flexiro

HOW IT WORKS

INSTALLING UNDERFLOOR HEATING ON MILLED OSB BOARDS

CONTENTS

INSTALLATION INSTRUCTIONS

Installation instructions as PDF

1 Introduction

The FLEXIRO underfloor heating system with OSB boards is a system kit that has been optimised for quick and easy retrofitting of radiant heating in individual rooms and connection to the existing heating system.

All important components are included in one set. However, connections to the existing heating system and adhesives or fillers are not part of the set. They can be easily purchased from a specialist building supplier.

The system is a thin-layer heating system. The advantages are a low installation height, which in this case is a minimum of 22 mm, even heat distribution and fast response times. Plug connectors and RTL technology make installation attractive for both installers and DIY enthusiasts.

Despite the simplified design, we must point out that, as the manufacturer, we can only guarantee that the product is delivered in perfect condition from the factory, but not that it is laid and connected by third parties. The currently valid standards and regulations for heating systems must be observed.

2 Scope of delivery

Set size	Pipe (Ø10 mm)	OSB boards	Flow distributor (outlets)	Return distributor (outlets)	Blind plug
2.9 m²	30 m	4	1 (1)	1 (1)	0
5.8 m²	60 m	8	1 (2)	1 (2)	2
8.7 m²	90 m	12	1 (4)	1 (4)	4
11.6 m²	120 m	16	1 (4)	1 (4)	4
1 OSB inlet plate [1,200 mm × 300 mm × 22 mm]					
Choice of 2 different control boxes:					
○ Kompabox RTL – temperature control with flow shut-off and connection for an additional radiator					
○ Multibox 4K-RTL – temperature control and maximum return temperature limit, smart home compatible					

Set prices and additional accessories for thin-layer underfloor heating in the FLEXIRO shop.

3 Important information before installation

- FLEXIRO OSB underfloor heating should not be operated continuously at system temperatures exceeding 45° C. Higher temperatures can damage the wood fibre boards.
- At the start of the work, a border insulation strip of at least 30 mm width must be laid around the floor area to be heated. Columns or similar objects in the room must also be enclosed with the border insulation strip so that the floor structure can expand when heated. The border insulation strip must later be grouted with permanently elastic grout, shortened after completion of the work and covered with skirting boards.
- The arrangement of the heating circuits is determined before installation. The installation location must be chosen so that the heating pipes of all heating circuits can be routed directly to the RTL box without the need for extensions.
    - Set 2.9 m² corresponds to one heating circuit
    - Set 5.8 m² corresponds to 2 heating circuits
    - Set 8.7 m² corresponds to 3 heating circuits
    - Set 11.6 m² corresponds to 4 heating circuits
- The underfloor heating pipes can be shortened in principle. However, care must be taken to ensure that the differences in length between the individual connections are not too great (max. 15%). If shortening is necessary, it should be distributed as evenly as possible across the pipes. Otherwise, there is a risk of uneven heat distribution.
- Flow distributors, return distributors and any connectors used must not be grouted with construction chemicals. This could damage the connections and consequently the entire heating system.
- Pipe crossings should be avoided as they increase the installation height.
- The PE-RT pipe must be cut straight and without burrs. It must not be crushed or kinked.
- The manifolds and pipes can be installed without tools.
- Unnecessary walking on the heating pipes during laying and installation work should be avoided. **Do not step on the pipes!** The manufacturer accepts no liability for any damage caused by this.
- The OSB boards should be allowed to adjust to the temperature and humidity in the room for 48 hours in order to minimise deformation during heating operation.
- The milled OSB boards are not suitable for use as a static floor construction. They are either laid on a load-bearing floor or on top of further layers of standard OSB boards.

4 Preparations

Working on heating systems requires sufficient technical knowledge and skills. This also applies to FLEXIRO underfloor heating. Read the instructions carefully. If in doubt, have the installation carried out by a specialist company.

