

MDV1H202311

Midea Building Technologies Division
Midea Group

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Heat pump solution



MDV

MDV was created in 1999 under Midea' s HVAC & Building Technologies Division as a professional climatic solution brand for sales via specialized air-conditioning companies. MDV' s brand portfolio (range of products produced under MDV brand) consists of cutting-edge technology and commercial and industrial equipment. These include VRF (Variable Refrigerant Flow) systems, air source heat pump, chillers and fan-coils, compressor condensing units, light commercial air-conditioners, used in commercial segment. Focusing on the professional channel for more than 10 years, MDV brand is recognized worldwide as one "professional HVAC solutions" .



Midea Global Spare Parts Center

The global spare parts center provides high quality and fast spare parts supply. Midea online system (<https://tsp.midea.com>) can query and purchase spare parts with one click, further shortening the supply time of spare parts.

The “**2** (HQ Spare parts center) + **10** (Regional Spare parts center) + **N** (Country Spare parts inventory)” Spare Parts Layout can ensure the timely supply of global after-sales spare parts.



MBT Learning Academy



Objective

MBT Learning Academy aims to provide training to the sales personnel as well as technical personnel in order to increase the utilization for your MBT equipment. Once you have purchased equipment from MBT, taking care of the equipment is topmost priority. MBT Learning Academy offers training courses to learn firsthand from the manufacturer what it takes to get the best out of your MBT product. The goal of MBT Learning Academy is to provide product specific training, safe work procedures and expertise in carrying out the installation and maintenance of MBT products as well as teaching the main selling points in order to help the sales people sell the MBT products with ease.

Training Centers

Our world class training centers provide knowledge and skills necessary to efficiently deploy MBT technologies. The training centers include dedicated laboratories to provide hands-on experiences with various systems, components and controls to refresh and enhance the skills of your sales, design and installation and service teams. Right now we operate our trainings from the below two locations:

1. Midea MBT Training Center

Address: MBT Training Center, 2nd Floor, Building 6, Midea Global Innovation Center, Beijiao, Shunde, Foshan, China Pin- 528311
The Midea MBT Training Center is situated 70 kilometers from Baiyun Guangzhou International Airport.
Products: VRF, M thermal

2. Chongqing Midea Training Center

Address: No. 15, Qiangwei Road, Nan'an District, Chongqing, China
Chongqing Midea Training Center is 35 kilometers from Chongqing International Airport.
Products: Centrifugal Chiller, Screw/Scroll Chiller and Terminals



VRF training



M thermal training



Chiller training

Global Technical Trainings

The training courses by MBT Learning Academy are divided into the following two categories with different targeted audiences for each.

Design and Application Trainings: The design and application trainings for various products are basically for the sales personnel selling MBT products in order to give them basic understanding about the main features. The trainings are conducted on a global level inviting sales engineers, technical engineers, consultants and project designers from different parts of the world.

After Sales- Service Trainings: These trainings are dedicated for the After Sales/ Service personnel in order for them to better carry out the installation, commissioning and maintenance of MBT products. Technical person and engineers from different parts of the world are invited to take part in these trainings.

Online Trainings: The trainings to the Global customers can also be done online with the help of Team and Midea Meeting software. This way, the customers do not need to be physically present for the training. Amid the COVID-19 pandemic, MBT Learning Academy has conducted a lot of online trainings. The training videos are available on the TSP system and can be downloaded by using QR codes.

Products: VRF, M thermal, Chillers and Terminals

Highly Skilled Trainers: The trainers for various courses by MBT Learning Academy are expert people with vast experiences in their field. Most of them have a deep insight about the global HVAC market and help the attendees to better understand the MBT products.

Training Certificates: The attendees for Global trainings are provided a training certificate highlighting the courses discussed in the training, signed by Mr. Henry Cheng, General Manager of MBT Overseas Sales Company

Registration: You can contact your respective Midea contact point to provide you with the complete schedule about the global technical trainings as well as how to register for these trainings. For further enquiries about the Global Trainings conducted by MBT Learning Academy, please send email at the following email address: peeyush@midea.com



Arctic Series

Technical Support Platform (TSP)

TSP is a platform for customers to provide professional technical support. Through TSP, you can inquire product information, documentation, spare parts and trouble shooting, initiate technical questions and quality complaint process, and also support self-service spare parts order.

Website address: <https://tsp.midea.com/>



My order

Inquire spare parts from exploded view and place spare parts order directly in TSP.

Document inquiry and download

View or download product technical documentation online, such as catalogs, images, training PPTs, etc.

Technical inquiry & FAQ

Initiate technical questions online, and our technicians answer them online in time. Find a quick solution in the FAQ.

Troubleshooting

Query the error code and solution by SN, model name, error code or product type.

Complain

Initiate the product quality complaint process online, and our after-sales engineers handle related complaints in time.



Mobile Intelligence Service App (MISA)

MISA is the mobile terminal of TSP, with the same functions as TSP. The mobile service makes technical support more timely and convenient.

<https://link.midea.com>



Technical Enquiry



Troubleshooting

Download



Scan above to download the mobile app



FAQ



Complain



Search product manuals

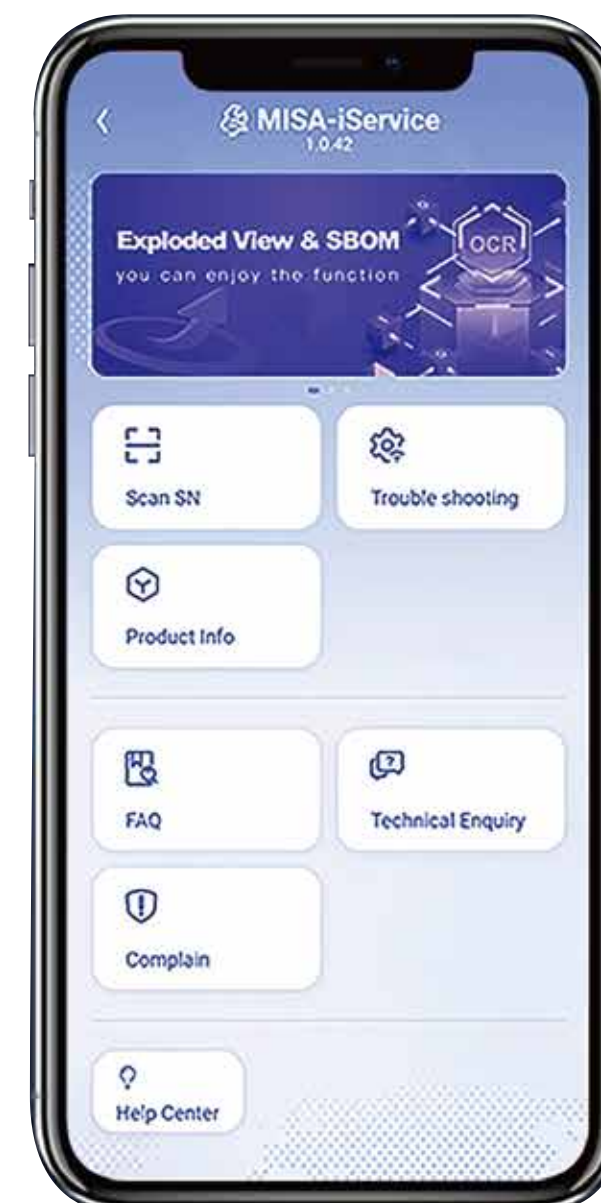


Spare Parts list

Feedback



Thank you very much for your attention and advice



Reference projects



Aston Kuta Bali Hotel (Five Star)

- Country: Indonesia
- City: Bali
- Completion Year: 2010
- Unit: ATW heat pump



Sheraton Bandara Resort Hotel (Five Star)

- Country: Indonesia
- City: Jakarta
- Completion Year: 2011
- Unit: ATW heat pump



Grand Aston Tunjungan (Five Star)

- Country: Indonesia
- City: Surabaya
- Completion Year: 2013
- Unit: ATW heat pump



The Royale Springhill Residences

- Country: Indonesia
- City: Jakarta
- Completion Year: 2010
- Unit: ATW heat pump

Heat pump solution

MDV thermal Arctic HT Series.....13

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ESG-Inv Swimming Pool Heat Pump.....79

Aqua thermal Super Heat Pump.....93



MDV thermal Arcitic HT Series



Product Lineup

	Capacity(kW)	4	6	8	10	12	14	16
Mono	220-240V~1N~50Hz	●	●	●	●	●	●	●
	380-415V~3N~50Hz					●	●	●



Environment friendly

- R290 Natural Refrigerant
- GWP=3
- ODP=0



Comfort and health

- Silence mode
- Disinfection
- Double zone control



Wider temperature range

- Min OAT=-25 °C
- Max LWT=75°C



High efficiency

- Space heating up to A+++ (W35)
- Higher capacity output even at a low temperature



User friendly controller

- Color screen
- Scenic and intuitive interface



High reliability

- Hermetic electric control box
- Explosion-proof design
- Vertical placed key component

Abbreviation

GWP: Global Warming Potential
ODP: Ozone Depletion Potential

OAT: Outdoor Ambient Temperature
LWT: Leaving Water Temperature

Compatible with different kinds of terminals



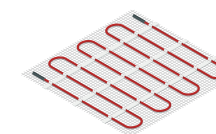
Fan coil unit



Radiator



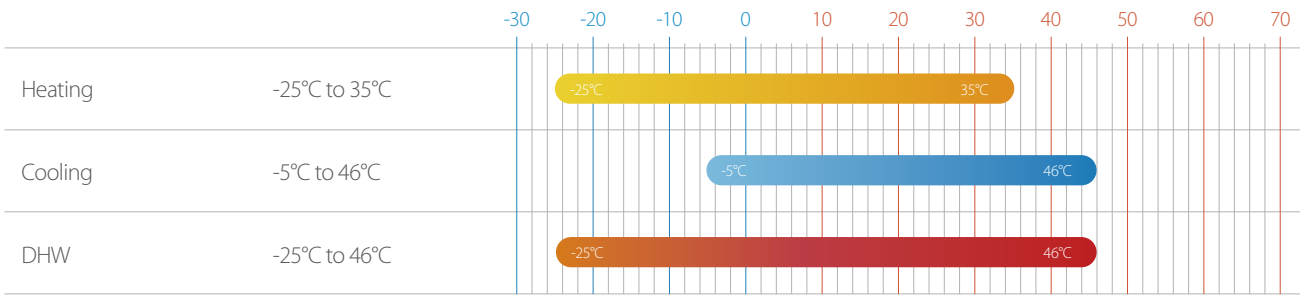
Water tank



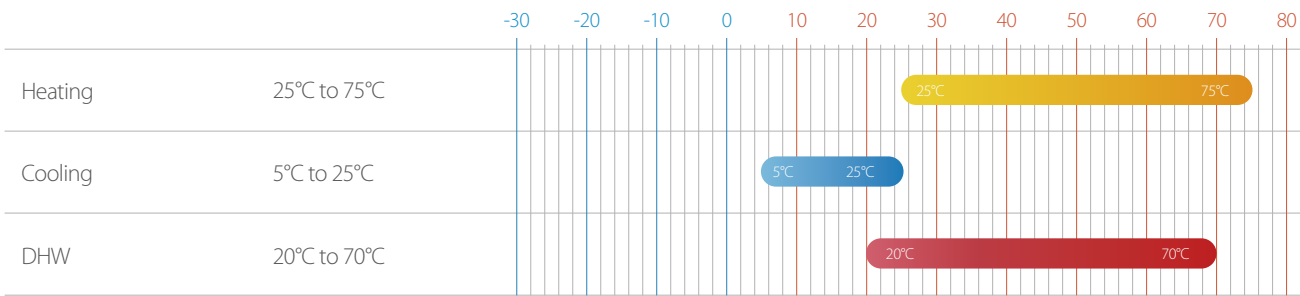
Floor heating loop

Wide operation range

Ambient temperature range



Leaving water setting temperature



Powerful heating



55 °C hot water under -2 °C ambient temperature



75 °C hot water under -1 °C ambient temperature

0 °C

R290

Naturally occurring Refrigerant

GWP=3

Lower impact on global warming

ODP=0

Neutral for the ozone layer

- Much lower GWP value to meet EU carbon neutrality
- No ozone depletion potential
- Excellent thermodynamic performance
- Great thermal efficiency for most conditions
- Reduced charge than most refrigerant in the market
- A safe bet for the long term solution

High Reliability

R290 M thermal heat pump adopts well-known brand components and advanced manufacturing processes to ensure product reliability. It is worth mentioning that, in order to best reassure customers about the use of R290 heat pump, the electric control system adopts a hermetic design to further improve the overall reliability.

Advanced manufacturing technology



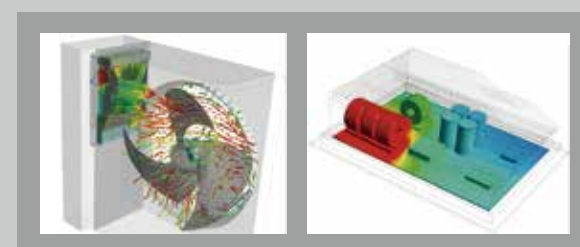
Hermetic electric control box



- Excellent sealability



- Explosion-proof design



Upgrade air flow design

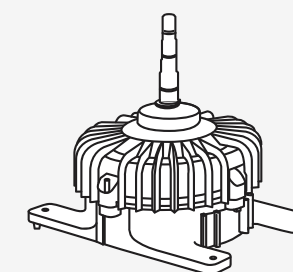
Thanks to the special air flow design and multiple simulations, the heat dissipation rate of electric control system has been greatly improved, which provides a strong support for heat pump to run stably in a wide ambient temperature range of -25°C to 46°C

DC Inverter

All DC Inverter components

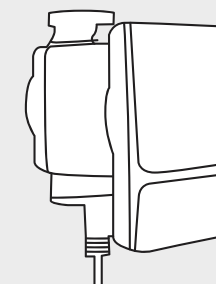
DC Inverter fan motor

- CE/CCC certification
- BLDC fan motor with stepless control
- Quiet operation
- Low power consumption
- 8 poles
- Insulation grade E



DC Inverter water pump

- CE certification
- High efficiency
- 9m pump head
- Insulation grade F
- Level of protection IPX44



DC Inverter compressor

CE certification

Wide working frequency

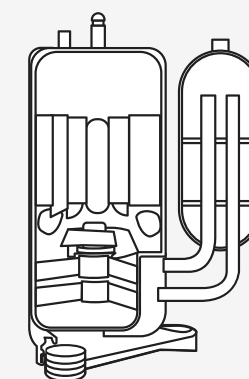
- High efficiency
- Six poles
- Insulation grade E

Twin eccentric cams

- 2 balance weights
- Better balance
- Low vibration

Compact structure

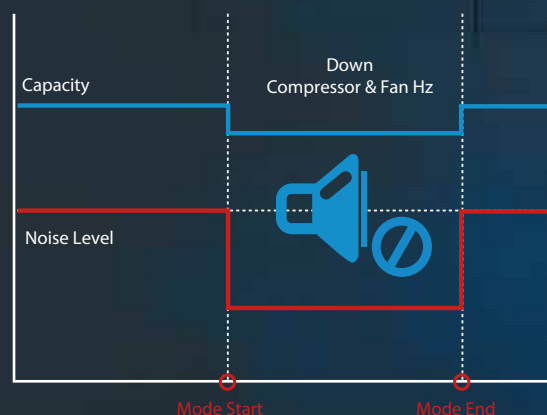
- Highly robust bearings
- Highly stable moving parts



Quiet

• Silence mode operation

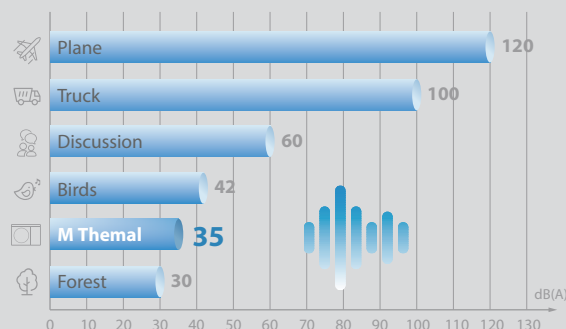
Silence mode decreases the sound effectively. Level 2 is more silent than level 1.



• Twin rotary compressor



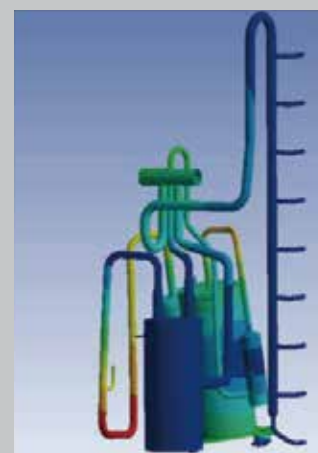
• Silent mode



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

1. Outdoor air temperature 7°C DB, 6°C WB; Water inlet 30°C, Water outlet 35°C.
2. Outdoor air temperature 35°C DB; Water inlet 23°C, Water outlet 18°C

• Optimized piping distribution



Modal analysis and harmonic response analysis help to improve the piping design for reducing noise

• Bionic fan design

Suction surface concave design

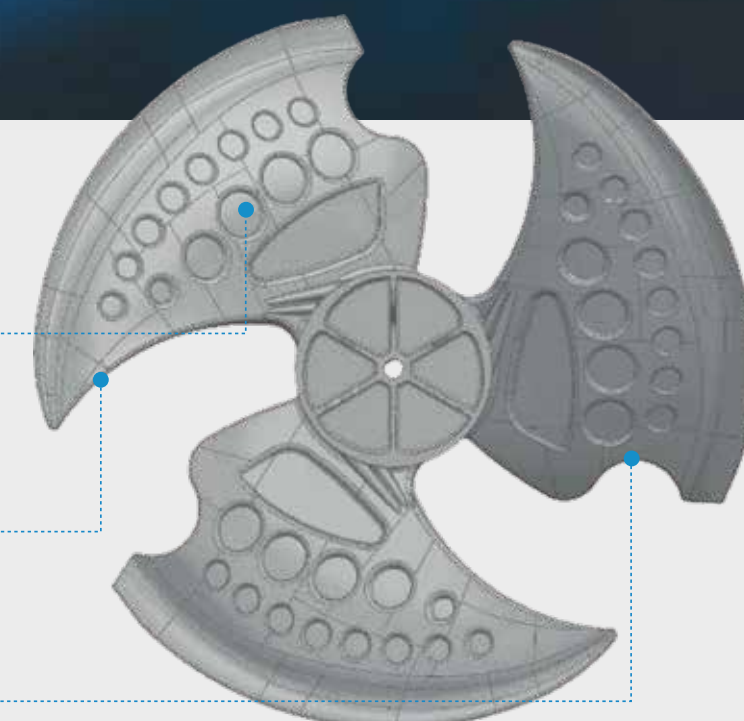
Reduce the size of wake shedding vortex Improve the flow field on blade surface Reduce weight and improve efficiency

Leading edge thickening design

Reduce low frequency noise Effectively improve the blade strength

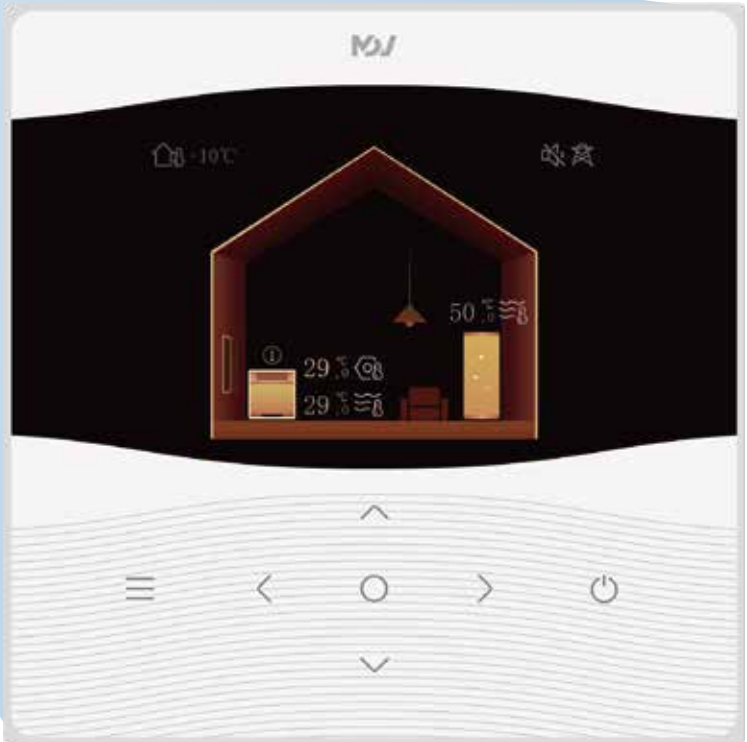
Trailing edge notch design

· Change pressure distribution in the trailing edge of the blade
· Reduce the noise of blade wake vortex shedding





Convenient



- Color screen
- Scenic and intuitive interface
- Temperature status display
- All terminals' status display
- Liquid crystal display panel
- Non-polarized wiring connection
- Touch-key design
- Built-in Wifi module
- Modbus protocol
- APP control
- Mutiple languages

Daily timer

Electrical heater

Silent mode

Holiday mode

Compressor

Disinfection

Energy saving mode

Additional heat source

Water pump

Weekly timer

Defrost

Anti-freezing function

Mains electricity

Solar heating function



iLetComfort APP



Easy setting



Double zones control



Monitor system status



Power consumption



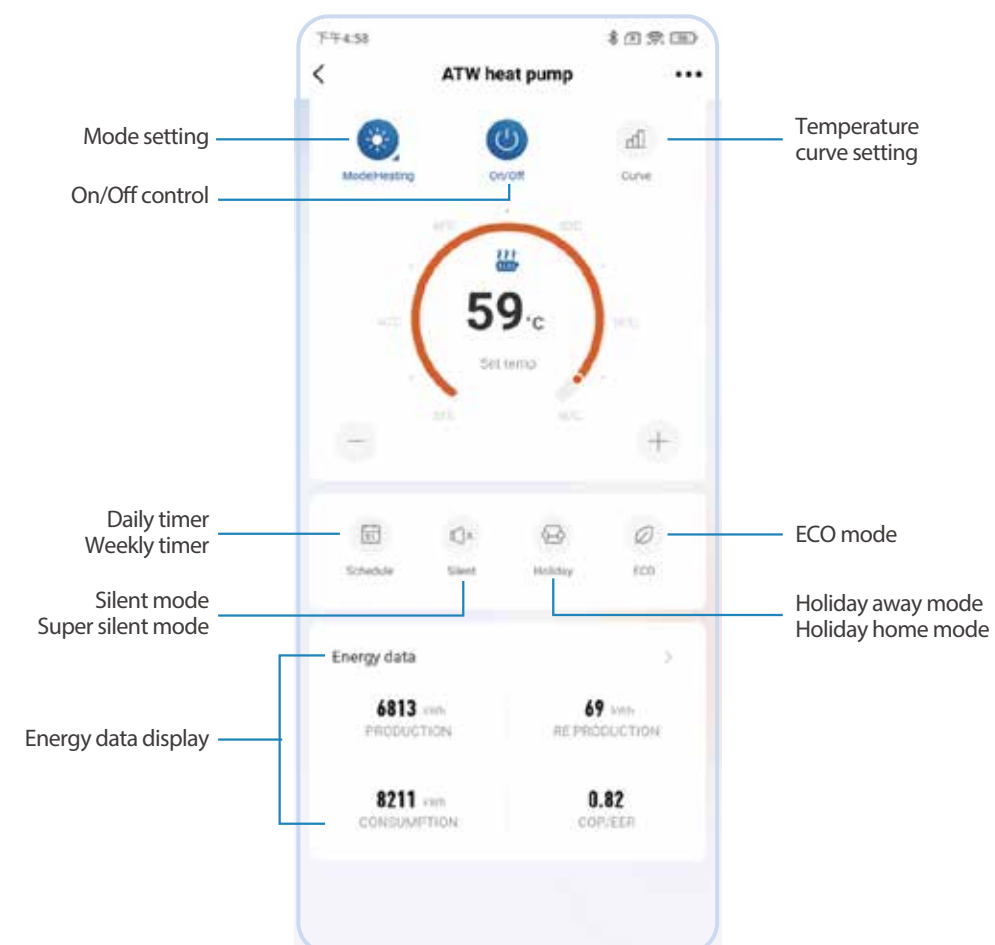
Remote control



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.

