

Control technology



Control technology

Innovative solutions
for energy efficiency and comfort



EMPUR® surface heating systems

Increased comfort and efficiency



The decision to install surface heating is a sensible decision for increased comfort, economy and sustainability. Surface heating systems are ideal for combining with modern heat generators and regenerative sources of energy.

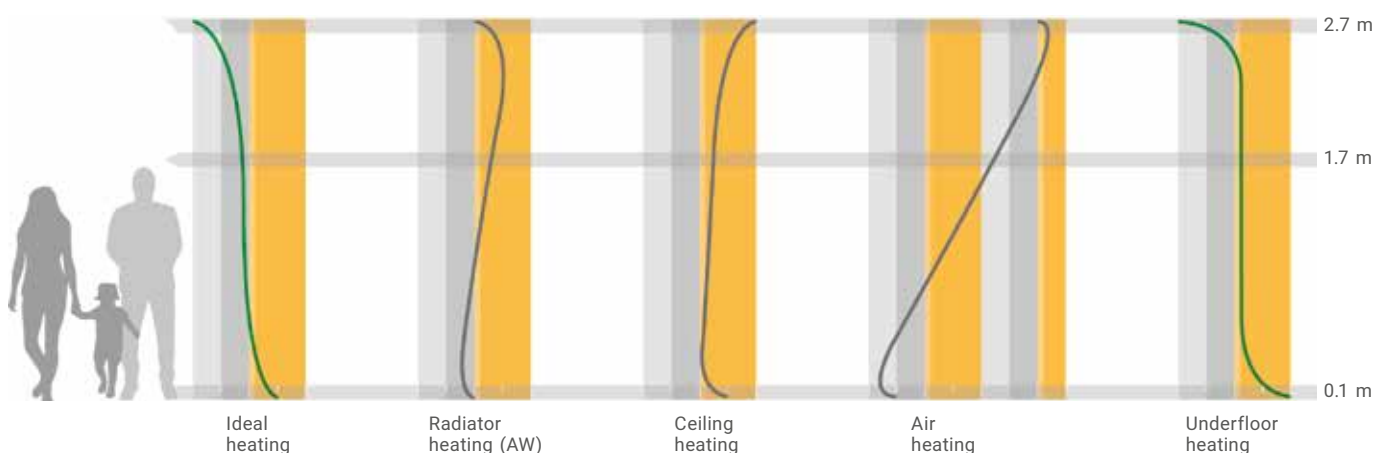
Mild heat radiation from the bottom up creates an increased sense of wellbeing. As a heat source with a large surface area, it can make an exceptional contribution to lowering energy costs at low flow temperatures. In this way, it also makes a significant contribution to sustainability and to protecting the environment.

Underfloor heating is also especially suited to people with allergies, as the heat rises across the entire room and hardly swirls up any dust across the large surface area. It affords the client completely new design possibilities without any visible radiators and increases the building's value in the long term.

Surface heating systems are also being used more and more in modernisation projects. Particular requirements, for example installation height, load capacity, weight, insulating properties and sound absorption can be guaranteed alongside efficient heating.

Surface temperatures

Temperature curve progression: Comparison of "ideal heating" with an underfloor heating system



EMPUR® surface heating systems

Quality "Made in Germany" from one source



EMPUR® Produktions GmbH is a producer and full-range retailer of innovative, high-quality panel heating systems and has the right solution for every requirement:

- Surface heating/cooling systems for floor, walls and ceilings
- Systems without additional installation height or with minimum installation height for modernisation
- Diverse systems with composite panels and additional insulation for new buildings in the private, municipal or industrial sectors
- System accessories and tools
- High-quality heat distribution and drinking water systems
- Innovative control technology



The company manufactures over 90% of the system components in its own production and under its own responsibility on modern equipment at our site in Buchholz-Mendt. We work under a structured quality management system, which is certified by DEKRA in accordance with the DIN EN ISO 9001:2015 international standard.

In the interests of the most objective and neutral product evaluation possible, EMPUR® subjects its products to material testing and certification by nationally recognised testing institutes and assessment centres. High quality, continual and pioneering product developments, technical advice and support, a three-level distribution network across Germany, reliable services, as well as specialist training for wholesalers, specialised craftsmen and planners make EMPUR® a competent partner in the heating industry.

