IP Gateway KNX/BACnet N143 **5WG1 143-1AB01**

Product and Application Description

The IP Gateway KNX-BACnet N 143 is is a DIN rail mounted device connecting a KNX installation with a system using BACnet/IP communication.
The Gateway provides up to 250 communication objects. Via these objects KNX functions (group addresses) are transposed to BACnet objects.
The communication objects can be configured optionally as:
- 1 bit
- 1 Byte (0...100%)
- 1 Byte unsigned
- 1 Byte signed
- 2 Byte unsigned
- 2 Byte signed
- 2 Byte float
- 4 Byte unsigned
- 4 Byte signed
- 4 Byte float

The device is configured entirely with ETS.

The configuration of the KNX communication objects automatically generates the corresponding BACnet objects. The following BACnet objects are being used:
- Binary Input
- Binary Output
- Binary Value
- Analog Input
- Analog Output
- Analog Value

No special knowledge about BACnet is required for the commissioning.
The KNX objects configured with ETS are automatically "translated" by the device into BACnet objects according to the following process:

The BACnet object instance number is identical to the object number of the ETS. Objects with a 1 bit data type are translated into "binary" objects. All others become "analog" objects. The parameter "Object Mode" (INPUT, OUTPUT, VALUE) completes the transformation to a BACnet object.

On BACnet the IP Gateway KNX/BACnet N 143 appears as an Application Specific Controller (B-ASC) with up to 250 BACnet objects. BACnet clients may set up to 455 BACnet change-of-value (COV) subscriptions for these 250 BACnet objects.
A common memory space is available for the administration of the COV subscriptions and priority arrays. This resource optimization is based on the fact that subscriptions are required for objects which send from KNX to BACnet whilst priority arrays are for objects sending from BACnet to KNX.
The maximum number of possible subscriptions is 455 if no priority arrays are used.
As each priority array has a size of 64 Byte (16 priority levels of 4 Byte each), the number of possible subscriptions decreases accordingly. The maximum possible number of subscriptions is displayed on the device website once the configuration is complete.
When the description of an object is requested from the BACnet side (ReadProperty "Description"), the description text is automatically generated and assembled from the object name, BACnet identifier and KNX group address data separated by a colon (":").

The device is equipped with a web server presenting the configuration and current values in an overview page. This presentation is helpful for testing purposes and for documentation of the interface between KNX and BACnet.
The web page contains a header section showing general device specific information:
- Device name
- BACnet instance number of the device
- MAC address
- IP address
- Net mask
- Gateway address
- Physical KNX address
- Number of configured objects
- Maximum number of possible COV subscriptions
- Number of binary input objects
- Number of binary output objects
- Number of binary value objects
- Number of analog input objects
- Number of analog output objects
- Number of analog value objects

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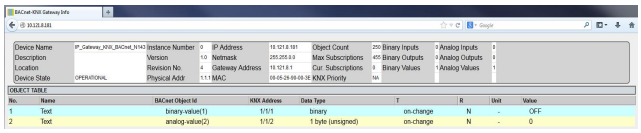

A table listing all configured objects follows. This table shows the following fields:

- Number of the object
- Name of the object
- BACnet object ID
- KNX group address
- Data type
- Transmission mode
- Read on initialization
- Unit
- Value of the object

The object values are not dynamically updated on the web site but only when the web site is called again.

Besides the function as IP Gateway KNX-BACnet the device also provides an IP Interface for ETS configuration of the device itself as well as other KNX devices of the attached KNX line.

Application program

070B CO IP Gateway KNX-BACnet 983601

- 250 KNX objects
- Configuration of the KNX communication objects for automatic transposition into BACnet objects
- IP communication for remote configuration and remote visualization

The device is configured and commissioned with the ETS (Engineering Tool Software) version ETS3 v3.0f or later.

