

Installer manual

**01506**

By-me KNX router



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System Requirements - Product description

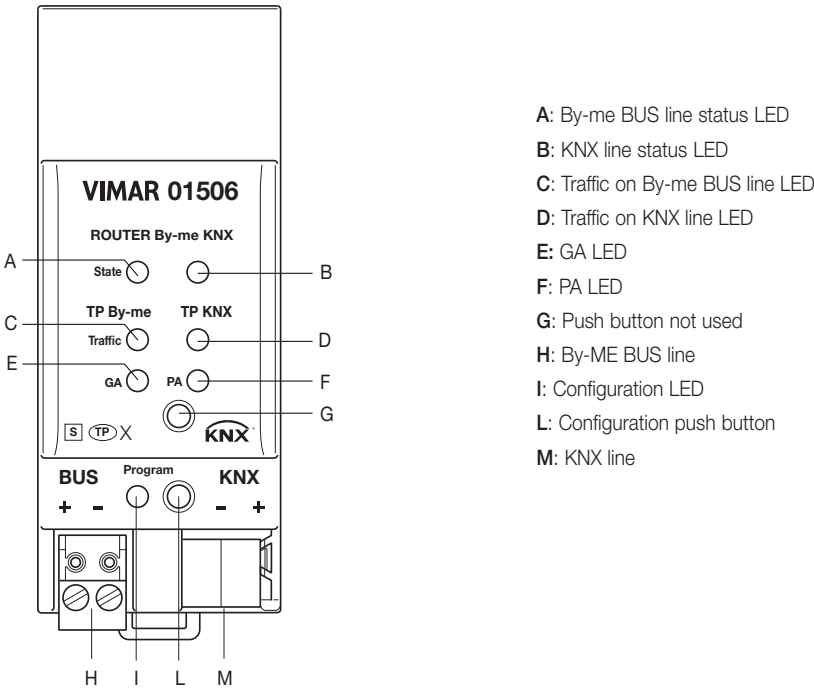
1. Product description

The By-me/KNX router enables communication between parts of a system comprising By-me devices, grouped together within an “island”, with a system comprising KNX devices. The messages are transmitted in both directions according to criteria which define the correspondence of the communication objects belonging to the specific domains. The router allows up to 450 routing rules. Each rule is specified by the By-me group address, by the KNX address, by the direction of communication (from KNX to By-me; from By-me to KNX; both) and by the type of information exchanged (1 bit, 2 bit, ...).

The device is equipped with a TP terminal for connection to the By-me BUS, an Ethernet connector and a front push button for configuration via ETS. The power supply is provided by the By-me BUS.

Router 01506 conforms to the KNX Secure requirements on the datapoints defined in the routing table. A datapoint on the KNX side can be defined for the heartbeat signal.

1.1 Front view of the device

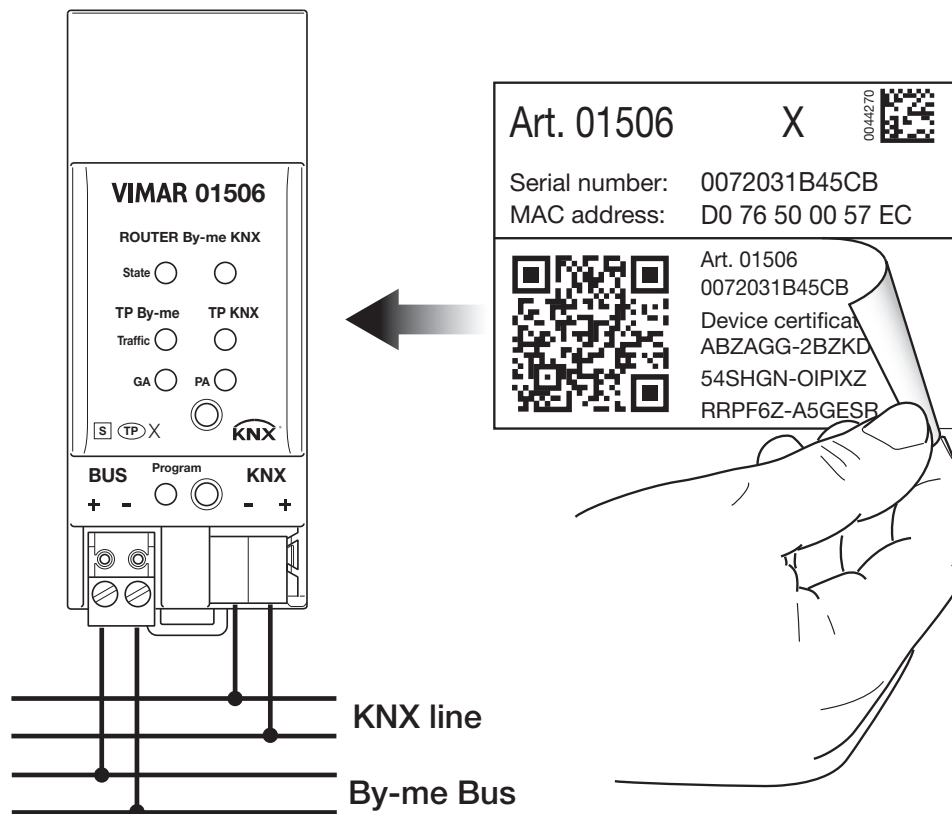


1.2 LED indications

	Green	Red
By-me BUS line status LED (A)	ON: Correct operation	ON: Device factory reset
KNX line status LED (B)		
Traffic on By-me BUS line LED (C)	ON: Data traffic presence	-
KNX line traffic LED (D)		
GA LED (E)	-	ON: Device not configured
PA LED (F)		
Configuration LED (I)	-	ON: Device in the configuration phase

### 1.3 Commissioning

- To activate the security function and Secure Commissioning you will need the device Certificate
- Security function activation requires a specific minimum ETS version number



- ✓ To launch a secure configuration download, you first need to activate the Secure Commissioning in the ETS project.
- ✓ Also read chapter “1.5 Important notes” before operating the device.

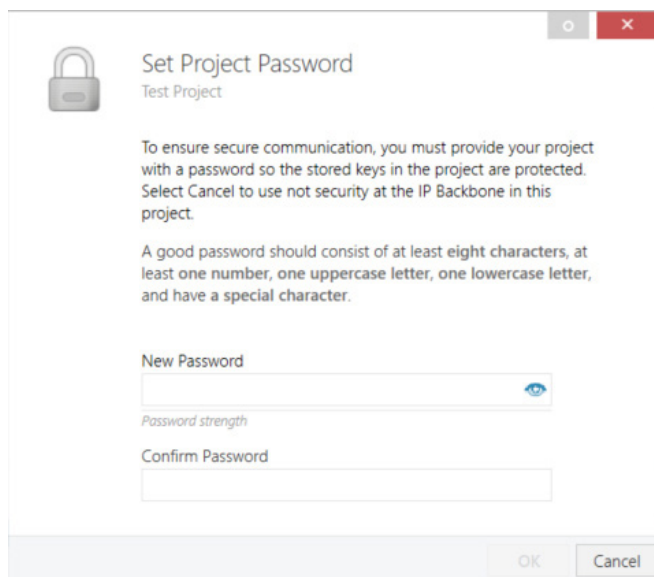
## 1.4 Secure Commissioning

To launch the secure download of the configuration settings and/or individual address, you first need to add the individual Certificate of device 01506 to the ETS project. To add it, the ETS project must be password-protected.