- The existing subfloor must be level, clean, dry and load-bearing. The load-bearing capacity can be achieved, for example, in case of a wooden beam construction, with additional layers of OSB boards. The number and thickness of layers depend on the expected load. The specifications for laying standard OSB floors must be observed.
- Before laying the underfloor heating, determine the position of the RTL control box on the wall. This will define where the pipes will run.
- The layout of the heating system and the positioning of the RTL boxes can be customised. There is no universal solution for this. The control valve must always be accessible later on. After installing the distributors, it must still be possible to insert the ends of the connection pipes into the individual connections. (Note the height from the floor.)
- We recommend creating a layout plan for the OSB boards and heating pipes. The heating pipe can be laid in a meandering or spiral (bifilar) pattern. It is important that the layout is planned so that the heating pipe can be returned to the control box without intersections.

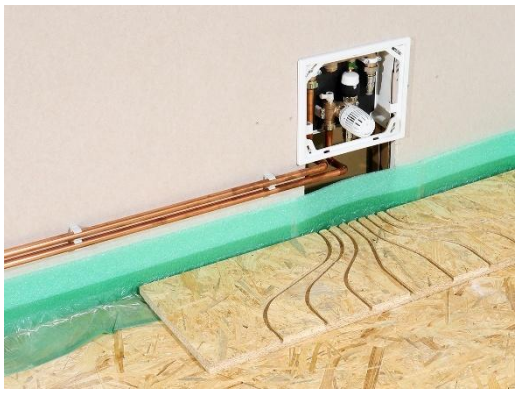
5 Installation

5|1 Installation of the RTL control box

- For efficient temperature control, the control box should be positioned so that the thermostat head can detect the temperature of the room air and be surrounded by it without obstruction.
- The distance between the control box and the finished floor should be at least 20 cm from the lower edge of the flush-mounted box.
- The separately enclosed installation and operating instructions from the RTL box manufacturer must be observed.

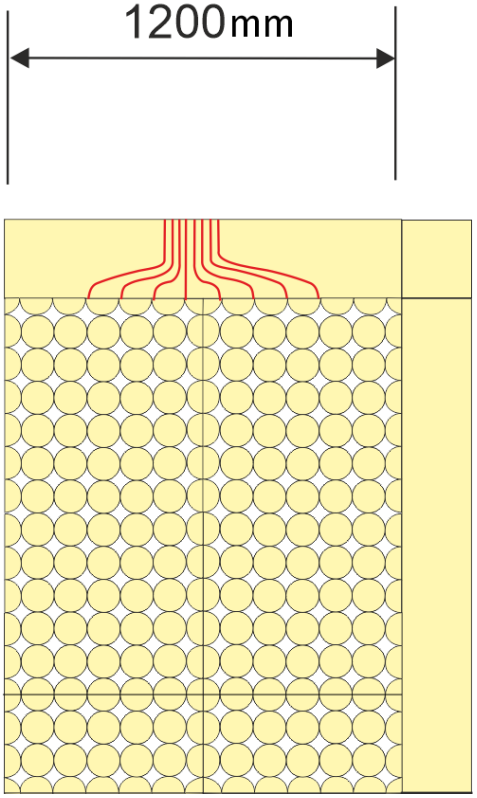
5|2 Applying the edge insulation strip

- A continuous edge insulation strip must be installed on all walls or vertical components (stairs, columns, door frames, rising pipes). This must always extend to the upper edge of the top covering. The edge insulation strip serves to separate the floor covering from the masonry or other fixtures.
- The edge insulation strip is cut to size after the top layer has been completely laid (in the case of tile laying, only after grouting).



5|3 Laying the FLEXIRO OSB boards

- Before installation, the heating area specified in the plans must be transferred to the floor and the OSB boards cut to size if necessary. A hand-held circular saw, jigsaw or hand saw with a suitable saw blade can be used to cut the OSB boards to size.
- **Please note:** FLEXIRO OSB boards are only required for the designated heating area. Standard OSB boards with a thickness of 22 mm are used in the unheated edge areas and to completely fill the top layer.
- Start laying the boards with the supply board. The supply board must be aligned with the RTL box so that the heating pipes can be routed directly to the connections without kinking.
- The milled OSB boards are then laid out so that the grooves in the boards are aligned with each other, allowing the heating pipe to be laid in the grooves later. Cross joints are not a problem for the top layer.
- The boards are fixed to the lower OSB layers using 4 screws without additional



pre-drilling in the centre of the milled holes located at the corners of the boards. The pre-drilled holes from the milling process can be used.

