



# **VTM3000**

Digital room thermostat

User and service manual

version 1.2

## 1. Device description

Programmable room thermostat VTM3000 is designed for temperature control in habitable rooms, offices and similar. VTM3000 is for installation to installation box KU68. Thermostat is equipped by output relay 230 V<sub>AC</sub>/16 A.

Thermostat is switching between the set requested comfort and savings temperature according to defined time program. Keeping the requested temperature is done by optimal supplying of the heating element to achieve the requested temperature.

VTM3000 has from production predefined most often time programs for changes between comfort and savings temperature.

### **VTM3000 can be configured for following systems:**

- Room air temperature (*temperature sensor is placed in the thermostat body*)
- Floor temperature (*external floor temperature can be connected to the thermostat*)
- Room air temperature and maximum floor temperature.

### **VTM3000 thermostat works in following modes:**

- TIMED mode enabled. Thermostat regulates according to set time programs.
- Freezing protection temperature 5°C activated.
- Regulation disabled.

### **Time mode can be selected from predefined types:**

- DAY – each day the same time program is used.
- WORKING WEEK – Monday till Friday there is the same time program. For Saturday and Sunday another time program.
- WEEK – each day can have unique time program

Time program can have 4 or 6 changes per day between savings and comfort temperature.


### **Thermostat offers also special time modes:**

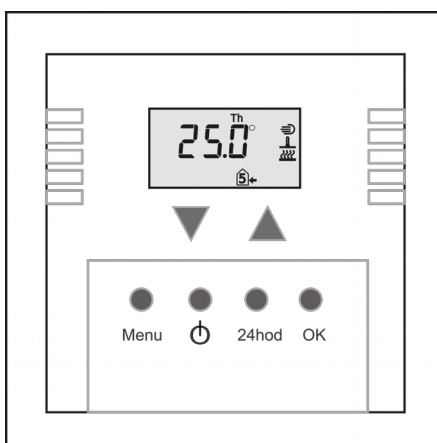
- 24h SAVINGS – whole day the savings temperature mode is enabled
- 24h COMFORT – whole day the comfort temperature mode is enabled
- UN-TIMED – thermostat does not react on time changes and regulates only according to manually set requested temperature.
- User have possibility lock keys against the unauthorized manipulation. Service menu is possible be protected by access password.

VTM3000 also records to memory time of heating (time of switched relay). Thanks to this it is possible to see heating time of present day, yesterday, week and total usage from thermostat installation.

## 2. Device control

For thermostat operation and setting there is LCD display and keyboard on front panel.

- Pressing button **Menu** browses the user or service menu parameter list.
- Button  turns OFF / ON regulation according to time mode or activates freezing protection temperature 5°C.
- Button **24hod** activates the all day savings or comfort heating temperature.
- Button **OK** for confirmation of set values and selected parameters.
- Cursor buttons for set value change.



### 2.1. User menu structure












User menu offers settings of requested temperature, time program configuration, date and time etc. It provides also information about usage time of heating system. User menu can be entered by pressing the key **Menu**. Via arrow keys it is possible change set values. Key **OK** confirms changes and another pressing of key **Menu** moves to another parameter.



