12 CO IP-Interface 720002

Application program usage

Product family:	System devices
Product type:	IP-Interface
Manufacturer:	Siemens

Name:	IP Interface N148/22
Order-No.:	5WG1 148-1AB22

Functional description

The IP Interface is a DIN rail mounted device.

This device utilizes the KNXnet/IP standard and enables communication connections to KNX/EIB lines or systems via data networks using the Internet Protocol (IP). PC's or other data processing equipment can exchange data with KNX/EIB devices through this communication link.

The physical connection to the KNX/EIB bus is established via a bus connector terminal block. For connection to the data network (IP via 10BaseT) the device contains an RJ45 socket.

By using a LAN modem a KNX/EIB installation can be remotely accessed even if there is no direct data network connection between a PC and an IP Interface. LAN modems are available on the market for standard telephone, ISDN or DSL connections.

The IP Interface requires additional operating power for its operation.
The IP Interface N148/22 can source this operating power via the network connection from "Power over Ethernet" according to IEEE 802.3af. Alternatively, the operating power can be provided via a second terminal block (white-yellow terminals) by a safety extra low voltage (SELV) power supply AC/DC 24 V or by a bus power supply (unchoked power, DC 29V). When a SELV power supply is connected the operating power is sourced from it.

The IP Interface has these characteristics:
- Simple connection to hierarchically superimposed systems via Internet Protocol (IP)
- Direct access to the KNX/EIB installation from any access point to the IP network (KNXnet/IP Tunneling)
- Communication between buildings and facilities
- LED display of
  - operation
  - KNX/EIB communication
  - IP communication
- Simple configuration with standard ETS

- Easy connection to SCADA and Facility Management systems (see: Supported Software)

KNXnet/IP Tunneling interface to the bus
A direct connection between a networked PC and the bus can be established via a data network and the IP Interface N 148/22. This allows for accessing the bus from any access point in the data network.

The IP Interface N148/22 provides up to five KNXnet/IP Tunneling connections, allowing for e.g. simultaneous configuration with ETS3 and operation of a visualization.

Note

For stable communication via KNXnet/IP Tunneling the IP Interface must use a separate individual address for each KNXnet/IP Tunneling connection. These additional individual addresses must be different from the individual address of the device and must not be used by any other bus device. In ETS these individual addresses should be reserved by proxy devices.

ObjectServer interface to the bus (N148/22)
A direct connection between a networked PC and the bus can also be established via a data network and the IP Interface N148/22 using ObjectServer. ObjectServer compared with KNXnet/IP Tunneling provides the advantage that the communication can be maintained even over network connections with a transmission time for the datagrams of over one second (e.g. satellite connections).

Assignment of additional individual address(es)

Additional individual addresses are either assigned with ETS (see: Setting the additional individual address of the IP Interface with ETS3) or alternatively without a tool automatically by the device itself.
The automatic address assignment for KNXnet/IP Tunneling and ObjectServer is started when the learning button is pressed during normal operation for more than 5 seconds but less than 10 seconds. The programming LED flashes during the address assignment process. The device checks which individual addresses are already used by other bus devices connected to the bus line. These addresses are not used for the address assignment.
By adding additional bus devices at a later time one or more of the additional individual addresses could be assigned twice. When during normal operation the learning button is pressed for more than 10 seconds all additional individual addresses in the IP Interface N148/22 are reset to the default value (15.15.255) and the programming LED is turned off.

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3.10.1.5.1/1

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12 CO IP-Interface 720002

IP address assignment
Please consult your network administrator regarding configuration of the parameters device IP address, sub-net mask, and DHCP.

The IP address of the IP Interface N148/22 is assigned manually using ETS, automatically by a DHCP server in the IP network, or by the device itself (AutoIP). Assign-ment of the IP address by a DHCP server allows for changes of the device IP address without using ETS. Configuration of the DHCP server may require the MAC address, which is printed on the device. If a DHCP serv-er is not available the device assigns itself an IP address (AutoIP).

Default factory settings
The IP Interface ships with these default factory settings:
- Physical address of the IP Interface:
  15.15.15 (= FFFF hex)
- IP address assignment via DHCP

Configuration with ETS
The IP Interface N 148/22 can be configured with ETS3.0 f and later versions.