- Screws suitable for chipboard and OSB boards are used. The length of the screws should be 2.5 times the thickness of the OSB board. Countersunk screws with a diameter of 4.5 mm and a length of 55 mm are therefore recommended.
- Once all the boards have been fixed in place, they are screwed down with additional screws at intervals of approx. 30 cm. This means that approx. 18 screws are used per board.
- **Please note:** When laying the milled OSB boards directly on a straight, load-bearing floor, a suitable adhesive is recommended instead of screws for installing the OSB boards.

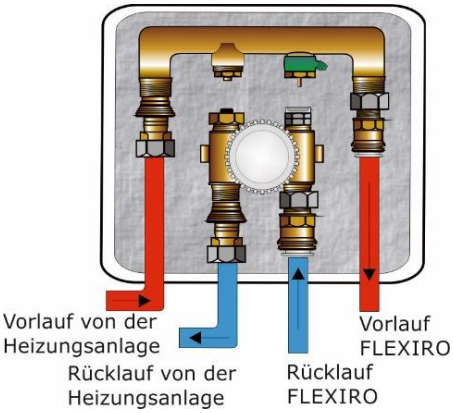
5|4 Laying the heating pipes

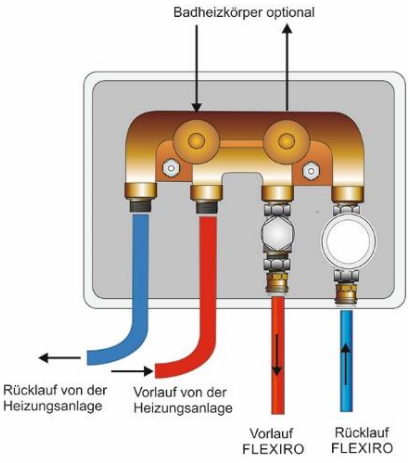
- Ideally, the laying of the heating pipes should begin near the distribution fingers. This allows the pipe length required for the connection to be kept as short as possible.
- The distance between the grooves is 10 cm. This corresponds to the minimum laying distance and the smallest bending radius of the pipe. The distance between the underfloor heating and the room walls should be at least 5 cm.
- The heating pipe must be laid without twists
- Meandering and spiral laying patterns are commonly used. We have implemented spiral or helical laying because it results in very even heat distribution and also facilitates twist-free laying due to the larger radii.
- When walking on the OSB boards to lay the pipe, care must be taken not to damage the pipe.
- Any kinks or damaged areas on the heating pipe must be cut out. The pipe must be reconnected with a permanently sealed coupling (for accessories, see plug connectors). The coupling must be protected from direct contact with the grouting compound or the floor covering by wrapping it with PE film. The position of the coupling should be marked. If necessary, the pipes can also be extended using the same procedure.
- After installation, the heating pipe should lie firmly in the grooves. If the pipe still pops out in some places, it can be additionally secured with sufficiently wide staples or similar.

5|5 Connection to the control box

- The distribution fingers are connected to the control box using Eurocone screw connections. The Eurocone has a self-sealing effect, while the metal screw connection only serves a safety function. It is essential to avoid overtightening, as this could compromise the safety of the heating system.
- The arrangement of the heating pipes on the control box is shown in the following illustrations. The order of the connections differs depending on the control box. The heating pipes are connected to the distribution fingers by means of a simple plug-in assembly. The straight-cut and possibly shortened heating pipes are inserted directly into the plug-in connections of the distribution fingers until they stop.

Multibox 4K-RTL	Kompabox RTL





Making the plug connection:

- Cut the heating pipe straight and free of burrs.
- Insert the pipe until it stops (approx. 20 mm).
- Caution: The retaining element engages before it seals.
- Ensure that the pipe is inserted as far as it will go. The pipe is now in a fixed position.
- Pull on the heating pipe to check that the connection is secure.

Caution: The pipes must enter the distributor vertically and must not exert any tension or pressure on the connection box!

