ALPS
EXCLUSIVE

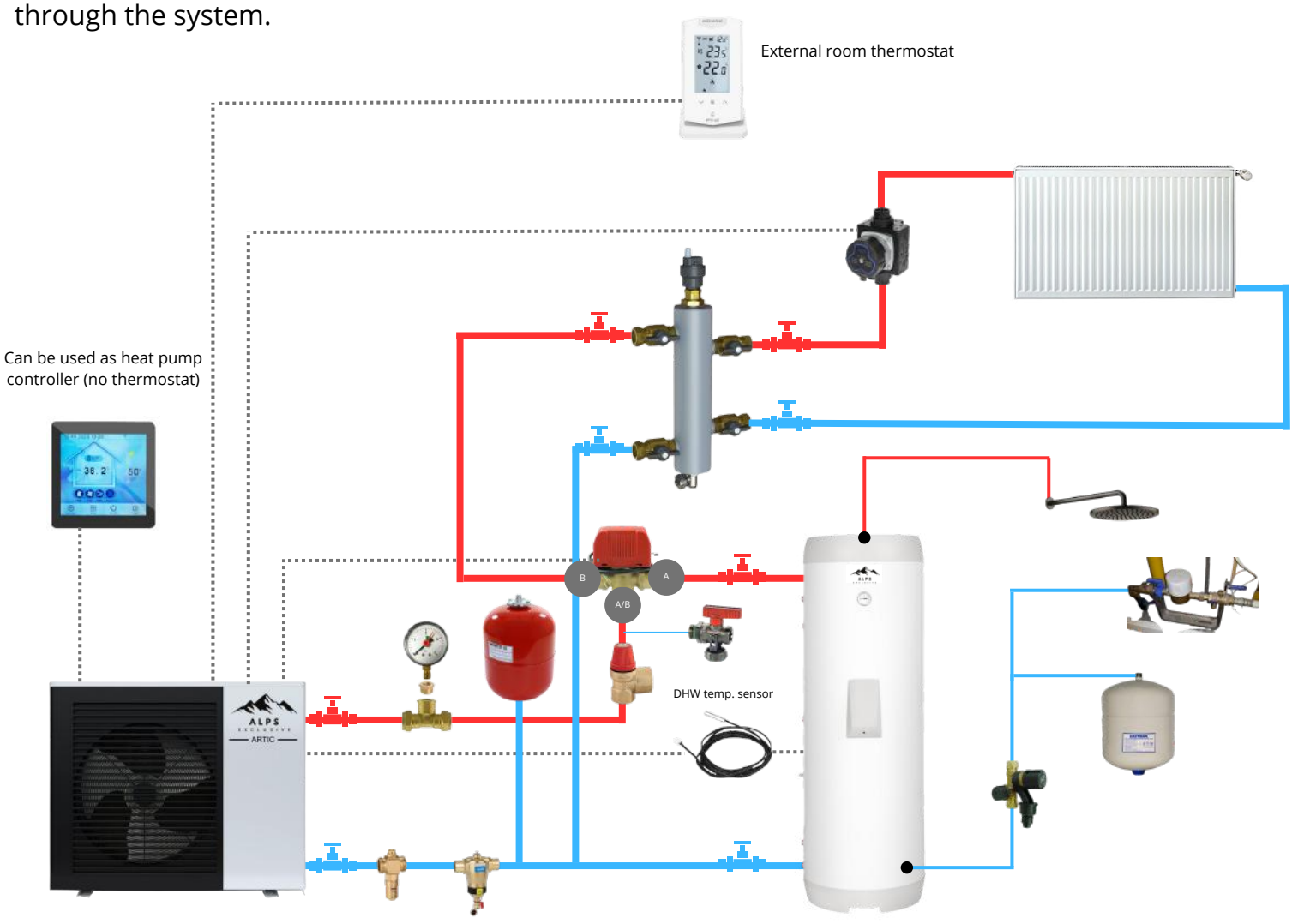
INSTALLATION SCHEMATICS

Maintenance guide

2022 - 2024

Installation schematic

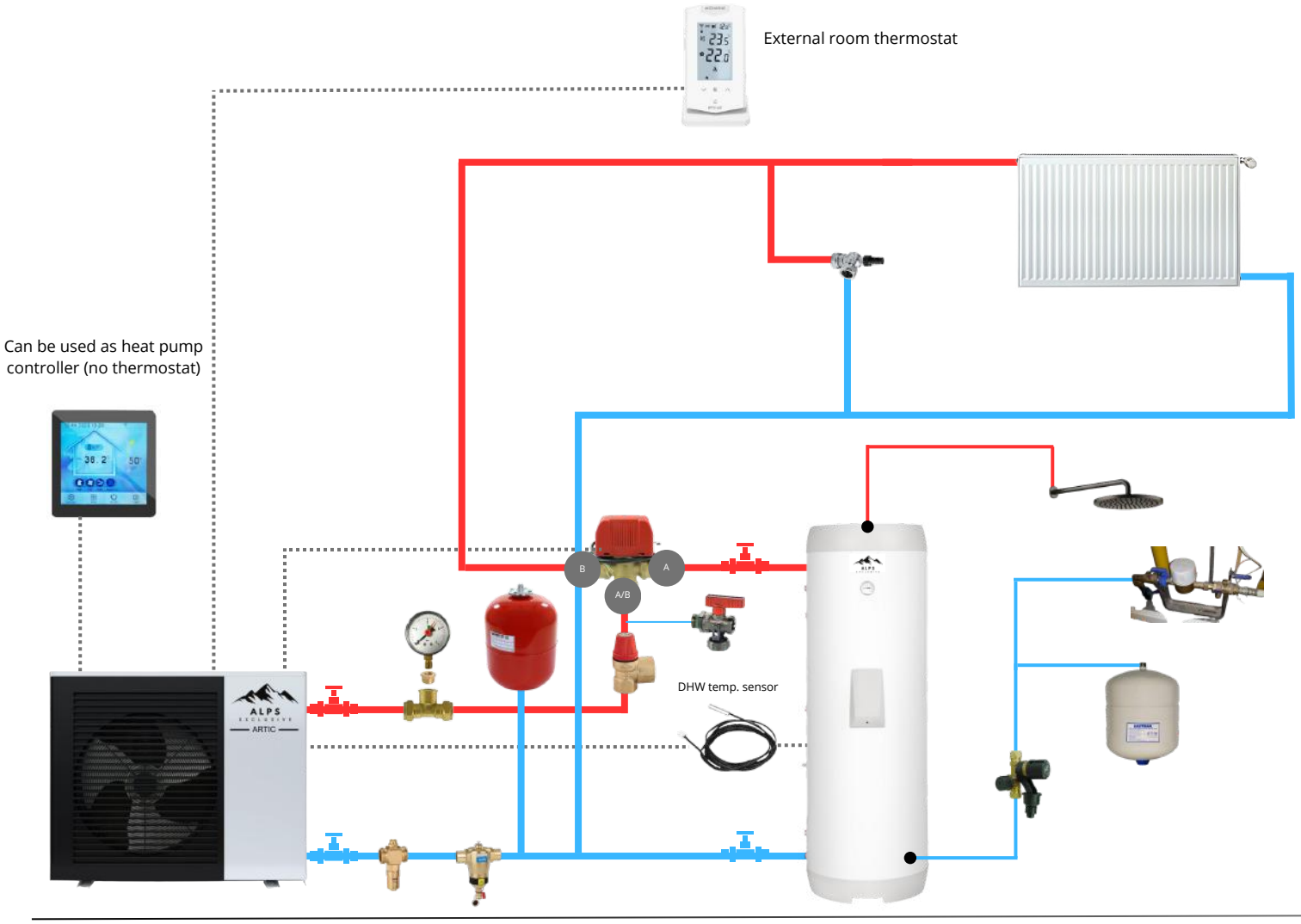
LOW LOSS HEADER: A typical installation for Retrofit installations, where primary pipe work is interdependent of the distribution system. This means the primary and secondary sides are “hydraulically separated”. Both side of the system are unable to inhibit each others flow. The distribution pump must be installed on the outlet of the low loss header to avoid negative pressure through the system.



Installing multiple automatic air vents in the heating system is crucial for optimal performance and longevity. These vents efficiently eliminate trapped air, preventing uneven heating and potential damage. This straightforward enhancement significantly boosts system efficiency and comfort.

Installation schematic

