WEINZIERL

Wireless KNX IP interface

KNX IP Interface 740.1 *wireless*

Operation and installation manual

(Art. # 5419)

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Content

1 Application

The KNX IP Interface 740.1 *wireless* serves as a wireless interface to the KNX bus based on Wi-Fi. The device can be used as a programming interface for the ETS® and is a wireless alternative to USB or wired IP interfaces. The bus access via Wi-Fi allows the installer to move freely in the building with his laptop to a large extent.

The KNX IP Interface 740.1 *wireless* has an integrated Wi-Fi access point to which the laptop can connect. Alternatively, the device can be connected to an existing Wi-Fi in client mode, the connection can be made via WPS (Wi-Fi Protected Setup).

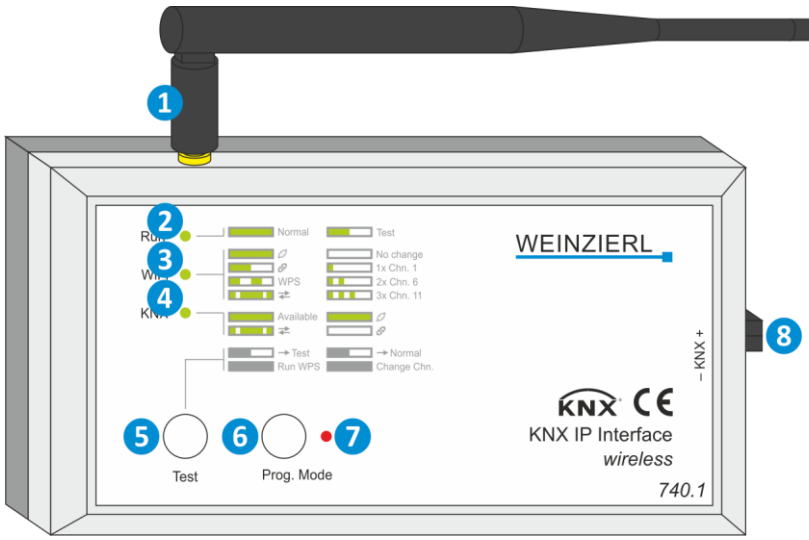
The device supports the security standard WPA2.

Power is supplied via the KNX bus.

The device works according to the KNXnet/IP specification. It can be used with the ETS® from version 5.

2 Installation and connection

The housing of the KNX IP Interface 740.1 *wireless* has the dimensions 125 x 67 x 31 mm (L x W x H). It features the following controls and displays:



1. Antenna
2. LED Run (green)
3. LED WiFi (green)
4. LED KNX (green)
5. Button Test
6. Button Prog. Mode
7. Programming LED
8. KNX bus connector

If the bus voltage is missing, the device is without function.

2.1 KNX programming mode

The KNX programming mode is activated/deactivated by pressing the KNX programming button 6. When programming mode is active, the programming LED 7 lights up red.

2.2 Manual operation and status display

Summary of the states of the programming LED 7:

LED Status	Meaning
LED lights red	The programming mode is active.
LED flashes red (fast)	The programming mode is not active. The device is not loaded correctly, e.g. after aborting a download.

Pressing the button Test 5 briefly switches between normal operating mode and test mode. The active mode is indicated by the LED Run 2 lighting up or flashing slowly in green.

Summary of the states of the LED Run 2:

LED Status	Meaning
LED lights green	The device operates in normal operating mode.
LED flashes green (slowly)	The device is in test mode.
LED flashes green (fast)	The device is currently loaded by the ETS.

2.2.1 Normal operating mode

The LED WiFi 3 lights up green when a Wi-Fi connection is available. If this LED flickers, telegram traffic is taking place via Wi-Fi. If this LED flashes slowly in green, the device is not connected via Wi-Fi.

Pressing and holding the button Test 5 executes WPS (Wi-Fi Protected Setup). This is indicated by the LED WiFi 3 flashing fast in green.

Summary of the states of the LED WiFi 3:

LED Status	Meaning
LED lights green	The device is connected via Wi-Fi.
LED flashes green (slowly)	The device is not connected via Wi-Fi.
LED flashes green (fast)	WPS is in progress.
LED flickers green	Telegram traffic via Wi-Fi.

The LED KNX 4 lights up green when KNX bus voltage is present. If this LED flickers, telegram traffic is taking place on the KNX bus.

Summary of the states of the LED KNX 4:

LED Status	Meaning
LED lights green	KNX bus voltage present.
LED flickers green	Telegram traffic on the KNX bus.

2.2.2 Test mode

In test mode, the Wi-Fi channel can be changed and the connection status of the tunneling connection can be displayed.