The technical information in this brochure represents the state of our knowledge and experience at the time of printing. Unless expressly agreed, however, it does not constitute assurance in the legal sense. The level of experience is constantly evolving. The latest edition of this brochure should always be used. The product applications described may not take into account special conditions in an individual case. Here, suitability for the specific application purpose must be checked. Our products are delivered exclusively on the basis of our general conditions of sale and delivery.



Control technology

Energy efficiency and comfort



Control technology

Energy efficiency and comfort



The task of control technology is to ensure that the under-floor heating brings the rooms to a certain temperature set by the consumer and that this temperature is maintained constantly for the desired period of time. The technology continuously measures the temperature, compares it with a predefined value and automatically adjusts it in the control loop should a deviation be detected.

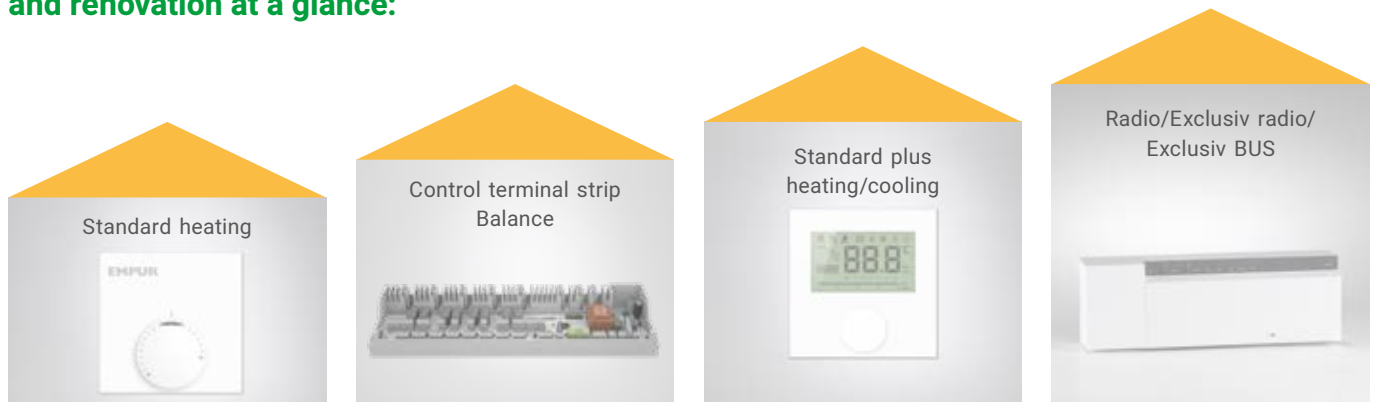
With the latest generation of our room control technology systems, you can maximise both energy efficiency and user comfort. EMPUR® offers innovative and perfectly matched control components as an ideal addition to versatile surface heating systems. We offer cable-bound standard solutions for conventional surface heating, as well as solutions for heating/cooling applications with heat pumps depending on

the type of application and installation. The modular control system offers individual solutions for new builds and renovation projects.

In the case of **retrofitting or modernisation**, mostly radio variants are used, which can be combined with modern heat generators. The Exclusiv control technology (radio/BUS) also offers the option of controlling your heating system via smartphone or PC.

The individual product ranges are supplemented using control terminal strips, which – depending on the equipment – can also control a circulation pump. Humidity monitors, digital room control units with connection option for floor sensors and integrated weekly timers complete the range.

Our control technology for new builds, modernisation and renovation at a glance:



Control technology

Standard heating



Standard heating

For **needs-oriented, energy-saving individual room control with precision control accuracy**, we offer reliable modules – even with our standard solutions – which control your surface heating according to your requirements. They are used both in new builds and in modernisation projects.

In addition to **high-quality materials** and a **modern design** that blends harmoniously into the interior design of your home, these also offer the advantage of **intuitive operation**. The desired room temperature can be conveniently set using the dial operation. Installation on flush-mounted boxes or directly on the surface is also very straightforward.

Our standard solutions are perfectly suited as a stand-alone solution for retrofitting underfloor heating in individual rooms.

