system serial port number.

If the property "Communication" is set to "TCP/IP", the following properties will appear:

IP Address   Device IP address or RS232overIP address.

Port Number   TCP/IP port number for ethernet connection.

Partitions :   Group of sensors that can be armed or disarmed together.

Max. partitions :   Maximum number of partitions supported by the device.

Partitions reading :   Time interval between two consecutive partitions state readings.

Sensors :   List of all sensors connected to the alarm panel.

Max.sensors :   Maximum number of sensors supported by the device.

Sensors reading :   Time interval between two consecutive sensors state readings.

KNX reading :   Enable/disable functions that allow to establish a KNX communication with central alarm system.

If in the property "Device Type" are selected "AVS Electronics XTream 640", "Bentel Absoluta", "Elkron MP508 TG", "Honeywell Galaxy Dimension", "Tecnoalarm TP16-256", "Tecnoalarm TP8-64", "Tecnoalarm TP8-88" the following property will appear:

Default code   Enabled code for plant status quering.

If in the property "Device Type" is selected "AVS Electronics XTream 640" the following property will appear:

Use special functions   Will enable the usage of AVS special way of arming a single partition (ON, HOME, AREA, PERIMETER). Can be applied only when using a single partition.

If in the property "Device Type" are selected "Elkron MP508 TG", "Urmet 1067" the following property will appear:

System code   System code of the panel. Elkron default value is 55555555. Urmet default value is 99999999.

If in the property "Device Type" are selected "GE security/Aritech ATS", "Honeywell Galaxy Dimension" the following property will appear:

Force Arm   Force Arm partition when arming.

If in the property "Device Type" is selected "GE security/Aritech ATS" the following property will appear:

Users   List of security users associated to this control.

If in the property "Device Type" are selected "Tecnoalarm TP16-256", "Tecnoalarm TP8-64", "Tecnoalarm TP8-88", "Urmet 1067" the following property will appear:

Passphrase   Encryption passphrase used during panel configuration.

5.15.1 Bentel Interface

The system allows to manage Kyo8, Kyo16 and Kyo32 panels. Those panels can establish only a serial connection with ThinKnx system using a null-modem cable. Partitions, in ThinKnx, take numbers starting from 0 for the first one; sensors take numbers starting from 0 for the first one as well.

5.15.2   Tecnoalarm Interface

To interact with a TecnoAlarm device, the licence Tecnoout must be enabled on the alarm device following the manufacturer's instructions. Furthermore, through the Centro software, the alarm device must be configured on the network as illustrated in following pictures.

In the "Extra" tab, check the box corresponding to "Tecnoout" and specify the correct port (10500 is recommended) and a password with 16 characters.
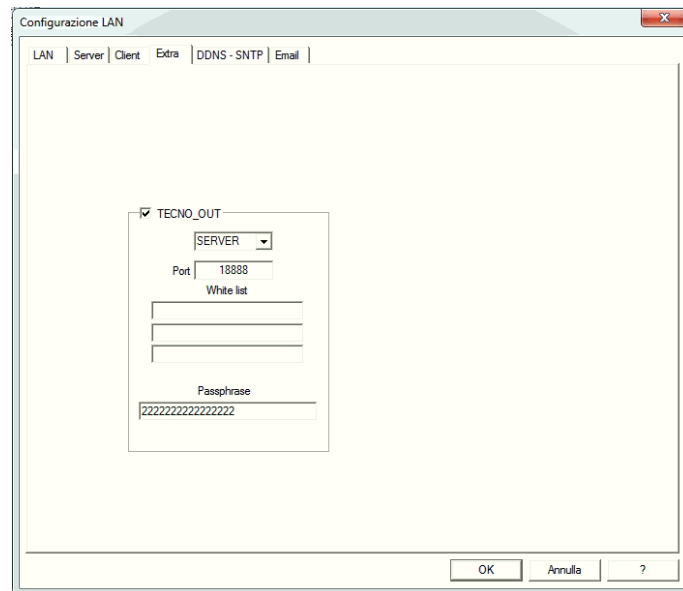
In the "LAN" tab, configure the network settings.
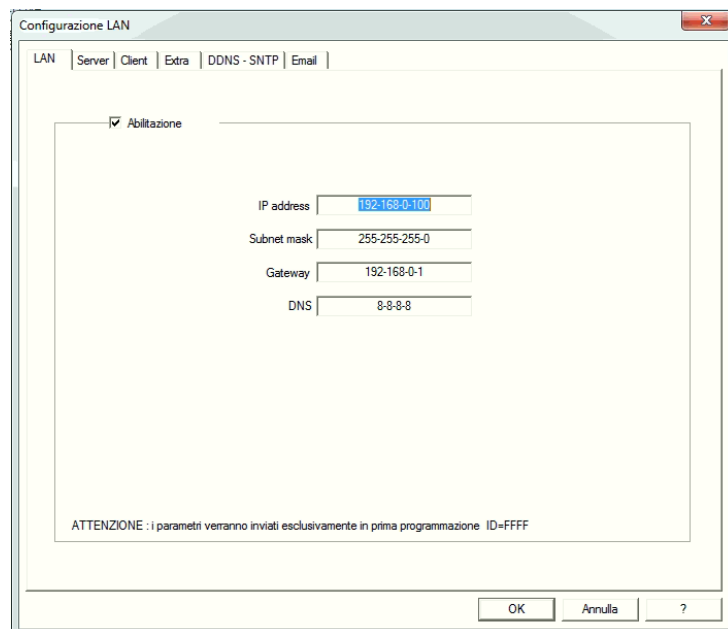
!→   The port specified in the "Extra" tab must be different from those specified in the "Server" tab, even if ports specified in the "Server" tab are unchecked.

!→   Parameters for alarm device can be set just during the first configuration. To change those values a complete reset of the device is needed.

5.15.3 Adding partitions

Click on the button displayed on the right to open partitions editor window, click on "Add" and then adjust the properties in the grid:

Area Name :   Label of text to identify the area.

Central index :   Insert the number of the partition programmed in the security system.

Disarming :   Enable/disable the option to deactivate the alarm system through a KNX command.

Arming :   Enable/disable the option to activate the alarm system through a KNX command.

Command bit :   KNX group address to command arming of the area (1 bit - 1=arm, 0=disarm)

Command Byte :   KNX group address to command area in byte.

Command 14 Byte : KNX group address to command area in with 14 bytes object. The string should be in the form 1|xxxx or 0|xxxx where xxxx represents the user code and 0 or 1 is used to decide if the partition should be armed or disarmed.

Status byte :   1 byte KNX group address sent by the server containing the partition status.

Area name :   Insert the partition name.

5.15.4 Adding sensors

Click on the button displayed on the right to open sensors editor window, click on "Add" and then adjust the properties in the grid:

Index number :   Insert the number of the sensor you programmed in your security system.

Group :   Insert a KNX group address to communicate with the sensor (f.e. to turn on a light using an alarm system motion sensor).

Name of the sensor : Sensor name.

Send all states :   If enabled, the sensor sends all states, if disabled, the sensor sends only alarm state (only value 1).

Send on change :   If enabled the sensor sends its state only on change (otherwise, sensor status will be sent on every polling).

5.16   Combination

The "Combination" object allows to perform logical operations (AND, OR, XOR) on the values coming from KNX groups and to send the result to another KNX group.

Operation :   This property indicates the type of desired logical operation.

- *'AND'* is the operation that returns 1 if all the inputs are 1, otherwise 0.

- *'OR'* is the operation that returns 1 if at least one of the outputs is 1, otherwise 0.

- *'XOR'* is the operation that returns 0 if all the inputs share the same value (so all 1 or all 0), otherwise 1.

Inputs :   This property represents the list of KNX groups which is possible to pick the values from. For further details about the configuration of the inputs, refer to the following paragraph.

Inverted output :   This property states if the result of the logical operation needs to be inverted, in other words, 1 becomes 0 and vice versa.

Output sending behaviour :   This property indicates when the result of the operation has to be sent to the KNX group.

- "On result change": indicates that the result is sent only when different from the previous one.

- "When a new input telegram is received": indicates that the result is sent whenever the server receives a telegram from one of the KNX groups specified in the inputs.

Output values :   This property states which output values (the result of the operation) the telegram has to be sent for.

Output group :   This property represents the KNX group that receives the telegram containing the result of the operation.

Gate :   This property allows to establish through a "gate" input (a value coming from a KNX group) if the operation can be executed.

If the property "Gate" is "Enabled", the following properties will appear:

Inverted gate   This property states the value needed to enable the operation. If disabled, 1 enables and 0 disables it, if enabled, 0 enables and 1 disables it.

Startup gate status   This property allows to specify the starting value of the KNX group corresponding to the gate.

- *'Read current value':* indicates to use the group current value as starting value.

- *'Wait for a new telegram':* indicates that the gate doesn't take any value until the receiving of a telegram.

- *'0 until first telegram':* indicates that the gate takes value 0 until the receiving of a new telegram.

- *'1 until first telegram':* indicates that the gate takes value 1 until the receiving of a new telegram.

Gate group   This property allows to define the KNX group selected as a gate.

5.16.1 Input Configuration

In order to set up the list of the inputs of the combination, select the "Inputs" property and click on the button displayed on the right.

In the displayed window, in order to add a new input, click and the "Add" button below. An "Input" object will be added to the list; select it and adjust the properties on the right.

Input type :   This property allows to apply variations on the value coming from the KNX group. .

- *'Normal':* indicates that is not applied any adjustment.

- *'Inverted':* indicates that the value coming from the KNX group is denied so 1 becomes 0 and vice versa.

- *'Always 0':* indicates that the input value is always 0 independently from the value of the KNX group.

- *'Always 1':* indicates that the input value is always 1 independently from the value of the KNX group.

Value at startup :   This property indicates the value taken by the input at the launch.

- *'Read current value':* indicates that the input starting value is equivalent to the value of the KNX group.

- *'Wait for a new telegram':* indicates that the input doesn't take any value until the receiving of a new telegram.

- *'0 until first telegram':* indicates that the input takes value 0 until the receiving of the first telegram.

- *'1 until first telegram':* indicates that the input takes value 1 until the receiving of the first telegram.

KNX group :   This property indicates the KNX group the input is associated to.

5.17 Filter

The *'Filter'* object allows to perform operations on the value of an input KNX group and to send the result with an optional delay to an output KNX group. To set up the "Filter" object, select from the system tree and adjust the properties displayed in the grid below.

Filter type : This property indicates the value assigned to the output depending on the input value.

- *'1 -> - / 0 -> - (disabled)'* indicates that no values are assigned to the output.

- *('1 -> - / 0 -> 0')* if input is equal to 1, no value assigned to the output. If input is equal to 0, 0 will be sent to the output.

- *'1 -> - / 0 -> 1'* if input is equal to 1, no value sent to the output. If input is 0, 1 is sent to the output

- *'1 -> - / 0 -> Toggle'* if input is equal to 1, no value will be sent to the output. If input is equal to 0, the output will toggle.

- *'1 -> 0 / 0 -> -'* If input is 1, output will be set to 0. If input is 0, no value will be sent to the output.

- *'1 -> 0 / 0 -> 1 (inversion)'* indicates that the input value is inverted and than sent to the output.

- *'1 -> 1 / 0 -> -'* indicates that if the input is 1, 1 is assigned to the output, if the input is 0, no values are assigned to the output.

- *'1 -> 1 / 0 -> 0 (pass all)'* indicates that both of the input values are sent to the output.

- *'1 -> Toggle / 0 -> -'*: indicates that if the input is 1 the output value is inverted, if the input is 0 no values are assigned to the output.

- *'1 -> Toggle / 0 -> Toggle'* for every input value (both 0 or 1), the output will toggle.

Input group : This property represents the KNX group of the input value.