- ✓ Secure download is only possible after Secure Commissioning has been activated.
- ✓ To activate Secure Commissioning you will need the individual Certificate of the device.
- ✓ Device certificates can only be added to a password-protected ETS project.

If a password has not been set for the project, Secure Commissioning cannot be activated. ETS projects with Secure Commissioning and/or the Security function set to active always require a project password. If no project password proves to be set when the Security function is activated, ETS prompts you to enter one.

## Product description



- ✓ The individual Certificate of the device is always included with the KNX Secure product. For the product to be configured by the user, make sure you do not lose the device Certificate (see chapter 2.6 Keeping the device Certificate).

### 1.5 Important notes

We recommend you attend standardised courses at a certified KNX training centre before installing, programming and commissioning a KNX system. The participant will gain the necessary expertise and knowledge also for troubleshooting, thanks to practical exercises.

Read this chapter thoroughly before first use and installation:

#### 1.5.1 Installation and commissioning

- If the device is damaged during storage or transport, repairs must only be carried out by authorised personnel.
- Once connected to the By-me bus system, the device works with its default settings.
- **Warning:** do not connect to a 230 V mains power supply. The device is powered by the By-me bus and does not require any additional external power supply.
- The device must be installed and commissioned solely by a qualified electrician or an authorised person.
- For the design and creation of electrical systems, abide by the specifications, guidelines and applicable local regulations in force.
- For configuration, use ETS (or ETS Inside)

#### 1.5.2 Assembly and safety

- For assembly, use appropriate equipment, in compliance with IEC60715.
- Installation on 35 mm DIN rail (TH35)
- Do not damage the electrical insulation while making the connections.
- Only install in a dry place.

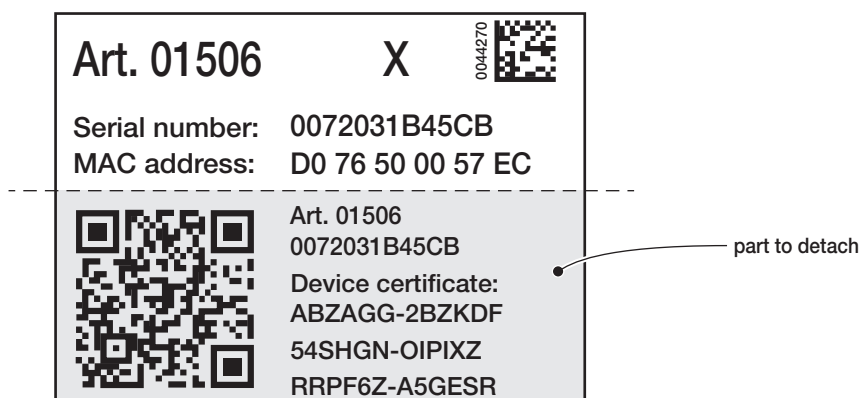
#### 1.5.3 Maintenance

- Guarantee accessibility to the device for operation and visual inspection.
- Do not open the external casing.
- Protect the device against moisture, dirt and damage.
- The device does not require any maintenance.
- If necessary, you can clean it with a dry cloth.

## Product description - KNXnet/IP

### 1.6 Keeping the device Certificate

The device Certificate is on the label affixed to the side of the casing. To avoid unauthorised access, the device Certificate should be removed from the device once it has been commissioned. To this end, the label is divided into two parts, one fixed part which remains affixed to the casing (for identification), and the other removable part (to be kept).



After adding the device Certificate to the dedicated list in ETS, keep the removed part of the label in a safe place. The list of device Certificates must only include certificates of KNX Secure devices used for ETS projects. ETS will automatically use the correct certificates for device programming.

To identify the device clearly after the detachable part has been removed, the serial number is printed on both parts of the label, the one you have removed and the one that remains on the casing.

- ✓ If you lose the removed part with the device Certificate, it will only be available in the password-protected ETS project.
- ✓ Caution! If the device Certificate is lost and cannot be retrieved, in other words if the part of the label removed can no longer be found and the project password has also been lost, the device can no longer be used securely (the Security function will no longer be available for activation). If this is the case the device may only be used in the non-protected mode, like a "normal" device.

### 1.7 Summary of functions

- The device Certificate guarantees that only authorised persons may access device 01506.
- When the ETS "Secure Commissioning" function is active, the configuration data are only downloaded in encrypted KNX Data Secure format.
- The device is powered by the By-me bus.

## The KNX Secure protocol

### 2. The KNX Secure protocol

The device is used to activate the “KNX SECURE” data encryption protocol, entering the QR code or the digits in ETS and also creating a password associated to the project.

N.B.: If the QR code printed on the label is too small, take a photo of it with a smartphone and enlarge it.

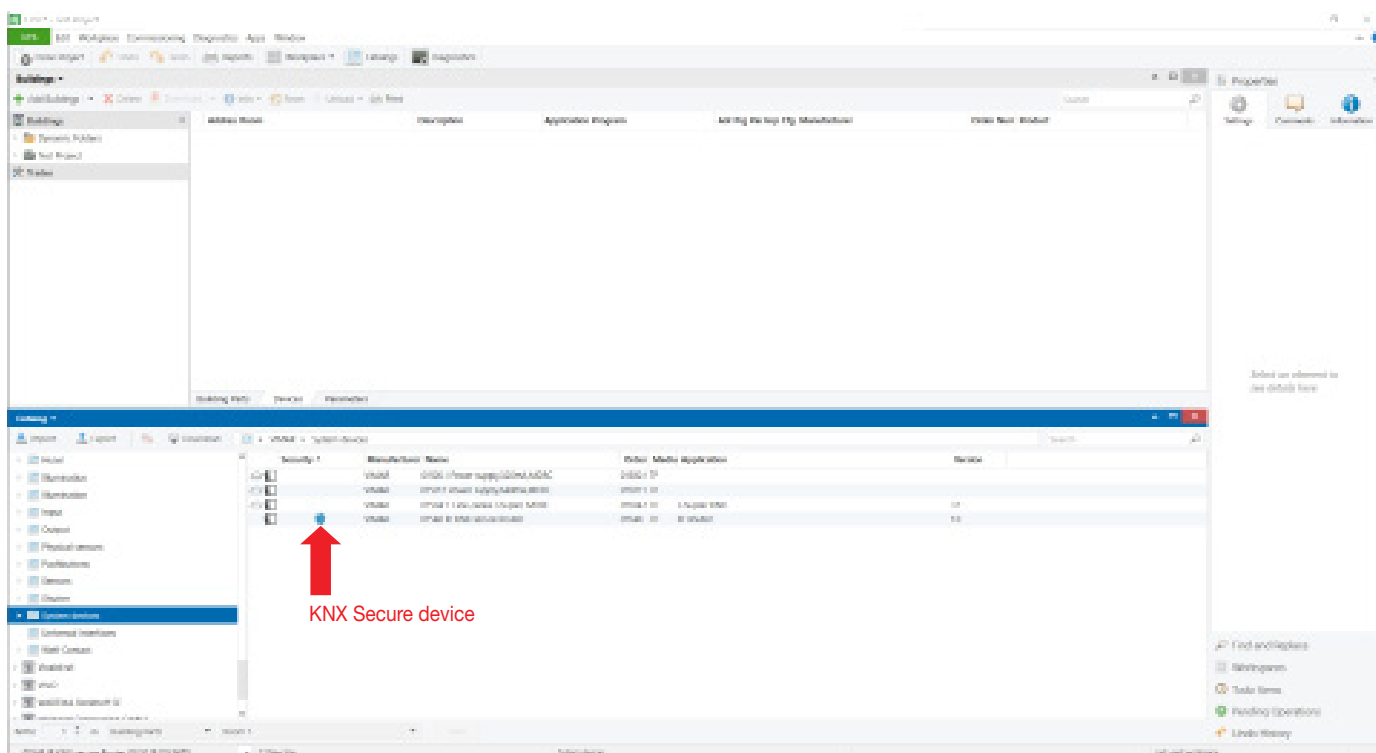
The password is mandatory in the following cases:

- when enabling the Secure part of the devices in the project
- when entering the certificate of a Secure device in the project

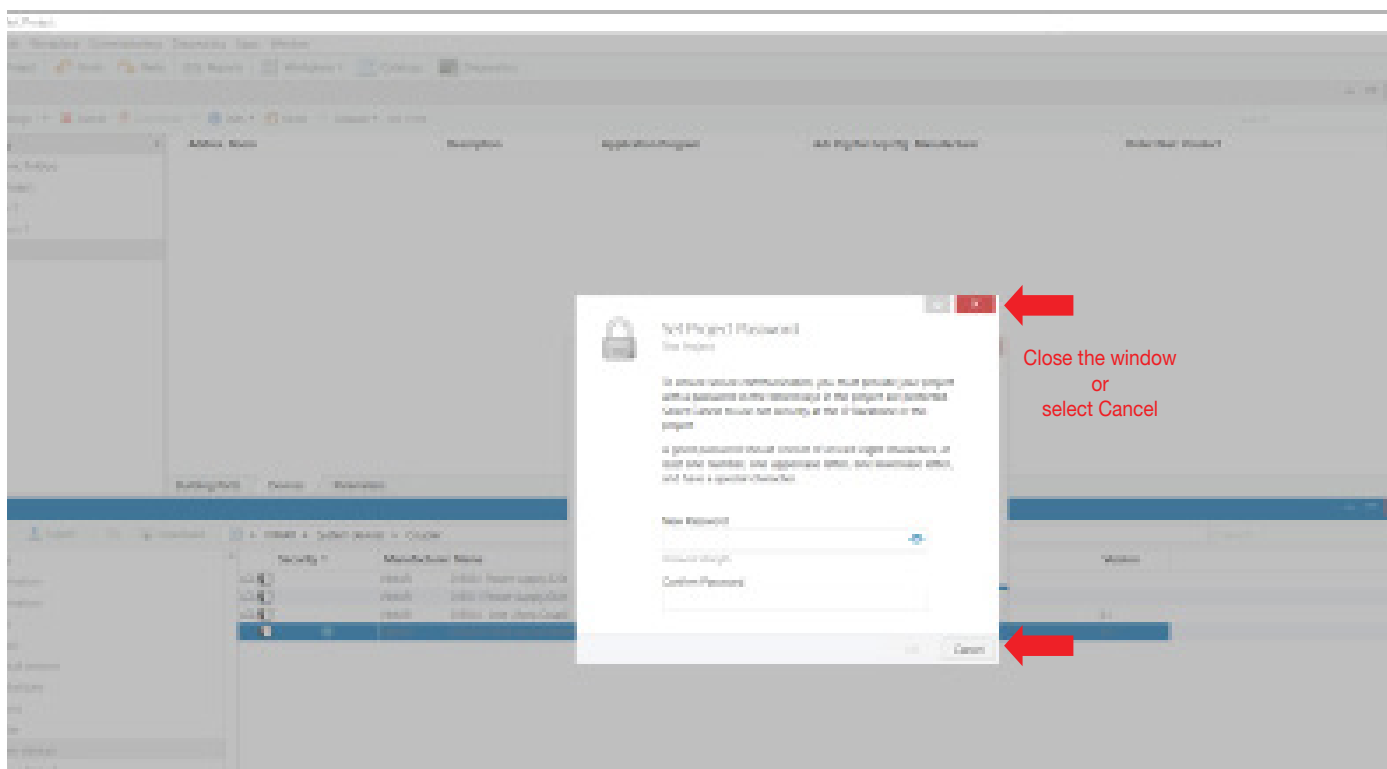
If the Secure part of a device is disabled, it acts exactly like a device that does not support this protocol.

If you do not wish to enable the Secure part, when importing the device into the project close the Secure request window as described in the following procedure.

