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KNX IP interface

Order No. 2168 00



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1 Product definition

1.1 Product catalogue

Product name: KNX/IP interface
Application: IP interface
Design: DRA (series installation)
Order No.: 2168 00

1.2 Accessories

Additional power supply
Order No.: 1296 00
KNX/EIB power supply 320 mA
Order No.: 1086 00

1.3 Application

The KNX/IP interface connects an Instabus KNX/EIB line to a data network (Ethernet) using the Internet Protocol (IP). It utilises the KNXnet/IP standard (tunneling) so that bus access is possible from a PC or other data processing devices via an IP network.

The KNX/IP interface can be used with the ETS 3.0 Version "f" or higher or the ETS 4.0 or higher.

The device supports up to 4 KNXnet/IP tunneling connections and thus enables parallel bus access, e.g. via the ETS and other PC software.

It has an integrated switch with two RJ45 connections. This enables several KNX/IP interfaces or other IP devices to be connected to the distribution without the aid of other active components.

The KNX/IP interface requires a separate power supply 24..30V DC $\pm 10\%$ to operate. The KNX/IP interface is supplied with power by this operating power connection.

2 Installation, electrical connection and operation

2.1 Safety instructions

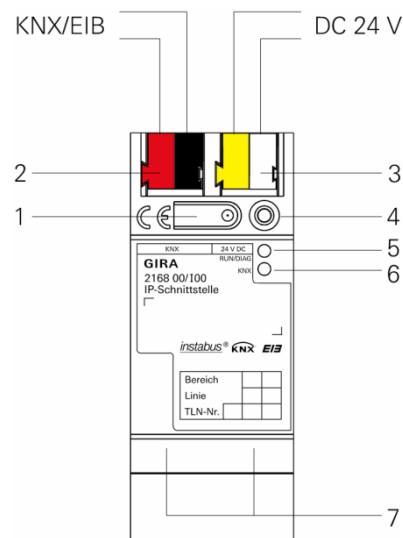
Installation and mounting of electrical devices may only be carried out by a qualified electrician. In doing so,

the applicable accident prevention regulations must be observed.

Failure to observe the installation instructions can result in damage to the device, fire or other dangers.

Please see the operating instructions enclosed with the device for more information.

2.2 Device design



Dimensions:

Width (W):
36 mm (2 HP)

Height (H):
90 mm

Depth (D):
74 mm

Figure 1: KNX/IP interface

1 Programming button

2 KNX connection

3 External power supply connection* 24..30V DC $\pm 10\%$.

4 Programming LED (red)
on: programming mode on
off: programming mode off

5 LED operation indication (green)
on: ready for operation
flashing: diagnosis code

6 LED KNX (yellow)
on: KNX is connected
off: KNX is not connected
flashing: data on KNX line

7 Ethernet connection

- 10/100 speed (green)
 - on: 100 Mbit/s
 - off: 10 Mbit/s
- link/ACT (orange)
 - on: link to IP network
 - off: no connection
 - flashing: data reception on IP

2.3 Installation and electrical connection



DANGER!

Electric shock if live parts are touched. Electric shock may lead to death. Isolate connection cables before working on the device. Cover up live parts in the vicinity!

Installing the device

- Snap the cap rail on according to DIN EN 60715. Network connection must be located on the bottom.
- ❗ A KNX/EIB data rail is not necessary.
- ❗ Observe temperature range (0 °C...+45 °C) and ensure sufficient cooling if necessary.

Connecting the device

- Connecting the KNX/EIB bus to the KNX connection of the interface (2) with a KNX/EIB connection terminal.
- Connecting the external power supply* to the power supply connection (3) of the interface using a KNX/EIB connection terminal (preferably yellow/white).
- Connecting one or two network lines to the network connection of the interface (7).

*: The non-choked output of a KNX/EIB power supply unit can also be used as an external power supply. Ensure that the maximum quantity of KNX/EIB devices which can be operated with the KNX/EIB power supply unit is reduced accordingly.

Mounting / removing the cover cap

A cover cap can be mounted for secure isolation to protect the bus connection / power supply connection from dangerous voltage, particularly in the connection area.

The cap is mounted with an attached bus and power supply terminal and a connected bus and power supply line to the rear.

- Mounting the cover cap: The cover cap is pushed over the bus terminal (compare with Figure 2.A) until it engages noticeably.
- Removing the cover cap: The cover cap is removed by pressing it in slightly on the side and pulling it off to the front (compare with Figure 2.B).

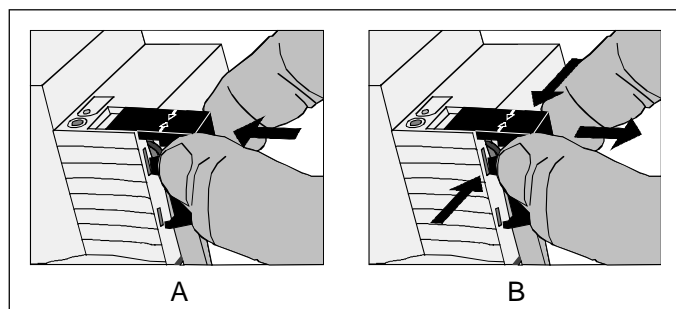


Figure 2: Mounting / removing the cover cap

2.4 Start-up

After installing the device and connecting the bus line, power supply and Ethernet, the device can be started up.

The following physical addresses are factory preset

Interface	15.15.255
-----------	-----------

This address has to be reprogrammed in order to be able to use the device. In addition, the application program should be imported.

Programming the physical address of the interface

Programming is done in the programming environment of the ETS (3.0f, 4.0 or higher). An additional KNX/EIB data interface is not required for programming. A connection to the device can be established via IP or KNX.

- Ensure that the device and bus voltage are switched on
- Ensure that the programming LED (4) is not illuminated.
- Press the programming button (1).
Programming LED (4) lights up red
- Program the physical address using the ETS.
Programming LED (4) goes out after a successful programming process.
- Make note of the physical address on the device
- If the device was programmed without an additional KNX/EIB data interface, the tunneling connection must be set up again after the programming process.

