Midea Building Technologies Division

Engineering Data

M thermal Arctic Pro Series Mono

4~16kW

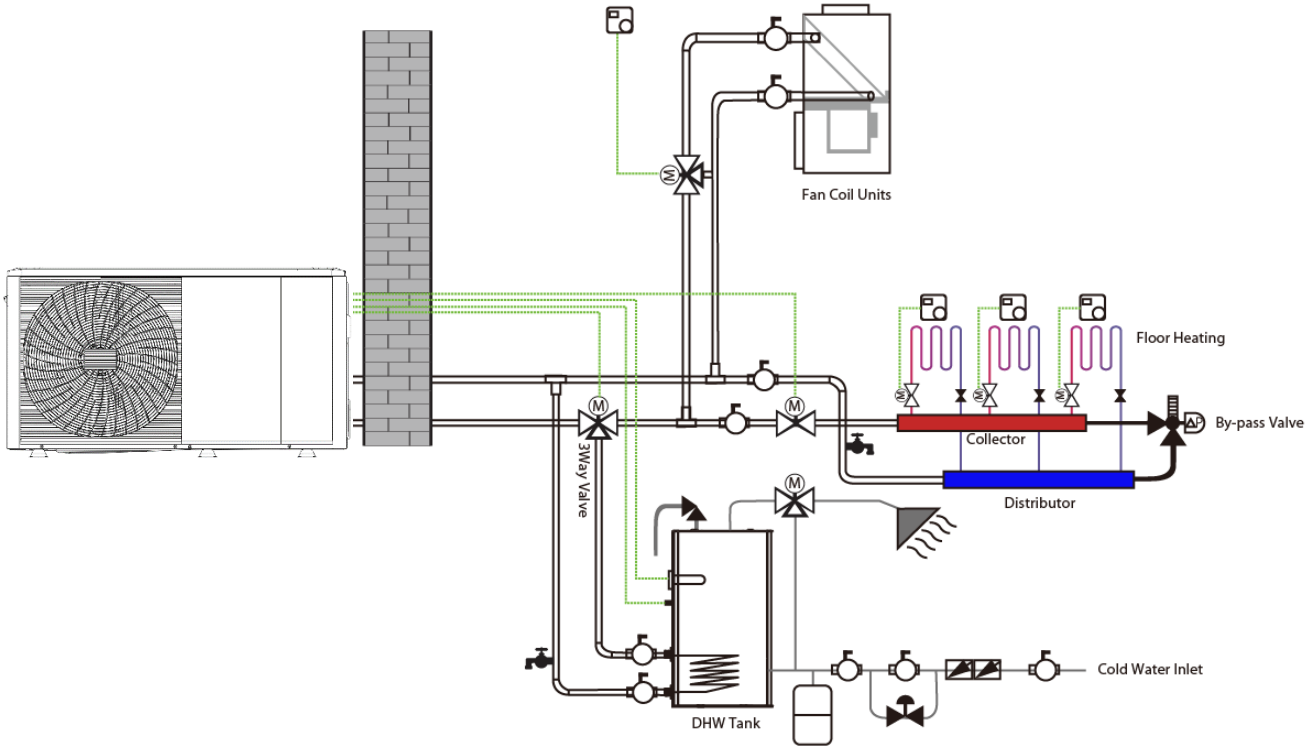
CONTENTS

Part 1

General Information

1 M thermal Mono System

1.1 System Schematic



M thermal is an integrated air to water heat pump system which is one-stop solution for space heating, space cooling and domestic hot water, The outdoor heat pump system extracts heat from the outdoor air and transfers this heat through refrigerant piping to the plate heat exchanger in the hydronic system. The heated water in the hydronic system circulates to low temperature heat emitters (floor heating loops or low temperature radiators) to provide space heating, and to the domestic hot water tank to provide domestic hot water. The 4-way valve in the outdoor unit can reverse the refrigerant cycle so that the hydronic system can provide chilled water for cooling using fan coil units.

The heating capacity of heat pumps decreases with ambient temperature dropping. M thermal Mono can be equipped with a backup electric heater to provide additional heating capacity for use during extremely cold weather when the heat pump capacity is insufficient. The backup electric heater also serves as a backup in case of heat pump malfunction and for anti-freeze protection of the outside water piping in winter.

1.2 System Configurations

M thermal Mono 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

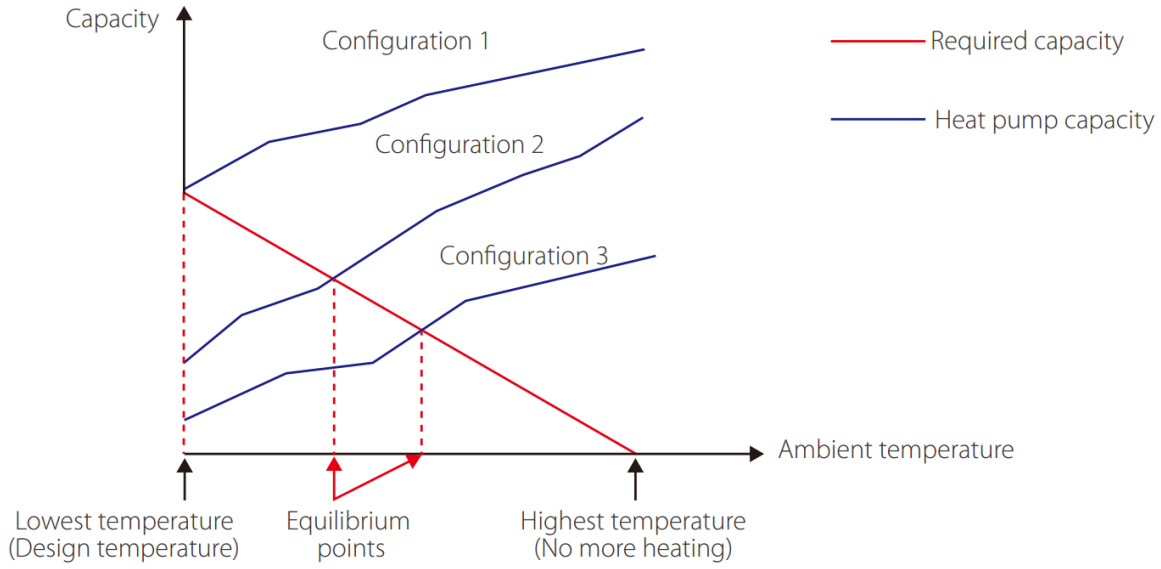
- The heat pump covers the required capacity and no extra heating capacity is necessary.
- Requires selection of larger capacity heat pump and implies higher initial investment.
- Ideal for new construction in projects where energy efficiency is paramount.

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.



2 Unit Capacities

Model[1]	MHC-V4W/D2N8-B2 MHC-V4W/D2N8-B2E30	MHC-V6W/D2N8-B2 MHC-V6W/D2N8-B2E30	MHC-V8W/D2N8-B2 MHC-V8W/D2N8-B2E30 MHC-V8W/D2N8-B2ER90	MHC-V10W/D2N8-B2 MHC-V10W/D2N8-B2E30 MHC-V10W/D2N8-B2ER90	MHC-V12W/D2(R)N8-B2 MHC-V12W/D2(R)N8-B2E30 MHC-V12W/D2(R)N8-B2ER90	MHC-V14W/D2(R)N8-B2 MHC-V14W/D2(R)N8-B2E30 MHC-V14W/D2(R)N8-B2ER90	MHC-V16W/D2(R)N8-B2 MHC-V16W/D2(R)N8-B2E30 MHC-V16W/D2(R)N8-B2ER90
Appearance							

3 Nomenclature

M	H	C	-	V	16	W	/	D2	R	N8	-	B2	E	R	90
1	2	3		4	5	6		7	8	9		10	11	12	13

Legend		
No.	**Code**	**Remarks**
1	M	Brand: Midea brand
2	H	Unit type: heat pump
3	C	Series: Mono
4	V	Inverter
5	16	Capacity: 4: 4kW; 6: 6kW; 8: 8 kW; 10: 10 kW; 12: 12 kW; 14: 14 kW; 16: 16 kW;
6	W	Unit category: Outdoor unit
7	D2	Compressor and fan motor types: All DC
8	R	Power Supply of heat pump R: 3-phase, 380-415V, 50Hz Omitted: 1-phase, 220-240V, 50Hz
9	N8	Refrigerant: R32
10	B2	Version code
11	E	Electric heating E: With electric heating function Omitted: Without electric heating function
12	R	Power Supply of electric heating R: 3-phase, 380-415V, 50Hz Omitted: 1-phase, 220-240V, 50Hz
13	90	Electric heating capacity 30: 3kW; 90: 9kW;

4 System Design and Unit Selection

4.1 Selection Procedure

Step 1: Total heat load calculation

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

Step 2: System configuration

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

Step 3: Selection of outdoor units

Determine required total heat load on outdoor units
Set capacity safety factor
Select power supply

Provisionally select M thermal Mono unit capacity based on nominal capacity

Correct capacity of the outdoor units for the following items:
Outdoor air temperature / Outdoor humidity / Water outlet temperature[1] / Altitude / Anti-freeze fluid

Is corrected M thermal Mono unit capacity ≥ Required total heat load on outdoor units[2]

Yes → M thermal Mono system selection is complete

No → Select a larger model or enable backup electric heater operation → Correct capacity of the outdoor units for the following items: Outdoor air temperature / Outdoor humidity / Water outlet temperature[1] / Altitude / Anti-freeze fluid

Notes:

1. If the required water temperatures of the heat emitters are not all the same, the M thermal Mono's outlet water temperature setting should be set at the highest of the heat emitter required water temperatures. If the water outlet design temperature falls between two temperatures listed in the outdoor unit's capacity table, calculate the corrected capacity by interpolation.
2. If the outdoor unit selection is to be based on total heating load and total cooling load, select Mono units which satisfy not only the total heating load requirements but also the total cooling load requirements.

4.2 M thermal Leaving Water Temperature (LWT) Selection

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

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

4.3 Optimizing System Design

To get the most comfort with the lowest energy consumption with M thermal, it is important to take account of the following considerations:

- Choose heat emitters that allow the heat pump system to operate at as low a hot water temperature as possible whilst still providing sufficient heating.
- Make sure the correct weather dependency curve is selected to match the installation environment (building structure, climate) as well as ender user's demands.
- Connecting room thermostats (field supplied) to the hydronic system helps prevent excessive space heating by stopping the outdoor unit and circulator pump when the room temperature is above the thermostat set point.

4.4 Tank back up heater notice

Heat pump will stop when T5 (tank temperature) has reached the minimum of both T5S (tank setting temperature) and T5stop (highest tank temperature which can be reached under certain ambient temperature with heat pump only) and lasted for 5s. The value of T5stop is shown as below.

If T5S is higher than T5stop, then T5S can be not reached with heat pump only. In this case, tank back up heater is needed in order to reach T5S.

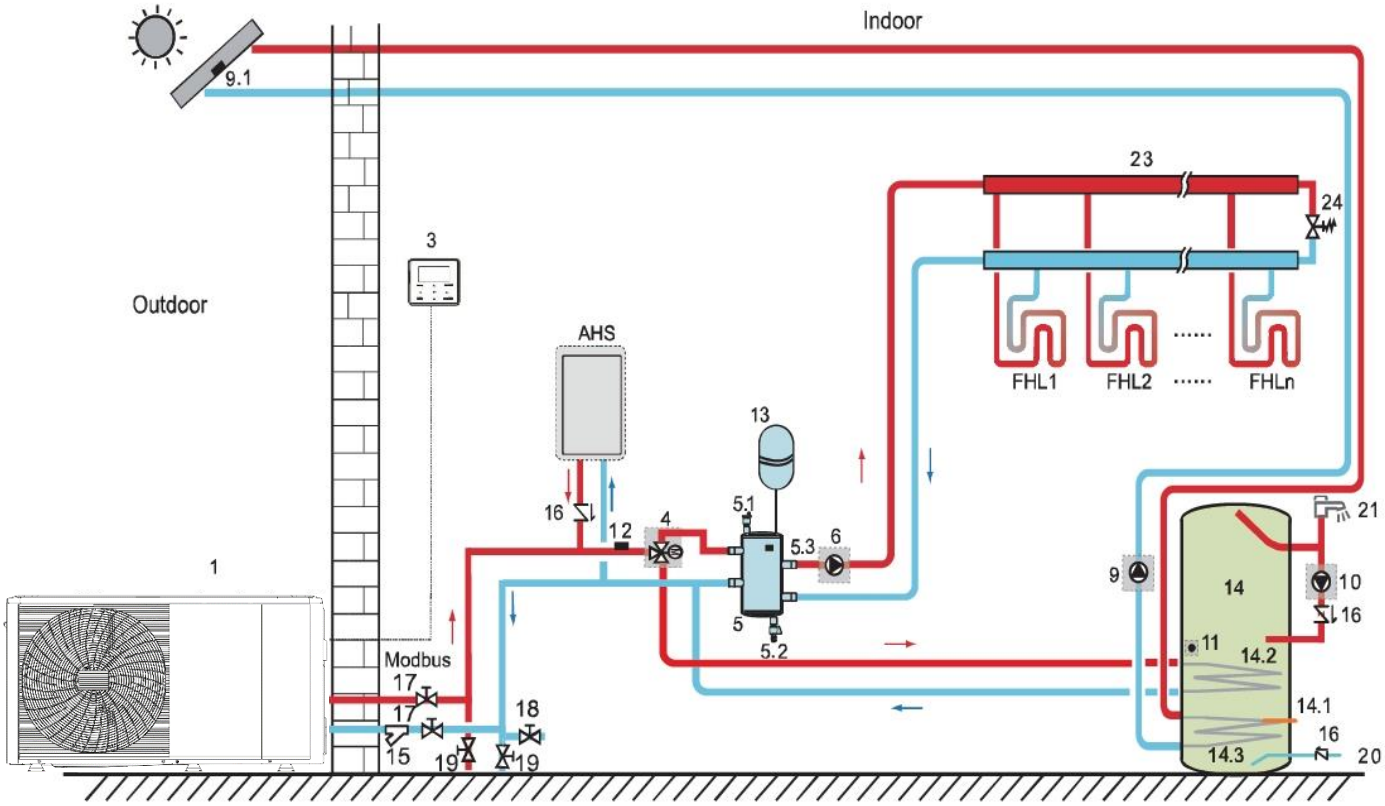
T5stop value:

Ambient temperature(℃)	< -20	-20~15	-15~-10	-10~-5	-5~0	0~5	5~10
T5stop(℃)	35	40	45	48	52	55	56

Ambient temperature(℃)	10~15	15~20	20~25	25~30	35~40	40~65	40~65
T5stop(℃)	57	56	55	52	50	48	45

5 Typical Applications

5.1 Application 1



Legend			
1	Outdoor unit	14	Domestic hot water tank (Field supply)
3	User interface	14.1	TBH: Domestic hot water tank booster heater (Field supply)
4	SV1:3-way valve (Field supply)	14.2	Coil 1, heat exchanger for heat pump
5	Balance tank (Field supply)	14.3	Coil 2, heat exchanger for Solar energy
5.1	Automatic bleed valve	15	Filter (Accessory)
5.2	Drainage valve	16	Check valve (Field supply)
5.3	Tbt1: Balance tank upper temperature sensor (Optional)	17	Shut-off valve (Field supply)
6	P_o: Zone A circulation pump (Field supply)	18	Filling valve (Field supply)
9	P_s: Solar pump (Field supply)	19	Drainage valve (Field supply)
9.1	Tsolar: Solar temperature sensor (Optional)	20	Tap water inlet pipe (Field supply)
9.2	Solar panel (Field supply)	21	Hot water tap (Field supply)
10	P_d: DHW pipe pump (Field supply)	23	Collector/distributor (Field supply)
11	T5: Domestic water tank temperature sensor (Accessory)	24	Bypass valve (Field supply)
12	T1: Water flow temperature sensor (Optional)	FHL1…n	Floor heating loop (Field supply)
13	Expansion vessel (Field supply)	AHS	Auxiliary heat source (Field supply)

Notes:

1. The example is just for application illustration; please confirm the exact installation method according to the installation manual.

5.1.1 Space heating

The ON/OFF signal and operation mode and temperature setting are set on the user interface. P_o (6) keeps running as long as the unit is ON for space heating, SV1(4) keeps OFF.

5.1.2 Domestic water heating

The ON/OFF signal and target tank water temperature (T5S) are set on the user interface. P_o (6) stops running as long as the unit is ON for domestic water heating, SV1(4) keeps ON.

5.1.3 AHS (auxiliary heat source) control

The AHS function is set on the indoor unit

1) When the AHS is set to be valid only for heating mode, AHS can be turned on in the following ways:

a. Turn on the AHS via BACKHEATER function on the user interface;

b. AHS will be turned on automatically if initial water temperature is too low or target water temperature is too high at low ambient temperature.

P_o (6) keeps running as long as the AHS is ON, SV1(4) keeps OFF.

2) When the AHS is set to be valid for heating mode and DHW mode. In heating mode, AHS control is same as part 1); In DHW mode, AHS will be turned on automatically when the initial domestic water temperature T5 is too low or the target domestic water temperature is too high at low ambient temperature. P_o (6) stops running, SV1(4) keeps ON.

3) When the AHS is set to be valid, M1M2 can be set to be valid on the user interface. In heating mode, AHS will be turned on if MIM2 dry contact closes. This function is invalid in DHW mode.

5.1.4 TBH (tank booster heater) control

The TBH function is set on the user interface.

1） When the TBH is set to be valid, TBH can be turned on via TANKHEATER function on the user interface; In DHW mode, TBH will be turned on automatically when the initial domestic water temperature T5 is too low or the target domestic water temperature is too high at low ambient temperature.

2） When the TBH is set to be valid, M1M2 can be set to be valid on the user interface. TBH will be turned on if MIM2 dry contact closes.

5.1.5 Solar energy control

Hydraulic module recognizes solar energy signal by judging Tsolar or receiving SL1SL2 signal from user interface. The recognition method can be set via SOLAR INPUT on the user interface. Please refer to 8.8.5 "For solar energy input signal" for wiring.

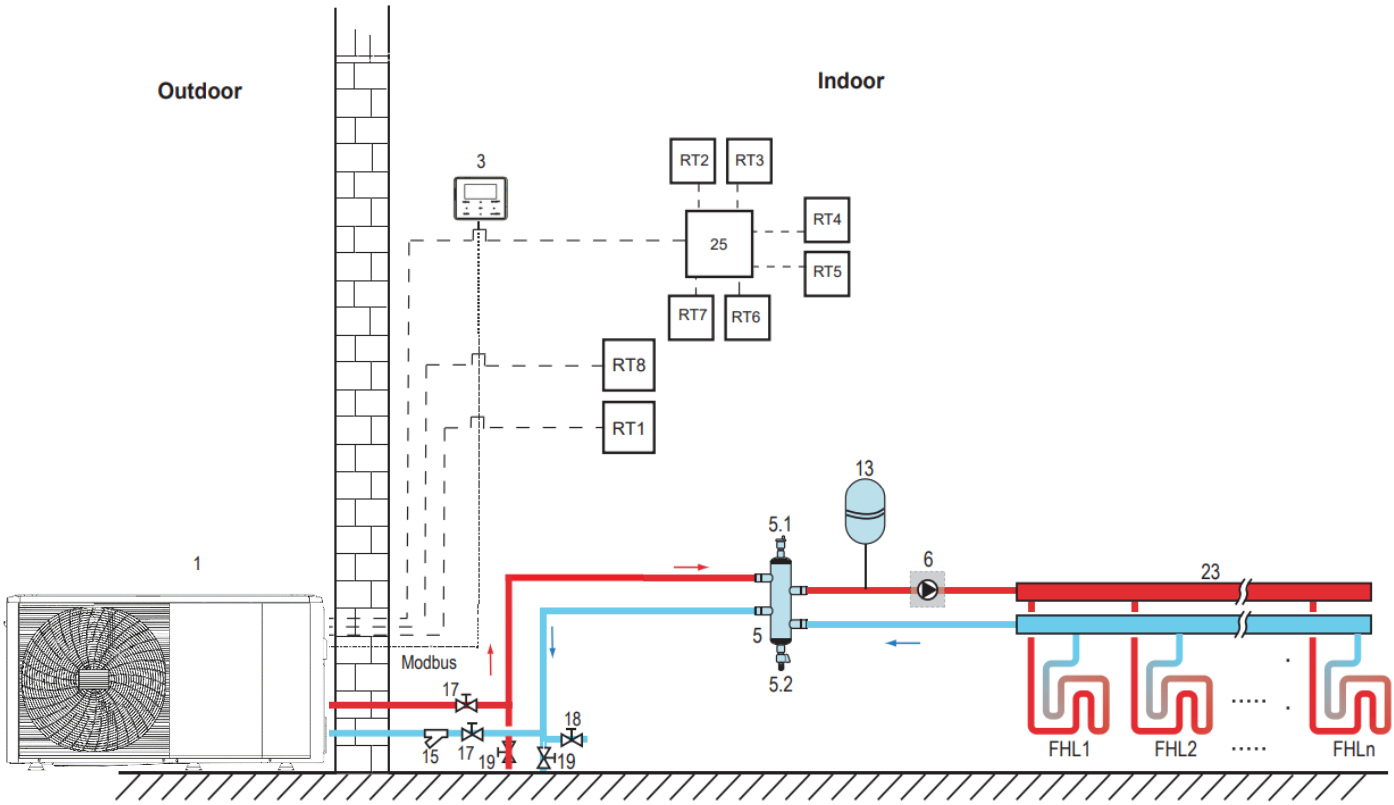
1） When Tsolar is set to be valid, Solar energy turns ON when Tsolar is high enough, P_s(9) starts running; Solar energy turns OFF when Tsolar is low, P_s (9) stops running.

2） When SL1SL2 control is set to be valid, Solar energy turns ON after receiving Solar kit signal from user interface, P_s (9) starts running; Without solar kit signal. Solar energy turns OFF, P_s (9) stops running. 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.

5.2 Application 2

ROOM THERMOSTAT Control for Space heating or cooling need to be set on the user interface. It can be set in three ways: MODE SET/ONE ZONE/DOUBLE ZONE. The indoor unit can be connected to a high voltage room thermostat and a low voltage room thermostat. A hydraulic adapter box can also be connected. Another six thermostats can be connected to the hydraulic adapter box. Please refer to “ROOM THERMOSTAT in installation manual” for wiring.

5.2.1 One zone control



Legend			
1	Outdoor unit	17	Shut-off valve (Field supply)
3	User interface	18	Filling valve (Field supply)
5	Balance tank (Field supply)	19	Drainage valve (Field supply)
5.1	Automatic bleed valve	23	Collector/distributor (Field supply)
5.2	Drainage valve	25	Hydraulic adapter box (Optional)
6	P_o: Zone A circulation pump (Field supply)	RT 1…7	Low voltage room thermostat (Field supply)
13	Expansion vessel (Field supply)	RT8	High voltage room thermostat (Field supply)
15	Filter (Accessory)	FHL1…n	Floor heating loop (Field supply)

Notes:

1. The example is just for application illustration; please confirm the exact installation method according to the installation manual.

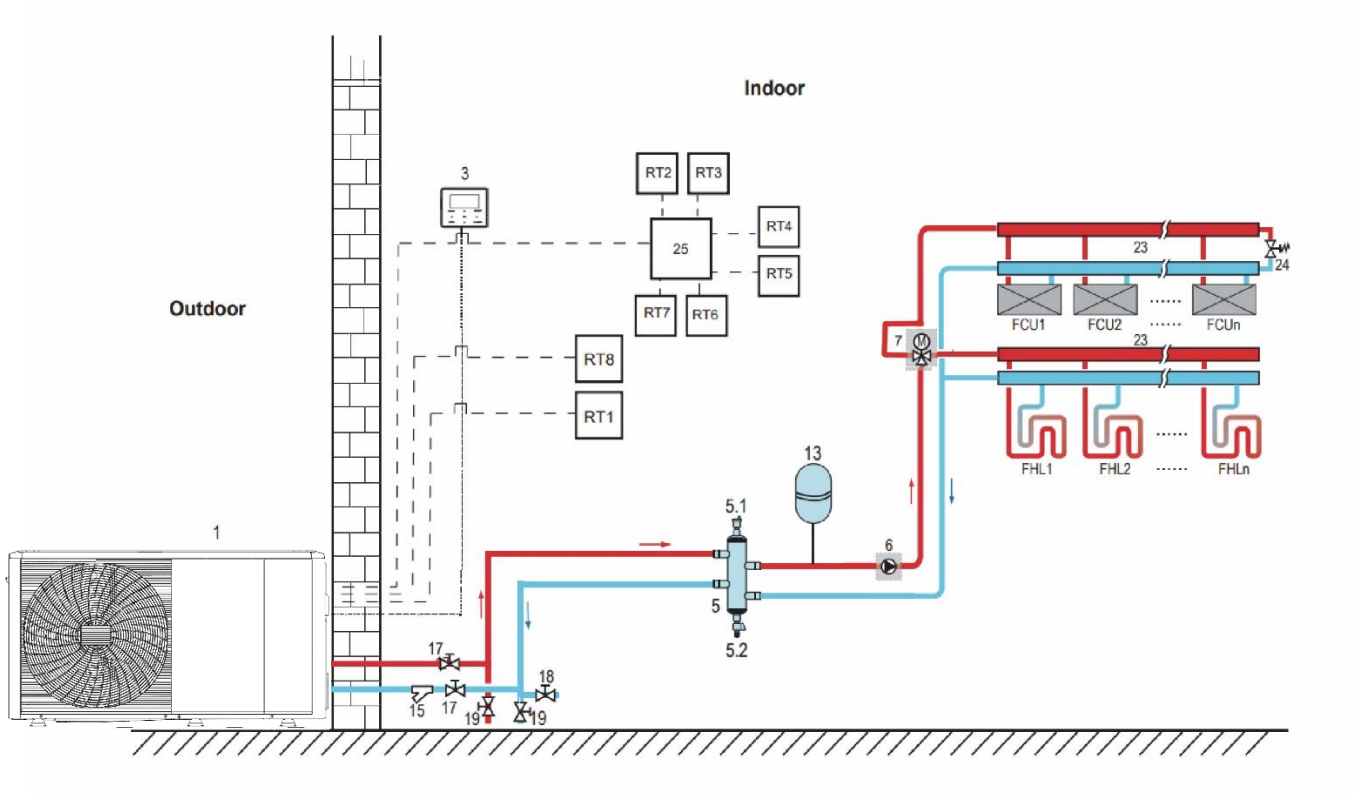
Space heating

One zone control: the unit ON/OFF is controlled by the room thermostat, cooling or heating mode and outlet water temperature is set on the user interface. System is ON when any “HL” of all the thermostats closes. When all “HL” open, system turns OFF.

The circulation pumps operation

When the system is ON, which means any “HL” of all the thermostats closes, P_o(6) starts running; When the system is OFF, which means all “HL” close, P_o (6) stops running.

5.2.2 Mode set control



Legend			
1	Outdoor unit	17	Shut-off valve (Field supply)
3	User interface	18	Filling valve (Field supply)
5	Balance tank (Field supply)	19	Drainage valve (Field supply)
5.1	Automatic bleed valve	23	Collector/distributor (Field supply)
5.2	Drainage valve	24	Bypass valve (Field supply)
6	P_o: Zone A circulation pump (Field supply)	25	Hydraulic adapter box (Optional)
7	SV2: 3-way valve (Field supply)	RT 1…7	Low voltage room thermostat (Field supply)
13	Expansion vessel (Field supply)	RT8	High voltage room thermostat (Field supply)
15	Filter (Accessory)	FHL1…n	Floor heating loop (Field supply)
		FCU1…n	Fan coil unit (Field supply)

Notes:

1. The example is just for application illustration; please confirm the exact installation method according to the installation manual.

Space heating

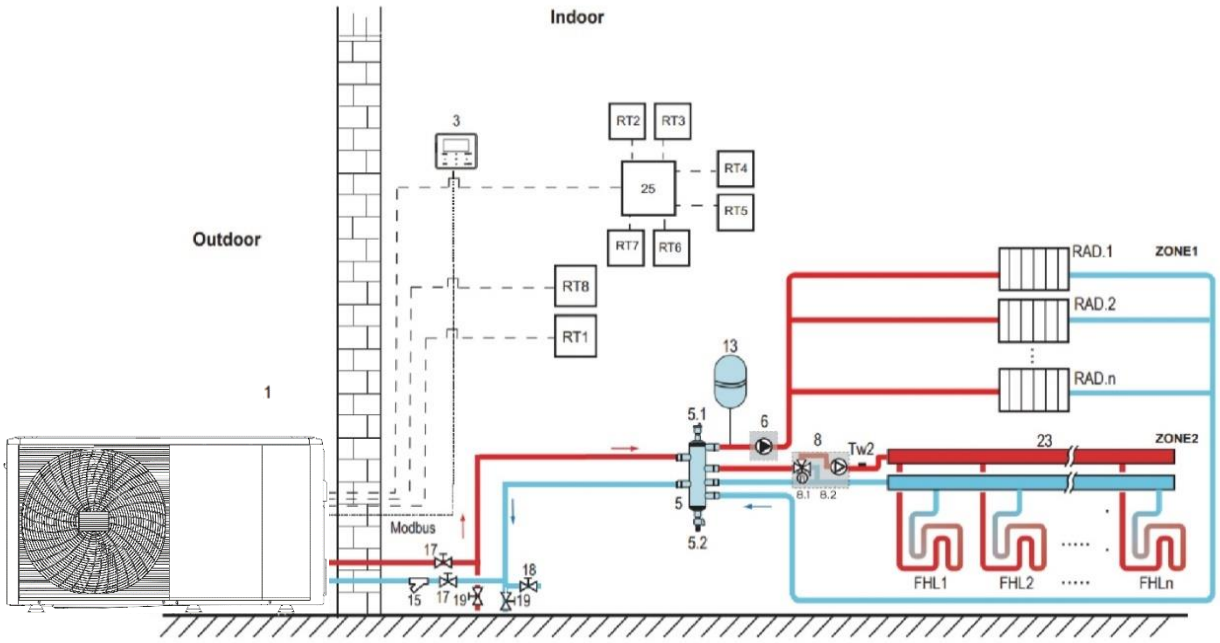
Cooling or heating mode is set via the room thermostat, water temperature is set on the user interface. 1) When any “CL” of all the thermostats close, system will be set at cooling mode. 2) When any “HL” of all the thermostats close and all “CL” open, system will be set at heating mode.

The circulation pumps operation

1) When the system is in cooling mode, which means any “CL” of all the thermostats closes, SV2(7) keeps OFF, P_o(6) starts running;

2) When the system is in heating mode, which means one or more “HL” close and all “CL” open, SV2(7) keeps ON, P_o(6) starts running.

5.2.3 Double zone control



Legend			
1	Outdoor unit	17	Shut-off valve (Field supply)
3	User interface	17	Shut-off valve (Field supply)
5	Balance tank (Field supply)	18	Filling valve (Field supply)
5.1	Automatic bleed valve	19	Drainage valve (Field supply)
5.2	Drainage valve	23	Collector/distributor (Field supply)
6	P_o: Zone A circulation pump (Field supply)	25	Hydraulic adapter box (Optional)
8	Mixing station (Field supply)	RT 1…7	Low voltage room thermostat (Field supply)
8.1	SV3: Mixing valve (Field supply)	RT8	High voltage room thermostat (Field supply)
8.2	P_c: zone 2 circulation	FHL1…n	Floor heating loop (Field supply)
13	Expansion vessel (Field supply)	Tw2	Zone 2 water flow temperature sensor (Optional)
15	Filter (Accessory)	RAD.1…n	Radiator (Field supply)

Notes:

1. The example is just for application illustration; please confirm the exact installation method according to the installation manual.

Space heating

Zone1 can operate in cooling mode or heating mode, while zone2 can only operate in heating mode; While installation, for all thermostats in zone1, only “H、L” terminals need to be connected. For all thermostats in zone2, only “C、L” terminals need to be connected.

1) The ON/OFF of zone1 is controlled by the room thermostats in zone1. When any “HL” of all thermostats in zone1 closes, zone1 turns ON. When all “HL” turn OFF, zone1 turns OFF; Target temperature and operation mode are set on the user interface;

2) In heating mode, the ON/OFF of zone2 is controlled by the room thermostats in zone2. When any ”CL” of all thermostats in zone2 closes, zone2 turns ON. When all “CL” open, zone2 turns OFF. Target temperature is set on the user interface; Zone 2 can only operate in heating mode. When cooling mode is set on the user interface, zone2 keeps in OFF status.

The circulation pump operation

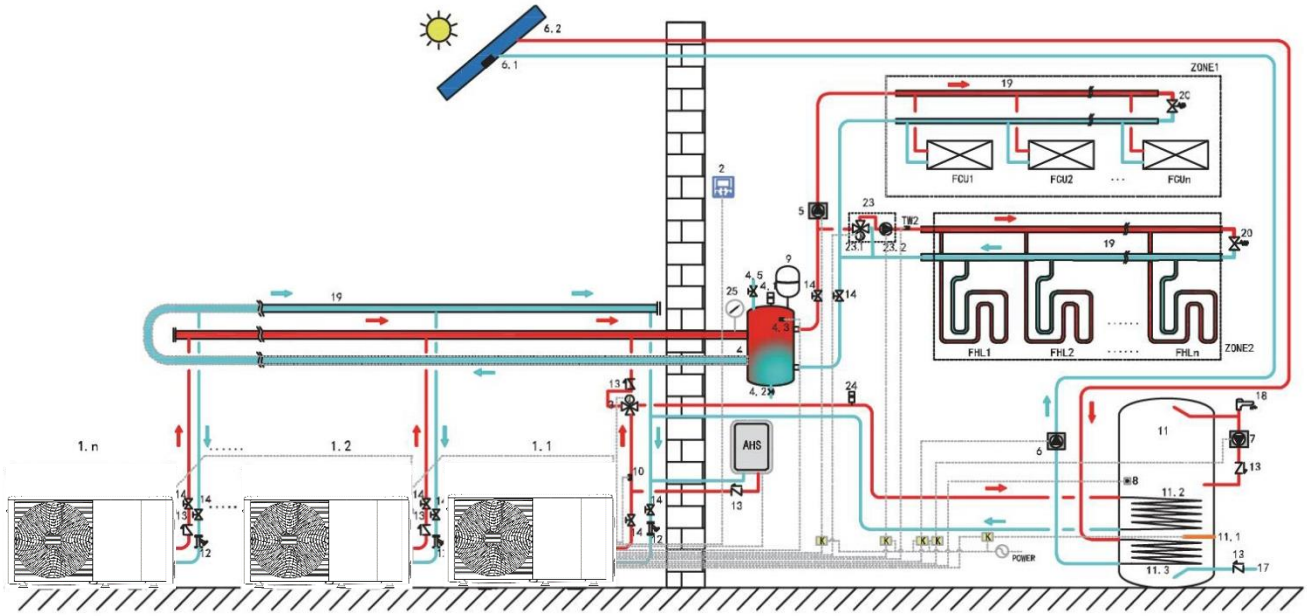
When zone 1 is ON, P_o(6) starts running; When zone 1 is OFF, P_o(6) stops running;

When zone 2 is ON, SV3(8.1) is ON, P_c(8.2) starts running; When zone 2 is OFF, SV3(8.1) is OFF, P_c(8.2) stops running .

The floor heating loops require a lower water temperature in heating mode compared to radiators. To achieve these two set points, a mixing station is used to adapt the water temperature according to requirements of the floor heating loops. The radiators are directly connected to the unit water circuit and the floor heating loops are after the mixing station. The mixing station is controlled by the unit.

5.3 Application 3

5.3.1 Group control



Legend			
1.1	Master unit	11.3	Coil 2: heat exchanger for heat pump
1.2…n	Slave unit	12	Filter(Accessory)
2	User interface	13	Check valve (Field supply)
3	SV1: 3-way valve(Field supply)	14	Shut-off valve(Field supply)
4	Balance tank(Field supply)	17	Tap water inlet pipe(Field supply)
4.1	Automatic bleed valve	18	Hot water tap(Field supply)
4.2	Drainage valve	19	Collector/Distributor(Field supply)
4.3	Tbt1: Balance tank upper temperature sensor(optional)	20	Bypass valve(Field supply)
4.5	Filling valve	23	Mixing station(Field supply)
5	P_O: Outside circulation pump (Field supply)	23.1	SV3: Mixing valve(Field supply)
6	P_S: Solar pump(Field supply)	23.2	P_C: Zone B circulation pump(Field supply)
6.1	Tsolar: Solar temperature sensor(Optional)	24	Automatic bleed valve(Field supply)
6.2	Solar panel (Field supply)	25	Water manometer(Field supply)
7	P_D: DHW pipe pump(Field supply)	Tw2	Zone B water flow temperature sensor(Optional)
8	T5: Domestic water tank temperature sensor(Accessory)	RAD 1…n	Radiator(Field supply)
9	Expansion vessel(Field supply)	FHL 1…n	Floor heating loop(Field supply)
10	T1: Total water flow temperature sensor(Optional)	K	Contactor(Field supply)
11	Domestic water tank(Field supply)	ZONE 1	The space operate cooling or heating mode
11.1	TBH: Domestic water tank heater	ZONE 2	The space operate heating mode
11.2	Coil 1: heat exchanger for heat pump	AHS	Auxiliary heat source(Field supply)

Notes:

1. The example is just for application illustration; please confirm the exact installation method according to the installation manual.

Modularity is perfect when an extension of capacity becomes required as the building cooling/heating demand evolves. 6 units can be controlled in group. The group control system can control and view the operation of the entire system only by connecting the master to the wire controller. If the DHW function is required, the water tank can only be connected to the master unit water circuit through a three-way valve, and controlled by the master unit. If AHS is needed, it can only be connected to the master waterway and controlled by the master unit. The Tbt1 temperature sensor must be installed in the parallel system (otherwise unit cannot be started). If the balance tank is too large, Tbt2 needs to be added in order to improve the control accuracy. Tbt2 is set in the lower part of the balance tank. The water inlet and outlet pipe joints of each unit of the parallel system should be connected with soft connections and one-way valves must be installed at the

water outlet pipe.

