



Zennio KNX-IP Router PLess Zennio KNX-IP Interface PLess

KNX-IP Line / Area Coupler

ZSY-IPR-PL
ZSY-IPI-PL

Application Program version: [1.0]
User Manual version: [1.0]_b

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DOCUMENT UPDATES

Version	Changes	Page(s)
[1.0]_b	Correction in the access URL of the Zennio KNX-IP Interface PLess web application.	18

1 INTRODUCTION

1.1 ZENNIO KNX-IP ROUTER/INTERFACE PLESS

Zennio KNX-IP Router PLess and Zennio KNX-IP Interface PLess are the **KNX twisted pair to Ethernet line-coupling** solution from Zennio with no need of external power.

Analogously as twisted-pair to twisted-pair line couplers, Zennio KNX-IP Router PLess and Zennio KNX-IP Interface PLess aim at enlarging KNX installations by coupling separate segments by considering in this particular case that the main line is the Ethernet medium. Therefore, they can be used as **line or area** couplers to provide data connection between the upper KNXnet/IP line and the lower KNX twisted-pair bus line.

They also provide a **connection point** for ETS to enable programming (up to four parallel connections) and monitoring the KNX line via IP.

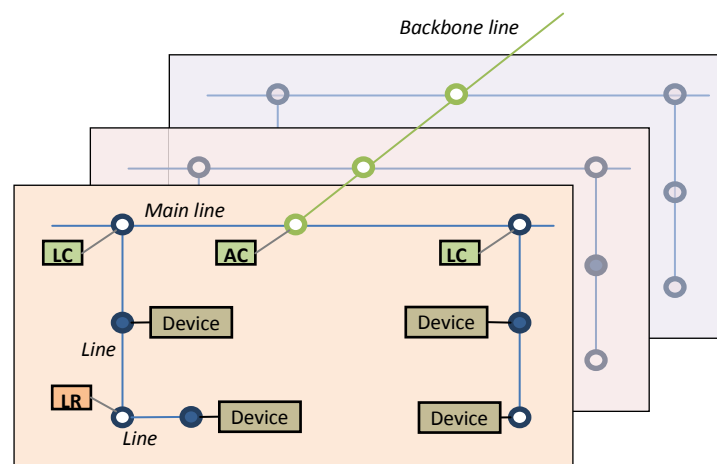


Figure 1. Context (Topology)

In contrast to **Zennio KNX-IP Interface** (which offers a simple KNX to IP interface solution), **Zennio KNX-IP Router PLess** incorporates an additional, configurable telegram filtering system according to the destination group / physical addresses.

These are the most outstanding features of these two devices:

- **Support for long messages** (up to 250 bytes).
- Use as an **area or line coupler** with a LAN as main line or main area line, offering a fast communication medium for telegram exchange.

- Support for group addresses in the **range 14 to 31**.
- Up to **4 parallel connections from ETS** for programming and monitoring.
- **No external power required.**
- **High capacity buffer** for the reception of telegrams from the Ethernet network.
- **Web interface** to display the device settings, to switch to the programming mode and for firmware updates.
- **.7 lighting indicators (LEDs)**: two bus state indicators per line (with detection of abnormal situations: excessive bus load, message retransmissions, etc.), one more indicator per line for the state of the filtering function, and one additional indicator for the programming mode.
- Only in Zennio KNX-IP Router PLess:
 - **Traffic filtering** according to the project topology and to the built-in address table.
 - **Telegram dropping.**
 - **Blocking of device-configuration telegrams** (telegrams destined to physical addresses).
 - **Customisable Function pushbutton** for triggering the manual mode, useful at runtime and for set-up and troubleshooting purposes.

1.2 INSTALLATION

1. Main line (LAN) connector.
2. Main line (LAN) status LED.
3. Main line (LAN) traffic LED.
4. Group address filter status LED.
5. Manual function button.
6. Secondary line (KNX) status LED.
7. Secondary line (KNX) traffic LED.
8. Physical address filter status.
9. Programming LED.
10. Programming button.
11. Secondary line (KNX) connector.
12. DIN rail clamp.

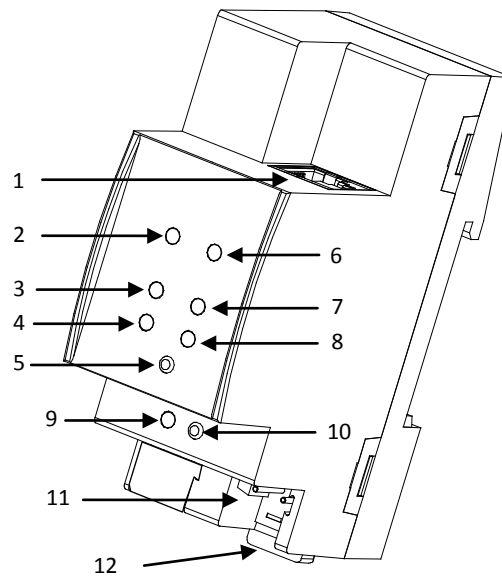


Figure 2 Element Diagram

Figure 2 shows a scheme with all the LED indicators and required connections. This device does not require an external power supply, it is not powered through the KNX bus.

To couple a KNX twisted-pair (TP) line and a LAN, the KNX bus (11) and Ethernet (1) cables must be connected. After the connection, the device can be conveniently mounted on the DIN rail by the usual procedure

The programming button (10) shown in Figure 2 may be pressed to set Zennio KNX-IP Router PLess in **programming mode**. After a short press, the programming LED (9) will light in red.

The behaviour of the additional LEDs and the manual function button will be described in sections 0 and 2.4.

For detailed information about the technical features of the device, as well as on security and installation procedures, please refer to the device **Datasheet**, bundled within the original packaging of the device and also available at <http://www.zennio.com>.

1.3 USING THE DEVICE AS A PROGRAMR

Zennio KNX-IP Router PLess and Zennio KNX-IP Interface PLess can be used in ETS as a **programming interface**. In addition to an IP address, they must be assigned a KNX individual address for this purpose.

Note: to detect the device as a programr in ETS, it needs to be connected to the same IP network as the PC.