Your benefits

- From surface heating systems to manifold and control technology – all system components from a single source
- **Simple installation** and intuitive operation
- **Precision control accuracy and energy saving**
- **Ideal for retrofitting underfloor heating (in one room)**
- Modern design of the room control units and thermostats
- Room control units with frost protection and a set point adjuster with bar display
- Control terminal strips for 6 or 10 heating circuits, for wall or “top hat” rail mounting
- The current-free and closed connection of actuators is possible
- Versatile system expansion options through specially adapted accessories



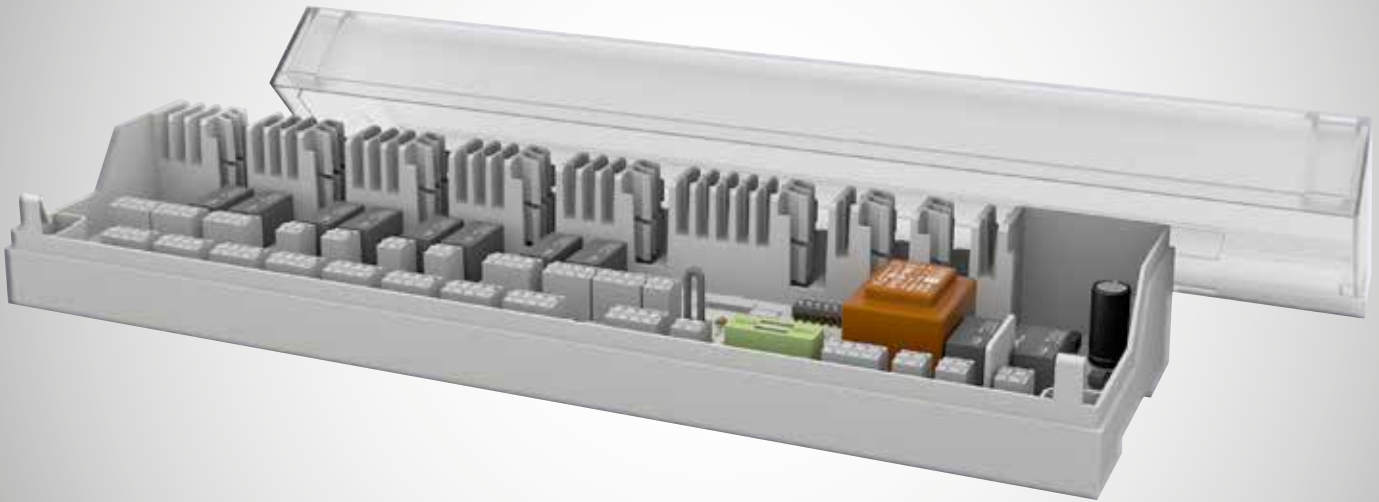
Regulator terminal strip 6 or 10 zones 230 V



Actuator „Economy“ 230/24 V



Actuator „Man Open“ 230/24 V



Balance control terminal strip

The **Balance control terminal strip** is the **intelligent individual room control** for maximum convenience and energy efficiency in surface temperature control in combination with our brass manifolds version 2.0 and the stainless steel manifold series 03.

The Balance control terminal strip with **integrated, TÜV-certified "automatic hydraulic balancing"** carries out the balancing completely independently without using additional hardware or software and is therefore eligible for funding. The system's control characteristics ensure automatic balancing of the flow rate at the manifold in the connected heating circuits and is therefore at least equivalent to manual hydraulic balancing according to the TÜV certificate.

Use funding!

With the Balance control terminal strip, the applicant has a very simple option with which to apply for funding. For this purpose, after completion of the measures, only the following text is added to the VDZ (Association of the German Central Heating Industry) form as part of the verification:

„The hydraulic balancing of the surface temperature control was carried out with an automatic TÜV-certified system (certificate no.: AHBHS_268065243 and test mark number: 72544).“



Your benefits

- Integrated TÜV certified **"automatic hydraulic balancing"**
- In combination with **standard heating room control units**, the Balance control terminal strip also supports the **cooling function** by inverting the input signals
- All 230 V NC thermal actuators can be used
- Simple, intuitive installation and operation without additional components (sensors)
- Meets legal requirements (GEG), **eligible for BAFA funding**
- Automatic calibration begins approx. 30 minutes after the operating voltage is applied and after the controller inputs are detected
- **Operating status display by LEDs** for each heating zone, cooling changeover function (CO), mains voltage input, fuse as well as pump and boiler relay output
- **Change Over Signal (CO)** for heating/cooling changeover (external potential-free normally open contact)
- "Lock cooling" function can be individually set for each heating zone via DIP switch
- Heat generator and **pump control (pump logic function)** via switching contacts
- Dew point sensor or safety temperature monitor connection (potential-free normally closed contact)
- Lowering channel for control via external timer signal
- Can be used in refurbishments as well as new buildings and can be easily retrofitted in existing systems