Programming application programmes and configuration data

After programming the physical address, the application program for the interface must be imported to the device. A connection to the device can be established via IP or KNX.

- Ensure that the device and bus voltage are switched on
- Parameterise the respective device accordingly in the ETS
- Import the software to the device
- Start-up is complete
- If the device was programmed without an additional KNX/EIB data interface, the tunneling connection must be set up again after the programming process.

2.5 Operation

The KNX/IP interface features 3 status LEDs on the top of the housing and 4 status LEDs on the network connection. In addition, there is a programming button with which the interface can be put into programming mode.

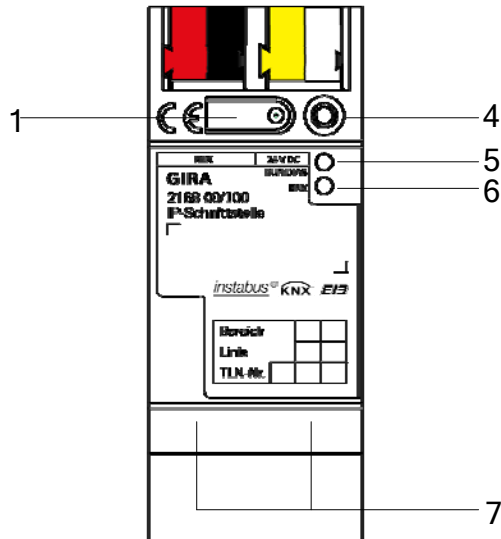


Figure 3: KNX/IP interface

1 Programming button

4 Programming LED (red)
on: programming mode on
off: programming mode off

5 LED operation indication (green)
on: ready for operation
flashing: diagnosis code

6 LED KNX (yellow)
on: KNX is connected
off: KNX is not connected
flashing: data on KNX line

7 Ethernet connection

- 10/100 speed (green)
on: 100 Mbit/s
off: 10 Mbit/s
- link/ACT (orange)
on: link to IP network
off: no connection
flashing: data reception on IP

Diagnosis codes

The current device status can be concluded using the operation indication (5):

- LED off: device is not switched on or not yet completely powered up.
- LED on: device is ready for operation.
- LED flashes slowly (~1Hz): Device is not configured or was configured with impermissible parameters. The physical address must be set for the interface and the application program must be imported to the device with permissible parameters for the LED to stop flashing. See "2.4 Start-up" for more details.
- LED flashes quickly (~4Hz): internal device error. Please contact support.

LED status when starting up the device

When the device is started up properly, the yellow LED (6) flashes when the operating voltage is applied, thus signalling the start-up process. As soon as the device has completely started up, the green LED (5) lights up continuously if the device is already parameterised, or it flashes according to the diagnosis codes. From this time on, the yellow LED (6) signals the KNX bus status and KNX telegrams.

A self-test is carried out when the device is started up. If an error occurs here, the yellow LED (6) and the green LED (5) flash alternately directly after the operating voltage is applied. In this case, please contact support.

3 Technical data

KNX medium	TP
Start-up mode	S mode (ETS)
KNX supply	DC 21...30V SELV
KNX connection	Bus connection terminal
External supply	
Voltage	DC 24..30V $\pm 10\%$
Connection	connection terminal
Power consumption	typically 2W (for 24V DC, 2 Ethernet lines connected)
IP communication	Ethernet 10 /100 BaseT (10/100 MBit)
IP connection	2 x RJ45
Supported protocols	ARP, ICMP, IGMP, UDP/IP, DHCP, AutoIP KNXnet/IP in compliance with KNX system specification: core, tunneling, device management
Ambient temperature	
	0 °C to +45 °C
Storage temperature	
	-25 °C to +70 °C
Installation width	36 mm (2 HP)
Installation height	90 mm
Installation depth	74 mm
Protection type	IP20 (compliant with EN60529)
Protection class	III (compliant with IEC 61140)
Test marks	KNX, CE

4 Software description

4.1 Software specification

ETS search paths: - Communication / IP interface/ KNX/IP interface

Configuration: S-mode standard

Applications:

No.	Brief description	Name	Version
1	KNX/IP interface	KNX/IP interface 901410	1.0

4.2 Software "**KNX/IP** interface 901410"

4.2.1 Range of functions

- Simple connection to higher-level network systems by using the Internet Protocol (IP)
- Direct access from each point in the IP network to the KNX/EIB installation (KNXnet/IP tunneling)
- Simple configuration with the ETS 3/4
- Support of up to 4 parallel KNXnet/IP tunneling connections
- Support of a bus monitor connection
- Simple connection of visualisation systems and facility management systems

4.2.2 Information on the software

- The KNX/IP interface can be parameterised for ETS 3.0f or higher.
- When using ETS 3.0f, the Falcon must be updated to Version 2.0. The update can be obtained from the KNX homepage (<http://www.knx.org>) free of charge.

4.2.3 Object table

Number of communication objects: 0

4.2.4 Functional description

IP address assignment

The device's IP address can either be assigned manually or via a DHCP server. This can be configured using the "IP address assignment" parameter on the "General" parameter page.





For the "Manual entry" setting, the values which are preset on the "IP address", "IP subnet mask" and "IP standard gateway" parameter pages are valid for the interface. In the state of delivery, the interface gets its IP address from a DHCP server.

For the "From DHCP service" setting, a DHCP interface must assign the KNX/IP interface a valid IP address. If there is not a DHCP server available for this setting, the interface starts up after a certain waiting time with an AutoIP address (address range from 169.254.1.0 to 169.254.254.255). As soon as a DHCP server is available, the device is automatically assigned a new IP address.

