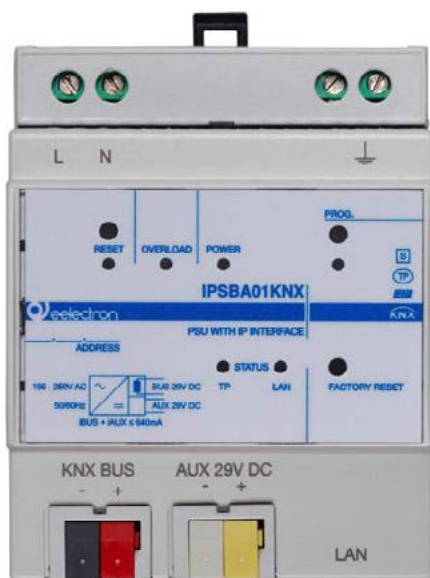


IPSBA01KNX	KNX bridge with IP interface and power supply KNX + AUX 640mA + MQTTs
IPSBA02KNX	KNX bridge with IP interface and power supply KNX + AUX 640mA



USER MANUAL

Translation of the original instructions

Version: 1.1

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VERSION	DATE	CHANGES
1.0	19/Jun/2023	-
1.1	19/May/2024	added IPSBA02KNX and 4 bytes alarms

Any information inside this manual can be changed without advice.

This handbook can be download freely from the website:

www.eelectron.com

Exclusion of liability:

Despite checking that the contents of this document match the hardware and software, deviations cannot be completely excluded. We therefore cannot accept any liability for this.

Any necessary corrections will be incorporated into newer versions of this manual.



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1. Introduction to the user manual

This manual is intended for use by KNX installers. The purpose of the document is to describe the functionalities and application programming of the **IPSBA01KNX** and **IPSBA02KNX** using the ETS software tool.

For the technical data of the device and the compatible accessories, please refer to the datasheet of the device itself.

Meaning of the symbols used



WARNING - The operation or phase described must be carried out in compliance with the instructions provided and with the safety standards.



IMPORTANT NOTE - Details and specifications to be respected for the correct functioning of the device.

2. Product overview

The **IPSBA01KNX** and **IPSBA02KNX** are KNX bridge devices that integrate a KNX power supply with auxiliary output with a total current of **640mA**, and an **IP interface**, allowing KNX installations to be implemented quickly and efficiently.

The voltage of the bus output as well as that of the auxiliary output is **29V DC**.

The IP address can be obtained via DHCP server or manually configured via ETS®.

The device works in accordance with the KNXnet / IP specifications; up to 5 different IP addresses can be assigned. The device is also a KNX bus node, with its own application program and can be configured with ETS® to communicate using **KNX Data Secure protocol**.

The **IPSBA01KNX** device integrates the **MQTT protocol** which can manage publications and subscriptions of a server up to 160 objects. By enabling the specific parameter on ETS, the MQTT version with TLS is available, which features mutual authentication based on certificate (server and device) and encryption. The purpose of the certificate is to guarantee the identity of the server (broker), of the client (bridge) and to transmit data in a secure way.

The uploading of the certificates is managed by the software “Eelectron Certificate Loader” property of eelectron. Please refer to the specific user manual “[Eelectron Certificate Loader](#)”.

By enabling the ETS “**Other power supplies on the BUS line**” parameter, it is possible to install two devices on the same bus line, at a minimum distance of 200 metres.

Moreover, 48 logic blocks are available to implement simple expressions with logical or threshold operator or complex expressions with algebraic and conditional operators; It is possible to use predefined algorithms as proportional controls of temperature and humidity or dew point calculation.

The device also integrates the “**Virtual Holder Logic**”; the field of application is the hotel room: through a magnetic sensor installed on the door and connected to a digital input, accurate presence information is managed. The presence detection solution can deduce the presence of people in the room using one or more dedicated sensors. It also detects an unexpected presence and is able to differentiate more behaviors.

It is also implemented the control logic called “**OnLine-OffLine**” that checks if all KNX TP devices of the subnet connected to the power supply are operating “On Line”, alerting the backbone if one of them goes into “Off Line” status.

On the device there are pushbuttons and signaling LEDs for bus reset operations as well as for Factory Reset or for displaying activity on the KNX bus and on the IP backbone.