1. Add the Secure device to the ETS project.

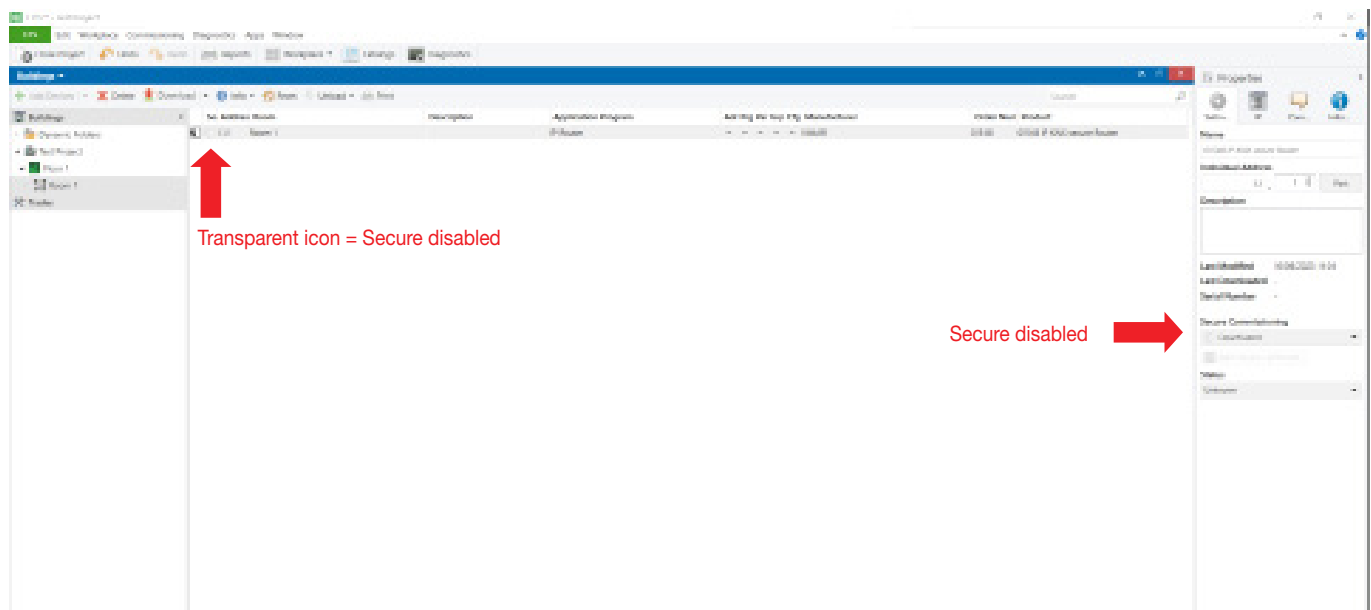


2. Ignore the set password request.

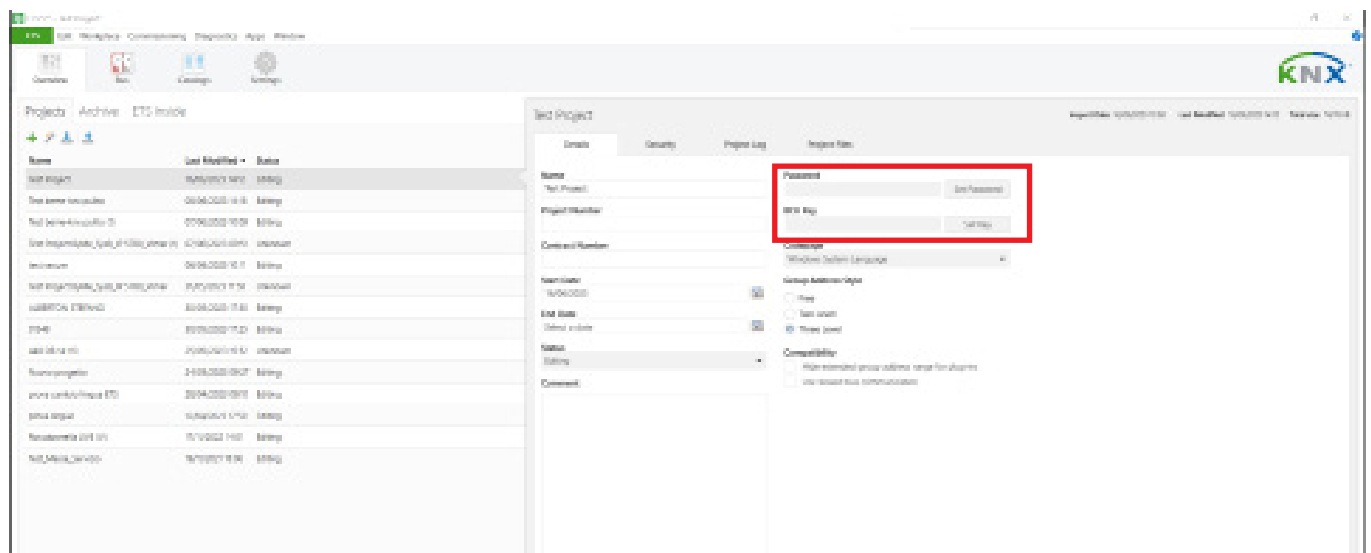




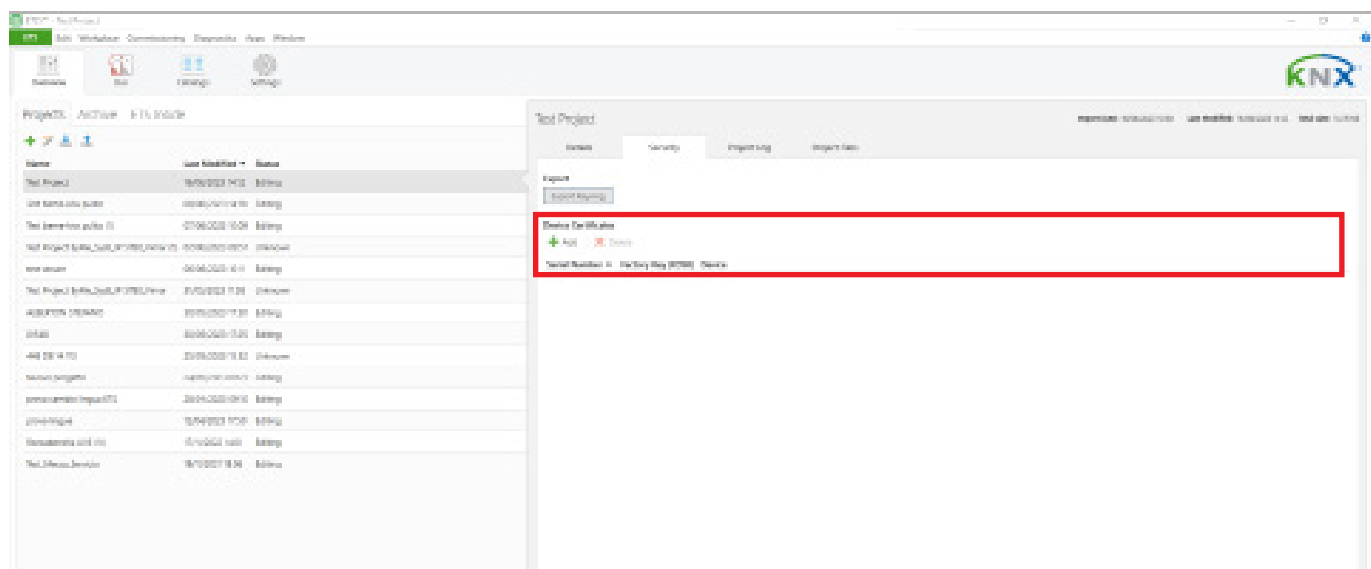
3. The device is displayed with the Secure part disabled.



4. No password is associated with the project.



5. No certificate is associated to the project.



## Description of operation

### 3. Description of operation

In KNX network systems, router 01506 is used to transfer messages from KNX bus to By-me bus and vice-versa. The message exchange rules are totally defined by the installer using the dedicated folder (Group objects, Parameters, DCA) created in ETS for the specific device. It can be used normally without activating the Security function and in ETS projects in which the Security function is active. After connection to KNX IP, router 01506 works with its default settings. A valid individual address must be set.

#### 3.1 General Information

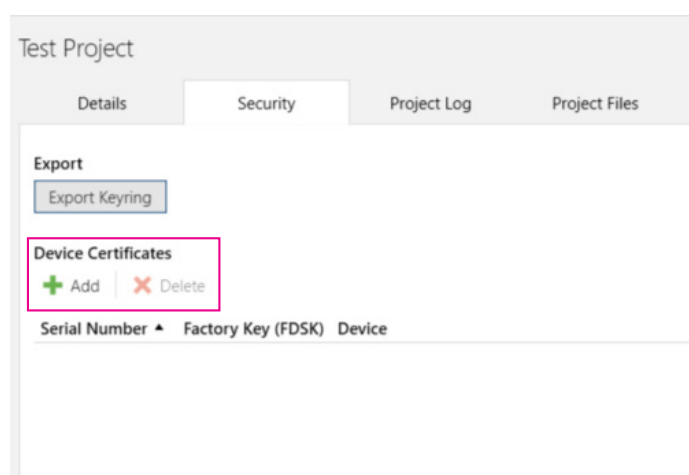
When it receives data which use group addresses, router 01506 behaves in accordance with the settings present in the DCA. During normal operation, it only forward messages whose group addresses are specified in the routing rules defined in the DCA.

#### 3.2 Adding the device Certificate

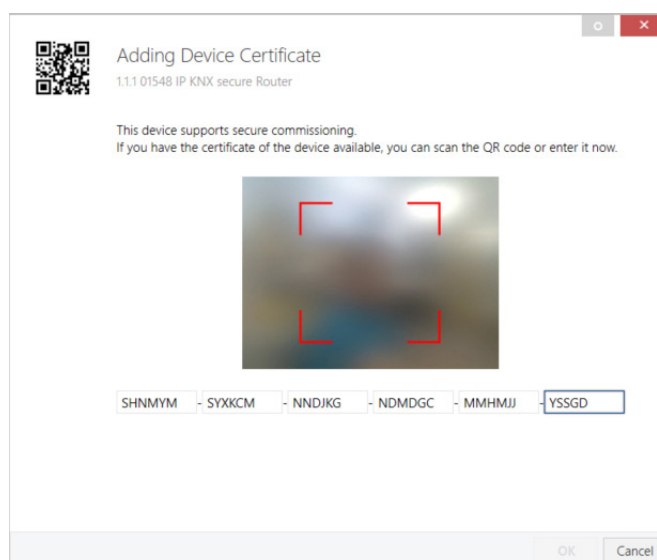
Each KNX Secure device uses its own Certificate. The device Certificate must be entered in ETS before activating or using the KNX security functions.