Delay : This property indicates if is necessary to wait for a time interval before sending the output value to the KNX group.

- *'Do not use':* disables the property so no delays are applied .

- *'Use if input is 1':* applies the delay only if the input is 1.

- *'Use if input is 0':* applies the delay only if the input is 0.

- *'Use always':* applies the delay for any input value.

If the property "Delay" is not set to "Do not use", the following properties will appear:

Delay base time This property indicates the measurement unit of the time interval of the delay.

Delay factor This property indicates the value of the time interval of the delay.

Output sending behaviour : This property indicates when the result of the output operation has to be sent.

- *'On result change':* indicates that the value is sent only when the result of the operation is different from the previous one.

- *'When a new input telegram is received':* indicates that the value is sent whenever the server receives a telegram from on of the KNX groups specified in the inputs.

Input group : This property represents the KNX group of the input value.

Gate : This property enables or disables the operation. See page 64.

5.18   Multiplexer

This object, given an input and two outputs, allows to choose, through a control bit, the output which the input value has to be assigned to.

In order to set up the *'Multiplexer'* object, select it in the system tree and adjust the properties displayed in the grid below.

Group input :   This property represents the KNX group of the input value.

Input type :   This property indicates the type of data that has to be read on the input group.

Group output A :   This property represent the KNX group of the output A.

Group output B :   This property represent the KNX group of the output B.

Control group :   This represents the KNX group of the control bit that decides the output which the input has to be assigned to.

Type for 0 :   This property indicate which action has to be executed when the control bit is 0.

Type for 1 :   This property indicate which action has to be executed when the control bit is 1. For properties "Type for 0" and "Type for 1" are available the following options:

- *'No transmission':* indicates that the input is not assigned to any output.

- *'From input to output A':* indicates that the input is assigned to output A.

- *'From input to output B':* indicates that the input is assigned to output B.

- *'From input to both output':* indicates that the input is assigned to output A and to output B.

Startup value :   This property indicates which starting value is taken by the control bit at server launching.

- *'Read current value':* indicates that the control bit starting value is equivalent to the value of the KNX group.

- *'Wait for a new telegram':* indicates that the control bit doesn't take any value until the receiving of a new telegram.

- *'0 until first telegram':* indicates that the control bit takes value 0 until the receiving of the first telegram.

- *'1 until first telegram':* indicates that the control bit takes value 1 until the receiving of the first telegram.

Gate :   This property enables or disables the operation. See page 64.

5.19 Logic Matrix

This object, given *n* inputs and *n* outputs, to select an input with a 1 byte selector and send it on an output chosen with a 1 byte selector.

Data type : KNX telegram type of input and output groups.

Inputs : List of all the inputs KNX groups.

Outputs : List of all the outputs KNX groups.

Input control value group : KNX group address of the value used to select the input (1 byte).

Default input : Input selected by default (default control value).

Output control value group : KNX group address of the value used to select the output (1 byte).

Default output control value : Default output control value (1 byte, 0-255).

Update for every input control tel. : If enabled, outputs will be updated for every received telegram to the input control (selection) group. If disabled, outputs will be refreshed only when a new telegram on the selected input is received or (if enabled) when a telegram on the output control group is received.

Update for every output control tel. : If enabled, outputs will be updated for every received telegram to the output control (selection) group. If disabled, outputs will be refreshed only when a new telegram on the selected input is received or (if enabled) when a telegram on the input control group is received.

Gate : This property enables or disables the operation. See page 64.

5.19.1 Adding an input

Click on the button displayed on the right to open inputs editor window, click on "Add" and then adjust the properties in the grid:

Label : Name of the input.

Control value : Value assumed by the Input control value to select this input.

Value at startup : Value to assign at input during startup.

KNX group : KNX group of the input (it must follow the Data type property).

5.19.2 Adding an output

Click on the button displayed on the right to open outputs editor window, click on "Add" and then adjust the properties in the grid:

Label : Name of the output.

Control value : Value assumed by the Output control value to select this output.

KNX group : KNX group of the output (it must follow the Data type property).

5.20 Linear combination

$$\sum$$

This object allows to calculate weighted sums between the bit values of specific input KNX groups and to assign the result expressed in bytes to an output KNX group. Therefore, the output value is:

$$C = p_1 \cdot v_1 + p_2 \cdot v_2 + ... + p_k \cdot v_k$$

where p1 is the load (from 0 to 255) associated to the addend v1 that is the value 0 or 1 coming from the input KNX group. It's particularly useful in case it's requested to modulate a KNX command through a byte because it allows to associate a different weight to each addend.

In order to set up the *'Linear combination'* object, select it in the system tree and adjust the properties displayed in the grid below.

Addends : This property represents the list of values coming from different KNX groups that will be summed .

Output sending behaviour : This property indicates when the result of output operation has to be sent.

- *'On result change'*: indicates that the value is sent only when the result of the operation is different from the previous one.

- *'When a new input telegram is received'*: indicates that the result is sent whenever the server receives a telegram from one of the KNX groups specified in the inputs.

Output group : This property represents the KNX group which the sum will be assigned to.

5.20.1 Addends configuration

In order to set up the addends of the sum, select the property *'Addends'* and click on the button displayed on the right. In the displayed window, to add a new addend, click on the *'Add'* button below. An object *'Addend'* is added to the list, select it and adjust the properties on the right.

Name : Label of text that identify the input.

Load : This property associates a load (a multiplier) to the value of the KNX group corresponding to the addend. Doing so it's possible to obtain a weighted sum between the addends and to associate an importance level to each KNX group.

KNX group : This property represents the KNX group which the value of the addend can be picked from.

5.21   Complex maths expressions

The "Complex maths expressions" object represents a collection of logical and arithmetical operations that can be written to elaborate values coming from different KNX groups. It's possible to write expressions for the calculation of sums, balances, means, absolute values and analogical values, such as temperature and consumption, coming from KNX commands.

To write an expression, add the "Complex maths expressions" object, select it and adjust the properties displayed in the grid below.

Expression :   This property represents the list of defined maths expressions, see subsection 5.21.1 on page 70.

5.21.1   Configuring an expression

Click on the "Add" button in the displayed window. An "Expression" object is added to the list, select it and adjust the properties on the right.

Expression :   This property contains the syntax of the maths expression. Select it and click on the button displayed on the right. In the displayed window, type the text of the expression in the text box above and click on the "Check" button below. The check is used to test the expression accuracy and to create the variables. Each variable represents an input that is a value of a KNX group.
Please note that many math functions are included. The following list includes the available functions:

abs   Calculates the absolute value of a numeric parameter

avg   Calculates the average of a list of numbers. The list items must be convertible to double

between   Indicates if a value is between the other values. Please note that the comparison is inclusive

cos   Calculates the cosine of a number

iif   Performs an if-else-end

isbitclear   Verify if a bit is clear into an integer number

isbitset   Verify if a bit is set into an integer number

isfalseornull   Indicates if the parameter has the value false or is null

isnullorempty   Indicates if the parameter is null or empty

istrueornull   Indicates if the parameter has the value true or is null

mid   Calculates the median for a list of numbers

not   Performs a NOT on a boolean parameter

numericmax   Finds the maximum numeric value in a list

numericmin   Finds the minimum numeric value in a list

random   Return a random number comprised between indicated limits

regulator   Implements regulation of an output provided a setpoint and an actual value. The result can be inverted with an additional variable. Implements symmetric hysteresis.
During non inverted mode result will be 0 when actual value is less than setpoint value minus hysteresis and 1 when higher than setpoint plus hysteresis.
In inverted mode the result will be inverted. Can be used as thermostat with heating/cooling functionality. Refer to manual for more details.

round   Rounds a numeric value to the number of decimal places

sin   Calculates the sin of a number

sqrt   Calculates the square root of a number

Alternatively, to view a complete list of available functions and their syntax click on the "?" button.

Output sending behaviour :   This property indicates when the result of the output operation has to be sent.

- "On result change" indicates that the value is sent only when the result of the operation is different from the previous one.

- "When a new input telegram is received" indicates that the result is sent whenever the server receives a new telegram from one of the KNX groups specified in the inputs.

Output group :   This property indicates which KNX group the result of the operation has to be assigned to.

Type :   Type of number to exrtact from the value read from bus.

5.21.2 Expression Editor

To enter the math expression click on the button on the right of the property "Expression" in the "Expressions Editor" window, which contains the list of all the expressions.   In the single "Expression Editor" window the math expression can be directly added, with the desired variable names.
Clicking the "Check" button variables are generated and for each variable following properties can be set.

Value at startup :   This property allows to specify the starting value of the variable when the server is launched.

- "Read current value" takes as starting value the value of the associated KNX group.

- "Wait for a new telegram" doesn't assign any value to the input until the receiving of a new telegram from the associated KNX group.

- "0 until first telegram" indicates that the input takes value 0 until the receiving of the first telegram from the associated KNX group.

- "1 until first telegram" indicates that the input takes value 1 until the receiving of the first telegram from the associated KNX group.

KNX group :   This property represents the KNX group associated to the variable.

Type :   Type of number to extract from the value read from the bus.

Trigger computation :   This property is particularly usefull in case the same KNX group is used for both the result and another variable: in those situations loop may occurs. Setting this property to "Disabled" store the value for next computations and avoids loops.   If the property is set to "Enabled", the incoming values will trigger the computation of the expression and the sending of the new value.

! → The change of the expression doesn't involve of the previously set properties of the variables. Renaming a variable involves the cancellation of the old one and the creation of a new one: the new variable doesn't acquire the properties of the old one.

! → Whenever the text of the expression is changed, click on the "Check" button before clicking on "Ok". Not doing so, the variables do not generate and the expression is not saved.

The expression can contain mathematical operators such as +, -, *, /, > (greater-than), < (less-than), = (equal), := (assignment), <> (different) and logical operators such as "AND" and "OR". Decimals have to be expressed with "." symbol, for example 0.9, 1.5, 20.05. Each line have to end with ";" symbol. Is possible to include mathematical functions such as mean, absolute value and rounding. For a complete list of functions with related syntax, click on the "?" button below.

5.21.3 Importing and exporting Expressions

This feature allows to export a list of expressions previously created in a project and import it in another project.

To export the expressions list, open the expressions list editor window by clicking on the button displayed on the right of the "Expressions" property. Click on the "Export" button and choose the path of the xml file that will be created, in this way the list of expressions will be saved outside the Configurator.

To import the expressions list in a project, open the expressions list editor window by clicking on the button displayed on the right of the "Expressions" property. Click on the "Import" button and select the xml file previously saved and click on OK button to confirm. A list of expressions will appear in the editor window.

5.22   KNX variables

This object represents a collection of values stored in the server and associated to a KNX group. Through these variables it is possible to store, for example, the results of mathematical or logical operations and make them available on KNX through a group address. It is possible to choose if the value will be stored on the server in a persistent way, which means that the value will be available also after the server reboot.

Variables :   KNX variables to be used for computation or for storage.

Trigger write from KNX :   Permits to force the server to send (write) the content of the KNX variables to the KNX bus after receipt of a KNX telegram with a defined value. When set to "Enabled" following properties will appear:

Trigger KNX group   KNX group used to trigger the write of KNX variables to KNX bus.

Trigger KNX value   Permits to choose the value that has to be sent to the trigger KNX group to invoke KNX variables write. There are three alternatives: "All values", "Only 1", "Only 0".

Trigger write timebased :   Permits to force the server to send (write) the content of the KNX variables to the KNX bus basing on a timer with a defined interval. When set to "Enabled" following property will appear:

Trigger time interval   Time interval (in seconds) after which a new KNX variable write to the KNX bus is invoked.

