Description

The ekinex® binary input EK-CA1-TP is a S-mode KNX modular device for rail mounting for connection to the bus of switches and sensors of conventional type (not communicating natively on the KNX bus) equipped with potential-free contacts. In this way, by means of the binary input is possible to switch and control KNX bus functions with normal switches, pushbuttons and sensors or binary signals made available by other devices. The binary input can be used as follows:

- 8 independent channels, for example for the connection of traditional (not bus) switches or pushbuttons dedicated to the switching on/off of loads;
- 4 independent channels, for example for the connection of traditional (not bus) pushbuttons for the control of dimmer or motorized drives.

The device is equipped with an integrated bus communication module and is designed for rail mounting in distribution boards. To operate the device receives an input signal and converts it into a corresponding telegram sent on the bus. The telegram is received and executed by one or more KNX actuators. The device is powered by the KNX bus line with SELV voltage 30 Vdc and requires no auxiliary power supply. The scanning voltage for the input channels is produced inside the device.

Main characteristics

Each input channel of the device can be programmed for a different function:

- on/off switching of single loads or group of loads;
- detecting the state of signaling contacts (from safety devices, alarms, etc.);
- recalling and saving of scenes;
- sending on the bus of values (temperature, brightness, etc.);
- switching to forced operating mode (lock);
- counting of impulses and switching cycles.
- Each pair of input channels can be furthermore programmed for:
- dimming of lighting devices;
- controlling drives for shading devices (such as shutters, blinds, curtains, etc.).

Other characteristics

- Housing in plastic material
- Mounting on 35 mm rail (according to EN 60715)
- Protection degree IP20 (installed device)
- Overvoltage class III (according to EN 60664-1)
- Classification climatic 3K5 and mechanical 3M2 (according to EN 50491-2)
- Pollution degree 2 (according to IEC 60664-1)
- 4 modular units (1 unit = 18 mm)
- Weight 145 g
- Dimensions 72 x 90 x 70 mm (WxHxD)

Technical data

- 30 Vdc from KNX bus line
- Current consumption from bus < 13 mA
- Power consumption 320 mW

Ingressi

- Number: 8
- Scanning voltage: > 11 V
- Scanning current: > 5 mA
- Maximal lenght of the connection cable: 10 m (with cable section 0,8 mm²)

Environmental conditions

- Operating temperature: - 5 ... + 45°C
- Storage temperature: - 25 ... + 55°C
- Transport temperature: - 25 ... + 70°C
- Relative humidity: 95% not condensing

Switching, display and connection elements

The device is equipped with a programming pushbutton and a programming LED, membrane pushbuttons, LED for status indication and terminals for connecting the KNX bus line and the inputs.
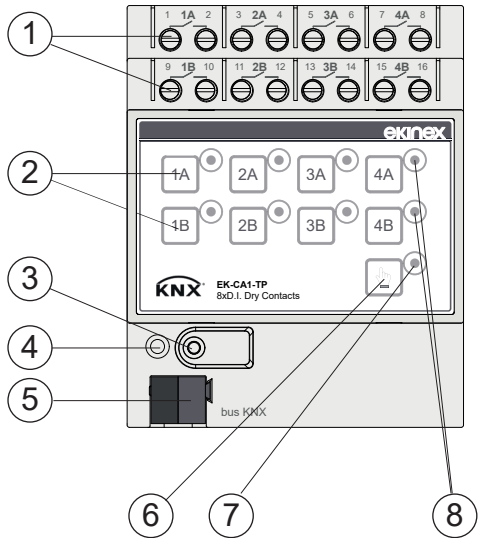

1) Terminal blocks for inputs
2) Pushbuttons for forced operation of the inputs
3) LED for status indication of the inputs
4) Programming pushbutton
5) Programming LED
6) Terminal block for KNX bus line
7) Pushbutton for toggling between manual and automatic operation
8) LED for indication forced / automatic operation mode

Switching elements

- Pushbutton (3) for switching between the normal and programming operating mode
- Pushbutton (6) for switching between the operating modes: forced (pushbuttons on the front panel: active) or automatic (pushbuttons on the front panel: not active)
- Pushbuttons (2) for forced operation of the input channels

Switching to the forced operation mode allows to simulate the state of the input channels with the pushbuttons on the front panel of the device; in this way it is possible to test the correct operation of the coordinated loads before connecting any device to the inputs channels.
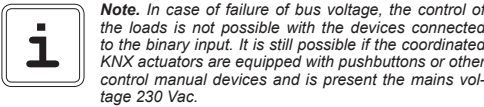
> **Note.** In case of failure of bus voltage, the control of the loads is not possible without the devices connected to the binary input. It is still possible if the coordinated KNX actuators are equipped with pushbuttons or other control manual devices and is present the mains voltage 230 Vac.

