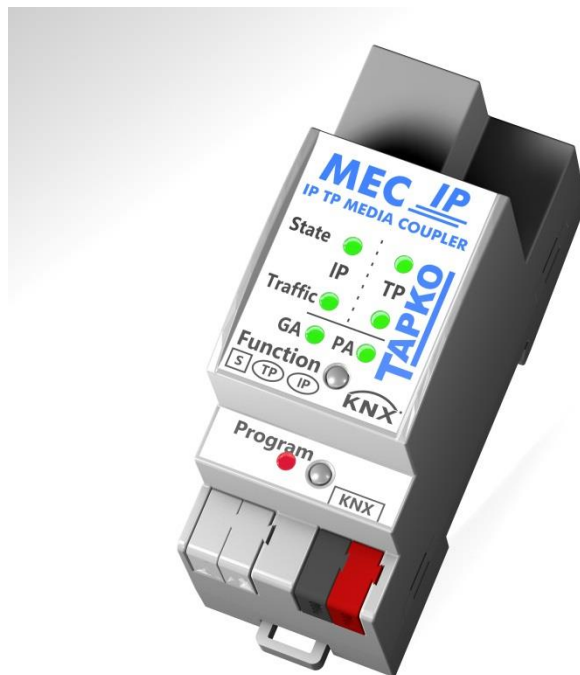


TAPKO

TECHNOLOGIES GMBH

DOCUMENTATION

MECip



TECHNICAL AND APPLICATION DESCRIPTION

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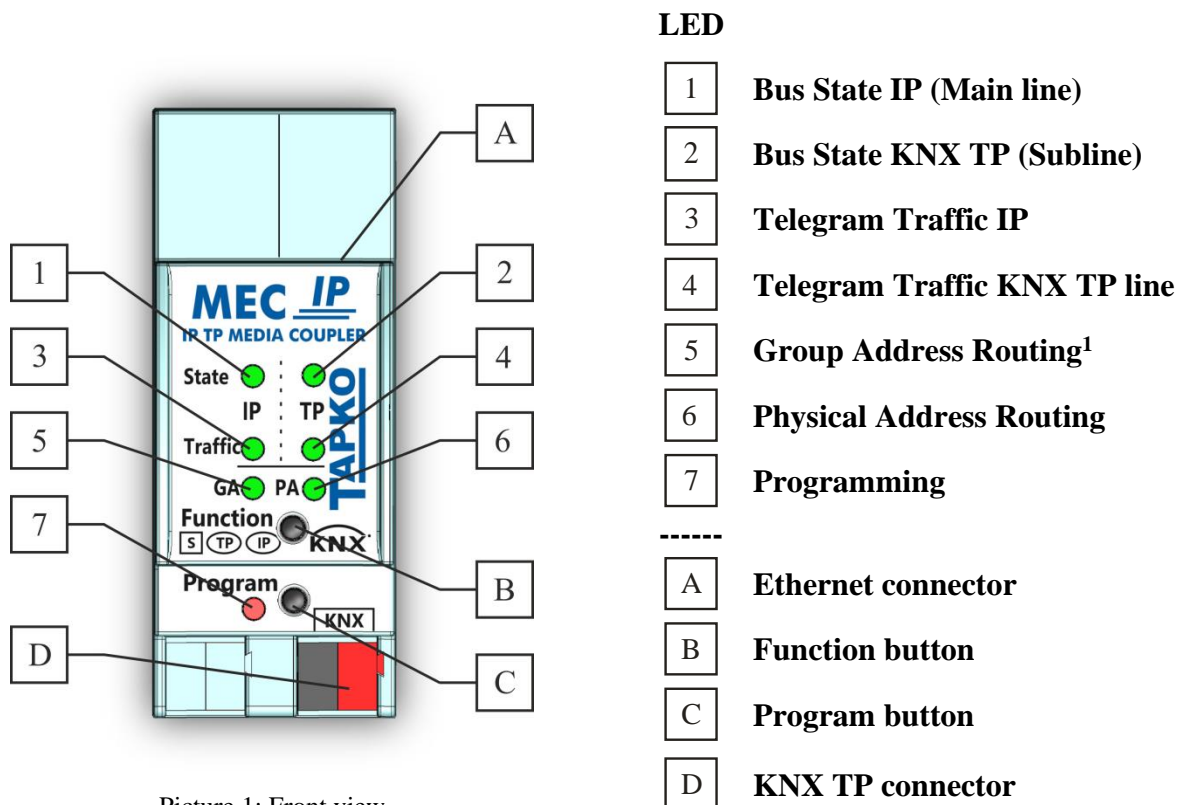
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2 MECip PRODUCT DESCRIPTION

The **MECip** works as line/backbone coupler to provide a data connection between the upper KNXnet/IP line (main line) and the lower KNX TP line (subline). Basic functionality of the **MECip** is to couple the Ethernet with one or more KNX TP lines featuring galvanic isolation between Ethernet and KNX TP line(s). Due to its flexibility the **MECip** can be used as a line coupler e.g. to connect several KNX TP lines via Ethernet. And it can be used as a backbone coupler to connect several TP areas or different TP installation systems via Ethernet. Main task of the **MECip** is to filter the traffic according to the installation place in the hierarchy (Physical[ly addressed] telegrams) or according to the built in filter tables for group communication (Group [oriented] telegrams).

With the ETS or any other KNX compatible commissioning tool the **MECip** also works as interface for programming. For this purpose the device provides up to four additional (physical) tunnelling addresses. The **MECip** has no KNX communication objects for itself.

TAPKO's **MECip** is a **Tunnelling** and **Routing** device. These features are described in the following sections in detail. The device front panel consists of seven LEDs and two buttons as illustrated below. The device offers a detailed internal diagnosis by displaying all **Operation Modes** states. LEDs show bus state, telegram traffic, errors/faulty communication NACK, busy on the bus, filter table state, etc.



Picture 1: Front view

¹ only group telegrams with main groups 0...13

3 TAPKO **MECip** HIGHLIGHTS

- The **MECip** is one of the rare KNX IP routers on the market that support the extended frame format and long telegrams up to **240 bytes (APDU)**. In combination with the TAPKO line coupler “**MECtp**” and the TAPKO USB interface “**UIMtp**” long messages are made possible (e.g. for energy metering applications).
- The **MECip** favourably replaces a line coupler or an area coupler. Using LAN as a fast medium to exchange telegrams between lines and/or areas is the great advantage.
- The TAPKO **MECip** works without external power supply.
- Providing tunnelling protocols and a connection point for the ETS (or any other tool to enable commissioning and monitoring) the ETS address for tunnelling is not necessarily the one that is already configured. Four parallel connections are possible, one separate address for each and every connection.
- IACK on own sent out messages (ETS configurable).
- After no IACK response on a sent message the **MECip** can repeat it up to three times. For physically addressed or for group addressed telegrams this can be configured via ETS independently. In case of an IACK response there will be no repetition. The failure mechanism of a negative IACK or BUSY is still maintained hereby.
- Programmable automatic switch on of the filter table after timeout.
- For a predefined amount of time (ETS configurable) it is possible to switch off the filter table with pressing a button on the device. So, without reconfiguring the device with the ETS the filter table can be switched off by a button press which is necessary for running fast diagnostics on site. Filtering of messages can temporarily be disabled by pressing the “Function” button. This eases commissioning and debugging of the system. Without an ETS download a temporary access to other lines is possible. After the timeout an automatic switching the filter table on is implemented (the timeout is configurable in the ETS). This avoids forgetting to reactivate the filter.
- UPnP is available to discover the device in the IP network. That is only possible with a proper network installation in terms of topology. With the KNXnet/IP Search Request the ETS can recognize the device as a communication interface.
- The WEB interface operations provide a set of informative settings and an opportunity to switch the device to program mode. With the Web front-end the firmware can be updated.
- For networks with a high bus load a high internal amount of communication buffers is suitable.
- The **MECip** is featuring a high internal amount of communication buffers being capable of smoothing peaks in the communication load course.
- The **MECip**’s ETS database entries are available for the ETS4 and upward.
- The **MECip** supports KNXnet/IP, ARP, ICMP, IGMP, HTTP, UPnP discovery, UDP/IP, TCP/IP, DHCP und Auto IP.