4.2.5 State of delivery

Physical address	15.15.255
physical address of the tunneling connections	15.15.255
Device name	Gira KNX/IP interface
IP address assignment	from DHCP service
IP address	DHCP
IP subnet mask	DHCP
IP standard gateway	DHCP

4.2.6 Parameters

Description:	Values:	Comments:
 General		
Device name (maximum of 30 characters)	max. 30 characters, Gira KNX/IP interface	Via this parameter, the KNX/IP interface receives a unique name of a maximum of 30 characters which serves the simple recognition of the device when searching with a KNXnet/IP visualisation or with the ETS.
IP address assignment	From DHCP service manual entry	Defines if the IP address of the device is assigned manually or automatically (by the DHCP server).
 IP address		
IP address		Defines the IP address of the KNX/IP interface if manual address assignment is activated. The address is compiled of 4 individual bytes. Default is 192.168.0.10. If invalid parameters are configured (e.g. a gateway which does not match the set IP address or the configured DNS addresses), the device is automatically set to DHCP and the green LED begins to flash slowly (~1Hz).
Byte 1 (0...255)	0..255, 192	
Byte 2 (0...255)	0..255, 168	
Byte 3 (0...255)	0..255, 0	
Byte 4 (0...255)	0..255, 10	
 IP subnet mask		
IP subnet mask		Defines the IP subnet mask of the KNX/IP interface if manual address assignment is activated. The mask is compiled of 4 individual bytes. Default is 255.255.255.0.
Byte 1 (0...255)	0..255, 255	
Byte 2 (0...255)	0..255, 255	
Byte 3 (0...255)	0..255, 255	
Byte 4 (0...255)	0..255, 0	
 IP standard gateway		
IP standard gateway		Defines the IP address of the standard gateway if manual address assignment is activated. The address is compiled of 4 individual bytes. Default is 0.0.0.0.
Byte 1 (0...255)	0..255, 0	
Byte 2 (0...255)	0..255, 0	
Byte 3 (0...255)	0..255, 0	
Byte 4 (0...255)	0..255, 0	

5 Appendix

5.1 Operation in the ETS3

Via an IP data network and a KNX/IP interface, a direct connection can be established from a PC or other data processing devices in the networks (e.g. visualisations) to the KNX/EIB. Thus, access to the bus is possible from every point in the IP data network.

The ETS3 and ETS4 facilitate the configuration of KNX/EIB installations via the existing IP data network and use the KNX/IP interface such as a conventional serial RS232 or USB data interface to communicate with the bus. This also includes downloading from bus devices or the function of the group monitor or the bus monitor.

For stable communication via KNXnet/IP tunneling, a second physical address (similar to the local physical address for an RS232 or USB connection) must be set via the ETS3 or ETS4.

The following steps must be carried out to configure the communication interfaces:

1. First the ETS3 must be started and the option dialogue of the communication properties must be called up
(Extras → Options → Kommunikation (Tools/Options/Communication) – compare with Figure 7).

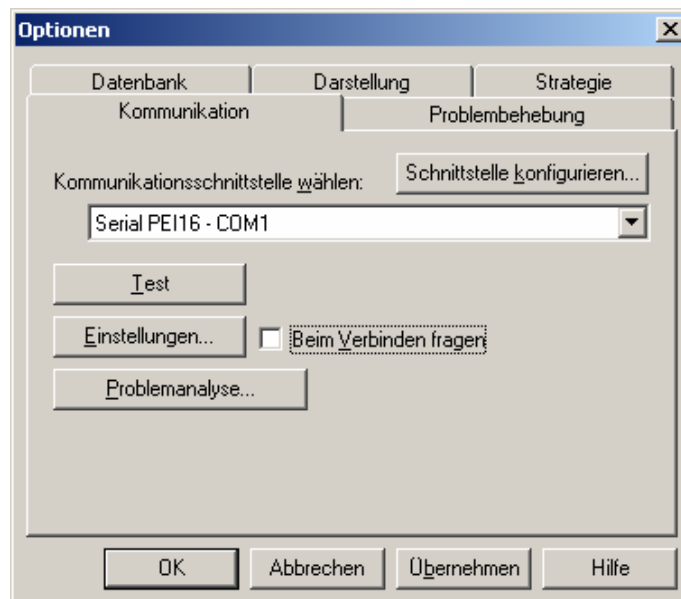


Figure 4: Option dialogue of the communication properties of the ETS3

2. Select the "Schnittstelle konfigurieren" (Configure interface) button. The "ETS Connection Manager" window opens (compare with Figure 8).

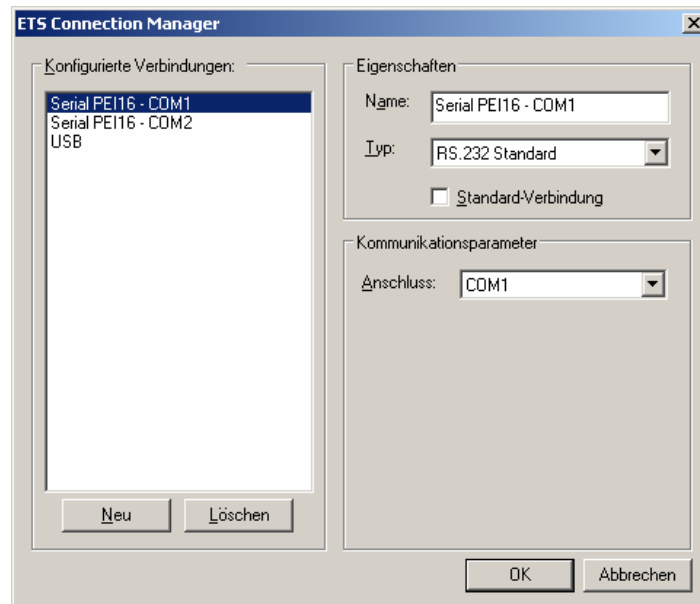


Figure 5: ETS Connection Manager

3. Create a new connection. For this, select the "Neu" (New) button. Give the new connection a unique name. Select "KNXnet/IP" as type (compare with Figure 9). Subsequently the ETS automatically searches the IP data network for available IP communication devices.