The device is compact, with a size of only **4 DIN modules** and is intended for installation on DIN bar in LV distribution switchboards.

3. Installation instructions

The device can be used for permanent internal installations in dry places.



WARNING

- When a clear separation between the low voltage (SELV) and the dangerous voltage (230V) is NOT possible, the device must be installed maintaining a minimum guaranteed distance of 4 mm between the dangerous voltage lines or cables (230V not SELV) and the cables connected to the EIB / KNX BUS (SELV).
- The device must be mounted and commissioned by an authorized installer.
- The applicable safety and accident prevention regulations must be observed.
- The device must not be opened. Any faulty devices should be returned to manufacturer.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.
- KNX bus allows you to remotely send commands to the system actuators. Always make sure that the execution of remote commands do not lead to hazardous situations, and that the user always has a warning about which commands can be activated remotely.

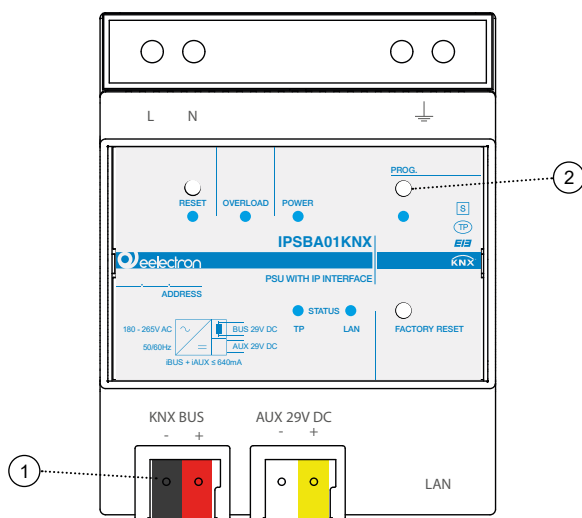
For more information: www.eelectron.com.

4. Configuration and commissioning

The configuration and commissioning of the device is made with the ETS® (Engineering Tool Software). For the configuration of the device parameters the corresponding application program or the whole eelectron® product database must be loaded in the ETS® program.

The commissioning of the device requires the following steps:

- connect the bus KNX (1)
- turn on the bus power supply
- press the programming button (2); the red programming LED turns ON
- download into the device the physical address and the configuration with the ETS® program



5. General parameters

In ETS®, in the drop down menu of the device the general parameters consist of four configuration blocks, described in the next paragraphs.

General settings

Communication objects involved:

"<General> Heartbeat"	1 Bit	CRT
"<General> Power On Event"	1 Bit	CRT
"<General> Input Date"	3 Bytes	CWTU
"<General> Input Time"	3 Bytes	CWTU
"<General> Output Date"	3 Bytes	CRT
"<General> Output Time"	3 Bytes	CRT
"<General> IP Interface"	1 Bit	CW
"<General> Reset BUS"	1 Bit	CW
"<General> Primary Heartbeat"	1 Bit	CW
"<General> Primary Alarm"	1 Bit	CRT

KNX PARAMETER	SETTINGS
Delay to send telegrams on power-up	5 + 15 seconds
Through this parameter it is possible to set the telegram transmission delay after switch-on by selecting the time beyond which the device is authorized to send telegrams. In large systems, after a power outage or shutdown, this delay avoids generating excessive traffic on the bus which cause slow performance or a transmission crash. In case of several devices requiring telegrams to be sent on the bus after a reset, these delays must be programmed to prevent traffic congestion during the initialization phase. Input detection and object values are updated at the end of the transmission delay time At the end of ETS programming, the device behaves as it did after it was switched on.	
Other power supplies on the BUS line	no / yes
By enabling this parameter it's possible to install two devices on the same bus line, at a minimum distance of 200 metres.	
Heartbeat (periodic alive notification)	nothing periodic on request
The parameter allows you to notify a hierarchically superior control or supervision system of your existence / correct online activity. The notification can take place spontaneously (periodically - settable period value) or following a query (upon request). The value of the 1-bit notification telegram can be set.	
Telegram value	off / on / toggle
Defines the value of the 1 bit notification telegram. The toggle value is not available for "on demand" configuration.	
Period - time unit	seconds / minutes / hours
Defines the unit of measure of the notification time interval. This parameter is not available for the "on demand" configuration.	
Period - time value	1 ... 255
Defines the notification interval time. This parameter is not available for the "on demand" configuration.	
Date and time source for timers	from BUS / from NTP server
Defines whether the time data are taken from the BUS line or the NTP server.	
Request time at power ON	no / yes
In case of date and time data sourcing from BUS, this parameter permits to enable a time request at power ON.	
Output date objects	Date and Time / DateTime
Defines whether the relay outputs are managed individually or coupled.	
Cyclic send time	never / every minute / every 30 minutes / every hour / every 6 hours / every 12 hours / every day
Set the period of cyclical sending.	
Timezone mode	custom / standard
In custom mode it is possible to set manually the coordinates In standard mode the location is chosen from the drop down menu.	
IP interface	always enabled / bus controlled
With this parameter it is possible to set how to manage the IP interface function.	

