1H202010


**Commercial Air Conditioner Division**

**Midea Group**

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Quality Assurance ISO 9001 · Environmental Management ISO 14001 · Occupational Health and Safety Assessment OHSAS 18001

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 LCP-HP. Check ongoing validity of certificate: WWW. eurovent-certification. com

Commercial Air Conditioners 2020

Midea

# Air Source Heat Pump


# 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.

2020 » Launched the 4th generation of R32 M-Thermal products, including Mono and Split type.
2018-2019 » Launched the 3rd generation of R32 M-Thermal products, including Mono and Split type.
2016 » Acquired 80% stake in Clivet
Launched the 2nd 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 1st 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.

# MCAC Learning Academy

## Objective

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

## Training Centers

Our world class training centers provide knowledge and skills necessary to efficiently deploy Midea CAC 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 CAC Training Center

**Address:** Midea CAC Training Center, 2nd Floor, Building 6, Midea Global Innovation Center, Beijiao , Shunde, Foshan, China Pin- 528311

The Midea CAC 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 Midea CAC 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 Midea CAC 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.

**Main Courses Offered:**

1. Introduction to main Selling points and Features
2. Installation and Commissioning
3. Control Systems
4. Selection Software

**Products: VRF, M-Thermal, Chillers and Terminals**

**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 Midea CAC products. Technical person and engineers from different parts of the world are invited to take part in these trainings.

**Main Courses Offered:**

1. Product Electric Control and Refrigerant System
2. Control Systems
3. Installation and Commissioning Demonstration
4. Troubleshooting and Maintenance

**Products: VRF, M-Thermal, Chillers and Terminals**

**Highly Skilled Trainers:** The trainers for various courses by Midea CAC 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 CAC products.

**Training Certificates:**

The attendees for Global trainings are provided a training certificate highlighting the courses discussed in the training, signed by Mr. Jason Zhao, General Manager of Midea CAC Overseas Sales Company.

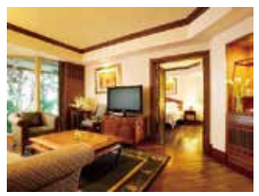
**Registration:**

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.

# 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 |

## Grand Aston Tunjungan (Five Star)

| | |
|---|---|
| **Country:** | Indonesia |
| **City:** | Surabaya |
| **Completion Year:** | 2013 |





## The Royale Springhill Residences

| | |
|---|---|
| **Country:** | Indonesia |
| **City:** | Jakarta |
| **Completion Year:** | 2010 |

## Agile Estate (Clear Water Bay)

**Country:** China
**City:** Sanya
**Completion Year:** 2011

## Shanghai Fudan University (Dormitory Building)

**Country:** China
**City:** Shanghai



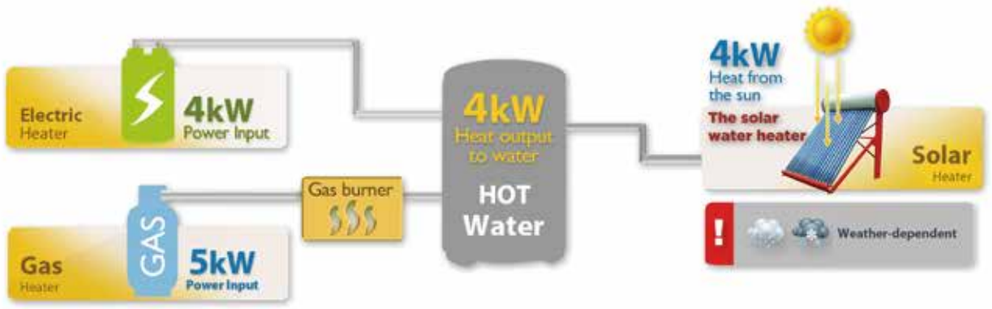


# Contents

# 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 | 2.08$m^3$ | 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

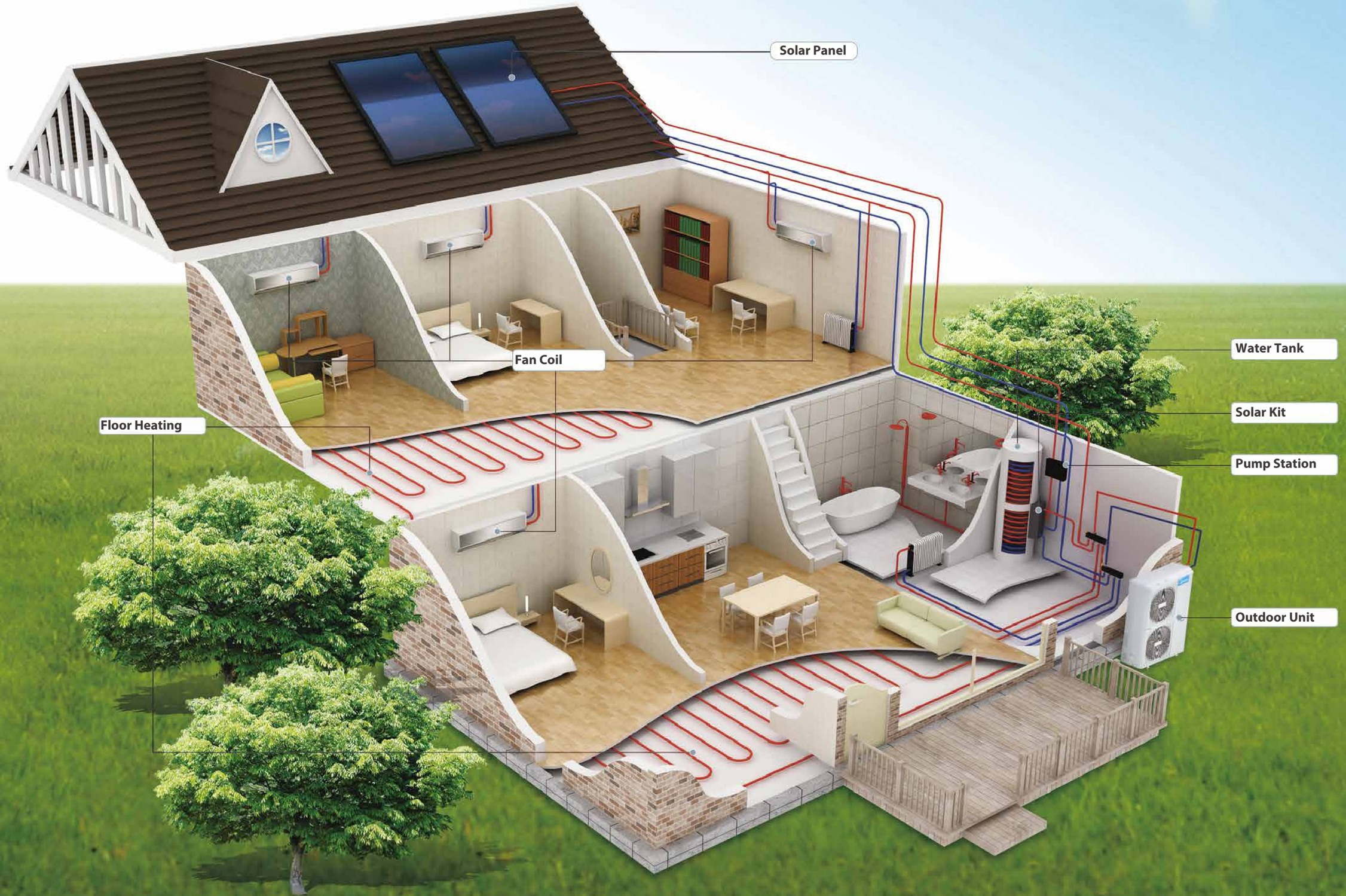
When the refrigerant vapor passes through the compressor, refrigerant pressure increases and temperature rises above that of the water in hydronic system.

### 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

## Hydronic box for S series and E series

SMK – 100 / C S D 45 G N8 – A

- A: Designed code
  Omitted: A
- N8: Refrigerant
  N1: R410A
  N8: R32
- G: Floor heating function
- 45: Electric heater capacity index
  The capacity in W multiplied by 100
- D: Built-in electric heater
  D: With built-in electric heater
  Omitted: Without built-in electric heater
- S: Power Supply
  S: 3-phase, 380-415V, 50Hz
  Omitted: 1-phase, 220-240V, 50Hz
- C: Heating type
  C: Water cycle with water pump
- 100: Capacity index
  The capacity in W multiplied by 100
- SMK: hydronic box without water tank





## Hydronic box for A series

HB – A 60 / C G N8 – B

- B: Design code
- N8: Refrigerant
  N8: R32
- G: Function code
  G: With floor heating function
- C: Heating type
  C: Water cycle with water pump
- 60: Compatible maximum capacity of outdoor unit
  60: 6kW
- A: Compatible outdoor unit code
  A: Split outdoor unit
- HB: Product code
  HB: Hydronic box

## Outdoor units

M H C – V 16 W / D2 R N8 – B

- B: Design code A(omitted), B…
- N8: Refrigerant
  N1: R410A
  N8: R32
- R: Power Supply
  R: 3-phase, 380-415V, 50Hz
  Omitted: 1-phase, 220-240V, 50Hz
- D2: Compressor and fan motor types
  D2: DC inverter compressor and fan
- W: Condensation type
  W: Air cooling
- 16: Capacity index
  The capacity in kW
- V: Compressor attribute code
  V: Inverter
- C: Model
  C: M thermal Mono
  A: M thermal Split
- H: Hot water
- M: Midea

# Product lineup

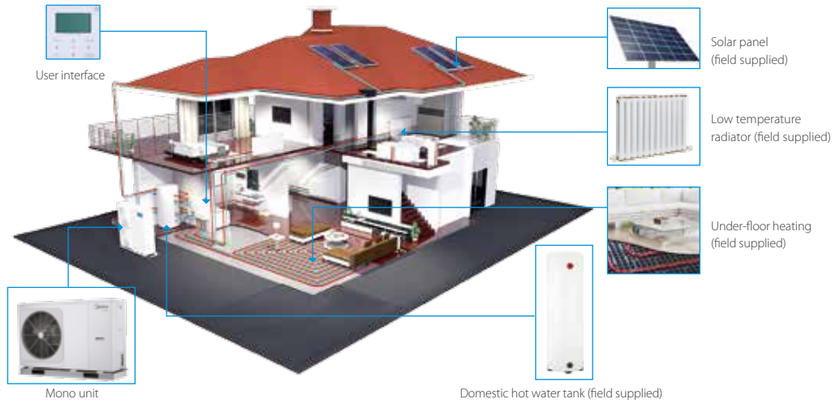
| | Capacity (kW) | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 14 | 16 | 18 | 22 | 26 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mono | 220~240V-1Ph | ● | ● ● | ● | ● ● | ● | ● ● | ● ● | ● ● ● | ● ● ● | ● ● ● | | | | |
| | 380~415V-3Ph | | | | | | | | ● ● ● | ● ● ● | ● ● ● | ● | ● | ● | ● |

| | Capacity (kW) | 4 | 6 | 8 | 10 | 12 | 14 | 16 |
|---|---|---|---|---|---|---|---|---|
| Split Outdoor unit | 220~240V-1ph | ● ● ● | ● ● ● | ● ● ● | ● ● ● | ● ● | ● ● | ● ● |
| | 380~415V-3Ph | | | | | ● ● | ● ● | ● ● |

| | Power supply | Hydronic box |
|---|---|---|
| Split Hydronic box | 220~240V-1ph | ● ● ● |
| | 380~415V-3Ph | ● |

● S series using R410A ● E series using R32 ● A series using R32

## M thermal Mono

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

**Mono unit**

Mono 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.