- ✓ The device Certificate is printed on a label affixed to the side of the casing.
- ✓ The device Certificates can be entered manually or by scanning the QR code with the webcam.

After the project has been opened, the list of device Certificates can be edited in the Security tab of Project Overview.



If the device Certificate has not been added to the list yet, when a protected download is launched, the following window appears.



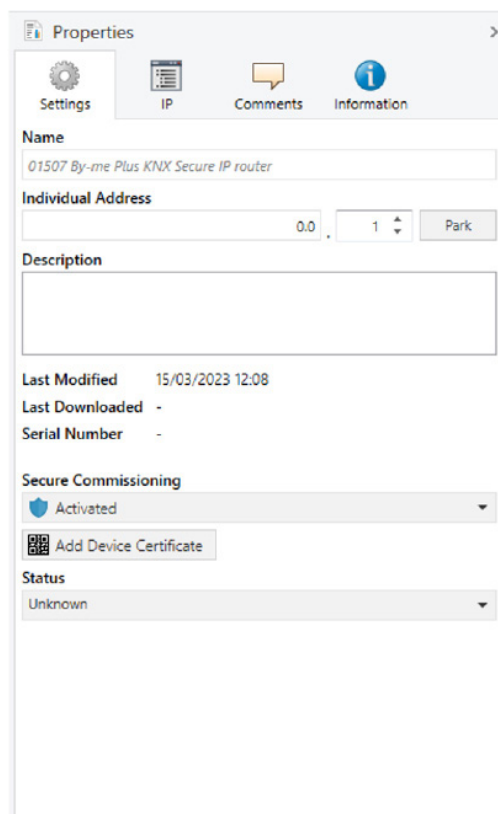
## Description of operation

### 3.3 Programming

#### 3.3.1 Programming the individual address (and application)

To download the individual address in a device, the Programming mode must be active. Press the programming button to activate or deactivate the programming mode. A red lit configuration LED (I) indicates the programming mode is active. When the download from ETS is activated and you press the programming button, the device stores the new individual address in the memory. The security settings are updated by downloading the individual address and application (L).

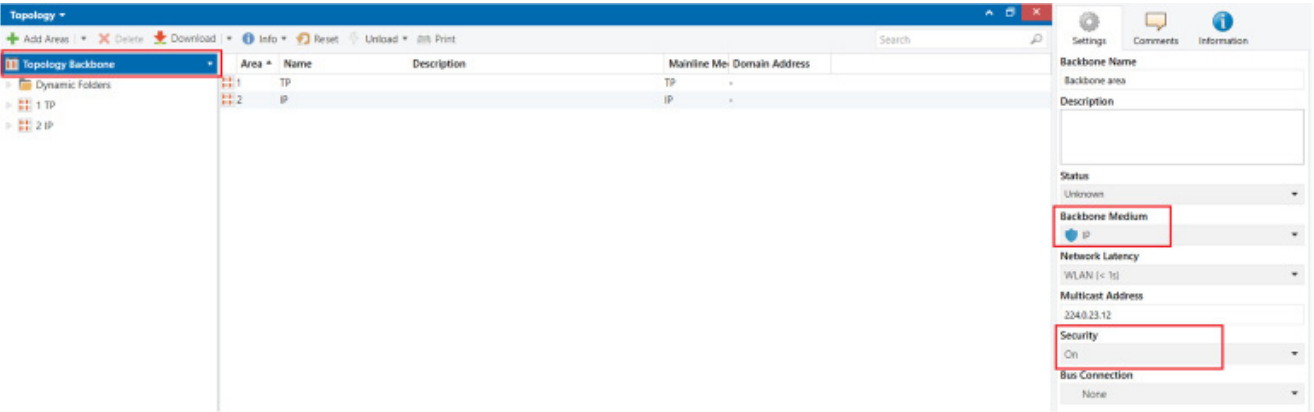
The KNX address can be assigned to the device by setting the desired address in the ETS properties window. At the end of download from ETS, the device will restart.



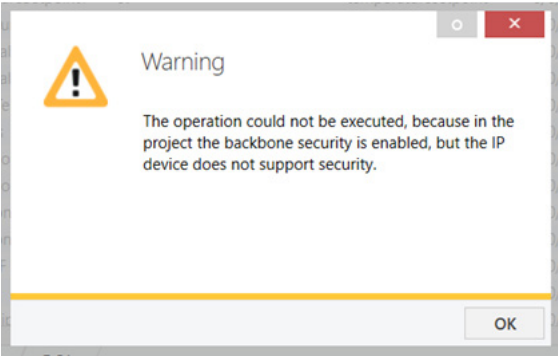
- ✓ The device is supplied with the individual address 15.15.255 (default factory setting). We advise against using this address for normal operation of a system and recommend assigning a different address when commissioning.
- ✓ If the configuration LED (I) flashes red, this means the Ethernet cable is not connected correctly or that a connection with an IP network is not available.
- ✓ The ETS database is available on the company website and in the ETS on-line catalogue.

3.3.2 Network backbone configuration with KNX Secure active.

If you want to use KNX Secure we recommend you set the Backbone IP to Secure (by default ETS sets it to “Automatic”). To set the backbone to secure, display the Topology and edit the “Security” property.



This means that all the IP/KNX devices connected to the system support and are configured with KNX Secure. In the presence of IP/KNX devices that are not configured in KNX Secure, ETS will display the following warning:



**N.B.** If reset devices are present, the default physical address 15.15.255 is not read by the ETS diagnostics because it is transmitted unencrypted when the Backbone is Secure. Once the Backbone secure is activated, the configuration status of the various Secure devices will show as not up to date and so the application programmes will have to be downloaded again.