Energy Utilization and Analysis



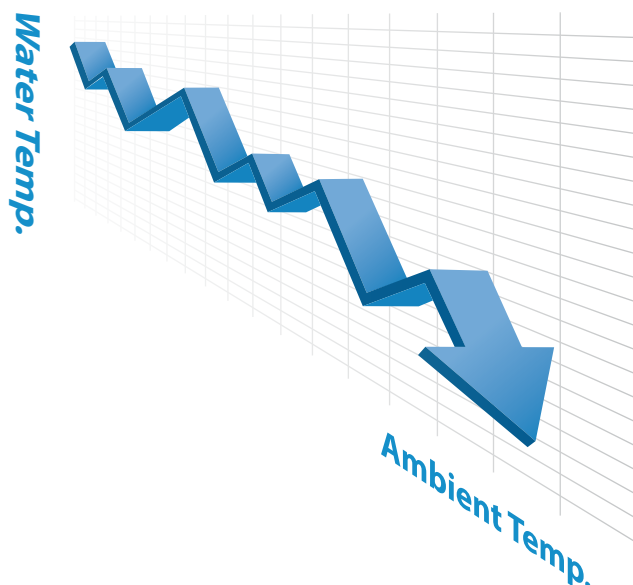
Smart Grid

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



Climate curves

This function aims that water temperature regulates automatically depending on the outdoor ambient temperature.

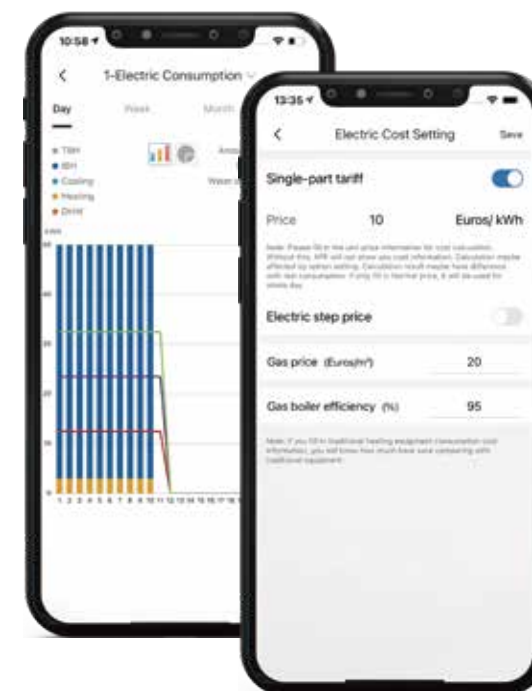
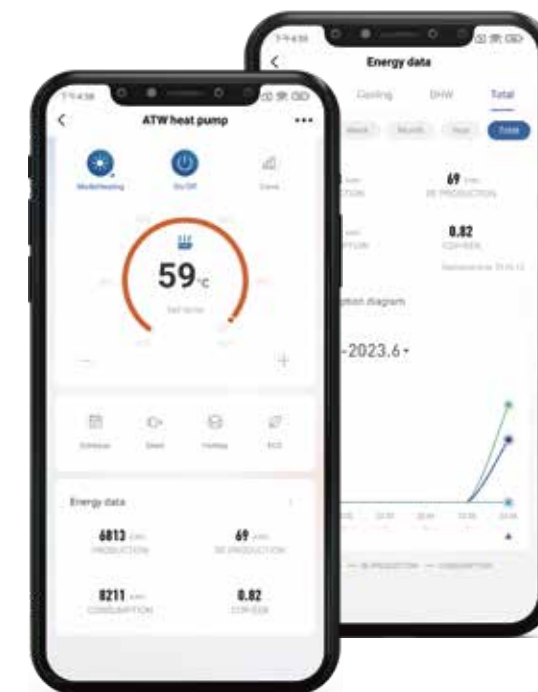


- Three types of temperature types: Standard, Custom, and ECO
- 32 standard weather temperature curves
- "Temperature offset" function to control precisely Customized curves in different zones and different modes

Energy and electric consumption

Energy consumption and suggestion

- M thermal unit can be controlled through APP and energy consumption can be displayed on APP.
- Energy-saving suggestion can be displayed on APP.



Electric consumption function

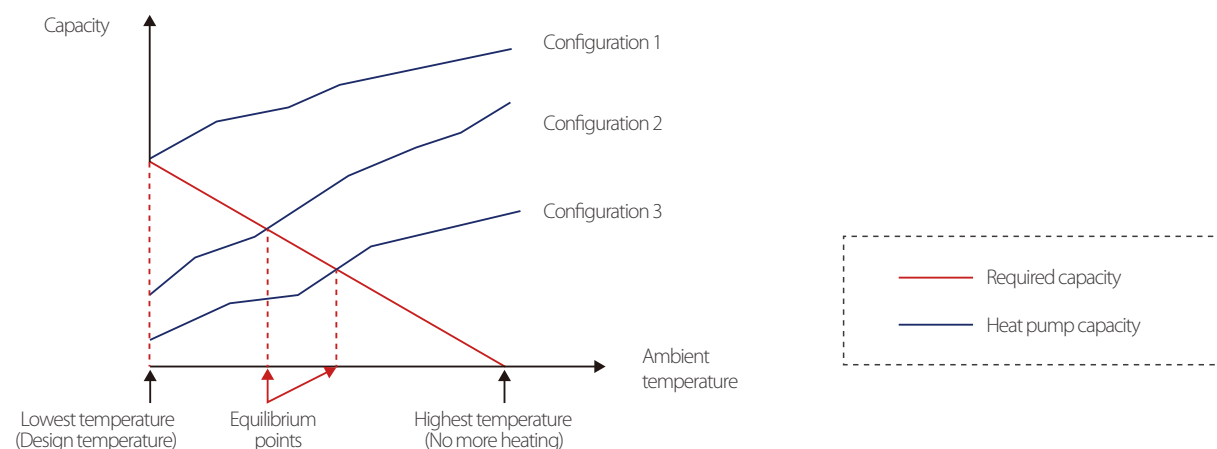
- Electric consumption and cost calculation function are available to activate for monitoring the electricity consumed.

Typical Applications

System configurations

M 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

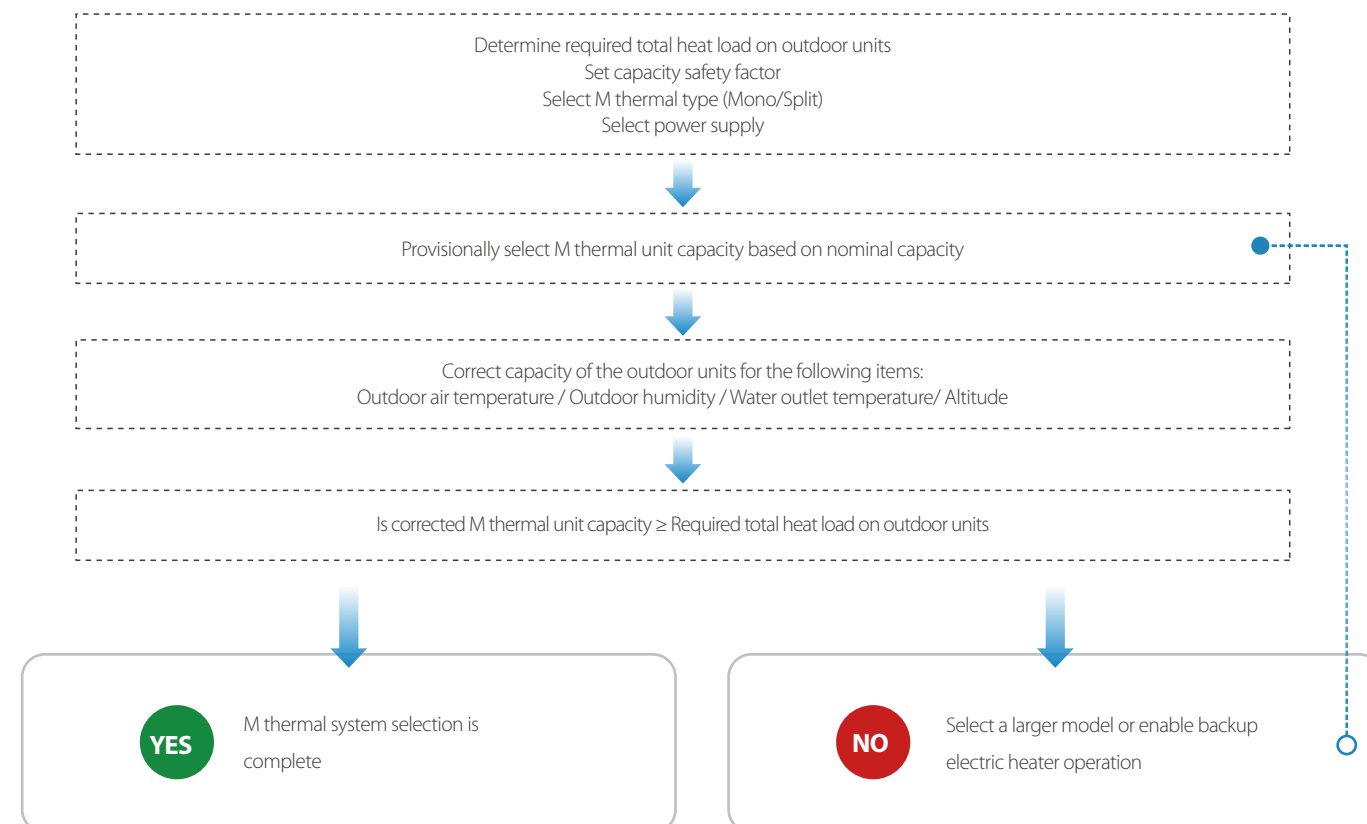
Step 1 Total heat load calculation

Calculate conditioned surface area and select the heat emitters (type, quantity, water temperature and heat load)

Step 2 System configuration

Decide whether to include AHS and set AHS's switching temperature
Decide whether backup electric heater is enabled or disabled.

Step 3 Selection



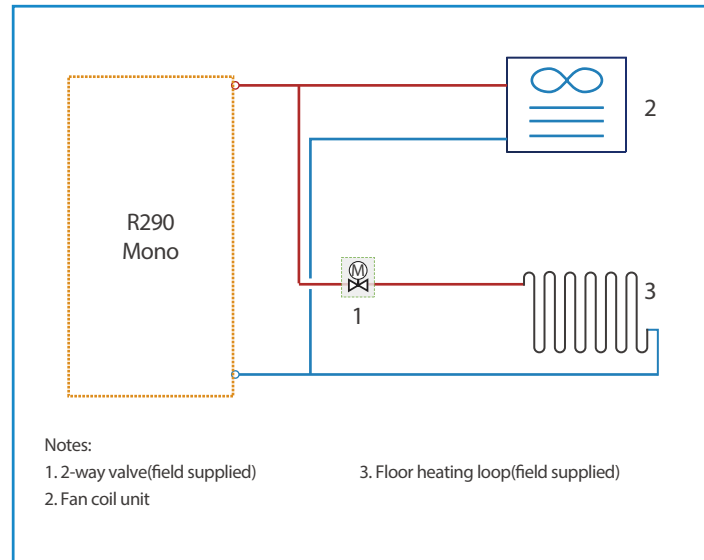
Leaving Water Temperature (LWT)

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 55°C

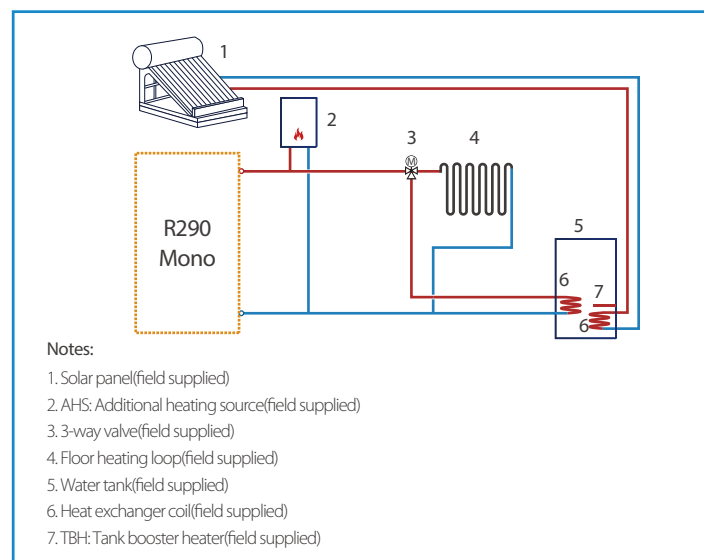
Application Scenarios

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 space cooling. 2-way valve is used to prevent water from entering floor heating loops then result in condensation during cooling.



Heating, DHW and hybrid heat source

Backup electric heater(optional) or AHS provide additional heating to raise the leaving water 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.

Double zones control

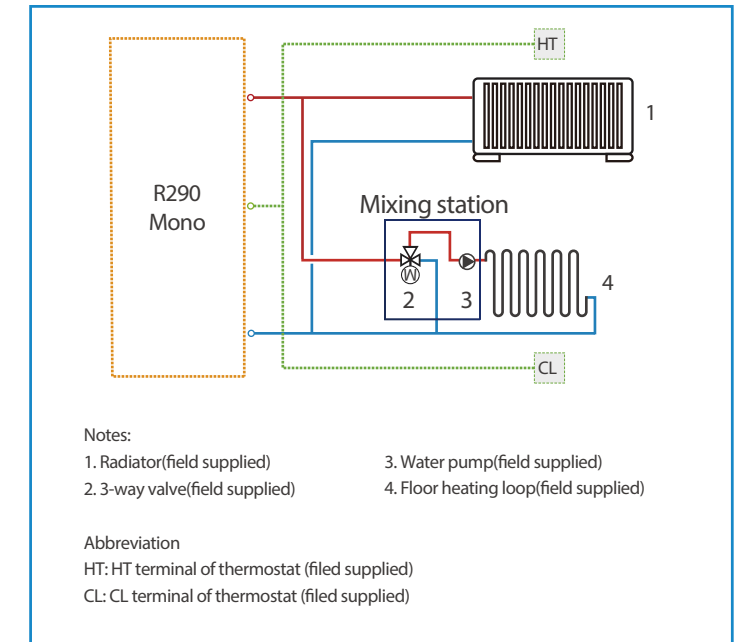
Double zones control is only available for heating mode. It can control different areas to reach different temperature to meet various needs. Mixing station is used to adjust appropriate water temperature for floor heating loops using.

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 room temperature.

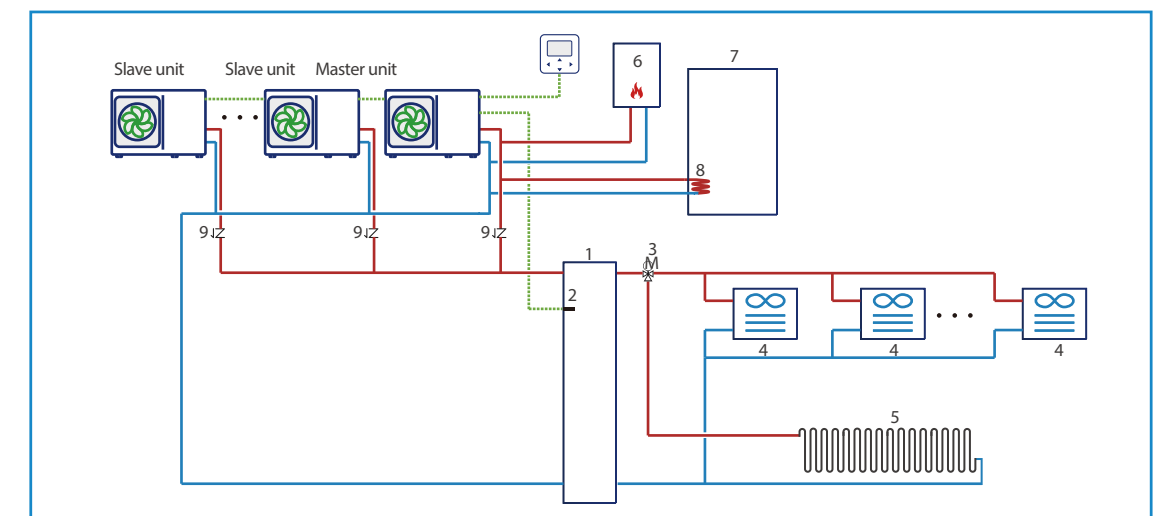
2. Using wired controller and thermostat

Wired controller sets the mode and water temperature. Both Zone 1 and Zone 2 can be controlled by thermostat. Zone1 is controlled by "HT" terminal, Zone 2 is controlled by "CL" terminal.



Mono Cascade system

Cascade system design is perfect when an extension of capacity becomes required as the building demand evolves. Maximum 6 units can be controlled in group with one controller. Balance tank temperature control makes water temperature more accurate.



Specifications



Model			MDVC-V4WD2ER7-A	MDVC-V6WD2ER7-A	MDVC-V8WD2ER7-A	MDVC-V10WD2ER7-A	MDVC-V12WD2ER7-A	MDVC-V14WD2ER7-A	MDVC-V16WD2ER7-A	MDVC-V12WD2BR7-A	MDVC-V14WD2BR7-A	MDVC-V16WD2BR7-A
Power supply			220-240V-50Hz	220-240V-50Hz	220-240V-50Hz	220-240V-50Hz	220-240V-50Hz	220-240V-50Hz	220-240V-50Hz	380-415V-3N-50Hz	380-415V-3N-50Hz	380-415V-3N-50Hz
Heating A7W35	Capacity	W	4500	6200	8400	10000	12000	14000	15000	12000	14000	15000
	Rated input	W	874	1265	1680	2128	2500	3111	3409	2500	3111	3409
	COP		5.15	4.90	5.00	4.70	4.80	4.50	4.40	4.80	4.50	4.40
Heating A7W45	Capacity	W	4500	6400	8200	10000	12000	14000	15000	12000	14000	15000
	Rated input	W	1111	1684	2130	2740	3243	4000	4478	3243	4000	4478
	COP		4.05	3.80	3.85	3.65	3.70	3.50	3.35	3.70	3.50	3.35
Heating A7W55	Capacity	W	4600	6200	7800	9500	12000	14000	15000	12000	14000	15000
	Rated input	W	1438	2000	2438	3115	3871	4667	5263	3871	4667	5263
	COP		3.20	3.10	3.20	3.05	3.10	3.00	2.85	3.10	3.00	2.85
Heating A2W35	Capacity	W	4400	5600	7100	8200	9100	10800	12800	9100	10800	12800
	Rated input	W	1073	1436	1844	2247	2395	3086	4000	2395	3086	4000
	COP		4.10	3.90	3.85	3.65	3.80	3.50	3.20	3.80	3.50	3.20
Heating A-7W35	Capacity	W	4500	5900	7000	8000	10000	11500	12700	10000	11500	12700
	Rated input	W	1452	2000	2333	2807	3571	4259	5080	3571	4259	5080
	COP		3.10	2.95	3.00	2.85	2.80	2.70	2.50	2.80	2.70	2.50
Cooling A35W18	Capacity	W	4500	6500	8300	10000	12000	14000	16000	12000	14000	16000
	Rated input	W	818	1275	1612	2105	2667	3333	4103	2667	3333	4103
	EER		5.50	5.10	5.15	4.75	4.50	4.20	3.90	4.50	4.20	3.90
Cooling A35W7	Capacity	W	4700	6800	7500	8900	11500	12700	14000	11500	12700	14000
	Rated input	W	1288	2194	2174	2738	3770	4379	5091	3770	4379	5091
	EER		3.65	3.10	3.45	3.25	3.05	2.90	2.75	3.05	2.90	2.75
SCOP	Average climate, W35		A+++									
	Average climate, W55		A++									
ErP sound power level		dB	56	58	60	61	65	65	69	65	65	69
Refrigerant	Type(GWP)		R290(3)									
	Charged volume	g	700		1100			1250				
Unit dimension (WxHxD)		mm	1299x717x426			1385x865x523						
Packing dimension (WxHxD)		mm	1375x885x475							1465x1035x560		
Net weight		kg	90			117		135			137	
Gross weight		kg	110			139		157			159	
Water side Connection dimension			G1"BSP			G1 1/4"BSP						
Outdoor air temperature range	Cooling	℃	-5~46									
	Heating	℃	-25~35									
	DHW	℃	-25~46									
Water setting temperature range	Cooling	℃	5~25									
	Heating	℃	25~75									
	DHW	℃	20~70									

Note:
The above data test reference standard EN14511; EN14825; EN50564;EN 12102; (EU) No:811



MDV thermal Arctic Series
Focus on your comfort

Split 4~16kW



Mono 4~30kW



Product lineup

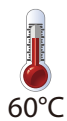
	Capacity (kW)	4	6	8	10	12	14	16	18	22	26	30
Mono	220~240V-1N-50Hz	•	•	•	•	•	•	•				
	380~415V-3N-50Hz					•	•	•	•	•	•	•
	Capacity (kW)	4	6	8	10	12	14	16				
Split Outdoor unit	220~240V-1N-50Hz	•	•	•	•	•	•	•				
	380~415V-3N-50Hz					•	•	•	•	•	•	•
	Model	60	100	160								
Split Hydronic box	220~240V-1N-50Hz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

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



DC Inverter



Compatible with different kinds of terminals

Fan coil unit



Radiator



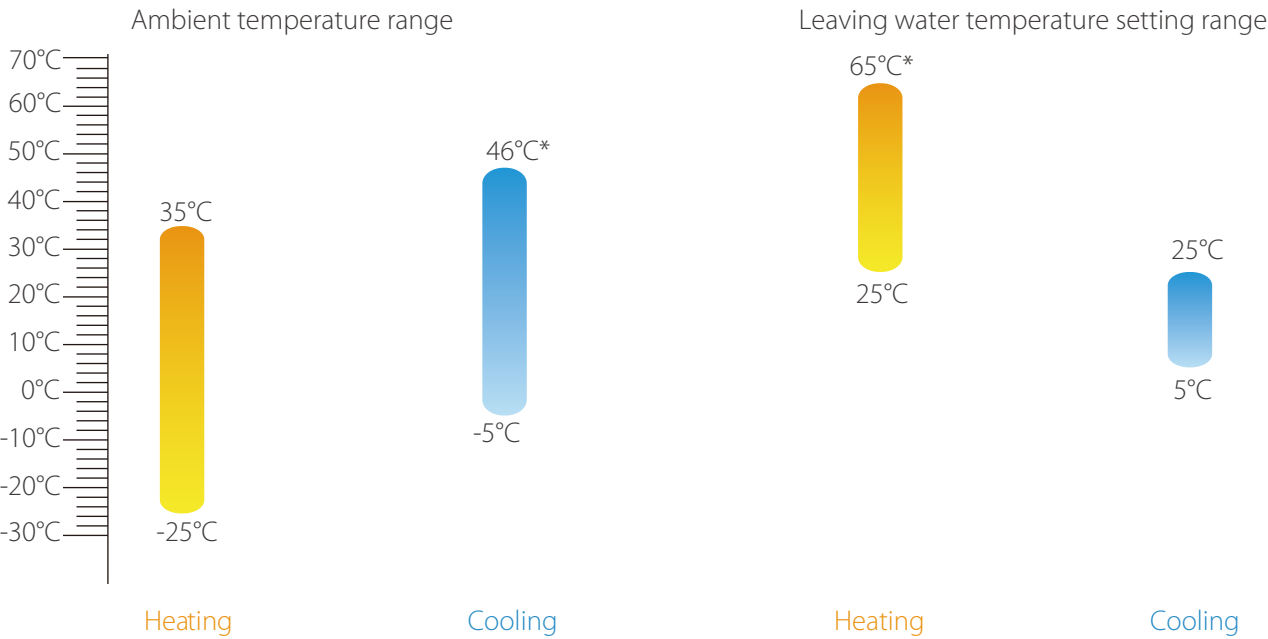
Water tank



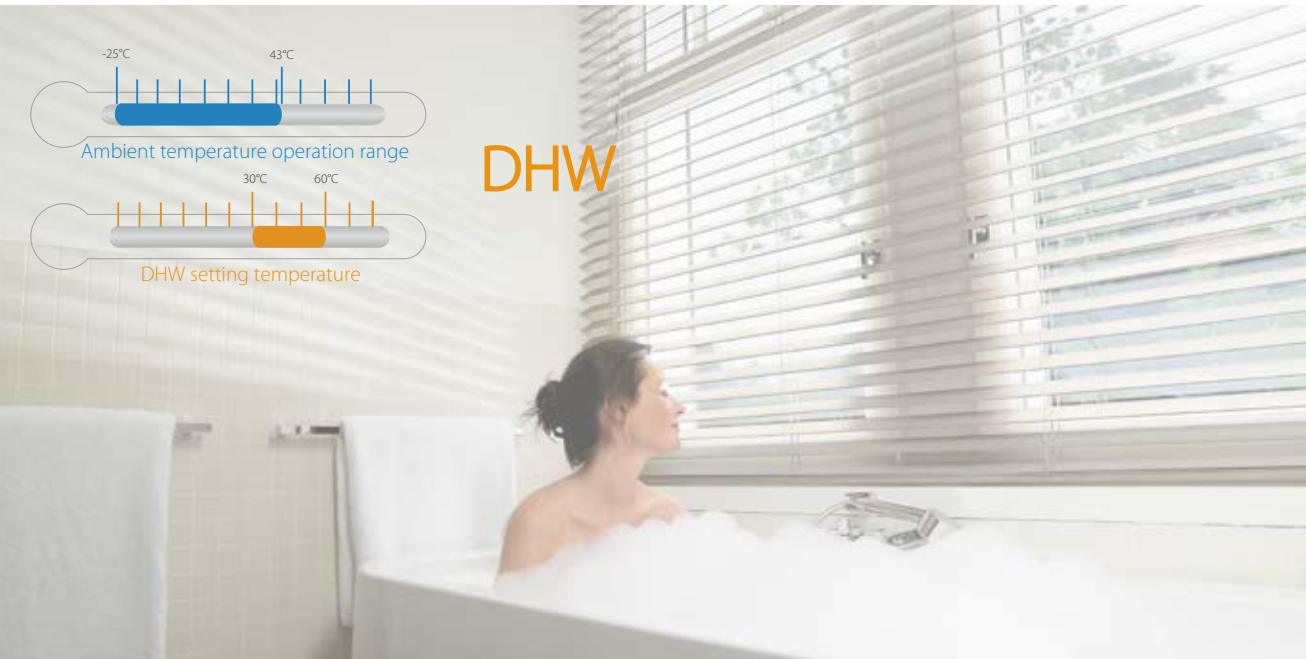
Floor heating loop



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.



