



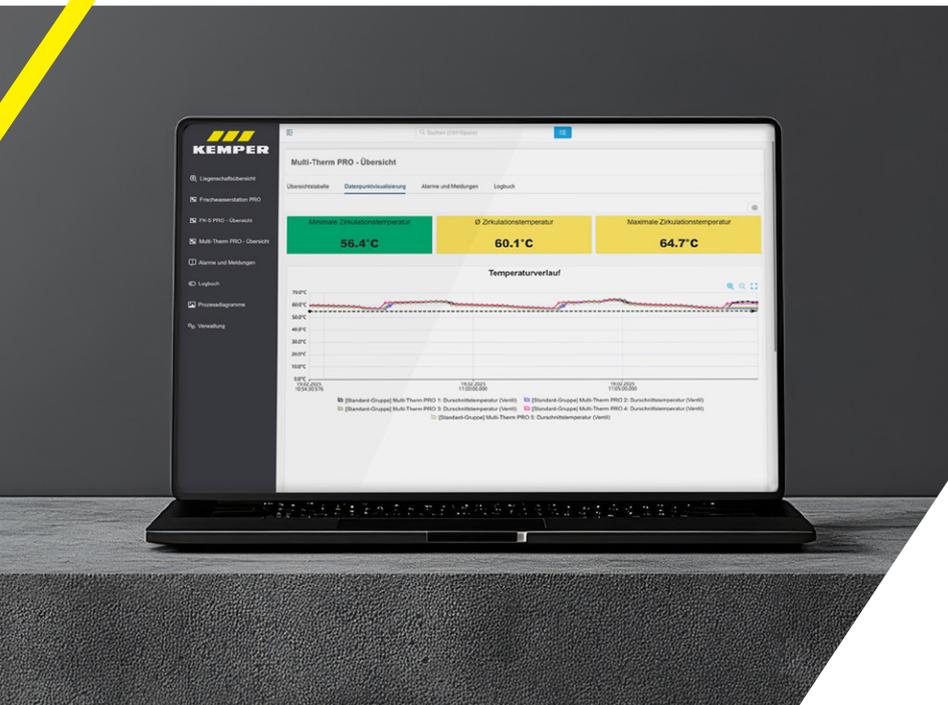
BALANCING VALVES

The complete solution for hydraulic
balancing in hot water circulation systems


KEMPER
DRIVING PROGRESS

Danger zone hot water

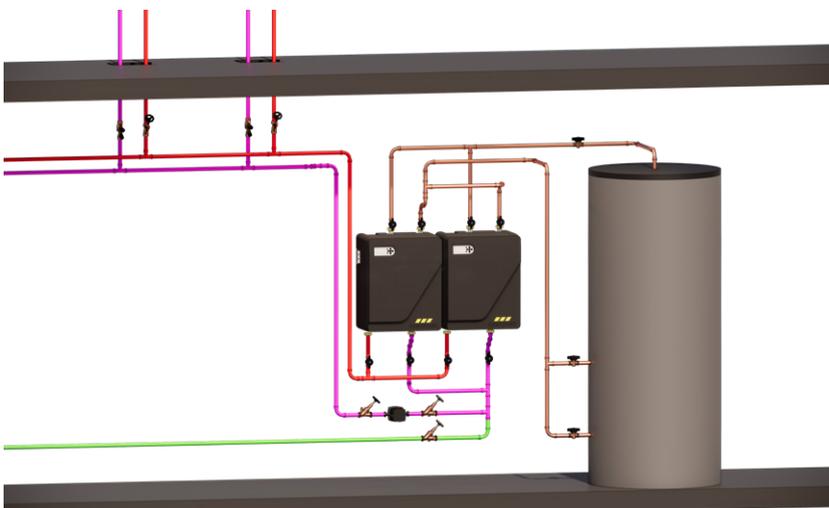
Protecting drinking water systems from *Legionella* bacteria



To reduce the growth of *Legionella* bacteria in domestic water installations, maintaining drinking water temperatures is of particular importance. For this reason, the required temperatures must be continuously maintained at the hot water heater outlet.

With the exception of hot water systems that fall under the the 3-litre rule of DIN 1988, the heat losses in the hot water network must be compensated by circulation systems when not in use. Hydraulic balancing in the hot water circulation system is a prerequisite for a functioning hot water system. A correctly sized circulation system ensures that temperatures do not permanently fall below the required levels at any point in the hot water system.

Drinking water hygiene must be taken into account when sizing hot water heating, distribution and circulation systems. Circulation systems must therefore be sized not only under consideration of functional and economic aspects, but also from the point of view of drinking water hygiene.