1.3.1 PARALLEL DOWNLOADS

ETS offers the option to perform multiple parallel downloads within the same project. This option is only available for connections via a KNX-IP router or a KNX-IP interface. Certain conditions must be met:

- Each download must be performed on a different line.
- For each line, it is necessary to select one **Zennio KNX-IP Router PLess** or one **Zennio KNX-IP Interface** to perform the download.

This is configured by right-clicking on the line and, under "Set Connection", selecting the desired connection (once selected, it will not be available for other lines).

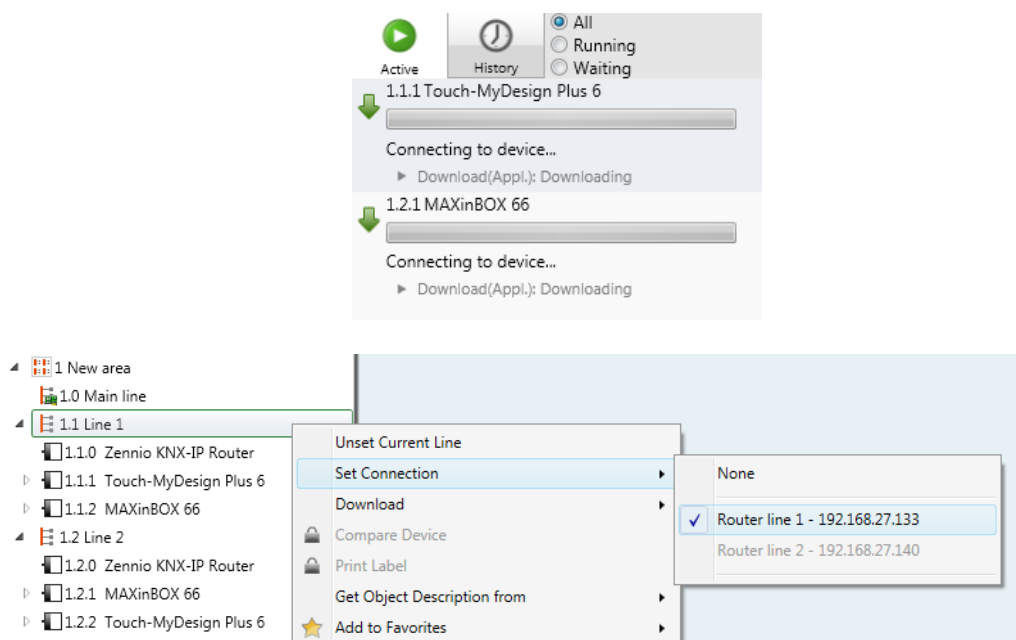


Figure 3 ETS parallel downloads.

An additional restriction applies to parallel downloads: they are **not available to download physical addresses**. When performing this type of downloads, the link device used by ETS is not the one configured for the line but the general one.

1.3.2 LIMITATIONS

It is important to note that Zennio KNX-IP Router PLess and Zennio KNX-IP Interface PLess, when being used as programrs, do not allow **bus monitoring** (the ETS bus monitor will not be available).

Moreover, these devices do not allow being **unloaded (unprogramd)** from ETS. Equivalently, they can be reset to the factory default state, as explained in section 2.4.2.

2 DESCRIPTION

2.1 KNX TO IP INTERFACE

Zennio KNX-IP Router PLess and Zennio KNX-IP Interface PLess can be used as a **line coupler** (for coupling both a line to a mainline) or as an **area coupler** (for coupling a main line to an area line, also referred to as *backbone line*). The operation on both cases is analogous – being a line coupler or an area coupler only depends on the location of the device within the topology.

Figure 4 shows a typical scenario where Zennio KNX-IP Router / Interface PLess can be installed as any of the nodes the nodes labelled as “AC” (area coupler) or “LC” (line coupler):

- Coupling an area line and a main line requires an **area coupler (AC)**. **Zennio KNX-IP Router PLess** and **Zennio KNX-IP Interface PLess** is intended for cases where the medium of the former is Ethernet while the medium of the latter is TP.
- Coupling a main line and a line requires a **line coupler (LC)**. **Zennio KNX-IP Router PLess** is intended for cases where the medium of the former is Ethernet while the medium of the latter is TP. In such cases, the medium of the area line (if any) is assumed to be Ethernet as well.

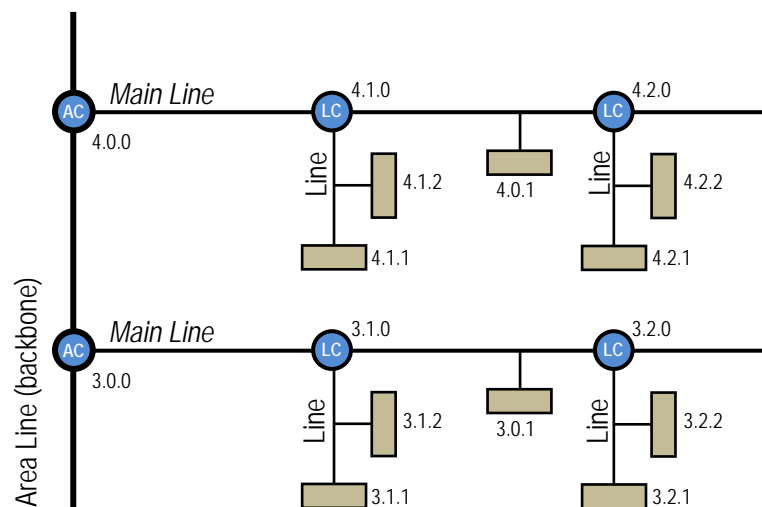


Figure 4 Line Coupling

On the other hand, Zennio KNX-IP Router / Interface PLess can be incorporated to the ETS project topology as any other device. This step is not compulsory if the default configuration meets the requirements of the integrator. However, should they require modifying any parameters the device must be assigned a physical address prior to downloading the new parameterisation.

Whatever the location in the topology, Zennio KNX-IP Router / Interface PLess offers an insulated coupling interface with the possibility, in the particular case of the Router, of **filtering the traffic** according to the topology or to group-address dependent criteria. In other words, Zennio KNX-IP Router PLess will (or will not) let telegrams pass from one medium to the other according to the parameterisation.