Display elements

- Red LED (4) for displaying the active operating mode of the device (on = programming, off = normal operation)
- Green LEDs (8) for displaying the switching status of the input channels (on = closed contact, off = opened contact)
- Red LED (7) for displaying the operating mode (on = forced operation, off = automatic operation)

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. The installation is in horizontal position, the correct position is when the KNX bus terminal is located at the bottom and the terminals for the inputs are located at the top. 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).
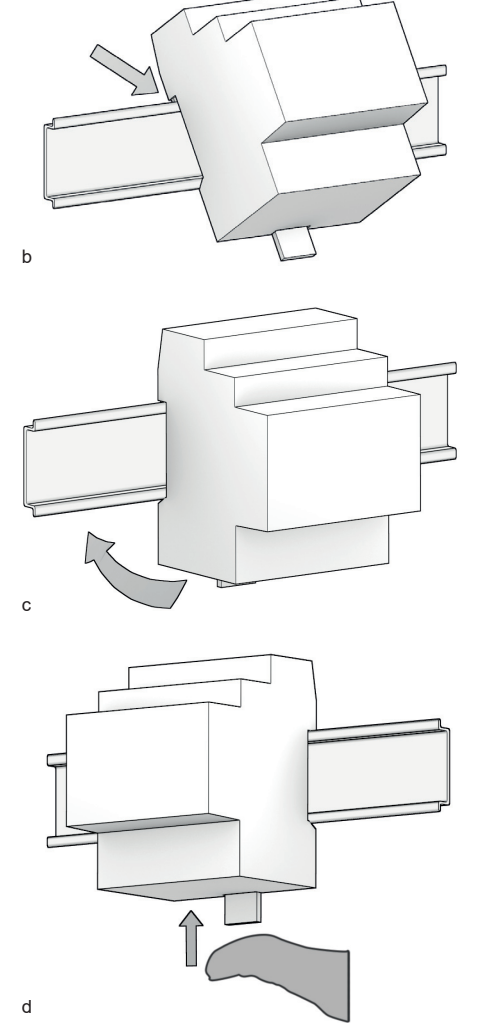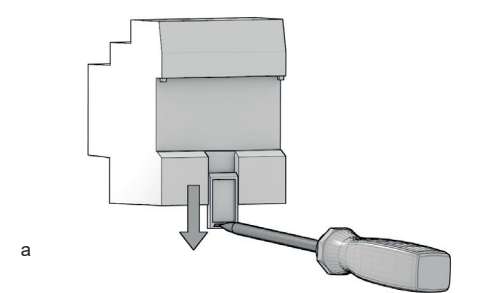
Before removing the device, be sure the inputs have been disconnected and the bus terminal has been extracted from its slot. Use a screwdriver to slide down the locking device and remove the device from the rail.
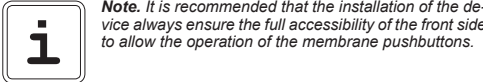
> **Note.** It is recommended that the installation of the device always ensure the full accessibility of the front side to allow the operation of the membrane pushbuttons.