#### **Important**

*After setting of user values it is recommended to lock keyboard.*

**User menu structure:**

Symbol	Meaning
 Set OFF	Keyboard lock. OFF – keyboard enabled, On – keyboard locked. All buttons except the button <b>Menu</b> are locked.
Set 25.0°C 	Requested COMFORT temperature (symbol sun). By arrow keys the value is changed in step of 0.2°C. Button <b>OK</b> confirms the set value.
Set 15.0°C 	Requested SAVINGS temperature (symbol moon). By arrow keys the value is changed in step of 0.2°C. Button <b>OK</b> confirms the set value.
Set Min 5.0°C 	Minimum floor temperature. Only if the floor sensor is configured.
Mo Tu We Th Fr Set 6:00 	Setting of first time change to comfort temperature. Time is set by arrow keys in step of 10 minutes. Key <b>OK</b> confirms the time and jump to another time change to savings temperature. Number of changes (4 or 6) and number of days in the week is defined by setting in service menu.
Mo Tu We Th Fr Set 8:00 	Setting of second time change to savings temperature. Time is set by arrow keys in step of 10 minutes. Key <b>OK</b> confirms the time and jump to another time change to savings temperature. Number of changes (4 or 6) and number of days in the week is defined by setting in service menu.
Mo Tu We Th Fr Set 12:00 	Setting of third time change to comfort temperature. Time is set by arrow keys in step of 10 minutes. Button <b>OK</b> confirms the time and jump to another time change to savings temperature. Number of changes (4 or 6) and number of days in the week is defined by setting in service menu.
Mo Tu We Th Fr Set 12:38 	Time setting. Time is in 24:00 format. Button <b>OK</b> confirms set value.
Set 09 y 	Year setting. Button <b>OK</b> confirms set value.
Set 01 mm 	Month setting. <b>OK</b> confirms set value.
Set 23 Fr 	Day setting. Button <b>OK</b> confirms set value.
Th 3:52	Show the heating day of present day. Example from picture: today the total heating time was 3 hours and 52 minutes.
We 8:33	Shows the heating time for last day. Example from picture: last day the total heating time was 8 hours and 33 minutes.
Mo Tu We Th Fr Sa Su 9	Shows the heating time for the last week. Example from picture: last week the total heating time was 9 hours.
20	Shows the heating time for the all thermostat usage. Example from picture: heating was used for 20 hours since the thermostat installation.
CLR	Erase all saved heating (Clear). Pressing the button <b>OK</b> confirms erasing the heating profile memory.



## Note

After 1 minute without any action on the keyboard in the user menu, thermostat turns back to normal operation mode.


## 2.2. Time mode setting


Assumption for time modes definition is correct setting of used temperature sensors (AIR, FLOOR), type of time mode (DAY, WORKING WEEK, WEEK) a number of changes per day (4, 6). Further more thermostat has to be in TIMED mode, when time changes are accepted.

VTM3000 has predefined time programs and requested comfort and savings temperatures from production. These values are suitable for most of applications and are based on experience with movement in residential buildings. All predefined values can be easily changed and modified.


Default values are:

- Comfort temperature 25°C
- Savings temperature 15°C
- 6 changes per day: (06:00-comfort, 08:00-savings, 12:00-comfort, 14:00-savings, 16:30-comfort, 22:30-savings)
- 4 changes per day: (06:00-comfort, 08:00-savings, 16:30-comfort, 22:30-savings)

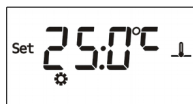
Icon of house with arrow out symbolizes switching to savings temperature  (person leaves house).

Icon of house with arrow in symbolizes switching to comfort temperature  (person comes to house).


### 2.2.1 Comfort temperature change

Keep pressing the button **Menu** until screen with symbol  will appear:

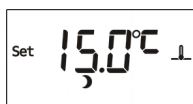
By using cursor keys set requested comfort temperature. By key **OK** confirm set temperature.




### 2.2.2 Savings temperature setting


Press key **Menu**, until following screen with symbol  will appear.

By using cursor keys set requested savings temperature. By key **OK** confirm set temperature.



### 2.2.3 Time program setting


Press key **Menu**, until the following screen with symbol \* for first time change on comfort temperature appears.

By cursor key set requested time of change (setting with stop of 10 minutes). By pressing key **OK** confirm the time. Second time of change on savings temperature will appear, symbolized by . Setting the time is the same as for first change. Follow the same procedure until all time of changes are set. Number of changes depends on type of time mode (DAY, WORKING WEEK, WEEK) and set number of changes per day (4 or 6).