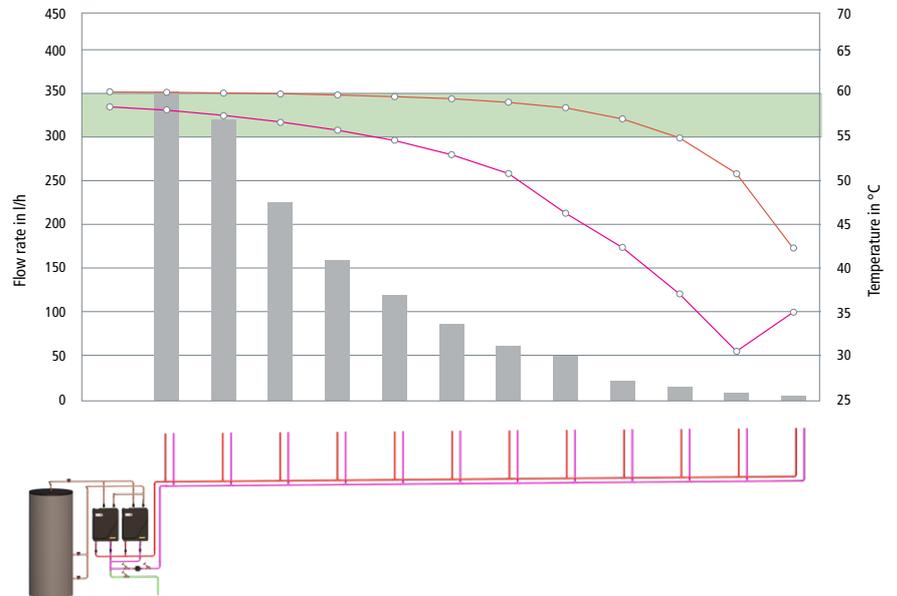


Schematic diagram of a circulation system (temperature conditions with hydraulic balancing)

Hot water circulation systems

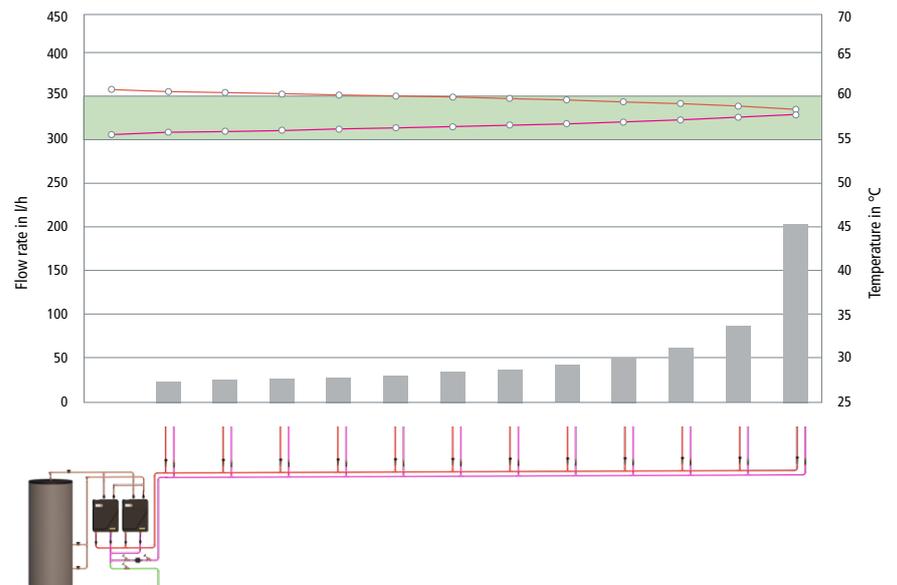
The need for hydraulic balancing

The circulation flow rate must be able to transport the amount of heat that is lost to the environment through the surface of the pipework. This means that a specific preset temperature range can be maintained only if a state of equilibrium can be ensured at all points in the circulation system. This hydraulic balancing of a circulation system is therefore a fundamental prerequisite for its correct functioning. If hydraulic balancing is not effected, the flow rates and thus also the temperatures of the currently calculated case cannot be achieved in the plant in question!