Note

The IP Interface can be reset to the default factory set-tings by pressing the learning button for more than six seconds when the operation voltage is turned on. The transition to the default state is indicated by a blinking programming LED. All parameter settings are deleted by this reset action.

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720002, 6 pages

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3.10.1.5.1/2

12 CO IP-Interface 720002

Communication objects

The application program does not contain any communication objects.

Parameter General

Parameter	Settings
Device name (max. 30 char)	**IP Interface N148**
This parameter determines the name (max. 30 characters) of the IP Interface, which is used for easy recognition of the device when searched by an KNXnet/IP visualisation or the ETS.	
IP Address Assignment	**by DHCP Server** manual input
This parameter determines the type of IP address assignment. By default the parameter is set for automatic assignment of the IP address by a DHCP server. If "manual input" is selected two additional tabs appear for manual input of the IP address, subnet mask, and the default gateway address.	

Parameter IP Konfiguration

IP Config 1

Parameter	Settings
IP Address Byte 1, Byte 2, Byte 3, Byte 4	**0.0.0.0**
This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP address of the IP	

Interface.

The factory default setting for the IP address is **0.0.0.0**. This default value must be replaced by a valid IP address.

Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte.

Parameter	Settings
IP Subnet Mask Byte 1, Byte 2, Byte 3, Byte 4	**0.0.0.0**
This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP subnet mask used by the IP Interface. The factory default value is **0.0.0.0**. This default value must be replaced by a valid subnet mask. Valid subnet mask values are e.g. 255.255.255.0 or 255.255.240.0. Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte.	

IP Config 2

Parameter	Settings
IP Standard Gateway Byte 1, Byte 2, Byte 3, Byte 4	**0.0.0.0**
This parameter is only visible if manual input was chosen for IP Address Assignment. It determines the IP address of the IP Standard Gateway. The factory default value is **0.0.0.0**. This default value may be replaced by a valid IP address. Each byte of the four byte IP Routing Multicast Address is set separately, with a value range of 0...255 for each byte. The Standard Gateway transmits IP datagrams to IP devices with IP addresses outside of the local network. Use the predefined (invalid) IP address (**0.0.0.0**) if the device shall be configured without a Standard Gateway.	

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3.10.1.5.1/3

12 CO IP-Interface 720002

Supported Software

Here is a list of software supporting the IP Interface.

ComBridge Studio
  IPAS GmbH
  Grabenstr 149 a
  47057 Duisburg
  [http://www.ipas-products.com]

  Visualization, Database interface,
  Notification via email, OPC Server

ComBridge Studio is a visualization software that can use the IP Interfaces N148/21 and N148/22, the IP Routers N146 and N146/02, the IP Controller N350E and the IP Viewer N151 as interface to KNX/EIB. Find more information in the GAMMA catalog or at the above listed web site.

ETS3
  KNX Association
  De Kleetlaan 5, Bus 11
  B-1831 Brussels-Diegem
  Belgium
  [http://www.knx.org]

  Configuration of bus installations via existing data net works (ETS 3.0c or higher)

A KNXnet/IP driver is available for ETS3. When this driver is installed ETS3 may use the IP Interfaces N148/21 and N148/22, the IP Routers N146 and N146/02, the IP Controller N350E and the IP Viewer N151 as interfaces to the bus just like a standard RS232 or USB serial interface. This function includes download of device configuration via the bus and the group monitor function of ETS3.

Note

The ETS3 driver currently does not support local download. When attempting a local download to the IP Interface N148/22 this message appears: "incompatible BCU version $091A (required $0012)".

Note

After installing the ETS3 driver and selecting the IP Interface N148/22 or the IP Router N146/02 as communication interface a windows message may pop up announcing that a "Class" is unknown.
In this case install the Microsoft .Net Framework that you can download from the Microsoft software update site (file size: approx. 25MB).

Note

When an IP Interface is unloaded this unloading process may fail with the error message "An internal error occurred". Subsequently, no other device can be configured and ETS displays the error message "An internal error occurred.". When attempting to check the "Settings" in menu "Extras → Options → Communication" the error message "Severe error" appears.
The problem is solved by either selecting a different interface or by closing and restarting ETS.