AUTO BYPASS INSTALL: This hydraulic installation would typically be used in a new build property, where no secondary circulating pump is installed and sufficient open water volume is present (to prevent short cycling). Circulation of primary heating water would be provided by the circulating pump within the ALPS EXCLUSIVE outdoor unit.



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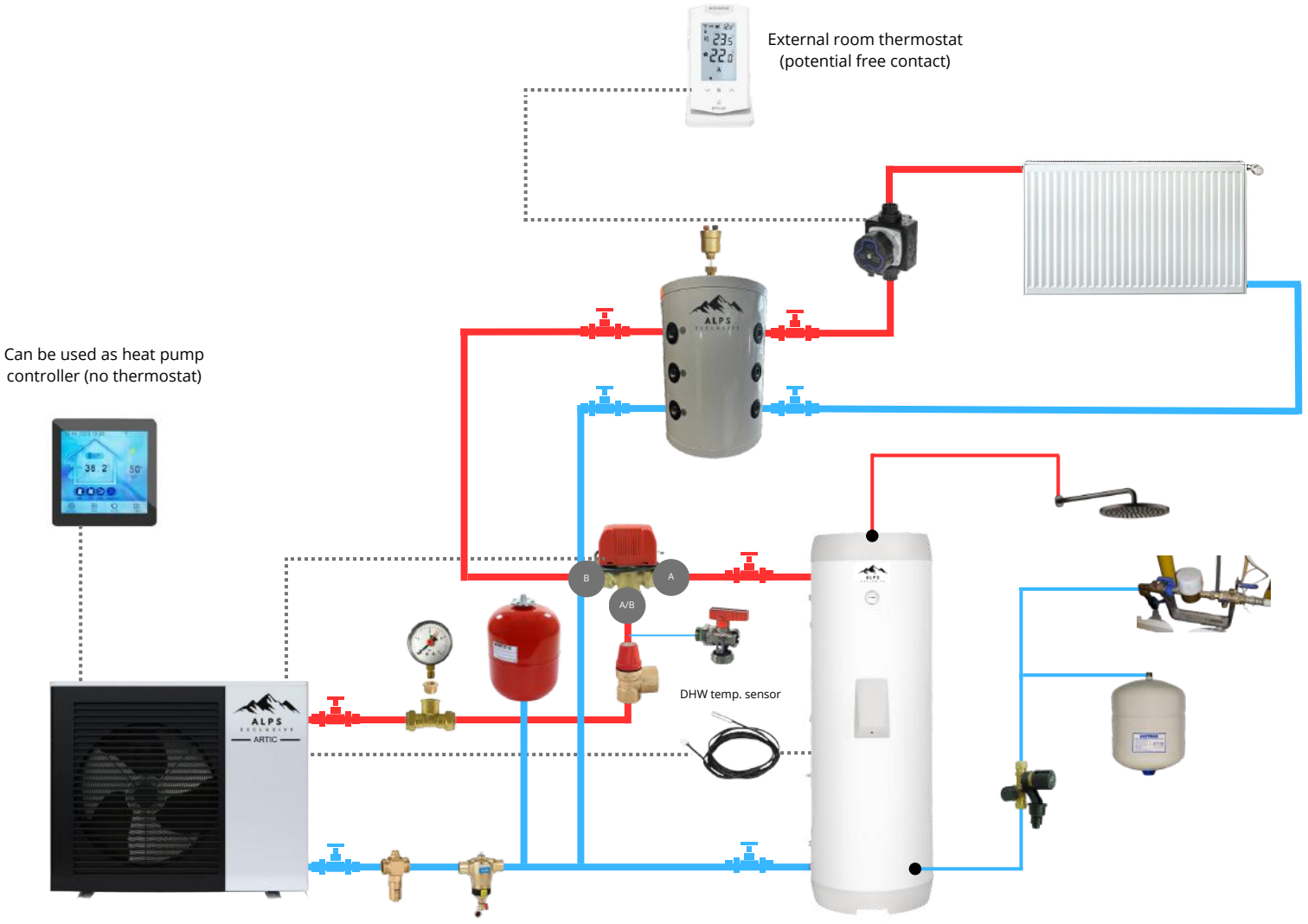
BUFFERTANK USAGE: Using a buffertank in a combination setting is the **ideal installation** design. In a heating system that includes both space heating and domestic hot water (DHW) provision, incorporating a DHW tank along with a three-way valve adds another layer of complexity and functionality. This setup allows the system to efficiently switch between heating the building and heating water for domestic use, optimizing energy use and ensuring comfort. In the scenario described, where an external thermostat controls an external central heating (CH) pump and a T-piece is installed in the return line for temperature management, the addition of a DHW tank and a three-way valve significantly enhances the system's capabilities.



