

## Описание

Многофункциональный датчик и регулятор качества воздуха ekinex® EK-ES2-TP... - устройство KNX типа S-mode, предназначенное для независимой регуляции температуры в помещении/зоне или здании. Может устанавливаться в частных домах и зданиях (офисах, гостиницах и т.п.).

Температурный контроллер оборудован тремя датчиками: температуры, относительной влажности и качества воздуха - с учетом значений TVOC (Total Volatile Organic Compounds) или CO<sub>2</sub>. Устройство также может работать как контроллер, использующийся для управления данными параметрами в отдельной зоне. Предполагает возможность настройки до 8 светодиодов для индикации таких параметров, как рабочие пороги TVOC или CO<sub>2</sub>, активация функций увлажнения/осушения или режимов нагрева/охлаждения. Устройство оборудовано коммуникационным модулем KNX. Предназначено для настенной установки в монтажную коробку внутреннего монтажа. Кнопка и светодиод программирования, а также 3 датчика расположены на лицевой стороне устройства, ниже клавиши.

Устройство получает питание по шине KNX и не требует подключения дополнительного питания..

## Main functional characteristics

The common features to all versions are documented as follows:

- Temperature, relative humidity and air quality (TVOC and CO<sub>2</sub> equivalent) measuring through the integrated sensors, with possibility of sending the read value on the bus;
- Two-point (ON/OFF) or proportional (PWM or continuous) room temperature regulation;
- Seasonal modes: heating and cooling with possibility of either local or via bus seasonal changeover;
- Operating modes: comfort, standby, economy and building protection with different setpoint for heating and cooling functions;
- Automatic switching of the operating modes through presence sensor or window contact;
- Weighted average of two temperature values;
- Dew-point temperature computation;
- Temperature regulation (measured and setpoint, as °C), relative humidity (measured and setpoint in percentage), air quality in terms of TVOC (ppb) or CO<sub>2</sub> equivalent (ppm) concentration, alarms and errors (with alphanumeric coding);
- Relative humidity thresholds setting;
- TVOC and CO<sub>2</sub> equivalent thresholds setting, with the possibility to enable an alarm function for CO<sub>2</sub> equivalent threshold;
- Floor temperature limitation and antincondensation (for radiant panels);
- Delayed start of a fan ("hot-start") with time-scheduling or depending on the water temperature measured at the coil for thermal exchange;
- Compatibility with KNX actuators for VAV flow regulators and 6-way zone valve management;
- Logic functions (AND, OR, NOT and XOR) availability, in order to implement complex functions.

## Other characteristics

- Plastic casing for wall mounting
- Integrated temperature, relative humidity and air quality (TVOC and CO<sub>2</sub> equivalent) sensors
- Protection degree IP20 (according to EN 60529)
- Classification climatic 3K5 and mechanical 3M2 (according to EN 50491-2)
- Pollution degree 2 (according to IEC 60664-1)

## Technical data

- 30 Vdc power supply through KNX bus
- Current consumption from bus < 13 mA

## Environmental conditions

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

## Accessories

A metallic support, the fixing screws and the terminal for connection of the KNX bus line are delivered with the device. This has to be completed with the following items:

- a square rocker 60 x 60 mm, with set code EK-T1Q-..., to be filled with the specific colour and material extension;
- a single plate and a frame, to be ordered separately, except for the 'NF (No Frame) version, which do not require any frame.

## Plate

The device has to be completed with an ekinex® single plate with 60 x 60 mm window (EK-PQS-...) in combination with an adapter for mounting with frame of the

Form or Flank series or without frame. It is also possible the double mounting with 71 mm center-to-center distance in combination with double plates that must have (at least) one 60 x 60 mm window (EK-P2G-... or EK-P2S-...).

**Single square plate**  
with one 60 x 60 mm window  
Code EK-PQS-...  
(to be used with EK-ES2-TP)

**Single rectangular plate**  
with one 60 x 60 mm window  
Code EK-PRS-...  
(to be used with EK-ES2-TP-R)

**Double plate**  
with one 60 x 60 mm window and one 55 x 55 mm window  
Code EK-P2G-...

**Double plate**  
with two 60 x 60 mm windows  
Code EK-P2S-...

**i** **Note.** Frame and rockers for the completion of the device have to be ordered separately. For further information about materials, colours and finishing available see also the ekinex® product catalog or browse [www.ekinex.com](http://www.ekinex.com).