If many participants are using the same Wi-Fi channel, switching to a less heavily used channel can improve the connection quality:

Pressing and holding the button Test 5 switches through the Wi-Fi channels. This is indicated by the LED WiFi 3 flashing green. The selected Wi-Fi channel is activated after exiting the test mode. This is not stored in the device (selection only temporary).

Summary of the states of the LED WiFi 3:

LED Status	Meaning
LED is off	The Wi-Fi channel configured via ETS is selected.
LED flashes 1x green	Wi-Fi channel 1 is selected.
LED flashes 2x green	Wi-Fi channel 6 is selected.
LED flashes 3x green	Wi-Fi channel 11 is selected.

The LED KNX 4 lights up green when the KNXnet/IP tunneling connection is active.

Summary of the states of the LED KNX 4:

LED Status	Meaning
LED lights green	At least one KNXnet/IP tunneling connection is active.
LED is off	No KNXnet/IP tunneling connection is active.

3 Reset to factory default settings

It is possible to reset the device to its factory default settings.

- Disconnect the KNX bus connection 8 from the device.
- Press the button Prog. Mode 6 and keep it pressed down.
- Reconnect the KNX bus connection 8 to the device.
- Keep the button Prog. Mode 6 pressed for at least another 6 seconds.
- A short flashing of all LEDs (2 3 4 7) visualizes the successful reset of the device to factory default settings.

3.1 Factory default settings

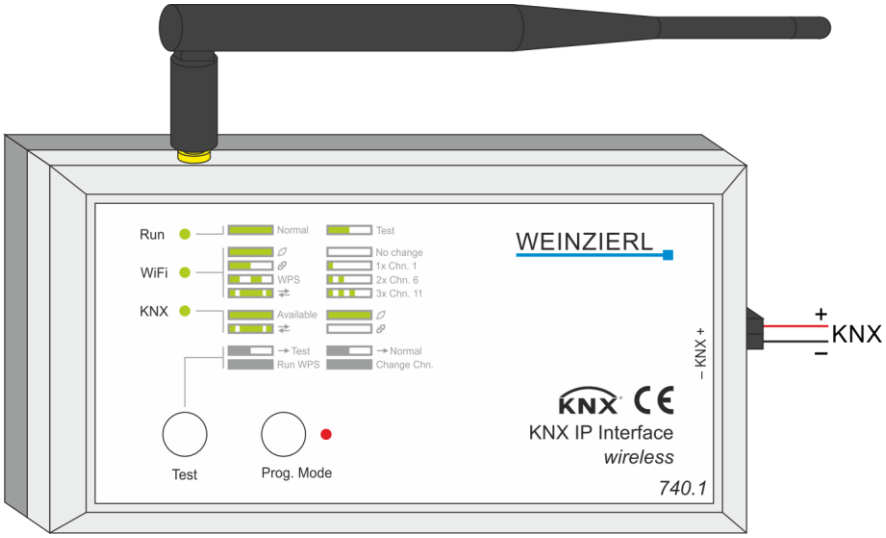
Individual addresses and KNXnet/IP tunneling connections

Individual address: 15.15.255
Active KNXnet/IP tunneling connections: 1
Individual address of the tunneling connection: 15.15.250

Configuration

Device name (SSID): KNX IP Interface 740.1
Mode: Access point
Authentication: WPA2-PSK
Key: MAC address (hexadecimal, bytes separated by hyphen, e.g. 00-24-6D-00-00-00)
Wi-Fi channel: 6

4 Wiring scheme



4.1 Pluggable screw terminal

The screw terminal is used to connect the KNX bus.

4.2 Pin assignment

Connection	Symbol	Description
KNX	+	Positive connection for KNX bus
KNX	-	Ground connection for KNX bus

5 Setting up a Wi-Fi connection

5.1 KNX IP Interface 740.1 *wireless* is “Access point”

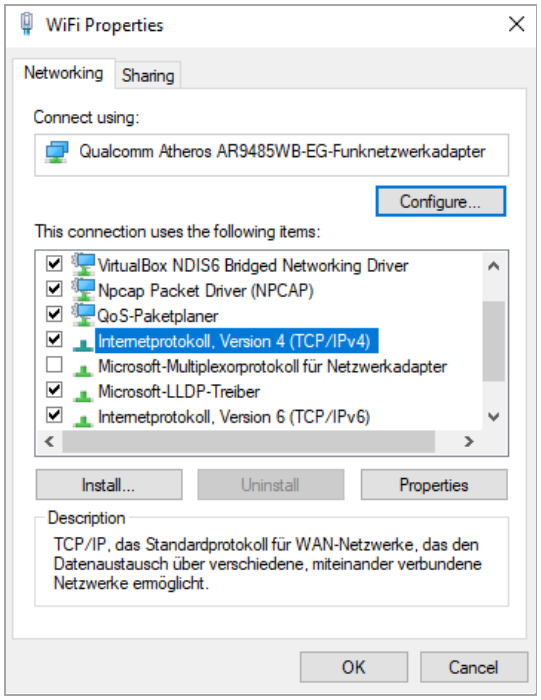
To set up a Wi-Fi connection from a PC or laptop, a Wi-Fi adapter is required. For laptops, this is usually integrated in the device.