Bus controlled	
Initial enable state	disabled / enabled
It defines the initial state of the IP interface function when bus controlled.	
Enable activation telegram	telegram "0" / telegram "1"
It defines the telegram sent to the object "<General> IP Interface" to enable the function.	
Automatic deactivation time (0=never) [min]	0 ... 255
It defines the automatic time after which the function is deactivated.	
Reset BUS object	disabled / enabled
With this parameter it's possible to enable the object "<General> Reset BUS".	
Telegram for reset	telegram "0" / telegram "1"
It defines the telegram sent to the object "<General> Reset BUS" to enable the reset.	
Additional function x	4 logics 20 MQTT channels 1 virtual holder
With this parameter it is possible to enable this functions: 4 logics - see "Logic" user manual 20 MQTT channels (for IPSBA01KNX only) - 20 MQTT messaging channels are available (see " MQTT ") 1 virtual holder - is a logical function that automatically recognizes the presence of a person in a room. This function can be used in hotels or similar installations and requires connection to other devices (see " Virtual Holder ").	

Surveillance configuration

Communication objects involved:

"<General> Alarms 0 - 15"	4 bytes	CRT
"<General> Alarms 16 - 31"	4 bytes	CRT
"<General> Alarms 32 - 47"	4 bytes	CRT
"<General> Alarms 48 - 63"	4 bytes	CRT
"<General> Alarms 64 - 79"	4 bytes	CRT
"<General> Alarms 80 - 95"	4 bytes	CRT
"<General> Alarms 96 - 111"	4 bytes	CRT
"<General> Alarms 112 - 127"	4 bytes	CRT
These objects are used to sum up the alarm status of the relative surveillance channels.		

KNX PARAMETER	SETTINGS
Physical address main line	0 .. 255
This parameter defines the physical main address of the surveilled devices (e.g. 10.13.x --> 10).	
Physical address sub line	0 .. 255
This parameter defines the physical sub address of the surveilled devices (e.g. 10.13.x --> 13).	
Alarm time - hours	0 ... 255
This parameter defines the surveillance time (hours) before sending the alarm. Used by the surveillance modules when the alarm function is enabled.	
Alarm time - minutes	0 ... 255
This parameter defines the surveillance time (minutes) before sending the alarm. Used by the surveillance modules when the alarm function is enabled.	

Warning time - seconds	20 ... 255
This parameter defines the warning time (seconds). This time indicates how much before the end of the surveillance time a group value read is sent on the bus through the "Warning Read Request" object. Used by the surveillance modules when the warning function is enabled.	
Surveillance priority	primary / secondary
This parameter defines if the device is the primary surveillance device or if it is the secondary one. If secondary is selected, the heartbeat period of the primary device must be aligned to the one of the primary device itself. If no message is received in the period an alarm message is sent on the object "<General> Primary Alarm" and the secondary device starts to surveil the plant.	
Primary period - time unit	seconds / minutes / hours
This parameter defines the unit of measures of the Primary Heartbeat period.	
Primary period - time value	1 ... 255
This parameter defines the time interval for sending the "<General> Primary Heartbeat" object.	
Number of surveillances	16, 32, 48, 64, 80, 96, 112, 128
This parameter defines the number of surveillance modules.	