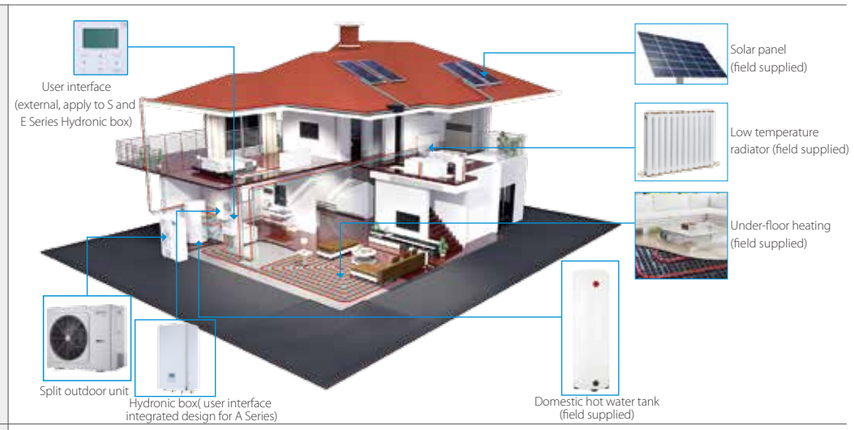
**User interface**

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

| | |
|---|---|
| M thermal Split System |  |
| Application | Heating + Cooling + Domestic hot water |
| Structure type | Split (Heat pump and hydronic box are independent) |
| Refrigerant piping | Between heat pump unit (outdoor) and hydronic box (indoors) |
| Water piping | Between hydronic box and indoor heating appliances |
| Installation | Refrigerant piping and water piping |
| Combinational parts (field supplied) | Under-floor heating loops<br>Fan coil units (Midea can supply)<br>Low temperature radiators<br>Domestic hot water tank(external, apply to SMK)<br>Auxiliary heat sources (such as water heaters and boilers) |

**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**

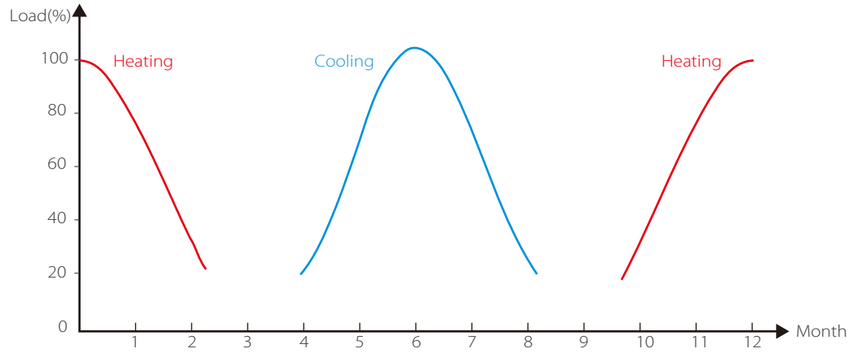
User interface is connected to the Split unit through signal wire. It mainly uses for ON/OFF the unit, mode setting, temperature adjusting and timer setting.

# Features

## DC Inverter Technology

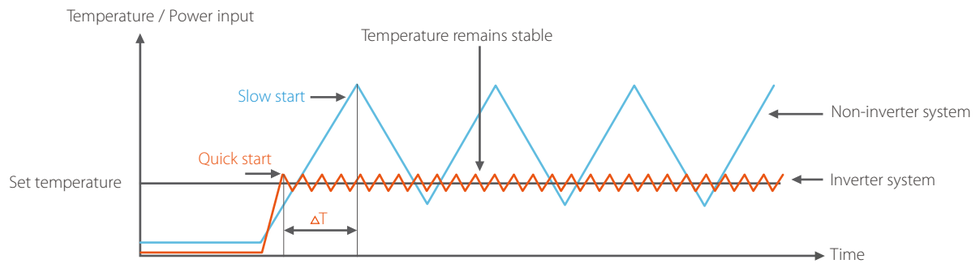
❖ Guarantee efficiency

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.



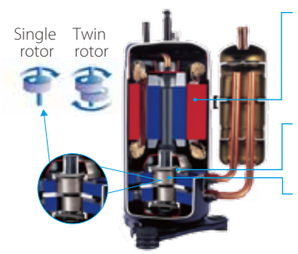


## High efficiency and wide operating range

❖ Spray liquid cooling control of compressor is benefit for enhancing heating capacity in low temperature condition.
❖ S series: Offers heating capacity of 80% at -7°C thanks to the large heat exchanger and large compressor.
❖ E series: Offers heating capacity of 100% at -7°C thanks to the large heat exchanger and large compressor.
❖ A series: Offers heating capacity of 100% at -10°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.

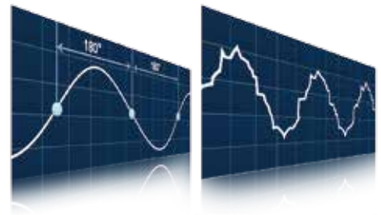



Twin rotary compressor

High efficiency DC motor:
- Innovative motor core design
- High density neodymium magnet
- Concentrated stator
- Wide operating frequency range

Better balance and extremely low vibration:
- Twin eccentric cams
- 2 balance weights

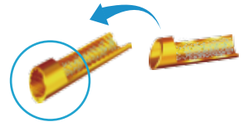
Highly stable moving parts:
- Optimize compressor drive technology
- Highly robust bearings
- Compact structure



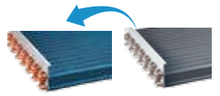
**Finned tube heat exchanger**

High performance fin-coil type heat exchanger is adopted at air side.
Flat fin strengthens the low temperature heating capacity and effectively reduces capacity attenuation.
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, assuresa longer coil service life.

Flat fin



High efficiency inner-threaded pipe, enhance heat transfer.



Hydrophilic fins + inner-threaded pipes

**Hydronic module**
Intergrated hydronic module with DC water pump and backup electric heater.

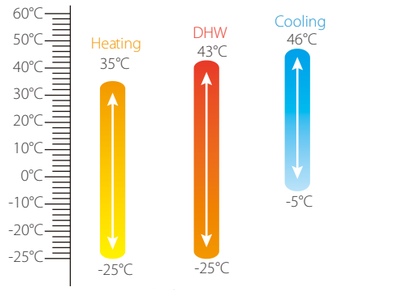
For S and E series

For A series

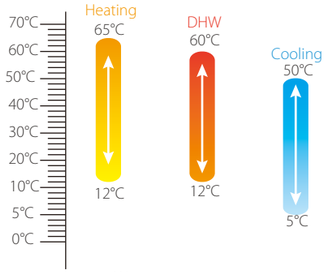
**Brushless DC fan motor**
Stepless fan motor control enables super-quiet fan operation and minimizes power consumption.

❖ For E series and A series and S series model MHC-V5(7/9)W/D2N1, backup electric heater is customizable whilst other S series 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 (AHS) 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 temperature operation ranges.




Ambient temperature operation range




Water temperature operation range

## Easy installation and easy maintenance

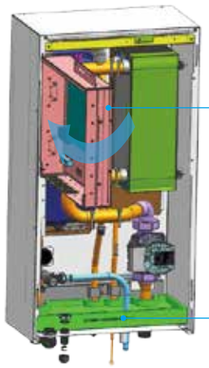
❖ All hydronic components are located within the outdoor unit(Mono models).
❖ Refrigerant system entirely contained within outdoor unit - no additional refrigerant piping required(Mono models).
❖ Compact structure, easy for transportation and installation.
❖ Two-door design for easy access to internal components for easy maintenance(Take an example as A Series 8-16kW).

Door 1: Access to hydronic components and electrical parts

Door 2: Access to refrigerant components and electrical parts.

❖ E Series and A Series Split: Additional refrigerant charge only required if refrigerant piping length exceeds 15m.
❖ S Series Split: Additional refrigerant charge only required if refrigerant piping length exceeds 10m.
❖ 270mm thinnest size for A Series Split indoor unit.
Ideal transformation plan for gas burner and convenient for replacing.
Rotating electric control box enables easy maintenance access to all hydronic components.


**270mm thinnest !**



Electric box

Built-in backup electric heater (optional for E Series and A Series) uses for additional heating during extremely cold weather. The out put capacity is adjustable.
Drain pan fitted as standard.

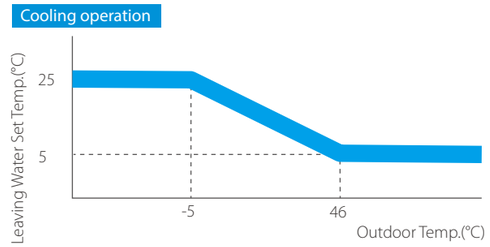
Drain pan

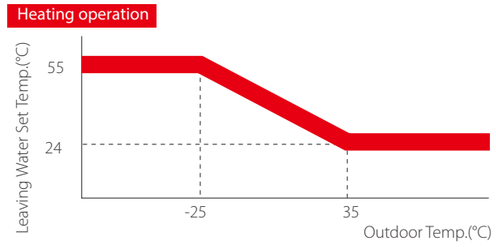




## Flexible operation and more comfort

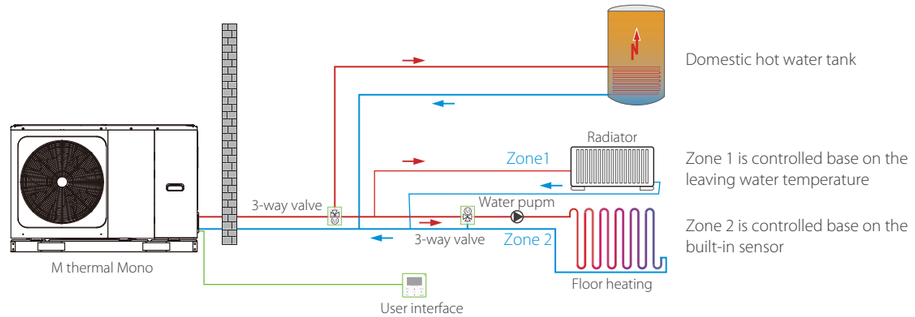
❖ Weather dependent operation with climate correlation to ensure absolute comfort.
Totally there are 32 climate correlation curves for choice and custom curve is optional. Once the curve is selected, the unit set the outlet water temperature automatically according to the outdoor ambient temperature.



