

BVF WFD

10-20 Series



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IMPORTANT SAFETY NOTICE



WARNING: Shock and fire hazard!

- If the BVF WFD System is damaged or not installed properly, fire or shock hazard could occur resulting in serious personal injuries or damage to property. You must carefully follow the warnings and instructions contained in this manual.
- Use controllers only designed for electric floor heating systems.
- It is important that this equipment is installed only by qualified electricians who are familiar with the proper sizing, installation, construction and operation of floor warming systems and the hazards involved. The installation must comply with all national and local electrical codes. If you are unfamiliar with these requirements, contact an electrician.
- The BVF WFD System is designed for under floor heating purposes only. Be sure that the floor is not penetrated by nails, screws, or similar devices that can cause damage on first installation or during subsequent floor repairs in the future
- If the BVF WFD System is damaged, it must be replaced. Do not attempt to splice or repair any part of the system.

1 GENERAL INFORMATION

1.1 Use of the Manual

This manual describes the BVF WFD floor heating system – how to design the room, select the product, and install the system. It is important to thoroughly review this manual before installation.

For additional information contact to the distributor.

1.2 Safety Guidelines

The safety and reliability of any floor heating system depends on proper design, installation, and testing. Incorrect installation or mishandling of the product can cause damage to the heating cable, system components and property, and can create a risk of fire or shock. The guidelines and instructions contained in this guide are important. Follow them carefully to minimize these risks and to ensure that the BVF WFD system performs reliably.

Pay special attention to the following notices:

Instructions marked Important:



Safety warnings identified as WARNING:



1.3 Remember to measure resistance

The resistance should be measured between the two conductors, white and black. Compare this resistance reading to the resistance specified in table below. The value should be within -10% to +10%. If you get a different reading, contact to the distributor. Also, measure the resistance between the white, black and shielding/ground wire. Both should read infinity. If you get a different reading, contact to the distributor. Please refer to "5 Commissioning" for instructions on how to measure the resistance.

Important: measure the resistance four times during the installation: Remember to always measure, verify and record the actual resistance throughout the installation process (out of the box, after installation, after thin set cement or self-leveler application and after installation of floor tiles)

1.4 10 years Extended Warranty

For a period of ten (10) years from the date of purchase warrants that the BVF WFD heating cable is free from defects in material, design and workmanship. The extended warranty is only valid if the warranty certificate has been properly completed, and the installation is in accordance with the installation instructions.

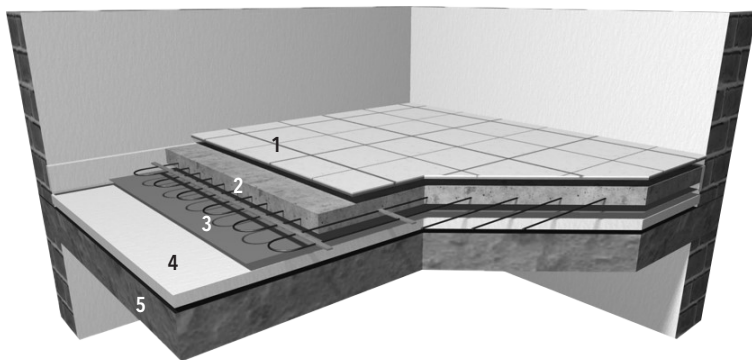
2 BVF WFD SYSTEM

2.1 BVF WFD typical technical specifications

Cable Construction:	Twin conductor
Rated Voltage:	230V
Output:	10W/m \pm 10% ; 20W/m \pm 10%
Bending radius:	min. 50 mm
Cable Diameter:	4.8 mm
Conductor Insulation:	TTPE, HDPE
Outer Insulation:	LSZH
Operation temperature:	+ 30 °C
Min. Installation Temp.:	+ 5 °C
Cold lead:	2-wire plus ground; 2.5m length

2.2 BVF WFD typical installations and applications

Figure 1.: Embedded in concrete



1. Ceramic tiles
- 2. Concrete + BVF WFD heating cable**
3. PE humidity barrier
4. Floor insulation
5. Foundation

Alternative methods: self-leveling cement is recommended for large surfaces and the following floor materials: engineered wood, laminate, floating floors, vinyl, linoleum and carpet.

