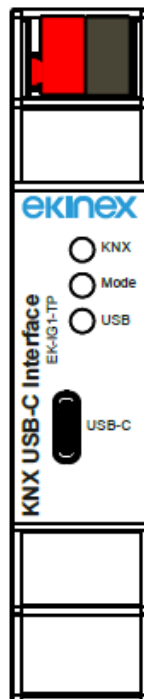




Application manual



KNX / USB-C Interface EK-IG1-TP

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Revision	Modifications	Date	Drafted	Verified
1.0	First version	02/02/2026	G. Schiochet	V. Cappelli

1. Purpose of the document

This application manual refers to the release A1.0 of the ekinex® KNX/USB-C Interface EK-IG1-TP device.

The application manual and application program for ETS® are available for download at www.ekinex.com.

Object	Filename	Device release	Update
Application Manual	MAEKIG1TP_EN.pdf	A1.0	02 / 2026
Application program KNX / USB-C interface	APEKIG1TP01.knxprod		

Other technical information on the device is available on the datasheet STEKIG1TP_EN.pdf.

2. Product description

The ekinex® KNX USB-C interface EK-IG1-TP is a data interface between a PC or laptop and the KNX installation bus.

The device can be used as a programming interface for ETS® software and supports KNX Long Frames. Long telegrams enable a faster download to devices that support these telegrams, and it is necessary for KNX Security.

The LEDs on the device indicate the operating status and communication errors on the bus. The USB connector (USB Type-C) is galvanic isolated from the KNX bus.

Notes for developers: In addition to the telegram interface via cEMI, the KNX USB-C Interface EK-IG1-TP includes a complete KNX Stack with communication objects and BAOS protocol V2. Thus, the device offers the possibility to extend devices with USB connection to full KNX devices, which can even be programmed by ETS.

The power is supplied via the USB connection.

3. KNX Security

The KNX standard was extended by KNX Security to protect KNX installations from unauthorized access. KNX Security reliably prevents the monitoring of communication as well as the manipulation of the system.

KNX Data Security describes encryption at the telegram level. This means that the telegrams are encrypted on the twisted pair bus.

The KNX USB interface supports the so-called KNX long frames (long telegrams) and is therefore compatible with KNX security telegrams.

In the KNX specification, USB interfaces are regarded as local devices that do not require additional protection. Access to the USB interface is therefore the same as access to the TP bus. This means that KNX USB interfaces should not be publicly accessible.

4. Installation and connection

The KNX / USB-C interface EK-IG1-TP is designed for installation on a DIN rail with a width of 1 unit (18mm).

The interface is powered by USB. An external power supply is not necessary.

It features the following controls and displays:

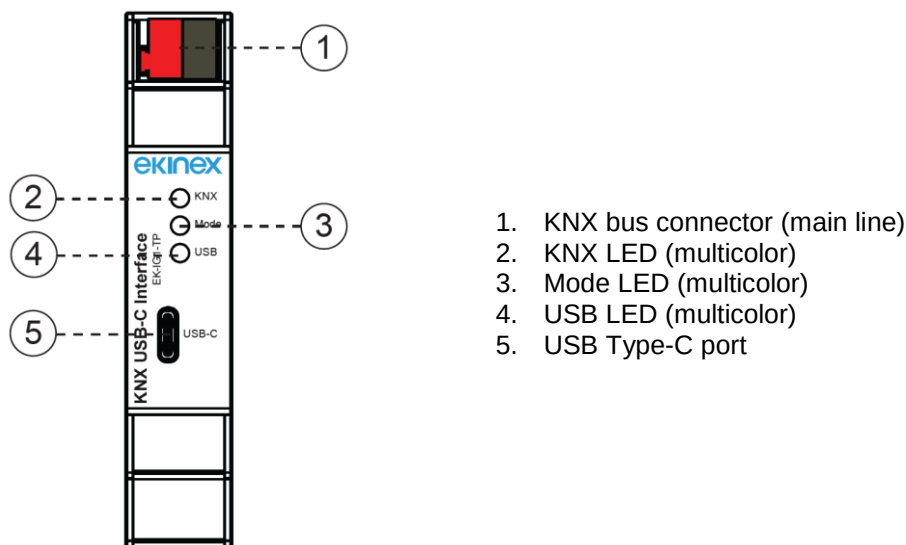


Figure 1 - EK-IG1-TP elements



Note: The device is not working without USB connection.