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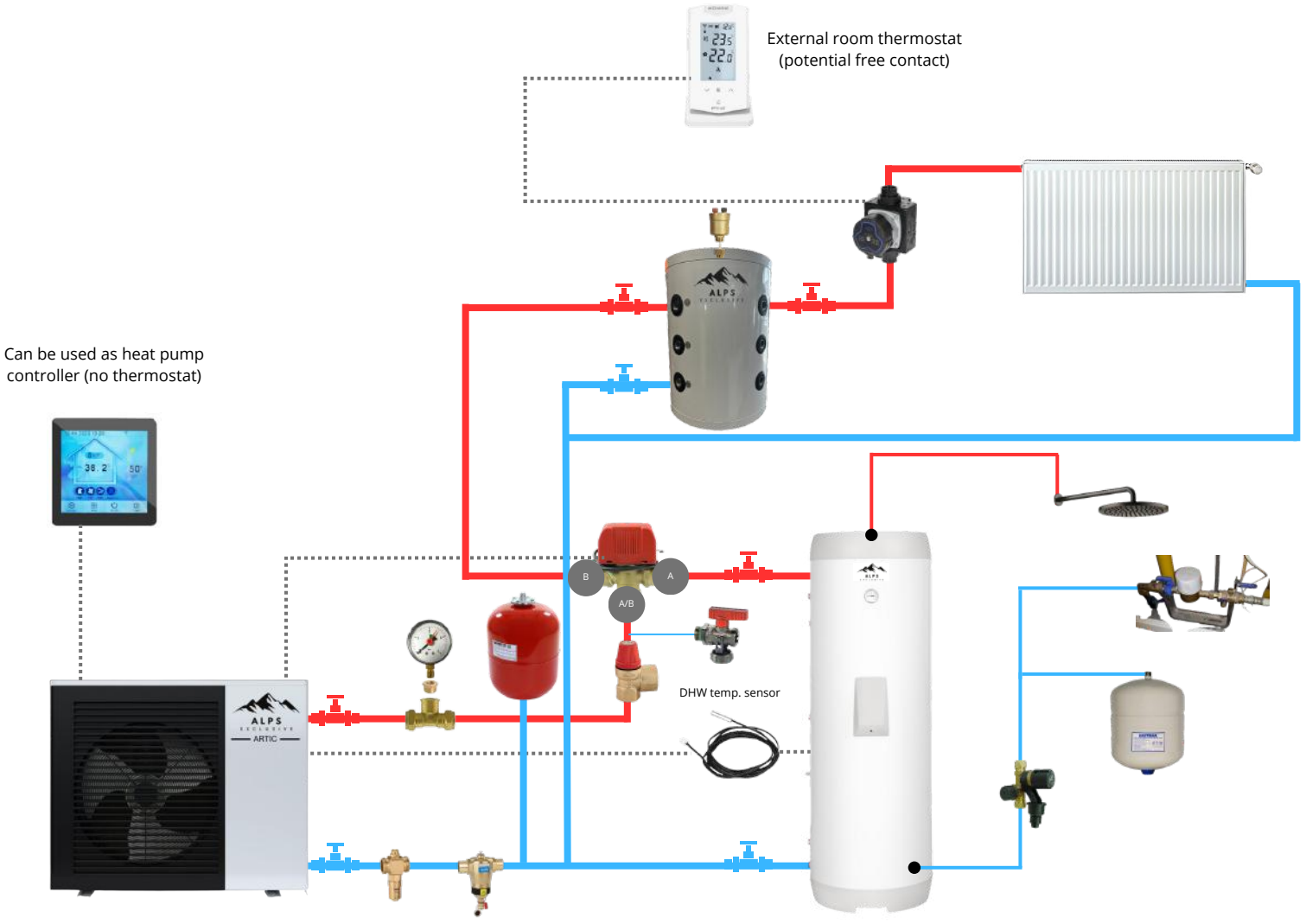
BUFFERTANK USAGE: Using a buffertank is the **ideal installation** design. In this advanced setup, the external thermostat remains responsible for activating the external central heating (CH) pump based on the ambient temperature. The inclusion of T-pieces in both the supply and return lines offers a fine-tuned approach to managing the water temperature throughout the system. The T-piece in the supply line allows for a portion of the hot water to be redirected back towards the heat pump or mixed with the outgoing flow, enhancing temperature control and system responsiveness. Meanwhile, the T-piece in the return line mixes cooler return water with the warmer supply water, maintaining an optimal temperature for the heat pump's efficiency. The DHW tank, equipped with a three-way valve, ensures that domestic hot water is available when needed. The three-way valve directs the hot water flow either to the DHW tank for heating domestic water or towards the space heating circuit, depending on the current demand. This dual priority system guarantees that the heat pump's output is utilized where it is most needed, without sacrificing comfort in either heating space or providing hot water.



