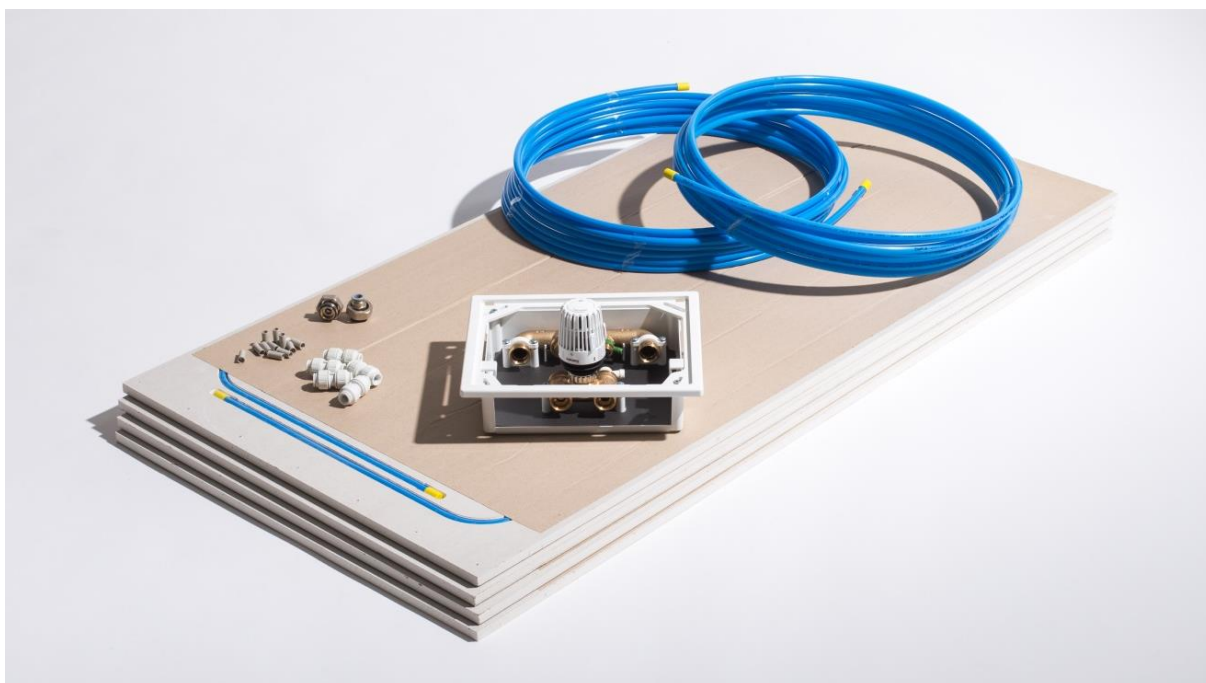


HOW IT'S DONE: INSTALLING CEILING HEATING USING DRYWALL CONSTRUCTION



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1 INSTALLATION OF FLEXIRO CEILING HEATING – INTRODUCTION

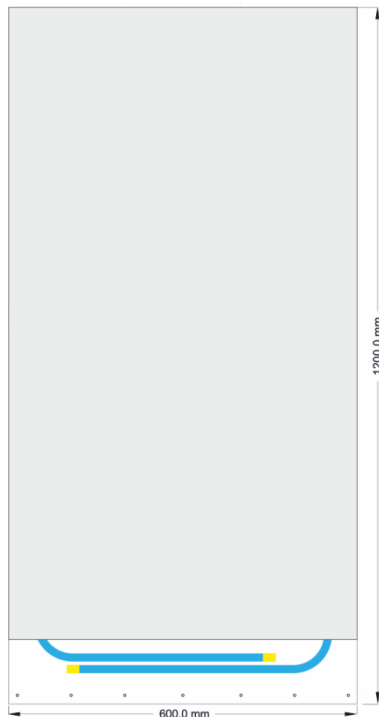
The FLEXIRO ceiling heating system is a system kit that has been optimized for easily installing ceiling heating in the form of a suspended drywall ceiling with integration of the heating surfaces into the existing heating system. All required components are included in a single kit. The use of FLEXIRO connection hoses, plug-in connections and a temperature control box for controlling the individual room temperature simplify the installation and connection of the ceiling heating to the existing heating system, so that FLEXIRO is equally suitable for professional installers and do-it-yourself enthusiasts. The following panels (starting on page 3) illustrate the installation steps for a test setup approximately 3 m² in size.