Note: *the individual address of a line coupler needs to be of the form **X.Y.0** (or **X.0.0** in case of working as a backbone coupler).*

2.2 TELEGRAM FILTERING

Note: *this functionality does not apply to Zennio KNX-IP Interface PLess.*

Zennio KNX-IP Router PLess provides two complementary filter types:

- **Group address filtering:** ETS automatically generates a group address table for the project loaded. This table is transferred to the line coupler during complete ETS downloads over it.

When a telegram containing a group address in the “destination address” field arrives, the line coupler will look up if such address exists in the group table, and eventually transmit the telegram to the other side –if the address is found– or drop (block) it –if it is not–.

Note: *making further changes to a project (addresses, etc.) requires downloading the updated filter table to the line coupler.*

Example: *if the line coupler has been parameterised to filter group addresses from both lines, when it receives a telegram from the mainline destined to a group address (e.g., 2/5/13) it will check that there is a device in the secondary line with objects that have been assigned such group address (or that such address has at least been marked in ETS to pass through the line coupler; see Figure 5). If so, then the line coupler will let it pass. Otherwise, it won't be transferred to the secondary line. The same would also apply to the inverse case (a telegram originating in the secondary line).*

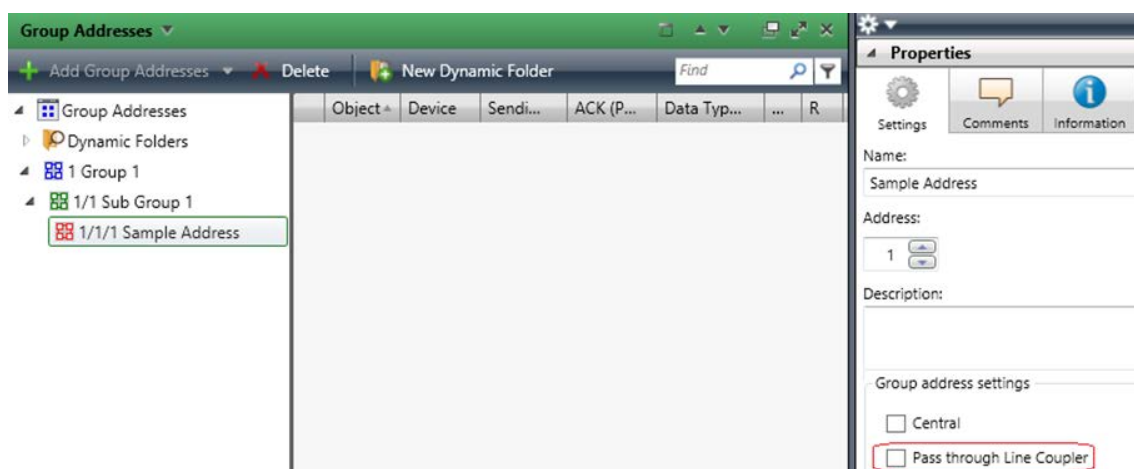


Figure 5 ETS Option to Force Passing a Group Address through the Line Coupler

- **Physical address filtering:** when the device receives a telegram where the destination address is a physical/individual address (for example, during downloads), it will compare such address with its own physical address (no particular filter table is required for physical address filtering, but a simple comparison).

The physical address of the line coupler determines the line it belongs to, which then, and according to the parameterisation, determines if the telegram will be routed or eventually dropped (blocked). This can be parameterised separately for the mainline and for the line.

Example: *in the example shown in Figure 4, if the coupler with address 3.2.0 reads a telegram on the mainline destined to a device with individual address 3.1.2, it will compare both addresses and conclude that 3.1.2 does not belong to the secondary line, and therefore not transmit it.*

Notes:

- *The device that sends a telegram needs to have been assigned a physical address that really corresponds to its line. In Figure 4, if the device with address 3.1.1 (a KNX programr, for instance) changes its address to 7.7.255, it will not be able to send telegrams to, for example, the device with address 4.0.1.*
- *As device programming consists in sending telegrams destined to a physical address, in order to perform downloads to a device in a certain line (for example, the device with address 4.1.1 in Figure 4) from a programr not in that line, it is necessary that the line coupler is configured to let pass all physical addresses from the main line.*

2.3 LED INDICATORS

Zennio KNX-IP Router / Interface PLess incorporates seven LED lights on the top of the device that make it easy to monitor the status of the buses and to detect typical communication problems, as detailed next.

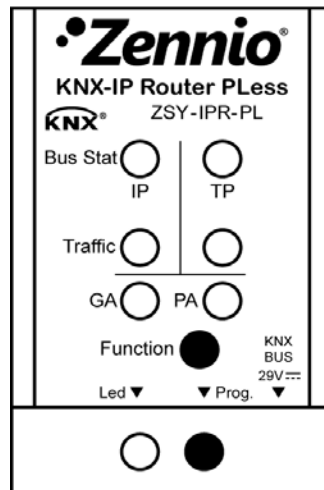


Figure 6 LEDs

- **Mainline (IP) Status LED:** shows the status of the primary bus.

- OFF: error or mainline not connected or not powered.
- ON (green) = Ethernet connection OK.
- ON (orange) = manual function in execution or factory reset preparation.

Note: *the LED colours are independent. It must be taken into account that when the green and red colours are on at the same time, the result colour is orange.*

The update of the LED status can be delayed a few seconds after the trigger event, e.g., after the disconnection of the main line.

- **KNX Line Status LED:** shows the status of the secondary bus.

- OFF: error or secondary line not connected.
- ON (green): OK
- BLINKING (green): boot mode (see section 2.5.3).

- ON (red): factory reset in execution (see section 2.4.2).

Note: *the LED colours are independent. It must be taken into account that when the green and red colours are on at the same time, the result colour is orange.*

● **Mainline (IP) Traffic LED:** shows the traffic status in the Ethernet.

- BLINKING (green): traffic.
- OFF: no traffic.
- ON (red): errors in the transmissions.

● **KNX Line Traffic LED:** shows the traffic status in the secondary bus.

- BLINKING (green) = traffic.
- OFF = no traffic.
- BLINKING (red) = errors in the transmissions.