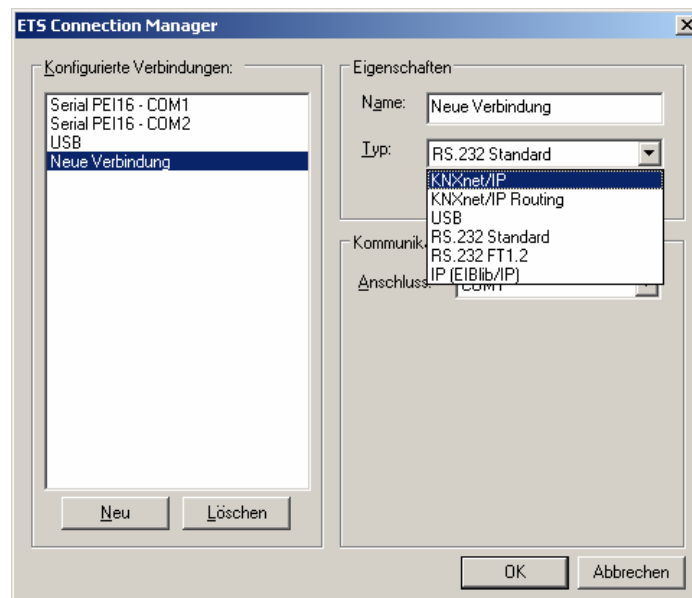


Figure 6: Create new connection as KNXnet/IP

4. In the "KNXnet/IP Gerät" (KNXnet/IP device) device list, all KNX/IP interfaces found in the IP network are listed (compare with Figure 10). The name assigned in the ETS (default "Gira KNX/IP Schnittstelle") (Gira KNX/IP interface) and the IP address of the KNX/IP interface are displayed. Any (P) which might follow this information signals an activated programming mode. In this way, individual devices can also be identified specifically in systems with several interfaces. In the device list, the KNX/IP interface must be selected which should serve as a "data interface" in the configured connection.

By clicking the "Erneut scannen" (Scan again) button, the ETS begins an additional scan process and again searches the IP network for IP interfaces.

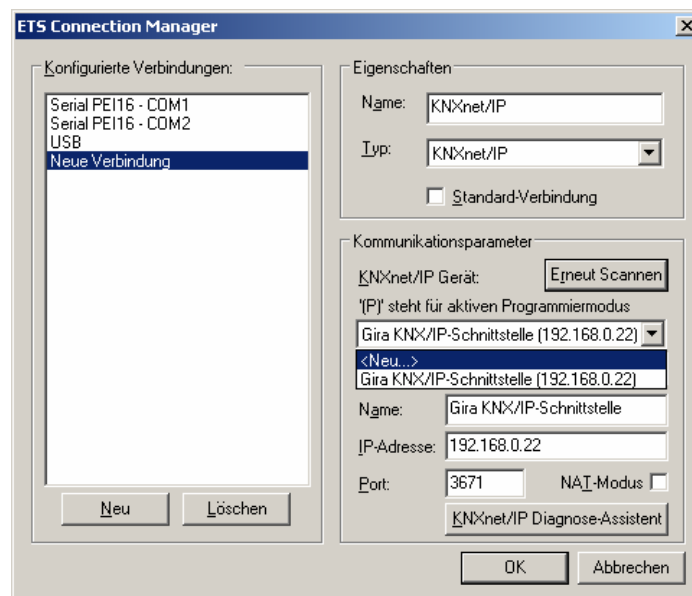


Figure 7: Device list under communication parameters with all IP interfaces found

5. Subsequently the configuration of the new connection can be completed by clicking the "OK" button. The communication parameters (compare with Figure 11) should remain unchanged.

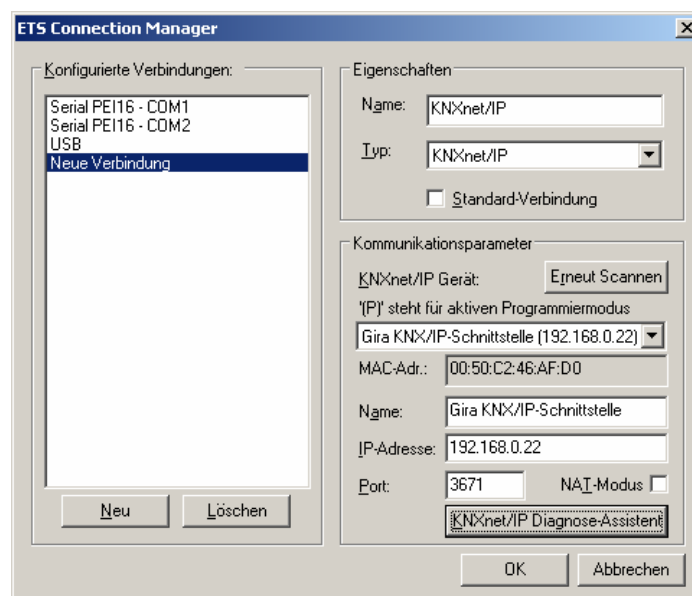


Figure 8: Complete interface configuration of the KNX/IP interface

6. For stable communication via KNXnet/IP tunneling, a second physical address (similar to the local physical address for an RS232 or USB connection) must be set via the ETS. For this, select the new KNXnet/IP connection as the interface in the option dialogue of the communication properties (compare with Figure 12) and click the "Einstellungen" (Settings) button.

