KNX IP BAOS 771

EN

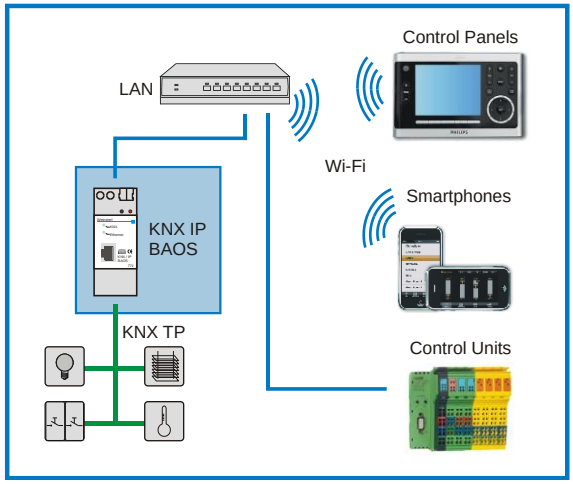
Operating and installation manual

Purpose

The KNX IP BAOS 771 is used as Interface for connecting to KNX/EIB both on telegram level (KNXnet/IP Tunneling) and on data point level (KNX Application Layer). Clients can directly access Group Objects via either a Binary Protocol (over TCP/IP or UDP/IP) or via JSON (Java Script Object Notation) Web Services. The device is configured with ETS and supports up to 250 Group Objects and 10 simultaneous client connections.

BAOS is an acronym for "*Bus Access and Object Server*". It is possible to connect to KNX/EIB-Bus everywhere over LAN. Bus connection over the internet with KNX IP BAOS 771 is also possible. The device supports 5 simultaneous KNXnet/IP tunneling connections.

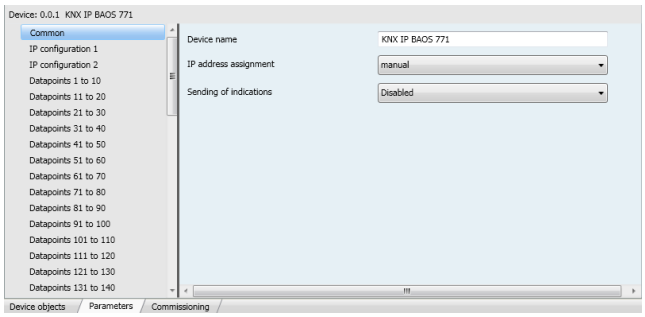
There are two ways to assign an IP-address to the KNX IP BAOS 771: get the IP-address from a DHCP-server or configure it with the ETS (as ETS parameter). It requires an external 12 V to 24 V power supply (AC or DC) or can alternatively be powered via Power-over-Ethernet (IEEE 802.3af).



ETS Database

With the ETS, following parameters can be set:

General:

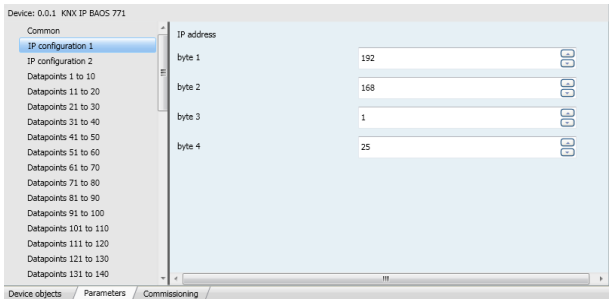


Device name:
It's possible to assign any name for the KNX IP BAOS 771. The device name should be significant (e.g. Data points 1st floor), because the name is used when searching for devices.

