# JB-111TH, JB-111TH-AN
# Bus temperature and humidity sensor with thermostat function

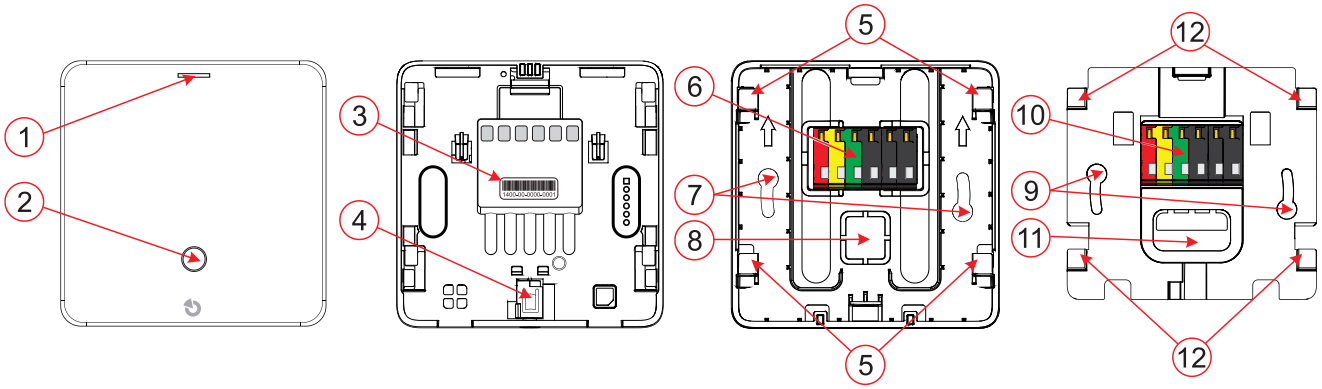
*The product is a component of the JABLOTRON systems and is designed, in combination with the control panel, for zonal temperature and ventilation control using built-in air temperature and humidity measurement. In combination with the external sensor JB-TS-NTC10K (sold separately), the thermostat measures and limits the floor temperature.*

*The product combines the features of an alarm system with the control of thermal comfort in buildings, enabling automatic functions in response to system events, e.g. switching to economy operation when occupants are absent, switching off the heating when a window is opened, etc.*

*The system must be registered in the JABLOTRON Cloud for the product to function properly (some functions may incur a fee).*

***The product is compatible with JA-103K and JA-107K.***

*The product is intended for installation by a trained technician with a valid Jablotron certificate.*




**Front part on both sides** **Rear part A (PLV-JB11xTx)** **Rear part B**

***Fig 1**: Description of the individual parts of the product*

***1** – LED indicator; **2** – capacitive button; **3** – serial number; **4** – locking mechanism; **5** – latches of rear part A (PLV-JB11xTx); 6 – location of surface mounting terminals; **7** – screw holes; **8** – break-out square for cable pull-through; **9** – holes for fixing screws; **10** – location of terminals in the rear part for semi-recessed mounting (2 pcs in the package); **11** – hole for cable pull-through; **12** – latches of rear part B*

## Installation

**Always connect the bus with the system power completely off.**

**The product does not detect tampering, in alarm systems in security grade 2 it is necessary to connect the product after the JA-110T bus isolator - bus tamper protection.**

### *Surface mounting with rear part PLV-JB11xTx*

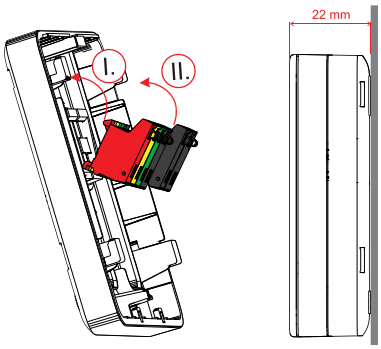



***Fig. 2**: Illustration of surface mounting*

*I. Bus terminal block*
*II. Floor sensor terminal block*

1. Break out the plastic square from the rear part A (PLV-JB11xTx – not included – must be purchased separately as an accessory) pull the cables through the square hole and fix the rear part to the wall using the two screws (7).
2. Connect the wires of the bus and, if applicable, the floor sensor to the terminal block.
3. Then insert the front part into the latches (5) and pull down to secure the product.