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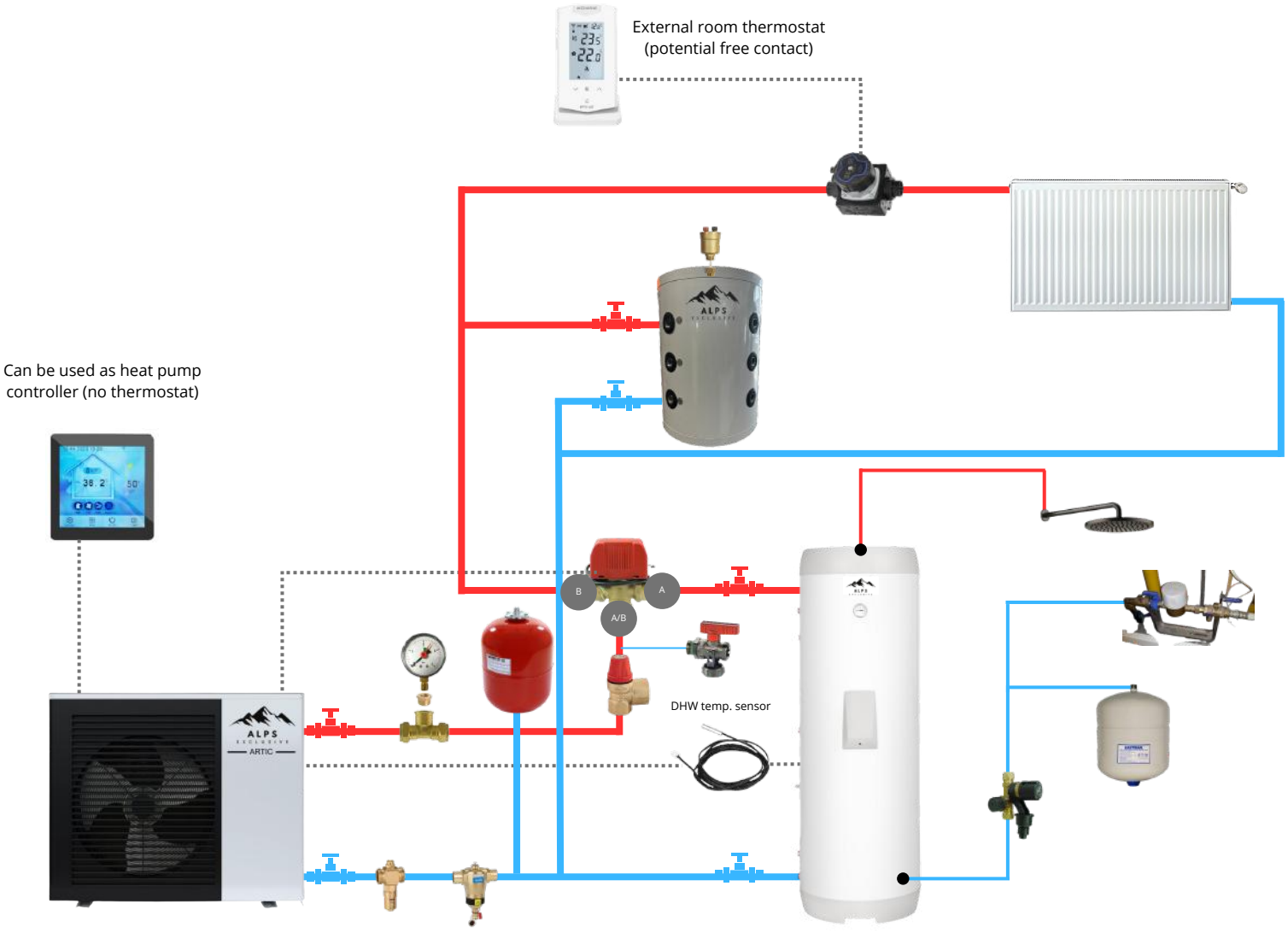
BUFFERTANK USAGE: Using a buffertank is the **ideal installation** design. The use of a buffer tank in a heating system, particularly with a heat pump, plays a crucial role in enhancing efficiency, providing consistent temperature control, and extending the lifespan of the equipment. This overview explores the general purpose, benefits, and considerations associated with integrating a buffer tank into your heating system. A buffer tank is essentially a storage reservoir for therm. Here is a perfect example for a buffer tank placement with a heat pump. The sensor is in a place where the supply temperature to the delivery system can be properly measured and determined. The buffer can serve as an "overflow" and also provides (at the t pieces) for proper mixing. Unwanted opinion no longer takes place here.