5.22.1   Adding a variable

In order to add a variable the variable editor must be opened. Click on the "Add" button to define following properties:

KNX group   KNX group associated to the variable; through this group address it is possible to read the value or to set a new value.

Type   DTP of the variable value.

Store Value   Enable or disable the storage of the variable value. If enabled the variable value will be stored on the server and will persists on reboot. If disabled, the variable value will be lost after the server reboots.

5.23   Database

This object represents a service to store data coming from the plant on a cloud database. All these data will be accessible through the Chart interface object.

! → This objects works correctly only if the ThinKnxCloud service is enabled and configured!

Values collection :   List of values to store in the cloud database.

5.23.1   Adding a Database Variable

A database variable is an object which represent the value to store in the database. Clicking on the button on the right of the Values Collection property. Add a new value with the Add button and edit its properties to configure the saving modalities:

Name :   Name associated to the value.

Unit of measure :   Unit of measure associated to the value in the database (optional).

Multiplying factor :   Conversion factor applied to the value before storing it in the database.

Source :   Bus type of the value to read, the possible options are KNX and Modbus.

If *Source* is set to KNX, the following properties will be displayed:

Type   Data type of the value read from KNX.

Group address   Value's KNX group address.

If Source is set to Modbus, the following properties will be displayed:

Type   Data type of the value read from KNX.

Modbus gateway   Modbus gateway that contains the datapoint to read.

Modbus datapoint   Value's Modbus datapoint.

The following properties must be configured to define storing rules in the database:

Store trigger :   Policy used by the server to pick the values from the bus and store them on the cloud.

- *On new value reception:* The server will send the value to the cloud every time it receives a telegram from KNX. This option is useful when the user wants a precise representation of the data during the day, for example, for power consumption. *This option is although space consuming so we recommend to use it carefully.*

- *After a fixed time interval:* The server will read the value from KNX after a determined time interval and store it on the cloud. This option can be used, for example, to read temperatures and all that values that doesn't change that much during the day.

- *On over-threshold change:* The server will store locally the last value received from KNX and it will compare it with the latest incoming telegram, if the difference between the two values overcrosses a predefined threshold it will store the new value on the cloud.   The

threshold represents the ratio between the gap of the two values and the previously stored value. This option is useful because allows the user to keep trace only of the significant changes of the value during the day.

- *On over-threshold change and after time:* This option combines the advantages of both previously explained techniques. Data will be stored when over-threshold change occurs and, in any case, after a fixed time interval.

If the Store trigger property is set to "After a fixed time interval", the following property will be displayed:

Store time interval : Time interval to wait before the server sends the value to the database.

If the Store trigger property is set to "On over-threshold change", the following property will be displayed:

Change percentage : Minimum change percentage required to store a new value on database. To be stored, the new value has to differ more than this percentage from the previous value.

If the Store trigger property is set to "On over-threshold change and after time", both Change percentage and Store time interval property are displayed.

Value to store : Math elaborations applied the data picked with the Store Trigger policy.

- *Last received value:* The value will be sent to the cloud without additional elaborations.

- *Math derivative of values:* The server will compute the derivative of the values coming from KNX telegrams in the interval after the last value sent. If the Store Trigger is set to "On new value reception", the derivative will be computed between the last value stored and the new one while, if the Store Trigger is set to "After a fixed time interval", the derivative will consider all the telegrams received during the time interval. This elaboration can be useful, for example, when the server reads the value of energy from KNX and the user wants to store the power.

- *Math integral of values:* The server will compute the integral of the values as explained in the previous option. This elaboration can be useful when the server reads the value of power from KNX and the user wants to store the energy.

- *Simple mean of values:* The server will compute a simple mean of the values as explained above.

- *Weighted mean of values:* The server will compute a weighted mean of the values as explained above.

To avoid an exponential growth of the data contained in the database, it is possible to apply some filter to old data:

After 1 day filter : Filter to be applied to data older than one day.

- *Do not filter:* No filtering applied to data.

- *Discard all values:* All the data will be deleted.

- *Simple mean on new interval:* All the data older than one day will be grouped following a predefined time interval, the data inside each group will be discarded and the simple mean of the group will be stored in database.

- *Weighted mean on new interval:* All the data older than one day will be grouped following a predefined time interval, the data inside each group

will be discarded and the weighted mean of the group will be stored in database.

If the selected filter is a mean, the following property will be displayed:

Interval for 1 day filter : Time interval applied to the filter.

After 1 week filter : Filter to be applied to data older than one week. Please refer to the property above for the available options.

After 1 month filter : Filter to be applied to data older than one month. Please refer to the property above for the available options.

After 6 months filter : Filter to be applied to data older than six months. Please refer to the property above for the available options.

After 1 year filter : Filter to be applied to data older than one year. Please refer to the property above for the available options.

! → Since the quantity of data storable for each server in the cloud database is limited, it is highly recommended to use the filter policies.

5.24 Report

This object defines a values collection to be saved in the internal memory according to time intervals defined by the installer. This values are sent via mail and optionally organised in charts.

Recipients : List of possible recipients.

Values : List of configured values.

Title : Report title.

Text : Email message text.

Subject : Subject of the email containing the report.

Html : If enabled, report will be sent as a html file (readable by a standard web browser), otherwise it will be sent as a text file.

Create chart : If enabled, a chart representing data analysed by the report, is attached to the email.

Store interval : The system stores a data recording of the pre-set value after this pre-set timespan.

Read interval : The system reads the recorded values after this pre-set timespan.

Use default SMTP : SMTP server determines the email sender address; if enabled, email messages are sent from the default SMTP; if not, the following property is displayed:

Email Account : Select the "Email account" item from the list. Please refer to the dedicated section above.

5.24.1 Adding recipients

Click on the button displayed on the right to open recipients editor window, click on "Add" and then adjust the properties in the grid:

Email address : Recipient's address.

Added subject : Text to be added to the main report subject for this specific user.

Added text : Text to be added to the main report text for this specific user.

Sending interval : Time interval between two consecutive report sending.

5.24.2 Adding values

Click on the button displayed on the right to open values editor window, click on "Add" and then adjust the properties in the grid:

Force read : If enabled, the value is read before storage.

Store Trigger : Trigger used to store value. Using fixed interval a new value will be stored after interval is elapsed. Using change percentage method instead a new value will be stored. If it differs more than a defined amount from the previous value.

Unit of measure : Measuring unit associated to the value.

Multiplying factor : The recorded value is obtained by multiplying the read value with this factor.

Type : Type of KNX value.

Source : KNX or Modbus.

If KNX option is selected the following property will be displayed:

KNX group   KNX group address of the value to be read.

If Modbus option is selected, the following properties will be displayed:

Gateway   Modbus gateway.

Modbus datapoint   Datapoint which the server reads the value from.

5.25   Hue gateway

This object allows the server to control Philips Hue lamps. It is possible manage shades of white or all the colours in the spectrum from the configurator.

IP address : Bridge IP address.

MAC address : MAC address of the bridge. It is imported automatically.

Controlled elements : List of configured Hue elements.

5.25.1   Connecting to Hue Bridge

Clicking on the button on the right of the IP address property or MAC address it is possible to open the Hue Bridge Finder window. In this window, the configurator searches for Hue Bridges connected to the local network and displays them in a list. Every bridge can be "Authorized" or "Not Authorized":

- *Authorized*: the connection to the Configurator isn't the first one and it was already authorized.

- *Not Authorized*: the connection to the Configurator isn't authorized (it usually happens the first time the Configurator detect the bridge). To authorize the connection, click the "Register bridge" button and follow the procedure explained in the new window. If this procedure has a positive ending, the bridhe will switch to "Authorized".

Clicking the "Select bridge" button the selected bridge is associated to the Hue gateway object.

5.25.2   Reading Hue Bridge configuration and creating Hue Lights Groups

In the "Hue Bridge Finder", under each Authorized bridge node, there is a list of all the lights and groups configured in the Bridge. With a right click on the bridge is possible turn on or turn off all the lights, refresh the properties read from the bridge and create a new group of lights. Selecting a lamp node, in the property grid on the right, the properties configured in the bridge are displayed:

ID : ID associated to the lamp in the Hue Bridge.

Name : Name associated to the lamp in the Hue Bridge, it is possible to edit this property and the changes will apply also to the Hue Bridge.

State : Current status of the Hue lamp (on/off/dimming).

Type : Hue lamp type (colored, white, etc.).

Model ID : Hue lamp model code.

Software version : Hue lamp firmware version.

Unique ID : Unique ID associated to the lamp in the Hue Bridge.

Every Hue lamp node has a child node, which is the lamp status node. By selecting it a list of editable properties will be displayed:

Turned ON : If enabled, the Hue lamp switches to the ON state.

Hue : Current hue value.

Brightness : Current brightness value.

Saturation : Current saturation value.

Color Temperature : Current color temperature.

Effect : Currect color effect.

Color : Selected color, by changing this property the properties above will assume different values.

After editing these properties, to save them in the Hue Bridge, click the "Save Properties" button.

The Configurator allows to create Hue Groups directly from the "Hue Bridge Finder" window: right click on the Bridge node and select "Create new lights group" in the menu that appears. This action adds a child node to the Groups node, selecting the group properties will be displayed:

ID : ID associated to the group in the Hue Bridge.

Name : Name associated to the group in the Hue Bridge, it is possible to edit this property and the changes will apply also to the Hue Bridge.

Type : Property indicating the type of Hue element (always LightGroup).

Model ID : Model Hue element.

Lights : List of Hue lamps which will be part of the group.

Every Hue group node has a child node, which is the group status node. The properties of the status node are the same of the single Hue lamp but they apply to all the lamps of the group.

! → All the properties listed in the "Hue Bridge Finder" window are used to test the Hue Bridge configuration (or edit it) but they don't represent the real configuration needed by ThinKnx server to control the lights.   The real configuration is made by adding a controlled element. Please refer to the chapter below.

5.25.3 Adding a controlled element

Clicking on the right button of the Controlled elements property, a window will be displayed. Click on the "Add" button, select the added object and adjust its properties:

Element name : Name of the Hue element.

Element type : Type of the Hue element to control, it can be a single light or a group of lights.

If the "Element type" property is set to Light, the following properties will be displayed:

Hue light   Hue light previously detected with the Hue Bridge Finder tool.

Light ID   Identifier used to match the Hue light in the Hue Bridge.

Light unique identifier   Unique identifier used to match the Hue Light in the Hue Bridge.

If the "Element type" property is set to Group, the following properties will be displayed:

Hue group   Hue group previously configured with the Hue Bridge Finder tool.

Group ID   Identifier used to match the Hue group in the Hue Bridge.

Both lights and groups have the following properties:

Simulate type :   Type of feature to control with ThinKnx server: Dimmer coloured, Dimmer white, ON/OFF coloured, ON/OFF white and RGB.

If the Simulate type is "Dimmer colored" or "ON/OFF colored" the following property will be displayed:

Start color   Base color for the element.

If the Simulate type is "Dimmer white" or "ON/OFF white" the following property will be displayed:

Color temperature   Base color temperature for the element (warm or cold).

If the Simulate type is "Dimmer colored", "ON/OFF colored", "Dimmer white" or "ON/OFF white" the following property will be displayed:

Force color   If enabled, the chosen color/color temperature will be forced every time a command is sent. If disabled, the chosen color/color temperature are sent to the element just when the server start, every other command will not send the color again.

Every Hue element can be controlled from KNX and send feedback to KNX through the properties:

KNX gateway :   If enabled it will be possible to control the current element directly from KNX and receive feedbacks into KNX.

KNX switch group :   KNX group (1bit DPT1) to command (turn off and on) the current element.

KNX switch feedback group :   KNX group (1bit DPT1) to notify the status of the current element (1 = ON, 0 = OFF).

