



Aqua Comfort Series Monobloc Heat Pump



Carrier Aqua Comfort Series Monobloc Type Heat Pump

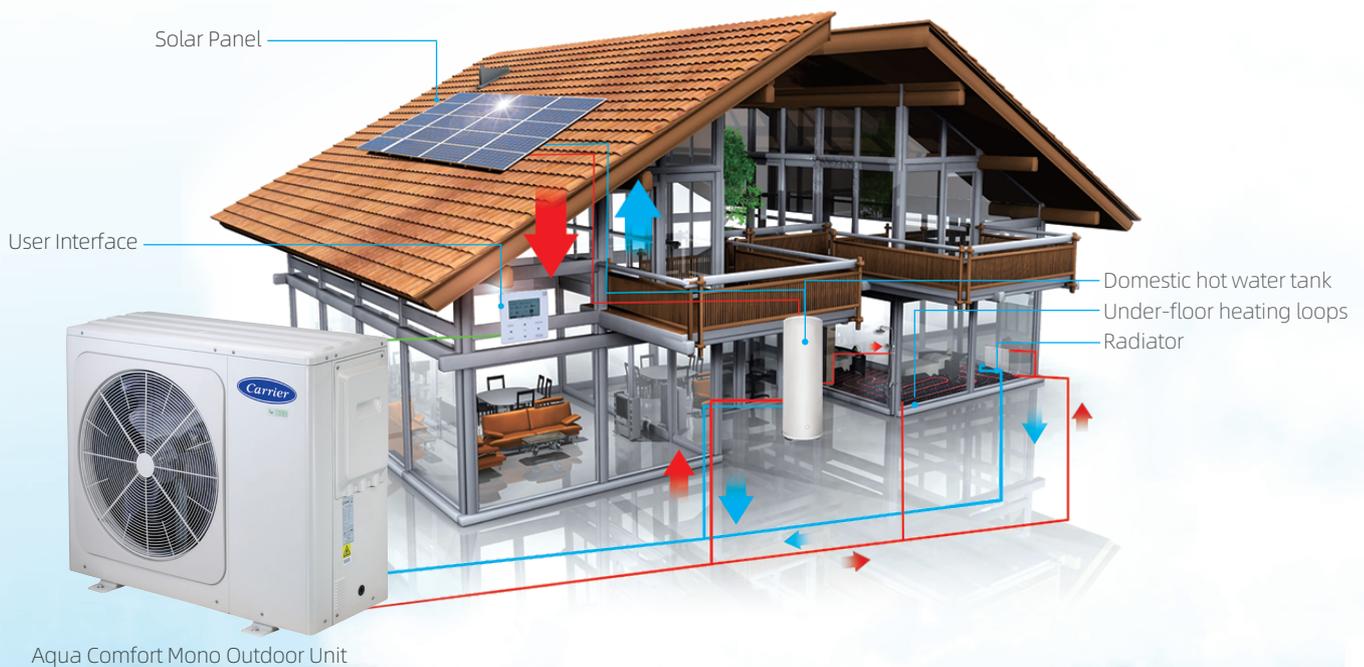


Mono 5~16kW

One-stop solution - Heating, cooling and domestic hot water in one system



Aqua Comfort is an integrated system that provides space heating and cooling as well as domestic hot water, offering a complete, all-year-round solution which can remove the need for traditional gas or oil boilers, or work together with them. Aqua Comfort can be combined with floor heating loops, fan coil units, radiators and domestic water tank. It can also be connected to solar collectors, gas furnace, boiler and other heat sources.