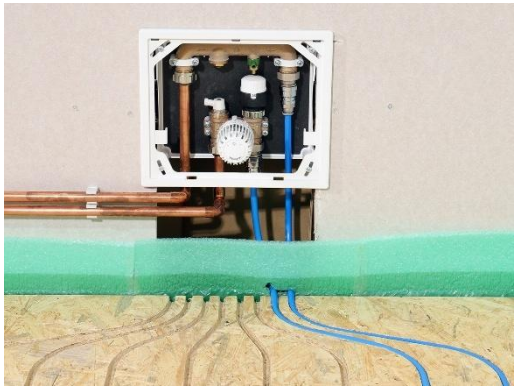
Loosening the plug connection:

- Ensure that the system is without pressure.
- Press the retaining element against the front of the housing. The pipe can now be easily removed by pulling.

The supplied manifold fingers can be installed **without tools**.

5|6 Connection to the heating system

- Please ensure that the flow and return are correctly assigned in the control box. Mixing up the flow and return in the control box will render the thermostatic valve inoperable and also prevent the FLEXIRO underfloor heating from operating correctly.
- As a rule, the FLEXIRO underfloor heating system can be integrated into the existing heating system in parallel with the other radiators or in place of a radiator.
- To do this, a T-piece (not included in the FLEXIRO set) is inserted into the flow and return pipes of the heating system.
- A pipe (not included in the FLEXIRO set) is routed from each of the T-pieces of the flow and return to the input of the control box and connected using a suitable transition fitting. Suitable transition fittings for different pipe qualities and dimensions are available as accessories in the online shop or from specialist builders' merchants.



5|7 Pressure testing of the heating system

Before commissioning the underfloor heating, ensure that the system and all associated components are installed correctly. Even if it is a new product, it must be tested according to the following procedure:

- Close the supply and return valves in the heating system.
- Flush the heating circuit until the water in the return pipe no longer contains any air bubbles.
- Then pressurise the system to 10 bar for at least 10 minutes.
- Check the pipe system and all connections for leaks.

- Depressurise the heating system.
- The system should then be tested at a working pressure of 2 bar for a further 10 minutes.

A suitable pressure test pump is available from the FLEXIRO Shop:
https://flexiro.de/en/product/d/86/pressuretestpump/

Please note that without performing the pressure test, the manufacturer cannot guarantee the long-term functionality of the heating system.

5|8 Test run of the underfloor heating

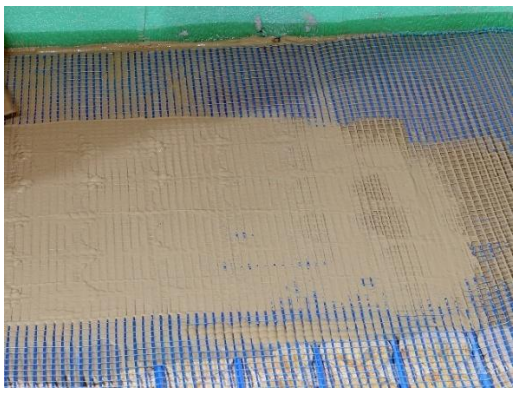
Before applying the levelling compound, it is essential to carry out a test run. This is the last opportunity to correct any installation errors or damage.

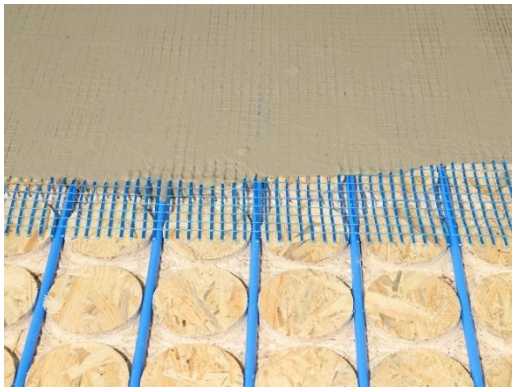
- The underfloor heating is filled via the connected heating system. When using the Multibox 4K-RTL, it is possible and recommended to vent the pipe system directly via the vent valve.
- After filling, the operating pressure of the system is restored.
- The pipe system and all connections are then checked again for leaks.
- Once the thermostatic valve on the control box has been turned fully open, check that all areas and heating circuits of the underfloor heating system are heating up evenly.

