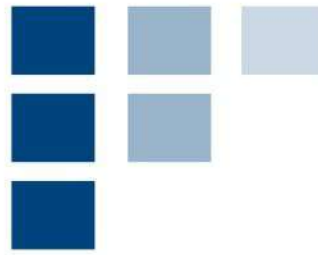


NOON

Heat pump solution





MDV thermal Arctic Series

Focus on your comfort

Split 4~16kW



Mono 4~30kW



Product lineup

Mono	Capacity (kW)	4	6	8	10	12	14	16	18	22	26	30
	220~240V-1N-50Hz	●	●	●	●	●	●	●				
	380~415V-3N-50Hz					●	●	●	●	●	●	●
Split Outdoor unit	Capacity (kW)	4	6	8	10	12	14	16				
	220~240V-1N-50Hz	●	●	●	●	●	●	●	●	●	●	●
	380~415V-3N-50Hz						●	●	●	●	●	●
Split Hydronic box	Model	60			100			160				
	220~240V-1N-50Hz	●			●			●				

Overview

Refrigerant R32 75% less impact on global warming

DC Inverter technology allows precise consumption on real load

Maximum water temperature up to 60°C by heat pump

Minimum operation ambient temperature down to -25°C

COP up to 5.20(Split 4/8kW model)

High energy efficiency level A+++ for energy saving (Water outlet temperature at 35°C)

Offers heating capacity of 100% at -7°C(Water outlet temperature at 35°C; Mono/Split 4kW model)

Provide space heating, cooling and domestic hot water, total heat solution

Compatible with other heat sources such as solar panels and boilers



Compatible with different kinds of terminals

Fan coil unit



Radiator



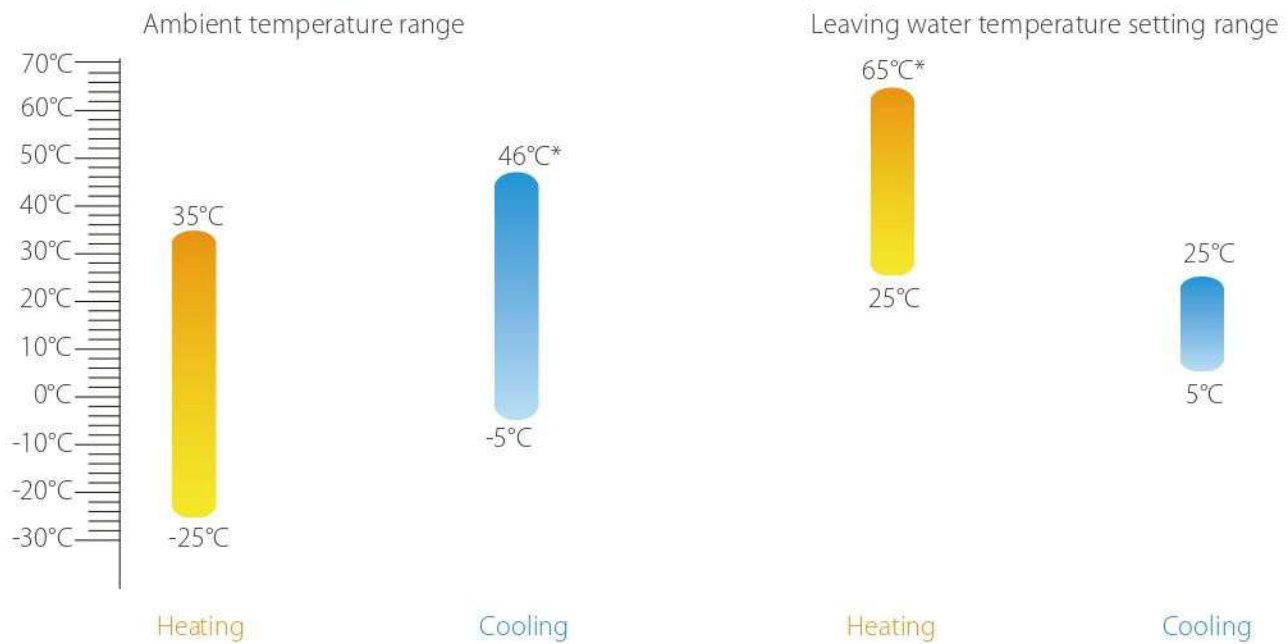
Water tank



Floor heating loop



Wide operation range



* For Mono 4~16kW and Split models, the ambient temperature range for cooling mode is -5°C~43°C.
For Mono 18~30kW models, the leaving water setting temperature range for heating mode is 25°C~60°C.



Multiple function



Note:

1. Only when the immersion heater of tank is available can the disinfection water temperature reaches 70°C.

High reliability

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.