Space heating

All salve units can operate in space heating mode. The operation mode and setting temperature are set on the user interface(2). Due to changes of the outdoor temperature and the required load indoors, multiple outdoor units may operate at different times.

In cooling mode, SV3(23.1) and P_C(23.2) keep OFF, P_O(5) keeps ON;

In heating mode, when both ZONE 1 and ZONE 2 work, P_C(23.2) and P_O(5) keeps ON, SV3(23.1) switches between ON and OFF according to the set Tw2.

In heating mode, when only ZONE 1 works, P_O(5) keep ON, SV3(23.1) and P_C(23.2) keep OFF.

In heating mode, when only ZONE 2 works, P_O(5) keep OFF, P_C(23.2) keep ON, SV3(23.1) switches between ON and OFF according to the set Tw2.

Domestic water heating

Only master unit(1.1) can operate in DHW mode. T5S is set on the user interface(2). In DHW mode, SV1(3) keeps ON. When master unit operated in DHW mode, slave units can operate in space cooling/heating mode.

AHS control

AHS should be set via the dip switches on main board; AHS is only controlled by master unit. When master unit operates in DHW mode, AHS can only be used for producing domestic hot water; when master unit operates in heating mode, AHS can only be used for heating mode.

1) When AHS is set valid only for heating mode, it will be turned on in following conditions:

a. Turn on BACKUPHEATER function on user interface;

b. Master unit operates in heating mode. When inlet water temperature is too low or ambient temperature is too low, the target leaving water temperature is too high, AHS will be turned on automatically.

2) When the AHS is set valid for heating mode and DHW mode. It will be turned on in following conditions:

When master unit operates in heating mode, conditions of turning on AHS is same as 1);

When master unit operates in heating mode, if T5 or ambient temperature is too low, target T5 temperature is too high, AHS will be turned on automatically.

3)When AHS is valid, and the operation of AHS is controlled by M1M2.

When M1M2 closes, AHS is turned on. When master unit operates in DHW mode, AHS can not be turned on by closing M1M2.

TBH control

TBH should be set via the dip switches on main board. TBH is only controlled by master unit.

1) When the TBH is set to be valid, TBH can be turned on via TANKHEATER function on the user interface; In DHW mode, TBH will be turned on automatically when the initial domestic water temperature T5 is too low or the target domestic water temperature is too high at low ambient temperature.

2) When the TBH is set to be valid, M1M2 can be set to be valid on the user interface. TBH will be turned on if MIM2 dry contact closes.

Solar energy control

Solar energy is only controlled by master.

Hydraulic module recognizes solar energy signal by judging Tsolar or receiving SL1SL2 signal from user interface. The recognition method can be set via SOLAR INPUT on the user interface.

1)When Tsolar is set to be valid, Solar energy turns ON when Tsolar is high enough, P_s starts running; Solar energy turns OFF when Tsolar is low, P_s stops running.

2)When SL1SL2 control is set to be valid, Solar energy turns ON after receiving Solar kit signal from user interface, P_s starts running; Without solar kit signal. Solar energy turns OFF, P_s stops running.

Part 2

Engineering Data

1 Specifications

Outdoor unit model name			MHC-V4W/D2N8-B2	MHC-V6W/D2N8-B2	MHC-V8W/D2N8-B2	MHC-V10W/D2N8-B2
Power supply	V/Ph/Hz		220-240/1/50			
Heating A7W35	Capacity	kW	4.20	6.35	8.40	10.0
	Rated input	kW	0.82	1.28	1.63	2.02
	COP		5.10	4.95	5.15	4.95
Heating A7W45	Capacity	kW	4.30	6.30	8.10	10.0
	Rated input	kW	1.13	1.70	2.10	2.67
	COP		3.80	3.70	3.85	3.75
Heating A7W55	Capacity	kW	4.40	6.00	7.50	9.50
	Rated input	kW	1.49	2.03	2.36	3.06
	COP		2.95	2.95	3.18	3.10
Heating A-7W35	Capacity	kW	4.70	6.00	7.00	8.00
	Rated input	kW	1.52	2.00	2.19	2.62
	COP		3.10	3.00	3.20	3.05
Heating A-7W55	Capacity	kW	4.00	5.15	6.15	6.85
	Rated input	kW	2.05	2.58	3.00	3.43
	COP		1.95	2.00	2.05	2.00
Cooling A35W18	Capacity	kW	4.50	6.50	8.30	9.90
	Rated input	kW	0.82	1.35	1.64	2.18
	EER		5.50	4.80	5.05	4.55
Cooling A35W7	Capacity	kW	4.70	7.00	7.45	8.20
	Rated input	kW	1.36	2.33	2.22	2.52
	EER		3.45	3.00	3.35	3.25
Seasonal space heating energy efficiency class	Water outlet at 35°C		A+++			
	Water outlet at 55°C		A++			
SCOP	Warmer climate	35°C	6.46	6.57	6.99	7.09
		55°C	4.15	4.21	4.51	4.62
	Average climate	35°C	4.85	4.95	5.22	5.20
		55°C	3.31	3.52	3.37	3.47
	Colder climate	35°C	4.06	4.21	4.33	4.32
		55°C	2.63	2.85	2.88	2.99
SEER	Water outlet	7°C	4.98	5.31	5.82	5.95
		18°C	7.76	8.22	8.94	8.73
Sound power Level[2]		dB	55	58	59	60
Rated water flow		m^3/h	0.72	1.09	1.44	1.72
Water flow range		m^3/h	0.4~0.9	0.4~1.25	0.4~1.65	0.4~2.1
Internal water volume		L	2.16~6.96	2.16~6.96	2.44-7.24	2.44-7.24
Compressor	Type		Twin rotary			
Outdoor fan	Motor type / Number of fans		DC fan / 1		DC fan / 1	
Air side heat exchanger			Finned tube			
Refrigerant			R32 1.4kg			
Unit dimension (W×H×D)		mm	1299×717×426		1385×865×523	
Packing dimension (W×H×D)		mm	1375×885×475		1465×1035×560	
Net/Gross weight		kg	85/103		101/126	

Outdoor air temperature range	Cooling	ºC	-5～43			
	Heating	ºC	-25～35			
	DHW	ºC	-25～43			
Water side heat exchanger			Plate type			
Water side connection			R1 "	R1 "	R1 1/4”	R1 1/4”
Water setting temperature range	Cooling	ºC	5～25			
	Heating	ºC	25～65			
	DHW[3]	ºC	20～60			

Notes:

1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1
3. Maximum domestic hot water temperature 60℃ is only available with TBH support.

Outdoor unit model name			MHC-V12W/D2N8-B2	MHC-V14W/D2N8-B2	MHC-V16W/D2N8-B2
Power supply		V/Ph/Hz	220-240/1/50		
Heating A7W35	Capacity	kW	12.1	14.5	15.9
	Rated input	kW	2.44	3.15	3.53
	COP		4.95	4.60	4.50
Heating A7W45	Capacity	kW	12.3	14.1	16.0
	Rated input	kW	3.32	3.92	4.57
	COP		3.70	3.60	3.50
Heating A7W55	Capacity	kW	11.9	13.8	16.0
	Rated input	kW	3.90	4.68	5.61
	COP		3.05	2.95	2.85
Heating A-7W35	Capacity	kW	10.00	12.00	13.10
	Rated input	kW	3.33	4.21	4.85
	COP		3.00	2.85	2.70
Heating A-7W55	Capacity	kW	9.80	11.00	12.50
	Rated input	kW	4.78	5.37	6.25
	COP		2.05	2.05	2.00
Cooling A35W18	Capacity	kW	12.00	13.50	14.2
	Rated input	kW	3.04	3.74	3.94
	EER		3.95	3.61	3.61
Cooling A35W7	Capacity	kW	11.5	12.4	14.0
	Rated input	kW	4.18	4.96	5.60
	EER		2.75	2.50	2.50
Seasonal space heating energy efficiency class	Water outlet at 35°C		A+++		
	Water outlet at 55°C		A++		
SCOP	Warmer climate	35°C	6.48	6.58	6.29
		55°C	4.43	4.49	4.48
	Average climate	35°C	4.81	4.72	4.62
		55°C	3.45	3.47	3.41
	Colder climate	35°C	4.08	4.07	4.02
		55°C	3.02	3.05	3.12
SEER	Water outlet	7°C	4.93	4.87	4.69
		18°C	7.13	6.94	6.75
Sound power Level[2]		dB	65	65	68
Rated water flow		m^3/h	2.08	2.49	2.73
Water flow range		m^3/h	0.7~2.5	0.7~2.75	0.7~3.0
Internal water volume		L	2.78-7.58	2.78-7.58	2.78-7.58
Compressor	Type		Twin rotary		
Outdoor fan	Motor type		DC fan		
	Number of fans		1		
Air side heat exchanger			Finned tube		
Refrigerant			R32 1.75kg		
Unit dimension (W×H×D)		mm	1385×865×523		
Packing dimension (W×H×D)		mm	1465×1035×560		
Net/Gross weight		kg	124/145		
Outdoor air temperature range	Cooling	°C	-5～43		

	Heating	°C	-25～35
	DHW	°C	-25～43
Water side heat exchanger			Plate type
Water side connection			R1 1/4”
Water setting temperature range	Cooling	°C	5～25
	Heating	°C	25～65
	DHW[3]	°C	20～60

Notes:

1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1
3. Maximum domestic hot water temperature 60℃ is only available with TBH support.

Outdoor unit model name			MHC-V12W/D2RN8-B2	MHC-V14W/D2RN8-B2	MHC-V16W/D2RN8-B2
Power supply		V/Ph/Hz	380-415/3/50		
Heating A7W35	Capacity	kW	12.1	14.5	15.9
	Rated input	kW	2.44	3.15	3.53
	COP		4.95	4.60	4.50
Heating A7W45	Capacity	kW	12.3	14.1	16.0
	Rated input	kW	3.32	3.92	4.57
	COP		3.70	3.60	3.50
Heating A7W55	Capacity	kW	11.9	13.8	16.0
	Rated input	kW	3.90	4.68	5.61
	COP		3.05	2.95	2.85
Heating A-7W35	Capacity	kW	10.00	12.00	13.10
	Rated input	kW	3.33	4.21	4.85
	COP		3.00	2.85	2.70
Heating A-7W55	Capacity	kW	9.80	11.00	12.50
	Rated input	kW	4.78	5.37	6.25
	COP		2.05	2.05	2.00
Cooling A35W18	Capacity	kW	12.00	13.50	14.20
	Rated input	kW	3.04	3.74	3.94
	EER		3.95	3.61	3.61
Cooling A35W7	Capacity	kW	11.5	12.4	14.0
	Rated input	kW	4.18	4.96	5.60
	EER		2.75	2.50	2.50
Seasonal space heating energy efficiency class	Water outlet at 35°C		A+++		
	Water outlet at 55°C		A++		
SCOP	Warmer climate	35°C	6.47	6.57	6.28
		55°C	4.42	4.49	4.47
	Average climate	35°C	4.81	4.72	4.62
		55°C	3.45	3.47	3.41
	Colder climate	35°C	4.08	4.07	4.02
		55°C	3.02	3.05	3.12
SEER	Water outlet	7°C	4.90	4.85	4.67
		18°C	7.07	6.89	6.70
Sound power Level[2]		dB	65	65	68
Rated water flow		m^3/h	2.08	2.49	2.73
Water flow range		m^3/h	0.7~2.5	0.7~2.75	0.7~3.0
Internal water volume		L	2.78-7.58	2.78-7.58	2.78-7.58
Compressor	Type		Twin rotary		
Outdoor fan	Motor type		DC fan		
	Number of fans		1		
Air side heat exchanger			Finned tube		
Refrigerant			R32 1.75kg		
Unit dimension (W×H×D)		mm	1385×865×523		
Packing dimension (W×H×D)		mm	1465×1035×560		
Net/Gross weight		kg	141/162		
Outdoor air temperature range	Cooling	°C	-5～43		

	Heating	°C	-25～35
	DHW	°C	-25～43
Water side heat exchanger			Plate type
Water side connection			R1 1/4”
Water setting temperature range	Cooling	°C	5～25
	Heating	°C	25～65
	DHW[3]	°C	20～60

Notes:

1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1
3. Maximum domestic hot water temperature 60℃ is only available with TBH support.

Outdoor unit model name			MHC-V4W/D2N8-B2E30	MHC-V6W/D2N8-B2E30	MHC-V8W/D2N8-B2E30	MHC-V8W/D2N8-B2ER90	MHC-V10W/D2N8-B2E30	MHC-V10W/D2N8-B2ER90
Power supply	V/Ph/Hz		220-240/1/50	220-240/1/50	220-240/1/50	380-415/3/50	220-240/1/50	380-415/3/50
Heating A7W35	Capacity	kW	4.20	6.35	8.40	8.40	10.0	10.0
	Rated input	kW	0.82	1.28	1.63	1.63	2.02	2.02
	COP		5.10	4.95	5.15	5.15	4.95	4.95
Heating A7W45	Capacity	kW	4.30	6.30	8.10	8.10	10.0	10.0
	Rated input	kW	1.13	1.70	2.10	2.10	2.67	2.67
	COP		3.80	3.70	3.85	3.85	3.75	3.75
Heating A7W55	Capacity	kW	4.40	6.00	7.50	7.50	9.50	9.50
	Rated input	kW	1.49	2.03	2.36	2.36	3.06	3.06
	COP		2.95	2.95	3.18	3.18	3.10	3.10
Heating A-7W35	Capacity	kW	4.70	6.00	7.00	7.00	8.00	8.00
	Rated input	kW	1.52	2.00	2.19	2.19	2.62	2.62
	COP		3.10	3.00	3.20	3.20	3.05	3.05
Heating A-7W55	Capacity	kW	4.00	5.15	6.15	6.15	6.85	6.85
	Rated input	kW	2.05	2.58	3.00	3.00	3.43	3.43
	COP		1.95	2.00	2.05	2.05	2.00	2.00
Cooling A35W18	Capacity	kW	4.50	6.50	8.30	8.30	9.90	9.90
	Rated input	kW	0.82	1.35	1.64	1.64	2.18	2.18
	EER		5.50	4.80	5.05	5.05	4.55	4.55
Cooling A35W7	Capacity	kW	4.70	7.00	7.45	7.45	8.20	8.20
	Rated input	kW	1.36	2.33	2.22	2.22	2.52	2.52
	EER		3.45	3.00	3.35	3.35	3.25	3.25
Seasonal space heating energy efficiency class	Water outlet at 35°C		A+++					
	Water outlet at 55°C		A++					
SCOP	Warmer climate	35°C	6.46	6.57	6.99	6.99	7.09	7.09
		55°C	4.15	4.21	4.51	4.51	4.62	4.62
	Average climate	35°C	4.85	4.95	5.22	5.22	5.20	5.20
		55°C	3.31	3.52	3.37	3.37	3.47	3.47
	Colder climate	35°C	4.06	4.21	4.33	4.33	4.32	4.32
		55°C	2.63	2.85	2.88	2.88	2.99	2.99
SEER	Water outlet	7°C	4.98	5.31	5.82	5.82	5.95	5.95
		18°C	7.76	8.22	8.94	8.94	8.73	8.73
Sound power Level[2]		dB	55	58	59	59	59	59
Rated water flow		m^3/h	0.72	1.09	1.44	1.44	1.44	1.44
Water flow range		m^3/h	0.4~0.9	0.4~1.25	0.4~1.65	0.4~1.65	0.4~1.65	0.4~1.65
Internal water volume		L	3.31-8.11	3.31-8.11	3.59-8.39	3.49-8.29	3.59-8.39	3.49-8.29
Backup electric heater	Capacity	kW	3	3	3	9	3	9
	Power supply	V/Ph/Hz	220-240/1/50	220-240/1/50	220-240/1/50	380-415/3/50	220-240/1/50	380-415/3/50
Compressor	Type		Twin rotary					
Outdoor fan	Motor type / Number of fans		DC fan / 1					

Air side heat exchanger			Finned tube							
Refrigerant			R32 1.4kg							
Unit dimension (W×H×D)		mm	1295×717×426		1385×865×523					
Packing dimension (W×H×D)		mm	1375×885×475		1465×1035×560					
Net/Gross weight		kg	90/108		106/130					
Outdoor air temperature range	Cooling	°C	-5 ~ 43							
	Heating	°C	-25 ~ 35							
	DHW	°C	-25 ~ 43							
Water side heat exchanger			Plate type							
Water side connection			R1 "	R1 "	R1 1/4”	R1 1/4”	R1 1/4”	R1 1/4”		
Water setting temperature range	Cooling	°C	5 ~ 25							
	Heating	°C	25 ~ 65							
	DHW[3]	°C	20 ~ 60							

Notes:

1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1
3. Maximum domestic hot water temperature 60℃ is only available with TBH support.

Outdoor unit model name				MHC-V12W /D2N8-B2E30	MHC-V12W /D2N8-B2ER90	MHC-V14W /D2N8-B2E30	MHC-V14W /D2N8-B2ER90	MHC-V16W /D2N8-B2E30	MHC-V16W /D2N8-B2ER90
Power supply		V/Ph/Hz		220-240/1/50	380-415/3/50	220-240/1/50	380-415/3/50	220-240/1/50	380-415/3/50
Heating A7W35	Capacity	kW		12.1	12.1	14.5	14.5	15.9	15.9
	Rated input	kW		2.44	2.44	3.15	3.15	3.53	3.53
	COP			4.95	4.95	4.60	4.60	4.50	4.50
Heating A7W45	Capacity	kW		12.3	12.3	14.1	14.1	16.0	16.0
	Rated input	kW		3.32	3.32	3.92	3.92	4.57	4.57
	COP			3.70	3.70	3.60	3.60	3.50	3.50
Heating A7W55	Capacity	kW		11.9	11.9	13.8	13.8	16.0	16.0
	Rated input	kW		3.90	3.90	4.68	4.68	5.61	5.61
	COP			3.05	3.05	2.95	2.95	2.85	2.85
Heating A-7W35	Capacity	kW		10.00	10.00	12.00	12.00	13.10	13.10
	Rated input	kW		3.33	3.33	4.21	4.21	4.85	4.85
	COP			3.00	3.00	2.85	2.85	2.70	2.70
Heating A-7W55	Capacity	kW		9.80	9.80	11.00	11.00	12.50	12.50
	Rated input	kW		4.78	4.78	5.37	5.37	6.25	6.25
	COP			2.05	2.05	2.05	2.05	2.00	2.00
Cooling A35W18	Capacity	kW		12.00	12.00	13.50	13.50	14.2	14.2
	Rated input	kW		3.04	3.04	3.74	3.74	3.94	3.94
	EER			3.95	3.95	3.61	3.61	3.61	3.61
Cooling A35W7	Capacity	kW		11.5	11.5	12.4	12.4	14.0	14.0
	Rated input	kW		4.18	4.18	4.96	4.96	5.60	5.60
	EER			2.75	2.75	2.50	2.50	2.50	2.50
Seasonal space heating energy efficiency class	Water outlet at 35°C			A+++					
	Water outlet at 55°C			A++					
SCOP	Warmer climate	35°C		6.48	6.48	6.58	6.58	6.29	6.29
		55°C		4.43	4.43	4.49	4.49	4.48	4.48
	Average climate	35°C		4.81	4.81	4.72	4.72	4.62	4.62
		55°C		3.45	3.45	3.47	3.47	3.41	3.41
	Colder climate	35°C		4.08	4.08	4.07	4.07	4.02	4.02
		55°C		3.02	3.02	3.05	3.05	3.12	3.12
SEER	Water outlet	7°C		4.93	4.93	4.87	4.87	4.69	4.69
		18°C		7.13	7.13	6.94	6.94	6.75	6.75
Sound power Level[2]		dB		65	65	65	65	68	68
Rated water flow		m^3/h		2.08	2.08	2.49	2.49	2.73	2.73
Water flow range		m^3/h		0.7~2.5	0.7~2.5	0.7~2.75	0.7~2.75	0.7~3.0	0.7~3.0
Internal water volume		L		3.93-8.73	3.83-8.63	3.93-8.73	3.83-8.63	3.93-8.73	3.83-8.63
Backup electric heater	Capacity	kW		3	9	3	9	3	9
	Power supply	V/Ph/Hz		220-240/1/50	380-415/3/50	220-240/1/50	380-415/3/50	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				Finned tube					
Refrigerant				R32 1.75kg					

Unit dimension (W×H×D)		mm	1385×865×523
Packing dimension (W×H×D)		mm	1465×1035×560
Net/Gross weight		kg	129/150
Outdoor air temperature range	Cooling	°C	-5 ~ 43
	Heating	°C	-25 ~ 35
	DHW	°C	-25 ~ 43
Water side heat exchanger			Plate type
Water side connection			R1 1/4"
Water setting temperature range	Cooling	°C	5 ~ 25
	Heating	°C	25 ~ 65
	DHW[3]	°C	20 ~ 60

Notes:

1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1
3. Maximum domestic hot water temperature 60℃ is only available with TBH support.

Outdoor unit model name				MHC-V12W /D2RN81-BE30	MHC-V12W /D2RN8-B2ER90	MHC-V14W /D2RN8-B2E30	MHC-V14W /D2RN8-B2ER90	MHC-V16W /D2RN8-B2E30	MHC-V16W /D2RN8-B2ER90
Power supply		V/Ph/Hz		380-415/3/50					
Heating A7W35	Capacity	kW		12.1	12.1	14.5	14.5	15.9	15.9
	Rated input	kW		2.44	2.44	3.15	3.15	3.53	3.53
	COP			4.95	4.95	4.60	4.60	4.50	4.50
Heating A7W45	Capacity	kW		12.3	12.3	14.1	14.1	16.0	16.0
	Rated input	kW		3.32	3.32	3.92	3.92	4.57	4.57
	COP			3.70	3.70	3.60	3.60	3.50	3.50
Heating A7W55	Capacity	kW		11.9	11.9	13.8	13.8	16.0	16.0
	Rated input	kW		3.90	3.90	4.68	4.68	5.61	5.61
	COP			3.05	3.05	2.95	2.95	2.85	2.85
Heating A-7W35	Capacity	kW		10.00	10.00	12.00	12.00	13.10	13.10
	Rated input	kW		3.33	3.33	4.21	4.21	4.85	4.85
	COP			3.00	3.00	2.85	2.85	2.70	2.70
Heating A-7W55	Capacity	kW		9.80	9.80	11.00	11.00	12.50	12.50
	Rated input	kW		4.78	4.78	5.37	5.37	6.25	6.25
	COP			2.05	2.05	2.05	2.05	2.00	2.00
Cooling A35W18	Capacity	kW		12.00	12.00	13.50	13.50	14.2	14.2
	Rated input	kW		3.04	3.04	3.74	3.74	3.94	3.94
	EER			3.95	3.95	3.61	3.61	3.61	3.61
Cooling A35W7	Capacity	kW		11.5	11.5	12.4	12.4	14.0	14.0
	Rated input	kW		4.18	4.18	4.96	4.96	5.60	5.60
	EER			2.75	2.75	2.50	2.50	2.50	2.50
Seasonal space heating energy efficiency class	Water outlet at 35°C			A+++					
	Water outlet at 55°C			A++					
SCOP	Warmer climate	35°C		6.47	6.47	6.57	6.57	6.28	6.28
		55°C		4.42	4.42	4.49	4.49	4.47	4.47
	Average climate	35°C		4.81	4.81	4.72	4.72	4.62	4.62
		55°C		3.45	3.45	3.47	3.47	3.41	3.41
	Colder climate	35°C		4.08	4.08	4.07	4.07	4.02	4.02
		55°C		3.02	3.02	3.05	3.05	3.12	3.12
SEER	Water outlet	7°C		4.90	4.90	4.85	4.85	4.67	4.67
		18°C		7.07	7.07	6.89	6.89	6.70	6.70
Sound power Level[2]		dB		65	65	65	65	68	68
Rated water flow		m^3/h		2.08	2.08	2.49	2.49	2.73	2.73
Water flow range		m^3/h		0.7~2.5	0.7~2.5	0.7~2.75	0.7~2.75	0.7~3.0	0.7~3.0
Internal water volume		L		3.93-8.73	3.83-8.63	3.93-8.73	3.83-8.63	3.93-8.73	3.83-8.63
Backup electric heater	Capacity	kW		3	9	3	9	3	9
	Power supply	V/Ph/Hz		220-240/1/50	380-415/3/50	220-240/1/50	380-415/3/50	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				Finned tube					
Refrigerant				R32 1.75kg					

Unit dimension (W×H×D)		mm	1385×865×523
Packing dimension (W×H×D)		mm	1465×1035×560
Net/Gross weight		kg	141/162
Outdoor air temperature range	Cooling	°C	-5 ~ 43
	Heating	°C	-25 ~ 35
	DHW	°C	-25 ~ 43
Water side heat exchanger			Plate type
Water side connection			R1 1/4"
Water setting temperature range	Cooling	°C	5 ~ 25
	Heating	°C	25 ~ 65
	DHW[3]	°C	20 ~ 60

Notes:

1. Relevant EU standards and legislation: EN14511; EN14825; EN50564; EN12102; (EU) No 811/2013; (EU) No 813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1
3. Maximum domestic hot water temperature 60℃ is only available with TBH support.

2 Electrical characteristics

System	Outdoor unit				Power current			Compressor		Fan	
	Voltage (V)	Hz	Min. (V)	Max. (V)	MCA (A)	TOCA (A)	MFA (A)	MSC (A)	RLA (A)	kW	FLA (A)
MHC-V4W/D2N8-B2	220~240	50	198	264	12	18	16	/	11.5	0.10	0.5
MHC-V6W/D2N8-B2	220~240	50	198	264	14	18	16	/	13.5	0.10	0.5
MHC-V8W/D2N8-B2	220~240	50	198	264	16	19	20	/	14.5	0.17	1.5
MHC-V10W/D2N8-B2	220~240	50	198	264	17	19	20	/	15.5	0.17	1.5
MHC-V12W/D2N8-B2	220~240	50	198	264	25	30	32	/	23.5	0.17	1.5
MHC-V14W/D2N8-B2	220~240	50	198	264	26	30	32	/	24.5	0.17	1.5
MHC-V16W/D2N8-B2	220~240	50	198	264	27	30	32	/	25.5	0.17	1.5
MHC-V12W/D2RN8-B2	380~415	50	342	456	10	14	16	/	9.15	0.17	1.5
MHC-V14W/D2RN8-B2	380~415	50	342	456	11	14	16	/	10.15	0.17	1.5
MHC-V16W/D2RN8-B2	380~415	50	342	456	12	14	16	/	11.15	0.17	1.5
MHC-V4W/D2N8-B2E30	220~240	50	198	264	25	31	32	/	11.5	0.10	0.5
MHC-V6W/D2N8-B2E30	220~240	50	198	264	27	31	32	/	13.5	0.10	0.5
MHC-V8W/D2N8-B2E30	220~240	50	198	264	29	32	32	/	14.5	0.17	1.5
MHC-V8W/D2N8-B2ER90	380~415	50	342	456	29	32	32	/	14.5	0.17	1.5
MHC-V10W/D2N8-B2E30	220~240	50	198	264	30	32	32	/	15.5	0.17	1.5
MHC-V10W/D2N8-B2ER90	380~415	50	342	456	30	32	32	/	15.5	0.17	1.5
MHC-V12W/D2N8-B2E30	220~240	50	198	264	38	43	50	/	23.5	0.17	1.5
MHC-V12W/D2N8-B2ER90	380~415	50	342	456	38	43	50	/	23.5	0.17	1.5
MHC-V14W/D2N8-B2E30	220~240	50	198	264	39	43	50	/	24.5	0.17	1.5
MHC-V14W/D2N8-B2ER90	380~415	50	342	456	39	43	50	/	24.5	0.17	1.5
MHC-V16W/D2N8-B2E30	220~240	50	198	264	40	43	50	/	25.5	0.17	1.5
MHC-V16W/D2N8-B2ER90	380~415	50	342	456	40	43	50	/	25.5	0.17	1.5
MHC-V12W/D2RN8-B2E30	380~415	50	342	456	23	27	32	/	9.15	0.17	1.5
MHC-V12W/D2RN8-B2ER90	380~415	50	342	456	23	27	32	/	9.15	0.17	1.5
MHC-V14W/D2RN8-B2E30	380~415	50	342	456	24	27	32	/	10.15	0.17	1.5
MHC-V14W/D2RN8-B2ER90	380~415	50	342	456	24	27	32	/	10.15	0.17	1.5
MHC-V16W/D2RN8-B2E30	380~415	50	342	456	25	27	32	/	11.15	0.17	1.5
MHC-V16W/D2RN8-B2ER90	380~415	50	342	456	25	27	32	/	11.15	0.17	1.5

Note：

MCA: Min. Circuit Amps. (For wire diameter selection)

TOCA: Total Over-current Amps. (For air-break switch selection)

MFA: Max. Fuse Amps. (For fuse selection)

MSC: Max. Starting Amps.

RLA: Rated Load Amps.

The input Amps of compressor where MAX. Hz can operate for nominal cooling or heating test condition

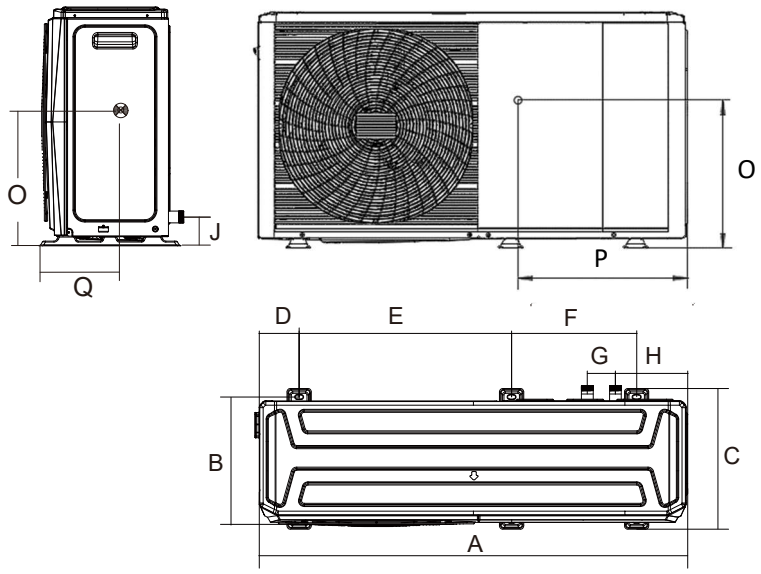
kW: Rated Motor Output

FLA: Full Load Amps.

3 Dimensions and Center of Gravity

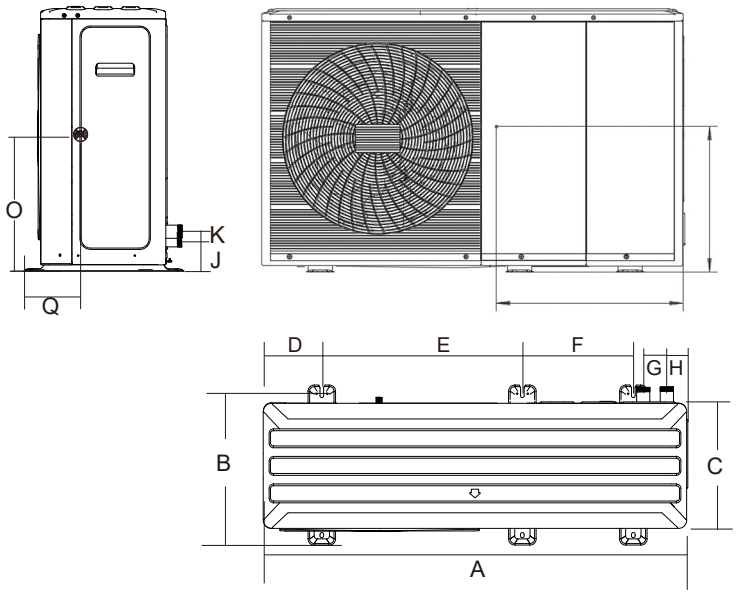
4/6kW models

MHC-V4(6)W/D2N8-B2(E30) dimensions and center of gravity (unit: mm)



8/10/12/14/16kW models

MHC-V8(10)W/D2N8-B2(E30/ER90) MHC-V12(14/16)W/D2(R)N8-B2(E30/ER90) dimensions and center of gravity (unit: mm)



unit：mm

Model	A	B	C	D	E	F	G	H	I	J	K
4/6kW	1299	375	426	121	644	379	85	220	717	87	/
8-16kW	1385	456	523	191	656	363	77	68	865	101	245

Model	O	P	Q
4/6kW 1 phase	295	540	190
8/10kW 1 phase	330	580	280

Model	O	P	Q
12-16kW 1 phase	290	605	245
12-16kW 3 phase	200	605	245

4 Capacity Tables

4.1 Heating Capacity Tables (Test standard： EN14511)

Table 2-4.1-1: Heating capacity for 4kW models

Maximum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	2.05	1.18	1.74	1.80	1.22	1.48	1.71	1.32	1.29	1.53	1.30	1.18	1.37	1.25	1.10
-20	3.09	1.31	2.36	2.83	1.56	1.82	2.44	1.70	1.43	2.17	1.74	1.24	1.98	1.75	1.13
-15	3.60	1.19	3.03	3.41	1.22	2.78	3.25	1.36	2.39	2.93	1.49	1.97	2.50	1.60	1.56
-10	4.47	1.33	3.36	4.29	1.33	3.23	4.14	1.45	2.85	4.02	1.65	2.43	3.59	1.77	2.02
-7	5.11	1.39	3.67	5.03	1.43	3.51	4.99	1.65	3.01	4.67	1.73	2.70	4.54	1.98	2.29
-5	5.18	1.29	4.03	5.08	1.36	3.72	5.02	1.53	3.27	4.74	1.68	2.82	4.63	1.89	2.45
-2	5.14	1.18	4.36	5.01	1.25	3.99	4.91	1.41	3.47	4.70	1.58	2.97	4.77	1.80	2.65
0	5.41	1.07	5.06	5.27	1.21	4.34	5.10	1.36	3.74	4.92	1.55	3.18	5.04	1.74	2.89
2	5.63	1.07	5.28	5.44	1.21	4.51	5.28	1.36	3.87	5.18	1.55	3.35	5.25	1.77	2.97
5	5.99	1.07	5.58	5.75	1.18	4.85	5.68	1.31	4.33	5.59	1.48	3.77	5.60	1.71	3.27
7	6.38	1.03	6.17	6.22	1.15	5.40	6.26	1.26	4.96	6.26	1.42	4.41	5.96	1.63	3.67
10	6.37	0.99	6.43	6.03	1.07	5.66	6.07	1.16	5.22	5.91	1.28	4.63	6.05	1.55	3.90
12	6.22	0.95	6.59	5.90	1.01	5.83	5.93	1.10	5.42	5.98	1.23	4.85	6.15	1.51	4.06
14	6.12	0.92	6.66	5.80	0.98	5.92	5.84	1.06	5.51	5.99	1.21	4.95	6.17	1.49	4.14
15	6.03	0.90	6.71	5.72	0.96	5.98	5.75	1.03	5.59	6.00	1.19	5.04	6.20	1.47	4.21
19	5.90	0.83	7.14	5.74	0.87	6.60	5.77	0.99	5.83	6.06	1.12	5.39	6.14	1.34	4.57
20	5.86	0.81	7.24	5.74	0.85	6.75	5.77	0.98	5.88	6.08	1.11	5.48	6.12	1.31	4.66
25	5.70	0.72	7.91	5.77	0.80	7.21	5.81	0.94	6.15	5.91	0.98	6.06	6.05	1.15	5.25
30	5.78	0.69	8.41	5.84	0.78	7.48	5.78	0.86	6.71	5.89	0.92	6.39	6.02	1.07	5.62
35	5.85	0.65	8.96	5.90	0.76	7.77	5.97	0.82	7.27	5.86	0.87	6.77	5.99	0.99	6.05
40	6.30	0.58	10.84	6.38	0.67	9.51	6.36	0.74	8.57	6.33	0.80	7.88	6.38	0.93	6.86
43	6.57	0.54	12.20	6.67	0.62	10.80	6.59	0.69	9.50	6.62	0.77	8.63	6.61	0.89	7.39
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	1.85	1.75	1.06	1.56	1.59	0.98	1.38	1.49	0.93	/	/	/	/	/	/
-15	2.20	1.68	1.31	1.84	1.56	1.18	1.77	1.62	1.09	1.73	1.68	1.03	/	/	/
-10	3.28	1.81	1.81	2.63	1.68	1.56	2.74	1.76	1.56	2.81	1.80	1.56	/	/	/
-7	4.41	2.12	2.08	4.28	2.34	1.83	3.85	2.10	1.83	3.56	1.94	1.84	/	/	/
-5	4.56	2.02	2.26	4.41	2.26	1.95	4.06	2.10	1.93	3.83	2.00	1.92	/	/	/
-2	4.74	2.01	2.36	4.72	2.20	2.15	4.35	2.11	2.06	4.10	2.06	1.99	/	/	/
0	5.02	2.03	2.48	5.13	2.16	2.37	4.69	2.13	2.20	4.40	2.10	2.09	/	/	/
2	5.19	2.06	2.52	5.26	2.17	2.42	4.86	2.16	2.25	4.59	2.16	2.13	/	/	/
5	5.50	1.98	2.78	5.54	2.07	2.68	5.16	2.08	2.48	4.90	2.09	2.35	4.04	2.16	1.87
7	5.69	1.83	3.11	5.74	2.03	2.83	5.54	2.06	2.70	5.41	2.08	2.61	4.27	2.09	2.04
10	5.80	1.71	3.40	5.70	1.80	3.16	5.44	1.89	2.88	5.27	1.96	2.69	4.49	2.02	2.22
12	5.76	1.63	3.53	5.69	1.73	3.29	5.38	1.80	2.99	5.17	1.86	2.79	4.70	1.96	2.40
14	5.71	1.59	3.60	5.65	1.69	3.35	5.32	1.75	3.04	5.10	1.80	2.83	4.79	1.93	2.48
15	5.67	1.55	3.65	5.63	1.65	3.41	5.27	1.71	3.08	5.04	1.76	2.87	4.87	1.90	2.56
19	5.71	1.46	3.92	5.54	1.53	3.63	5.11	1.57	3.26	4.82	1.60	3.02	5.22	1.82	2.87
20	5.72	1.43	3.99	5.52	1.50	3.68	5.07	1.53	3.31	4.77	1.56	3.06	/	/	/
25	5.68	1.29	4.39	5.42	1.35	4.02	4.86	1.35	3.59	4.50	1.36	3.30	/	/	/
30	5.67	1.22	4.63	5.51	1.28	4.31	4.97	1.30	3.83	4.61	1.32	3.51	/	/	/
35	5.59	1.14	4.90	5.61	1.22	4.62	/	/	/	/	/	/	/	/	/
40	6.00	1.15	5.20	/	/	/	/	/	/	/	/	/	/	/	/
43	6.25	1.16	5.38	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.1-2: Heating capacity for 4kW models