WARNING

Consult the manufacturer for information on special installation requirements for wood, laminate and vinyl or linoleum flooring.

Important

- Read the instructions carefully before installing BVF WFD system.
- Remember to measure the resistance four times.
- Only for indoor installation. Do not install the system on walls or ceilings.
- The cable must be embedded in mortar, thin-set, concrete or similar material.
- The minimum installation temperature is 5°C.
- **The heating cable cannot be cut to length, crossed over itself, or installed too close.**
- It is recommended to use copper wire only.

3 DESIGNING FLOOR HEATING AND CHOOSING THE PRODUCT

3.1 Design the Installation

Step 1: Measure the heated area

Determine the heated area of the floor where there are no permanent fixtures or furniture such as showers, toilets, vanities, or cabinets. Measure the heated area of the floor. For example, in Figure 3.1, the area of the bathroom is 8.75 m². When you subtract the area of the vanity, shower and toilet, the total heated area is only 6.45 m².

Step 2: Determine the power supply voltage

Make sure the supply voltage was 230 V. If it was not, contact to your supplier for enlargement.

Step 3: Plan the design

Determine the optimum floor heating cable layout for your heated area to ensure coverage. Select a spot for the thermostat in the wall above the heated area where it can be reached by the 2.5m cold lead on the BVF WFD cable, and the floor temperature sensor. Please refer to Figure 3.

Important

The predetermined spacing must be maintained to ensure proper floor heating. Do not change the heating cable spacing when you lay out the cable or the floor may have cold spots.

Figure 2.: Calculating the heated area

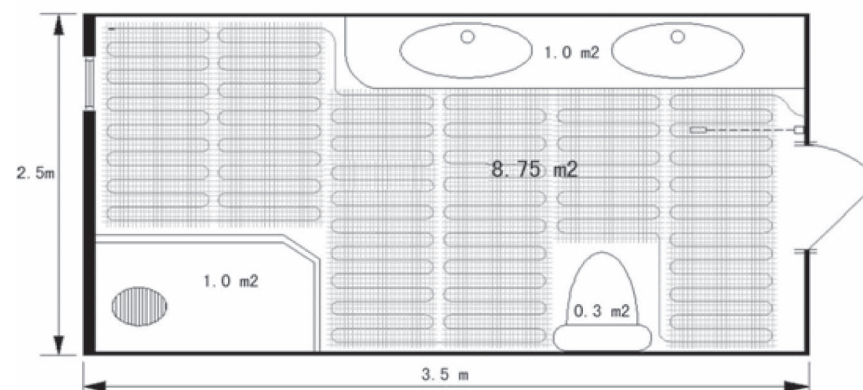
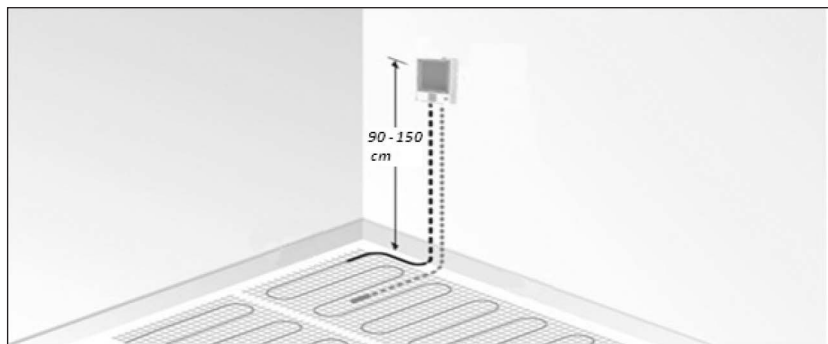


Figure 3.: Typical cold lead and thermostat floor sensor installation



3.2 Confirm Your Product Selection

Confirm that your BVF WFD length is not larger than the heated area. Following the example from Figure 2, if the heated area is 6.45 m², select the optimal cable length and cable spacing based on the figures below.