The Wi-Fi connection to the KNX IP Interface 740.1 *wireless* is set up as follows:

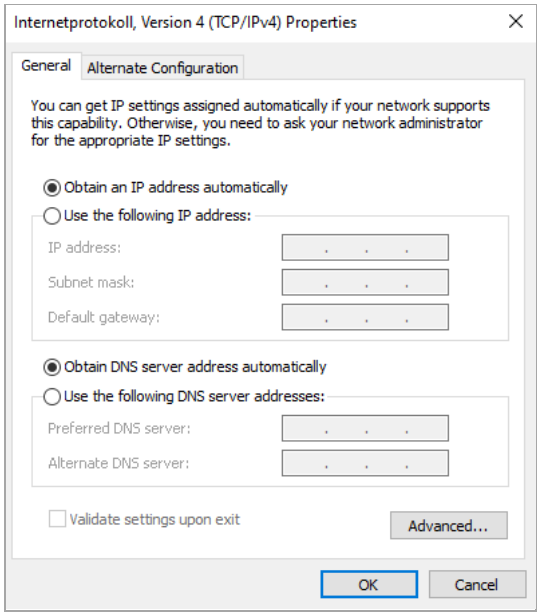
First, the Wi-Fi provided by the KNX IP Interface 740.1 *wireless* must be found. The Windows® “Show available networks” dialog lists all available wireless networks. This dialog can be accessed via “Settings / Network & Internet / Show available networks”. Alternatively, this dialog can be accessed via the corresponding “Network” icon in the notification area at the edge of the screen.

Since the KNX IP Interface 740.1 *wireless* has an integrated DHCP server, the IP address of the PC should be set automatically (DHCP). This is the default setting for most laptops.

To change the settings, select the item “Internet Protocol, Version 4 (TCP/IPv4)” in the properties dialog of the wireless network connection and click the “Properties” button.



In the following dialog “Obtain an IP address automatically” should be active.



After setting up the Wi-Fi connection, the KNX IP Interface 740.1 *wireless* can be used as an interface to the KNX bus.

5.2 KNX IP Interface 740.1 *wireless* is “Station / Client Mode”

The KNX IP Interface 740.1 *wireless* automatically setting up the Wi-Fi connection to the configured access point, provided the entered data is correct. The data is entered via the ETS parameter dialog. See the section “ETS database – Operating mode “Station / Client-Mode””.

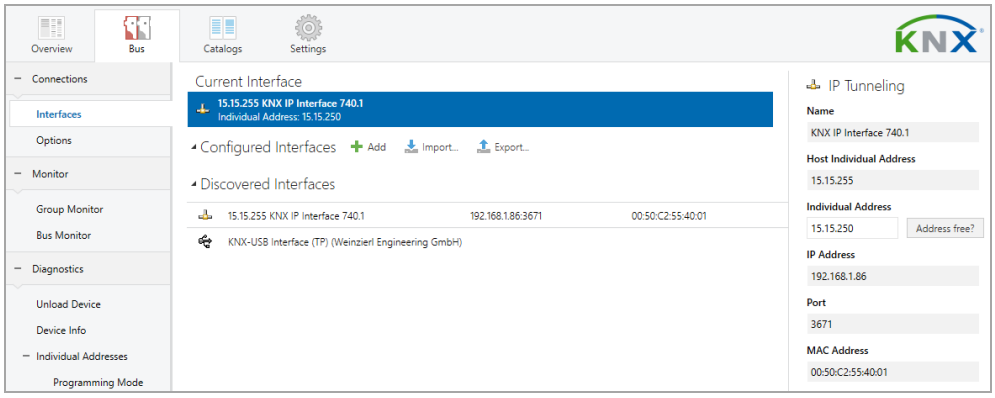
If configured, the connection can also be established via WPS. For this, the parameter **WPS (Wi-Fi protected setup)** must be set to Temporary or Permanent. To connect, the WPS functions must first be activated on the access point and then the button Test 5 on the KNX IP Interface 740.1 *wireless* must be pressed for a long time (at least 1 second). The interface must be in normal operating mode (LED Run 2 lights up green).

