Manual and Configuration

# KNXnet/IP Router

Note

Table of content

Notices

- Installation and assembly of electrical equipment must be performed by qualified electricians.

- When connecting KNX/EIB interfaces skills are provided by KNX™-Training.

- Ignoring the instructions may damage the device as well as causing fire or other hazards.

- This manual is part of the product and must remain with the end user.

- The manufacturer is not liable for any costs or damages incurred by the user or third parties through the use of this device, misuse or malfunction of the connection, malfunction of the device or the subscriber equipment.

- Opening the case or other authorized changes or modifications will void the warranty!

- The manufacturer is not liable for improper use.

Assembly and connection

Requirements:

- One of the following power supplies

  - 20 bis 30 V DC

  - 16 bis 24 V AC

  - „Power over Ethernet" (IEEE 802.3af), Class 1

  - AUX-Output of the Enertex® KNX PowerSupply 960 if there is no additional KNX choke connected to it

- 10/100 Mbit compatible Ethernet connection

- KNX/EIB bus connection

Commissioning
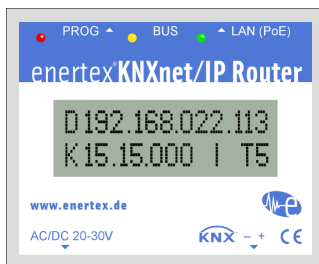
LCD shows product name and firmware version at startup. Boottime is about 2 seconds.

The default network setting ist DHCP.

If the DHCP server has transmitted a valid IP address to the device, it is shown in the first line of the LCD with the prefix „D".

If you set a static IP „S" occurs or rather „Z" for a IP address procured via Zeroconf.

In the second row the KNX pysical address is displayed (prefix „K"). To use the routing functions it has to look like „x.y.0" or „x.0.0" (x,y: value between 0 and 15).

„T", followed by a number between 0 and 5 shows the number of the open tunnel connection.

The green LED signalizes LAN activity, the yellow LED signalizes KNX bus activity. If the the red LED is active, device is in programming mode.

Functional Description

- Five independent KNXnet/IP tunnel connections
- KNXnet/IP Routing for communication between KNX lines, areas und systems via IP network
- Telegram routing and filtering according to pysical address or group address
- LED-signaling for KNX communication, Ethernet communication and programming mode
- Standard configuration with ETS
- Configuration of the tunnel addresses via Telnet
- SNTP Server with battery-buffered real-time clock

ETS-Topology

To add the device in a ETS project, the project needs a IP-Backbone, as shown in the following example:

Lines:

- **0.0:** Medium IP
- **1.0:** Medium IP
- **1.1:** Medium TP

Parameterization

The device can be parameterized with ETS3, ETS4 or ETS5. It supports up to five tunnel connections and can be used as a line- or area coupler.

General
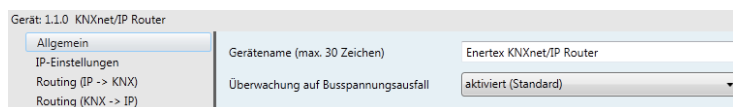
Device name You can assign a user-defined name here (up to 30 characters).

Bus power failure monitoring Reports a KNX bus failure to the IP network, als well as the restoration.
Parameter: enabled, disabled

IP settings

IP assignment method The IP address can be assigned via DHCP, Manually or Zeroconf.
Parameter: manuell, DHCP, Zeroconf

IP-Adressvergabe	DHCP
Routing-Multicast-Adresse:	
x._._._ - [224...239]	224
_.x._._ - [0...255]	0
_._.x._ - [0...255]	23
_._._.x - [0...255]	12

Routing Multicast Address This address will be used for routing telegrams on IP side. The Multicast IP Address 224.0.23.12 has been reserved for this purpose (KNXnet/IP Routing). If you want to assign another address it has to be in the range between 224.0.0.0 and 239.255.255.255.