Connection of the KNX bus line

The connection of the KNX bus line is made with the terminal block (5) included in delivery and inserted into the slot of the housing.
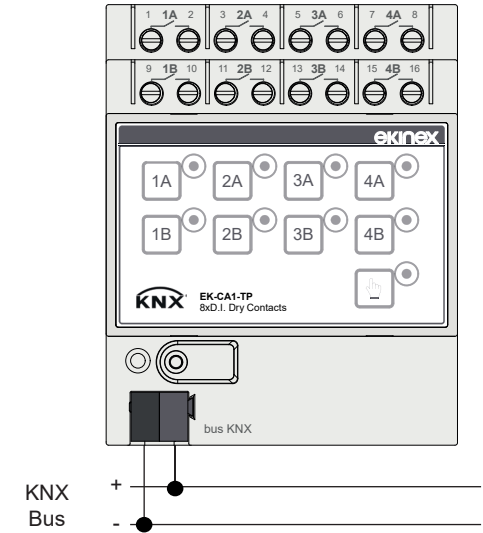
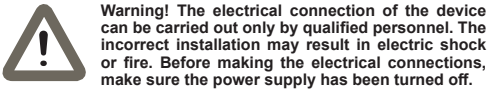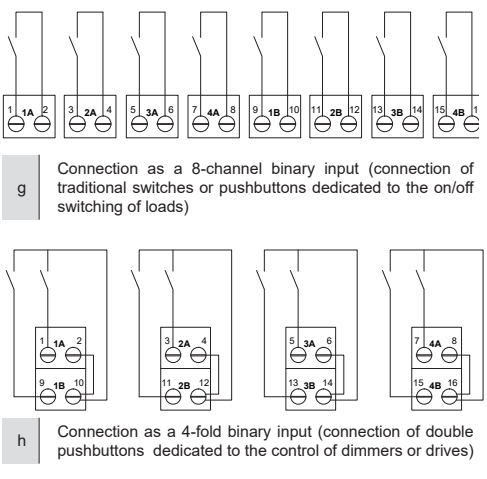KNX Bus

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

Connection of the inputs

The connection of the inputs (fig. g and h) is made with the screw terminals located at the top.

Characteristics of the terminals

- screw clamping of conductors
- maximum cross section of conductor 2.5 mm² (single-wire) or 1.5 mm² (multi-wire)
- recommended wire stripping approx. 6 mm
- torque max 0.8 Nm

g — Connection as a 8-channel binary input (connection of traditional switches or pushbuttons dedicated to the on/off switching of loads)

h — Connection as a 4-fold binary input (connection of double pushbuttons dedicated to the control of dimmers or drives)

> **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

Configuration and commissioning of the device require the use of the ETS® (Engineering Tool Software) program V4 or later releases. These activities must be carried out according to the design of the building automation system done by a qualified planner.
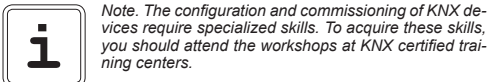
> **Note.** The configuration and commissioning of KNX devices require specialized skills. To acquire these skills, you should attend the workshops at KNX certified training centers.

Configuration

For the configuration of the device parameters the corresponding application program or the whole ekinex® product database must be loaded in the ETS program. For detailed information on configuration options, refer to the application manual of the device available on the website www.ekinex.com

Product code	Application software (## = release)	Communication objects (max nr.)	Group adresses (max nr.)
EK-CA1-TP	APEKCA1TP##.knxprod	156	254

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. In this mode of operation, the programming LED is turned on;
- 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.

Marks

- KNX
- CE: the device complies with the Low Voltage Directive (2014/35/EU) and the Electromagnetic Compatibility Directive (2014/30/EU). Tests carried out according to EN 50491-2:2010, EN 50491-3:2009, EN 50491-4-1:2012, EN 50491-5-1:2010, EN 50491-5-2:2010, EN 50428:2005 + A1:2007 + A2:2009

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
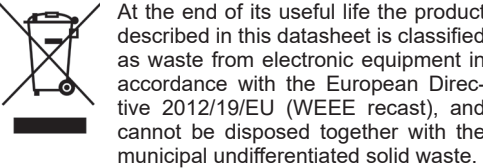
 At the end of its useful life the product described in this datasheet is classified as waste from electronic equipment in accordance with the European Directive 2012/19/EU (WEEE recast), and cannot be disposed together with the municipal undifferentiated solid waste.
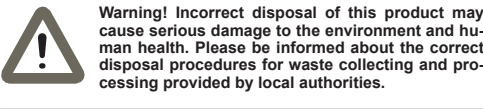
> **Warning! Incorrect disposal of this product may cause serious damage to the environment and human health. Please be informed about the correct disposal procedures for waste collecting and processing provided by local authorities.**

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
- The use of the device in security applications is not allowed. The device may however be used for auxiliary signaling functions
- 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
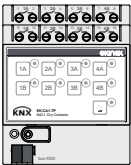
Other information

- The instruction sheet must be delivered to the end customer with the project documentation
- 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
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