If the Simulate type is "Dimmer colored" or "Dimmer white" the following property will be displayed:

KNX dimming group   KNX group (4bit DPT3) for dimming up and down the current element.

5.25.4 Object commands

Commands sent to the object and recallable from other objects

Turn on/off element   Turn on or off the Hue element. Set 1 as parameter turn on the element, while 0 turn off the element.

Dimm the element to a value   set the desired value for the dimmer through a single parameter which can assume a value between 0 and 255.

Set the element color temperature (white)   Set the element color temperature. A single parameter must be set with a value within 0 and 255, where 0 corresponds to Cold White (6500 K) and 255 correspond to Warm White (2000 K).

Set the element color (RGB)   Set the element RGB color through the definition of three parameters for Red, Green and Blue. Each color can assume a value between 0 and 255.

5.26   MyHome Gateway

<center>bt_{icino}</center>

It allows the bidirectional connection of MyHome BTicino plants to KNX plants. Through easy-to-fit tables it is possible to set matching among the messages coming from the two worlds.

IP Address :   IP address of the device or of the serial server

Port Number :   Serial port number. It can be between 0 and 3. For USB use 10

Lights :   Collection of lights

Automation :

Heating :   Collection of heating and cooling elements.

5.26   MyHome Gateway

5.27   Load control

This server service reads the electrical energy consumption in a specific plant point from KNX group. Basing on thresholds previously set by the installer, the server can disconnect the load for a predetermined time interval or notify the user.

Type : Value type.

Maximum power : Maximum contractual power supported by the entire plant expressed in Watt.

Warning threshold : When this adjustable threshold (expressed in Watt) is reached by the plant, a warning is sent to the pre-set KNX group.

Power value group : KNX group which the object reads the values from.

Warning group : KNX group which the system sends the 1 value to (f.e expressed with an alert message).

Reconnection time : After this pre-set time span, configured loads are automatically reconnected to the plant.

Disconnection time : After this system continually reports the warning threshold value for the pre-set timespan, configured loads are automatically disconnected from the system.

Time between loads disconnection :   If more than one load is configured, they will be disconnected from the system one by one, basing on this pre-set timespan.

Loads : Loads related to the plant portion controlled by this object; when the warning threshold is reached, they are automatically disconnected from the system. If no load is configured, the system will only make a data reading and send a warning message if the warning group has been previously set.

5.27.1   Adding loads

Click on the button displayed on the right to open the loads editor window, click on "Add" and adjust the properties in the grid:

Load KNX group : KNX group that control the on/off commands.

Load KNX status group : KNX group feedback.

5.28   Gateway Modbus

<div align="center">

modbus

</div>

It allows to integrate Modbus devices.

Communication Type :   Define the method and mean of communication. Serial over TCP is used when a Serial Server is used.

If in the property "Communication Type" is selected the setting "Modbus Serial", the following properties will appear:

Port Number   Serial port number. It can be between 0 and 3. For USB use 10.

Baud Rate   Modbus Baud Rate

Data Length   Number of bits for data

Parity   Parity check modality

Stop Bits   Number of stop bits.

Comm. timings   Serial timings to optimize communication over the RS485 bus. It depents on bus adapter, slave devices timings etc.

If in the proprerty "Commmunication Type" is selected the setting "Modbus Serial on TCP" or "Modbus TCP", the following properties will appear:

IP Address   IP address of the device or of the serial adapter

IP Port   IP port used when the device listen for communication (502 is a standard for TCP protocol).

Datapoints :   Data points collection

Poll Interval :   Pause between two consecutive polling sequences [ms]

5.29   ZWave Controller

It allows to integrate Z-Wave devices. Without any gateway, the result is a reliable and easy-to-use system with a bidirectional connection between Z-Wave and other standards such as KNX.

Use internal controller :   If enable, it will be used the server internal Z-Wave controller. If disabled it will be possible to use an external Z-Wave controller. This option is only used during configuration phase. If disabled, following properties will appear:

IP address   IP address of the external Z-Wave controller

Password   Server password (of the web page) of the external Z-Wave controller

Nodes :   Collection of the Z-Wave nodes registered inside the controller

Ping Nodes :   If enabled, all the nodes will be pinged every minute. In this way a failed node will be promptly reported.

Auto-Healing :   Healing is a procedure to reconstruct network in case of nodes not reachables or moved. If Auto-Healing is enabled, it will be performed in case of a node is marked as failed. Healing will be performed during right-time at 2.00 AM.

5.29.1   Managing Z-Wave nodes

Click on the button on the right of the property Nodes. It will appear the **ZWave node collection editor**.
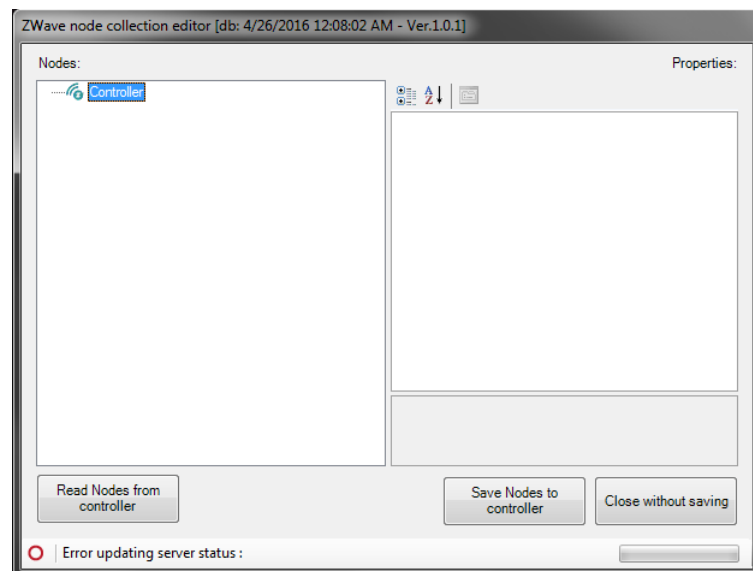
Clicking on **Read nodes from controller** the system will receive the list of nodes from the Z-Wave controller (internal or external).
To save changes click on the button **Save Nodes to the controller**
Clicking on the **Close without saving** button all unsaved changes will be lost.

5.30 iRoomController

Thinknx integration with iBezel. KNX groups can be associated with iBezel leds and movements.

iBezel devices : iBezel devices collection

5.30.1 Adding a iBezel device

Click on the button on the right "iBezel device". On the device editor click on the "Add" button and define following properties:

Device Name A name for the current device.

IP Address IP Address of the device.

TCP port TCP port to connect to the device.

Events to monitor Events generated from device that have to be monitored to generate command on other devices.

Use KNX gateway If enabled it will be possible to control the current element directly from KNX.

If the property "Use KNX gateway" is set to "True", the following properties will appear:

KNX group dock KNX group to control docking position (1 bit - DPT1 - 0=open, 1=close)

KNX group relay KNX group to control internal relaty (1 bit - DPT1 - 0=contact open, 1=contact close)

KNX group home led KNX group to control led of the home button (1 bit - DPT1 - 0=led off, 1=led on)

KNX group led 1 KNX group to control led of the button 1 (1 bit - DPT1 - 0=led off, 1=led on)

KNX group led 2 KNX group to control led of the button 2 (1 bit - DPT1 - 0=led off, 1=led on)

KNX group led 3 KNX group to control led of the button 3 (1 bit - DPT1 - 0=led off, 1=led on)

KNX group led 4 KNX group to control led of the button 4 (1 bit - DPT1 - 0=led off, 1=led on)

KNX group led 5 KNX group to control led of the button 5 (1 bit - DPT1 - 0=led off, 1=led on)

KNX group led 6 KNX group to control led of the button 6 (1 bit - DPT1 - 0=led off, 1=led on)

KNX group led 7 KNX group to control led of the button 7 (1 bit - DPT1 - 0=led off, 1=led on)

KNX group led 8 KNX group to control led of the button 8 (1 bit - DPT1 - 0=led off, 1=led on)

5.31   Universal gateway

This service allows the server to function as gateway, performing actions based on conditions defined by the installer on KNX groups. For each KNX value three conditions can be applied so that three different actions can be defined.

Actions from KNX :   List of KNX objects that will cause actions through the gateway.

5.31.1   Adding actions

Click on the button displayed on the right to open the actions editor window, click on "Add" and adjust the properties in the grid:

KNX group :   KNX group which the action result is sent to.

Data type :   KNX data type.

C1 enabling :   This property allows to enable or disable the first action. If "C1 enabling" is set to "Enabled", the following properties will appear:

C1 command   Command to be sent if the condition is enabled.

C1 condition   Condition used to compare the current value with the preset one.

C1 condition parameters   Value to be compared with the current one. This value determines if the selected action will be performed or not.

C2 enabling :   This property allows to enable or disable the second action. If "C2 enabling" is set to "Enabled", the following properties will appear:

C2 command   Command to be sent if the condition is enabled.

C2 condition   Condition used to compare the current value with the preset one.

C2 condition parameters   Value to be compared with the current one. This value determines if the selected action will be performed or not.

C3 enabling :   This property allows to enable or disable the third action. If "C3 enabling" is set to "Enabled", the following properties will appear:

C3 command   Command to be sent if the condition is enabled.

C3 condition   Condition used to compare the current value with the preset one.

C3 condition parameters   Value to be compared with the current one. This value determines if the selected action will be performed or not.

5.32   SMS gateway

This service allows the server to send messages using the external service Skebby. SMS can be used to send notifications, alerts, etc.

Username :   Skebby account username.

Password :   Skebby account password

Sender :   Sender's name displayed in the SMS.

Max SMS per day :   Maximum number of SMS that can be sent in one day.

Min SMS for alert :   An alert SMS is sent when the SMS number on the account reaches this value.

Min SMS alert text :   Text of alert SMS.

Telephone number for min SMS :   Telephone number which the alert SMS is sent to (put the country code before the telephone number)

5.32.1   Object commands

Commands sent to the object and recallable from other objects:

Send SMS to numbers with text   Sends an SMS. In the parameters specify the SMS content and the recipients' number; the number should be preceded by the national code without leading + nor 00.

5.33   Lutron

This object allows bidirectional connection of Lutron plants to KNX plants. The integration allows to associate KNX groups to Lutron lights, making the devices in the Lutron plant controllable from KNX buttons or supervision.

Lutron Type :   Type of Lutron project. There are two options available: **Lutron Homework QS** or **Lutron Homeworks**

Lutron Project :   Xml file exported from Lutron configuration system.

IP address :   IP address of the Lutron Homeworks processor

IP port :   IP port of the Lutron Homeworks processor

Actions from Lutron :   Actions from Lutron system

5.34   Serial gateway

This object represents the interface between ThinKnx system and a third-party device connected through serial port. It makes possible to send commands through the serial port to the device.

Port Number :   Serial port number. It can be between 0 and 3. For USB use 10.

Baud Rate :   Serial port baud rate.

Data Length :   Number of bits for data.

Parity :   Parity check modality.

Stop Bits :   Number of stop bits.

5.34.1   Object commands

Commands sent to the object and recallable from other objects:

Send string with no termination   Sends a string to the serial port without carriage return; adjust the parameter on the right to specify the string text.

Send string with CR termination   Sends a string to the serial port with carriage return; adjust the parameter on the right to specify the string text.

Send hexadecimal string with no termination   Sends a hexadecimal string to the serial port without carriage return; adjust the parameter on the right to specify the string text. The string command has to be converted in hexadecimal, and each byte must be separated by a space. In case of absence of CR, also the termination characters must be expressed in hexadecimal.

Send hexadecimal string with CR termination   Sends a hexadecimal string to the serial port with carriage return; adjust the parameter on the right to specify the string text.   The string command has to be converted in hexadecimal, and each byte must be separated by a space.