IP Address (only for manual assignment)

IP-Adresse:	
x._._._	192
_.x._._	168
_._.x._	1
_._._.x	181

Parameter: valid IP address in your network

Subnet Mask (only for manual assignment)

Subnetzmaske:	
x._._._	255
_.x._._	255
_._.x._	255
_._._.x	0

Parameter: valid subnet mask

Default Gateway (only for manual assignment)

Subnetzmaske:		
x._._._	255	
_.x._._	255	
_._.x._	255	
_._._.x	0	

Parameter: valid IP address in your network

Routing (KNX → IP)

Gruppentelegramme der Hauptgruppen 0 bis 13	filtern (Standard)
Gruppentelegramme der Hauptgruppen 14 bis 15	weiterleiten (Standard)
Physikalisch adressierte Telegramme	filtern (Standard)
Broadcast-Telegramme	weiterleiten (Standard)

Group telegrams of main group 0 to 13 Via routing group telegrams can be forwarded,

blocked or filtered. You can parameterize the behaviour of the main groups 0 to 13 different to the behaviour of the main groups 14 to 15. If you choose „filter", ETS will select the relevant telegrams to route automatically.

Parameter: <u>filter</u>, block, route

Group telegrams of main group 14 to 15

Parameter: block, <u>route</u>

Physically addressed telegrams Physically addressed telegrams (e.g. programming of actuators) can be routed, blocked or filtered.

Parameter: <u>filter</u>, block, route

Broadcast telegrams

Parameter: block, <u>route</u>

Routing (IP → KNX)

Gruppentelegramme der Hauptgruppen 0 bis 13	filtern (Standard) ▾
Gruppentelegramme der Hauptgruppen 14 bis 15	weiterleiten (Standard) ▾
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Broadcast telegrams

Parameter: block, <u>route</u>

Telnetserver

A integrated Telnet server provides additional functionalities. The default password for Telnet access is „knxnetip".

`date`	Show time (UTC) and date
	`# date`
	`15:50:19 21.04.2017 (UTC)`

`factory_reset`	Reset the device to factory default and restart

`ifconfig`	Show IP settings
	`# ifconfig`
	`IP............: 192.168.22.253`
	`Subnet mask...: 255.255.255.0`
	`Gateway.......: 192.168.22.69`
	`NTP server....: 192.53.103.108`
	`Sys multicast: 224.0.23.12`
	`RT multicast..: 224.0.23.12`
	`Hardware addr.: 00:50:c2:79:30:03`
	
	Sys multicast: multicast address for system telegrams
	RT multicast: multicast address for routing telegrams

`lcconfig`	Show KNXnet/IP routing setting
	``` # lcconfig Coupler type.: line coupler IP -> KNX: GA 0-13......: filter GA 14-15......: route Ph. add.......: route Broadcast.....: route KNX -> IP: GA 0-13......: filter GA 14-15......: route Ph. add.......: route Broadcast.....: route PW fail. mon..: enabled ``` IP->KNX: settings for telegrams from IP to KNX KNX->IP: settings for telegrams from KNX to IP GA 0-13: group telegrams of main groups 0 to 13 GA 14-15: group telegrams of main groups 14 to 15 Ph. addr.: physical addressed telegrams Broadcast: broadcast telegrams PW fail. mon.: power fail monitor
`logout`	Close Telnet session

`passwd oldpw newpw`
`passwd oldpw`
`passwd newpw`
	Change Telnet passwort (`passwd old new`),
	Delete passwort (`passwd old`)
	Set passwort, if no password is set already (`passwd new`)

`lock [0│1]`	Show „Lock" status (without option) or change lock mode (*0* = off, *1* = on) With filtering a router can prevent forwarding of physically addressed telegrams, which makes it impossible to re-program devices at another line. That's important for outside areas/lines. Though it's possible to re-program the router itself to enable routing of physical addressed telegrams by accessing the bus at an outdoor line with e.g. a USB-KNX-Interface. This can be prohibited by this Telnet function. Set „lock" to 1 to disable reprogramming of the router.
`progmode [0│1]`	Show programming mode status (without option) or set programming mode (*0* = off, *1* = on) ``` # progmode Programming mode: off # progmode 1 Programming mode: on # progmode 0 Programming mode: off ```
`reboot`	Restart device
`sntp [query│server IP]`	Send ntp query (`sntp query`) or set IP address of the NTP server (`sntp server 1.2.3.4`) ``` # sntp query Sending SNTP query to 192.53.103.108 # sntp server 1.2.3.4 NTP server...: 1.2.3.4 ```
`stats`	Show statistics ``` # stats uptime: 1 days, 20:29 KNX communication statistics: TX to IP (all): 384690 (ca. 144 t/m) TX to KNX: 8826 (ca. 3 t/m) RX from KNX: 110487 (ca. 41 t/m) Overflow to IP: 1 Overflow to KNX: 0 TX tunnel re-req: 47 ``` uptime: uptime since last reboot TX to IP (all): number of telegrams sent to IP TX to KNX: number of telegrams sent to KNX bus RX from KNX: number of telegrams received from KNX bus Overflow to IP: number of telegrams, that couldn't be sent to IP Overflow to KNX: number of telegrams, that couldn't be sent to KNX bus TX tunnel re-req: number of telegrams, that had to be repeated during tunnel access
`tpconfig`	Show KNX parameters ``` # tpconfig KNX bus state.: up KNX address...: 00.01.000 Serial number.: 00-a6-00-00-00-03 ``` KNX bus state: KNX bus detected (up) or not detected (down) KNX address: physical address of the device Serial number: serial number of the device

`tunaddr 1..5 address`
`tunaddr reset`
	Change tunnel address for each tunnel e.g. *tunaddr 1 15.15.240* or reset tunnel addresses to factory default (*tunaddr reset*)
	