4 BASICS INFORMATION

4.1 TUNNELLING

The presence of the Internet Protocol (IP) has led to the definition of KNXnet/IP. KNXnet/IP provides the means for point-to-point connections like “KNXnet/IP Tunnelling” for ETS and/or between a supervisory system and a KNX installation.

The KNXnet/IP Device Management provides configuring KNXnet/IP devices via the KNX network effectively. Additionally, with this the time required for network configurations is reduced.

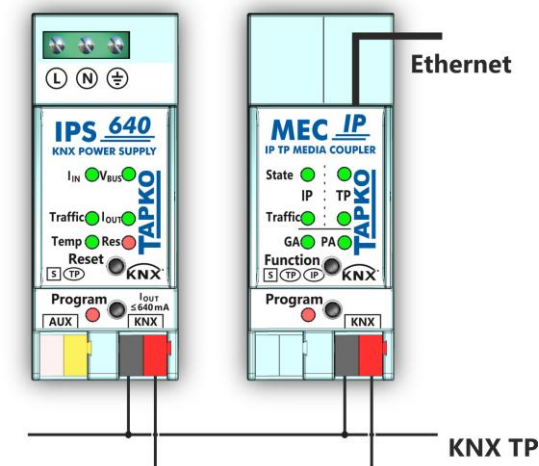
4.2 ROUTING

Routing is the way of interconnecting KNX lines or areas via IP network(s) using KNXnet/IP. In IP networks the KNXnet/IP Routing defines how KNXnet/IP routers communicate with each other.

4.3 KNX IP ROUTERS

The TAPKO *MECip* is a KNX IP router. KNX IP routers are highly similar to TP line couplers. The only exception is that they use the communication medium Ethernet as their main line. However, it is also possible to integrate KNX end devices via IP directly. This makes the Ethernet a KNX medium.

4.4 CONNECTION SCHEME



Picture 2: Connection Scheme

5 OPERATIONAL DESCRIPTION

The **MECip** features two operational modes, the “Normal Mode” and the “Boot Mode”. According either to the factory default settings or the latest parameter settings downloaded from ETS (also other tools) in “Normal Mode” the **MECip** operates as it is supposed to.

Please note for commissioning at delivery status with default settings:

- All telegrams are blocked because the filter table is not defined
- The switch-off time for the Manual Function is 120 min
- The physical address is 15.15.0

5.1 OPERATION MODES

5.1.1 NORMAL MODE

Number	LED	Colour	Explanation / Range
1	Bus State IP (Main line)	green	IP line OK
		red	Manual Function active
		< off >	No IP connection
2	Bus State KNX TP (Subline)	green	Subline OK
		< off >	Subline not connected
3	Telegram Traffic IP (Main line)	blinking green	Telegram traffic extent indicated by blinking (Speed up to 10 Mbit/s)
		blinking red	Transmission error
		< off >	No telegram traffic
4	Telegram Traffic KNX TP (Subline)	blinking green	Telegram traffic extent indicated by blinking
		blinking red	Transmission error
		< off >	No telegram traffic
5	Group Address Routing	green	Filter table active
		orange	Route all (mixed colour of green and red)
		red	Block all
		< off >	Routing of Group telegrams not the same between main line and subline
6	Physical Address Routing¹	green	Filtering active
		yellow	Route all (mixed colour of orange and green)
		orange	Block all
		< off >	Routing of Physical telegrams not the same between main line and subline
7	Programming	red	Program mode / Boot mode active
		blinking red	No Ethernet/KNX IP connection

¹ If the **MECip** is used as IP Router without physical address x.y.0 LED 6 (PA) works not like described here.

5.1.2 BOOT MODE

When operating in “Boot Mode”, it is possible to update the **MECip**’s firmware (see [Update](#)). For more detailed information please refer to the section [Web Front-End](#). In “Boot Mode”, LEDs 1, 2, 3, and 7 have the states as described here:

LED 1 Bus State IP	Keeps on lighting green
LED 2 Bus State KNX TP	Blinking green
LED 3 Telegram Traffic IP	Blinking green (not at the same tempo as LED 2)
LED 7 Programming	Keeps on lighting red

The device enters the “Boot Mode” in the following two situations:

- Reset of the application after a communication error on the IP line (Traffic IP line LED lighting red) by pressing the Function button for 15 seconds.
- Reset of the application by pressing the Function button for 15 seconds with having the Ethernet cable disconnected.

To exit the “Boot Mode” it is necessary to enter the [Update](#) tab in the [Web Front-End](#) and either update the firmware (if you have a new firmware available for your **MECip**) or reset the application by pressing the “Abort” button.

5.1.3 FUNCTION BUTTON

The Function button is used for two purposes; either to switch on the Manual Function or to do a factory reset. It depends on the current operation mode of the **MECip** and the duration of time this button is being pressed.

5.1.3.1 MANUAL FUNCTION

- **Long press (≈ 3 sec) in “Normal Mode”**
The default function is set by the IP line and the (KNX) line parameters. To configure the “Manual Function” and set the Fallback time use the parameter tab “General”. The latest downloaded setting (parameters) and filter table are still available after switch back from “Manual Function” to “Normal Mode”.

5.1.3.2 FACTORY RESET

- **Very long press (≈ 15s) in “Normal Mode”**
A factory reset is carried out by pressing the button for about 15 seconds (LEDs light with mixed colour). After release, pressing it again for some seconds resets all the parameters to factory default (incl. physical address). Subsequently, the LEDs change their status.
- **Rather long press (≈ 8s) in “Boot Mode”**
A factory reset is carried out by pressing the button for about 8 seconds (LEDs light green and after 2 seconds the LED Bus Stat KNX light red), then release. Even after a factory reset in this mode the **MECip** stays in the “Boot Mode”. For more details about the “Boot Mode” please refer to [Boot Mode](#).

5.1.4 PROGRAM BUTTON AND PROGRAMMING LED

- **In “Normal Mode”:**
To download the desired physical address and a full ETS setting the Program button must be pressed. Successive pressing on the Program button will lead to turn on and off the “Program Mode”. LED 7 lights in colour red. A blinking red Programming LED indicates that the Ethernet cable is not properly connected.
- **In “Boot Mode”:**
The Program button is used to switch the MECip to “Boot Mode”. For more details please refer to [Boot Mode](#). Even when being in “Boot Mode” a successive pressing of the Program button will lead to turn on and off the Programming LED.

