

2006-1H2001

Commercial Air Conditioners 2020



Air Source Heat Pump Water Heater



Commercial Air Conditioner Division Midea Group

Add.: Midea Headquarters Building, 6 Midea Avenue, Shunde, Foshan, Guangdong, China

Postal code: 528311

cac.midea.com www.midea-group.com



Note: Product specifications change from time to time as product improvements and developments are released and may vary from those in this document.

GD MIDEA Heating & Ventilating Equipment Co. Ltd participates in the ECP programme for VRF. Check ongoing validity of certificate: WWW.eurovent-certification.com



Midea CAC

Midea CAC is a key division of the Midea Group, a leading producer of consumer appliances and provider of heating, ventilation and air conditioning solutions. Midea CAC has continued with the tradition of innovation upon which it was founded, and emerged as a global leader in the HVAC industry. A strong drive for advancement has created a groundbreaking R&D department that has placed Midea CAC at the forefront of a competitive field. Through these independent efforts and joint cooperation with other global enterprises, Midea has supplied thousands of innovative solutions to customers worldwide.

There are four production bases: Shunde, Chongqing, Hefei and Italy.

MCAC Shunde: 38 product lines focusing on VRF, Split Products, Heat Pump Water Heaters, and AHU/FCU.

MCAC Chongqing: 14 product lines focusing on Water Cooled Centrifugal/Screw/Scroll Chillers, Air Cooled Screw/Scroll Chillers and AHU/FCU.

MCAC Hefei: 11 product lines focusing on VRF, Chillers and Heat Pump Water Heaters.

Clivet S.p.A: 50,000m² workshop in Feltre and Verona, covering products such as ELFO system, hydronic, WHLP, packaged, split and close control and so on.

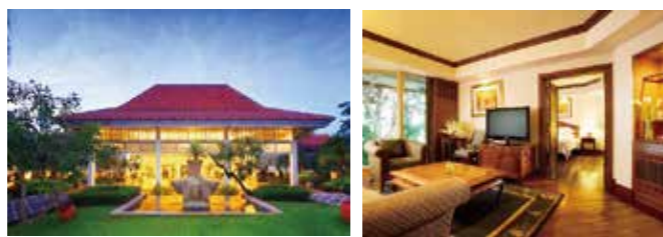
- 2018-2019 >> Launched the new generation of R32 M-Thermal products, including Mono and Split type.
- 2016 >> Acquired 80% stake in Clivet
 - Launched the new generation of R410A M-Thermal products, including Mono and Split type.
- 2015 >> JV with Carrier in China in chiller field, BOSCH in VRF production and Siix in smart control.
- 2013 >> Launched combo type 300L products with enamel water tank.
- 2012 >> Introduced the professional production line EISENMAN from German.
- 2011 >> Launched the first generation of M-thermal products.
- 2010 >> Built the 3rd manufacturing base in Hefei.
- 2008 >> Launch the first generation of combo type products.
- 2007 >> Cooperated with GE to develop combo type air source heat pump.
- 2004 >> Launch the first generation of direct heating products.
- 2003 >> Entered the air source heat pump field and launched the first generation cycle heating products.
- 1999 >> Entered the CAC field.

Reference projects



Aston Kuta Bali Hotel (Five Star)

Country: Indonesia
 City: Bali
 Completion Year: 2010



Sheraton Bandara Resort Hotel (Five Star)

Country: Indonesia
 City: Jakarta
 Completion Year: 2011



Ramada Plaza (Five Star)

Country: China
 City: Shunde
 Completion Year: 2009



The Royale Springhill Residences

Country: Indonesia
 City: Jakarta
 Completion Year: 2010



Grand Aston Tunjungan (Five Star)

Country: Indonesia
 City: Surabaya
 Completion Year: 2013

Contents

13 M-Thermal



38 Sanitary Hot Water



45 Swimming Pool Application



49 Commercial Heat Pump Water Heater



Agile Estate (Clear Water Bay)

Country: China
 City: Sanya
 Completion Year: 2011



Shanghai Fudan University (Dormitory Building)

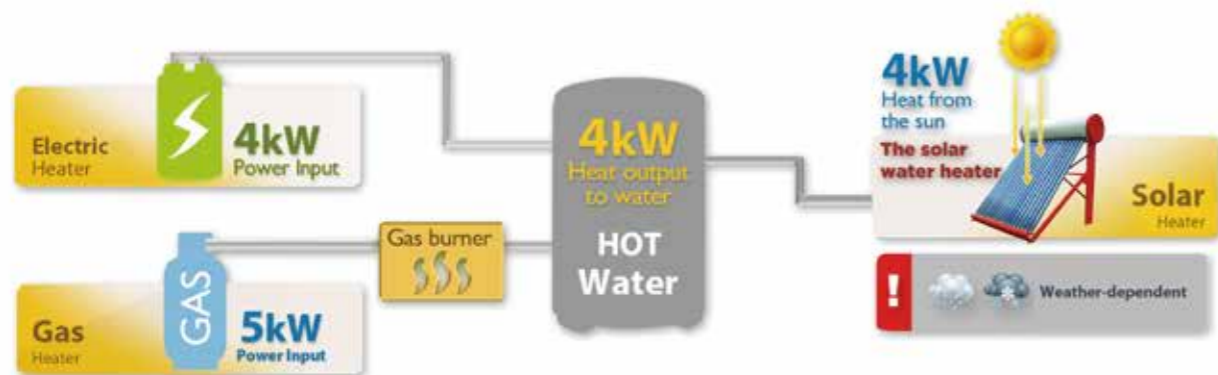
Country: China
 City: Shanghai

Introduction

Why choose an air source heat pump?



Typically around 3kWh of energy can be captured for every 1kWh of electrical energy expended, giving almost 4kWh of heat energy for only 1kWh of electrical input and giving efficiency of almost 400%.



Comparison of energy sources

| | Midea air source heat pump | Gas boiler | Electric water Heater | Diesel boiler | Solar water heater |
|--------------------|----------------------------|--------------------------|-----------------------|---------------|---------------------|
| Energy source | Air and electricity | LPG | Electric | Diesel | Sun and electricity |
| Calorific value | 860kcal/kWh | 24000kcal/m ³ | 860kcal/kWh | 10200kcal/kg | 860kcal/kWh |
| Average efficiency | 3.5 | 0.8 | 0.95 | 0.7 | 2.7 |
| Consumption* | 13.33kWh | 2.08m ³ | 49.13kWh | 5.6kg | 17.22kWh |
| Running cost(USD) | 1.2 | 5.9 | 4.42 | 6.5 | 1.5 |

LPG: Liquefied Petroleum Gas

1. Products tested under controlled conditions at Midea laboratories.

2. * 40,000kcal are required to heat 1 ton of water from 15°C to 55°C.

How air source heat pump works

Heat pump units are capable of extracting heat from the surrounding air and transferring this heat indoors for space heating and domestic hot water.



1 Stage One

As the refrigerant passes through the expansion valve and expands, its temperature and pressure both drop.

2 Stage Two

With the temperature of the refrigerant being lower than the ambient temperature, heat passes from the air flowing over the air side heat exchanger to the refrigerant and the refrigerant evaporates.

3 Stage Three

When the refrigerant vapor passes through the compressor its pressure increases and its temperature rises above that of the water in hydronic system.

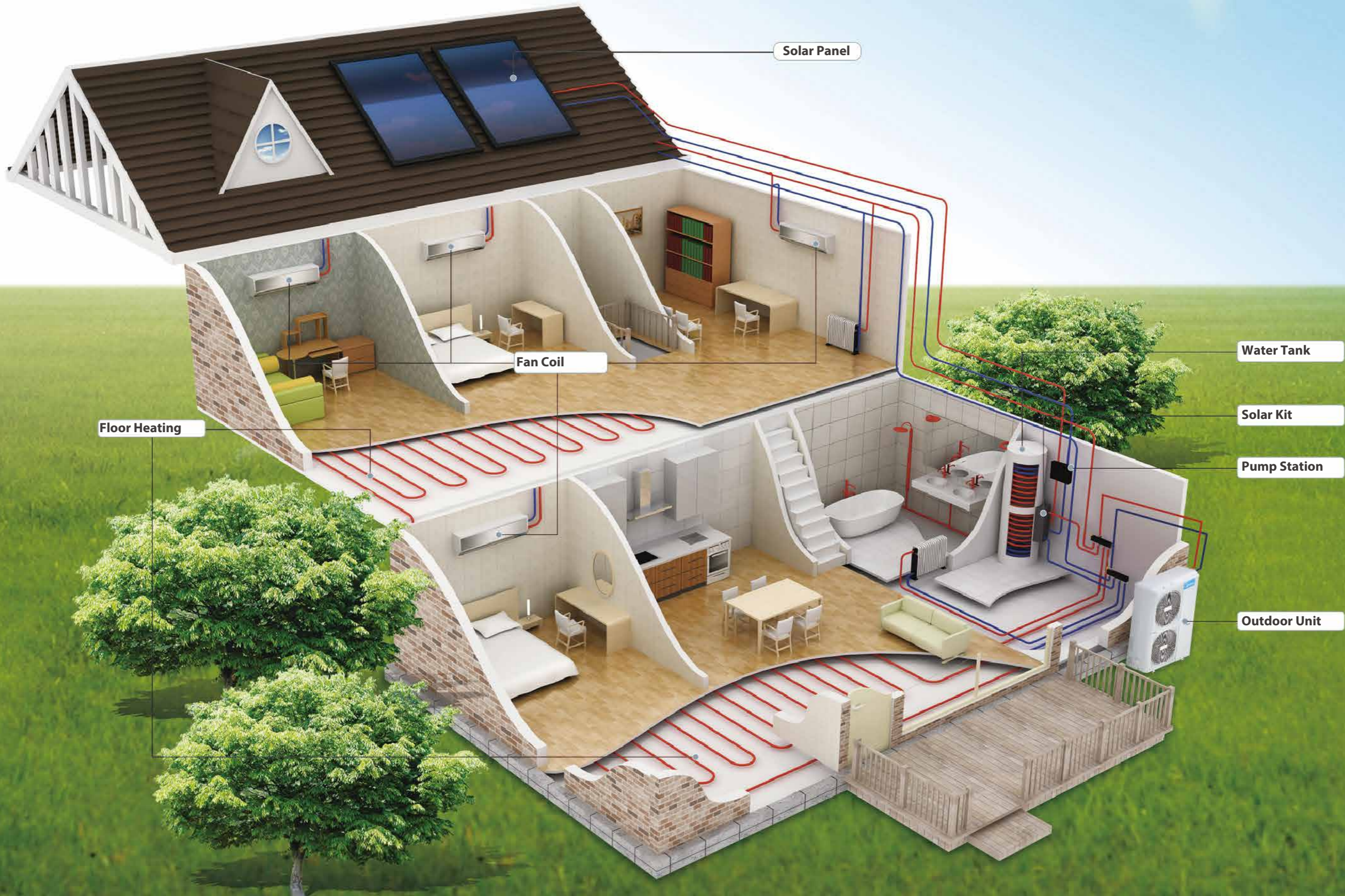
4 Stage Four

As the hot vapor refrigerant passes through the water side heat exchanger it heats the water in the hydronic system, which is then pumped indoors to the space heating terminals or hot water tank. The refrigerant cools and condenses and then ready to return to the expansion valve to start the cycle again.

M -Thermal



TOTAL SOLUTION FOR HEATING, COOLING AND DOMESTIC HOT WATER



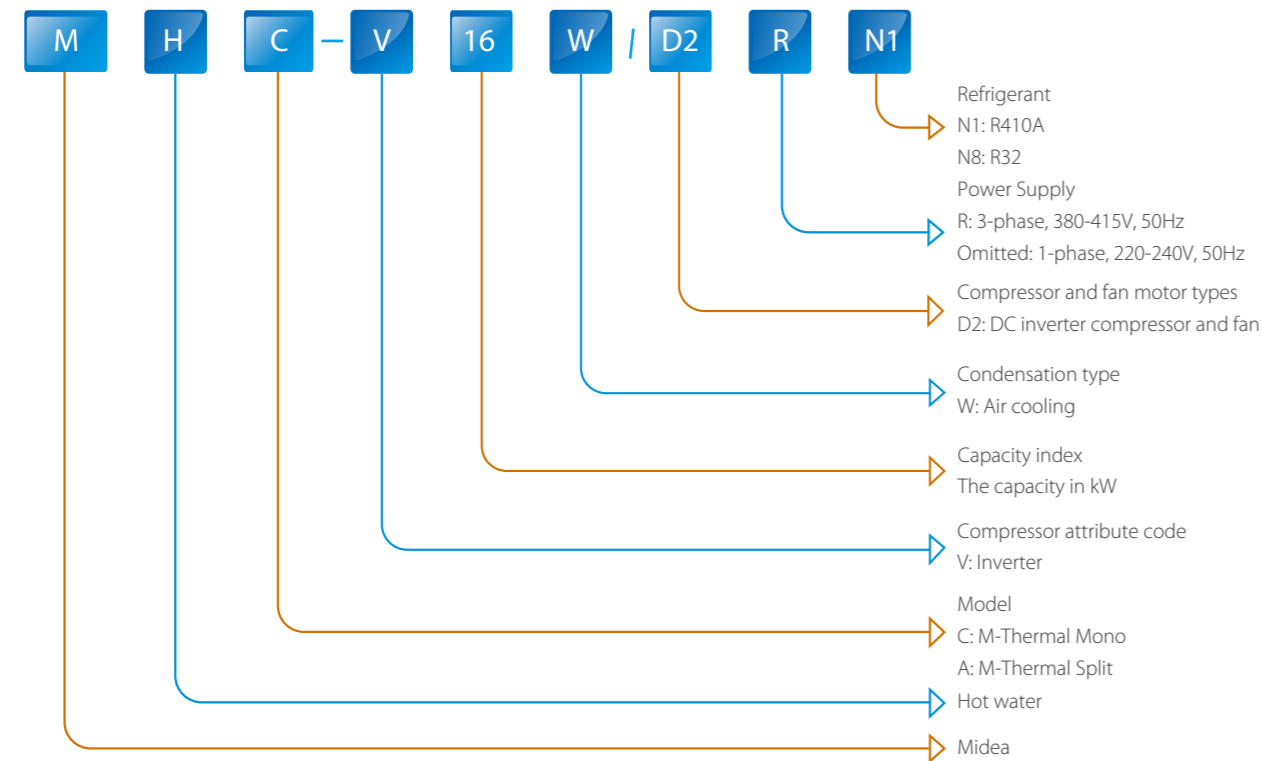
Overview



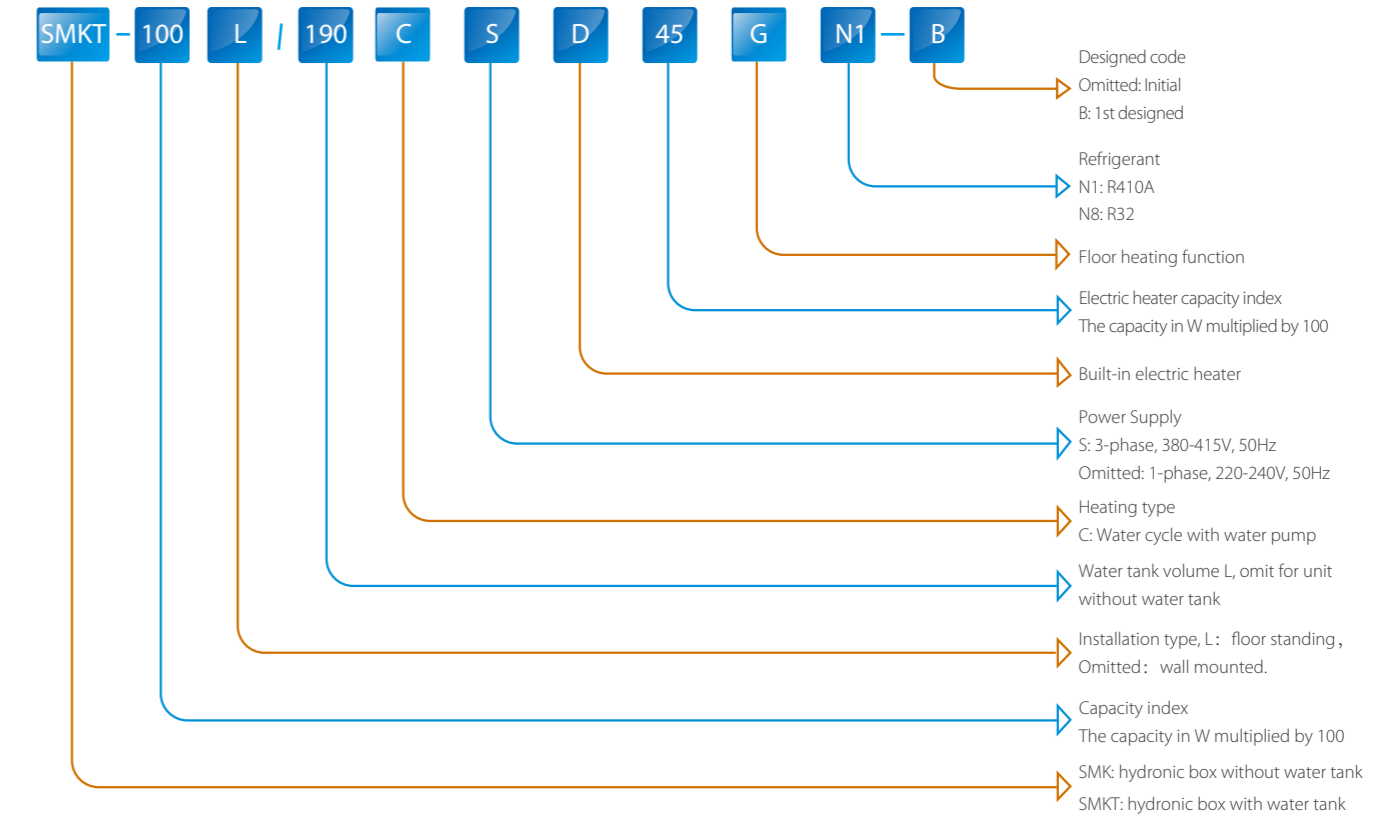
The M-Thermal range offers the flexibility to either have the hydronic components installed indoors or outdoors. M-Thermal has two different refrigerant series: R32 & R410A. With M-Thermal Mono, the hydronic components are integrated into the outdoor unit, offering ease of installation, whilst with M-Thermal Split the hydronic components are contained in a separate hydronic box, offering more installation flexibility. Both the Mono and Split products are rated A+++ on the energy efficiency and make a significant contribution to limiting the impact on the environment.