Mutiple function



DHW Operation Priority



AUTO mode



Disinfect mode¹



Eco mode



Preset water temperature



Fast DHW



Day schedule



Weekly schedule

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 pre-heating mode for the first heating during seasonal heating in order to protect the floor. During the process, the water temperature would be increased gradually.



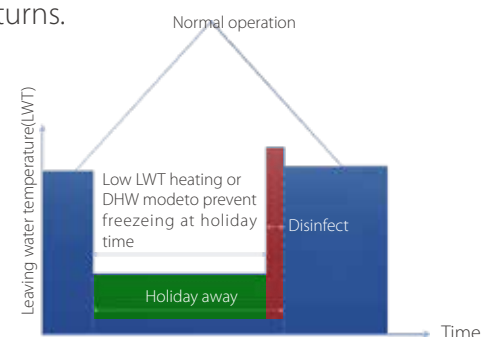
Power limitation function

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.



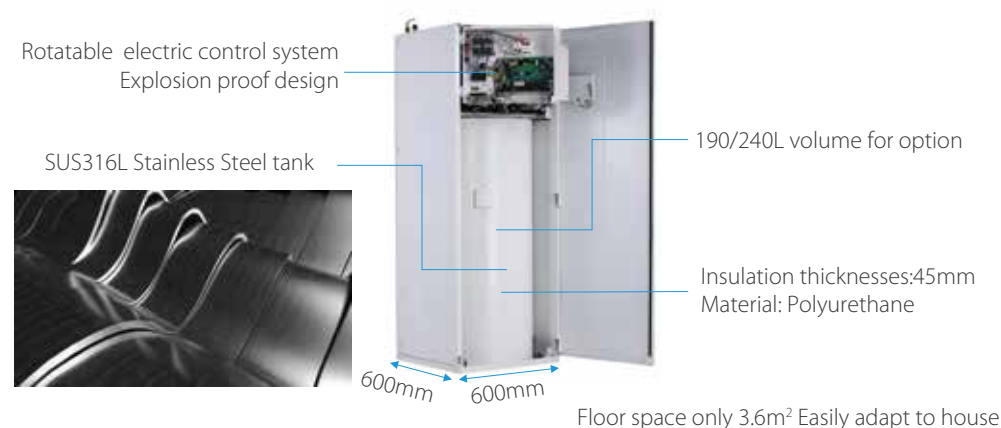
Holiday away

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

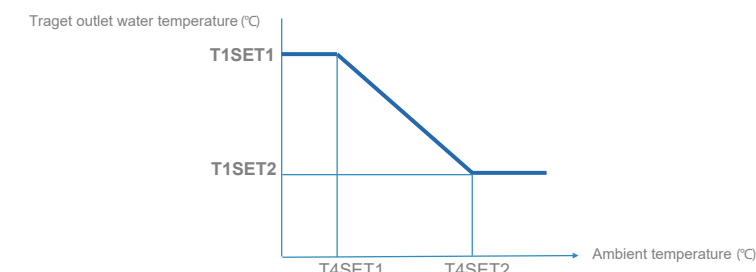
The water tank is made of SUS316L stainless steel with excellent corrosion resistance to ensure long-term stable operation of the system. Rotatable electric control box with explosion proof design improves electric safety and maintenance convenience.



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

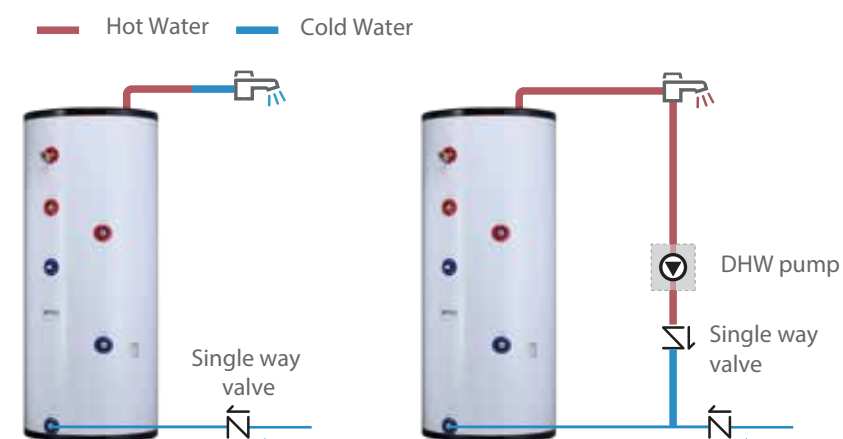
Normal electrical signal: Operates according to users' need.

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.



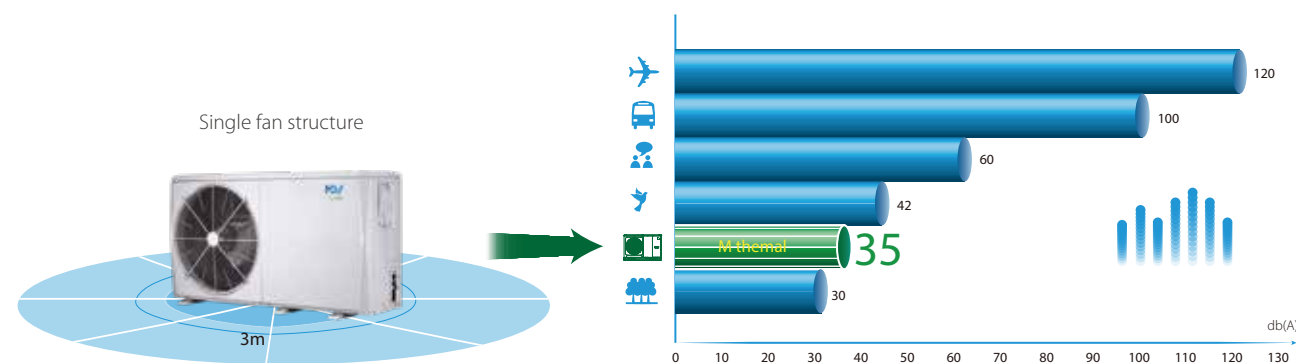
Comfort

Silent mode

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

Test condition:

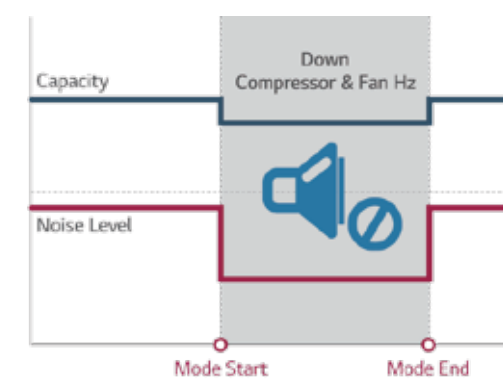
1. Evaporator air in 7°C, 85% R.H., Condenser water in/out 30/35°C
2. Condenser air in 35°C. Evaporator water in/out 23/18°C



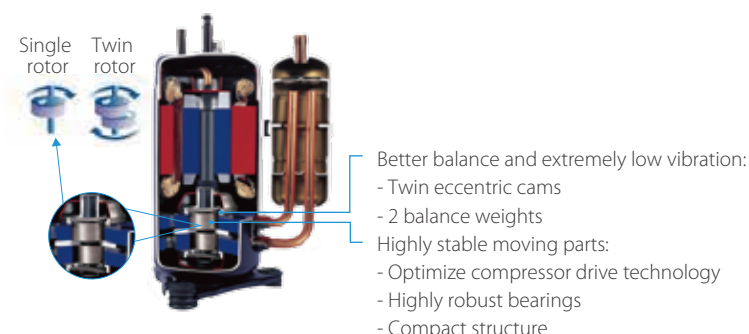
Multiple optimization design makes noise reduction:

Triple noise reduction

Silent mode decrease the sound effectively
Level 2 is more silent than level1.



Twin rotary compressor

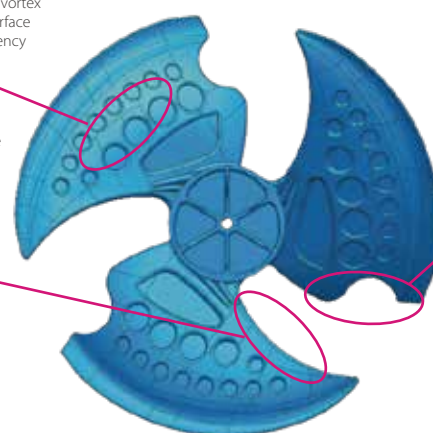


Bionic fan design

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.

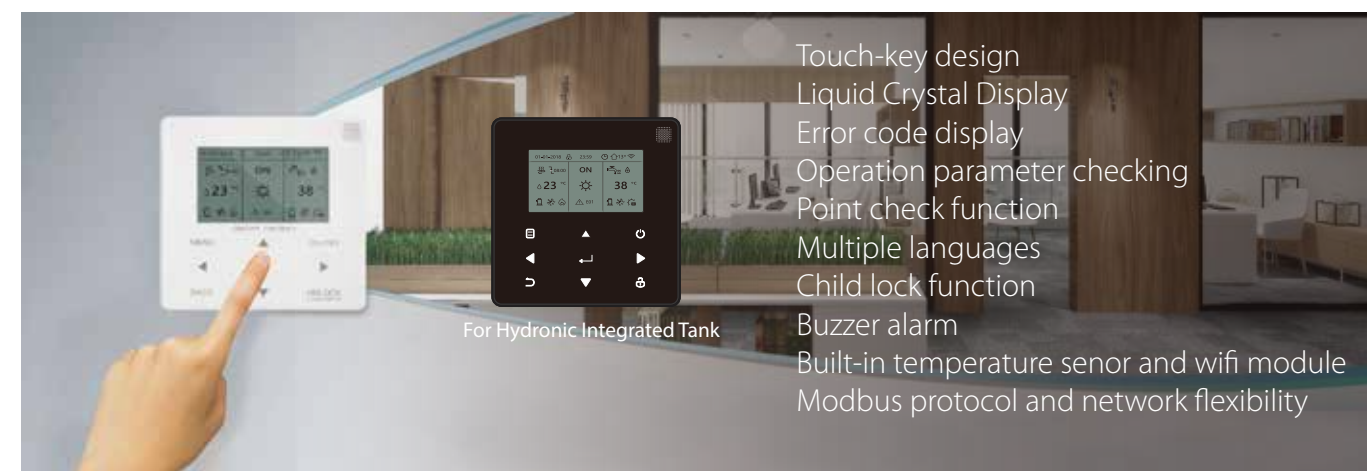


Holiday home

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

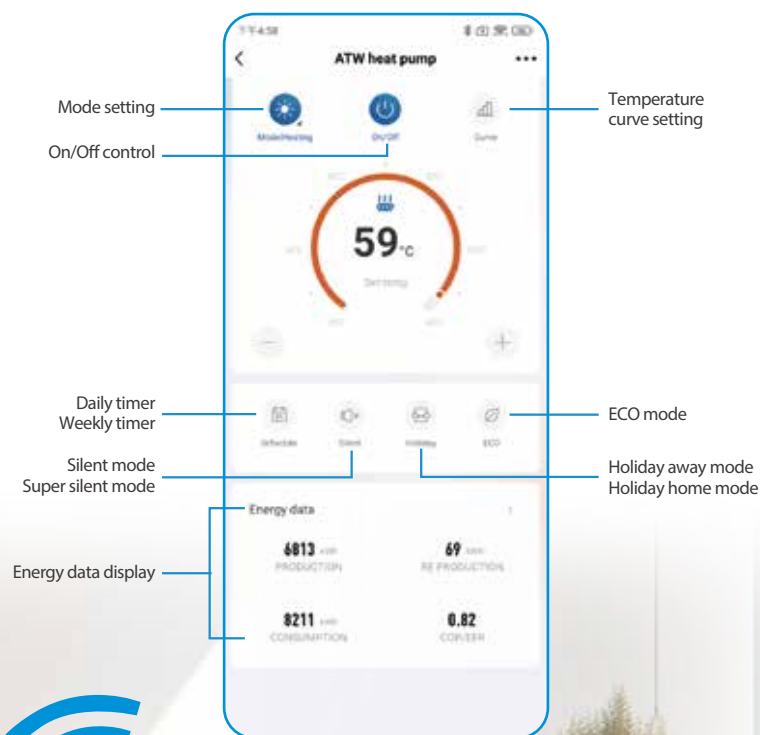


Wifi controller





iLetComfort APP



Easy setting



Double zones control



Monitor system status



Power consumption



Remote control



Energy saving suggestion



Schedule function

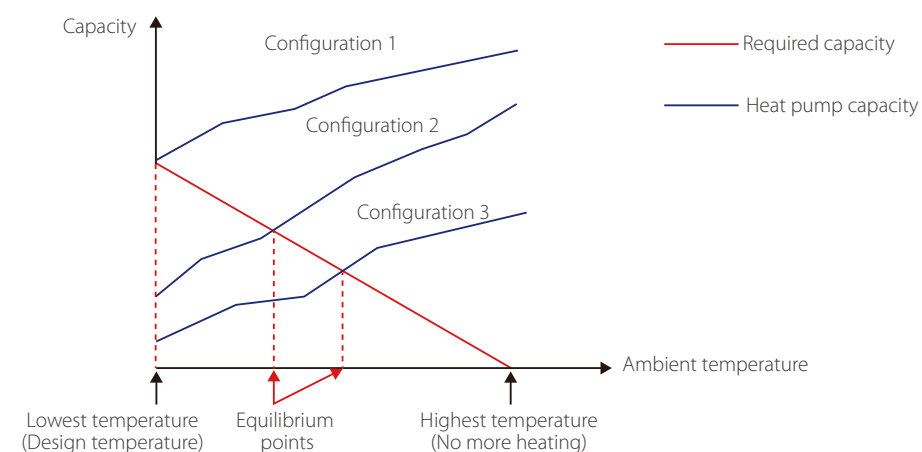
Note:
APP interface changes from time to time as APP is updated and may change slightly vary from those in this document.

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.

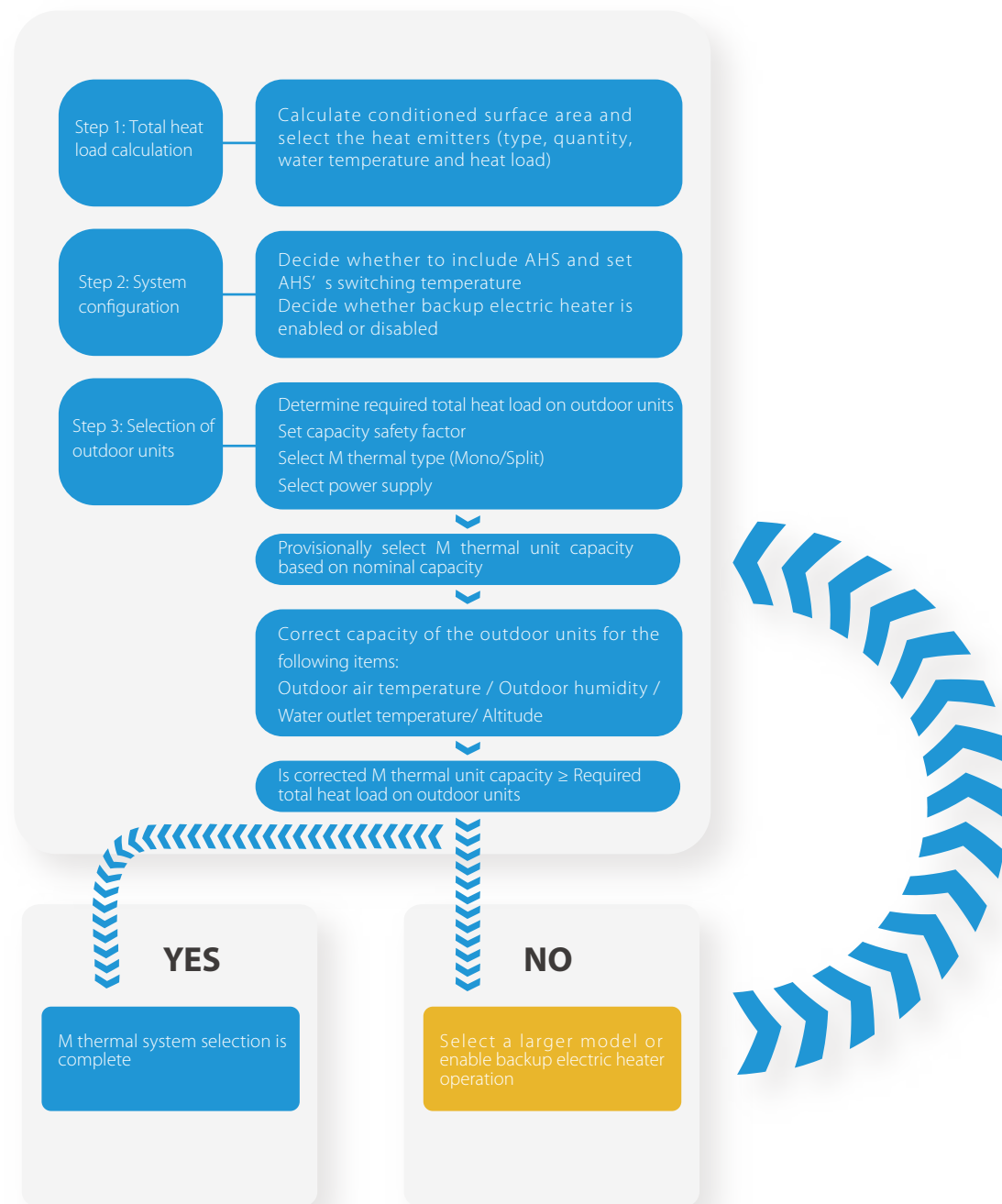
Configuration 2: Heat pump and backup electric heater

- ❖ 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.

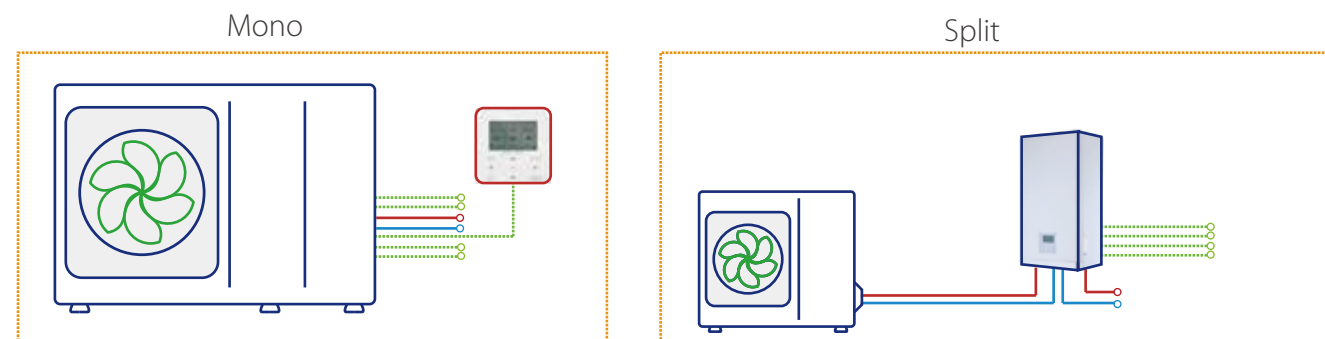


Smart Grid certification indicates MDV thermal can fully utilize electricity from different sources or different price levels, which means like photovoltaic, and the peak valley of urban electricity supply to satisfy different modes operation, which is benefit for cost saving.



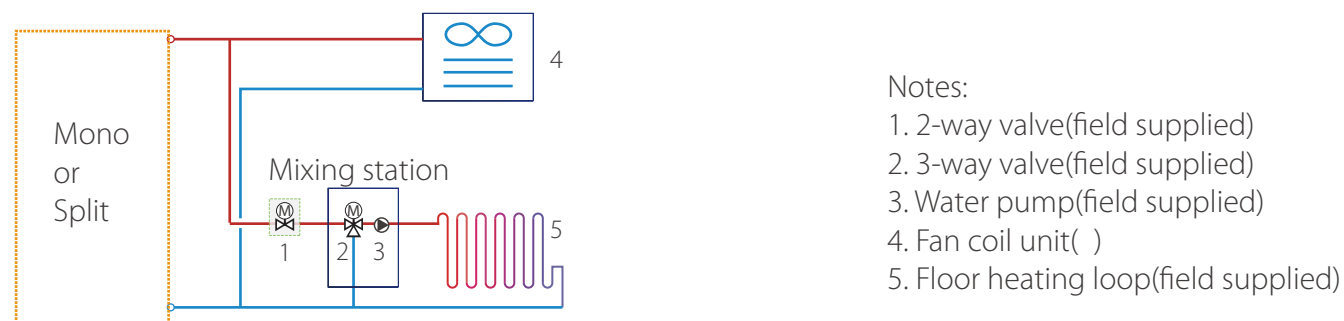
Typical application

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



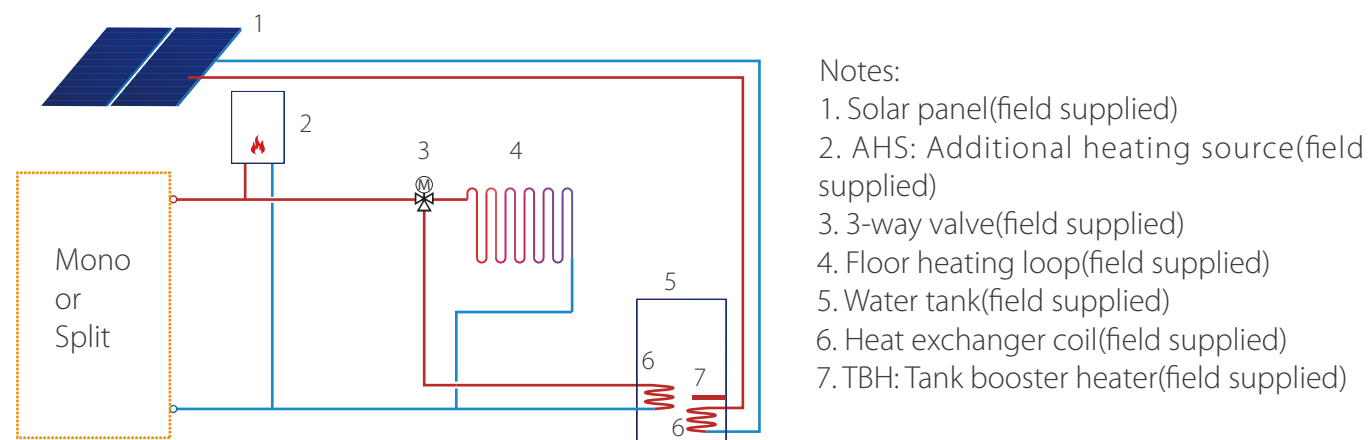
Heating and cooling

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.