● **Group Address (GA) Filter Status LED:** shows the current configuration of the group address routing:

- OFF: different configuration for the Ethernet and the secondary lines.
- ON (green): filtering active.
- ON (red and green = orange): all group addresses routed (filtering disabled).
- ON (red): all group addresses blocked.

Note: *these LEDs are non-functional in Zennio KNX-IP Interface PLess.*

● **Physical Address (PA) Filter Status LED:** shows the current configuration of the individual address routing:

- OFF: different configuration for the Ethernet and the secondary lines.
- ON (green): filtering active.

- ON (red and orange = yellow): all physical addresses routed (filtering disabled).
- ON (dark orange): all physical addresses blocked.

Notes:

- *These LEDs are non-functional in Zennio KNX-IP Interface PLess.*
- *Please be careful not to confuse yellow and dark orange.*

● **Physical Address (PA) programing LED:**

- OFF = normal operation.
- ON (red) = programing mode active.
- BLINKING (red) = Ethernet cable disconnected.

Please refer to section 3 for a detailed explanation of the different behaviours and parameterisations of the **Zennio KNX-IP Router / Interface PLess** application program.

2.4 MANUAL FUNCTION BUTTON

Zennio KNX-IP Router / Interface PLess features an additional pushbutton on the top cover, next to the status LEDs (see (5) in Figure 2), which permits:

- Activating the **Manual Operation Mode** (see section 2.4.1), only in Zennio KNX-IP Router PLess.
- Performing a hard reset to the **factory defaults** (see section 2.4.2).
- Authorising a **firmware update** (see section 2.5.3).

2.4.1 MANUAL OPERATION MODE

Note: *this functionality does not apply to Zennio KNX-IP Interface PLess.*

A **three-second press** on this button will set the device in manual mode, which will activate a customisable manual function and will turn the main bus status LED orange or red (depending on the previous status of the LED: green or off). Depending on the parameterised manual function, other LEDs may also change their colours.

If the manual function button is pressed again for three seconds (or if the parameterised fall-back timer expires), the device will leave the manual mode and **recover the normal mode**. Note that switching from the normal mode to the manual mode and then back to the normal mode does not cause the loss of the parameters or filter tables previously downloaded.

In the application program of the device, the available manual functions are:

- Disabled,
- Pass all telegrams,
- Pass physical telegrams,
- Pass group telegrams.

Please refer to section 3 for the parameterisation in ETS of the manual function and for a detailed description of the different options.

2.4.2 HARD RESET TO FACTORY DEFAULTS

The manual function button permits performing a hard reset of the device, which will set it back to the factory default state, including the initial **individual address**. The default parameters of the device are:

- **Physical address:** 15.15.0.
- **Host name:** KNX-IP router (see section 3.1).
- **DHCP** activated.
- **KNX Multicast address:** 224.0.23.12 (see section 3.3).
- “Transmit all” for **group telegrams** and **physical telegrams**.

These are the steps to restore the factory settings:

- Press the manual function button for at least 15 seconds. The main line, KNX line, and group filter state LEDs will light in orange (or red if they were not green previously) and the physical address filter state LED will turn yellow (or orange if it was not green previously).
- Release the manual function button and press it again for about 5 seconds. The device will be then automatically reset.

Note: *keep in mind that, before entering the reset mode (~15s press), the device will first enter the manual function mode, which will also make some LEDs change.*

2.5 WEB INTERFACE

Zennio KNX-IP Router PLess provides a web interface for **consulting the device configuration, activating the programming mode or updating the firmware.**

The web interface can be accessed through port 8080 of the IP address of the device. For example, if the IP address is 192.168.1.222:

- <http://192.168.1.222:8080>

The following URLs (where “xxxxxx” refers to the last six digits of the MAC address of the device) will be equivalent:

- **Zennio KNX-IP Router PLess:** <http://KNX-IPrt-xxxxxx:8080>.
- **Zennio KNX-IP Interface PLess:** <http://KNX-IPif-xxxxxx:8080>.

The **IP address** of the device can be easily obtained in ETS as long as the device belongs to the same LAN segment than the PC. On the other hand, the **MAC address** must be printed on the cover of the device.

Note: Zennio KNX-IP Router PLess allows using port 80 instead of 8080 by enabling it in parameters. In such case, it can be omitted from the access URL.

2.5.1 DEVICE INFO

The “Device Info” tab in the web interface contains general information about the current settings of the device, as Figure 7 shows.

Device Information	
Device Info	Status: normal operation
KNX	DHCP: true
	IP Address: 192.168.1.231
Update	Subnet Mask: 255.255.255.0
	Gateway: 192.168.1.1
	DNS: 80.58.61.250
	Http Port: 8080
	MAC Address: D0-76-50-00-07-4D
	Hostname: KNX-IPRT-00074D
	Description: KNX-IP router
	UDN: uuid:1f6b0c5e-1f6b-0c3a-4a51-d0765000074d
Application SW version: 2.0.4	
Bootloader SW version: 2.2	

Figure 7 Web interface (Device Info).

2.5.2 KNX

Under the “KNX” tag, it is possible to obtain information about the KNX (TP) line and to perform some actions (e.g.: activate the programming led).

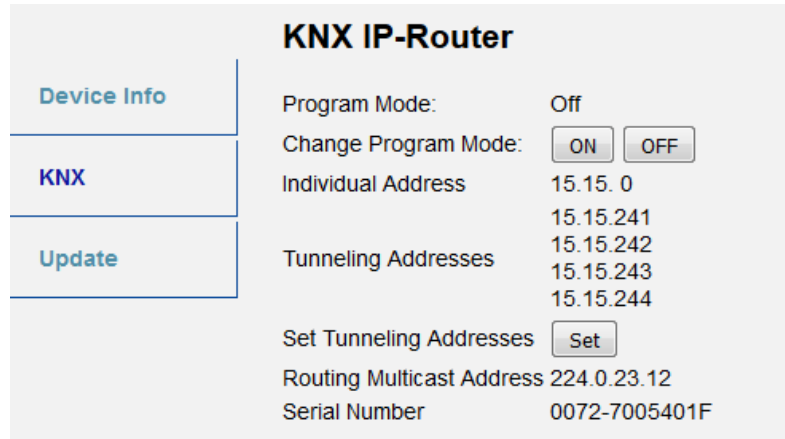


Figure 8 Web interface (KNX line info)