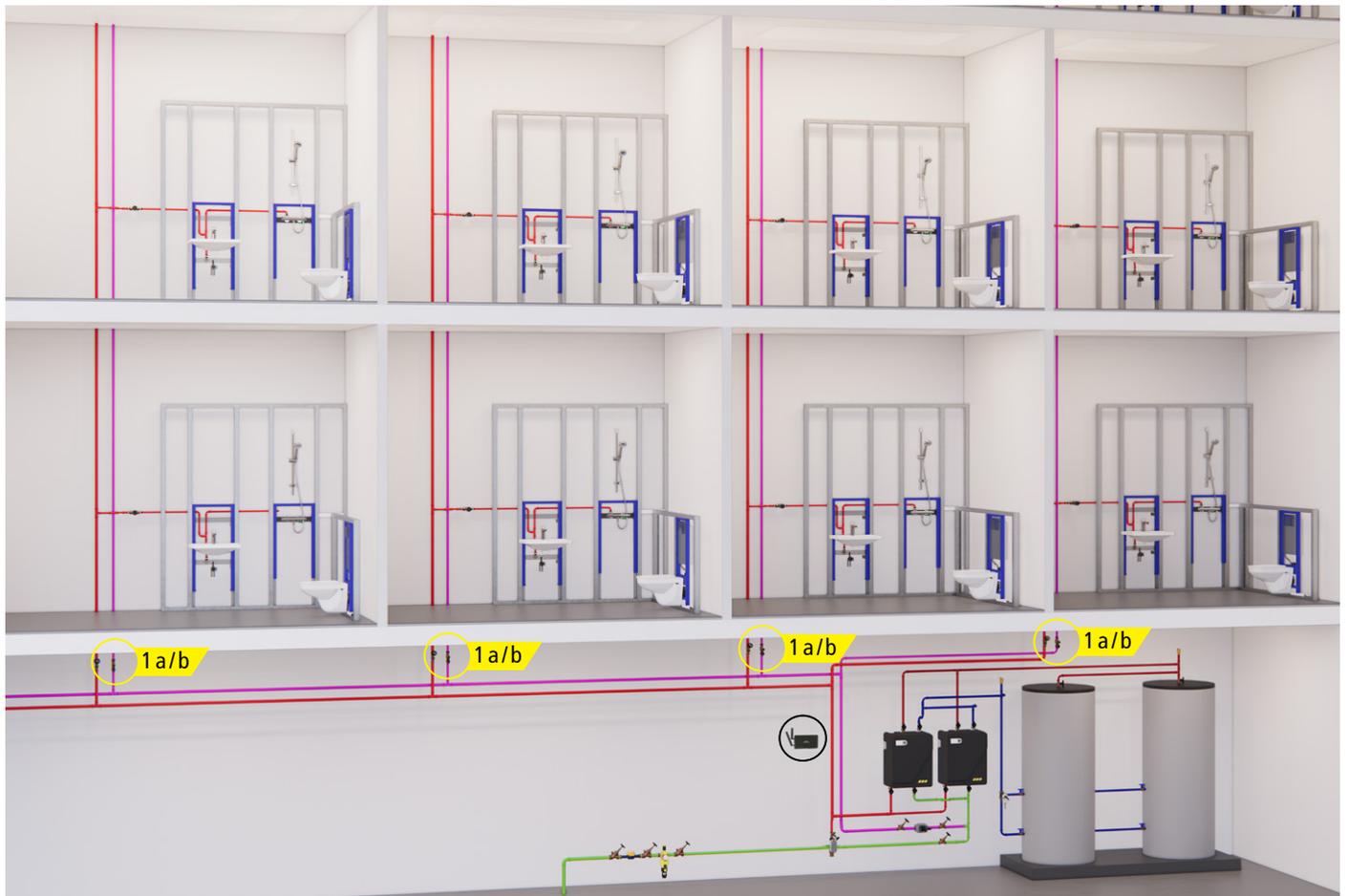
Flow rate distribution and temperature curve in a circulation system without hydraulic balancing

In the pressure-loss calculation, the available pump pressure must be "consumed" as far as possible in each of the plant's circulation circuits, taking into account minimum internal diameters and maximum allowed velocities. The difference remaining in the pressure-loss calculation between the available pump pressure and the calculated pressure losses of the pipework must be throttled. Circulation balancing valves are used for this.



Flow rate distribution and temperature curve in a circulation system that is hydraulically balanced by static balancing valves