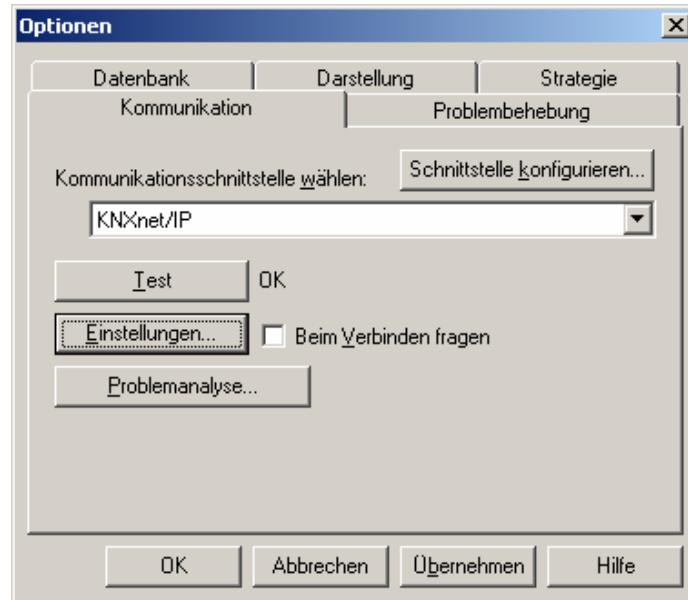


Figure 9: Select communication interface KNXnet/IP and open settings

7. The settings of the local interface open (compare with Figure 13). In the "Physical address" field, the physical address of the IP data interface must now be entered. It must be ensured that an address from another device in the ETS project is not used (if necessary, check using the ETS "Is the address free?"). Following successful address assignment, a dummy device should be inserted in the ETS project at the topologically correct position.
In the state of delivery, the physical address "15.15.255" is preset.
By clicking the "OK" button, configuration of the IP data interface is completed. The IP connection can then be used.

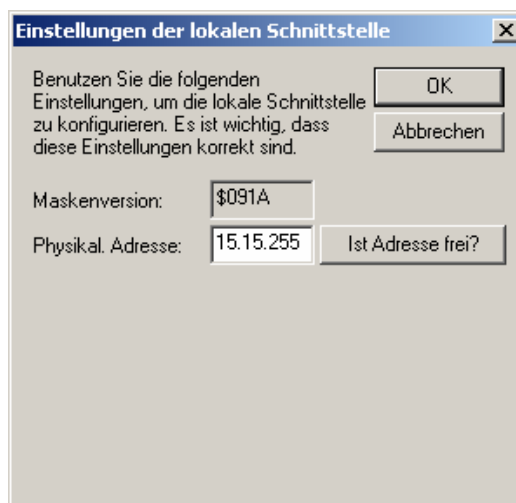


Figure 10: Settings of the local interface

NEW

5.2 Operation in the ETS4

Via an IP data network and a KNX/IP interface, a direct connection can be established from a PC or other data processing devices in the networks (e.g. visualisations) to the KNX/EIB. Thus, access to the bus is possible from every point in the IP data network.

The ETS3 and ETS4 facilitate the configuration of KNX/EIB installations via the existing IP data network and use the KNX/IP interface such as a conventional serial RS232 or USB data interface to communicate with the bus. This also includes downloading from bus devices or the function of the group monitor (no support of the bus monitor mode).

For stable communication via KNXnet/IP tunneling, a second physical address (similar to the local physical address for an RS232 or USB connection) must be set via the ETS3 or ETS4.

The following steps must be carried out to configure the communication interfaces:

1. First the ETS4 must be started and the settings for communication must be opened (Einstellungen -> Kommunikation (Settings/Communication) – compare with Figure 14)

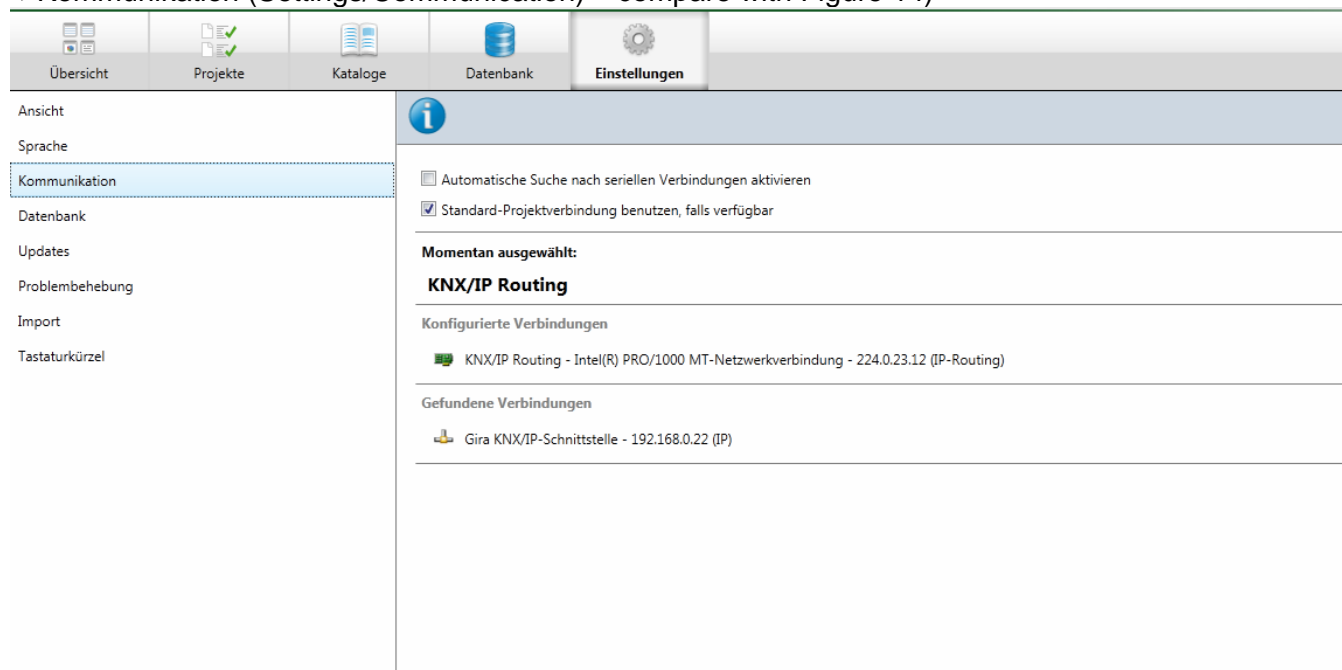


Figure 11: Communication settings in the ETS4

2. Then select the KNX/IP interface in the device list under "Gefundene Verbindungen" (Connections found) and click on "Auswählen (Select)".