Nomenclature

Outdoor units



Hydronic box



Product lineup

| | M-Thermal Mono | M-Thermal Split | | | | Refrigerant | | |
|------------------------------|----------------|---------------------------------|----|------------------------------|----|-------------|----|----|
| | | | | | | | | |
| M-Thermal Mono | Capacity (kW) | 5 | 7 | 9 | 10 | 12 | 14 | 16 |
| | 220~240V-1Ph | •• | •• | •• | • | •• | •• | •• |
| | 380~415V-3Ph | | | | | •• | •• | •• |
| M-Thermal Split Outdoor unit | Capacity (kW) | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
| | 220~240V-1ph | •• | •• | •• | •• | • | • | • |
| | 380~415V-3Ph | | | | | • | • | • |
| M-Thermal Split Hydronic box | Power supply | Hydronic box without water tank | | Hydronic box with water tank | | | | |
| | | | | 190L | | 250L | | |
| | 220~240V-1ph | •• | | • | | • | | |
| | 380~415V-3Ph | • | | | | | | |



M-Thermal Mono

| | |
|---|--|
| <p>M-Thermal Mono System</p> |  <p>Solar panel</p> <p>User interface</p> <p>Low temperature radiator</p> <p>Under-floor heating</p> <p>Mono outdoor unit</p> <p>Domestic hot water tank</p> |
| <p>Application</p> | <p>Heating + Cooling + Domestic hot water</p> |
| <p>Structure type</p> | <p>Integrated (Heat pump and hydronic box are in the same casing)</p> |
| <p>Refrigerant piping</p> | <p>Inside outdoor unit</p> |
| <p>Water piping</p> | <p>Between outdoor unit and indoor heating appliances</p> |
| <p>Installation</p> | <p>Only need to install water piping</p> |
| <p>Combinational parts (field supplied)</p> | <p>Under-floor heating coils Fan coil units Low temperature radiators Domestic hot water tank Auxiliary heat sources (such as water heaters and boilers)</p> |

Mono outdoor unit

Mono outdoor unit absorbs heat from the outside air and transfers it to the water in the hydronic modular, through water to supply heat to indoor side.

Domestic hot water tank

Hot water from the Mono unit is circulated around the domestic hot water tank's heating water coil, heating the domestic hot water inside the tank. Immersion heaters are often installed in domestic hot water tanks as a backup.

User interface

User interface is connected to the Mono unit through signal wire; it mainly uses for ON/OFF the unit, mode setting, temperature adjusting and timer setting.

M-Thermal Split

| | |
|---|--|
| <p>M-Thermal Split System</p> |  <p>Solar panel</p> <p>User interface (external, apply to SMK)</p> <p>Low temperature radiator</p> <p>Under-floor heating</p> <p>Split outdoor unit</p> <p>Hydronic box SMK or Hydronic box SMK-T</p> <p>Domestic hot water tank (external, apply to SMK)</p> |
| <p>Application</p> | <p>Heating + Cooling + Domestic hot water</p> |
| <p>Structure type</p> | <p>Split (Heat pump and hydronic box are independent)</p> |
| <p>Refrigerant piping</p> | <p>Between heat pump unit (outdoor) and hydronic box (indoors)</p> |
| <p>Water piping</p> | <p>Between hydronic box and indoor heating appliances</p> |
| <p>Installation</p> | <p>Refrigerant piping and water piping</p> |
| <p>Combinational parts (field supplied)</p> | <p>Under-floor heating loops Fan coil units Low temperature radiators Domestic hot water tank(external, apply to SMK) Auxiliary heat sources (such as water heaters and boilers)</p> |

Split type outdoor unit

The outdoor unit absorbs heat from the outside air and transfers it inside through the refrigerant piping.

Hydronic box

The hydronic box heats the water by refrigerant from outdoor unit. The heated water circulates through heating apparatus such as floor heating, radiators, fan coil units as well as inner coil of domestic hot water tank.

Domestic hot water tank

Hot water from the Split unit is circulated around the domestic hot water tank's heating water coil, heating the domestic hot water inside the tank. Immersion heaters are often installed in domestic hot water tanks as a backup.

User interface

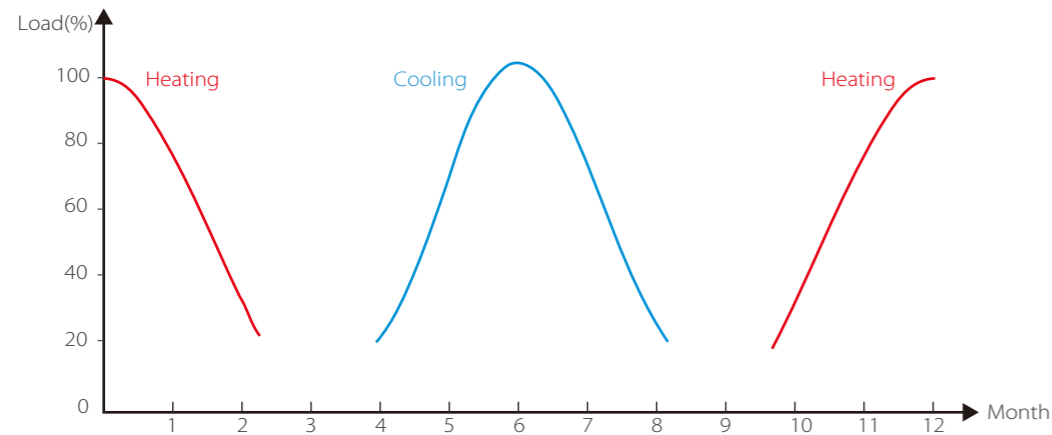
User interface is connected to the Split unit through signal wire. It mainly uses for ON/OFF the unit, mode setting, temperature adjusting and timer setting.

Features

DC Inverter Technology

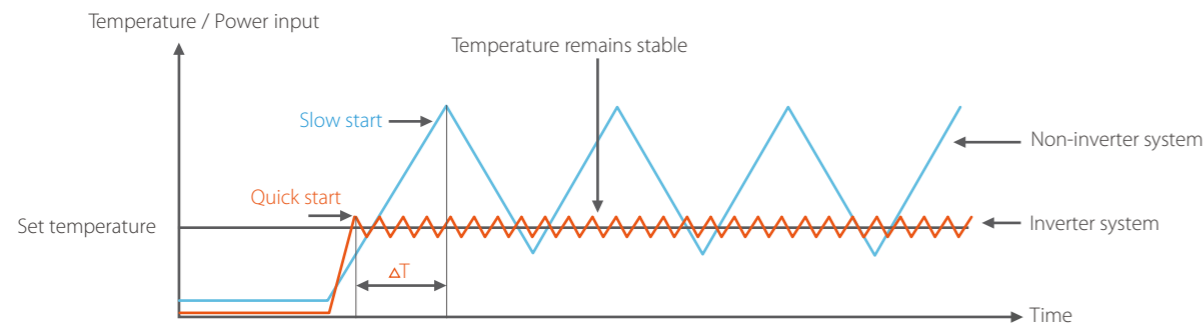
- ❖ Guarantee efficiency

The motors traditionally used in heat pumps run at full power even during part-load operation, wasting energy. Midea's M-Thermal products use DC inverter technology, which allows precise control of motor speed, ensuring that only the power necessary to perfectly match the real load is used.



- ❖ Stable water temperature improves comfort

Precise control of the compressor rotation speed ensures that the water temperature is maintained within a much smaller range around the set temperature than is possible with non-inverter systems.



- ❖ Quick start-up

Inverter system output power according to the energy demand by adjusting motor rotary frequency, so it possible to achieve comfort conditions in less time than system without inverter, start-up time reduced.

- ❖ Less frequent start/stop

The ability to vary compressor speed (as opposed to simple on/off control) means that the compressors experience fewer start/stop cycles which expands compressor lifespan and reduces noise.

- ❖ Quiet operation

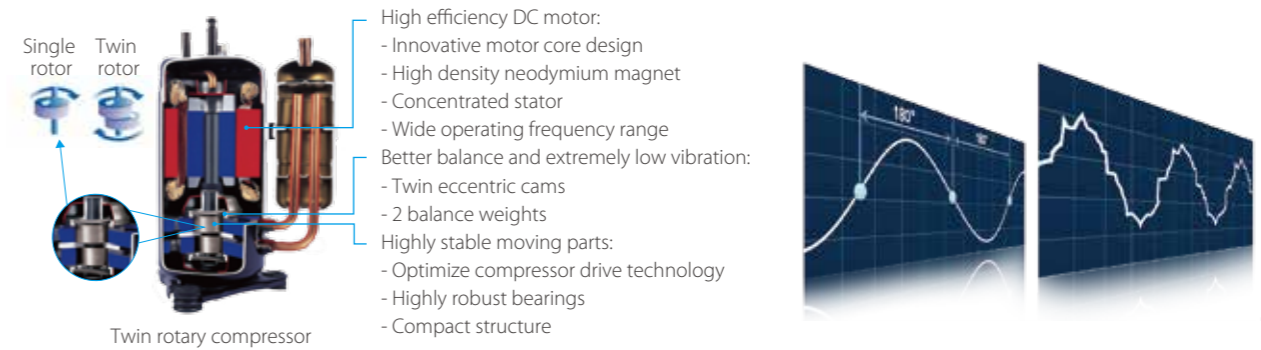
Most of the time, the capacity required for heating/cooling is lower than the peak load condition, meaning that heat pumps work under part-load conditions most of the time. With DC inverter compressors adjusting rotation speed according to the actual load requirement, noise levels are lower than with traditional compressor technology.

High efficiency and wide operating range

- ❖ Spray liquid cooling control of compressor is benefit for enhancing heating capacity in low temperature condition.
- ❖ R410A series: Offers heating capacity of 80% at -7°C thanks to the large heat exchanger and large compressor.
- ❖ R32 series: Offers heating capacity of 100% at -7°C thanks to the large heat exchanger and large compressor.

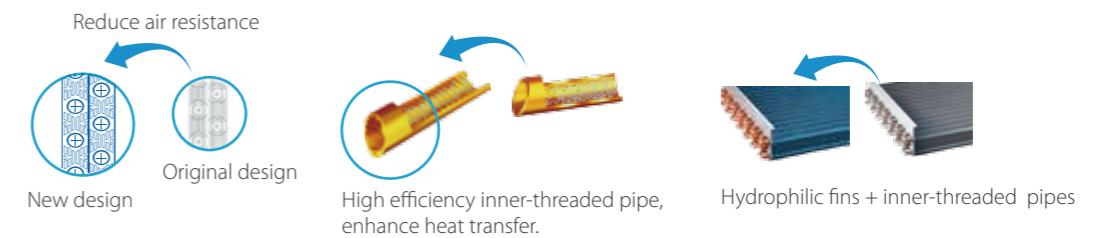
Twin rotary compressor

Twin rotary DC inverter compressor uses 30% less power than traditional scroll compressors whilst also giving a wider operating frequency range, enabling precise control and reducing running noise levels.



Finned tube heat exchanger

High performance fin-coil type heat exchanger is adopted at air side. The new designed window fins enlarge the heat-exchanging area, decrease the air resistance, save more power and enhance heat exchange performance. Hydrophilic film fins and inner-threaded copper pipes optimize heat exchange efficiency. The specially coated blue fins enhance durability and protect against corrosion from air, water and other corrosive agents, assures a longer coil service life.



Hydronic module

Integrated hydronic module with DC water pump and backup electric heater.

Brushless DC fan motor

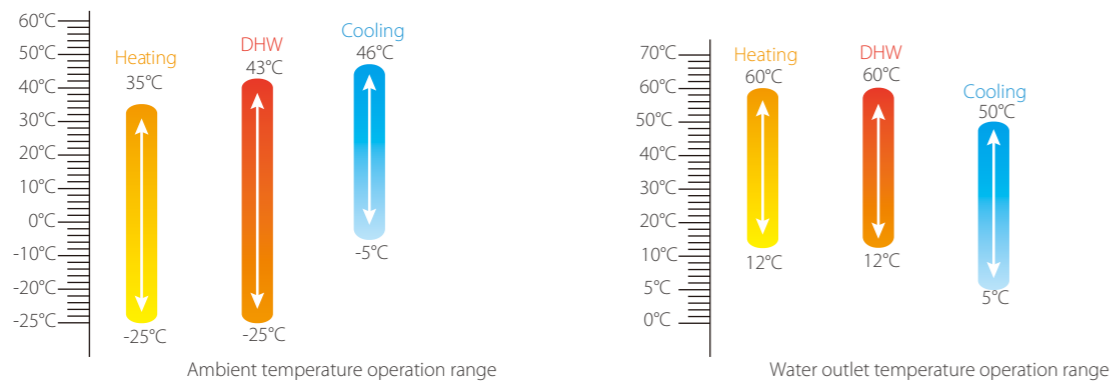
Stepless fan motor control enables super-quiet fan operation and minimizes power consumption.



- ❖ For R32 series and R410A model MHC-V5(7/9)W/D2N1, backup electric heater is customizable whilst other R410A models are standard mounted for additional heating during extremely cold weather. The capacity of the backup electric heater is customizable and the output capacity is adjustable.

- ❖ Heating, cooling and domestic hot water: a total heat solution.
- ❖ Compatible with additional heat sources (AHSs) including solar water heaters and boilers. AHSs can work together with heat pump or alternative for space heating and domestic hot water dependent on the system control.

- ❖ Wide ambient temperature and water outlet temperature operation ranges.



Easy installation and easy maintenance

- ❖ All hydronic components are located within the outdoor unit(Mono models).
- ❖ Refrigerant system entirely contained within outdoor unit - no additional refrigerant piping required(Mono models).
- ❖ Compact structure, easy for transportation and installation.
- ❖ Two-door design for easy access to internal components for easy maintenance(Mono 12-16KW models).

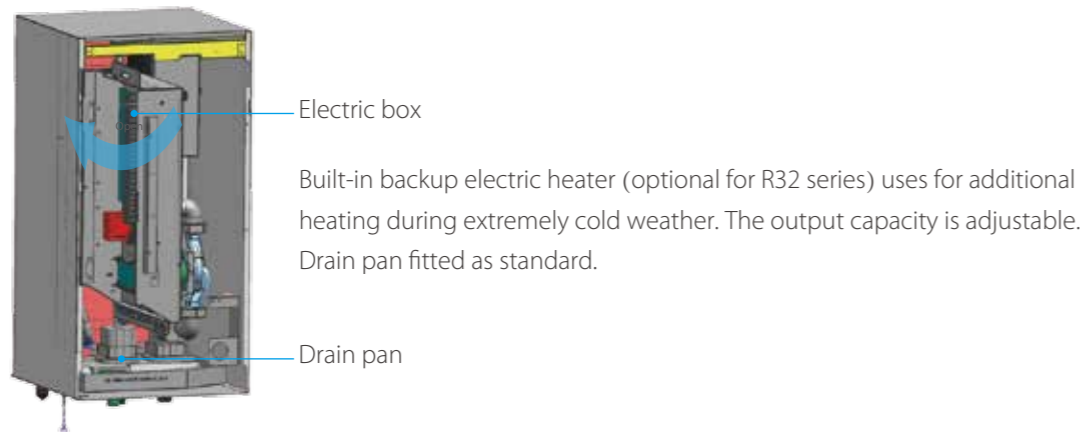


Door 1: Access to hydronic components and electrical parts

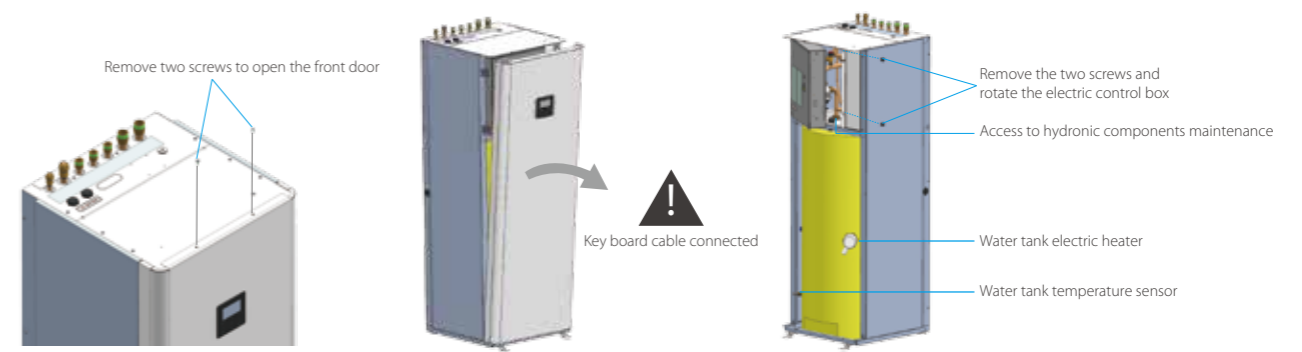


Door 2: Access to refrigerant components and electrical parts.

- ❖ R32 split series: Additional refrigerant charge only required if refrigerant piping length exceeds 15m
- ❖ R410A split series: Additional refrigerant charge only required if refrigerant piping length exceeds 10m.
- ❖ Rotating electric control box enables easy maintenance access to all hydronic components (For SMK).

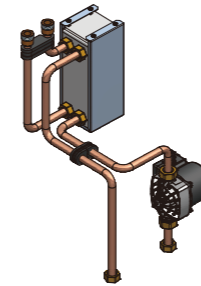


- ❖ Two screws to open the front door and rotating control box enable easy maintenance (For SMK).



Various customized components (For SMKT)

- ❖ Back-up heater of 2(4,6,9)KW can be customized for models SMKT-100L/190(250)CGN8
- ❖ Various customized components to meet different applications need .and make installation more convenient.



Solar energy kit

The solar energy kit is used to circulate hot water heated by solar energy to water tank. By connecting the signal of solar system and circulation pump of the kit to M-Thermal, free energy will be well used and operation cost is lower.



External 2 zone kit

The 2 zone kit is used to realize the 2 zones control function of M-Thermal. In situation of M-Thermal is connected to different type of space heating terminals or terminals in different rooms, the using of the kit will enhance comfort.

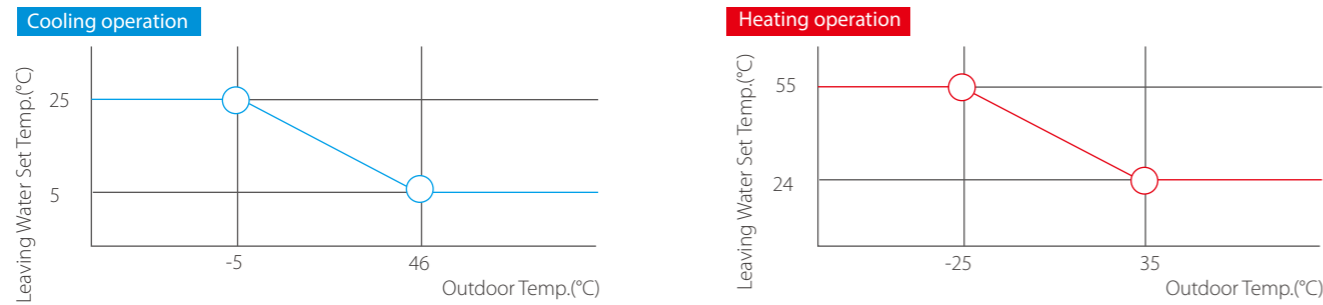


Inertial 40-litre storage tank

With the storage tank, the water temperature will be more stable and unit ON/OFF will be less frequent especially in part load condition.