5.2 KNX TELEGRAMS IN THE IP NETWORK

The MECip sends telegrams from/to the KNX to/from the IP network in accordance with the KNXnet/IP protocol specification. According to the default setting these telegrams are sent as multicast telegrams to the multicast IP address 224.0.23.12 port 3671. The multicast IP address 224.0.23.12 is the defined address for the KNXnet/IP from the KNX Association in conjunction with the IANA. This address should be preserved and used as defined. Only if it becomes necessary due to the existing network, it could be changed in the “General Parameters” as described in [KNX Multicast Address](#). Important to note:

- All KNX IP devices that are intended to communicate with each other via IP must have the same IP multicast address
- Multicast IP address 224.0.23.12 may need to be changed corresponding to the type of network and the setting of the network components
- IGMP (Internet Group Management Protocol) is used for the IP configuration to establish multicast group memberships
- If the IP address is changed from the IP side, it may sometimes happen that the ETS does not recognize the device anymore and the connection can no longer be established (tunnelling uses IP addresses)
- As a precaution, run a restart or change the IP address only from the TP side
- Please ask your administrator if problems occur for the IP Address assignment
- According to the topology, the additional physical addresses (for tunnelling) always have to be assigned in the range of subline addresses. For more information about additional tunnelling addresses please refer to [Tunnelling addresses \(Additional Physical Addresses\)](#)
- If a KNX/USB or KNX/IP interface is used to program a device of another line connected to a KNX IP Router, you should pay close attention to have the correct topology!

5.2.1 THE MECip IN A NETWORK INSTALLATION

In a network installation the MECip can either be used as a KNX area coupler or as a KNX line coupler.

5.2.2 THE MECip AS AN AREA COUPLER

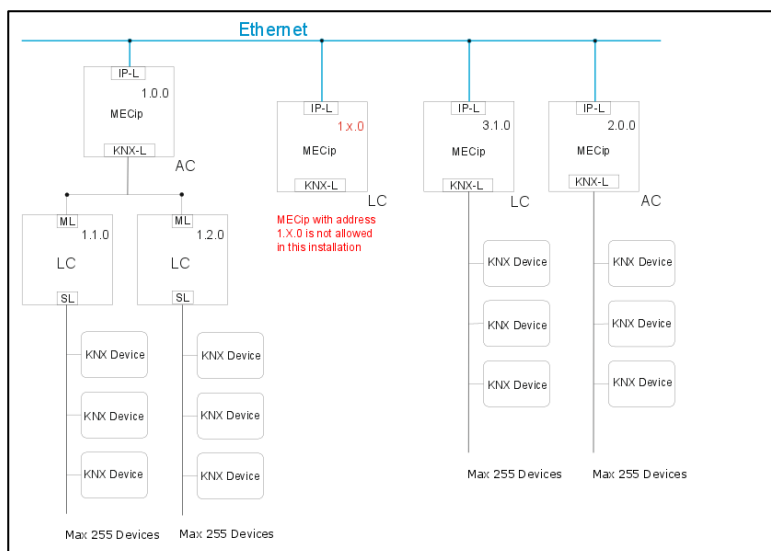
The MECip can replace an **area coupler** in a KNX network. For this purpose it must receive the physical address of an area coupler (X.0.0, $1 \leq X \leq 15$). In the ETS up to **15 areas** can be defined with area couplers.

5.2.3 THE MECip AS A LINE COUPLER

The MECip of a KNX network can assume the functionality of a **line coupler**. For this purpose it must have the physical address of a line coupler (X.Y.0, $1 \leq X \text{ \& } Y \leq 15$). In the ETS up to **225 lines** can be defined (from 1.1.0 to 15.15.0).

5.2.4 THE MECip IN A MIXED SYSTEM

If it is necessary in a KNX system to use the MECip at one point as an **area coupler**, e.g. office or home complex, and at another point as a **line coupler**, e.g. a remote underground garage or a pool; this is possible. It is only necessary to ensure that the MECip used as a line coupler uses a line coupler address from a free addressing area. The following picture best illustrates the topology with MECip routers as area and/or line couplers. Special attention needs to be paid that if a MECip area coupler with address “1.0.0” already exists in the installation, no other MECip line coupler (or any other KNX IP router) with address “1.X.0, $1 \leq X \leq 15$ ” is allowed to be used in that network, and of course vice versa, if a MECip line coupler with address “1.1.0” already exists in the installation, no other MECip area coupler (or any other KNX IP router) with address “1.0.0” is allowed to be used in that network.



A direct connection between two MECips is possible as well. In this case, the AutoIP will assign each MECip an IP address and the two MECips will communicate either via a normal or a crossed network cable.

- IP-L: IP backbone line
- KNX-L: KNX TP line
- AC: Area coupler
- LC: Line coupler
- ML: TP Area (main line)
- SL: TP Line (subline)

Picture 3: Mixed system

6 IP COUPLER APPLICATION DESCRIPTION

When the coupler receives telegrams (for example during commissioning) that use physical addresses as destination addresses, it compares the physical addresses of the receiver with its own physical address and then decides whether it has to route the telegrams or not.

Due to telegrams with group addresses the coupler reacts in accordance with its parameter settings. During normal operation (default setting), the coupler only routes those telegrams whose group addresses have been entered in its filter table.

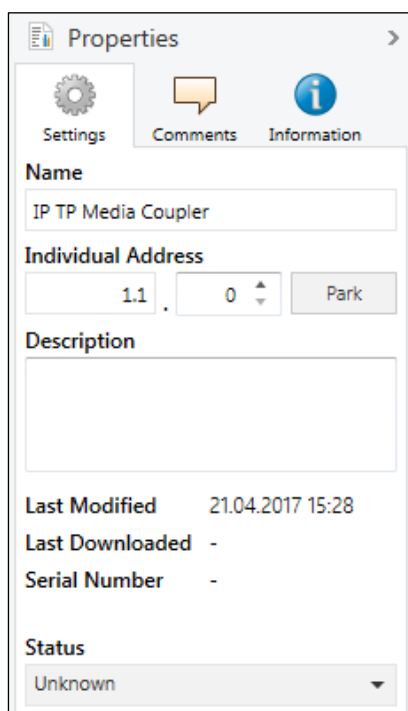
If the coupler routes a telegram and does not receive an acknowledgement, or if a bus device discovers a transmission error, the coupler repeats the telegram up to three times (depending on the corresponding parameter that is set to the device through the last ETS download). With the parameters „Repetitions if errors...“, this behaviour can be set separately for both lines. These parameters should stay with the default setting.

Note: The ETS does not provide an unload procedure for applications.


7 ETS PARAMETERS

All screen shots of this chapter show the **MECip**'s database entries of the ETS5 version.

7.1 PHYSICAL ADDRESS ASSIGNMENT



Picture 4: Properties window

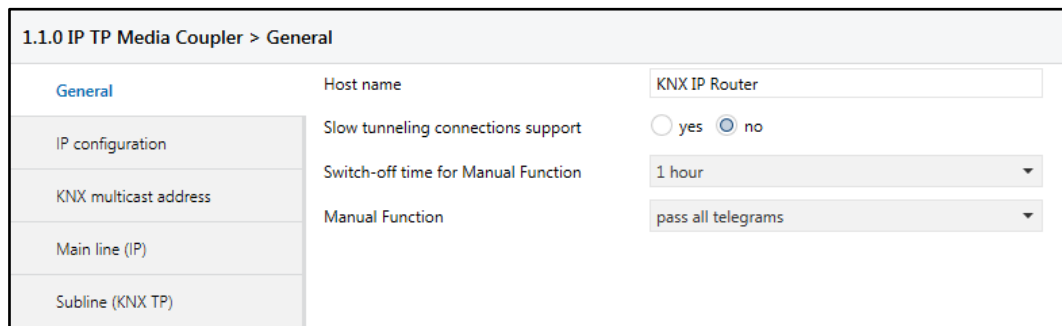
With the ETS the physical address can be assigned to the device by setting the desired address in the properties window of the ETS. To download the desired physical address and a full ETS setting into the device the Program button  has to be pressed. The Program button puts the device into “Program Mode”. After starting the download and pressing the programming button the device restarts itself.

