

# BVF H-MAT

## 100-150 Series



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### Take special note of the following information:

Important information:



Safety notice:



## IMPORTANT SAFETY NOTICE



**Safety notice:** Danger! Electric shock and electrical fire risk!

- ♦ Improper installation of the BVF H-MAT system may cause electric shock or electronic fire related personal and material injury. For your own safety, read the attached information carefully!
- ♦ Use a double sensor thermostat suitable for the control of electric floor heating exclusively.
- ♦ Have your system installed by an electrician acquainted with the proper sizing, installation, implementation and operation of the system, obtaining adequate knowledge on the specifications of floor heating systems. Installation must be carried out only in compliance with local legal requirements. If you are not certain regarding relevant regulations, assign a professional with the installation.
- ♦ BVF H-MAT is to be used for floor heating purposes only. Remove all remained sharp objects, nailheads, and any contamination from the floor which may damage the system during installation or future rebuilding.
- ♦ BVF H-MAT heating mat is not to be installed/placed when damaged. Home improvement and repair of the damaged system is strictly prohibited.

## 1 GENERAL INFORMATION

### 1.1 Introduction to the Installation and User Manual

The present Installation and User Manual presents the details of BVF H-MAT floor heating system application: Process of layout design, choosing the ideal size heating mat, as well as the installation. The detailed study of the information material prior to installation is highly advised.

For more information contact the distributor.

### 1.2 Security requirements

Safety and proper operation of the floor heating system is coherent with thorough planning, implementation and control. Improper use and installation of the product may cause damage in the heating mat and its parts, or may cause danger of fire and accident. Make sure to proceed by the provided information of the User Manual in order to ensure reliable operation of the BVF H-MAT system.



**Safety notice:** BVF H-MAT heating mat is not to be placed on insulating materials, nor can be in direct contact with heat insulation. In case you are not certain regarding the quality or heat insulation capacity of the placing material, contact our professional colleagues prior to implementation. Application of a layer order different from the general (Figure 1) may result in losing warranty rights.

### 1.3 Resistance reading

Read the resistance between the brown and blue terminals, then compare it with the data shown in the table. Maximal allowed variance shall be between -10% and +10%. Resistance value between grounding and brown / blue terminals ideally is infinite value. Should you notice a different value, contact the distributor of the product.

For more information on resistance reading see Chapter 5.

**Important information:** During installation, make sure to check resistance 4 times.

During installation, read and record resistance values by work phases. Firstly, following the removal of product packaging, then following placement as well. Thirdly, following the layout of tile adhesive or floor levelling compound. Lastly, for the fourth time, when finishing covering. The 4 values shall match. Should the values not match, contact the distributor of the product!

### 1.4 10 years extended warranty

Product Distributor undertakes 10 years warranty for BVF H-MAT heating mats in relation of material and construction errors originated during production. Warranty shall be enforceable exclusively upon a properly filled-out and submitted Warranty card, and alongside professional installation.

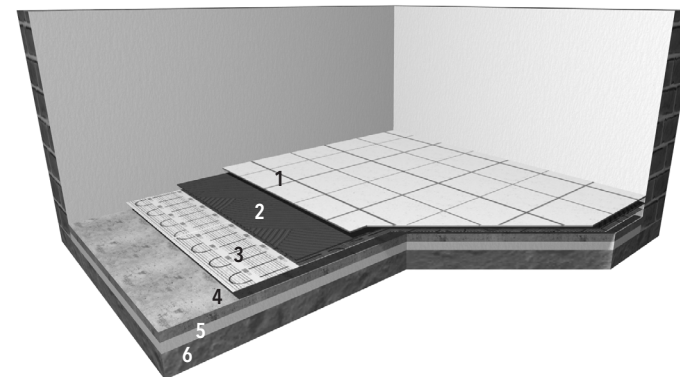
## 2 BVF H-MAT SYSTEM

### 2.1 BVF H-MAT technical specification

Cable type:	Double insulation heating cable / grounded, shaded
Grid voltage:	230V
Capacity:	150W/m <sup>2</sup> ± 10% ; 100W/m <sup>2</sup> ± 10%
Distance between cables:	80 mm ; 112 mm
Cable diameter:	3.6 mm (except: 150/2700: 4.0 mm ; 150/3000: 4.2 mm)
Heating wire insulation:	Fluoropolimer
Outer cover insulation:	PVC
Operation temperature:	+ 30 °C - + 50 °C
Min. installation temperature:	+ 5 °C
Connecting cable:	Three cables; Length: 2.5 m