### *Partially recessed mounting in the wiring box*

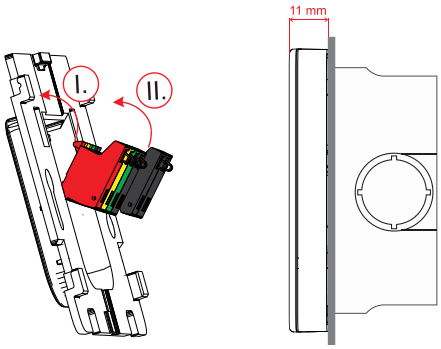



***Fig. 3**: Illustration of partially recessed mounting*

*I. Bus terminal block*
*II. Floor sensor terminal block*

4. Secure by turning the locking mechanism clockwise.
1. Pull the cables through the hole (11) and connect the bus and floor sensor wires to the terminal block.
2. Fix the rear part B to the wiring box using two screws (not included).
3. Then insert the front part into the latches (5) and pull down to secure the product.
4. Turn the locking mechanism (4) clockwise on the bottom side of the thermostat.

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Next, follow the installation manual of the control panel.

Basic procedure:

a. In ***F-Link***, select the desired position in the ***Peripherals*** tab and use the ***Assign*** button to turn on the learning mode.
b. Open the Scan/add new BUS devices selection and double-click to select the appropriate thermostat. Then proceed to the Internal Device Settings.

***Notes****: Enrolling can also be done by entering the serial number (3) in the F-Link program. All digits are entered (sample serial number: 1400-00-0000-0001).*

## Product function diagram

The product allows heating, cooling or ventilation to be controlled by the three PG outputs of the control panel in On/Off mode, see figure below.

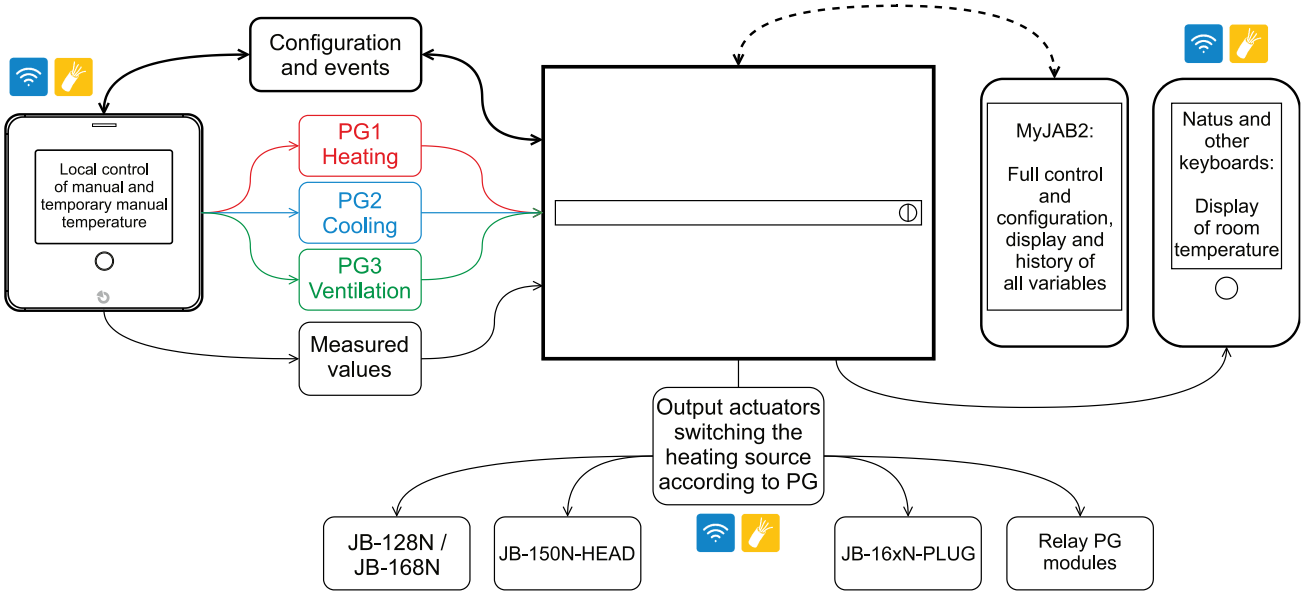



***Fig. 4****: General configuration of heating, air conditioning and ventilation control.*

## *The thermostat settings are divided into 2 blocks:*

- **Installation:** Basic thermostat settings performed by the technician in F-Link during installation. This setting is necessary for the proper operation of the product and limits user settings and functions. Once the installation settings have been made and registered in the JABLOTRON Cloud, the product can be handed over to the customer for use.
- **User:** The operating settings contain parameters for normal use of the product, such as the desired temperatures for the individual modes, hysteresis, calendar functions, etc. The settings are primarily intended for the user and are made in MyJABLOTRON. For cases where the user needs to be given a detailed product setup, the user part is accessible to the installation partner in MyCOMPANY.