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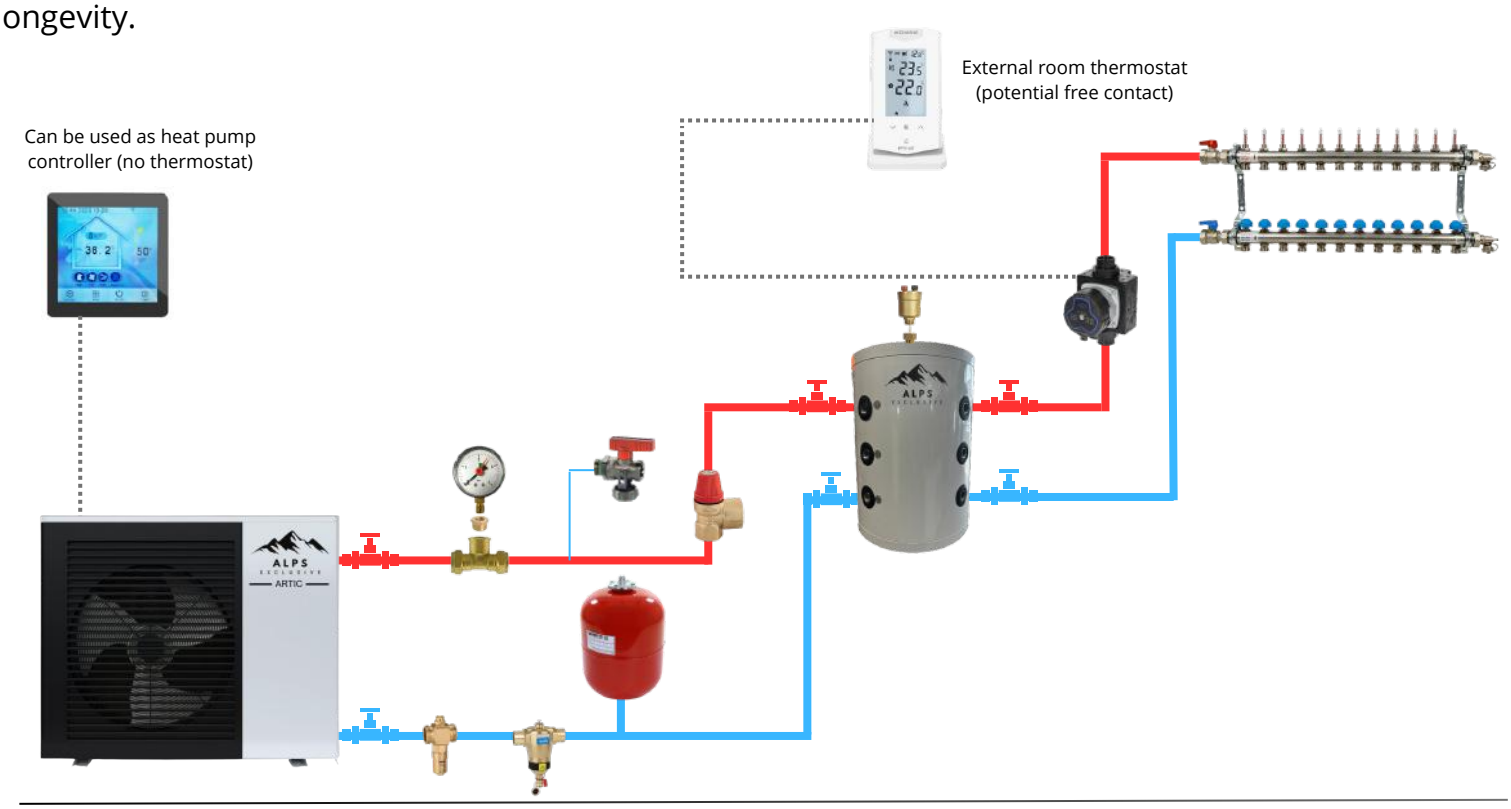
BUFFERTANK USAGE: An air-to-water monoblock heat pump system, paired with a buffertank is the **ideal installation** design, represents a highly efficient solution for heating needs in residential or commercial settings. This setup harnesses energy from the outside air to heat water, which is then stored in a buffer tank before being circulated through the central heating (CH) system. The monoblock design integrates all necessary components within a single outdoor unit, simplifying installation and minimizing indoor space requirements. The addition of a buffer tank ensures a steady supply of heated water, reducing the frequency of heat pump cycles and enhancing system longevity.