4.1 KNX programming mode

The individual address of the interface can be set locally via the ETS. Therefore no programming button or LED is available on this device.

If programming mode is activated via the BAOS protocol, this is indicated by Mode LED ③ lighting up red.

4.2 Display elements

The device is provided with three LEDs for status indication.

The KNX LED ② lights up green if the device is successfully connected to the KNX bus. This LED indicates telegram traffic on the KNX bus by flickering.

KNX communication failures (e.g. repetitions of telegrams or telegram fragments) are indicated by a short change of the LED color to red.

Overview of the different indications of the KNX LED ②:

LED Status	Meaning
LED lights green.	KNX bus voltage available.
KNX bus voltage available.	Telegram traffic on the KNX bus.
LED flashes green.	Communication failures on the KNX bus.

Table 1 – KNX LED indications

The Mode LED ③ lights up green when the device is connected to USB. If the interface is set to bus monitor mode, this LED lights up orange.

The multicolor Mode LED ③ indications are listed in the following table:

LED Status	Meaning
LED lights green.	USB active
USB active.	LED lights red
LED lights red.	Programming mode is activated via BAOS protocol

Table 2 – Mode LED indications

The USB LED ④ lights up green if the device is connected to USB. This LED indicates telegram traffic on the USB by flickering.

USB communication failures are indicated by a short change of the LED color to red.

Overview of the different indications of the USB LED ④:

LED Status	Meaning
LED lights green.	USB active.
LED flickers green.	Telegram traffic on USB.
LED briefly red.	Communication failures on USB.

Table 3 – USB LED indications

4.3 USB suspend

If the PC or Laptop switches to suspend mode also connected USB devices will be suspended to save energy. Computers running MS Windows® 8.1 or higher may set unused peripherals to standby even during normal operation. In suspend mode all LEDs of the KNX USB interface are off.

5. Factory default settings

The following configuration is set by factory default:

Individual address: 15.15.255

6. Wiring scheme

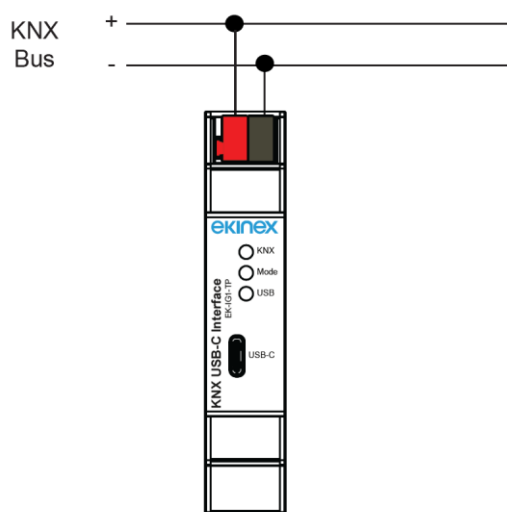


Figure 2 - Connections scheme

7. Interface settings in the ETS programme

7.1 ETS 5

In the ETS 5 programme, interfaces can be selected and configured via the ETS menu “Bus – Interfaces”. All available connections are listed under “Discovered Interfaces”. After clicking on the desired connection, connection specific information and options appear on the right side of the ETS window. The selected connection can be selected as the “Current Interface” via the “Select” button.