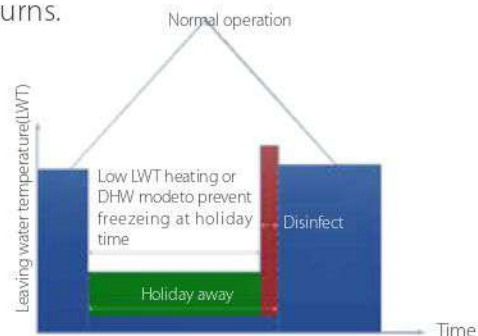
Power limitation function

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



Holiday away

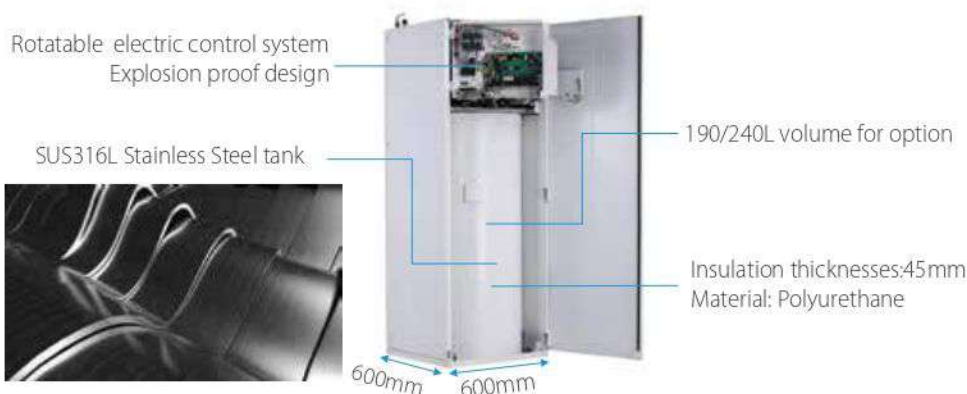
Holiday away function is a mode for improving system reliability and saving energy. Unit operates in heating mode and/or DHW mode with low water temperature to prevent water from freezing in the winter during holiday outside. The user can pre-set, the disinfection mode before he returns home to make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



Safety

The water tank is made of SUS316L stainless steel with excellent corrosion resistance to ensure long-term stable operation of the system.

Rotatable electric control box with explosion proof design improves electric safety and maintenance convenience.

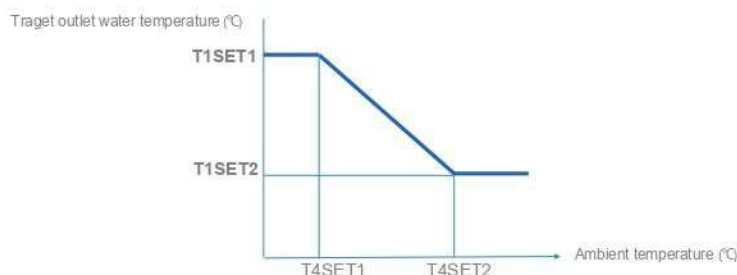


Floor space only 3.6m² Easily adapt to house

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 according to different electrical signals. Power consumption of the system can be automatically adjusted according to the peak and valley power to reduce the power consumption to a great extent.

Cheap electrical signal: DHW mode will be effective to produce hot water

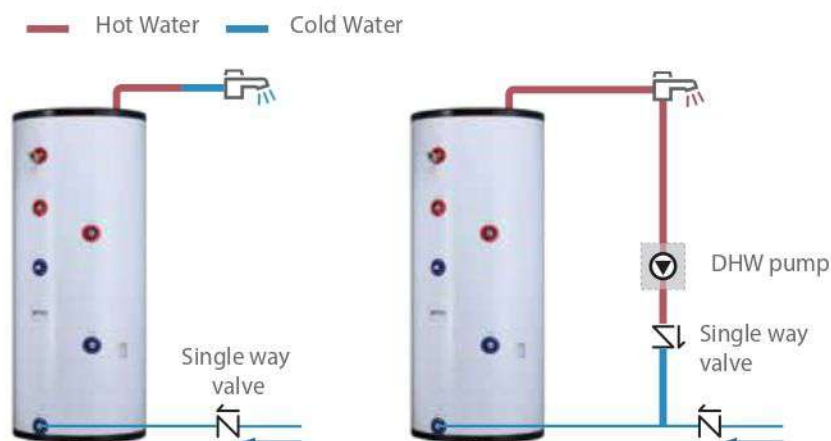
Normal electrical signal: Operates according to users' need.

Expensive electrical signal: Set the maximum operating time for heating mode and cooling mode.



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.