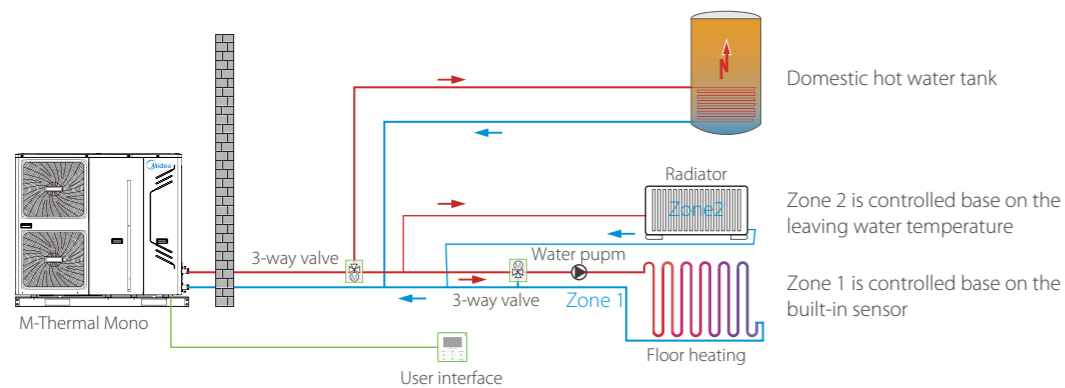
Flexible operation and more comfort

❖ Weather dependent operation with climate correlation to ensure absolute comfort. Totally there are 32 climate correlation curves for choice and custom curve is optional. Once the curve is selected, the unit set the outlet water temperature automatically according to the outdoor ambient temperature.

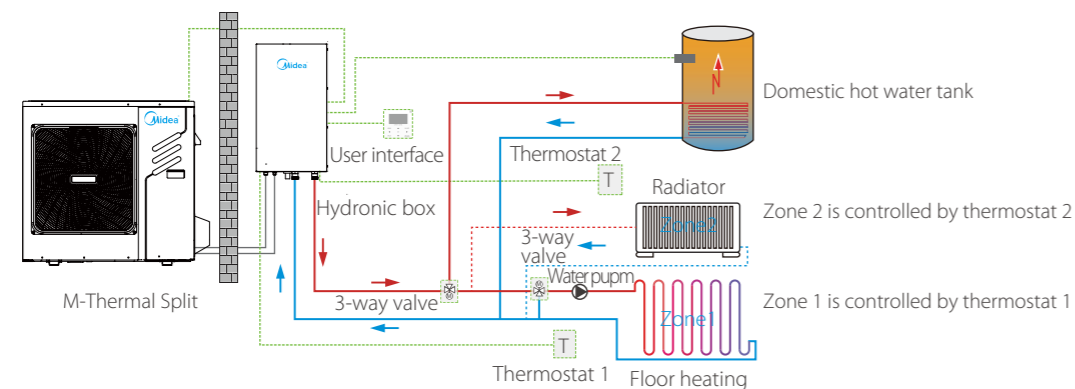


❖ Two zones control more flexibility
Temperature of each zone is separately controlled. Two zones control reduces water pump cycle time and save energy.

Two zones controlled using user interface only (take an example as Mono Series)



Two zones controlled using user interface and thermostat (take an example as Split Series)



❖ Priority setting function and multi modes choice



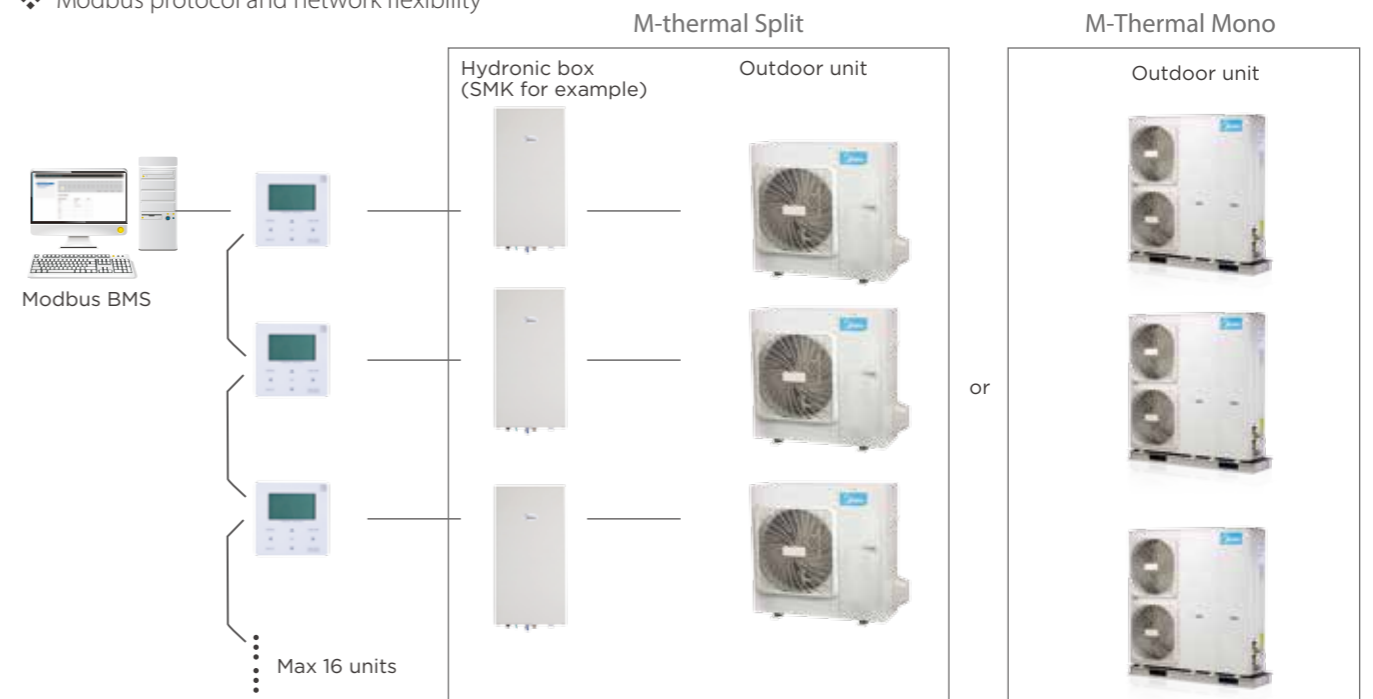
Note:
1. Only when the immersion heater of tank is available can the disinfection mode be used.

❖ Special functions such as air purge, preheating for floor and floor drying up

User interface



- ❖ Newly designed touch-key wired controller
- ❖ Check running parameters in real time
- ❖ Communication wire length up to 50m
- ❖ Built-in temperature sensor
- ❖ Built-in wifi module (For R32 series)
- ❖ Multiple languages (For R32 series)
- ❖ Modbus protocol and network flexibility



Smart Grid function(R32 models only)

Unit adjusts the operation according to different electrical signals to decrease operation cost.
 Free electric energy signal: DHW mode turn on, the setting temperature will be changed to 70 °C automatically, and the TBH operate. The unit operate in cooling/heating mode as the normal logic.
 Common electric energy signal: unit operates according to users' need.
 Expensive electric energy signal: only available for cooling or heating mode and user can set the maximum operating time.



Msmartlife APP control (R32 models only)

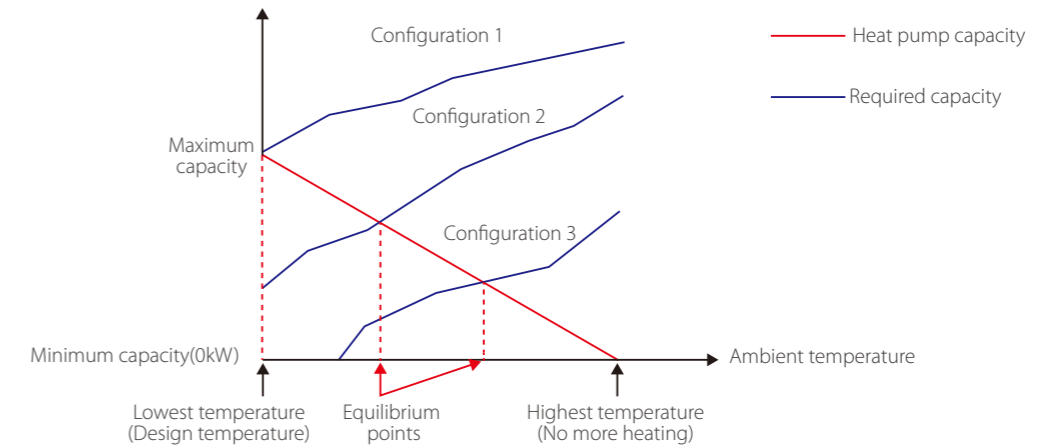
Remote control
 Check the running state of equipment, zone switch, operation mode and temperature.
 Set switch, operation mode and temperature of each zone
 Display fault information



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.

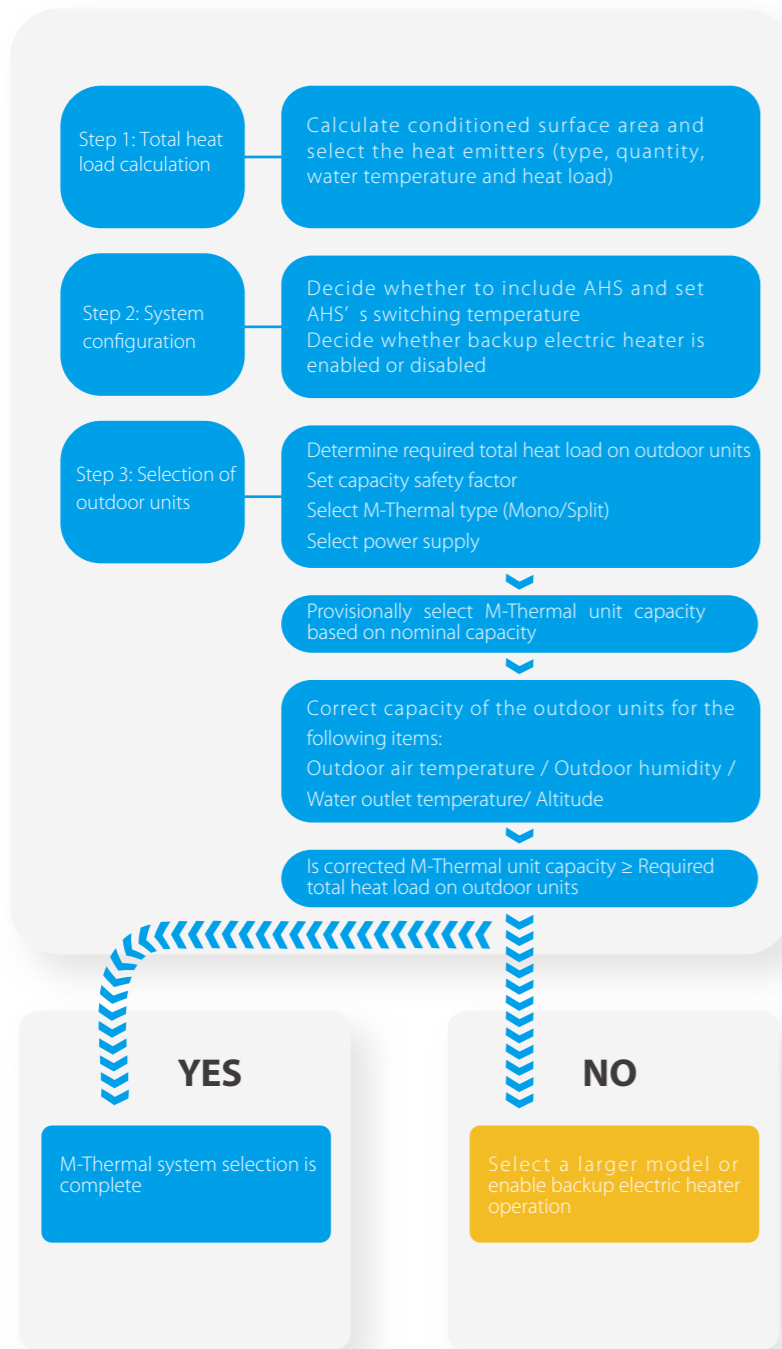
Configuration 2: Heat pump and backup electric heater

- ❖ 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



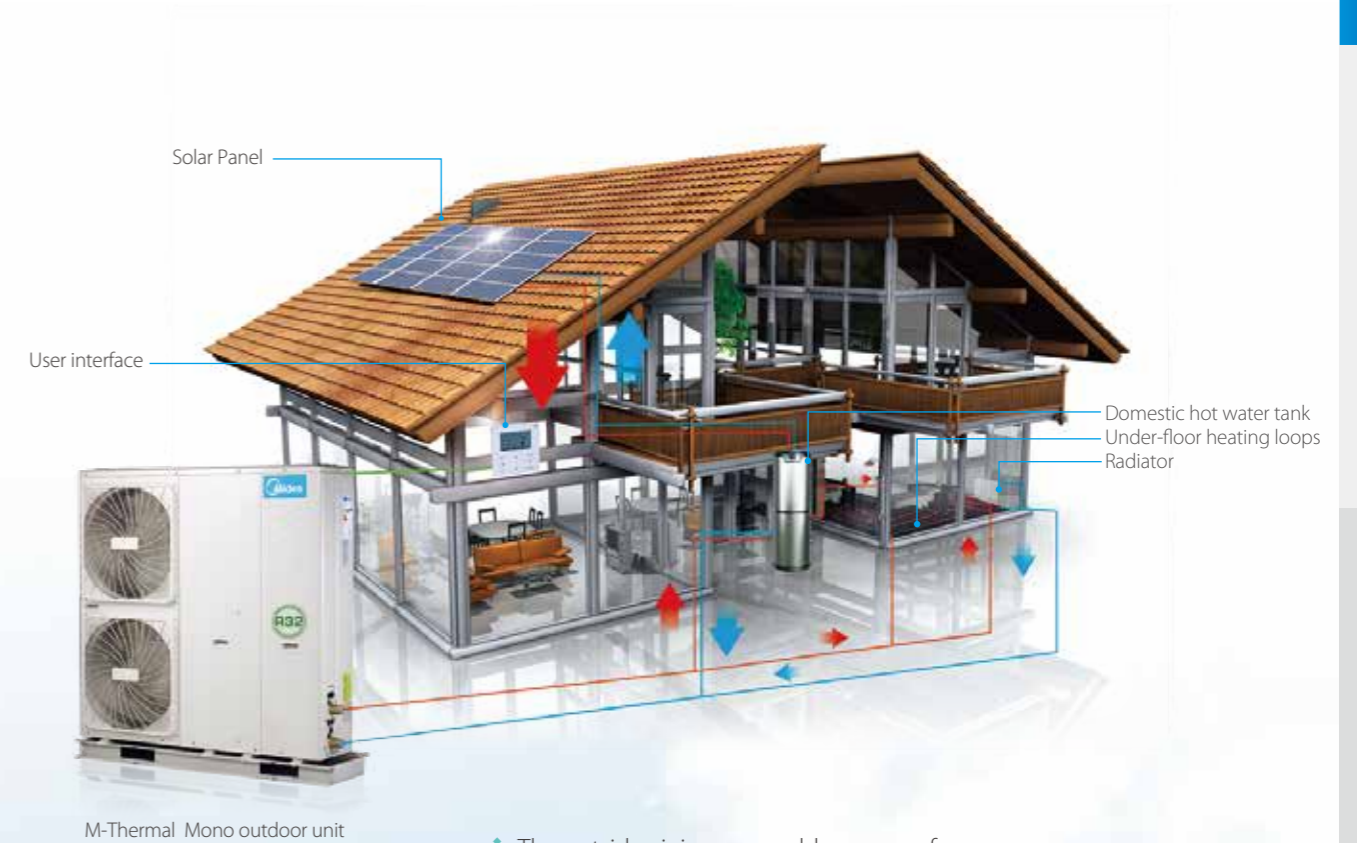
Leaving Water Temperature (LWT)

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

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

Total heat 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.



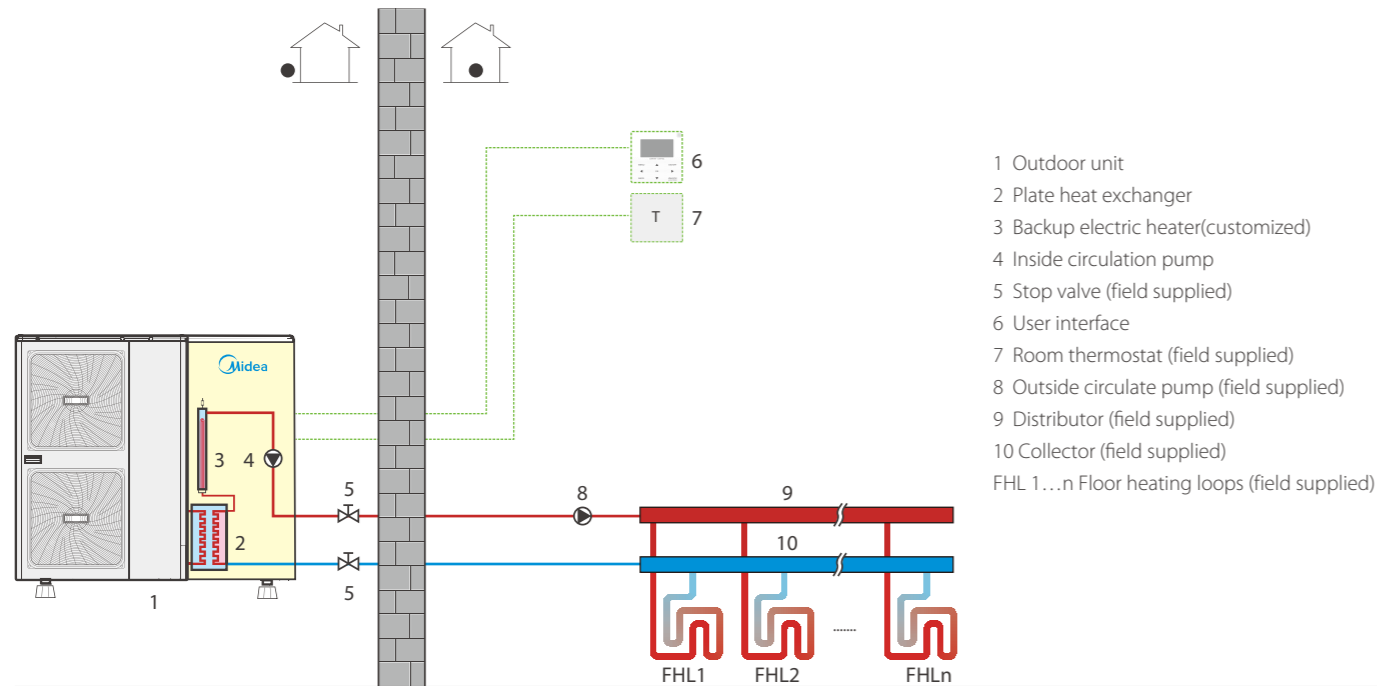
- ❖ The outside air is a renewable source of energy
- ❖ DC inverter technology enables high energy efficiency
- ❖ Sufficient heating capacity at low ambient temperatures (even at -25°C)
- ❖ Provide space heating, cooling and domestic hot water, total heat solution
- ❖ Compatible with other heat sources such as solar panels and boilers