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.



* 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

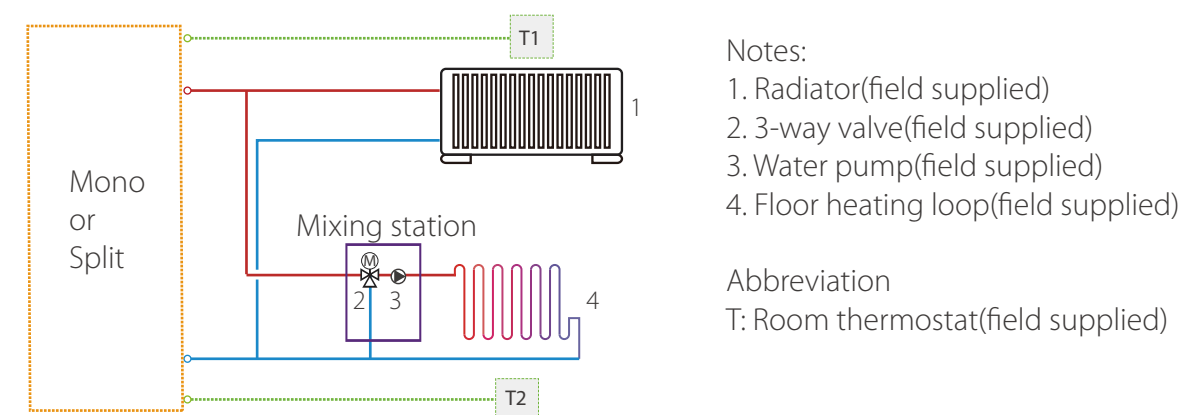
Double zones control is only available for heating mode. It can control different areas to reach different temperature to meet various needs of daily use.

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.

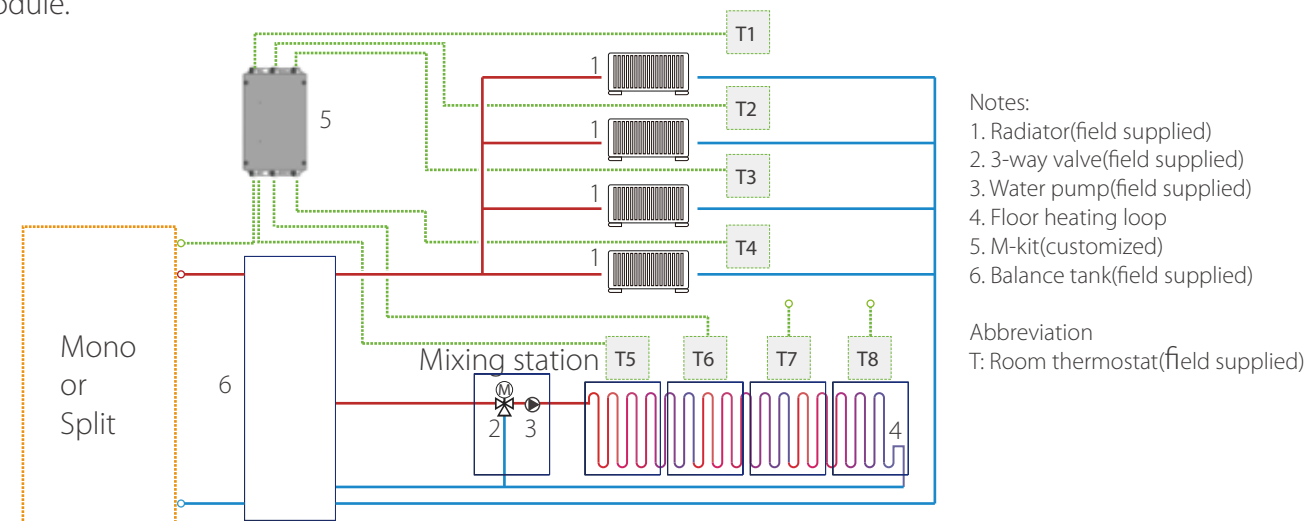
2. Using wired controller and thermostat

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



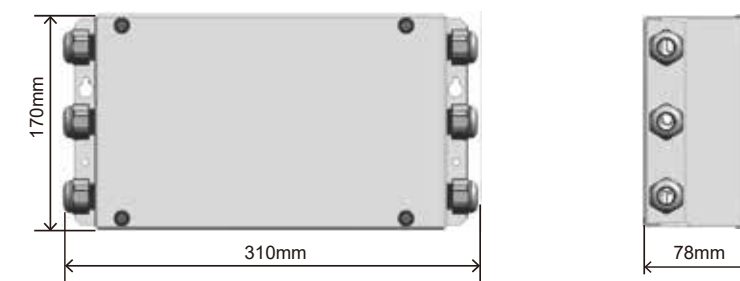
Multiple rooms control(customized)

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.



M-kit

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

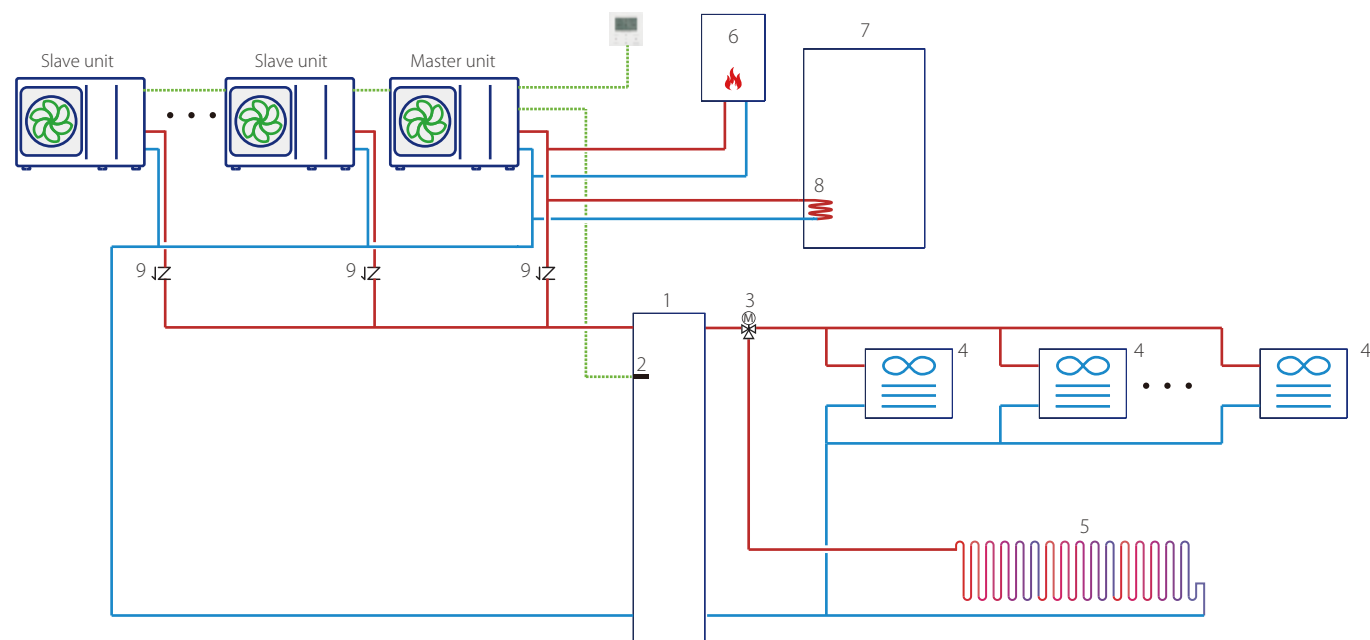


Cascade system*

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	℃	-5～43									
	Heating		℃									
	DHW		℃									
LWT setting range	Cooling	℃	5～25									
	Heating		℃									
	DHW		℃									
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	1129×1558×528			
Packing dimension (WxHxD)		mm	1220×1735×565			
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/out23/18°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.

Arctic Series Split

Outdoor unit model MDVA-			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
Hydronic box model			MDVHB-60CEGR8-A		MDVHB-100CEGR8-A		MDVHB-160CEGR8-A					
Heating ¹	Capacity	kW	4.25	6.20	8.30	10.0	12.1	14.5	16.0	12.1	14.5	16.0
	Rated input	kW	0.82	1.24	1.60	2.00	2.44	3.09	3.56	2.44	3.09	3.56
	COP		5.20	5.00	5.20	5.00	4.95	4.70	4.50	4.95	4.70	4.50
Heating ²	Capacity	kW	4.35	6.35	8.20	10.0	12.3	14.2	16.0	12.3	14.2	16.0
	Rated input	kW	1.14	1.69	2.08	2.63	3.24	3.89	4.44	3.24	3.89	4.44
	COP		3.80	3.75	3.95	3.80	3.80	3.65	3.60	3.80	3.65	3.60
Heating ³	Capacity	kW	4.40	6.00	7.50	9.50	12.0	13.8	16.0	12.0	13.8	16.0
	Rated input	kW	1.49	2.00	2.36	3.06	3.87	4.60	5.52	3.87	4.60	5.52
	COP		2.95	3.00	3.18	3.10	3.10	3.00	2.90	3.10	3.00	2.90
Cooling ⁴	Capacity	kW	4.50	6.55	8.40	10.00	12.00	13.50	14.90	12.00	13.50	14.90
	Rated input	kW	0.81	1.34	1.66	2.08	3.00	3.75	4.38	3.00	3.75	4.38
	EER		5.55	4.90	5.05	4.80	4.00	3.60	3.40	4.00	3.60	3.40
Cooling ⁵	Capacity	kW	4.70	7.00	7.40	8.20	11.6	12.7	14.0	11.6	12.7	14.0
	Rated input	kW	1.36	2.33	2.19	2.48	4.22	4.98	5.71	4.22	4.98	5.71
	EER		3.45	3.00	3.38	3.30	2.75	2.55	2.45	2.75	2.55	2.45
Seasonal space heating energy efficiency class ⁶	Water outlet at 35°C	class	A+++									
	Water outlet at 55°C	class	A++									

Arctic Series Split outdoor unit



Outdoor unit model MDVA-			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		
Refrigerant	Type(GWP)		R32(675)									
	Charged volume	kg	1.50		1.65		1.84					
Sound power Level ¹		dB	56	58	59	60	64	65	68	64	65	68
Net dimension (WxHxD)		mm	1008×712×426				1118×865×523					
Packing dimension (WxHxD)		mm	1065×800×485				1180×890×560					
Net/Gross weight		kg	58/64		77/88		96/110			112/125		
Pipe size O.D.	Liquid	mm	6.35		9.52							
	Gas	mm	15.88		15.88							
Connection method			Flared									
Between indoor and outdoor unit	Height difference	m	Max.20									
	Pipe length	m	2-30									
Additional refrigerant	Chargment	g/m	20		38							
	Max. pipe length for no additional refrigerant	m	15									
Ambient temperature range	Cooling	°C	-5~43									
	Heating	°C	-25~35									
	DHW	°C	-25~43									

Note: 1.Testing standard: EN12102-1.

Arctic Series Split hydronic box



Hydronic box model			MDVHB-60CEGR8-A	MDVHB-100CEGR8-A	MDVHB-160CEGR8-A
Power supply		V/Ph/Hz	220-240/1/50		
Sound power level ¹		dB	38	42	43
Unit dimension (WxHxD)		mm	420×790×270		
Packing dimension (WxHxD)		mm	525×1050×360		
Net/Gross weigh		kg	37/43	37/43	39/45
Water pump	Max. pump head	m	9		
	Water side	mm	R1"		
Connection	Refrigerant liquid	mm	6.35	9.52	
	Refrigerant gas	mm	15.88	15.88	
Backup E-heater ²	Standard mounted		kw	/	
	Optional		kw	3/9	3/9
	Capacity steps			1/3	1/3
	Power supply	3kW	V/Ph/Hz	220-240/1/50	
		9kW		380-415/3/50	
LWT setting range	Cooling		°C	5~25	
	Heating		°C	25~65	
	DHW		°C	30~60	

Note: 1.Testing standard: EN12102-1. 2. For three phase type backup electric heater, 3/6kW can be achieved by changing DIP switch when hydronic box is equipped with 9kW.



Arctic Series Split Hydronic Integrated Tank

Hydronic box model			MDVHBT190-100CEGR8-ADE3	MDVHBT240-100CEGR8-ADE3	MDVHBT240-160CEGR8-ADE3
Power supply		V/Ph/Hz	220-240/1/50		
Unit dimension (WxHxD)		mm	600×1683×600	600×1943×600	
Packing dimension (WxHxD)		mm	730×1920×730	730×2180×730	
Net/Gross weight		kg	140/161	157/178	159/180
Water pump	Max. pump head	m	9		
	Water side	mm	R1"		
Connection	Refrigerant liquid	mm	6.35	9.52	
	Refrigerant gas	mm	15.88	15.88	
Backup E-heater ¹	Standard mounted		kW	3	
	Optional		kW	6/9	6/9
	Capacity steps			2/3	2/3
	Power supply	6kW	V/Ph/Hz	220-240/1/50	
		9kW		380-415/3/50	
LWT setting range	Cooling		°C	5~25	
	Heating		°C	25~65	
	DHW		°C	30~60	

Note: 1. For three phase type backup electric heater, 3/6kW can be achieved by changing DIP switch when hydronic box is equipped with 9kW.





MDV thermal Power Series

Mini size with big energy



Mono 5~16kW

Product lineup

Mono

Capacity(KW)	5	7	9	12	14	16
Appearance						
220~240-1Ph	●	●	●	●	●	●
380~415-3Ph				●	●	●

-  Mini size(0.4 m³) for container-carrying capacity optimization
(For reference: 76 units within one 40HQ container)
Smaller floor space(0.4M²) 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

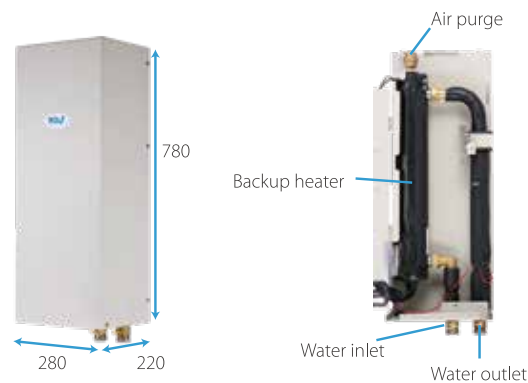
External electric heater (Optional)

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

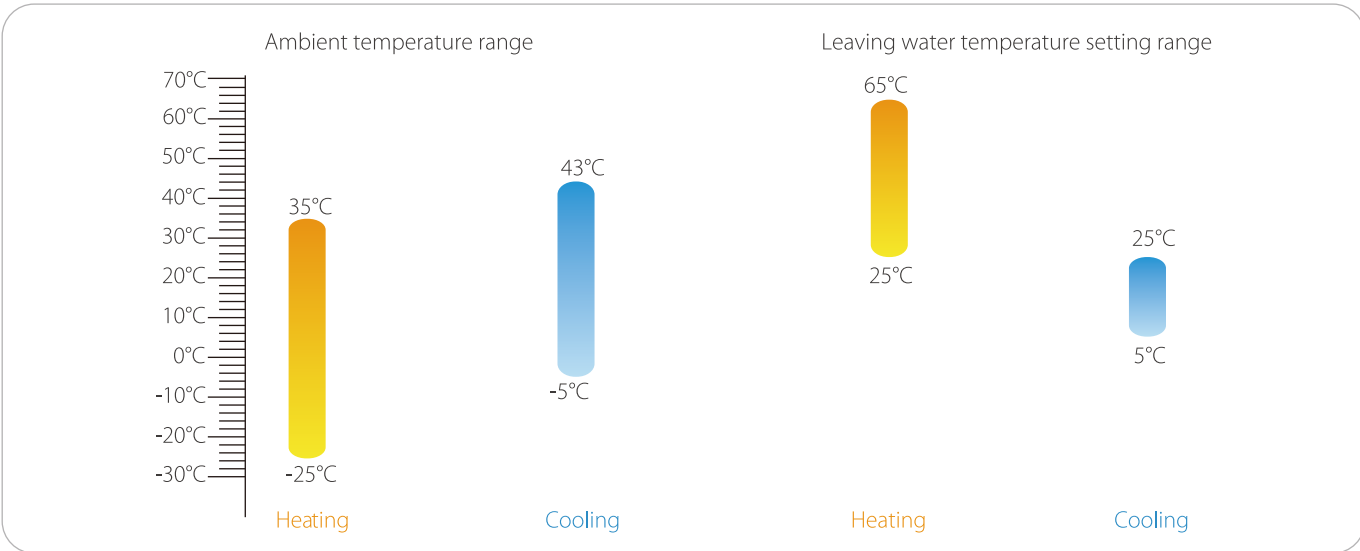
Capacity(KW)	3	4.5	6	9
Appearance				
220~240-1Ph	●	●		
380~415-3Ph		●	●	●

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 operation range



Mini size

- Smaller size**
- Container-carrying capacity optimization (For reference: 76 units within one 40HQ container)
 - Transportation cost saving



- Smaller floor space**
- Flexible installation
 - Idea for hotels or replacement project



- Lighter**
- Easier for human transport



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.



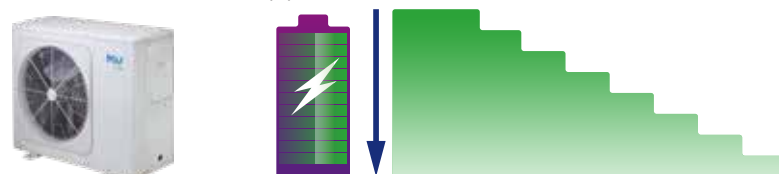
Preheating and drying up for floor

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

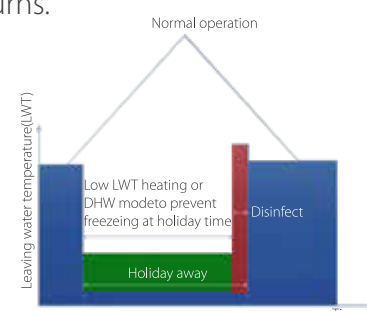
Power limitation function makes the machine suitable for a variety of current supplies. There are 8 configurations for user to choose according to the maximum allowable access current. Only easy setting on the wired controller is needed, the units can suit more application.



Holiday function

Holiday away

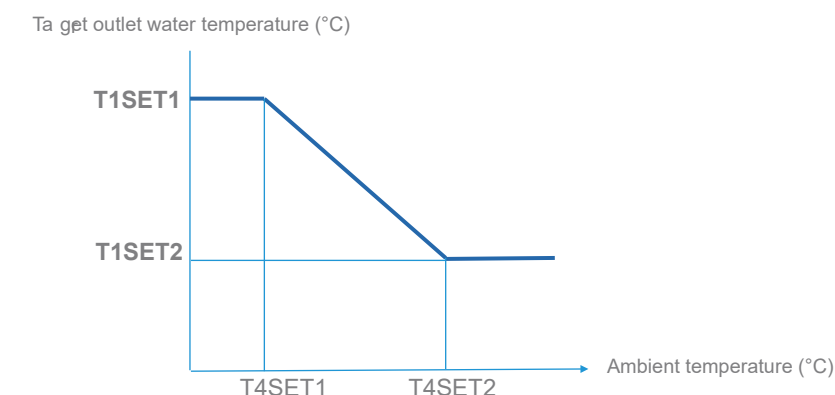
Holiday away function is a mode for improving system reliability and saving energy. Unit operates in heating mode and/or DHW mode with low water temperature to prevent water from freezing in the winter during holiday outside. The user can pre-set the disinfection mode before he returns home to make sure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



Smart control

Weather temperature curve

With the help of Weather temperature curve function, water temperature will automatically change as outside air temperature changes, which is energy saving while satisfying comfort. Totally 32 fixed Weather temperature curve that can be manually set temperature offset and one personalized curve is available



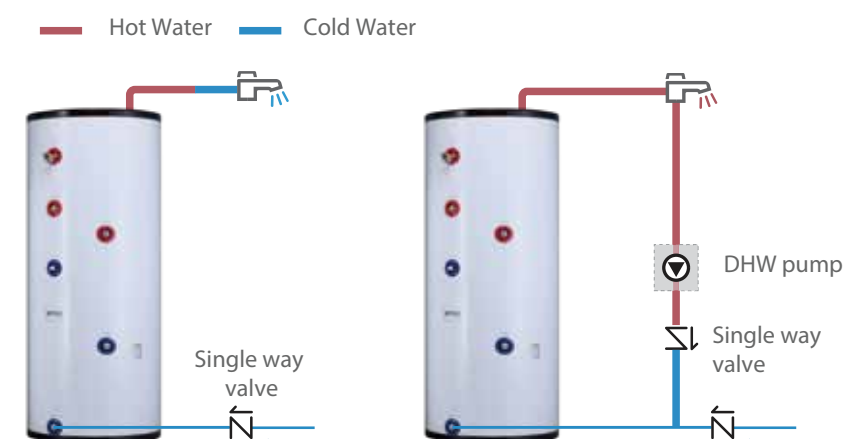
Smart Grid

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

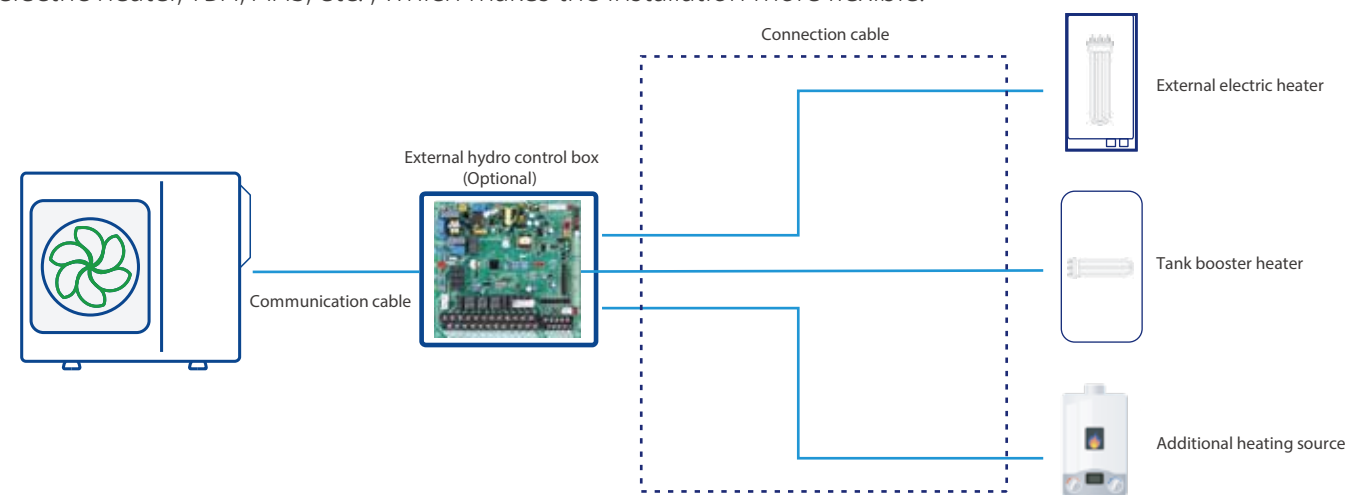
The DHW pump function is used to return water in the water pipe net to the hot water tank according to set timer. Total 12 timers for one day can be set, which allows users to set the DHW pump operation time according to using habit to guarantee using hot water without waiting for a long time.