Logics configuration

Communication objects involved:

"<General> Enable/Disable All Logics"	1 Bit	CW
"<General> Enable/Disable Logic x"	1 Bit	CW

KNX PARAMETER	SETTINGS
Logic activation telegram	telegram "0" / telegram "1"
Defines the telegram sent on the object "<General> Enable/Disable All Logics" to enable the logic function.	
Logic x enabled/disabled state after download	disabled / enabled
This parameter defines the value set for object ""<General> Enable/Disable Logic x" after a download.	
Logic x enable/disable object	do not use / use
With this parameter it's possible to use the object "<General> Enable/Disable Logic x".	

Network configuration

This function allows the device to communicate with the DNS (Domain Name System) and NTP (Network Time Protocol) services, to be considered mandatory for the ETS IP configuration. To guarantee the correct functioning of the validation of the security certificates and the identity of the broker to which to connect with the MQTT service, the device must reach the NTP and DNS services.

In addition to the MQTT part, the NTP service is required to use the object dedicated to sending the date and time via KNX.

Communication objects involved:

"<General> Alarm DHCP"	1 Bit	CRT
"<General> Alarm Ping"	1 Bit	CRT
"<General> Alarm DNS Resolution"	1 Bit	CRT
"<General> Alarm NTP"	1 Bit	CRT

"<General> Alarm 4 Bytes"	4 Bytes	CRT
"<General> Alarm Text"	14 Bytes	CRT

KNX PARAMETER	SETTINGS
DNS 1 address	max 15 bytes
With this parameter (Domain Name System) it's possible to convert a web address in an IP address which uniquely identifies the device.	
DNS 2 address	max 15 bytes
This parameter it's used in case of failure of DNS 1.	
DHCP alarm	disabled / enabled
This parameter (Dynamic Host Configuration Protocol) is used to assign IP addresses and other network configurations automatically to devices that connect to a network.	
This parameter allows a message to be sent to the bus which warns whether or not the protocol has correctly released the IP address to the device.	
Alarm telegram	telegram "0" / telegram "1"
It defines the value sent to the object "<General> Alarm DHCP" to activate the alarm.	
Cycling ping alarm	disabled / enabled
Ping is a command that is used to verify the network connection between two devices. Ping works by sending a packet of data from one device to another.	
Ping is often used to check if a given IP address or hostname is reachable across a network connection. For example, you can use ping to check if a server is able to respond to connection requests or to diagnose network connection problems.	
This parameter allows a message to be sent to the bus which warns if the IP address/DNS has responded correctly to the request.	
Address to ping	max. 32 bytes allowed
It defines the IP address/DNS the device will connect to.	
Alarm telegram	telegram "0" / telegram "1"
It defines the value sent to the object "<General> Alarm Ping" to activate the alarm.	
Cyclic time [min]	1 ... 60
It defines the time interval for ping request.	
DNS resolution alarm	disabled / enabled
This parameter allows a message to be sent to the bus which warns if at least one of the configured DNS functions correctly (see DNS1/2).	
Domain name	max. 32 bytes
It defines the name of the IP address/DNS to resolve.	
Alarm telegram	telegram "0" / telegram "1"
It defines the value sent to the object "<General> Alarm DNS Resolution" to activate the alarm.	
Server x (1- 4)	max. 32 bytes
Network Time Protocol (NTP) is a network protocol that is used to synchronize the system time of a device on the network with a time server. We have 4 servers available to ensure time synchronization, if server 1 fails the request is passed to 2 and so on up to 4.	
NTP alarm	disabled / enabled
This parameter allows a message to be sent to the bus which warns if at least 1 of the configured NTP servers is working correctly (see Server1/2/3/4).	
Alarm telegram	telegram "0" / telegram "1"
It defines the value sent to the object "<General> Alarm NTP" to activate the alarm.	