Example of operation

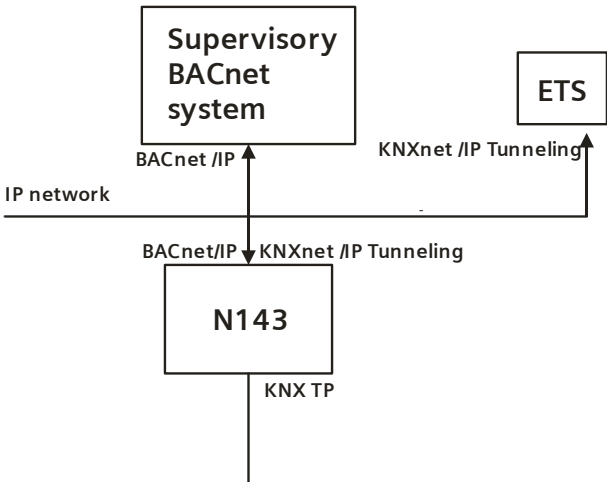

figure 1: Example of operation

Installation notes

- 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 authorized 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.

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Technical Data

Network communication
- Ethernet:
  100BaseT (100 Mbit/s)
- Supported Internet Protocols:
  ARP, ICMP, IGMP, UDP/IP, DHCP
- KNXnet/IP according to KNX System Specification:
  Core, Device Management, Tunneling

Rated voltage
- Bus: DC 24V (DC 21...30V)
- Current demand: 40 mA
- Auxiliary power supply:
  AC 12-24V, DC 12-30V

Power Supply
- Bus voltage: via the bus line
- Operating voltage:
  from external SELV power supply AC 24V / DC 24V nominal,
  permissible input voltage range:
  AC 12-24V, DC 12-30 V
- Recommended power supplies:
  – separate safety extra low voltage power supply
  – unchoked power from KNX power supplies N125/x2

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

Display elements
- 1 yellow LED: Ethernet Link Signal available (LK)
- 1 red LED: Status / Error display
- 1 red LED: for monitoring bus voltage and for displaying normal mode (LED=Off) / addressing mode (LED=On)

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

Physical specifications
- housing: plastic
- dimensions: DIN-rail mounted device,
  width: 4 SUs (1 SU = 18 mm), height: 55 mm
- weight: approx. 120 g
- fire load: approx. 3245 kJ
- installation: rapid mounting on EN 60715-TH35-7,5 rail

Electrical safety
- degree of pollution (according to IEC 60664-1): 2
- type of protection (according to EN 60529): IP 20
- overvoltage class (according to EN 60664-1): III
- bus: safety extra low voltage SELV DC 24 V
- the device complies with EN 50428

Electromagnetic compatibility
complies with EN 50428

Environmental specifications
- climatic conditions: EN 50090-2-2
- ambient temperature operating: 0 ... + 45 °C
- storage temperature: - 25 ... + 70 °C
- relative humidity (not condensing): 5 % bis 93 %

Reliability
Failure rate: 476 fit at 40°C

Markings
EIB, KNX, CE, C-Tick

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

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Location / Function of the Display and Operating Elements

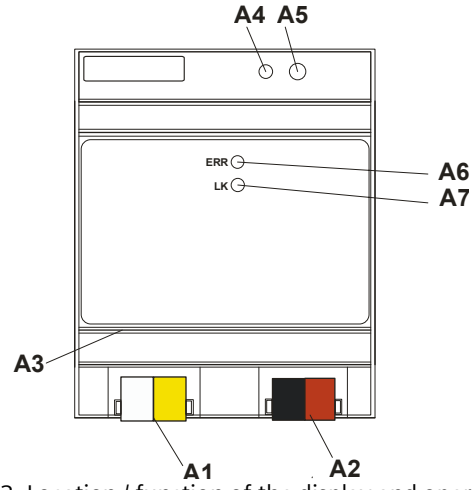

figure 2: Location / function of the display and operating elements

A1 AC/DC 24 V bus connector terminal (yellow-white)
A2 KNX bus connector terminal (black-red)
A3 Ethernet RJ45 socket
A4 KNX programming LED
A5 KNX learning button
A6 Status-/Fehleranzeige LED
A7 Ethernet Link LED

Mounting and Wiring

General description
The N-system DIN-rail device can be installed in 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 a bus connector terminal (red-black).
The RJ45 socket on the device front side provides the connection to the Ethernet-IP data network.