After the Wi-Fi connection has been established, the KNX IP Interface 740.1 *wireless* can be used as an interface to the KNX bus. This applies to all PCs and laptops in this network.

6 Interface settings in the ETS

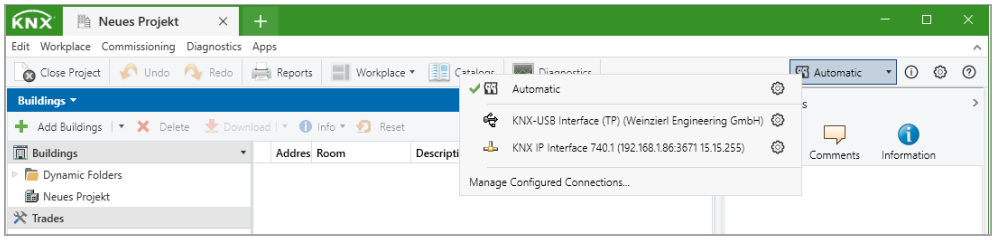
6.1 ETS 5

In the ETS 5, 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.



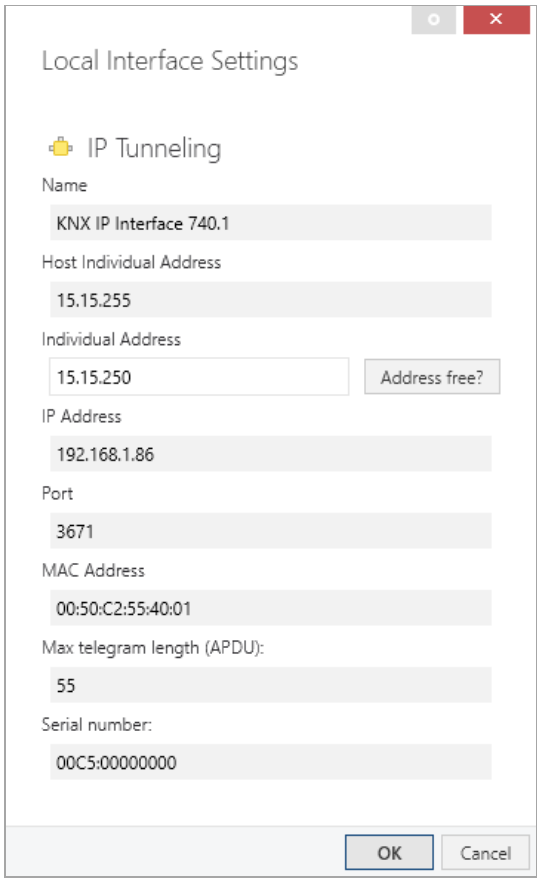
6.2 ETS 6

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



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.



6.3 Common

The displayed device name and the “Host Individual Address” (individual address of the device) can then be changed via the database entry within your ETS project.

In the “Individual address” section, the individual KNX address of the currently used KNXnet/IP tunneling connection can be changed. In order to check whether the desired individual address is not already available in your KNX installation, the button “Address free?” can be pressed.

The KNX IP Interface 740.1 *wireless* supports up to 8 connections simultaneously. A separate individual address is used for each connection.

The ETS can access configured IP interfaces even without a database entry. If the configuration does not correspond to the conditions of the installation, it must be adapted via the database entry within your ETS project.

The individual KNX device address as well as the individual KNX addresses for the additional tunneling connections can be changed via the database entry within the ETS project after the device has been added to the project. See section “ETS database – Additional individual addresses”.

Like all programmable KNX devices, the KNX IP Interface 740.1 *wireless* has a individual address with which the device can be addressed. This is used, for example, by the ETS when downloading the interface via the KNX bus.

For the interface function, the device uses additional individual addresses that can be set in the ETS (for ETS5.7 or newer). If a client (e.g. ETS) sends telegrams to the KNX bus via the KNX IP Interface 740.1 *wireless*, these contain one of the additional addresses as the sender address. Each address is assigned to a connection. In this way, response telegrams can be forwarded clearly to the respective client.

The additional individual addresses must be from the address range of the bus line in which the interface is located and must not be used by another device.

Example:

Individual address:	*1.1.10 (device address in the topology)*
KNXnet/IP tunneling connection 1:	*1.1.240 (1. additional individual address)*
KNXnet/IP tunneling connection 2:	*1.1.241 (2. additional individual address)*
KNXnet/IP tunneling connection 3:	*1.1.242 (3. additional individual address)*
KNXnet/IP tunneling connection 4:	*1.1.243 (4. additional individual address)*
KNXnet/IP tunneling connection 5:	*1.1.244 (5. additional individual address)*
KNXnet/IP tunneling connection 6:	*1.1.245 (6. additional individual address)*
KNXnet/IP tunneling connection 7:	*1.1.246 (7. additional individual address)*
KNXnet/IP tunneling connection 8:	*1.1.247 (8. additional individual address)*

7 Programming

The KNX IP Interface 740.1 *wireless* can be programmed by the ETS in various ways.