Normal															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	1.90	1.07	1.78	1.65	1.08	1.52	1.56	1.19	1.31	1.42	1.20	1.19	1.28	1.18	1.09
-20	2.82	1.15	2.45	2.57	1.38	1.86	2.20	1.49	1.48	1.98	1.57	1.26	1.83	1.61	1.14
-15	3.26	1.03	3.17	3.07	1.06	2.88	2.90	1.17	2.48	2.66	1.31	2.02	2.22	1.40	1.59
-10	4.00	1.11	3.60	3.92	1.15	3.40	3.82	1.30	2.95	3.60	1.45	2.49	3.25	1.59	2.05
-7	4.68	1.21	3.85	4.61	1.26	3.65	4.70	1.52	3.10	4.26	1.52	2.81	4.30	1.83	2.35
-5	4.69	1.11	4.22	4.62	1.19	3.86	4.37	1.28	3.41	4.21	1.42	2.96	4.20	1.65	2.54
-2	4.70	1.04	4.52	4.56	1.11	4.12	4.26	1.19	3.59	4.26	1.39	3.06	4.27	1.56	2.74
0	4.99	0.96	5.19	4.80	1.08	4.46	4.40	1.15	3.85	4.53	1.40	3.23	4.46	1.49	3.00
2	5.18	0.95	5.45	4.94	1.05	4.70	4.40	1.10	4.00	4.77	1.39	3.44	5.10	1.70	3.00
5	5.48	0.95	5.79	5.19	1.03	5.03	5.08	1.13	4.49	5.11	1.32	3.86	4.82	1.41	3.42
7	4.60	0.71	6.48	4.36	0.77	5.65	4.20	0.82	5.10	4.38	0.95	4.64	4.30	1.13	3.80
10	5.73	0.83	6.88	5.28	0.89	5.91	5.36	1.00	5.37	5.24	1.09	4.83	5.48	1.35	4.05
12	5.62	0.79	7.11	5.19	0.85	6.13	5.26	0.94	5.61	5.28	1.03	5.11	5.60	1.33	4.22
14	5.54	0.76	7.25	5.11	0.82	6.26	5.19	0.90	5.76	5.27	1.00	5.27	5.62	1.30	4.31
15	5.48	0.75	7.32	5.06	0.80	6.33	5.14	0.88	5.84	5.28	0.98	5.38	5.67	1.30	4.37
19	5.38	0.69	7.83	5.10	0.72	7.04	5.10	0.83	6.13	5.53	0.96	5.79	5.64	1.18	4.77
20	5.36	0.67	7.96	5.11	0.71	7.22	5.09	0.82	6.21	5.59	0.95	5.89	5.63	1.16	4.88
25	5.08	0.58	8.75	5.24	0.67	7.85	5.12	0.78	6.57	5.47	0.83	6.55	5.67	1.02	5.53
30	5.18	0.55	9.37	5.33	0.65	8.20	5.32	0.74	7.21	5.48	0.79	6.97	5.67	0.95	5.97
35	5.29	0.53	10.05	5.44	0.63	8.57	5.54	0.70	7.89	5.50	0.74	7.43	5.70	0.88	6.47
40	5.78	0.47	12.23	5.77	0.55	10.57	5.73	0.61	9.37	5.78	0.66	8.70	5.89	0.80	7.38
43	6.08	0.44	13.87	6.09	0.50	12.08	6.00	0.57	10.46	6.09	0.63	9.60	6.15	0.77	8.01
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	1.73	1.61	1.07	1.50	1.52	0.99	1.37	1.46	0.93	/	/	/	/	/	/
-15	1.96	1.46	1.34	1.69	1.41	1.20	1.64	1.49	1.10	1.61	1.56	1.03	/	/	/
-10	2.99	1.62	1.84	2.40	1.52	1.58	2.51	1.61	1.56	2.59	1.67	1.55	/	/	/
-7	4.12	1.93	2.14	4.00	2.05	1.95	3.49	1.84	1.89	3.15	1.68	1.87	/	/	/
-5	4.14	1.78	2.32	4.04	2.02	2.00	3.67	1.86	1.97	3.42	1.75	1.95	/	/	/
-2	4.22	1.75	2.41	4.19	1.87	2.23	3.84	1.83	2.10	3.63	1.81	2.01	/	/	/
0	4.41	1.75	2.52	4.43	1.78	2.49	4.09	1.82	2.25	3.87	1.86	2.09	/	/	/
2	5.03	1.96	2.56	5.10	2.08	2.45	4.46	1.96	2.28	4.04	1.87	2.16	/	/	/
5	4.53	1.59	2.86	4.56	1.66	2.75	4.39	1.74	2.52	4.28	1.81	2.37	3.30	1.68	1.96
7	4.54	1.37	3.32	4.40	1.49	2.95	4.32	1.56	2.77	4.27	1.61	2.65	3.54	1.64	2.16
10	5.20	1.51	3.45	4.96	1.54	3.23	4.89	1.66	2.94	4.84	1.76	2.74	3.67	1.56	2.35
12	5.17	1.42	3.65	4.98	1.47	3.38	4.86	1.58	3.07	4.78	1.67	2.86	3.86	1.50	2.57
14	5.13	1.36	3.76	4.96	1.43	3.47	4.81	1.53	3.15	4.72	1.61	2.93	3.93	1.46	2.69
15	5.11	1.33	3.83	4.96	1.40	3.53	4.79	1.50	3.19	4.68	1.58	2.97	4.03	1.45	2.77
19	5.24	1.26	4.15	4.90	1.30	3.78	4.66	1.39	3.34	4.50	1.48	3.05	4.39	1.40	3.13
20	5.27	1.25	4.23	4.89	1.27	3.84	4.63	1.37	3.38	4.45	1.45	3.07	/	/	/
25	5.30	1.13	4.68	4.89	1.16	4.23	4.52	1.22	3.70	4.28	1.28	3.34	/	/	/
30	5.45	1.10	4.97	5.01	1.10	4.56	4.65	1.17	3.97	4.41	1.23	3.57	/	/	/
35	5.42	1.02	5.30	5.14	1.04	4.92	/	/	/	/	/	/	/	/	/
40	5.66	1.00	5.67	/	/	/	/	/	/	/	/	/	/	/	/
43	5.94	1.01	5.90	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.1-3: Heating capacity for 4kW models

Minimum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	1.23	0.68	1.80	1.12	0.72	1.55	1.18	0.89	1.33	1.09	0.90	1.20	0.86	0.79	1.10
-20	1.73	0.69	2.50	1.53	0.80	1.90	1.42	0.94	1.51	1.39	1.08	1.29	1.23	1.07	1.15
-15	1.68	0.52	3.25	1.65	0.56	2.95	1.55	0.61	2.54	1.64	0.79	2.07	1.60	1.00	1.61
-10	1.65	0.45	3.70	1.75	0.50	3.50	1.71	0.56	3.04	2.09	0.82	2.56	2.17	1.04	2.09
-7	1.16	0.29	4.01	1.18	0.31	3.76	1.25	0.37	3.34	2.06	0.70	2.93	2.08	0.86	2.42
-5	1.36	0.31	4.38	1.36	0.34	3.98	1.42	0.40	3.51	2.06	0.67	3.07	2.16	0.83	2.60
-2	1.36	0.29	4.68	1.39	0.33	4.25	1.38	0.37	3.70	2.03	0.64	3.17	2.16	0.77	2.80
0	1.45	0.27	5.37	1.51	0.33	4.61	1.42	0.36	3.98	2.12	0.63	3.34	2.22	0.72	3.07
2	1.69	0.30	5.71	1.73	0.36	4.87	1.65	0.39	4.23	2.33	0.65	3.60	2.39	0.74	3.23
5	1.97	0.33	6.03	1.99	0.38	5.23	1.92	0.41	4.66	2.58	0.64	4.01	2.59	0.74	3.52
7	2.35	0.35	6.78	2.34	0.40	5.89	2.31	0.43	5.39	2.95	0.62	4.78	3.22	0.82	3.91
10	1.95	0.27	7.21	1.77	0.29	6.17	1.92	0.34	5.61	2.84	0.56	5.06	3.27	0.78	4.21
12	2.17	0.29	7.48	2.02	0.32	6.40	2.10	0.36	5.87	2.92	0.54	5.38	3.37	0.77	4.40
14	2.26	0.30	7.66	2.13	0.32	6.56	2.17	0.36	6.04	2.93	0.53	5.57	3.39	0.75	4.52
15	2.36	0.31	7.72	2.25	0.34	6.62	2.25	0.37	6.12	2.96	0.52	5.68	3.43	0.75	4.58
19	2.58	0.31	8.27	2.70	0.37	7.38	2.86	0.44	6.44	3.70	0.60	6.12	3.72	0.74	5.01
20	2.64	0.31	8.41	2.81	0.37	7.58	3.01	0.46	6.53	3.88	0.62	6.23	3.80	0.74	5.12
25	3.14	0.34	9.25	3.40	0.41	8.30	3.52	0.51	6.93	4.31	0.62	6.94	4.35	0.75	5.81
30	3.32	0.34	9.90	3.59	0.41	8.68	3.79	0.50	7.63	4.03	0.55	7.37	4.42	0.71	6.27
35	3.92	0.37	10.63	4.01	0.44	9.08	3.91	0.47	8.36	4.04	0.51	7.87	4.44	0.65	6.80
40	4.28	0.33	12.94	4.27	0.38	11.19	4.51	0.45	9.93	4.56	0.49	9.22	4.85	0.62	7.76
43	4.53	0.31	14.68	4.53	0.35	12.80	4.75	0.43	11.08	4.83	0.48	10.17	5.15	0.61	8.42
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	1.28	1.18	1.08	1.14	1.14	1.00	1.06	1.12	0.94	/	/	/	/	/	/
-15	1.52	1.12	1.36	1.25	1.00	1.25	1.24	1.10	1.13	1.23	1.17	1.05	/	/	/
-10	2.23	1.19	1.88	1.82	1.14	1.60	1.94	1.22	1.59	2.02	1.27	1.58	/	/	/
-7	2.05	0.94	2.18	1.88	0.93	2.02	2.09	1.09	1.91	2.22	1.16	1.91	/	/	/
-5	2.09	0.88	2.37	1.99	0.98	2.04	2.17	1.08	2.01	2.29	1.15	1.99	/	/	/
-2	2.14	0.85	2.51	2.08	0.92	2.26	2.30	1.07	2.14	2.44	1.19	2.05	/	/	/
0	2.24	0.84	2.68	2.21	0.88	2.51	2.45	1.07	2.29	2.61	1.22	2.14	/	/	/
2	2.39	0.87	2.75	2.48	0.95	2.61	2.68	1.12	2.39	2.81	1.25	2.24	/	/	/
5	2.58	0.88	2.94	2.79	0.99	2.81	2.95	1.14	2.59	3.05	1.25	2.44	2.33	1.14	2.04
7	3.22	0.95	3.40	3.65	1.16	3.15	3.59	1.24	2.91	3.56	1.30	2.75	2.71	1.19	2.26
10	3.19	0.90	3.54	3.60	1.07	3.35	3.56	1.16	3.05	3.53	1.24	2.85	2.87	1.17	2.44
12	3.30	0.87	3.78	3.85	1.09	3.53	3.71	1.17	3.17	3.62	1.24	2.93	2.99	1.12	2.68
14	3.33	0.85	3.93	3.94	1.08	3.64	3.76	1.16	3.25	3.64	1.22	2.99	3.02	1.07	2.81
15	3.37	0.84	4.01	4.05	1.10	3.70	3.83	1.17	3.28	3.68	1.23	3.00	3.07	1.06	2.90
19	3.59	0.83	4.35	3.77	0.95	3.97	3.48	1.00	3.50	3.29	1.03	3.18	3.27	1.00	3.27
20	3.65	0.82	4.44	3.70	0.92	4.04	3.40	0.96	3.55	3.19	0.99	3.23	/	/	/
25	4.31	0.88	4.92	3.89	0.87	4.44	3.52	0.91	3.89	3.28	0.93	3.52	/	/	/
30	4.39	0.84	5.22	4.10	0.85	4.79	3.73	0.89	4.17	3.48	0.93	3.76	/	/	/
35	4.47	0.80	5.57	4.38	0.85	5.18	/	/	/	/	/	/	/	/	/
40	4.86	0.82	5.96	/	/	/	/	/	/	/	/	/	/	/	/
43	5.19	0.84	6.20	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.2-1: Heating capacity for 6kW models

Maximum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	2.57	1.49	1.72	2.25	1.53	1.46	2.14	1.67	1.28	1.91	1.64	1.17	1.71	1.57	1.09
-20	3.64	1.56	2.34	3.34	1.86	1.80	2.88	2.03	1.42	2.56	2.08	1.23	2.33	2.08	1.12
-15	4.43	1.49	2.97	4.19	1.53	2.73	4.00	1.71	2.34	3.61	1.87	1.93	3.08	2.01	1.53
-10	5.75	1.69	3.41	5.50	1.84	2.99	5.11	1.99	2.57	4.83	2.18	2.22	4.64	2.24	2.07
-7	6.55	1.77	3.71	6.30	1.92	3.28	6.21	2.17	2.86	5.79	2.32	2.50	5.57	2.38	2.35
-5	6.54	1.64	3.98	6.32	1.79	3.52	6.25	2.02	3.09	5.97	2.18	2.74	5.84	2.30	2.54
-2	6.32	1.49	4.24	6.14	1.58	3.88	6.11	1.80	3.40	6.07	2.04	2.97	6.01	2.26	2.65
0	6.49	1.34	4.85	6.37	1.48	4.31	6.35	1.68	3.79	6.50	1.99	3.26	6.35	2.25	2.82
2	6.68	1.35	4.96	6.48	1.48	4.38	6.53	1.69	3.86	6.65	1.89	3.52	6.58	2.23	2.95
5	7.04	1.31	5.37	6.81	1.51	4.51	6.88	1.62	4.25	6.96	1.89	3.69	6.99	2.12	3.29
7	7.58	1.29	5.87	7.46	1.55	4.81	7.41	1.56	4.76	7.13	1.79	3.99	7.13	2.00	3.58
10	7.43	1.21	6.12	7.27	1.39	5.24	7.35	1.46	5.02	7.37	1.75	4.21	7.32	1.93	3.78
12	7.33	1.17	6.25	7.26	1.31	5.54	7.34	1.42	5.16	7.51	1.70	4.42	7.40	1.86	3.98
14	7.25	1.15	6.31	7.22	1.27	5.69	7.30	1.39	5.23	7.54	1.67	4.52	7.41	1.82	4.08
15	7.17	1.13	6.35	7.20	1.24	5.82	7.26	1.38	5.28	7.58	1.64	4.61	7.43	1.78	4.16
19	6.98	1.00	6.99	7.01	1.13	6.19	7.04	1.22	5.78	7.28	1.56	4.68	7.42	1.70	4.37
20	6.93	0.97	7.15	6.97	1.11	6.28	6.98	1.18	5.91	7.21	1.54	4.70	7.42	1.68	4.42
25	6.69	0.80	8.32	6.74	0.94	7.16	6.70	1.06	6.31	6.65	1.30	5.11	7.21	1.52	4.74
30	6.74	0.71	9.53	6.83	0.85	8.02	6.83	0.94	7.27	6.56	1.09	6.01	7.05	1.40	5.05
35	6.79	0.66	10.34	6.93	0.73	9.43	6.96	0.85	8.17	6.47	0.94	6.87	6.89	1.27	5.42
40	7.26	0.64	11.42	7.37	0.73	10.15	7.28	0.81	9.02	7.12	0.97	7.34	7.34	1.20	6.12
43	7.54	0.63	12.01	7.64	0.70	10.94	7.48	0.76	9.87	7.51	0.91	8.27	7.61	1.08	7.02
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	2.19	2.04	1.07	1.84	1.86	0.99	1.63	1.74	0.94	/	/	/	/	/	/
-15	2.70	2.02	1.34	2.26	1.88	1.20	2.18	1.96	1.11	2.13	2.02	1.05	/	/	/
-10	4.13	2.41	1.72	3.80	2.24	1.69	3.51	2.28	1.54	3.32	2.30	1.44	/	/	/
-7	5.29	2.63	2.01	5.22	2.66	1.96	4.83	2.63	1.84	4.57	2.61	1.75	/	/	/
-5	5.44	2.44	2.23	5.31	2.64	2.01	4.96	2.61	1.90	4.73	2.59	1.83	/	/	/
-2	5.59	2.38	2.35	5.31	2.60	2.04	5.05	2.58	1.96	4.88	2.57	1.90	/	/	/
0	5.88	2.37	2.48	5.42	2.59	2.09	5.21	2.56	2.03	5.06	2.54	1.99	/	/	/
2	6.05	2.38	2.54	5.69	2.36	2.41	5.48	2.50	2.19	5.33	2.61	2.05	/	/	/
5	6.37	2.27	2.81	6.11	2.46	2.48	5.89	2.50	2.36	5.74	2.53	2.27	4.92	2.68	1.84
7	6.87	2.16	3.17	6.90	2.37	2.91	6.61	2.46	2.69	6.42	2.52	2.55	5.25	2.60	2.02
10	7.01	2.09	3.35	6.93	2.28	3.04	6.53	2.35	2.78	6.27	2.41	2.60	5.57	2.52	2.21
12	7.15	2.03	3.52	6.99	2.20	3.18	6.50	2.27	2.86	6.17	2.32	2.65	5.86	2.45	2.39
14	7.19	1.99	3.60	6.98	2.15	3.24	6.44	2.22	2.91	6.09	2.27	2.68	5.98	2.41	2.48
15	7.24	1.97	3.67	6.98	2.12	3.30	6.40	2.18	2.94	6.01	2.23	2.70	6.10	2.39	2.56
19	7.27	1.84	3.95	6.84	1.93	3.54	6.33	1.97	3.21	5.98	2.00	2.99	6.60	2.30	2.88
20	7.28	1.81	4.02	6.81	1.89	3.60	6.31	1.92	3.28	5.98	1.95	3.06	/	/	/
25	7.33	1.66	4.43	6.63	1.66	4.00	6.22	1.67	3.73	5.94	1.67	3.55	/	/	/
30	6.91	1.40	4.92	6.60	1.57	4.21	6.25	1.57	3.98	6.01	1.57	3.83	/	/	/
35	6.49	1.24	5.21	6.57	1.48	4.45	/	/	/	/	/	/	/	/	/
40	6.93	1.22	5.68	/	/	/	/	/	/	/	/	/	/	/	/
43	7.19	1.21	5.96	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.2-2: Heating capacity for 6kW models

Normal															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	2.37	1.35	1.76	2.07	1.37	1.51	1.95	1.50	1.30	1.77	1.51	1.17	1.61	1.49	1.08
-20	3.33	1.37	2.43	3.04	1.65	1.85	2.60	1.78	1.46	2.34	1.87	1.25	2.16	1.92	1.13
-15	4.01	1.29	3.11	3.77	1.33	2.83	3.57	1.47	2.43	3.27	1.65	1.98	2.73	1.76	1.56
-10	5.15	1.43	3.61	4.89	1.57	3.12	4.51	1.69	2.66	4.33	1.91	2.27	4.21	2.01	2.10
-7	6.24	1.62	3.86	6.05	1.80	3.36	6.00	2.00	3.00	5.61	2.21	2.54	5.40	2.25	2.40
-5	5.94	1.42	4.17	5.89	1.62	3.63	5.72	1.79	3.19	5.65	1.97	2.87	5.50	2.11	2.61
-2	5.78	1.32	4.39	5.69	1.43	3.97	5.55	1.58	3.51	5.64	1.82	3.10	5.51	2.00	2.75
0	5.99	1.20	4.98	5.86	1.33	4.40	5.74	1.47	3.89	5.94	1.75	3.40	5.68	1.93	2.94
2	6.15	1.20	5.11	5.87	1.31	4.50	5.50	1.41	3.90	5.95	1.65	3.61	5.80	1.93	3.00
5	6.43	1.16	5.56	6.06	1.31	4.64	6.16	1.39	4.42	6.36	1.68	3.78	6.13	1.78	3.45
7	6.75	1.09	6.18	6.27	1.20	5.21	6.35	1.28	4.95	6.44	1.55	4.14	6.30	1.70	3.70
10	6.68	1.02	6.52	6.32	1.15	5.49	6.49	1.26	5.17	6.59	1.50	4.39	6.62	1.73	3.83
12	6.62	0.98	6.74	6.37	1.08	5.88	6.51	1.21	5.38	6.83	1.46	4.66	6.83	1.67	4.09
14	6.56	0.95	6.87	6.36	1.04	6.09	6.48	1.18	5.50	6.91	1.44	4.82	6.89	1.63	4.23
15	6.52	0.94	6.93	6.37	1.02	6.24	6.48	1.16	5.57	7.03	1.43	4.92	6.98	1.61	4.32
19	6.37	0.83	7.67	6.24	0.93	6.68	6.31	1.03	6.14	6.65	1.32	5.02	6.85	1.50	4.56
20	6.34	0.81	7.85	6.20	0.91	6.79	6.27	1.00	6.28	6.55	1.30	5.05	6.82	1.48	4.62
25	5.97	0.65	9.21	6.12	0.78	7.79	6.13	0.91	6.75	6.15	1.11	5.53	6.76	1.35	4.99
30	6.04	0.57	10.62	6.24	0.71	8.79	6.29	0.80	7.84	6.10	0.93	6.55	6.64	1.24	5.35
35	6.14	0.53	11.60	6.38	0.61	10.41	6.46	0.73	8.87	6.07	0.81	7.54	6.55	1.13	5.79
40	6.66	0.52	12.89	6.67	0.59	11.28	6.57	0.67	9.86	6.49	0.80	8.11	6.78	1.03	6.59
43	6.97	0.51	13.65	6.98	0.57	12.24	6.80	0.63	10.86	6.91	0.75	9.20	7.09	0.93	7.61
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	2.04	1.88	1.08	1.77	1.78	1.00	1.61	1.71	0.94	/	/	/	/	/	/
-15	2.41	1.76	1.37	2.08	1.70	1.22	2.02	1.80	1.12	1.98	1.88	1.05	/	/	/
-10	3.76	2.15	1.75	3.46	2.03	1.71	3.22	2.08	1.55	3.06	2.13	1.44	/	/	/
-7	5.07	2.45	2.07	5.15	2.58	2.00	4.63	2.47	1.87	4.28	2.39	1.79	/	/	/
-5	5.11	2.25	2.27	5.08	2.47	2.06	4.64	2.40	1.93	4.35	2.35	1.85	/	/	/
-2	5.17	2.17	2.39	5.06	2.44	2.07	4.69	2.37	1.98	4.44	2.32	1.91	/	/	/
0	5.36	2.12	2.53	5.15	2.44	2.11	4.80	2.35	2.04	4.56	2.29	1.99	/	/	/
2	5.73	2.18	2.63	5.65	2.31	2.45	5.25	2.36	2.23	4.99	2.40	2.08	/	/	/
5	5.91	2.04	2.89	5.80	2.28	2.54	5.45	2.28	2.39	5.22	2.28	2.29	4.23	2.21	1.91
7	6.13	1.86	3.29	6.00	2.03	2.95	5.79	2.10	2.76	5.64	2.17	2.60	4.40	2.06	2.14
10	6.47	1.88	3.44	6.04	1.94	3.11	5.87	2.07	2.83	5.76	2.17	2.65	4.54	1.94	2.34
12	6.64	1.82	3.66	6.12	1.87	3.27	5.86	1.99	2.94	5.70	2.09	2.73	4.81	1.88	2.56
14	6.69	1.77	3.78	6.12	1.82	3.36	5.83	1.94	3.01	5.63	2.03	2.77	4.91	1.83	2.68
15	6.76	1.75	3.86	6.15	1.80	3.42	5.81	1.91	3.04	5.59	2.00	2.79	5.04	1.82	2.77
19	6.82	1.63	4.18	6.06	1.64	3.69	5.77	1.76	3.29	5.58	1.85	3.02	5.55	1.77	3.14
20	6.84	1.61	4.25	6.03	1.60	3.76	5.76	1.72	3.35	5.58	1.82	3.07	/	/	/
25	7.01	1.49	4.72	5.99	1.43	4.20	5.79	1.51	3.83	5.65	1.57	3.59	/	/	/
30	6.64	1.26	5.28	6.00	1.35	4.46	5.85	1.42	4.13	5.75	1.47	3.91	/	/	/
35	6.29	1.12	5.63	6.02	1.27	4.75	/	/	/	/	/	/	/	/	/
40	6.53	1.06	6.19	/	/	/	/	/	/	/	/	/	/	/	/
43	6.84	1.05	6.54	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.2-3: Heating capacity for 6kW models

Minimum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	1.54	0.86	1.78	1.39	0.91	1.53	1.48	1.12	1.32	1.36	1.14	1.19	1.08	0.99	1.09
-20	2.04	0.82	2.47	1.80	0.96	1.88	1.67	1.12	1.49	1.64	1.28	1.28	1.45	1.27	1.14
-15	2.07	0.65	3.18	2.03	0.70	2.90	1.90	0.76	2.49	2.02	0.99	2.03	1.97	1.25	1.58
-10	2.28	0.62	3.71	2.14	0.67	3.21	2.02	0.74	2.74	2.51	1.07	2.34	2.81	1.32	2.14
-7	1.57	0.39	4.03	1.45	0.41	3.50	1.48	0.48	3.06	2.49	0.92	2.72	2.67	1.08	2.48
-5	1.78	0.41	4.32	1.66	0.44	3.76	1.70	0.52	3.30	2.59	0.87	2.98	2.82	1.08	2.61
-2	1.71	0.38	4.55	1.68	0.41	4.13	1.69	0.46	3.63	2.69	0.84	3.19	2.88	1.04	2.78
0	1.74	0.34	5.15	1.82	0.40	4.58	1.77	0.44	4.02	2.93	0.84	3.47	3.02	1.00	3.01
2	2.01	0.38	5.35	2.06	0.44	4.69	2.04	0.48	4.22	3.04	0.81	3.78	3.13	0.94	3.32
5	2.31	0.40	5.78	2.32	0.48	4.82	2.33	0.51	4.59	3.21	0.82	3.93	3.29	0.93	3.54
7	2.71	0.42	6.44	2.65	0.49	5.37	2.73	0.51	5.32	3.36	0.78	4.32	3.85	0.99	3.88
10	2.27	0.33	6.83	2.08	0.36	5.75	2.32	0.43	5.42	3.32	0.72	4.60	3.96	0.99	3.99
12	2.56	0.36	7.08	2.47	0.40	6.19	2.60	0.46	5.67	3.48	0.71	4.91	4.12	0.96	4.27
14	2.68	0.37	7.25	2.64	0.41	6.43	2.71	0.47	5.82	3.53	0.69	5.09	4.16	0.94	4.43
15	2.81	0.38	7.31	2.83	0.43	6.59	2.84	0.48	5.89	3.60	0.69	5.20	4.22	0.93	4.53
19	3.06	0.38	8.10	3.30	0.47	7.06	3.53	0.54	6.50	4.35	0.82	5.31	4.52	0.94	4.79
20	3.12	0.38	8.30	3.41	0.48	7.18	3.70	0.56	6.65	4.54	0.85	5.34	4.60	0.95	4.86
25	3.68	0.38	9.73	3.97	0.48	8.24	4.22	0.59	7.15	4.85	0.83	5.85	5.19	0.99	5.24
30	3.88	0.35	11.23	4.20	0.45	9.30	4.47	0.54	8.30	4.49	0.65	6.94	5.18	0.92	5.63
35	4.55	0.37	12.27	4.71	0.43	11.02	4.57	0.49	9.40	4.46	0.56	7.99	5.10	0.84	6.09
40	4.93	0.36	13.64	4.94	0.41	11.94	5.17	0.49	10.45	5.12	0.60	8.59	5.58	0.81	6.92
43	5.20	0.36	14.44	5.20	0.40	12.96	5.39	0.47	11.51	5.48	0.56	9.75	5.93	0.74	8.00
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	1.51	1.38	1.09	1.34	1.34	1.01	1.25	1.31	0.95	/	/	/	/	/	/
-15	1.86	1.35	1.39	1.53	1.24	1.24	1.52	1.34	1.14	1.51	1.41	1.07	/	/	/
-10	2.80	1.57	1.78	2.63	1.51	1.74	2.48	1.57	1.58	2.38	1.63	1.47	/	/	/
-7	2.57	1.22	2.11	2.64	1.27	2.08	2.66	1.40	1.90	2.68	1.47	1.82	/	/	/
-5	2.59	1.10	2.35	2.81	1.33	2.11	2.75	1.39	1.98	2.72	1.43	1.90	/	/	/
-2	2.75	1.12	2.46	2.80	1.31	2.13	2.83	1.40	2.03	2.85	1.45	1.96	/	/	/
0	2.99	1.15	2.59	2.85	1.31	2.17	2.94	1.41	2.09	3.00	1.47	2.04	/	/	/
2	3.18	1.17	2.73	3.13	1.24	2.52	3.21	1.39	2.30	3.26	1.51	2.16	/	/	/
5	3.43	1.15	2.98	3.46	1.32	2.62	3.53	1.43	2.46	3.58	1.52	2.36	2.85	1.42	2.01
7	4.26	1.25	3.41	4.38	1.41	3.10	4.29	1.50	2.85	4.23	1.57	2.69	3.33	1.49	2.24
10	4.22	1.18	3.57	4.37	1.35	3.23	4.27	1.45	2.94	4.20	1.53	2.75	3.55	1.46	2.43
12	4.37	1.15	3.82	4.73	1.39	3.41	4.48	1.47	3.04	4.32	1.55	2.79	3.72	1.39	2.67
14	4.40	1.11	3.96	4.86	1.38	3.52	4.55	1.47	3.10	4.34	1.54	2.82	3.77	1.34	2.80
15	4.46	1.10	4.05	5.03	1.40	3.58	4.65	1.49	3.13	4.39	1.56	2.82	3.84	1.33	2.90
19	4.68	1.07	4.38	4.65	1.20	3.88	4.31	1.25	3.44	4.08	1.30	3.15	4.14	1.26	3.28
20	4.73	1.06	4.46	4.56	1.15	3.95	4.23	1.20	3.52	4.00	1.24	3.23	/	/	/
25	5.50	1.11	4.96	4.76	1.08	4.41	4.51	1.12	4.03	4.34	1.15	3.78	/	/	/
30	5.35	0.96	5.55	4.91	1.05	4.69	4.69	1.08	4.34	4.54	1.10	4.11	/	/	/
35	5.19	0.88	5.92	5.13	1.03	4.99	/	/	/	/	/	/	/	/	/
40	5.61	0.86	6.50	/	/	/	/	/	/	/	/	/	/	/	/
43	5.97	0.87	6.87	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.3-1: Heating capacity for 8kW models

Maximum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	4.45	1.98	2.25	4.00	2.04	1.96	3.59	2.19	1.64	3.34	2.15	1.55	2.81	2.17	1.30
-20	5.68	2.03	2.80	5.09	2.15	2.37	4.74	2.24	2.11	4.32	2.44	1.77	3.70	2.29	1.61
-15	6.90	2.07	3.34	6.44	2.24	2.87	6.11	2.51	2.43	5.57	2.47	2.26	5.29	2.65	2.00
-10	7.45	2.02	3.68	7.28	2.18	3.33	7.08	2.25	3.15	6.87	2.63	2.62	6.77	2.74	2.47
-7	7.64	2.03	3.76	7.47	2.20	3.40	7.27	2.29	3.17	7.05	2.64	2.67	6.94	2.76	2.52
-5	8.05	2.00	4.02	7.97	2.16	3.69	7.69	2.39	3.22	7.45	2.57	2.90	7.44	2.77	2.69
-2	8.26	1.94	4.25	8.19	2.11	3.89	8.15	2.28	3.57	7.95	2.58	3.08	7.77	2.80	2.78
0	8.55	1.79	4.77	8.49	2.01	4.23	8.42	2.23	3.77	8.40	2.53	3.32	8.09	2.75	2.94
2	8.66	1.67	5.20	8.65	1.92	4.50	8.48	2.14	3.95	8.50	2.50	3.40	8.31	2.74	3.04
5	9.03	1.52	5.95	8.95	1.81	4.94	8.86	1.94	4.56	8.78	2.29	3.84	8.69	2.57	3.38
7	9.51	1.45	6.54	9.20	1.73	5.32	9.11	1.80	5.07	8.85	2.12	4.18	8.98	2.35	3.82
10	10.06	1.35	7.44	9.28	1.59	5.84	8.94	1.65	5.42	8.70	2.02	4.30	8.74	2.24	3.90
12	10.00	1.23	8.13	9.37	1.45	6.48	9.05	1.58	5.74	8.92	1.89	4.72	8.86	2.14	4.15
14	9.92	1.16	8.53	9.38	1.37	6.83	9.06	1.53	5.93	8.99	1.81	4.96	8.88	2.07	4.30
15	9.86	1.12	8.79	9.39	1.33	7.09	9.09	1.51	6.04	9.07	1.77	5.12	8.91	2.03	4.38
19	9.69	0.98	9.87	9.48	1.17	8.08	9.28	1.35	6.88	9.69	0.98	9.87	9.05	1.85	4.89
20	9.65	0.95	10.14	9.51	1.14	8.33	9.33	1.32	7.09	9.45	1.59	5.93	9.08	1.81	5.02
25	9.42	0.90	10.44	9.00	1.03	8.75	8.75	1.15	7.64	9.15	1.44	6.34	9.01	1.55	5.80
30	9.18	0.83	11.03	8.49	0.93	9.16	8.17	1.05	7.78	8.85	1.29	6.84	8.93	1.43	6.23
35	9.55	0.84	11.31	8.83	0.93	9.45	8.50	1.06	8.05	9.20	1.31	7.05	9.29	1.46	6.34
40	10.03	0.87	11.57	9.27	0.93	10.02	8.92	1.05	8.49	9.66	1.32	7.31	9.75	1.51	6.46
43	10.33	0.84	12.25	9.55	0.85	11.27	9.19	1.01	9.11	9.95	1.27	7.86	10.04	1.47	6.83
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	3.17	2.26	1.41	2.62	2.10	1.25	2.28	1.98	1.15	/	/	/	/	/	/
-15	4.67	2.70	1.73	4.94	2.92	1.69	4.37	2.87	1.52	3.99	2.84	1.41	/	/	/
-10	6.32	2.88	2.20	6.07	3.05	1.99	5.54	2.94	1.88	5.19	2.86	1.81	/	/	/
-7	6.48	2.89	2.24	6.22	3.07	2.03	5.68	2.96	1.92	5.32	2.88	1.85	/	/	/
-5	7.35	2.99	2.46	6.45	2.94	2.19	6.20	2.97	2.09	6.04	3.00	2.02	/	/	/
-2	7.83	3.09	2.54	6.82	3.04	2.24	6.60	3.11	2.12	6.54	3.22	2.04	/	/	/
0	8.11	2.95	2.75	7.10	2.99	2.38	6.95	3.09	2.25	6.85	3.16	2.17	/	/	/
2	8.18	2.90	2.82	7.26	2.83	2.56	7.05	3.01	2.34	6.91	3.14	2.20	/	/	/
5	8.30	2.76	3.00	7.56	2.74	2.76	7.29	2.82	2.58	7.11	2.89	2.46	3.89	3.27	1.19
7	8.43	2.66	3.17	7.80	2.50	3.12	7.47	2.59	2.88	7.24	2.66	2.72	4.08	3.00	1.36
10	8.28	2.42	3.42	8.20	2.48	3.31	7.78	2.61	2.98	7.50	2.72	2.76	5.59	2.65	2.11
12	8.38	2.33	3.60	8.29	2.41	3.44	7.89	2.52	3.13	7.62	2.60	2.93	5.67	2.52	2.25
14	8.39	2.26	3.72	8.30	2.36	3.52	7.91	2.45	3.23	7.64	2.52	3.03	5.69	2.43	2.34
15	8.41	2.23	3.77	8.32	2.34	3.55	7.93	2.43	3.27	7.68	2.49	3.09	5.71	2.39	2.39
19	8.51	2.06	4.13	8.41	2.16	3.89	8.06	2.25	3.59	7.82	2.31	3.39	5.79	2.25	2.58
20	8.53	2.02	4.22	8.43	2.12	3.97	8.09	2.21	3.66	7.86	2.27	3.46	/	/	/
25	8.61	1.87	4.61	8.09	1.90	4.25	7.71	1.96	3.93	7.46	2.01	3.72	/	/	/
30	8.68	1.74	4.99	7.84	1.73	4.53	7.38	1.76	4.20	7.07	1.78	3.98	/	/	/
35	9.03	1.73	5.21	8.16	1.80	4.72	/	/	/	/	/	/	/	/	/
40	9.48	1.74	5.46	/	/	/	/	/	/	/	/	/	/	/	/
43	9.77	1.61	6.08	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.3-2: Heating capacity for 8kW models