Hydraulic balancing for circulation in risers and floor distribution pipes



Schematic diagram of a circulation system with circulation in the riser



1 a MULTI-THERM thermostatic circulation balancing valve, Figure 141 0G



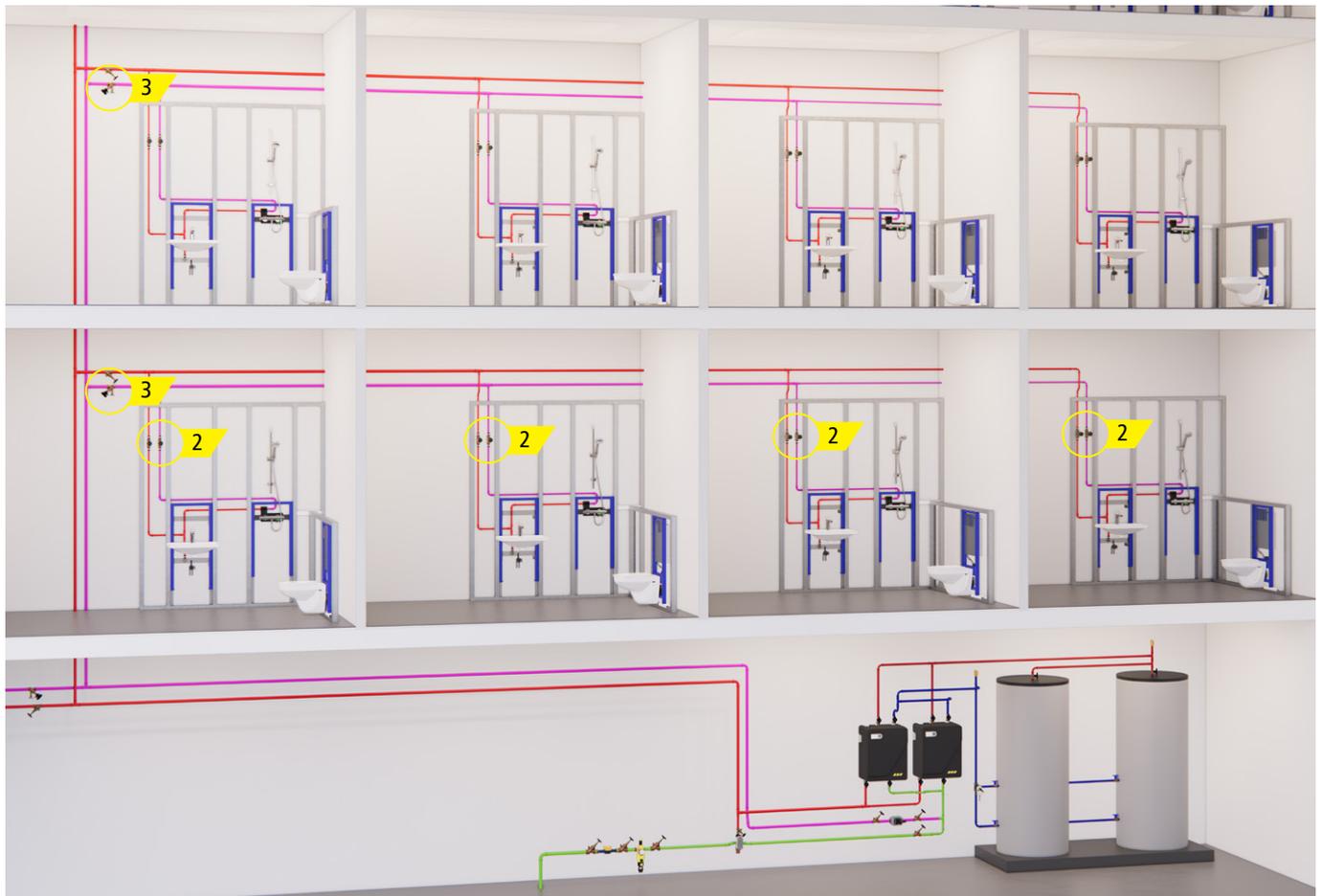
1 b MULTI-THERM PRO digital circulation balancing valve, Figure 144 0G



PRO WaterManager with LPWAN Figure 111 01 001

- 1a MULTI-THERM (page 7)
- 1b MULTI-THERM PRO (page 8)
- 2 ETA-THERM (page 12)
- 3 MULTI-FIX-PLUS (page 14)

Hydraulic balancing for the smallest circulation circuits



Schematic diagram of a circulation system that circulates the water to each tap and is hydraulically balanced via two balancing stages.