Typical Applications (take an example as R32 Mono Series)

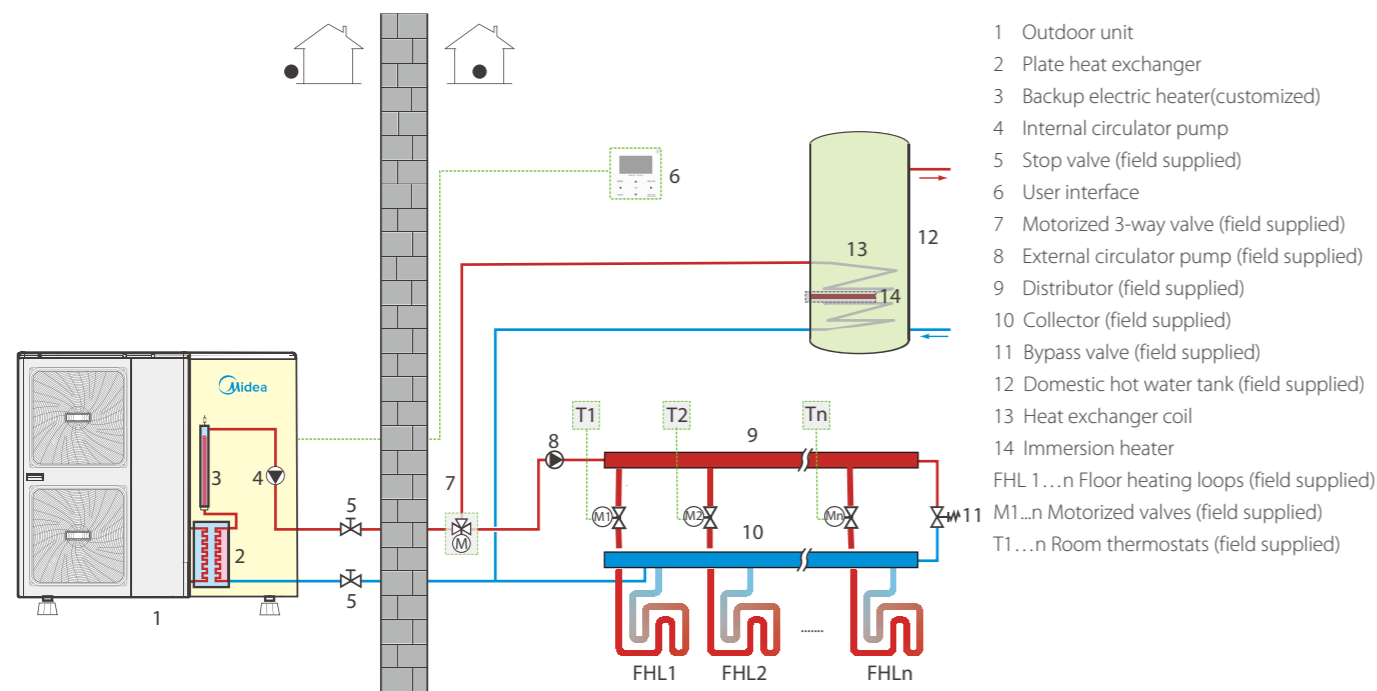
❖ Application 1: Space Heating Only

The room thermostat is used as a switch. When there is a heating request from the room thermostat, the Mono unit operates to achieve the target water temperature set on the user interface. When the room temperature reaches the thermostat's set temperature, the unit stops.



❖ Application 2: Space Heating and Domestic Hot Water

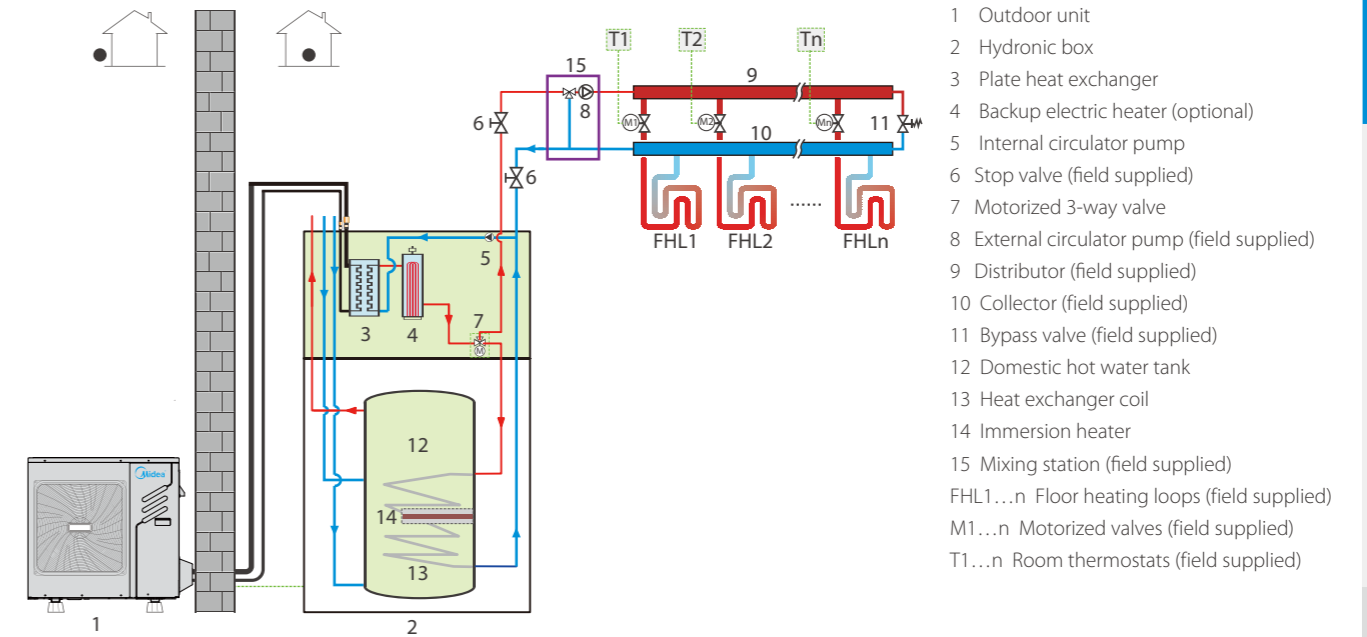
The room thermostats are not connected to the Mono unit but to a motorized valve. Each room's temperature is regulated by the motorized valve on its water circuit. Domestic hot water is supplied from the domestic hot water tank connected to the Mono unit. A bypass valve is required.



Typical Applications (take an example as R32 Split combine with SMKT)

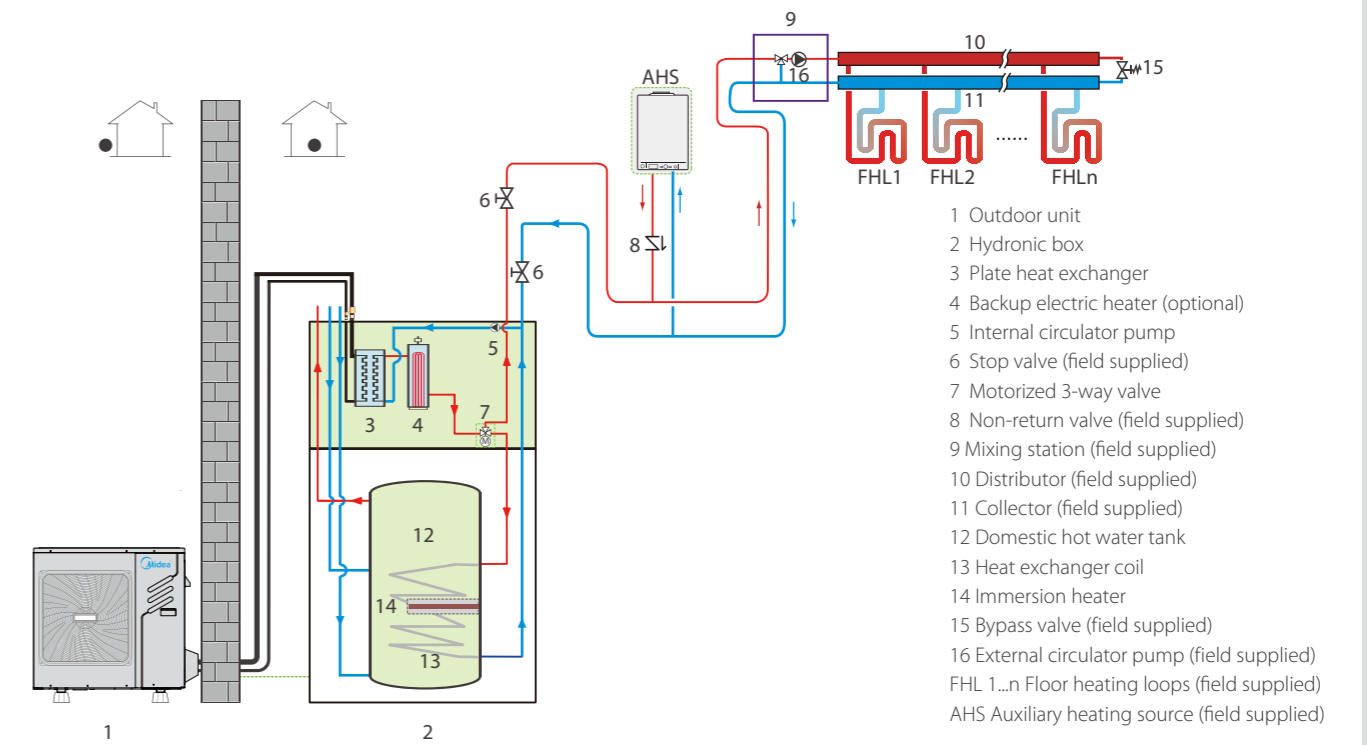
❖ Application 1: Space Heating and Domestic Hot Water

The room thermostats are not connected to the hydronic box but to a motorized valve. Each room's temperature is regulated by the motorized valve on its water circuit. Domestic hot water is supplied from the domestic hot water tank connected to the hydronic box. A bypass valve is required.



❖ Application 2: Space Heating and Domestic Hot Water (Bivalent)

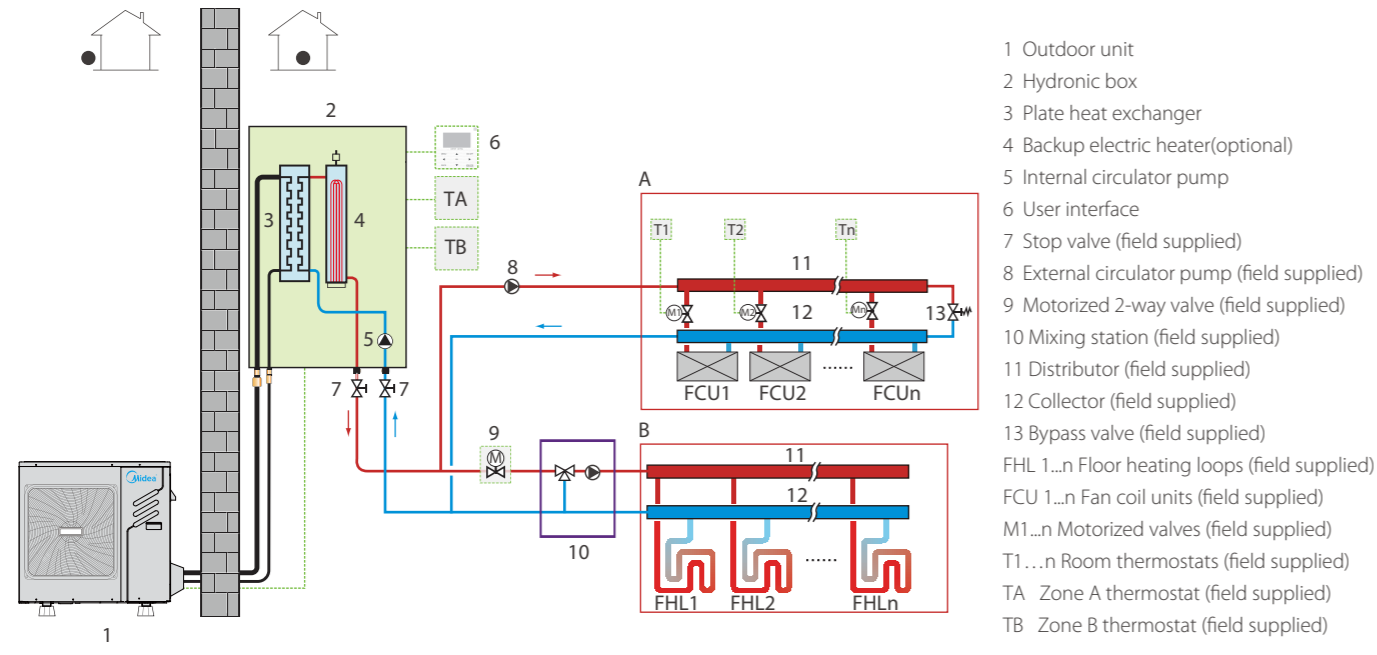
Auxiliary heat source provides space heating only



Typical Applications (take an example as R32 Split combine with SMK)

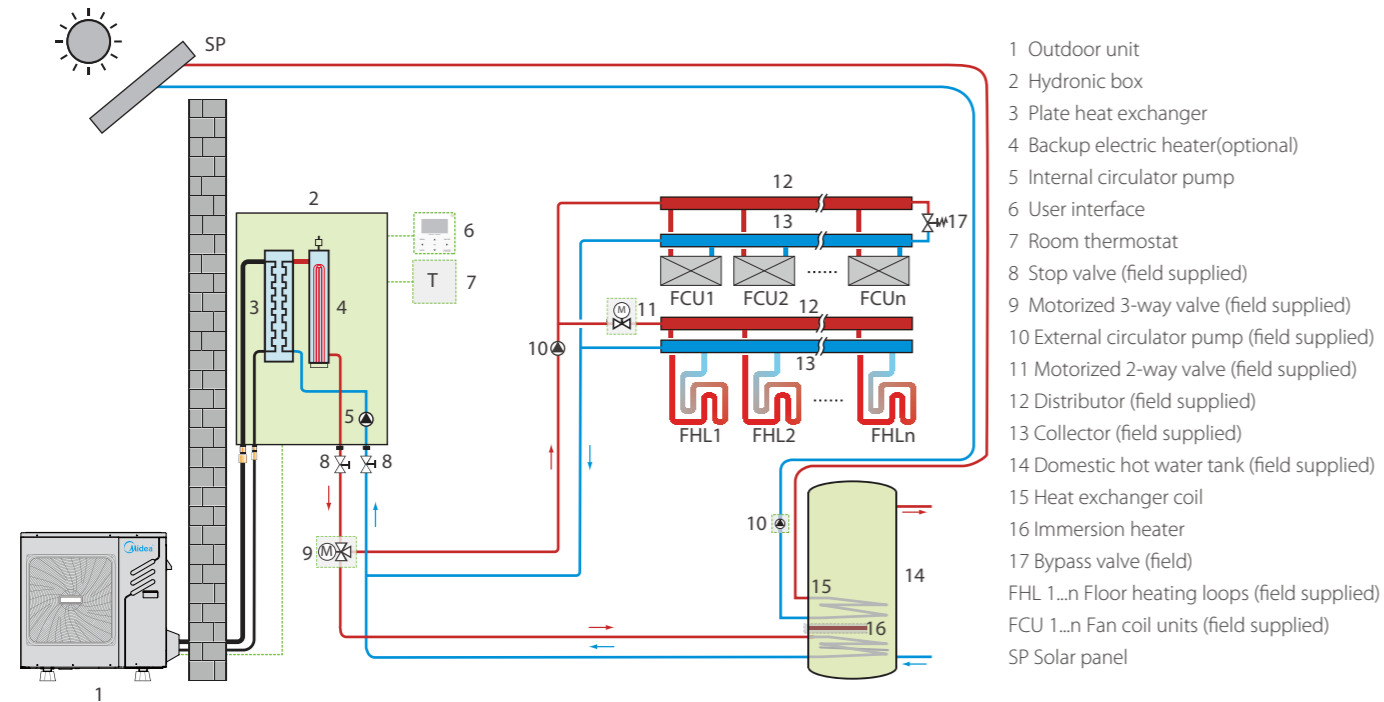
❖ Application 1: Space Heating Through Floor Heating Loops and Fan Coil Units

The floor heating loops and fan coil units require different operating water temperatures. To achieve these two set points, a mixing station is required. Room thermostats for each zone are optional.



❖ Application 2: Space Heating, Space Cooling and Domestic Hot Water Compatible with Solar Water Heater

Floor heating loops and fan coil units are used for space heating and fan coil units are used for space cooling. Domestic hot water is supplied from the domestic hot water tank connected to both the hydronic box and solar water heater. The unit switches to heating or cooling mode according to the temperature detected by the room thermostat. In space cooling mode, the 2-way valve is closed to prevent cold water entering the floor heating loops.