### 2.2 Typical areas of use and installation of BVF H-MAT

Figure 1 – example for concrete floor



- |   |                     |
|---|---------------------|
| 1. Cover                                    | 4. Concrete         |
| 2. Tile adhesive / floor levelling compound | 5. Floor insulation |
| <b>3. BVF H-MAT heating mat</b>             | 6. Foundation       |

Other construction methods: in case of direct cover heating the use of a floor levelling compound is advised for the following cover types: wood strip flooring, laminated parquet, PVC, synthetic resin and fitted floor carpet.

#### Safety notice

In case of implementation of materials by other construction methods (see above), ask for the professional opinion of the distributor or contact our expert colleagues.

#### Important information

- ♦ Read the instructions prior to installing the BVF H-MAT system.
- ♦ Make sure to read the resistance of the product 4 times during installation (Section 1.3).
- ♦ This product is intended for indoor floor heating purposes only.
- ♦ Place the product using tile adhesive, self-levelling floor compound or same quality material.
- ♦ Minimal temperature for the installation shall be +5°C.
- ♦ **Length of the heating cable should not be shortened by cutting, cables should not cross each other and should not go directly next to each other (min. 5 cm distance)!**
- ♦ The use of sized cross-section copper cable is advised during connection.

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### 3 DESIGNING FLOOR HEATING AND CHOOSING THE PRODUCT

#### 3.1 Pre-installation planning

1. Assess the surface to be heated

Define the surface to be heated by leaving out the territory covered with fix sanitary and devices (shower, toilet, bathtub, kitchen cupboard, etc.) Calculate the size of the surface to be heated.

Example: the bathroom shown on Figure 2 is 8.75 m<sup>2</sup>. When deducting the area covered by the shower, toilet and sink, the remaining area is only 6.45 m<sup>2</sup>. Choose the 6 m<sup>2</sup> size heating mat with the competent capacity.

2. Check grid voltage and available capacity

The system operates using 230 V grid voltage. Check the available capacity, and request extension from the provider if necessary.

3. Design the system

Plan the optimal placement of the heating mat with full coverage. When defining the place of the thermostat, take note of the 2.5-meter-long connection cable of the heating mat required to reach the thermostat, as well as of the signal transmitter of the thermostat in the floor to be in adequate distance. It is advised to lead/install the connection cable of the heating mat from the place of the thermostat. See Figure 3.

**i** Important information

To ensure even heat distribution, keep cable distance as set by default during installation. By increasing cable distance, cooler floor areas may be created.

Figure 2 – calculation of the heating surface

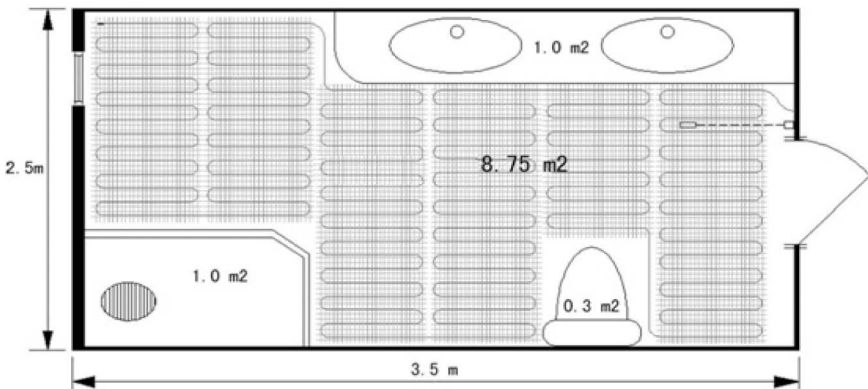
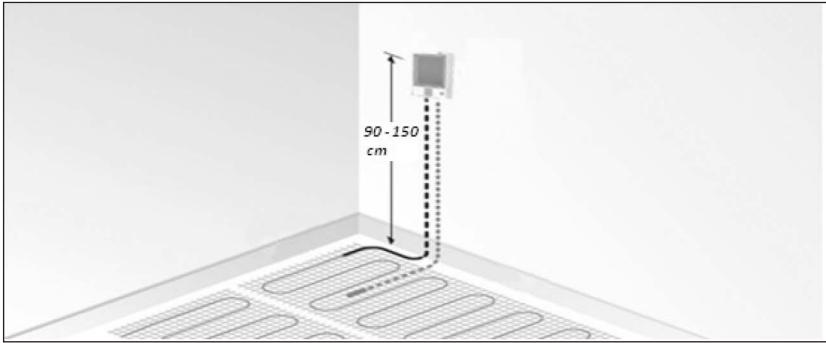