To commission the device an interface connection (IP, USB) to the KNX bus system is required. The device is supplied with the individual physical address 15.15.0. The KNX product database entry (available for ETS4 and higher) can be downloaded from the TAPKO website and the KNX Online Catalog.

Note: In this document only the term “physical address” is used. The term “physical address” means the physical address as well as the individual address. Both terms are used by the KNX organisation interchangeably.

7.2 GENERAL

If the host name is changed by an ETS4 download, a manual restart (bus disconnection, reset of the line, etc.) is recommended to take over this change.

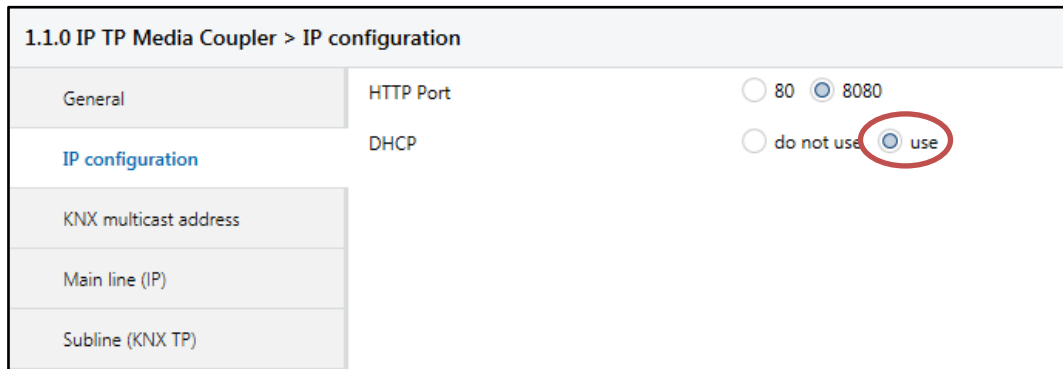


Picture 5: General

ETS Text	Selection [Factory default]	Comment
Host name	<30 Characters allowed> [KNX IP Router]	Field to enter the device name providing an easy search of the device with the ETS or with a KNXnet/IP visualisation system.
Slow tunnelling connections support	yes no [no]	Enable to support slow tunnelling connections.
Switch-off time for Manual Function	10 min, 1 hour, 4 hours, 8 hours [1 hour]	After expiry of this time period the “Manual Function” is switched off automatically.
Manual Function	disabled pass all telegrams pass all Physical telegrams pass all Group telegrams [pass all telegrams]	Configuration setting for telegram routing when the “Manual Function” is activated.

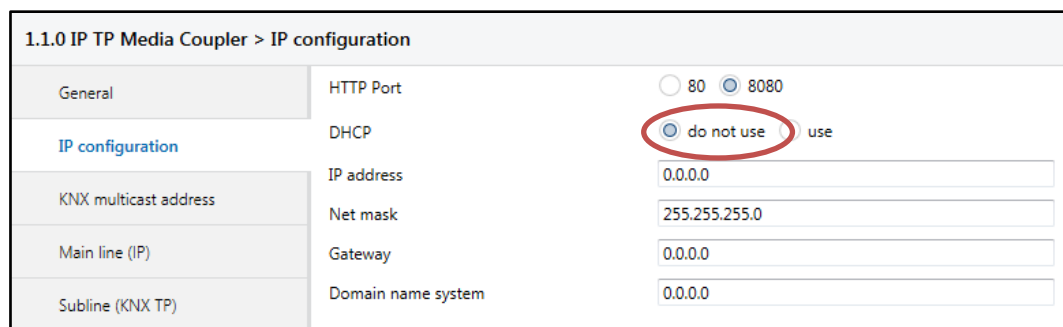
7.3 IP CONFIGURATION

After downloading the IP configuration a manual restart (bus disconnection, reset of the line, etc.) has to be executed. Generally, after an ETS download the IP address is not updated. It is essential doing a manual device restart to get all IP configuration parameters updated.



Picture 6: IP configuration

ETS Text	Selection [Factory default]	Comment
HTTP Port	80 8080 [8080]	Select one of the two official system ports.
DHCP	do not use use [use]	If DHCP is used, no IP parameters have to be set. If DHCP is not used, set following parameters manually (see table below).

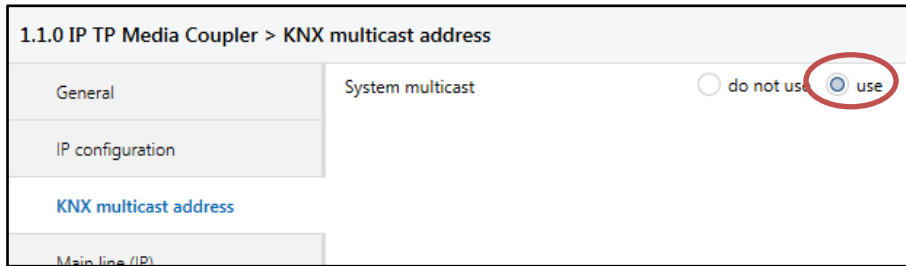


Picture 7: Manual IP configuration

ETS Text	Selection [Factory default]	Comment
IP address	0-255.0-255.0-255.0-255 [0.0.0.0]	IP Byte 1 to 4: manual input.
Net mask	0-255.0-255.0-255.0-255 [255.255.255.0]	NM Byte 1 to 4: manual input.
Gateway	0-255.0-255.0-255.0-255 [0.0.0.0]	GW Byte 1 to 4: manual input.
Domain name system	0-255.0-255.0-255.0-255 [0.0.0.0]	DNS Byte 1 to 4: manual input

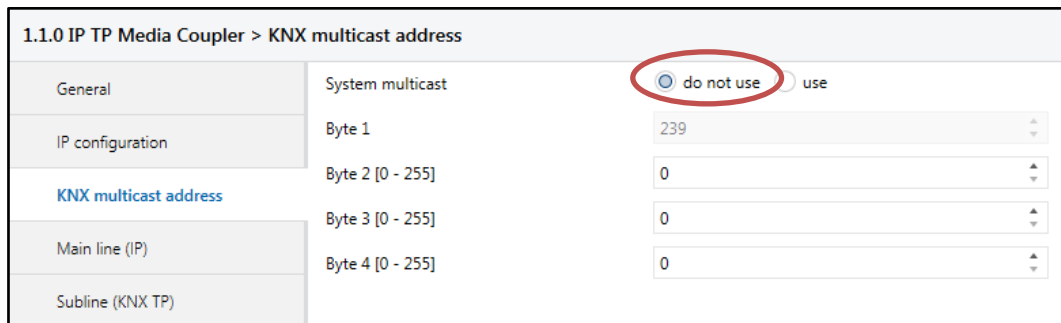
7.4 KNX MULTICAST ADDRESS

The multicast address **224.0.23.12** is the defined address for the KNXnet/IP from the KNX Association in conjunction with the IANA. Only change this address if it becomes necessary due to the existing network. Please make sure that during commissioning all KNX IP devices intended to communicate with each other via IP use the same IP routing multicast address. After downloading the multicast address a manual restart has to be executed.



Picture 8: System multicast

ETS Text	Selection [Factory default]	Comment
System multicast	do not use use [use]	If "use" is selected the multicast address is predefined: 224.0.23.12 .