High reliability

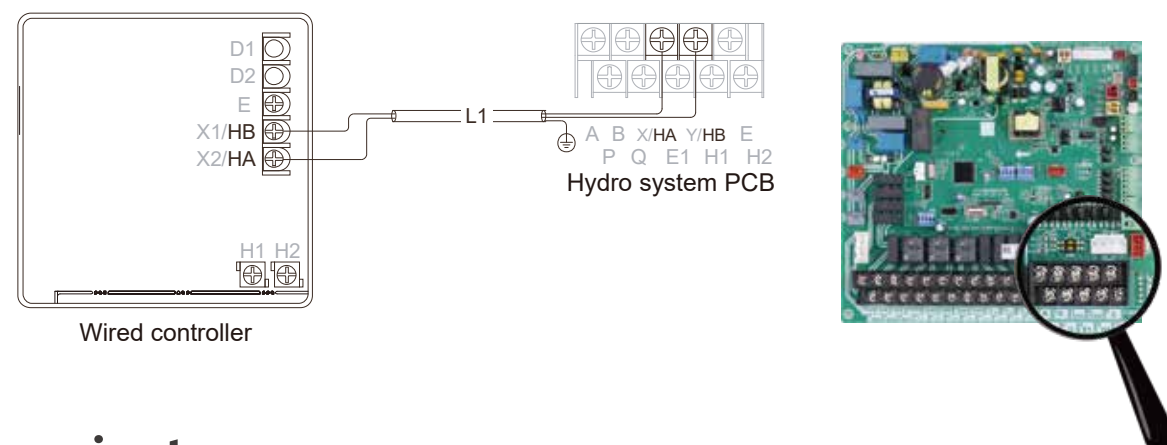
External control box

Shorten the field connection cable length between hydro system PCB and external equipments, such as electric heater, TBH, AHS, etc. , which makes the installation more flexible.



Wired controller

Homebus protocol is applied for the wired controller. And two core shielded twisted pair cable with nonpolar installation provides strong support for reducing the risk of wrong connections.



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.



iLetComfort APP



Easy setting



Double zones control



Monitor system status



Power consumption



Remote control



Energy saving suggestion



Schedule function

Note:

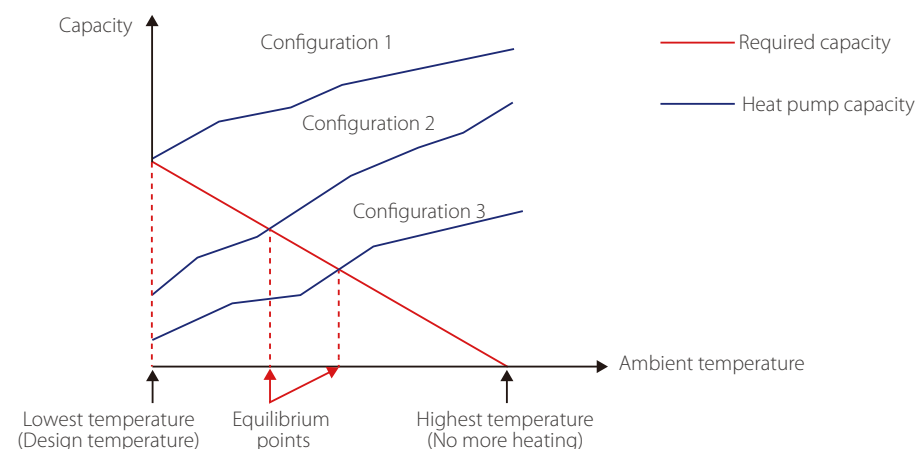
APP interface changes from time to time as APP is updated and may change slightly vary from those in this document.

Typical Applications

System configurations

M 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.

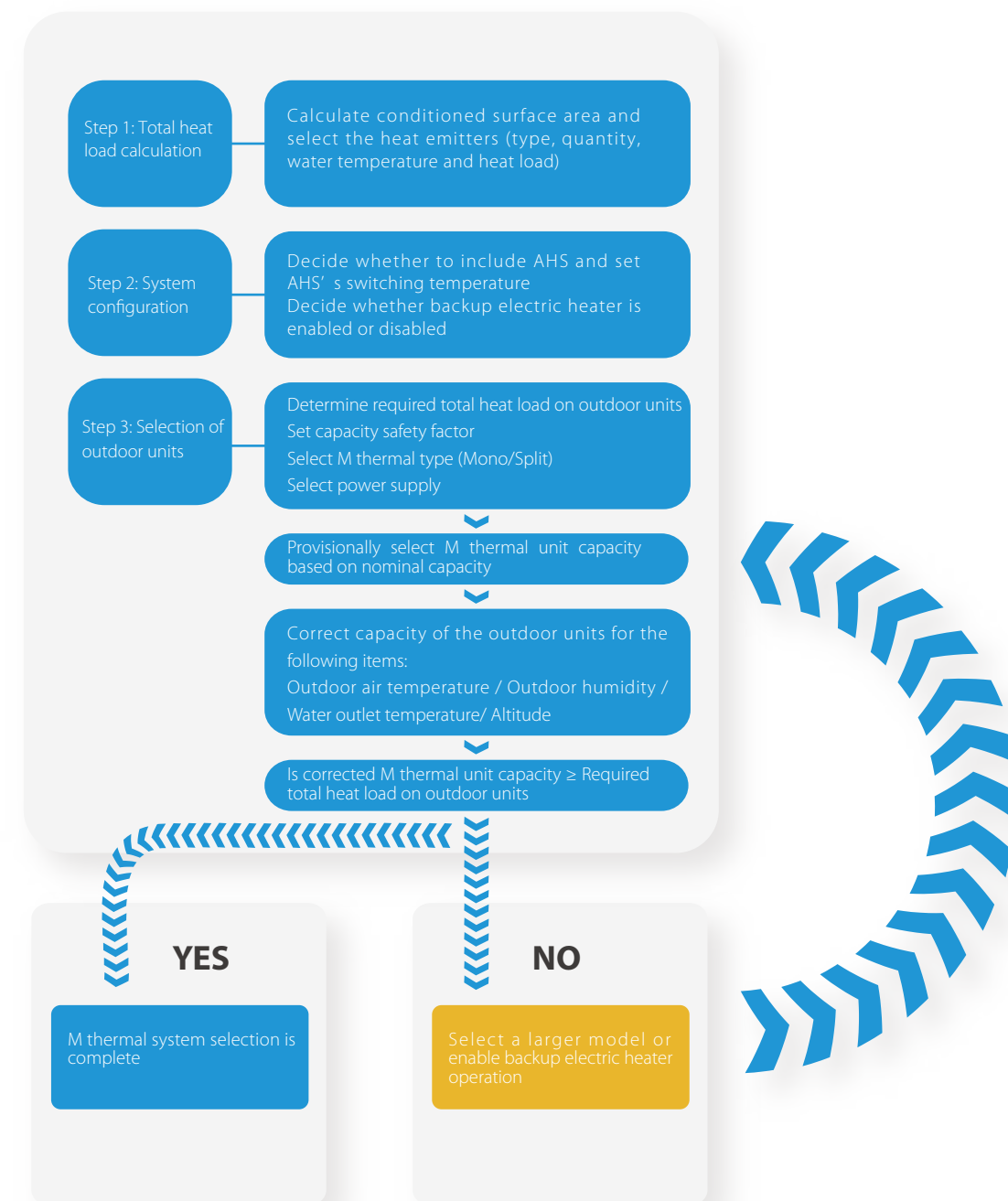
Configuration 2: Heat pump and backup electric heater

- ❖ 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

M 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. M 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.

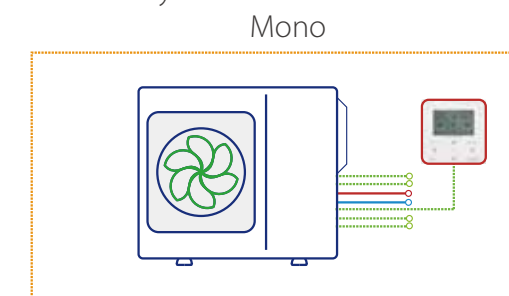


Smart Grid certification indicates M thermal can fully utilize electricity from different sources or different price levels, which means like photovoltaic, and the peak valley of urban electricity supply to satisfy different modes operation, which is benefit for cost saving.



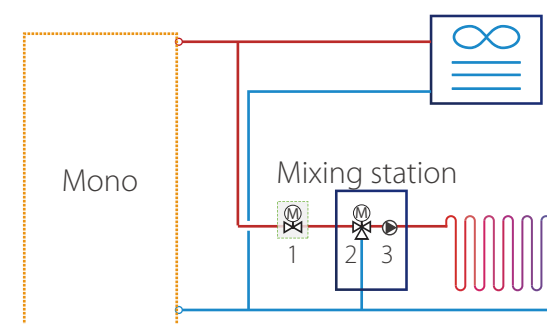
Typical application

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



Heating and cooling

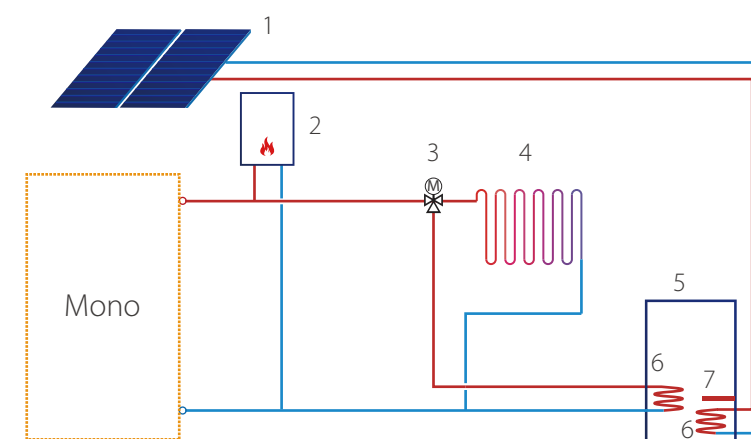
Floor heating loops is used for space heating and fan coil unit is used for both space heating and cooling. For heating mode, floor heating loops and fan coil unit require different operating water temperature. To achieve these two temperature, a mixing station (field supplied) which consists of 3-way 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

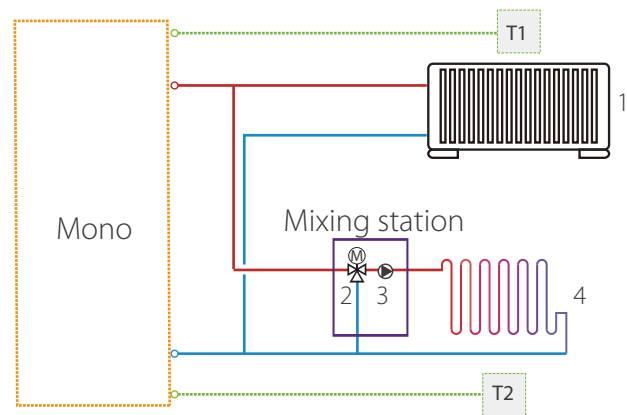
Double zones control is only available for heating mode. It can control different areas to reach different temperature to meet various needs of daily use.

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

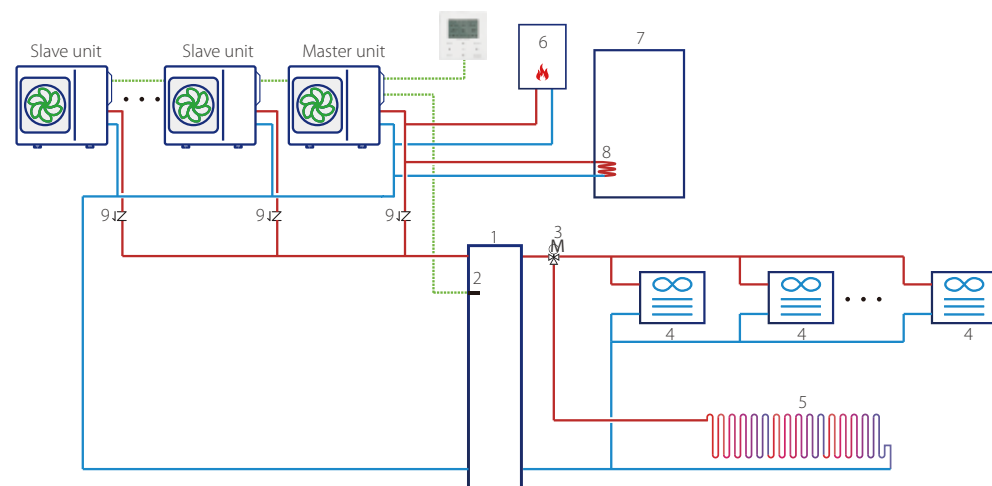
T: Room thermostat (field supplied)

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 (field supplied)

Specifications

Power Series Mono



Outdoor unit model			MDVC-V5W D2ER8-M	MDVC-V7W D2ER8-M	MDVC-V9W D2ER8-M	MDVC-V12W D2ER8-M	MDVC-V14W D2ER8-M	MDVC-V16W D2ER8-M	MDVC-V12W D2BR8-M	MDVC-V14W D2BR8-M	MDVC-V16W D2BR8-M	
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(GWP)		R32(675)									
	Charged volume	kg	1.25			1.8						
Sound power Level ⁷		dB	60	63	65	70	72	72	70	72	72	
Net dimension (H×W×D)		mm	865×1040×410									
Packing dimension (H×W×D)		mm	970×1190×560									
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)	Standard mounted	kW	/									
	Optional	kW	3/4.5/6/9									
	Capacity steps		1/1/2/3									
	Power supply	3	V/Ph/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 testes in average climate general 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/C 207/02:2014



Aqua Eco Mini Heat Pump

Low-carbon lifestyle



5~16kW

Product lineup

Aqua Eco Mini Heat Pump

Capacity(KW)	5	7	9	12	14	
Appearance						
220~240-1Ph	●	●	●	●	●	●
380~415-3Ph				●	●	●

-  Mini size (0.4 m³) for container-carrying capacity optimization
(For reference: 76 units within one 40HQ container)
Smaller floor space (0.4M²) for flexible installation
-  Heating, cooling, hot water, one-stop solution
-  -5°C low ambient cooling function
-  R32 eco-friendly refrigerant with low carbon emission
-  All DC inverter design, high efficiency
-  Solar hot water, Photovoltaic application
for green energy-saving
-  Cascade function for bigger system application
-  USB function for convenient data transformation

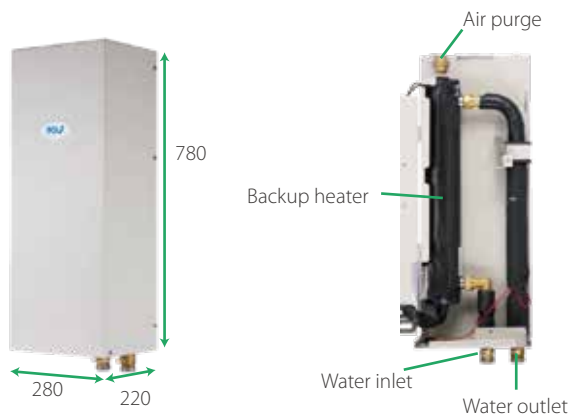
External electric heater (Optional)

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

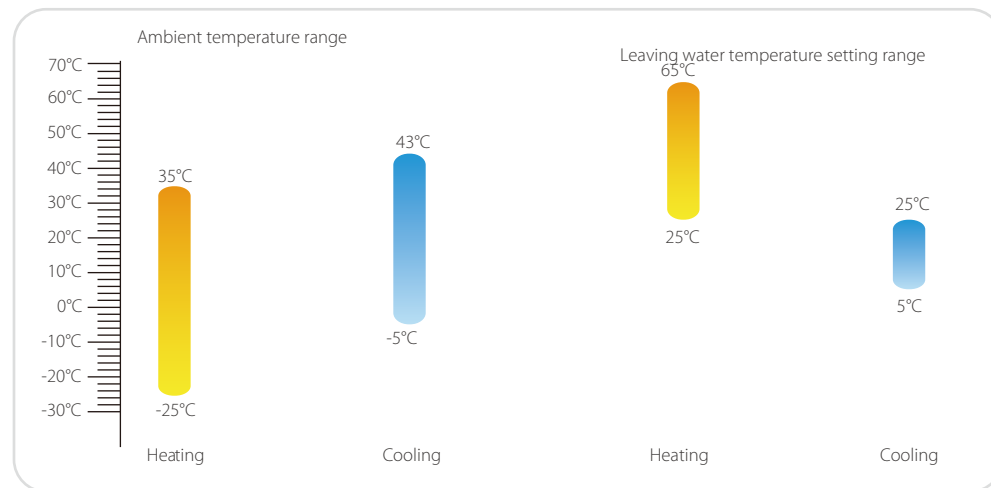
Capacity (KW)	3	4.5	6	9
Appearance				
220~240-1Ph	●	●		
380~415-3Ph		●	●	●

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 operation range



Mini size

Smaller size

- ❖ Container-carrying capacity optimization
(For reference: 76 units within one 40HQ container)
- ❖ Transportation cost saving



Smaller floor space

- ❖ Flexible installation
- ❖ Idea for hotels or replacement project



Lighter

- ❖ Easier for human transport



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.



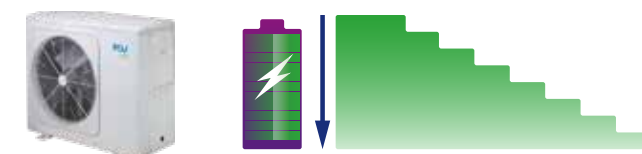
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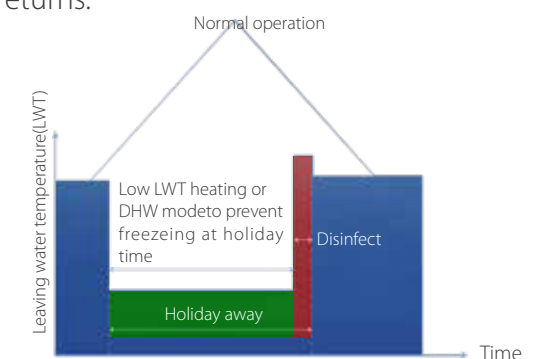
Power limitation function

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

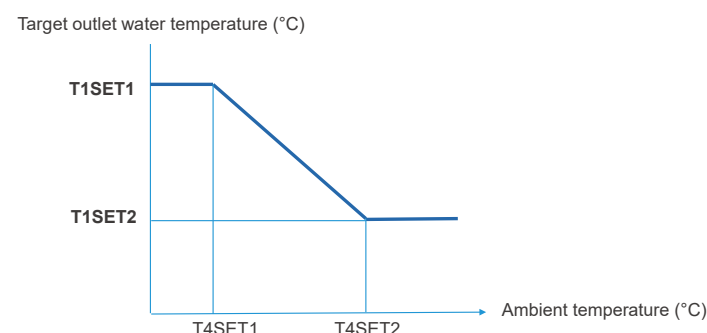
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Weather temperature curve

With the help of Weather temperature curve function, water temperature will automatically change as outside air temperature changes, which is energy saving while satisfying comfort. Totally 32 fixed Weather temperature curve that can be manually set temperature offset and one personalized curve is available, which meets the diversified comfort requirement.



Smart Grid

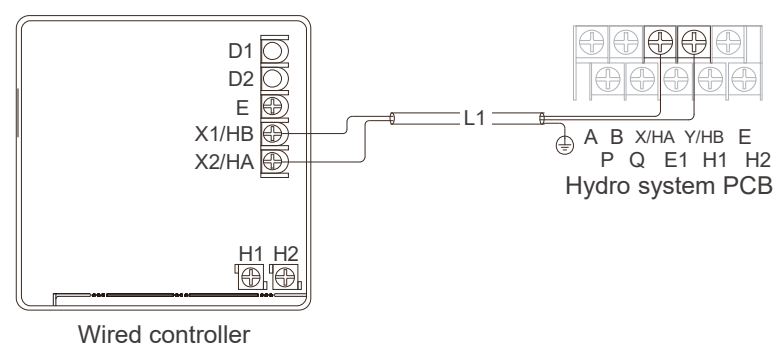
Heat pump adjusts the operation mode according to different electrical signals from the grid to realize energy saving. When the electric price is low or even free, heat pump takes DHW priority. When electric price is high, DHW related functions are limited. When the electric price is normal, heat pump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



Easy installation

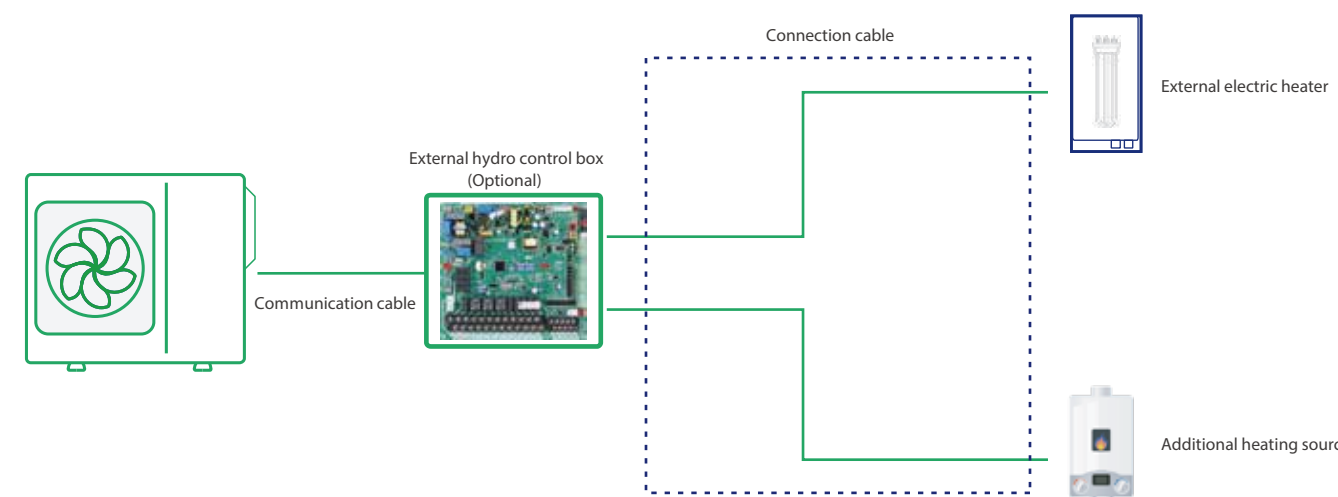
Wired controller

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External control box

Shorten the field connection cable length between hydro system PCB and external equipments, such as electric heater, AHS, etc. , which makes the installation more flexible.



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.





Easy setting



Double zones control



Monitor system status



Power consumption



Remote control



Energy saving suggestion



Schedule function

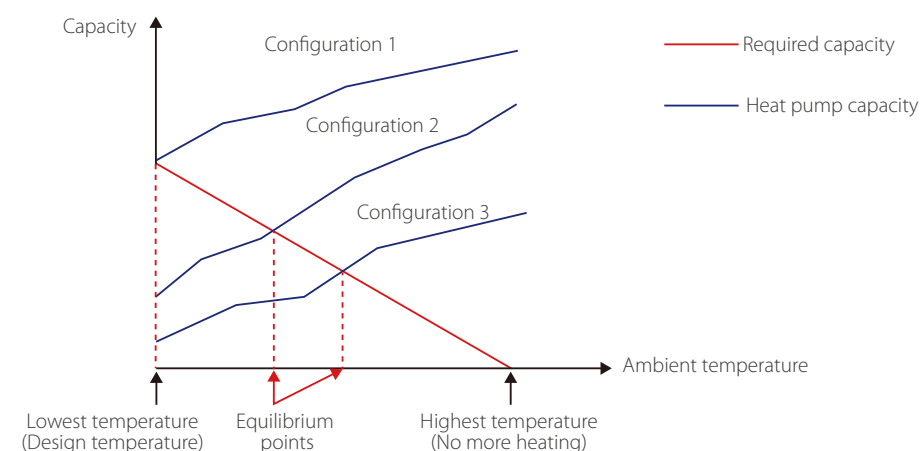
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The chosen configuration affects the size of heat pump that is required. Three typical configurations are described below.