5.34.2   Serial port settings for ThinKnx servers

Depending on the server you are going to use, the serial port number should be set according to the following settings:

Compact RS232 *Port Number* 0

Rack Serial A *Port Number* 2

Rack Serial B *Port Number* 3

Rack RS232 C *Port Number* 0

BrickBox RS232 *Port Number* 4

BrickBox RS485 *Port Number* 5

Serial over USB *Port Number* 10

5.35 Ethernet gateway

This object is a server service that allows to send GET and POST requests, and strings on TCP or UDP sockets.

5.35.1 Object commands

Commands sent to the object and recallable from other objects:

Make a http GET call to a specific url   Allows to send a GET; adjust the "URL" parameter on the right to specify the url.

Make a http GET call to a specific url with username   Allows to send a GET; adjust the "URL" parameter on the right to specify the url and type in the login parameters required for the authentication to the server.

Make a http POST call to a specific url   Allows to send a POST; adjust the "URL" parameter on the right to specify the url.

Make a http POST call to a specific url with username   Allows to send a POST; adjust the "URL" parameter on the right to specify the url and type in the login parameters required for the authentication to the server.

Send string with no termination to TCP socket   Allows to send a string to a TCP socket without carriage return; adjust the parameters on the right to specify the string text and type in the IP address and port of the server.

Send string with CR termination to TCP socket   Allows to send a string to a TCP socket with carriage return; adjust the parameters on the right to specify the string text and type in the IP address and port of the server.

Send hexadecimal string with no termination to TCP socket   Allows to send a hexadecimal string to a TCP socket without carriage return; adjust the parameters on the right to specify the string text and type in the IP address and port of the server. The string command has to be converted in hexadecimal, and each byte must be separated by a space. In case of absence of CR, also the termination characters must be expressed in hexadecimal.

Send hexadecimal string with CR termination to TCP socket   Allows to send a hexadecimal string to a TCP socket with carriage return; adjust the parameters on the right to specify the string text and type in the IP address and port of the server. The string command has to be converted in hexadecimal, and each byte must be separated by a space.

Send string with no termination to UDP socket   Allows to send a string to a UDP socket without carriage return; adjust the parameters on the right to specify the string text and type in the IP address and port of the server.

Send string with CR termination to UDP socket   Allows to send a string to a UDP socket with carriage return; adjust the parameters on the right to specify the string text and type in the IP address and port of the server.

Send hexadecimal string with no termination to UDP socket   Allows to send a hexadecimal string to a UDP socket without carriage return; adjust the parameters on the right to specify the string text and type in the IP address and port of the server. The string command has to be converted in hexadecimal, and each byte must be separated by a space. In case of absence of CR, also the termination characters must be expressed in hexadecimal.

Send hexadecimal string with CR termination to UDP socket   Allows to send a hexadecimal string to a UDP socket with carriage return; adjust the parameters on the right to specify the string text and type in the IP address and port of the server. The string command has to be converted in hexadecimal, and each byte must be separated by a space.

Send SOAP request to the specified URL   Allows to send a SOAP request; adjust the parameters on the right to specify the destination URL, the SOAP envelope and the SOAP action of the request.

5.36   P1 Meter Interface

Serial interface available in the new meters in the Netherlands.

Serial port number :   Number of the serial port used to connect the meter box.

KNX gateway :   If enabled, the data read from the meter box will be available also on the KNX bus. If "KNX gateway" is set to "Enabled", the following properties will appear:

KNX group delivered energy normal tariff   KNX group delivered energy normal tariff.

KNX group delivered energy low tariff   KNX group delivered energy low tariff.

KNX group consumed energy normal tariff   KNX group consumed energy normal tariff.

KNX group consumed energy low tariff   KNX group consumed energy low tariff.

KNX group current tariff   KNX group current tariff.

KNX group current power   KNX group current power.

KNX group power threshold   KNX group power threshold.

KNX group gas consumption last 24h   KNX group gas consumption last 24h.

KNX group gas cons. last 24h normalized   KNX group gas consumption last 24h normalized.

KNX group calorie heat   KNX group calorie heat.

KNX group calorie cool   KNX group calorie cool.

KNX water consumption   KNX water consumption.

5.37 Tester

The Tester object allows to perform some tests (e.g. ping) and send commands to the plant depending on the result of the test.

Tests : Collection of tests to perform

5.37.1 Manage Tests

To open the "Test Editor", click on the button next to the property Tests.

Clicking on the "Add" button, a new test will be added and will appear on the left column.
To delete a test, select it in the left column and then click on the "Remove" button.

Selecting a test on the left column a list of properties will appear on the right part of the window, which are:

Label :	Action Label
Test type :	Type of test to perform. Following alternatives can be choosen:
Ping Ethernet Device	the test checks if the pinged device answer to the requests
Ping KNX Device	the test checks if the device on the KNX bus answer to the requests
Test TCP Port	the test checks the status of the defined TCP port of the device
Test UDP Port	the test checks the status of the defined UDP port of the device]
Execution interval :	Interval (in seconds) between two consecutive tests
Retry count :	Number of retry (in case of test fails) before launching the fail command. If 0 than command will be launched at first fail occurrence.
Success command :	Command to perform in case of test is successfully performed
Fail command :	Command to perform in case of test failure for the number of times in retry count parameter.

If the "Test type" is set to "Ping Ethernet Device", "Test TCP Port" or "Test UDP Port" the following properties will appear:

Hostname :	Hostname or IP address of the test target
Test timeout :	Time to wait before aborting the performing test and giving a fail result.

If the "Test type" is set to "Test TCP Port" or "Test UDP Port" the following property will appear:

Port number :	Port number that will be tested

If the "Test type" is set to "Ping KNX Device" the following property will appear:

KNX Physical Addr. :	KNX physical address of the test target

5.38   Video Matrix

This object allows to interface a video matrix with the system through serial or tcp/ip.

Device :   It can be selected from a list of six possible options:

- *Atlona HDMI*

- *Atlona UHD PRO3 series*

- *Cat5 HDMI 4x4*

- *DBX Zone Pro 640/641*

- *Extron MVX 44/48/84/88*

- *Gefen Toolbox HDMI 8x8*

- *HD Anywhere mHub*

- *Kramer protocol 2000*

Use serial port :   If disabled, the following properties will be displayed:

If the property "Use serial port" is set to "Disabled", the following properties will appear:

IP address   Device IP address.

Port number   TCP/IP port number for ethernet connection.

If the property "Use serial port" is set to "Enabled", the following property will be displayed:

Serial port   Server serial port number.

5.38.1   Object commands

Commands sent to the object and recallable from other objects:

Set the selected input for a selected output   Associates a specified input with a specified output of the matrix; input and output numbers can be specified by adjusting the "Input Number" and "Output Number" on the right.

Disconnect input for the selected output   Disconnects a specified input from the previously specified output of the matrix; input and output numbers can be specified by adjusting the "Input Number" and "Output Number" on the right.

Disconnect input for every output   Resets all the previously configured connection between inputs and outputs of the video matrix.

5.39 Audio Matrix

This object allows to interface a video matrix with the system through serial or TCP/IP.

Device :   It can be selected from a list of four possible options:

- *AMX serie Precis LT*

- *Audac M2*

- *Audac R2*

- *Extron MAV Plus*

- *Kramer protocol 2000*

- *Tutondo MTx816*

Use serial port :   If disabled, the following properties will be displayed:

If the property "Use serial port" is set to "Disabled", the following properties will appear:

IP address   Device IP address.

Port number   TCP/IP port number for ethernet connection.

If the property "Use serial port" is set to "Enabled", the following property will be displayed:

Serial port   Server serial port number.

Mute KNX Group :   KNX group for mute command.

5.39.1 Object commands

Commands sent to the object and recallable from other objects:

Set the selected input for a selected output   Associates a specified input with a specified output of the matrix; input and output numbers can be specified by adjusting the "Input Number" and "Output Number" on the right.

Disconnect input for the selected output   Disconnects a specified input from the previously specified output of the matrix; input and output numbers can be specified by adjusting the "Input Number" and "Output Number" on the right.

Disconnect input for every output   Resets all the previously configured connection between inputs and outputs of the audio matrix.

Mute or unmute selected output   Temporarily mutes a selected output; several output numbers, separated by a comma, can be typed in the "Output number" parameter. The "Mute" bit value can be adjusted in the related parameter as well.

Volume up selected output Turns up the volume of a specified output (several output numbers, separated by a comma, can be typed in the "Output number" parameter).

Volume down selected output Turns down the volume of a specified output (several output numbers, separated by a comma, can be typed in the "Output number" parameter).

Set volume for selected output Configures a specified volume value for the selected output; the volume value and the output number(s) can be defined by adjusting the parameters on the right.

5.40   Display

This object is required to interface video projectors using a serial.

Device :   It can be selected from a list of three possible options:

- *Projector brand Sanyo*

- *TV brand LCD*

- *TV brand NEC*

Serial port :   Server serial port number.

5.40.1   Object Commands

Commands that can be recalled from other objects:

Set the TV channel number   Change channel on the TV to the desired number.

Set the video source   Set the video source.

Muet or unmute the audio   Set mute or unmute.

On or standby the device   Turn on the device or put it in standby.

Set the audio volume   Set the volume

Set the audio volume up   Raise the volume

Set the audio volume down   Lower the volume

5.41 Home theater

This object allows to interface Home Theater plants using serial or tcp/ip.

Device : It can be selected from a list of three possible options:

- *Cambridge Azur 650*
- *Denon AVR series*
- *Onkyo Integra series*

Use serial port : If disabled, the following properties will be displayed:

If the property "Use serial port" is set to "Disabled", the following properties will appear:

IP address   Device IP address.

Port number   TCP/IP port number for ethernet connection.

If the property "Use serial port" is set to "Enabled", the following property will be displayed:

Serial port   Server serial port number.

5.41.1 Object commands

Commands that can be recalled from other objects:

Power On or Standby device   Power on or standby the device.

Mute or unmute main output   Mute or unmute the main output.

Enable or disable Subwoofer   Enable or disable the subwoofer.

Enable or disable OSD   Enable or disable the OSD.

Volume up main output   Raise the main output volume

Volume down main output   Lower the main output volume

Set volume for main output   Set the main output volume

Bass up selected output   Raise low frequencies for the selected output.

Bass down selected output   Lower low frequencies for the selected output.

Treble up main output   Raise high frequencies for the main output.

Treble down main output   Lower high frequencies for the main output.

Move OSD cursor up   Move OSD up

Move OSD cursor down   Move l'OSD down

Move OSD cursor right   Move l'OSD right

Move OSD cursor left   Move l'OSD left

Select Source for main output   Select source for the main output.

Select audio source for selected main source   Select audio source for main source.

Select video source for selected main source   Select video source for main source.

Read tuner frequency   Read tuner frequency.

Read tuner station   Read tuner station.

Tuner Frequency up   Tuner frequency up.

Tuner Frequency down   Tuner frequency down.

Tuner Preset up   Change to next preset.

Tuner Preset down   Change to previous preset.

Tuner auto search   Tuner auto search.

Tuner stop sarch   Tuner stop search.

Press Enter button on OSD   Press Enter button on OSD.

Select Digital mode for main output   Select digital mode for main output.

Select Surround mode for main output   Select surround mode for main output.

5.42   Sonos Zone Player (Obsolete)

SONOS
PLAYER

This object allows to control Sonos devices from server. They are interfaced by LAN network but, since the server function as KNX gateway, Sonos can be controlled also from KNX plates and not only from client applications.

IP address :   Sonos device IP address.

Use KNX :   If enabled, the device can be controlled by KNX gateway.

Play/stop group :   KNX bit group (1=play/0=stop). It has to be selected from an ETS project.

Play/stop status group :   Play/stop KNX feedback group.