Despite the simplified construction, as the manufacturer we would like to point out that we can only guarantee top quality delivered from the factory, but bear no responsibility for installations and connections made by third parties. Furthermore, please observe current valid standards and regulations for heating systems and drywall construction.

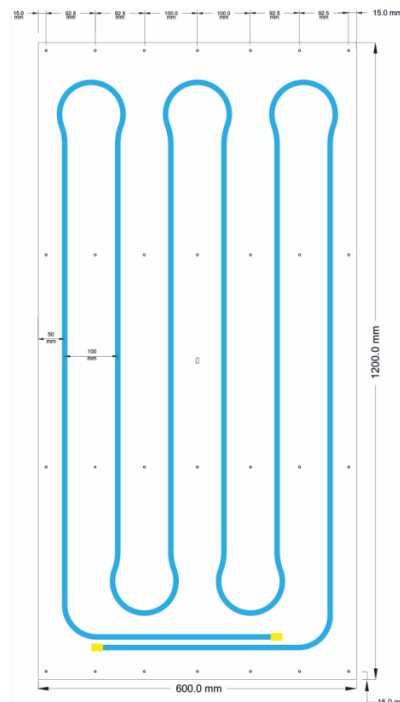
2 SCOPE OF DELIVERY FLEXIRO CEILING HEATING KIT IN DRYWALL CONSTRUCTION

Kit size	Ceiling heating elements	Pipes (Ø10 mm) 7000 mm	Flow manifold (outlets)	Return manifold (outlets)	Support sleeves	Blind plugs 10 mm	Plug-in connectors
2.9 m ²	4	2	1 (1)	1 (1)	12		5
5.8 m ²	8	4	1 (2)	1 (2)	24	2	10
8.7 m ²	12	6	1 (4)	1 (4)	36	4	15
11.6 m ²	16	8	1 (4)	1 (4)	48	4	20
Regulating boxes (depending on the selection)							
<ul style="list-style-type: none"> ○ Kompabox RTL – single room temperature control with flow cut-off ○ Multibox 4K-RTL – single room temperature control and maximum limitation of return temperature, smarthome integration possible 							

Kits and further accessories for underfloor heating can be obtained at the FLEXIRO shop: flexiro.de/en/ceiling-heating-drywall.



Rear view of the ceiling heating element. Size 1200 mm x 600 mm x 12.5 mm



View of a ceiling heating element with pre-drilled holes in the element (the element is supplied from the factory with cardboard backing)

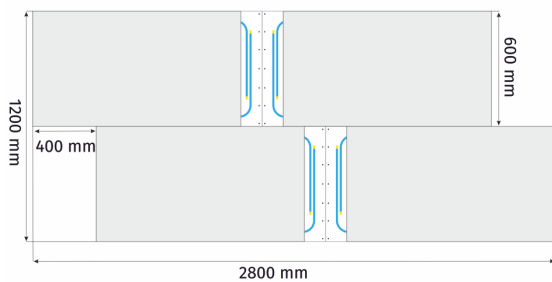
3 IMPORTANT NOTE BEFORE BEGINNING THE INSTALLATION