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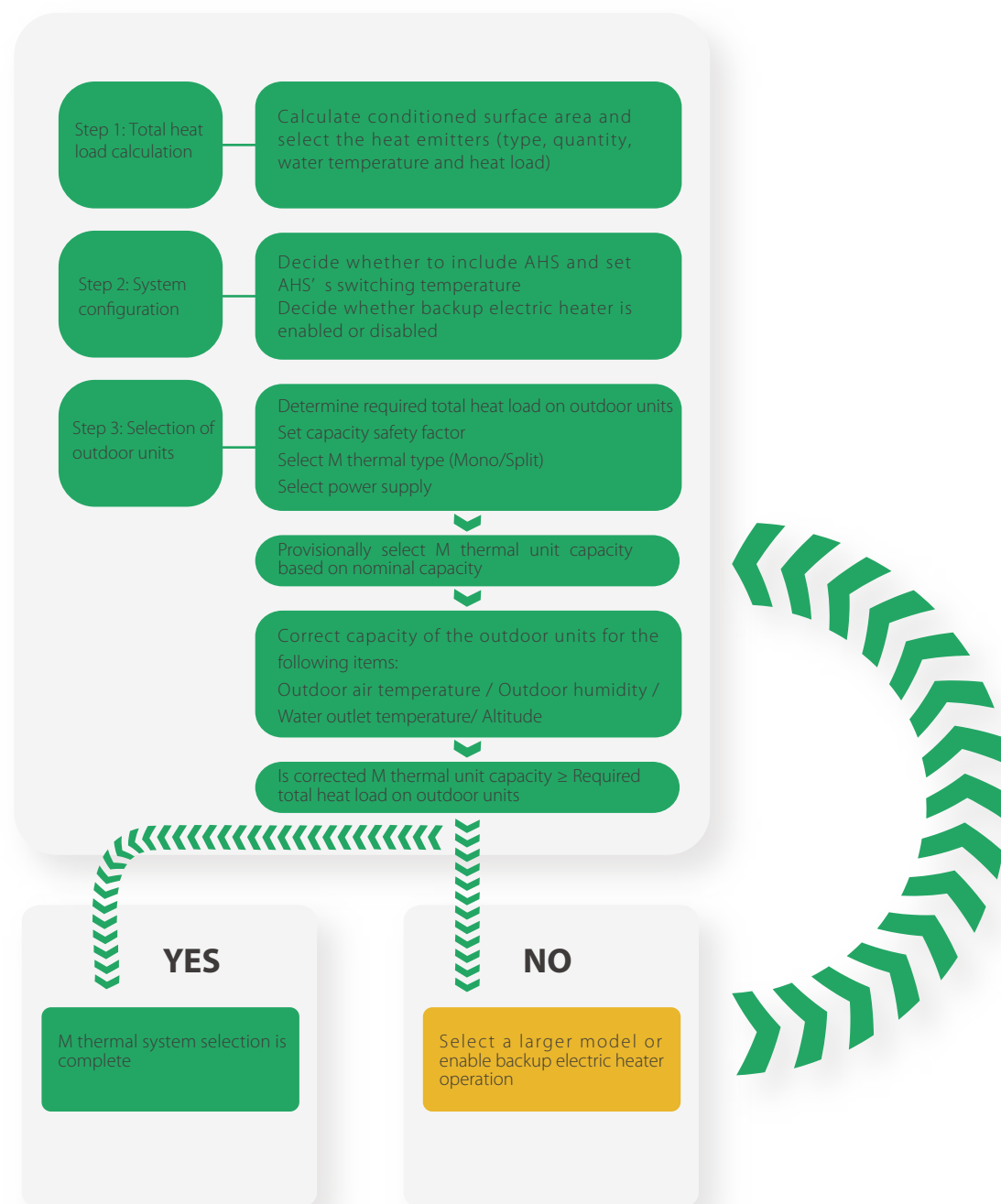
Configuration 2: Heat pump and backup electric heater

- ❖ 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



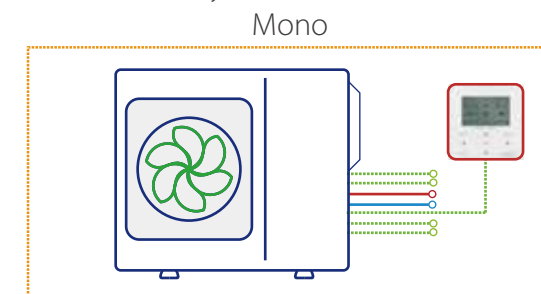
Leaving Water Temperature (LWT)

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

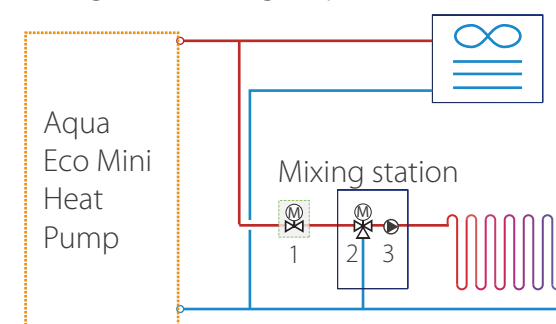
Typical application

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
5. Floor heating loop (field supplied)

Double zones control

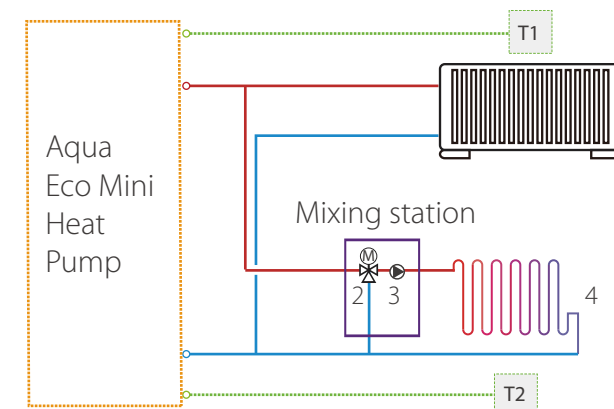
Double zones control is only available for heating mode. It can control different areas to reach different temperature to meet various needs of daily use.

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:

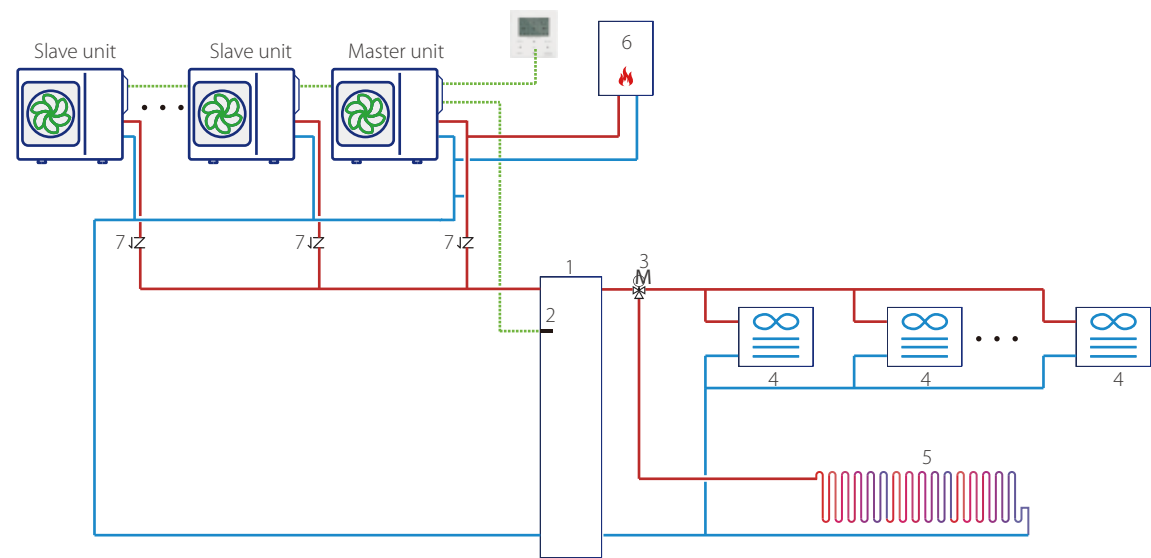
1. Radiator (field supplied)
2. 3-way valve (field supplied)
3. Water pump (field supplied)
4. Floor heating loop (field supplied)

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. 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. Single way valve (field supplied)

Aqua Eco Mini Heat Pump



Outdoor unit model			MDVG-V5WD2ER8	MDVG-V7WD2ER8	MDVG-V9WD2ER8	MDVG-V12WD2ER8
Cooling ¹	Capacity	W	5500	7400	9000	11600
	Rated input	W	1692	2349	3103	3742
	EER		3.25	3.15	2.90	3.10
Heating ²	Capacity	W	6600	8500	10200	12500
	Rated input	W	1650	2237	2795	3378
	COP		4.00	3.80	3.65	3.70
Refrigerant	Type(GWP)		R32(675)			
	Charged volume	kg	1.25			1.8
Sound power Level ³		dB	60	63	65	70
Net dimension (HxWxD)		mm	865x1040x410			
Packing dimension (HxWxD)		mm	970x1190x560			
Net/Gross weight		kg	87/103			106/122
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			
LWT setting range	Cooling	°C	5 ~ 25			
	Heating	°C	25 ~ 65			
Backup E-heater ⁴ Optional	Standard mounted	kW	/			
	Optional	kW	3/4.5/6/9			
	Capacity steps		1/1/2/3			
	Power supply	3	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 35 °C DB; Water inlet 12 °C, Water outlet 7 °C.
 - 2. Outdoor air temperature 7 °C DB, 6 °C WB; Water inlet 40 °C, Water outlet 45 °C.
 - 3. Testing standard: EN12102-1.
 - 4. Backup electric heater is external installation.

Outdoor unit model			MDVG-V14WD2ER8	MDVG-V16WD2ER8	MDVG-V12WD2BR8	MDVG-V14WD2BR8	MDVG-V16WD2BR8
Cooling ¹	Capacity	W	13400	14000	11600	13400	14000
	Rated input	W	4573	4828	3742	4573	4828
	EER		2.93	2.90	3.10	2.93	2.90
Heating ²	Capacity	W	14500	16200	12500	14500	16200
	Rated input	W	4085	4696	3378	4085	4696
	COP		3.55	3.45	3.70	3.55	3.45
Refrigerant	Type(GWP)		R32(675)				
	Charged volume	kg	1.8				
Sound power Level ³		dB	72	72	70	72	72
Net dimension (H×W×D)		mm	865×1040×410				
Packing dimension (H×W×D)		mm	970×1190×560				
Net/Gross weight		kg	106/122		120/136		
Water pump	Max. pump head	m	9				
Water piping connection		mm	G5/4"BSP				
Ambient temperature range	Cooling	℃	-5 ~ 43				
	Heating	℃	-25 ~ 35				
LWT setting range	Cooling	℃	5 ~ 25				
	Heating	℃	25 ~ 65				
Backup E-heater ⁴ Optional	Standard mounted	kW	/				
	Optional	kW	3/4.5/6/9				
	Capacity steps		1/1/2/3				
	Power supply	3	V/Ph/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 35°C DB; Water inlet 12°C, Water outlet 7°C.
2. Outdoor air temperature 7°C DB, 6°C WB; Water inlet 40°C, Water outlet 45°C.
3. Testing standard: EN12102-1.
4. Backup electric heater is external installation.

M thermal Accessory(Optional)

3-way valve

Mactch with			Accessory description	Accessory type	Connecting description
MDV 2-pipe Duct		LSP & MSP 2/3/4 row	3-way valve accessory	FP-204WA	general for left and right connecting
			3-way valve piping assembly		
MDV 4-pipe Duct		HSP 3 row	3-way valve accessory	FP-136/238/306WA	general for left and right connecting
			3-way valve piping assembly		
MDV 4-way Cassette		LSP & MSP	3-way valve accessory	FP-34WA-Z3-G30	left connecting
			3-way valve piping assembly		
MDV 4-way Compact Cassette		2-pipe	3-way valve accessory	FP-255KBM	left connecting
			3-way valve piping assembly		
MDV 2nd generation Ceiling & Floor		4-pipe	3-way valve accessory	FP-12.5KBM	left connecting
			3-way valve piping assembly		
		2-pipe	3-way valve accessory	FP-68KBM	left connecting
			3-way valve piping assembly		
		4-pipe	3-way valve accessory	FP-68KBM	left connecting
			3-way valve piping assembly		
		2/4-pipe 150~700	3-way valve accessory	FP-51LM	left/right connecting
			3-way valve piping assembly		
		2/4-pipe 800	3-way valve accessory	FP-136LM	left/right connecting
			3-way valve piping assembly		

Notes:
3-way valve accessory: With 3-way valve
3-way valve piping assembly: Without 3-way valve

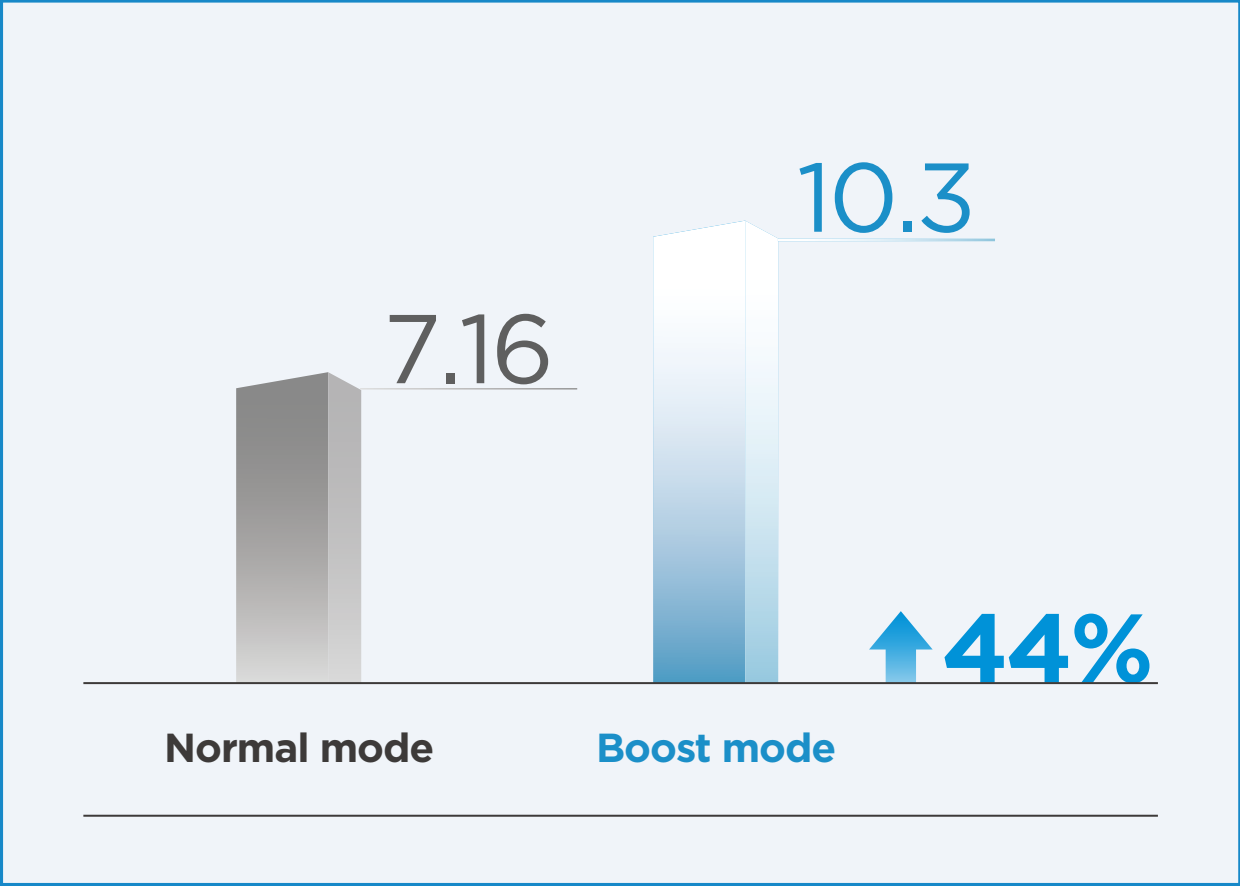
Thermostat

Match table			Thermostat description
MDV AC 2nd generation Ceiling & Floor			Mechanical thermostat
MDV AC/DC Duct			Mode control
MDV AC/DC Cassette			Fan speeds control
MDV Wall-mounted			Temp. setting
MDV DC 2nd generation Ceiling & Floor			Receiving remote signal
MDV DC one-way cassette			Mode control
			Fan speeds control
			Temp. setting
MDV AC 2nd generation Ceiling & Floor			LED display screen
MDV AC/DC Duct			Mode control
			Seven speed fan control
			Temp. setting
MDV AC 2nd generation Ceiling & Floor			LED display screen
MDV AC/DC Duct			Mode control
			Fan speeds control
			Temp./Timer setting
MDV AC 2nd generation Ceiling & Floor			ECO setting/reminder
MDV AC/DC Duct			LED display screen
			Mode/Electric heater control
			Fan speeds control
MDV AC 2nd generation Ceiling & Floor			Temp./Timer setting
MDV AC/DC Duct			ECO setting/reminder
			Compatible with Modbus

ESG-InV Swimming Pool Heat Pump

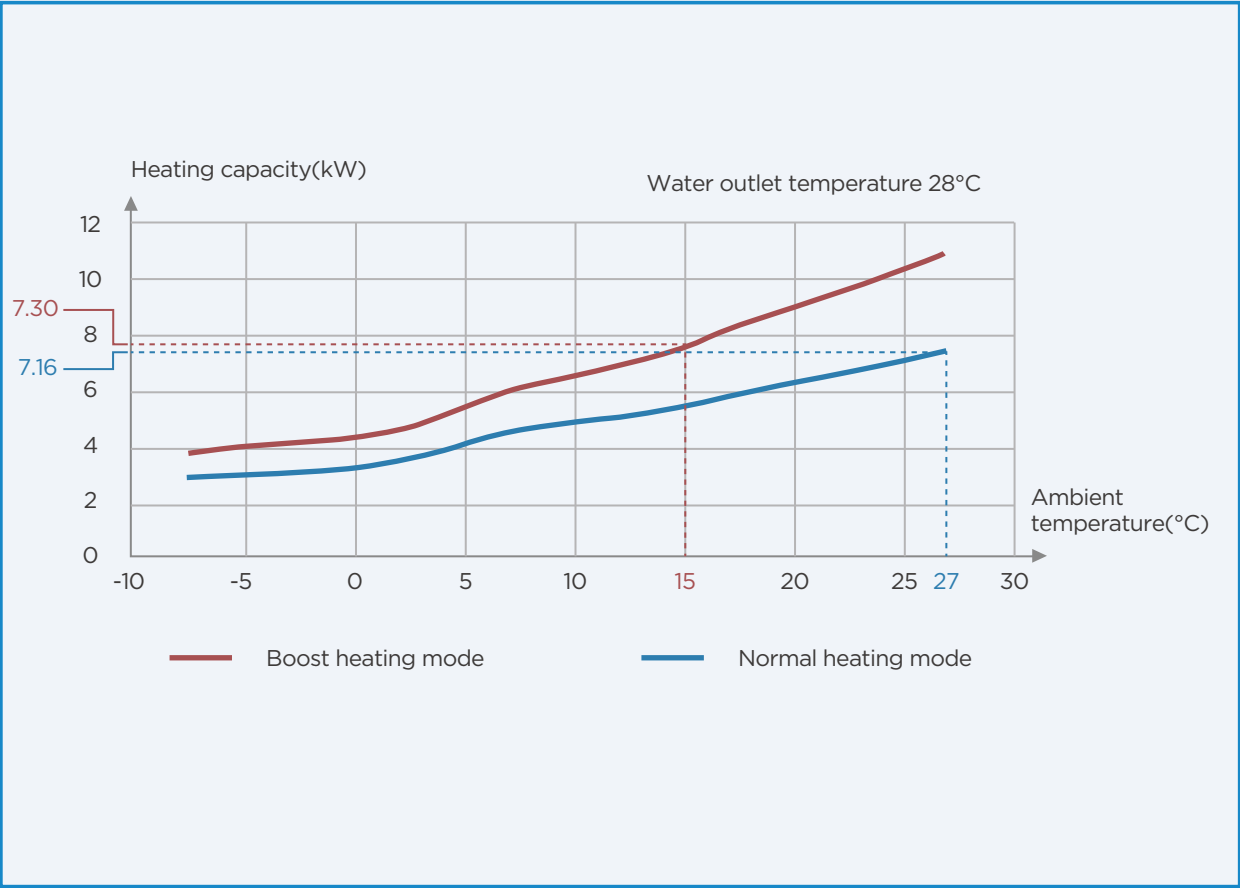


Boost heating



Thanks to the DC inverter technology and reliable core component, when boost heating mode is effective, the compressor and fan motor can increase the output to enhance the heating capacity up to 44% compare to normal operation(MDVSC-7D2R8-A).

From 27°C to 15°C ambient temperature drop, heating capacity at 15°C is even higher than capacity at 27°C.(MDVSC-7D2R8-A, MDVSC-9D2R8-A)



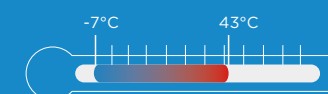
Silence mode

Two level silence mode provides comfort. ESG-Inv M Series can reach 38dB(A) sound pressure at 1m under level 2 silence mode and still remains 60% capacity output. (MDVSC-7D2R8-A, A27W28)

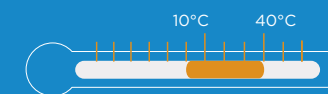


Wide operation

Heating



Ambient temperature
-7 °C ~ 43 °C



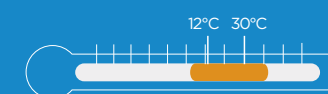
Water temperature
10°C to 40°C



Cooling



Ambient temperature
15 °C ~ 43 °C
43 °C ~ 54 °C (Customized)

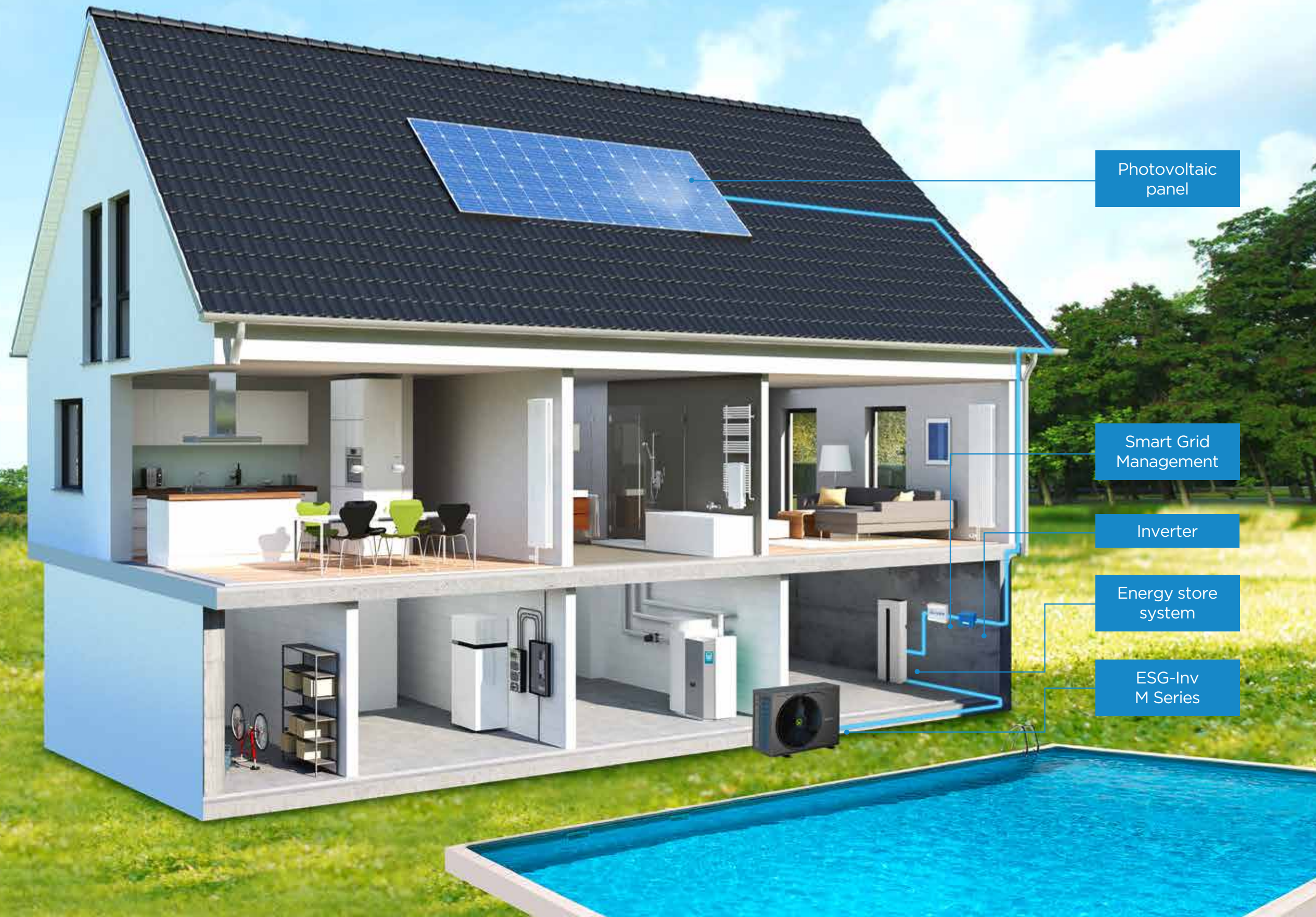


Water temperature
12°C to 30°C



Sustainable energy usage

SG-ready ensures that ESG-Inv M Series uses as much clean energy as possible from the smart grid and stores the energy in the swimming pool. When the smart grid is fully supplied with clean energy, ESG-Inv M Series consume close to zero carbon.