Note

If the communication to the KNX bus fails when a KNXnet/IP Tunneling connection exists then, even if the KNX bus is reconnected, a connection to the bus cannot be established and a download fails.
The problem is solved by either selecting a different interface or by closing and restarting ETS.
Then a connection to the previously used IP device (IPInterface N148/21 resp. N148/22 or IP Router N146 resp. N146/02) can be established.
The same behavior shows if the power to the IP device fails.

Note

If the IP Interface N148/22 is used as an interface to the bus and its own configuration is downloaded via the bus then ETS displays the error message "The device with the individual address %1 cannot be found.". The download is not executed.
The problem is solved by either selecting a different interface or by closing and restarting ETS.
Then a connection to the IP Interface N148/22 can be established.

Note

As long as a KNXnet/IP Tunneling connection is used by ETS for bus monotoring function only this KNXnet/IP Tunneling connection is functional. Other KNXnet/IP Tunneling connections are blocked while the bus monitoring function is active

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3.10.1.5.1/4

720002, 6 pages

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12 CO IP-Interface 720002

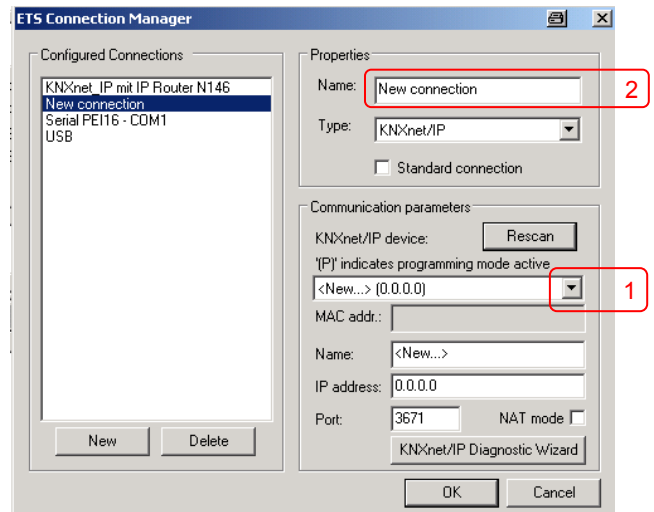## Setting the communication interface in ETS3

In ETS3 select Extras→ Options.
In the Options window select the Communication tab.
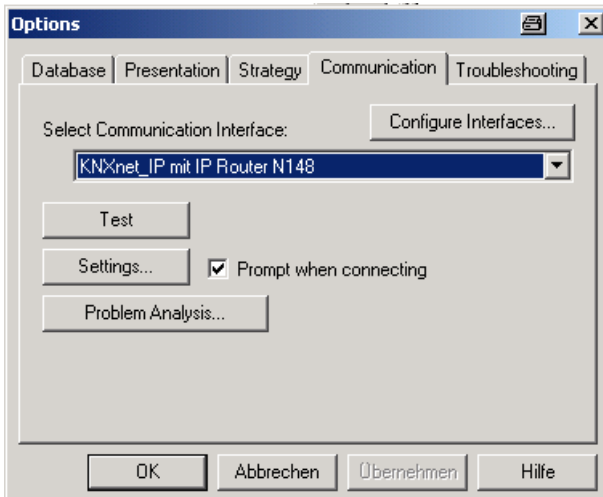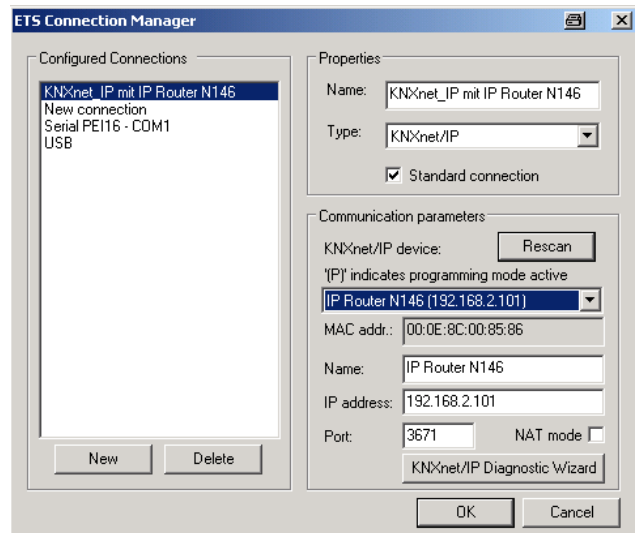