- You will need to determine the arrangement of the individual ceiling heating elements when beginning the work. Since the FLEXIRO ceiling elements cannot be cut to size, custom-cut panels may need to be made for the edge areas of the planned heating surface. You can obtain suitable gypsum plasterboards from specialist hardware or DIY stores. All fixtures in the ceiling surface, such as luminaire fittings, cable bushings, etc., cannot be installed within the FLEXIRO ceiling elements.
- Commercially available gypsum plasterboards should also be inserted as strips at these points. The edge junctions around the ceiling surface should later be filled with permanently elastic sealant in accordance with drywall construction guidelines.
- The FLEXIRO connection hoses can generally be shortened. When installing kits 8, 12 or 16, however, it must be ensured that the differences in length between the two connection hoses leading to the temperature control box are not too great (max. 15%). If shortening is required, this should be distributed as evenly as possible over each heating surface. Otherwise there is a risk of uneven heat distribution. It is not a problem if the connection hoses are too long. The excess length is distributed in the ceiling cavity.

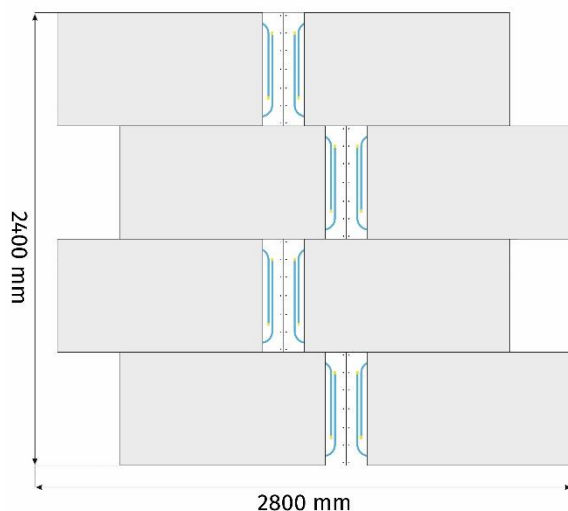
- The temperature control box should be positioned on the wall surface so that the indoor air can easily reach the thermostatic head and at the same time it is ensured that the temperature control box can be easily operated.
- Always make sure that the pipe is cut straight and burr-free. The pipe must not be crushed or kinked.
- The installation of distributors and pipes does not require any special tools.
- When setting the fixing screws with which the FLEXIRO ceiling heating elements are mounted to the substructure, please use the pre-drilled holes provided in the factory for the elements. Never drill or screw into the surface of the elements. This could damage the heating pipes. The manufacturer is not liable for damage caused by disregarding this advice.

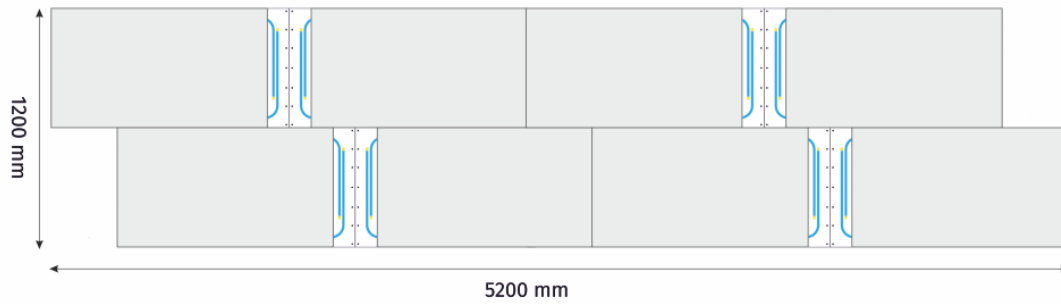
Schematic illustration showing example configurations for installing the ceiling heating elements