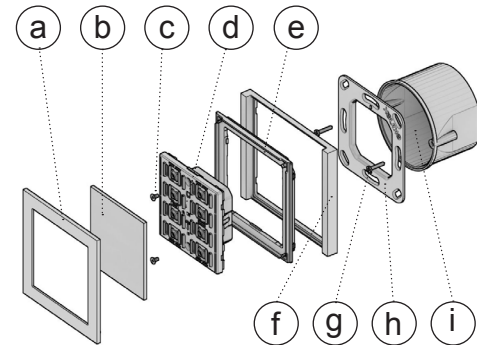
## Mounting

The device has degree of protection IP20, and is therefore suitable for use in dry interior rooms. The installation of the device requires the following steps:

### Mounting with frame

Carry out the following steps:

- fix the metallic support (h) with the screws (g) on a flush-mounting box (i) provided with suitable fixing holes;
- snap a square frame (f) of the form or flank series, inserting it from the rear of the preassembled thermostat-adaptor (d+e);
- insert the bus terminal, previously connected to the bus cable, in its slot on the rear side (see also: "Connection of the KNX bus line"). At this point it is recommended to carry out the commissioning of the pushbutton (see also "Configuration and commissioning") or at least the physical address download;
- insert thermostat and adapter (d+e), completed with the frame (f), in the metallic support (h). Mounting the pushbutton follow the indication TOP (arrow tip pointing up) on the rear side of the device;
- tighten thermostat, adapter and frame (d+e+f) on the metallic support (h) with the two screws (c);
- snap the plate (a);
- snap the rocker (b) to complete the installation.



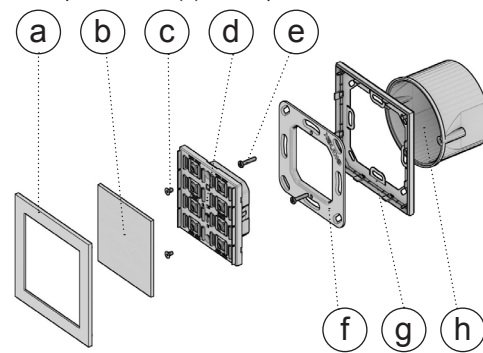
- a) 1-fold plate
- b) Rocker
- c) Screws (for device)
- d) Device
- e) Adapter (delivered preassembled on the device)
- f) Frame (square, form or flank series)
- g) Screws (for metallic support)
- h) Metallic support
- i) Flush-mounting box (not delivered by Ekinex)

### Mounting with frame ('NF series)

Carry out the following steps:

- insert the metallic support (f) on the adapter (g);
- fix adapter and metallic support (f+g) with the screws (e) on a flush-mounting box (h) provided with suitable fixing holes;
- insert the bus terminal, previously connected to the bus cable, in its slot on the rear side (see also: "Connection of the KNX bus line"). At this point it is recommended to carry out the commissioning of the pushbutton (see also "Configuration and commissioning") or at least the physical address download;
- insert the thermostat (d) in the support-adaptor (f+g). Mounting the device follow the indication TOP (arrow

- tip pointing up) on the rear side of the device;
- tighten the device on the support-adaptor (f+g) with the two screws (c);
- snap the plate (a);
- snap the rocker (b) to complete the installation.

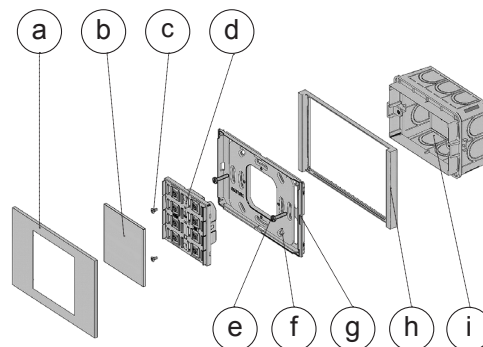


- a) 1-fold plate
- b) Rocker
- c) Screws (for device)
- d) Device
- e) Screws (for metallic support)
- f) Metallic support
- g) Adapter for 'NF series (delivered with the device)
- h) Flush-mounting box (not delivered by Ekinex)