Product Lineup

Mono

Capacity (kW)	6	8	10	12	14	16
Appearance						
220~240-1Ph	●	●	●	●	●	●
380~415-3Ph				●	●	●



Mini size (0.4 m³) for container-carrying capacity optimization
Smaller floor space (0.4 m²) for flexible installation



Heating, cooling, hot water, one-stop solution



Maximum 65°C leaving water temperature



Solar hot water, photovoltaic application for green energy-saving



Cascade function for bigger system application



USB function for convenient data transformation

External electric heater (Optional)

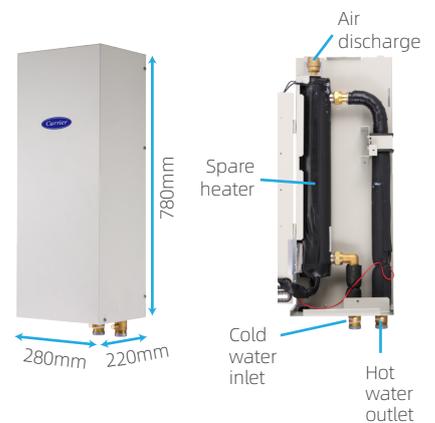
3~9kW external electric heater enhances low ambient heating capacity (Optional)

Capacity (kW)	3	4.5	6	9
Appearance				
220~240-1Ph	●	●		
380~415-3Ph		●	●	●

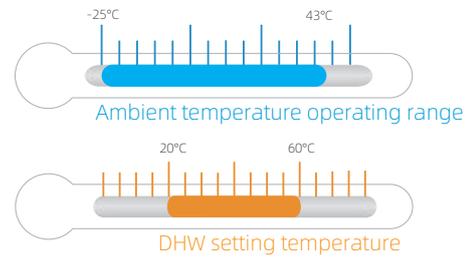
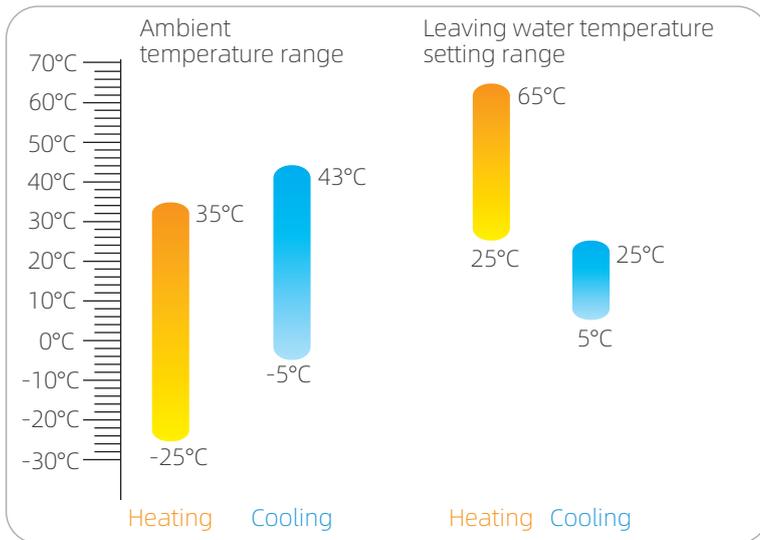
External backup electric heater kit (Optional)

Features:

- Easy installation
- Compact structure
- No fuel tubes and storage
- Supply additional heating capacity
- Complete isolation between water and electricity



Wide operating range



DHW

Mini size



Smaller size

Container-carrying capacity optimization
Transportation cost saving

Smart control



You can easily control your heat pump via your smart phone or tablet. With the **internal Wi-Fi kit** and app, you're still in control even if you don't have a remote control...

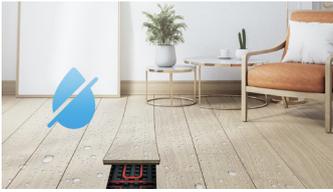
High Reliability

Manual defrost

During heating/DHW mode, frost is generated and attached to the fins, which affects the heating performance. In order to recover heating capacity, heat pump enters defrost mode automatically in time. Manual defrost is also suitable for quickly defrosting according to user's demand.



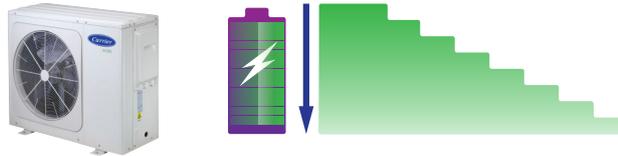
Preheating and drying up for floor



Before floor heating, if a large amount of water remains on the floor, the floor may be warped or even ruptured during floor heating operation. We provide drying up mode which is used after the initial installation of floor loops and preheating mode for the first heating during seasonal heating in order to protect the floor. During the process, the water temperature would be increased gradually.