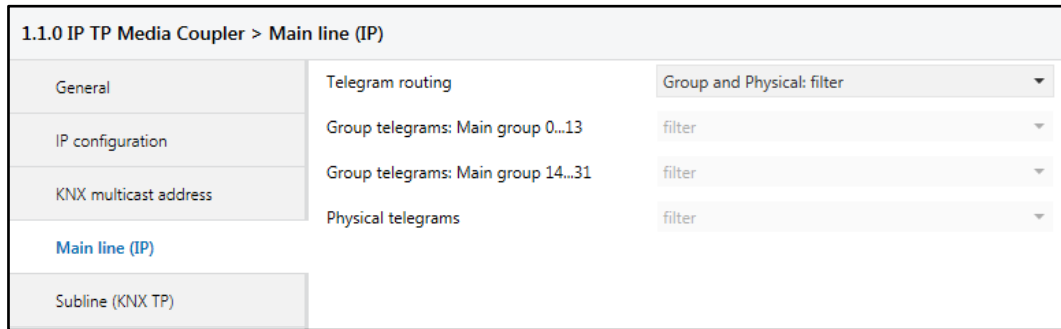


Picture 9: Project specific setting of multicast address

ETS Text	Range [Default value]	Comment
System multicast	do not use use [use]	If "do not use" is selected, the multicast address <u>has to be</u> defined manually.
Byte 1 (of the IP address)	224 (System), 239 [239]	If System multicast address is used, "224" is permanently set. If System multicast address is not used, "239" is permanently set.
Byte 2 [0 - 255] (of the IP address)	0-255 [0]	Can only be set manually if System multicast address is not used.
Byte 3 [0 - 255] (of the IP address)	0-255 [23]	Can only be set manually if System multicast address is not used.
Byte 4 [0 - 255] (of the IP address)	0-255 [12]	Can only be set manually if System multicast address is not used.

7.5 MAIN LINE (IP)

For Group telegrams and Physical telegrams the selection “transmit all” is intended only for testing purposes. **Please do not use for normal operation.**



Picture 10: Main line (IP) configuration setting

ETS Text	Selection [Factory default]	Comment
Telegram routing	Group: filter, Physical: block Group and Physical: filter Group: route, Physical: filter Group and Physical: route configure [Group and Physical: filter]	- block : no telegrams are routed. - filter : only telegrams entered in the filter table are routed. - route : all telegrams are routed. - configure : the following parameters can be set manually.
Group telegrams: Main group 0...13	1. transmit all (not recommended) 2. block 3. filter [filter]	1. Group telegrams (with main group 0...13) are routed. 2. Group telegrams (with main group 0...13) are not routed. 3. Group telegrams (with main group 0...13) are routed if they are entered in the filter table.
Group telegrams: Main group 14...31	1. transmit all (not recommended) 2. block 3. filter [filter]	1. Group telegrams (with main group 14...31) are routed. 2. Group telegrams (with main group 14...31) are not routed. 3. Group telegrams (with main group 14...31) are routed if they are entered in the filter table.
Physical telegrams	1. transmit all (not recommended) 2. block 3. filter [filter]	1. All Physical telegrams are routed. 2. Physical telegrams are not routed. 3. Depending on the physical address Physical telegrams are routed.

7.6 SUBLINE (KNX TP)

For Group telegrams and Physical telegrams the selection “transmit all” is intended only for testing purposes. **Please do not use for normal operation.**

If the parameter “Send confirmation on own telegrams” is set to “yes”, the **MECip** systematically sends an ACK on any own routed telegram.

1.1.0 IP TP Media Coupler > Subline (KNX TP)		
General	Telegram routing	Group and Physical: filter
IP configuration	Group telegrams: Main group 0...13	filter
KNX multicast address	Group telegrams: Main group 14...31	filter
Main line (IP)	Physical telegrams	filter
Subline (KNX TP)	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"/> enable <input type="radio"/> disable

Picture 11: Subline (KNX TP) configuration setting

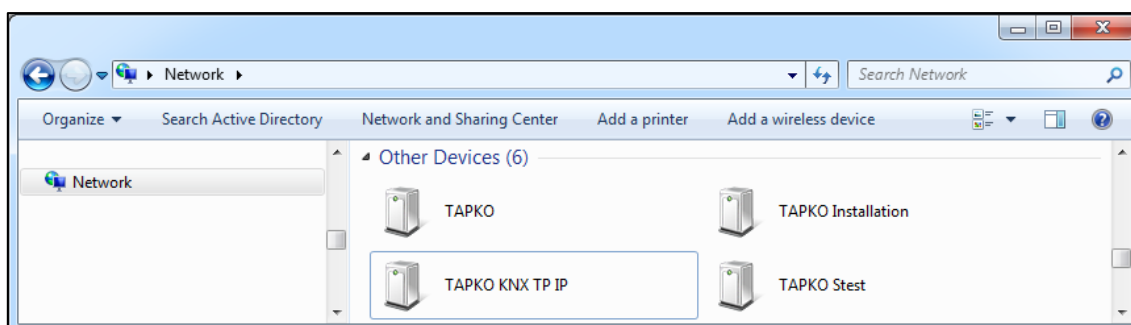
ETS Text	Selection [Factory default]	Comment
Telegram routing	Group: filter, Physical: block Group and Physical: filter Group: route, Physical: filter Group and Physical: route configure [Group and Physical: filter]	- block : no telegrams are routed. - filter : only telegrams entered in the filter table are routed. - route : all telegrams are routed. - configure : the following parameters can be set manually.
Group telegrams: Main group 0...13	1. transmit all (not recommended) 2. block 3. filter [filter]	1. Group telegrams (with main group 0...13) are routed. 2. Group telegrams (with main group 0...13) are not routed. 3. Group telegrams (with main group 0...13) are routed if they are entered in the filter table.
Group telegrams: Main group 14...31	1. transmit all (not recommended) 2. block 3. filter [filter]	1. Group telegrams (with main group 14...31) are routed. 2. Group telegrams (with main group 14...31) are not routed. 3. Group telegrams (with main group 14...31) are routed if they are entered in the filter table.
Physical telegrams	1. transmit all (not recommended) 2. block 3. filter [filter]	1. All Physical telegrams are routed. 2. Physical telegrams are not routed. 3. Depending on the physical address Physical telegrams are routed.
Physical telegrams: Repetition if errors on subline	1. no 2. up to 3 repetitions 3. one repetition [up to 3 repetitions]	Transmission error (e.g. missing receiver) after sending a Physical telegram on the subline: 1. Physical telegrams are not repeated. 2. Physical telegrams are repeated up to 3 times. 3. Physical telegrams are repeated only once.
Group telegrams: Repetition if errors on subline	1. no 2. up to 3 repetitions 3. one repetition [up to 3 repetitions]	Transmission error (e.g. missing receiver) after sending a Group telegram on the subline: 1. Group telegrams are not repeated. 2. Group telegrams are repeated up to 3 times. 3. Group telegrams are repeated only once.
Telegram confirmation on subline	1. if routed 2. always [if routed]	1. Routed telegrams are confirmed on the subline (own ACK). 2. Each telegram on the subline is confirmed.
Send confirmation on own telegrams	1. yes 2. no [no]	1. Every telegram on the subline is confirmed with its own ACK (from the media coupler). 2. No confirmation with own ACK
Configuration from subline (KNX TP)	allow block [allow]	If blocked the ETS download to the MECip can occur only via IP (main line).

8 WEB FRONT-END

8.1 ACCESSING THE DEVICE

To download the firmware into the device and/or to adjust the tunnelling addresses please use the Web front-end. To access the device it has to be opened as a Microsoft Windows (Vers. 7 or higher) UPnP network device. Alternatively, for this purpose also the IP address and the MAC address as URL base in the web browser can be used.