Click on „Configure Interfaces".
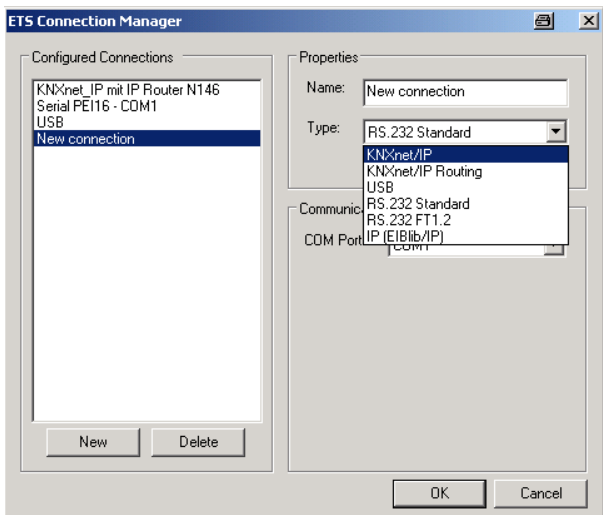
Generate a new interface and select the type KNXnet/IP. ETS3 automatically searches for all reachable IP Interfaces.

(1) Select an IP Interface from the list.
(2) Assign a name to this new interface.

The result could look like this.

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3.10.1.5.1/5

12 CO IP-Interface 720002

Setting the additional individual address of the IP Interface with ETS3

For a stable communication with the IP Interface via KNXnet/IP Tunneling a additional individual address must be set using ETS3.
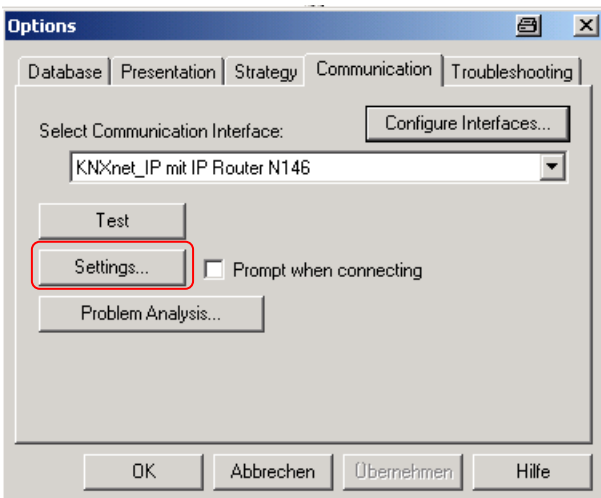
Click on Settings.
ETS3 fetches the current setting of the additional individual address from the IP Interface.
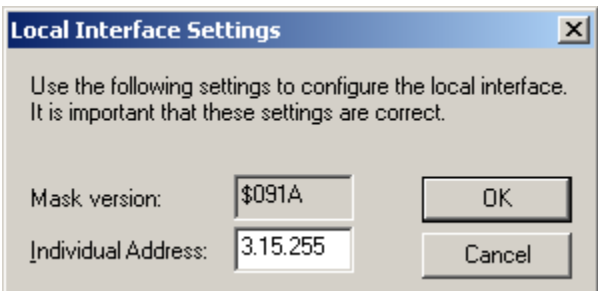
The factory setting of the additional individual address of the IP Interface is 15.15.255.
Enter the desired additional individual address and acknowledge this entry by clicking on OK.
ETS3 sets the value in the IP Interface and closes the window.

Note

When entering the additional individual address take care that this individual address is not used by another bus device. A Dummy device with this individual address should be inserted in the ETS project.

General Notes

- The operating instructions must be handed over to the client.
- Any faulty device is to be sent together with a return delivery note of the local Siemens office.
- For any technical questions, please consult:
☎ +49 (911) 895-7222
🖷 +49 (911) 895-7223
✉ support.automation@siemens.com
www.siemens.com/automation/support-request

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3.10.1.5.1/6