Specifications

R410A M-Thermal Mono

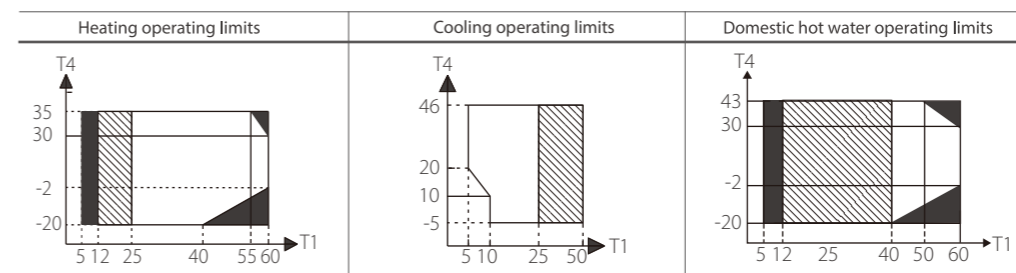
| Model name MHC- | | V5W/D2N1 | V7W/D2N1 | V9W/D2N1 | V10W/D2N1 | V12W/D2N1 | V14W/D2N1 | V16W/D2N1 | V12W/D2RN1 | V14W/D2RN1 | V16W/D2RN1 | |
|---|-------------------|-------------|----------------------------|----------|-----------|----------------------------|-----------|-----------|----------------------------|------------|------------|-------|
| Power supply | | V/Ph/Hz | 220-240/1/50 | | | | | | 380-415/3/50 | | | |
| Heating ² | Capacity | kW | 4.58 | 6.55 | 8.64 | 10.43 | 12.17 | 14.76 | 16.33 | 12.37 | 14.10 | 16.30 |
| | Rated input | kW | 0.97 | 1.45 | 2.01 | 2.28 | 2.73 | 3.40 | 3.90 | 2.76 | 3.26 | 3.88 |
| | COP | | 4.72 | 4.52 | 4.30 | 4.57 | 4.46 | 4.34 | 4.19 | 4.48 | 4.33 | 4.20 |
| Heating ³ | Capacity | kW | 4.67 | 6.69 | 9.19 | 10.17 | 12.58 | 14.08 | 16.12 | 12.02 | 14.11 | 16.06 |
| | Rated input | kW | 1.43 | 2.05 | 2.63 | 3.08 | 3.86 | 4.47 | 5.22 | 3.72 | 4.46 | 5.23 |
| | COP | | 3.27 | 3.26 | 3.49 | 3.30 | 3.26 | 3.15 | 3.09 | 3.23 | 3.16 | 3.07 |
| Cooling ⁴ | Capacity | kW | 4.55 | 6.45 | 8.35 | 10.25 | 12.19 | 14.61 | 14.82 | 12.64 | 14.03 | 15.10 |
| | Rated input | kW | 1.00 | 1.47 | 2.10 | 2.06 | 2.65 | 3.32 | 3.66 | 2.75 | 3.26 | 3.78 |
| | EER | | 4.55 | 4.40 | 3.97 | 4.98 | 4.60 | 4.40 | 4.05 | 4.60 | 4.30 | 4.00 |
| Cooling ⁵ | Capacity | kW | 4.55 | 6.71 | 8.06 | 10.44 | 12.21 | 12.95 | 13.72 | 12.58 | 13.80 | 15.26 |
| | Rated input | kW | 1.55 | 2.57 | 3.51 | 3.28 | 4.17 | 4.53 | 5.16 | 4.32 | 5.14 | 6.41 |
| | EER | | 2.94 | 2.61 | 2.30 | 3.18 | 2.93 | 2.86 | 2.66 | 2.91 | 2.68 | 2.38 |
| Seasonal space heating energy efficiency class ⁶ | | LWT at 35°C | A++ | | | | | | | | | |
| | | LWT at 55°C | A++ | | | | | | | | | |
| Air flow | m ³ /h | | 3050 | 3050 | 3050 | 6150 | 6150 | 6150 | 6150 | 6150 | 6150 | 6150 |
| Sound power level | dB | | 63 | 67 | 70 | 68 | 69 | 73 | 73 | 70 | 73 | 75 |
| Net dimensions (WxHxD) | mm | | 1210x945x402 | | | 1404x1414x405 | | | 1404x1414x405 | | | |
| Packed dimensions (WxHxD) | mm | | 1500x1140x450 | | | 1475x1580x440 | | | 1475x1580x440 | | | |
| Net/Gross weight | kg | | 99/117 | | | 162/183 | | | 177/198 | | | |
| Water piping connections | mm | | Ø25 Female BSP | | | Ø32 Female BSP | | | Ø32 Female BSP | | | |
| Safety valve set pressure | MPa | | 0.3 | | | 0.3 | | | 0.3 | | | |
| Total water volume | L | | 2.0 | | | 5.5 | | | 5.5 | | | |
| Operating temperature range | Cooling | °C | -5 to 46 | | | | | | | | | |
| | Heating | °C | -20 to 35 | | | | | | | | | |
| | DHW | °C | -20 to 43 | | | | | | | | | |
| LWT range | Cooling | °C | 5 to 25 | | | | | | | | | |
| | Heating | °C | 25 to 60 | | | | | | | | | |
| | DHW | °C | 40 to 60 | | | | | | | | | |
| Refrigerant | Type | | R410A | | | | | | | | | |
| | Charged volume | kg | 2.4 | 2.4 | 2.4 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 |
| Throttle type | | | Electronic expansion valve | | | Electronic expansion valve | | | Electronic expansion valve | | | |
| | Standard mounted | kW | - | - | - | 3.0 | 3.0 | 3.0 | 3.0 | 4.5 | 4.5 | 4.5 |
| Backup electric heater | Optional | kW | 3.0 | 3.0 | 3.0 | 4.5 | 4.5 | 4.5 | 4.5 | - | - | - |
| | Capacity steps | | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 |

Notes:

1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.
2. Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.
3. Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.
4. Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C.
5. Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C.
6. Seasonal space heating energy efficiency class tested in average climate conditions.

Abbreviations:
 DHW: Domestic hot water
 LWT: Leaving water temperature

Operating Limits



Abbreviations:
 T4: Outdoor temperature (°C)
 T1: Leaving water temperature (°C)
 Notes:
 Shaded areas indicate no heat pump operation (backup electric heater or auxiliary heat source only)
 Hatched areas indicate water flow temperature drop or rise interval

R410A M-Thermal Split

| Outdoor Split type MHA- | | | V4W/D2N1 | V6W/D2N1 | V8W/D2N1 | V10W/D2N1 | V12W/D2N1 | V14W/D2N1 | V16W/D2N1 | V12W/D2RN1 | V14W/D2RN1 | V16W/D2RN1 | |
|---|----------------|-------------------|--------------------------|----------|---------------|-----------|---------------|-----------|--------------|---------------|------------|------------|--|
| Power supply | | | 220-240/1/50 | | | | | | 380-415/3/50 | | | | |
| Heating ¹ | Capacity | kW | 4.10 | 6.10 | 8.00 | 10.00 | 12.10 | 14.00 | 15.50 | 12.00 | 14.00 | 15.50 | |
| | Rated input | kW | 0.82 | 1.29 | 1.73 | 2.17 | 2.74 | 3.39 | 3.82 | 2.66 | 3.26 | 3.79 | |
| | COP | | 5.00 | 4.73 | 4.62 | 4.61 | 4.42 | 4.13 | 4.06 | 4.51 | 4.29 | 4.09 | |
| Heating ³ | Capacity | kW | 4.01 | 5.96 | 7.34 | 10.12 | 11.85 | 14.05 | 16.05 | 11.97 | 13.93 | 15.48 | |
| | Rated input | kW | 1.13 | 1.68 | 2.13 | 2.93 | 3.48 | 4.41 | 5.03 | 3.50 | 4.21 | 4.87 | |
| | COP | | 3.55 | 3.55 | 3.45 | 3.45 | 3.41 | 3.19 | 3.19 | 3.42 | 3.31 | 3.18 | |
| Cooling ¹ | Capacity | kW | 4.10 | 6.20 | 8.00 | 10.50 | 11.70 | 13.10 | 13.80 | 12.00 | 13.50 | 14.50 | |
| | Rated input | kW | 0.84 | 1.43 | 1.93 | 2.30 | 2.79 | 3.48 | 3.77 | 2.80 | 3.45 | 3.94 | |
| | EER | | 4.88 | 4.34 | 4.15 | 4.57 | 4.19 | 3.76 | 3.66 | 4.29 | 3.91 | 3.68 | |
| Cooling ³ | Capacity | kW | 4.12 | 6.15 | 6.44 | 9.39 | 11.02 | 12.49 | 12.85 | 11.70 | 12.53 | 12.91 | |
| | Rated input | kW | 1.30 | 2.08 | 2.24 | 3.26 | 4.17 | 5.07 | 5.39 | 4.65 | 5.21 | 5.52 | |
| | EER | | 3.17 | 2.96 | 2.88 | 2.88 | 2.64 | 2.46 | 2.38 | 2.52 | 2.40 | 2.34 | |
| Seasonal space heating energy efficiency class ⁶ | LWT at 35°C | | A+++ | | A++ | A+++ | | A++ | | A+++ | | A++ | |
| | LWT at 55°C | | A++ | | | | | | | | | | |
| Sound power level | dB | | 62 | 66 | 69 | 67 | 69 | 71 | 72 | 70 | 72 | 72 | |
| Dimension (WxHxD) | mm | | 960x860x380 | | 1075x965x395 | | 900x1327x400 | | | 900x1327x400 | | | |
| Packing (WxHxD) | mm | | 1040x1000x430 | | 1120x1100x435 | | 1030x1457x435 | | | 1030x1457x435 | | | |
| Net/gross weight | kg | | 60/72 | | 76/88 | | 99/112 | | | 115/126 | | | |
| Compressor | Type | | Twin-rotary inverter | | | | | | | | | | |
| Outdoor fan | Type | | Brushless DC motor | | | | | | | | | | |
| | Air flow | m ³ /h | 3180 | | 5116 | | 6500 | | | | | | |
| Air side heat exchanger | | | Fin-coil | | | | | | | | | | |
| Piping connections | Liquid | Type | Flaring | | | | | | | | | | |
| | | Dia.(OD) | mm | | Ø9.5 | | | | | | | | |
| | Gas | Type | Flaring | | | | | | | | | | |
| | | Dia.(OD) | mm | | Ø15.9 | | | | | | | | |
| | Piping length | Min. | m | 2 | | 2 | | 2 | | | 2 | | |
| | | Max. | m | 20 | | 30 | | 50 | | | 50 | | |
| Installation height difference | OU above | m | 10 | | 20 | | 30 | | | 30 | | | |
| | OU below | m | 8 | | 15 | | 25 | | | 25 | | | |
| Refrigerant | Type | | R410A | | | | | | | | | | |
| | Charged volume | kg | 2.5 | | 2.8 | | 3.9 | | | 4.2 | | | |
| Throttle type | | | Electric expansion valve | | | | | | | | | | |
| Operating temperature range | Cooling | °C | -5 to 46 | | | | | | | | | | |
| | Heating | °C | -20 to 35 | | | | | | | | | | |
| | DHW | °C | -20 to 43 | | | | | | | | | | |

Notes:

1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.
2. Outdoor air temperature 7°C DB, 85% RH; EWT 30°C, LWT 35°C.
3. Outdoor air temperature 7°C DB, 85% RH; EWT 40°C, LWT 45°C.
4. Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C.
5. Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C.
6. Seasonal space heating energy efficiency class tested in average climate conditions.

Abbreviations:

DHW: Domestic hot water

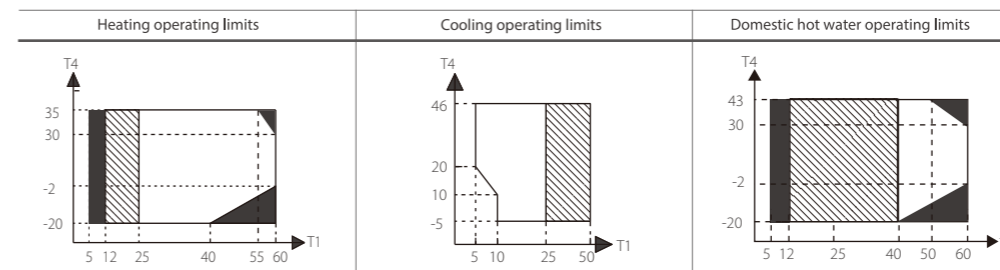
R410A Hydronic box

| Hydronic box | Model | SMK-80/CD30GN1-B | SMK-160/CD30GN1-B | SMK-160/CSD45GN1-B | |
|---------------------------|-------------------------------------|---------------------|------------------------|--|-----------|
| | Compatible outdoor unit model names | MHA-V4(6, 8)W/D2N1 | MHA-V10/12/14/16W/D2N1 | MHA-V12/14/16W/D2RN1 | |
| Function | | Heating and cooling | | | |
| LWT range | Space heating | Low | °C | | 25 to 55 |
| | | High | °C | | 35 to 60 |
| | Space cooling | Low | °C | | 5 to 25 |
| | | High | °C | | 18 to 25 |
| DHW | °C | | 40 to 60 | | |
| Power supply | V/Ph/Hz | 220-240/1/50 | 220-240/1/50 | 380-415/3/50 | |
| Sound power level | dB | 43 | 45 | 45 | |
| Dimension (WxHxD) | mm | 400x865x427 | | | |
| Packing (WxHxD) | mm | 495x1040x495 | | | |
| Net/gross weight | kg | 51/57 | 54/60 | 53/59 | |
| Water circuit | Piping connections | | mm | | DN25 |
| | Safety valve set pressure | | MPa | | 0.3 |
| | Total water volume | | L | | 5.0 / 5.5 |
| | Drainage pipe | | mm | | Ø16 |
| | Expansion tank | Volume | L | | 5 |
| | | Max. water pressure | MPa | | 0.8 |
| Pre pressure | | MPa | | 0.15 | |
| Water side heat exchanger | Type | Plate | | | |
| | Volume | L | 0.7 | 1 | 1 |
| Water pump head | | m | 6 | 7.5 | 7.5 |
| Refrigerant circuit | Liquid side | mm | | Ø9.5 | |
| | Gas side | mm | | Ø15.9 | |
| Backup electric heater | Size | kW | | 3.0 / 3.0 / 4.5 | |
| | Step | | | 2 / 2 / 2 | |
| | Power supply | | | 220-240/1/50 / 220-240/1/50 / 380-415/3/50 | |

Abbreviations:

DHW: Domestic hot water
LWT: Leaving water temperature

Operating Limits



Abbreviations:

T4: Outdoor temperature(°C)
T1: Leaving water temperature (°C)

Notes:

- Shaded areas indicate no heat pump operation (backup electric heater or auxiliary heat source only)
- ▨ Water flow temperature drop or rise interval

R32 M-Thermal Mono

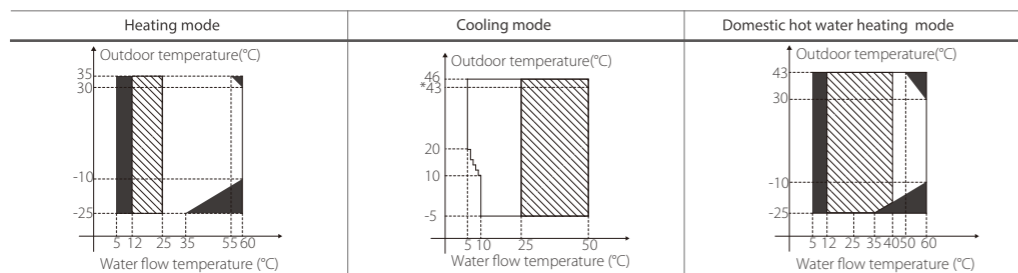
| Model name MHC- | | | V5W/D2N8 | V7W/D2N8 | V9W/D2N8 | V12W/D2N8 | V14W/D2N8 | V16W/D2N8 | V12W/D2RN8 | V14W/D2RN8 | V16W/D2RN8 |
|---|-------------------|-------|----------------------------|----------|----------|----------------------------|-----------|-----------|----------------------------|------------|------------|
| Power supply | | | 220-240/1/50 | | | 220-240/1/50 | | | 380-415/3/50 | | |
| Heating ¹ | Capacity | kW | 4.65 | 6.65 | 8.60 | 12.30 | 14.10 | 16.30 | 12.30 | 14.10 | 16.30 |
| | Rated input | kW | 0.93 | 1.35 | 1.87 | 2.56 | 3.07 | 3.66 | 2.54 | 3.05 | 3.63 |
| | COP | | 5.00 | 4.94 | 4.60 | 4.81 | 4.60 | 4.45 | 4.84 | 4.63 | 4.49 |
| Heating ² | Capacity | kW | 4.80 | 6.70 | 8.60 | 12.40 | 14.10 | 16.20 | 12.40 | 14.10 | 16.20 |
| | Rated input | kW | 1.33 | 1.88 | 2.50 | 3.52 | 4.06 | 4.72 | 3.45 | 3.99 | 4.70 |
| | COP | | 3.60 | 3.57 | 3.44 | 3.53 | 3.47 | 3.43 | 3.59 | 3.54 | 3.45 |
| Heating ³ | Capacity | kW | 4.65 | 6.80 | 8.60 | 11.90 | 14.20 | 16.10 | 11.90 | 14.20 | 16.10 |
| | Rated input | kW | 1.77 | 2.42 | 3.13 | 4.28 | 5.17 | 5.91 | 4.24 | 5.10 | 5.83 |
| | COP | | 2.63 | 2.81 | 2.75 | 2.78 | 2.75 | 2.73 | 2.81 | 2.79 | 2.76 |
| Cooling ⁴ | Capacity | kW | 4.60 | 6.45 | 8.00 | 12.20 | 14.00 | 15.50 | 12.20 | 14.00 | 15.50 |
| | Rated input | kW | 0.95 | 1.39 | 1.92 | 2.55 | 3.10 | 3.64 | 2.53 | 3.11 | 3.63 |
| | EER | | 4.82 | 4.65 | 4.16 | 4.78 | 4.52 | 4.26 | 4.83 | 4.50 | 4.27 |
| Cooling ⁵ | Capacity | kW | 4.85 | 6.30 | 7.95 | 10.90 | 12.90 | 13.80 | 10.90 | 12.90 | 13.80 |
| | Rated input | kW | 1.63 | 2.27 | 3.15 | 3.74 | 4.62 | 5.21 | 3.72 | 4.62 | 5.19 |
| | EER | | 2.98 | 2.77 | 2.53 | 2.92 | 2.80 | 2.65 | 2.93 | 2.80 | 2.66 |
| Seasonal space heating energy efficiency class ⁶ | LWT at 35°C | class | A+++ | A+++ | A+++ | A++ | A++ | A++ | A++ | A++ | A++ |
| | LWT at 55°C | class | A++ | A++ | A++ | A++ | A++ | A++ | A++ | A++ | A++ |
| Air flow | m ³ /h | | 3050 | 3050 | 3050 | 6150 | 6150 | 6150 | 6150 | 6150 | 6150 |
| Sound power level | dB | | 61 | 64 | 67 | 68 | 71 | 71 | 68 | 71 | 71 |
| Net dimensions (WxHxD) | mm | | 1210x945x402 | | | 1404x1414x405 | | | 1404x1414x405 | | |
| Packed dimension (WxHxD) | mm | | 1285x1090x435 | | | 1430x1475x450 | | | 1430x1475x450 | | |
| Net/Gross weight | kg | | 92/111 | | | 158/178 | | | 172/193 | | |
| Water piping connections Dia. | inch | | 1" Male BSP | | | 1-1/4" Male BSP | | | 1-1/4" Male BSP | | |
| Safety valve set pressure | MPa | | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Expansion tank volume | L | | 2 | 2 | 2 | 5 | 5 | 5 | 5 | 5 | 5 |
| Total water volume | L | | 2 | 2 | 2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 | 3.2 |
| Ambient temperature range | Cooling | °C | -5-43 | | | -5-46 | | | -5-46 | | |
| | Heating | °C | -25-35 | | | -25-35 | | | -25-35 | | |
| | DHW | °C | -25-43 | | | -25-43 | | | -25-43 | | |
| LWT range | Cooling | °C | 5-25 | | | 5-25 | | | 5-25 | | |
| | Heating | °C | 25-60 | | | 25-60 | | | 25-60 | | |
| | DHW | °C | 40-60 | | | 40-60 | | | 40-60 | | |
| Refrigerant | Type | | R32 | | | R32 | | | R32 | | |
| | Charged volume | kg | 2.0 | | | 2.8 | | | 2.8 | | |
| Throttle type | | | Electronic expansion valve | | | Electronic expansion valve | | | Electronic expansion valve | | |
| Backup electric heater | Standard mounted | kW | / | / | / | / | / | / | / | / | / |
| | Optional | kW | 3 | 3 | 3 | 3 | 3 | 3 | 4.5 | 4.5 | 4.5 |
| | Capacity steps | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Notes:

1. Evaporator air in 7°C, 85% RH., Condenser water in/out 30/35°C
2. Evaporator air in 7°C, 85% RH., Condenser water in/out 40/45°C
3. Evaporator air in 7°C, 85% RH., 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. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.