- Program Mode: shows whether the programming mode (and therefore the programming LED) is on or off.
- Change Program Mode: activates or deactivates the programming mode, and therefore the programming LED.
- Individual Address: shows the individual address of the device.
- Tunneling Addresses: shows the additional individual addresses for the tunneling function (see section 2.5.2.1).
- Set Tunneling Addresses: allows defining additional individual addresses for the tunneling function (see section 2.5.2.1).
- Routing Multicast Address (only in **Zennio KNX-IP Router PLess**): shows the IP address the KNX telegrams are sent to or received from in the LAN network. It can be configured in ETS.
- Serial number: shows the internal serial number of the device.
- KNX Busload (only in **Zennio KNX-IP Router PLess**): shows a graph that reflects the KNX bus load in the past 60 minutes. The red curve represents the local maximum while the green one indicates the local average load on the KNX bus.

Note: this function requires a web browser that supports the SVG (Scalable Vector Graphics) format.

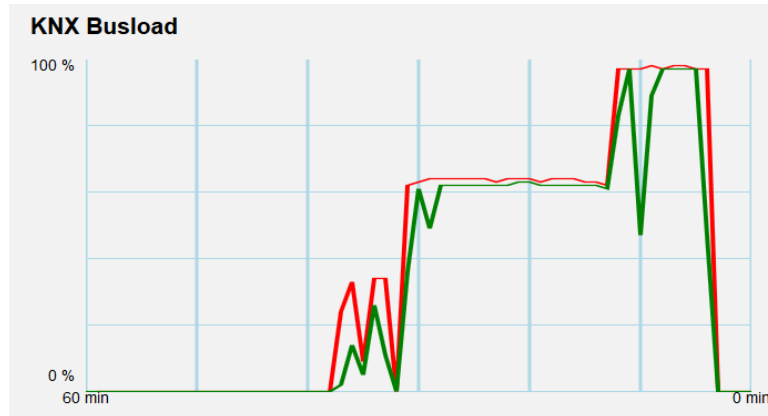


Figure 9 Web interface (KNX bus load)

2.5.2.1 ADDITIONAL INDIVIDUAL ADDRESSES (TUNNELING ADDRESSES)

Zennio KNX-IP Router / Interface PLess requires a specific individual address when acting as a programming interface (*tunneling*) other than the address it is assigned to perform as a coupler. Up to four simultaneous connections are possible, which implies that up to four different individual addresses must be configured.

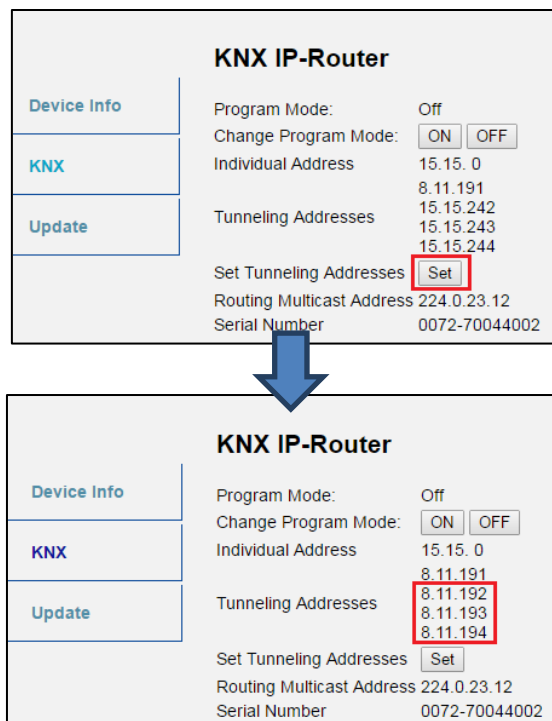


Figure 10 Set tunneling addresses in web interface.

The “KNX” tab in the web interface shows the four tunneling individual addresses currently configured. As shown in Figure 10, it is possible to modify them by pressing

on the “Set” button. This will assign the desired value to the first address, and the immediately consecutive values to the other three addresses.

Finally, the tunneling address to be used for downloads must be set in ETS as shown in Figure 11.

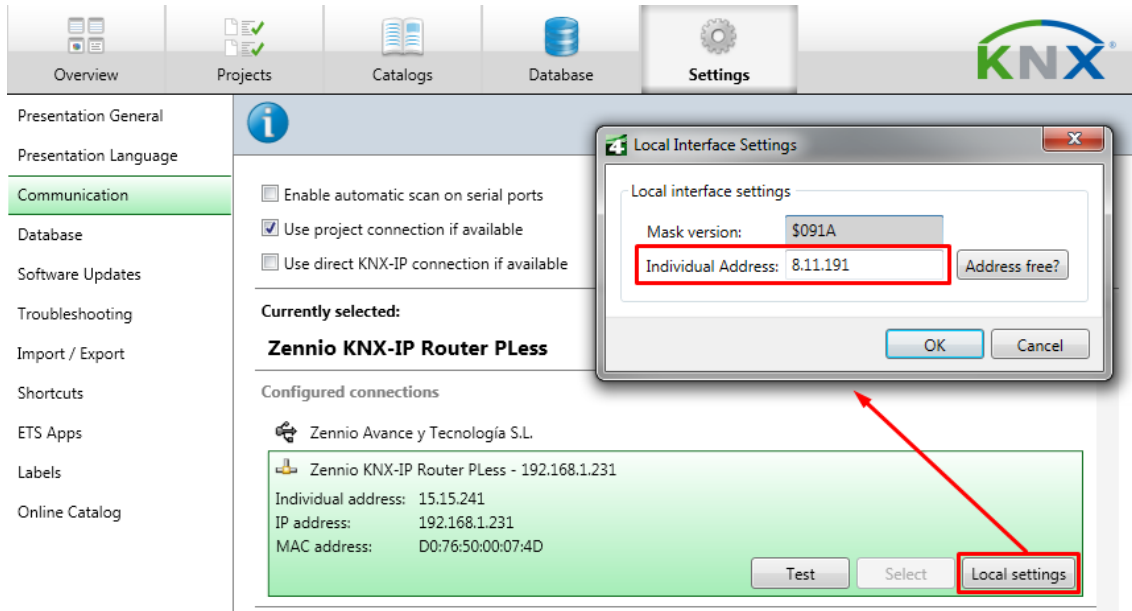


Figure 11 Set tunneling address in ETS.