Figure 3 – typical connection scheme



#### 3.2 Choosing the right product

Make sure that the size of BVF H-MAT heating mat matches the size of the surface to be heated, as well as the planned capacity. With reference to Figure 2, when the surface to be heated is 6.45 m<sup>2</sup>, choose the 6m<sup>2</sup> size product.

**BVF H-MAT electric heating mat in 150 W/m<sup>2</sup> capacity**

Type	Heating surface	Width	Length	Capacity	Amps	Ohm
BVF H-MAT/150-75-0.5	0.5 m <sup>2</sup>	50 cm	1 m	75 W	0.3	705.3
BVF H-MAT/150-150-1.0	1.0 m <sup>2</sup>	50 cm	2 m	150 W	0.7	352.7
BVF H-MAT/150-225-1.5	1.5 m <sup>2</sup>	50 cm	3 m	225 W	1.0	235.1
BVF H-MAT/150-300-2.0	2.0 m <sup>2</sup>	50 cm	4 m	300 W	1.3	176.3
BVF H-MAT/150-375-2.5	2.5 m <sup>2</sup>	50 cm	5 m	375 W	1.6	141.1
BVF H-MAT/150-450-3.0	3.0 m <sup>2</sup>	50 cm	6 m	450 W	2.0	117.6
BVF H-MAT/150-525-3.5	3.5 m <sup>2</sup>	50 cm	7 m	525 W	2.3	100.8
BVF H-MAT/150-600-4.0	4.0 m <sup>2</sup>	50 cm	8 m	600 W	2.6	88.2
BVF H-MAT/150-675-4.5	4.5 m <sup>2</sup>	50 cm	9 m	675 W	2.9	78.4
BVF H-MAT/150-750-5.0	5.0 m <sup>2</sup>	50 cm	10 m	750 W	3.3	70.5
BVF H-MAT/150-900-6.0	6.0 m <sup>2</sup>	50 cm	12 m	900 W	3.9	58.8
BVF H-MAT/150-1050-7.0	7.0 m <sup>2</sup>	50 cm	14 m	1050 W	4.6	50.4
BVF H-MAT/150-1200-8.0	8.0 m <sup>2</sup>	50 cm	16 m	1200 W	5.2	44.1
BVF H-MAT/150-1350-9.0	9.0 m <sup>2</sup>	50 cm	18 m	1350 W	5.9	39.2
BVF H-MAT/150-1500-10.0	10.0 m <sup>2</sup>	50 cm	20 m	1500 W	6.5	35.3
BVF H-MAT/150-1800-12.0	12.0 m <sup>2</sup>	50 cm	24 m	1800 W	7.8	29.4
BVF H-MAT/150-2100-14.0	14.0 m <sup>2</sup>	50 cm	28 m	2100 W	9.1	25.2
BVF H-MAT/150-2400-16.0	16.0 m <sup>2</sup>	50 cm	32 m	2400 W	10.4	22.0
BVF H-MAT/150-2700-18.0	18.0 m <sup>2</sup>	50 cm	36 m	2700 W	11.7	19.6
BVF H-MAT/150-3000-20.0	20.0 m <sup>2</sup>	50 cm	40 m	3000 W	13.0	17.6

