KNX IP secure interface

KNX IP secure router

Codes: EK-IE1-SEC-TP / EK-IF1-SEC-TP

TP | S | X

Datasheet STEKIE1IF1TP_EN

Secure IP devices for establishing the bidirectional data connection between a PC or laptop and a KNX bus system via a LAN network. They have an integrated KNX bus communication module and are designed for 35 mm rail mounting. The power supply takes place via the KNX bus.

REFLIE1IF1TPD

Description

KNX IP Interface EK-IE1-SEC-TP secure

The ekinex® KNX IP Interface EK-IE1-SEC-TP secure is a compact bus powered interface between LAN/Ethernet and KNX bus. With its compact design has a width of only 1 module (18 mm) and is powered by the KNX bus. The device is an interface between IP and KNX and can be used as programming interface for ETS® Software. You can access the KNX Bus from every point of your LAN. Furthermore, the KNX IP Interface EK-IE1-SEC-TP secure allows you to program the KNX bus over the Internet.

The device supports KNX Security which can be enabled in ETS. With its interface functionality (tunneling) KNX security prevents from unauthorized access.

The buttons and LEDs on the device allow a local diagnosis including the operating status and communication errors.

KNX IP Router EK-IF1-SEC-TP secure

The ekinex® KNX IP Router EK-IF1-SEC-TP secure allows forwarding of telegrams between different lines through a LAN (IP) as a fast backbone. In addition this device is suited to connect a PC to the KNX network e.g. for ETS programming.

The device supports KNX Security which can be enabled in ETS. As secure router the device allows coupling of not secured communication on KNX TP to a secured IP backbone. Also for the interface functionality (tunneling) KNX security prevents from unauthorized access.

The IP address can be obtained by a DHCP server or by manual configuration (ETS) respectively. This device works according to the KNXnet/IP specification using the core, the device management, the tunneling and the routing part.

The KNX IP Router EK-IF1-SEC-TP secure has an extended filter table for main group 0 ... 31 and is able to buffer up to 150 telegrams. Power is supplied via the KNX bus.

Main functional characteristics

- Programming button and LED on the front
- LED for status and data traffic signaling on bus line and Ethernet network
- Buttons for activating connection functions
- Bus line connection via KNX terminal
- Connection to Ethernet network via RJ45 connector
- Ethernet 100BaseT (100MBit/s)
- Supported internet protocols ARP, ICMP, IGMP, UDP/IP, TCP/IP, DHCP and Auto IP
- Support for KNX secure technology, which can be activated via ETS®
- Up to 8 KNXnet/IP Tunneling connections simultaneously
- Max. APDU length: 55
- KNXnet/IP Security (AES-128)
- KNX Line / Area coupler functionality (EK-IF1-SEC-TP only)
- Extended filter table for main group 0 ... 31 (EK-IF1-SEC-TP only)

Other characteristics

- Housing in plastic material (PC)
- Mounting on 35 mm rail (according to EN 60715)
- Protection degree IP20 (installed device, according to EN 60529)
- Appliance class III (according to EN 60664-1)
- Classification climatic 3K5 and mechanical 3M2 (according to EN 50491-2)
- 1 modular units (1 unit = 18 mm)
- Weight 40 g
- Dimensions (WxHxD): 17.8 x 90 x 60 mm

Technical data

Supply

- 30 Vdc from KNX bus line
- Current consumption from bus < 20 mA
- Power consumption < 600 mW

KNX

- Medium IP/TP
- KNX Security (AES-128) incl. Tunneling V2, Core V2
- Up to 8 KNXnet/IP Tunneling connections simultaneously
- Extended filter table for main group 0 ... 31 (EK-IF1-SEC-TP only)
- Max. APDU length: 55

Connectors

- Bus connector for KNX (red / black)
- LAN RJ-45 socket

Environmental conditions

- Operating temperature: - 5 ... + 45 °C
- Non-operating ambient temp.: - 25 ... + 70 °C
- Relative humidity: 5 ... 93% not condensing

Switching and display elements

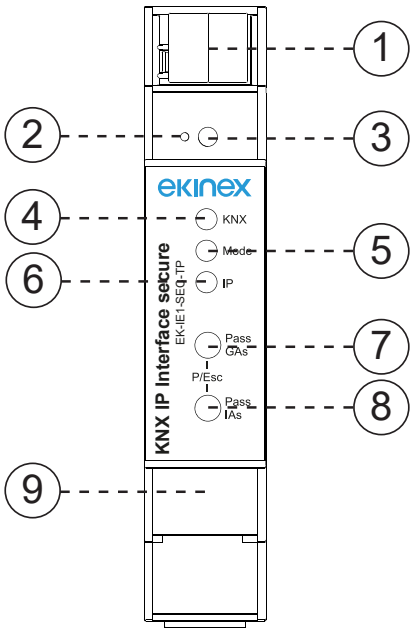
The devices are equipped with a programming pushbutton and a programming LED, two operating buttons, three LEDs for status indication, terminals for connecting the KNX bus line and the Ethernet/LAN.