7.1 Via the KNX bus

For this, the device must only be connected to the KNX bus. The ETS requires an additional interface (e.g. USB) to the KNX bus. This way, both the individual address and the entire application including IP configuration can be programmed. Programming via the KNX bus is recommended if no IP connection can be established.

7.2 Via KNXnet/IP tunneling

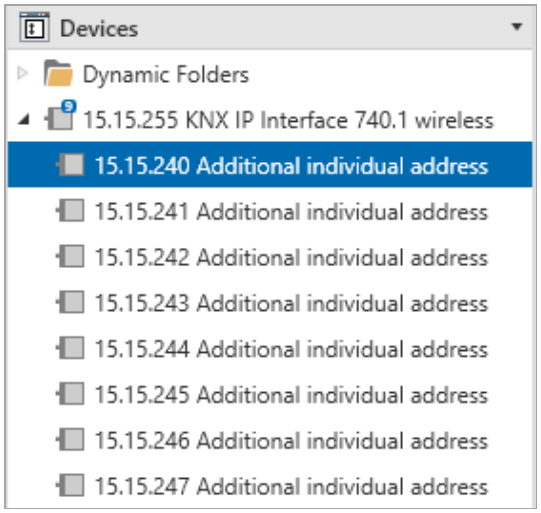
No additional interface is required here. Programming via KNXnet/IP tunneling is possible if the device already has a valid IP configuration (e.g. via DHCP). In this case, the device is displayed in the interfaces in the ETS and must be selected. The download takes place from the ETS project, as with other devices.

8 ETS database

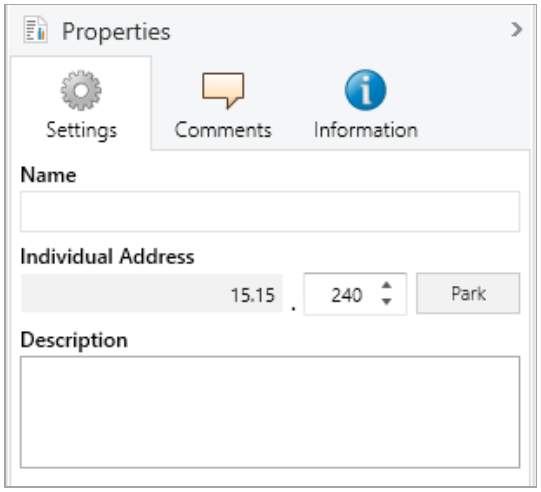
The ETS5 database (for ETS 5.7 or newer) can be downloaded from the product website of the KNX IP Interface 740.1 *wireless* (www.weinzierl.de) or from the ETS online catalogue.

8.1 Additional individual addresses

The additional individual addresses appear in the topology view.



To change the individual addresses, select the corresponding entry in the list and enter the desired address in the text field under “Properties – Settings”. If the frame of the text field changes its colour to red after entry, this indicates that the address entered is already being used. The changes are only applied in the device after download.



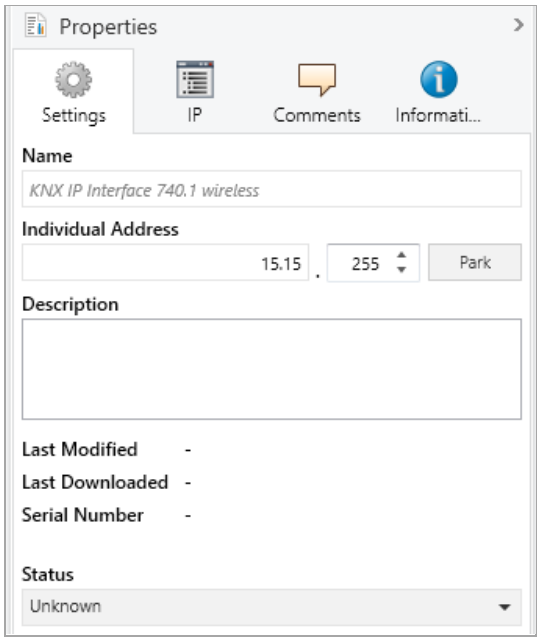
Make sure that none of the specified addresses are already used in your KNX installation.

8.2 IP settings

By marking the KNX IP Interface 740.1 *wireless* in the tree structure of the topology view of the ETS project, the overview “Properties” appears on the right side of the ETS window.