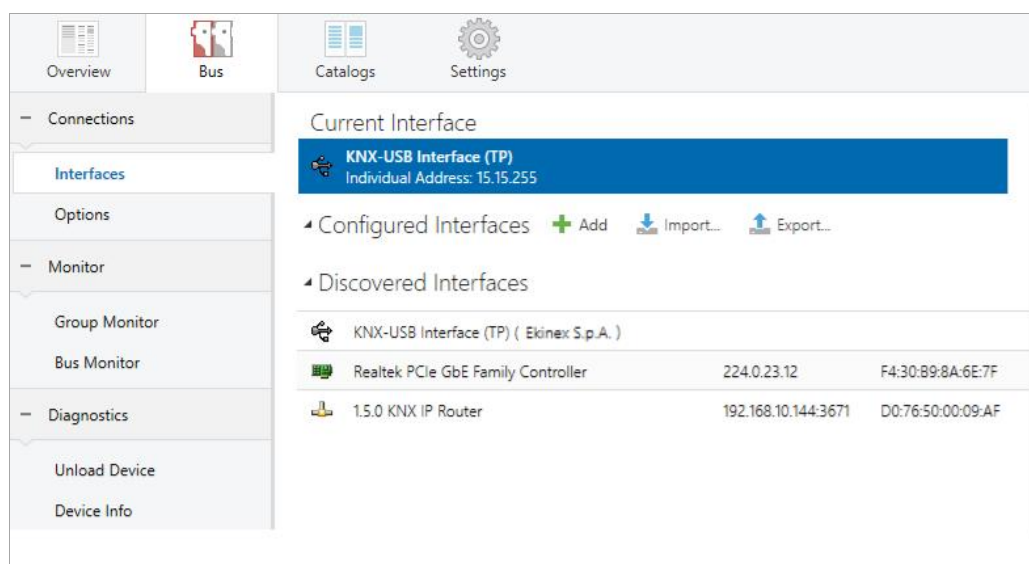


Figure 3 - Interface settings in the ETS5 programme

7.2 ETS 6

In the ETS 6 programme, interfaces can be selected and configured in the ETS project via the “Interface” button. All available connections are listed here.

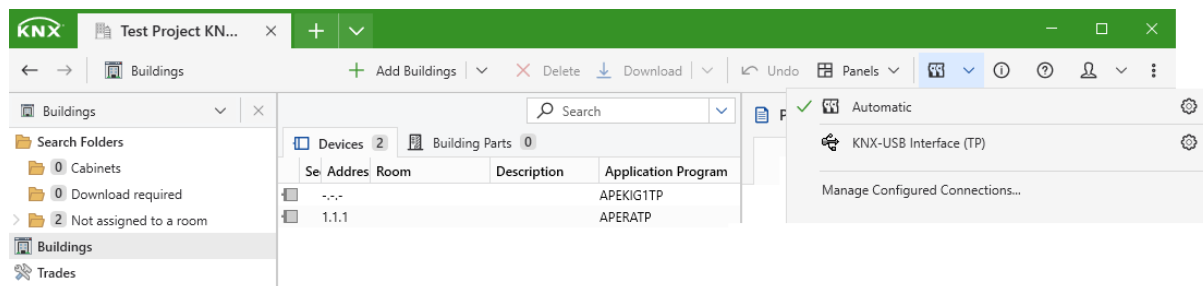


Figure 4 - Interface settings in the ETS6 programme

By clicking on a connection, this is selected as the desired interface.

By clicking the gear next to the desired connection, the connection specific information and options appear.