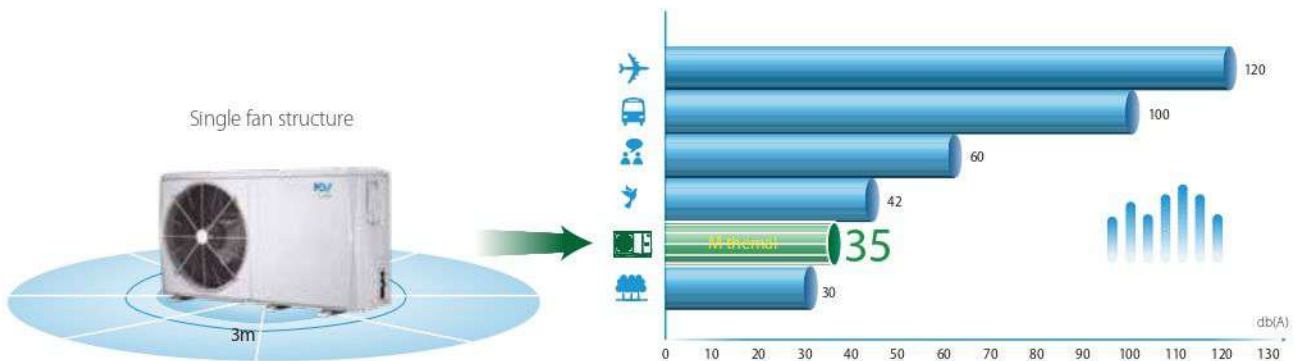
Comfort

Silent mode

Mono 4kW model produces 35dB(A) sound pressure level at 3 meters thanks to multiple optimization design.

Test condition:

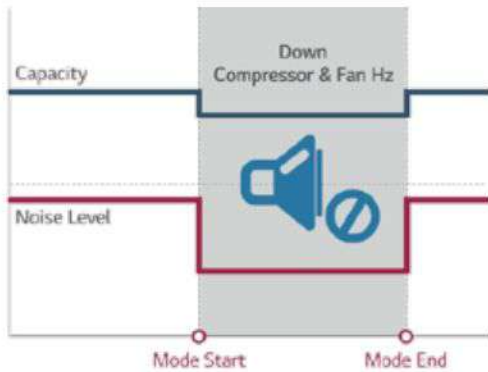
1. Evaporator air in 7°C, 85% R.H., Condenser water in/out 30/35°C
2. Condenser air in 35°C. Evaporator water in/out 23/18°C



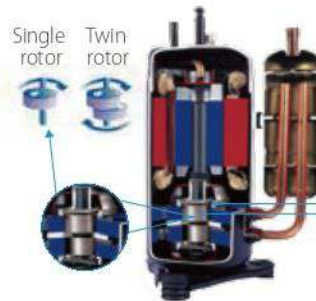
Multiple optimization design makes noise reduction:

Triple noise reduction

Silent mode decrease the sound effectively
Level 2 is more silent than level 1.



Twin rotary compressor



Better balance and extremely low vibration:

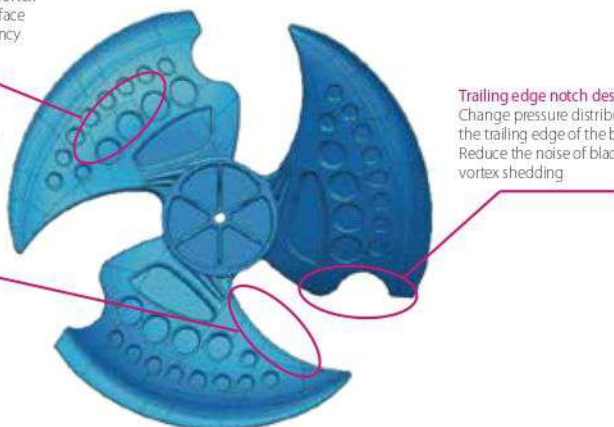
- Twin eccentric cams
- 2 balance weights
- Highly stable moving parts:
- Optimize compressor drive technology
- Highly robust bearings
- Compact structure

Bionic fan design

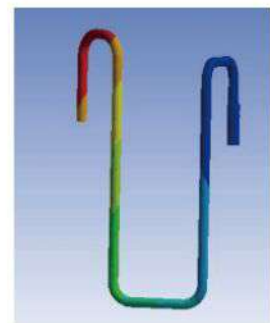
Suction surface concave design
Reduce the size of wake shedding vortex
Improve the flow field on blade surface
Reduce weight and improve efficiency

Leading edge thickening design
Reduce low frequency noise
effectively improve the blade strength

Trailing edge notch design
Change pressure distribution in the trailing edge of the blade
Reduce the noise of blade wake vortex shedding



Optimized piping distribution



Convenient

USB function

Convenient program upgrade

No need to carry any other heavy equipments but only USB can realize program upgrade of indoor unit and outdoor unit.

Parameter setting transmission between wired controllers

Installer can quickly copy the setting from one controller to another via USB, which save the time of on-site installation.



Holiday home

Holiday home function is used to deviate from the normal schedules without having to change them during the holiday at home.