## BVF H-MAT electric heating mat in 100 W/m<sup>2</sup> capacity

Type	Heating surface	Width	Length	Capacity	Amps	Ohm
BVF H-MAT/100-100-1.0	1.0 m <sup>2</sup>	50 cm	2 m	100 W	0.4	529.0
BVF H-MAT/100-200-2.0	2.0 m <sup>2</sup>	50 cm	4 m	200 W	0.9	264.5
BVF H-MAT/100-300-3.0	3.0 m <sup>2</sup>	50 cm	6 m	300 W	1.3	176.3
BVF H-MAT/100-400-4.0	4.0 m <sup>2</sup>	50 cm	8 m	400 W	1.7	132.3
BVF H-MAT/100-500-5.0	5.0 m <sup>2</sup>	50 cm	10 m	500 W	2.2	105.8
BVF H-MAT/100-600-6.0	6.0 m <sup>2</sup>	50 cm	12 m	600 W	2.6	88.2
BVF H-MAT/100-700-7.0	7.0 m <sup>2</sup>	50 cm	14 m	700 W	3.0	75.6
BVF H-MAT/100-800-8.0	8.0 m <sup>2</sup>	50 cm	16 m	800 W	3.5	66.1
BVF H-MAT/100-900-9.0	9.0 m <sup>2</sup>	50 cm	18 m	900 W	3.9	58.8
BVF H-MAT/100-1000-10.0	10.0 m <sup>2</sup>	50 cm	20 m	1000 W	4.3	52.9
BVF H-MAT/100-1200-12.0	12.0 m <sup>2</sup>	50 cm	24 m	1200 W	5.2	44.1
BVF H-MAT/100-1400-14.0	14.0 m <sup>2</sup>	50 cm	28 m	1400 W	6.1	37.8
BVF H-MAT/100-1600-16.0	16.0 m <sup>2</sup>	50 cm	32 m	1600 W	7.0	33.0
BVF H-MAT/100-1800-18.0	18.0 m <sup>2</sup>	50 cm	36 m	1800 W	7.8	29.4
BVF H-MAT/100-2000-20.0	20.0 m <sup>2</sup>	50 cm	40 m	2000 W	8.7	26.4

## 4 INSTALLATION

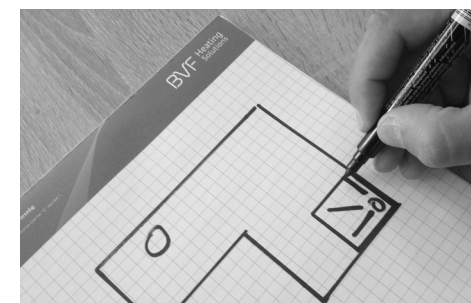
### Important information: Tools needed for the installation

You will need the following tools for the installation and check-up of the heating system:

- ♦ Scissors
- ♦ Tile cutter
- ♦ Cable stripping tool
- ♦ Measuring tape
- ♦ Screwdriver
- ♦ Electric measuring device / multimeter

### 1. Make a drawing of the layout

Make a drawing or sketch indicating planned layout. Indicate every area covered by fix sanitary and other devices (shower, toilet, etc.) Calculate the size of the surface to be heated. Write down all the needed size data for the surface to be heated, and define the place of the thermostat and the floor sensor.



### 2. Copy the drawing onto the floor

Draw the outlines of the planned system on the floor. Leave out the places of devices to be placed as fix later. Roll out and place the first couple of meters of the heating mat. The starting point of the cable should not be more than 2.5 meters away from the thermostat.

### Important information

Make sure that **the connection point (connection cable – heating cable) of the BVF H-MAT cable is placed in a conduit**. Placement of heating cable in the conduit pipe is prohibited! Only the connection cable shall be put through the conduit pipe.

Make sure to place the floor sensor of the thermostat exactly in between two heating mats (on heated surface), in a distance at least 65 cm from the wall, in a conduit pipe, to enable replacement if necessary.

### 3. Installation of the sensor

Place the thermostat's floor sensor lead in a conduit pipe. It is advised to use a conduit pipe to enable easy replacement in the unlikely case of malfunction. The thermostat's floor sensor and conduit pipe shall be led to the wall module box of the thermostat. The conduit pipe shall be partly encased in the floor.



#### Important information

Make sure to place the floor sensor of the thermostat between two heating cables, in equal distance. Secure the end of the conduit pipe using adhesive tape to prevent floor leveling compound or tile adhesive getting to the sensor. Secure the conduit pipe as well to avoid floating. When placing the sensor directly into the tile adhesive, fix it to the floor as shown on Figure 3.

### 4. Preparation of the subfloor

Clean or vacuum the subfloor removing all kinds of contamination which may damage the cable. **The pre-installation manual presents the method of preparation in detail.** Check the flatness of the floor. Fill in any gaps or uneven parts to prevent cable damage.