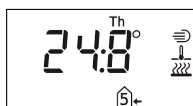
By pressing the key **Menu** it is possible to escape at any time from setting of time program and continue in user menu.





### 2.2.4 Manual temperature change of time program

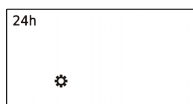
If keyboard is not locked, it is possible to increase or decrease requested temperature manually. For changing the requested temperature use cursor keys **▲** (+) or **▼** (-). Set value confirm by pressing key **OK**. On the display the symbol  for manually set temperature will appear and thermostat starts to show actual temperature again.

Manually set temperature is valid only until next change according time time program. Manually set temperature cannot be displayed.





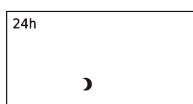
### 2.2.5 Activation of day comfort temperature

If there is request for whole day comfort temperature, press once the key **24h**. Following screen with symbols  and **24h** will appear. Confirm it by pressing key **OK** and on the main screen will appear symbols  and **24h**.



### 2.2.6 Activation of day savings temperature

If there is request for whole day savings temperature, press twice the key **24h**. Following screens with symbols  and **24h** will appear. Confirm it by pressing the key **OK** and on the main screen will appear symbols  and **24h**.



## 2.2.7 Deactivation of day comfort or savings temperature

For deactivation of whole day comfort or savings temperature press once key **24h**. Main screen without symbols for whole day comfort or savings temperature will appear.

## 2.3. Manual mode

Thermostat VTM3000 allows manual operation without any time changes in the mode UNTIMED. Thermostat regulates only according to manually set temperature. UNTIMED mode can be activated in service menu. On the device display is shown only current temperature and information about hearing status.



By arrow keys set the requested temperature and confirm it by pressing button **OK**. Thermostat starts to regulate on this temperature without considering the time programs and modes. Manually set requested temperature cannot be shown on the display. To switch heating on the requested temperature has to be higher than current ambient temperature at least about 1°C.

## 2.4. Service menu structure

Service menu contains settings for system configuration and essential thermostat behaviour. Entering the service menu is possible by simultaneous pressing of buttons **OK** and **Menu**. Arrow buttons change values. Button **OK** confirms set changes. Pressing the button **Menu** moves to another parameter in the menu.



### Important

*Service menu should be entered only by authorized person. Access to service menu is recommended to be protected by password.*

Symbol	Meaning
	Maximum floor temperature settings. Only in case that floor sensor is configured.
	Temperature sensor configuration. F – floor sensor A – air sensor FA – floor and air sensor
	TIMED/UNTIMED mode. If set value t (timed) = 1, thermostat uses time programs. If set value t (untimed) = 0, thermostat ignores time programs and regulates only according manually set requested temperature. In this case it behaves as a standard thermostat.
	Predefined time mode types. d1 = day mode d5:2 = week mode (5 working + 2 free days) d7 = week mode
	Number of changes between comfort and savings temperature during day. There can be 4 or 6 changes per day.
	Method of showing floor sensor temperature. It is active if the system configuration is only for F – floor sensor. Value F:0 show temperature in °C. Value F:1 shows temperature in scale 0 – 13.
	Delayed start of thermostat operation. Regulation process will start after set delay elapsing. Time is set in days and it is recommended to be used only by installers.
	Reset to default factory settings. After confirming by pressing the button <b>OK</b> all settings will be returned back to default factory settings.
	Password for access to service menu. By arrow keys choose the number and confirm by key <b>OK</b> . Follow the same procedure until the four number code is set.



### Note

*After 1 minute without any action on the keyboard in the service menu, thermostat turns back to normal operation mode.*

## 2.5. Time backup

All settings are safely stored at internal nonvolatile memory. Time and date is backed up by lithium battery of 3 V (type CR2032).

If the symbol  appears on the display, it is necessary to replace the battery.