Wifi controller

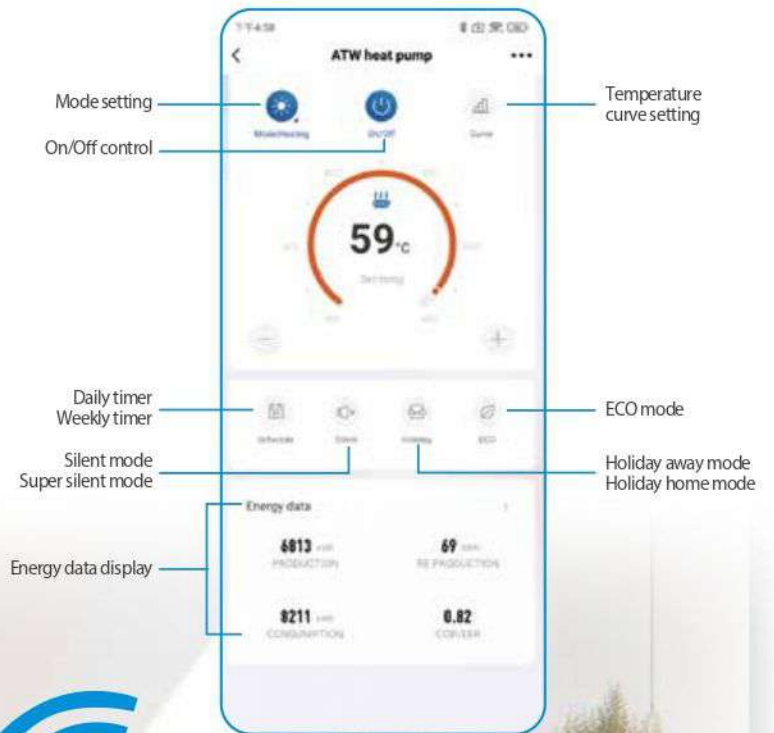
A photograph of a hand pointing at a white thermostat on a wall. The thermostat has a digital display and several buttons. A digital overlay shows the thermostat's interface with various settings and icons. The background is a modern interior with large windows and wooden paneling.

Touch-key design
Liquid Crystal Display
Error code display
Operation parameter checking
Point check function
Multiple languages
Child lock function
Buzzer alarm
Built-in temperature sensor and wifi module
Modbus protocol and network flexibility

For Hydronic Integrated Tank



iLetComfort APP



Easy setting



Double zones control



Monitor system status



Power consumption



Remote control



Energy saving suggestion



Schedule function

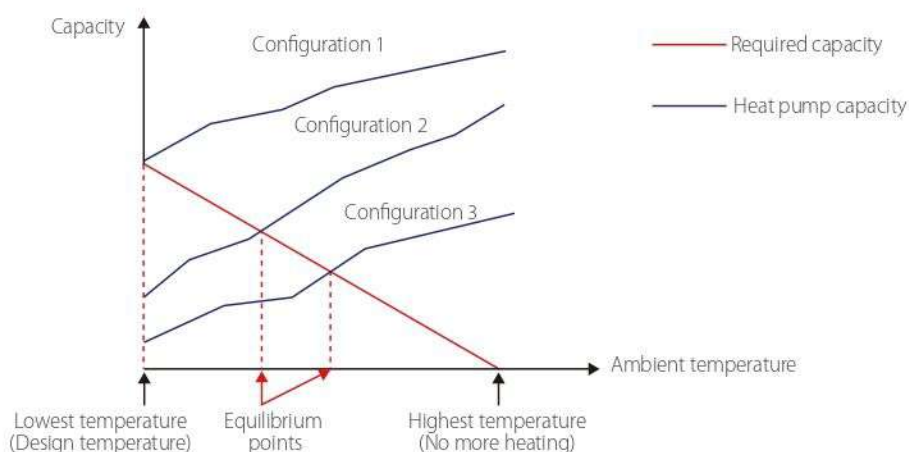
Note:
APP interface changes from time to time as APP is updated and may change slightly vary from those in this document.

Typical Applications

System configurations

MDV thermal 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.