## *Internal settings in F-Link*

In the internal settings of the thermostat, the basic functions necessary for commissioning the product can be set. The thermostat is switched to heating mode with manual temperature setting after leaving the service mode. This keeps the temperature constant (default 20 °C). In this mode, the thermostat can simply maintain the desired temperature in the building, for example, until the system is fully completed and later registered on Cloud JABLOTRON. All other functions and controls are part of the user settings in MyJABLOTRON / MyCOMPANY, see below.

**Functional modes heating / cooling / ventilation** – All three modes can be activated using the check buttons. If activated, each mode will expand to select the individual PG that will switch the respective appliance. The activation of each mode also affects the availability of user settings in MyJABLOTRON / MyCOMPANY. Heating and cooling modes do not work together. The user must manually switch between heating/cooling season in MyJABLOTRON. Accordingly, the thermostat switches either heating or cooling PG. The ventilation mode, on the other hand, works in parallel, independently of heating and cooling. The ventilation PG switches when the threshold humidity is reached until it drops by the set hysteresis. Both parameters are part of the user settings. **Upper and lower temperature limits are user adjustable** - the limits (0°- 40°C) determine the range within which the user can set the desired temperature in MyJABLOTRON.

**Switch to Economy Temperature** – when the thermostat is in **Program** mode, if the section to which it is assigned is selected as the provisioning method, it will automatically shorten the comfort section of the calendar and continue to maintain only the economy temperature. This is maintained until the comfort temperature is again required by the calendar. **Floor sensor** - If a JB-TS-NTC10K floor sensor is connected, a limit can be set for the floor temperature that the thermostat will not exceed during heating (5°- 40°C). In residential buildings, we recommend not to increase the default temperature of 29 °C, which is recommended by the hygiene standards for living rooms. An exception may be in rooms with short stays (e.g. bathroom) where the maximum floor temperature of 33°C is permissible. When the limit temperature is reached, the thermostat will stop heating until the temperature drops by 1°C. The function of the floor sensor is limit only, the thermostat uses the air temperature for normal control.

**Declaring a fault event based on a critical temperature measurement** – the thermostat can declare a selected event (fault/alarm) when a set critical low or high temperature is reached from a selected temperature measurement source:

- Air and Floor (the first source to reach the set temperature).
- Air (floor temperature is ignored).
- Floor (air temperature is ignored, only the external sensor is evaluated).

The event is reported by the system to the user or to the PCO. The function is suitable for preventing damage in the event of a heating system failure, or for monitoring the temperature in areas where this value is critically monitored. Dynamic monitoring of the critical temperature (-5 °C from off mode or +10 °C to comfort mode) can be activated to control the heating of common objects. The values at which the thermostat will declare an error event are then calculated automatically according to the user's temperature setting for the off/comfort temperature for the heating mode.

### PG output settings

The PG outputs that the thermostat controls are automatically assigned and locked by the F-Link to the on/off function. In zone heating control, each thermostat controls its own PG output that controls the switching of the heating source in the room where the thermostat is installed (e.g., a head in a floor heating manifold, a radiator head, a relay switching the electric floor heating in the room, etc.). If the system is equipped with a central heat source (boiler, heat pump), the heat source should be switched by a common PG output that copies with the OR logic the PG of the individual thermostats (if at least one thermostat requests heating, the common PG copies the request, if none of the thermostats heats, the common PG is disabled).

### PG output blocking

PG outputs controlled by thermostats can be blocked by various events, for example by activating a device (open window), by securing a section, or by custom set logic (blocking by another PG output). If the PG is blocked, the thermostat does not heat until the temperature drops to the value set for off mode. When this is reached, the thermostat overrides the lockout and continues to maintain the temperature in the off mode until the lockout ends, at which point it returns to the default state.

## *User setting of the thermostat in MyJABLOTRON / MyCOMPANY:*

The system must be registered in the JABLOTRON Cloud for the product to function properly. The settings in the applications respect the installation settings in F-Link, only the parameters for the enabled functional modes are available, the range of adjustable temperatures in the application is limited to the range enabled in the installation settings. The user settings are made separately for the heating, cooling and ventilation function modes.