Control technology

Standard plus heating/cooling



Standard plus heating/cooling

All standard functions can also be put in place with our latest heating/cooling control technology. However, there is **an additional option to cool the rooms instead of heating them.**

In our product range, you will find an analogue room control unit available in a sleek white housing and with a dial operation, also available as a public building model, as well as a more exclusive version with a large, language-neutral display. Both devices win users over thanks to their high-quality processing and timeless, attractive design.

Your benefits

- From surface heating systems to manifold and control technology – **all system components from a single source**
- **Heating and cooling function** possible with one controller
- **Set point temperatures freely definable**
- **Simple installation and intuitive operation**
- **Modern design** of the room control units and thermostats
- **Precision control accuracy and energy saving**
- **Ideal for retrofitting underfloor heating**
- The devices **can be operated intuitively** and use internationally understandable symbols in their navigation. **Various user settings** are possible, such as day and night temperature, automatic mode, holiday function or child lock. The components can also be used when retrofitting underfloor heating in individual rooms.
- The set points for different modes can be freely defined. The system's efficient operation is possible with an input for a time-controlled reduction of the room temperature.
- Analogue room control units with frost protection, set point adjuster with easy-to-read scaling and changeover input (heating/cooling switchover)
- Room control units with display and room temperature indicator, time, switching programs, changeover input (heating/cooling switchover) and connection possibilities for the external sensor
- Control terminal strips for 6 or 10 room control units and up to 18 actuators, for wall or "top hat" rail mounting, available in a 230 V or 24 V design
- Versatile system expansion options through specially adapted accessories

Control technology

System components Standard plus heating/cooling



Room operating unit 230/24 V analogue
Standard plus heating/cooling



Room operating unit 230/24 V Display
Standard plus heating/cooling



Room sensor 230 V public building model



Cover frame



Humidity monitoring with internal sensor



Dew point monitor 230 V



Dew point sensor Typ 2 for Dew point monitor
230 V



Dew point sensor Typ 3 for Dew point monitor
230 V



Regulator terminal strip 6 or 10 zones
230/24 V Standard plus heating/cooling



Actuator „Economy“ 230/24 V



Actuator „Man Open“ 230/24 V



DDC actuator 24 V

Control technology

Radio, Exclusiv radio and Exclusiv BUS



Control technology

Radio, Exclusiv radio and Exclusiv BUS



Radio, Exclusiv radio and Exclusiv BUS

Our Exclusiv control technology is the **intelligent individual room control solution of the future for maximum convenience and energy efficiency in surface temperature control**. With this state-of-the-art technology, you also have the option of controlling your heating system even when you are not at home.

The 868 MHz radio technology ensures safe, bidirectional communication between the assigned room control units, base stations and connected actuators with a minimum radio load. **The control systems can communicate perfectly over several floors using a serial bus connection (sys-BUS)**. An **Ethernet interface** allows you to operate, program

and set up the control systems room by room with ease. Visualisation is also possible – via your PC, laptop, touchpad or smartphone.

By opting for a holistic setup, you have **access to all heating and cooling applications**. Numerous inputs and outputs, as well as measurement, control and regulation functions, guarantee optimum, energy-efficient interaction with external devices and systems. The key areas of application for the system are single- and multi-dwelling buildings, functional and administrative buildings as well as hotels and schools with central management requirements.

