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CONTROL YOUR LIVING SPACE

CODESYS PLC with KNX interface

Code: EK-IA1-TP

CE

Programmable logic controller (PLC) with interface to the KNX system. It has to be used in KNX installations for control of homes and buildings.

Description

The CODESYS® ekinex® EK-IA1-TP PLC is a freely programmable logic controller equipped with a KNX interface that allows to run at the same time several complex logical blocks. The programming is carried out with the development environment for PC CODESYS® che mette a disposizione all the PLC programming languages (Function Block, Ladder, etc.) considered by the IEC 61131-3 standard. Through a dedicated configuration tool it is possible the mapping into the logical controller of the objects defined in the ETS® project and present on the network and use them for the realisation of complex logical blocks (e. g. timer, PID for temperature regulation, etc.). Dedicated libraries are furthermore available for the realisation of complex functions in an easy and intuitive way. The device is equipped with an integrated bus communication module and is designed for rail mounting in distribution boards and cabinets. The device can receive from the bus telegrams sent by bus devices (such as pushbuttons, sensors or other devices for switching or controlling) installed on the KNX network and send telegrams on the bus after the processing of the logical sequences internally programmed. The device is powered by the KNX bus line with SELV voltage 30 Vdc and does not require any auxiliary power supply.

Main characteristics

- CPU ARM CORTEX M3 110MHz
- Memory on board: 1MB RAM, 1MB Flash, 8k FRAM
- Runtime PLC single task CODESYS V3
- USB device port for programming and debug
- Ethernet port (optional)
- RS485 serial port (opzionale)
- Auxiliary power supply not necessary

Other characteristics

- Housing in plastic material
- Mounting on 35 mm rail (according to EN 60715)
- Protection degree IP20 (according to EN 60529)
- 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 n.a.
- Dimensions 72 x 90 x 70 mm (WxHxD)

Technical data

Power supply

- 30 Vdc from KNX bus line
- Current consumption n.a.
- Power consumption n.a.

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, a programming LED, a terminal block for connecting the KNX bus line and an USB port for programming and debug the PLC program.

Switching elements

- Pushbutton for switching between the normal and programming operating mode

Display elements

- Red LED for displaying the active operating mode of the device (on = programming, off = normal operation)
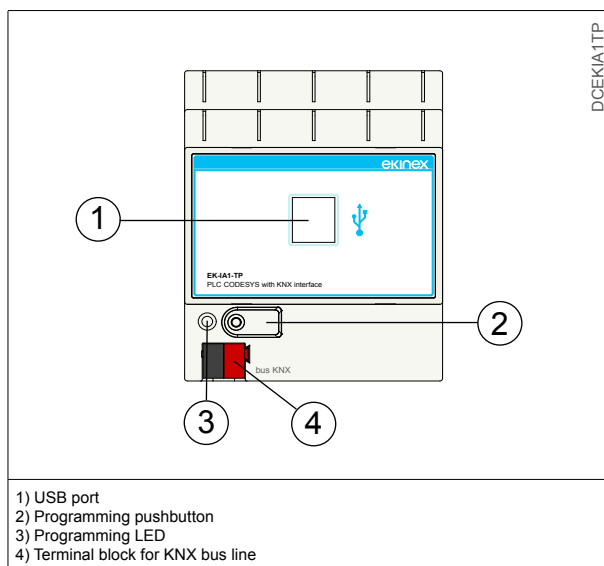
1) USB port
2) Programming pushbutton
3) Programming LED
4) Terminal block for KNX bus line

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. 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 (1);

- place the upper edge of the rear inner profile on the upper edge of the rail (2);
- rotate the device towards the rail (3);
- push the locking device upward until it stops (4).

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.
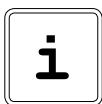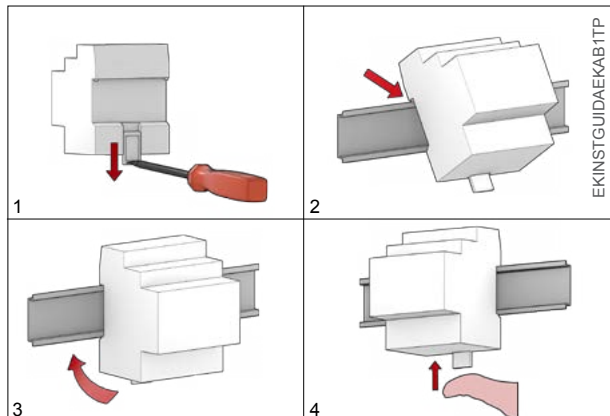