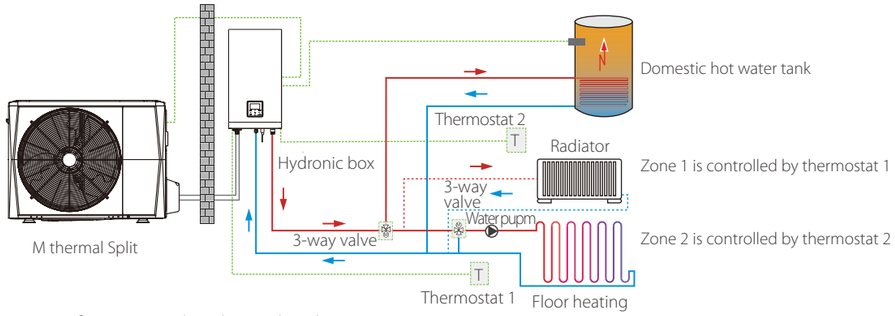




❖ Zones control more flexibility
Temperature of each zone is separately controlled. Two zones control reduces water pump cycle time and save energy.

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




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




❖ Priority setting function and multi modes choice


Cooling Operation and Space Heating Operation Priority | DHW Operation Priority | AUTO mode | Disinfect mode[1] | Holiday mode | Forced DHW mode | Eco mode | Silent mode

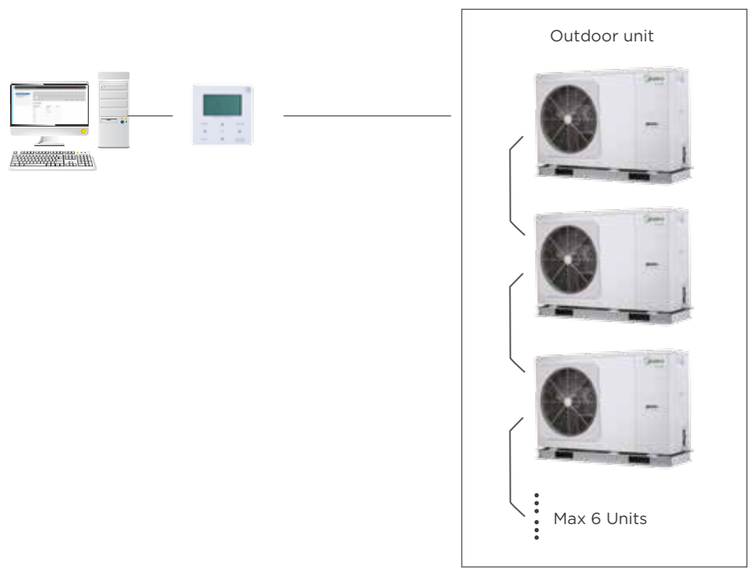
Note:
1. Only when the immersion heater of tank is available can the disinfection mode be used.

❖ 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 E series and A series)
- Multiple languages (For E series and A series)
- Modbus protocol and network flexibility
- Maximum 6 units controlled by one controller with automatic addressing(For A series Mono)

M thermal Mono








## Smart Grid function(E series and A series)

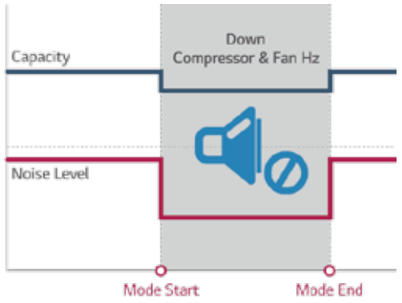
Unit adjusts the operation according to the peak and valley power with different electrical signals to decrease operation cost.
Free electric energy signal:DHW mode turn on, the setting temperature will be changed to 70℃ automatically, and the TBH operate. The unit operate in cooling/heating mode as 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 (E series and A series)

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

## Extremely silent

- Two level of silent mode provides more comfort




- Single fan structure for big capacity with lower noise (For A series silent mode)


## USB function(For A Series)

- 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.

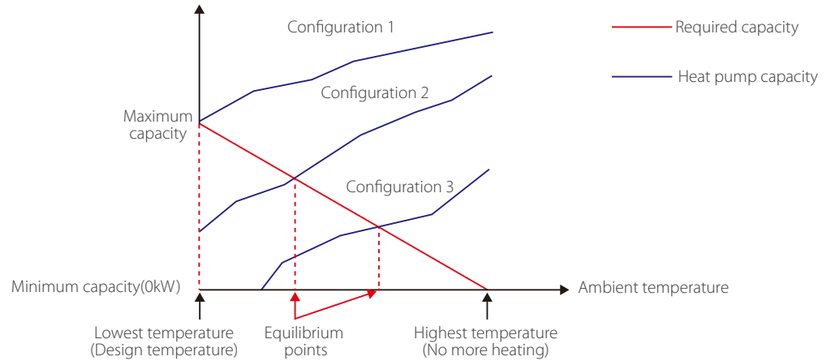




# Typical Applications

## 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.

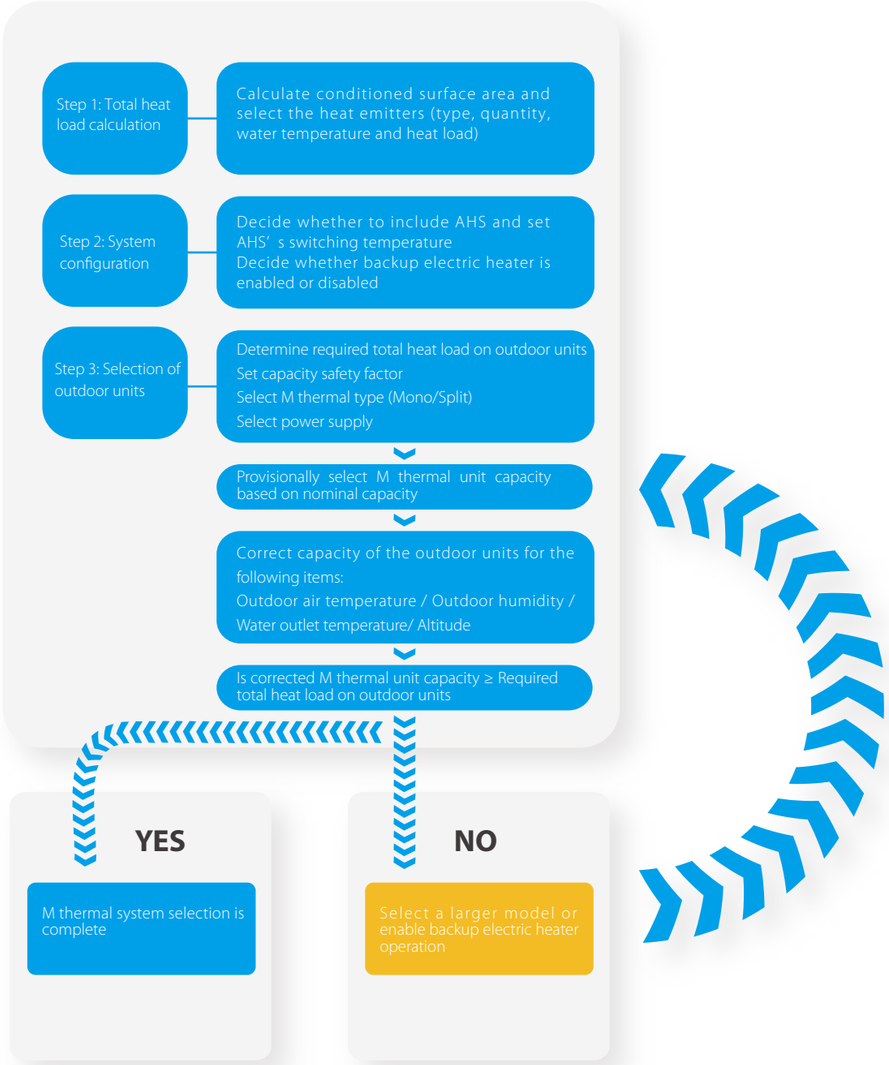
*Configuration 2: Heat pump and backup electric heater*

- 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 LTW 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

## 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.

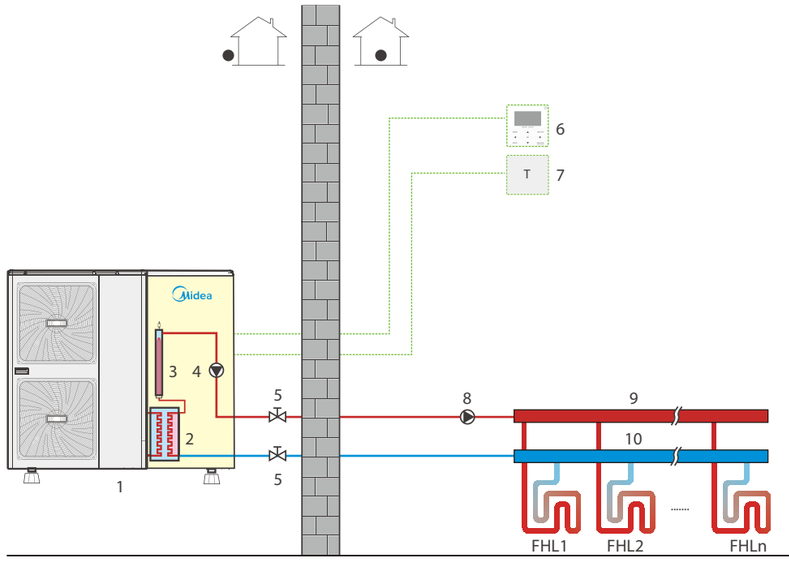

M thermal Mono outdoor unit

- 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 S series Mono

### ❖ Application 1: Space Heating Only

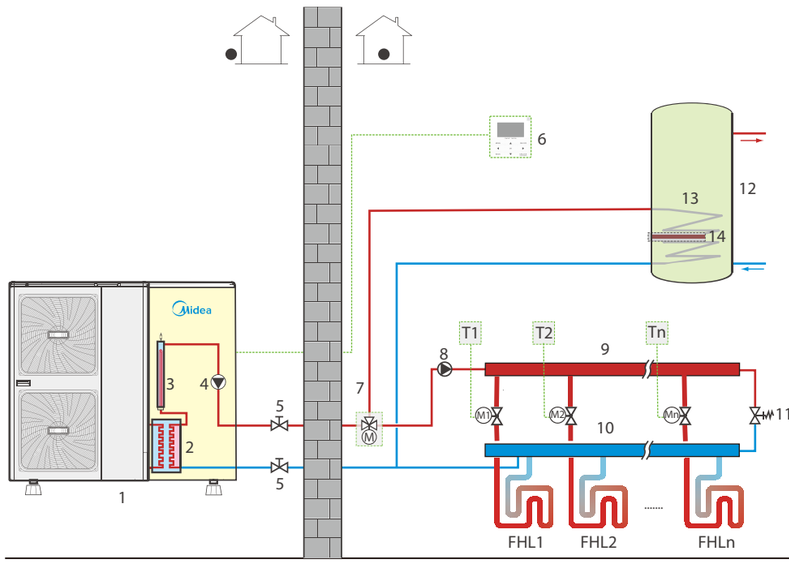
The room thermostat is used as a switch. When there is a heating request from the room thermostat, the Mono unit operates to achieve the target water temperature set on the user interface. When the room temperature reaches the thermostat's set temperature, the unit stops.