Normal															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	4.11	1.79	2.29	3.68	1.82	2.03	3.27	1.96	1.67	3.10	1.99	1.56	2.64	2.05	1.29
-20	5.20	1.79	2.90	4.63	1.90	2.43	4.27	1.97	2.17	3.96	2.20	1.80	3.43	2.11	1.62
-15	6.24	1.79	3.49	5.80	1.95	2.98	5.45	2.15	2.53	5.04	2.18	2.32	4.69	2.31	2.03
-10	6.66	1.71	3.89	6.48	1.86	3.49	6.25	1.92	3.26	6.16	2.30	2.68	6.14	2.46	2.50
-7	7.27	1.83	3.97	7.11	2.01	3.53	7.00	2.19	3.20	6.71	2.40	2.79	6.60	2.59	2.55
-5	7.25	1.71	4.25	7.21	1.89	3.81	6.99	2.12	3.30	6.86	2.28	3.01	6.79	2.47	2.75
-2	7.59	1.77	4.28	7.62	1.92	3.97	7.45	2.12	3.51	7.40	2.39	3.10	7.20	2.54	2.84
0	7.60	1.55	4.89	7.78	1.79	4.34	7.67	1.98	3.88	7.74	2.30	3.37	7.16	2.35	3.05
2	7.77	1.45	5.36	7.85	1.69	4.64	7.10	1.73	4.10	7.80	2.21	3.54	7.40	2.28	3.25
5	8.09	1.31	6.17	8.08	1.58	5.13	8.08	1.71	4.73	8.03	2.04	3.93	7.62	2.15	3.54
7	8.60	1.26	6.84	8.21	1.47	5.57	8.40	1.63	5.15	8.00	1.84	4.34	8.10	2.10	3.85
10	9.05	1.14	7.93	8.12	1.33	6.12	7.89	1.41	5.58	7.77	1.74	4.48	7.91	2.00	3.95
12	9.03	1.03	8.78	8.25	1.20	6.87	8.03	1.34	5.99	8.02	1.61	4.98	8.06	1.89	4.26
14	8.98	0.97	9.26	8.26	1.13	7.30	8.05	1.29	6.23	8.09	1.54	5.26	8.09	1.82	4.44
15	8.96	0.93	9.59	8.32	1.09	7.60	8.11	1.27	6.37	8.20	1.50	5.46	8.15	1.79	4.55
19	8.85	0.82	10.83	8.43	0.97	8.72	8.32	1.14	7.30	8.85	0.82	10.83	8.32	1.63	5.11
20	8.82	0.79	11.14	8.46	0.94	9.00	8.37	1.11	7.53	8.58	1.35	6.37	8.36	1.59	5.25
25	8.39	0.73	11.55	8.17	0.86	9.52	8.01	0.98	8.18	8.47	1.23	6.86	8.44	1.38	6.11
30	8.23	0.67	12.29	7.75	0.77	10.04	7.52	0.90	8.39	8.24	1.11	7.46	8.42	1.27	6.61
35	8.63	0.68	12.68	8.13	0.78	10.43	7.89	0.90	8.74	8.64	1.12	7.74	8.83	1.30	6.77
40	9.20	0.70	13.06	8.39	0.75	11.13	8.04	0.87	9.28	8.81	1.09	8.08	9.01	1.30	6.95
43	9.56	0.69	13.92	8.72	0.69	12.61	8.36	0.83	10.03	9.16	1.05	8.74	9.36	1.26	7.40
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	2.96	2.08	1.42	2.52	2.00	1.25	2.25	1.95	1.15	/	/	/	/	/	/
-15	4.16	2.36	1.76	4.55	2.65	1.72	4.05	2.64	1.53	3.72	2.64	1.41	/	/	/
-10	5.75	2.58	2.23	5.53	2.75	2.01	5.08	2.69	1.89	4.78	2.65	1.81	/	/	/
-7	6.17	2.67	2.31	6.15	3.00	2.05	5.50	2.82	1.95	5.07	2.69	1.89	/	/	/
-5	6.59	2.61	2.52	6.06	2.72	2.23	5.71	2.70	2.12	5.48	2.69	2.04	/	/	/
-2	7.28	2.78	2.61	6.32	2.77	2.29	6.14	2.84	2.16	6.01	2.89	2.08	/	/	/
0	7.39	2.64	2.79	6.33	2.63	2.41	6.15	2.72	2.26	6.03	2.78	2.17	/	/	/
2	7.37	2.53	2.91	7.10	2.73	2.60	6.54	2.73	2.39	6.16	2.74	2.25	/	/	/
5	7.50	2.43	3.09	6.68	2.37	2.82	6.40	2.44	2.62	6.21	2.50	2.49	3.32	2.72	1.22
7	7.53	2.29	3.29	7.50	2.36	3.18	6.75	2.30	2.94	6.25	2.25	2.77	3.44	2.46	1.40
10	7.65	2.18	3.51	7.14	2.11	3.38	6.99	2.30	3.04	6.89	2.45	2.81	4.92	2.27	2.16
12	7.78	2.08	3.74	7.26	2.05	3.54	7.13	2.21	3.22	7.04	2.34	3.01	5.08	2.19	2.32
14	7.80	2.01	3.88	7.28	2.00	3.64	7.15	2.15	3.33	7.07	2.26	3.12	5.12	2.13	2.41
15	7.85	1.98	3.96	7.33	1.99	3.68	7.21	2.13	3.39	7.13	2.24	3.19	5.19	2.11	2.46
19	7.98	1.83	4.37	7.44	1.84	4.05	7.36	2.00	3.67	7.30	2.14	3.42	5.48	2.05	2.67
20	8.01	1.79	4.47	7.47	1.80	4.14	7.39	1.98	3.74	7.34	2.11	3.47	/	/	/
25	8.23	1.68	4.91	7.31	1.64	4.47	7.19	1.78	4.05	7.10	1.89	3.76	/	/	/
30	8.35	1.56	5.36	7.13	1.49	4.80	6.91	1.59	4.35	6.77	1.67	4.06	/	/	/
35	8.75	1.55	5.63	7.48	1.49	5.03	/	/	/	/	/	/	/	/	/
40	8.94	1.50	5.95	/	/	/	/	/	/	/	/	/	/	/	/
43	9.28	1.39	6.67	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.3-3: Heating capacity for 8kW models

Minimum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	2.67	1.15	2.33	2.48	1.21	2.06	2.48	1.46	1.69	2.37	1.50	1.58	1.77	1.37	1.29
-20	3.18	1.08	2.96	2.75	1.11	2.48	2.75	1.24	2.22	2.76	1.51	1.83	2.29	1.40	1.64
-15	3.22	0.90	3.58	3.12	1.03	3.05	2.91	1.12	2.59	3.12	1.31	2.37	3.38	1.64	2.06
-10	2.96	0.74	4.01	2.84	0.79	3.59	2.80	0.84	3.35	3.57	1.30	2.76	4.10	1.61	2.55
-7	1.83	0.45	4.09	1.72	0.47	3.63	1.82	0.53	3.44	3.12	1.07	2.90	3.41	1.28	2.67
-5	2.19	0.50	4.37	2.09	0.53	3.94	2.17	0.63	3.44	3.23	1.03	3.15	3.60	1.27	2.84
-2	2.22	0.48	4.59	2.26	0.54	4.18	2.28	0.62	3.66	3.46	1.07	3.24	3.59	1.23	2.91
0	2.21	0.44	5.06	2.44	0.54	4.49	2.37	0.59	4.01	3.62	1.04	3.48	3.57	1.14	3.12
2	2.54	0.45	5.62	2.75	0.57	4.86	2.69	0.62	4.37	3.80	1.05	3.63	3.80	1.15	3.31
5	2.90	0.45	6.41	3.10	0.58	5.32	3.06	0.62	4.91	4.05	0.99	4.08	4.09	1.12	3.64
7	3.40	0.48	7.14	3.46	0.60	5.81	3.36	0.61	5.54	4.17	0.92	4.53	4.85	1.17	4.15
10	3.08	0.37	8.30	2.72	0.42	6.41	2.83	0.48	5.85	3.92	0.83	4.70	4.73	1.15	4.11
12	3.49	0.38	9.23	3.22	0.45	7.23	3.21	0.51	6.30	4.08	0.78	5.24	4.86	1.09	4.44
14	3.67	0.38	9.75	3.45	0.45	7.69	3.37	0.51	6.57	4.13	0.74	5.55	4.88	1.05	4.64
15	3.86	0.38	10.12	3.69	0.46	8.03	3.55	0.53	6.73	4.20	0.73	5.76	4.94	1.04	4.77
19	4.25	0.37	11.44	4.46	0.48	9.22	4.67	0.60	7.73	4.25	0.37	11.44	5.49	1.02	5.36
20	4.34	0.37	11.77	4.66	0.49	9.52	4.94	0.62	7.98	5.95	0.88	6.74	5.63	1.02	5.51
25	5.18	0.42	12.21	5.31	0.53	10.07	5.51	0.64	8.66	6.68	0.92	7.26	6.48	1.01	6.42
30	5.28	0.41	12.99	5.22	0.49	10.63	5.35	0.60	8.88	6.06	0.77	7.89	6.56	0.94	6.95
35	6.40	0.48	13.42	6.00	0.54	11.04	5.58	0.60	9.26	6.35	0.77	8.20	6.87	0.96	7.12
40	6.82	0.49	13.82	6.21	0.53	11.79	6.34	0.64	9.84	6.96	0.81	8.56	7.41	1.01	7.31
43	7.13	0.48	14.73	6.49	0.49	13.35	6.62	0.62	10.63	7.27	0.78	9.26	7.83	1.01	7.78
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	2.19	1.52	1.44	1.91	1.51	1.27	1.74	1.49	1.17	/	/	/	/	/	/
-15	3.22	1.80	1.79	3.36	1.92	1.75	3.04	1.96	1.56	2.84	1.99	1.43	/	/	/
-10	4.29	1.88	2.28	4.20	2.05	2.05	3.91	2.03	1.93	3.72	2.02	1.84	/	/	/
-7	3.38	1.44	2.35	3.57	1.67	2.13	3.48	1.73	2.01	3.42	1.78	1.92	/	/	/
-5	3.78	1.46	2.59	3.65	1.59	2.30	3.68	1.69	2.18	3.71	1.77	2.09	/	/	/
-2	4.01	1.49	2.69	3.76	1.56	2.42	3.87	1.72	2.25	3.92	1.83	2.14	/	/	/
0	4.12	1.44	2.86	3.80	1.54	2.47	3.96	1.71	2.32	4.06	1.83	2.22	/	/	/
2	4.26	1.41	3.02	4.01	1.51	2.66	4.13	1.67	2.47	4.21	1.80	2.34	/	/	/
5	4.47	1.41	3.18	4.28	1.47	2.91	4.37	1.62	2.70	4.43	1.73	2.56	2.47	1.99	1.24
7	5.23	1.54	3.40	4.95	1.49	3.33	4.84	1.59	3.05	4.76	1.66	2.87	2.69	1.89	1.42
10	4.99	1.37	3.65	5.17	1.47	3.51	5.08	1.61	3.16	5.02	1.72	2.92	3.80	1.72	2.22
12	5.12	1.31	3.91	5.61	1.52	3.69	5.45	1.64	3.33	5.35	1.74	3.08	3.84	1.62	2.37
14	5.14	1.27	4.06	5.78	1.52	3.80	5.59	1.63	3.43	5.46	1.72	3.18	3.82	1.55	2.47
15	5.19	1.25	4.15	5.99	1.55	3.86	5.76	1.66	3.48	5.60	1.74	3.23	3.82	1.52	2.52
19	5.47	1.19	4.58	5.72	1.34	4.25	5.49	1.43	3.84	5.33	1.49	3.57	3.85	1.40	2.74
20	5.55	1.18	4.69	5.65	1.30	4.35	5.42	1.38	3.93	5.26	1.44	3.65	/	/	/
25	6.46	1.25	5.16	5.81	1.24	4.69	5.59	1.31	4.25	5.45	1.38	3.96	/	/	/
30	6.73	1.20	5.63	5.83	1.16	5.04	5.53	1.21	4.58	5.34	1.25	4.27	/	/	/
35	7.22	1.22	5.92	6.36	1.20	5.29	/	/	/	/	/	/	/	/	/
40	7.68	1.23	6.25	/	/	/	/	/	/	/	/	/	/	/	/
43	8.11	1.16	7.01	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.4-1: Heating capacity for 10kW models

Maximum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	4.68	2.06	2.27	4.21	2.12	1.98	3.78	2.28	1.66	3.52	2.24	1.57	2.96	2.26	1.31
-20	5.98	2.12	2.82	5.35	2.24	2.39	4.98	2.34	2.13	4.55	2.55	1.79	3.89	2.39	1.63
-15	7.26	2.15	3.37	6.78	2.34	2.90	6.43	2.62	2.46	5.86	2.57	2.28	5.57	2.76	2.02
-10	8.37	2.33	3.60	8.14	2.53	3.22	7.89	2.65	2.98	7.64	2.86	2.67	7.38	3.10	2.38
-7	8.72	2.29	3.81	8.48	2.49	3.41	8.31	2.77	3.00	7.96	2.81	2.83	7.68	3.05	2.52
-5	9.00	2.19	4.10	8.86	2.47	3.60	8.80	2.64	3.33	8.46	2.94	2.88	8.18	3.09	2.65
-2	9.25	2.13	4.34	9.19	2.42	3.81	9.10	2.58	3.53	8.81	2.85	3.09	8.60	3.14	2.74
0	9.43	1.93	4.90	9.36	2.31	4.05	9.46	2.52	3.76	9.25	2.93	3.16	8.89	3.10	2.87
2	9.72	1.88	5.18	9.57	2.21	4.34	9.72	2.48	3.93	9.58	2.86	3.35	9.24	3.07	3.01
5	10.24	1.79	5.72	10.07	2.10	4.80	10.13	2.25	4.51	10.10	2.64	3.83	9.79	2.88	3.40
7	10.49	1.77	5.94	10.28	1.97	5.21	10.32	2.09	4.93	10.45	2.50	4.18	10.28	2.76	3.72
10	11.20	1.59	7.04	10.41	1.85	5.64	10.03	1.96	5.13	9.94	2.38	4.17	9.87	2.69	3.67
12	11.36	1.50	7.58	10.56	1.74	6.08	10.17	1.84	5.53	10.08	2.24	4.49	10.01	2.53	3.95
14	11.38	1.44	7.90	10.59	1.67	6.33	10.20	1.77	5.76	10.10	2.16	4.68	10.04	2.44	4.12
15	11.42	1.41	8.10	10.62	1.64	6.49	10.23	1.73	5.90	10.13	2.11	4.80	10.07	2.39	4.22
19	10.93	1.23	8.86	10.73	1.40	7.67	10.58	1.61	6.56	10.57	1.93	5.49	10.24	2.16	4.73
20	10.81	1.19	9.05	10.76	1.35	7.96	10.67	1.59	6.72	10.68	1.89	5.66	10.28	2.12	4.86
25	9.94	1.04	9.59	9.90	1.17	8.44	9.82	1.38	7.12	9.82	1.64	6.00	9.46	1.84	5.15
30	9.77	0.96	10.15	9.07	1.03	8.79	8.90	1.12	7.95	8.85	1.32	6.72	9.92	1.61	6.15
35	10.16	0.95	10.73	9.44	1.03	9.15	9.25	1.11	8.30	9.21	1.32	6.97	10.32	1.61	6.40
40	10.67	0.93	11.52	9.91	1.01	9.81	9.71	1.15	8.47	9.67	1.32	7.34	10.84	1.60	6.79
43	10.99	0.91	12.03	10.20	0.96	10.61	10.00	1.08	9.25	9.96	1.23	8.07	11.16	1.47	7.58
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	3.34	2.35	1.42	2.75	2.18	1.26	2.40	2.06	1.16	/	/	/	/	/	/
-15	5.22	2.99	1.74	5.20	3.04	1.71	4.60	3.00	1.54	4.20	2.96	1.42	/	/	/
-10	7.03	3.31	2.13	6.67	3.58	1.86	5.90	3.33	1.77	5.38	3.15	1.71	/	/	/
-7	7.33	3.26	2.25	7.05	3.53	1.97	6.18	3.30	1.87	5.61	3.10	1.81	/	/	/
-5	8.04	3.27	2.46	7.53	3.32	2.27	6.69	3.19	2.09	6.13	3.10	1.98	/	/	/
-2	8.49	3.37	2.52	7.88	3.49	2.26	7.13	3.40	2.10	6.53	3.29	1.99	/	/	/
0	8.82	3.27	2.70	8.18	3.31	2.47	7.46	3.31	2.26	6.99	3.30	2.12	/	/	/
2	9.02	3.22	2.80	8.51	3.38	2.52	7.80	3.36	2.32	7.32	3.34	2.19	/	/	/
5	9.45	3.14	3.01	9.08	3.27	2.78	8.34	3.23	2.58	7.85	3.20	2.45	4.52	3.30	1.37
7	9.83	3.05	3.22	9.72	3.20	3.04	8.82	3.06	2.88	8.23	2.96	2.78	4.85	3.11	1.56
10	9.59	2.91	3.30	9.57	3.11	3.08	8.79	3.07	2.86	8.27	3.04	2.72	6.44	3.05	2.11
12	9.72	2.74	3.55	9.71	2.93	3.32	8.92	2.89	3.08	8.39	2.86	2.93	6.53	2.87	2.27
14	9.75	2.63	3.70	9.73	2.81	3.46	8.94	2.78	3.21	8.40	2.75	3.05	6.54	2.76	2.37
15	9.78	2.58	3.80	9.76	2.76	3.54	8.97	2.72	3.29	8.43	2.70	3.13	6.56	2.71	2.43
19	9.97	2.42	4.13	9.83	2.58	3.81	9.22	2.58	3.57	8.80	2.58	3.41	6.65	2.50	2.66
20	10.02	2.38	4.21	9.85	2.54	3.88	9.28	2.55	3.64	8.90	2.56	3.48	/	/	/
25	9.22	2.07	4.46	9.06	2.20	4.11	8.54	2.21	3.86	8.18	2.22	3.69	/	/	/
30	9.31	1.88	4.96	9.04	1.88	4.80	8.11	1.92	4.22	7.49	1.96	3.83	/	/	/
35	9.69	1.87	5.17	9.42	1.90	4.96	/	/	/	/	/	/	/	/	/
40	10.17	1.84	5.53	/	/	/	/	/	/	/	/	/	/	/	/
43	10.48	1.68	6.25	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.4-2: Heating capacity for 10kW models

Normal															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	4.33	1.87	2.32	3.87	1.89	2.05	3.45	2.05	1.68	3.26	2.07	1.57	2.78	2.14	1.30
-20	5.47	1.87	2.93	4.87	1.98	2.46	4.50	2.05	2.20	4.17	2.29	1.82	3.61	2.20	1.64
-15	6.57	1.86	3.53	6.10	2.03	3.01	5.73	2.24	2.56	5.31	2.27	2.34	4.94	2.41	2.05
-10	7.49	1.97	3.81	7.25	2.15	3.37	6.95	2.26	3.08	6.84	2.50	2.74	6.69	2.78	2.41
-7	8.28	2.11	3.92	8.18	2.33	3.51	8.00	2.62	3.05	7.43	2.54	2.93	7.35	2.88	2.55
-5	8.13	1.89	4.29	8.21	2.22	3.70	8.16	2.39	3.41	7.56	2.55	2.96	7.43	2.73	2.72
-2	8.40	1.91	4.40	8.28	2.16	3.84	8.31	2.33	3.56	8.13	2.70	3.01	7.91	2.85	2.78
0	8.33	1.64	5.06	8.25	1.99	4.15	8.33	2.16	3.86	8.23	2.57	3.20	7.87	2.65	2.97
2	8.62	1.61	5.34	8.68	1.92	4.52	8.20	2.05	4.00	8.79	2.54	3.46	7.85	2.45	3.20
5	9.09	1.53	5.95	9.00	1.81	4.99	9.07	1.94	4.68	9.23	2.35	3.92	8.58	2.41	3.55
7	10.22	1.69	6.05	9.98	1.85	5.40	10.00	2.02	4.95	10.14	2.36	4.29	10.00	2.67	3.75
10	10.06	1.34	7.50	9.12	1.54	5.91	8.85	1.68	5.28	8.88	2.04	4.35	8.94	2.40	3.72
12	10.26	1.25	8.19	9.29	1.44	6.45	9.03	1.57	5.77	9.05	1.91	4.74	9.11	2.25	4.06
14	10.30	1.20	8.58	9.33	1.38	6.76	9.06	1.50	6.04	9.08	1.83	4.97	9.14	2.15	4.25
15	10.38	1.18	8.83	9.40	1.35	6.96	9.13	1.47	6.22	9.16	1.79	5.12	9.22	2.10	4.38
19	9.98	1.03	9.72	9.54	1.15	8.27	9.49	1.36	6.96	9.59	1.63	5.89	9.41	1.90	4.94
20	9.88	0.99	9.94	9.58	1.11	8.60	9.58	1.34	7.14	9.70	1.60	6.08	9.46	1.86	5.08
25	8.86	0.83	10.61	8.98	0.98	9.18	8.99	1.18	7.63	9.10	1.40	6.49	8.87	1.63	5.43
30	8.76	0.77	11.31	8.28	0.86	9.63	8.19	0.96	8.57	8.24	1.13	7.32	9.35	1.43	6.53
35	9.19	0.76	12.03	8.69	0.86	10.10	8.59	0.95	9.01	8.65	1.13	7.65	9.81	1.43	6.84
40	9.79	0.75	13.01	8.97	0.82	10.90	8.75	0.95	9.26	8.82	1.09	8.11	10.01	1.37	7.31
43	10.17	0.74	13.67	9.32	0.79	11.87	9.10	0.89	10.18	9.16	1.02	8.98	10.40	1.27	8.21
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	3.11	2.17	1.44	2.65	2.09	1.27	2.37	2.03	1.17	/	/	/	/	/	/
-15	4.78	2.68	1.78	4.69	2.70	1.74	4.23	2.73	1.55	3.91	2.75	1.42	/	/	/
-10	6.41	2.96	2.16	6.08	3.23	1.88	5.41	3.05	1.78	4.96	2.91	1.70	/	/	/
-7	7.00	3.04	2.30	6.85	3.43	2.00	5.82	3.06	1.91	5.14	2.79	1.84	/	/	/
-5	7.08	2.81	2.52	6.89	2.98	2.31	6.03	2.83	2.13	5.46	2.71	2.02	/	/	/
-2	7.94	3.07	2.59	7.34	3.07	2.39	6.61	3.03	2.18	6.12	3.01	2.04	/	/	/
0	8.03	2.92	2.75	7.30	2.87	2.54	6.61	2.89	2.28	6.16	2.91	2.11	/	/	/
2	8.20	2.84	2.89	8.10	3.16	2.56	7.40	3.14	2.36	6.94	3.12	2.23	/	/	/
5	8.53	2.76	3.09	8.02	2.82	2.84	7.32	2.79	2.62	6.86	2.77	2.48	3.86	2.75	1.40
7	9.58	2.92	3.28	9.50	3.07	3.10	8.42	2.86	2.94	7.70	2.72	2.83	4.29	2.66	1.61
10	8.86	2.62	3.39	8.34	2.65	3.14	7.89	2.70	2.92	7.60	2.74	2.77	5.66	2.62	2.16
12	9.03	2.44	3.69	8.50	2.49	3.41	8.05	2.54	3.17	7.75	2.57	3.01	5.84	2.50	2.34
14	9.06	2.34	3.87	8.53	2.39	3.57	8.08	2.44	3.32	7.77	2.47	3.15	5.89	2.42	2.44
15	9.14	2.29	3.99	8.60	2.34	3.67	8.14	2.39	3.41	7.84	2.42	3.23	5.97	2.39	2.50
19	9.36	2.14	4.36	8.70	2.19	3.97	8.41	2.30	3.65	8.21	2.39	3.44	6.29	2.28	2.76
20	9.41	2.11	4.46	8.73	2.16	4.05	8.48	2.28	3.71	8.31	2.38	3.49	/	/	/
25	8.82	1.85	4.76	8.19	1.89	4.32	7.95	2.00	3.97	7.79	2.09	3.73	/	/	/
30	8.96	1.68	5.33	8.21	1.61	5.08	7.58	1.73	4.37	7.17	1.84	3.90	/	/	/
35	9.39	1.68	5.59	8.63	1.63	5.29	/	/	/	/	/	/	/	/	/
40	9.59	1.59	6.02	/	/	/	/	/	/	/	/	/	/	/	/
43	9.96	1.45	6.85	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.4-3: Heating capacity for 10kW models

Minimum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	2.81	1.19	2.35	2.61	1.26	2.08	2.61	1.53	1.71	2.50	1.56	1.60	1.87	1.43	1.31
-20	3.35	1.12	2.99	2.89	1.15	2.50	2.89	1.29	2.24	2.91	1.57	1.85	2.41	1.46	1.66
-15	3.39	0.94	3.61	3.29	1.07	3.08	3.06	1.17	2.62	3.28	1.37	2.40	3.56	1.71	2.08
-10	3.32	0.85	3.91	3.18	0.92	3.47	3.11	0.98	3.17	3.97	1.41	2.82	4.47	1.82	2.46
-7	2.09	0.51	4.14	1.95	0.54	3.64	2.05	0.61	3.37	3.52	1.14	3.08	3.77	1.41	2.67
-5	2.39	0.53	4.48	2.32	0.60	3.84	2.48	0.70	3.57	3.67	1.17	3.13	3.95	1.41	2.80
-2	2.46	0.53	4.64	2.52	0.62	4.05	2.55	0.68	3.73	3.90	1.21	3.21	3.99	1.39	2.87
0	2.42	0.46	5.24	2.68	0.62	4.30	2.67	0.67	3.99	3.99	1.20	3.31	3.92	1.29	3.04
2	2.82	0.50	5.60	3.04	0.65	4.69	3.03	0.70	4.34	4.29	1.18	3.62	4.23	1.29	3.28
5	3.26	0.53	6.18	3.45	0.67	5.18	3.43	0.71	4.86	4.65	1.14	4.07	4.61	1.26	3.66
7	3.76	0.58	6.48	3.86	0.68	5.69	3.81	0.71	5.39	4.92	1.09	4.53	5.55	1.36	4.09
10	3.43	0.44	7.86	3.05	0.49	6.19	3.17	0.57	5.54	4.47	0.98	4.55	5.34	1.38	3.86
12	3.98	0.46	8.60	3.63	0.54	6.78	3.61	0.59	6.07	4.61	0.92	4.99	5.49	1.30	4.24
14	4.21	0.47	9.03	3.89	0.55	7.12	3.79	0.59	6.38	4.64	0.89	5.24	5.52	1.24	4.45
15	4.48	0.48	9.32	4.17	0.57	7.35	4.00	0.61	6.58	4.69	0.87	5.40	5.58	1.21	4.59
19	4.79	0.47	10.27	5.05	0.58	8.75	5.33	0.72	7.36	6.32	1.01	6.23	6.22	1.20	5.19
20	4.86	0.46	10.51	5.27	0.58	9.10	5.66	0.75	7.56	6.73	1.05	6.44	6.38	1.19	5.34
25	5.47	0.49	11.22	5.84	0.60	9.72	6.19	0.77	8.07	7.17	1.04	6.87	6.81	1.19	5.70
30	5.62	0.47	11.96	5.58	0.55	10.20	5.83	0.64	9.08	6.06	0.78	7.75	7.29	1.06	6.86
35	6.81	0.53	12.73	6.42	0.60	10.69	6.07	0.64	9.55	6.35	0.78	8.10	7.64	1.06	7.19
40	7.26	0.53	13.76	6.64	0.58	11.54	6.90	0.70	9.81	6.96	0.81	8.59	8.24	1.07	7.68
43	7.59	0.52	14.47	6.94	0.55	12.57	7.20	0.67	10.79	7.27	0.76	9.51	8.71	1.01	8.64
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	2.31	1.59	1.45	2.01	1.57	1.28	1.83	1.56	1.18	/	/	/	/	/	/
-15	3.39	1.88	1.81	3.53	2.00	1.76	3.20	2.04	1.57	2.98	2.07	1.44	/	/	/
-10	4.78	2.17	2.20	4.62	2.40	1.92	4.17	2.30	1.81	3.87	2.22	1.74	/	/	/
-7	3.82	1.62	2.36	3.99	1.93	2.07	3.76	1.92	1.96	3.60	1.91	1.88	/	/	/
-5	4.13	1.60	2.58	4.26	1.79	2.38	3.96	1.81	2.19	3.76	1.83	2.06	/	/	/
-2	4.35	1.63	2.68	4.34	1.78	2.44	4.08	1.82	2.24	3.98	1.88	2.11	/	/	/
0	4.48	1.59	2.82	4.38	1.68	2.61	4.24	1.81	2.34	4.14	1.91	2.17	/	/	/
2	4.74	1.58	3.00	4.72	1.74	2.71	4.58	1.85	2.47	4.48	1.94	2.31	/	/	/
5	5.08	1.60	3.18	5.14	1.76	2.92	4.99	1.85	2.70	4.89	1.92	2.55	2.87	2.02	1.42
7	6.10	1.76	3.46	6.17	1.90	3.25	5.72	1.87	3.06	5.41	1.85	2.93	3.19	1.96	1.63
10	5.78	1.64	3.52	6.04	1.85	3.27	5.74	1.89	3.04	5.54	1.92	2.88	4.38	1.98	2.22
12	5.94	1.54	3.86	6.57	1.84	3.56	6.16	1.88	3.28	5.88	1.91	3.08	4.41	1.84	2.39
14	5.97	1.47	4.05	6.78	1.82	3.74	6.31	1.85	3.42	6.00	1.87	3.20	4.39	1.76	2.50
15	6.03	1.44	4.18	7.03	1.83	3.85	6.51	1.86	3.50	6.16	1.88	3.27	4.40	1.71	2.56
19	6.42	1.40	4.58	6.69	1.60	4.17	6.27	1.64	3.83	6.00	1.67	3.59	4.42	1.56	2.83
20	6.51	1.39	4.68	6.60	1.55	4.25	6.22	1.59	3.91	5.96	1.62	3.67	/	/	/
25	6.92	1.38	5.00	6.51	1.43	4.54	6.19	1.48	4.17	5.97	1.52	3.93	/	/	/
30	7.22	1.29	5.59	6.71	1.26	5.34	6.08	1.32	4.60	5.65	1.38	4.11	/	/	/
35	7.75	1.32	5.88	7.34	1.32	5.56	/	/	/	/	/	/	/	/	/
40	8.24	1.30	6.33	/	/	/	/	/	/	/	/	/	/	/	/
43	8.70	1.21	7.20	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.5-1: Heating capacity for 12kW models

Maximum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	6.33	2.92	2.17	5.96	2.77	2.15	5.03	2.96	1.70	4.53	3.12	1.45	4.23	3.29	1.28
-20	7.75	3.04	2.55	7.49	3.00	2.50	7.21	3.34	2.16	6.38	3.41	1.87	6.05	3.52	1.72
-15	8.95	3.13	2.85	8.66	3.27	2.65	8.36	3.41	2.45	7.93	3.62	2.19	7.39	3.95	1.87
-10	10.98	3.47	3.17	10.38	3.79	2.74	10.02	3.95	2.54	9.69	4.34	2.23	9.32	4.54	2.05
-7	12.30	3.52	3.49	10.94	3.62	3.02	11.02	3.89	2.83	10.42	4.27	2.44	10.40	4.50	2.31
-5	12.35	3.33	3.71	11.21	3.55	3.15	11.30	3.87	2.92	10.94	4.26	2.57	10.94	4.61	2.37
-2	12.04	3.11	3.87	11.28	3.28	3.44	11.30	3.56	3.17	11.29	4.07	2.77	11.46	4.46	2.57
0	12.48	2.87	4.35	12.09	3.18	3.80	11.99	3.44	3.48	12.25	4.04	3.04	12.29	4.37	2.81
2	13.36	2.80	4.78	12.73	3.11	4.09	12.64	3.45	3.66	12.87	3.93	3.28	12.83	4.40	2.92
5	14.60	2.66	5.49	13.71	3.02	4.55	13.62	3.28	4.15	13.78	3.70	3.73	13.62	4.18	3.26
7	15.45	2.57	6.00	14.67	2.93	5.01	14.57	3.11	4.69	14.80	3.57	4.14	14.51	4.00	3.63
10	14.95	2.40	6.22	14.36	2.62	5.49	14.30	2.83	5.06	14.61	3.34	4.37	14.32	3.89	3.69
12	15.10	2.17	6.96	14.59	2.40	6.08	14.39	2.74	5.25	14.84	3.26	4.55	14.52	3.71	3.92
14	15.06	2.07	7.27	14.60	2.31	6.33	14.34	2.70	5.31	14.85	3.22	4.61	14.52	3.63	4.00
15	15.12	1.97	7.67	14.70	2.21	6.65	14.36	2.65	5.43	14.96	3.17	4.72	14.61	3.53	4.14
19	14.67	1.72	8.54	14.39	1.94	7.41	14.25	2.28	6.26	14.86	2.83	5.25	14.72	3.22	4.58
20	14.56	1.66	8.76	14.32	1.88	7.60	14.22	2.20	6.47	14.84	2.75	5.39	14.75	3.15	4.69
25	14.41	1.55	9.31	14.28	1.73	8.23	14.18	1.93	7.35	14.72	2.35	6.26	14.70	2.73	5.39
30	14.64	1.45	10.12	14.20	1.62	8.75	14.35	1.85	7.76	14.69	2.22	6.63	14.73	2.63	5.59
35	15.17	1.39	10.87	14.86	1.60	9.29	14.71	1.80	8.16	15.09	2.17	6.95	14.57	2.50	5.83
40	15.69	1.41	11.10	15.59	1.59	9.82	15.48	1.79	8.65	15.96	2.17	7.36	15.34	2.44	6.29
43	16.15	1.35	11.96	15.95	1.50	10.61	15.89	1.73	9.18	16.48	2.11	7.82	15.99	2.35	6.81
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	5.36	3.55	1.51	5.08	3.76	1.35	4.90	3.68	1.33	/	/	/	/	/	/
-15	6.71	3.97	1.69	6.33	4.31	1.47	6.05	4.52	1.34	5.87	4.69	1.25	/	/	/
-10	8.96	4.62	1.94	8.60	4.79	1.79	7.46	4.97	1.50	6.70	5.13	1.30	/	/	/
-7	10.61	4.74	2.24	10.59	5.25	2.02	9.06	5.15	1.76	8.05	5.06	1.59	/	/	/
-5	10.77	4.75	2.27	10.55	4.96	2.13	9.15	5.14	1.78	8.21	5.14	1.60	/	/	/
-2	10.82	4.65	2.33	10.56	4.82	2.19	9.22	5.00	1.84	8.33	5.09	1.64	/	/	/
0	11.12	4.61	2.41	10.77	4.70	2.29	9.42	4.89	1.93	8.52	5.03	1.69	/	/	/
2	11.85	4.52	2.62	11.64	4.62	2.52	10.61	4.92	2.15	9.92	5.19	1.91	/	/	/
5	12.81	4.46	2.88	12.82	4.62	2.77	12.07	4.90	2.46	11.57	5.06	2.29	9.92	5.16	1.92
7	13.91	4.43	3.14	13.85	4.66	2.97	13.31	4.89	2.72	12.95	5.07	2.56	11.54	5.17	2.23
10	13.54	4.11	3.30	13.12	4.22	3.11	12.87	4.61	2.79	12.70	4.79	2.65	11.69	4.89	2.39
12	13.54	3.92	3.45	12.64	3.86	3.27	12.58	4.40	2.86	12.55	4.56	2.75	11.76	4.65	2.53
14	13.44	3.84	3.50	12.31	3.70	3.33	12.35	4.30	2.87	12.38	4.45	2.78	11.71	4.55	2.58
15	13.42	3.73	3.60	12.05	3.52	3.42	12.19	4.18	2.92	12.29	4.32	2.85	11.73	4.42	2.65
19	13.61	3.43	3.97	12.03	3.48	3.46	11.45	3.74	3.06	11.07	3.83	2.89	11.82	3.98	2.97
20	13.66	3.37	4.06	12.02	3.42	3.52	11.27	3.64	3.10	10.76	3.71	2.90	/	/	/
25	13.90	3.00	4.63	12.00	3.12	3.84	10.82	3.25	3.33	10.03	3.36	2.99	/	/	/
30	13.95	2.82	4.95	12.64	2.89	4.37	11.26	3.18	3.55	10.34	3.40	3.04	/	/	/
35	14.23	2.72	5.24	12.89	2.75	4.69	/	/	/	/	/	/	/	/	/
40	14.51	2.69	5.40	/	/	/	/	/	/	/	/	/	/	/	/
43	14.78	2.57	5.75	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.5-2: Heating capacity for 12kW models