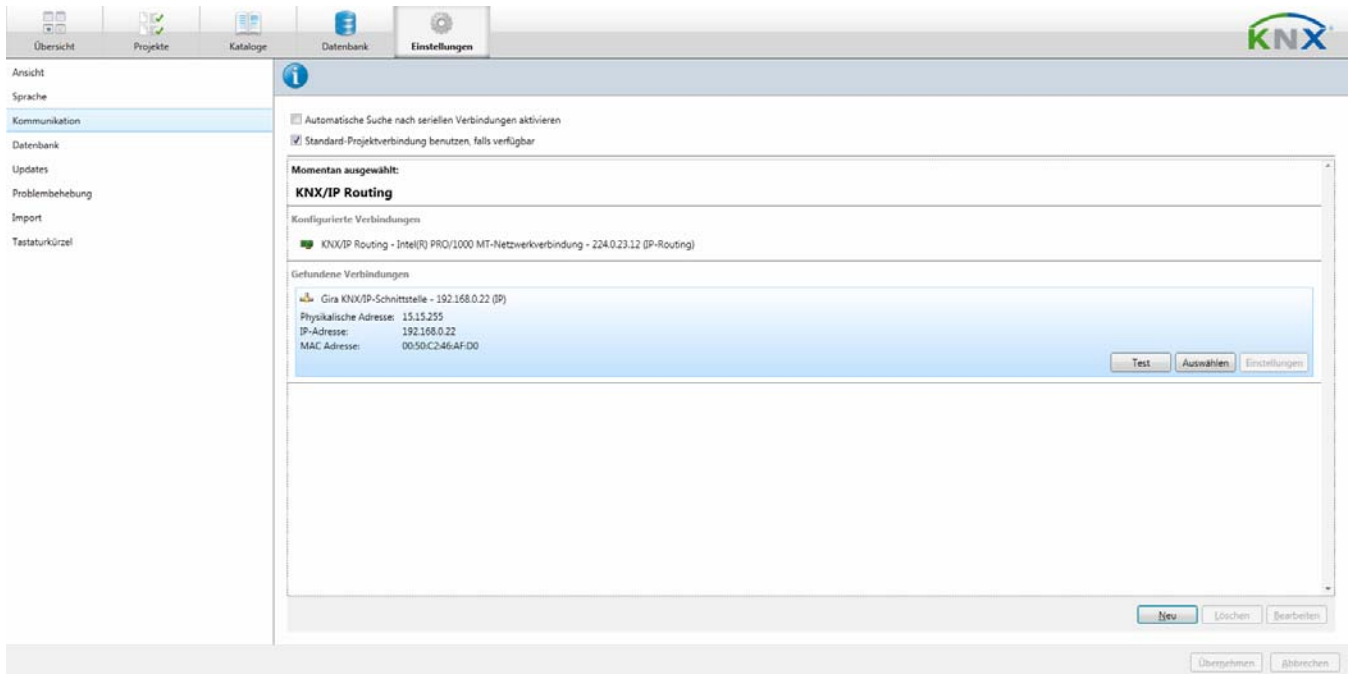


Figure 12: Select device for tunneling connection in the ETS 4

3. The interface now appears under "Konfigurierte Verbindungen" (Configured connections).

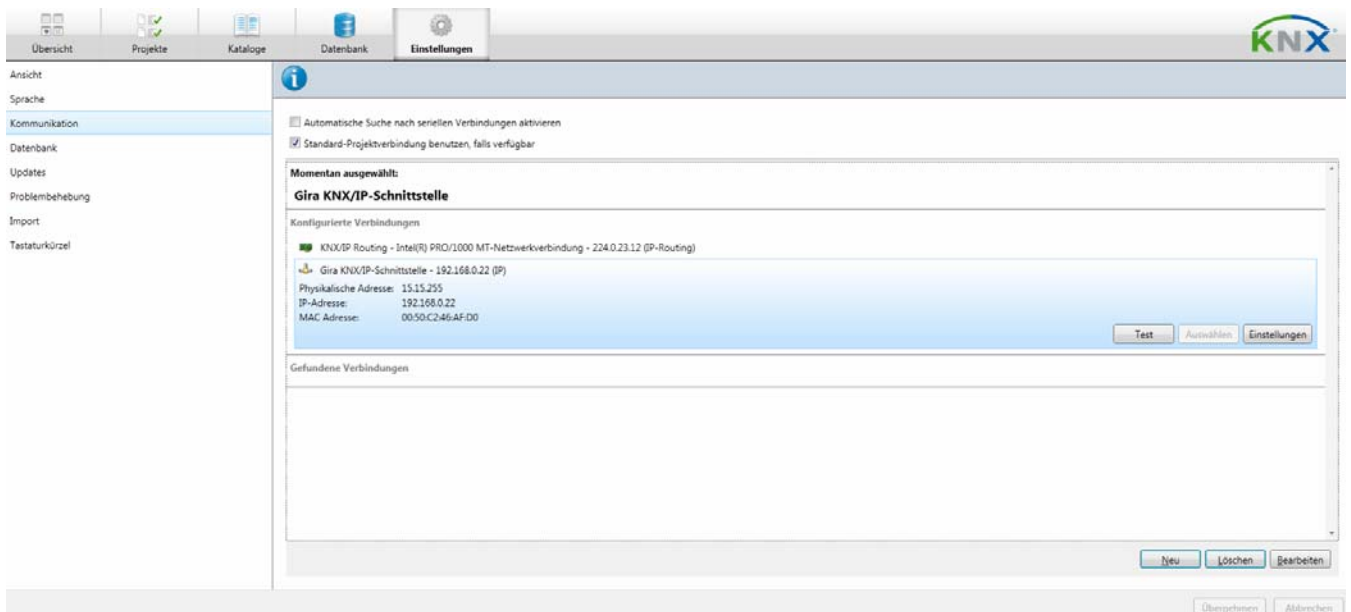


Figure 13: Device was selected in the ETS4

4. For stable communication via KNXnet/IP tunneling, a second physical address (similar to the local physical address for an RS232 or USB connection) must be set via the ETS. For this, select the device under "Konfigurierte Verbindungen" (Configured connections) and click "Einstellungen" (Settings).