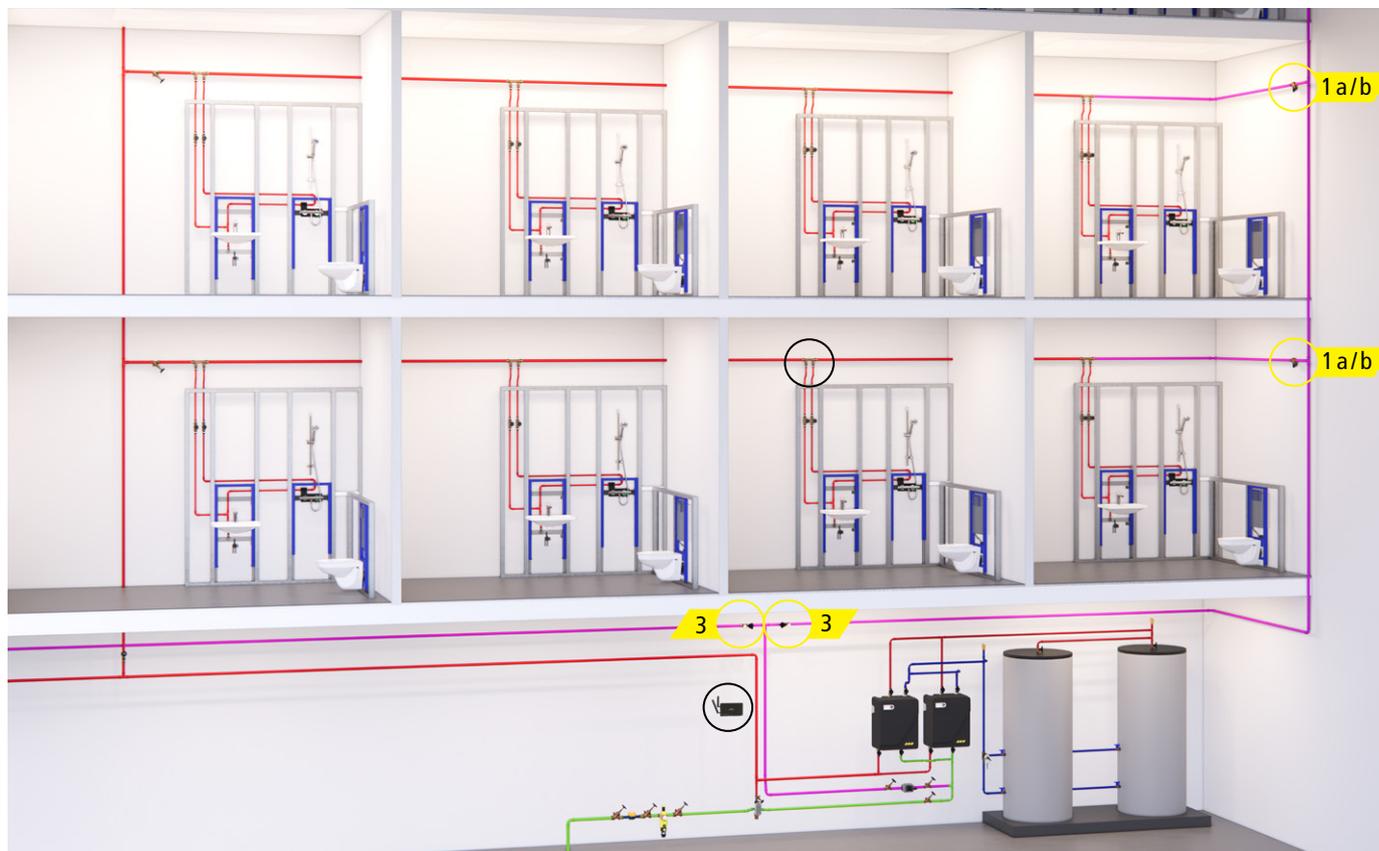
2 ETA-THERM thermostatic balancing valve, Figure 130 or Figure 540



3 MULTI-FIX-PLUS static balancing valve, Figure 151 06

Combination of static and thermostatic
 With multi-stage adjustment, it is important to note that there must always only be one thermostatically controlled valve in a circulation circuit. In order to maintain valve authority, only the first valve in the circulation circuit may be a thermostatic balancing valve.

Hot water pipework with circulation up to every tapping point with Flow-Splitters & MULTI-THERM / MULTI-THERM PRO



Schematic diagram of a circulation system as a floor distribution pipe in combination with a Flow-Splitter for bathroom circulation



1 a MULTI-THERM thermostatic circulation balancing valve, Figure 141 0G



1 b MULTI-THERM PRO digital circulation balancing valve, Figure 144 0G



3 MULTI-FIX-PLUS static balancing valve, Figure 151 06



KHS Flow-Splitter Figure 650 00



PRO WaterManager with LPWAN Figure 111 01 001

- 1a MULTI-THERM (page 7)
- 1b MULTI-THERM PRO (page 8)
- 3 MULTI-FIX-PLUS (page 14)

1 a

MULTI-THERM

thermostatic balancing valve

The all-rounder for hydraulic balancing



Figure 141 0G
(dial thermometer and drain valve
available as optional accessories)

The use of thermostatic balancing valves can significantly reduce the amount of work involved in adjustment measures! With the MULTI-THERM thermostatic balancing valve, hydraulic balancing can easily be implemented in a "classic" two-pipe circulation system in the riser.

MULTI-THERM is so versatile!

MULTI-THERM combines several functions in one valve: monitoring the temperature and precise balancing, shutting off, draining and temperature control. In addition to its normal operating range, MULTI-THERM also automatically supports thermal disinfection at temperatures above 70°C. Furthermore, MULTI-THERM can be easily upgraded in existing installations to MULTI-THERM PRO – a genuine leap in technology (for further information see page 11).

Benefits at a glance

- // Shutoff and temperature monitoring in one bonnet
- // Automatic control range adjustment with thermal disinfection
- // In proven gunmetal quality, resistant to aggressive water – alternatively in stainless steel
- // Free from dead spots
- // Can be optionally fitted with electronic temperature sensor for building management systems
- // Suitable for digital upgrade to Multi-Therm PRO (with wireless control module PRO, figure number 144 01 000).

Figure	Article designation
141 0G	MULTI-THERM, made of gunmetal, male thread, DN 15–25
143 00	MULTI-THERM, made of gunmetal, female pipe thread, DN 15–25
143 22	MULTI-THERM, made of gunmetal, MAPRESS press connection, DN 15–20
041 0G	SST MULTI-THERM, made of stainless steel, male thread, DN 15

1b

MULTI-THERM PRO

digitises hot water circulation



Figure 144 0G (with MPT)
Figure 144 00 (with FPT)

MULTI-THERM is a real success story: The most reliable circulation balancing valve on the market has been setting the standard for the hydraulic balancing of risers and floor distribution lines in the hot water circulation systems since 1997. Thanks to advanced engineering with a thermostatic element, MULTI-THERM ensures reliability, safety and great customer satisfaction in countless installations.