Cable type	Length	Watts	Amps	Ohms	60W/m ²	80W/m ²	100W/m ²
BVF-WFD/100-10	10,0 m	100W	0,4	529	1,7 m ²	1,3 m ²	1,0 m ²
BVF-WFD/200-10	20,0 m	200W	0,9	265	3,3 m ²	2,5 m ²	2,0 m ²
BVF-WFD/300-10	30,0 m	300W	1,3	176	5,0 m ²	3,8 m ²	3,0 m ²
BVF-WFD/400-10	40,0 m	400W	1,7	132	6,7 m ²	5,0 m ²	4,0 m ²
BVF-WFD/500-10	50,0 m	500W	2,2	106	8,3 m ²	6,3 m ²	5,0 m ²
BVF-WFD/600-10	60,0 m	600W	2,6	88	10,0 m ²	7,5 m ²	6,0 m ²
BVF-WFD/700-10	70,0 m	700W	3,0	76	11,7 m ²	8,8 m ²	7,0 m ²
BVF-WFD/800-10	80,0 m	800W	3,5	66	13,3 m ²	10,0 m ²	8,0 m ²
BVF-WFD/900-10	90,0 m	900W	3,9	59	15,0 m ²	11,3 m ²	9,0 m ²
BVF-WFD/1000-10	100,0 m	1000W	4,3	53	16,7 m ²	12,5 m ²	10,0 m ²
BVF-WFD/1200-10	120,0 m	1200W	5,2	44	20,0 m ²	15,0 m ²	12,0 m ²
BVF-WFD/1400-10	140,0 m	1400W	6,1	38	23,3 m ²	17,5 m ²	14,0 m ²
BVF-WFD/1600-10	160,0 m	1600W	7,0	33	26,7 m ²	20,0 m ²	16,0 m ²
BVF-WFD/1800-10	180,0 m	1800W	7,8	29	30,0 m ²	22,5 m ²	18,0 m ²
BVF-WFD/2000-10	200,0 m	2000W	8,7	26	33,3 m ²	25,0 m ²	20,0 m ²
Cable spacing					167 mm	125 mm	100 mm

Cable type	Length	Watts	Amps	Ohms	80W/m ²	120W/m ²	150W/m ²
BVF-WFD/200-20	10,0 m	200W	0,9	242	2,5 m ²	1,7 m ²	1,3 m ²
BVF-WFD/300-20	15,0 m	300W	1,4	161	3,8 m ²	2,5 m ²	2,0 m ²
BVF-WFD/400-20	20,0 m	400W	1,8	121	5,0 m ²	3,3 m ²	2,7 m ²
BVF-WFD/500-20	25,0 m	500W	2,3	97	6,3 m ²	4,2 m ²	3,3 m ²
BVF-WFD/600-20	30,0 m	600W	2,7	81	7,5 m ²	5,0 m ²	4,0 m ²
BVF-WFD/700-20	35,0 m	700W	3,2	69	8,8 m ²	5,8 m ²	4,7 m ²
BVF-WFD/800-20	40,0 m	800W	3,5	66	10,0 m ²	6,7 m ²	5,3 m ²
BVF-WFD/850-20	42,5 m	850W	3,9	57	10,6 m ²	7,1 m ²	5,7 m ²
BVF-WFD/1000-20	50,0 m	1000W	4,5	48	12,5 m ²	8,3 m ²	6,7 m ²
BVF-WFD/1200-20	60,0 m	1200W	5,5	40	15,0 m ²	10,0 m ²	8,0 m ²
BVF-WFD/1400-20	70,0 m	1400W	6,4	35	17,5 m ²	11,7 m ²	9,3 m ²
BVF-WFD/1600-20	80,0 m	1600W	7,3	30	20,0 m ²	13,3 m ²	10,7 m ²
BVF-WFD/1800-20	90,0 m	1800W	8,2	27	22,5 m ²	15,0 m ²	12,0 m ²
BVF-WFD/2000-20	100,0 m	2000W	9,1	24	25,0 m ²	16,7 m ²	13,3 m ²
BVF-WFD/2200-20	110,0 m	2200W	10,0	22	27,5 m ²	18,3 m ²	14,7 m ²
BVF-WFD/2400-20	120,0 m	2400W	10,9	20	30,0 m ²	20,0 m ²	16,0 m ²
BVF-WFD/2600-20	130,0 m	2600W	11,8	19	32,5 m ²	21,7 m ²	17,3 m ²
BVF-WFD/2800-20	140,0 m	2800W	12,7	17	35,0 m ²	23,3 m ²	18,7 m ²
BVF-WFD/3100-20	155,0 m	3100W	14,1	16	38,8 m ²	25,8 m ²	20,7 m ²
Cable spacing					250 mm	167 mm	133 mm