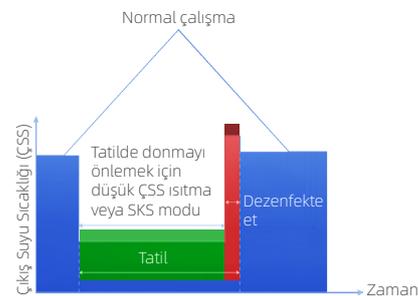
Power limitation function

Power limitation function makes the machine suitable for a variety of current supplies. There are 8 configurations that the user can choose according to the maximum allowable access current. Only easy setting on the wired controller is needed, the units can suit more application.



Holiday function

Holiday away function is a mode for improving system reliability and saving energy. Unit operates in heating mode and/or DHW mode with low water temperature to prevent water from freezing in the winter during holiday outside. The user can pre-set the disinfection mode before he returns home to make sure that germ free water is available to be used when he returns.

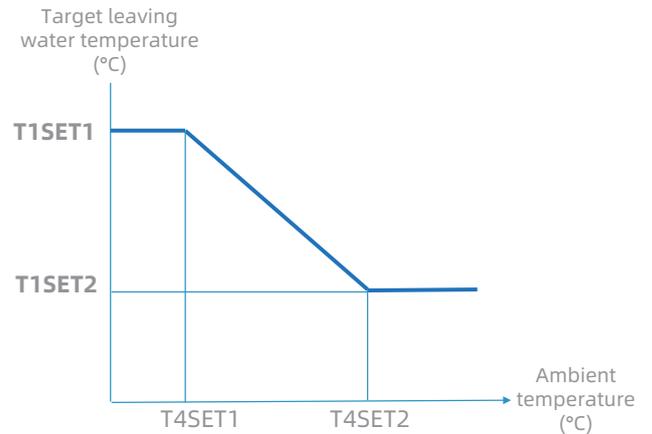


Smart Control

Weather temperature curve

With the help of weather temperature curve function, water temperature will automatically change as outside air temperature changes. When outdoor air temperature increases/decreases, the heating load will decrease/increase and water temperature will decrease/increase automatically.

When outdoor air temperature decreases/increases, the cooling load will decrease/increase and water temperature will increase/decrease automatically. Totally 32 fixed weather temperature curve and one custom curve is available, which meets the diversified requirements of temperature.



