IP Interface N148/21	5WG1 148-1AB21

Product and Applications Description

The IP Interface N148/21 is a DIN rail mounted device.

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

To operate the IP Interface requires AC/DC 24 V, which is provided via a second terminal block. The IP Interface is powered via this operating voltage terminal connector.

The IP Interface employs the KNXnet/IP Tunneling standard, which enables sending KNX/EIB telegrams via an IP network to an KNX/EIB installation and thus connecting to the bus from a PC.

By using a LAN modem an 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 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)

IP Interface as interface to the bus (KNXnet/IP Tunneling)
A direct connection between a networked PC and the bus can be established via a data network and the IP Interface N 148/21. This allows for accessing the bus from any access point in the data network.

IP address assignment
The IP address of the IP Interface N 148/21 is assigned manually using ETS or automatically by a DHCP server in the IP network. Assignment 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.

Please consult your network administrator regarding configuration of the parameters device IP address, subnet mask, and DHCP.

Default factory settings
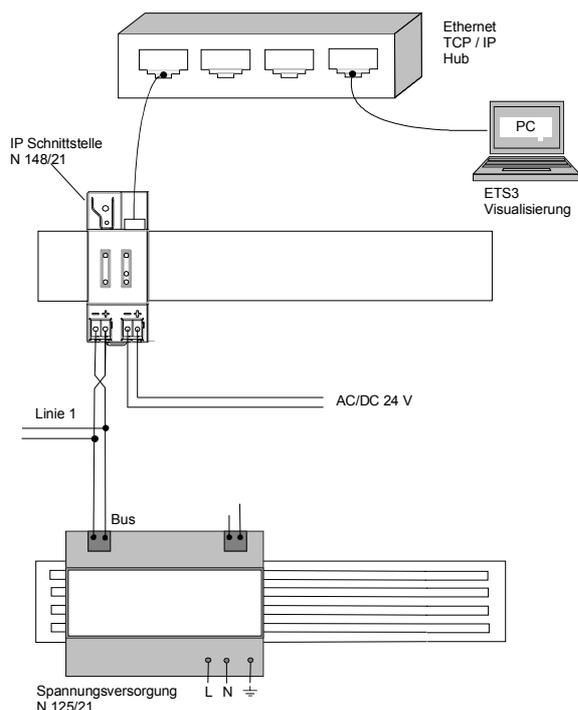The IP Interface ships with these default factory settings:
- Physical address of the IP Interface: 15.15.255 (= FFFF hex)

Application programs

The IP Interface N148/21 can be configured with ETS2 v1.2 or higher.

It requires the application program "**12 CO IP Interface 720001**".

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Industry Sector, Building Technologies
Electrical Installation Technology
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Example of Operation

Installation Instructions

- The device may be used for permanent interior installations in dry locations within distribution boards or small casings with DIN rail EN 60715-TH35-7,5.

⚠️ **WARNING**

- The device must be mounted and commissioned by an authorised electrician.
- Free DIN rail areas with sticked-in data rails must be covered with covers, order no. 5WG1 192-8AA01.
- The prevailing safety rules must be heeded.
- The device must not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.

Technical Specifications

Network communication
- Ethernet:
  10BaseT (10 Mbit/s)
- Supported Internet Protocols:
  ARP, ICMP, IGMP, UDP/IP, DHCP
- KNXnet/IP according to Konnex System Specification:
  Core, Tunneling, Device Management

Rated voltage
- Bus: DC 24V (DC 21...30V)
- Auxiliary power supply:
  AC/DC 24V (AC/DC 12...30V)

Power supply
- Bus voltage: via KNX/EIB bus line
- Operating voltage:
  from external SELV power supply AC/DC 24V nominal,
  permissible input voltage range:
  AC/DC 12 ... 30 V
- Recommended power supplies:
  – door bell transformer 4AC3 108, AC 230V / AC 2x12V (primary / secondary), 2x0,33A, 2MU width
  – door bell transformer 4AC3 116, AC 230V / AC 2x12V (primary / secondary), 2x0,0,67A, 2MU width
  – door bell transformer 4AC3 140, AC 230V / AC 2x12V (primary / secondary), 2x1,67A, 3MU width

⚠️ **CAUTION**

- The device connects the external safety extra low voltage with the LAN potential. If the LAN shield is connected to earth ground then the isolation to ground is lost.
- It is recommended to use the external low voltage power supply for the IP Router N146 only.