Abbreviations:
 DHW: Domestic hot water
 LWT: Leaving water temperature

Operating Limits



*The maximum operating temperature of the 5/7/9kW model is 43°C

Abbreviations:
 T4: Outdoor temperature (°C)
 T1: Leaving water temperature (°C)

Notes:
 ■ Shaded areas indicate no heat pump operation (backup electric heater or auxiliary heat source only)
 ▨ Water flow temperature drop or rise interval

R32 M-Thermal Split

| Model name MHA- | | | V4W/D2N8 | | V6W/D2N8 | | V8W/D2N8 | | V10W/D2N8 | |
|---|----------------------|-------------------|----------------------------|-----------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|
| Indoor unit | | | Without water tank | With water tank | Without water tank | With water tank | Without water tank | With water tank | Without water tank | With water tank |
| Power supply | | | 220-240/1/50 | | | | | | | |
| Heating ¹ | Capacity | kW | 4.2 | 4.49 | 6.5 | 6.32 | 8.4 | 8.37 | 10 | 10.26 |
| | Rated input | kW | 0.82 | 0.9 | 1.34 | 1.32 | 1.73 | 1.72 | 2.15 | 2.19 |
| | COP | | 5.15 | 5.01 | 4.85 | 4.79 | 4.85 | 4.87 | 4.65 | 4.68 |
| Heating ² | Capacity | W | 4.2 | 4.14 | 6.35 | 6.09 | 8.05 | 8.02 | 9.85 | 10.3 |
| | Rated input | W | 1.15 | 1.12 | 1.74 | 1.66 | 2.16 | 2.1 | 2.72 | 2.81 |
| | COP | | 3.65 | 3.7 | 3.64 | 3.66 | 3.73 | 3.82 | 3.62 | 3.67 |
| Heating ³ | Capacity | W | 4.1 | 4.09 | 5.75 | 5.46 | 7.5 | 7.6 | 9.3 | 8.99 |
| | Rated input | W | 1.44 | 1.44 | 1.98 | 1.82 | 2.49 | 2.44 | 3.25 | 2.98 |
| | COP | | 2.85 | 2.84 | 2.9 | 3 | 3.01 | 3.12 | 2.86 | 3.02 |
| Cooling ⁴ | Capacity | W | 4.3 | 4.63 | 6.45 | 6.79 | 8.35 | 8.53 | 10.2 | 9.73 |
| | Rated input | W | 0.77 | 0.89 | 1.32 | 1.32 | 1.79 | 1.71 | 2.4 | 2 |
| | EER | | 5.6 | 5.21 | 4.88 | 5.14 | 4.67 | 5 | 4.25 | 4.87 |
| Cooling ⁵ | Capacity | W | 4.5 | 4.56 | 6.5 | 6.17 | 7.38 | 7.39 | 8.15 | 9.06 |
| | Rated input | W | 1.36 | 1.31 | 2.2 | 1.92 | 2.44 | 2.37 | 2.76 | 3.01 |
| | EER | | 3.32 | 3.48 | 2.95 | 3.21 | 3.02 | 3.12 | 2.95 | 3.01 |
| Seasonal space heating energy efficiency class ⁶ | Water outlet at 35°C | class | A+++ | A+++ | A+++ | A+++ | A+++ | A+++ | A+++ | A+++ |
| | Water outlet at 55°C | class | A++ | A++ | A++ | A++ | A++ | A++ | A++ | A++ |
| Water tank profile & DHW energy class | 190L | L | / | A+ | / | A+ | / | A+ | / | A+ |
| | 250L | XL | / | A | / | A | / | A | / | A |
| Sound power level | dB | | 61 | | 62 | | 63 | | 65 | |
| Net dimension (WxHxD) | mm | | 960x860x380 | | | | 1075x965x395 | | | |
| Packed dimension (WxHxD) | mm | | 1040x1000x430 | | | | 1120x1100x435 | | | |
| Net/Gross weight | kg | | 57/68 | | | | 67/79 | | | |
| Compressor | Type | | Twin rotary invert | | | | Twin rotary invert | | | |
| Outdoor fan | Motor type | | DC Brushless fan | | | | DC Brushless fan | | | |
| | Air flow | m ³ /h | 3250 | | | | 4950 | | | |
| Air side heat exchanger | Type | | Fin-coil | | | | | | | |
| Pipe size O.D. | Liquid | mm | 6.35 | | | | 9.52 | | | |
| | Gas | mm | 15.9 | | | | 15.9 | | | |
| | Connection method | | Flared | | | | | | | |
| Between indoor and outdoor unit | Height difference | m | Max.20 | | | | Max.20 | | | |
| | Pipe length | m | 2-30 | | | | 2-30 | | | |
| Refrigerant | Type(GWP) | | R32(675) | | | | | | | |
| | Charged volume | kg | 1.55 | | | | 1.65 | | | |
| Additional refrigerant | Chargment | g/m | 20 | | | | 38 | | | |
| | Min. pipe length | m | 15 | | | | | | | |
| Throttle type | | | Electronic expansion valve | | | | | | | |
| Outdoor air temperature range | Cooling | °C | -5~43 | | | | | | | |
| | Heating | °C | -25~35 | | | | | | | |
| | DHW | °C | -25~43 | | | | | | | |

Notes:

1. Evaporator air in 7°C, 85% RH., Condenser water in/out 30/35°C
2. Evaporator air in 7°C, 85% RH., Condenser water in/out 40/45°C
3. Evaporator air in 7°C, 85% RH., Condenser water in/out 47/55°C
4. Condenser air in 35°C. Evaporator water in/out 23/18°C
5. Condenser air in 35°C. Evaporator water in/out 12/7°C
6. Seasonal space heating energy efficiency class testes in average climate general
7. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.

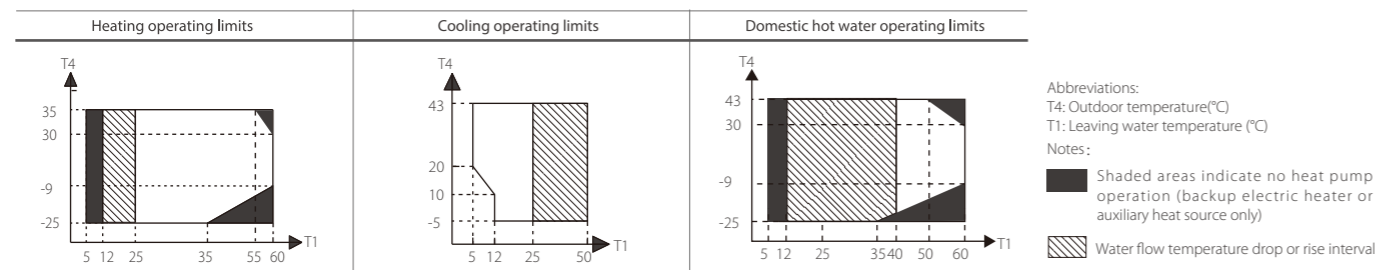
Abbreviations:
 DHW: Domestic hot water
 GWP: Global warming potential

R32 Hydronic box

| Hydronic box | | Model | SMK-60/CGN8 | SMK-80/CGN8 | SMKT-100L/190CGN8 | SMKT-100L/250CGN8 | |
|------------------------------------|---------------------------------|--|----------------|--------------|-------------------|-------------------|-------|
| | | Compatible outdoor unit model names MHA- | V4(6)W/D2N8 | V8(10)W/D2N8 | V4(6,8,10)W/D2N8 | V4(6,8,10)W/D2N8 | |
| LWT range | Space heating | Low | °C | | 25 to 55 | | |
| | | High | °C | | 35 to 60 | | |
| | Space cooling | Low | °C | | 5 to 25 | | |
| | | High | °C | | 18 to 25 | | |
| DHW | | °C | | 40 to 60 | | | |
| Power supply | | V/Ph/Hz | 220-240/1/50 | | | | |
| Sound power level | | dB | 43 | | 41 | | |
| Net dimension (WxHxD) | | mm | 400x850x427 | | 600x615x1774 | 600x615x2084 | |
| Packed dimension (WxHxD) | | mm | 495x1040x495 | | 660x690x1890 | 660x690x2190 | |
| Net/Gross weight | | kg | 400x850x427 | | 175/185 | 180/190 | |
| Water side heat exchanger | | Plate type | | | | | |
| Water tank size | | L | / | | 190 | 250 | |
| Water tank heat exchanger | Coil material | | / | | Enameled steel | | |
| | Coil diameter | | mm | | 25 | | |
| | Coil area | | m ² | | 2 | | |
| Water pump | | Max. pump head | m | | 7.5 | 10.5 | |
| Expansion vessel (Primary circuit) | Volume | | L | | 8 | | |
| | Charge pressure | | MPa | | 0.15 | | |
| Connection | Outlet connect to terminals | | inch | | 1" | | |
| | Inlet connect to terminals | | inch | | 1" | | |
| | DHW outlet | | inch | | 3/4" | | |
| | Water inlet | | inch | | 3/4" | | |
| | DHW recirculation circuit inlet | | inch | | 3/4" | | |
| | Refrigerant liquid | | mm | | 6.35 | 9.52 | 9.52 |
| | Refrigerant gas | | mm | | 15.88 | 15.88 | 15.88 |
| Safety valve | | MPa | 0.3 | | 0.3 | | |
| Flow switch | | m ³ /h | 0.6 | | 0.6 | | |
| Backup E-heater | Standard mounted | | kW | | / | | |
| | Optional | | kW | | 3 | | |
| | Power supply | | V/Ph/Hz | 220-240/1/50 | 220-240/1/50 | 380-415/3/50 | |
| Water tank E-heater | Capacity mounted | | kW | | 2 | | |
| | Power supply | | V/Ph/Hz | / | | | |

Abbreviations:
 DHW: Domestic hot water
 LWT: Leaving water temperature

Operating Limits



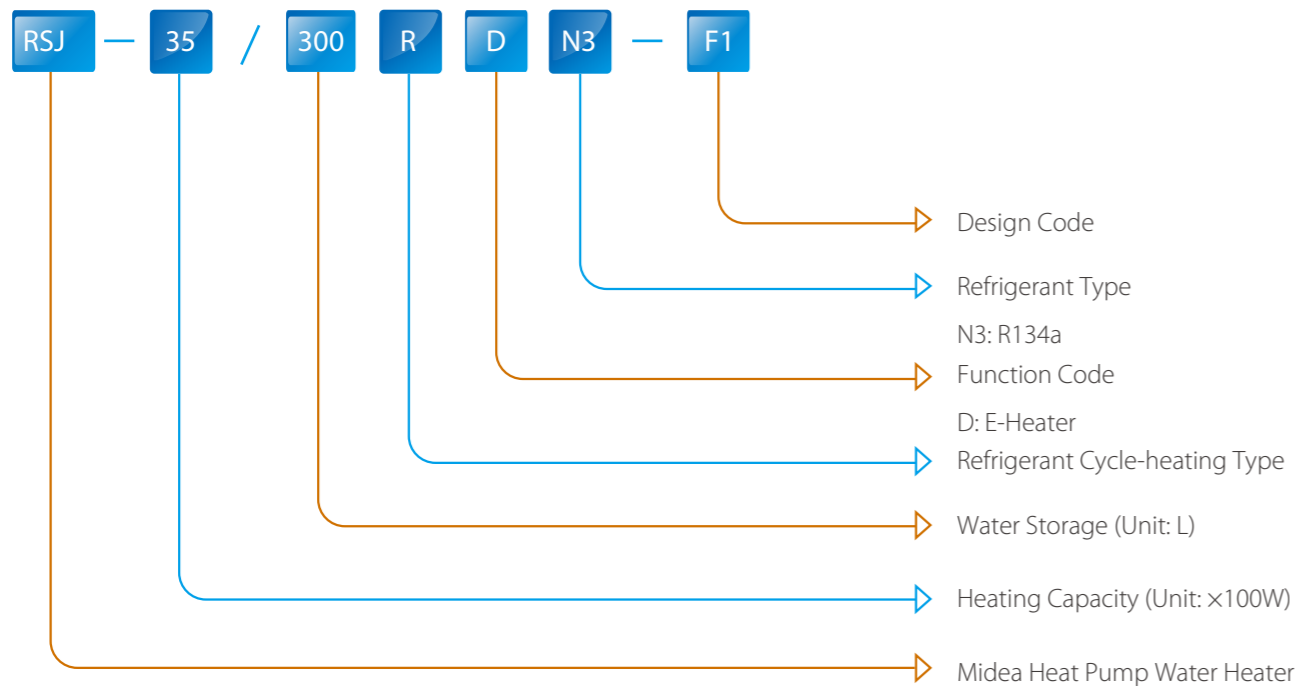
Sanitary Hot Water



Sanitary Hot Water Combo Type



Nomenclature



Features

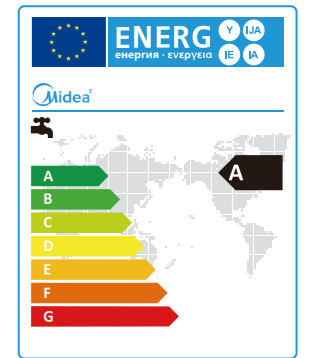
Environmental protection

- ❖ Environmentally friendly refrigerant R134a is used.
- ❖ No discharge of poisonous gas.
- ❖ No pollution to atmosphere and environment.



High heating energy efficiency

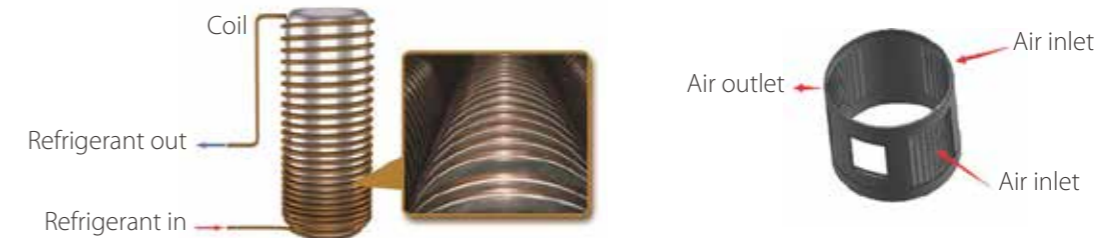
The unit adopts heat pump principle, which absorbs heat from ambient air and releases it to the water to produce hot water. Seasonal water heating energy efficiency class ups to A.



For RSJ-15/190RDN3-F, RSJ-35/300RDN3-F1

Features

- ❖ Enamel water tank, hardly be corroded.
- ❖ Complete isolation between water and electricity without electric shock problem.
- ❖ No fuel tubes and storage, no potential danger from oil leakage, fire, explosion, and so on.
- ❖ No cross contamination potential, the condenser coil is wrapped around the inner tank.
- ❖ Uniform water temperature provides more comfort for bottom coil and special distributary design.
- ❖ Sideward air flow design allows machine has better rainproof effect.
- ❖ Outside metal design prevents aging caused by strong light exposure (sideward air flow model).



Easy installation

- ❖ Integral designed and just need to connect water pipes.
- ❖ 25Pa external static pressure enables air duct up to 10m (topside air flow model).
- ❖ Flexible duct installation (topside air flow model).



Easy control

| Model | RSJ-15/190RDN3-F RSJ-35/300RDN3-F1 | RSJ-15/190RDN3-E | RSJ-23/300RDN3-B |
|-----------------------|---|---|--|
| Controller appearance | | | |
| Main Functions | Protection alarm and buzzer prompt tone Button and screen auto lock Auto restart Timer function Combination button (Query, clear error code) E-heater, vocation and disinfect mode | Protection alarm and buzzer prompt tone Button and screen auto lock Auto restart Timer function Combination button (Query, clear error code) E-heater, economy and hybrid mode Disinfection | Protection alarm and buzzer prompt tone Button and screen auto lock Auto restart Timer function Combination button (Query, Disinfect, E-forced heating) E-heater, economy and hybrid mode Remote control |



Combo Type 190L/300L

RSJ-15/190RDN3-F
RSJ-35/300RDN3-F1

- ❖ Running ambient temperature -20~43°C
- ❖ Water output temperature 38~70°C
- ❖ Multiple key LCD display panel
- ❖ Automatic weekly disinfect function
- ❖ Top air flow, 25Pa air flow pressure enables ducted length up to 10m
- ❖ A rated energy efficiency



Combo Type 190/300L

RSJ-15/190RDN3-E
RSJ-23/300RDN3-B

- ❖ Running ambient temperature -20~43°C
- ❖ Water output temperature 38~70°C
- ❖ Multiple key LCD display panel
- ❖ Automatic weekly disinfect function
- ❖ Sideward air flow
- ❖ Metal net design (For RSJ-23/300RDN3-B)

Specifications

| Model | | RSJ-15/190RDN3-F | | RSJ-35/300RDN3-F1 | |
|---------------------------------------|-------------------|-----------------------------------|----------|-----------------------------------|----------|
| Power supply | V/Ph/Hz | 220-240/1/50 | | 220-240/1/50 | |
| Running mode | | Economy | E-heater | Economy | E-heater |
| Running ambient temperature | °C | -7~43 | -20~43 | -7~43 | -20~43 |
| Output water temperature | °C | Default 60,38~70 | | Default 55,38~65 | |
| Storage size ¹ | Ltr | 180 | | 280 | |
| Capacity ² | kW | 1.45 | 3.15 | 3.00 | 3.00 |
| COP | | 3.80 | 1.00 | 3.60 | 1.00 |
| Max. current | A | 17 | | 18.7 | |
| Water heating energy efficiency class | | A | | A | |
| Dimension (DxH) | mm | Φ560x1,760 | | Φ650x1,920 | |
| Packing (WxHxD) | mm | 695x1,805x685 | | 740x2,160x770 | |
| Net weight | kg | 107 | | 145.5 | |
| Sound pressure level ³ | dB(A) | 42 | | 45 | |
| Sound power level | dB(A) | 58 | | 58 | |
| Compressor | Type | Rotary | | Rotary | |
| Fan motor | Type | AC Motor | | AC Motor | |
| Air side heat exchanger | Type | Fin-coil | | Fin-coil | |
| Water side heat exchanger | Type | Dividing wall type heat exchanger | | Dividing wall type heat exchanger | |
| Refrigerant | Type/Quantity | R134a/1.0 | | R134a/1.2 | |
| | Throttle type | Electric expansion valve | | Electric expansion valve | |
| Water pipeline | Water inlet pipe | mm DN20 | | mm DN20 | |
| | Water outlet pipe | mm DN20 | | mm DN20 | |
| | Drainage pipe | mm DN20 | | mm DN20 | |
| | PTR valve joint | mm DN20 | | mm DN20 | |
| E-heater | kW | 3.15 | | 3.15 | |
| Hot water yield ⁶ | m ³ /h | 0.041 | / | 0.086 | / |
| Applicable persons | | 3~4 | | 5~6 | |

Remark:

1. The storage size is labeled according to NF certification requirement.
2. The test conditions: outdoor temperature 15/12°C(DB/WB), initial water temperature in the units is 15°C, terminal water temperature is 45°C.
3. Sound pressure value test conditions: four side of the unit, distance is 1m, and height is 1m + half of the unit's height.
4. The above data test reference standard EN16147; (EU)No:812:2013; (EU)No:814:2013.
5. The specifications may be changed for product improvement without notice.
6. The value is calculated based on the capability value and capability test condition.