3.3.3 01548 interface configuration

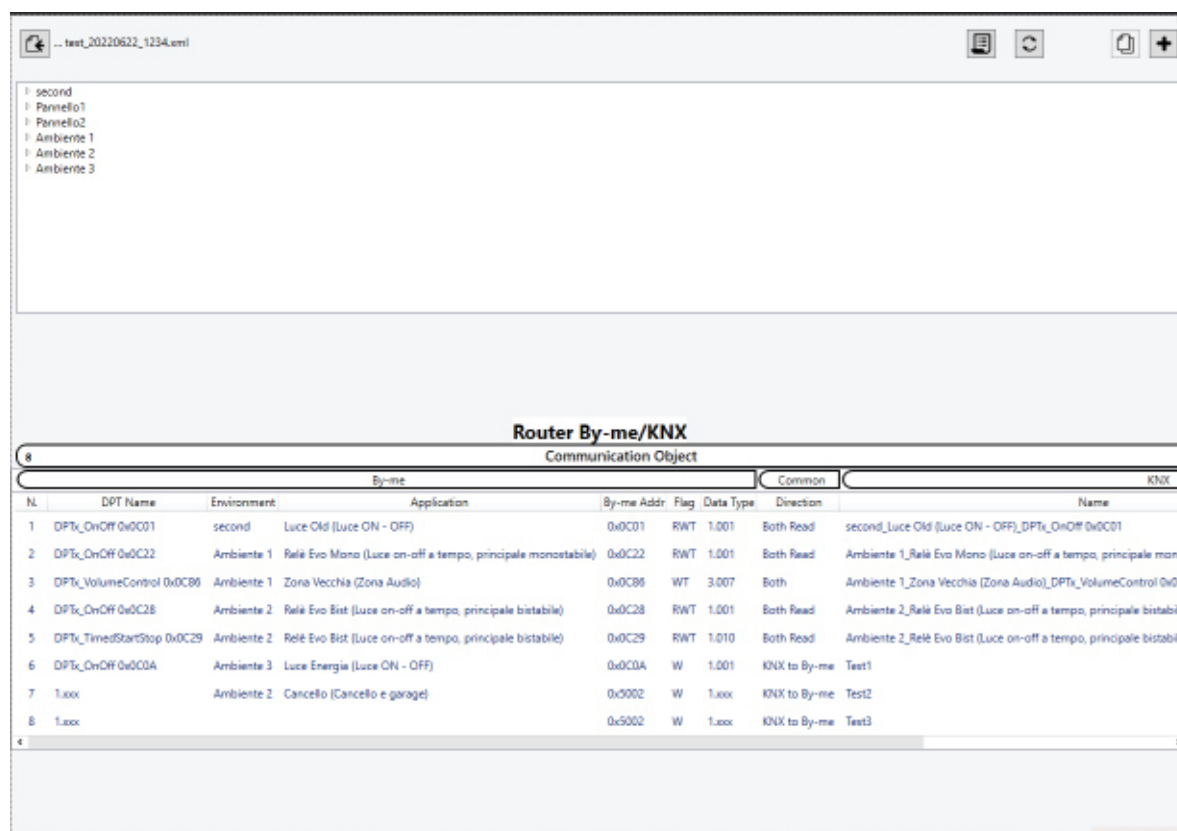
For the correct operation of the router 01506 configuration procedure, the physical addresses on the secondary line (TP) must be filtered.

General	Telegram routing	Group and Physical: filter
Main line (KNX IP)	Group telegrams: Main group 0...13	filter
	Group telegrams: Main group 14...31	filter
Subline (KNX TP)	Physical telegrams	filter
	Physical telegrams: Repetition if errors on subline	up to 3 repetitions
	Group telegrams: Repetition if errors on subline	up to 3 repetitions
	Telegram confirmation on subline	if routed
	Send confirmation on own telegrams	no
	Configuration from subline (KNX TP)	<input checked="" type="radio"/> allow <input type="radio"/> block





## Organising the DCA for customising associations

### 4. Organising the DCA for customising associations

To simplify the definition of the association between By-me group and KNX group, there is a tab called DCA available (as in the figure below).



#### 4.1 Controls

-  Importing By-me plant
-  Refresh
-  Copy communication object
-  Add communication object (not By-me)

#### 4.2 Section A

Displays the By-me Plus system organised in a navigation tree:

- the "Environments" nodes are present at level I;
- the "Applications" nodes are present at level II;
- the "Group" nodes are present at level III;
- the "Group address" nodes are present at level IV.

The "Group" nodes are only displayed in the presence of applications which need several groups (see temperature control operation). If this is not the case, Level III is not displayed whereas information of Level IV Group addresses is presented.

#### 4.3 Section B

Displays the list of all the By-me Plus/KNX associations which the installer has defined (max 450).

In the above figure, the area reserved for By-me information (on the left) is clearly distinguished from the area for the KNX data (on the right). The "Common" column contains the direction of group messages which cross the Router.

Each communication object defined can be deleted by tapping the icon , which activates the deletion function.

## Organising the DCA for customising associations

### 4.4 Tab

This is the section of ETS which contains all the default “Tab Group Object” and “Parameters”. A specific “DCA” tab is dedicate to “01506 Router By-me KNX” for the definition of the routing rules.

### 4.5 Preliminary procedures on the By-me Plus system

After configuring the By-me Plus system using the View Pro App, import the information in an xml file (see the By-me Plus manual).

### 4.6 Configured By-me Plus system

Allows you to import the By-me Plus system into the DCA.

1. Activate the function by clicking on icon .
2. Using the file explorer, select the xml file containing the By-me Plus system data.

Section A contains the By-me Plus system data.

### 4.7 Adding a communication object from By-me Plus data

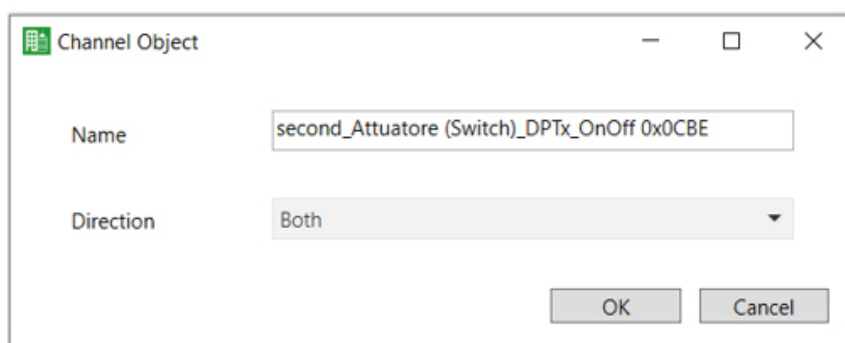
There are two ways to do this:

- Drag&Drop the “Group” node from Section A to the area reserved for Communication objects;
- Double-click on the “Group” node in Section A

Before adding the new Communication Object to the “By-me Plus KNX SECURE Router” a check is carried out for any error conditions:

- addition of a Communication Object when the By-me Plus KNX SECURE Router table has already reached 450 rows;
- duplicate Communication object name.


The installer can always customise the “Direction” and “Name” by double-clicking on the routing table row.

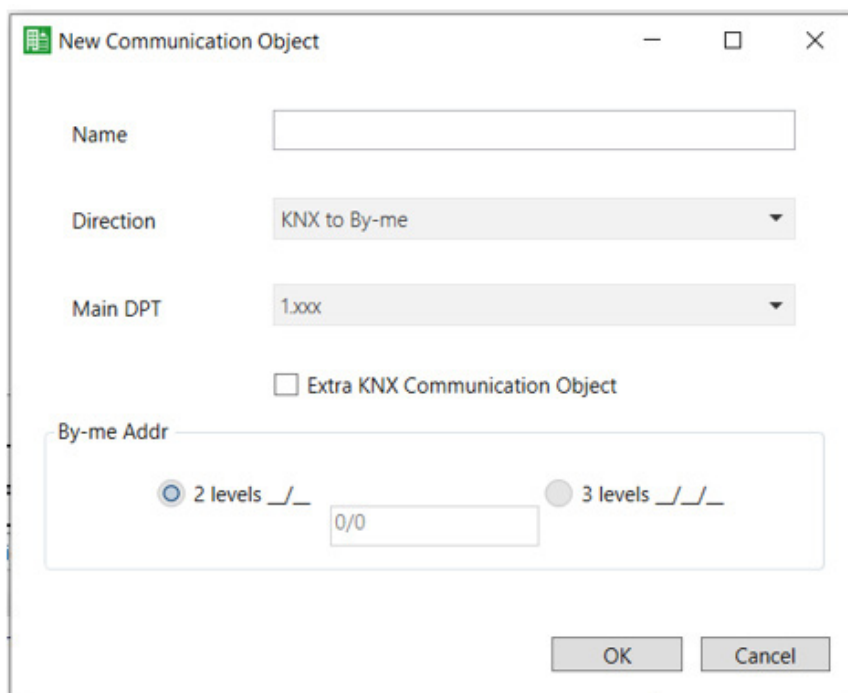


The image shows a dialog box titled "Channel Object". It has two input fields: "Name" and "Direction". The "Name" field contains the text "second\_Actuatore (Switch)\_DPTx\_OnOff 0x0CBE". The "Direction" field is a dropdown menu currently set to "Both". At the bottom right, there are two buttons: "OK" and "Cancel".