Your benefits

- From surface heating systems to manifold and control technology – **all system components from a single source**
- **Secure communication** between the system components via radio or BUS, even over several storeys
- **Up to 20% energy savings** thanks to intelligent control – adjustability per zone allows the parallel control of different heat sources side by side
- High-quality materials for a functional and timelessly elegant design, thus its harmonious integration into the room architecture
- **Intuitive operation, central programming and simple initialisation**
- Versatile parameterisation options as the basis for the optimal energy management of heating and cooling applications
- Various inputs and outputs for interaction with external devices/systems
- **Individual configuration options** for the heating zones
- LC display with information on operating states and functions
- Optional Ethernet interface for visualisation, programming and remote maintenance via PC or smartphone
- Customer-specific hardware and software solutions for each type of installation
- **Interesting user functions** such as Smart-Start technology, holiday function, party function etc.
- Universally applicable for single- and multi-dwelling buildings, functional and administrative buildings as well as in hotels and schools

Control technology

System components Radio, Exclusiv radio and Exclusiv BUS



Wireless base station 230V 868MHz, alternativ with Ethernet connection



Wireless base station 230V 868MHz for one room control unit and one actuator



Wireless room control unit/BUS with display



Analogue wireless room control unit/BUS without display



Radio room sensor/BUS (authorities' model)



Humidity monitoring with internal sensor



Humidity monitoring with external sensor



Repeater with power adapter



Active external antenna



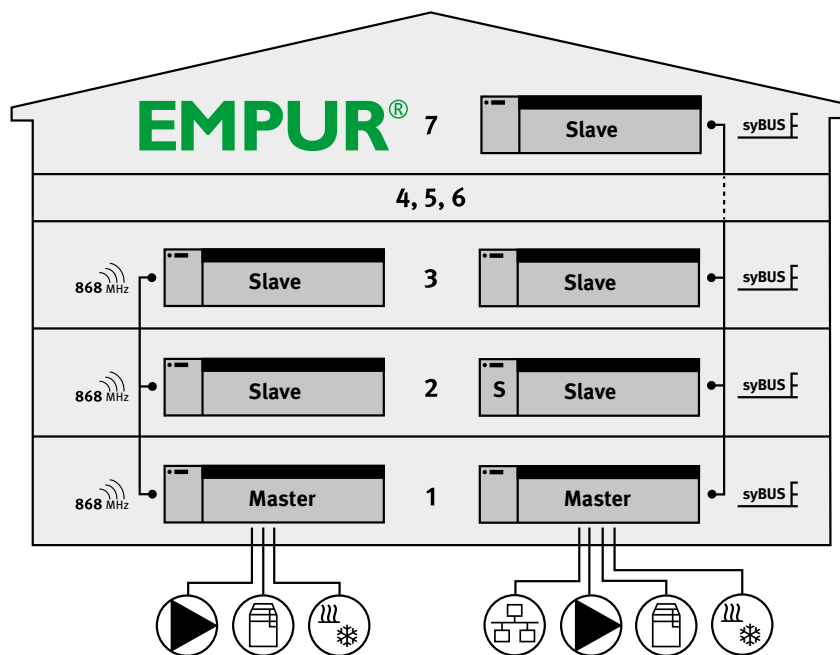
Dew point monitor 230 V



Dew point sensor Typ 2 for Dew point monitor 230 V



Dew point sensor Typ 3 for Dew point monitor 230 V



Base stations

- Connection of up to 12 room control units and 18 actuators
- Status displays via LED (9 system LEDs/1 LED per zone)
- Various control algorithms are adjustable per heating zone
- Exclusiv radio variant with Ethernet interface
- Connection for up to 7 base stations via radio or BUS
- System can be configured by specialist tradesmen or on-site
- Lowering of the temperature room-by-room via an integrated system clock or centrally via an external switching signal
- Various modes of operation preconfigured (frost protection, heating, cooling, ECO, automatic, emergency operation)
- Pilot function for heating/cooling
- Boiler output
- Dew point monitoring
- Configurable valve protection function at all outputs
- Integrated, configurable pump module with pump protection function
- Connection for a safety temperature limiter
- Accessories such as external antenna or repeater

Use funding!

With the Exclusiv control technology radio/BUS, the applicant has a very simple option with which to apply for funding. For this purpose, after completion of the measures, only the following text is added to the VDZ (Association of the German Central Heating Industry) form as part of the verification:

„The hydraulic balancing of the surface temperature control was carried out with an automatic TÜV-certified system (certificate no.: AHBHS_12575199 and test mark number: 72544).“

Room control units

User

- Functions: day, automatic, period of presence, ECO mode (night status), party function, holiday function with date indication
- 4 pre-set lifestyle time programs
- Target room temperature adjustment range can be limited
- Date and time with automatic summer/winter time changeover
- Information about battery status
- Switch-off of controller (automatic frost protection activation)
- Activated lock prevents access in public buildings

Specialised trade

- Selection of the type of heating (control according to 2-point or PI behaviour can be selected for each heating zone)
- Active switching heating/cooling can be activated
- Frost protection temperature can be adjusted
- Heating/cooling can be locked
- Pump/boiler output can be configured
- Smart start function



Control technology

Additional system components



Manifold technology

As almost all EMPUR® components are manufactured in-house, we offer you optimum solutions for various applications, including in the field of manifold technology, as an ideal supplement to surface heating systems. We can even create special solutions from brass and stainless steel for client-specific requirements.