Kit 1: 2.9 m²

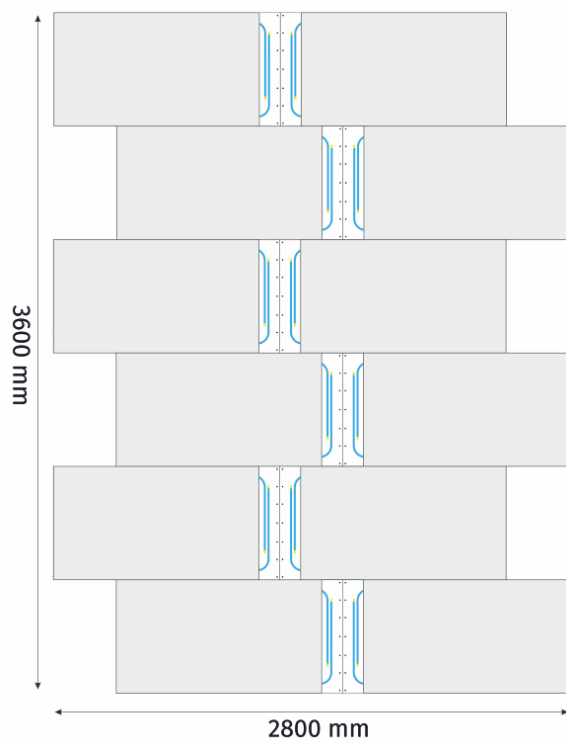


Kit 2: 5.8 m²

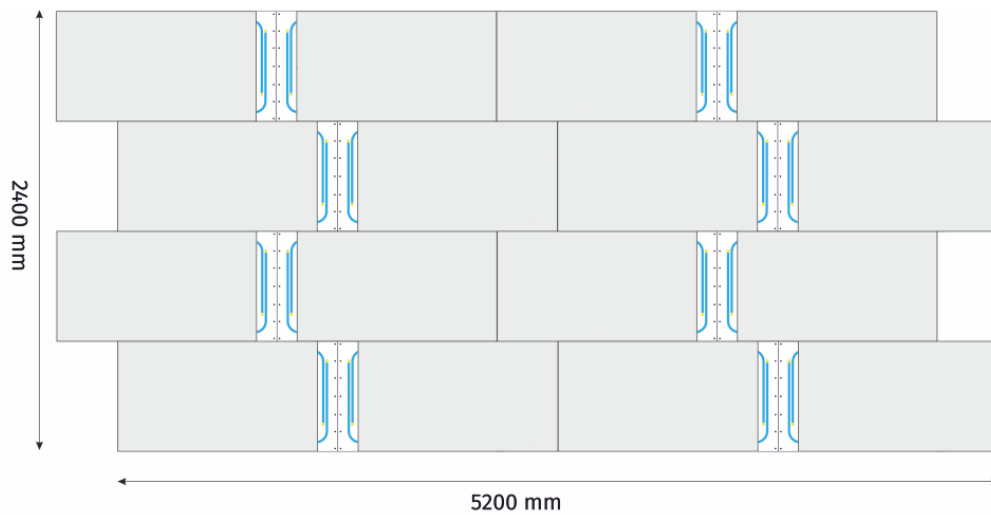


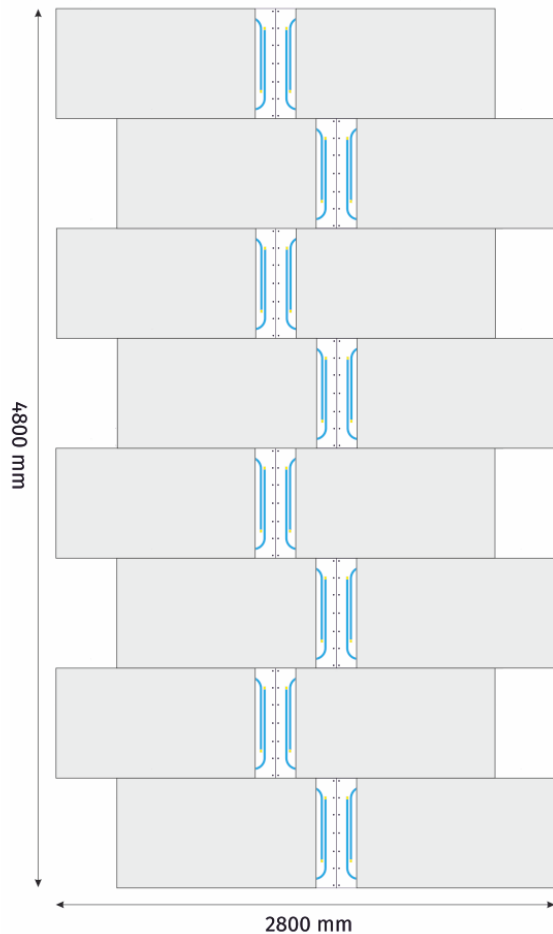


Kit 3: 8.7 m²



Kit 4: 11.6 m²





4 PREPARING THE INSTALLATION

As with other heating systems, the installation of FLEXIRO ceiling heating requires sufficient technical knowledge and skills. If necessary, have the installation carried out by a professional installer.

- The existing ceiling to which the structure is to be fixed must be capable of bearing an additional load of 17 kg/m².
- The substructure for the ceiling should preferably be made of drywall CD profiles and fixed to the existing ceiling in compliance with all drywall guidelines. The standard spacing of the CD support profiles must be 400 mm.
- Before installing the ceiling elements, determine the position of the temperature control box on the wall so that you know exactly where you need to lead the pipes.
- The arrangement of the heating system and the positioning of the temperature control box can be planned individually. There is no general solution here. Please ensure that the control valve can always be reached later. It must be possible to insert the pipe ends of the FLEXIRO connection hoses into the individual connections after installing the temperature control box. (Note the height from the floor).

5 INSTALLATION

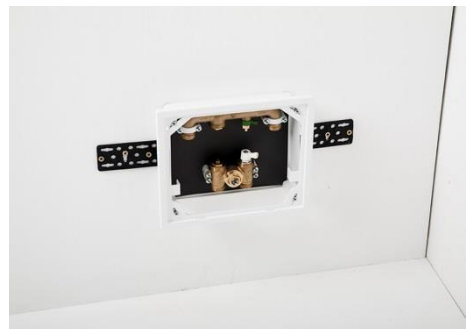
5|1 Installing the substructure to the existing ceiling