Switching elements

- Pushbutton (3) for switching between the normal and programming operating mode. This operation can be done by simultaneously pressing the pushbuttons (7) and (8) as well;
- Pushbuttons (7), (8) to perform the following operation:

  a) for EK-IE1-SEC-TP, they allow to choose each single connection. ***Conn Up*** counts the connection numbers up and ***Conn Dn*** down. The actually selected connection number is indicated by flashing (1x…5x times) of the Mode LED (5);

  b) for EK-IF1-SEC-TP, with the button ***Pass GAs*** the forwarding of Group Addressed telegrams can be activated, while the button ***Pass IAs*** activates the forwarding of Individually Addressed telegrams.



EK-IE1-SEC-TP

1) KNX Bus connector
2) LED for Programming Mode (red)
3) Programming Mode button
4) KNX LED (multicolor)
5) Mode LED (multicolor)
6) IP LED (multicolor)
7) Connection Up button
8) Connection Down button
9) Ethernet/LAN connector

Display elements

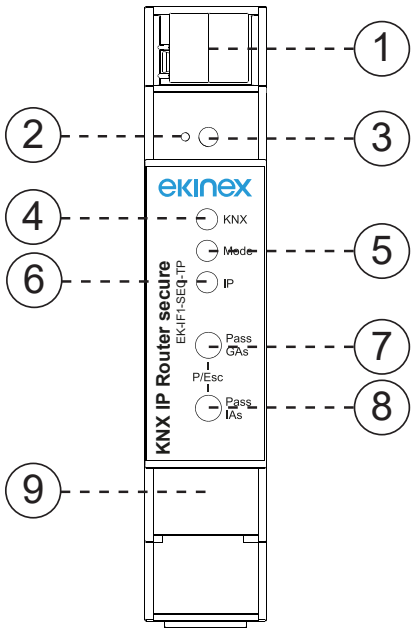
- Red LED (2) for displaying the active operating mode of the device (on = programming, off = normal operation)
- Multicolor KNX LED (4), that lights up green if the device is successfully powered by the KNX bus. The LED indicates telegrams on the KNX bus by flickering. Communication failures (e.g. repetitions of telegram or telegram fragments) are indicated by a short change of the LED color to red.
- Multicolor Mode LED (5):

  a) for EK-IE1-SEC-TP, it shows the actually selected connection number by flashing (1x...5x times). An available KNXnet/IP Tunneling connection is indicated by a green light and a used tunneling connection is indicated by an orange light.

  b) for EK-IF1-SEC-TP, it shows the forwarding of Individual and/or Group Adressed telegrams.

- Multicolor IP LED (6), that lights up when an Ethernet link is active. This LED is green if the device has valid IP settings (IP address, Sub net and Gateway). With invalid or nonexistent IP settings, or if the device has not yet received the IP settings by a DHCP server, the LED is red. The LED indicates IP telegrams by flickering green.

For detailed information on configuration options, refer to the application manual of the device.



EK-IF1-SEC-TP

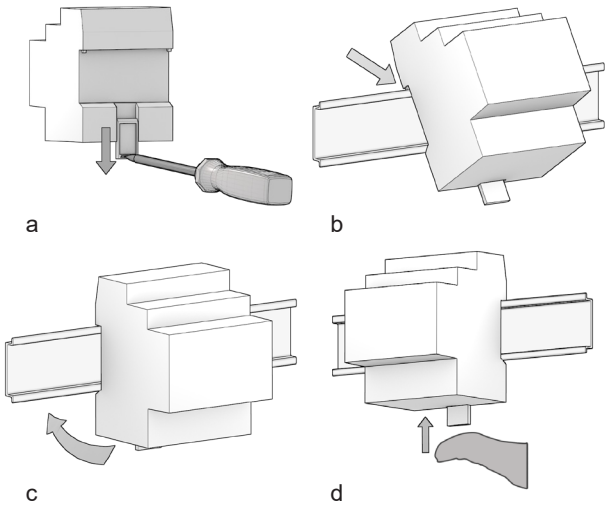
1) KNX Bus connector
2) LED for Programming Mode (red)
3) Programming Mode button
4) KNX LED (multicolor)
5) Mode LED (multicolor)
6) IP LED (multicolor)
7) Pass GAs (Group Addresses) button
8) Pass IAs (Individual Addresses) button
9) Ethernet/LAN connector