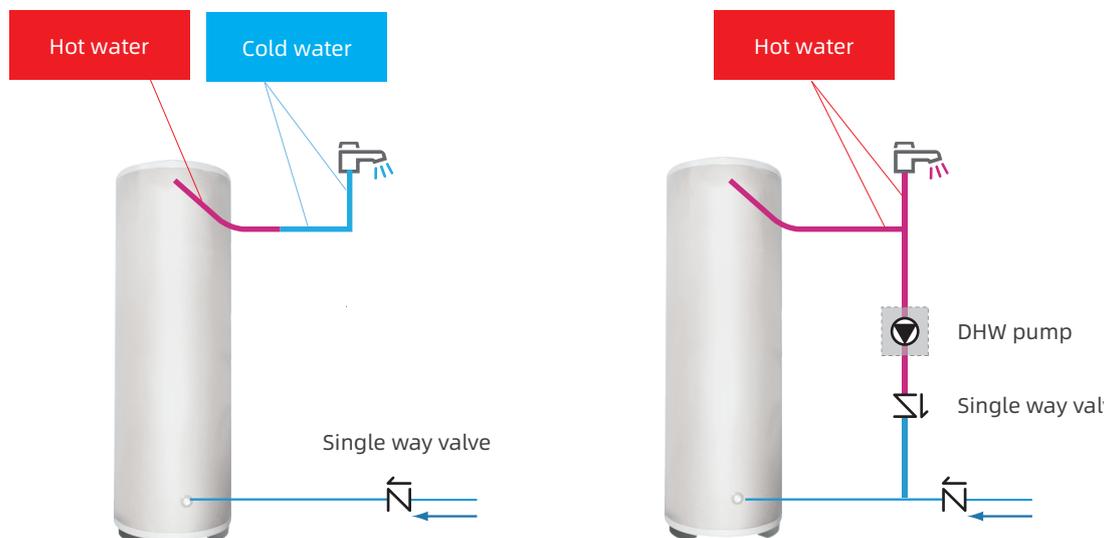
Smart grid

Heat pump adjusts the operation mode according to different electrical signals from the grid to realize energy saving. When the electric price is low or even free, heat pump takes DHW priority. When electric price is high, DHW related functions are limited. When the electric price is normal, heat pump operates according to users' requirement.



DHW pump function

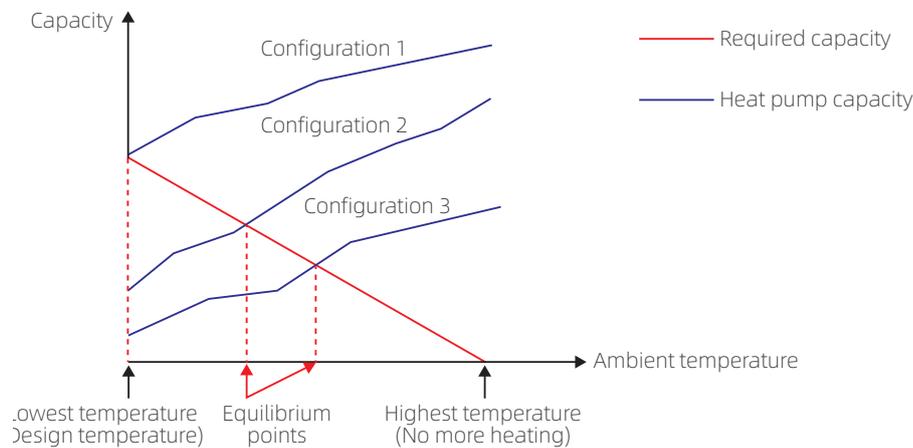
The DHW pump function is used to return water in the water pipe net to the hot water tank according to set timer. Total 12 timers for one day can be set, which allows users to set the DHW pump operation time according to using habit to guarantee using hot water without waiting for a long time.



Typical Applications

System configurations

Aqua Comfort system can be configured to run with the electric heater either enabled or disabled and can also be used in conjunction with an auxiliary heat source such as a boiler. The chosen configuration affects the size of heat pump that is required. Three typical configurations are described below.



Configuration 1: Heat pump only

- ❖ The heat pump covers the required capacity and no extra heating capacity is necessary.
- ❖ Requires selection of larger capacity heat pump and implies higher initial investment.
- ❖ Ideal for new construction in projects where energy efficiency is paramount.

