ekinex
CONTROL YOUR LIVING SPACE

KNX Clima room thermostat

Codes: EK-EM2-TP-E-... (Easy version)

EK-EM2-TP-F-... (Classic version)

CE UK CA

KNX S TP1

Datasheet STEKEM2TPEF_EN

KNX bus devices capable of independently regulating the temperature of a room or building zone. Use in KNX standard building automation systems.

REFLEKEM2TPEF

Description

The ekinexs room thermostat EK-EM2-TP-... Easy/Classic are KNX S-mode devices for the independent temperature control of a room or zone within a building. In combination with one or more KNX actuators, the thermostats are capable of controlling the heating or cooling output of a range of room heating and cooling terminals (such as radiators, fan coil units, underfloor and ceiling radiant panels, etc.). The devices are equipped with an LCD display with adjustable backlighting, a sensor for measuring room temperature, a sensor for measuring relative humidity and two freely configurable inputs for connecting, for example, window contacts or temperature sensors. The units are fitted with an integrated KNX bus communication module and are designed for mounting in a flush-mounted wall box. The backlit touch-sensitive buttons on the side are used to control the thermostat functions, and the devices can also indicate whether the room or zone is within a thermal comfort range that can be configured according to the building's intended use, the activity being carried out and other specific factors. Three specific applications are also available for using the thermostats as an interface for air conditioning: radiant panel + split, split only, or as a simple On/Off control for the device. Power is supplied at SELV 30 Vdc via the KNX bus, and no auxiliary power supply is required.

Main functional characteristics

Below is a list of the device's main features:

- User interface with LCD display and backlit touch-sensitive side buttons
- 2 freely programmable inputs
- Temperature and relative humidity measurement using the built-in sensor, with the option to transmit the reading via the bus
- 2-point room temperature control (ON/OFF type) or proportional control (PWM or continuous)
- Ventilation control with continuous adjustment or 3-speed settings
- Heating and cooling switch over, with the option of switching automatically, manually or via bus
- Manual or automatic control of fan coil units with 2- or 4-pipe hydraulic systems
- Operating modes: comfort, standby, economy and building protection with separate setpoints for heating and cooling operation, also configurable via scenarios (only for Classic model)
- Automatic ON / OFF switching based on the insertion/removal of a card or whether the windows are open or closed (for Easy model)
- Automatic switching between operating modes depending on presence, insertion/removal of a card or whether windows are open or closed (only for Classic model)
- Weighted average of two temperature readings
- Display of temperature (measured, setpoint and external in °C or °F), alarms and errors (with alphanumeric codes)
- Measurement of relative humidity using the built-in sensor, with the option to transmit the value via the bus
- Humidification and dehumidification control
- Sends a signal via the bus indicating whether the temperature is within or outside the comfort zone (configurable)
- Calculation of psychrometric values (dew point and perceived temperature)
- Display of perceived temperature and relative humidity (measured and setpoint in %)
- Surface temperature limitation and anti-condensation functions (for radiant panel systems)
- Anti-stratification function
- Delayed fan coil fan start-up ("hot-start"), either time-controlled or based on the fluid temperature measured at the heat exchanger coil
- Window opening alert
- Special interface applications for air conditioning (VRF): radiant panel + split unit, split unit only, or on/off control
- Logical functions

Other features

- Plastic wall-mounted housing
- Built-in temperature and relative humidity sensors
- IP20 protection rating (when installed)
- Climate classification 3K5 and mechanical classification 3M2 (in accordance with EN 50491-2)
- Pollution degree 2 (in accordance with IEC 60664-1)
- Dimensions (WxHxP): 60 x 60 x 35 mm
- Weight: 65 g

Technical specifications

- 30 Vdc power supply via the KNX bus
- Current draw from the bus < 13 mA

Environmental Conditions

- Operating temperature: - 5 ... + 50°C
- Storage temperature: - 25 ... + 55°C
- Transport temperature: - 25 ... + 70°C
- Relative humidity: 95% non-condensing