	```# tunaddr setall 0.1.240```
	```Setting all tunnel KNX addresses..```
	```1: New KNX address: 00.01.240```
	```2: New KNX address: 00.01.241```
	```3: New KNX address: 00.01.242```
	```4: New KNX address: 00.01.243```
	```5: New KNX address: 00.01.244```
	```done```
	
	```# tunaddr```
	```1: KNX address: 00.01.240```
	```2: KNX address: 00.01.241```
	```3: KNX address: 00.01.242```
	```4: KNX address: 00.01.243```
	```5: KNX address: 00.01.244```

`tunnel [1..5]`	Show tunnel addresses and connection status (without option), or show detailled information for a specific tunnel (option 1..5)
	
	```# tunnel```
	```Tunnels open: 2/5```
	```1: 00.01.240, closed```
	```2: 00.01.241, open (CCID: 2)```
	```3: 00.01.242, open (CCID: 211)```
	```4: 00.01.243, closed```
	```5: 00.01.244, closed```
	
	```# tunnel 2```
	```Tunnel 2......: open (CCID 2)```
	```KNX address...: 00.01.241```
	```HPAI control..: 192.168.22.249:4808```
	```HPAI data.....: 192.168.22.249:4808```
	```Connect. type.: TUNNEL_CONNECTION```
	```TX tun req....: 118537```
	```TX tun re-req.: 0```
	```RX tun req....: 2550```
	```RX tun re-req (identified): 0```
	```RX tun req (wrong seq.)...: 0```
	
	CCID: connection id of the tunnel connection
	KNX address: tunnel address
	HPAI control: control-end-point of the receiver
	HPAI data: data-end-point of the receiver
	Connect. Type: tunnel connection or management connection
	TX tun req: number of telegrams sent to this tunnel
	TX tun re-req: number of telegrams that had to be repeated for this tunnel connection
	RX tun req: number of telegrams received from this tunnel
	RX tun re-req: number of telegrams that have been received twice for this tunnel connection
	RX tun req (wrong seq.): number of telegrams with wrong sequence number that have been received for this tunnel

`version`	Show firmware version
	
	```# version```
	```Firmware version: 1.042```

Reset to factory defaults

To reset the device to factory defaults, press and hold the programming mode button for three seconds. When the red LED starts blinking release the button. The device shuts down and will reboot with factory settings automatically.

ETS product data

You can download the latest version of the product's ETS database from our homepage:

http://www.enertex.de/e-downloads01.php

Technical data

Power supply	16-24 V AC or 20-30 V DC; IEEE 802.3af („Power over Ethernet")
Power consumption	Max. 1 W
Display	2-line LCD
KNX functions	KNXnet/IP tunneling and routing

| KNXnet/IP routing	Up to 48 telegrams per second
KNXnet/IP tunneling	Up to 35 telegrams per second, up to five tunnel connections
NTP	SNTP Server, battery-buffered

Obligation for distributors
under § 18 (1) Battery Act

Dear customer, you bought a battery operated product from us. Although the battery life is very long, it still needs to be disposed someday. Used batteries should not be put in the household garbage. Consumers are required by law to bring batteries to a suitable collection point. You can also send your used batteries to

Enertex Bayern GmbH
Ebermannstädter Str. 8
91301 Forchheim
Deutschland

Old batteries contain valuable raw materials that can be recycled.

The environment and Enertex Bayern GmbH say thank you.
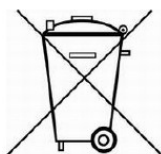
The garbage bin symbol means: Batteries and rechargeable batteries must not be disposed of with household waste.