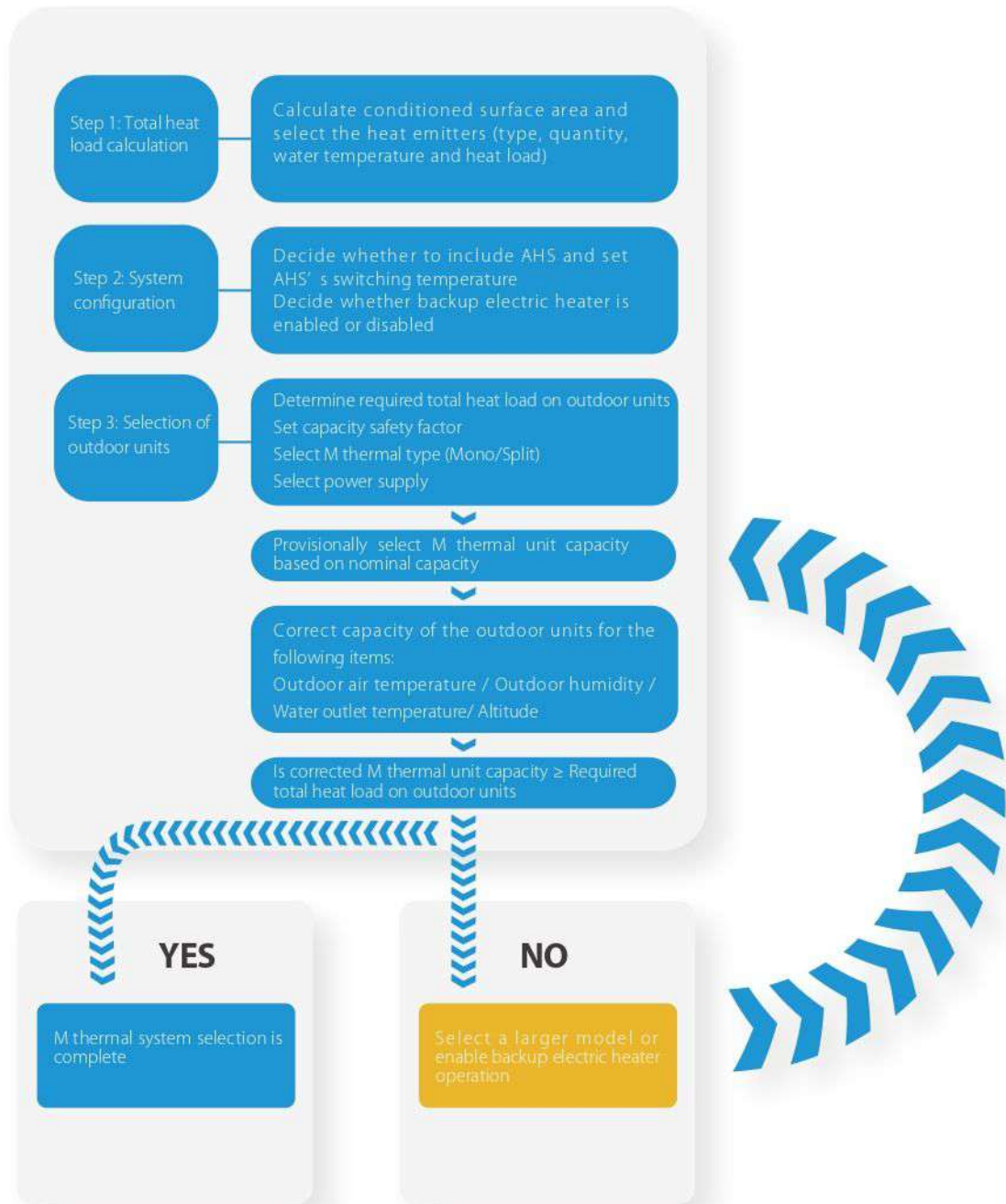
Configuration 2: Heat pump and backup electric heater

- ❖ 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 emitter are:

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

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

MDV thermal 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. MDV thermal 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.



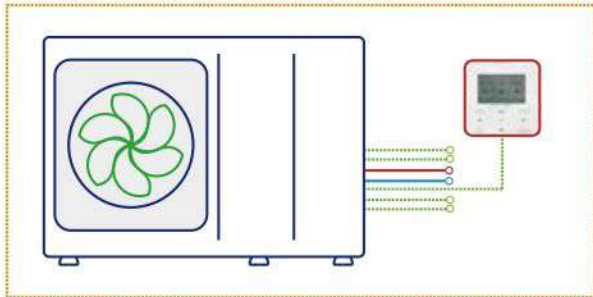
Smart Grid certification indicates MDV thermal can fully utilize electricity from different sources or different price levels, which means like photovoltaic, and the peak valley of urban electricity supply to satisfy different modes operation, which is benefit for cost saving.



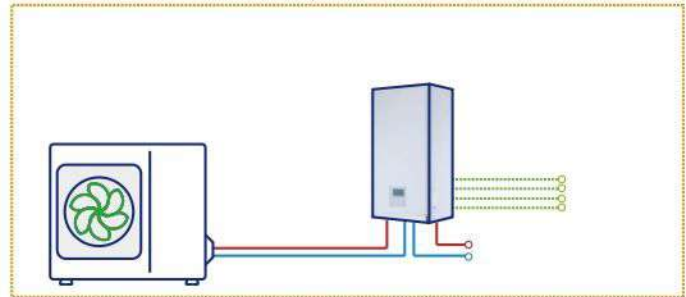
Typical application

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

Mono

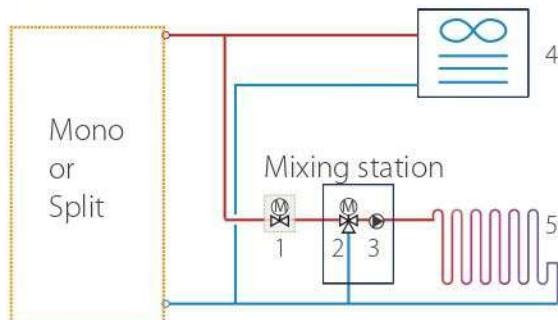


Split



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.