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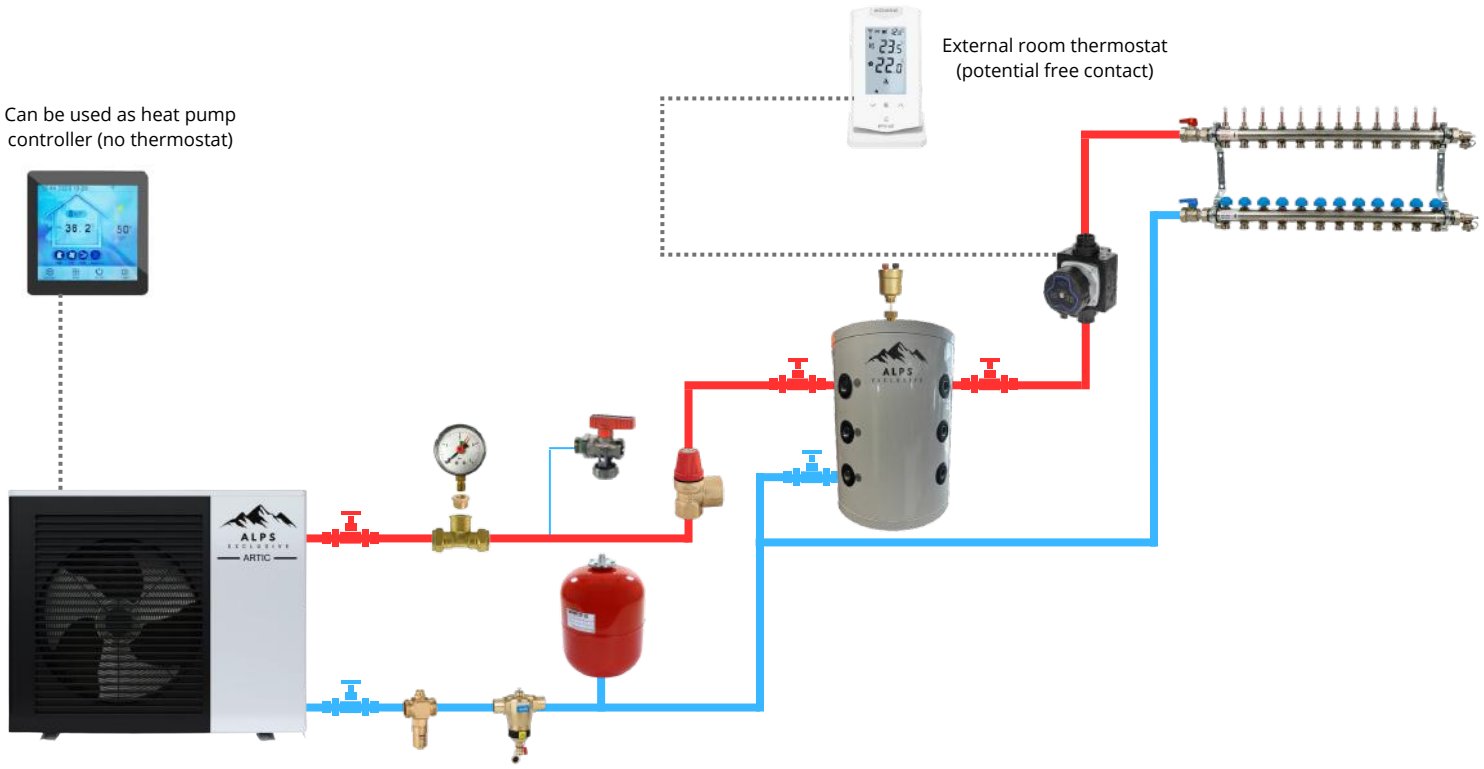
Installation schematic

BUFFERTANK USAGE: In an optimized heating system setup, particularly one that integrates a heat pump with an external central heating (CH) pump, the precise management of flow and temperature can greatly enhance the system's efficiency and comfort levels. A refined approach involves the use of an external thermostat to control the external CH pump, coupled with the strategic placement of a T-piece in the return line, while omitting the T-piece in the supply line. This configuration focuses on effective temperature regulation and energy utilization by adjusting the return flow, thereby optimizing the performance of the entire system. The external thermostat, strategically placed within the building, functions as the primary control for the external CH pump. It activates the pump in response to the ambient temperature falling below a predetermined setpoint, ensuring that heat distribution is initiated only when necessary. This approach minimizes unnecessary energy expenditure and provides a more comfortable living environment by maintaining consistent indoor temperatures. Incorporating a T-piece into the return line introduces a crucial element of temperature management. This setup allows for a portion of the cooler water returning from the heating circuits, such as radiators or underfloor heating, to be mixed with the outgoing hot water from the heat pump or buffer tank. This mixing process prevents the return of excessively cold water to the heat pump, which can increase its efficiency and prevent potential operational issues, such as freezing in extreme conditions or unnecessary cycling.