### Heating function settings:

**Automatic switch to economy temperature:** when the thermostat is in program mode, if the provisioning method of the section to which it is assigned is selected, it automatically shortens the comfort section of the calendar and continues to maintain only the economy temperature. This is maintained until the comfort temperature is again required by the calendar. By default, the thermostat automatically switches to the economy temperature when the section is fully provisioned.

**Hysteresis:** Determines how much the temperature must drop again after the desired temperature is reached for the thermostat to start heating again. Proper hysteresis setting prevents the heating source from switching too often. By default, the hysteresis for heating is set to 0.5°C.

**Temperature correction:** allows you to manually calibrate the air temperature measured by the thermostat for cases where the thermostat is affected by an external source, such as airflow.

**The floor temperature will not exceed:** Displays the floor temperature limit set in the installation settings. Default 29°C.

**Comfort Temperature:** The temperature that the thermostat maintains during the program operating mode during set time periods when a higher temperature is desired (typically morning and evening). By default, the comfort temperature is set to 22°C. If automatic switchover to economy temperature is active, the thermostat will automatically shorten the comfort period when the section is secured.

**Economy Temperature:** the temperature that the thermostat maintains during program operation outside the set comfort sections (typically at night or during periods when no one is in the building). The default economy temperature is 18°C.

**Off:** The temperature that the thermostat maintains when it is switched to the heating function and the operating mode is off. For normal interiors, it is recommended that the temperature does not fall below the default setting of 12°C. At lower temperatures, mould and other undesirable phenomena may occur. The thermostat maintains the temperature in the off mode even when the PG is blocked for heating, for example by an open window or a longer securing of a section (long term departure from the building), etc.

### Setting the cooling function:

**Automatic switchover to economy temperature:** when the thermostat is in program mode, if the section to which it is assigned has been selected, it automatically shortens the comfort period of the calendar and continues to maintain only the economy temperature. This is maintained until the comfort temperature is again required by the calendar. By default, the thermostat automatically switches to the economy temperature when the section is fully provisioned.

**Hysteresis:** Determines how much the temperature must rise again after the desired temperature is reached for the thermostat to start cooling again. Proper hysteresis setting prevents the cooling from switching too often. The hysteresis setting for cooling is individual and is typically higher than for heating, 1°C by default.

**Comfort temperature:** The temperature that the thermostat maintains during program operation at set times when a lower temperature is desired (typically afternoon and for sleep). By default, the comfort cooling temperature is set to 23°C. If automatic changeover to comfort temperature is active, the thermostat will automatically shorten the comfort section when the section is armed.

**Economy Temperature:** the temperature that the thermostat maintains during program operation outside the set comfort sections, typically when no one is in the building, but it is desirable to avoid overheating the interior to quickly return to the comfort temperature. The default economical cooling temperature is 25°C.

### Ventilation function setting:

**Ventilation switches on when relative humidity is reached:** the thermostat simply switches on the associated appliance when the set humidity threshold is reached, default 50%. The threshold can be set from 0% (ventilation is permanently switched on) to 100% (ventilation does not switch on at all). The function is active permanently, regardless of the current thermostat settings. The function is suitable, for example, for automatic switching of the bathroom fan, etc.

**Humidity Hysteresis:** Determines by how much the humidity must drop after the ventilation is switched on for the ventilation to open again. The default hysteresis is 5% (when humidity reaches 50%, the thermostat will turn the ventilation on and turn it off when humidity drops to 45 %).

### Calendar settings:

Multiple comfort periods can be set in the calendar for each day during which the thermostat maintains the set comfort temperature. At the beginning of a comfort period, the thermostat begins heating to the desired temperature. Achieving this temperature depends on the thermal inertia of the space and the performance of the heating system, so the start of the comfort period must be set well in advance so that the desired temperature is reached in the required time. The calendar settings are made separately for the heating and cooling functions.

## *Operation of the thermostat*

All operation is carried out only in the MyJABLOTRON app under the thermostats and thermometers tab.

**Seasonal function**: if both functions are enabled in the installation settings, the thermostat allows switching between heating and cooling functions. Switching is done manually in the application when switching between seasons, joint operation of both modes is not possible. **Note**: If the thermostat is switched to cooling, heating is completely disabled, even if the temperature drops to the off mode. It is recommended to leave the error event annunciation active at critically low temperature (installation setting) to alert the user in time if the heating function is not activated.

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### Thermostat operating modes:

– **Calendar** – the thermostat automatically switches between comfort and economy temperature, according to the schedule set in the calendar. This mode is most suitable for economical operation of the heating system in the building. Outside of exposed times, the thermostat heats at a lower temperature, reducing the building's operating costs.