With the MULTI-THERM PRO digitised circulation balancing valve we are continuing this success story into the future by enabling the digitalisation of hot water circulation systems in a revolutionary simple way.

In the past, controlling temperatures in a hot water circulation system caused a great deal of work: either a lot of cabling for digital monitoring

or high levels of personnel deployment if monitored by hand. If temperature control is done manually and possibly only irregular, critical temperature fluctuations in the pipework are often not detected on time and a dangerous concentration of legionella bacteria may result.

With MULTI-THERM PRO, you can monitor the temperatures in the system at any time thanks to the integrated sensors and radio technology – completely automated and, thanks to a self-sufficient energy supply from energy harvesting, without any complex wiring. You therefore save personnel and investment costs. The clear visualisation and logging of the operating status enables the operator to fulfil his proof obligations in no time.

Figure	Article designation
144 0G	MULTI-THERM PRO (with MPT)
144 00	MULTI-THERM PRO (with FPT)

That's how easy it is to turn MULTI-THERM into MULTI-THERM PRO.

The digital upgrade of existing MULTI-THERM circulation balancing valves with the wireless control module PRO is sustainable, fast, cost-efficient and possible with very little technical effort: Simply replace the existing thermostatic balancing bonnet with the wireless control module PRO and connect it to the PRO WaterManager. Done.*

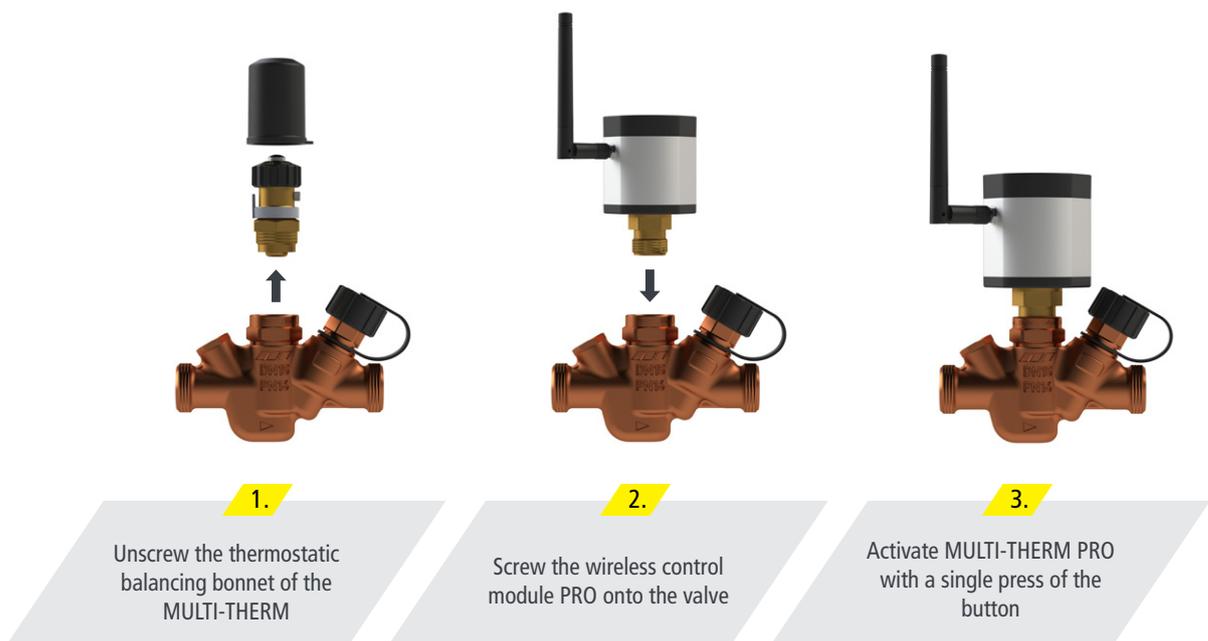
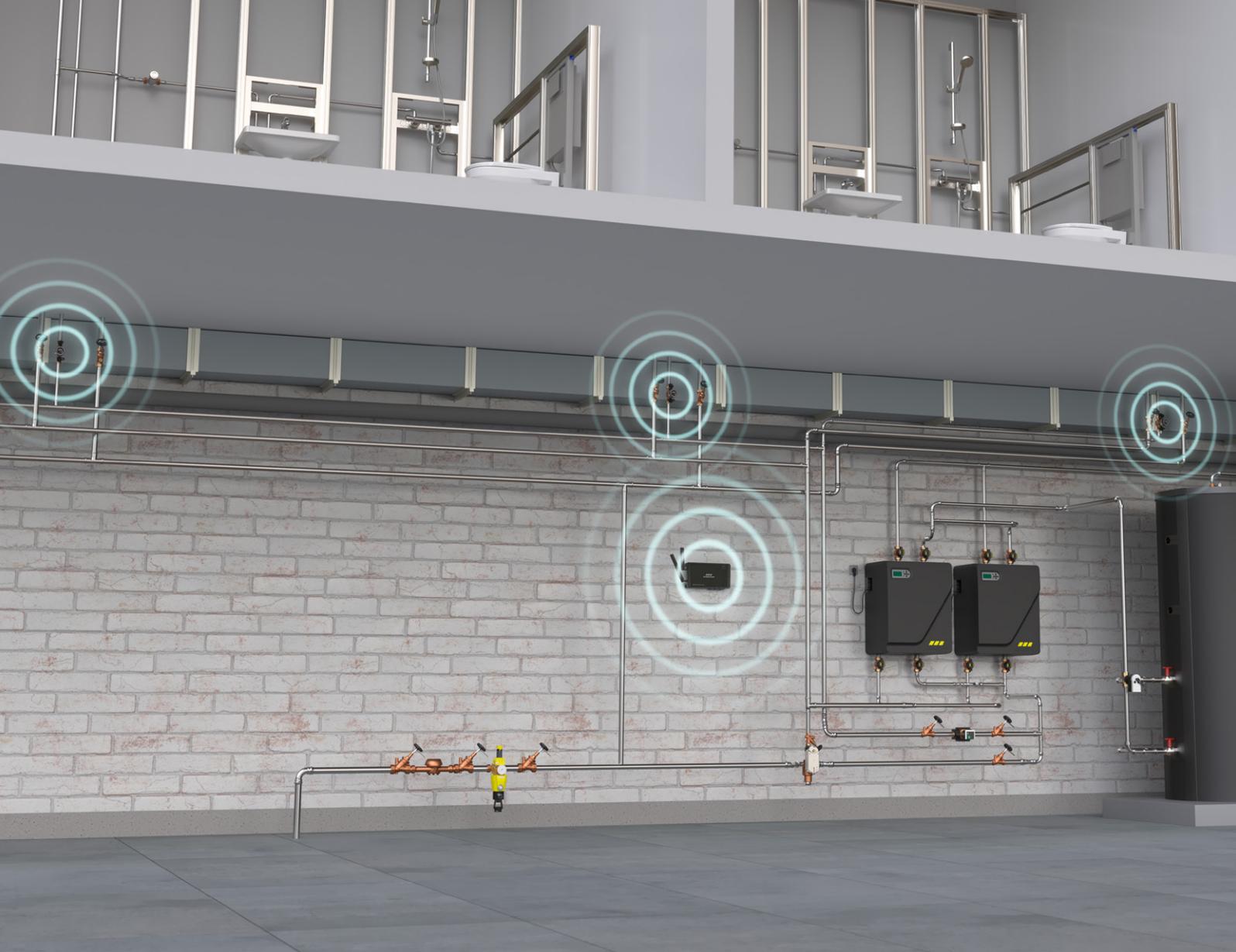