Normal															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	5.36	2.32	2.30	5.12	2.23	2.29	4.24	2.37	1.79	3.88	2.57	1.51	3.66	2.82	1.30
-20	6.73	2.45	2.75	6.60	2.44	2.70	6.25	2.72	2.30	5.62	2.85	1.97	5.31	3.01	1.77
-15	7.43	2.41	3.09	7.35	2.55	2.88	7.28	2.78	2.62	6.63	2.86	2.32	6.04	3.13	1.93
-10	9.06	2.69	3.37	8.26	2.83	2.92	8.14	3.06	2.66	8.00	3.45	2.32	7.80	3.70	2.11
-7	11.09	3.11	3.57	10.29	3.26	3.15	10.00	3.33	3.00	10.14	4.06	2.50	10.20	4.25	2.40
-5	10.26	2.55	4.03	10.22	3.19	3.20	9.95	3.28	3.03	10.07	3.76	2.68	10.18	4.15	2.45
-2	9.94	2.39	4.16	9.81	2.75	3.57	9.57	2.86	3.35	9.83	3.35	2.94	10.06	3.76	2.68
0	10.23	2.21	4.63	10.05	2.51	4.01	9.79	2.62	3.74	10.11	3.11	3.25	10.23	3.46	2.96
2	10.74	2.05	5.23	9.96	2.23	4.47	9.20	2.36	3.90	10.07	2.81	3.58	10.60	3.53	3.00
5	11.77	1.95	6.05	10.77	2.18	4.94	10.57	2.35	4.50	10.83	2.65	4.08	11.08	3.16	3.51
7	12.90	1.96	6.57	12.11	2.23	5.42	12.10	2.44	4.95	12.35	2.75	4.50	12.30	3.32	3.70
10	11.82	1.72	6.88	11.23	1.87	5.99	10.88	1.97	5.51	11.26	2.34	4.81	10.91	2.74	3.99
12	11.97	1.55	7.73	11.44	1.71	6.67	10.98	1.91	5.75	11.47	2.28	5.04	11.10	2.61	4.26
14	11.97	1.48	8.10	11.47	1.65	6.96	10.96	1.88	5.83	11.51	2.25	5.11	11.12	2.55	4.36
15	12.03	1.41	8.56	11.57	1.58	7.32	11.00	1.84	5.97	11.61	2.21	5.24	11.20	2.48	4.52
19	11.58	1.21	9.60	11.23	1.37	8.22	10.82	1.56	6.93	11.43	1.94	5.88	11.19	2.22	5.03
20	11.47	1.16	9.86	11.15	1.32	8.45	10.77	1.50	7.18	11.39	1.89	6.04	11.19	2.17	5.16
25	11.42	1.09	10.47	11.19	1.22	9.15	10.81	1.33	8.15	11.37	1.46	7.79	11.22	1.89	5.93
30	11.71	1.04	11.31	11.23	1.16	9.66	11.05	1.29	8.55	11.46	1.41	8.15	11.36	1.93	5.88
35	12.36	1.02	12.09	11.97	1.17	10.21	11.55	1.32	8.78	11.99	1.60	7.49	11.45	1.86	6.17
40	13.10	1.06	12.42	12.88	1.19	10.86	12.46	1.33	9.37	13.00	1.63	7.99	12.36	1.84	6.71
43	13.73	1.02	13.47	13.41	1.14	11.81	13.03	1.30	10.01	13.68	1.60	8.54	13.12	1.80	7.31
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	4.72	3.03	1.56	4.63	3.38	1.37	4.57	3.50	1.31	/	/	/	/	/	/
-15	5.51	3.14	1.75	5.30	3.58	1.48	5.10	3.82	1.33	4.96	4.01	1.24	/	/	/
-10	7.54	3.77	2.00	7.24	3.91	1.85	6.32	4.11	1.54	5.70	4.30	1.33	/	/	/
-7	10.28	4.48	2.29	9.80	4.78	2.05	8.34	4.63	1.80	7.23	4.42	1.64	/	/	/
-5	10.15	4.37	2.32	9.96	4.58	2.17	8.33	4.57	1.82	7.24	4.44	1.63	/	/	/
-2	10.02	4.21	2.38	9.85	4.30	2.29	8.29	4.39	1.89	7.26	4.34	1.67	/	/	/
0	10.13	4.12	2.46	9.94	4.16	2.39	8.37	4.24	1.98	7.33	4.23	1.73	/	/	/
2	10.13	3.82	2.65	11.30	4.52	2.50	9.46	4.26	2.22	8.17	4.08	2.01	/	/	/
5	11.75	4.01	2.93	11.60	4.07	2.85	10.17	3.98	2.55	9.21	3.86	2.38	8.19	4.05	2.02
7	12.17	3.75	3.25	11.90	3.90	3.05	11.29	3.98	2.84	10.81	4.06	2.66	9.64	4.10	2.35
10	10.10	2.93	3.44	9.86	3.03	3.25	9.90	3.42	2.89	9.92	3.62	2.74	9.48	3.80	2.49
12	10.13	2.79	3.62	9.53	2.77	3.44	9.71	3.25	2.98	9.83	3.44	2.86	9.56	3.59	2.66
14	10.07	2.73	3.69	9.30	2.66	3.50	9.55	3.18	3.00	9.71	3.36	2.89	9.54	3.50	2.72
15	10.08	2.66	3.79	9.12	2.53	3.61	9.44	3.09	3.06	9.66	3.26	2.97	9.57	3.39	2.82
19	10.13	2.40	4.21	9.02	2.45	3.68	8.79	2.72	3.23	8.63	2.84	3.04	9.72	3.03	3.20
20	10.14	2.35	4.32	9.00	2.40	3.74	8.62	2.63	3.28	8.37	2.74	3.06	/	/	/
25	10.39	2.11	4.93	9.04	2.21	4.09	8.33	2.36	3.52	7.85	2.50	3.14	/	/	/
30	10.53	2.01	5.24	9.62	2.11	4.56	8.75	2.37	3.70	8.17	2.58	3.17	/	/	/
35	10.95	1.96	5.58	10.00	2.03	4.93	/	/	/	/	/	/	/	/	/
40	11.46	1.98	5.80	/	/	/	/	/	/	/	/	/	/	/	/
43	11.90	1.91	6.22	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.5-3: Heating capacity for 12kW models

Minimum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	3.64	1.54	2.36	3.52	1.50	2.35	3.27	1.81	1.81	3.08	2.01	1.53	2.83	2.17	1.30
-20	4.44	1.60	2.78	4.22	1.54	2.74	4.08	1.75	2.33	3.72	1.86	2.00	3.93	2.25	1.75
-15	4.85	1.54	3.16	5.00	1.70	2.94	4.92	1.83	2.68	4.55	1.92	2.37	4.73	2.45	1.93
-10	4.67	1.34	3.49	4.48	1.48	3.03	4.36	1.59	2.74	4.39	1.84	2.38	4.85	2.25	2.15
-7	4.61	1.17	3.94	3.85	1.15	3.36	3.97	1.26	3.14	4.20	1.53	2.74	5.41	2.14	2.52
-5	4.75	1.13	4.19	4.06	1.15	3.53	4.18	1.28	3.26	4.52	1.56	2.90	5.80	2.23	2.61
-2	4.73	1.08	4.40	4.21	1.09	3.86	4.27	1.20	3.55	4.75	1.51	3.14	6.16	2.18	2.83
0	4.99	1.01	4.96	4.64	1.08	4.28	4.62	1.18	3.92	5.24	1.52	3.45	6.70	2.15	3.11
2	5.41	0.98	5.54	4.95	1.06	4.69	4.92	1.16	4.23	5.56	1.45	3.83	7.04	2.12	3.32
5	5.91	0.93	6.35	5.34	1.03	5.19	5.31	1.12	4.73	5.97	1.39	4.29	7.49	2.05	3.66
7	6.15	0.88	6.98	5.53	0.96	5.79	5.58	1.04	5.38	6.30	1.31	4.80	7.88	1.92	4.10
10	6.10	0.84	7.24	5.72	0.91	6.31	5.62	0.97	5.81	6.37	1.26	5.07	7.92	1.90	4.16
12	6.05	0.75	8.12	5.78	0.82	7.01	5.65	0.94	6.04	6.69	1.26	5.29	8.05	1.81	4.44
14	5.97	0.70	8.49	5.76	0.79	7.30	5.62	0.92	6.11	6.78	1.27	5.36	8.05	1.77	4.54
15	5.93	0.66	8.96	5.78	0.75	7.68	5.62	0.90	6.26	6.92	1.26	5.49	8.09	1.72	4.69
19	5.83	0.58	10.05	5.74	0.67	8.61	5.65	0.78	7.27	6.96	1.13	6.16	8.24	1.58	5.23
20	5.81	0.56	10.32	5.73	0.65	8.85	5.66	0.75	7.52	6.97	1.10	6.32	8.27	1.54	5.36
25	5.89	0.54	10.97	5.85	0.61	9.58	5.79	0.68	8.54	7.06	0.96	7.36	8.39	1.36	6.16
30	6.83	0.58	11.82	6.96	0.69	10.11	7.82	0.89	8.78	8.23	1.09	7.52	8.52	1.38	6.18
35	7.23	0.56	12.79	7.43	0.69	10.81	8.17	0.88	9.31	8.60	1.08	7.94	8.58	1.32	6.49
40	7.63	0.58	13.14	7.95	0.69	11.50	8.75	0.88	9.93	9.09	1.07	8.47	9.05	1.28	7.05
43	8.10	0.57	14.26	8.37	0.67	12.51	9.22	0.87	10.62	9.64	1.06	9.06	9.75	1.27	7.69
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	3.75	2.43	1.54	3.60	2.54	1.42	3.51	2.69	1.30	/	/	/	/	/	/
-15	4.63	2.64	1.75	4.43	2.98	1.49	4.31	3.21	1.34	4.22	3.39	1.25	/	/	/
-10	5.11	2.50	2.04	5.33	2.83	1.89	4.82	3.08	1.57	4.49	3.32	1.35	/	/	/
-7	5.73	2.41	2.37	6.03	2.77	2.18	5.55	2.96	1.87	5.23	3.11	1.68	/	/	/
-5	5.93	2.44	2.43	6.12	2.68	2.28	5.70	3.01	1.89	5.42	3.20	1.69	/	/	/
-2	5.95	2.35	2.53	6.12	2.59	2.36	5.78	2.95	1.96	5.56	3.20	1.74	/	/	/
0	6.12	2.31	2.65	6.23	2.53	2.46	5.94	2.90	2.05	5.75	3.18	1.81	/	/	/
2	6.66	2.32	2.87	7.10	2.66	2.67	6.89	2.97	2.32	6.76	3.22	2.10	/	/	/
5	7.30	2.32	3.15	8.08	2.66	3.04	7.95	2.97	2.68	7.87	3.18	2.48	6.99	3.33	2.10
7	7.83	2.26	3.46	8.63	2.64	3.27	8.68	2.91	2.98	8.71	3.13	2.79	8.06	3.28	2.46
10	7.76	2.13	3.63	8.30	2.44	3.40	8.53	2.82	3.03	8.68	3.03	2.87	8.28	3.17	2.61
12	8.07	2.11	3.82	8.12	2.26	3.58	8.50	2.73	3.11	8.75	2.93	2.98	8.50	3.07	2.77
14	8.15	2.10	3.88	7.95	2.18	3.65	8.41	2.69	3.13	8.71	2.89	3.02	8.54	3.02	2.83
15	8.28	2.08	3.98	7.83	2.09	3.75	8.37	2.63	3.18	8.73	2.83	3.09	8.62	2.95	2.92
19	8.48	1.92	4.42	7.89	2.06	3.83	7.91	2.35	3.36	7.92	2.50	3.16	8.97	2.73	3.29
20	8.52	1.88	4.53	7.90	2.03	3.89	7.79	2.28	3.41	7.72	2.43	3.18	/	/	/
25	8.81	1.70	5.18	8.00	1.88	4.25	7.58	2.07	3.66	7.29	2.23	3.27	/	/	/
30	8.95	1.62	5.51	8.60	1.79	4.80	7.84	2.02	3.89	7.34	2.20	3.33	/	/	/
35	9.27	1.58	5.87	8.90	1.71	5.19	/	/	/	/	/	/	/	/	/
40	9.60	1.57	6.10	/	/	/	/	/	/	/	/	/	/	/	/
43	10.00	1.53	6.54	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.6-1: Heating capacity for 14kW models

Maximum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	7.00	3.27	2.14	6.76	3.20	2.11	5.43	3.18	1.71	4.89	3.35	1.46	4.47	3.47	1.29
-20	8.36	3.25	2.57	8.01	3.18	2.52	7.79	3.58	2.18	6.89	3.65	1.89	6.25	3.61	1.73
-15	9.61	3.40	2.82	9.47	3.61	2.62	9.22	3.80	2.43	8.57	3.95	2.17	7.63	4.12	1.85
-10	11.88	3.81	3.12	11.42	4.18	2.73	10.95	4.44	2.47	10.60	4.70	2.26	9.64	4.73	2.04
-7	13.71	4.02	3.41	12.91	4.28	3.02	12.70	4.55	2.79	12.32	4.94	2.49	11.94	5.17	2.31
-5	13.90	3.78	3.68	13.19	3.87	3.41	12.76	4.27	2.99	12.56	4.61	2.73	12.07	4.99	2.42
-2	13.69	3.61	3.79	13.01	3.61	3.60	12.51	4.04	3.09	12.45	4.38	2.84	12.21	4.90	2.49
0	14.32	3.40	4.21	13.68	3.54	3.87	13.03	4.00	3.26	13.01	4.32	3.01	12.69	4.85	2.62
2	14.69	3.20	4.59	14.14	3.44	4.11	13.61	3.94	3.46	13.46	4.23	3.18	13.32	4.84	2.75
5	15.38	2.93	5.25	14.91	3.30	4.51	14.32	3.63	3.94	14.28	3.95	3.61	14.29	4.59	3.11
7	16.27	2.81	5.80	15.55	3.15	4.94	15.46	3.44	4.49	15.60	3.86	4.04	15.65	4.52	3.46
10	15.54	2.28	6.81	15.52	2.89	5.36	14.86	3.10	4.79	15.27	3.60	4.24	14.97	4.08	3.67
12	15.49	2.14	7.23	15.41	2.76	5.58	15.08	3.02	4.99	15.61	3.59	4.35	15.30	4.04	3.79
14	15.36	2.08	7.38	15.25	2.70	5.65	15.08	2.99	5.04	15.68	3.58	4.37	15.36	4.02	3.82
15	15.32	2.01	7.62	15.18	2.62	5.79	15.17	2.94	5.16	15.83	3.56	4.45	15.50	3.98	3.89
19	14.99	1.83	8.21	14.89	2.27	6.55	14.75	2.66	5.55	15.35	3.14	4.90	15.20	3.52	4.32
20	14.90	1.78	8.35	14.81	2.20	6.74	14.64	2.59	5.65	15.23	3.04	5.01	15.12	3.42	4.42
25	14.89	1.64	9.08	14.75	1.92	7.69	14.62	2.38	6.15	14.93	2.68	5.57	14.74	2.98	4.95
30	15.25	1.55	9.82	14.81	1.80	8.21	14.86	2.10	7.09	15.06	2.42	6.22	15.00	2.80	5.36
35	16.01	1.45	11.05	15.37	1.70	9.04	14.99	1.87	8.02	15.49	2.26	6.86	15.25	2.65	5.77
40	16.22	1.40	11.62	16.41	1.59	10.29	16.21	1.89	8.57	15.96	2.20	7.26	15.75	2.59	6.08
43	16.55	1.36	12.20	16.73	1.54	10.83	16.54	1.88	8.81	16.28	2.12	7.69	16.07	2.56	6.27
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	5.42	3.61	1.50	5.14	3.99	1.29	4.97	4.06	1.23	/	/	/	/	/	/
-15	7.01	4.32	1.62	6.46	4.58	1.41	6.19	4.84	1.28	6.01	5.05	1.19	/	/	/
-10	9.07	5.01	1.81	8.72	5.21	1.67	7.53	5.26	1.43	6.73	5.30	1.27	/	/	/
-7	11.04	5.33	2.07	11.27	5.61	2.01	9.32	5.45	1.71	8.02	5.31	1.51	/	/	/
-5	11.17	5.24	2.13	11.14	5.32	2.09	9.41	5.18	1.82	8.25	5.06	1.63	/	/	/
-2	11.39	5.07	2.25	11.36	5.23	2.17	9.80	5.26	1.86	8.76	5.28	1.66	/	/	/
0	11.89	4.99	2.38	11.80	5.19	2.27	10.32	5.34	1.93	9.34	5.48	1.70	/	/	/
2	12.68	5.13	2.47	12.62	5.27	2.39	11.28	5.44	2.07	10.38	5.58	1.86	/	/	/
5	13.80	4.98	2.77	13.78	5.05	2.73	12.53	5.29	2.37	11.70	5.38	2.17	9.76	5.33	1.83
7	14.97	4.81	3.11	14.53	5.04	2.88	13.73	5.08	2.70	13.20	5.20	2.54	10.38	4.95	2.10
10	15.31	4.62	3.31	14.15	4.60	3.08	13.58	4.77	2.84	13.20	4.91	2.69	11.23	4.98	2.26
12	15.39	4.50	3.42	13.63	4.31	3.16	13.27	4.53	2.93	13.02	4.70	2.77	11.60	4.96	2.34
14	15.32	4.45	3.44	13.27	4.17	3.18	13.01	4.42	2.95	12.84	4.60	2.79	11.69	4.96	2.36
15	15.34	4.37	3.51	12.99	4.02	3.24	12.84	4.28	3.00	12.74	4.48	2.84	11.86	4.97	2.41
19	15.06	3.94	3.83	12.78	3.71	3.45	11.91	3.81	3.12	11.34	3.91	2.90	12.53	4.80	2.61
20	14.99	3.84	3.90	12.73	3.68	3.46	11.68	3.70	3.16	10.99	3.77	2.92	/	/	/
25	14.72	3.43	4.30	12.47	3.26	3.82	11.08	3.35	3.31	10.16	3.40	2.99	/	/	/
30	14.61	3.14	4.65	12.80	2.97	4.30	11.32	3.17	3.57	10.34	3.40	3.04	/	/	/
35	14.78	2.95	5.00	13.01	2.82	4.62	/	/	/	/	/	/	/	/	/
40	14.95	2.78	5.38	/	/	/	/	/	/	/	/	/	/	/	/
43	15.15	2.73	5.54	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.6-2: Heating capacity for 14kW models

Normal															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	5.85	2.57	2.27	5.71	2.54	2.25	4.57	2.55	1.79	4.19	2.76	1.51	3.88	2.97	1.30
-20	7.27	2.63	2.77	7.27	2.67	2.72	6.75	2.92	2.32	6.07	3.06	1.99	5.48	3.08	1.78
-15	8.03	2.63	3.06	7.94	2.79	2.85	7.86	3.03	2.60	7.16	3.12	2.29	6.24	3.26	1.91
-10	9.80	2.96	3.31	9.36	3.22	2.91	8.89	3.43	2.59	8.76	3.74	2.34	8.07	3.85	2.09
-7	12.45	3.50	3.56	12.19	3.94	3.09	12.00	4.21	2.85	11.87	4.46	2.66	11.70	4.98	2.35
-5	12.05	3.05	3.95	11.84	3.29	3.60	11.87	3.88	3.06	11.70	4.08	2.87	11.68	4.73	2.47
-2	11.76	2.89	4.07	11.44	3.01	3.80	11.44	3.55	3.22	11.44	3.79	3.02	11.54	4.52	2.55
0	12.20	2.70	4.52	11.79	2.89	4.08	11.72	3.40	3.45	11.79	3.65	3.23	11.74	4.36	2.69
2	11.98	2.41	4.97	11.80	2.65	4.46	11.00	3.06	3.60	11.55	3.40	3.40	11.50	4.04	2.85
5	13.40	2.39	5.61	13.08	2.71	4.82	13.01	3.17	4.10	12.62	3.26	3.87	12.70	3.85	3.30
7	15.21	2.43	6.26	14.54	2.77	5.24	14.50	3.15	4.60	14.58	3.52	4.15	14.10	3.92	3.60
10	12.29	1.63	7.53	12.14	2.07	5.85	11.31	2.17	5.22	11.77	2.52	4.67	11.41	2.87	3.97
12	12.29	1.53	8.03	12.08	1.97	6.12	11.50	2.11	5.46	12.07	2.51	4.82	11.69	2.84	4.12
14	12.20	1.49	8.22	11.98	1.93	6.21	11.53	2.08	5.53	12.14	2.50	4.85	11.76	2.83	4.16
15	12.19	1.43	8.50	11.95	1.87	6.37	11.62	2.05	5.67	12.29	2.49	4.94	11.89	2.80	4.25
19	11.83	1.28	9.22	11.62	1.60	7.27	11.20	1.82	6.15	11.81	2.15	5.48	11.55	2.43	4.75
20	11.74	1.25	9.40	11.53	1.54	7.49	11.09	1.77	6.27	11.69	2.08	5.62	11.47	2.35	4.87
25	11.80	1.15	10.22	11.56	1.35	8.55	11.15	1.63	6.82	11.53	1.66	6.93	11.25	2.06	5.46
30	12.20	1.11	10.98	11.71	1.29	9.07	11.44	1.46	7.81	11.75	1.54	7.64	11.56	2.05	5.63
35	13.05	1.06	12.28	12.39	1.25	9.93	11.77	1.36	8.63	12.31	1.67	7.39	11.99	1.96	6.10
40	13.55	1.04	13.01	13.55	1.19	11.38	13.05	1.41	9.28	13.01	1.65	7.88	12.70	1.96	6.48
43	14.06	1.02	13.75	14.07	1.17	12.06	13.56	1.41	9.61	13.51	1.61	8.40	13.19	1.96	6.73
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	4.77	3.08	1.55	4.69	3.60	1.30	4.64	3.87	1.20	/	/	/	/	/	/
-15	5.76	3.42	1.68	5.41	3.81	1.42	5.22	4.09	1.28	5.09	4.31	1.18	/	/	/
-10	7.63	4.08	1.87	7.34	4.26	1.72	6.37	4.35	1.46	5.73	4.44	1.29	/	/	/
-7	10.86	5.15	2.11	11.00	5.37	2.05	8.84	5.05	1.75	7.41	4.77	1.55	/	/	/
-5	10.78	4.99	2.16	10.83	5.13	2.11	8.87	4.82	1.84	7.57	4.56	1.66	/	/	/
-2	10.80	4.73	2.28	10.87	4.90	2.22	9.05	4.78	1.89	7.85	4.64	1.69	/	/	/
0	11.08	4.57	2.42	11.13	4.75	2.34	9.36	4.77	1.96	8.18	4.70	1.74	/	/	/
2	12.14	4.86	2.50	12.40	5.06	2.45	10.10	4.77	2.12	8.56	4.46	1.92	/	/	/
5	12.50	4.40	2.84	12.57	4.47	2.81	10.61	4.31	2.46	9.31	4.11	2.27	8.06	4.19	1.93
7	14.00	4.40	3.18	13.80	4.68	2.95	12.93	4.67	2.77	12.34	4.73	2.61	9.71	4.50	2.16
10	11.42	3.30	3.46	10.64	3.31	3.21	10.44	3.54	2.95	10.31	3.71	2.78	9.11	3.88	2.35
12	11.51	3.21	3.59	10.28	3.10	3.32	10.23	3.35	3.05	10.20	3.54	2.88	9.43	3.83	2.46
14	11.48	3.17	3.62	10.03	3.00	3.35	10.05	3.26	3.08	10.07	3.47	2.90	9.53	3.82	2.50
15	11.52	3.11	3.70	9.84	2.88	3.41	9.94	3.16	3.14	10.01	3.38	2.96	9.68	3.78	2.56
19	11.21	2.76	4.07	9.59	2.62	3.67	9.14	2.77	3.30	8.83	2.90	3.05	10.29	3.65	2.82
20	11.13	2.68	4.16	9.53	2.59	3.68	8.94	2.68	3.34	8.54	2.78	3.07	/	/	/
25	11.00	2.41	4.58	9.40	2.31	4.07	8.53	2.43	3.50	7.95	2.53	3.14	/	/	/
30	11.03	2.24	4.92	9.74	2.17	4.49	8.80	2.36	3.73	8.17	2.58	3.17	/	/	/
35	11.38	2.13	5.33	10.09	2.08	4.86	/	/	/	/	/	/	/	/	/
40	11.81	2.04	5.78	/	/	/	/	/	/	/	/	/	/	/	/
43	12.20	2.04	5.99	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.6-3: Heating capacity for 14kW models

Minimum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	3.76	1.62	2.33	4.02	1.74	2.30	3.54	1.94	1.82	3.33	2.17	1.54	3.00	2.29	1.31
-20	4.58	1.63	2.80	4.77	1.73	2.76	4.40	1.87	2.35	4.02	1.99	2.02	4.06	2.31	1.76
-15	5.24	1.68	3.13	5.40	1.85	2.91	5.31	2.00	2.66	4.91	2.09	2.35	4.88	2.56	1.91
-10	5.05	1.47	3.44	5.08	1.68	3.02	4.76	1.79	2.66	4.80	1.99	2.41	5.01	2.35	2.13
-7	5.14	1.34	3.84	4.55	1.35	3.36	4.57	1.48	3.10	4.96	1.77	2.80	6.21	2.46	2.52
-5	5.35	1.28	4.17	4.78	1.25	3.81	4.61	1.38	3.34	5.19	1.69	3.07	6.40	2.41	2.65
-2	5.37	1.25	4.30	4.89	1.21	4.04	4.56	1.32	3.47	5.24	1.63	3.22	6.56	2.39	2.75
0	5.73	1.19	4.80	5.34	1.22	4.36	4.79	1.31	3.66	5.57	1.63	3.42	6.92	2.39	2.90
2	5.93	1.11	5.33	5.57	1.18	4.71	5.14	1.29	4.00	5.83	1.60	3.64	7.33	2.34	3.13
5	6.23	1.03	6.07	5.89	1.14	5.15	5.58	1.24	4.49	6.18	1.49	4.16	7.86	2.25	3.49
7	6.48	0.96	6.75	6.03	1.06	5.68	5.92	1.12	5.27	6.64	1.42	4.68	8.50	2.09	4.07
10	6.34	0.80	7.93	6.18	1.00	6.16	5.84	1.06	5.50	6.66	1.35	4.92	8.28	2.00	4.15
12	6.21	0.74	8.43	6.11	0.95	6.43	5.92	1.03	5.73	7.04	1.39	5.06	8.49	1.98	4.29
14	6.09	0.71	8.62	6.02	0.92	6.52	5.91	1.02	5.80	7.16	1.41	5.09	8.51	1.97	4.33
15	6.01	0.67	8.90	5.97	0.89	6.68	5.93	1.00	5.94	7.33	1.42	5.18	8.59	1.94	4.42
19	5.96	0.62	9.65	5.93	0.78	7.61	5.85	0.91	6.45	7.19	1.25	5.74	8.50	1.72	4.93
20	5.95	0.60	9.84	5.93	0.76	7.85	5.83	0.89	6.57	7.16	1.22	5.88	8.48	1.68	5.06
25	6.09	0.57	10.70	6.05	0.68	8.95	5.96	0.83	7.15	7.17	1.10	6.54	8.42	1.48	5.67
30	7.11	0.62	11.47	7.26	0.76	9.49	8.10	1.01	8.02	8.43	1.20	7.05	8.68	1.46	5.92
35	7.63	0.59	13.00	7.69	0.73	10.52	8.32	0.91	9.15	8.83	1.13	7.84	8.98	1.40	6.42
40	7.89	0.57	13.77	8.37	0.69	12.06	9.16	0.93	9.84	9.10	1.09	8.35	9.29	1.36	6.82
43	8.30	0.57	14.55	8.79	0.69	12.78	9.59	0.94	10.19	9.53	1.07	8.90	9.24	1.31	7.08
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	3.79	2.47	1.54	3.65	2.68	1.36	3.56	2.98	1.20	/	/	/	/	/	/
-15	4.84	2.87	1.68	4.52	3.17	1.43	4.41	3.44	1.28	4.33	3.65	1.19	/	/	/
-10	5.17	2.71	1.90	5.40	3.08	1.76	4.87	3.26	1.49	4.51	3.43	1.32	/	/	/
-7	5.96	2.71	2.20	6.25	2.89	2.16	5.63	3.09	1.82	5.22	3.26	1.60	/	/	/
-5	6.15	2.69	2.28	6.46	2.88	2.24	5.85	3.03	1.93	5.44	3.15	1.73	/	/	/
-2	6.30	2.61	2.41	6.62	2.83	2.34	6.12	3.07	1.99	5.78	3.28	1.76	/	/	/
0	6.61	2.58	2.57	6.90	2.83	2.44	6.46	3.12	2.07	6.17	3.39	1.82	/	/	/
2	7.18	2.62	2.74	7.73	2.92	2.65	7.29	3.20	2.28	7.00	3.43	2.04	/	/	/
5	7.86	2.59	3.03	8.68	2.91	2.98	8.24	3.20	2.58	7.95	3.38	2.35	6.88	3.44	2.00
7	8.43	2.46	3.43	9.05	2.78	3.25	8.95	3.02	2.96	8.88	3.21	2.77	7.25	3.14	2.31
10	8.77	2.40	3.65	8.96	2.67	3.36	8.99	2.91	3.09	9.02	3.10	2.91	7.95	3.23	2.46
12	9.17	2.43	3.78	8.75	2.53	3.46	8.95	2.81	3.19	9.08	3.03	3.00	8.39	3.27	2.56
14	9.29	2.44	3.81	8.57	2.46	3.49	8.85	2.76	3.21	9.04	2.99	3.03	8.53	3.29	2.59
15	9.47	2.43	3.89	8.45	2.38	3.55	8.80	2.69	3.27	9.04	2.93	3.09	8.72	3.29	2.65
19	9.38	2.20	4.27	8.38	2.20	3.81	8.22	2.39	3.43	8.11	2.56	3.17	9.49	3.27	2.90
20	9.35	2.14	4.36	8.36	2.18	3.83	8.07	2.32	3.47	7.88	2.47	3.19	/	/	/
25	9.33	1.94	4.80	8.32	1.97	4.23	7.76	2.13	3.65	7.38	2.26	3.27	/	/	/
30	9.37	1.81	5.17	8.70	1.84	4.73	7.89	2.01	3.92	7.34	2.20	3.33	/	/	/
35	9.63	1.72	5.61	8.97	1.76	5.11	/	/	/	/	/	/	/	/	/
40	9.89	1.63	6.08	/	/	/	/	/	/	/	/	/	/	/	/
43	10.25	1.63	6.30	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.7-1: Heating capacity for 16kW models

Maximum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	7.69	4.03	1.91	7986.00	4132.04	1.93	6.61	4.01	1.65	5.89	4.43	1.33	4.96	4.21	1.18
-20	9.57	4.02	2.38	9.71	4.43	2.19	8.16	4.77	1.71	7.48	4.76	1.57	6.55	4.85	1.35
-15	11.84	4.37	2.71	11.27	4.60	2.45	10.71	4.93	2.17	10.07	5.24	1.92	9.03	5.38	1.68
-10	13.40	4.51	2.97	13.03	4.79	2.72	12.68	5.10	2.49	12.42	5.45	2.28	11.05	5.64	1.96
-7	14.34	4.59	3.13	14.09	4.89	2.88	13.87	5.19	2.67	13.84	5.55	2.50	13.13	6.02	2.18
-5	14.55	4.19	3.47	14.25	4.55	3.13	13.98	4.88	2.86	13.84	5.31	2.61	13.38	5.88	2.28
-2	14.38	3.84	3.74	13.90	4.08	3.41	13.70	4.46	3.07	13.48	4.96	2.72	13.53	5.56	2.43
0	15.09	3.49	4.33	14.46	3.85	3.75	14.27	4.27	3.34	13.85	4.80	2.88	14.06	5.33	2.64
2	15.73	3.36	4.68	15.10	3.86	3.91	14.72	4.38	3.36	14.48	4.75	3.05	14.73	5.42	2.72
5	16.79	3.24	5.19	16.53	4.07	4.06	16.07	3.98	4.04	15.64	4.56	3.43	15.88	4.96	3.20
7	17.48	3.16	5.53	16.91	3.68	4.60	16.79	3.79	4.43	16.35	4.25	3.85	16.62	4.80	3.46
10	18.01	2.99	6.02	17.76	3.58	4.96	17.58	3.71	4.74	17.07	4.31	3.96	17.33	4.72	3.67
12	18.52	2.88	6.44	18.22	3.30	5.52	18.07	3.55	5.08	17.74	4.19	4.23	18.00	4.63	3.89
14	18.65	2.83	6.60	18.31	3.19	5.75	18.18	3.49	5.22	17.94	4.14	4.33	18.21	4.60	3.96
15	18.89	2.76	6.84	18.52	3.06	6.05	18.41	3.40	5.41	18.26	4.08	4.48	18.53	4.53	4.09
19	17.55	2.25	7.79	17.15	2.49	6.89	17.04	2.82	6.05	16.77	3.36	4.99	16.59	3.92	4.24
20	17.22	2.14	8.03	16.81	2.37	7.10	16.70	2.69	6.21	16.39	3.20	5.12	16.11	3.77	4.28
25	16.48	1.86	8.86	16.19	2.23	7.26	16.24	2.34	6.94	16.15	2.78	5.81	15.73	3.23	4.87
30	15.63	1.55	10.09	15.46	1.88	8.21	15.37	2.00	7.68	15.41	2.37	6.49	15.05	2.76	5.46
35	16.57	1.53	10.82	16.35	1.81	9.01	16.31	1.94	8.42	16.23	2.36	6.87	15.88	2.79	5.68
40	16.90	1.47	11.46	17.64	1.75	10.06	17.25	1.88	9.15	17.35	2.40	7.24	16.41	2.78	5.91
43	17.24	1.46	11.84	17.99	1.71	10.51	17.59	1.88	9.37	17.70	2.39	7.41	16.74	2.70	6.20
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	5.85	4.54	1.29	5.37	4.63	1.16	5.07	4.90	1.04	/	/	/	/	/	/
-15	7.53	5.32	1.42	6.82	5.29	1.29	6.58	5.46	1.21	6.42	5.59	1.15	/	/	/
-10	9.49	5.58	1.70	8.92	5.92	1.51	7.79	5.74	1.36	7.04	5.59	1.26	/	/	/
-7	12.86	6.22	2.07	12.50	6.25	2.00	9.94	6.17	1.61	8.25	6.18	1.33	/	/	/
-5	12.95	5.82	2.22	12.60	6.14	2.05	10.21	5.94	1.72	8.62	5.97	1.45	/	/	/
-2	13.02	5.53	2.35	12.59	5.85	2.15	10.47	5.75	1.82	9.06	5.74	1.58	/	/	/
0	13.42	5.35	2.51	12.84	5.68	2.26	10.87	5.60	1.94	9.56	5.54	1.72	/	/	/
2	14.08	5.40	2.61	13.65	5.74	2.38	12.08	5.78	2.09	11.03	5.82	1.89	/	/	/
5	15.26	5.05	3.02	14.47	5.44	2.66	13.42	5.29	2.53	12.71	5.36	2.37	10.71	5.24	2.04
7	16.20	5.11	3.17	16.20	5.73	2.83	14.91	5.45	2.74	14.06	5.34	2.63	11.28	5.13	2.20
10	16.69	5.12	3.26	16.05	5.36	2.99	15.01	5.14	2.92	14.32	5.13	2.79	12.23	4.97	2.46
12	17.33	4.96	3.50	16.82	5.57	3.02	15.48	5.05	3.07	14.59	4.98	2.93	12.40	4.89	2.54
14	17.52	4.89	3.59	17.09	5.68	3.01	15.61	5.01	3.12	14.62	4.92	2.97	12.40	4.86	2.55
15	17.83	4.79	3.72	17.46	5.76	3.03	15.83	4.95	3.20	14.75	4.83	3.06	12.47	4.80	2.60
19	15.26	4.21	3.63	15.45	4.66	3.32	14.26	4.48	3.19	13.46	4.47	3.01	12.76	4.58	2.79
20	14.62	4.06	3.60	14.95	4.41	3.39	13.86	4.36	3.18	13.14	4.39	3.00	/	/	/
25	14.52	3.46	4.20	14.06	3.70	3.80	13.26	3.93	3.37	12.73	4.15	3.07	/	/	/
30	14.31	2.99	4.79	13.56	3.18	4.26	12.83	3.63	3.53	12.34	3.98	3.10	/	/	/
35	15.00	3.00	5.01	13.37	2.93	4.56	/	/	/	/	/	/	/	/	/
40	15.58	2.98	5.22	/	/	/	/	/	/	/	/	/	/	/	/
43	15.89	2.94	5.41	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.7-2: Heating capacity for 16kW models

Normal															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	6.57	3.24	2.03	6.79	3.29	2.06	5.57	3.21	1.73	5.04	3.65	1.38	4.30	3.60	1.19
-20	8.42	3.29	2.56	8.50	3.59	2.37	7.07	3.88	1.82	6.59	3.99	1.65	5.74	4.14	1.39
-15	9.89	3.37	2.93	9.35	3.52	2.66	8.80	3.79	2.32	8.41	4.14	2.03	7.38	4.26	1.73
-10	11.06	3.51	3.15	10.69	3.68	2.90	10.30	3.95	2.61	10.26	4.34	2.37	9.25	4.59	2.01
-7	13.87	4.27	3.25	13.54	4.44	3.05	13.10	4.85	2.70	13.09	4.98	2.63	12.80	5.69	2.25
-5	13.71	3.85	3.56	13.62	4.13	3.30	13.20	4.47	2.95	13.12	4.86	2.70	12.73	5.49	2.32
-2	13.00	3.35	3.88	12.90	3.57	3.62	12.67	4.03	3.14	12.60	4.44	2.84	12.58	5.05	2.49
0	13.10	2.90	4.52	13.04	3.25	4.01	12.93	3.80	3.40	12.74	4.21	3.03	12.78	4.72	2.71
2	13.25	2.61	5.07	13.10	3.18	4.12	13.00	3.77	3.45	12.72	3.97	3.20	12.70	4.46	2.85
5	14.14	2.52	5.61	13.66	3.19	4.28	13.46	3.09	4.35	13.09	3.58	3.66	13.14	3.88	3.39
7	16.96	2.87	5.91	16.14	3.16	5.11	15.90	3.53	4.50	15.74	3.99	3.94	16.00	4.57	3.50
10	14.24	2.14	6.66	13.89	2.57	5.42	13.48	2.61	5.16	13.16	3.01	4.36	13.21	3.33	3.97
12	14.54	2.03	7.16	14.28	2.32	6.17	14.03	2.52	5.58	13.72	2.93	4.68	13.76	3.26	4.22
14	14.59	1.99	7.35	14.38	2.22	6.49	14.21	2.48	5.74	13.90	2.90	4.80	13.94	3.23	4.32
15	14.73	1.93	7.63	14.57	2.11	6.89	14.48	2.43	5.97	14.18	2.85	4.98	14.21	3.19	4.46
19	13.56	1.55	8.76	13.44	1.75	7.69	13.26	1.98	6.70	12.95	2.32	5.59	12.62	2.71	4.66
20	13.27	1.47	9.04	13.16	1.67	7.89	12.95	1.88	6.88	12.65	2.20	5.75	12.22	2.59	4.71
25	12.82	1.29	9.97	12.68	1.57	8.06	12.73	1.65	7.71	12.67	1.75	7.22	12.01	2.24	5.36
30	12.51	1.11	11.29	12.23	1.35	9.06	11.83	1.40	8.47	12.41	1.55	7.98	11.83	2.06	5.74
35	13.36	1.11	12.03	13.24	1.34	9.90	12.80	1.41	9.06	13.22	1.79	7.40	12.48	2.07	6.02
40	14.11	1.10	12.83	14.57	1.31	11.13	13.88	1.40	9.91	14.14	1.80	7.86	13.22	2.10	6.30
43	14.65	1.10	13.33	15.13	1.29	11.71	14.43	1.41	10.21	14.69	1.81	8.10	13.74	2.06	6.66
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	5.15	3.88	1.33	4.89	4.18	1.17	4.74	4.68	1.01	/	/	/	/	/	/
-15	6.18	4.21	1.47	5.71	4.40	1.30	5.54	4.61	1.20	5.43	4.77	1.14	/	/	/
-10	7.98	4.55	1.75	7.51	4.83	1.55	6.60	4.75	1.39	5.99	4.69	1.28	/	/	/
-7	12.38	5.83	2.12	12.50	6.25	2.00	9.61	5.89	1.63	7.69	5.60	1.37	/	/	/
-5	12.41	5.51	2.25	11.67	5.63	2.07	8.72	4.91	1.77	7.88	5.32	1.48	/	/	/
-2	12.49	5.19	2.41	11.96	5.45	2.19	8.73	4.63	1.88	8.04	4.99	1.61	/	/	/
0	12.88	4.97	2.59	12.48	5.43	2.30	8.86	4.40	2.01	8.26	4.69	1.76	/	/	/
2	13.02	4.88	2.67	13.30	5.54	2.40	10.71	4.95	2.17	8.92	4.44	2.01	/	/	/
5	13.22	4.25	3.11	13.50	4.91	2.75	11.47	4.37	2.62	10.12	4.09	2.47	8.84	4.24	2.08
7	15.97	4.92	3.24	16.00	5.61	2.85	14.31	5.13	2.79	13.19	4.86	2.72	10.24	4.60	2.23
10	12.45	3.66	3.41	12.07	3.86	3.13	11.53	3.81	3.03	11.18	3.88	2.88	9.92	3.93	2.52
12	12.96	3.53	3.67	12.69	4.01	3.17	11.93	3.73	3.20	11.43	3.76	3.04	10.08	3.88	2.60
14	13.14	3.48	3.77	12.91	4.08	3.16	12.05	3.70	3.26	11.47	3.71	3.09	10.10	3.85	2.62
15	13.39	3.41	3.92	13.22	4.13	3.20	12.24	3.65	3.35	11.59	3.64	3.19	10.18	3.81	2.67
19	11.36	2.95	3.85	11.60	3.29	3.52	10.93	3.25	3.36	10.49	3.32	3.16	10.49	3.65	2.87
20	10.85	2.83	3.84	11.19	3.10	3.61	10.61	3.15	3.36	10.22	3.24	3.15	/	/	/
25	10.85	2.43	4.47	10.59	2.62	4.04	10.07	2.83	3.57	9.73	3.01	3.23	/	/	/
30	10.88	2.15	5.07	10.02	2.33	4.31	10.05	2.73	3.68	10.06	3.12	3.23	/	/	/
35	11.55	2.16	5.34	10.38	2.19	4.74	/	/	/	/	/	/	/	/	/
40	12.31	2.19	5.61	/	/	/	/	/	/	/	/	/	/	/	/
43	12.79	2.19	5.85	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