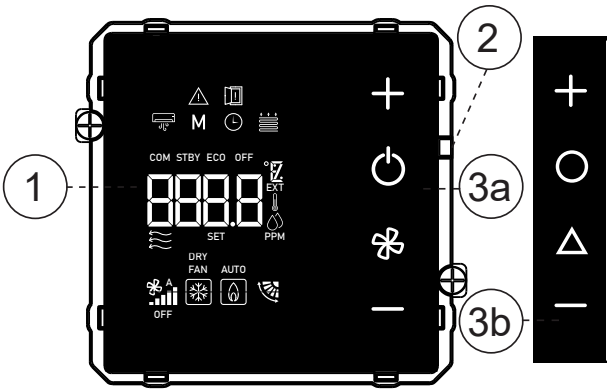
Accessories

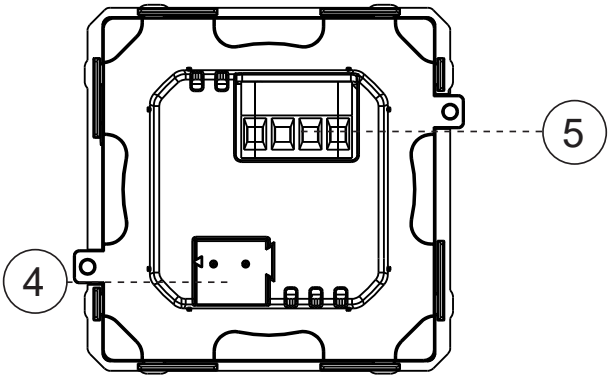
The device can be fitted with a faceplate from the 71 series (Deep or Form) or the ERA series. The mounting bracket, fixing screws and the terminal block for connection to the KNX bus are included with the device.

Note. *The cover plate required to complete the fitting must be ordered separately. For further information on the materials, colours and finishes available, please refer to the ekinex product catalogue® or visit the website www.ekinex.com.*

Control, signalling and connection elements

The unit is equipped with a terminal for connecting the KNX bus line (4), a terminal for connecting the inputs (5), and internal sensors for measuring room temperature and relative humidity. A backlit LCD display shows the main information (1), whilst the side buttons (3) allow you to change certain settings. The button for switching between normal and KNX programming modes is recessed and can be operated by pressing it with a pointed object from the right-hand side of the unit (2).





EK-EM2-TP-...

No.	Meaning
1	Backlit LCD display with numbers and symbols
2	KNX programming button
3a	Backlit touch keys (for EK-EM2-TP-E model)
3b	Backlit touch keys (for EK-EM2-TP-F model)
4	KNX bus terminal
5	Input terminal

Assembly

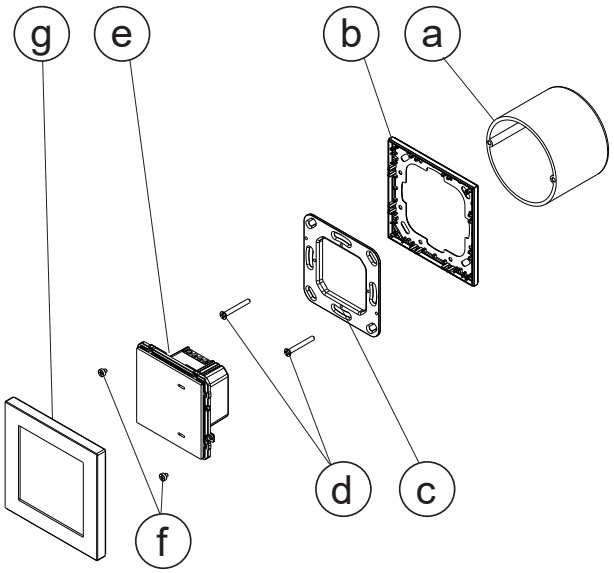
The unit has an IP20 protection rating and is therefore suitable for use in dry indoor environments. To install the unit, follow the steps below, ensuring that the TOP indicator (with the arrow pointing upwards) on the back of the unit is always observed.