2.5.3 FIRMWARE UPDATE

The “Update” section of the web interface permits updating the internal firmware of the device whenever Zennio releases a new firmware version (through the <http://www.zennio.com> website) by following these steps (please see Figure 12):

- **Authorise the update:**
 - Set the device into the programming mode.
 - Press the manual function button.
 - Wait for the “update authorized” message on the screen.
- **Request the update:**
 - From the “**Update**” section, press the “Request Update” button, and wait until the device reboots and enters Boot mode.
- **Upload the firmware:**
 - Browse for the hexadecimal file.
 - Press the “**Upload**” button.

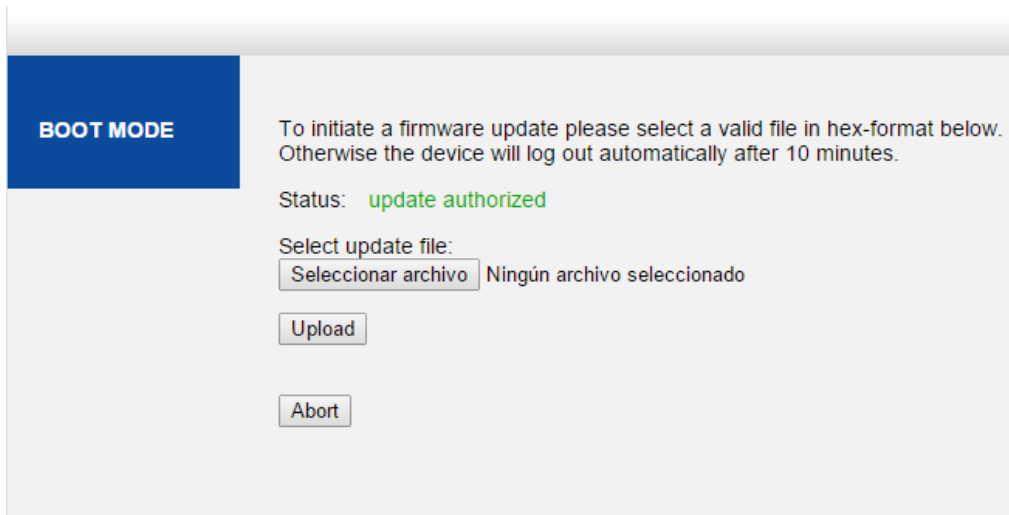


Figure 12 Web interface (firmware update).

After the second step (update request), the device switches to Boot mode, which interrupts the normal device operation (telegram filtering, etc.), being no longer possible to connect to it. It will remain in this mode for **ten minutes** to allow the firmware update before returning to the normal mode.

During the Boot mode' the TP line status LED indicator blinks in green.

Notes:

- *The Boot mode can be alternatively accessed by disconnecting the power supply and re-connecting it while pressing the Programming or the Manual Function buttons, or both together.*

3 ETS PARAMETERISATION

To begin with the parameterisation process of the device, it is necessary, once the ETS program has been opened, to import the database of the product (**Zennio KNX-IP Router PLess** or **Zennio KNX-IP Interface PLess** application programs).

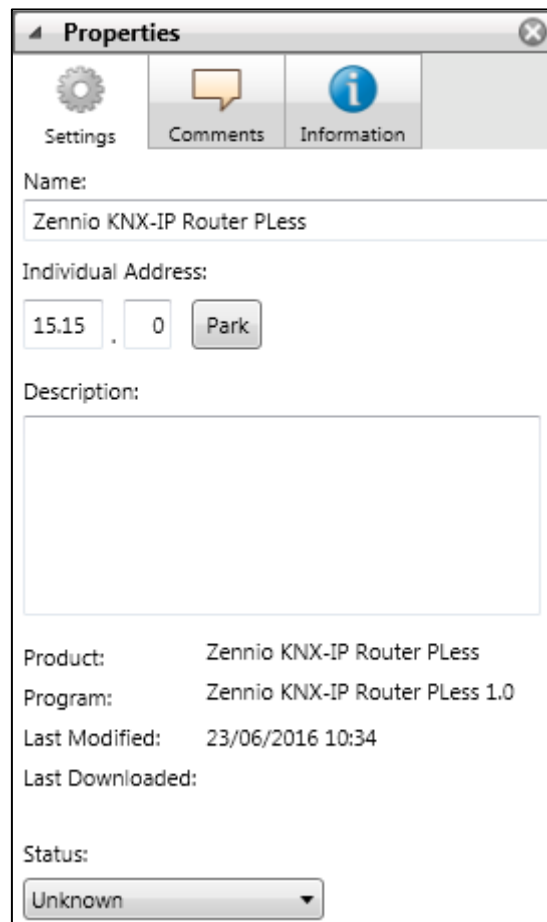


Figure 13 Properties of the Zennio KNX-IP Router PLess Application Program

Next, the device should be added to the project where desired. Note that, depending on where the device is placed, the upper levels of the topology need to be **configured as KNXnet / IP**:

- The **backbone line**, in case of working as an area coupler.
- The **backbone line** and the **main line of the area** the device belongs to, in case of working as a line coupler.