1 Outdoor unit
2 Plate heat exchanger
3 Backup electric heater(customized)
4 Inside circulation pump
5 Stop valve (field supplied)
6 User interface
7 Room thermostat (field supplied)
8 Outside circulate pump (field supplied)
9 Distributor (field supplied)
10 Collector (field supplied)
FHL 1…n Floor heating loops (field supplied)

### ❖ 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.




1 Outdoor unit
2 Plate heat exchanger
3 Backup electric heater(customized)
4 Internal circulator pump
5 Stop valve (field supplied)
6 User interface
7 Motorized 3-way valve (field supplied)
8 External circulator pump (field supplied)
9 Distributor (field supplied)
10 Collector (field supplied)
11 Bypass valve (field supplied)
12 Domestic hot water tank (field supplied)
13 Heat exchanger coil
14 Immersion heater
FHL 1…n Floor heating loops (field supplied)
M1…n Motorized valves (field supplied)
T1…n Room thermostats (field supplied)

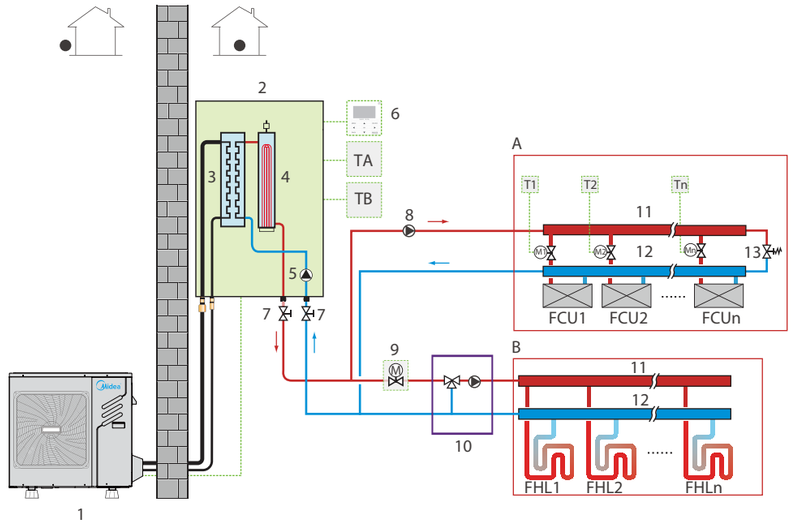




# Typical Applications
# Take an example as E series Split

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

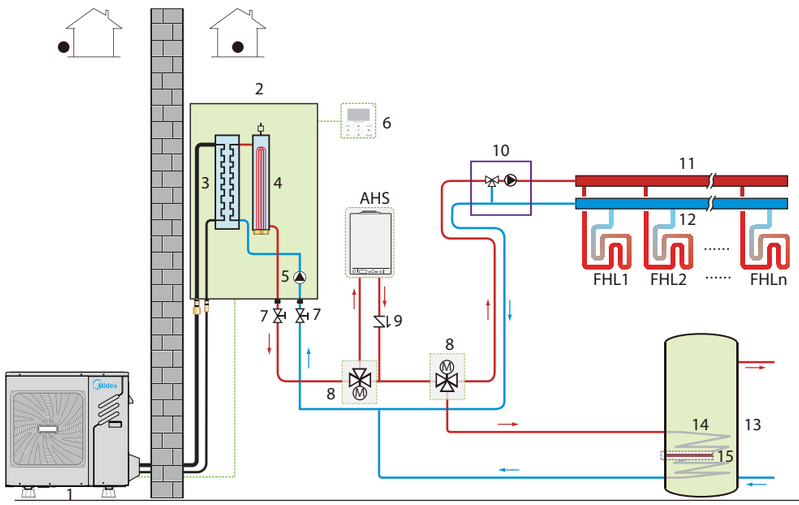
The floor heating loops and fan coil units require different operating water temperatures. To achieve these two set points, a mixing station is required. Room thermostats for each zone are optional.




1 Outdoor unit
2 Hydronic box
3 Plate heat exchanger
4 Backup electric heater(optional)
5 Internal circulator pump
6 User interface
7 Stop valve (field supplied)
8 External circulator pump (field supplied)
9 Motorized 2-way valve (field supplied)
10 Mixing station (field supplied)
11 Distributor (field supplied)
12 Collector (field supplied)
13 Bypass valve (field supplied)
FHL 1…n Floor heating loops (field supplied)
FCU 1…n Fan coil units (field supplied)
M1…n Motorized valves (field supplied)
T1…n Room thermostats (field supplied)
TA Zone A thermostat (field supplied)
TB Zone B thermostat (field supplied)

### ❖ Application 2 : Auxiliary heat source provides additional heating

If the unit's outlet temperature is too low, the auxiliary heat source provides additional heating to raise the water temperature to the set temperature. An additional 3-way valve is required. When the unit's outlet temperature is too low, the 3-way valve is open and the water flows through the auxiliary heat source. When the unit's outlet temperature is high enough, the 3-way valve is closed.

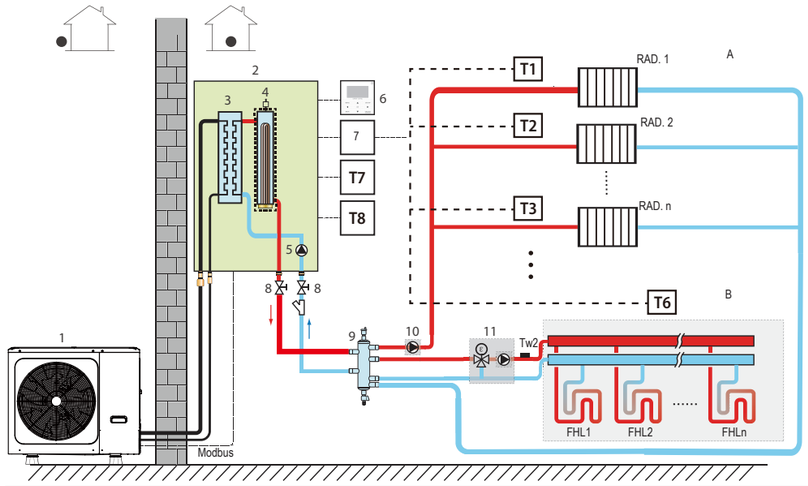



1 Outdoor unit
2 Hydronic box
3 Plate heat exchanger
4 Backup electric heater(optional)
5 Internal circulator pump
6 User interface
7 Stop valve (field supplied)
8 Motorized 3-way valve (field supplied)
9 Non-return valve (field supplied)
10 Mixing station (field supplied)
11 Distributor (field supplied)
12 Collector (field supplied)
13 Domestic hot water tank(field supplied)
14 Heat exchanger coil
15 Immersion heater
FHL 1…n Floor heating loops(field supplied)
AHS Auxiliary heating source (field supplied)

# Typical Applications
## Take an example as A series Split

### ❖ Application 1： Space Heating Through Floor Heating Loops and Radiators

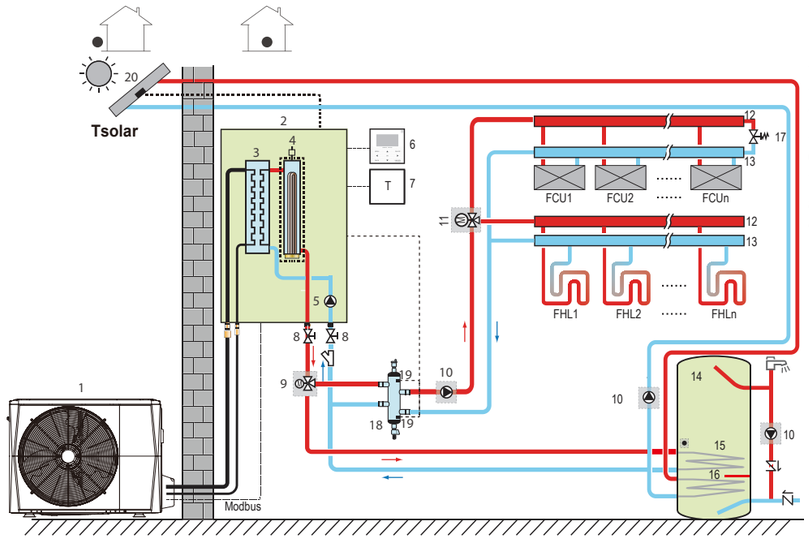
The floor heating loops and radiators require different operating water temperatures. To achieve these two set points, a mixing station is required. Room thermostats for each zone are optional.With the help of hydronic adapter board(optional), maximum 8 thermostats for 8 rooms are available to control heat pump, which greatly improves the operation convenience.




1 Outdoor unit
2 Hydronic box
3 Plate heat exchanger
4 Backup electric heater(optional)
5 Internal circulator pump
6 User interface (Integrated in hydronic box)
7 Hydronic adapter board (Optional)
8 Stop valve (field supplied)
9 Balance tank (field supplied)
10 External circulator pump (field supplied)
11 Mixing station (field supplied)
12 Room thermostat
RAD 1...n Radiators (field supplied)
FHL 1...n Fan coil units (field supplied)
T1...8 Room thermostat

### ❖ 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. Solar water pump is controlled by Tsolar temperature sensor. Balance tank temperature sensor is used to control on/off of heat pump. Once the heat pump stops, internal pump stops to save energy and then balance tank provides hot water for space heating. In addition, balance tank temperature control can meet both space heating and domestic hot water needs at the same time.




1 Outdoor unit
2 Hydronic box
3 Plate heat exchanger
4 Backup electric heater(optional)
5 Internal circulator pump
6 User interface (Integrated in hydronic box)
7 Room thermostat
8 Stop valve (field supplied)
9 Motorized 3-way valve (field supplied)
10 External circulator pump (field supplied)
11 Motorized 3-way valve (field supplied)
12 Distributor (field supplied)
13 Collector (field supplied)
14 Domestic hot water tank (field supplied)
15 Heat exchanger coil
16 Immersion heater
17 Bypass valve (field supplied)
18 Balance tank (field supplied)
19 Balance tank temperature sensor(optional)
20 Solar panel
FHL 1...n Floor heating loops (field supplied)
FCU 1...n Fan coil units (field supplied)





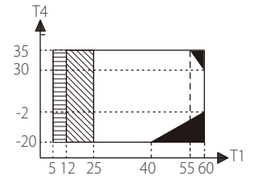
# Specifications
## S series Mono

| Model 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℃ | | A++ | | | | | | | | | |
| | LWT at 55℃ | | A++ | | | | | | | | | |
| Air flow | | $m^3/h$ | 3050 | 3050 | 3050 | 6150 | 6150 | 6150 | 6150 | 6150 | 6150 | 6150 |
| Sound power level[7] | | dB | 63 | 67 | 70 | 68 | 69 | 73 | 73 | 70 | 73 | 75 |
| Net dimensions (WxHxD) | | mm | 1210×945×402 | | | 1404×1414×405 | | | | 1404×1414×405 | | |
| Packed dimensions (WxHxD) | | mm | 1500×1140×450 | | | 1475×1580×440 | | | | 1475×1580×440 | | |
| Net/Gross weight | | kg | 99/117 | | | 162/183 | | | | 177/198 | | |
| Water piping connections | | mm | Φ25 Female BSP | | | Φ32 Female BSP | | | | Φ32 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 | ℃ | -5 to 46 | | | | | | | | | |
| | Heating | ℃ | -20 to 35 | | | | | | | | | |
| | DHW | ℃ | -20 to 43 | | | | | | | | | |
| LWT range | Cooling | ℃ | 5 to 25 | | | | | | | | | |
| | Heating | ℃ | 25 to 60 | | | | | | | | | |
| | DHW | ℃ | 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 | | |
| Backup electric heater[8] | Standard mounted | kW | - | - | - | 3.0 | 3.0 | 3.0 | 3.0 | 4.5 | 4.5 | 4.5 |
| | 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 |

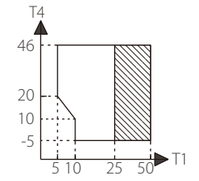
Notes:
1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.
2. Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.
3. Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.
4. Outdoor air temperature 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.
7.Testing standard: EN12102-1
8.For 5/7/9kW model, the backup electric heater is installed in an optional external box which model is BH30A while backup electric heater is built into 10/12/14/16kW model.