Table 2-4.7-3: Heating capacity for 16kW models

Minimum															
DB	LWT														
	25			30			35			40			45		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	4.38	2.11	2.08	4.74	2.25	2.11	4.30	2.45	1.76	4.01	2.86	1.40	3.33	2.77	1.20
-20	5.31	2.04	2.60	5.58	2.33	2.40	4.61	2.50	1.85	4.36	2.60	1.68	4.25	3.10	1.37
-15	6.45	2.15	3.00	6.37	2.34	2.72	5.94	2.50	2.38	5.77	2.77	2.08	5.78	3.33	1.73
-10	5.70	1.74	3.27	5.80	1.93	3.01	5.52	2.06	2.68	5.63	2.31	2.43	5.75	2.80	2.05
-7	5.38	1.53	3.52	4.96	1.55	3.21	4.99	1.68	2.97	5.58	1.99	2.80	6.83	2.86	2.38
-5	5.60	1.43	3.93	5.16	1.47	3.50	5.17	1.62	3.20	5.72	1.94	2.94	7.09	2.84	2.50
-2	5.64	1.33	4.26	5.22	1.36	3.83	5.17	1.50	3.44	5.67	1.84	3.08	7.27	2.71	2.68
0	6.04	1.22	4.94	5.62	1.33	4.23	5.49	1.46	3.76	5.93	1.81	3.28	7.66	2.62	2.92
2	6.35	1.18	5.39	5.69	1.31	4.34	5.82	1.42	4.10	6.28	1.77	3.56	8.12	2.55	3.19
5	6.80	1.13	5.99	5.78	1.25	4.64	6.27	1.36	4.60	6.77	1.71	3.95	8.74	2.43	3.59
7	6.96	1.08	6.43	5.67	1.05	5.38	6.43	1.27	5.08	6.97	1.56	4.46	9.02	2.26	3.99
10	6.51	0.93	7.01	6.78	1.19	5.70	6.93	1.27	5.44	7.44	1.62	4.59	9.58	2.31	4.15
12	6.65	0.89	7.51	6.84	1.06	6.48	7.15	1.22	5.86	7.99	1.63	4.92	9.98	2.27	4.40
14	6.66	0.86	7.71	6.81	1.00	6.81	7.20	1.20	6.02	8.20	1.63	5.04	10.09	2.25	4.49
15	6.71	0.84	7.99	6.82	0.94	7.22	7.29	1.17	6.26	8.45	1.62	5.22	10.26	2.21	4.64
19	6.76	0.74	9.17	6.86	0.85	8.06	7.10	1.01	7.02	8.23	1.41	5.86	9.28	1.92	4.84
20	6.77	0.72	9.46	6.86	0.83	8.27	7.05	0.98	7.21	8.17	1.36	6.02	9.04	1.85	4.89
25	6.92	0.66	10.44	7.00	0.83	8.45	7.34	0.91	8.07	7.99	1.17	6.82	8.98	1.61	5.57
30	7.29	0.62	11.79	7.58	0.80	9.48	8.38	0.96	8.70	8.91	1.21	7.36	8.88	1.47	6.03
35	7.75	0.61	12.73	8.28	0.79	10.48	9.05	0.94	9.60	9.48	1.21	7.85	9.34	1.48	6.33
40	8.22	0.61	13.58	9.00	0.76	11.79	9.75	0.93	10.51	9.89	1.19	8.34	9.68	1.46	6.62
43	8.64	0.61	14.11	9.45	0.76	12.40	10.20	0.94	10.83	10.35	1.21	8.59	10.21	1.46	7.00
DB	LWT														
	50			55			58			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
-20	4.10	3.11	1.32	3.81	3.14	1.21	3.64	3.60	1.01	/	/	/	/	/	/
-15	5.20	3.54	1.47	4.78	3.66	1.30	4.69	3.88	1.21	4.62	4.04	1.15	/	/	/
-10	5.41	3.03	1.79	5.53	3.49	1.58	5.04	3.56	1.42	4.71	3.62	1.30	/	/	/
-7	6.94	3.17	2.19	7.11	3.30	2.15	6.06	3.53	1.72	5.36	3.80	1.41	/	/	/
-5	7.12	3.00	2.37	7.31	3.32	2.20	6.34	3.46	1.83	5.69	3.72	1.53	/	/	/
-2	7.26	2.85	2.55	7.34	3.20	2.30	6.52	3.35	1.95	5.98	3.57	1.68	/	/	/
0	7.58	2.76	2.75	7.52	3.11	2.42	6.80	3.26	2.09	6.32	3.43	1.84	/	/	/
2	8.06	2.79	2.89	8.23	3.13	2.63	7.74	3.27	2.36	7.41	3.43	2.16	/	/	/
5	8.70	2.69	3.24	9.11	3.13	2.91	8.83	3.20	2.76	8.65	3.36	2.57	7.55	3.51	2.15
7	9.01	2.58	3.49	9.96	3.13	3.19	9.66	3.22	3.00	9.46	3.29	2.87	7.87	3.41	2.31
10	9.56	2.66	3.59	10.16	3.11	3.27	9.93	3.13	3.17	9.78	3.24	3.02	8.66	3.38	2.56
12	10.34	2.68	3.86	10.82	3.27	3.30	10.44	3.13	3.34	10.18	3.21	3.17	8.97	3.39	2.65
14	10.64	2.68	3.97	11.05	3.35	3.30	10.60	3.12	3.39	10.30	3.19	3.23	9.04	3.39	2.67
15	11.00	2.67	4.12	11.35	3.41	3.33	10.82	3.10	3.49	10.47	3.16	3.32	9.17	3.37	2.72
19	9.50	2.35	4.05	10.13	2.76	3.67	9.83	2.81	3.50	9.63	2.93	3.29	9.68	3.30	2.93
20	9.12	2.26	4.03	9.82	2.62	3.75	9.58	2.74	3.50	9.42	2.87	3.28	/	/	/
25	9.20	1.96	4.69	9.38	2.23	4.21	9.17	2.47	3.71	9.04	2.69	3.36	/	/	/
30	9.25	1.74	5.33	8.95	1.95	4.60	9.01	2.32	3.88	9.05	2.66	3.40	/	/	/
35	9.77	1.74	5.61	9.23	1.85	4.98	/	/	/	/	/	/	/	/	/
40	10.30	1.75	5.90	/	/	/	/	/	/	/	/	/	/	/	/
43	10.75	1.75	6.15	/	/	/	/	/	/	/	/	/	/	/	/

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
HC: Total heating capacity (kW)
PI: Power input (kW)

4.2 Cooling Capacity Tables (Test standard：EN14511)

Table 2-4.8: Cooling capacity for 4kW models

Maximum																								
DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	4.76	0.46	10.30	5.19	0.50	10.32	5.47	0.55	10.01	6.09	0.48	12.66
0	/	/	/	/	/	/	/	/	/	/	/	/	4.54	0.57	8.03	4.96	0.61	8.19	5.25	0.65	8.08	5.87	0.55	10.70
5	/	/	/	/	/	/	/	/	/	/	/	/	4.04	0.67	6.07	4.45	0.71	6.30	4.75	0.75	6.34	5.37	0.65	8.28
10	/	/	/	/	/	/	/	/	/	4.88	0.84	5.78	6.06	1.06	5.71	6.34	1.03	6.15	6.44	1.01	6.40	7.11	0.85	8.37
15	/	/	/	/	/	/	5.05	0.93	5.42	5.66	1.04	5.45	8.09	1.46	5.55	8.13	1.33	6.10	8.14	1.26	6.44	8.85	1.05	8.43
19	4.48	0.99	4.53	5.06	1.07	4.75	5.82	1.14	5.11	6.28	1.21	5.18	8.14	1.49	5.48	8.25	1.36	6.06	8.29	1.29	6.42	8.96	1.09	8.21
20	4.72	1.04	4.53	5.27	1.11	4.73	6.01	1.20	5.03	6.44	1.26	5.12	8.16	1.49	5.47	8.28	1.37	6.05	8.33	1.30	6.42	8.98	1.10	8.15
25	5.87	1.30	4.51	6.30	1.36	4.65	6.97	1.43	4.88	7.22	1.45	4.98	8.23	1.53	5.39	8.41	1.40	6.00	8.52	1.33	6.40	9.12	1.15	7.90
30	5.84	1.55	3.78	6.21	1.56	3.99	6.80	1.59	4.28	7.00	1.60	4.36	7.77	1.65	4.72	8.09	1.54	5.27	8.19	1.46	5.63	8.77	1.30	6.75
35	5.80	1.79	3.24	6.11	1.84	3.32	6.64	1.79	3.70	6.77	1.78	3.82	7.31	1.71	4.28	7.65	1.62	4.73	7.87	1.55	5.06	8.43	1.44	5.84
40	3.80	1.51	2.52	4.36	1.65	2.64	5.08	1.81	2.81	5.25	1.79	2.93	5.91	1.73	3.41	6.36	1.70	3.75	6.63	1.68	3.95	7.88	1.64	4.80
43	2.58	1.15	2.24	3.13	1.33	2.35	3.80	1.52	2.51	4.06	1.53	2.66	5.08	1.56	3.26	5.56	1.56	3.56	5.88	1.57	3.74	7.55	1.59	4.73
Normal																								
DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	3.83	0.33	11.74	4.18	0.35	11.97	4.45	0.37	11.92	4.95	0.35	14.10
0	/	/	/	/	/	/	/	/	/	/	/	/	3.66	0.39	9.35	4.01	0.41	9.70	4.28	0.44	9.81	4.78	0.36	13.31
5	/	/	/	/	/	/	/	/	/	/	/	/	3.23	0.48	6.68	3.56	0.50	7.07	3.81	0.52	7.29	4.36	0.45	9.77
10	/	/	/	/	/	/	/	/	/	3.53	0.58	6.04	4.87	0.77	6.29	5.08	0.73	6.91	5.19	0.70	7.37	5.79	0.59	9.89
15	/	/	/	/	/	/	3.79	0.66	5.71	4.39	0.76	5.75	6.79	1.15	5.89	6.91	1.05	6.56	7.00	0.99	7.06	7.44	0.80	9.29
19	3.48	0.73	4.76	3.92	0.79	4.97	4.64	0.86	5.42	5.08	0.92	5.51	6.80	1.16	5.88	6.99	1.07	6.51	7.14	1.03	6.96	7.74	0.86	9.04
20	3.68	0.77	4.76	4.10	0.83	4.95	4.86	0.91	5.34	5.25	0.96	5.45	6.80	1.16	5.88	7.01	1.08	6.50	7.17	1.03	6.94	7.82	0.87	8.98
25	4.65	0.97	4.78	4.98	1.02	4.88	5.72	1.10	5.18	5.97	1.13	5.29	6.96	1.21	5.74	7.27	1.13	6.45	7.44	1.07	6.98	8.05	0.91	8.85
30	4.69	1.17	4.02	4.97	1.18	4.20	5.67	1.24	4.56	5.87	1.26	4.66	6.67	1.32	5.06	7.03	1.25	5.63	7.25	1.20	6.05	7.85	1.06	7.44
35	4.51	1.36	3.32	4.70	1.36	3.45	4.81	1.20	4.01	4.80	1.16	4.15	4.77	1.01	4.70	4.50	0.82	5.50	4.87	0.85	5.71	5.69	0.89	6.42
40	3.10	1.15	2.70	3.55	1.26	2.81	4.30	1.42	3.03	4.47	1.41	3.16	5.15	1.40	3.68	5.60	1.38	4.07	5.95	1.37	4.34	7.15	1.32	5.41
43	2.12	0.91	2.33	2.45	1.02	2.41	2.99	1.15	2.59	3.20	1.16	2.76	4.04	1.18	3.43	4.58	1.21	3.79	5.04	1.25	4.04	5.97	1.15	5.18
Minimum																								
DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	2.48	0.20	12.60	2.69	0.21	12.59	2.87	0.23	12.38	3.21	0.20	15.83
0	/	/	/	/	/	/	/	/	/	/	/	/	2.37	0.24	9.92	2.59	0.26	10.09	2.77	0.27	10.09	3.11	0.23	13.40
5	/	/	/	/	/	/	/	/	/	/	/	/	1.74	0.24	7.35	1.91	0.25	7.62	2.06	0.27	7.76	2.35	0.23	10.17
10	/	/	/	/	/	/	/	/	/	2.79	0.43	6.44	2.70	0.39	6.99	2.82	0.37	7.51	2.90	0.37	7.91	3.21	0.31	10.39
15	/	/	/	/	/	/	2.32	0.38	6.04	2.59	0.42	6.09	3.64	0.58	6.29	3.58	0.50	7.10	3.50	0.45	7.80	4.25	0.41	10.32
19	1.78	0.36	4.96	1.87	0.36	5.24	2.17	0.38	5.71	2.42	0.42	5.81	3.43	0.55	6.24	3.66	0.53	6.88	3.86	0.52	7.41	4.40	0.46	9.66
20	1.86	0.38	4.95	1.93	0.37	5.20	2.13	0.38	5.62	2.38	0.41	5.74	3.38	0.54	6.23	3.68	0.54	6.83	3.95	0.54	7.32	4.44	0.47	9.50
25	2.23	0.46	4.89	2.23	0.44	5.02	2.37	0.45	5.31	2.55	0.47	5.46	3.29	0.54	6.04	3.63	0.54	6.74	3.92	0.53	7.33	4.38	0.47	9.28
30	2.23	0.54	4.10	2.21	0.51	4.35	2.33	0.49	4.73	2.49	0.51	4.85	3.12	0.59	5.30	3.48	0.59	5.89	3.79	0.59	6.38	4.23	0.55	7.72
35	2.05	0.59	3.50	2.22	0.58	3.80	2.53	0.60	4.23	2.63	0.60	4.36	3.01	0.61	4.91	3.35	0.60	5.62	3.66	0.62	5.92	4.23	0.62	6.84
40	1.40	0.52	2.69	1.66	0.58	2.86	2.01	0.64	3.12	2.11	0.65	3.26	2.52	0.66	3.82	2.87	0.68	4.19	3.18	0.71	4.50	4.07	0.74	5.51
43	0.73	0.31	2.38	1.04	0.42	2.49	1.43	0.53	2.68	1.57	0.55	2.86	2.11	0.59	3.57	2.35	0.60	3.90	2.57	0.62	4.17	3.80	0.71	5.38

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
CC: Total cooling capacity (kW)
PI: Power input (kW)

Table 2-4.9: Cooling capacity for 6kW models

Maximum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	5.27	0.59	8.93	5.91	0.57	10.42	6.38	0.55	11.53	6.77	0.64	10.62
0	/	/	/	/	/	/	/	/	/	/	/	/	5.05	0.69	7.28	5.68	0.67	8.49	6.16	0.66	9.39	6.55	0.74	8.85
5	/	/	/	/	/	/	/	/	/	/	/	/	4.55	0.79	5.74	5.17	0.77	6.73	5.66	0.76	7.48	6.05	0.84	7.20
10	/	/	/	/	/	/	/	/	/	5.81	1.25	4.65	6.32	1.13	5.61	6.70	1.06	6.33	6.90	1.01	6.83	7.45	0.95	7.88
15	/	/	/	/	/	/	5.89	1.10	5.33	6.33	1.18	5.38	8.09	1.46	5.55	8.13	1.33	6.10	8.14	1.26	6.44	8.85	1.05	8.43
19	5.06	1.29	3.93	5.87	1.36	4.31	6.48	1.36	4.76	6.81	1.39	4.91	8.14	1.49	5.48	8.25	1.36	6.06	8.29	1.29	6.42	8.96	1.09	8.21
20	5.41	1.38	3.93	6.10	1.43	4.27	6.63	1.43	4.62	6.93	1.45	4.79	8.16	1.49	5.47	8.28	1.37	6.05	8.33	1.30	6.42	8.98	1.10	8.15
25	7.16	1.80	3.98	7.26	1.79	4.07	7.37	1.77	4.17	7.54	1.71	4.42	8.23	1.53	5.39	8.41	1.40	6.00	8.52	1.33	6.40	9.12	1.15	7.90
30	6.50	1.85	3.51	7.15	1.95	3.67	7.29	1.90	3.84	7.39	1.84	4.02	7.77	1.65	4.72	8.09	1.54	5.27	8.19	1.46	5.63	8.77	1.30	6.75
35	6.04	2.09	2.89	7.11	2.39	2.97	7.22	2.03	3.55	7.24	1.95	3.71	7.31	1.68	4.35	7.65	1.64	4.67	7.87	1.58	4.98	8.43	1.44	5.84
40	3.80	1.51	2.52	4.50	1.69	2.66	5.08	1.81	2.81	5.25	1.79	2.93	5.91	1.73	3.41	6.36	1.70	3.75	6.63	1.68	3.95	7.88	1.64	4.80
43	2.58	1.15	2.24	3.24	1.37	2.37	3.80	1.52	2.51	4.06	1.53	2.66	5.08	1.56	3.26	5.56	1.56	3.56	5.88	1.57	3.74	7.55	1.59	4.73

Normal

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	4.24	0.42	10.18	4.76	0.39	12.12	5.19	0.38	13.72	5.50	0.42	12.96
0	/	/	/	/	/	/	/	/	/	/	/	/	4.07	0.48	8.48	4.59	0.46	10.08	5.02	0.44	11.39	5.33	0.48	11.01
5	/	/	/	/	/	/	/	/	/	/	/	/	3.64	0.58	6.31	4.13	0.55	7.56	4.54	0.53	8.61	4.91	0.58	8.49
10	/	/	/	/	/	/	/	/	/	4.69	0.95	4.93	5.08	0.82	6.18	5.37	0.75	7.12	5.55	0.71	7.86	6.06	0.65	9.31
15	/	/	/	/	/	/	4.42	0.78	5.65	4.89	0.86	5.69	6.79	1.15	5.89	6.91	1.05	6.56	7.00	0.99	7.06	7.44	0.80	9.29
19	3.93	0.95	4.12	4.62	1.01	4.58	5.17	1.01	5.10	5.50	1.05	5.25	6.80	1.16	5.88	6.99	1.07	6.51	7.14	1.03	6.96	7.74	0.86	9.04
20	4.22	1.02	4.14	4.84	1.07	4.54	5.36	1.08	4.96	5.65	1.10	5.14	6.80	1.16	5.88	7.01	1.08	6.50	7.17	1.03	6.94	7.82	0.87	8.98
25	5.67	1.35	4.21	5.92	1.36	4.34	6.05	1.35	4.49	6.23	1.31	4.74	6.96	1.21	5.74	7.27	1.13	6.45	7.44	1.07	6.98	8.05	0.91	8.85
30	5.23	1.40	3.74	5.82	1.49	3.91	6.08	1.48	4.10	6.20	1.44	4.29	6.67	1.32	5.06	7.03	1.25	5.63	7.25	1.20	6.05	7.85	1.06	7.44
35	4.74	1.61	2.94	7.00	2.33	3.00	6.85	1.87	3.67	6.86	1.78	3.85	6.87	1.50	4.58	6.50	1.35	4.80	6.87	1.28	5.36	7.69	1.20	6.39
40	3.10	1.15	2.70	3.74	1.31	2.86	4.30	1.42	3.03	4.47	1.41	3.16	5.15	1.40	3.68	5.60	1.38	4.07	5.95	1.37	4.34	7.15	1.32	5.41
43	2.12	0.91	2.33	2.58	1.05	2.46	2.99	1.15	2.59	3.20	1.16	2.76	4.04	1.18	3.43	4.58	1.21	3.79	5.04	1.25	4.04	5.97	1.15	5.18

Minimum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	2.75	0.25	10.92	3.07	0.24	12.69	3.35	0.23	14.26	3.57	0.27	13.17
0	/	/	/	/	/	/	/	/	/	/	/	/	2.64	0.29	9.00	2.96	0.28	10.44	3.25	0.28	11.72	3.47	0.31	11.08
5	/	/	/	/	/	/	/	/	/	/	/	/	1.96	0.28	6.95	2.22	0.27	8.12	2.46	0.27	9.16	2.64	0.30	8.84
10	/	/	/	/	/	/	/	/	/	2.60	0.45	5.73	2.81	0.41	6.87	2.98	0.39	7.72	3.10	0.37	8.44	3.36	0.34	9.78
15	/	/	/	/	/	/	2.71	0.45	5.99	2.89	0.48	6.05	3.64	0.58	6.29	3.58	0.50	7.10	3.50	0.45	7.80	4.25	0.41	10.32
19	2.07	0.48	4.29	2.20	0.46	4.77	2.42	0.45	5.34	2.62	0.47	5.52	3.43	0.55	6.24	3.66	0.53	6.88	3.86	0.52	7.41	4.40	0.46	9.66
20	2.13	0.50	4.30	2.25	0.48	4.72	2.35	0.45	5.17	2.55	0.47	5.39	3.38	0.54	6.23	3.68	0.54	6.83	3.95	0.54	7.32	4.44	0.47	9.50
25	2.42	0.56	4.31	2.49	0.55	4.50	2.50	0.53	4.72	2.66	0.53	4.98	3.29	0.54	6.04	3.63	0.54	6.74	3.92	0.53	7.33	4.38	0.47	9.28
30	2.48	0.65	3.81	2.49	0.61	4.05	2.49	0.58	4.30	2.62	0.58	4.50	3.12	0.59	5.30	3.48	0.59	5.89	3.79	0.59	6.38	4.23	0.55	7.72
35	2.07	0.62	3.31	2.44	0.67	3.65	2.75	0.69	4.00	2.80	0.67	4.20	3.01	0.60	4.99	3.35	0.60	5.62	3.66	0.63	5.81	4.23	0.62	6.84
40	1.40	0.52	2.69	1.73	0.60	2.90	2.01	0.64	3.12	2.11	0.65	3.26	2.52	0.66	3.82	2.87	0.68	4.19	3.18	0.71	4.50	4.07	0.74	5.51
43	0.73	0.31	2.38	1.09	0.43	2.52	1.43	0.53	2.68	1.57	0.55	2.86	2.11	0.59	3.57	2.35	0.60	3.90	2.57	0.62	4.17	3.80	0.71	5.38

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
CC: Total cooling capacity (kW)
PI: Power input (kW)

Table 2-4.10: Cooling capacity for 8kW models

Maximum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	6.39	0.63	10.07	7.40	0.70	10.51	8.21	0.76	10.82	8.74	0.71	12.31
0	/	/	/	/	/	/	/	/	/	/	/	/	6.17	0.71	8.69	6.81	0.73	9.28	7.26	0.74	9.76	7.76	0.70	11.05
5	/	/	/	/	/	/	/	/	/	/	/	/	5.96	0.82	7.30	6.21	0.77	8.04	6.30	0.72	8.69	6.78	0.69	9.78
10	/	/	/	/	/	/	/	/	/	5.07	0.65	7.86	6.29	0.74	8.54	7.20	0.80	9.05	7.91	0.84	9.45	8.30	0.79	10.53
15	/	/	/	/	/	/	5.97	0.87	6.84	6.24	0.90	6.95	7.33	0.99	7.38	8.34	1.08	7.71	9.11	1.15	7.94	9.73	1.12	8.67
19	5.52	1.09	5.08	6.31	1.19	5.30	6.84	1.19	5.74	7.11	1.21	5.88	8.17	1.27	6.45	9.25	1.39	6.63	10.1	1.50	6.73	10.9	1.51	7.18
20	5.68	1.15	4.96	6.46	1.25	5.18	7.06	1.29	5.46	7.33	1.31	5.61	8.38	1.35	6.22	9.47	1.49	6.36	10.3	1.60	6.43	11.6	1.64	6.81
25	6.47	1.48	4.36	7.25	1.59	4.56	7.82	1.63	4.81	8.11	1.64	4.95	9.26	1.68	5.52	10.4	1.81	5.75	11.3	1.90	5.92	12.8	2.02	6.33
30	7.27	1.89	3.85	8.03	1.99	4.03	8.57	2.01	4.25	8.89	2.02	4.39	10.2	2.06	4.93	11.3	2.15	5.26	12.2	2.20	5.54	14.4	2.40	6.00
35	7.39	2.37	3.12	8.20	2.55	3.21	8.77	2.31	3.80	9.06	2.31	3.93	10.2	2.31	4.43	11.1	2.37	4.69	11.7	2.40	4.89	13.6	2.50	5.42
40	6.61	2.52	2.62	7.11	2.49	2.86	7.42	2.37	3.14	7.71	2.40	3.21	8.88	2.53	3.51	9.69	2.54	3.81	10.2	2.51	4.07	12.3	2.83	4.34
43	5.09	2.28	2.23	5.44	2.28	2.39	5.64	2.19	2.58	5.86	2.17	2.70	6.73	2.13	3.16	7.55	2.17	3.48	8.15	2.17	3.75	10.04	2.49	4.03

Normal

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	5.14	0.45	11.38	5.97	0.50	12.01	6.68	0.53	12.50	7.10	0.51	14.03
0	/	/	/	/	/	/	/	/	/	/	/	/	4.98	0.50	9.94	5.50	0.51	10.69	5.91	0.52	11.31	6.31	0.49	12.86
5	/	/	/	/	/	/	/	/	/	/	/	/	4.77	0.60	7.96	4.96	0.56	8.88	5.05	0.52	9.69	5.50	0.51	10.76
10	/	/	/	/	/	/	/	/	/	4.10	0.49	8.42	5.05	0.54	9.32	5.77	0.58	10.00	6.37	0.60	10.55	6.75	0.58	11.60
15	/	/	/	/	/	/	4.48	0.62	7.24	4.82	0.65	7.36	6.16	0.79	7.83	7.07	0.85	8.32	7.83	0.90	8.70	8.17	0.86	9.55
19	4.29	0.80	5.34	4.98	0.88	5.64	5.46	0.89	6.14	5.74	0.91	6.29	6.82	0.99	6.92	7.82	1.09	7.15	8.66	1.19	7.30	9.40	1.19	7.91
20	4.43	0.85	5.21	5.12	0.93	5.52	5.71	0.97	5.86	5.97	0.99	6.03	6.99	1.04	6.69	8.01	1.17	6.86	8.87	1.28	6.95	9.71	1.29	7.50
25	5.13	1.11	4.61	5.83	1.20	4.87	6.42	1.24	5.17	6.70	1.26	5.31	7.84	1.33	5.87	8.92	1.44	6.20	9.82	1.52	6.46	11.3	1.59	7.09
30	5.84	1.42	4.10	6.56	1.52	4.31	7.14	1.57	4.54	7.45	1.59	4.69	8.71	1.65	5.28	9.85	1.74	5.65	10.80	1.82	5.94	12.9	1.95	6.61
35	5.75	1.79	3.20	7.45	2.22	3.35	7.70	1.89	4.07	7.82	1.86	4.21	8.32	1.74	4.77	8.30	1.64	5.05	10.25	1.95	5.26	12.4	2.09	5.94
40	5.40	1.92	2.81	5.89	1.91	3.08	6.27	1.86	3.38	6.56	1.90	3.46	7.73	2.04	3.79	8.54	2.06	4.15	9.18	2.06	4.47	11.1	2.28	4.89
43	4.18	1.80	2.32	4.35	1.75	2.49	4.44	1.66	2.67	4.62	1.65	2.80	5.36	1.61	3.32	6.23	1.68	3.71	6.98	1.72	4.06	7.94	1.80	4.41

Minimum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	3.33	0.28	11.86	3.84	0.31	12.42	4.31	0.33	12.89	4.60	0.31	14.71
0	/	/	/	/	/	/	/	/	/	/	/	/	3.23	0.31	10.38	3.55	0.32	11.13	3.83	0.32	11.79	4.11	0.31	13.34
5	/	/	/	/	/	/	/	/	/	/	/	/	2.57	0.30	8.55	2.67	0.28	9.46	2.74	0.27	10.29	2.96	0.26	11.57
10	/	/	/	/	/	/	/	/	/	2.27	0.25	9.25	2.80	0.28	10.11	3.20	0.30	10.75	3.56	0.31	11.31	3.75	0.30	12.59
15	/	/	/	/	/	/	2.75	0.36	7.69	2.86	0.37	7.82	3.30	0.39	8.37	3.63	0.40	9.03	3.92	0.41	9.62	4.67	0.44	10.61
19	2.19	0.40	5.55	2.34	0.40	5.87	2.55	0.40	6.43	2.73	0.41	6.61	3.44	0.47	7.35	4.09	0.54	7.60	4.69	0.60	7.79	5.34	0.63	8.47
20	2.24	0.41	5.42	2.38	0.42	5.73	2.50	0.41	6.12	2.69	0.43	6.31	3.47	0.49	7.09	4.20	0.58	7.24	4.88	0.67	7.33	5.51	0.69	7.93
25	2.46	0.52	4.73	2.57	0.51	5.05	2.66	0.49	5.43	2.87	0.51	5.58	3.71	0.60	6.18	4.47	0.69	6.51	5.18	0.76	6.78	6.12	0.82	7.44
30	2.78	0.66	4.19	2.86	0.64	4.45	2.93	0.62	4.76	3.16	0.64	4.91	4.08	0.74	5.53	4.89	0.82	5.93	5.64	0.90	6.28	6.92	1.01	6.86
35	2.62	0.74	3.54	2.99	0.77	3.89	3.34	0.78	4.28	3.51	0.79	4.45	4.21	0.82	5.12	4.86	0.90	5.43	5.46	0.96	5.70	6.82	1.07	6.36
40	2.44	0.87	2.80	2.70	0.86	3.12	2.94	0.84	3.48	3.11	0.87	3.57	3.79	0.97	3.93	4.38	1.02	4.30	4.91	1.06	4.64	6.34	1.28	4.97
43	1.43	0.60	2.37	1.78	0.70	2.55	2.12	0.77	2.76	2.26	0.78	2.90	2.80	0.81	3.46	3.20	0.83	3.84	3.55	0.85	4.18	5.06	1.11	4.58

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
CC: Total cooling capacity (kW)
PI: Power input (kW)

Table 2-4.11: Cooling capacity for 10kW models

Maximum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	6.83	0.69	9.92	7.94	0.77	10.35	8.79	0.82	10.66	9.35	0.77	12.13
0	/	/	/	/	/	/	/	/	/	/	/	/	6.61	0.77	8.56	7.30	0.80	9.14	7.76	0.81	9.61	8.30	0.76	10.88
5	/	/	/	/	/	/	/	/	/	/	/	/	6.38	0.89	7.19	6.66	0.84	7.92	6.74	0.79	8.56	7.25	0.75	9.63
10	/	/	/	/	/	/	/	/	/	5.30	0.69	7.69	6.55	0.75	8.73	7.48	0.79	9.51	8.17	0.80	10.18	8.80	0.86	10.22
15	/	/	/	/	/	/	6.30	1.07	5.89	6.56	1.06	6.18	7.61	1.03	7.35	8.68	1.10	7.91	9.48	1.13	8.38	10.64	1.20	8.84
19	6.01	1.21	4.98	6.52	1.28	5.11	7.01	1.32	5.31	7.30	1.33	5.50	8.46	1.35	6.25	9.64	1.45	6.63	10.53	1.52	6.93	12.12	1.57	7.73
20	6.20	1.28	4.86	6.72	1.35	4.98	7.19	1.39	5.17	7.49	1.40	5.33	8.67	1.45	5.97	9.88	1.57	6.31	10.79	1.64	6.57	12.49	1.68	7.45
25	7.13	1.68	4.24	7.73	1.77	4.37	8.26	1.81	4.56	8.59	1.83	4.70	9.87	1.88	5.24	11.11	2.00	5.55	12.00	2.07	5.79	13.93	2.17	6.42
30	8.06	2.17	3.71	8.63	2.24	3.86	9.34	2.31	4.05	9.68	2.33	4.16	11.08	2.40	4.62	12.34	2.51	4.91	13.21	2.57	5.14	15.37	2.79	5.51
35	8.13	2.70	3.01	8.53	2.72	3.13	9.48	2.43	3.72	9.79	2.57	3.82	11.03	2.62	4.21	12.05	2.68	4.49	12.70	2.68	4.73	14.51	2.87	5.06
40	6.61	2.52	2.62	7.04	2.46	2.86	7.42	2.37	3.14	7.71	2.40	3.21	8.88	2.53	3.51	9.71	2.55	3.81	10.23	2.51	4.07	12.27	2.83	4.34
43	5.09	2.28	2.23	5.39	2.25	2.39	5.64	2.19	2.58	5.86	2.17	2.70	6.73	2.13	3.16	7.56	2.17	3.48	8.15	2.17	3.75	10.04	2.49	4.03

Normal

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	5.50	0.49	11.21	6.40	0.54	11.83	7.15	0.58	12.31	7.59	0.55	13.82
0	/	/	/	/	/	/	/	/	/	/	/	/	5.33	0.54	9.79	5.90	0.56	10.53	6.33	0.57	11.14	6.75	0.53	12.66
5	/	/	/	/	/	/	/	/	/	/	/	/	5.11	0.65	7.84	5.32	0.61	8.74	5.41	0.57	9.54	5.88	0.56	10.60
10	/	/	/	/	/	/	/	/	/	4.29	0.52	8.22	5.26	0.55	9.53	5.99	0.57	10.51	6.58	0.58	11.37	7.16	0.64	11.26
15	/	/	/	/	/	/	4.73	0.76	6.24	5.06	0.77	6.55	6.39	0.82	7.80	7.36	0.86	8.54	8.15	0.89	9.18	8.94	0.92	9.74
19	4.67	0.89	5.23	5.18	0.95	5.43	5.60	0.98	5.69	5.89	1.00	5.89	7.06	1.05	6.70	8.16	1.14	7.15	9.06	1.21	7.51	10.48	1.23	8.51
20	4.83	0.95	5.11	5.36	1.01	5.31	5.82	1.05	5.55	6.10	1.07	5.72	7.23	1.13	6.42	8.35	1.23	6.80	9.29	1.31	7.10	10.87	1.32	8.21
25	5.65	1.26	4.49	6.25	1.34	4.68	6.78	1.38	4.91	7.10	1.41	5.04	8.35	1.50	5.58	9.53	1.59	5.99	10.47	1.66	6.32	12.30	1.71	7.18
30	6.48	1.64	3.95	7.17	1.74	4.12	7.78	1.80	4.32	8.12	1.83	4.45	9.51	1.92	4.95	10.73	2.04	5.26	11.69	2.12	5.51	13.76	2.26	6.08
35	6.31	2.01	3.15	8.20	2.52	3.25	8.57	2.16	3.96	8.68	2.13	4.07	9.09	2.05	4.43	9.90	2.18	4.55	11.08	2.18	5.09	13.23	2.39	5.54
40	5.40	1.92	2.81	5.87	1.90	3.08	6.27	1.86	3.38	6.56	1.90	3.46	7.73	2.04	3.79	8.56	2.06	4.15	9.18	2.06	4.47	11.14	2.28	4.89
43	4.18	1.80	2.32	4.33	1.74	2.49	4.44	1.66	2.67	4.62	1.65	2.80	5.36	1.61	3.32	6.24	1.68	3.71	6.98	1.72	4.06	7.94	1.80	4.41