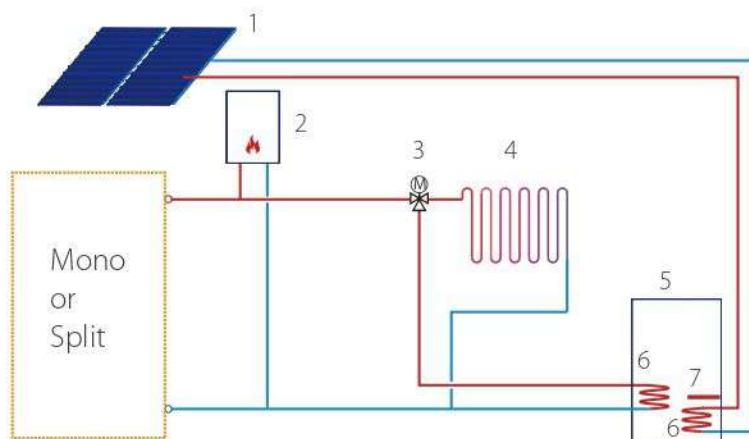


Notes:

1. 2-way valve(field supplied)
2. 3-way valve(field supplied)
3. Water pump(field supplied)
4. Fan coil unit()
5. Floor heating loop(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 heating 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 Split model, backup electric heater can be installed in the hydraulic box.
For Mono 4~16kW models, backup electric heater can be installed in the unit.

Double zones control

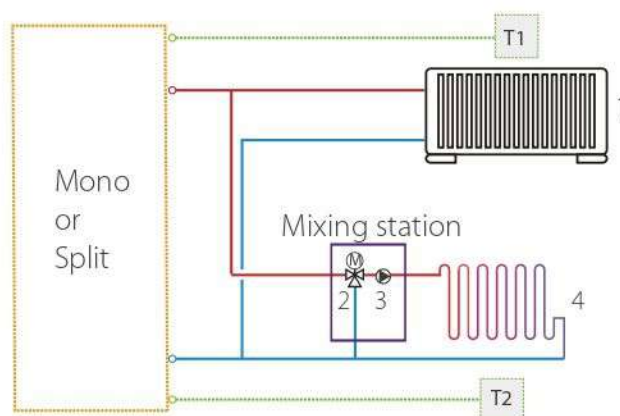
Double zones control is only available for heating mode. It can control different areas to reach different temperature to meet various needs of daily use.

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:

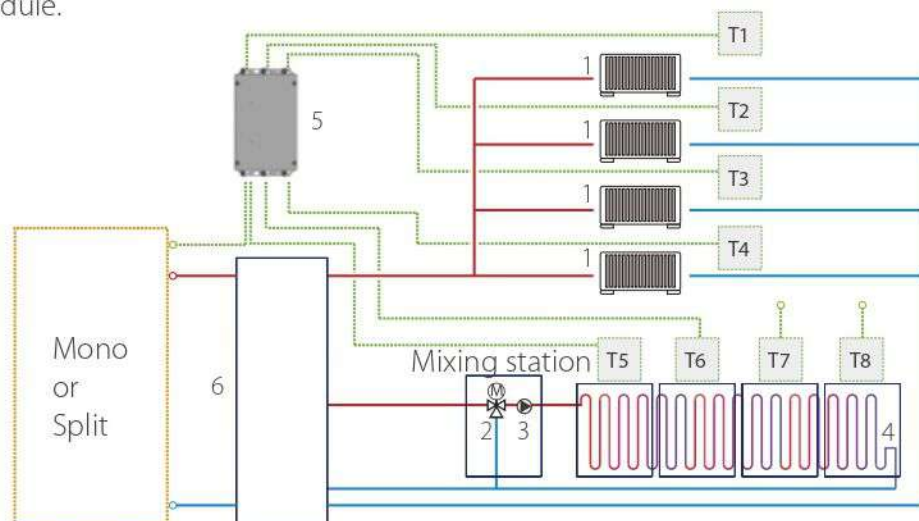
1. Radiator(field supplied)
2. 3-way valve(field supplied)
3. Water pump(field supplied)
4. Floor heating loop(field supplied)

Abbreviation

T: Room thermostat(field supplied)

Multiple rooms control(customized)

Maximum 6 room thermostats are available to be connected with M-kit and 2 thermostats are connected to hydraulic box, which realizes maximum 8 rooms can be controlled. M-kit is connected to the hydraulic module.



Notes:

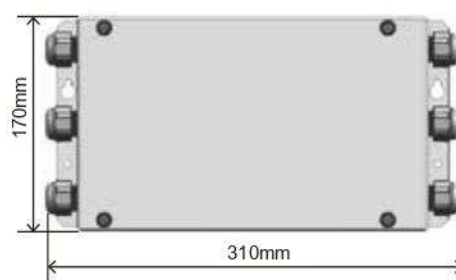
1. Radiator(field supplied)
2. 3-way valve(field supplied)
3. Water pump(field supplied)
4. Floor heating loop
5. M-kit(customized)
6. Balance tank(field supplied)

Abbreviation

T: Room thermostat(field supplied)

M-kit

Wall-mounted
Simple structure
Mini size
Flexible installation
Connect up to maximum 6 thermostats

