KNX TH-UP basic

Thermal hygrometer

Technical specifications and installation instructions

Article numbers 70362 (white), 70363 (aluminium), 70364 (anthracite)

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1. Description

The **Indoor sensor KNX TH-UP basic** measures the temperature and air humidity and calculates the dew point. Via the bus, the sensor receives external measuring values and processes them to an overall temperature and air humidity value (composite results) together with its own data.

The **KNX TH-UP basic** provides six switched outputs whose threshold values can be adjusted. Switched outputs and other communication objects may be linked via AND and OR logic gates. In addition, an integrated control variable comparator compares and outputs variables that were received via communication objects.

Integrated PI-controllers control ventilation (according to humidity) and heating/ cooling (according to temperature). The **KNX TH-UP basic** outputs a warning to the bus as soon as the comfort field (as per DIN 1946) is exited.

The housing is supplemented with a frame of the switch series used in buildings, and thus fits seamlessly into the interior fittings.

Functions:

- Measuring the **temperature** and **air humidity** (relative and absolute), calculation of the **dew point**
- **Composite values** from own measured values and external values (proportions are adjusted as a percentage)
- **PI-controller for heating** (one or two-stage) and **cooling** (one or two-stage) according to temperature. Regulation according to separate setpoints or basic setpoint temperature
- **PI controller for humidity** according to humidity: Dehumidifying/ humidifying (single level) or dehumidifying (single or double level)
- **6 threshold values** can be adjusted per parameter or via communication objects
- **8 AND and 8 OR logic gates**, each with 4 inputs. All switching events as well as 16 logic inputs (in the form of communications objects) are used as inputs for the logic gates. The output from each gate can be configured optionally as 1-bit or 2 x 8-bit
- **2 control variable comparators** to output minimum, maximum or average values. 5 inputs each for values received via communication objects

Configuration is made using the KNX software ETS. The **product file** can be downloaded from the Elsner Elektronik website on **www.elsner-elektronik.de** in the "Service" menu.

1.0.1. Deliverables

- Housing with sensor PCB
- Baseplate

Additionally required (not included in the deliverables):

- Junction box Ø 60 mm, 42 mm depth
- Frame (for insert 55 x 55 mm), compatible with the switch scheme used in the building

1.1. Technical specifications

Housing	Plastic (partially painted)
Colours	• White, glossy (similar to RAL 9016 Traffic White) • Matt aluminium • Charcoal, matt • Special colours on request
Assembly	Flush mounting (Wall mounting in junction box Ø 60 mm, 42 mm depth)
Protection category	IP 20
Dimensions	Housing approx. 55 x 55 (W x H, mm), Mounting depth approx. 15 mm Baseplate approx. 71 x 71 (W x H, mm),
Total weight	approx. 45 g
Ambient temperature	Operation -25…+80°C, storage -40…+85°C
Ambient humidity	max. 95% RH, avoid condensation
Operating voltage	KNX bus voltage
Bus current	max. 6 mA, max. 10 mA when programming LED active
Data output	KNX +/- bus plug-in terminals
BCU type	Integrated microcontroller
PEI type	0
Group addresses	max. 254
Assignments	max. 254
Communication objects	190
Temperature measuring range	-25…+80°C
Temperature resolution	0.1°C
Temperature accuracy*	±0,8°C at -25…-10°C ±0,5°C at -10...+65°C ±0,6°C at +65...+80°C
Humidity measuring range	0…100% RH
Humidity resolution	0.1%

Humidity accuracy	±7,5% RH at 0...10% RH ±4,5% RH at 10...90% RH ±7,5% RH at 90...100% RH
Humidity drift	± 0.5% RH per year in normal atmosphere

* Please note the information on *Measuring accuracy*, Page 4

The product is compliant with the provisions of EU guidelines.

1.1.1. Measuring accuracy

Measurement variations from sources of interference (see chapter *Installation position*) must be corrected in the ETS in order to ensure the specified accuracy of the sensor (offset).