Mounting DIN-rail devices (Figure 3)
- Slide the device (figure 3, B1) onto the DIN-rail (figure 3, B2) and
- swivel back the device (figure 3, B1) until the slide clicks into place audibly.
- Connect the auxiliary power AC/DC 24V with the yellow-white bus connector terminal (figure 2, A1).
- Connect the bus line with the black-red bus connector terminal (figure 2, A2).
- Plug an Ethernet patch cable with an RJ45 plug into the RJ45 socket (figure 2, A3) to connect the device with the LAN / Intranet.
  A connection is established to the network when the yellow LED marked ERR (figure 2, A6) is continuously lit. When the LED LK (figure 2, A7) flashes data is sent to or from the device.

Dismounting DIN-rail devices
- Unplug the Ethernet patch cable from the RJ45 socket (figure 2, A3).
- Remove the yellow-white bus connector terminal (figure 2, A1) from its socket.
- Remove the black-red bus connector terminal (figure 2, A2) from its socket.
- press down the slide (figure 3, C3) with a screw-driver and
- swivel the device (figure 3, C1) from the DIN-rail (figure 3, C2).

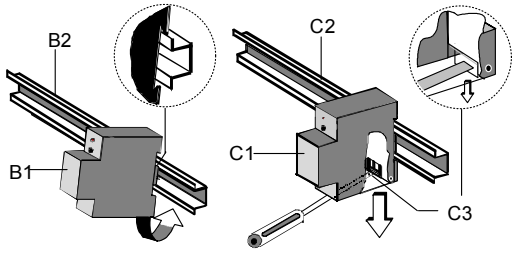

figure 3: *Mounting and unmounting a DIN rail mounted device*

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Slipping off bus connection blocks (Figure 4)
- 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 4)
- Slip the bus connection block onto the guide slot and
- press the bus connection block (D2) down to the stop.

Connecting bus cables (Figure 4)
- 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 4)
- Unplug the bus connection block (D1) and remove the bus cable conductor (D2.4) while simultaneously wiggling it.

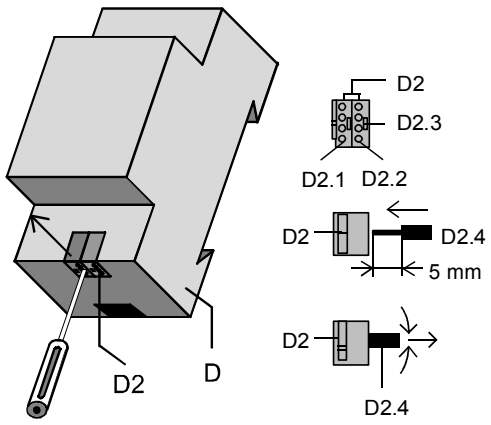
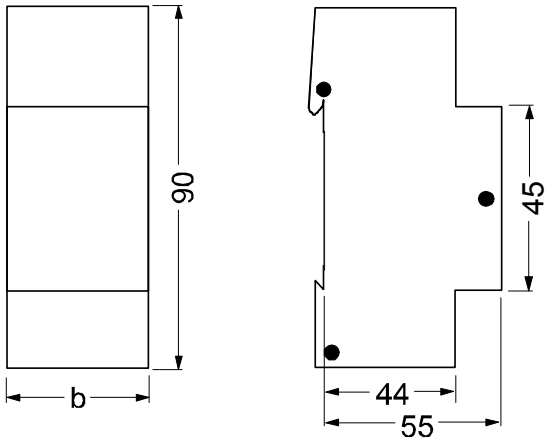


figure 4: Connecting and disconnecting bus wires

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

Dimension Drawing

Dimensions in mm



b = 4 SU

1 Standard unit (SU) = 18 mm

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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Space for notes

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