Photovoltaic panel

Smart Grid Management

Inverter

Energy store system

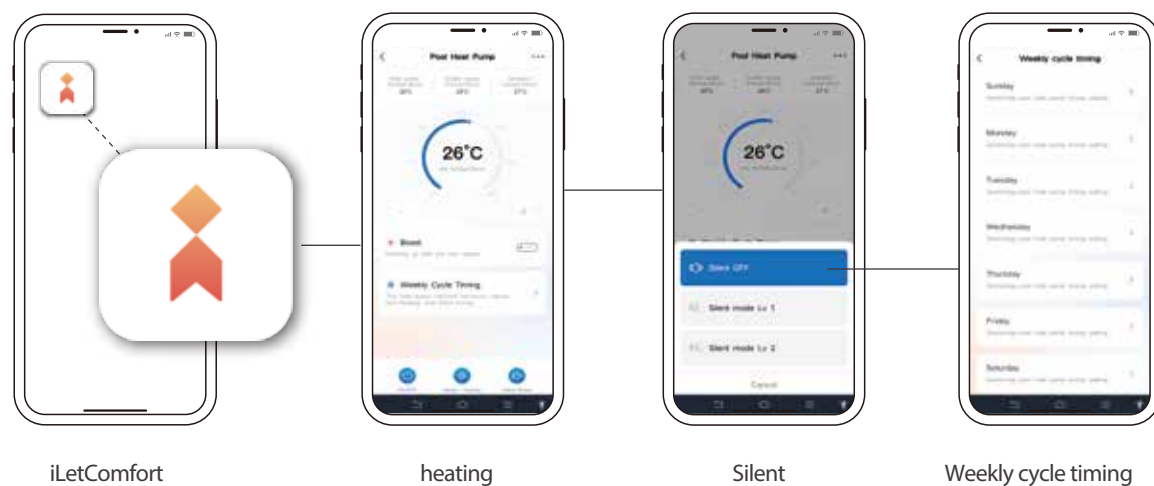
ESG-Inv M Series

iLetComfort APP

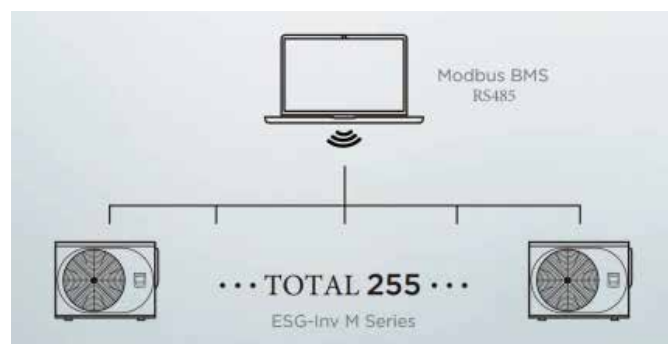
Easy setting

Convenient remote control

Multiple functions, schedule, silence mode, boost heating...



Centralized control



ESG-Inv M Series is compatible with all centralized control pool systems using Modbus protocol.

IOT platform

Remote software update

Remote maintenance

Remote device control

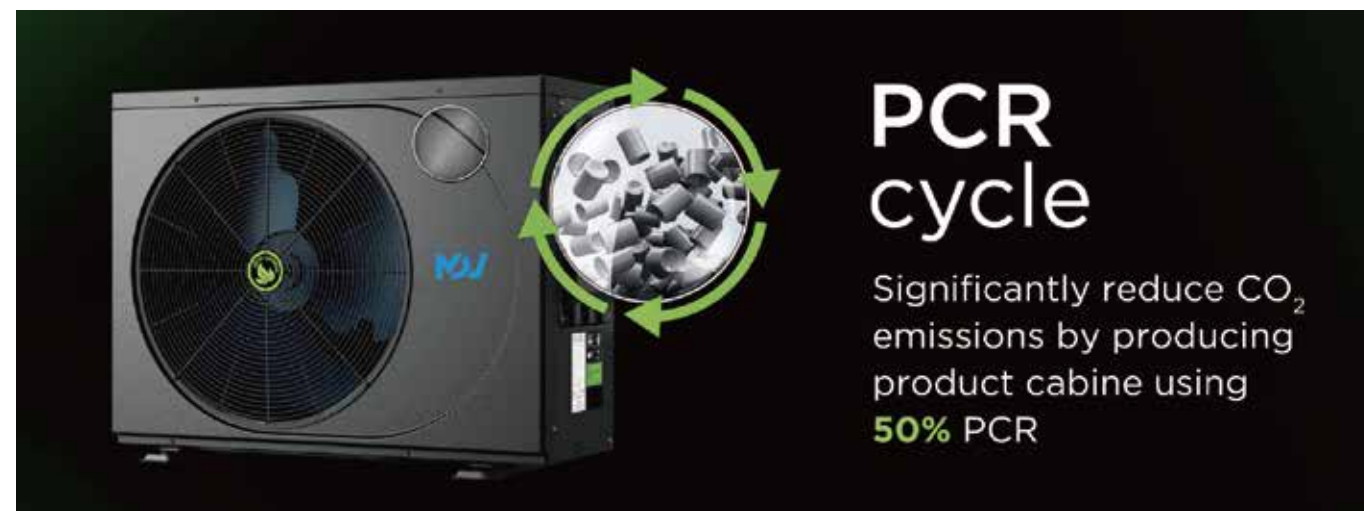


Note: pending available 23.03

Note: pending available 23.03

Environmental substantial governance

Recyclable material cabinet



Recyclable package



Eco friendly refrigerant





Specification

MODEL			MDVSC-7D2R8-A	MDVSC-9D2R8-A	MDVSC-12D2R8-A	MDVSC-16D2R8-A	MDVSC-20D2R8-A
Power supply			220-240V~ 50Hz				
Heating (A27/24.3°C, W28°C)	Capacity	kW	7.16	9.15	12.5	16.00	18.80
	Rated input	kW	0.95	1.35	1.79	2.67	3.62
	COP		7.5	6.8	7	6.00	5.20
Boost Heating (A27/24.3°C, W28°C)	Capacity	kW	10.3	12.8	14.5	18.70	21.80
	Rated input	kW	1.56	2.13	2.28	3.67	4.95
	COP		6.6	6	6.35	5.10	4.40
Heating (A15/12°C, W28°C)	Capacity	kW	5.3	6.8	9.12	12.80	14.50
	Rated input	kW	1.04	1.39	1.81	2.84	3.45
	COP		5.1	4.9	5.05	4.50	4.20
Boost Heating (A15/12°C, W28°C)	Capacity	kW	7.3	9.3	10.5	15.00	17.00
	Rated input	kW	1.56	2.09	2.28	3.95	4.72
	COP		4.69	4.45	4.6	3.80	3.60
Cooling (A35/-°C, W28°C)	Capacity	kW	4.5	5.2	7	7.80	8.60
	Rated input	kW	1.13	1.55	1.75	2.60	3.31
	EER		4	3.35	4	3.00	2.60
Boost Cooling (A35/-°C, W28°C)	Capacity	kW	/	/	/	8.40	8.80
	Rated input	kW	/	/	/	3.23	3.67
	EER		/	/	/	2.60	2.40

MODEL			MDVSC-7D2R8-A	MDVSC-9D2R8-A	MDVSC-12D2R8-A	MDVSC-16D2R8-A	MDVSC-20D2R8-A
Max. running input		W	2200	2600	2800	4200	5300
Refrigerant	Type		R32	R32	R32	R32	R32
	GWP		675	675	675	675	675
	Charged weight	kg	0.55	0.55	0.75	0.78	0.78
Water side connection		Type	Internal thread Glue connection	Internal thread Glue connection	Internal thread Glue connection	Internal thread Glue connection	Internal thread Glue connection
		mm	φ50	φ50	φ50	φ50	φ50
Water flow range		m³/h	3.1	3.9	5.4	6.9	8.3
Water pressure drop		kPa	4.6	7.3	13.8	23	33
Sound pressure Level (1m)	Heating (A27/24.3°C, W28°C)	dB(A)	41	43	49	50	54
	heating silence mode 1	dB(A)	39	39	40	41	43
	heating silence mode 2	dB(A)	38	38	38	39	40
Unit dimension (W×H×D)		mm	988×365×712	988×365×712	988×365×712	988×365×712	988×365×712
Packing dimension (W×H×D)		mm	1075×480×770	1075×480×770	1075×480×770	1075×480×770	1075×480×770
Net weight		kg	46	46	50	53	53
Gross weight		kg	53	53	57	59	59
Ambient temperature range	Cooling	°C	15-43	15-43	15-43	15-43	15-43
	Heating	°C	-7-43	-7-43	-7-43	-7-43	-7-43
Water inlet temperature setting range	Cooling	°C	12-30	12-30	12-30	12-30	12-30
	Heating	°C	10-40	10-40	10-40	10-40	10-40



Aqua thermal Super Heat pump



Product lineup

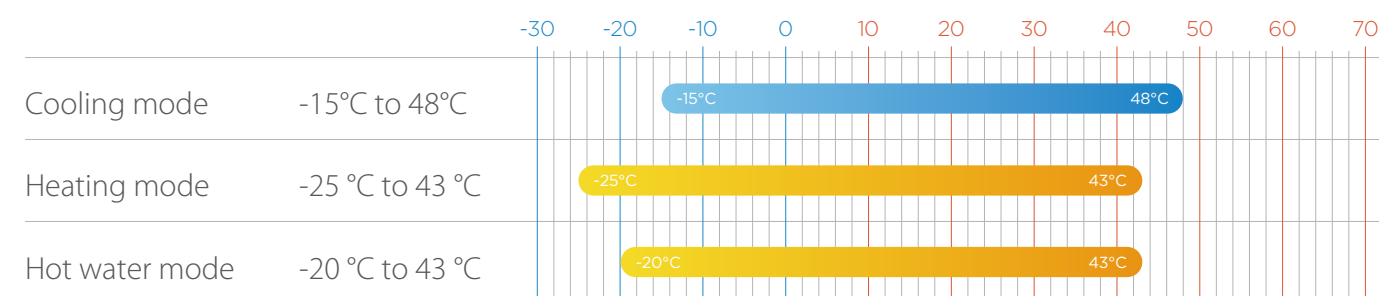
Capacity(kW)	65	75	110	140
Appearance				
380-415V/3Ph/50Hz	•	•	•	•

Overview

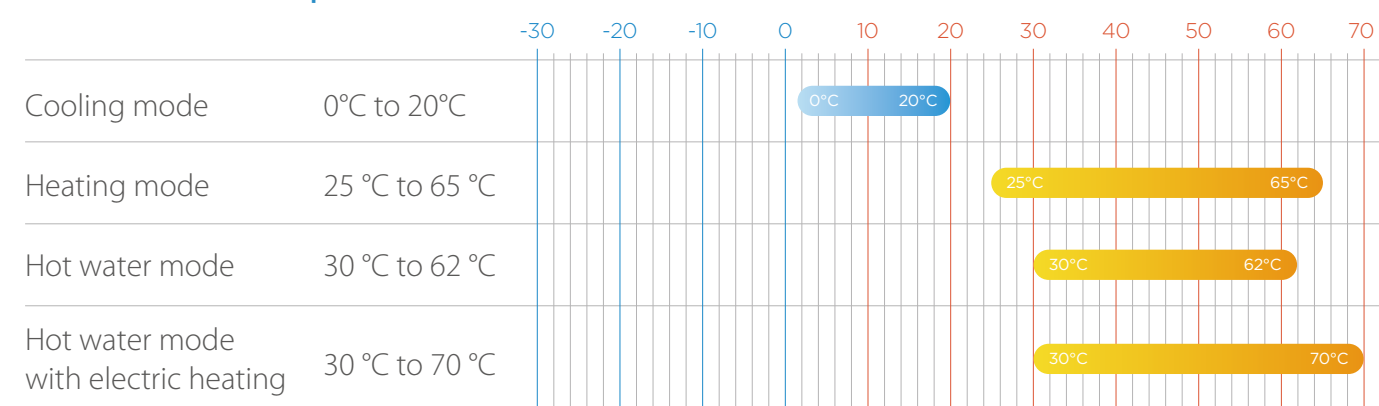
- Maximum water temperature up to 65°C
- Minimum operation ambient temperature down to -25°C
- DC Inverter technology allows precise consumption on real load
- High energy efficiency level A+++ for energy saving (65kW water outlet temperature at 35°C)
High energy efficiency level A++ for energy saving (water outlet temperature at 55°C)
- Multiple silence modes and operation protection are comfortable and secure to use
- Refrigerant R32 75% less impact on global warming
- Group control for up to maximum 16 units with one controller.
Maximum 16 controllers 256 units can be connected to BMS system.
- Integrated inverter hydro module (Customized), simplify onsite installation

Wide application range

Ambient temperature



Outlet water temperature

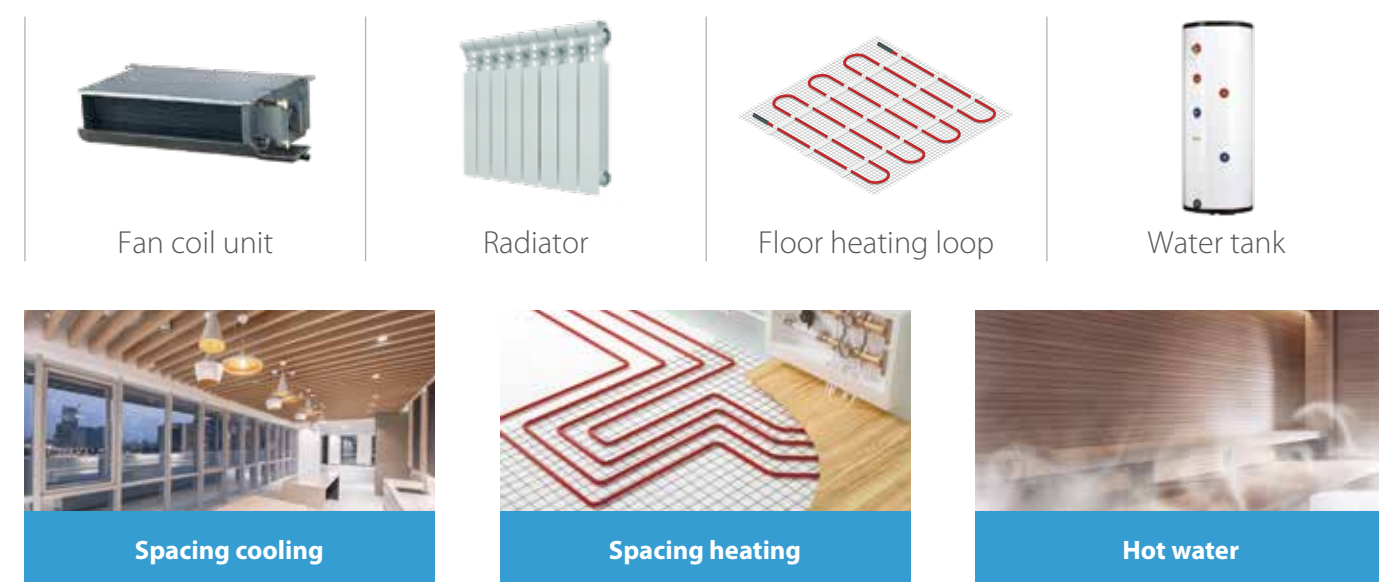


Notes:

1. Antifreeze fluid is needed when water outlet temperature less than 5°C.
2. Electric heater installed in the tank is field supplied.
3. The highest water temperature can reach 70°C, which can easily kill the bacteria in the tank.

terminals and scenarios

It can be matched with different kinds of terminals to meet the requirements of a variety of scenarios



Modular design

Modularity is perfect when an extension of capacity becomes required as the building load range from 65kW to 1760kW



7 Levels of energy saving

For projects with temporary electricity supply restrictions, the outdoor unit supports 7 levels of energy management which can be set to output 40-100% capacity. It prevents tripping during electricity supply restriction conditions and remains system continue to operate.



Advanced configuration

Full frequency conversion technology

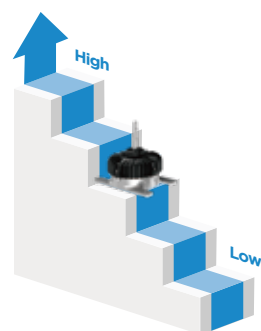
DC variable frequency compressor + DC variable frequency fan + variable frequency water pump.

DC variable frequency compressor



- More compact, weight reduced by 50%
- New structure enhances mid-frequency performance
- Specially designed scroll profile for R32
- Advanced permanent magnet DC motor improves low frequency band performance

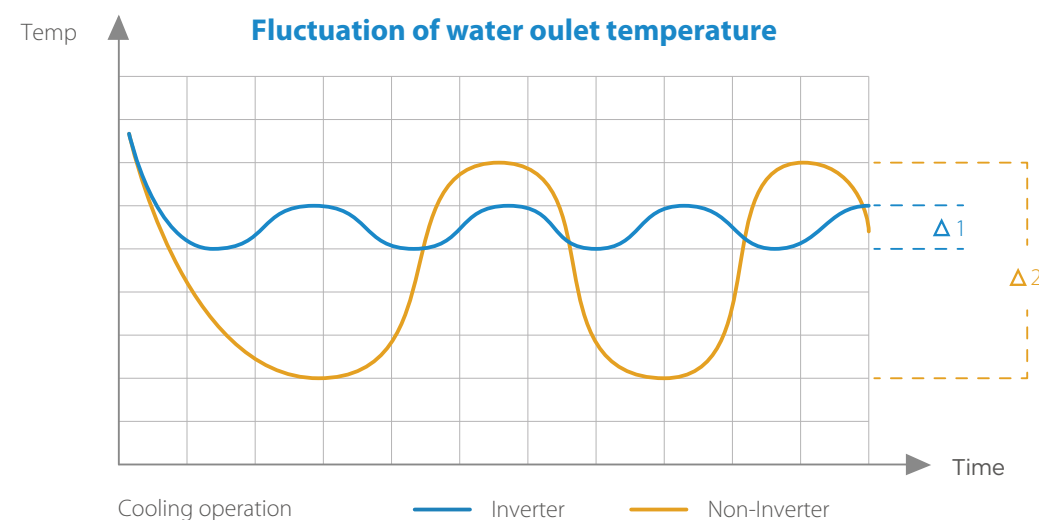
DC variable frequency fan



variable frequency water pump



The compressor, fan and water pump can be stepless broadband regulation, and the refrigerant output can be accurately adjusted according to the indoor and outdoor load, so that the water outlet temperature and speed are constant.
The unit does not need to start and stop frequently, more efficient and energy saving, and can bring comfortable and energy saving effect to the user.

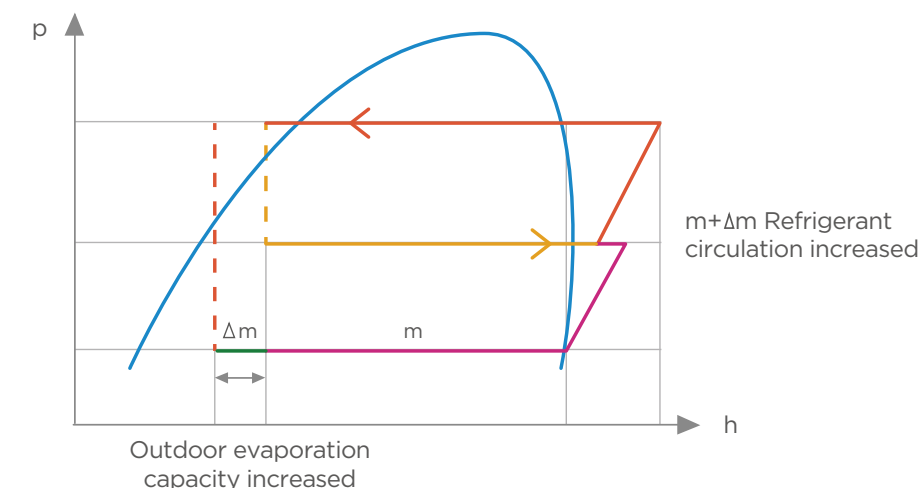


Enhanced Vapor Injection (EVI) Compressor

Enhanced vapor injection and secondary supercooling technology is used to achieve ultra-low temperature -25°C operation, and make up for the lack of heat production at low temperature, improve energy efficiency.

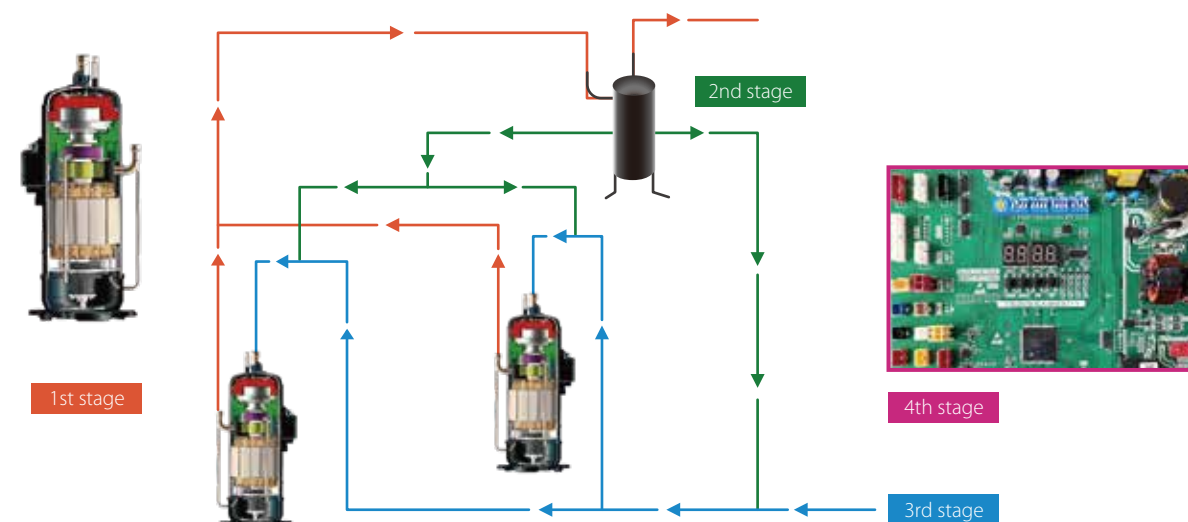


EVI compressor



Precise Oil Control Technology

Four stages of oil control technology ensure all outdoor compressor oil is always kept at a safe level, eliminating any compressor oil shortage problems. Compressor internal oil separation. High-efficiency centrifugal oil separator (with separation efficiency of up to 99%) ensures that oil is separated from the discharge gas and returned to the compressors in a timely fashion. Oil balance pipe ensures oil distribution to keep compressor running normally. Auto oil return program monitors the running time and system status to ensure reliable oil return.