- Place the plastic plate bracket (b) against the wall-mounted flush-mounted box, which has holes spaced 60 mm apart (a), aligning the holes;
- Insert the metal bracket (c) into the plastic bracket (b) and secure the assembly (a+b+c) using the screws (d) provided;
- Insert the bus terminal (black/red), previously connected to the bus cable (see: “Connection to the KNX bus network”), into the appropriate socket on the rear of the device (e); At this point, we recommend commissioning the device (see “Configuration and commissioning”) or at least downloading the physical address;
- connect any analogue or digital inputs to the terminal block on the back of the device;
- Insert the thermostat (e) into the recess created by the metal bracket and secure it with the screws (f) in the slots on both sides;
- Snap a square cover plate (g) from the relevant series into place by inserting it from the front of the unit (b).

Note. *The screws for the metal bracket must be tightened to a maximum torque of 1.0 Nm.*

The unit may only be fitted to a round or square flush-mounted box with a fixing hole centre-to-centre distance of 60 mm. If required, the metal mounting bracket for fitting to the flush-mounted box can also be ordered separately using the code EK-SMQ.

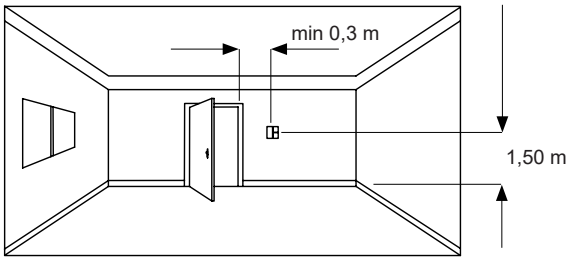
Note. *The programming button is recessed into the right-hand side of the unit, as viewed from the front. The device can also be easily addressed after installation is complete, either by removing the cover plate to access the programming button, or by putting it into programming mode using the ETS application. Once addressed, the configuration can then be downloaded to the device without returning it to programming mode.*



a) wall-mounted flush-mounted box with a centre-to-centre distance of 60 mm (to be ordered separately)
b) Plastic bracket
c) Metal bracket
d) Screws for securing the metal bracket to the flush-mounted box
e) Thermostat
f) Screws for securing the thermostat
g) Series 71 (Deep, Form) or ERA faceplate, to be ordered separately.

Installation position

For optimum control, the thermostat should preferably be installed on an internal wall at a height of 1.5 m and at least 0.3 m away from doors. The device must not be installed near heat sources such as radiators or domestic appliances, or in locations subject to direct sunlight. If necessary, a weighted average of two values selected from the following may be used for control: the value measured by the built-in sensor, the value measured by a temperature sensor connected to one of the device's inputs, or the value received via bus from another KNX device (e.g. from ekinex pushbuttons).



Measuring elements

For measurement purposes, the device is equipped with a temperature sensor and a relative humidity sensor. These are not visible, as they are located behind the front slits of the display.

Connection of the KNX bus line

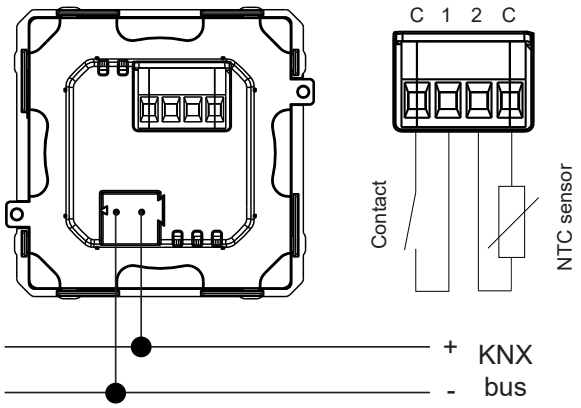
The device is connected to the bus network via the KNX terminal (black/red) included in the supply, which is inserted into the designated socket on the rear of the unit.

Warning! *In order to supply the KNX bus lines use only KNX bus power supplies (e.g. ekinex EK-AH1-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.*



Connection diagram for KNX bus and inputs

Symbol	Meaning
C	Common input terminal
1	Input 1 pole
2	Input 2 pole

Connecting the inputs

The inputs are connected via the screw terminals (5) fitted into the designated housing on the rear of the unit. The maximum connection distance is 10 m.