5|9 Applying the top layer

Construction chemicals (levelling compound) for radiant heating must generally be "flexible" so that no cracks occur due to expansion movements during heating. The appropriate levelling compound is labelled "suitable for underfloor heating" by the manufacturer.

- Before applying the construction chemicals, ensure that the underfloor heating is completely switched off. The heating function can have a negative effect on the drying process of the construction chemicals. Check one last time that the pipe is fixed in place everywhere and does not stand out from the grooves.
- First, a thin layer of primer is applied to the OSB boards using a suitable tool. Depending on the consistency, a brush, roller or roller brush is suitable. This ensures that the levelling compound adheres well to the OSB boards. The drying time is 1 or 2 hours. The manufacturer's instructions must be followed.
- Then pour a thin layer of levelling compound and smooth it out. The minimum coverage of the heating pipes is 5 mm. All grooves, even those not occupied by pipes, must be completely filled with levelling compound.
- Once the levelling compound has dried briefly, a decoupling mat is cut to size for the area and laid on top.
- The levelling compound is spread over the decoupling mat.
- Once the levelling compound has dried thoroughly, the selected top covering can be applied. The manufacturer's specifications regarding the preparation of the substrate must be observed.





Further information on levelling compounds:

To ensure professional execution, we draw your attention to the need to comply with laws, regulations, guidelines and standards when planning and installing heating systems. Filling and grouting compounds must have the following properties:

- Suitable for levelling concrete floors, cement, calcium sulphate, magnesite and mastic asphalt screeds.
- Suitable for levelling ceramic tile coverings or coatings.
- Suitable as a filling and grouting compound for hot water underfloor heating systems, which are recommended for thin-layer embedding.

The following manufacturers offer suitable products in stores and can provide you with further information:

- Knauf
- Maxit
- Bostik
- PCI
- Kiesel
- Sopro

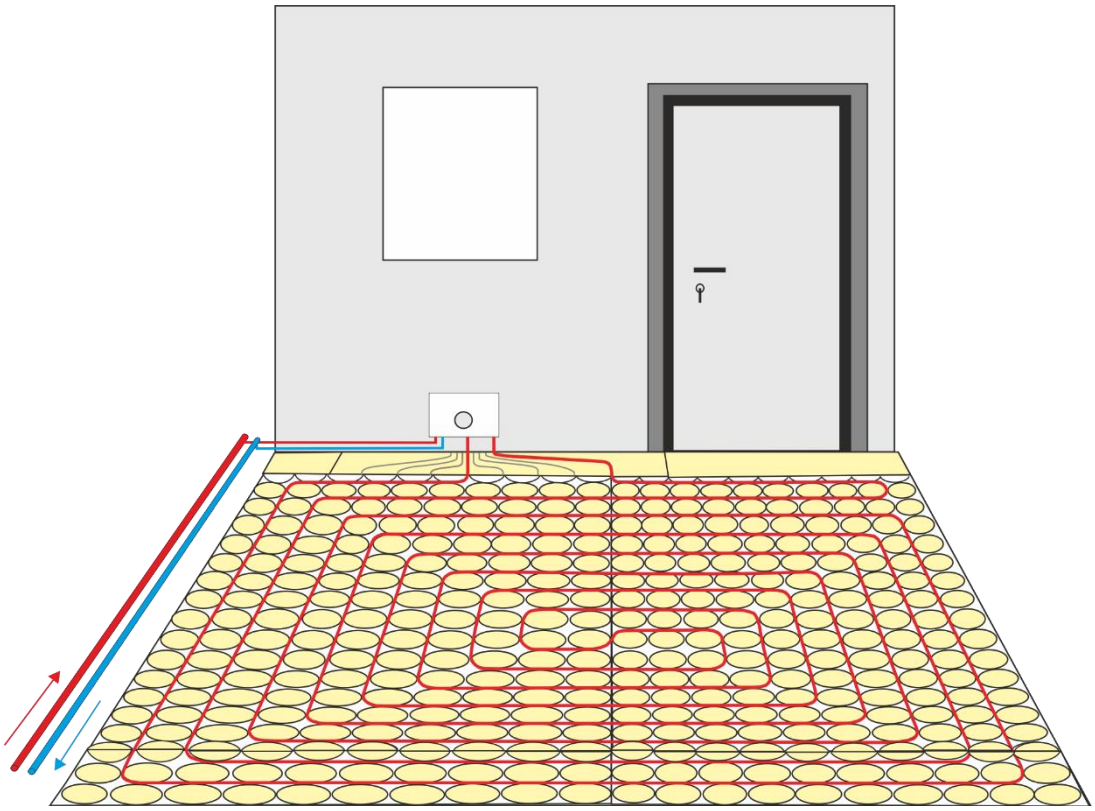
5|10 Commissioning (heating process)

