

Operation and installation manual  
**KNX USB Interface 312**

(Art. # 5229)  
 Compact USB Interface for the KNX-Bus



KNX USB Interface 312

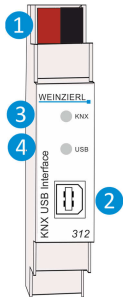
**Application**

The KNX USB Interface 312 is a data interface between a PC or laptop and the KNX installation bus. It can be used as a programming interface for ETS® Software Version 3 (or higher) and supports KNX long frames. Long telegrams enable a faster download to devices that can receive these telegrams.

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

**Installation and Connection**

The KNX USB Interface 312 is designed for installation on a DIN rail with a width of 1 unit (18mm). It features the following controls and displays:



- 1 KNX bus connector
- 2 USB type B connector
- 3 KNX LED (multicolor)
- 4 USB LED (multicolor)

The KNX USB Interface 312 is powered by USB. An external power supply is not necessary.

**i** The device is not working without USB connection.

**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.

**Status display**

The KNX LED 3 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.

If the KNX USB Interface is set to bus monitor mode the color of the LED changes to orange.

Overview of the different indications of the KNX LED 3:

LED Status	Meaning
LED lights green	KNX bus voltage available.
LED flickers green	Telegram traffic on the KNX bus
LED shortly red	Communication failures on the KNX bus
LED lights orange	Interface is set to bus monitor mode
LED flickers orange	Telegram traffic on the KNX bus in bus monitor mode

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 shortly red	Communication failures on USB

**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 both LEDs of the KNX USB Interface are off.

**Factory default settings**

The following configuration is set by factory default:

Individual device address: **15.15.255**

**Interface settings with ETS**

Within the ETS KNX interfaces can be selected and set up via the ETS menu "Bus Interfaces".

After connecting the KNX USB Interface to the PC and the KNX bus, it automatically appears in the ETS within the menu "Bus" under "Discovered interfaces".

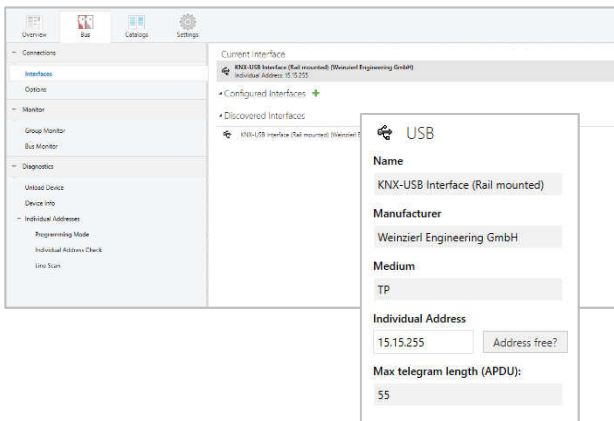
By clicking on the discovered interface it is selected as the current interface. On the right side of the ETS window all specific information and options of the connection appear.

The individual address of the KNX USB Interface can be changed here. To check if the address you want to assign is unique within your KNX installation you can click the button "Address free?"

For a proper function of the KNX USB Interface it is essential to set a valid individual address (physical address), which must be

- Unique in the installation
- Match to the line where it is installed

The KNX USB Interface just has one individual address for the device itself and for the USB communication.



### ETS database

The ETS database (for ETS 4.2 or higher) can be downloaded from the product website at [www.weinzierl.de](http://www.weinzierl.de).

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.

### ETS parameter dialog

The KNX USB device does not provide any parameter settings. The parameter dialog just shows a description page.

### 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.

### 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 55. This length has been specified as requirement for new KNX system devices. An APDU length of 55 results in total length of a KNX telegram on twisted pair of 64 bytes and occupies the bus for about 90 ms.



*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.*

### 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 kDrive is available from Weinzierl.

In addition to the telegram interface via cEMI, the KNX USB Interface 312 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 WEINZIERL.



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