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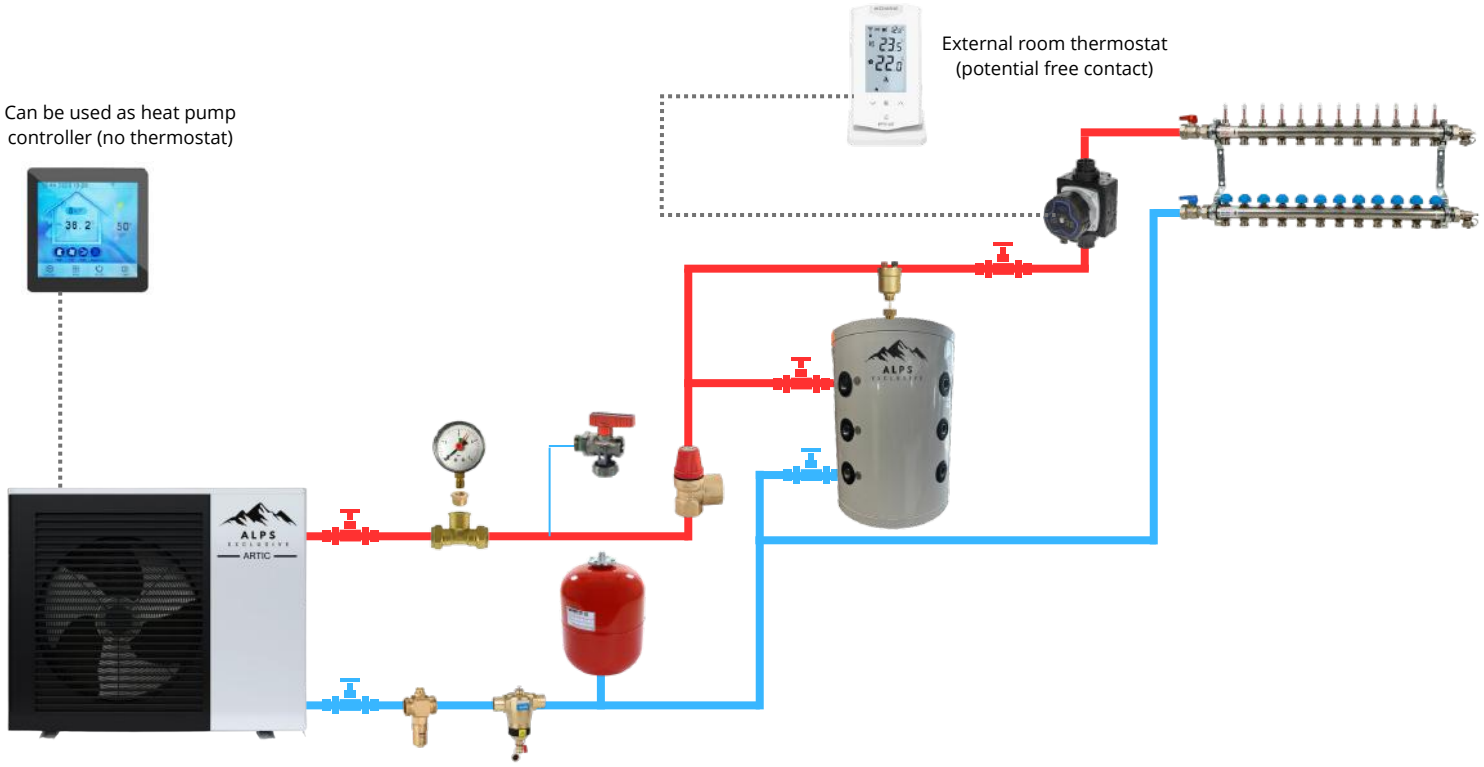
BUFFERTANK USAGE: In an advanced heating system configuration, particularly one involving a heat pump, the precision with which each component is controlled can significantly impact overall efficiency and comfort. An intriguing setup involves the use of an external thermostat to directly control an external central heating (CH) pump, combined with the strategic placement of T-pieces (or T-joints) in both the supply (anvoer) and return (retour) lines of the heating circuit. This arrangement allows for more nuanced management of the heating distribution, ensuring optimal performance of the system. The external thermostat, situated within a key area of the building such as the main living space, is tasked with monitoring the ambient temperature. Instead of directly controlling the heat pump as in some configurations, here, it directly controls the external CH pump. When the temperature falls below the setpoint, the thermostat activates the CH pump, circulating hot water from the heat pump or buffer tank through the heating distribution system, such as radiators or underfloor heating. This direct control ensures that the heating distribution is closely aligned with the actual heating needs of the building, enhancing both comfort and energy efficiency. The inclusion of T-pieces in both the supply and return lines introduces an additional layer of sophistication to the system. These T-pieces allow for a portion of the heated water to be redirected or mixed, facilitating finer temperature control and distribution efficiency. In the supply line, a T-piece can be used to bypass part of the flow directly back to the heat pump or buffer tank, helping to manage the temperature of the water being distributed. In the return line, a T-piece can mix cooler water returning from the heating circuit with the outgoing hot water, ensuring a more consistent temperature and reducing the risk of thermal shock to the system.