Mounting

The device has degree of protection IP20, and is therefore suitable for use in dry interior rooms. The housing is made for rail mounting according to EN 60715 in boards or cabinets for electrical distribution. For the installation of the device on the rail proceed as follows:

- with the aid of a tool bring the locking device in the fully lowered position (a);
- place the upper edge of the rear inner profile on the upper edge of the rail (b);
- rotate the device towards the rail (c);
- push the locking device upward until it stops (d).

Before removing the device, be sure the bus terminal has been extracted from its slot. Use a screwdriver to slide down the locking device and remove the device from the rail.



Connection of the KNX bus line

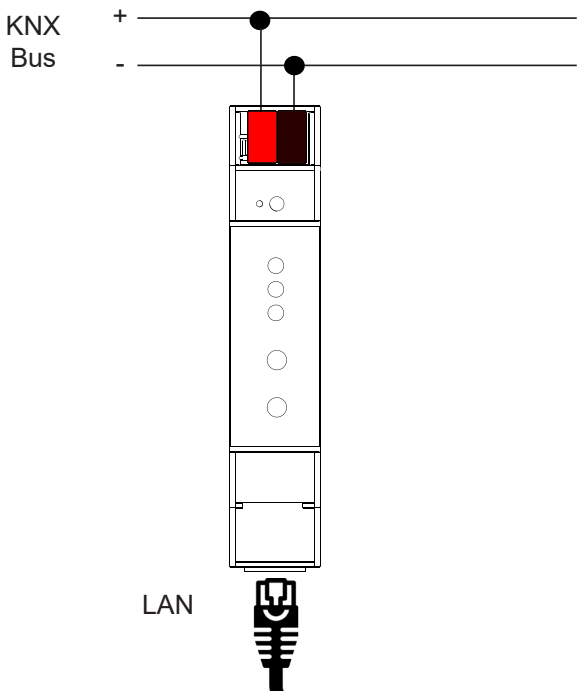
The connection of the KNX bus line is made with the terminal block (1) included in delivery and inserted into the slot of the housing.

Warning! *In order to supply the KNX bus lines use only KNX bus power supplies (e.g. ekinex EK-AB1-TP, EK-AG1-TP or EK-AM1-TP). The use of other power supplies can compromise the communication and damage the devices connected to the bus.*

Characteristics of the KNX terminal block

- spring clamping of conductors
- 4 seats for conductors for each polarity
- terminal suitable for KNX bus cable with single-wire conductors and diameter between 0.6 and 0.8 mm
- recommended wire stripping approx. 5 mm
- color codification: red = + (positive) bus conductor, black = - (negative) bus conductor

Warning! *The electrical connection of the device can be carried out only by qualified personnel. The incorrect installation may result in electric shock or fire. Before making the electrical connections, make sure the power supply has been turned off.*



Configuration and commissioning

The KNX IP Interface and Router secure devices can be programmed in different ways by the ETS®:

Via KNX Bus

The device only needs to be connected to the KNX bus. The ETS® requires an additional interface (for example, USB) to have access to the bus. Via this way both the individual address and the entire application including IP configura-tion can be programmed. Programming via the bus is recommended if no IP connection can be established.

Via KNXnet/IP Tunneling

No additional interface is required. 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 interface configuration of the ETS and must be selected. The download is executed via the ETS® project as with many other devices.

Via direct IP connection

While KNXnet/IP Tunneling and KNXnet/IP Routing is limited to the speed of KNX/TP connection, the device can be loaded via a direct IP connection at high speed. The direct IP connection is possible if the device already has a valid IP configuration as well as an individual address. To do this select “Use direct IP connection if available” in the ETS® menu “Bus – Connections - Options”. The download is then directly performed in the device and is not visible in the ETS group monitor.

In addition, the EK-IF1-SEC-TP router device can also be programmed via KNXnet/IP Routing. This is possible if the device already has a valid IP configuration (e.g. by

using DHCP or Auto IP). In the ETS®, the routing interface appears if at least one device on the network which supports rout-ing is available. The name of the network interface appears in the PC as description. If routing is selected as interface, the programming done from the ETS® project as like with other devices. In this case LAN is used as a KNX medium like TP. There is no additional interface device required.