8.1.1 VIA THE WINDOWS NETWORK WITH UPNP



Picture 12: UPnP network device

In the event that the network device is not visible a manual restart is recommended. Then wait until the device gets visible in the list of network devices. If it is still not visible make sure that the UPnP function of the network is enabled.

8.1.2 VIA THE HOST (MAC ADDRESS)

Name resolution is mandatory to establish communication by Host name. This is only possible if NetBIOS is active. NetBIOS is installed by default on Windows systems and Linux systems with Samba. The MAC address is printed on a label of the **MECip** housing. Use this MAC address without brackets [] as described here:

http://knx-iprt-[XX][YY][ZZ]:8080/
[XX] = byte 4 of the MAC address
[YY] = byte 5 of the MAC address
[ZZ] = byte 6 of the MAC address

Example:

- The MAC address is “**D0-76-50-11-22-33**”.
- Enter the URL “**http://knx-iprt-112233:8080/**” into the web browser’s address bar.

8.1.3 VIA THE IP ADDRESS

Example:

- The **MECip** has an IP address of “**192.168.1.32**”.
- Enter the URL “**http://192.168.1.32:8080/**” into the web browser’s address bar.

8.2 DEVICE INFO

The **Device Info** tab is the first tab you might see when you reach the Web front-end. Here you get all general information about the current settings of the device.

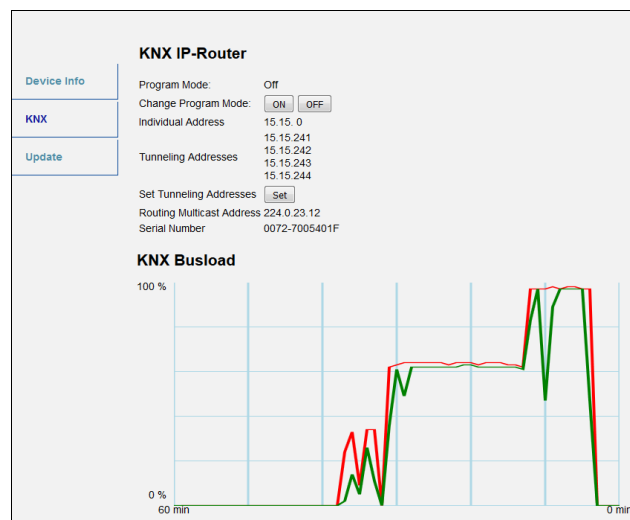


Device Information	
Status:	normal operation
DHCP:	true
IP Address:	192.168.1.37
Subnet Mask:	255.255.255.0
Gateway:	192.168.1.201
DNS:	192.168.1.2
Http Port:	8080
MAC Address:	D0-76-50-00-09-C5
Hostname:	KNX-IPRT-0009C5
Description:	KNX IP Router
UDN:	uuid:1f6b0c73-6308-1f55-4a51-d076500009c5
Application SW version:	2.0.3
Bootloader SW version:	2.2

Picture 13: Device info

8.3 KNX

Under the **KNX** tab the “Program Mode” of the **MECip** can be turned “On” or “Off”. This function is similar to the programming button function. With this the regarded device is easy to distinguish from other interfaces in the same IP network. It can also be noticed what the particular device is currently processing (after a change in the settings, for example). With the “Set” button (and the ETS) it is possible to set the tunnelling addresses (additional physical addresses). Moreover, here the routing multicast address, the serial number of the device and a last 60-minutes KNX bus load diagram are visible. The red curve shows the maximum and the green one indicates the average bus load on the TP side of the **MECip**. To see the curves, make sure that your web browser supports scalable vector graphics (SVG).

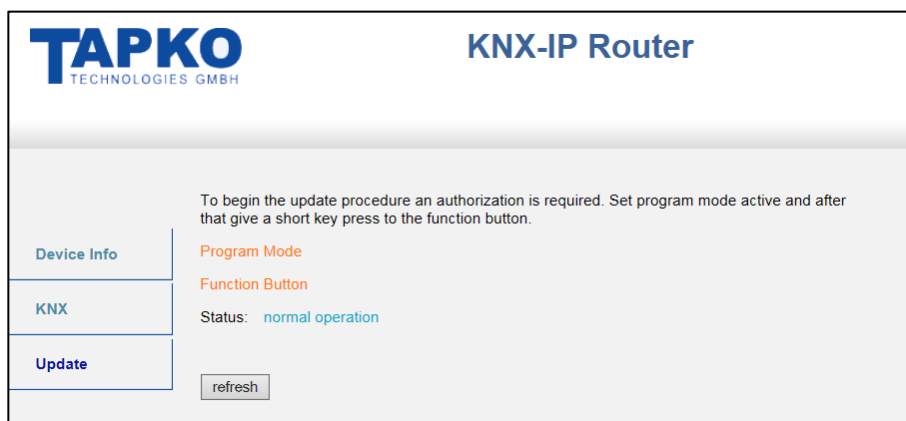


Picture 14: KNX

8.4 UPDATE

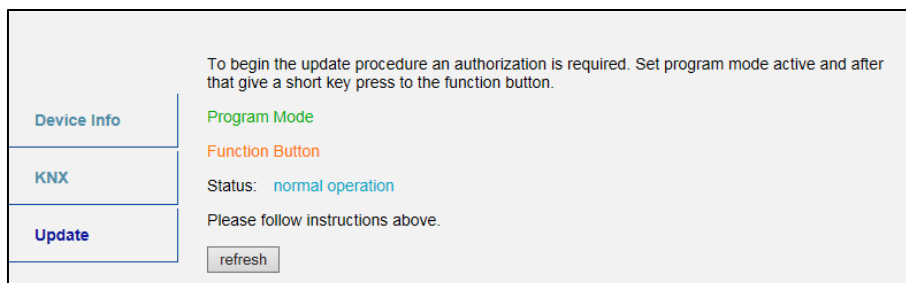
Under the **Update** tab the firmware of the device can be updated. If the device is in “Normal Mode”, proceed with following steps 1 to 5. If the device is already in “Boot Mode”, follow the instructions shown in the Web front-end and continue with step 3 (refresh, request update).

Step 1: Open the Update tab of the Web front-end.



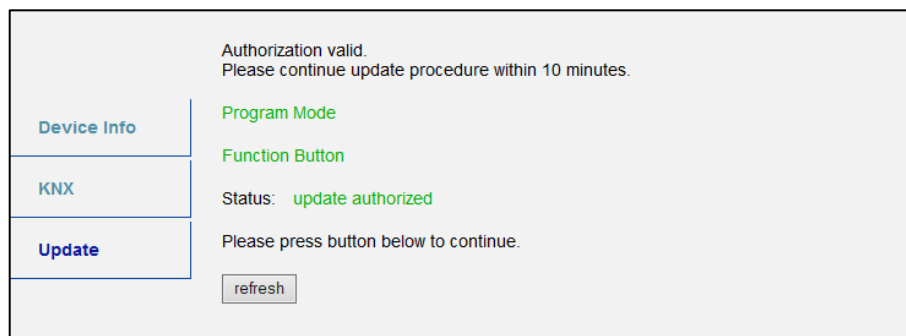
Picture 15: Update

Step 2: Either use the “Change Program Mode” function in the KNX tab or press the programming button once.