Figure	Article designation
111 01 001	PRO WaterManager with LPWAN

Figure	Article designation
144 01 000	Wireless control module PRO
144 02 001	Wireless control bonnet PRO

***Note:**
Operating conditions in existing installations are not always known in advance – consequently, the function of MULTI-THERM circulation balancing valves already in service may, for example, be impaired by scaling or encrustation. To reliably ensure the full functional scope of MULTI-THERM PRO, we therefore recommend upgrading using the complete assembly, Figures 144 0G 015 / 144 00 015

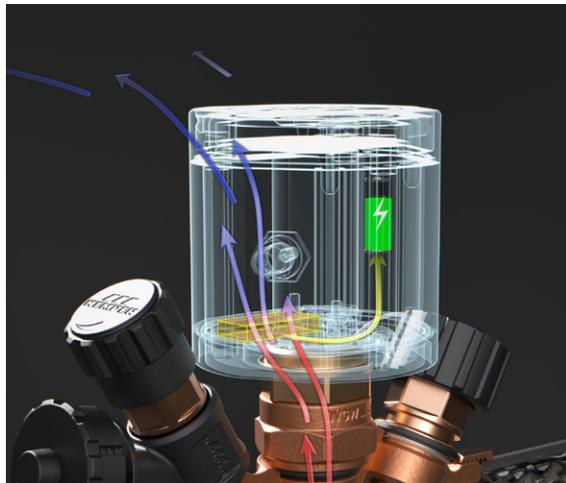


Connected components that make your installation better.

This is how digitalisation with MULTI-THERM PRO works.