- A flat metal substructure is installed under the existing ceiling using basic and supporting profiles made of standard drywall construction CD profiles, cross connectors, vernier hangers and DU edge profiles.
- The substructure for the ceiling should be made of dry-wall CD profiles and be fixed to the existing ceiling in compliance with all drywall guidelines.
- The center spacing for the CD support profiles must be exactly 400 mm.
- To improve the reaction time of the ceiling heating, you can insert insulation material in the ceiling cavity. You can find suitable insulation material at specialist hardware or DIY stores.



5|2 Installing the temperature control box single room controller

- In order to provide efficient temperature control, the temperature control box should be positioned in such a way that the thermostatic head can detect the temperature of the indoor air and the air can freely circulate around it.
- The separately enclosed installation and operating instructions must be observed. (Included with the temperature control box).

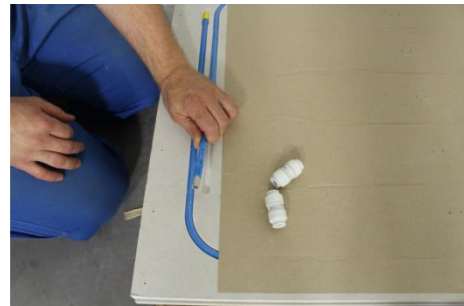
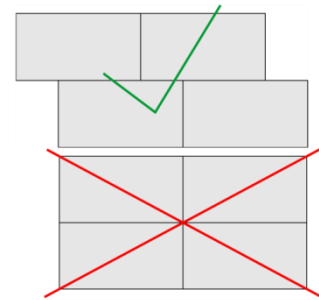


5|3 Preparing and installing the FLEXIRO ceiling elements

- Prepare a ceiling installation plan showing the exact arrangement of the individual FLEXIRO ceiling elements. Make sure you comply with the regulations for drywall construction. It is not permitted to form cross joints!
- The FLEXIRO ceiling elements are preferably placed in the middle of the overall ceiling surface. The edge areas are later closed with commercially available plaster-board (12.5 mm thick) as custom-cut panels.