Note. *It is recommended that the installation of the device always ensure the full accessibility of the front side to allow the connection of the PC to the USB port.*

Connection of the KNX bus line

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

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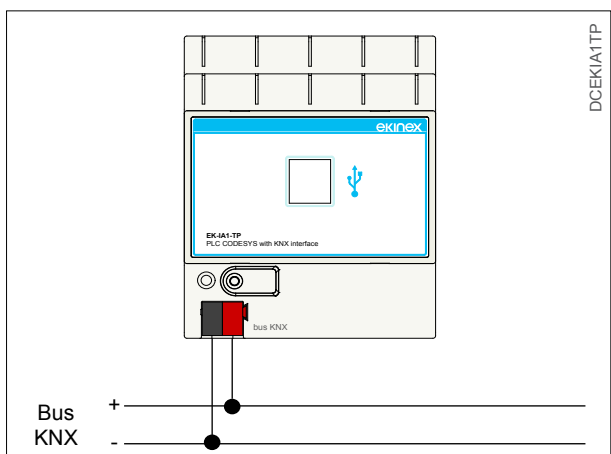
Warning! *In order to supply the KNX bus line use only KNX bus power supply (e.g. ekinex EK-AB1-TP or EK-AG1-TP). The use of other power supplies can compromise the communication and damage the devices connected to the bus.*

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 device is completely programmable; in order to work in an appropriate way it must be configured and programmed using the additional software tools supplied. Those tasks have to be carried out according to the project of the building automation system realised by a skilled professional. The programming and the commissioning require to use the program CODESYS® V3.5 service pack 4 (or later version), the ekinex® PLC tool and the program ETS® (Engineering Tool Software) V4.

Configuration

In order to have a correspondence between the variables defined in the ETS project and the PLC program, the KNX interface of the PLC has to be configured in an appropriate way. To do this it has to be used the ekinex® PLC tool that allows to read from the ETS database the variables defined in the project and to generate a configuration file for the uploading into CODESYS®. Using this file, the PLC is able to program in an appropriate way its KNX interface and to communicate with all of the objects in the KNX network. For detailed information on the configuration options, refer to the application manual of the device available on the website www.ekinex.com.
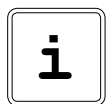
Commissioning

For commissioning the device the following activities are required:

- use the ekinex® PLC tool to read from the ETS® database the project in which the device is installed;
- export the configuration file that includes all the variables defined in the project;
- import the configuration file to the CODESYS® environment;
- write the PLC program;
- make the electrical connections as described above;
- turn on the bus power supply;
- start the CODESYS® development environment;
- download in the device the PLC software ande the configuration through the CODESYS® 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.

Product code	Configuration tool (## = version)	Communication objects (max. nr.)	Group addresses (max. nr.)
EK-IA1-TP	n.a.	n.a.	n.a.

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.*

Dimensions [mm]
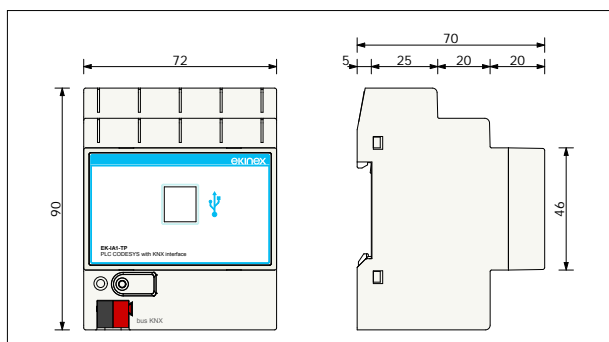
Marks

- CE mark: the device complies with the Low Voltage Directive (2006/95/EC) and the Electromagnetic Compatibility Directive (2004/108/EC).

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 2002/96/EC (WEEE), 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.

Documentation

This datasheet refers to the release A1.0 of the ekinex® device EK-IA1-TP, and is available for download at www.ekinex.com as a PDF (Portable Data Format) file.

Filename	Device release	Updating
STEKIA1TP_IT.pdf	A1.0	03 / 2014

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: SBS S.p.A. Via Circonvallazione s/n, I-28010 Miasino (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

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