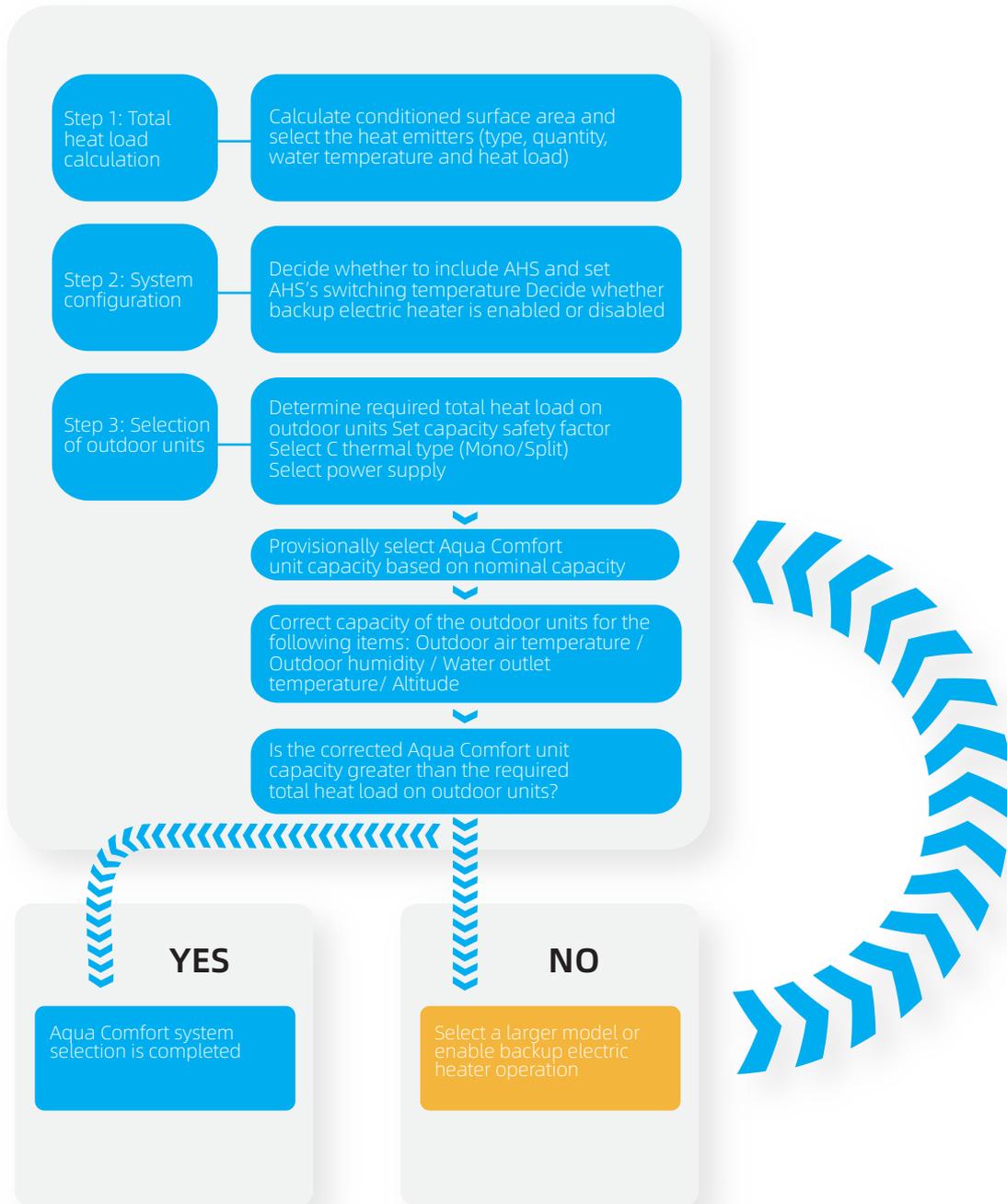
Configuration 2: Heat pump and backup electric heater

- ❖ Heat pump covers the required capacity until the ambient temperature drops below the point at which the heat pump is able to provide sufficient capacity. When the ambient temperature is below this equilibrium point, the backup electric heater supplies the required additional heating capacity.
- ❖ Best balance between initial investment and running costs, results in lowest lifecycle cost.
- ❖ Ideal for new construction.

Configuration 3: Heat pump with auxiliary heat source

- ❖ Heat pump covers the required capacity until the ambient temperature drops below the point at which the heat pump is able to provide sufficient capacity. When the ambient temperature is below this equilibrium point, depending on the system settings, either the auxiliary heat source supplies the required additional heating capacity or the heat pump does not run and the auxiliary heat source covers the required capacity.
- ❖ Enables selection of lower capacity heat pump.
- ❖ Ideal for refurbishments and upgrades.