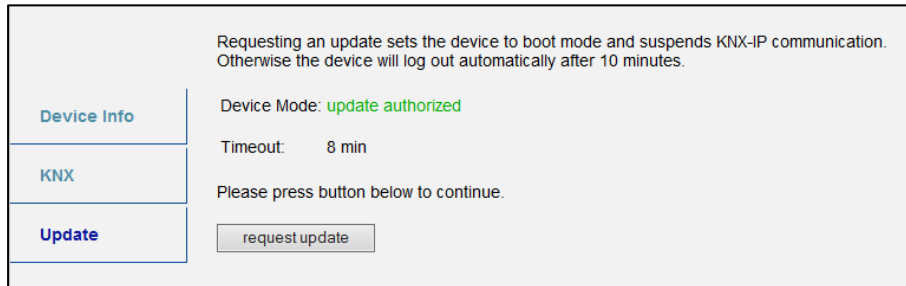
Picture 16: Program mode

Step 3: After the “Program Mode” is turned to “On” give a short key press to the function button. Then the “refresh” button in the Update tab needs to be pressed. Alternatively, refresh the browser.



Picture 17: Update authorized

Step 4: Then the „request update“ button appears. Press it to select the update file and enter “Boot Mode”.



Requesting an update sets the device to boot mode and suspends KNX-IP communication. Otherwise the device will log out automatically after 10 minutes.

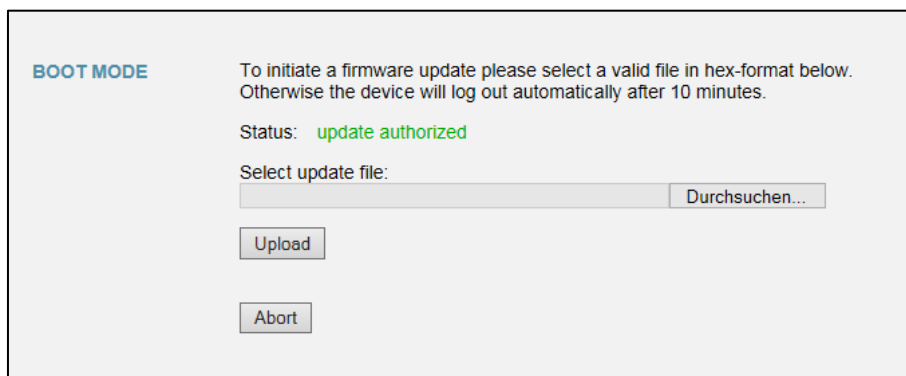
Device Mode: **update authorized**

Timeout: 8 min

Please press button below to continue.

Picture 18: Request update

Step 5: The device now switches to “Boot Mode”. The update file can be selected and uploaded. Pressing the „Abort“ button cancels the firmware update procedure and the device exits the “Boot Mode”.



BOOT MODE

To initiate a firmware update please select a valid file in hex-format below. Otherwise the device will log out automatically after 10 minutes.

Status: **update authorized**

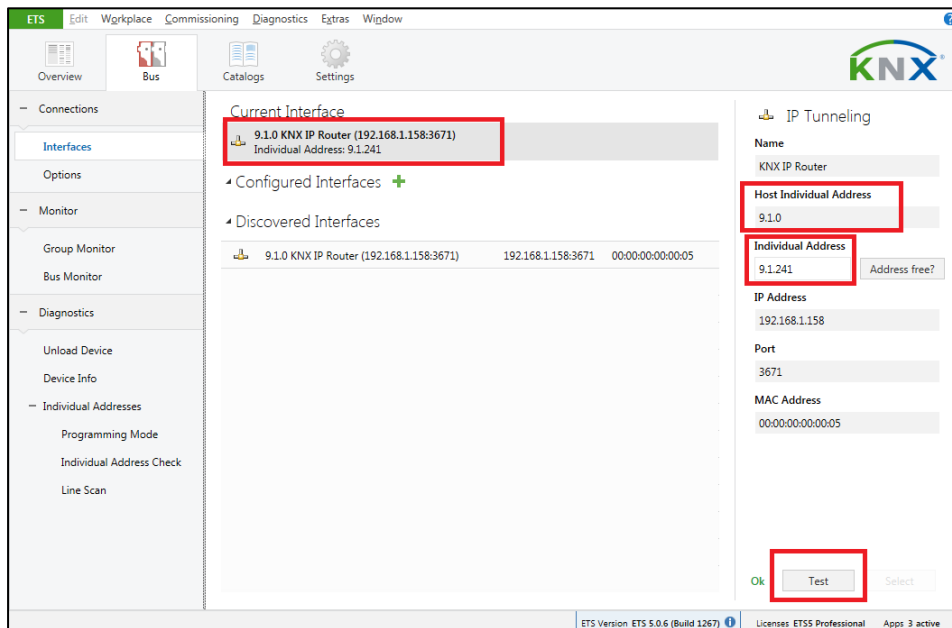
Select update file:

Picture 19: Select update file

8.5 TUNNELLING ADDRESSES (ADDITIONAL PHYS. ADDRESSES)

According to the host's physical address assignment the first additional physical address of the MECip can only be set with the ETS. **Please make sure:** The additional physical addresses for tunnelling and the host's physical address have to be different.

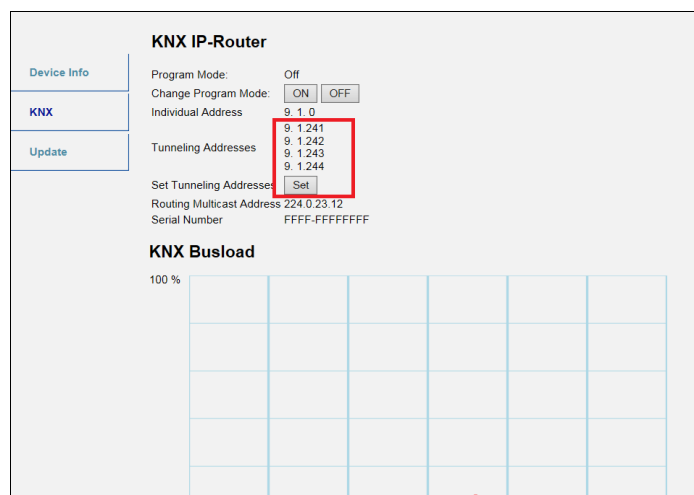
Step 1: Open the Bus tab in the ETS and select the MECip as the "Current Interface". In the "IP Tunnelling" window the already assigned host physical address can be read.



Picture 20: First additional physical address (first tunnelling address)

Step 2: Type the additional physical address into the "Individual Address" field. Click on the "Test" button. If the green **Ok** appears, the first tunnelling address is already set. In this example it is set to "9.1.241".

Step 3: Now open the KNX tab of the Web front-end. Click on the "Set" button to change the remaining three tunnelling addresses basing on the first tunnelling address as follows.



Picture 21: Additional tunnelling addresses

9 STATE OF DELIVERY

The **MECip** is delivered with the following default factory settings:

<i>General</i>	
Product	IP TP Media Coupler
Order Number	MECip
Application(s)	IP Router
ETS Name	IP TP Router MECip
Physical address	15.15.0
Additional physical addresses for tunnelling	15.15.241 15.15.242 15.15.243 15.15.244
<i>IP configuration</i>	
IP address assignment	DHCP/AutoIP
IP routing multicast address	224.0.23.12
<i>IP (IP Main line to KNX TP Subline)</i>	
Group telegrams (main group 0...13)	filter
Group telegrams (main group 14...31)	filter
Physical telegrams	filter
<i>KNX TP (KNX TP Subline to IP Main line)</i>	
Group telegrams (main group 0...13)	filter
Group telegrams (main group 14...31)	filter
Physical telegrams	filter
Physical: Repetition if errors on KNX TP	up to 3 repetitions
Group: Repetition if errors on KNX TP	up to 3 repetitions
Telegram confirmations on KNX TP	if routed
Send confirmation on own telegrams	no
Configuration from KNX TP	enabled