Power usage
- From the bus line: max. 10mA @ DC 29V
- From the auxiliary power supply: max. 800mW (25mA @ DC 24V)

Control elements
1 learning button:
for switching between normal operating mode and addressing mode

Display elements
- 1 green LED: device ready (ON)
- 1 yellow LED: Communication on bus line
- 1 green LED: Ethernet Link Signal available (Lk)

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- 1 yellow LED: Receiving data from Ethernet (Rx)
- 1 red LED: Transmitting data to Ethernet (Tx)
- 1 red LED: for monitoring bus voltage and displaying mode, selected with the learning button

Connections
- bus line:
  screwless bus connection block (red-black)
  0,6...0,8 mm Ø single core
  remove approx. 5mm of isolation
- Ethernet / IP network: RJ45 socket
- auxiliary power:
  screwless extra low voltage terminal (yellow-white)
  ∅ 0,6 ... 0,8 mm Ø single core
  remove approx. 5mm of isolation

Physical specifications
- housing: plastic
- N-system DIN-rail mounted device,
  width: 2 SUs (1SU = 18mm)
- installation: rapid mounting on EN 60715-TH35-7,5 rail
- weight: approx. 100g

Electrical safety
- degree of pollution (according to IEC 60664-1): 2
- protection (according to EN 60529): IP 20
- protection class (according to IEC 61140): III
- overvoltage class (according to IEC 60664-1): III
- bus: safety extra low voltage SELV DC 24 V
- the device complies with EN 50 090-2-2

Electromagnetic compatibility
complies with
EN 61000-6-2 and EN 61000-6-3 and EN 50090-2-2

Environmental specifications
- climatic conditions: EN 50090-2-2
- ambient temperature operating: - 5 ... + 45 °C
- storage temperature: - 25 ... + 70 ° C
- relative humidity (non-condensing): 5 % to 93 %

Markings
EIB, KNX, CE

CE mark
complies with the EMC regulations (residential and functional buildings), and low voltage regulations

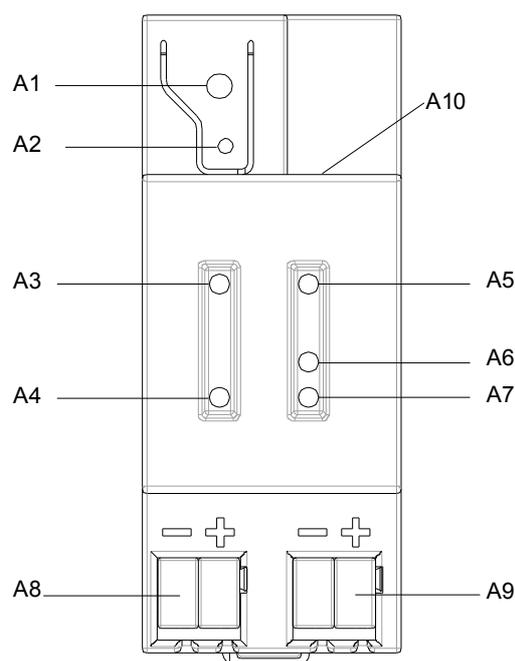### Location and Function of the Display and Operator Elements

Figure 1: Location of the display and operator elements

A1   LED red: indicating normal operating mode
       (LED off) and addressing mode (LED on)
A2   learning button for switching between normal
       operating mode and addressing mode for
       receiving the physical address
A3   LED green: Operation
A4   LED yellow: data transmission on bus line (Line)
A5   LED green: Ethernet Link signal (Lk)
A6   LED yellow: Ethernet Receive signal (Rx)
A7   LED red: Ethernet Transmit signal (Tx)
A8   extra low-voltage bus terminals (red-black)
A9   extra low-voltage terminals (yellow-white)
A10 RJ45 socket for data network cable

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Mounting and Wiring

General description
The N-system DIN-rail device can be installed in
N-system distribution boards, surface or flush mounted,
or on any DIN rail complying with EN 60715-TH35-7,5.
The connection to the bus line is established via the
bus connector terminal (red-black) on the top side.
The RJ45 socket on the device front side provides the
connection to the Ethernet-IP data network.

Mounting DIN-rail devices (Figure 5)
- Slide the device (B1) onto the DIN-rail (B2) and
- swivel back the device until the slide clicks into place
  audibly.