Volume group :   KNX bit group to control volume level (1=up/0=down).

Track group :   KNX bit group to control the tracklist (1=skip forward/0=skip backward).

Use mute for stop :   If enabled, when the KNX group receives value 0, the tune is muted but tracklist continues to be played.

5.42.1   Object commands

Commands sent to the object and recallable from other objects:

Put the device in PLAY state   This command allows to play the device.

Put the device in STOP state   This command allows to stop the device.

Volume up the device   Turns the volume up.

Volume down the device   Turns the volume down.

Skip track forward   Skips to the next track.

Skip track backward   Returns to the previous track.

Set value for volume   Configures a specified volume value for the device; the volume value can be defined by adjusting the parameters on the right.

Put the device in Mute state   Mutes the device; the bit value for the mute state can be defined by adjusting the related parameter on the right.

Play audio from the Audio plug in   Plays audio from any device connected using a jack.

Play the audio from a network file   Plays audio files from the internet; the file url can be defined by adjusting the parameter on the right.

Play the audio from a streaming   Plays audio from a streaming webradio: the streaming url can be defined by adjusting the parameter on the right.

5.43   Mediaplayer

This object represents the ThinKnx multiplayer integration, a customised version of xbmc; it allows to associate a list of commands with interface objects.

IP address :   IP address of the device

Port :   TCP/IP port used for ethernet connection.

Username :   Username used for remote control login.

Password :   Password used for remote control login.

MAC Address :   Ethernet MAC address of the device in the format aa:bb:cc:dd:ee:ff

5.43.1   Object commands

Commands sent to the object and recallable from other objects:

Navigate up in the user interface   Simulates the ↑ command.

Navigate down in the user interface   Simulates the ↓ command.

Navigate right in the user interface   Simulates the → command.

Navigate left in the user interface   Simulates the ← command.

Select current item in the user interface   Select the current object in the user interface. (It simulates the ”OK” or ”Enter” command)

Goes back in the user interface   Return to the previous page; it simulates the ”Return” or ”Back” command.

Shows the context menu in the user interface   Visualise the current object menu; it simulates the ”Menu” button.

Shows the information dialogue   Displays a pop-up with the information related to the current program; it simulates the ”Info” button.

Goes to GUI homepage   Redirects to the GUI homepage; it simulates the ”Home” button.

Shows the on-screen display for the current player   Visualise a pop-up with the on-screen display for the current player.

Starts playback of a single file or an item from the database   Launches a specified file; the file path can be specified by adjusting the ”File path” parameter on the right.

Play/**Pause the player**   Play or pause the current player.

Stop the player   Stops the player.

Skip the current track and play the next one   Skips the current track and directly play the next one.

Skip the current track and play the previous one   Skips the current track and directly play the next one.

Make a step forward on the current playing element   Fast forward the current playing element.

Make a step backward on the current playing element   Fast backward the current playing element.

Raise the volume of the player   Turns the volume up.

Lower the volume of the player   Turns the volume down.

5.44   Sonos Manager

SONOS

This object represents the complete integration of Sonos systems in ThinKnx, it allows to control and receive feedbacks from Sonos players directly through network without creating more traffic on KNX. In this way, all the commands and feedbacks can be available on KNX only if the installer really need them.

Players :   Sonos players configured in ThinKnx system.

Use KNX :   Sonos topologies configured in ThinKnx system.

Stop all KNX group :   KNX group (1 Bit - DPT1) used to stop all the players inside the plant.

Mute all KNX group :   KNX group (1 Bit - DPT1) used to mute all the players inside the plant.

Public announce coordinator :   Sonos player to use as source (Line-IN) for sending public announces to all the others players.

Public announce (PA) KNX group :   KNX group (1 Bit - DPT1) used to group all the players togheter and reproduce audio from the PA coordinator. Sending 1 to the group, the PA topology will be recalled whilst sending 0 the previous topology will be restored. Usefull to send audio messages to multiple rooms.

5.44.1   Adding a Sonos Player

Click on the button displayed on the right of the Players property to open the players editor window. By clicking on "Add" button, the Configurator will automatically start to search for Sonos Player in the local network and it will display them in a list. If the player to add is in the list, select it and click on "Add Player" to add it to the Players list. Otherwise, if the player isn't in the list, click "Search" to restart the automatic research or click on "Create Player" to add to the list an empty Player object. For each player it is possible to edit the following properties:

Label :   Name associated to the Sonos Player.

Identify by MAC :   If enabled the device will be identified using its MAC address while if disabled the device IP address will be used. It is strongly adviced to use MAC address for reliability.

IP address :   IP address of the device (it can be found using Sonos Controller).

MAC address :   MAC address of the device. Can be found on the bottom of the device. It is the serial number except for the last letter. Should be in the form XX-XX-XX-XX-XX-XX.

Device identifier :   Unique device identifier used during UPnP communication. The following properties must be set only if the Sonos Player must be controlled directly from KNX.

Play/Stop group :   KNX command group address for play=1/stop=0 using 1Bit DPT1 type.

Play/Stop status group :   KNX group address for sending play=1/stop=0 status using 1Bit DPT1 type.

Use separate skip groups :   If enabled it will be possible to skip track using two different KNX groups (one for next track and another for previous one). If disabled it will be possible to skip track using just one group using two different values (1 for next and 0 for previous).

If "Use separate skip groups" is disabled, the following property will be displayed:

Skip track group   KNX group to skip to the next=1/previous=0 track in the queue using 1Bit DPT1 type.

If Use separate skip groups is enabled, the two following properties will be displayed:

Next group   KNX group to skip to the next track in the queue using 1Bit DPT1 type.

Previous group   KNX group to skip to the previous track in the queue using 1Bit DPT1 type.

Volume value group :   KNX group address to change volume absolute value [0-100] (1Byte DPT5).

Volume value status group :   KNX group address to receive volume absolute value status [0-100] (1Byte DPT5).

Volume move group :   KNX group address for moving volume up/down using 4Bit DPT3 type.

Volume step group :   KNX group address for moving volume up=1/down=0 by one step using 1Bit DPT1 type.

Volume step value :   Step value used to increase/decrease volume using 1Bit DPT1 type.

Change group if coordinator :   If enabled, the command that will change volume will be sent to the entire players group. If disabled, the volume command will be sent only to this player.

Mute group :   KNX group to set Mute=1/Unmute=0 status (1Bit DPT1 type).

Mute status group :   KNX group to receive Mute=1/Unmute=0 status of the device (1Bit DPT1 type).

Shuffle group :   KNX group to set the Shuffle=1/Normal=0 play mode (1Bit DPT1 type).

Shuffle status group :   KNX group to receive Shuffle=1/Normal=0 play status (1Bit DPT1 type).

Repeat group :   KNX group to set the Repeat=1/Normal=0 play mode (1Bit DPT1 type).

Repeat status group :   KNX group to receive Repeat=1/Normal=0 play status (1Bit DPT1 type).

Line-in group :   KNX group to select line-in=1/queue=0 source (1Bit DPT1 type).

Line-in status group :   KNX group to receive current selected source (line-in=1/queue=0 - 1Bit DPT1 type).

Track title group :   KNX group to receive current track title (14Byte DPT16 type).

Track artist group :   KNX group to receive current track artist name (14Byte DPT16 type).

Track album group :   KNX group to receive current track album name (14Byte DPT16 type).

Playlist title group :   KNX group to receive current playlist title (14Byte DPT16 type).

Playlist select group :   KNX group to select the playlist to play using a number (1Byte DPT5 type). The playlist in Sonos must be named starting with "Num - " where Num is the number used to recall the playlist.

Playlist status group :   KNX group to receive the selected playlist number (1Byte DPT5 type).

Favorite select group :   KNX group to select the favorite item to play using a number (1Byte DPT5 type). The favorite in Sonos must be named starting with "Num - " where Num is the number used to recall the favorite.

5.44.2 Adding a Sonos Topology

The Configurator allows to define groupings (called Topologies) among Sonos Players and to recall them directly from KNX. To create a topology, click on the button displayed on the right of the Topologies property to open the topologies editor window, click on "Add" and adjust the properties in the grid:

Name :   Name assigned to the topology.

Players groups :   Permits to define the structure of the current topology and to create groups among players that are installed in the plant.

KNX feedback group :   KNX feedback group (1 Bit - DPT1) used to signal that current topology is active. Server will send 1 to this group whenever Sonos player are arranged as described in the "Player groups" property.

KNX recall group :   KNX group (1 Bit - DPT1) used to recall current topology. Sending 1 to this group, the Sonos players will be grouped as defined in "Players groups" property.

5.44.3   Sonos Player commands

Commands sent to the Sonos Player and recallable from other objects:

Put the device in PLAY state   Allows to set the Play status on the Sonos Player.

Put the device in STOP state   Allows to set the Stop status on the Sonos Player.

Volume up the device   Allows to increase the Sonos Player volume.

Volume down the device   Allows to decrease the Sonos Player volume.

Set value for volume   Allows to directly set the value of the volume of the Sonos Player; the volume value [0-100] can be adjusted by editing the parameter on the right.

Skip track forward   Allows to skip to the next track in the Sonos Player queue.

Skip track backward   Allows to skip to the previous track in the Sonos Player queue.

Put the device in MUTE state   Allows to set the Mute status on the Sonos Player; the parameter on the right indicates whether to Mute (1) or Unmute (0) the device.

Play the audio from AUDIO-IN plug   Starts playing from Audio-in source.

Play the audio from another player's AUDIO-IN plug   Starts playing from the Audio-in source of a different player; to specify the player adjust the parameter on the right specifying the unique identifier of the source player (refer to Sonos Player properties).

Play the audio from a network file   Starts playing from a network file source; the url of the file source must be adjusted in the parameter on the right, using the format *//192.168.2.5/Music/abc.mp3*

Play the audio from a streaming   Starts playing from a streaming source; the streaming url must be adjusted in the parameter on the right, using the format *//myradiostream.com/stream.pl*

Enable/Disable Repeat PlayMode   Allows to set the playing modality; the parameter on the right indicates whether to Enable (1) or Disable (0) the Repeat modality.

Enable/Disable Shuffle PlayMode   Allows to set the playing modality; the parameter on the right indicates whether to Enable (1) or Disable (0) the Shuffle modality.

Start a playlist from its number   Recalls the playlist to play; the parameter on the right indicates the number of the desired playlist. This command only works if the playlist's name in Sonos starts with "Num - " where Num is the number used to recall the playlist.

Start a playlist from its name   Recalls the playlist to play; the parameter on the right indicates the name of the desired playlist. This command only works if the playlist's name in Sonos is equal to the specified parameter.

Start a favorite from its number   Recalls the favorite to play; the parameter on the right indicates the number of the desired favorite. This command only works if the favorite's name in Sonos starts with "Num - " where Num is the number used to recall the favorite.

5.44.4   Sonos Topology commands

Commands sent to the Sonos Topology and recallable from other objects:

Recall the topology   Creates the grouping of players as specified in the Sonos Topology properties.

5.45   IR transmitter

This object allows to control an IR Transmitter device integrated into the LAN network. It can be interfaced with Ethernet, Ethernet PoE and Controller LAN devices.

IR commands : List of IR commands, see subsection 5.45.1 on page 108.

Remotes directory : This property allows to choose from a list of remotes files exported from IRTrans.

Copy in project : If this property is enabled, the system automatically saves the remotes files in the project folders.

Check for update : If this property is enabled, the system automatically checks if the remotes files are updated and immediately updates them if they are not.

IP address : IR Transmitter device IP address.

5.45.1   Adding IR commands

Click on the button displayed on the right to open the actions editor window, click on "Add" and adjust the properties in the grid:

Alias : Alternative name used to recall the IR command.

Remote : Remote control which the IR Trans file has been taken from.