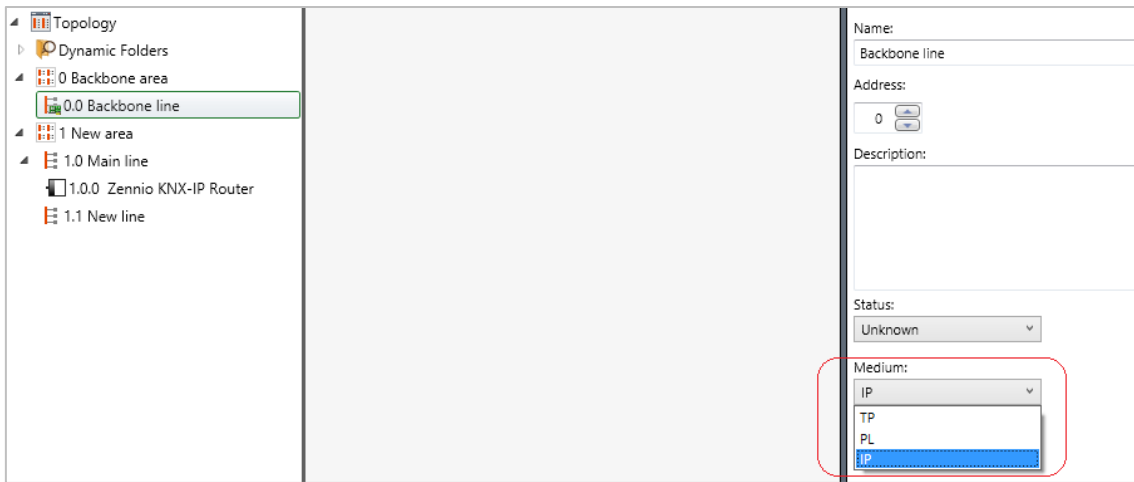


Figure 14 Zennio KNX-IP Router / Interface PLess as an Area Coupler.

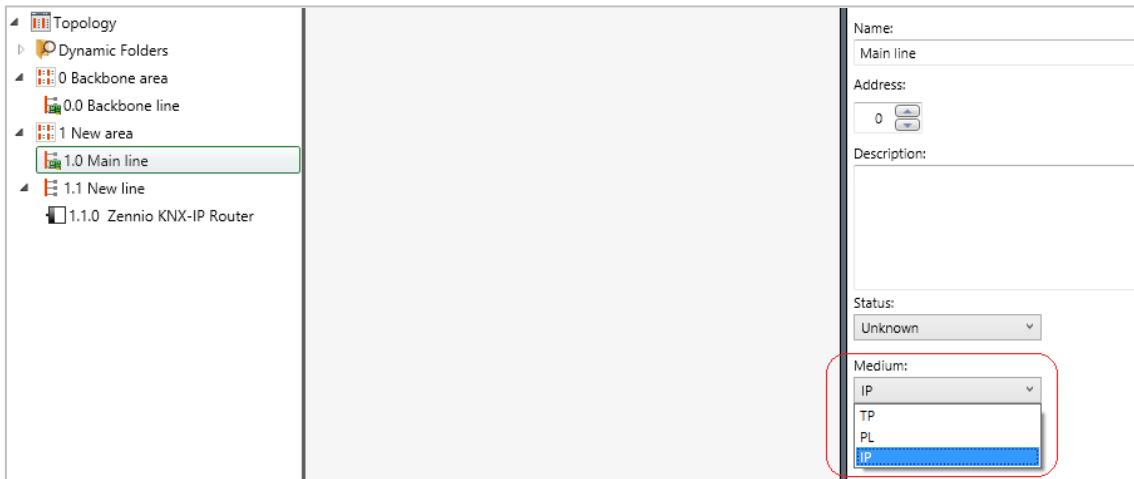


Figure 15 Zennio KNX-IP Router / Interface PLess as a Line Coupler.

Finally, clicking on the device with the secondary mouse button will permit selecting **"Edit Parameters"**, in order to start the configuration.

The following sections provide a detailed explanation about each of the different parameters of the device.

Note: *Zennio KNX-IP Router / Interface PLess does not require any communication objects.*

3.1 GENERAL

When entering the parameter edition of Zennio KNX-IP Router / Interface PLess for the first time, a window similar to Figure 16 will be shown.

Figure 16 General.

As shown in Figure 16, this screen contains the following parameters:

- **Host Name:** string of up to 30 characters to easily identify the device in ETS or from a KNXnet/IP system.
- **Enable Slow Connections** (only in Zennio KNX-IP Router PLess): allows slow connections between ETS and the device.
- **Fallback Time for Manual Operation** (only in Zennio KNX-IP Router PLess): sets the maximum operation time for the manual mode. Once exceeded, the device will automatically leave manual mode and return to normal mode. The available values are: “10 minutes”, “1 hour” (default), “4 hours” and “8 hours”.
- **Manual Function** (only in Zennio KNX-IP Router PLess): sets the desired function to be executed by the device while in the manual mode. The available values are:
 - “Disabled” (no action),
 - “Pass all telegrams” (default option; the device will not filter/drop any telegram transferred from one line the other),
 - “Pass physical telegrams” (the device will not filter/drop physical addresses; in other words, all telegrams destined to physical addresses will be transmitted while in manual mode; on the other hand, group telegram filtering will stay the same as in normal mode),

- “Pass group telegrams” (the device will not filter/drop group addresses; in other words, the group address filter table will stay *disabled* while in manual mode; on the other hand, physical address filtering will stay the same in normal mode).

In addition to the General screen, some additional tabs are available in the tree on the left. The parameters they contain are described in the next sections.

3.2 IP CONFIGURATION

General	HTTP Port	8080
IP Configuration	DHCP	Do Not Use
KNX Multicast Address	IP Address	0.0.0.0
Main Line	Net Mask	255.255.255.0
Sub Line	Gateway	0.0.0.0
	DNS	0.0.0.0

Figure 17 IP Configuration tab – DHCP: do not use.

Zennio KNX-IP Router / Interface PLess is provided with the **DHCP protocol** enabled by default, and therefore can gain an IP address automatically as long as a DHCP server is available in the local network. From ETS, it is possible to disable the use of the DHCP **and manually set an IP address** for the device, as well as the subnet mask, the IP address of the network gateway and that of the DNS server. Thus, it is advisable to contact the manager of the local network.

Notes:

- To make this configuration effective, after the download from ETS it is necessary to **interrupt the external power supply of the device for an instant**, and afterwards restore it.
- A **wrong configuration of these parameters** (e.g., IP address “0.0.0.0” or subnet mask “0.0.0.0”) may leave the device locked, with the LAN traffic status LED lighting in red colour. To exit this status, it is necessary to disconnect the Ethernet cable and restore the factory defaults (section 2.4.2).