Input	Applications available in ETS
Digital	window opening contact sensor
	card holder contact sensor
	anticondensation sensor
Analogue	coil battery temperature sensor
	room temperature sensor
	antistratification temperature sensor
	floor surface temperature sensor
	outdoor temperature sensor
	generic temperature sensor (NTC type)

Characteristics of the clamps

- Screw tightening of conductors
- Maximum conductor cross-section: 1 mm² (flexible)
- Recommended conductor stripping length: approx. 5 mm
- Maximum torque 0.2 Nm

Available applications

If configured as analogue, only NTC temperature sensors with a characteristic resistance of 10 kΩ at 25°C and β = 3435 may be connected to the input.

Configuration and commissioning

Configuration and commissioning of the device require the use of the ETS® (Engineering Tool Software) program V5 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. For more information, please visit www.knx.org website.*

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.

Code	Application program (## = version)	Communication Objects (max. nr.)	Group addresses (max. nr.)
EK-EM2-TP-...	APEKEM2TPE##.knxprod	150	150

Commissioning

The following steps are required to commission the appliance:

- make the electrical connections as described above;
- supply power to the KNX bus
- switch the appliance to programming mode by pressing the recessed button located on the right-hand side of the appliance (when viewed from the front). In this mode, the LEDs on the touch buttons on the right-hand side will flash;
- download the physical address and configuration to the device using the ETS software®. While the application program is downloading, the word “PrOg” and a flashing clock symbol appear on the display.

Once the download is complete, the device automatically returns to normal mode; in this mode, the backlit touch-button LEDs remain lit. The bus device is now programmed and ready for use.

Device reset

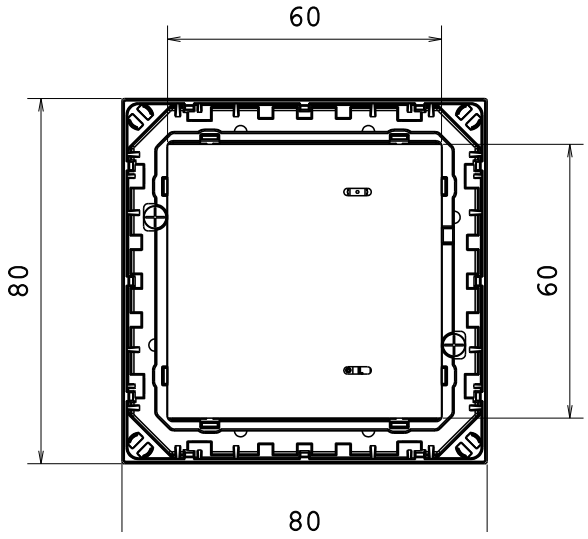
To reset the device, remove the connection to the bus network by removing the bus terminal from its socket. While holding down the programming button, reinsert the bus terminal into its socket, supplying power to the unit; the touch key LEDs will flash quickly. Release the programming button: the reset has been performed. At this point, it is necessary to re-address and re-configure the device using ETS.

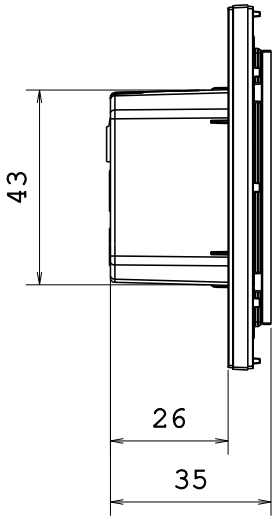
Warning! The reset resets the device to the factory delivery state. The addressing and value of the parameters set during configuration are lost.

Testing segments and icons

When the device is switched on, a test of the LCD display segments and icons is carried out automatically; these are all illuminated simultaneously for approximately 4 seconds. Once the test is complete, the device resumes normal operation.

Dimensions [mm]





Marks

- KNX
- CE, UKCA: 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 63044-5-1:2019, EN 63044-5-2:2019.

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.*

Documentation

This datasheet refers to the A1.0 release of ekinex® devices EK-EM2-TP-... . It is available for download on the website www.ekinex.com in PDF format (Portable Data Format).

File name	Device release	Update
STEKEM2TPEF_EN.pdf	A1.0	08 / 2026

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