4 INSTALLATION

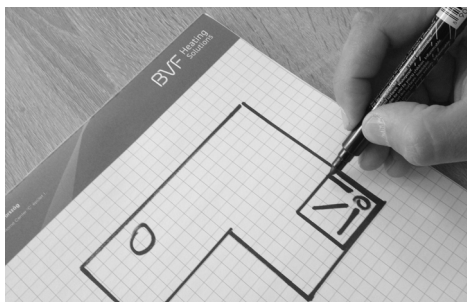
Important: Tools and materials required

You will require the following items to install and test the floor heating system:

- Scissors
- Utility knife
- Wire strippers
- Tape measure
- Screwdriver
- Multimeter
- BVF Fixing strips or wire mesh

1. Plan layout

Make a sketch layout or a floor plan of the room; include all permanent furnishings such as toilets, bathtubs, appliances, cabinetry, etc. Indicate all dimensions required to determine the available floor area and the position of the thermostat.



2. Transfer layout to floor

Draw an outline of the layout on the room floor including a foot print of all furnishings that are not yet installed. Unroll the first few feet of the BVF WFD. The starting point of the cable must be placed within 2.5m from the thermostat.

Important

Mark the position of the connection point between the power lead and the BVF WFD heating cable. **This connection must be concealed in thin-set or self-leveling cement.** When using a floor temperature sensing thermostat, mark the sensor position in the middle of two heating cables, at least about 25cm away from the wall (within the heated area), as close as possible to the thermostat.

3. Install floor sensor

If using a floor temperature sensing thermostat, install the sensor now, preferably in conduit tube, or directly to the subfloor. It is recommended that the sensor be installed in conduit tube. This will allow the sensor to be easily replaced in the unlikely event of failure. The sensor and/or tube needs to be installed between the thermostat wall box and the sensor position. The conduit tube must be partially countersunk into the subfloor.



Important

The sensor conduit must be centered in the cable loop (between two heating wires). Use duct tape to close the end of the conduit so that thin-set can't penetrate the conduit. Use duct tape to hold the sensor conduit into the groove to prevent it from floating up when the mortar or thin-set is poured. If the sensor is installed directly in the mortar bed, use duct tape to secure to subfloor.

4. Prepare subfloor surface

Clean and vacuum the floor thoroughly and remove dust and debris from the floor that may damage the heating cable. Ensure that the subfloor is secure and stable. Carefully fill in all cracks to prevent any potential damage to the new tiles resulting from shifts in the subfloor.

5. Measure the resistance (first time)

Use a digital ohm meter to measure the resistance of the BVF WFD heating cable and compare it to the table. Record the measured resistance on the warranty card. Documenting the resistance at each stage of installation is required for warranty purposes. Also, measure the resistance between the white, black and shielding/ground wire. Both should read infinity. Please refer to "5 Commissioning" for instructions on how to measure the resistance.

6. Begin laying the BVF WFD heating cable



WARNING: NEVER CUT OR SHORTEN THE HEATING CABLE

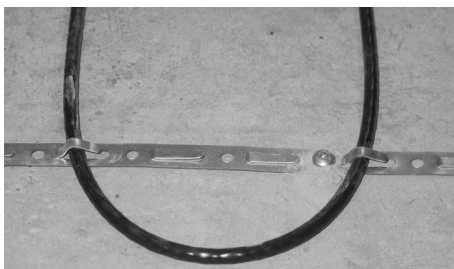
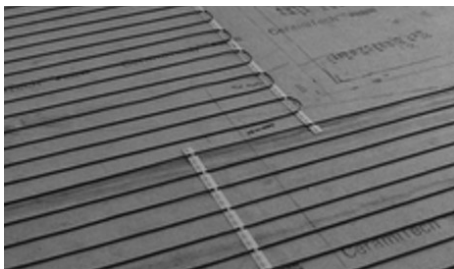
Start by placing the heating cable such that the connection point and the temperature sensor are in their intended positions and bring the power cable to the thermostat or connection box. Avoid walking on the heating cable. If this is not possible, use shoes with soft soles.