Specifications

| Model | | RSJ-15/190RDN3-E | | RSJ-23/300RDN3-B | |
|-----------------------------------|-------------------|-----------------------------------|----------|-----------------------------------|----------|
| Power supply | V/Ph/Hz | 220-240/1/50 | | 220-240/1/50 | |
| Running mode | | Economy | E-heater | Economy | E-heater |
| Running ambient temperature | °C | 5~43 | -20~43 | -7~43 | -20~43 |
| Output water temperature | °C | Default 63, 38~70 | | Default 60,55~60 | |
| Storage size | Ltr | 170 | | 280 | |
| Capacity ¹ | kW | 1.50 | 2.15 | 2.00 | 3.00 |
| COP | | 3.35 | 1.00 | 4.39 | 1.00 |
| Max. current | A | 12.1 | | 17.3 | |
| Dimension (DxH) | mm | Φ568x1,580 | | Φ650x1,936 | |
| Packing (WxHxD) | mm | 730x1675x700 | | 740x2235x770 | |
| Net weight | kg | 92 | | 153.5 | |
| Sound pressure level ² | dB(A) | 48 | | 49 | |
| Compressor | Type | Rotary | | Rotary | |
| Fan motor | Type | AC Motor | | AC Motor | |
| Air side heat exchanger | Type | Fin-coil | | Fin-coil | |
| Water side heat exchanger | Type | Dividing wall type heat exchanger | | Dividing wall type heat exchanger | |
| Refrigerant | Type/Quantity | R134a/0.8 | | R134a/1.6 | |
| | Throttle type | Electric expansion valve | | Electric expansion valve | |
| Water pipeline | Water inlet pipe | mm DN20 | | mm DN20 | |
| | Water outlet pipe | mm DN20 | | mm DN20 | |
| | Drainage pipe | mm DN20 | | mm DN20 | |
| | PTR valve joint | mm DN20 | | mm DN20 | |
| E-heater | kW | 2.15 | | 3 | |
| Hot water yield ⁴ | m ³ /h | 0.043 | / | 0.058 | / |
| Applicable persons | | 3~4 | | 5~6 | |

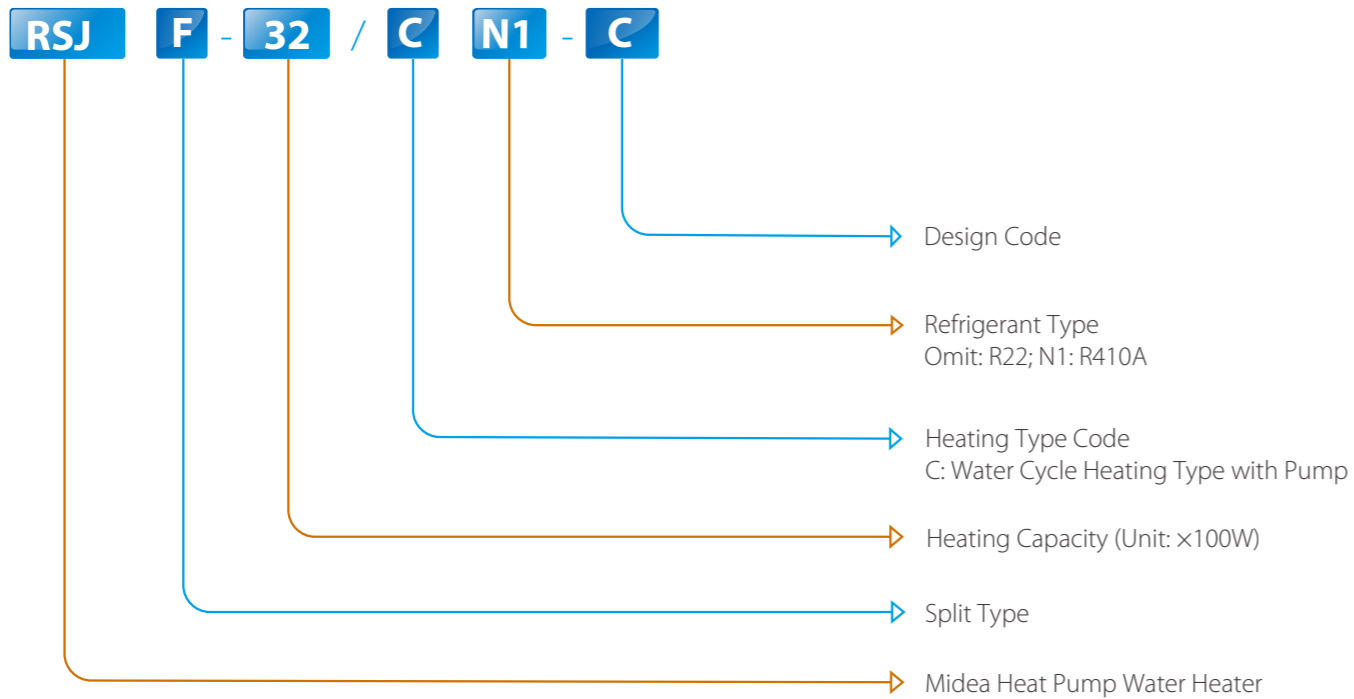
Remark:

1. The test conditions: outdoor temperature 15/12°C(DB/WB), initial water temperature in the units is 15°C, terminal water temperature is 45°C.
2. Sound pressure value test conditions: four side of the unit, distance is 1m, and height is 1m + half of the unit's height.
3. The specifications may be changed for product improvement without notice.
4. The value is calculated based on the capability value and capability test condition.

Sanitary Hot Water Split Type



Nomenclature



Features

- ❖ R410A refrigerant
- ❖ Max. water output temperature: 60°C
- ❖ Automatic startup and shutdown
- ❖ Four-way valve for automatic defrosting
- ❖ Sealed refrigerant circuit, easy for plumber installation
- ❖ Built-in water pump.
- ❖ Single-wall tube in tube heat exchanger



Wired Controller

- ❖ Touch key operation
- ❖ Parameter setting an LCD display
- ❖ Multiple timers
- ❖ Real-time clock function
- ❖ Power-off memory function



KJR-51/BMKE-A

Specifications

| Model | | | RSJF-32/CN1-C | RSJF-50/CN1-C | RSJF-72/CN1-C |
|-------------------------------|-------------------|-------|----------------------------|---------------|---------------|
| Power supply | V/Ph/Hz | | 220-240/1/50 | | |
| Running ambient temperature | °C | | -7~43 | -7~43 | -7~43 |
| Output water temperature | °C | | Default 50°C, 40°C~60°C | | |
| Water heating | Capacity | kW | 3.00 | 4.30 | 6.50 |
| | Input | kW | 0.87 | 1.22 | 1.72 |
| | COP | | 3.45 | 3.53 | 3.78 |
| | Max. current | A | 6.8 | 8.5 | 12.4 |
| Dimension (WxHxD) | mm | | 790x765x275 | 790x765x275 | 845x945x335 |
| Packing (WxHxD) | mm | | 905x807x355 | 905x807x355 | 965x1,009x395 |
| Net/gross weight | kg | | 48/52 | 55/58 | 68.5/74 |
| Outdoor noise level | dB(A) | | 53 | 55 | 55 |
| Air flow | m³/h | | 2,000 | 2,000 | 3,200 |
| Compressor | Type | | Rotary | | |
| Fan motor | Type | | AC Motor | | |
| Water side heat exchanger | Type | | Single-wall heat exchanger | | |
| Air side heat exchanger | Type | | Fin-coil | | |
| Water pump | Pump head | m | 5.5 | 5.5 | 5.5 |
| | Water volume | L/min | 10 | 10 | 10 |
| Refrigerant | Type/Quantity | kg | R410A/0.7 | R410A/0.9 | R410A/1.0 |
| | Throttle type | | Electric expansion valve | | |
| Water pipeline | Water inlet pipe | mm | DN20 | DN20 | DN20 |
| | Water outlet pipe | mm | DN20 | DN20 | DN20 |
| Controller | | | KJR-51/BMKE-A | | |
| Hot water yield ³ | m³/h | | 0.516 | 0.74 | 1.12 |
| Storage size of optional tank | L | | 100~250 | 150~300 | 250~500 |

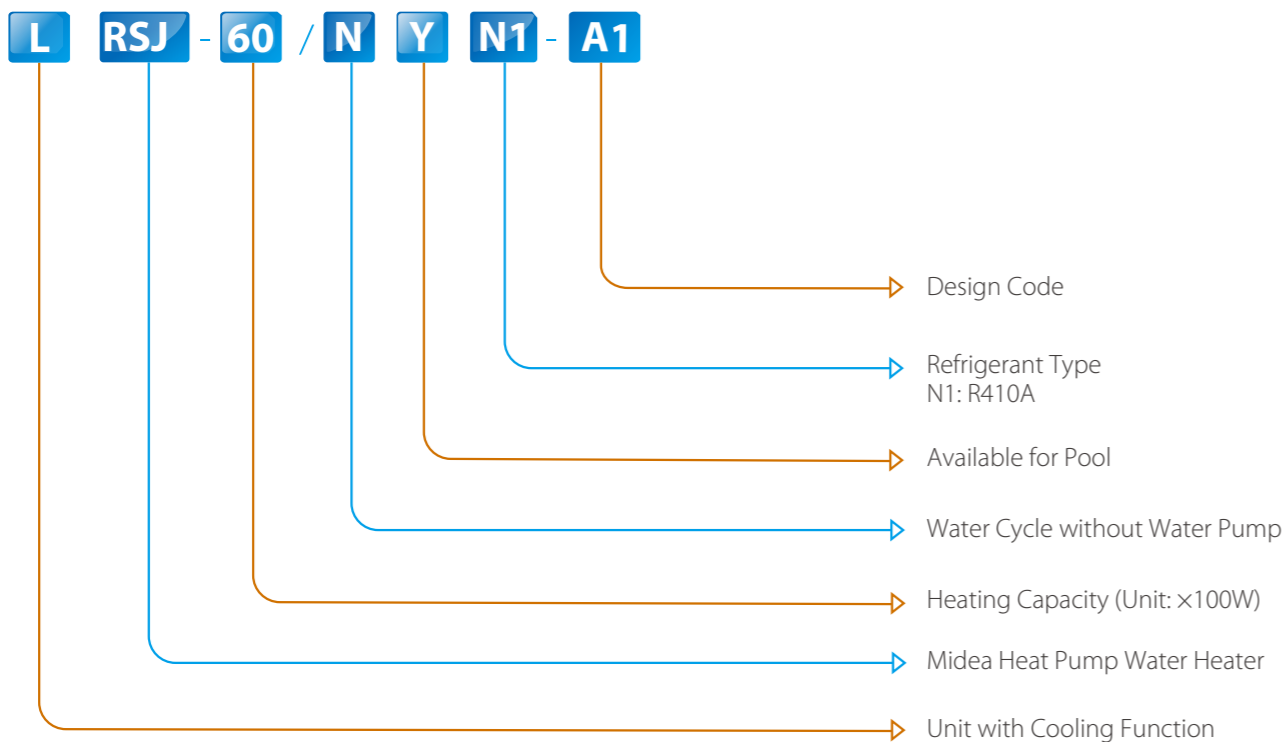
Remark:
 1. The test conditions: outdoor temperature 7/6°C(DB/WB), inlet water temperature 30°C, outlet water temperature 35°C.
 2. The specifications may be changed for product improvement, please refer to the nameplate.
 3. The value is calculated based on the capability value and capability test condition.

Swimming Pool Application





Nomenclature



Features

- ❖ R410A refrigerant
- ❖ Max. water output temperature: 35°C
- ❖ Automatic defrosting function
- ❖ Automatic start-up and shut-down functions
- ❖ Heating, cooling and pump mode
- ❖ Anti-corrosion titanium heat exchanger



Anti-corrosion titanium heat exchanger

Wired Controller

- ❖ Mechanical button
- ❖ LCD displays operation parameters
- ❖ Indicator light
- ❖ Heating, cooling and pump mode



KJRH-90B/E

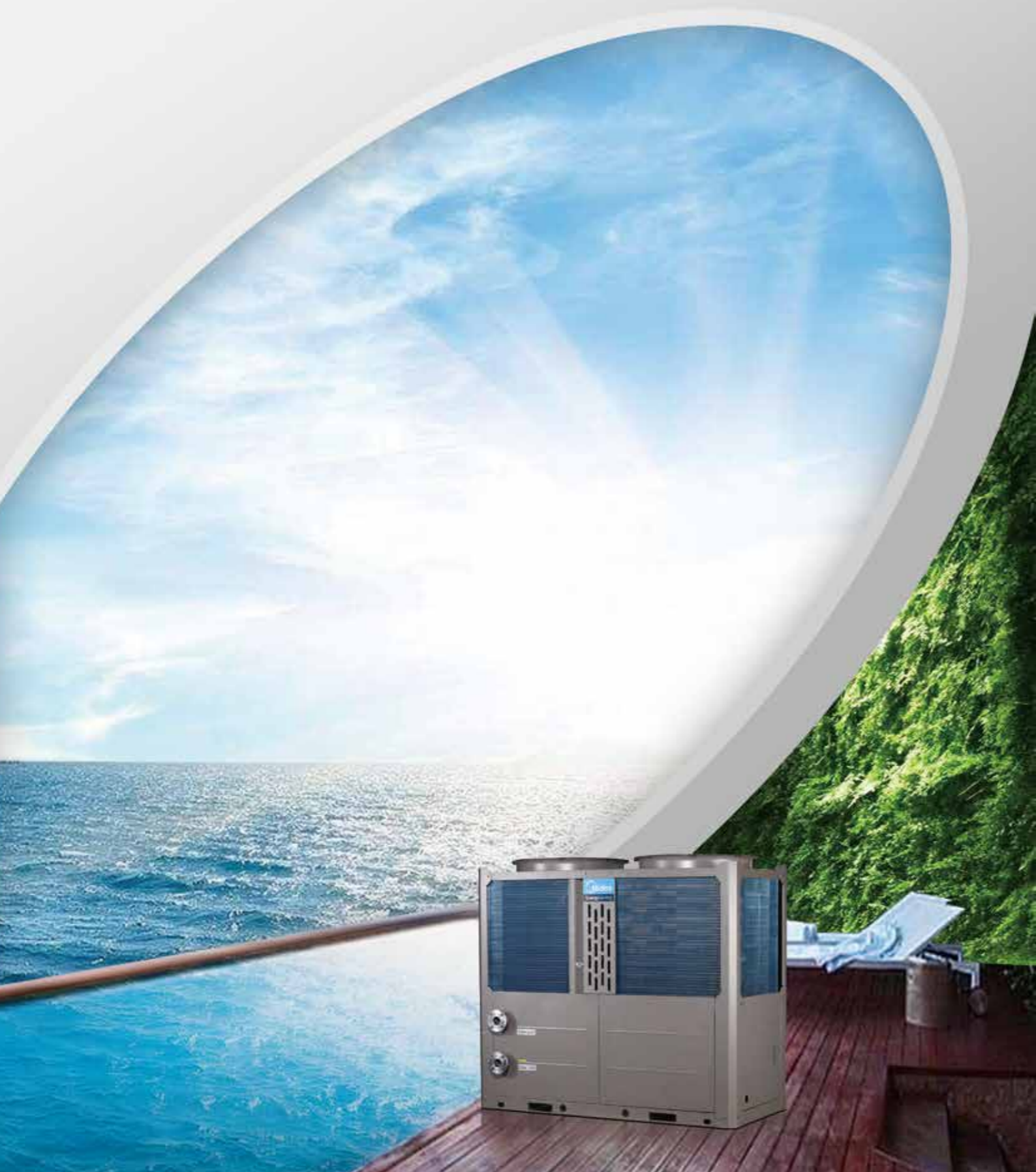
Specifications

| Model | | | LRSJ-60/NYN1-A1 | LRSJ-80/NYN1-A1 | LRSJ-120/NYN1-A1 | LRSJ-140/NYN1-A1 |
|---------------------------|--------------------------|---------------|-------------------------|-----------------|------------------|------------------|
| Power supply | | V/Ph/Hz | 220-240/1/50 | | | |
| Heating | Capacity | kW | 6.00 | 8.00 | 11.70 | 13.60 |
| | Input | kW | 1.150 | 1.518 | 2.350 | 2.550 |
| | COP | | 5.22 | 5.27 | 4.98 | 5.33 |
| | Ambient temperature | °C | -7~38 | -7~38 | -7~38 | -7~38 |
| | Output water temperature | °C | Default 28°C, 20°C~35°C | | | |
| Cooling | Capacity | kW | 4.00 | 5.80 | 8.25 | 10.35 |
| | Input | kW | 1.25 | 1.50 | 2.50 | 2.90 |
| | EER | | 3.20 | 3.87 | 3.30 | 3.57 |
| | Ambient temperature | °C | 15~43 | 15~43 | 15~43 | 15~43 |
| | Output water temperature | °C | Default 28°C, 10°C~30°C | | | |
| Max. current | A | 6.3 | 8.3 | 14.4 | 16.0 | |
| Dimension (WxHxD) | mm | 1,015×705×385 | 1,015×705×385 | 1,050×855×315 | 1,050×855×315 | |
| Packing (WxHxD) | mm | 1,095×840×445 | 1,095×840×445 | 1,160×980×410 | 1,160×980×410 | |
| Net/Gross weight | kg | 58.5/67.5 | 66/75 | 75/85 | 75/85 | |
| Outdoor noise level | dB(A) | 58 | 58 | 58 | 58 | |
| Compressor | Type | | Rotary | Rotary | Rotary | Rotary |
| Fan motor | Type | | AC motor | AC motor | AC motor | AC motor |
| Water side heat exchanger | Type | | Titanium-tube | Titanium-tube | Titanium-tube | Titanium-tube |
| Air side heat exchanger | Type | | Fin-coil | Fin-coil | Fin-coil | Fin-coil |
| Refrigerant | Type/Quantity | kg | R410A/1.0 | R410A/1.25 | R410A/1.6 | R410A/1.85 |
| | Throttle type | | Capillary | Capillary | Capillary | Capillary |
| Water pipeline | Water inlet pipe | mm | Φ50 | Φ50 | Φ50 | Φ50 |
| | Water outlet pipe | mm | Φ50 | Φ50 | Φ50 | Φ50 |
| | Drainage pipe | mm | Φ25 | Φ25 | Φ25 | Φ25 |
| Wire controller | | | KJRH-90B/E | KJRH-90B/E | KJRH-90B/E | KJRH-90B/E |
| Applicable range | m ³ | | 40 | 50 | 60~85 | 75~100 |