Selection procedure



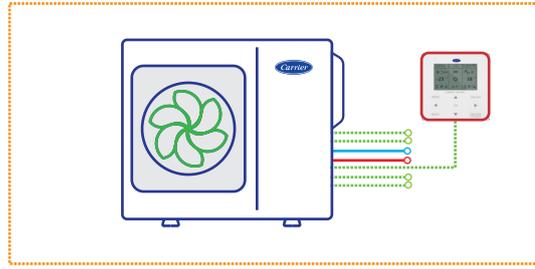
Leaving water temperature (LWT)

The recommended design LWT ranges for different types of heat emitters are:

- ❖ For floor heating: 30°C - 35°C
- ❖ For fan coil units: 40°C - 45°C
- ❖ For low temperature radiators: 40°C - 50°C

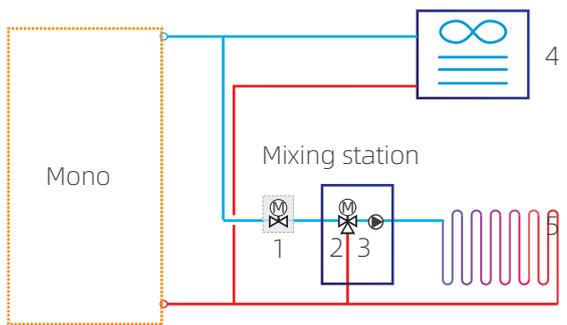
Typical application

Practical applications are various, including but not limited to the following applications. The application examples given below are for illustration only.



Heating and cooling

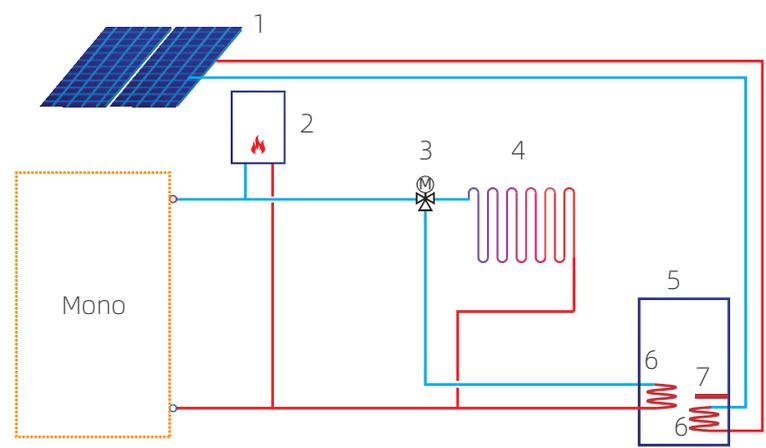
Floor heating loops is used for space heating and fan coil unit is used for both space heating and cooling. For heating mode, floor heating loops and fan coil unit require different operating water temperature. To achieve these two temperature, a mixing station (field supplied) which consists of 3-way valve and water pump is used to adapt the water temperature according to requirements of the floor heating loops. The mixing station is controlled by the unit. For cooling mode, 2-way valve is used to prevent cool water from entering floor heating loops then result in condensation during cooling.



- Notes:
1. 2-way valve (field supplied)
 2. 3-way valve (field supplied)
 3. Water pump (field supplied)
 4. Fan coil unit (field supplied)
 5. Floor heating cycle (field supplied)

Heating, DHW and hybrid heat source

Backup electric heater (customized)* and AHS provide additional heating to raise the water temperature for unit outlet temperature. TBH and solar system provide additional heating to raise the domestic hot water temperature. 3-way valve is used to switch between heating mode and DHW mode.



- Notes:
1. Solar panel (field supplied)
 2. AHS: Additional heat source (field supplied)
 3. 3-way valve (field supplied)
 4. Floor heating loop (field supplied)
 5. Water tank (field supplied)
 6. Heat exchanger coil (field supplied)
 7. TBH: Tank booster heater (field supplied)

*For Mono 4~16kW models, backup electric heater can be installed in the unit.

Double zones control

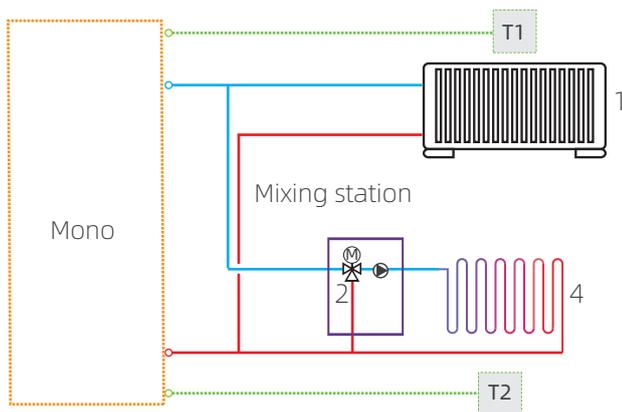
Double zones control is only available for heating mode. It can control different areas to reach different temperature to meet various needs of daily use.