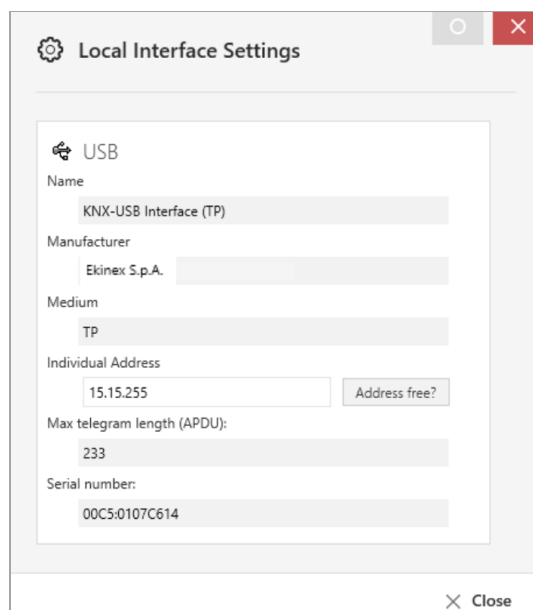


Figure 5 - Connection information and options

8. ETS database

The ETS database (for ETS 5.7 or newer) can be downloaded from the product website of the KNX / USB-C interface EK-IG1-TP (www.ekinex.com) or from the ETS online catalogue.

The ETS entry is not required to use the KNX USB Interface as programming interface. It is just a placeholder to show all installed devices in the topology.

8.1 Description

Device description



EK-IG1-TP KNX USB-C interface
With KNX Long Frames, USB-C

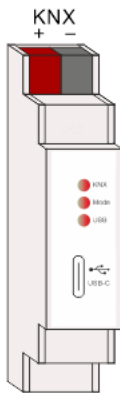
The EK-IG1-TP KNX USB-C interface is a data interface between a PC or laptop and the KNX installation bus.

The device can be used as a programming interface for ETS® Software and supports KNX Long Frames.

Long telegrams enable a faster download to devices that support these telegrams, and it is necessary for KNX Security.

The LEDs on the device indicate the operating status and communication errors on the bus. The USB connector (USB C) is galvanic isolated from the KNX bus.

Wiring scheme:



Please consult device data sheet and manual for further information.

Contact:

Ekinex S.p.A.
via Novara, 37
I-28010 Vaprio d'Agogna (NO)
Italy
www.ekinex.com
info@ekinex.com

Figure 6 – Device description page in the parameters section

This page shows the device description and the corresponding connection diagram.

8.2 USB channel

Group addresses can be dragged onto the USB channel of the interface. As a result, these group addresses are included in the filter tables of the corresponding couplers.

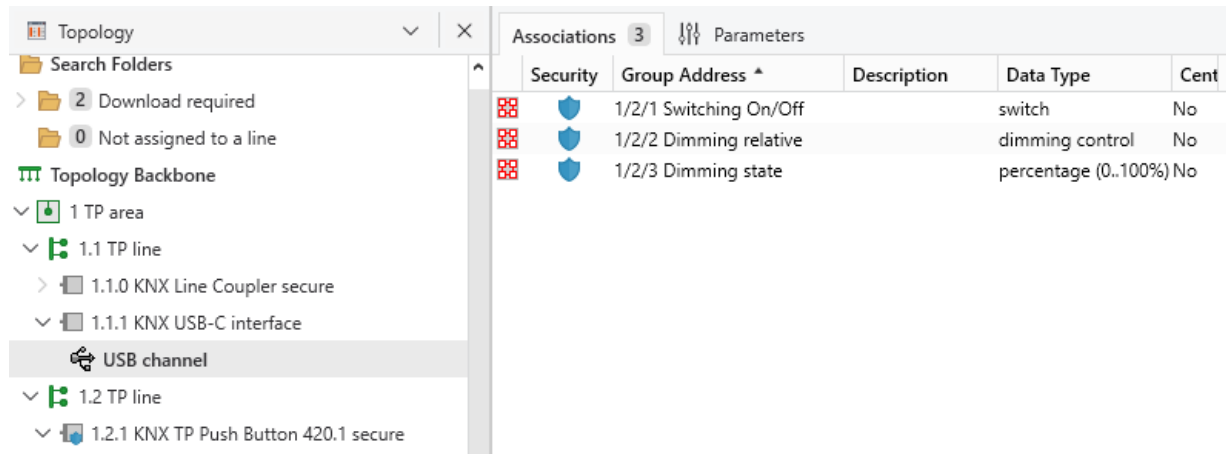


Figure 7 - USB channel associations

This is required if the interface shall receive the group communication of another line, e.g. for a visualization.