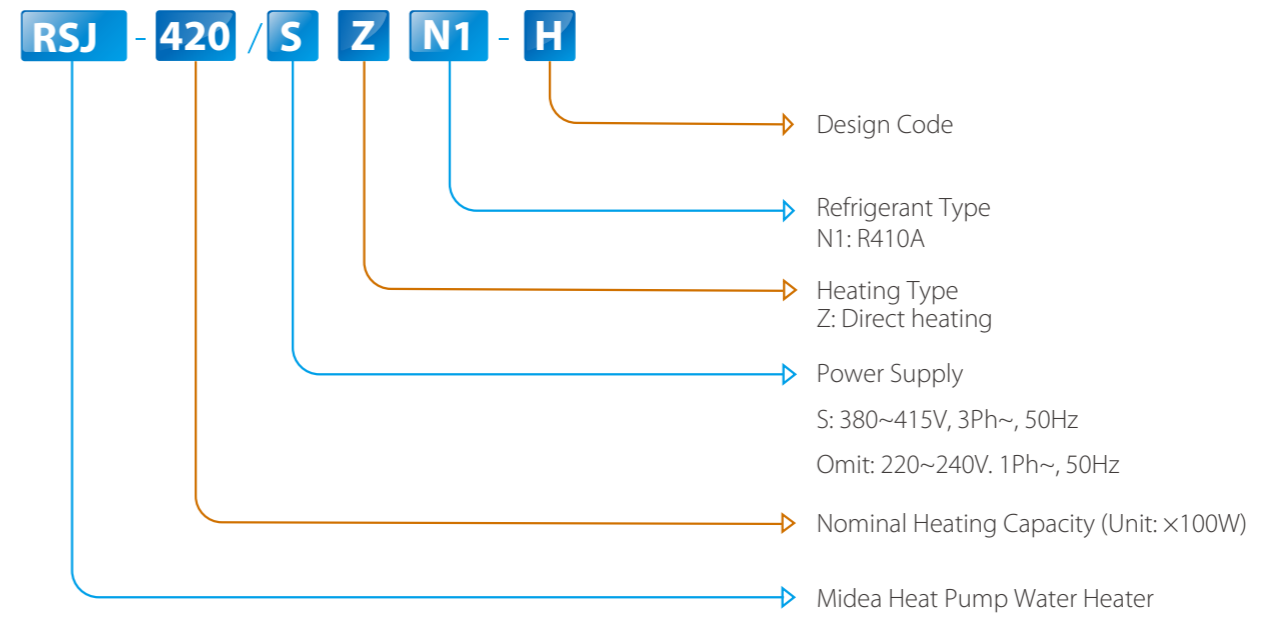
Remark:

1. The test conditions:
 Water Heating: outdoor temperature 24/19°C(DB/WB), inlet water temperature 27°C, outlet water temperature 29°C
 Water Cooling: outdoor temperature 35/24°C(DB/WB), inlet water temperature 27°C, the water flow volume is same in both cooling and heating mode.
2. The specifications may be changed for product improvement, please refer to the nameplate.

Commercial Heat Pump Water Heater



Nomenclature



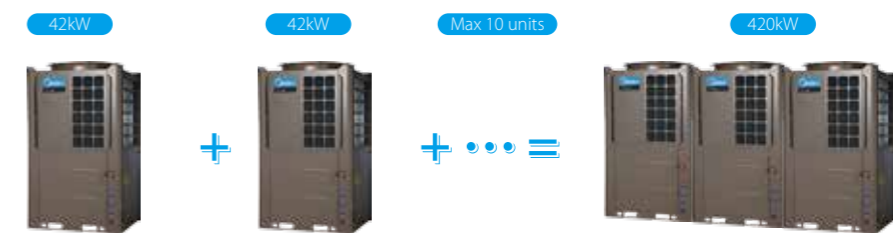
Product lineup

| Capacity (kW) | 12 | 20 | 42 | 80 |
|-------------------|---|---|---|----|
| Appearance Series |  |  |  | |
| 220~240V-1Ph | ● | | | |
| 380~415V-3Ph | | ● | ● | ● |

Features

Wide application range

- ❖ 4 basic models with heating capacity ranging from 12kW to 80kW.
- ❖ Free modular combination.



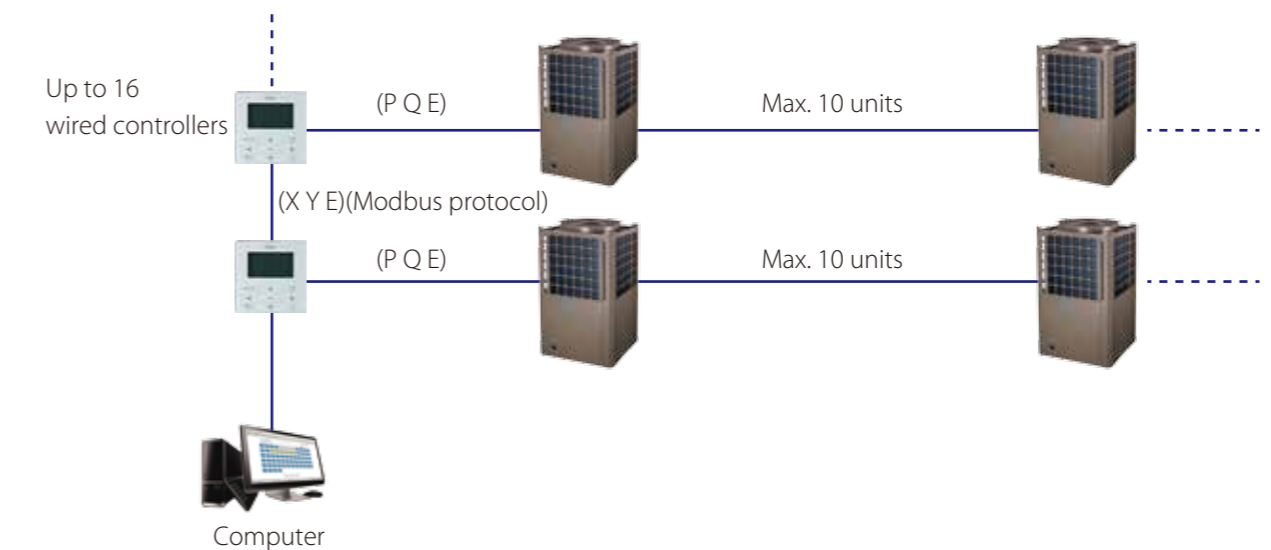
Easy control Wired controller



| | |
|----------------------|--|
| Model | KJR-51/BMKE-A |
| Appearance | |
| Main Functions | <ul style="list-style-type: none"> Touch key operation Parameter setting an LCD display Real-time clock function Multiple timer Power-off memory function Modbus(Customized) |
| Max. connection PCBs | 16 |

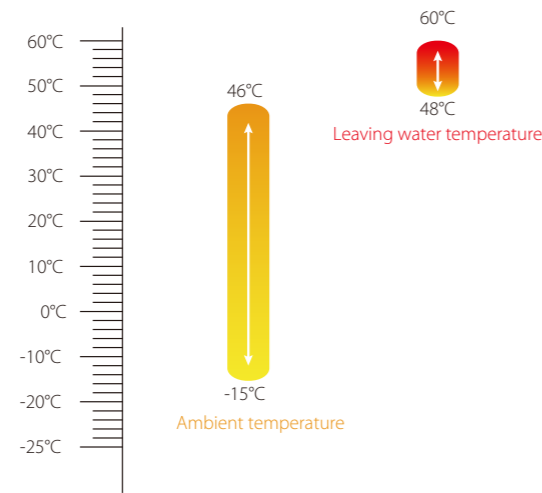
Modbus function

Modbus is an open protocol that is widely used, especially in BMS building control systems. Modbus function can be customized by adding X, Y, E ports on wired controller KJR-51/BMKE-A. It can connect Max. 16 wired controllers and each controller can control Max. 16 units.



❖ Wide operation ambient temperature range.

Operates stably under extreme conditions, ranging from -15°C to 46°C.



High heating energy efficiency

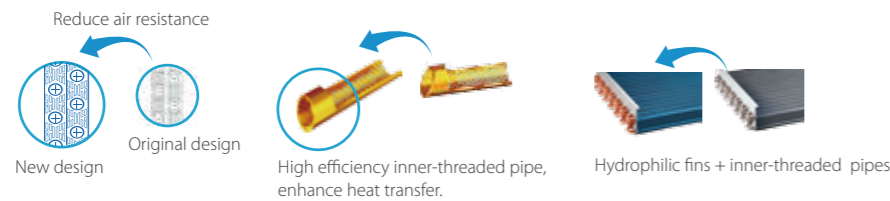
The unit adopts heat pump principle, which absorbs heat from ambient air and releases it to the water to produce hot water.

❖ High performance fin-coil type heat exchanger is adopted at air side.

The new designed window fins enlarge the heat-exchanging area, decrease the air resistance, save more power and enhance heat exchange performance.

Hydrophilic film fins and inner-threaded copper pipes optimize heat exchange efficiency.

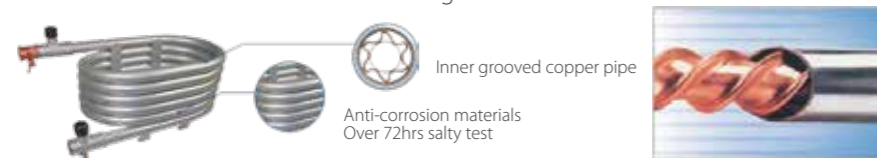
The specially coated blue fins enhance durability and protect against corrosion from air, water and other corrosive agents, assures a longer coil service life.



❖ High efficiency tube-in-tube heat exchanger

Inner grooved copper pipe, increase area of heat exchanger, improve efficient.

Anti-corrosion shell increases the useful life of heat exchanger.



Advanced technology

❖ Unique defrosting flow path.

Air side reserved special defrosting flow path, when the system is defrosting, the four-way valve is reversing, the system will absorb energy from special defrosting flow path, the defrosting progress will have no impact on water temperature.

❖ Electric water flow valve supplies hot water at a stable temperature and expands the life of compressor.

❖ Optimized fan blade edge by CFD programs with analyzing air pressure distribution.

❖ G-shape fin-coil heat exchanger to optimize air flow system of unit.

Remote control functions for convenient operation.

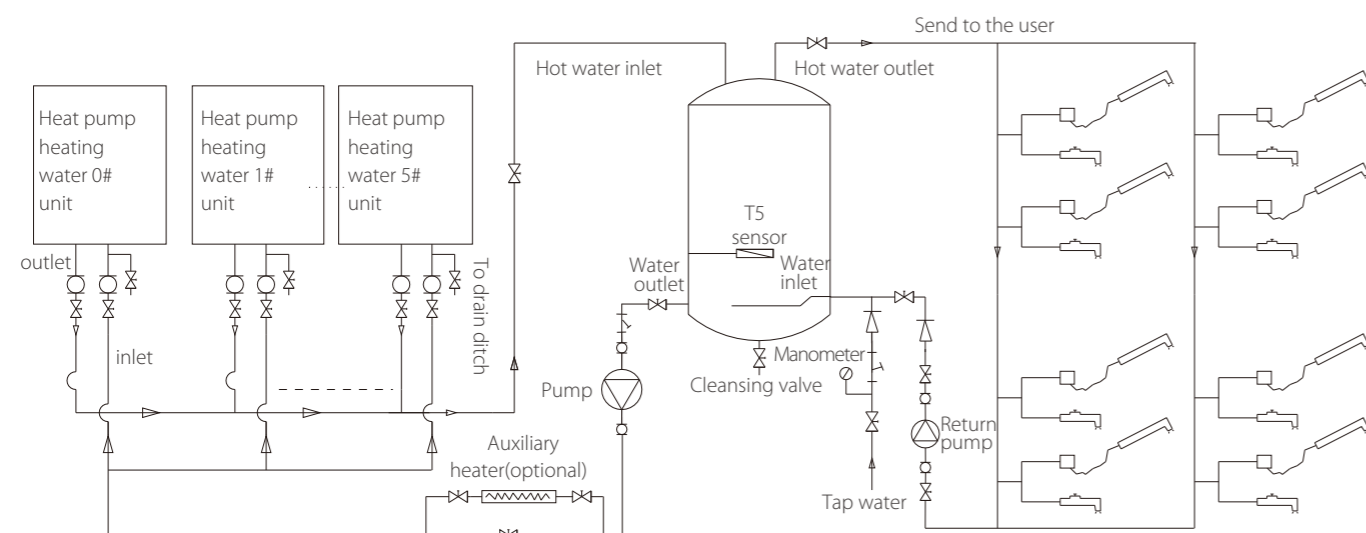
There are ON/OFF, Heat/Cool and Alarm terminals ports on PCB, connect switches from these terminal ports and remote control functions can be easily realized.



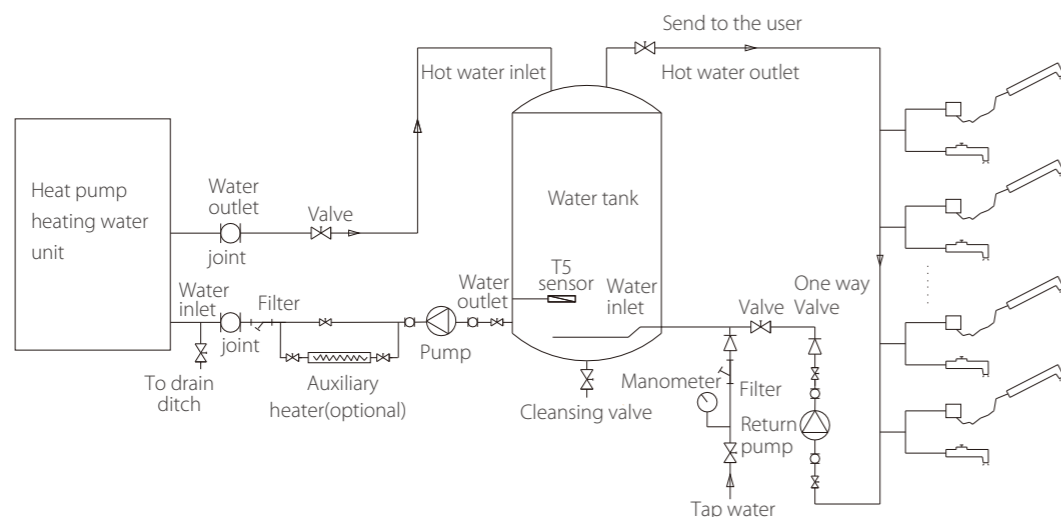
Note: When use the remote control function, the wired controller will be invalid for OFF and mode selection.

Simple refrigerating system diagram

Parallel connected heat pump system



Single connected heat pump system



Specifications

| Model | | | RSJ-120/ZN1-540V1 | RSJ-200/SZN1-540V1 |
|------------------------------|---------------------------|-------------------|--------------------------|--------------------|
| Power supply | | V/Ph/Hz | 220-240/1/50 | 380-415/3 / 50 |
| Running ambient temp | | °C | -15~46 | -15~46 |
| Outwater Temp | | °C | Default 56°C, 48°C~60°C | |
| Water Heating | Capacity | kW | 11.8 | 20.4 |
| | Input | kW | 2.95 | 5.23 |
| | COP | | 4.00 | 3.90 |
| | Max. input current | A | 18.0 | 13.0 |
| Unit dimension (WxHxD) | | mm | 790x1100x810 | 790x1100x810 |
| Packing dimension (WxHxD) | | mm | 860x1220x885 | 860x1220x885 |
| Net/Gross weight | | kg | 125/145 | 157/172 |
| Outdoor noise level | | dB(A) | 59 | 63 |
| Max. combination quantity | | Pieces | 6 | 6 |
| Compressor | Type | | Scroll | Scroll |
| | Quantity | Pieces | 1 | 1 |
| Fan motor | Type | | AC motor | AC motor |
| | Quantity | Pieces | 1 | 1 |
| Air side heat exchanger | | Type | Fin-coil | Fin-coil |
| Water side heat exchanger | | Type | Tube-in-tube | Tube-in-tube |
| Refrigerant | Refrigerant Type/Quantity | kg | R410A/1.55 | R410A/2.9 |
| | Throttle type | | Electric expansion valve | |
| Water pipe | water inlet pipe | mm | DN25 | DN25 |
| | water outlet pipe | mm | DN25 | DN25 |
| Controller | | | KJR-51/BMKE-A | KJR-51/BMKE-A |
| Hot Water Yield ³ | | m ³ /h | 0.25 | 0.45 |

| Model | | | RSJ-420/SZN1-H | RSJ-800/SZN1-H |
|------------------------------|---------------------------|-------------------|--------------------------|-------------------|
| Power supply | | V/Ph/Hz | 380-415/3 / 50 | 380-415/3 / 50 |
| Running ambient temp | | °C | -15~46 | -15~46 |
| Outwater Temp | | °C | Default 56°C, 48°C~60°C | |
| Water Heating | Capacity | kW | 39.0 | 80.0 |
| | Input | kW | 9.65 | 20.00 |
| | COP | | 4.04 | 4.00 |
| | Max. input current | A | 24.0 | 45.0 |
| Unit dimension (WxHxD) | | mm | 1,015x1,775x1,026 | 1,995x1,770x1,025 |
| Packing dimension (WxHxD) | | mm | 1,070x1,900x1,030 | 2,080x1,895x1,120 |
| Net/Gross weight | | kg | 323/343 | 599/627 |
| Outdoor noise level | | dB(A) | 66 | 68 |
| Max. combination quantity | | Pieces | 4 | 2 |
| Compressor | Type | | Scroll | Scroll |
| | Quantity | Pieces | 1 | 2 |
| Fan motor | Type | | AC motor | AC motor |
| | Quantity | Pieces | 1 | 2 |
| Air side heat exchanger | | Type | Fin-coil | Fin-coil |
| Water side heat exchanger | | Type | Tube-in-tube | Tube-in-tube |
| Refrigerant | Refrigerant Type/Quantity | kg | R410A/4.5 | R410A/2x4.4 |
| | Throttle type | | Electric expansion valve | |
| Water pipe | water inlet pipe | mm | DN32 | DN50 |
| | water outlet pipe | mm | DN32 | DN50 |
| Controller | | | KJR-51/BMKE-A | KJR-51/BMKE-A |
| Hot Water Yield ³ | | m ³ /h | 0.85 | 1.72 |

Remark:
 1. The test conditions: outdoor temperature 20/15°C(DB/WB), inlet water temperature 15°C, outlet water temperature 55°C.
 2. The specifications may be changed for product improvement, please refer to the nameplate.
 3. The value is calculated based on the capability value and capability test condition.