Our latest manifold generation offers a significantly reduced assembly effort for specialised craftsmen in combination with the EMPUR® manifold cabinets. With the specially developed **quick manifold assembly technology**, the manifolds are simply suspended in the guide rails of the manifold cabinet and fixed using two fillister head screws.

Thanks to extensive manifold accessories, we enable the right connection in every situation for a perfectly adapted system – ranging from connection sets and heat volume measurement sets to line regulating or zone valves, pointer thermometers and restrictors.

Give us a call. We'd be pleased to advise you!

We manufacture individual complete manifold solutions on request!
You can find detailed information in our Manifold technology brochure.

Control technology

Our systems at a glance



Intelligent solutions for energy efficiency and comfort

Our components and accessories are optimally adapted to EMPUR® surface heating and cooling and take into account all the requirements of our diverse systems. This provides specialist tradesmen and building services planners with security and reliability in the professional design of a new heating and cooling system in new buildings or modernisation projects, as well as providing end users with the highest level of living comfort and a large potential for energy savings thanks to low flow temperatures.

Our systems at a glance

- **PUR-THERM® stapler system** – exceptional adhesion using staples
- **Exclusiv-Klett system** – perfect hook and loop technology and quick laying
- **top-Nopp® nub system** – laying using the press stud method
- **OPTIMAL II dry construction system** – for quick construction progress
- **CUT-THERM® milling system** – without additional installation height
- **top-Nopp® mini nub system** – for low installation heights
- **Wall heating/cooling** – different systems for drywall or wet installation
- **Ceiling heating/cooling** – for a comfortable Indoor climate all year round
- **XXL-Industry/concrete core temperature control** – efficient temperature control for large areas
- **Sports floor heating** – the solution for sports facilities

Further information about our surface heating and cooling systems can be found at our homepage or in personal consultation with your specialist consultant.



Your specialists for surface heating and cooling systems

Expertise, reliability and commitment are **EMPUR®**'s strengths. In addition to the production and sale of high-quality surface heating and cooling systems and components, the company's range of services also includes comprehensive services relating to the planning and installation of our complete systems.

EMPLAN®'s specialist engineers and planning consultants are available to help you with their expertise in demanding property planning in almost all TGA areas such as heating, air conditioning, ventilation, plumbing and electrical.

We have bundled our many years of experience in the installation of surface heating and cooling systems into our **EMSOLUTION®** and support tradesmen to complete their construction projects on time.

EMPUR®, **EMPLAN®** and **EMSOLUTION®** together form the **EMGRUPPE®**. Thus, the three core areas of expertise – production, planning and installation – come from a single source.

TBE . PLANNING . CONCEPTS

EMPLAN®

- Planning surface heating and cooling systems for new builds, modernisation projects and customised solutions
- Project planning for heating, ventilation and air conditioning applications, electrical engineering and swimming pool technology
- Creation of performance specifications
- Planning and designing Geniax projects
- Energy planning and assessment of residential and non-residential buildings (EnEV/GEG certificates)
- Construction supervision for technical building systems

www.em-plan.net

TBE . PRODUCTION . SALES

EMPUR®

- Plastic heating pipes, insulation and composite panels for surface heating and cooling systems for new builds and modernisation projects
- Manifold and control technology
- Geniax heat distribution systems
- Accessories and tools
- Customised solutions for industrial, sports and commercial buildings

www.empur.com

TBE . ASSEMBLY . SERVICE

EMSOLUTION®

- Installation of surface heating and cooling systems in new build and modernisation projects
- Installation of the CUT-THERM® milling system
- Commissioning of Geniax heat distribution systems and heat pump systems
- Service for technical building installations

www.em-solution.de