10 TECHNICAL DATA

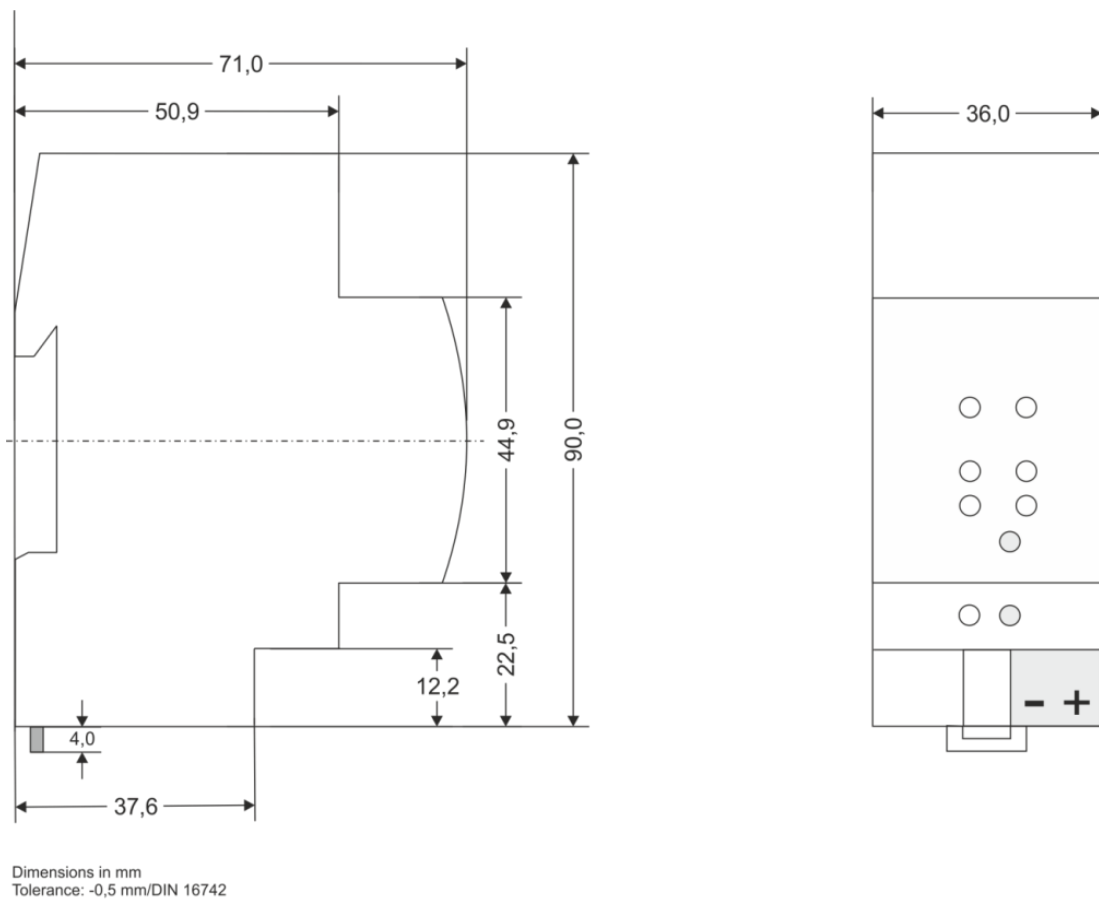


Warning: device may not be connected to 230V

Marking/Design	MECip	
Current consumption	< 40 mA	
Connections	IP (line): RJ45 socket for 100 Mbit and 10 Mbit BaseT, IEEE 802.3 networks KNX TP line: KNX TP connector (red/black), screwless, for single-core cable Ø 0.6...0.8 mm	
LED Display elements	Bus State Programming	Telegram Traffic Routing (GA and PA)
Control elements	Function button, Program button	
Mounting	35 mm top-hat rail (TH35) according to IEC60715	
Protection type	IP20 according to IEC60529	
Pollution degree	2 according to IEC60664-1	
Protection class	III according to IEC61140	
Overvoltage category	II according to IEC60664-1	
Approbation	KNX-certified according to ISO/IEC14543-3	
CE Marking	According to low voltage and EMC guidelines Compliance with EN50428, EN50581, EN61000-6 and EN62479	
Power supply	Safety extra low voltage, 21...30V DC (SELV)	
Housing colour	Plastic PA66 housing grey	
Dimensions	H = 90 mm, W = 36 mm (2 modules), D = 71 mm Mounting depth = 64 mm	
Weight	70 g	
Device temperature	Working temperature: -5...45 °C Storage temperature: -20...60 °C	
Ambient humidity	5...93 %, non-condensing	

11 TECHNICAL DRAWINGS

All dimensions shown here are specified in mm. The device width is 2 modules at 18 mm.



Picture 22: Dimension drawings

12 LEGAL NOTICE

Lw IP is used in developing the **MECip**.

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13 FAQ

Q: The firmware update process has finished successfully but the device doesn't react now.

A: Turn the power off and on manually (dis-/reconnect bus line). Try to restart it this way.

Q: Is it Ok to connect and disconnect the Ethernet quickly?

A: No! You shouldn't do this. To observe, the bus state LED will light green for a few seconds and then the device will reset.

Q: What does the Programming LED show when the Ethernet cable is not connected?

A: As long as the Ethernet cable is not connected properly the programming LED blinks red.

Q: LED 2 is blinking green continuously. Why?

A: This indicates that the **MECip** is in "Boot Mode". For more information about this mode and how to change back to "Normal Mode" please refer to [Boot Mode](#).

Q: I have disabled DHCP and assigned a correct IP configuration to the **MECip**. But I cannot reach the Web front-end anymore. Why?

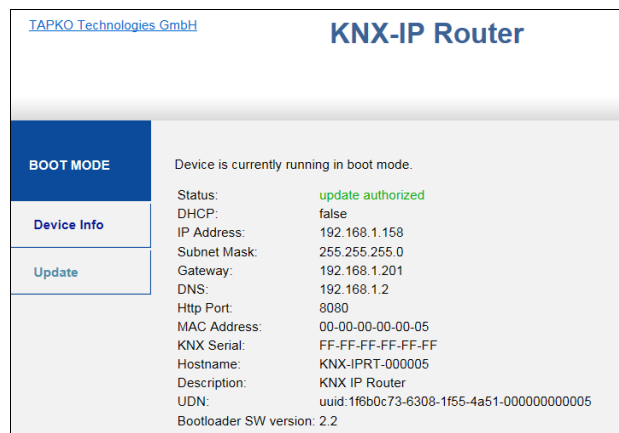
A: Manually reset the **MECip** and try again. For more information about changing the configuration of the IP network please refer to [IP Configuration](#).

Q: I tried to reach the Web front-end of my **MECip** but I wasn't successful. What can I do?

A: Make sure the "http://..." matches your device IP along with the port address "8080". Or type the MAC address into the browser's address bar in exactly the way as explained (see [Via the MAC Address \(IP Address is not known\)](#)). Then wait (for about 5-15 seconds), refresh your browser and try again.

Q: Is it possible to reach the Web front-end when the device is already in "Boot Mode"?

A: Yes, it is. The [Web Front-End](#) is accessible in both "Normal Mode" and "Boot Mode" (see [Update](#)). In this case the Web front-end will look like illustrated next. You can use the [Update](#) tab to update the firmware and/or to exit the "Boot Mode".



Picture 23: Boot Mode

Q: I was able to reach the Web front-end. But when I try to use its tabs or options again my browser only shows a connection error to me. What can I do?

A: Refresh the browser window. The Web front-end will show up again.