1. Using wired controller only

Wired controller sets the mode, temperature and on/off. Zone 1 is controlled based on the leaving water temperature. Zone 2 is controlled based on the leaving water temperature or built-in sensor integrated in the wired controller.

2. Using wired controller and thermostat

Wired controller sets the mode and water temperature. Both Zone 1 and Zone 2 are controlled by thermostat.



Notes:

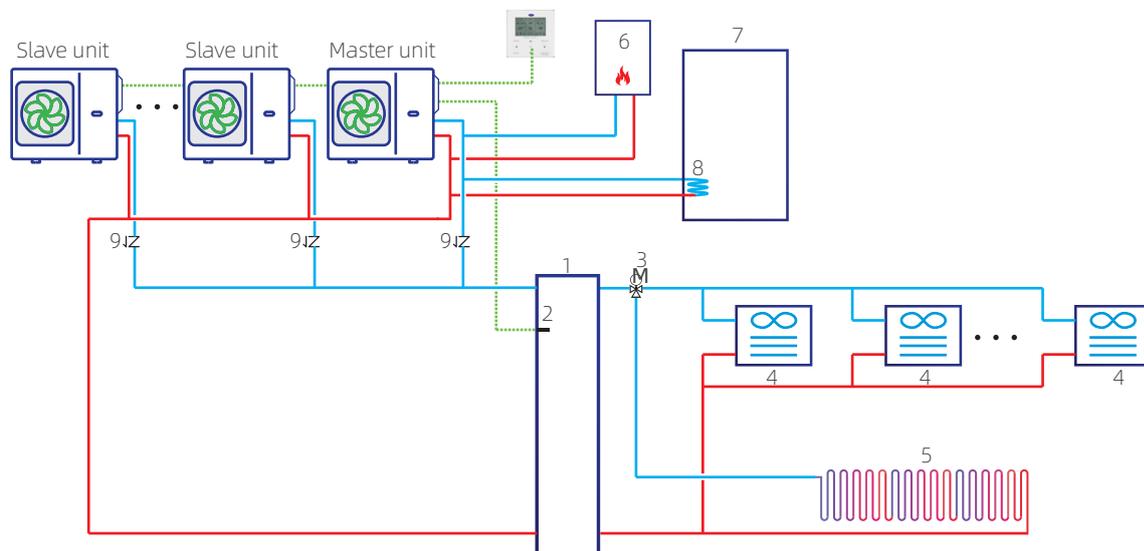
1. Radiator (field supplied)
2. 3-way valve (field supplied)
3. Water pump (field supplied)
4. Floor heating loop (field supplied)

Abbreviation:

T: Room thermostat (field supplied)

Cascade system

Cascade system design is perfect when an extension of capacity becomes required as the building cooling/ heating demand evolves. Maximum 6 units can be controlled in group with one controller. Balance tank temperature control makes water temperature more accurate. Water tank can only be connected to the master unit water circuit through a three-way valve, and controlled by the master unit. AHS can only be connected to the master waterway and controlled by the master unit.