8.2.1 Device name (SSID)

Under Properties menu item “Settings”, the device name (SSID) of the KNX IP Interface 740.1 *wireless* can be changed. The first 30 characters are used.

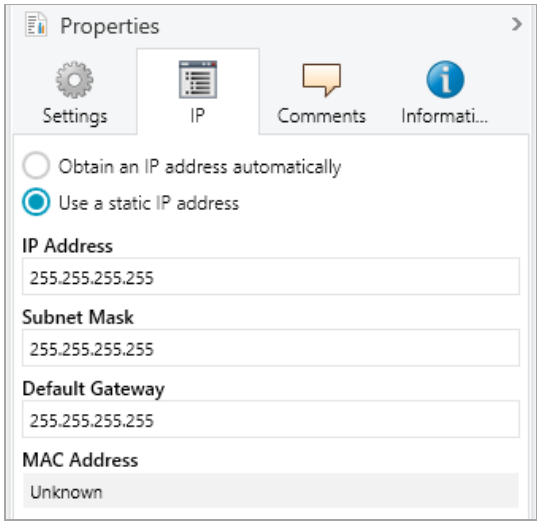


The change made will only take effect after an ETS download.

8.2.2 IP configuration

The IP configuration is only used in “Station / Client mode”.
In operating mode “Access point” the IP configuration is not used.

Under Properties menu item “IP”, the IP specific options of the KNX IP Interface 740.1 *wireless* can be changed.



The change made will only take effect after an ETS download.

By switching from “Obtain an IP address automatically” (via DHCP) to “Use a static IP address” (static IP address), the IP address, subnet mask and standard gateway can be freely selected.

IP Address

The IP address of the KNX IP Interface 740.1 *wireless* must be entered here. This is used to address the device via the IP network (Wi-Fi). The IP addressing should be coordinated with the administrator of the network.

Subnet Mask

The subnet mask must be entered here. This mask is used by the device to determine whether a communication partner is located in the local network. If a partner is not in the local network, the device does not send the telegrams directly to the partner, but to the standard gateway, which takes over the forwarding.

Default Gateway

Enter the IP address of the gateway here, e.g. the access point of the installation.

Example for the assignment of IP addresses

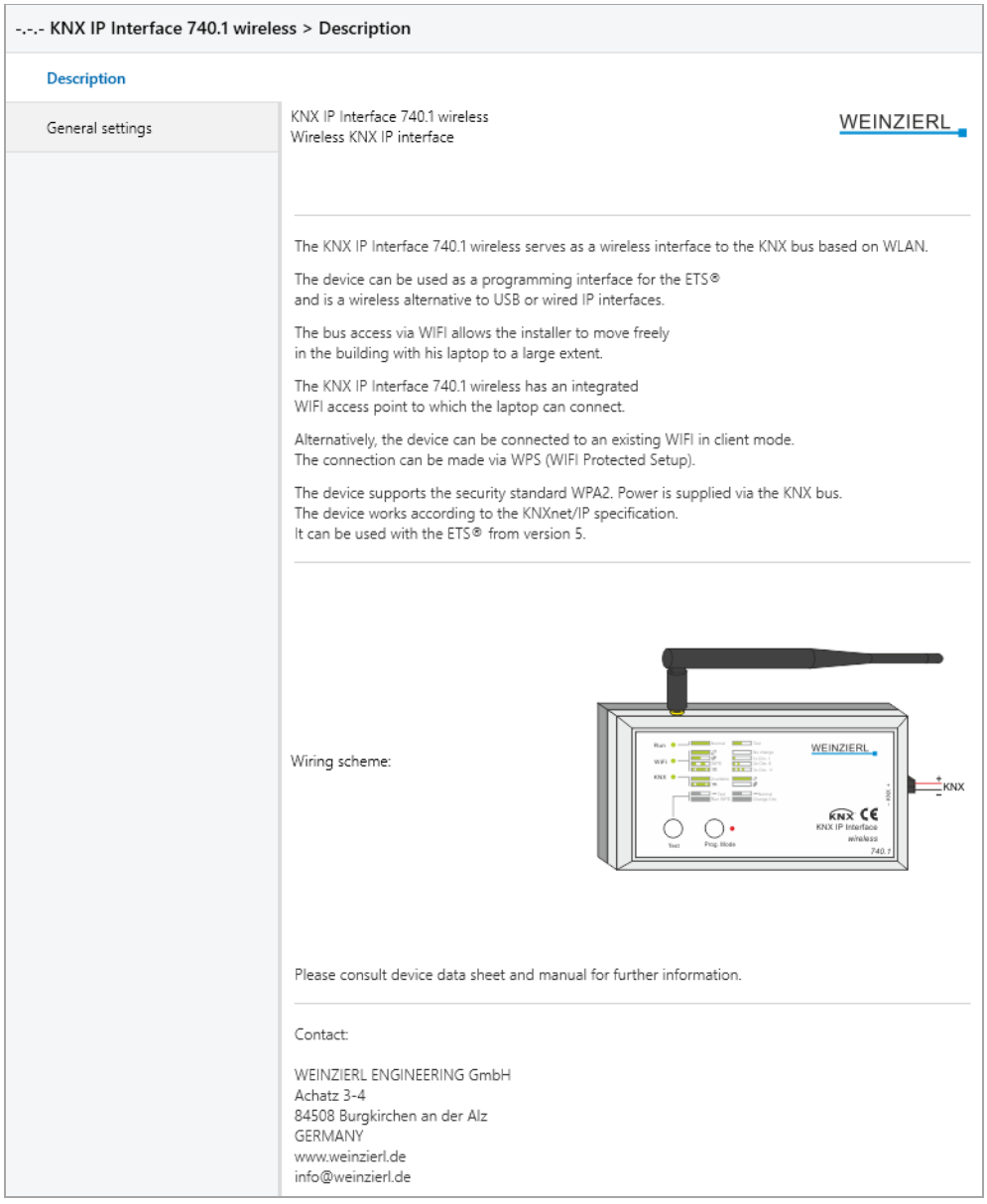
The KNX IP Interface 740.1 *wireless* is to be accessed with a PC.