## Operating Limits

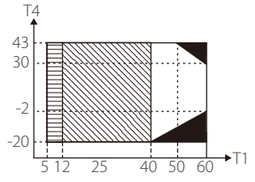
Heating operating limits




Cooling operating limits




Domestic hot water operating limits




Abbreviations:
T4: Outdoor temperature(℃)
T1: Leaving water temperature (℃)
IBH: Backup electric heater
AHS: Additional heat source

Notes：
IBH/AHS only
Water flow temperature drops or rises interval
If IBH/AHS setting is valid, IBH/AHS works with/without heat pump; If IBH/AHS setting is invalid, only heat pump turns on.

# S series Split outdoor unit

| Outdoor unit model MHA- | | | | V4W/D2N1 | V6W/D2N1 | V8W/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 | 4.04 | 6.10 | 8.00 | 10.00 | 12.10 | 14.20 | 15.40 | 12.10 | 14.10 | 15.50 |
| | Rated input | | kW | 0.82 | 1.32 | 1.74 | 2.17 | 2.74 | 3.46 | 3.79 | 2.68 | 3.27 | 3.71 |
| | COP | | | 4.93 | 4.62 | 4.60 | 4.61 | 4.42 | 4.10 | 4.06 | 4.51 | 4.31 | 4.18 |
| Heating[3] | Capacity | | kW | 4.00 | 6.00 | 7.34 | 10.00 | 11.80 | 14.00 | 16.00 | 11.90 | 13.90 | 15.50 |
| | Rated input | | kW | 1.18 | 1.74 | 2.15 | 2.92 | 3.48 | 4.39 | 5.02 | 3.48 | 4.21 | 4.87 |
| | COP | | | 3.39 | 3.45 | 3.41 | 3.42 | 3.39 | 3.19 | 3.19 | 3.42 | 3.30 | 3.18 |
| Cooling[4] | 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[5] | Capacity | | kW | 4.00 | 5.83 | 6.30 | 9.30 | 11.00 | 12.50 | 12.80 | 12.00 | 13.20 | 13.30 |
| | Rated input | | kW | 1.26 | 2.05 | 2.25 | 3.26 | 4.17 | 5.17 | 5.38 | 4.53 | 5.32 | 5.54 |
| | EER | | | 3.17 | 2.84 | 2.80 | 2.85 | 2.64 | 2.42 | 2.38 | 2.65 | 2.48 | 2.40 |
| Seasonal space heatingenergy efficiency class[6] | LWT at 35℃ | | | A+++ | | A++ | A+++ | | A++ | | A+++ | | A++ |
| | LWT at 55℃ | | | A++ | | | | | | | | | |
| Sound power level[7] | | | dB | 62 | 66 | 69 | 67 | 68 | 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-rotaryinverter | | | | | | | | | |
| 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 | Φ9.5 | | | | | | | | | |
| | Gas | Type | | Flaring | | | | | | | | | |
| | | Dia.(OD) | mm | Φ15.9 | | | | | | | | | |
| | Piping length | Min. | m | 2 | | 2 | 2 | | | | 2 | | |
| | | Max. | m | 20 | | 30 | 50 | | | | 50 | | |
| | Installtion height dfference | 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 | | ℃ | -5 to 46 | | | | | | | | | |
| | Heating | | ℃ | -20 to35 | | | | | | | | | |
| | DHW | | ℃ | -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% 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.
7. Testing standard: EN12102-1.





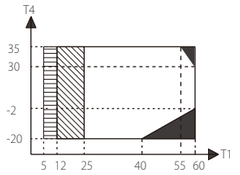
# S series Split hydronic box

| Hydronic box | Model | | | | SMK-80/CD30GN1-B | SMK-160/CD30GN1-B | SMK-160/CSD45GN1-B |
|---|---|---|---|---|---|---|---|
| | Compatible outdoor unit model | | | | 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 | | ℃ | 25 to 55 | | |
| | | High | | ℃ | 35 to 60 | | |
| | Space cooling | Low | | ℃ | 5 to 25 | | |
| | | High | | ℃ | 18 to 25 | | |
| | DHW | | | ℃ | 40 to 60 | | |
| Power supply | | | | V/Ph/Hz | 220-240/1/50 | 220-240/1/50 | 380-415/3/50 |
| Sound power level[1] | | | | 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 | Φ16 | | |
| | 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 | Liqiud side | | | mm | Φ9.5 | | |
| | Gas side | | | mm | Φ15.9 | | |
| 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 |

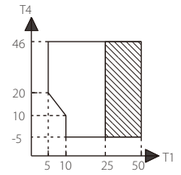
Note：1.Testing standard: EN12102-1.

# Operating Limits

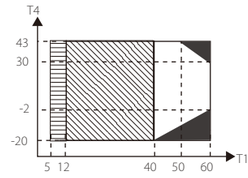
Heating operating limits




Cooling operating limits




Domestic hot water operating limits




Abbreviations:
T4: Outdoor temperature(℃)
T1: Leaving water temperature (℃)
IBH: Backup electric heater
AHS: Additional heat source

Notes：

IBH/AHS only

Water flow temperature drops or rises interval

If IBH/AHS setting is valid, IBH/AHS works with/without heat pump; If IBH/AHS setting is invalid, only heat pump turns on.

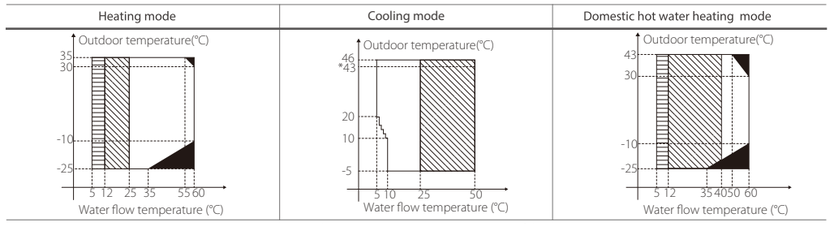
# E Series Mono

| Model MHC- | | | V5W/D2N8 | V7W/D2N8 | V9W/D2N8 | V12W/D2N8 | V14W/D2N8 | V16W/D2N8 | V12W/D2RN8 | V14W/D2RN8 | V16W/D2RN8 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Power supply | | V/Ph/Hz | 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℃ | class | A+++ | A+++ | A+++ | A++ | A++ | A++ | A++ | A++ | A++ |
| | LWT at 55℃ | 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[7] | | dB | 61 | 64 | 67 | 68 | 71 | 71 | 68 | 71 | 71 |
| Net dimensions (W×H×D) | | mm | 1210×945×402 | | | 1404×1414×405 | | | 1404×1414×405 | | |
| Packed dimension (W×H×D) | | mm | 1285×1090×435 | | | 1430×1475×450 | | | 1430×1475×450 | | |
| 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 | ℃ | -5-43 | | | -5-46 | | | -5-46 | | |
| | Heating | ℃ | -25-35 | | | -25-35 | | | -25-35 | | |
| | DHW | ℃ | -25-43 | | | -25-43 | | | -25-43 | | |
| LWT range | Cooling | ℃ | 5-25 | | | 5-25 | | | 5-25 | | |
| | Heating | ℃ | 25-60 | | | 25-60 | | | 25-60 | | |
| | DHW | ℃ | 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[8] | 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℃, 85% R.H., Condenser water in/out 30/35℃
2. Evaporator air in 7℃, 85% R.H., Condenser water in/out 40/45℃
3. Evaporator air in 7℃, 85% R.H., Condenser water in/out 47/55℃
4. Condenser air in 35℃. Evaporator water in/out 23/18℃
5. Condenser air in 35℃. Evaporator water in/out 12/7℃
6. Seasonal space heating energy efficiency class testes in average climate general conditions.
7. Testing standard: EN12102-1
8. For 5/7/9kW model, the backup electric heater is installed in an optional external box which model is BH30A while backup electric heater is built into 12/14/16kW model.
9. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.

# Operating Limits




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

Abbreviations:
T4: Outdoor temperature(℃)
T1: Leaving water temperature (℃)
IBH: Backup electric heater
AHS: Additional heat source
Notes:

IBH/AHS only

Water flow temperature drops or rises interval

If IBH/AHS setting is valid, only IBH/AHS turns on; If IBH/AHS setting is invalid, only heat pump turns on.





# E Series Split outdoor unit

| Model MHA- | | | V4W/D2N8 | V6W/D2N8 | V8W/D2N8 | V10W/D2N8 |
|---|---|---|---|---|---|---|
| Hydronic box | | | SMK-60/CGN8 | | SMK-80/CGN8 | |
| Power supply | | V/Ph/Hz | 220-240/1/50 | | | |
| Heating[1] | Capacity | kW | 4.2 | 6.5 | 8.4 | 10 |
| | Rated input | kW | 0.82 | 1.34 | 1.73 | 2.15 |
| | COP | | 5.15 | 4.85 | 4.85 | 4.65 |
| Heating[2] | Capacity | kW | 4.2 | 6.35 | 8.05 | 9.85 |
| | Rated input | kW | 1.15 | 1.74 | 2.16 | 2.72 |
| | COP | | 3.65 | 3.64 | 3.73 | 3.62 |
| Heating[3] | Capacity | kW | 4.1 | 5.75 | 7.5 | 9.3 |
| | Rated input | kW | 1.44 | 1.98 | 2.49 | 3.25 |
| | COP | | 2.85 | 2.9 | 3.01 | 2.86 |
| Cooling[4] | Capacity | kW | 4.3 | 6.45 | 8.35 | 10.2 |
| | Rated input | kW | 0.77 | 1.32 | 1.79 | 2.4 |
| | EER | | 5.6 | 4.88 | 4.67 | 4.25 |
| Cooling[5] | Capacity | kW | 4.5 | 6.5 | 7.38 | 8.15 |
| | Rated input | kW | 1.36 | 2.2 | 2.44 | 2.76 |
| | EER | | 3.32 | 2.95 | 3.02 | 2.95 |
| Seasonal space heating energy efficiency class[6] | Water outlet at 35℃ | class | A+++ | A+++ | A+++ | A+++ |
| | Water outlet at 55℃ | class | A++ | A++ | A++ | A++ |
| Water tank profile & DHW energy class | 190L | L | / | / | / | / |
| | 250L | XL | / | / | / | / |
| Sound power level[7] | | dB | 61 | 62 | 63 | 65 |
| Net dimension (W×H×D) | | mm | 960×860×380 | | 1075×965×395 | |
| Packed dimension (W×H×D) | | mm | 1040×1000×430 | | 1120×1100×435 | |
| 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 | ℃ | -5~43 | | | |
| | Heating | ℃ | -25~35 | | | |
| | DHW | ℃ | -25~43 | | | |

1.Evaporator air in 7℃, 85% R.H., Condenser water in/out 30/35℃
2.Evaporator air in 7℃, 85% R.H., Condenser water in/out 40/45℃
3.Evaporator air in 7℃, 85% R.H., Condenser water in/out 47/55℃
4.Condenser air in 35℃. Evaporator water in/out23/18℃
5.Condenser air in 35℃. Evaporator water in/out 12/7℃
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.