Use BVF fixing strips or mesh for fixing the cable on the floor. The strips or mesh shall be glued or screwed to the subfloor. Unroll the heating cable carefully and lay it according to the system design.



Important

It is highly recommended taking photographs of the installed system before installing the flooring.



7. Measure the resistance (second time)

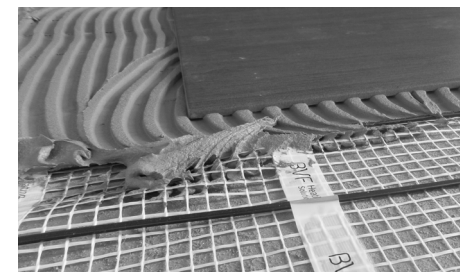
Please refer to Step 5.

8. Fixing the heating cable

Fix the cable on the subfloor with the cable distance specified in figure 31 to achieve the desired capacities

9. Embed the heating cable

In the case of tiles, proceed with the installation of the tiles by covering the heating cables with a layer of thin-set cement as directed by the tile manufacturer. Ensure that the thin-set mortar covers the entire height of the heating cable as the tiles are installed. In the case of a wood, engineered or laminate floor covering, it is recommended that the flooring manufacturer be contacted. For wooden floors, a minimum of 5cm of self-leveling cement over the heating cable is recommended. Ensure that all moisture in the self-leveling cement has been fully eliminated in accordance with the drying times recommended by the manufacturer.



Important

The system must not be turned on until the thin-set cement has fully dried. A minimum of two weeks is recommended.

10. Measure the resistance (third time)

Please refer to Step 5.

11. Install the tile

Tile and grout the floor using best industry practices and in accordance with instructions provided by the manufacturer of the tile.

12. Connect power supply and thermostat

The connection of the power supply and the thermostat must be done by a qualified electrician. The electrician should connect the floor sensor to the thermostat, take the final resistance reading and record it on the warranty card, see Step 13.


Note: You need to mark the appropriate circuit breaker reference label indicating which branch circuit supplies the electric heating cables.

13. Measure the resistance (fourth time)

Please refer to Step 5.

14. Record information

It is important for the homeowner to mail in the certificate immediately after installing the system (cable and thermostat). Failure to do so could void the manufacturer's warranty. The warranty is subject to the conditions listed on the warranty certificate.

 **Important**

Keep a copy of the warranty card for your reference.

15. Turn on the heating system

The system is ready to use after the drying period. Switch on and set the temperature on the thermostat. It is proposed to heat up the area progressively.

5 CHECK-UP

 **Important**

For the extended 10-year warranty to apply, you must perform these tests, record the results on the warranty card, and retain a copy of the record.
You must perform the Insulation Resistance Test, the Heating Cable Resistance Test, and the Sensor Resistance Test four times (Please refer to 4 installations) during the installation process.

5.1 Insulation resistance test

This test ensures that the insulating jackets of the cable are not damaged.

- 1. Connect the ground wire to the black lead and both power wires to the red lead of the multi meter.
- 2. Make sure the meter reads "open" or "infinity"
If you get a different reading, contact to the distributor.
- 3. Record these readings on the warranty card.



5.2 Heating cable resistance test

This test measures the resistance of the BVF WFD heating cable and is used to determine circuit integrity.

- 1. Set your multi meter to the 200 or 2000 ohm range.
- 2. Connect the multi meter leads to the black and white cold lead wires.
- 3. Compare this resistance reading to the resistance specified in the Product Selection. The value should be within -10% to +10%. If you get a different reading, contact to the distributor.
- 4. Record these readings on the warranty card.



 **Important**

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 25°C.

6 TROUBLESHOOTING

Symptom	Probable Causes	Corrective Action
Floor doesn't heat	No voltage. Circuit breaker tripped.	Check circuit breaker. Ensure that there are not too many cables or other appliances connected on the same circuit. The BVF WFD may require a dedicated circuit. See the Product Selection Table of this manual.
	Thermostat not turned on.	Refer to Thermostat Installation and Operation Manual.
Floor warm all the time	Thermostat not set correctly.	Refer to Thermostat Installation and Operation Manual.
Floor not warm enough	Thermostat not set correctly.	Refer to Thermostat Installation and Operation Manual.
Installation instructions not available		Download the latest version of BVF WFD system Installation Instructions from your local dealer's website.

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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