9. Bus monitor mode

The KNX USB interface supports the bus monitor mode and can be used with ETS. In bus monitor mode all traffic on the KNX bus is shown including ACK, NACK and BUSY characters.

Interfaces in bus monitor mode are completely passively on the bus and therefore cannot be used simultaneously for other operations like download. To monitor an ETS download within the same ETS the group monitor can be used. The group monitor uses the KNX USB interface in normal operation mode (data link layer) and can be used in parallel to other bus operations. In the group monitor also sending of telegrams is possible.

Note that in group monitor mode individual addressed telegrams which do not address the KNX USB interface cannot be received.

10. KNX Long Frames

Standard KNX telegrams are limited to an APDU length of 15. The APDU length is the number of bytes in the payload. A group telegram holding a 14 byte string (KNX data point type 16) results in an APDU length of 15.

To increase the efficiency of KNX communication mainly for the download an extended format has been defined. It can be used to send longer telegrams on the bus. To use this feature it must be supported by

- the tool (ETS)
- the bus interface (USB)
- all couplers in between
- the addressed device

ETS starting with version 5 is able to detect automatically whether long frames can be used and optimizes the download accordingly.

The max APDU length of the KNX USB interface and which is used by ETS is 233. This length has been specified as requirement for new KNX system devices. An APDU length of 233 results in total length of a KNX telegram on twisted pair of 242 bytes and occupies the bus for about 340 ms.



Note: *The download is much faster if the USB interface is installed in the same line as the target device. With each line coupler in-between the download time grows.*

11. Notes for developers

The KNX USB communication is based on HID and cEMI telegram coding according to the KNX specification. To integrate the KNX USB interface in applications running on Windows or Linux the cross-platform SDK kDriveExpress is available from Weinzierl.

In addition to the telegram interface via cEMI, the KNX USB Interface 312.1 includes a complete KNX Stack with communication objects and BAOS protocol V2. Thus, the device offers the possibility to extend devices with USB connection (e.g. boards with embedded Linux) to full KNX devices, which can even be programmed with the ETS.

For more information about this solution and available SDKs please contact Ekinex support.

12. Appendix



WARNINGS:

- *The device must be mounted and commissioned by an authorized electrician.*
- *Installation, electrical connection, configuration and commissioning of the device can only be carried out by qualified personnel in compliance with the applicable relevant guidelines, regulations and standards of the respective countries*
- *The device must not be opened. Opening the housing of the device causes the immediate end of the warranty period*
- *In case of tampering, the compliance with the essential requirements of the applicable directives, for which the device has been certified, is no longer guaranteed*
- *The instruction sheet must be delivered to the end customer with the project documentation*

12.1 Return of defective products

Defective ekinex® KNX devices can be returned for repair / replacement following the procedure detailed below.

12.2 Devices purchased directly from ekinex®

Request an RMA number by sending an e-Mail to the address support@ekinex.com with following mandatory information:

- Exact device model
- Device serial number (can be found on the product label)
- Date of purchase / Order reference
- Detailed description of the fault or issue

The technical assistance team will contact you as quickly as possible to either investigate the problem further, suggest possible solutions or authorize the return of the device for replacement or repair.

If the device should be returned, it should be shipped to the following address:

EKINEX S.p.A. - Via Novara, 37 / SP229 - I-28010 Vaprio d'Agogna (NO) - Italy.

Further arrangements will be made with the technical support team, according to the type of issue and device.

12.3 Devices purchased through ekinex® resellers

If the device has been purchased through a reseller, please refer to the reseller's technical support contact. Depending on the issue and other factors, at the decision of ekinex® and after agreement with the reseller, the customer might be instructed to contact ekinex® directly according to the procedure above.

12.4 Other information

This application manual is aimed at installers, system integrators and planners.

For further information on the product, please contact the ekinex® technical support at the e-mail address: **support@ekinex.com** or visit the website <http://www.ekinex.com/>

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