- Groups of 4 FLEXIRO ceiling elements are connected together to form partial heating surfaces.
- Remove the FLEXIRO ceiling elements from the packaging. To prevent damage to the elements, please work with two people.
- The arrangement of the heating pipes can be seen on the back of the FLEXIRO ceiling elements. On the connection side (a short side of each element), remove the ends of the connection pipes from the transport position and also remove the dust caps.
- The FLEXIRO ceiling elements are mounted on CD profiles using drywall quick-fit screws. The arrangement of the screws is determined by the holes pre-drilled at the factory. Only in this position can damage to the FLEXIRO heating pipes be reliably avoided.
- In the ceiling cavity, use the plug-in connectors to connect the connection hoses for four FLEXIRO ceiling elements in series to form a partial heating surface. Make sure that support sleeves are fitted in all pipe ends before plugging them together.
- The connection hoses must be laid free of twists and with a bending radius of not less than 200 mm. Avoid kinking the pipes when bending the pipe ends. You can shorten the pipe ends if necessary. Use the FLEXIRO hose cutter or the FLEXIRO pipe cutter Classic for shortening the pipes. The pipe end must be burr-free and cut straight.
- Now connect the flow and return for the respectively first and fourth ceiling element with the 7000 mm-long connection hoses to the temperature control box.
- Cut out any kinks or damaged areas on the connection hoses. The pipe must be reconnected with a permanently tight coupling (see Plug-in connector under Accessories). The same procedure should be followed if the pipes have to be extended.



5|4 Connecting to the temperature control box

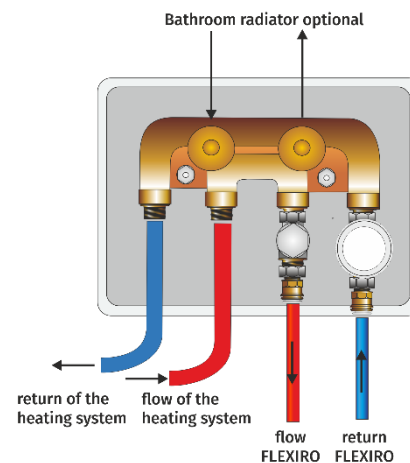
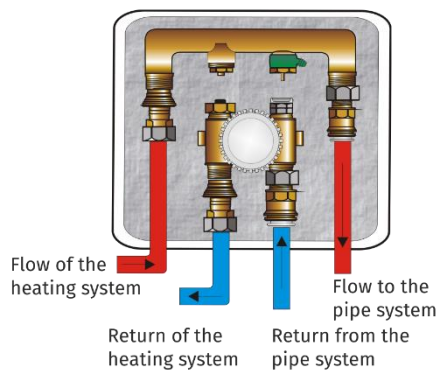
- The distributor arms are connected to the temperature control box using the Eurocone connector. The Eurocone has a self-sealing effect while the metal screw connection has a purely safety-related function. It is essential to avoid over-tightening as this would compromise the safety of the heating system.
- The following illustrations show the arrangement of the heating pipes in the temperature control box. The sequence of connections differs depending on the control box. The heating pipes are connected to the distributor arms using the simple plug-in assembly. The heating pipes, which have been cut straight and possibly shortened, are inserted directly into the plug-in connections of the distributor arms up to the stop.



Multibox 4K-RTL



Kompabox RTL



Creating the plug-in connection:

- Cut the heating pipe straight and burr-free.
- Insert the pipe up to the stop (approx. 20 mm).
- Note: The retaining element grips before it seals.
- Make sure that the pipe is inserted to the stop. The pipe is now in a fixed position.
- Pull the heating pipe to check that the connection is secure.

Note: The pipes must go vertically into the distributor and must not exert any tension or pressure on the connection box!