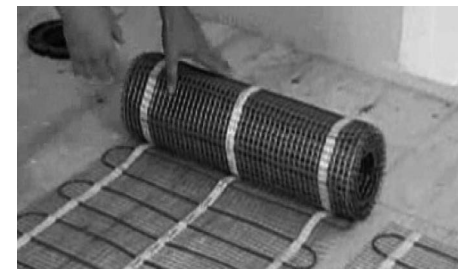
### 5. Read system resistance (1<sup>st</sup> time)

By using an electric measuring device, carry out a resistance reading (between the blue and brown terminals) and compare the data with the values shown in the table (Section 3.2). Record the date on the Warranty card. Recorded resistance values may be required during later eventual warranty issues. Then, read the resistance between the blue, brown and the grounding, which should show an open circuit reading. For more information on resistance reading see Chapter 5.

### 6. Placement of the heating mat

#### **NEVER CUT OR SHORTEN THE HEATING MAT!**

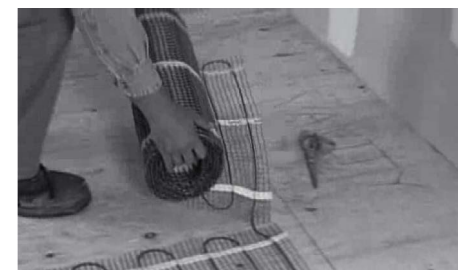
The bottom side of the heating mat contains adhesive, which shall secure the mat on the floor during placement. Begin the placement in a way that the connection cable and the sensor are put on its places when starting the placement. Lead the connection cable and sensor cable to the thermostat's connection point.



Install the heating mat evenly on the previously marked places. Prior to applying the adhesive, you can replace the mat before final fixing. When reaching the wall, cut the net, and turn the heating mat in the needed direction.



Make sure that BVF H-MAT is directly fixed to the floor on the entire surface. Avoid stepping on the placed heating mat. If it is inevitable, use smooth bottom shoes. Should you experience heating cable floating, apply a thick adhesive or glue tape on direct points.



When reaching different obstacles (shower, toilet, etc.) carefully remove the heating cable from the net and lead the cable around the obstacle. In some cases, partial or full removal of the net may be necessary. **Remember that cutting the cable is prohibited!** Use adhesive or tight glue tape to fix the removed cable on the floor.





## Important information

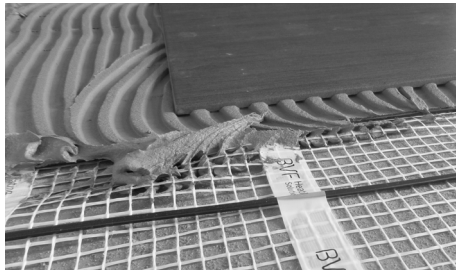
It is advised to take a photo of the system prior to covering.

*7. Read system resistance (2<sup>nd</sup> time) in accordance with Section 5.*

### *8. Covering*

Prior to covering check the fixing of the thermostat's floor sensor (as in Section 3.).

When placing ceramic cover, apply a thin layer of tile adhesive and proceed according to the producer's instructions. The tile adhesive shall fully cover the heating cables.



## Important information

**Do not activate the heating system before the full dry-out of tile adhesive.**

This shall take a minimum of 2 weeks.

*9. Read system resistance (3<sup>rd</sup> time) in accordance with Section 5.*

### *10. Placing the cover*

Place the cover in accordance with the instructions provided by the producer.

### *11. Connection of the thermostat and electricity*

Assign an electrician to carry out electricity and thermostat connection. Following connection, read the resistance for the last time, and record the values on the Warranty card.

See Section 13.

Note: Mark the circuit-breaker of the heating system on the switch board.

*12. Read system resistance (4th, last time) in accordance with Section 5.*

### *13. Documentation*

Fill-out the Warranty card of both the heating mat and the thermostat right after installation. Failing to do so may result in losing warranty rights. For detailed Warranty terms and conditions see the product's Warranty card.

## Important information

Keep the Warranty card for any later warranty issues.

### *14. Activation of the BVF H-MAT heating mat*

After the expiry of the dry-out time, the system is ready for use. Turn it on and set the desired temperature on the thermostat according to the user manual. Step-by-step heating-up of the system is advised, particularly when heating-up for the first time.

## 5 CHECK-UP

### Important information

To ensure the validity of the 10 years extended warranty period, carry out the following resistance readings and record the values on the Warranty card of the product. Do not lose the warranty card. Check-up of insulation and resistance reading is required four times during the installation. (See Section 4.5)

### 5.1 Reading insulation resistance

By reading insulation resistance you can make sure that the cable's electric insulation is not damaged.

1. Connect the grounding's connection to the black lead of the measuring device and connect the other two to the red cable simultaneously.
2. The measuring device shall read "open" or infinite value. In case of different values turn to the distributor of the product.
3. Record the read data on the product's Warranty card.