### Mounting with rectangular flush-mounting box

Carry out the following steps:

- insert the metallic support (f) on the adapter (g);
- for versions provided with frame only: snap a rectangular frame (f) of either form or flank series, starting from the back side of the support-adaptor group (f+g) ;
- fix adapter and metallic support (f+g) (and eventually the frame, h) with the screws (e) on a flush-mounting box (i) provided with suitable fixing holes;
- insert the bus terminal, previously connected to the bus cable, in its slot on the rear side (see also: "Connection of the KNX bus line"). At this point it is recommended to carry out the commissioning of the pushbutton (see also "Configuration and commissioning") or at least the physical address download;
- insert the thermostat (d) in the support-adaptor (f+g). Mounting the device follow the indication TOP (arrow tip pointing up) on the rear side of the device;
- tighten the device on the support-adaptor (f+g) with the two screws (c);
- snap the plate (a);
- snap the rocker (b) to complete the installation.



- a) 1-fold plate (square, with 60 x 60 mm window)
- b) Rocker
- c) Screws (for device)
- d) Device
- e) Screws (for metallic support)
- f) Metallic support
- g) Plastic adapter
- h) Rectangular frame (not for NF version)
- i) Flush-mounting box (not delivered by Ekinex)

## Mounting position

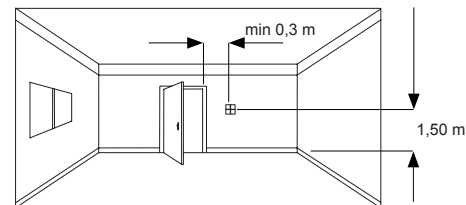
For optimum regulation the device has to be preferably installed on an internal wall at the height of 1.5 m and at least 0.3 m far from doors. The device cannot be installed close to heat sources such as radiators or domestic appliances or in positions subject to direct sunlight. If necessary, for the regulation may be used a weighted average between two values selected among the following ones: value measured by the internal sensor, value measured by a temperature sensor connected to a device input, value received via bus by another KNX device (e.g. from ekinex pushbuttons).

## Switching, display and measuring elements

The device is equipped with a programming LED, 8 displaying LEDs with lightguides for feedback status and 3 sensors.

### Switching elements

- Pushbutton (13) for switching between the normal and programming operating mode.

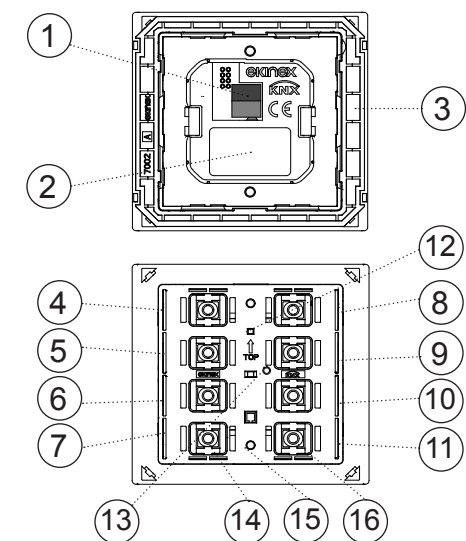


## Display elements

- White LED for indication of the heating mode functionality active, red LED if heating is ON (4);
- White LED for indication of the cooling mode functionality active, blue LED if cooling is ON (5);
- Blue LED (6) for indication of the dehumidification functionality ON;
- Green LED (7) for indication of the humidification functionality ON;
- Red flashing LED for indication that the measured CO<sub>2</sub> equivalent exceeds threshold 3, orange LED if the concentration is between thresholds 2 and 3 (8);
- Yellow LED for indication that the measured CO<sub>2</sub> equivalent is between thresholds 1 and 2, green LED if the concentration is below threshold 1 (9);
- Red flashing LED for indication that the measured TVOC exceeds threshold 3, orange LED if the concentration is between thresholds 2 and 3 (10);
- Yellow LED for indication that the measured TVOC is between thresholds 1 and 2, green LED if the concentration is below threshold 1 (11);
- Red LED (12) for indication of the active operating mode (on = programming, off = normal operation).