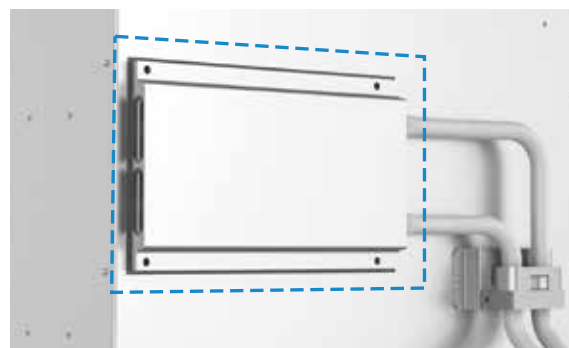
Micro channel refrigerant cooling technology

The refrigerant flows heat transfer directly inside the aluminum block, and the refrigerant flow channel is corrugated, which increases the heat transfer contact area between the refrigerant and the aluminum block, and the radiator thinner, improve the heat transfer efficiency of the refrigerant radiator, break through the higher water temperature limit.



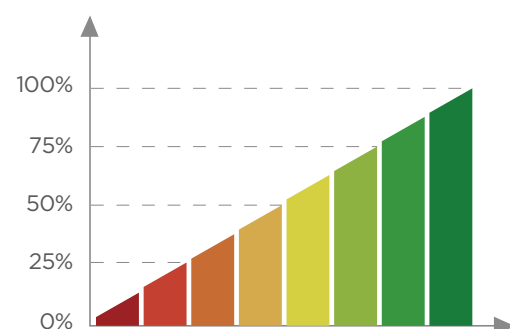
Refrigerant Cooling PCB

Refrigerant cooling PCB technology reduces electric control heating under harsh working conditions, effectively reduce the temperature of electronic control components, ensure the stable and safe operation of the unit control system.

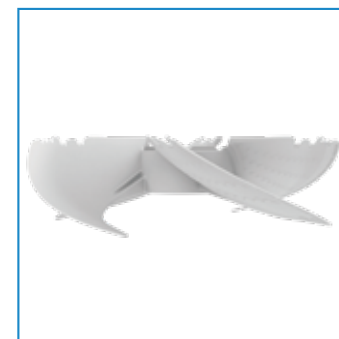


Precise flow control

Patented liquid distribution components maximize performance and minimize impact of defrosting operation. 500-step EXV with capillary tube allows stable and accurate gas flow control. Fast response results in higher efficiency and improved reliability.



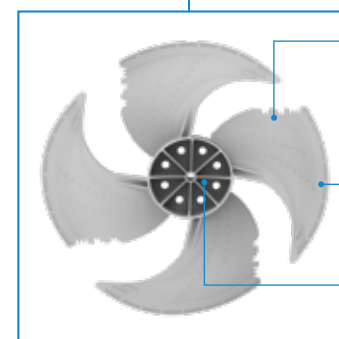
Multiple optimization design makes noise reduction



Optimized fan blade edge by CFD programs with analyzing air pressure distribution Realize higher air volume, lower noise level.



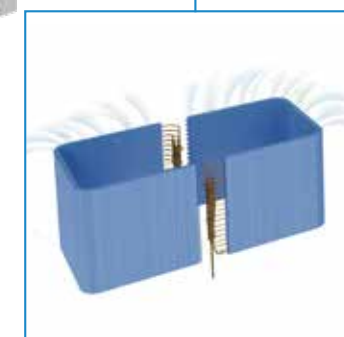
Guide air diffuser hood
Reduce noise effectively



Blade trailing edge dentate structure design
Blade suction surface concave design
Reduced turbulent kinetic energy

Large blade front edge bending sweep design
Blade outer edge falling vorticity design

Blade installation angle optimization design
Improve airflow and fan efficiency



- Big heat exchanger area
- Located in the upper part
- Uniform air flow
- High efficient "Double U" heat exchanger

Comfortable and convenient to use

Convenient control

Three user levels
Three different user levels ensure users can easily access control functions and allow engineers convenient access to operating parameters.



LCD touch wire controller

- Dot matrix LCD screen
- Weekly time, daily time
- Double temperature point setting
- Energy saving curve/power limiting mode setting
- Mute mode setting
- Power failure memory function
- Master/slave wire controller Settings
- Buzzer sound and alarm function
- Standard Modbus function, access to the smart building system



Standard mode



Silent mode



Super silent mode

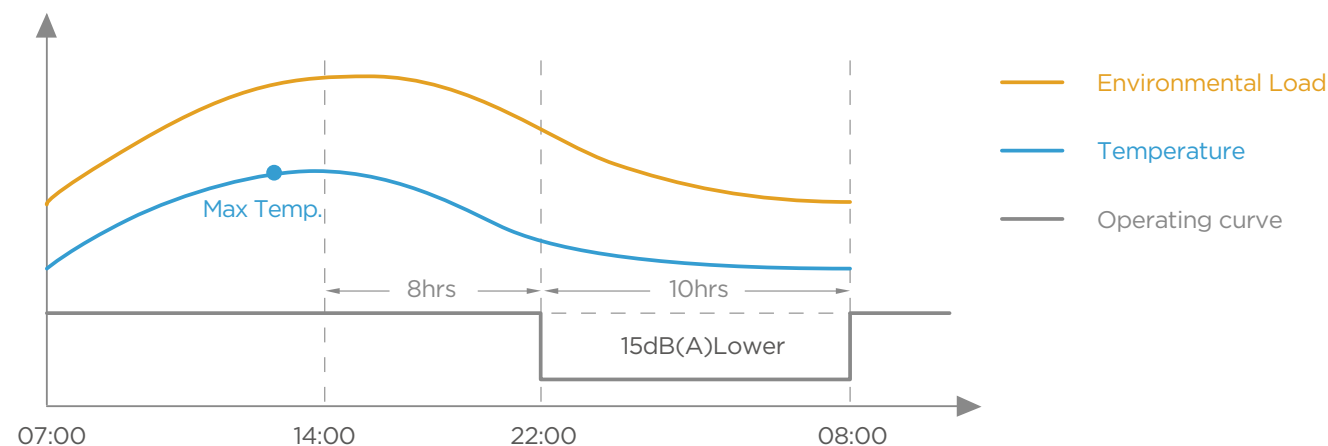
Night silent mode

The night silent mode can be set by the online controller to meet the needs of low noise operation.



Multiple silent modes

By adjusting the frequency and speed of the fan, a variety of mute modes can be realized, and the silent mode reduces noise by 4 dB, the super silent mode reduces noise by 8 dB.

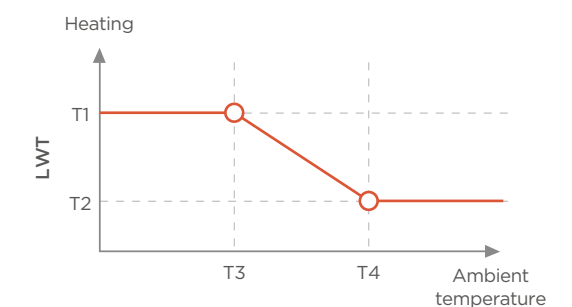
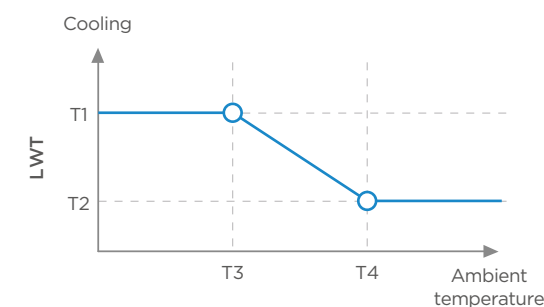
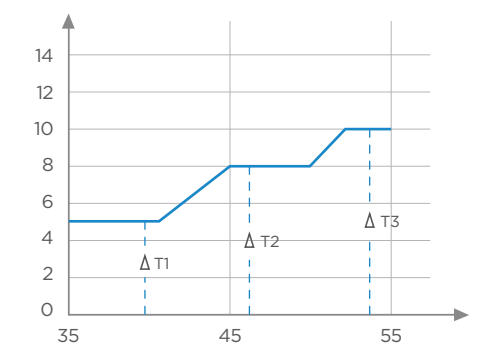


Adaptive variable temperature control and temperature regulation

According to different application scenarios, different terminals are used to adjust the temperature difference to the optimal target water temperature difference.

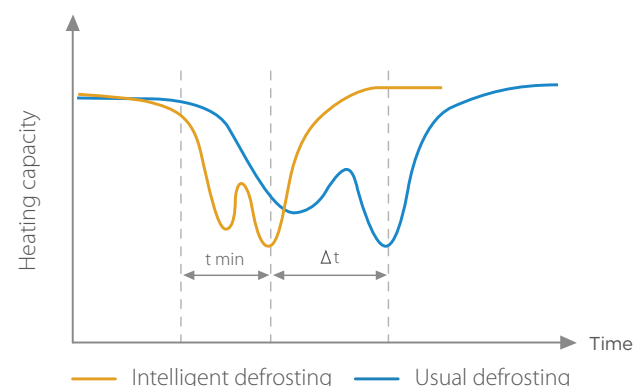
The unit automatically adjusts the target water outlet temperature according to the outdoor environment temperature.

Ensure the comfort of users while realizing high efficiency and energy saving.



Intelligent alternate defrosting

The intelligent defrosting program calculates the time required for defrosting according to the actual system status, eliminating heat losses from unnecessary defrosting. A specialized defrosting valve reduces time required for defrosting to as little as four minutes. By detecting the water temperature, the proportion of defrosting unit can be determined intelligently so as to realize small water temperature fluctuation during the alternate defrosting period.



1# unit is defrosting



2# unit is waiting for defrosting



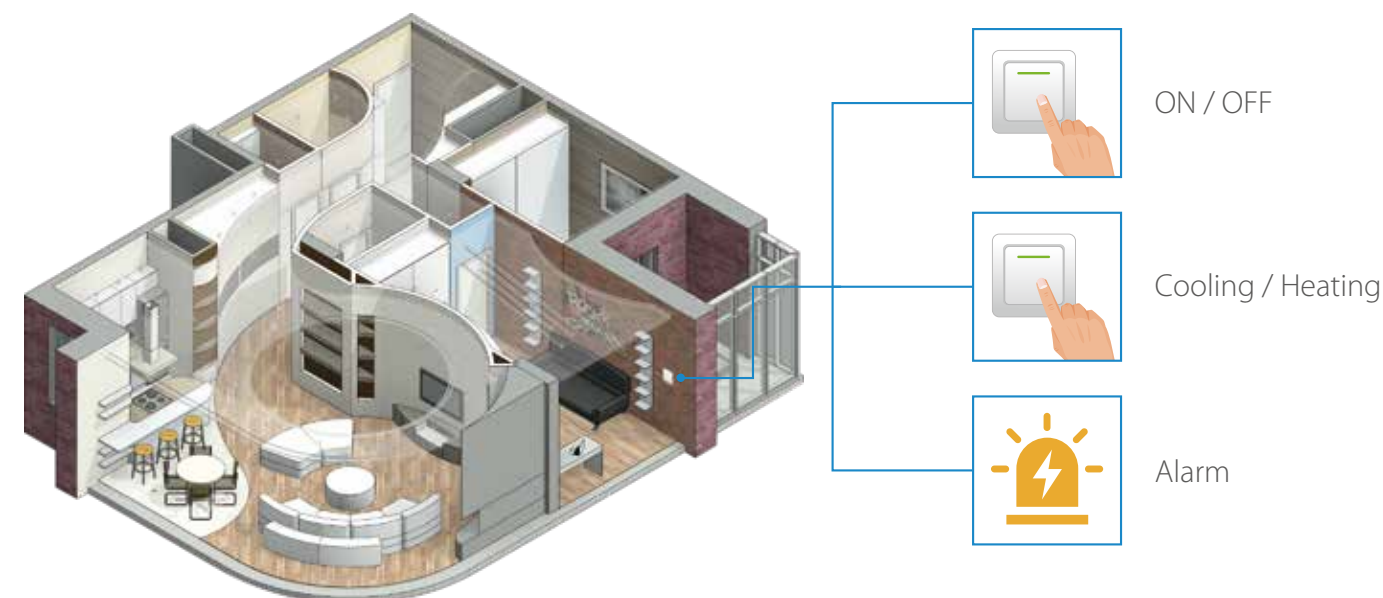
1# unit finished defrosting



2# unit is defrosting

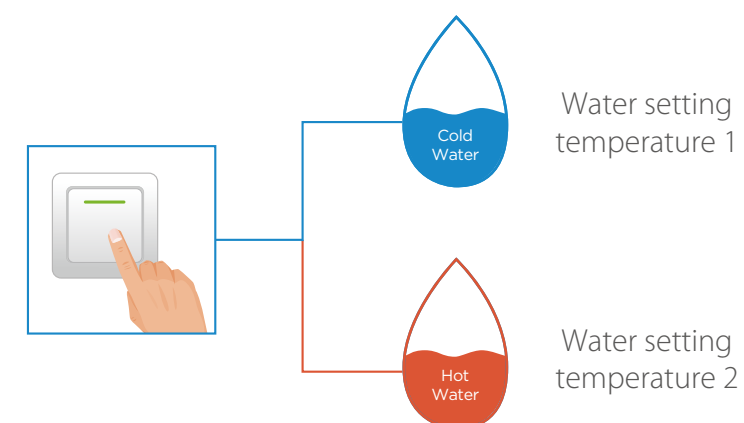


Remote alarm, on/off control, cooling/heating control



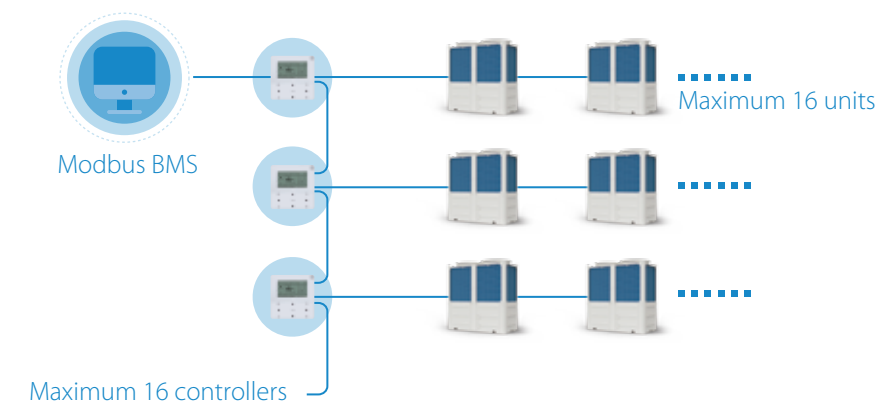
One-touch water temperature switching

For cooling and heating mode, different water temperatures can be switched just by one-touch.



Convenient control

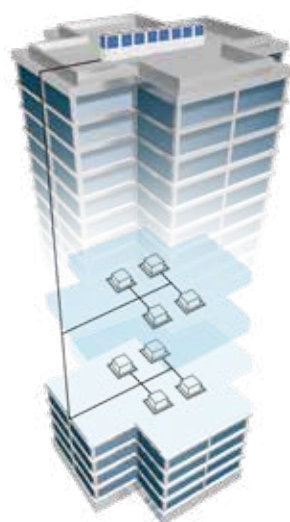
- Group control for up to maximum 16 units with one controller.
- Maximum 16 controllers 256 units can be connected to BMS system.



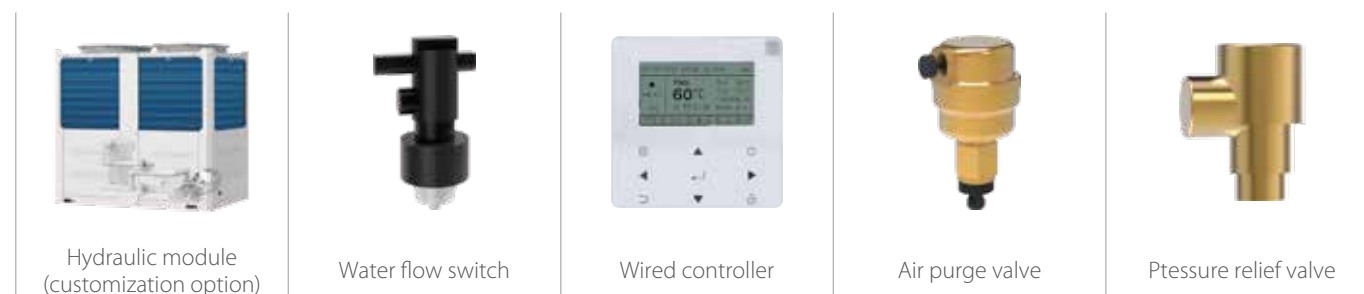
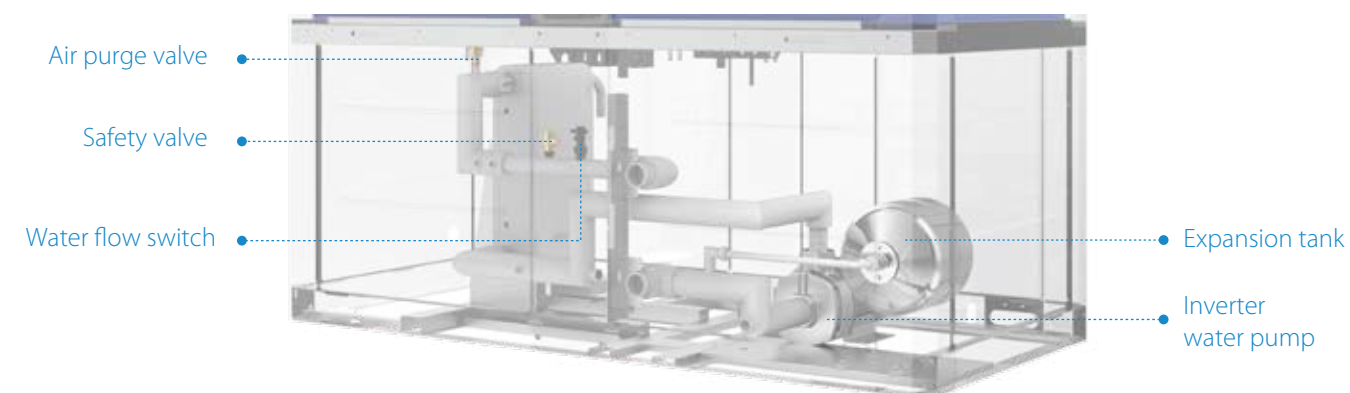
Easy installation and maintenance

Easy installation

Single unit covers an area of only 1.92m², which greatly saves lots of space for group control.

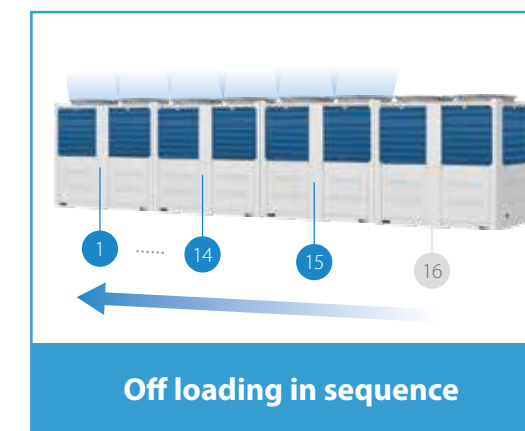
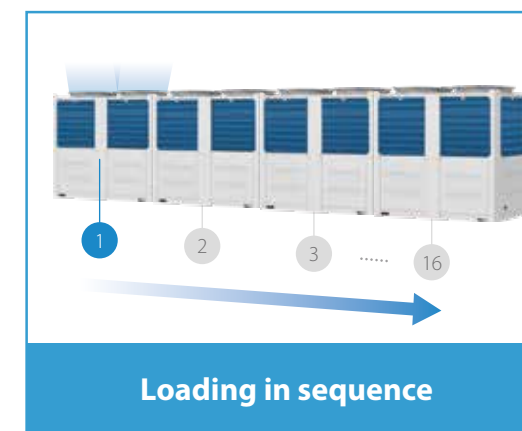


- The hydraulic models(customized) has the water pump components inside the unit, which can save the installation cost and time and make installation easier.
- Standard comes with a variety of components that are easy to install and maintain.



Alternative cycle duty operation

In one combination system, all units operate as alternative in cycle duty to keep equal running time, realize higher stability, better reliability and longer lifespan.



Back-up function

In a combination system, if one unit failed, other units can be back-up instead of the failed one for continuing operation.



Convenient program upgrade

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



Specifications

Model name			MDVM-V65D2BR8-AS	MDVM-V75D2BR8-AS	MDVM-V110D2BR8-AS	MDVM-V140D2BR8-AS
Power supply		V/Ph/Hz	380-415/3/50			
Heating (A7W65)	Capacity	kW	60	61	100	110
	Rated input	kW	26.10	26.75	42.90	50.00
	COP	/	2.30	2.28	2.33	2.20
Heating (A7W55)	Capacity	kW	64	66	106	126
	Rated input	kW	21.33	22.15	35.30	49.22
	COP	/	3.00	2.98	3.00	2.56
Heating (A7W45)	Capacity	kW	65	75	110	140
	Rated input	kW	18.30	22.06	29.90	44.73
	COP	/	3.55	3.40	3.68	3.13
Heating (A7W35)	Capacity	kW	64	77	112	142
	Rated input	kW	15.24	19.74	27.00	38.17
	COP	/	4.20	3.90	4.15	3.72
SCOP (55) average		/	3.40	3.40	3.25	3.25
SCOP (35) average		/	4.50	4.50	4.25	4.25
Cooling (A35W7)	Capacity	kW	57	70	100	130
	Rated input	kW	19.00	26.80	32.78	50.00
	EER	/	3.00	2.61	3.05	2.60
Cooling (A35W18)	Capacity	kW	76	86	128	138
	Rated input	kW	20.27	23.12	33.70	36.32
	EER	/	3.75	3.72	3.80	3.80
SEER		/	5.00		4.80	
Air side heat exchanger	Type	/	Fin coil mode			
Fan	Type	/	DC motor			
	Air flow rate	m³/h	22000	28500	32500	50000
Water side heat exchanger	Type	/	Plate heat exchanger			
	Water pressure drop	kPa	44	65	39	65
Refrigerant system	Refrigerant type	/	R32			
	Refrigerant charge	kg	9		15.5	
	Throttle type	/	Electronic expansion valve			
Sound power level (A7W45)		dB	80	86	80	92
Sound pressure level (1m) (A7W45)		dB(A)	64	69	64	73
Net dimensions (W×H×D)		mm	2000 × 1770 × 960		2220×2300×1135	
Packed dimensions (W×H×D)		mm	2085 × 1890 × 1030		2250×2445×1180	
Net weight		kg	440		670	
Gross weight		kg	455		690	
Water pipe connections		mm	DN50		DN65	
Operating temperature	Cooling	℃	-15 to 48			
	Heating	℃	-25 to 43			
	DHW	℃	-20 to 43			
Water outlet temperature	Cooling¹	℃	0 to 20			
	Heating	℃	25 to 65			
	DHW(Heat pump)	℃	30 to 62			
	DHW(Heat pump+Electric heater²)	℃	30 to 70			

Notes:
 1.Antifreeze liquid is needed when water outlet temperature reaches 5°C.
 2.Electric heater installed in the tank is field supplied.