Dismounting DIN-rail devices (Figure 5)
- Remove all connected wires,
- press down the slide (C3) with a screw-driver and
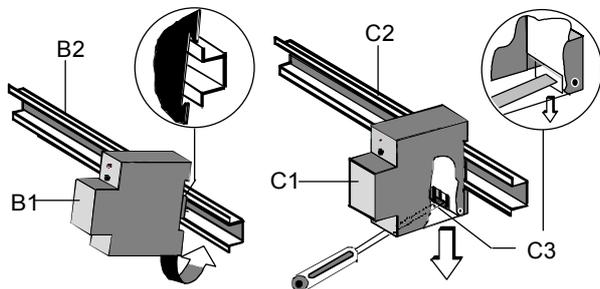- swivel the device (C1) from the DIN-rail (C2).

Figure 5: Mounting and dismounting a DIN-rail device

Slipping off bus connection blocks (Figure 6)
- The bus connection block (D2) is situated on the top
  of the device (D1).
- The bus connection block (D2) consists of two
  components (D2.1 and D2.2) with four terminal
  contacts each. Take care not to damage the two test
  sockets (D2.3) by accidentally connecting them to the
  bus cable or with the screw-driver (e.g. when
  attempting to unplug the bus connection block).
- Carefully put the screw-driver to the wire-inserting slit
  of the bus connection block's grey component and
  pull the bus connection block (D2) from the device
  (D1).

Slipping on bus connection blocks (Figure 6)
- Slip the bus connection block onto the guide slot and
- press the bus connection block (D2) down to the
  stop.

Connecting bus cables (Figure 6)
- The bus connection block (D2) can be used with
  single core conductors Ø 0,6 ... 0,8 mm.
- Remove approx. 5 mm of insulation from the
  conductor (D2.4) and plug it into the bus connection
  block (D2) (red = +, black = -).

Disconnecting bus cables (Figure 6)
- Unplug the bus connection block (E1) and remove
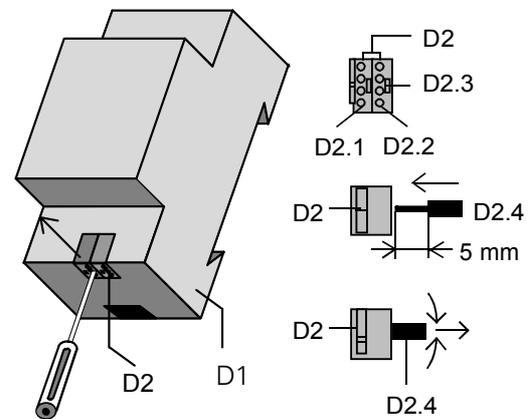 the bus cable conductor (E1.4) while simultaneously
  wiggling it.

Figure 6: Connecting and disconnecting bus wires

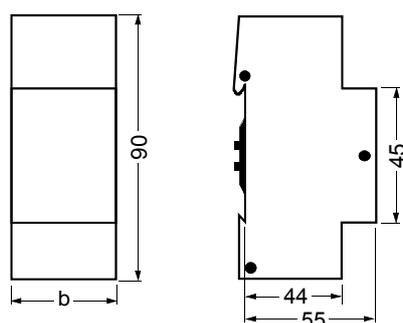### Slipping off / on auxiliary power connection block
- Follow the instructions for the bus connection block
  when slipping off/on the auxiliary power connection
  block.

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Dimension Diagram

Dimensions in mm

90

b

44

55

45

b = 2 SU

1 Standard unit (SU) = 18 mm

Supported Software

Here is a list of software supporting the IP Interface N 148/21.

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 Interface N148/21, the IP Router N146, 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 Interface N148/21, the IP Router N146, 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 busmonitoring and local download. When attempting a local download to the IP Interface N148/21 this message appears: "incompatible BCU version $091A (required $0012)".

Note

After installing the ETS3 driver and selecting the IP Interface N148/21 or the IP Router N146 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).

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General Notes

- Any faulty devices should be returned to the local Siemens office.
- If you have further questions about the product, please contact our Technical Support:

☎ +49 (0) 180 50 50-222
   (0,14 €/min. from the German landline network, deviating mobile communications prices are possible)

📠 +49 (0) 180 50 50-223

E-Mail: support.automation@siemens.com

✉ http://www.siemens.com/automation/service&support

Space for notes