For measuring purposes the device is provided with:

- a relative humidity sensor (14);
- a temperature sensor (located behind passage 15);
- a TVOC and CO<sub>2</sub> equivalent air quality sensor (16).



- 1) Terminal block for KNX bus line
- 2) Product label
- 3) Adapter
- 4) White LED (heating operating mode is active), or red LED (heating ON)
- 5) White LED (cooling operating mode is active), or blue LED (cooling ON)
- 6) Blue LED (dehumidification ON)
- 7) Green LED (humidification ON)
- 8) Red flashing LED (CO<sub>2</sub> equivalent concentration > threshold 3), or orange LED (CO<sub>2</sub> eq. concentration between threshold 2 and 3)
- 9) Yellow LED (CO<sub>2</sub> eq. concentration between threshold 1 and 2), or green LED (CO<sub>2</sub> equivalent concentration < threshold 1)
- 10) Red flashing LED (TVOC concentration > threshold 3), or orange LED (TVOC concentration between threshold 2 and 3)
- 11) Yellow LED (TVOC concentration between threshold 1 and 2), or green LED (TVOC concentration < threshold 1)
- 12) Programming LED
- 13) Programming pushbutton
- 14) Relative humidity sensor
- 15) Temperature sensor
- 16) TVOC / CO<sub>2</sub> equivalent concentration sensor

**i** **Note.** Programming pushbutton and LED are accessible from the front side of the device. The device addressing may be easily carried out after the assembly of the frame, removing the rockers. Once the addressing has been done, the device configuration can be later downloaded without pressing the programming pushbutton.

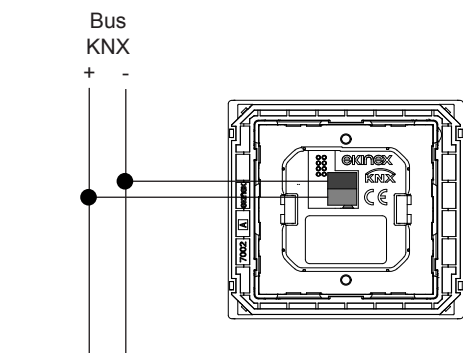
## Connection of the KNX bus line

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

### 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 lines use only KNX bus power supplies (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.

## 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.

**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

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](http://www.ekinex.com).

**i** **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.

Product code	Application software (## = release)	Communication objects (max nr.)	Group addresses (max nr.)
EK-ES2-TP	APEKES2TP##.knxprod	150	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 50491-5-1:2010 and EN 50491-5-2:2010

## Maintenance

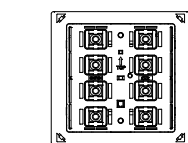
The device is maintenance-free. To clean it use a dry cloth. It must be avoided the use of solvents or other aggressive substances.

## Disposal

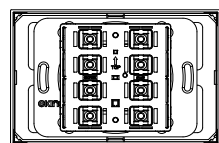
At the end of its useful life the product described in this datasheet is classified as waste from electronic equipment in accordance with the European Directive 2012 / 19 / EU (WEEE recast), and cannot be disposed together with the municipal undifferentiated solid waste.

## Air quality multisensor and regulator

Codes: EK-ES2-TP (for round and square wall box)  
EK-ES2-TP-R (for rectangular wall box)



EK-ES2-TP



EK-ES2-TP-R

## EKINEX S.p.A.

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info@ekinex.com

www.ekinex.com

FISPES2TPIEXX0

**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
- 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 EU 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](mailto:support@ekinex.com) or visit the website [www.ekinex.com](http://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

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## Versions

Code	Finishing	Wall box
EK-ES2-TP	with frame or no-frame (flank or form series)	round (distance between holes 60 mm)
EK-ES2-TP-R	with frame or no-frame (flank or form series)	rectangular (distance between holes 83.5 mm)

**Direct access to documentation**  
The QR code allows the direct access to the technical documentation using mobile devices (smart phones, tablets) with a standard QR code reader.

EK-ES2-TP..