For detailed information on configuration options, refer to the application manual of the device available on the website www.ekinex.com

Commissioning

For commissioning the device the following activities are required:

- make the electrical connections as described above;
- turn on the bus power supply;
- switch the device operation to the programming mode by pressing the programming pushbutton located on the front side of the housing. download into the device the physical address and the configuration with the ETS® program.

At the end of the download the operation of the device automatically returns to normal mode; in this mode the programming LED is turned off. Now the bus device is programmed and ready for use.

Note. *The configuration and commissioning of KNX devices require specialized skills. To acquire these skills, you should attend the workshops at KNX certified training centers.*

Device reset

The device can be reset to factory settings as follows (please refer to the pictures on page 2):

- disconnect the KNX bus connector (1) from the device;
- press the KNX programming button (3) and keep it pressed;
- reconnect the KNX bus connector (1) of the device;
- press and hold the KNX programming button (3) for at least another 6 seconds.

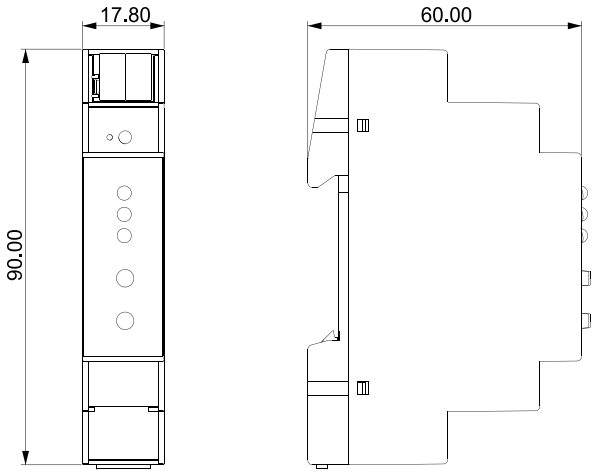
A short flash of all the LEDs (2), (4), (5), (6) confirms the correct reset of the device to the factory settings.

Warning! *The reset restores the device back to the state of delivery from the factory. The address and the value of the parameters set during configuration will be lost.*

Versions

Code	Application program (## = version)
EK-IE1-SEC-TP	APEKIE1TP##.knxprod
EK-IF1-SEC-TP	APEKIF1TP##.knxprod

Dimensions [mm]



Marks

- KNX
- CE marking according to:
  - EMC directive 2014 / 30 / EU
  - RoHS directive 2011 / 65 / EU
  - EN 63044-3: 2018, EN 50491-5-1: 2010
  - EN 50491-5-2:2010, EN 50491-5-3: 2010
  - EN 61000-6-2: 2019
  - EN 61000-6-3: 2007 + A1: 2011
  - EN 63000: 2018

Maintenance

The device is maintenance-free. To clean use a dry cloth. It must be avoided the use of solvents or other aggressive substances.

Disposal

At the end of its useful life the product described in this datasheet is classified as waste from electronic equipment in accordance with the European Directive 2012/19/EU (WEEE recast), and cannot be disposed together with the municipal undifferentiated solid waste.

Documentation

This technical datasheet refers to the A1.0 release of the ekinex® EK-IE1-SEC-TP and EK-IF1-SEC-TP devices and is available for download on the website www.ekinex.com in PDF format (Portable Data Format).

File name	Device release	Update
STEKIE1IF1SECTP_EN.pdf	A1.0	11 / 2022

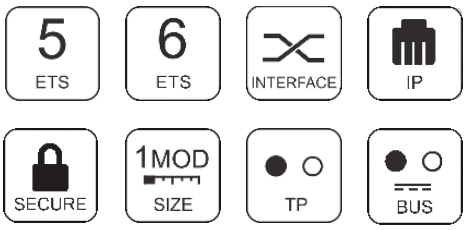
Warnings

- Installation, electrical connection, configuration and commissioning of the device can only be carried out by qualified personnel in compliance with the applicable technical standards and laws of the respective countries
- 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
- ekinex® KNX defective devices must be returned to the manufacturer at the following address: EKINEX S.p.A. Via Novara 37, I-28010 Vaprio d'Agogna (NO) Italy

Other information

- This datasheet 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 www.ekinex.com
- Each ekinex® device has a unique serial number on the label. The serial number can be used by installers or system integrators for documentation purposes and has to be added in each communication addressed to the EKINEX technical support in case of malfunctioning of the device
- KNX® and ETS® are registered trademarks of KNX Association cvba, Brussels

EK-IE1-SEC-TP



EK-IF1-SEC-TP