In the particular case of Zennio KNX-IP Router PLess, an option is also provided to select the desired **access port to the web interface**: “8080” (by default) or “80”.

3.3 KNX MULTICAST ADDRESS

Note: *this functionality does not apply to Zennio KNX-IP Interface PLess.*

Telegrams sent from the KNX bus to the IP network, or vice versa, travel through the latter as multicast IP packets, addressed to port 3671 at IP address number **224.0.23.12** so that they reach all KNX-IP interfaces available on the network.

Such address is reserved by the IANA organisation for the KNXnet/IP protocol, and should only be changed in parameters (Use Default Multicast Address = “**No**”) in case the network configuration requires it or to create different, independent topologies within the same IP network.

Otherwise, it should be left as is (Use Default Multicast Address = “**Yes**”)

Figure 18 KNX multicast address configuration tab.

3.4 MAIN LINE

Note: *this functionality does not apply to Zennio KNX-IP Interface PLess.*

Figure 19 Main Line tab.

This screen permits parameterising the behaviour of Zennio KNX-IP Router PLess regarding the telegrams received from the main line (Ethernet).

The available parameters are described next:

- **Configuration:** permits selecting a predefined set of parameters for the mainline, or enabling the manual configuration of each parameter (option “Configure”). The available options are:
 - “Groups: filter; Physical: block” (enables the group address filtering and drops all telegrams destined to physical addresses),
 - “Groups, Physical: filter” (default option; enables both the group address and the physical address filtering),
 - “Groups: route; Physical: filter” (performs no blocking or filtering over the group address but does filter telegrams destined to physical addresses),
 - “Groups, Physical: route” (performs no telegram filtering or dropping at all).

Note: *transmitting all telegrams (no telegram filtering or dropping) is intended for diagnostic purposes and may cause risks or conflicts or generate a large amount of traffic in the KNX installation if permanently activated.*

(The following parameters will be locked unless “Configure” has been selected under “Configuration”).

- **Group Telegrams:** sets the behaviour of the device regarding telegrams destined to group addresses. The available options are:
 - “Transmit all” (no telegram filtering or dropping),
 - “Block” (all telegrams will be dropped),
 - “Filter” (default option; telegrams will be filtered, dropping only the corresponding ones, according to the filter table; see section 2.2).

Note: *transmitting all telegrams (no telegram filtering or dropping) is intended for diagnostic purposes and may cause risks or conflicts or generate a large amount of traffic in the KNX installation if permanently activated.*

- **Main Group Telegrams > 13:** sets the desired action to perform over telegrams destined to group addresses beginning with “14” or greater (e.g., 14/1/1). The options are “Filter” (default option), “Transmit all” and “Block”.

- **Physical Telegrams:** sets the behaviour of the device regarding telegrams destined to individual addresses. The available options are:
 - “Transmit all” (no telegram filtering or dropping),
 - “Block” (all telegrams will be dropped),
 - “Filter” (default option; telegrams will be filtered, dropping the corresponding ones; see section 2.2).

Note: *transmitting all telegrams (no telegram filtering or dropping) is intended for diagnostic purposes and may cause risks or conflicts or generate a large amount of traffic in the KNX installation if permanently activated. However, being able to **perform downloads** to devices in a different line than the program requires setting this option to “Transmit All”.*

3.5 SUBLINE

Note: *this functionality does not apply to Zennio KNX-IP Interface PLess.*

This screen permits parameterising the behaviour of Zennio KNX-IP Router PLess regarding the telegrams received from the KNX line.

As shown in Figure 20, the available parameters are completely analogous to those in the “Main line” tab.

General IP Configuration KNX Multicast Address Main Line Sub Line	Configuration Group Telegrams Main Group Telegrams > 13 Physical Telegrams Physical: Repetition If Errors on Sub Line Group: Repetition If Errors on Sub Line Telegram Confirmations on Sub Line Send Confirmation on Own Telegrams Configuration from Sub Line	Groups, Physical: Filter Filter Filter Filter Normal Normal If Routed No Enable
-------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------

Figure 20 KNX line configuration tab.

Please refer to section 3.4 for a detailed description of these parameters; taking into account that section 3.4 applies to the main line instead of the line.

The following parameters are specific for the line (they are not available for the main line):

- **Physical: Repetition if Errors on Sub Line:** sets the desired reaction upon transmission errors in the line (e.g.: busy receiver, acknowledgement not received, negative acknowledgement, etc.) of telegrams destined to physical addresses. The options are:
 - “No” (the undelivered telegram will not be re-sent),
 - “Normal” (default option; the undelivered telegram will be re-sent up to three times),
 - “Reduced” (the undelivered telegram will be re-sent once).

- **Group: Repetition if Errors on Sub Line:** sets the desired reaction upon transmission errors in the line (e.g.: busy receiver, acknowledgement not received, negative acknowledgement, etc.) of telegrams destined to a group address. The options are:
 - “No” (the undelivered telegram will not be re-sent),
 - “Normal” (default option; the undelivered telegram will be re-sent up to three times),
 - “Reduced” (the undelivered telegram will be re-sent once).

- **Telegram Confirmations on Sub Line:** sets when the device should confirm (by sending an immediate ACK message or IACK) the reception of telegrams.
 - “If routed” (default option) will make the device respond with an IACK message only if the received telegram is routed towards the mainline,
 - “Always” will make the device send a confirmation for every telegram it receives, even if not routed to the line on the other side.

- **Send Confirmation on Own Telegrams:** permits enabling (“Yes”) or disabling (“No”; default option) self-acknowledgment.

This extra feature offers the possibility of sending an ACK to the destination line immediately after passing the telegram itself, so the telegram will show as confirmed on it (therefore preventing repetitions in case of faulty projects, etc.) even if no device is receiving it. In case of reception errors on the destination line, negative ACKs sent by the devices will overwrite this ACK, so having this parameter enabled will cause no damage or information loss.

- **Configuration From Sub Line:** enables (default option) or disables performing ETS downloads over the Zennio KNX-IP Router from the subline. If disabled, programming this device from ETS will only be possible via IP.

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