The new wireless control module PRO expands the proven MULTI-THERM balancing valve with a digital balancing bonnet to connect and balance hot water circulation via a central command level. The MULTI-THERM PRO communicates by radio via a "Low Power Wide Area Network", LPWAN for short. Thanks to longer radio waves, this technology also penetrates walls and ceilings, thus ensuring a stable, secure connection in the whole building – from the roof right down to the lowest level.

The wireless control module PRO generates its supply energy autonomously by using the difference between the ambient and media temperature (energy harvesting) – and thus manages without any batteries or connection to the power supply.



INFO

LPWAN + Energy-Harvesting
make installing MULTI-THERM PRO
completely wireless. That saves
working hours and material costs.

More in the video:



2

ETA-THERM thermostatic balancing valve

Hydraulic balancing in the smallest circulation circuits

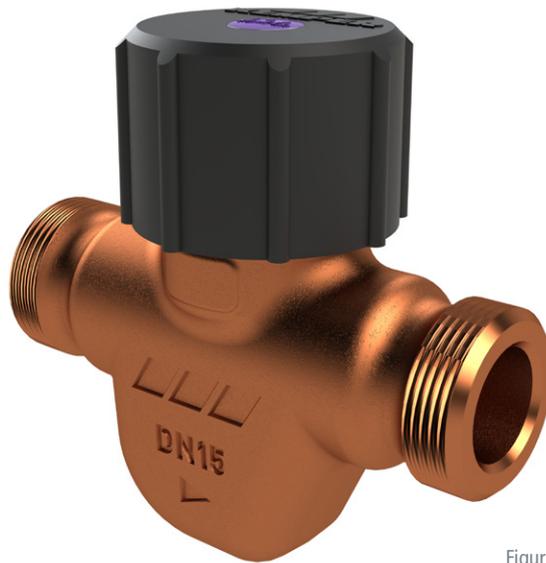


Figure 130 0G

If it is necessary to draw off hot water immediately after opening a tap, whether because of increased hygiene requirements or for reasons of comfort, an automatic balancing valve is required to hydraulically balance the bathroom circulation system (see illustration on page 5)!

As very low flow rates are required for temperature maintenance in the bathrooms on account of reduced heat-dissipating surfaces, KEMPER has developed the ETA-THERM specifically for this case. Its k_v value ($k_{v,min} = 0.05$, $k_{v,max} = 0.4$) is specially tailored to meet the needs of the bathrooms.

ETA-THERM is available in 2 setups. Installation is possible in the area of the individual shutoff in bathrooms as a flush-mounted or surface-mounted balancing valve.

Benefits at a glance

- // Multifunctional shutoff and balancing bonnet
- // In case of flush mounting, "blind" valve preset possible with ratchet mechanism
- // Built-in cleaning function
- // Wetted parts made of gunmetal
- // Free from dead spots

Installation situation: surface-mounted



Installation situation: flush mounted



2 a with male thread,
Figure 130 0G



2 b with sleeve connection,
Figure 540 02

Figure	Article designation
130 0G	ETA-THERM, control range 56°C–58°C, surface-mounted setup, male thread, DN 15
131 00	ETA-THERM, control range 56°C–58°C, surface-mounted setup, female pipe thread, DN 15
134 0G	ETA-THERM, control range 62°C–64°C, surface-mounted setup, male thread, DN 15
136 00	ETA-THERM, control range 62°C–64°C, surface-mounted setup, female pipe thread, DN 15

Figure	Article designation
544 02	UP-ETA-THERM, control range 56°C–58°C, flush-mounted setup, SANPRESS/PROFIPRESS press connection, DN 15
540 02	UP-ETA-THERM, control range 56°C–58°C, flush-mounted setup, female pipe thread, DN 15
542 02	UP-ETA-THERM, control range 56°C–58°C, flush-mounted setup, MAPRESS press connection, DN 15
540 62	UP-ETA-THERM, control range 62°C–64°C, flush-mounted setup, female pipe thread, DN 15

3

MULTI-FIX-PLUS static balancing valve

The manual, static addition



Figure 151 06

In circulation circuits, only the first balancing valve may be thermostatically controlled. For plants with several hydraulic levels, therefore, additional static balancing valves are required (see illustration on page 5)!

MULTI-FIX-PLUS static balancing valves enable the manual setting of fine flow rates based on defined valve-setting values.

Benefits at a glance

- // Maintenance valves without changing the throttle preset
- // Made entirely of gunmetal, resistant to aggressive water
- // Free from dead spots
- // Can be optionally fitted with temperature sensor, sampling valve and drain valve

Figure	Article designation
150 6G	MULTI-FIX-PLUS, with thermometer and plugged drain port, male thread, DN 15–50
151 06	MULTI-FIX-PLUS, with thermometer and plugged drain port, female pipe thread, DN 15–50

KEMPER measurement technology

Effective tool to control and
adjust circulation systems

Drinking water temperature control is another application that can be realised using KEMPER measurement technology.

For further information, please visit our website at www.kemper-group.com or use the QR code opposite!