5.2 Reading heating mat resistance

- 1. Select range 200-2.000 ohm on the device.
- 2. Connect the device's leads to the brown and blue connections.
- 3. Compare the read values with the data given in the table. Maximal allowed variance shall be between -10% and +10%. Should you notice a different value, contact the distributor of the product.
- 4. Record the read data on the product's Warranty card.

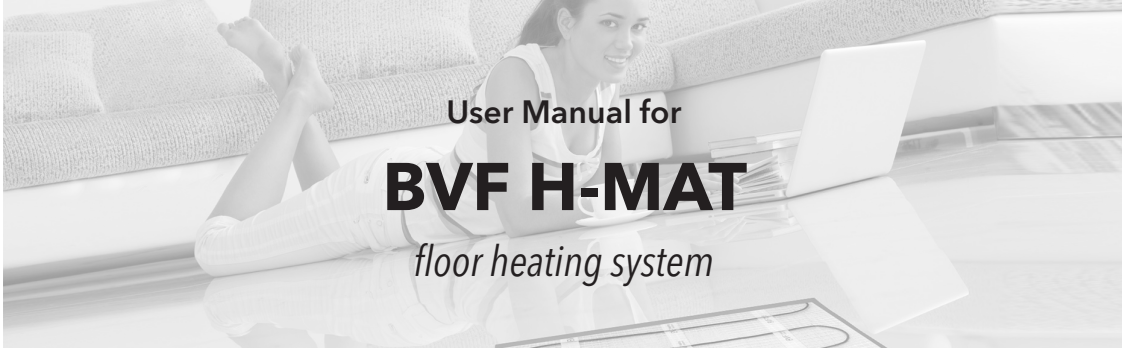


**i** Important information

Carry out the resistance reading of the NTC floor sensor of the thermostat prior to both placing and covering. In case of BVF brand thermostats: ~10 kΩ 20°C.

6 TROUBLESHOOTING

Nature of trouble	Possible reasons	Solution
Floor is not heating-up	Lack of voltage Electric circuit-breaker turns down Thermostat is not operating	Too many consumers connected to the same power circuit. BVF H-MAT may, in certain cases require separate power circuit. Check the values in the table. Check the thermostat according to the instructions of its user manual.
Floor is continuously heating	Improper thermostat setting	Check the thermostat according to the instructions of its user manual
Floor is not heated-up to the required temperature	Improper thermostat setting / Floor limit	Check the thermostat according to the instructions of its user manual



HEATED FLOOR/COVER

- 1. Ensure the electric floor heating's steady heat radiation, avoid placing sizeable objects/ furniture without legs on the floor.
- 2. **Avoid covering the floor with materials having high thermal insulating qualities (thick rug, mattress, under-bed bin, thermal proof materials, etc.) during operation.**
- 3. Protect floor covering from moisture, long-term wetting.

Checklist	
✓	✗
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CONTROL

- 1. Calibrate the thermostat using a room thermometer, since default settings of any type may be different than the actual temperature. (For details see the User Manual of the actual thermostat)
- 2. In case of individual heating, place the sensor operating mode of the thermostat to double (floor+room) position, where the thermostat shows the air temperature based on data provided by the built-in sensor, and the floor sensor sets the limit temperature of the floor (heat sink) in the value of the set temperature.
- 3. Set the disable temperature of the floor sensor to 29-31°C. (For details see the User Manual of the actual thermostat)
- 4. If the system is equipped with a programmable thermostat, for the most efficient operation the use of programming functions is advised.
- 5. BVF H-MAT floor heating system is NOT a heating storage or partly heating storage system, thus shorter heating-up times shall be taken into consideration when starting and programming heating cycles. Heating-up, depending on the floor's original temperature and thickness (thermal storage capacity/thermal inertia) may take longer time.
- 6. During the heating season, for the best results, avoid turning off the heating system, when out of use set air temperature back by 3-4°C the maximum, thus preventing the overcooling of walls and other devices. In case the heated premises are to be out of use for a longer period, the use of anti-freeze program option is advised for conservation purposes.

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## Disclaimer

The present installation and user manual had been prepared with the best knowledge of the distributor at the time of publishing. Distributor shall not be held responsible for printing mistakes on the online or printed version of its publications, and has the right to make amendments in the technical specifications of the products without prior notice.

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