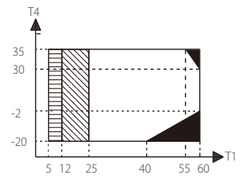
# E Series Split hydronic box

| Hydronic box | Model | | | SMK-60/CGN8 | SMK-80/CGN8 |
|---|---|---|---|---|---|
| | Compatible outdoor unit model MHA- | | | V4(6)W/D2N8 | V8(10)W/D2N8 |
| LWT range | Space heating | Low | ℃ | 25 to 55 | 25 to 55 |
| | | High | ℃ | 35 to 60 | 35 to 60 |
| | Space cooling | Low | ℃ | 5 to 25 | 5 to 25 |
| | | High | ℃ | 18 to 25 | 18 to 25 |
| | DHW | | ℃ | 40 to 60 | 40 to 60 |
| Power supply | | | V/Ph/Hz | 220-240/1/50 | 220-240/1/50 |
| Sound power level[1] | | | dB | 43 | 43 |
| Net dimension (W×H×D) | | | mm | 400×850×427 | 400×850×427 |
| Packed dimension (W×H×D) | | | mm | 495×1040×495 | 495×1040×495 |
| Net/Gross weight | | | kg | 47/53 | 47/53 |
| Water side heat exchanger | | | | Plate type | Plate type |
| Water tank heat exchanger | Coil material | | | / | / |
| | Coil diameter | | mm | / | / |
| | Coil area | | $m^2$ | / | / |
| Water pump | Max. pump head | | m | 8.5 | 8.5 |
| Expansion vessel (Primary circuit) | Volume | | L | 5 | 5 |
| | Charge pressure | | MPa | 0.15 | 0.15 |
| Connection | Outlet connect to terminals | | inch | 1″ | 1″ |
| | Inlet connect to terminals | | inch | 1″ | 1″ |
| | DHW outlet | | inch | / | / |
| | Water inlet | | inch | / | / |
| | DHW recirculation circuit inlet | | inch | / | / |
| | Refrigerant liquid | | mm | 6.35 | 9.52 |
| | Refrigerant gas | | mm | 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 | 3 |
| | Power supply | | V/Ph/Hz | 220-240/1/50 | 220-240/1/50 |
| Water tank E-heater | Capacity mounted | | kW | / | / |
| | Power supply | | V/Ph/Hz | / | / |

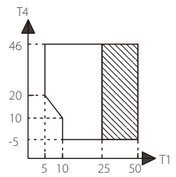
Note：1.Testing standard: EN12102-1.

# Operating Limits

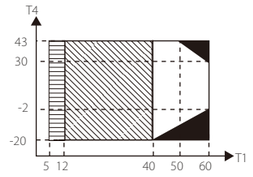
Heating operating limits




Cooling operating limits




Domestic hot water operating limits




Abbreviations:
T4: Outdoor temperature(℃)
T1: Leaving water temperature (℃)
IBH: Backup electric heater
AHS: Additional heat source

Notes：

IBH/AHS only

Water flow temperature drops or rises interval

If IBH/AHS setting is valid, only IBH/AHS turns on; If IBH/AHS setting is invalid, only heat pump turns on.





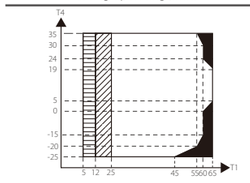
# A Series Mono

| Outdoor unit model MHC- | | | | V4W/D2N8-B | V6W/D2N8-B | V8W/D2N8-B | V10W/D2N8-B | V12W/D2N8-B | V14W/D2N8-B | V16W/D2N8-B | V12W/D2RN8-B | V14W/D2RN8-B | V16W/D2RN8-B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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℃ | | class | A+++ | | | | | | | | | |
| | Water outlet at 55℃ | | 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 |
| Unit dimension (W×H×D) | | | mm | 1295x792x429 | | 1385x945x526 | | | | | | | |
| Packing dimension (W×H×D) | | | mm | 1375x965x475 | | 1465x1120x560 | | | | | | | |
| Net/Gross weight | | | kg | 98/121 | | 121/148 | | 144/170 | | | 160/188 | | |
| Outdoor air temperature range | Cooling | | ℃ | -5～43 | | | | | | | | | |
| | Heating | | ℃ | -25～35 | | | | | | | | | |
| | DHW | | ℃ | -25～43 | | | | | | | | | |
| Water side heat exchanger | | | | Plate type | | | | | | | | | |
| Water pump | Max. pump head | | m | 9 | | | | | | | | | |
| Water side connection | | | mm | R1" | | R5/4" | | | | | | | |
| 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 | V/Ph/Hz | 220-240/1/50 | | | | | | | | | |
| | | 9kW | | 380-415/3/50 | | | | | | | | | |
| Water outlet temperature range | Cooling | | ℃ | 5～25 | | | | | | | | | |
| | Heating | | ℃ | 25～65 | | | | | | | | | |
| | DHW（tank） | | ℃ | 30～60 | | | | | | | | | |

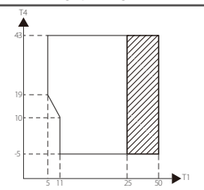
Notes:
1. Evaporator air in 7℃, 85% R.H., Condenser water in/out 30/35℃
2. Evaporator air in 7℃, 85% R.H., Condenser water in/out 40/45℃
3. Evaporator air in 7℃, 85% R.H., Condenser water in/out 47/55℃
4. Condenser air in 35℃. Evaporator water in/out 23/18℃
5. Condenser air in 35℃. Evaporator water in/out 12/7℃
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.
9. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02:2014.

# Operating Limits

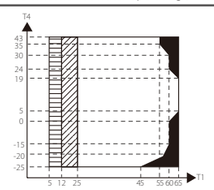
Heating operating limits




Cooling operating limits




Domestic hot water operating limits

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T1: Leaving water temperature (℃)
IBH: Backup electric heater
AHS: Additional heat source

Notes：

IBH/AHS only

Water flow temperature drops or rises interval

If IBH/AHS setting is valid, only IBH/AHS turns on; If IBH/AHS setting is invalid, only heat pump turns on.

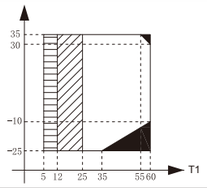
# A Series Mono

| Model | | | MHC-V18W/D2RN8 | MHC-V22W/D2RN8 | MHC-V26W/D2RN8 | MHC-V30W/D2RN8 |
|---|---|---|---|---|---|---|
| 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 |
| Unit dimension (W×H×D) | | mm | 1129×1558×440 | | | |
| Packing dimension (W×H×D) | | mm | 1220×1735×565 | | | |
| Net/Gross weight | | | 177/206 | | | |
| Water side heat exchanger | | | Plate type | | | |
| Water pump | Max. pump head | m | 12.0 | 12.0 | 12.0 | 12.0 |
| Water piping connections Dia. | | inch | 1-1/4" BSP | 1-1/4" BSP | 1-1/4" BSP | 1-1/4" BSP |
| Ambient temperature range | Cooling | ℃ | -5-46 | | | |
| | Heating | ℃ | -25-35 | | | |
| | DHW | ℃ | -25-43 | | | |
| Water outlet temperature range | Cooling | ℃ | 5-25 | | | |
| | Heating | ℃ | 25-60 | | | |
| | DHW | ℃ | 30-60 | | | |

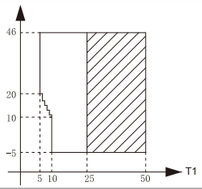
Notes:
1.Evaporator air in 7°C, 85% R.H., Condenser water in/out 30/35°C.
2.Evaporator air in 7°C, 85% R.H., Condenser water in/out 40/45°C.
3.Evaporator air in 7°C, 85% R.H., Condenser water in/out 47/55°C.
4.Condenser air in 35°C. Evaporator water in/out23/18°C.
5.Condenser air in 35°C. Evaporator 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.

# Operating Limits

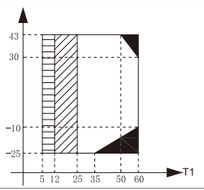
Heating operating limits




Cooling operating limits




Domestic hot water operating limits




Abbreviations:
T4: Outdoor temperature(℃)
T1: Leaving water temperature (℃)
IBH: Backup electric heater
AHS: Additional heat source

Notes:

IBH/AHS only

Water flow temperature drops or rises interval

If IBH/AHS setting is valid, only IBH/AHS turns on; If IBH/AHS setting is invalid, only heat pump turns on.





# A Series Split

| Outdoor unit model MHA- | | | V4W/D2N8-B | V6W/D2N8-B | V8W/D2N8-B | V10W/D2N8-B | V12W/D2N8-B | V14W/D2N8-B | V16W/D2N8-B | V12W/D2RN8-B | V14W/D2RN8-B | V16W/D2RN8-B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hydronic box model HB-A | | | 60/CGN8-B | | 100/CGN8-B | | 160/CGN8-B | | | | | |
| 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++ | | | | | | | | | |

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

# A Series Split outdoor unit

| Outdoor unit model MHA- | | | V4W/D2N8-B | V6W/D2N8-B | V8W/D2N8-B | V10W/D2N8-B | V12W/D2N8-B | V14W/D2N8-B | V16W/D2N8-B | V12W/D2RN8-B | V14W/D2RN8-B | V16W/D2RN8-B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Power supply | | V/Ph/Hz | 220-240/1/50 | | | | | | | 380-415/3/50 | | |
| Compressor | Type | | Twin rotary | | | | | | | | | |
| Outdoor fan | Motor type | | DC fan | | | | | | | | | |
| | Number of fans | | 1 | | | | | | | | | |
| Air side heat exchanger | Type | | Fin-coil | | | | | | | | | |
| Refrigerant | Type(GWP) | | R32(675) | | | | | | | | | |
| | Charged volume | kg | 1.50 | | 1.65 | | 1.84 | | | | | |
| Throttle type | | | Electronic expansion valve | | | | | | | | | |
| Sound power Level[1] | | dB | 56 | 58 | 59 | 60 | 64 | 65 | 68 | 64 | 65 | 68 |
| Unit dimension (W×H×D) | | mm | 1008×712×426 | | 1118×865×523 | | | | | | | |
| Packing dimension (W×H×D) | | 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 | | | | | | | | | |
| Outdoor air temperature range | Cooling | °C | -5~43 | | | | | | | | | |
| | Heating | °C | -25~35 | | | | | | | | | |
| | DHW | °C | -25~43 | | | | | | | | | |

Note：1.Testing standard: EN12102-1.