Minimum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	3.56	0.30	11.68	4.11	0.34	12.24	4.61	0.36	12.69	4.93	0.34	14.49
0	/	/	/	/	/	/	/	/	/	/	/	/	3.46	0.34	10.23	3.80	0.35	10.96	4.09	0.35	11.61	4.39	0.33	13.14
5	/	/	/	/	/	/	/	/	/	/	/	/	2.75	0.33	8.42	2.86	0.31	9.32	2.93	0.29	10.13	3.17	0.28	11.40
10	/	/	/	/	/	/	/	/	/	2.38	0.26	9.04	2.92	0.28	10.33	3.31	0.29	11.30	3.67	0.30	12.18	3.97	0.33	12.22
15	/	/	/	/	/	/	2.90	0.44	6.62	3.00	0.43	6.96	3.42	0.41	8.33	3.77	0.41	9.28	4.08	0.40	10.14	5.11	0.47	10.81
19	2.39	0.44	5.45	2.45	0.43	5.65	2.62	0.44	5.96	2.80	0.45	6.19	3.56	0.50	7.11	4.26	0.56	7.60	4.91	0.61	8.02	5.96	0.65	9.11
20	2.44	0.46	5.31	2.50	0.45	5.52	2.55	0.44	5.79	2.75	0.46	5.99	3.59	0.53	6.81	4.38	0.61	7.18	5.11	0.68	7.49	6.17	0.71	8.68
25	2.71	0.59	4.60	2.77	0.57	4.85	2.81	0.55	5.15	3.04	0.57	5.30	3.95	0.67	5.88	4.76	0.76	6.28	5.52	0.83	6.64	6.69	0.89	7.54
30	3.08	0.76	4.03	3.15	0.74	4.26	3.19	0.70	4.53	3.44	0.74	4.66	4.45	0.86	5.19	5.31	0.96	5.53	6.10	1.05	5.82	7.41	1.18	6.30
35	2.88	0.85	3.37	3.26	0.87	3.76	3.61	0.86	4.19	3.80	0.88	4.32	4.55	0.94	4.86	5.26	1.01	5.21	5.90	1.07	5.52	7.28	1.23	5.93
40	2.44	0.87	2.80	2.70	0.86	3.12	2.94	0.84	3.48	3.11	0.87	3.57	3.79	0.97	3.93	4.38	1.02	4.30	4.91	1.06	4.64	6.34	1.28	4.97
43	1.43	0.60	2.37	1.78	0.70	2.55	2.12	0.77	2.76	2.26	0.78	2.90	2.80	0.81	3.46	3.20	0.83	3.84	3.55	0.85	4.18	5.06	1.11	4.58

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
CC: Total cooling capacity (kW)
PI: Power input (kW)

Table 2-4.12: Cooling capacity for 12kW models

Maximum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	9.55	1.27	7.50	10.05	1.34	7.48	10.39	1.41	7.37	11.39	1.36	8.35
0	/	/	/	/	/	/	/	/	/	/	/	/	9.33	1.57	5.93	10.20	1.53	6.66	10.90	1.49	7.32	11.89	1.50	7.92
5	/	/	/	/	/	/	/	/	/	/	/	/	9.12	1.71	5.32	10.35	1.63	6.33	11.41	1.57	7.27	12.38	1.64	7.57
10	/	/	/	/	/	/	/	/	/	9.13	2.19	4.17	10.81	2.05	5.27	12.07	1.98	6.10	13.14	1.92	6.85	14.18	1.94	7.32
15	/	/	/	/	/	/	10.51	2.32	4.53	10.91	2.32	4.69	12.50	2.33	5.36	13.79	2.30	6.00	14.87	2.27	6.56	15.98	2.24	7.14
19	7.32	1.87	3.92	9.69	2.41	4.01	11.82	2.83	4.19	12.23	2.85	4.29	13.83	2.94	4.70	14.89	2.94	5.07	15.72	2.92	5.37	16.42	2.70	6.09
20	7.78	2.03	3.83	10.09	2.56	3.94	12.15	2.96	4.10	12.55	3.00	4.19	14.16	3.12	4.54	15.17	3.14	4.84	15.93	3.14	5.08	16.53	2.84	5.82
25	10.10	3.00	3.37	12.09	3.38	3.57	13.80	3.61	3.82	14.20	3.67	3.87	15.82	3.91	4.04	16.54	3.97	4.17	17.00	4.01	4.24	17.07	3.44	4.96
30	9.99	3.58	2.79	11.88	3.96	3.00	13.43	4.13	3.25	13.78	4.14	3.33	15.18	4.17	3.64	15.80	4.17	3.79	16.17	4.15	3.90	16.11	3.74	4.31
35	9.89	4.33	2.29	11.81	4.38	2.70	13.07	4.72	2.77	13.36	4.62	2.89	14.53	4.29	3.39	15.05	4.22	3.57	15.34	4.14	3.71	15.26	3.86	3.95
40	8.11	4.53	1.79	9.10	4.50	2.02	9.87	4.33	2.28	10.03	4.24	2.37	10.67	3.92	2.72	11.52	4.00	2.88	12.19	4.05	3.01	13.23	3.77	3.51
43	5.20	3.72	1.40	5.72	3.52	1.63	6.11	3.26	1.87	6.35	3.20	1.98	7.33	3.02	2.43	7.99	3.11	2.57	8.53	3.19	2.67	10.68	3.26	3.27

Normal

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	7.69	0.91	8.47	8.11	0.95	8.54	8.46	0.99	8.51	9.25	0.97	9.52
0	/	/	/	/	/	/	/	/	/	/	/	/	7.53	1.11	6.78	8.25	1.07	7.68	8.89	1.05	8.48	9.67	1.05	9.22
5	/	/	/	/	/	/	/	/	/	/	/	/	7.30	1.26	5.80	8.27	1.18	6.99	9.16	1.13	8.10	10.05	1.21	8.32
10	/	/	/	/	/	/	/	/	/	7.36	1.66	4.43	8.68	1.51	5.75	9.68	1.44	6.74	10.57	1.38	7.65	11.54	1.43	8.07
15	/	/	/	/	/	/	7.88	1.62	4.86	8.41	1.66	5.06	10.50	1.80	5.82	11.70	1.76	6.63	12.78	1.74	7.36	13.43	1.67	8.05
19	5.68	1.38	4.12	7.67	1.78	4.30	9.44	2.08	4.54	9.86	2.11	4.67	11.54	2.24	5.16	12.60	2.25	5.59	13.53	2.27	5.96	14.20	2.07	6.86
20	6.07	1.51	4.02	8.01	1.90	4.23	9.83	2.20	4.46	10.22	2.24	4.57	11.81	2.36	4.99	12.82	2.40	5.33	13.71	2.44	5.61	14.39	2.19	6.56
25	8.00	2.24	3.56	9.74	2.53	3.85	11.33	2.71	4.17	11.74	2.78	4.22	13.39	3.04	4.41	14.19	3.09	4.60	14.84	3.14	4.73	15.07	2.65	5.68
30	8.04	2.71	2.97	9.69	3.00	3.23	11.19	3.18	3.52	11.56	3.20	3.61	13.03	3.27	3.99	13.74	3.30	4.16	14.31	3.34	4.28	14.43	2.97	4.86
35	8.98	3.75	2.40	11.50	4.18	2.75	12.13	4.25	2.85	12.10	4.02	3.01	11.97	3.28	3.65	12.00	3.04	3.95	13.39	3.38	3.96	13.91	3.18	4.37
40	6.62	3.45	1.92	7.54	3.43	2.20	8.35	3.35	2.49	8.53	3.29	2.59	9.28	3.09	3.00	10.16	3.17	3.21	10.94	3.24	3.38	12.00	2.97	4.05
43	4.27	2.93	1.45	4.57	2.68	1.70	4.80	2.44	1.97	5.01	2.39	2.10	5.83	2.23	2.61	6.60	2.36	2.80	7.30	2.47	2.96	8.44	2.30	3.66

Minimum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	4.98	0.56	8.83	5.23	0.59	8.84	5.46	0.62	8.78	6.00	0.60	9.98
0	/	/	/	/	/	/	/	/	/	/	/	/	4.88	0.69	7.09	5.33	0.67	8.00	5.75	0.65	8.84	6.29	0.66	9.56
5	/	/	/	/	/	/	/	/	/	/	/	/	3.93	0.63	6.23	4.46	0.60	7.45	4.96	0.58	8.61	5.41	0.60	8.95
10	/	/	/	/	/	/	/	/	/	4.07	0.83	4.89	4.81	0.77	6.24	5.37	0.74	7.25	5.91	0.72	8.20	6.40	0.73	8.75
15	/	/	/	/	/	/	4.83	0.94	5.16	4.99	0.93	5.37	5.63	0.91	6.22	6.02	0.84	7.19	6.39	0.79	8.11	7.67	0.86	8.92
19	2.91	0.68	4.29	3.58	0.80	4.47	4.41	0.93	4.75	4.69	0.96	4.90	5.82	1.06	5.47	6.58	1.11	5.94	7.32	1.15	6.35	8.07	1.10	7.33
20	3.07	0.73	4.18	3.70	0.84	4.39	4.30	0.92	4.65	4.61	0.97	4.78	5.86	1.11	5.29	6.72	1.20	5.62	7.55	1.28	5.92	8.16	1.18	6.93
25	3.84	1.05	3.65	4.28	1.07	3.99	4.69	1.07	4.38	5.02	1.13	4.43	6.33	1.36	4.64	7.09	1.47	4.82	7.82	1.58	4.96	8.19	1.38	5.95
30	3.82	1.26	3.03	4.22	1.27	3.34	4.59	1.25	3.68	4.89	1.29	3.78	6.10	1.46	4.17	6.80	1.56	4.36	7.47	1.65	4.51	7.77	1.54	5.04
35	3.50	1.42	2.46	4.26	1.50	2.83	4.98	1.64	3.04	5.18	1.61	3.21	5.99	1.53	3.90	6.57	1.56	4.21	7.13	1.64	4.36	7.66	1.65	4.65
40	2.99	1.56	1.91	3.46	1.56	2.22	3.91	1.53	2.56	4.04	1.51	2.67	4.55	1.46	3.11	5.21	1.57	3.32	5.85	1.67	3.50	6.83	1.66	4.12
43	1.46	0.98	1.48	1.89	1.08	1.75	2.30	1.13	2.03	2.45	1.13	2.17	3.05	1.12	2.72	3.39	1.17	2.89	3.72	1.22	3.04	5.38	1.42	3.80

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
CC: Total cooling capacity (kW)
PI: Power input (kW)

Table 2-4.13: Cooling capacity for 14kW models

Maximum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	10.03	1.32	7.57	10.55	1.40	7.55	10.91	1.47	7.44	11.96	1.42	8.43
0	/	/	/	/	/	/	/	/	/	/	/	/	9.80	1.67	5.87	10.71	1.62	6.59	11.45	1.58	7.24	12.48	1.59	7.84
5	/	/	/	/	/	/	/	/	/	/	/	/	9.57	1.76	5.44	10.86	1.68	6.47	11.98	1.61	7.43	13.00	1.68	7.73
10	/	/	/	/	/	/	/	/	/	10.02	2.46	4.07	11.35	2.18	5.21	12.34	2.03	6.07	13.14	1.92	6.85	14.18	1.94	7.32
15	/	/	/	/	/	/	10.98	2.32	4.60	11.40	2.39	4.77	13.06	2.32	5.45	14.41	2.36	6.10	15.53	2.32	6.67	16.38	2.32	7.26
19	7.69	1.99	3.86	10.37	2.63	3.95	12.40	2.99	4.15	12.83	3.02	4.25	14.51	3.11	4.67	15.30	3.02	5.06	15.85	2.94	5.40	16.50	2.70	6.11
20	8.17	2.17	3.77	10.80	2.78	3.88	12.76	3.16	4.04	13.18	3.20	4.12	14.87	3.33	4.47	15.52	3.23	4.80	15.93	3.14	5.08	16.53	2.84	5.82
25	10.61	3.19	3.32	12.95	3.67	3.53	14.49	3.84	3.77	14.91	3.91	3.82	16.62	4.16	3.99	16.94	4.09	4.14	17.00	4.01	4.24	17.07	3.44	4.96
30	10.49	3.96	2.65	12.79	4.47	2.86	14.10	4.53	3.11	14.47	4.54	3.19	15.94	4.56	3.49	16.18	4.37	3.70	16.17	4.18	3.87	16.11	3.74	4.31
35	10.38	4.81	2.16	12.84	5.45	2.35	13.72	5.32	2.58	14.03	5.22	2.69	15.26	4.88	3.13	15.42	4.66	3.31	15.34	4.44	3.45	15.26	4.12	3.71
40	8.11	4.53	1.79	9.28	4.59	2.02	9.87	4.33	2.28	10.03	4.24	2.37	10.67	3.92	2.72	11.52	4.00	2.88	12.19	4.05	3.01	13.23	3.77	3.51
43	5.20	3.72	1.40	5.83	3.59	1.63	6.11	3.26	1.87	6.35	3.20	1.98	7.33	3.02	2.43	7.99	3.11	2.57	8.53	3.19	2.67	10.68	3.26	3.27

Normal

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	8.07	0.94	8.56	8.52	0.99	8.63	8.88	1.03	8.60	9.72	1.01	9.61
0	/	/	/	/	/	/	/	/	/	/	/	/	7.90	1.18	6.71	8.66	1.14	7.60	9.33	1.11	8.39	10.16	1.11	9.13
5	/	/	/	/	/	/	/	/	/	/	/	/	7.67	1.29	5.93	8.68	1.21	7.15	9.61	1.16	8.28	10.55	1.24	8.50
10	/	/	/	/	/	/	/	/	/	8.08	1.87	4.32	9.12	1.60	5.69	9.90	1.48	6.71	10.57	1.38	7.65	11.54	1.43	8.07
15	/	/	/	/	/	/	8.24	1.67	4.94	8.78	1.71	5.14	10.97	1.85	5.92	12.23	1.81	6.74	13.36	1.79	7.48	13.76	1.68	8.19
19	5.97	1.47	4.05	8.21	1.94	4.24	9.90	2.20	4.50	10.34	2.24	4.63	12.11	2.37	5.12	12.94	2.32	5.59	13.64	2.28	5.99	14.26	2.07	6.88
20	6.37	1.61	3.96	8.58	2.06	4.16	10.32	2.35	4.40	10.73	2.39	4.50	12.40	2.52	4.92	13.12	2.48	5.30	13.71	2.44	5.61	14.39	2.19	6.56
25	8.40	2.39	3.52	10.43	2.74	3.80	11.89	2.89	4.12	12.33	2.96	4.17	14.06	3.23	4.35	14.52	3.18	4.57	14.84	3.14	4.73	15.07	2.65	5.68
30	8.44	2.99	2.82	10.38	3.37	3.08	11.75	3.49	3.37	12.14	3.51	3.46	13.68	3.57	3.83	14.07	3.46	4.06	14.31	3.37	4.25	14.43	2.97	4.86
35	8.07	3.56	2.27	12.40	4.96	2.50	12.86	4.75	2.71	12.92	4.54	2.85	13.17	3.87	3.40	13.50	3.74	3.61	13.59	3.58	3.80	13.91	3.35	4.15
40	6.62	3.45	1.92	7.69	3.50	2.20	8.35	3.35	2.49	8.53	3.29	2.59	9.28	3.09	3.00	10.16	3.17	3.21	10.94	3.24	3.38	12.00	2.97	4.05
43	4.27	2.93	1.45	4.66	2.73	1.70	4.80	2.44	1.97	5.01	2.39	2.10	5.83	2.23	2.61	6.60	2.36	2.80	7.30	2.47	2.96	8.44	2.30	3.66

Minimum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	5.22	0.59	8.92	5.49	0.61	8.93	5.73	0.65	8.86	6.30	0.63	10.08
0	/	/	/	/	/	/	/	/	/	/	/	/	5.13	0.73	7.01	5.59	0.71	7.92	6.04	0.69	8.75	6.61	0.70	9.47
5	/	/	/	/	/	/	/	/	/	/	/	/	4.12	0.65	6.37	4.68	0.61	7.61	5.21	0.59	8.80	5.68	0.62	9.15
10	/	/	/	/	/	/	/	/	/	4.47	0.94	4.77	5.06	0.82	6.16	5.49	0.76	7.21	5.91	0.72	8.20	6.40	0.73	8.75
15	/	/	/	/	/	/	5.05	0.96	5.24	5.22	0.96	5.46	5.88	0.93	6.32	6.29	0.86	7.31	6.68	0.81	8.25	7.86	0.87	9.07
19	3.06	0.72	4.22	3.79	0.86	4.40	4.62	0.98	4.71	4.92	1.01	4.86	6.10	1.12	5.43	6.75	1.14	5.93	7.38	1.16	6.38	8.10	1.10	7.36
20	3.22	0.78	4.12	3.92	0.91	4.32	4.52	0.99	4.58	4.85	1.03	4.71	6.16	1.18	5.21	6.87	1.23	5.58	7.55	1.28	5.92	8.16	1.18	6.93
25	4.03	1.12	3.60	4.53	1.15	3.94	4.93	1.14	4.32	5.27	1.21	4.37	6.65	1.45	4.58	7.25	1.51	4.79	7.82	1.58	4.96	8.19	1.38	5.95
30	4.01	1.39	2.88	4.47	1.40	3.18	4.82	1.37	3.53	5.14	1.42	3.62	6.41	1.60	4.01	6.95	1.63	4.26	7.47	1.67	4.48	7.77	1.54	5.04
35	3.67	1.58	2.33	4.50	1.68	2.68	5.23	1.78	2.94	5.44	1.76	3.09	6.29	1.70	3.69	6.72	1.60	4.21	7.13	1.73	4.11	7.66	1.73	4.44
40	2.99	1.56	1.91	3.49	1.57	2.22	3.91	1.53	2.56	4.04	1.51	2.67	4.55	1.46	3.11	5.21	1.57	3.32	5.85	1.67	3.50	6.83	1.66	4.12
43	1.46	0.98	1.48	1.90	1.09	1.75	2.30	1.13	2.03	2.45	1.13	2.17	3.05	1.12	2.72	3.39	1.17	2.89	3.72	1.22	3.04	5.38	1.42	3.80

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
CC: Total cooling capacity (kW)
PI: Power input (kW)

Table 2-4.14: Cooling capacity for 16kW models

Maximum

DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	10.03	1.32	7.57	10.55	1.40	7.55	10.91	1.47	7.44	11.96	1.42	8.43
0	/	/	/	/	/	/	/	/	/	/	/	/	9.80	1.67	5.87	10.71	1.62	6.59	11.45	1.58	7.24	12.48	1.59	7.84
5	/	/	/	/	/	/	/	/	/	/	/	/	9.57	1.76	5.44	10.86	1.68	6.47	11.98	1.61	7.43	13.00	1.68	7.73
10	/	/	/	/	/	/	/	/	/	10.02	2.46	4.07	11.35	2.18	5.21	12.34	2.03	6.07	13.14	1.92	6.85	14.18	1.94	7.32
15	/	/	/	/	/	/	11.37	2.43	4.67	11.80	2.44	4.84	13.52	2.44	5.53	14.92	2.41	6.19	16.08	2.37	6.77	16.96	2.30	7.37
19	8.46	2.23	3.78	11.41	2.94	3.87	13.50	3.29	4.10	13.86	3.29	4.21	15.31	3.30	4.65	16.15	3.20	5.04	16.73	3.11	5.38	17.41	2.86	6.08
20	8.99	2.43	3.70	11.88	3.12	3.80	14.04	3.55	3.96	14.38	3.55	4.05	15.76	3.56	4.42	16.46	3.46	4.75	16.89	3.36	5.03	17.52	3.04	5.76
25	11.67	3.59	3.25	14.24	4.13	3.45	15.94	4.32	3.69	16.24	4.36	3.73	17.45	4.47	3.90	17.72	4.38	4.04	17.85	4.31	4.14	17.92	3.70	4.84
30	11.54	4.46	2.59	14.26	5.10	2.79	15.51	5.11	3.04	15.85	5.09	3.11	17.21	5.05	3.41	17.24	4.84	3.57	17.14	4.66	3.68	16.92	4.02	4.21
35	11.42	5.42	2.11	14.18	6.17	2.30	15.09	6.00	2.52	15.37	5.91	2.60	16.48	5.60	2.94	16.50	5.28	3.13	16.26	4.96	3.27	16.17	4.47	3.62
40	8.92	5.11	1.75	10.21	5.18	1.97	10.86	4.89	2.22	11.03	4.78	2.31	11.73	4.42	2.65	12.67	4.57	2.77	13.41	4.69	2.86	14.55	4.36	3.34
43	5.98	4.50	1.33	6.87	4.44	1.54	7.33	4.12	1.78	7.67	4.07	1.89	9.01	3.91	2.31	9.83	4.03	2.44	10.49	4.13	2.54	11.96	3.85	3.11

Normal

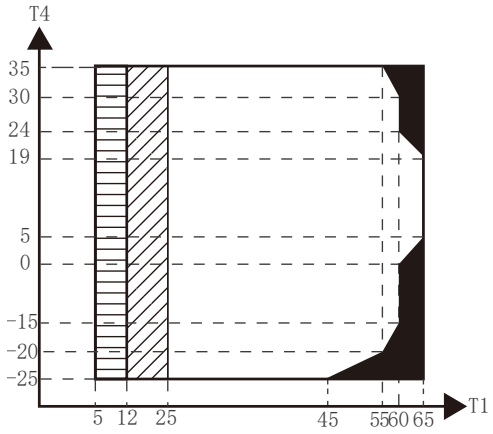
DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	8.07	0.94	8.56	8.52	0.99	8.63	8.88	1.03	8.60	9.72	1.01	9.61
0	/	/	/	/	/	/	/	/	/	/	/	/	7.90	1.18	6.71	8.66	1.14	7.60	9.33	1.11	8.39	10.16	1.11	9.13
5	/	/	/	/	/	/	/	/	/	/	/	/	7.67	1.29	5.93	8.68	1.21	7.15	9.61	1.16	8.28	10.55	1.24	8.50
10	/	/	/	/	/	/	/	/	/	8.08	1.87	4.32	9.12	1.60	5.69	9.90	1.48	6.71	10.57	1.38	7.65	11.54	1.43	8.07
15	/	/	/	/	/	/	8.52	1.70	5.02	9.09	1.74	5.22	11.36	1.89	6.01	12.65	1.85	6.84	13.83	1.82	7.59	14.24	1.71	8.31
19	6.56	1.65	3.98	9.03	2.17	4.15	10.79	2.42	4.45	11.18	2.44	4.58	12.78	2.51	5.10	13.66	2.45	5.56	14.39	2.41	5.96	15.05	2.20	6.85
20	7.01	1.80	3.88	9.44	2.31	4.08	11.35	2.63	4.31	11.71	2.65	4.42	13.14	2.70	4.87	13.91	2.65	5.24	14.53	2.62	5.56	15.25	2.35	6.49
25	9.24	2.69	3.43	11.47	3.09	3.71	13.08	3.25	4.02	13.42	3.30	4.07	14.76	3.47	4.25	15.25	3.42	4.46	15.58	3.37	4.62	15.83	2.85	5.55
30	9.28	3.37	2.75	11.42	3.79	3.01	12.93	3.93	3.29	13.30	3.94	3.38	14.77	3.95	3.74	15.05	3.85	3.91	15.17	3.75	4.04	15.15	3.19	4.75
35	9.87	4.46	2.21	14.00	5.60	2.50	14.19	5.23	2.71	14.27	5.10	2.79	14.57	4.65	3.13	14.20	3.94	3.61	15.19	4.33	3.51	15.15	3.93	3.85
40	7.28	3.89	1.87	8.46	3.95	2.14	9.18	3.78	2.43	9.39	3.71	2.53	10.21	3.49	2.93	11.18	3.62	3.09	12.03	3.75	3.21	13.20	3.43	3.84
43	4.91	3.55	1.38	5.48	3.39	1.62	5.76	3.08	1.87	6.04	3.03	1.99	7.17	2.89	2.48	8.12	3.05	2.66	8.98	3.20	2.81	9.46	2.72	3.48

Minimum

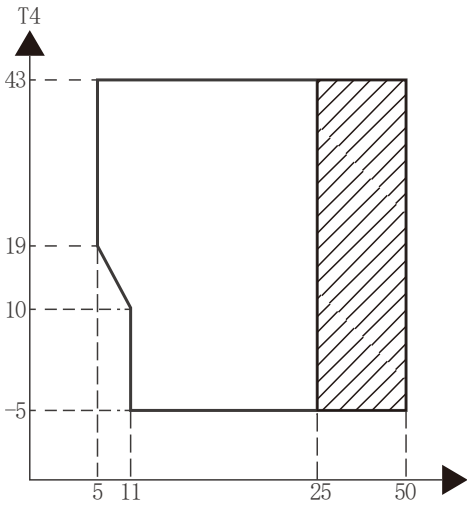
DB	LWT																							
	5			7			10			11			15			18			20			25		
	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER	CC	PI	EER
-5	/	/	/	/	/	/	/	/	/	/	/	/	5.22	0.59	8.92	5.49	0.61	8.93	5.73	0.65	8.86	6.30	0.63	10.08
0	/	/	/	/	/	/	/	/	/	/	/	/	5.13	0.73	7.01	5.59	0.71	7.92	6.04	0.69	8.75	6.61	0.70	9.47
5	/	/	/	/	/	/	/	/	/	/	/	/	4.12	0.65	6.37	4.68	0.61	7.61	5.21	0.59	8.80	5.68	0.62	9.15
10	/	/	/	/	/	/	/	/	/	4.47	0.94	4.77	5.06	0.82	6.16	5.49	0.76	7.21	5.91	0.72	8.20	6.40	0.73	8.75
15	/	/	/	/	/	/	5.23	0.98	5.32	5.40	0.97	5.54	6.08	0.95	6.41	6.51	0.88	7.42	6.91	0.83	8.37	8.14	0.88	9.21
19	3.36	0.81	4.14	4.17	0.97	4.32	5.02	1.08	4.66	5.30	1.10	4.81	6.44	1.19	5.41	7.13	1.21	5.91	7.79	1.22	6.36	8.55	1.17	7.33
20	3.54	0.88	4.04	4.31	1.02	4.24	4.97	1.11	4.49	5.28	1.14	4.62	6.53	1.27	5.15	7.28	1.32	5.53	8.01	1.37	5.86	8.65	1.26	6.86
25	4.43	1.26	3.52	4.98	1.30	3.85	5.42	1.28	4.22	5.73	1.34	4.27	6.98	1.56	4.47	7.61	1.63	4.68	8.21	1.69	4.85	8.60	1.48	5.81
30	4.41	1.57	2.81	4.92	1.58	3.11	5.31	1.54	3.44	5.63	1.59	3.54	6.92	1.77	3.91	7.43	1.81	4.10	7.92	1.86	4.26	8.15	1.66	4.92
35	4.04	1.78	2.27	4.95	1.94	2.56	5.75	2.00	2.87	5.96	1.99	2.99	6.79	1.96	3.47	7.19	1.80	4.00	7.56	1.83	4.12	8.12	1.87	4.33
40	3.29	1.76	1.86	3.84	1.77	2.17	4.30	1.72	2.50	4.44	1.70	2.60	5.01	1.65	3.03	5.73	1.80	3.19	6.43	1.93	3.33	7.52	1.92	3.91
43	1.68	1.19	1.41	2.24	1.35	1.66	2.76	1.43	1.93	2.95	1.44	2.06	3.75	1.45	2.58	4.17	1.52	2.75	4.57	1.58	2.89	6.03	1.67	3.61

Abbreviations:
LWT: Leaving water temperature (°C)
DB: Dry-bulb temperature for Outdoor air temperature (°C)
CC: Total cooling capacity (kW)
PI: Power input (kW)

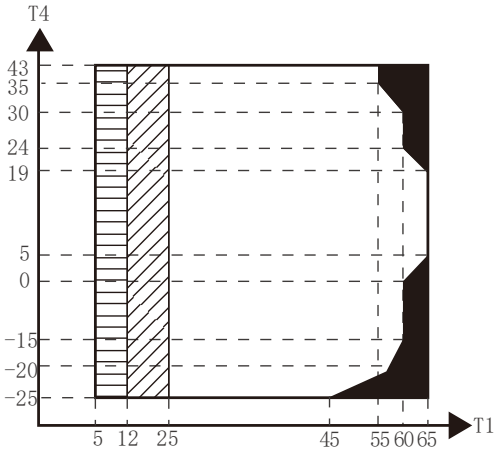
5 Operating Limits



Heating operating limits[1]



Cooling operating limits



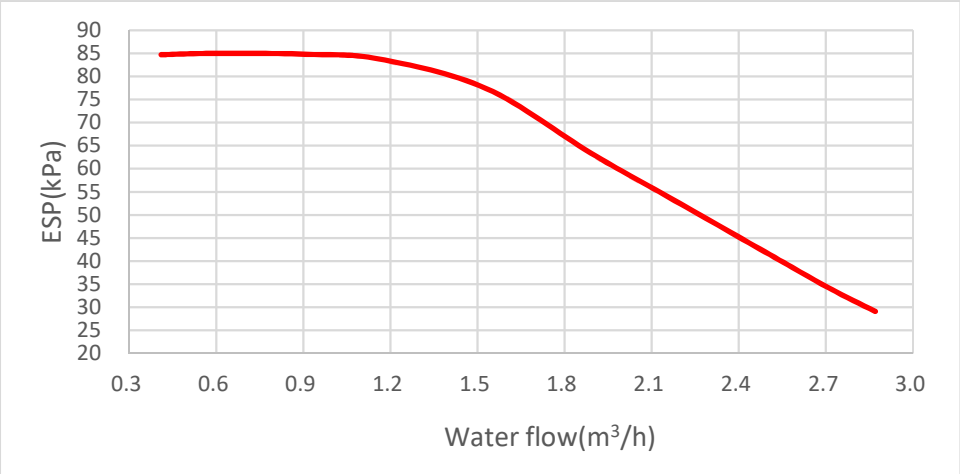
Domestic hot water operating limits[1]

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

Notes:
1. ■ IBH/AHS only
2. ▨ Water flow temperature drops or rises interval
3. ▤ If IBH/AHS setting is valid, only IBH/AHS turns on; If IBH/AHS setting is invalid, only heat pump turns on

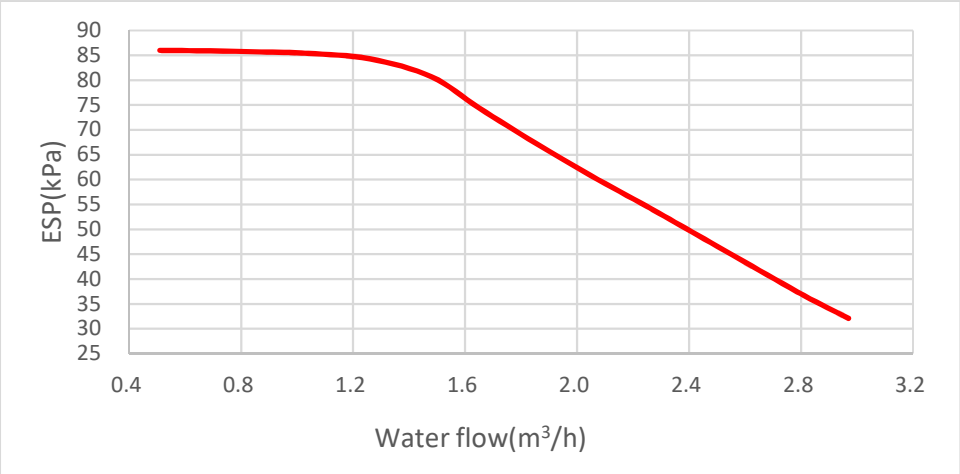
6 Hydronic Performance

MHC-V4W/D2N8-B2 / MHC-V6W/D2N8-B2 / MHC-V8W/D2N8-B2 / MHC-V10W/D2N8-B2



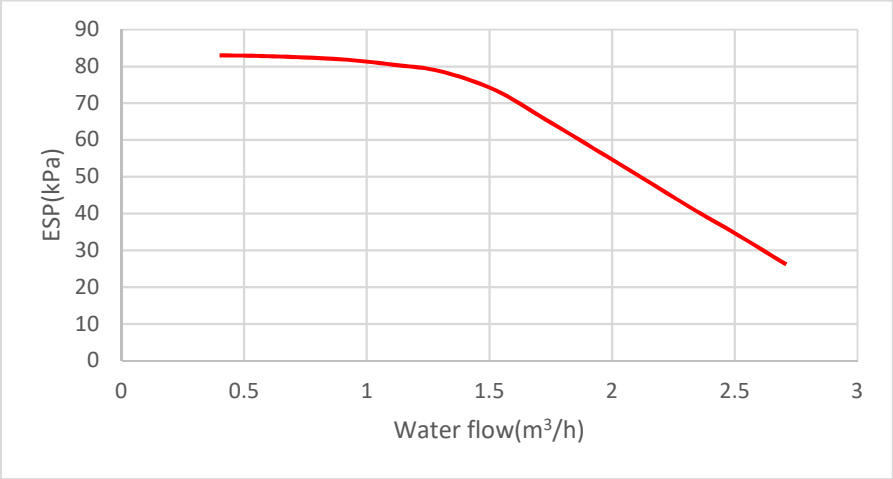
Abbreviations:
ESP: External static pressure

MHC-V12W/D2N8-B2 / MHC-V14W/D2N8-B2 / MHC-V16W/D2N8-B2
MHC-V12W/D2RN8-B2 / MHC-V14W/D2RN8-B2 / MHC-V16W/D2RN8-B2



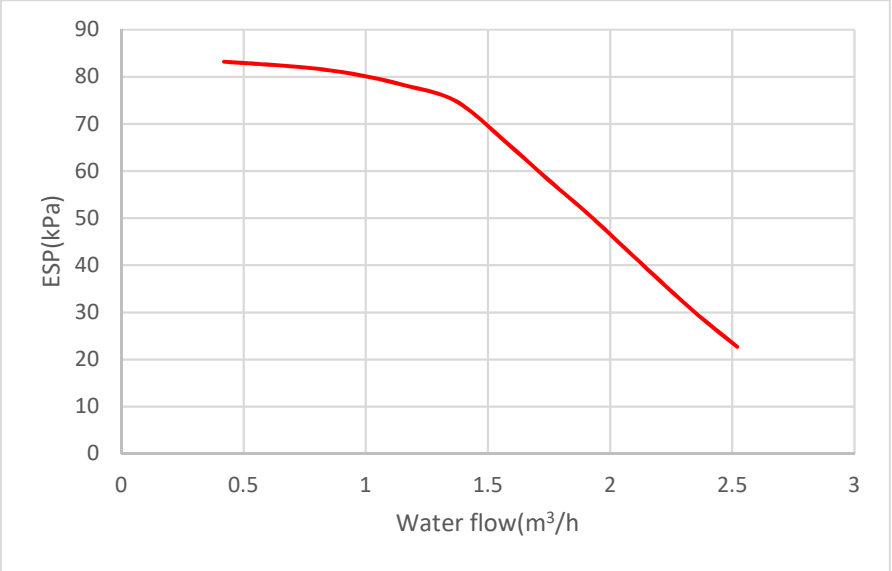
Abbreviations:
ESP: External static pressure

MHC-V4W/D2N8-B2E30 / MHC-V6W/D2N8-B2E30 / MHC-V8W/D2N8-B2E30
MHC-V8W/D2N8-B2E90 / MHC-V10W/D2N8-B2E30 / MHC-V10W/D2N8-B2E90



Abbreviations:
ESP: External static pressure

MHC-V12W/D2N8-B2E30 / MHC-V12W/D2N8-B2ER90 / MHC-V14W/D2N8-B2E30 / MHC-V14W/D2N8-B2ER90
MHC-V16W/D2N8-B2E30 / MHC-V16W/D2N8-B2ER90 / MHC-V12W/D2RN8-B2E30 / MHC-V12W/D2RN8-B2ER90
MHC-V14W/D2RN8-B2E30 / MHC-V14W/D2RN8-B2ER90 / MHC-V16W/D2RN8-B2E30 / MHC-V16W/D2RN8-B2ER90



Abbreviations:
ESP: External static pressure

7 Sound Levels

7.1 Overall

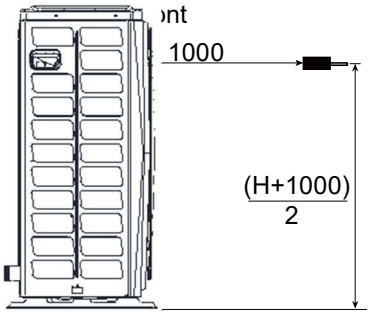
Table 2-7.1: Sound pressure levels[1]

Model name	dB [2]
MHC-V4W/D2N8-B2(E30)	45.0
MHC-V6W/D2N8-B2(E30)	47.5
MHC-V8W/D2N8-B2(E30/ER90)	48.5
MHC-V10W/D2N8-B2(E30/ER90)	50.5
MHC-V12W/D2N8-B2(E30/ER90)	53.0
MHC-V14W/D2N8-B2(E30/ER90)	53.5
MHC-V16W/D2N8-B2(E30/ER90)	57.5
MHC-V12W/D2RN8-B2(E30/ER90)	53.5
MHC-V14W/D2RN8-B2(E30/ER90)	54.0
MHC-V16W/D2RN8-B2(E30/ER90)	58.0

Notes:

1. Sound pressure level is measured at a position 1m in front of the unit and (1+H)/2m (where H is the height of the unit) above the floor in a semi-anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.