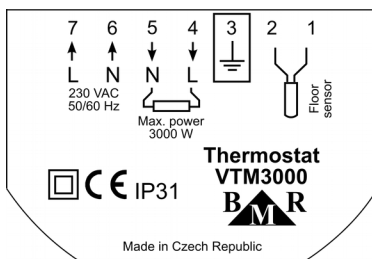


### Important

Battery has to be installed with correct polarity! (+ pole on the top and – pole on the bottom)

## 3. Installation

Thermostat VTM3000 is designed for wall mounting in to the installation box KU68. Power supply of thermostat is 230 V<sub>AC</sub> and IP rating IP31. Load (heater) has to be of resistive type. Maximum allowed current on output terminals (No. 4 and 5) is 16 A at  $\cos\phi = 1$ . If the floor sensor is used, the type of floor sensor delivered with thermostat has to be installed.



After opening thermostat front cover and unscrewing two screws, it is possible push out the controlling part from the supply part. On the bottom side of the control part is DIL switch with following functions:

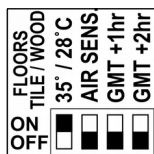
- **FLOORS TILE / WOOD 35°C / 28°C.** Maximum predefined floor temperature 35°C for tile wood – position OFF or maximum predefined floor temperature 28°C for wooden floor – position ON.
- **AIR SENS.** Air sensor is enabled – ON, disabled – OFF.
- **GMT+1hr** at position ON. Adds 1 hour to set time.
- **GMT+2hr** at position ON. Adds 2 hours to set time.
- **GMT+1hr and GMT+2hr** at position ON. Adds 3 hours to set time.

By this DIL switch is possible to set some thermostat features without accessing the service menu. Function description is on the label placed on the processor. All parameters of DIL switch can be changed also in service menu.

Verify sensor settings after the thermostat installation.


















### Error codes:

- E2 – temperature higher than 40°C
- E4 – short circuit of floor temperature sensor
- E5 – disconnected floor temperature sensor



## 4. Symbols description

There are several symbols, shown on the display, which represents additional information about device status. Symbols are following international standards for easy understanding.

Symbol	Meaning
<b>24h</b>	24 hours mode is activated. Whole day is set on comfort temperature or savings temperature
	Keyboard locked
<b>Set</b>	Device is in service mode for parameters setting
<b>Min</b>	Setting of minimal temperature – savings temperature
<b>Max</b>	Setting of maximum temperature – comfort temperature
	1 <sup>st</sup> time change on comfort temperature
	2 <sup>nd</sup> time change on savings temperature
	3 <sup>rd</sup> time change on comfort temperature
	4 <sup>th</sup> time change on savings temperature
	5 <sup>th</sup> time change on comfort temperature
	6 <sup>th</sup> time change on savings temperature
<b>Mo</b>	Monday
<b>Tu</b>	Tuesday
<b>We</b>	Wednesday
<b>Th</b>	Thursday
<b>Fr</b>	Friday
<b>Sa</b>	Saturday
<b>Su</b>	Sunday
	Comfort temperature mode
	Savings temperature mode
	Time setting
	Date setting
	Manual change of requested temperature
	Air temperature
	Floor temperature
	Heating
	Freezing protection temperature activated
	Discharged battery warning

## 5. Floor sensor temperature scales

In the service menu it is possible set the way of showing the floor sensor temperature. Setting F:0 shows temperature in °C. Setting F:1 shows temperature scale in steps 0 – 13.

- 0 (15.6°C and less)
- 1 (15.8°C – 18.0°C)
- 2 (18.2°C – 20.4°C)
- 3 (20.6°C – 22.8°C)
- 4 (23.0°C – 25.2°C)
- 5 (25.4°C – 27.6°C)
- 6 (27.8°C – 30.0°C)
- 8 (32.6°C – 34.8°C)
- 9 (35.0°C – 37.2°C)
- 10 (37.4°C – 39.6°C)
- 11 (39.8°C – 42.0°C)
- 12 (42.2°C – 44.4°C)
- 13 (44.6°C and more)