IP address of PC: 192.168.1.30
Subnet mask of PC: 255.255.255.0

The KNX IP Interface 740.1 *wireless* is located in the same local network, i.e. it uses the same subnet. The assignment of the IP address is restricted by the subnet, i.e. in this example the IP address of the IP interface must be 192.168.1.xx, xx can be a number from 1 to 254 (with the exception of 30, which has already been used). Care must be taken not to assign addresses twice.

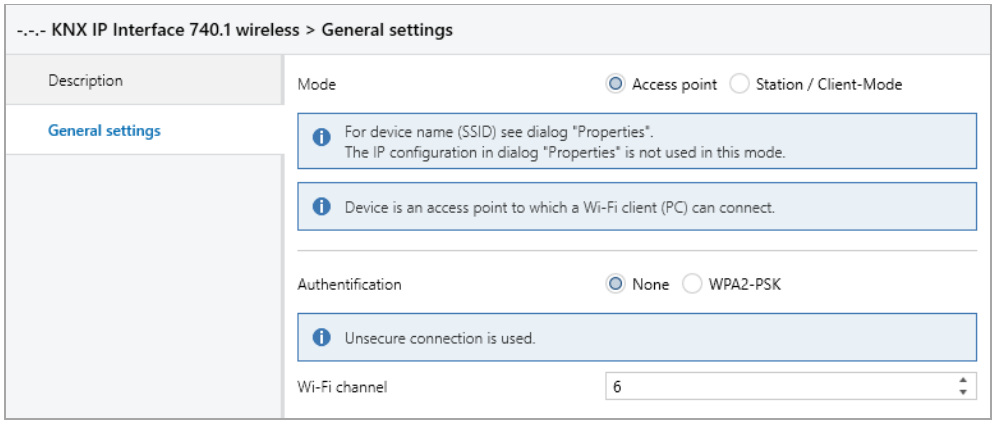
IP address of KNX IP Interface 740.1 wireless: 192.168.1.31
Subnet mask of KNX IP Interface 740.1 wireless: 255.255.255.0

8.3 Description



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

8.4 General settings

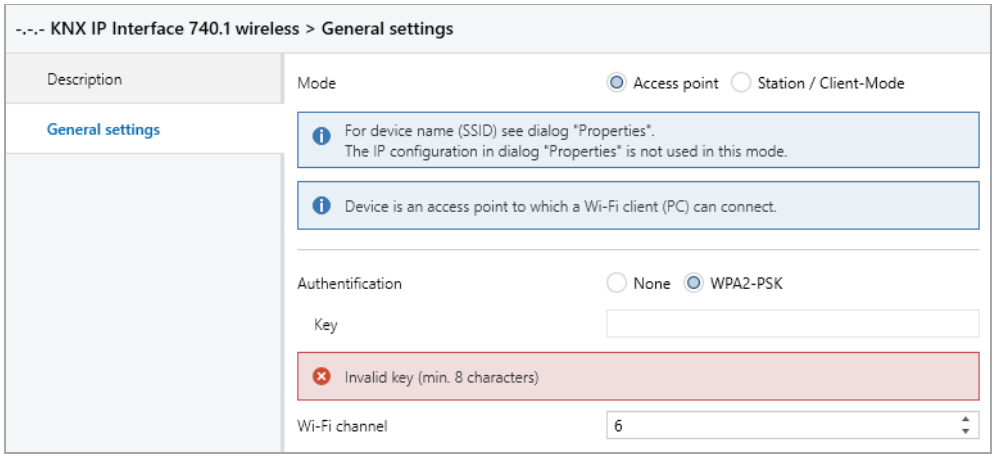


Mode

The operating mode of the device is configured here. The following options are available:

- Access point
  Device is an access point to which a Wi-Fi client (PC) can connect.
- Station / Client-Mode
  Device is a client that connects to an access point.