If automatic switchover to the economy temperature is active, the thermostat will shorten any ongoing comfort section and thus switch to the economy temperature immediately upon securing the section. The following comfort section is started according to the calendar setting despite any locked condition.

In calendar mode, the current desired temperature can be changed manually in the app if the user suddenly needs it. The thermostat then maintains the newly set temperature until the next change in the calendar (switching from economy to comfort temperature or vice versa). Then the temperature is set again according to the schedule in the calendar.

The calendar mode is available for both heating and cooling, the settings are individual for each function.

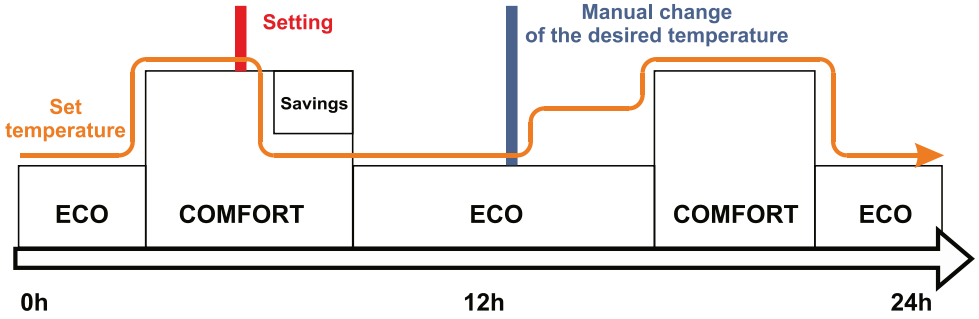



***Fig. 5**: Temperature evolution for individual modes and actions in the system*

– **Manual temperature** – the thermostat maintains a constant temperature set by the user. Changing the desired temperature can only be done in the application. System provisioning has no effect on the thermostat's behavior in this mode. Manual mode is available for both cooling and heating.
– **Off** – When in heating mode, the thermostat maintains the constant temperature set for Off mode. In cooling mode, the thermostat does not maintain any temperature in the off mode. Off mode is activated automatically if the appropriate PG for heating or cooling is blocked by the system.

**Display of current values:** The thermostat reports the current temperature and humidity measure values to the application at 5-minute intervals. MyJABLOTRON displays the last known values. The application creates a graph from the room temperature values, allowing the temperature history to be monitored.

### Optical indication

The product is equipped with an indication LED at the top of the product. The intensity of the light is automatically controlled according to the ambient light. The LED indicates only when the capacitive button is pressed.

| LED indication | Indicated function |
|---|---|
| Green light | Quiet state - heated/cooled to the desired temperature |
| Red light | Active status - thermostat is currently heating or cooling |
| Red flashing | Heating/cooling is blocked |
| Yellow light | Thermostat failure (communication error with control panel, external sensor error, internal error) |
| Yellow flashing | Thermostat not taught to system |

## *Technical parameters*

*Temperature measuring range with external sensor ..... -40 to+ 125 °C (± 0.2 °C)*
*Operating temperature range ..... -20 to +40 °C*
*Humidity measuring range ..... 0–100 %*
**Temperature controller class ..... I. (according to Regulation (EU) No 813/2013)*
**Contribution of controllers to seasonal efficiency ..... ηS = 1 % (according to Regulation (EU) No 813/2013)*
**for both parameters in the control panel configuration*
*Power supply ..... from the control panel bus 12 V DC (10...15 V)*
*Quiescent current consumption ..... 5.2 mA*
*Maximal current consumption ..... 22 mA*
*IP resistance ..... IP 31*
*Dimensions ..... 82 x 82 x 22 mm*
*Weight ..... 82.9 g*
*Average operating humidity ..... 75 % (non-condensing)*
*Environment ..... indoor general*
*Also complies with ..... EN 50130-4, EN 55032, EN IEC 63000*
*Recommended screws ..... 2x ø 3.5 mm (half-rounded head)*

*JABLOTRON a.s. declares that the product JB-111TH, JB-111TH-AN is designed and manufactured in compliance with the harmonisation legislation of the European Union: directives no: 2014/30/EU, 2009/125/EC, 2011/65/EU when used as intended. Original declaration of the Declaration of Conformity is available at www.jablotron.com in the Downloads section.*

*Note: Although the product does not contain any harmful materials, do not dispose of it in the garbage but take it to an e-waste collection point. More detailed information at www.jablotron.com in the Downloads section.*