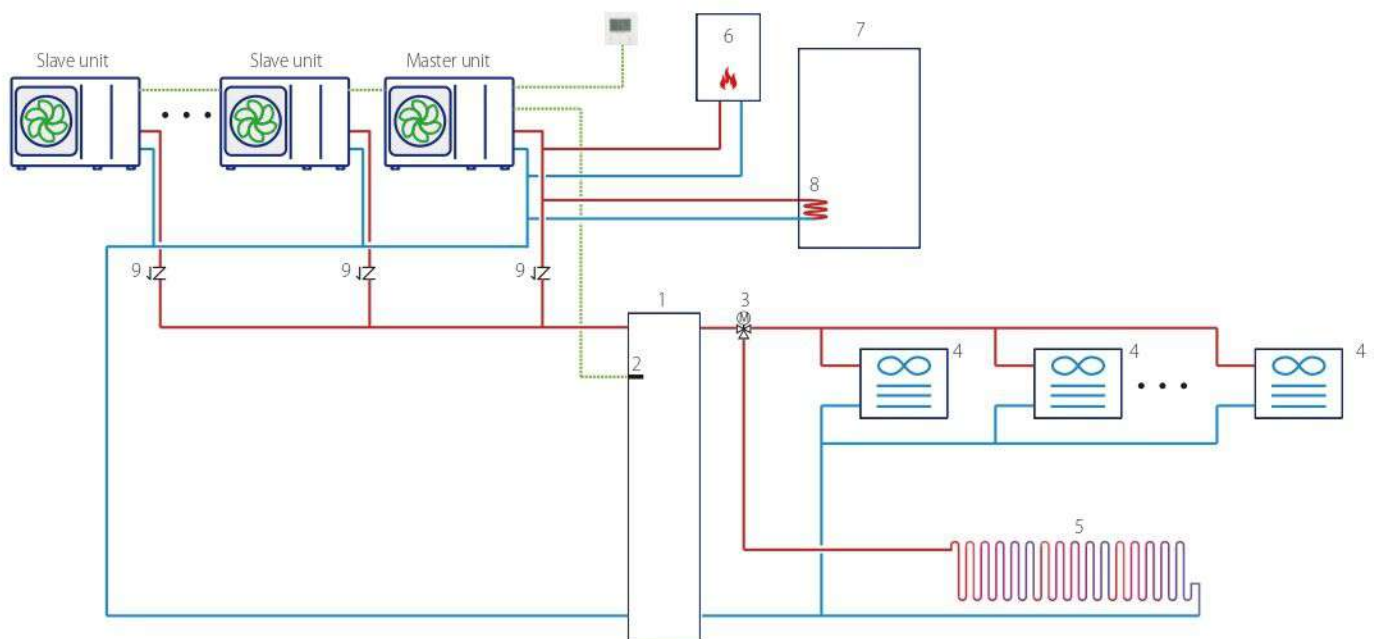


Cascade system*

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
3. 3-way valve(field supplied)
4. Fan coil unit
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

* 1, 4~16kW modes can only combine with each other to reach a larger system capacity from 4~96kW.

2. 18~30kW models can only combine with each other to reach a larger system capacity from 18~180kW.

Arctic Series Mono



Outdoor unit model MDVC-			V4W D2ER8-A	V6W D2ER8-A	V8W D2ER8-A	V10W D2ER8-A	V12W D2ER8-A	V14W D2ER8-A	V16W D2ER8-A	V12W D2BR8-A	V14W D2BR8-A	V16W D2BR8-A
Power supply		V/Ph/Hz	220-240/1/50							380-415/3/50		
Heating ¹	Capacity	kW	4.20	6.35	8.40	10.0	12.1	14.5	15.9	12.1	14.5	15.9
	Rated input	kW	0.82	1.28	1.63	2.02	2.44	3.15	3.53	2.44	3.15	3.53
	COP		5.10	4.95	5.15	4.95	4.95	4.60	4.50	4.95	4.60	4.50
Heating ²	Capacity	kW	4.30	6.30	8.10	10.0	12.3	14.1	16.0	12.3	14.1	16.0
	Rated input	kW	1.13	1.70	2.10	2.67	3.32	3.92	4.57	3.32	3.92	4.57
	COP		3.80	3.70	3.85	3.75	3.70	3.60	3.50	3.70	3.60	3.50
Heating ³	Capacity	kW	4.40	6.00	7.50	9.50	11.9	13.8	16.0	11.9	13.8	16.0
	Rated input	kW	1.49	2.03	2.36	3.06	3.90	4.68	5.61	3.90	4.68	5.61
	COP		2.95	2.95	3.18	3.10	3.05	2.95	2.85	3.05	2.95	2.85
Cooling ⁴	Capacity	kW	4.50	6.50	8.30	9.90	12.00	13.50	14.90	12.00	13.50	14.90
	Rated input	kW	0.82	1.35	1.64	2.18	3.04	3.75	4.38	3.04	3.75	4.38
	EER		5.50	4.80	5.05	4.55	3.95	3.60	3.40	3.95	3.60	3.40
Cooling ⁵	Capacity	kW	4.70	7.00	7.45	8.20	11.5	12.4	14.0	11.5	12.4	14.0
	Rated input	kW	1.36	2.33	2.22	2.52	4.18	4.96	5.60	4.18	4.96	5.60
	EER		3.45	3.00	3.35	3.25	2.75	2.50	2.50	2.75	2.50	2.50
Seasonal space heating energy efficiency class ⁶	Water outlet at 35°C	class	A+++									
	Water outlet at 55°C	class	A++									
Refrigerant	Type(GWP)		R32(675)									
	Charged volume	kg	1.40		1.40			1.75				
Sound power Level ⁷		dB	55	58	59	60	65	65	68	65	65	68
Net dimension (WxHxD)		mm	1295x792x429				1385x945x526					
Packing dimension (WxHxD)		mm	1375x965x475				1465x1120x560					
Net/Gross weight		kg	98/121		121/148		144/170			160/188		
Water pump	Max. pump head	m	9									
Water piping connection		mm	R1"			R5/4"						
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	Standard mounted	kW	/									
	Optional	kW	3	3	3/9	3/9	3/9	3/9	3/9	3/9	3/9	3/9
	Capacity steps		1	1	1/3	1/3	1/3	1/3	1/3	1/3	1/3	1/3
	Power supply	3kW 9kW	V/Ph/Hz	220-240/1/50								
380-415/3/50												