## Organising the DCA for customising associations

### 4.8 Non-configured By-me Plus system

Before importing the By-me Plus xml file, manually add all the Communication Objects on the KNX side using icon  .  
Once you have done this, you can import the By-me Plus system and complete the definition of associations.



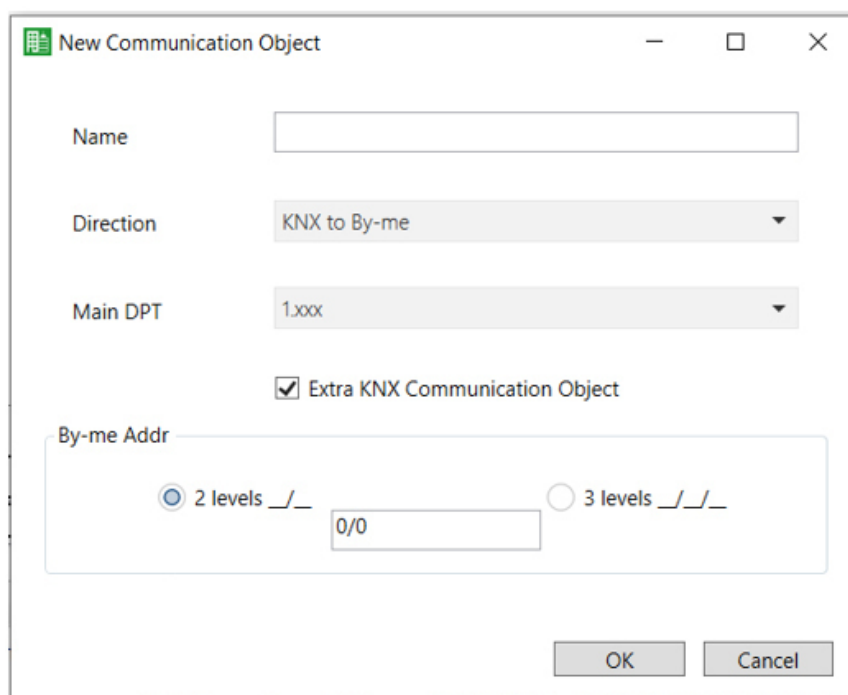
The dialog box titled "New Communication Object" contains the following fields and options:

- Name:** A text input field.
- Direction:** A dropdown menu set to "KNX to By-me".
- Main DPT:** A dropdown menu set to "1.xxx".
- Extra KNX Communication Object:** An unchecked checkbox.
- By-me Addr:** A section containing two radio buttons: "2 levels \_/\_\_" (selected) and "3 levels \_/\_\_". Below the "2 levels" radio button is a text input field containing "0/0".
- Buttons:** "OK" and "Cancel" buttons at the bottom right.

In this case the name of the communication object is not automatically prompted by the procedure but is left up to the installer, who can also set the direction of the messages and the type of data transported (1.xxx will be valid for 1.001, 1.002, 1.003, etc.).

### 4.9 KNX Communication objects present in the By-me Plus island

With the "Extra KNX Communication Object" option, you can manage the KNX devices (not By-me Plus) connected inside the By-me Plus island. In this case, the device is not present in the By-me Plus xml file exported from the View Pro App.



The dialog box titled "New Communication Object" contains the following fields and options:

- Name:** A text input field.
- Direction:** A dropdown menu set to "KNX to By-me".
- Main DPT:** A dropdown menu set to "1.xxx".
- Extra KNX Communication Object:** A checked checkbox.
- By-me Addr:** A section containing two radio buttons: "2 levels \_/\_\_" (selected) and "3 levels \_/\_\_". Below the "2 levels" radio button is a text input field containing "0/0".
- Buttons:** "OK" and "Cancel" buttons at the bottom right.

## Organising the DCA for customising associations

To complete configuration, you need to specify the KNX format that the By-me Plus KNX SECURE Router should adopt; the options are:

- 2 levels
- 3 levels.

Next, the installer can set the KNX group address of the communication object they have just defined.

The group address is inserted in the "By-me Addr" column in the chosen KNX format.

### 4.10 Assigning By-me data to Communication Objects

After adding the KNX communication objects to the By-me Plus KNX SECURE Router device, proceed as follows:

1. Configure the By-me system with the home automation system gateway;
2. Export the system in xml format;
3. Access the "DCA" of the By-me/KNX gateway;
4. Import the xml file;
5. Drag&Drop the By-me Plus node to the row associated with the By-me Plus KNX SECURE Router of the routing table.

In this case the DCA should check the consistency of the "Data Type of the By-me DPTx" selected with what is already set in the destination row (Main DPT). Only if the respective Main DPTs match will the Drop be permitted (permitting the same format of the Main DPT on the By-me side with respect to the one on the KNX side: e.g. By-me Data Type 1.001 → KNX Main Data Type 1.xxx).

### 4.11 Copying Communication Objects

The Copy function  allows you to make a copy of a Communication Object for those which only have KNX data.

Once you have selected a row in the Communication Objects table, you can duplicate the related Communication Object, whose window appears with the "Direction" and "Data Type" fields already set. You will need to edit the "Name" (which must be different).

### 4.12 Errors

The following errors are envisaged:

- "Copy Communication Object is disabled when there is no row in the By-me/KNX Gateway or it hasn't been selected
- "Addition" of a Communication Object when the By-me/KNX Gateway table has already reached 450 rows.
- Communication Object selected has all the By-me parameters defined: in this case only the KNX part is duplicated (the name changes everywhere) whereas the By-me part stays empty and has to be associated starting with a node of the By-me tree.

N.B.: In the event that the By-me parameters are defined, the copy function is disabled.



4.13 Copying the By-me/KNX gateway from ETS

After defining the By-me/KNX Gateway, ETS can be used to duplicate the device inside the same KNX system and set its characteristics (see figure below).

Paste Special

1.1.1 02972 KNX Rotary Dial Thermostat

Number of items

1

Group Addresses

☒ Don't Copy

☐ Keep

☐ Create new group address in middle group

0/0

Generate Address

☒ Fill up (use first free)

☐ Append

☐ Start with:

1

☐ Offset:

0

OK

Cancel

4.14 Completing the ETS configuration

On completion of the By-me Plus KNX SECURE Router definition, tap the "Group Objects" tab to associate the group address with each communication object defined. This way, the information is managed similarly to the system KNX device information.