Command : Command name.

5.45.2   Importing and exporting IR commands

This feature allows to export a list of IR commands previously created in a project and import it in another project.

To export the commands list, open the commands editor window by clicking on the button displayed on the right of the "IR commands" property. Click on the "Export" button and choose the path of the xml file that will be created, in this way the list of IR commands will be saved outside the Configurator.

To import the commands list in a project, open the commands editor window by clicking on the button displayed on the right of the "IR commands" property. Click on the "Import" button and select the xml file previously saved and click on OK button to confirm. A list of commands will appear in the editor window.

! → During the import process, if the "Remotes directory" property of the "IR transmitter" object isn't set, the commands will be added to the list with the prefix "***" in the name and only the command alias will be set.

5.45.3   Object commands

Commands sent to the object and recallable from other objects:

Send the selected command for the selected remote Allows to create sequences using the commands previously configured in the relates system object properties (please refer to the dedicated section). To create a sequence select the desired command from the list and the click on "Enqueue"; the "Make pause" item can be added to the sequence in order to grant a better reception. The sequence displayed in the box below can be edited by deleting single items or moving them by clicking on "Up" and "Down" buttons. By checking the "Output option" item, the same command can be sent to different outputs of the same IR device.

6 Interface Objects

These objects, divided into functions, pages and objects, compose the client application GUI. Please refer to the "User Interface" section. Each object allows the user to check the system status and control the integrated elements. All these objects shares the following properties:

Label : Name of the object.

Scale : This property allows to adjust object dimensions.

Rotation : This property allows to rotate the object.

Position : This property allows to insert object coordinates in order to place it in the page.

PIN Protection : If enabled, the object is protected and to unlock actions the user must insert a PIN code. For more details refer to Section 3.1.7 on page 17.

PIN Code : Pin code associated to the object.

Restrictions : This property allows to define whether the object is available for a specific user profile. All objects are visible for all user accounts by default. For more details refer to Section 3.1.6 on page 16.

View in list : If enabled, the object is displayed in the portrait view list on iPad.

View in web : If enabled, the object is displayed on the web interface.

By right clicking on a selected object, the following items are displayed in the drop-down menu:

Add object : A new system object can be selected from the list.

Remove object : The selected object will be removed from the project.

Copy : Copy the selected object.

Paste : Paste the selected object.

Select all objects : Select all the objects in the page.

Arrange : Arranges objects position. For more details refer to Section 3.2.1 on page 20.

By right clicking on the icons of objects that can be associated with KNX groups, the following items will be active in the drop-down menu:

Get label from ETS : The selected object will be renamed according to the KNX group name previously configured in the ETS project.

Add text from object label : A "Static text" object with the object label will be automatically added next to the current interface object icon.

6.1   Page

This object is the fundamental object for the User Interface. On the page is possible to place all the objects customizing the project.

6.1   Page

6.2 Picture

This object allows to import a (PNG or JPG) image file in the project. (It can be used for example as interface background).

File : Image file to select.

6.3   Static text

<div align="center" style="font-size:3em;color:#3a8fb0">A</div>

This object allows to insert text labels in the GUI.

Text dimension :	Font dimension
Text colour :	Font colour
Multiline :	If enabled, if the text exceeds the maximum with, it will be displayed on more lines.
	If the property "Multiline" is set to "Enabled", the following properties will appear:
Max. width	Maximum width of the text field if multiline is enabled.
Text alignment	Text alignment

6.4 Switch

This object is used for every kind of switching command: toggle, dimming, "send 1", "send 0", "send 1 on press and 0 on release", etc. If related to "Switch schedule" and "Calendar" objects, this object can be used with a timer.

Switching type : This property indicates the way the command is sent; the following options will be displayed in the list:

- *Dimmer:* if this option is selected, a lighting percentage based on a value set by the user is sent to the system. (0 stands for "turned off", 255 stands for "100% turned on").

- *OFF on pression:* 0 is sent on pression, anything on release.

- *OFF on pression, ON on release:* 0 is sent on pression, 1 on release.

- *ON on pression:* 1 is sent on pression, anything on release.

- *ON on pression, OFF on release:* 1 is sent on pression, anything on release.

- *ON/OFF norm. closed:* 0 is sent for ON, 1 for OFF.

- *ON/OFF norm. opened:* 1 is sent for ON, 0 for OFF.

- *Value on pression:* a value predetermined by the user is sent on pression.

- *Value on pression and on release:* a value predetermined by the user is sent on pression and on release.

- *Value on release:* a value predetermined by the user is sent on release.

Bus type : Six different options are displayed (KNX, Lutron, Modbus, MyHome, Philips Hue, ZWave)

Graphic : This property allows to select an icon which will represent the object in its different states. In addition to some standard graphics, it is possible to use a custom graphic by selecting the "Custom" option.

If the "Custom" option is selected, the following properties will be displayed:

File for off   Image displayed for "Off" switch status.

File for on   Image displayed for "On" switch status.

File for dimmed   Image displayed for "Dimmed" switch status.

For every Graphic option selected it is possible to have a preview by editing the following property:

Visualisation : This property allows to have a graphic preview of the object for each of its states (dimmed, on or off).

If the Switching type option is "Value on pression", "Value on release" or "Value on pression and on release", the following properties are displayed:

Value on press   Value sent to the KNX group on press (1byte).

Value on release   Value sent to the KNX group on release (1byte).

For all the kinds of switching types, a scheduling feature is available:

Time schedule :   If enabled, the object can be temporised using a system object. If "Time schedule" is "Enabled", the following properties will appear:

Schedule object type   Type of temporisation technique used to schedule this object.

If the selected Schedule object type is "Calendar", a calendar like temporisation will be adopted:

Calendar object   Calendar system object previously configured into the system.

If the selected Schedule object type is "Chrono Switch", a simpler temporisation will be adopted:

Time schedule object   Time schedule object previously configured into the system.

Use pop-up :   If enabled, this property allows the user to interact with the system using a pop-up displayed on the client application.

ON/OFF group :   KNX group which the value is sent to.

ON/OFF group feedback :   KNX group that allows to read the value.

Value group :   KNX group which the value set by the user that will is sent to; if the "Dimmer" option is selected, the light will be regulated according to this value.

Value feedback group :   KNX group that provides the feedback of the value set by the user.

Modbus gateway :   Modbus gateway preset in the correspondent system object properties.

ON/OFF datapoint :   Modbus datapoint which the value is sent to.

ON/OFF feedback datapoint :   Modbus datapoint that allows to read the value.

Value set datapoint :   Modbus datapoint which the value set by the user that will is sent to; if the"Dimmer" option is selected, the light will be regulated according to this value.

Value feedback datapoint :   Value feedback datapoint.

Gateway Lutron :   Lutron gateway preset in the correspondent system object properties.

Lutron output :   Output on the Lutron system.

Hue gateway :   Hue gateway preset in the correspondent system object properties.

Hue element :   Hue element, created inside Hue gateway, to control with the current object. The list of available elements depends on the switching type selected.

Gateway MyHome :   Gateway My Home preset in the correspondent system object properties.

Lights MyHome :   Elements preset in the system object to control with the current element.

6.5   RGB lamp

This object allows the user to control a RGB lamp from client application.

RGB object :   RGB system object previously integrated into the system that will be associated to the current interface object.   For more details refer to Section 5.10 on page 52.

Visualisation :   This property allows to visualise a preview of the object for each of possible status. (ON or OFF)

Custom graphic :   This property allows to select the icon correspondent to this object. If the "Custom option" is selected, the "Off image" and "On image" properties will be displayed:

- *OFF image*: Image displayed for "Off" RGB status.

- *ON image*: Image displayed for "On" RGB status.

6.6   Thermo comfort

Chronotermostat object that allows the user to set hourly, daily and weekly temperatures and boiler programs. It reads the current temperature and gives the feedback of heating and cooling valve.

Use extended UI :
: This property allows to select the functioning mode of the plant: if disabled, the user can either manually set the temperature using a pop-up displayed on the client application or use temporisations created using the chronotermostat. If enabled, the user can set the temperature using the predefined programs (comfort, standby, night, chrono).

Use chronotermostat :
: This property allows to enable or disable the usage of chronotermostat function.

! →
: The related "Chronotermostat" system object has to be configured with the same functioning logic. "Use extended UI" disabled -> "Temperature mode" enabled. "Use extended UI" enabled -> "Temperature mode" disabled.

Chronotermostat object :
: Chronotermostat system object previously integrated into the system that will be associated to the current interface object. Please refer to the dedicated section at page 48.

If both "Use Modbus" and "Use TIEMME" properties are disabled, the system works using the KNX protocol and the following properties will be displayed.

Actual temperature group :
: KNX group related to the actual temperature value. (2byte-float).

FB setpoint temperature group :
: KNX group which the temperature value set on the thermostat by the user is sent to.

Setpoint temperature group :
: KNX group that allows to read the value.

Group for cooling :
: KNX group related to the cooling valve.

Group for heating :
: KNX group related to the heating valve.

Use Modbus :
: If enabled, the "Modbus gateway", "Actual temperature datapoint", "Setpoint temperature datapoint", "Setpoint temperature feedback datapoint", "Cooling datapoint" and "Heating datapoint" properties will be displayed:

Modbus gateway :
: Modbus gateway preset in the correspondent system object properties.

Actual temperature datapoint :
: Modbus datapoint related to the actual temperature value.

Setpoint temperature datapoint :
: Modbus datapoint which the temperature value set on the thermostat by the user is sent to.

Setpoint temperature feedback datapoint :
: Modbus datapoint that allows to read the value.

Cooling datapoint :
: Modbus datapoint related to the cooling valve.

Heating datapoint :
: Modbus datapoint related to the heating valve.

Use TIEMME :
: If enabled, the "Tiemme gateway" and "Tiemme device" properties will be displayed:

Tiemme gateway :
: TIEMME gateway preset in the correspondent system object properties.

Tiemme device :
: TIEMME device preset in the correspondent system object properties.

6.7 Comfort HVAC

This object allows to control an air conditioning device integrated into the system.

HVAC controller :   HVAC controller system object previously integrated into the system that will be associated to the current interface object. Please refer to the dedicated section at page 43.

HVAC device :   HVAC controller device previously integrated into the system that will be associated to the current interface object.

6.7 Comfort HVAC

6.8   Roller shutter

This object allows the user to control rollers.

Visualisation : This property allows to visualise a preview of the object for each of possible status. (Open, close,or half).

Graphic : This property allows to select the icon correspondent to this object. If the"Custom option" is selected, the "Image for close", "Image for open" and "Image for half" properties will be displayed:

- *Image for close*: Image displayed for "Close" roller status.

- *Image for open*: Image displayed for"Open" roller status.

- *Image for half*: Image displayed for "Half" roller status.

Bus type : Two different options are displayed (KNX and MyHome) If "Bus type" is set to "KNX", following properties will appear:

Move group KNX group that controls the rollers movement. If value 1 is sent, the roller is open, if value 0 is sent, the roller is closed.

Stop group KNX group that controls the rollers stopping. If value 1 is sent, the roller is stopped, if value 0 is sent, the roller starts to move again.

Value group KNX group that controls the position of rollers; this value represents the opening percentage.

Value feedback group KNX group that reads the value related to the position of rollers (1byte).

If "Bus type" is set to "MyHome", following properties will appear:

Gateway MyHome Gateway My Home present in the correspondent system object properties.

Roller MyHome Elements preset in the system object to control with the current element.

If "Bus type" is set to "ZWave", following properties will appear:

Zwave controller ZWave controller that contains the node to command.

ZWave node ZWave node inside the selected controller to control with this object.

ZWave instance ZWave instance inside the selected node to control with this object.

Inverted functioning : If enabled, rollers will be activated inversely.