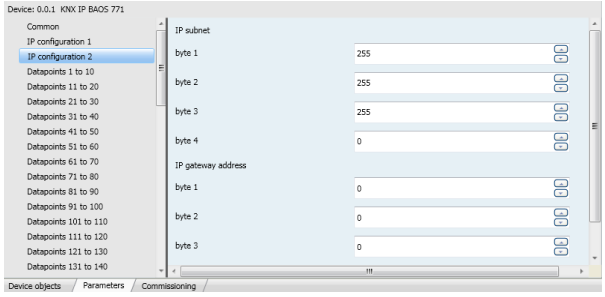
IP-Address assignment:
DHCP: The device can get its IP-address from a DHCP-server automatically. There must be a DHCP-server in the LAN in order to use this functionality (e.g. this can be a DSL-router with a DHCP-server integrated).
Manually: In this case, the IP-address, the subnetwork and the IP-address of the gateway have to be entered.

Sending of Indications:
When this parameter is activated a client will receive asynchronous datapoint value indications.

IP-Configuration:



IP-Address:
Enter the IP-Address of the KNX IP BAOS 771 here.



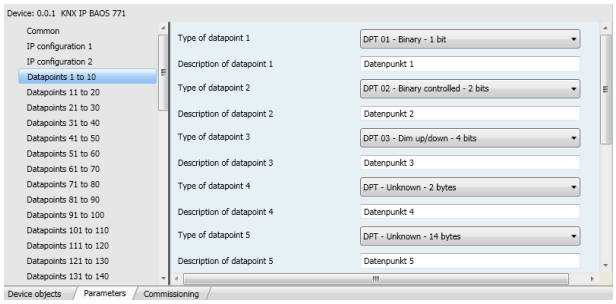
IP-Subnetwork:
Enter the subnetwork mask here. The mask helps the device to discover, whether the communication partner is the local network. If the partner is not in the local network, then the device sends the IP telegrams not directly to the partner but to the gateway, which forwards the telegrams to the device.

IP-Gateway-Address:
Enter the IP-Address of the gateway here.
Hint: Leave 0.0.0.0 there, if the KNX IP BAOS 771 ought to be used only in the local LAN.

Example for IP-Address assignment:
Over a PC the KNX IP BAOS 771 shall be accessed.
IP-Adress of the PC: `192.168.1.30`
Subnetwork of the PC: `255.255.255.0`
The KNX IP BAOS 771 is located in the same local LAN therefore it uses the same subnetwork mask. Because of the used subnetwork the IP-address assignment is limited, only addresses with format 192.168.1.xx can be assigned the device, xx stands for the range 1-255 (without 30, because already assigned to PC). Be careful not to use one IP-address more then once.
IP-adress KNX IP BAOS 771: `192.168.1.31`
Subnetwork KNX IP BAOS 771: `255.255.255.0`

Data points:

Up to 250 data points can be parameterized. Each data point gets a group address, in order to send to the bus. More than one group address can be set for one object for receiving.



Datapoint Type:
For each Datapoint the associated type (DPT) can be set. The following data points types are available:

DPT 1 (1 Bit, Boolean)
DPT 2 (2 Bit, Control)
DPT 3 (4 Bit, Dimming, Blinds)
DPT 4 (8 Bit, Character Set)
DPT 5 (8 Bit, Unsigned Value)
DPT 6 (8 Bit, Signed Value)
DPT 7 (2 Byte, Unsigned Value)
DPT 8 (2 Byte, Signed Value)
DPT 9 (2 Byte, Float Value)
DPT 10 (3 Byte, Time)
DPT 11 (3 Byte, Date)
DPT 12 (4 Byte, Unsigned Value)
DPT 13 (4 Byte, Signed Value)
DPT 14 (4 Byte, Float Value)
DPT 15 (4 Byte, Access)
DPT 16 (14 Byte, String)
DPT 17 (1 Byte, Scene Number)
DPT 18 (1 Byte, Scene Control)