Notes:

1. Balance tank (field supplied)
2. Balance tank temperature sensor (Midea can supply)
3. 3-way valve (field supplied)
4. Fan coil unit (Midea can supply)
5. Floor heating loop (field supplied)
6. AHS: Additional heating source (field supplied)
7. Water tank (field supplied)
8. Heat exchanger coil (field supplied)
9. Single way valve (field supplied)

Specifications

Aqua Comfort Series Mono



Outdoor unit model-E			38PM002 H112016	38PM003 H112016	38PM054 H112016	38PM004 H112016	38PM005 H112016	38PM006 H112016	38PM004 H119016	38PM005 H119016	38PM006 H119016	
Heating ¹	Capacity	W	6500	8400	10000	12200	14100	16000	12200	14100	16000	
	Rated input	W	1226	1663	2128	2490	3000	3556	2490	3000	3556	
	COP			5.30	5.05	4.70	4.90	4.70	4.50	4.90	4.70	4.50
Heating ²	Capacity	W	6600	8500	10200	12500	14500	16200	12500	14500	16200	
	Rated input	W	1650	2237	2795	3378	4085	4696	3378	4085	4696	
	COP			4.00	3.80	3.65	3.70	3.55	3.45	3.70	3.55	3.45
Heating ³	Capacity	W	6300	8200	9400	12000	14000	16000	12000	14000	16000	
	Rated input	W	1969	2603	3032	4000	4746	5614	4000	4746	5614	
	COP			3.20	3.15	3.10	3.00	2.95	2.85	3.00	2.95	2.85
Cooling ⁴	Capacity	W	6500	8300	10000	12200	13900	15400	12200	13900	15400	
	Rated input	W	1275	1711	2326	2652	3159	3667	2652	3159	3667	
	EER			5.10	4.85	4.30	4.60	4.40	4.20	4.60	4.40	4.20
Cooling ⁵	Capacity	W	5500	7400	9000	11600	13400	14000	11600	13400	14000	
	Rated input	W	1692	2349	3103	3742	4573	4828	3742	4573	4828	
	EER			3.25	3.15	2.90	3.10	2.93	2.90	3.10	2.93	2.90
Seasonal space heating energy efficiency class ⁶	Water outlet at 35°C	class	A+++									
	Water outlet at 55°C	class	A++									
Refrigerant	Type (KIP)		R32 (675)									
	Filled volume	kg	1.25					1.8				
Sound power level ⁷	dB		60	63	65	70	72	72	70	72	72	
Net dimension (HxWxD)	mm		865x1040x410									
Packaging size (HxWxD)	mm		970x1190x560									
Net/Gross weight	kg		87/103			106/122			120/136			
Water pump	Max. pump head	m	9									
Water piping connection	mm		G1" BSP			G5/4" BSP						
Ambient temperature range	Cooling	°C	-5 ~ 43									
	Heating	°C	-25 ~ 35									
	DHW	°C	-25 ~ 43									
LWT setting range	Cooling	°C	5 ~ 25									
	Heating	°C	25 ~ 65									
	DHW	°C	20 ~ 60									
Backup E-heater ⁸ (Optional)	Mounted as a standard	kW	/									
	Optional	kW	3/4.5/6/9									
	Capacity steps			1/1/2/3								
	Power supply	3	V/ Phase/ Hz	220-240/1/50								
		4.5		220-240/1/50								
		4.5		380-415/3/50								
6		380-415/3/50										
9		380-415/3/50										

Notes:

1. Outdoor air temperature 7°C DB, 6°C WB; Water inlet 30°C, Water outlet 35°C.
2. Outdoor air temperature 7°C DB, 6°C WB; Water inlet 40°C, Water outlet 45°C.
3. Outdoor air temperature 7°C DB, 6°C WB; Water inlet 47°C, Water outlet 55°C.
4. Outdoor air temperature 35°C DB; Water inlet 23°C, Water outlet 18°C.
5. Outdoor air temperature 35°C DB; Water inlet 12°C, Water outlet 7°C.
6. Seasonal space heating energy efficiency class tests under average general climatic conditions.
7. Testing standard: EN12102-1.
8. Backup electric heater is external installation.
9. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C207/02:2014

 **ALARKO**



**ALARKO CARRIER
SANAYİ VE TİCARET A.Ş.**

GOSB-Gebze Organize Sanayi Bölgesi

Şahabettin Bilgisu Cad. 41480 Gebze-Kocaeli/TURKEY

Phone : (90)(262) 648 60 00 PBX

Telefax : (90)(262) 648 61 01

web : www.alarko-carrier.com.tr

e-mail : info@alarko-carrier.com.tr

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