! → It is highly recommended to correctly plug in the cables in the actuator in order to avoid the need to set the inverted functioning.

6.9   Analog value

This object allows to visualise a value read by KNX server in the GUI.

Visualisation :	Three possible option are selectable (Numbers, straight icon or triangle icon).
Send value :	If enabled, the analog value can be set and will be displayed on the client application. If "Send value" is enabled, also the property "Step for slider" will appear:
Step for slider :	Indicates the numeric step needed to increment or decrement the value on the slider.
Max value :	If the value is higher than the preset one, the latter will be always be displayed on client application. It is particularly useful for a better functioning of the graphical visualisation.
Min value :	If the value is lower than the preset one, the latter will be always be displayed on client application.
Value :	Value preview on the GUI.
Factor :	The read value will be converted according to this factor in order to be expressed with the desired measurement unit.
Data source :	Source of displayed data (KNX, Modbus, System Object).
Command :	Command to send when the value is changed by the user. Use percentual value inside the value that you want to replace with the slider value.

If the "Data source" property is set to "KNX", the following properties will be displayed:

KNX data type	Type of KNX data to read from the bus.
Value group	KNX group used to read the value.
Value send group	KNX group used to send the value by pop-up.

If the "Data source" property is set to "Modbus", the following properties will be displayed:

Modbus gateway	Modbus gateway previously configured in system objects.
Value datapoint	Modbus datapoint used to read the value.

If the "Data source" property is set to "System Object", the following properties will be displayed:

System status :	Status of a system object to use as data source.

6.10   Blinds

This object allows the user to control blinds.

Move group :   KNX group that controls the blinds movement. If value 1 is sent, the blind is open, if value 0 is sent, the blind is closed.

Stop group :   KNX group that controls the blinds stopping. If value 1 is sent, the blind is stopped, if value 0 is sent, the blind starts to move again.

Value group :   KNX group that controls the position of blinds; this value represents the opening percentage.

Value feedback group :   KNX group that reads the value related to the position of blinds (1byte).

Inverted functioning :   if enabled, blinds will be activated inversely.

! →   It is highly recommended to correctly plug in the cables in the actuator in order to avoid the need to set the inverted functioning.

6.11 Scene

This object allows the user to launch, set or record a scene directly from the client interface.

Scenary object : Scene system object previously integrated into the system that will be associated to the current interface object. Please refer to the dedicated section at page 41.

Custom graphic : If enabled, this property allows to user to select a customised icon, different from the default one.

6.12 Intercom

This object allows the user to answer the intercom from client application.

KNX ring group :
KNX group that sends a telegram when an incoming call from an identified caller is detected.

KNX close group :
KNX group that sends a telegram when a call received by client devices has to be stopped.

Custom graphic :
If the "Custom" option is selected, the "Image file" property will be displayed:

Image file
Customised image that will be displayed as object icon.

System PBX :
If disabled, the system works with an external PBX and the "Caller ID" property will be displayed:

Caller ID
Doorstation extension needed to answer incoming calls; if no caller ID is inserted, the user will not be able to answer any call.

If the "PBX system" property is enabled, the "PBX intercom device" property will be displayed:

PBX intercom device
PBX intercom device system object previously integrated into the system that will be associated to the current interface object.

Warning! If you do not know the Caller ID of the door station, you can retrieve it: leave the Called ID field blank, enter the data for registration and upload the project on iPad or iPhone. With the project open on the iOS client, close the app and make the call from the door station. The extension number of the door station will be displayed in the notification of the iOS client.

6.13   Chart

This object allows to display in the client interface the data stored in the Cloud database.

! → To work properly this object requires an active internet connection and the ThinKnx Cloud enabled and configured!

Color theme : Combinations of colors used to draw the chart.

Show legend : If enabled the legend of the chart will be shown.

If the Show legend property is enabled, the following two properties will be displayed:

Overlay legend : If enabled, legend will be plot inside the chart area. If disabled, legend will be plot outside the chart. Only valid for iOS clients.

Legend position : Position of the legend in reference to the chart. Only valid for iOS clients.

X axis : List of X axis of the chart (only one available).

Y axis : List of Y axis of the chart.

Series : List of the series of data displayed in the chart.

Navigation bar : If enabled, the time interval can be selected. If the bar is disabled, the chart will show a fixed time interval regarding last data recorded.

If the Navigation bar property is disabled, the following property will be displayed:

Range viewer : If enabled, a little point will be visualized under the main chart and will be used to navigate through data zooming and panning. Only valid for iOS clients.

Timespan : Timespan of data to show. It will start always with the present moment on the left.

6.13.1   Editing X axis

The chart supports only one X axis, to edit its properties click the button on the right of the X axis property:

Label : Name assigned to the X axis.

Show label : If enabled, the name of the axis will be displayed in the chart.

Show grids : If enabled, grid lines will be displayed for the axis.

6.13.2 Adding Y axis

By default, one Y axis is already created in the chart, but it is possible to add a second Y axis to differentiate the scales of the values displayed. To configure a Y axis, click on the button on the right of the Y axis property. In the widows that appears, click "Add" to add a new axis and select it to edit its properties:

Label : Name assigned to the Y axis.

Show label : If enabled, the name of the axis will be displayed in the chart.

Show grids : If enabled, grid lines will be displayed for the axis.

Axis position : It allows to choose where the axis will be drawed, on the left or right of the plot.

Custom range : If enabled, the values range of the axis will be predefined. If disabled, it will be calculated automatically so that it comprehends the whole data range.

If the Custom range property is enabled, the following properties will be displayed:

Minimum Y Value displayed in the lower edge of the Y axis.

Maximum Y Value displayed in the upper edge of the Y axis.

Step Value between two ticks on the Y axis.

6.13.3 Adding a series

Each chart series represents a system Database variable. To add a series, click on the button on the right of the Series property. In the window that appears, click on "Add" and adjust the properties of the new object:

Label : Name assigned to the series that will be displayed in the legend.

Reference axis : Y axis which the series refers to.

Series type : Type of graphical representation of the series in the plot (Point, Line or Column).

Color : Color of the line/point/column in the chart.

Line width : Line thickness of the line/point/column in the chart.

Database : Database system object which contains the variable to plot.

Variable : Database variable used to plot the data.

6.14 Weather

This object allows to add the weekly weather forecast to the project.

! → To work properly this object requires an active internet connection because the data are downloaded from an external server!

City/Code : The system will detect weather conditions of the selected city.

6.15 Irrigation panel

This object is a dashboard used by the user in the client application to manage the Irrigation system object.

attention In order to work properly, this object need an internet connection, since data are downloaded from an external server.

Irrigation object : Irrigation object defined in the system object, that will be associated to the current interface object.

6.16   Generic command

This generic button can be configured in order to perform a specific action (f.e: send telegrams on bus, launch a scene). It can be programmed to control each server service.

Command : Type of command to be related to this button.

Font : Three possible option are displayed:

- *Graphic symbols*: Mini-icons related to keyboard letters are added to the main object icon.

- *Graphic symbols and text*: Mini-icons related to keyboard letters, with their names displayed below, are added to the main object icon.

- *Normal text*: Customisable text can be added to the main object icon.

Text dimension : Font dimension.

Text colour : Font colour.

Extra text : Customisable text.

Custom graphic : if enabled, the "Image" property will be displayed:

- *Image*: Customised image that will be displayed as object icon.

6.17 Extended command

This object is a particular button that, reading a value from KNX, can switch between different states defined by the user. For each state the user can associate two actions, one for press and one for long press.

Type :
: Graphical type of the object:

  - *Graphic*: Object's states are represented by images.

  - *Text*: Object's states are represented by text defined by the user for each state or coming directly from KNX.

Use background :
: If enabled a background colour is added to the object.

KNX Data Type :
: Type of data read from KNX bus.

KNX group :
: KNX group of the data to read.

Feedback States :
: List of object's states defined by the user.

Visualization :
: This property allows to visualise a preview of the object for each of possible status.

6.17.1 Adding states

To define Extended Command's states, click on the button displayed on the right of "Feedback States" property to open the states editor window, click on "Add" and adjust the properties in the grid:

If "KNX Data Type" property is set to DPT 10, 11 or 16, the following properties will be displayed:

Display KNX String :
: If enabled, the object will display the value read from KNX bus.

Otherwise the following properties will be displayed:

Threshold :
: The threshold is the string to compare to the string value read from KNX bus. It defines the feedback state.

Criteria :
: This property defines the comparison criteria used to check the string read from KNX.

  - *KNX string is equal to threshold*: The comparison result is positive only if the value read from KNX is equal to threshold.

  - *Text*: The comparison result is positive if the value read from KNX contains a substring equal to threshold.

If "KNX Data Type" property is set to one of the remaining data types, the following property will be displayed:

Threshold :
: This property defines the minimum value assumed by the state. If the data type is 1 bit, the extended command must have two states, one with threshold 0 and one with threshold 1. If the data type is a 1 byte unsigned int (0 - 255), the values corresponding to extended command states will follow the table below:

If "Type" property is set to "Text", the following properties will be displayed:

States	Threshold	KNX value
State 1	0	0-89
State 2	90	90-179
State 3	180	180-255

Text : Text displayed when the condition defined in the "Threshold" property is verified.

Font size : Size of the text defined in the "Text" property.

Text colour : Colour of the text defined in the "Text" property.

If "Type" property is set to "Graphic", the following property will be displayed:

Image file : Path of the image file that will be displayed for the state.

If "Use background" property is enabled, the following property will be displayed:

Background color : Background color of the object.

Back. Transparency : Transparency index of the background color, 0 means fully transparent, 100 fully coloured.

For each state it is possible to define two actions, one for press and one for long press:

Command : System command to perform when the object is pressed.

Hold press function : If enabled, the hold press function is activated for the object and the following property is displayed:

Command hold   System command to perform when the object is long pressed.

6.18 Sensor

This object allows the user to visualise the status of an alarm sensor and provides the option to exclude it.

Central : Anti-theft device ("Alarm central" system object) previously integrated into the system that will be associated to the current interface object. Please refer to the dedicated section at page 58.

Sensor device : "Sensor" system object previously integrated into the system that will be associated to the current interface object.

Exclusion : This property allows the user to exclude the selected sensor.

Sensor type : Sensor type (movement detector, custom, door, window); each type has its own specific icon.

Visualisation : This property allows to visualise a preview of the object for each of possible status (steady or alarm).

6.19   Alarm keyboard

This object allows the user to enable/disable the alarm for all the partitions or just for some of them.

Alarm central :   Anti-theft device ("Alarm central" system object) previously integrated into the system that will be associated to the current interface object.

Hide sensor status :   This property allows to determine whether sensors status has to be displayed on the alarm keyboard.

6.19   Alarm keyboard

6.20   Camera

This object allows the user to visualise the streaming or fan IP camera in the application.

Type :   If the desired type of camera is not included in the given list, the "Generic camera" option has to be selected.

Use RTSP :   If enabled, the system will interact with the selected camera using RTSP (rtsp://) streaming protocol; this option is used for H264 streaming. If a MJPG streaming is required, this property has to be disabled.

Image path :   Image path needed to access specific snapshots of camera streaming.

External address :   Camera external address without http://

External port :   Camera external port.

Use local connection :   If enabled, this property allows the system to connect to the camera using the local LAN; if this type of connection fails, the system will automatically try to use the external network.

Local address :   Camera local address

Local Port :   Camera local port

Username :   Login parameter.

Password :   Login parameter.

Image dimension :   Image dimension.

Add timestamp :   A timestamp is a character added at the end of camera url that allows to stock the selected snapshot in a temporary iPad memory; it is particularly useful to prevent the camera from keeping to stream the same snapshot and to optimise the functioning.

audio_stream_on :   Enable audio streaming