# A Series Split hydronic box

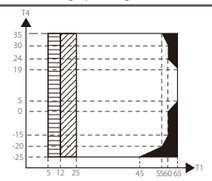
| Hydronic box model HB-A | | | | 60/CGN8-B | 100/CGN8-B | 160/CGN8-B |
|---|---|---|---|---|---|---|
| Power supply | | | V/Ph/Hz | 220-240/1/50 | | |
| Sound power level[1] | | | dB | 38 | 42 | 43 |
| Unit dimension (W×H×D) | | | mm | 420×790×270 | | |
| Packing dimension (W×H×D) | | | mm | 525×1050×360 | | |
| Net/Gross weight | | | kg | 37/43 | | 39/45 |
| Water side heat exchanger | | | | Plate type | | |
| Water pump | Max. pump head | | m | 9 | | |
| Expansion vessel (Primary circuit) | Volume | | L | 8 | | |
| | Charge pressure | | MPa | 0.3 | | |
| Connection | water side | | mm | R1" | | |
| | Refrigerant liquid | | mm | 6.35 | 9.52 | |
| | Refrigerant gas | | mm | 15.88 | 15.88 | |
| Safety valve | | | MPa | 0.3 | | |
| Flow switch | | | $m^3/h$ | 0.36 | | 0.6 |
| Total water volume | | | L | 5 | | |
| Backup E-heater[2] | Standard mounted | | kW | / | | |
| | Optional | | kW | 3/9 | 3/9 | 3/9 |
| | Capacity steps | | | 1/3 | 1/3 | 1/3 |
| | Power supply | 3kW | V/Ph/Hz | 220-240/1/50 | | |
| | | 9kW | | 380-415/3/50 | | |
| Room temperature range | | | °C | 5~35 | | |
| Water outlet temperature range | Cooling | | °C | 5~25 | | |
| | Heating | | °C | 25~65 | | |
| | DHW(tank) | | °C | 30~60 | | |

Note: 1.Testing standard: EN12102-1.

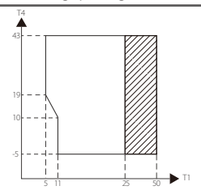
2. For three phase type backup electric heater, 3/6kW can be achieved by changing DIP switch when hydronic box is equipped with 9kW.

## Operating Limits

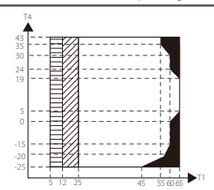
Heating operating limits




Cooling operating limits




Domestic hot water operating limits




Abbreviations:
T4: Outdoor temperature(℃)
T1: Leaving water temperature (℃)
IBH: Backup electric heater
AHS: Additional heat source

Notes:

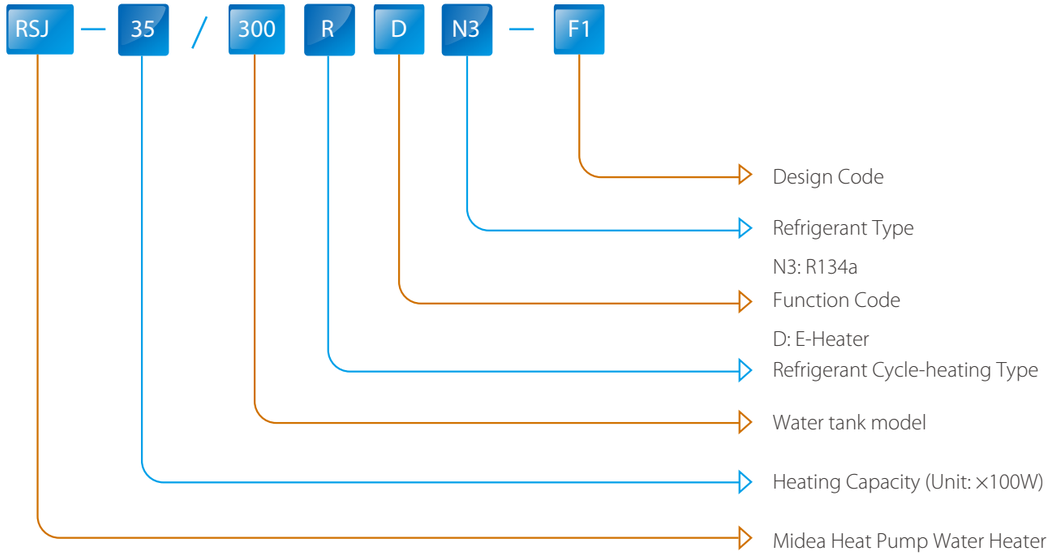
IBH/AHS only

Water flow temperature drops or rises interval

If IBH/AHS setting is valid, only IBH/AHS turns on; If IBH/AHS setting is invalid, only heat pump turns on.

# Sanitary Hot Water


# Nomenclature




# Features

## Environmental protection

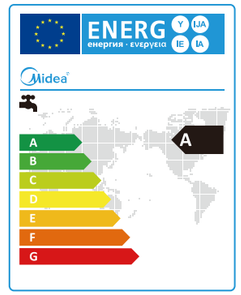
- Environmentally friendly refrigerant R134a is used.
- No discharge of poisonous gas.
- No pollution to atmosphere and environment.






## High heating energy efficiency

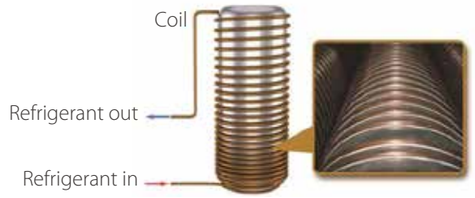
The unit adopts heat pump principle, which absorbs heat from ambient air and releases it to the water to produce hot water. Seasonal water heating energy efficiency class ups to A.




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).

Living room


Dining room


## Easy control

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

R134a DISINFECT

# Combo Type

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

- Running ambient temperature -20~43℃
- Water output temperature 38~70℃
- 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

## 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 | | ℃ | -7~43 | -20~43 | -7~43 | -20~43 |
| Output water temperature | | ℃ | 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 (D×H) | | mm | Φ560×1,760 | | Φ650×1,920 | |
| Packing (W×H×D) | | mm | 695×1,805×685 | | 740×2,160×770 | |
| 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 | kg | R134a/1.0 | | R134a/1.2 | |
| | Throttle type | | Electric expansion valve | | Electric expansion valve | |
| Water pipeline | Water inlet pipe | mm | DN20 | | DN20 | |
| | Water outlet pipe | mm | DN20 | | DN20 | |
| | Drainage pipe | mm | DN20 | | DN20 | |
| | PTR valve joint | mm | DN20 | | 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℃(DB/WB), initial water temperature in the units is 15℃, terminal water temperature is 45℃.
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.





R134a DISINFECT

# Combo Type

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

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

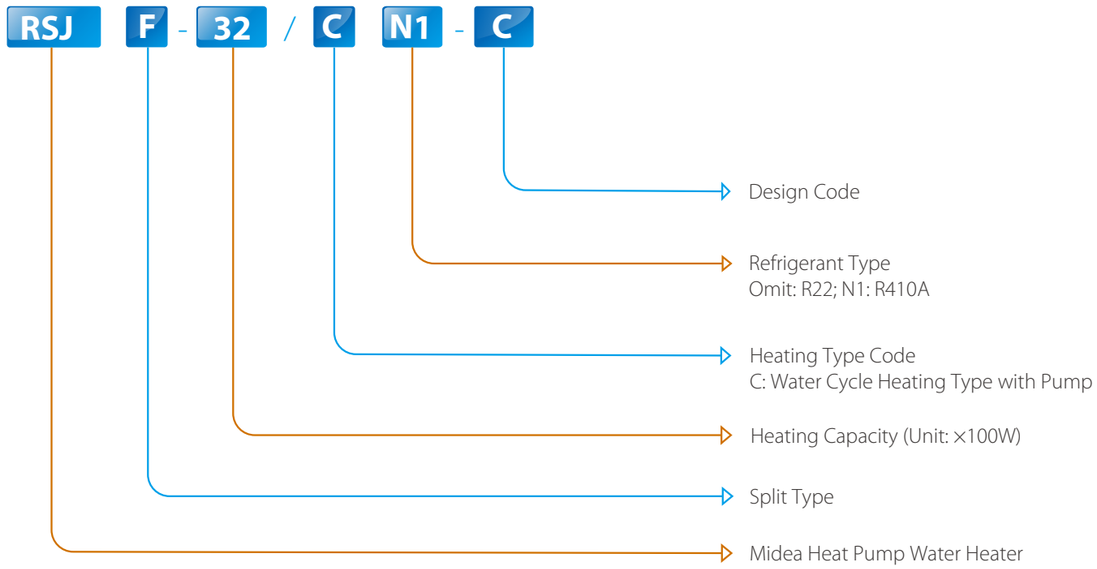
## Specifications

| Model | | | RSJ-15/190RDN3-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 | | ℃ | 5~43 | -20~43 | -7~43 | -20~43 |
| Output water temperature | | ℃ | 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 (D×H) | | mm | Φ568×1,580 | | Φ650×1,936 | |
| Packing (W×H×D) | | mm | 730×1675×700 | | 740×2235×770 | |
| 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 | kg | R134a/0.8 | | R134a/1.6 | |
| | Throttle type | | Electric expansion valve | | Electric expansion valve | |
| Water pipeline | Water inlet pipe | mm | DN20 | | DN20 | |
| | Water outlet pipe | mm | DN20 | | DN20 | |
| | Drainage pipe | mm | DN20 | | DN20 | |
| | PTR valve joint | mm | DN20 | | 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℃(DB/WB), initial water temperature in the units is 15℃, terminal water temperature is 45℃.
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℃
- 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