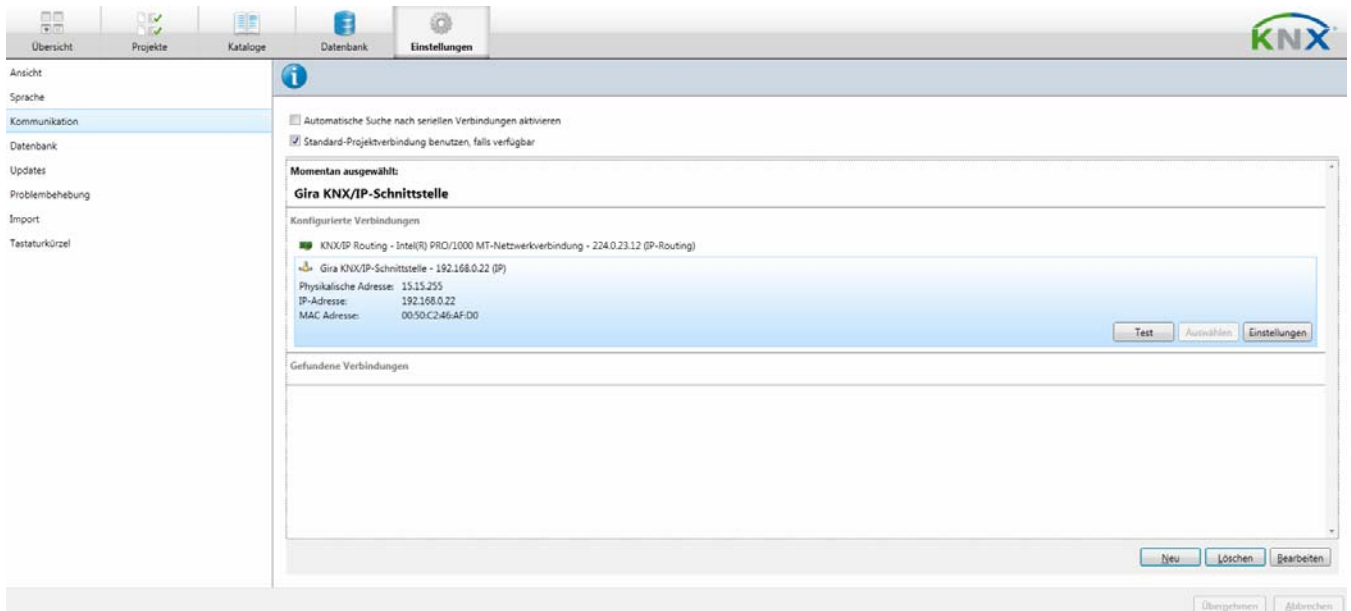


Figure 14: Select device in the ETS4 under "Configured connections"

5. The configuration dialogue opens. The desired address must now be entered in the field of the physical address of the device. It must be ensured that an address from another device in the ETS project is not used (if necessary, check using the ETS "Address free?").

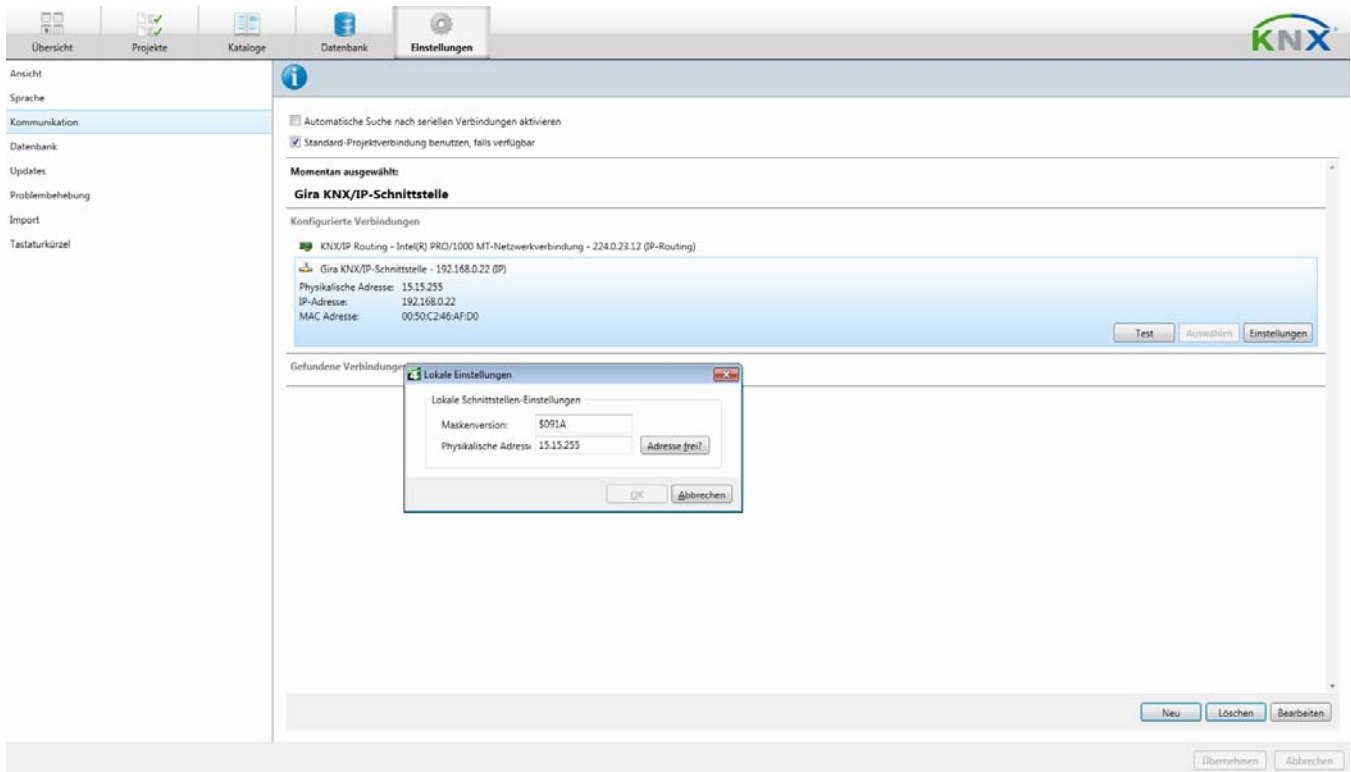


Figure 15: Setting the local physical address

6 License Agreement for the KNX/IP interface software

Hereinafter are the contract terms for your use of the software as the "licensee".