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority	No. of Associ
1	Heartbeat	Heartbeat			1 byte	C	-	W	-	-		Low	0
11	Bi-directional- Object 11	DPT 1			1 bit	C	-	W	T	U	cooling/he...	Low	0
12	Both read- Object 12	DPT 1	centrovolta	1/1/0	1 bit	C	R	W	T	U	switch	Low	1
13	KNX to ByMe GW - Object 13	DPT 1			1 bit	C	-	W	-	U	switch	Low	0
14	KNX to ByMe GW - Object 14	DPT 12			4 bytes	C	-	W	-	U	counter pu...	Low	0
15	KNX to ByMe GW - Object 15	DPT 1			1 bit	C	-	W	-	U	switch	Low	0

#### 4.15 Cloning a room/area

In the following example, room 101 is copied to room 102.

Paste Special

Room 101

Number of items: 1

Group Addresses

- ☐ Don't Copy
- ☒ Keep
- ☐ Create new group address in middle group: 0/0

Generate Address

- ☒ Fill up (use first free)
- ☐ Append
- ☐ Start with: 1
- ☐ Offset: 0

OK Cancel

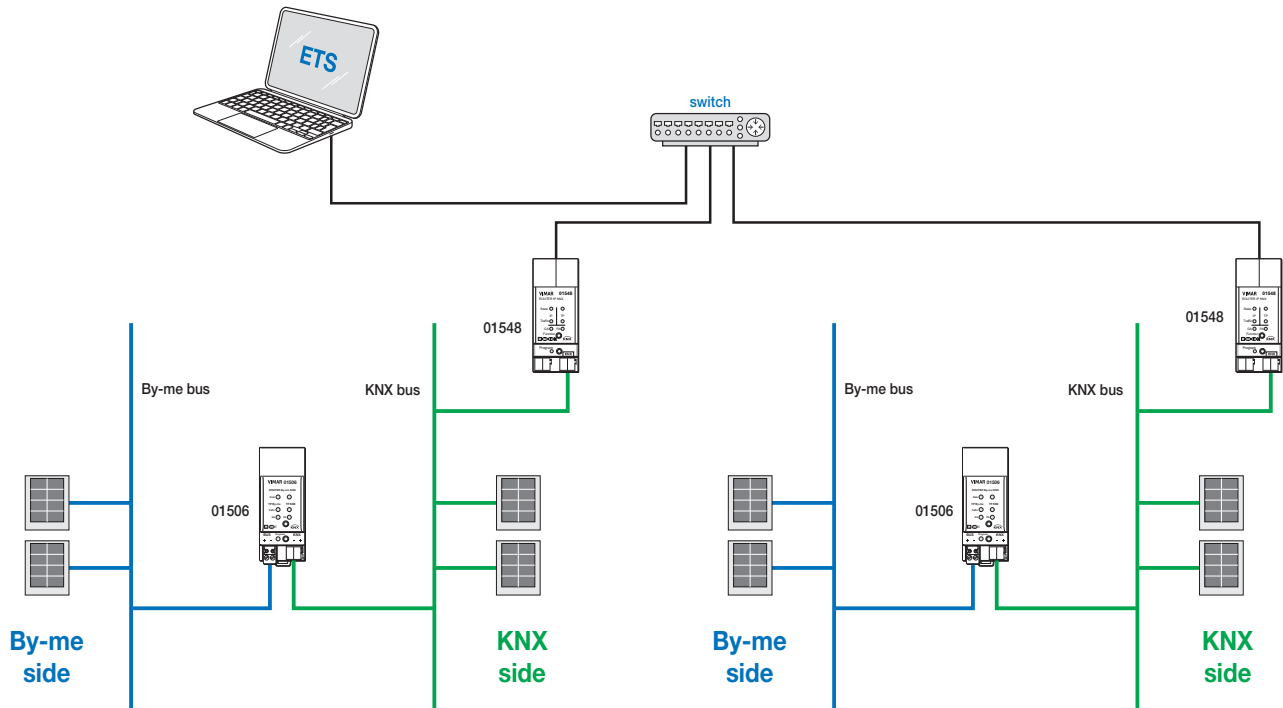
[illegible]

You can now rename Room 101 – Copy in Room 102 and attribute the physical address of the Gateway.

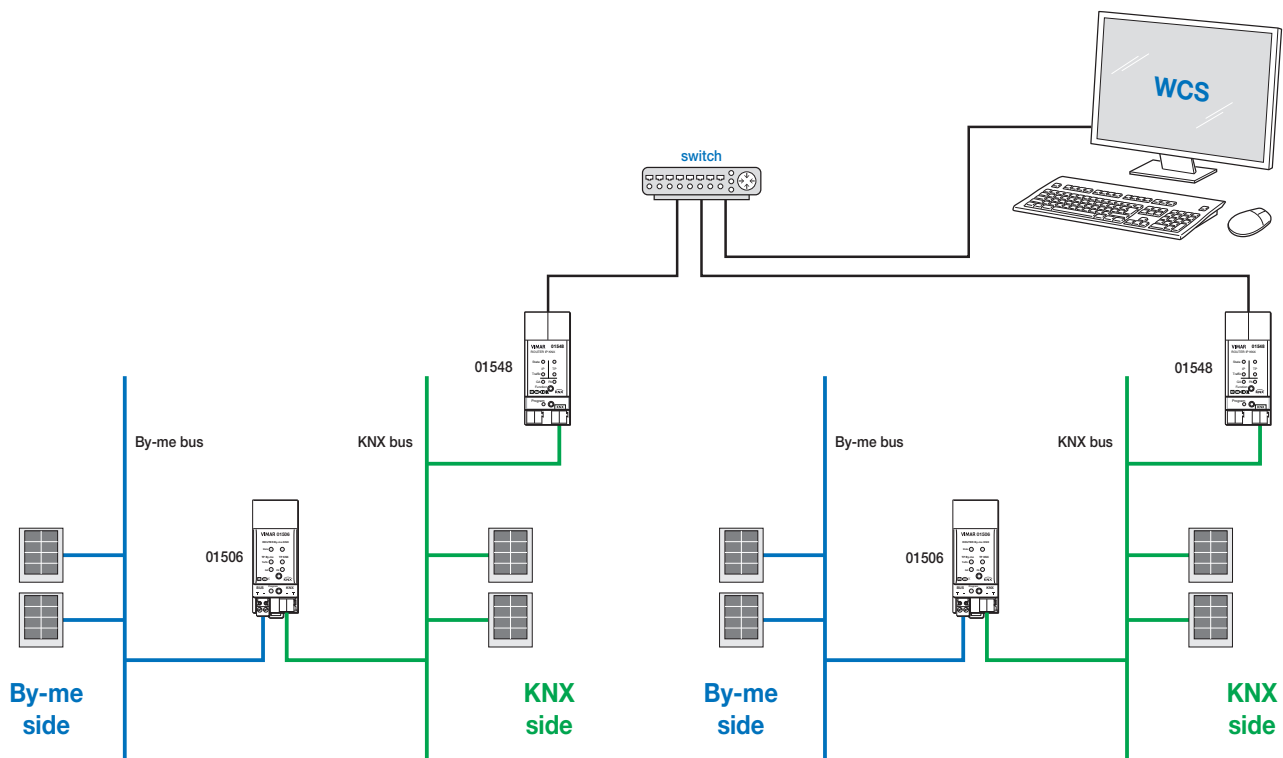
## Usage examples

### 5. Usage examples

#### 5.1 Mixed system with 01506 TP/IP, configuration



#### 5.2 Mixed system with 01506 TP/IP, supervision





01506 IT 05 2511



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