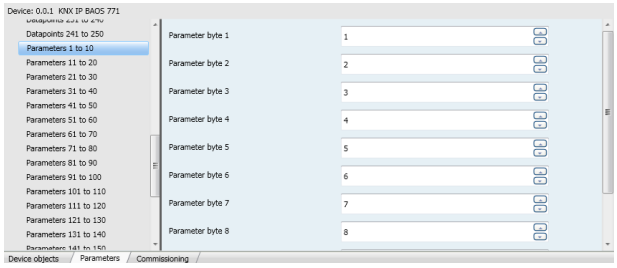
For datapoint types that are not known (or not yet defined) it is possible to explicitly set the datapoint length. The following datapoint lengths are available:

1 Bit
2 Bit
3 Bit
4 Bit
5 Bit
6 Bit
7 Bit
1 Byte
2 Byte
3 Byte
4 Byte
6 Byte
8 Byte
10 Byte
14 Byte

The Datapoint type descriptions can be found in the download area of the KNX Association (www.knx.org).

Parameter:

KNX IP BAOS 771 has 250 bytes available for user-defined parameters which can be accessed via the BAOS protocol.

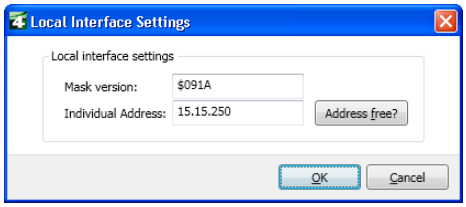


Parameter Byte:
For each of the 250 bytes a value between 0 and 255 can be entered.

ETS Connection Manager

If the IP-configuration of the KNX IP BAOS 771 is valid the device can act as an interface to KNX/EIB. The following configuration is necessary:

Select the button *Settings* and the tab *Communication* in the main window of ETS4. All available connections are listed by *Configured connections*. Select the desired connection.
The button *Local settings* enables the configuration of the individual address, which is used for bus access.



A dummy device may be created in the ETS-project to reserve this address.

The KNX IP BAOS 771 device supports up to 5 connections simultaneously. An additional physical address has to be reserved for every connection.
The first additional physical address is allocated (as shown above) to the connection in the ETS. The remaining additional addresses can be assigned directly by the device, in which cast the learn button should be pressed for at least one second. The automatic address allocation is performed as: Connection 2 contains the next higher address from Connection 1, Connection 3 the next higher from Connection 2 etc..
For example:
Connection 1 uses the additional individual address 15.15.250. Connection 2 is automatically set to 15.15.251, connection 3 is 15.15.252, connection 4 is 15.15.253 and connection 5 is 15.15.254.
The assignment of the additional individual addresses is shown by a fast blinking learn led.

Note: It is necessary to check whether the addtitional individual addresses are unused before they are assigned.

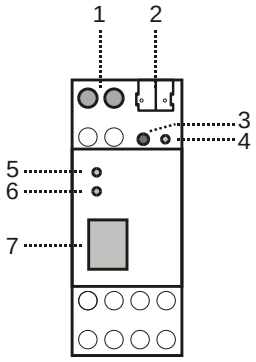
For new devices (i.e. in the factory settings state), only the additional individual address of the first connection is active with the address 15.15.250. To support multiple concurrent connections the additional address assignment is required.

Object Server

Access to the Object Server is possible via a Binary Protocol or via Web Services. Protocol descriptions can be downloaded at the KNX IP BAOS 771 product site at www.weinzierl.de. A C++ SDK (released under the BOOST software license) is available which provides an implementation of the Binary Protocol for TCP/IP.

Installation and Connection

The KNX IP BAOS 771 is designed for installation on DIN rail with a width of 2 units (36 mm). It has the following display and control elements:



1: Connector for external power supply (12 V to 24 V AC or 12 V to 30V DC)
2: Connector for KNX/EIB with a bus terminal
3: Learn key
4: Learn LED (red)
5: LED (green):
- Lights up to indicate bus voltage on KNX/EIB
- Flashes to indicate telegram traffic
6: LED (green):
- Lights up to indicate Ethernet connection
- Flashes to indicate telegram traffic
7: RJ 45 socket for connecting an Ethernet patch cable

An external power supply only needs to be connected if the switch in use does not support Power-over-Ethernet.

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