Separating the plug-in connection:

- Make sure the system is pressure-free.
- Press the retaining element against the front of the housing. Now the pipe can be easily removed by pulling.

The distributor arms supplied can be installed without tools.

5|5 Connecting to the heating system

- Make sure that the flow and return lines are correctly connected in the temperature control box. Mixing up the flow and return lines in the temperature control box will disable the thermostatic valve and even prevent the flow through the FLEXIRO ceiling heating system.
- As a rule you should be able to integrate your FLEXIRO ceiling heating system into the existing heating system in parallel.
- To do this you will need to insert T-pieces (not supplied with the FLEXIRO kit) into the flow and return lines for the heating system.
- Pipes (not included in the FLEXIRO kit) should be routed from the respective T-pieces for the flow and return lines to the inlet of the temperature control box and connected there by means of a suitable transition screw connection. Suitable transition fittings for different pipe qualities and dimensions can be found as accessories in the FLEXIRO webshop or in specialist hardware stores.



5|6 Pressure testing the heating system

Make sure that the system and all associated components are correctly installed before putting the ceiling heating system into operation. Although it is a new product, it must still be initially tested according to the following procedure:

- Close the flow and return valves in the heating system.
- Rinse the heating circuit until the water in the return line no longer contains any air bubbles.
- Then pressurize the system with 10 bar for at least 10 minutes.
- Check the pipe system and all connections for leaks.
- Depressurize 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 at the FLEXIRO Shop:
flexiro.de/en/product/d/86/pressuretestpump.

Please note that the manufacturer cannot guarantee that the heating system permanently functions unless a pressure test is carried out.

5|7 Testing the ceiling heating system

Make sure to carry out a test run before casting the pipe system. This is the last opportunity to correct installation errors or repair damages.

- Unless you have pre-filled the wall elements, the pipe system fills itself via the heating system. When using the Multibox 4K-RTL, venting the pipe system directly via the vent valve is possible and advisable.
- Now fill the heating system and restore the operating pressure of your system.
- Check the tightness again.
- Check the pipe system and all connections for leaks.
- Completely open the thermostat valve on the temperature control box and check whether all areas and heating circuits in the FLEXIRO underfloor heating system become warm.



5|8 Closing the ceiling surface

The gypsum plasterboard panels for closing the edge areas of the ceiling to the adjoining walls must have a panel thickness of 12.5 mm. The joints with the adjacent building components must be flexible so that the heating surface does not crack as a result of the expansion movements caused by heat. Please follow the manufacturer's instructions.

- The inactive gypsum plasterboard should be cut to size in accordance with the manufacturer's instructions.
- When the complete ceiling surface is closed, the joints between the panels should be filled. Use suitable joint cover strips and smoothing compounds in accordance with the gypsum plasterboard manufacturer's instructions.
- The junctions with the adjacent building components should be sealed with elastic joint sealants.



Further information on drywall construction work and the heating installation:

We once again point out the need to comply with laws, ordinances, guidelines and standards when planning and installing heating systems and executing drywall construction work.

The following **manufacturers of drywall construction materials** offer corresponding products on the market and will provide you with further information:

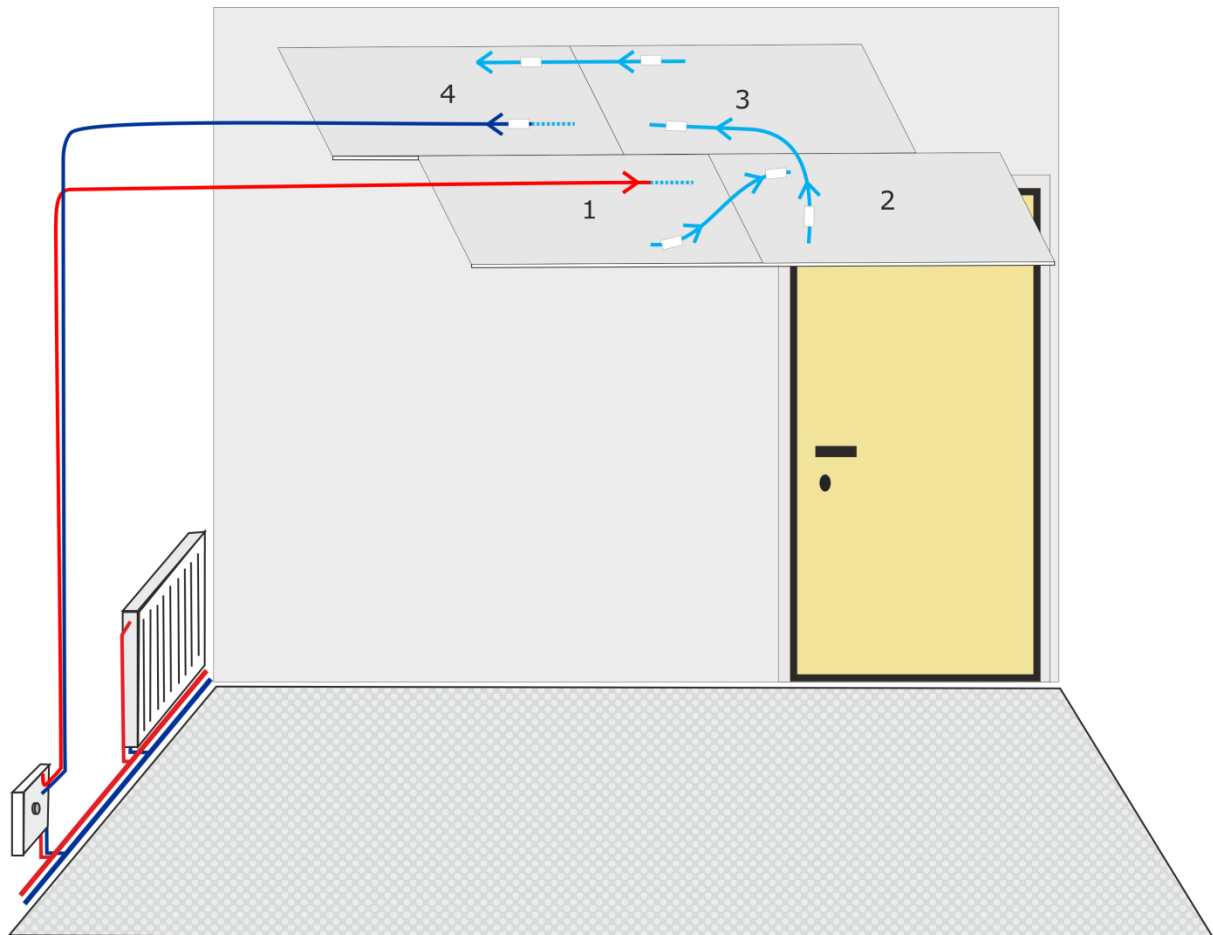
- Knauf
- RIGIPS
- SINIAT

You can also obtain detailed information from specialist hardware or DIY stores.

5|9 Commissioning (heating up process)

- After completing the installation and once the joint fillers, paints and surface coverings have naturally dried out, the heating can be put into operation.
- The desired surface temperature is set on the temperature control box during the first hours of operation by turning the thermostatic valve head. The FLEXIRO ceiling heating is a radiant heating system. The sense of warmth is very direct. Adjust the temperature according to your sense of comfort and not according to the value you read on a thermometer. This enables you to save heating costs and still feel comfortable.

5|10 Installation drawing



FLEXIRO ceiling heating, four ceiling elements = one partial heating surface



It can't be easier

FLEXIRO ceiling heating drywall panels

Kit selection, prices and technical specifications at:
flexiro.de/en/wall-heating-drywall



Questions? Service hotline +49 30 474 114 33
(weekdays 8 am – 4 pm)