Notes:

1. Evaporator air in 7°C, 85% R.H., Condenser water in/out 30/35°C

2. Evaporator air in 7°C, 85% R.H., Condenser water in/out 40/45°C

3. Evaporator air in 7°C, 85% R.H., Condenser water in/out 47/55°C

4. Condenser air in 35°C. Evaporator water in/out 23/18°C

5. Condenser air in 35°C. Evaporator water in/out 12/7°C

6. Seasonal space heating energy efficiency class testes in average climate general conditions.

7. Testing standard: EN12102-1.

8. Backup electric heater is built into all models.

For three phase type backup electric heater, 3/6kW can be achieved by changing DIP switch when heat pump is equipped with 9kW. In this case, three phase power supply is needed.

9. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.

Arctic Series Mono



Model			MDVC-V18WD2BR8-A	MDVC-V22WD2BR8-A	MDVC-V26WD2BR8-A	MDVC-V30WD2BR8-A
Power supply		V/Ph/Hz	380-415/3/50			
Heating ¹	Capacity	kW	18.00	22.00	26.00	30.10
	Rated input	kW	3.83	5.00	6.37	7.70
	COP		4.70	4.40	4.08	3.91
Heating ²	Capacity	kW	18.00	22.00	26.00	30.00
	Rated input	kW	5.14	6.47	8.39	10.35
	COP		3.50	3.40	3.10	2.90
Heating ³	Capacity	kW	18.00	22.00	26.00	30.00
	Rated input	kW	6.55	8.30	10.61	13.04
	COP		2.75	2.65	2.45	2.30
Cooling ⁴	Capacity	kW	18.50	23.00	27.00	31.00
	Rated input	kW	3.90	5.00	6.28	7.75
	EER		4.75	4.60	4.30	4.00
Cooling ⁵	Capacity	kW	17.00	21.00	26.00	29.50
	Rated input	kW	5.57	7.12	9.63	11.57
	EER		3.05	2.95	2.70	2.55
Seasonal space heating energy efficiency class ⁶	Water outlet at 35°C	class	A+++	A+++	A+++	A++
	Water outlet at 55°C	class	A++	A++	A+	A+
Refrigerant	Type(GWP)		R32(675)			
	Charged volume		5.0			
Sound power level ⁷		dB	71	73	75	77
Net dimension (WxHxD)		mm	1129x1558x528			
Packing dimension (WxHxD)		mm	1220x1735x565			
Net/Gross weight			177/206			
Water pump	Max. pump head	m	12.0	12.0	12.0	12.0
Water piping connection		inch	1-1/4" BSP	1-1/4" BSP	1-1/4" BSP	1-1/4" BSP
Ambient temperature range	Cooling	°C	-10-46			
	Heating	°C	-25-35			
	DHW	°C	-25-43			
LWT setting range	Cooling	°C	0-25			
	Heating	°C	25-60			
	DHW	°C	20-60			

Notes:

1. Evaporator air in 7°C, 85% R.H., Condenser water in/out 30/35°C.

2. Evaporator air in 7°C, 85% R.H., Condenser water in/out 40/45°C.

3. Evaporator air in 7°C, 85% R.H., Condenser water in/out 47/55°C.

4. Condenser air in 35°C, Evaporator water in/out 23/18°C.

5. Condenser air in 35°C, Evaporator water in/out 12/7°C.

6. Seasonal space heating energy efficiency class testes in average climate general.

7. Testing standard: EN12102-1.

8. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.