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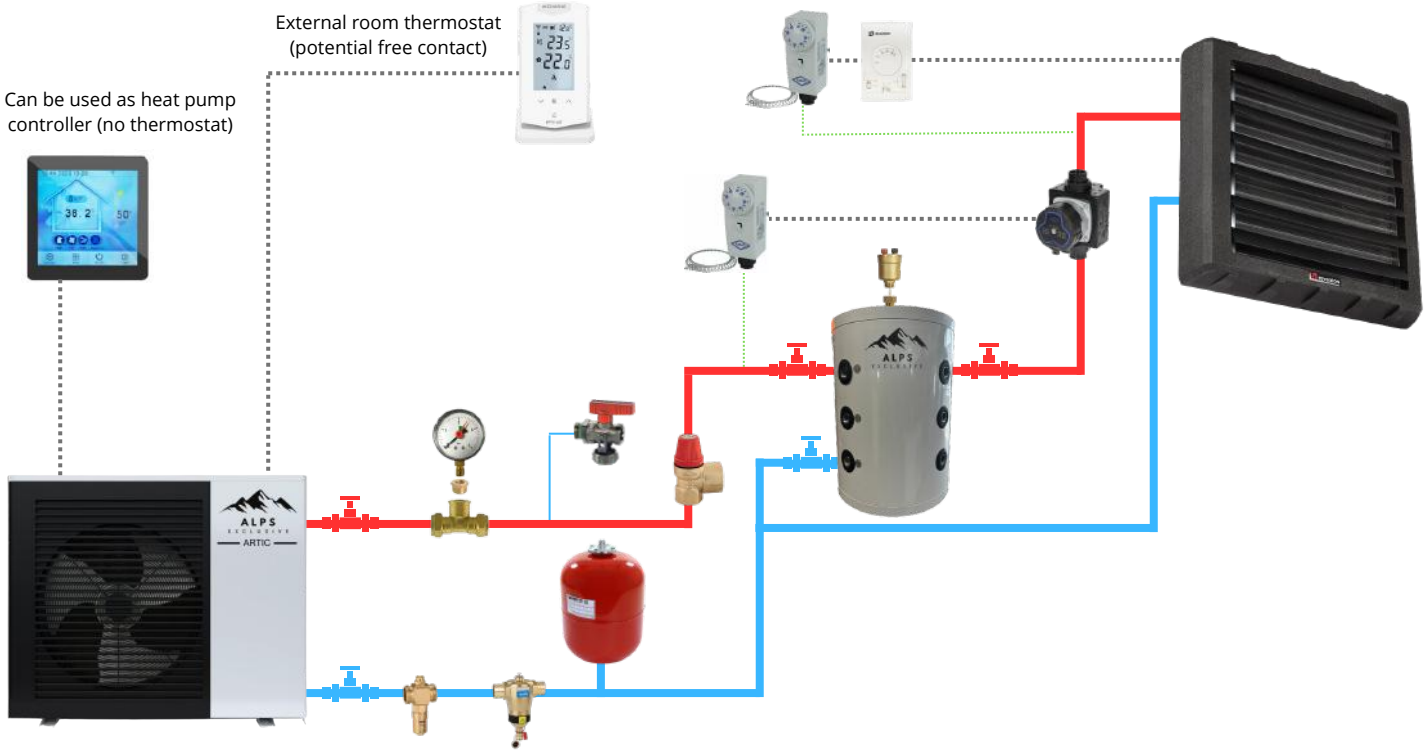
INDUSTRIAL SETTING: The external thermostat, typically located within the main living space or another key area of the building, serves as the primary interface for setting desired temperatures. This device monitors the ambient temperature and sends signals to the heat pump to activate or deactivate, based on the user-set temperature thresholds. This direct control mechanism allows the heat pump to operate more efficiently by reducing unnecessary cycling, thereby only producing heat when it is needed to maintain comfort levels. Parallel to this, the immersion thermostat is attached directly to the piping or the buffer tank and is responsible for managing the flow of heated water by controlling the external CH pump. This thermostat is set to a specific temperature that aligns with the optimal performance of the heating distribution system. When the water in the pipes or tank reaches the set temperature, indicating that there is sufficient heat available for distribution, the immersion thermostat activates the CH pump. This pump then circulates the heated water through the heaters effectively distributing heat throughout the building. The integration of these two thermostatic controls—external for the heat pump and immersion for the CH pump—enables a highly efficient and responsive heating system. This configuration ensures that the heat pump is only in operation when necessary to achieve the desired indoor temperature, while the CH pump circulates the heat precisely when the water temperature is adequate, reducing energy waste.



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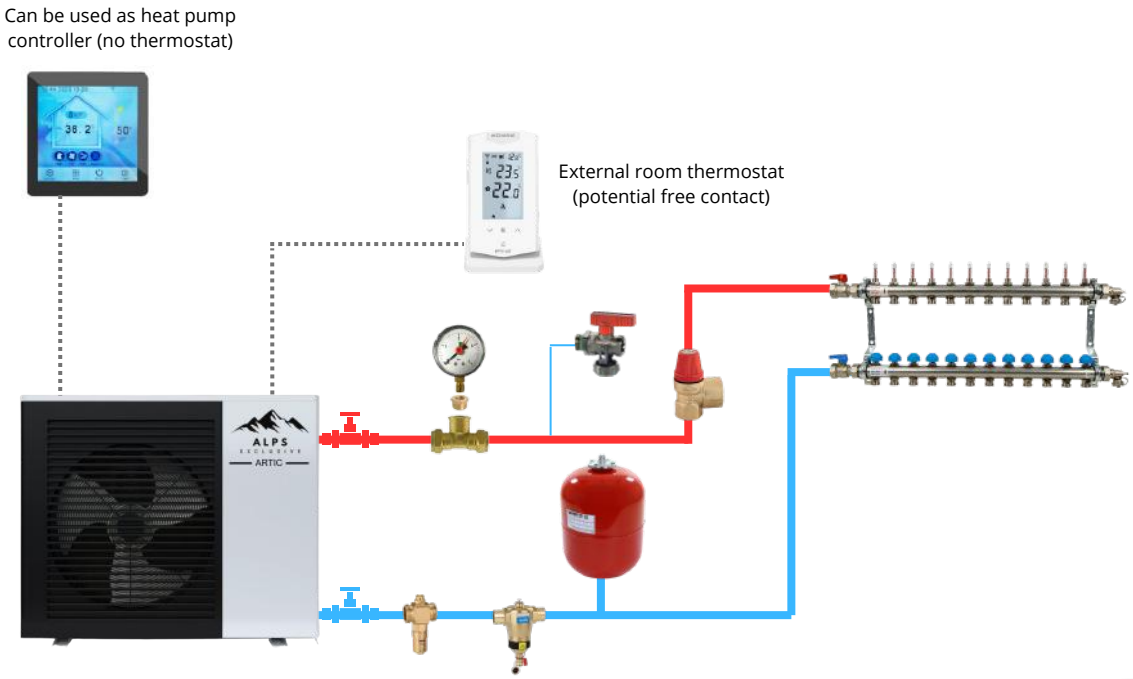
WITHOUT A BUFFERTANK: An air-to-water monoblock heat pump system directly connected to an emission system, such as underfloor heating, offers a streamlined approach to home heating by eliminating the need for a buffer tank. However, this configuration is generally not recommended due to the increased risk of short-cycling, commonly known as "pendeling," and the adverse effects of frequent defrost cycles. These issues can reduce the system's efficiency and longevity, leading to more frequent maintenance and potentially higher operational costs.



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