Alarm 4 bytes	disabled / enabled																																																																
This parameter enables the object "<General> Alarm 4 Bytes" which sends to the BUS a bit mask (27.001) containing the network errors.																																																																	
The general alarms available are:																																																																	
0 ALARM_IDX_DHCP: failed to obtain IP address from DHCP																																																																	
1 ALARM_IDX_PING: failed to PING address																																																																	
2 ALARM_IDX_DNS: DNS resolution test failed																																																																	
3 ALARM_IDX_NTP: NTP time synchronization failed																																																																	
4 ALARM_IDX_MQTT: MQTT connection failed																																																																	
The DPT of the 4 bytes object for combined management of alarms consists of 4 bit mask that defines whether consider or not the alarm and 4 bit info that defines the alarm status. See figure and tab below:																																																																	
<table border="1" style="width: 100%; text-align: center;"> <tr> <td>m15</td><td>m14</td><td>m13</td><td>m12</td><td>m11</td><td>m10</td><td>m9</td><td>m8</td><td>m7</td><td>m6</td><td>m5</td><td>m4</td><td>m3</td><td>m2</td><td>m1</td><td>m0</td><td>s15</td><td>s14</td><td>s13</td><td>s12</td><td>s11</td><td>s10</td><td>s9</td><td>s8</td><td>s7</td><td>s6</td><td>s5</td><td>s4</td><td>s3</td><td>s2</td><td>s1</td><td>s0</td> </tr> <tr> <td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td><td>B</td> </tr> </table>		m15	m14	m13	m12	m11	m10	m9	m8	m7	m6	m5	m4	m3	m2	m1	m0	s15	s14	s13	s12	s11	s10	s9	s8	s7	s6	s5	s4	s3	s2	s1	s0	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
m15	m14	m13	m12	m11	m10	m9	m8	m7	m6	m5	m4	m3	m2	m1	m0	s15	s14	s13	s12	s11	s10	s9	s8	s7	s6	s5	s4	s3	s2	s1	s0																																		
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BIT INFO																																																																	
ALARM	DATAFIELD	BIT	DESCRIPTION	ENCODING																																																													
DHCP	s0	0	Info on off alarm1	0= alarm state off 1= alarm state on																																																													
PING	s1	1	Info on off alarm2	0= alarm state off 1= alarm state on																																																													
DNS	s2	2	Info on off alarm3	0= alarm state off 1= alarm state on																																																													
NTP	s3	3	Info on off alarm4	0= alarm state off 1= alarm state on																																																													
MQTT (IPSBA01KNX ONLY)	s4	4	Info on off alarm5	0= alarm state off 1= alarm state on																																																													
BIT MASK																																																																	
ALARM	DATAFIELD	BIT	DESCRIPTION	ENCODING																																																													
DHCP	m0	16	Mask bit info on off alarm1	0= alarm state is not valid 1= alarm state is valid																																																													
PING	m1	17	Mask bit info on off alarm2	0= alarm state is not valid 1= alarm state is valid																																																													
DNS	m2	18	Mask bit info on off alarm3	0= alarm state is not valid 1= alarm state is valid																																																													
NTP	m3	19	Mask bit info on off alarm4	0= alarm state is not valid 1= alarm state is valid																																																													
MQTT (IPSBA01KNX ONLY)	m4	20	Mask bit info on off alarm5	0= alarm state is not valid 1= alarm state is valid																																																													
Alarm text	disabled / enabled																																																																
This parameter enable the object "<General> Alarm Text" which sends a text string containing network errors to the BUS.																																																																	

6. Diagnostic

Please refer to the ["Diagnostic"](#) user manual.

7. Surveillance


Please refer to the "[Surveillance](#)" user manual.

8. Timer

Please refer to the "[Timer](#)" user manual.


9. Logics

Please refer to the "[Logics](#)" user manual.

 In the devices described, the logical expression can have a maximum of 24 characters.

10. MQTT

Please refer to the "[MQTT](#)" user manual.

 This feature is only available for the IPSBA01KNX device.

11. Behaviour on bus failure, recovery and download

Behaviour on bus voltage failure

On failure of bus voltage, it's possible to set an action to execute in case of independent relays. Behaviour of controlled actuators must be set using their own parameters.

Behaviour on bus voltage recovery

On bus voltage recovery all the communication objects are set to 0 except for objects for which a parameter is defined for the initial value.

Wrong application download

If the wrong ETS application is downloaded then KNX/EIB led starts blinking and device is not operative on the bus. A power reset must be done or the correct ETS application must be downloaded.