- Once the top layer has been completed and has dried naturally, the heating process can begin. If tiles are being laid, the heating must not be switched on

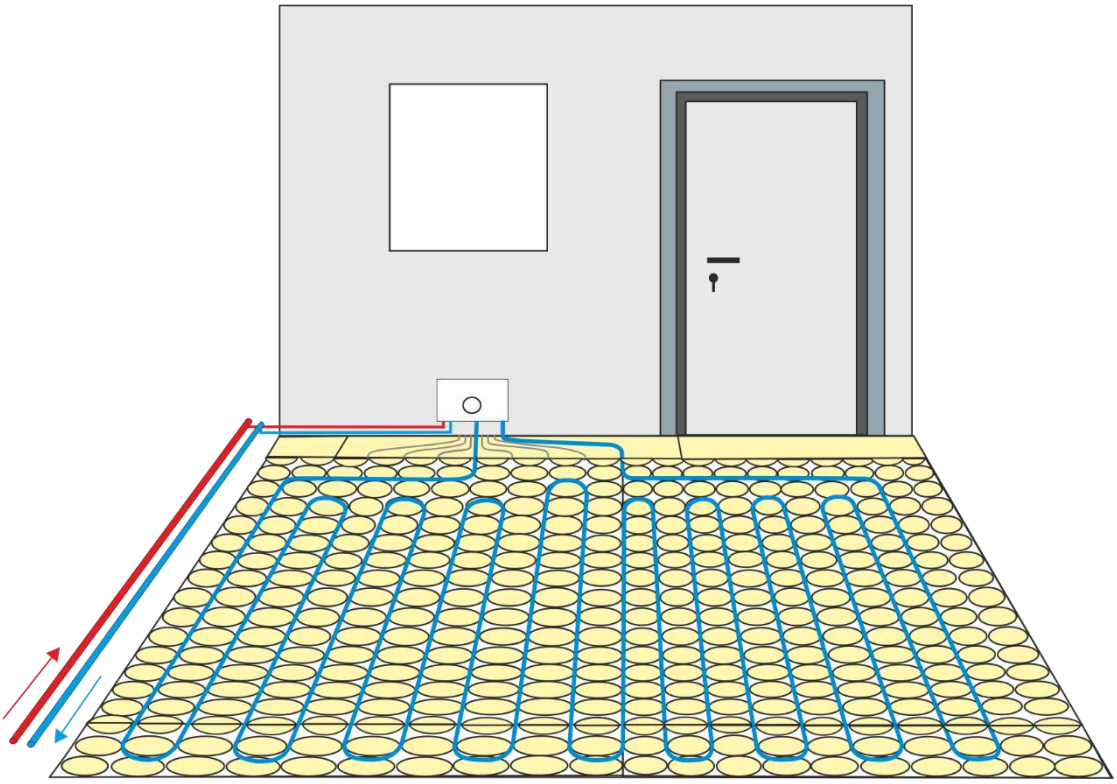
until the tile adhesive has completely hardened. The processing instructions provided by the respective manufacturers must be observed.

- If possible, commissioning should be carried out in accordance with the specifications of a heating protocol.

5|11 Installation drawing



Laying pattern: spiral/helical



Laying pattern: meandering

	FLEXIRO wishes you every success with your project!
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