By accepting this agreement and installing the KNX/IP interface software or putting the KNX/IP interface into use, you conclude an agreement with Gira, Giersiepen GmbH & Co KG and agree to be legally bound to the terms of this agreement.

6.1 Definitions

Licensor: Gira, Giersiepen GmbH & Co KG, Radevormwald, Germany

Licensee: The lawful recipient of the KNX/IP interface software

Firmware: Software which is embedded on the KNX/IP interface hardware and enables operation of the DCS-IP-gateway.

KNX/IP interface software: The KNX/IP interface software denotes all of the software provided for the KNX/IP interface product, including the operating data. This particularly includes the firmware and the product database.

6.2 Subject matter of the agreement

The subject matter of this agreement is the KNX/IP interface software provided on data carriers or through downloads, as well as the corresponding documentation in written and electronic form.

6.3 Rights of use of the KNX/IP interface software

The licensor grants the licensee the non-exclusive, non-transferable right to use the KNX/IP interface software for an unlimited time in accordance with the following conditions for the purposes and applications specified in the valid version of the documentation (which shall be provided in printed form or also as online help or online documentation).

The licensee is obliged to ensure that each person who uses the program only does so as part of this license agreement and observes this license agreement.

6.4 Restriction of rights of use

- 6.4.1 The licensee is not authorised to use, copy, process or transfer the KNX/IP interface software in whole or in part in any way other than as described herein. Excluded from this is one (1) copy, which shall be produced by the licensee exclusively for archiving and backup purposes.**
- 6.4.2 The licensee is not authorised to apply reverse-engineering techniques to the KNX/IP interface software or to convert the KNX/IP interface software to another form. Such techniques particularly include disassembly (conversion of the binary-coded computer instructions of an executable program into an assembler language which can be read by humans) or decompilation (conversion of binary-coded computer instructions or assembler instructions into source code in the form of high-level language instructions).**
- 6.4.3 The firmware may only be installed and used on the hardware (KNX/IP interface) approved by the licensor.**
- 6.4.4 The KNX/IP interface software may not be passed on to third parties, nor may it be made accessible to third parties.**
- 6.4.5 The licensee is not authorised to rent or lease the KNX/IP interface software or grant sublicenses to the program.**
- 6.4.6 The licensee requires written approval from the licensor to create and distribute software which is derived from the KNX/IP interface software.**
- 6.4.7 The mechanisms of the license management and copying protection of the KNX/IP interface software may not be analysed, published, circumvented or disabled.**

6.5 Ownership, secrecy

6.5.1 The KNX/IP interface software and the documentation (which shall be provided in printed form or also as online help or online documentation) are business secrets of the licensor and/or the object of copyright and/or other rights and shall continue to belong to the licensor. The licensee shall observe these rights.

6.5.2 Neither the software nor the data backup copy nor the documentation (which shall be provided in printed form or also as online help or online documentation) may be passed on to third parties at any point in time, in whole or in part, for a charge or free of charge.

6.6 Changes, additional deliveries

The KNX/IP interface software and the documentation (which shall be provided in printed form or also as online help or online documentation) shall be subject to possible changes by the licensor.

6.7 Warranty

The KNX/IP interface software shall be delivered together with software from third parties as listed in section 11. No warranty is provided for software from third parties.

6.7.1 The KNX/IP interface software and the documentation (which shall be provided in printed form or also as online help or online documentation) shall be provided to the licensee in the respective valid version. The warranty period for the KNX/IP interface software is 24 months. During this time the licensor shall provide the following warranty:

- The software shall be free of material and manufacturing defects when turned over to the customer.
 - The software shall function in accordance with the documentation included with it in the respective valid version.
 - The software shall be runnable on the computer stations specified by the licensor.
- The warranty shall be fulfilled with the supply of spare parts.

6.7.2 Otherwise, no warranty shall be provided for the freedom from faults of the KNX/IP interface software and its data structures from defects. Nor does the warranty cover defects due to improper use or other causes outside the influence of the licensor. Any additional warranty claims shall be excluded.

6.8 Liability

The licensor shall not be liable for damages due to loss of profit, data loss or any other financial loss resulting as part of the use of the KNX/IP interface software, even if the licensor is aware of the possibility of damage of that type.

This limitation of liability is valid for all damage claims of the licensee, regardless of the legal basis. In any case, liability is limited to the purchase price of the product.

The exclusion of liability does not apply to damage caused by premeditation or gross negligence on the part of the licensor. Furthermore, claims based on the statutory regulations for product liability shall remain intact.

6.9 Applicable law

This agreement is subject to the laws of the Federal Republic of Germany.
The place of jurisdiction is Cologne, Germany.

6.10 Termination

This agreement and the rights granted herein shall end if the licensee fails to fulfil one or more provisions of this agreement or terminates this agreement in writing. The KNX/IP interface software and the documentation turned over (which is provided in printed form or also as online help or online documentation) including all copies shall in this case be returned immediately and without being requested to do so. No claim to reimbursement of the price paid shall be accepted in this case.

The license for use of the KNX/IP interface software shall expire upon the termination of the agreement. In this case, the KNX/IP interface product must be taken out of operation. Further use of the KNX/IP interface without a license is precluded.

The start-up software and the visualisation software must be uninstalled and all copies must be destroyed or returned to the licensor.

6.11 Subsidiary agreements and changes to the agreement

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