8.5 Operating mode “Access point”



Authentification

The Wi-Fi encryption can be activated/deactivated via the authentification parameter.

The choices are:

- None
  The installer can connect to the Wi-Fi without entering a password.
  The Wi-Fi is not encrypted.

- WPA2-PSK
  As encryption standard WPA2-PSK (Wi-Fi Protected Access 2, pre-shared-key) is used.

Key *(only for WPA2-PSK, 63 characters)*

The key used must be entered here (8 ... 63 characters). This must also be entered in the Wi-Fi client (PC) when establishing the Wi-Fi connection.

Wi-Fi channel

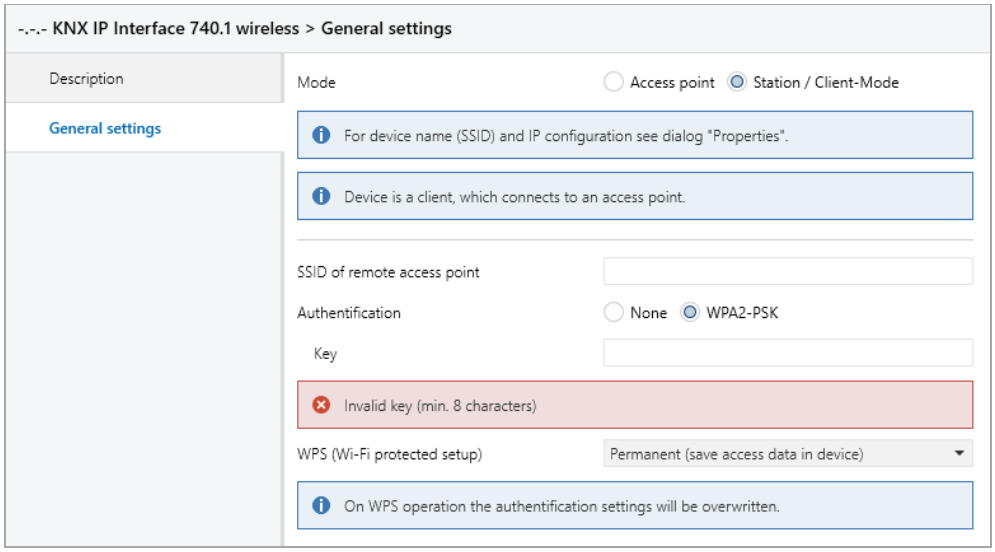
The used Wi-Fi channel is configured here.

Example: Authentification

To ensure a high level of security, the key should be at least 10 characters long. Also it should contain upper and lower case letters as well as special characters and numbers.

Device name (SSID): KNX IP Interface 740.1
Authentification: WPA2-PSK
*Key: iEn49*s/kP*

8.6 Operating mode “Station / Client-Mode”



SSID of remote access point *(32 characters)*

Here the identifier of the Wi-Fi network (SSID, Service Set Identifier) to which the device is to connect has to be entered.

Authentification

The Authentification parameter can be used to configure whether the remote access point uses Wi-Fi encryption.

The choices are:

- None
  The Wi-Fi is not encrypted.

- WPA2-PSK
  As encryption standard WPA2-PSK (Wi-Fi Protected Access 2, pre-shared-key) is used.

Key *(only for WPA2-PSK, 63 characters)*

The key used must be entered here (8 ... 63 characters). This is required to establish the Wi-Fi connection to the remote access point.

WPS (Wi-Fi protected setup)

This configures whether the device can connect to the remote access point using WPS (Wi-Fi protected setup).

The choices are:

- Disabled
- Temporary
- Permanent (save access data in device)
  The WPS function overwrites the authentification settings.

WARNING

- The device must be mounted and commissioned by an authorized electrician.
- 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.

ETS5 database
www.weinzierl.de/en/products/740.1/ets5

Data sheet
www.weinzierl.de/en/products/740.1/datasheet

CE Declaration
www.weinzierl.de/en/products/740.1/ce-declaration

Tender text
www.weinzierl.de/en/products/740.1/tender-text

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2021-11-18