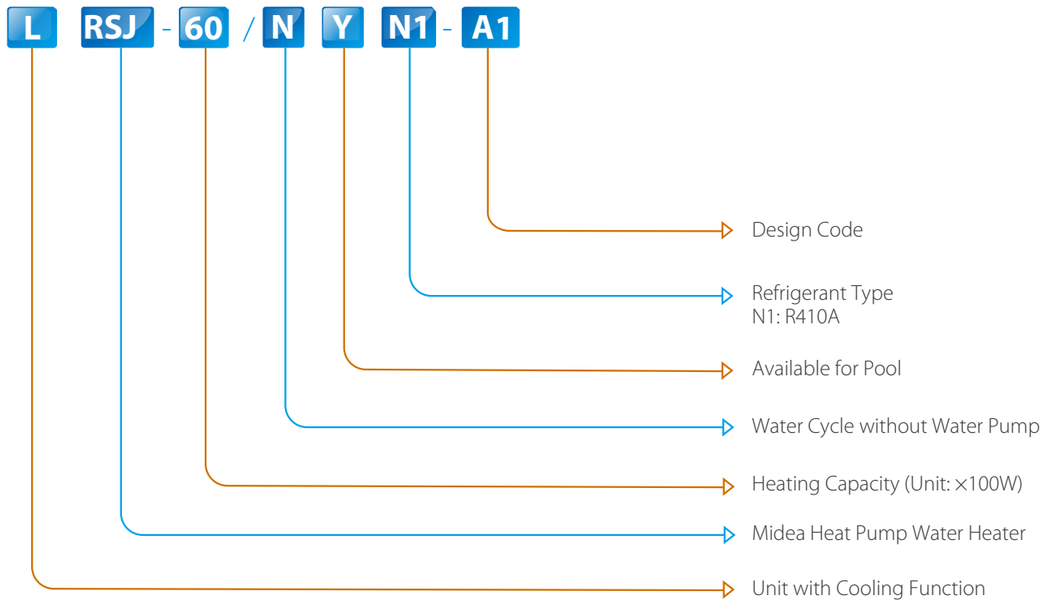
## Specifications

| 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 | | ℃ | -7~43 | -7~43 | -7~43 |
| Output water temperature | | ℃ | Default 50℃, 40℃~60℃ | | |
| 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 (W×H×D) | | mm | 790×765×275 | 790×765×275 | 845×945×335 |
| Packing (W×H×D) | | mm | 905×807×355 | 905×807×355 | 965×1,009×395 |
| Net/gross weight | | kg | 48/52 | 55/58 | 68.5/74 |
| Outdoor noise level | | dB(A) | 53 | 55 | 55 |
| Air flow | | $m^3/h$ | 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] | | $m^3/h$ | 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℃(DB/WB), inlet water temperature 30℃, outlet water temperature 35℃.
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 punp mode
- Anti-corrosion titanium heat exchanger


Anti-corrosion titanium heat exchanger

## Wired Controller

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


KJRH-90B/E

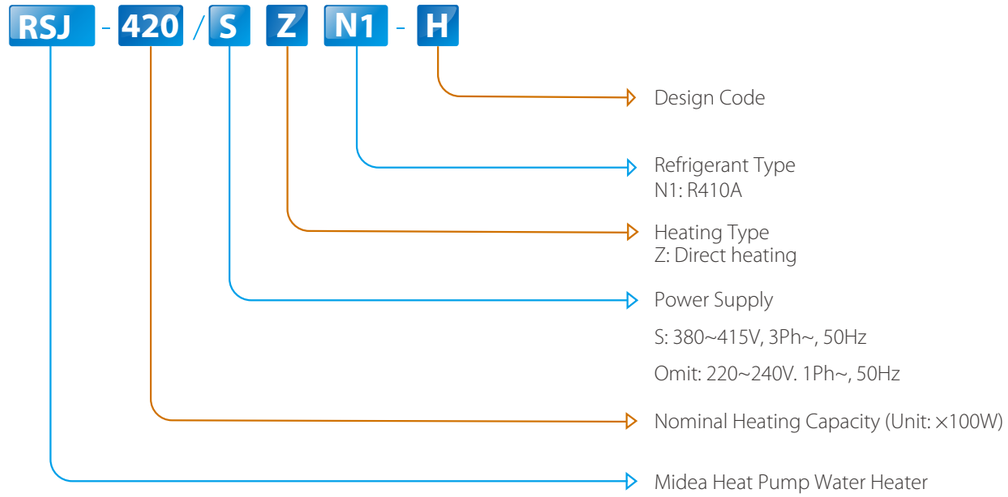
## Specifications

| 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 volumn 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



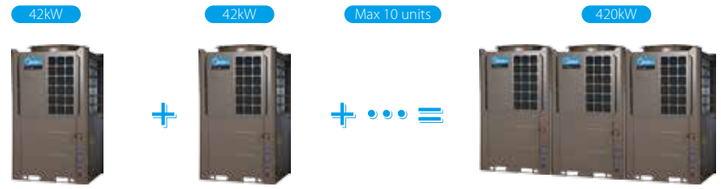

## Product lineup

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

## Features

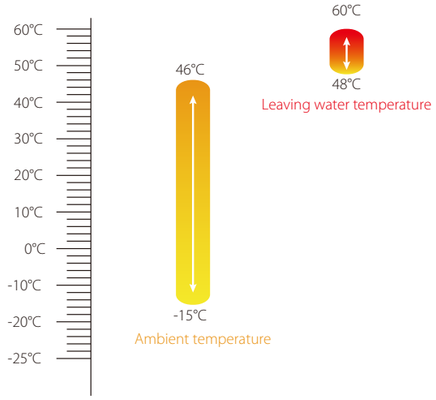
### Wide application range

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



❖ Wide operation ambient temperature range.

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




## High heating energy efficiency

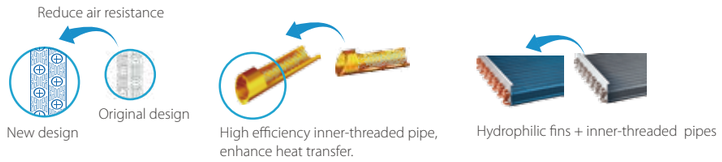
The unit adopts heat pump principle, which absorbs heat from ambient air and releases it to the water to produce hot water.

❖ 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, assuresa 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.





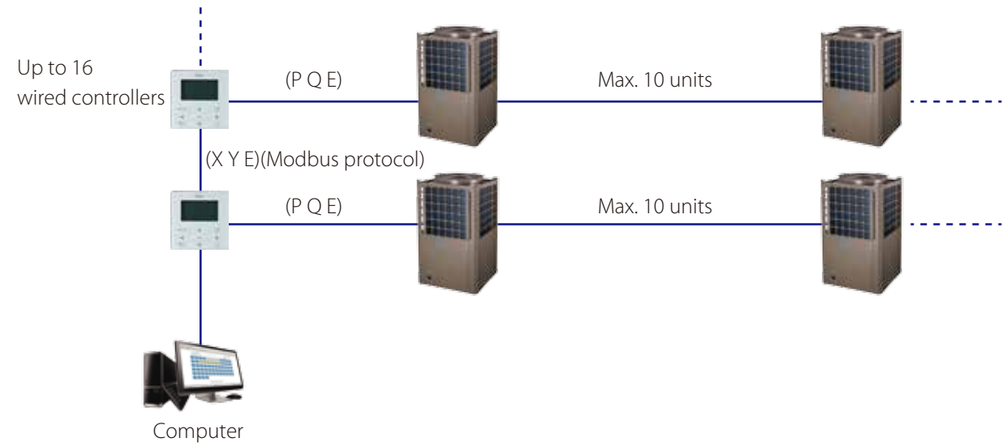
# Easy control

## Wired controller

| Model | KJR-51/BMKE-A |
|---|---|
| Appearance |  |
| Main Functions | Touch key operation<br>Parameter setting an LCD display<br>Real-time clock function<br>Multiple timer<br>Power-off memory function<br>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.



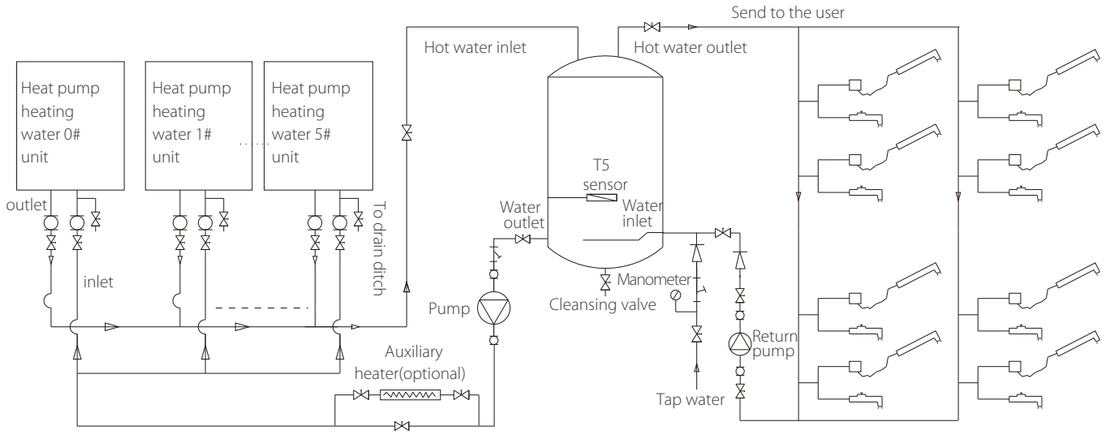
## Remote control functions for convenient operation.

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.

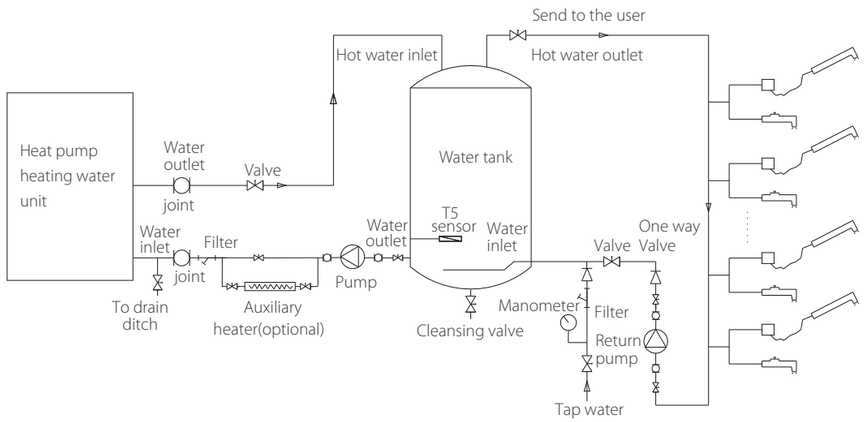

Note: When use the remote control function, the wired controller will be invalid for OFF and mode selection.

# Simple refrigeranting 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 | | ℃ | -15~46 | -15~46 |
| Outwater Temp | | ℃ | Default 56℃, 48℃~60℃ | |
| 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 (W×H×D) | | mm | 790×1100×810 | 790×1100×810 |
| Packing dimension (W×H×D) | | mm | 860×1220×885 | 860×1220×885 |
| 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 |
| Warer 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 | | ℃ | -15~46 | -15~46 |
| Outwater Temp | | ℃ | Default 56℃, 48℃~60℃ | |
| 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 (W×H×D) | | mm | 1,015×1,775×1,026 | 1,995×1,770×1,025 |
| Packing dimension (W×H×D) | | mm | 1,070×1,900×1,030 | 2,080×1,895×1,120 |
| 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 |
| Warer side heat exchanger | Type | | Tube-in-tube | Tube-in-tube |
| Refrigerant | Refrigerant Type/Quantity | kg | R410A/4.5 | R410A/2×4.4 |
| | 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℃(DB/WB), inlet water temperature 15℃, outlet water temperature 55℃.
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.