When **measuring temperature**, the self-heating of the device is considered by the electronics. The heating is compensated by reducing the measured temperture by the self-heating of 1.8°C. The indicated indoor temperature measured value approches the actual room temperature during a 2 hours heating period.

2. Installation and start-up

2.1. Installation notes

Installation, testing, operational start-up and troubleshooting should only be performed by an electrician.

CAUTION!
Live voltage!
There are unprotected live components inside the device.

- National legal regulations are to be followed.
- Ensure that all lines to be assembled are free of voltage and take precautions against accidental switching on.
- Do not use the device if it is damaged.
- Take the device or system out of service and secure it against unintentional use, if it can be assumed, that risk-free operation is no longer guaranteed.

The device is only to be used for its intended purpose. Any improper modification or failure to follow the operating instructions voids any and all warranty and guarantee claims.

After unpacking the device, check it immediately for possible mechanical damage. If it has been damaged in transport, inform the supplier immediately.

The device may only be used as a fixed-site installation; that means only when assembled and after conclusion of all installation and operational start-up tasks and only in the surroundings designated for it.

Elsner Elektronik is not liable for any changes in norms and standards which may occur after publication of these operating instructions.

2.2. Installation position

The sensor will be installed concealed within a socket (Ø 60 mm, 42 mm deep).

The sensor may be installed and operated in dry interior rooms only. Avoid condensation.

When selecting an installation location, please ensure that the measurement results are affected as little as possible by external influences. Possible sources of interference include:

- Direct sunlight
- Drafts from windows and doors
- When mounted in-wall: Draft from ducts which lead from other rooms to the junction box in which the sensor is mounted
- Warming or cooling of the building structure on which the sensor is mounted, e.g. due to sunlight, heating or cold water pipes
- Connection lines which lead from warmer or colder areas to the sensor

Temperature variations from such sources of interference must be corrected in the ETS in order to ensure the specified accuracy of the sensor (temperature offset).

2.3. Construction of the sensor

2.3.1. Housing

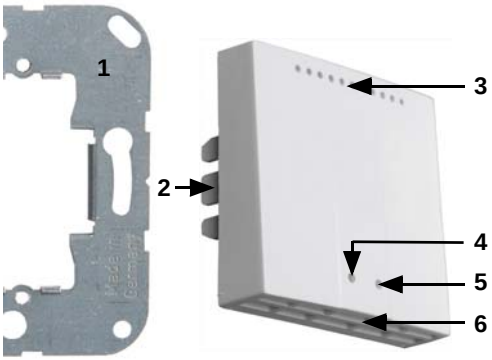

Fig. 1
1 Baseplate
2 Catches
3 Openings for air circulation
4 Programming LED (recessed)
5 Programming button (recessed) for teaching the device
6 Openings for air circulation (LOWER)

2.3.2. Rear view sensor plate with connection

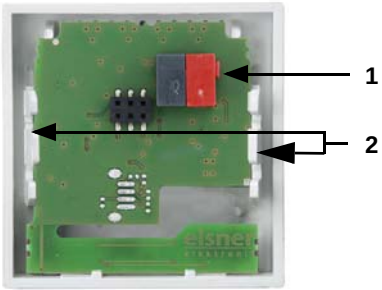

Fig. 2
1 KNX terminal BUS +/-
2 Catches

2.4. Assembly of the sensor

First of all fit the socket with connection. Seal inlet pipes to avoid infiltration.
Then screw the base plate onto the socket and position the frame of the switching programme. Connect the bus line +/- (black-red plug) to the terminals provided on the sensor board of the sensor. Pin the sensor with the notches on to the metal frame, so that sensor and frame are fixed.

2.5. Notes on mounting and commissioning

Never expose the device to water (e.g. rain) or dust. This can damage the electronics. You must not exceed a relative humidity of 95%. Avoid condensation.

After the bus voltage has been applied, the device will enter an initialisation phase lasting a few seconds. During this phase no information can be received or sent via the bus.