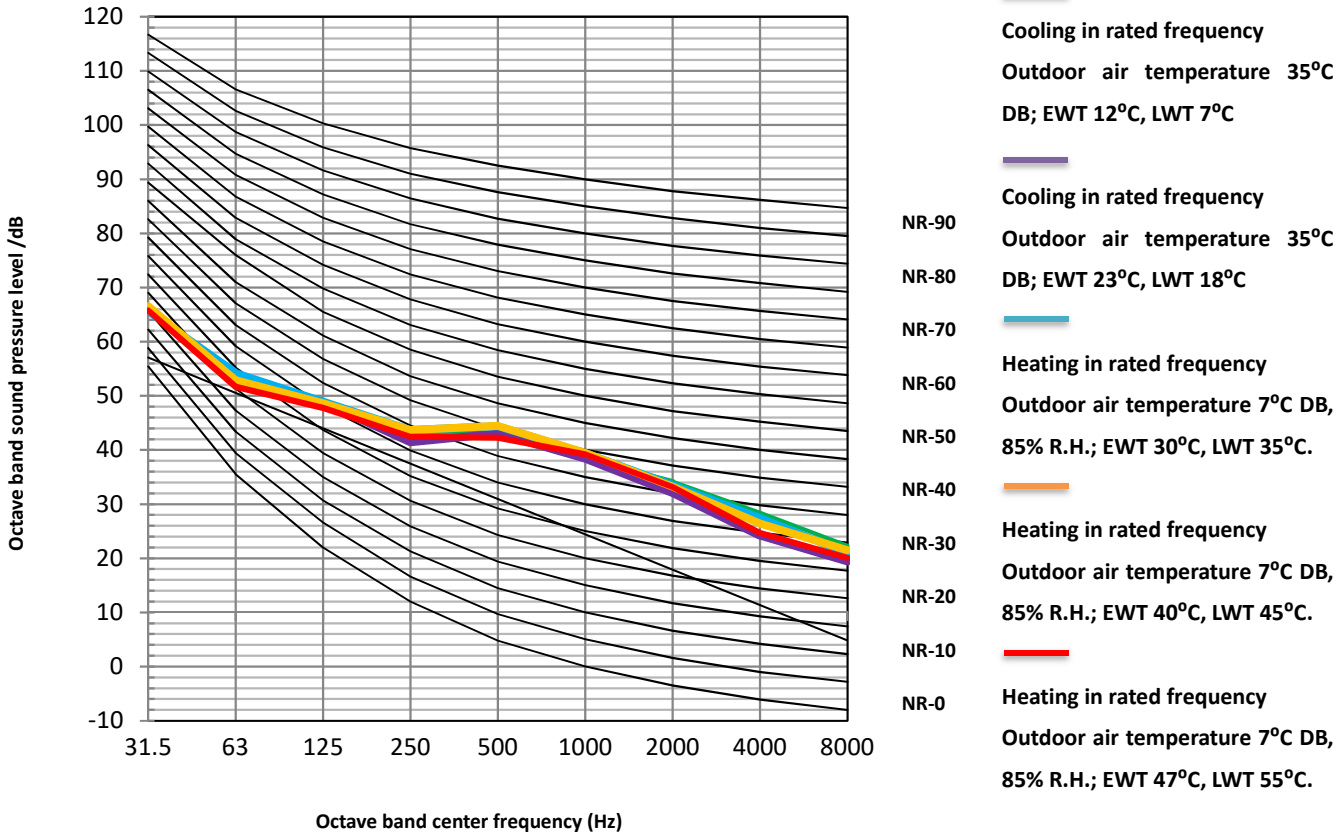
Sound pressure level measurement (unit: mm)



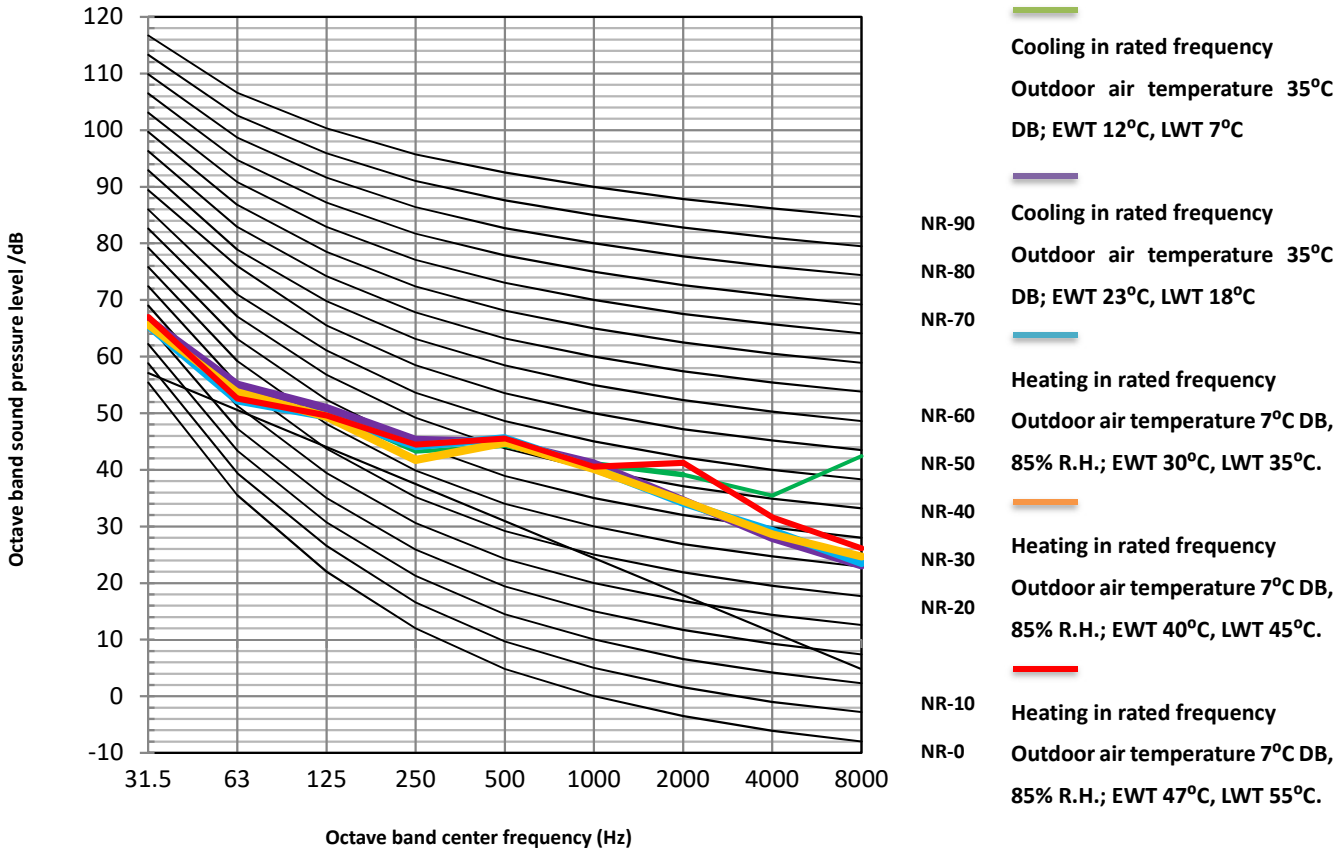
2. dB is the maximum value tested under the conditions below:
   Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C. Free compressor frequency.
   Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C. Free compressor frequency.

7.2 Octave Band Levels

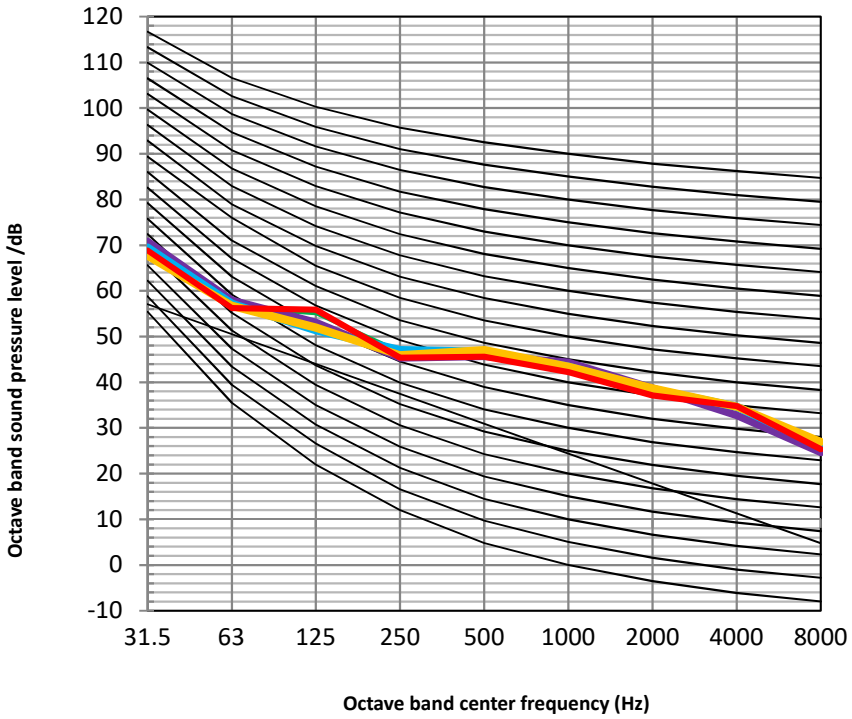
MHC-V4W/D2N8-B2(E30) octave band levels



MHC-V6W/D2N8-B2(E30) octave band levels



MHC-V8W/D2N8-B2(E30/ER90) octave band levels



Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C

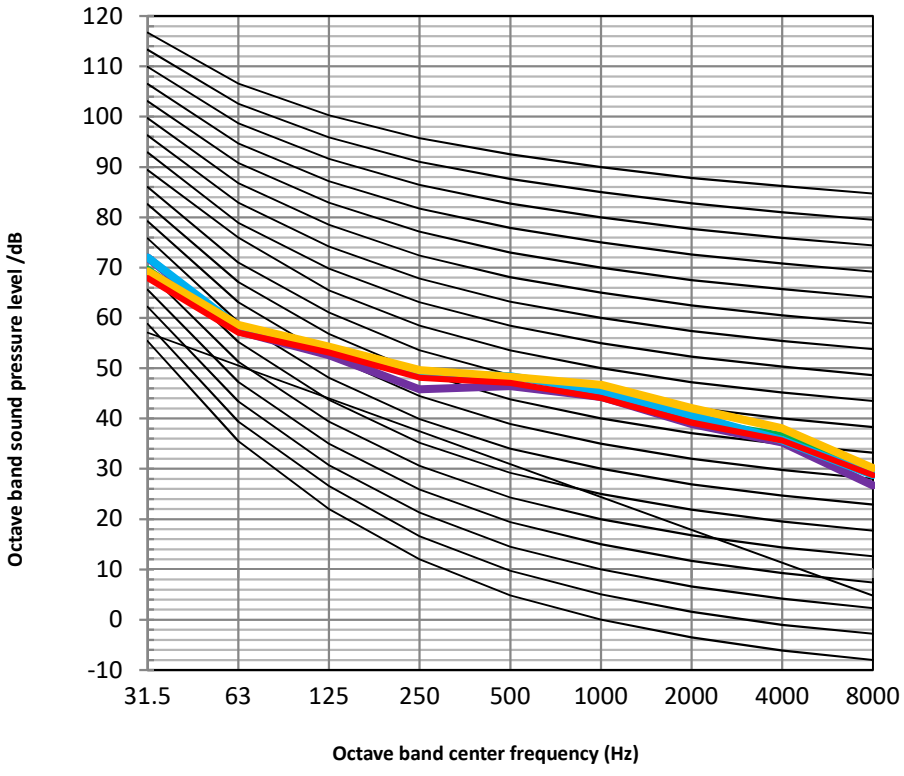
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C.

MHC-V10W/D2N8-B2(E30/ER90) octave band levels



Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C

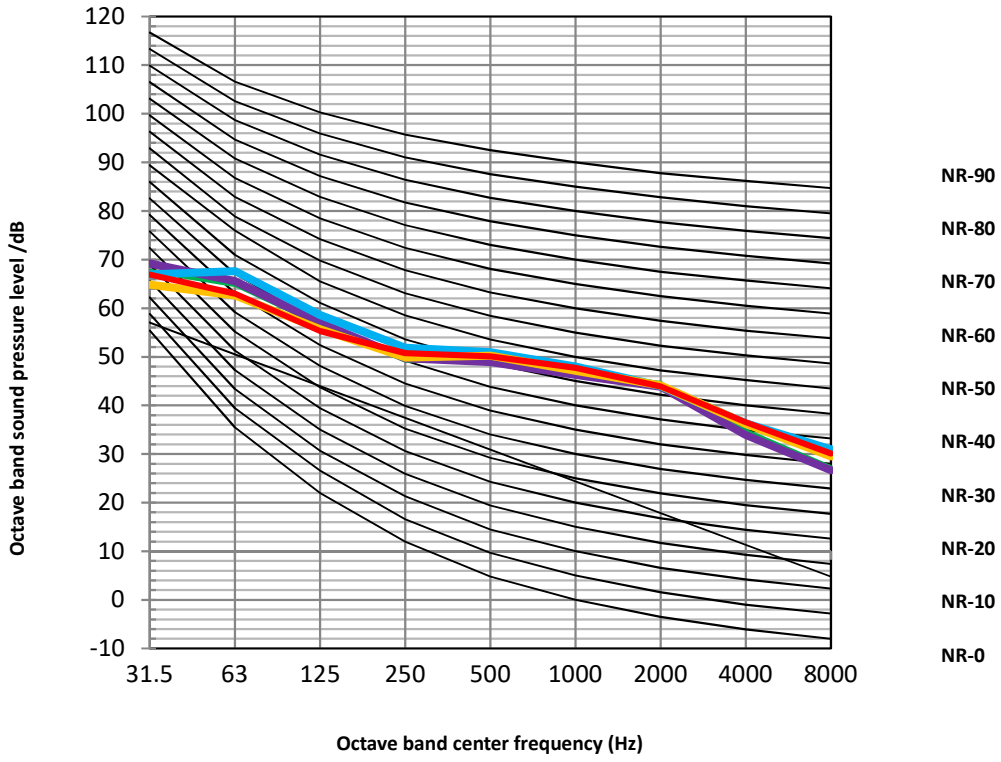
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C.

MHC-V12W/D2N8-B2(E30/ER90) octave band levels



Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C

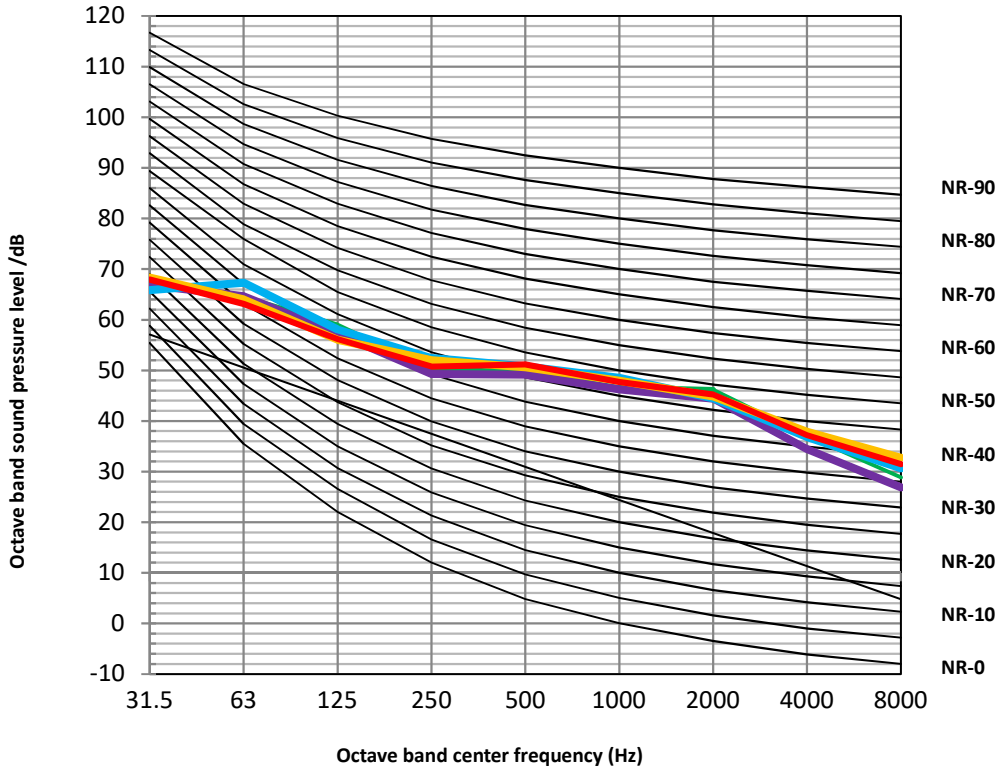
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C.

MHC-V14W/D2N8-B2(E30/ER90) octave band levels



Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C

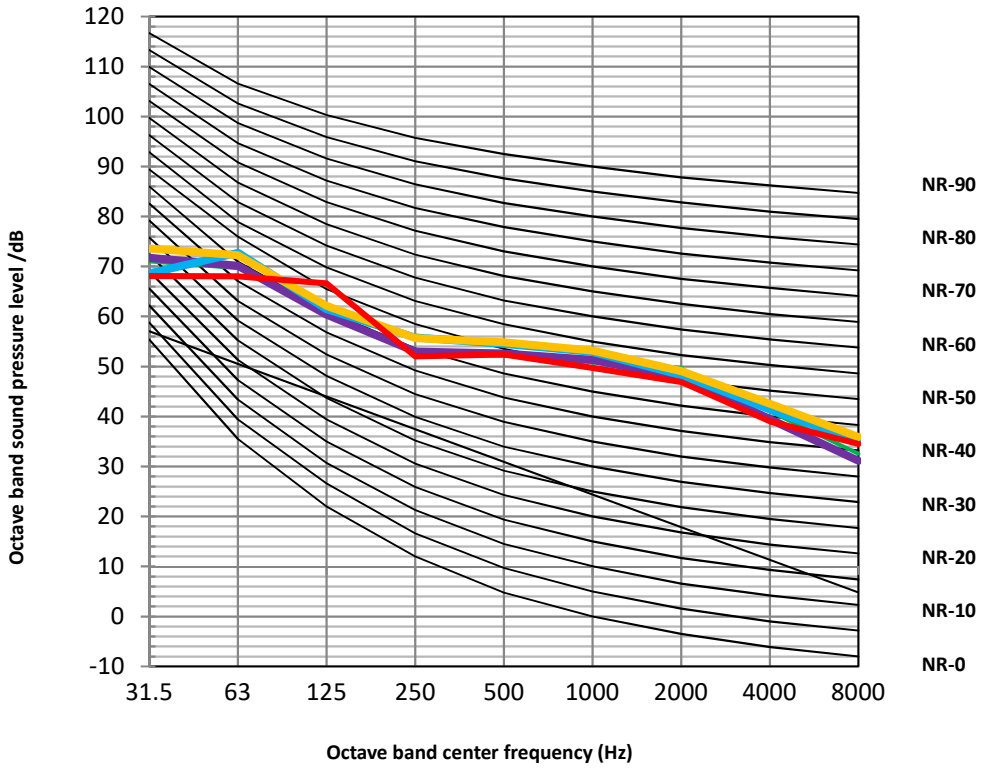
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C.

MHC-V16W/D2N8-B2(E30/ER90) octave band levels



Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C

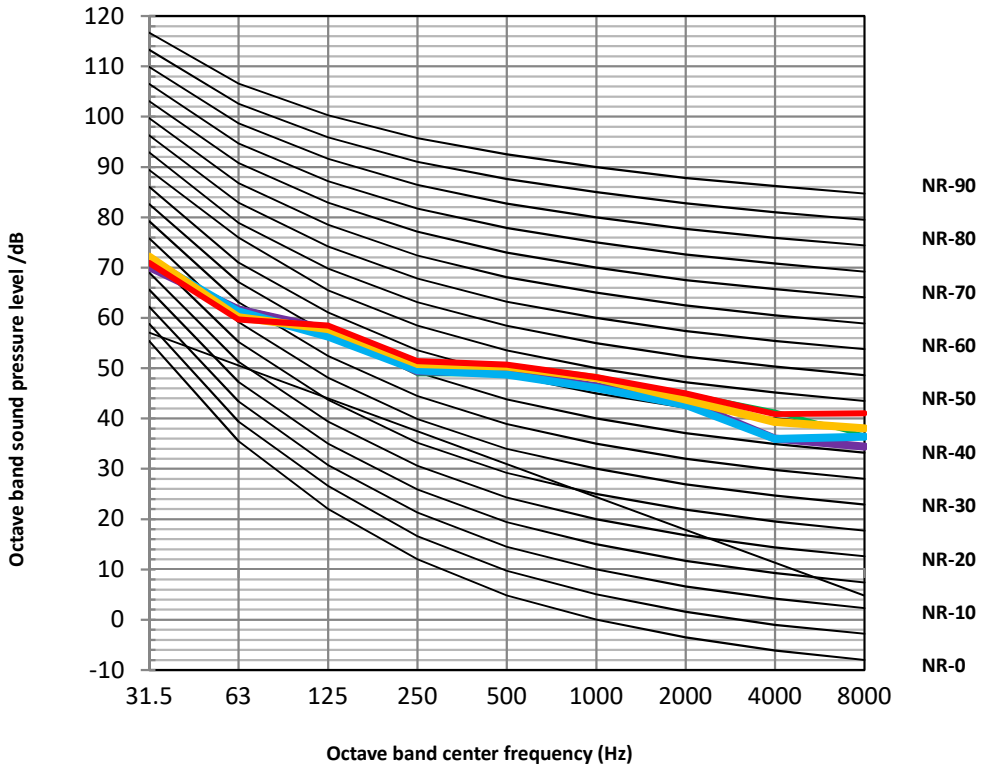
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C.

MHC-V12W/D2RN8-B2(E30/ER90) octave band levels



Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C

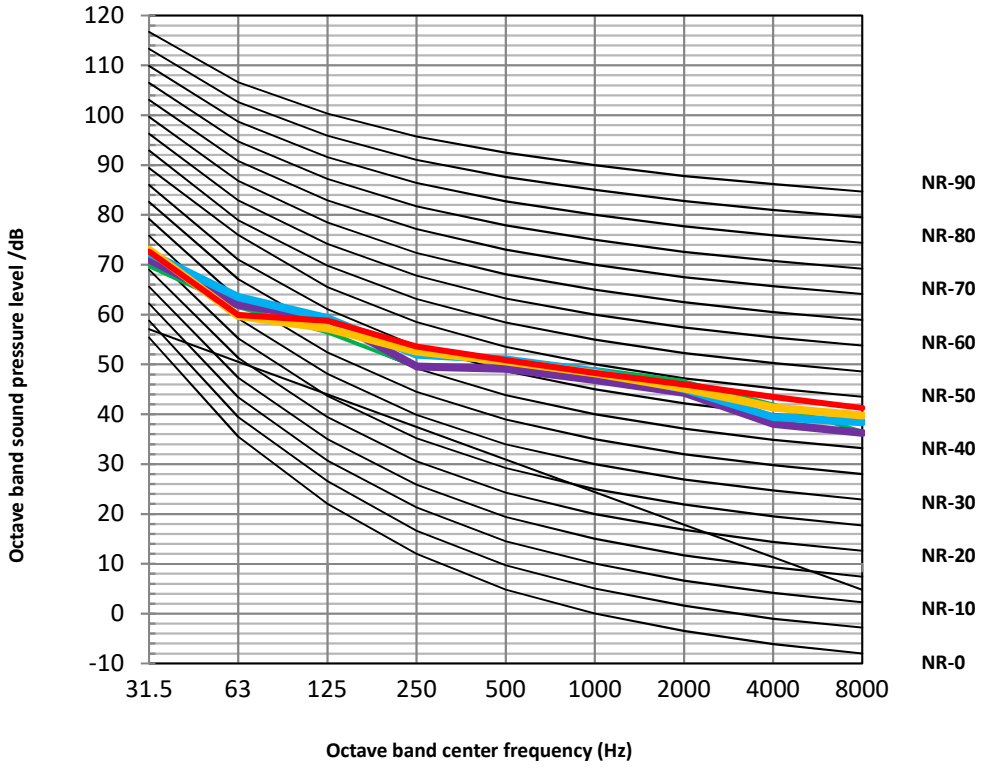
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C.

MHC-V14W/D2RN8-B2(E30/ER90) octave band levels



Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C

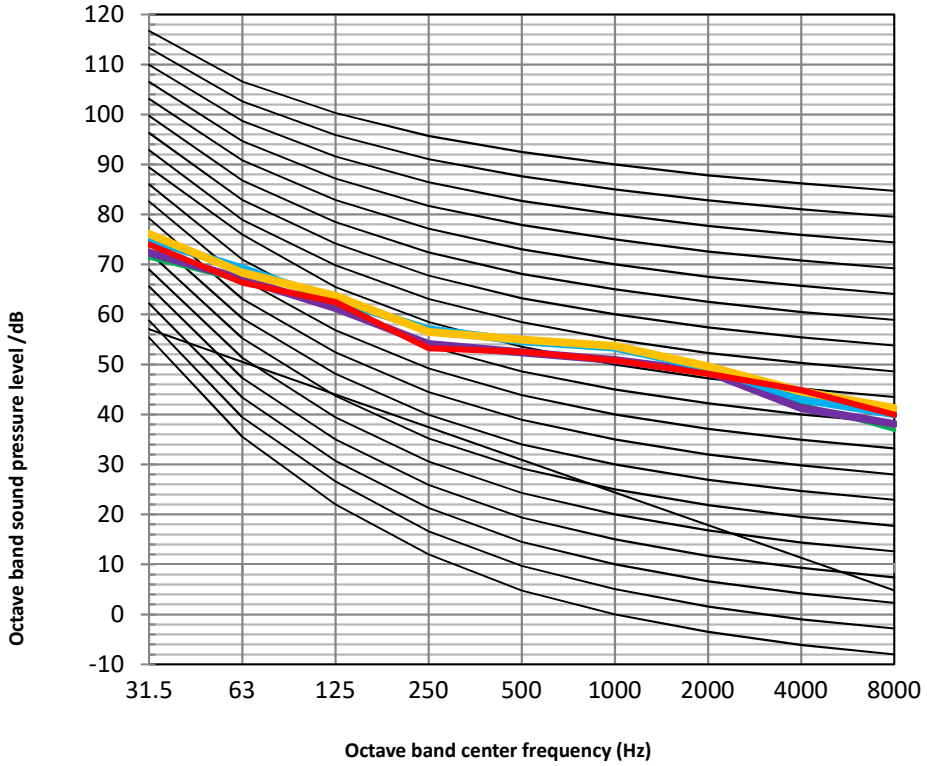
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C.

MHC-V16W/D2RN8-B2(E30/ER90) octave band levels



Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 12°C, LWT 7°C

Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 30°C, LWT 35°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 40°C, LWT 45°C.

Heating in rated frequency Outdoor air temperature 7°C DB, 85% R.H.; EWT 47°C, LWT 55°C.

Part 3

Field Settings

1 User Interface Field Settings

1.1 Introduction

During installation, the M thermal Mono's settings and parameters should be configured by the installer to suit the installation configuration, climate conditions and end-user preferences. The relevant settings are accessible and programmable through the **FOR SERVICEMAN** menu on the M thermal Mono's user interface. The user interface menus and settings can be navigated using the user interface's touch-sensitive keys.

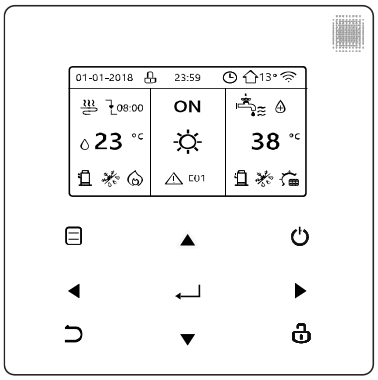
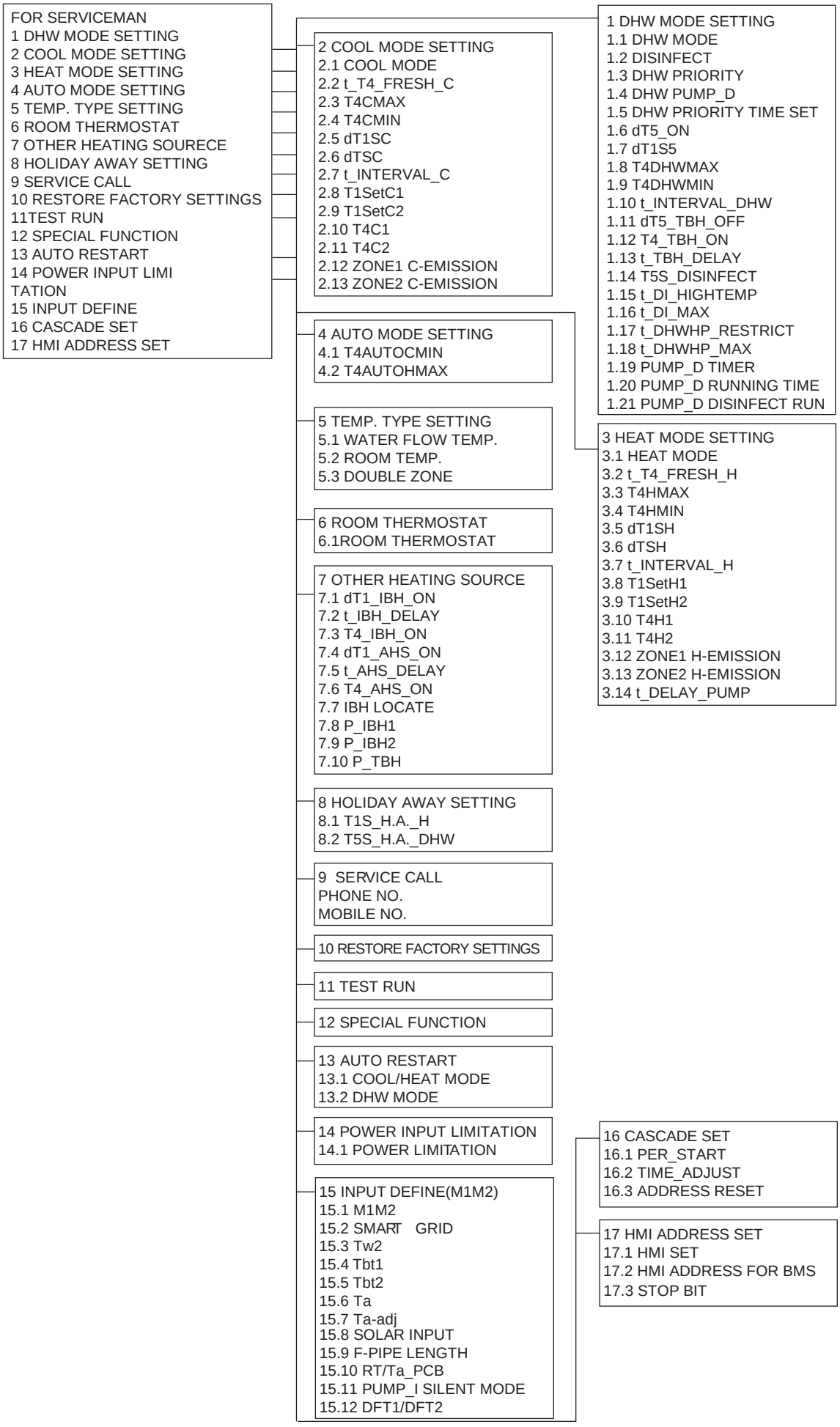


Table 3-7.1: User interface keys

Keys	Function
	Go to the menu structure(on the home page)
▲ ◄ ► ▼	Navigate the cursor on the display Navigate in the menu structure Adjust settings
	Turn on/off the space heating/cooling operation or DHW mode Turn on/off functions in the menu structure
	Come back to the up level
	Long press for unlock/lock the controller Unlock /lock some functions such as "DHW temperature adjusting"
	Go to the next step when programming a schedule in the menu structure and confirm a selection to enter in the submenu of the menu structure.

1.2 Menu Structure



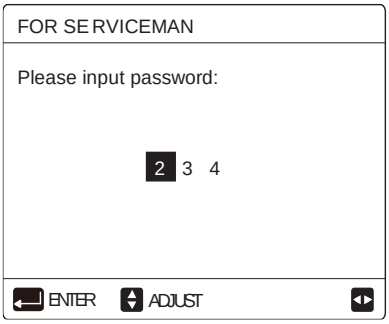
1.3 FOR SERVICEMAN Menu

FOR SERVICEMAN allows installers to input the system configuration and set the system parameters. To enter **FOR SERVICEMAN**, go to **MENU** > **FOR SERVICEMAN**.

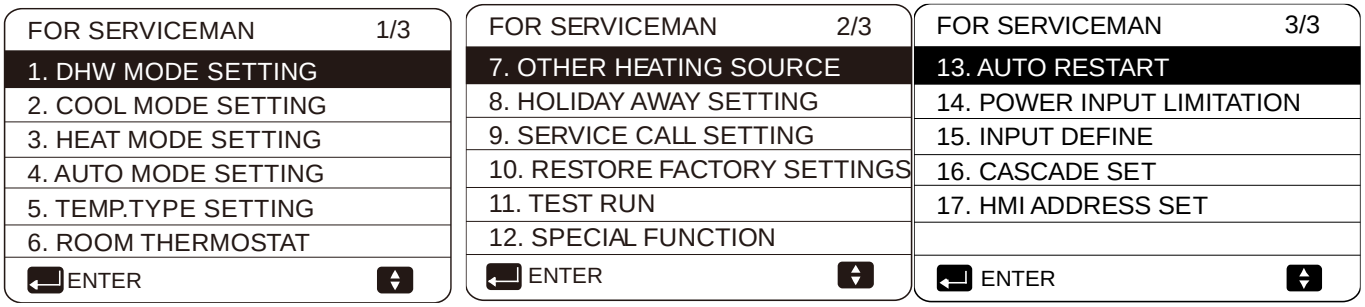
Enter the password, using ◄ ► to navigate between digits and using ▼ ▲ to adjust the numerical values, and then press **OK**. The password is 234.

Then the following pages will be displayed after putting the password. Refer to below.

FOR SERVICEMAN password screen



FOR SERVICEMAN menu

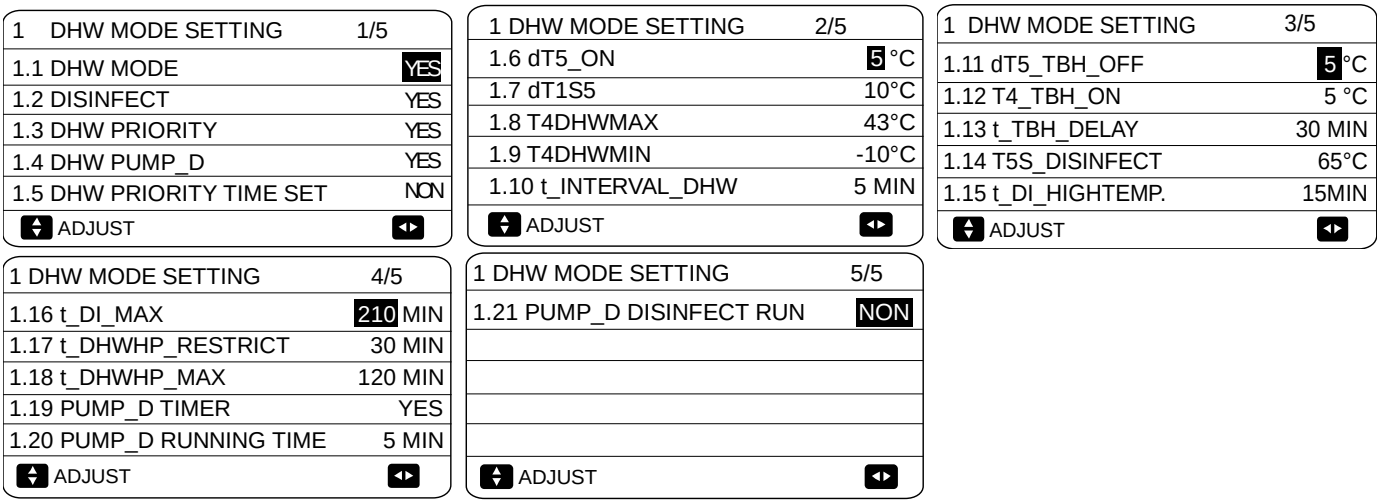


1.4 DHW MODE SETTING Menu

1.4.1 DHW MODE SETTING menu overview

MENU > **FOR SERVICEMAN** > **DHW MODE SETTING**

DHW MODE SETTING menu



In **DHW MODE SETTING** the following parameters should be set.

DHW MODE enables or disables DHW mode. For installations with DHW tanks, select **YES** to enable DHW mode. For installations without DHW tanks, select **NON** to disable DHW mode.

DISINFECT sets whether or not the disinfection operation is performed.

DHW PRIORITY sets whether domestic hot water heating or space heating/cooling takes priority. If **NON** is selected in the **DHW PRIORITY** mode, when it is available and the space heating/cooling is **OFF**, the heat pump will heat the water as required. If space heating/cooling is **ON**, the water will be heated as required when the immersion heater is unavailable.

Only when the space heating/cooling is **OFF** will the heat pump operate to heat domestic water.

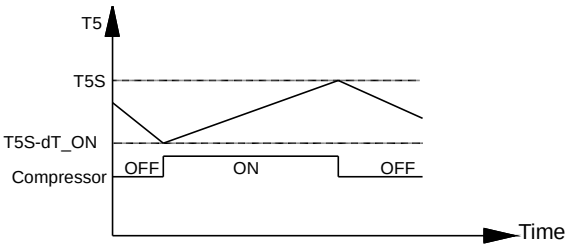
DHW PUMP_D sets whether or not the DHW pump is controlled by the M thermal Mono unit. If the DHW pump is to be controlled by the M thermal Mono, select **YES**. If the DHW pump is not to be controlled by the M thermal Mono unit, select **NON**.

DHW PUMP PRIORITY TIME SET set the operation time of DHW during **DHW PRIORITY** mode.

dT5_ON sets the temperature difference between the DHW set temperature (T5S) and the DHW tank water temperature (T5) above which the heat pump providing heated water to the DHW tank. When T5S - T5 ≥ dT5_ON the heat pump providing heated water to the DHW tank.

Note: When the heat pump's leaving water temperature is above the DHW mode leaving water temperature operating limit (T5stop), the heat pump does not provide heated water to the DHW tank. The DHW mode leaving water temperature operating limit is related to ambient temperature.

dT5_ON

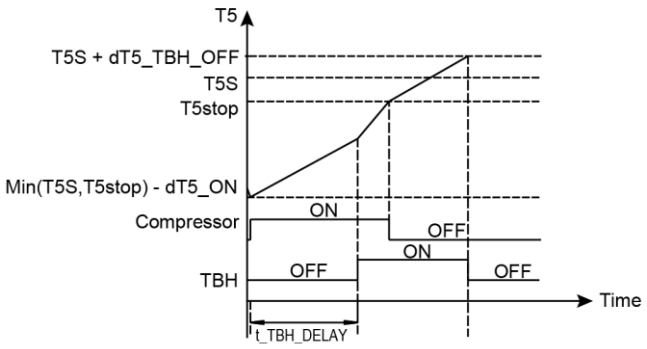


Abbreviations:
T5: DHW tank water temperature
T5S: DHW set temperature

dT1S5 sets the heat pump's leaving water set temperature (T1S) relative to DHW tank water temperature (T5). For DHW mode, the user sets the DHW set temperature (T5S) on the main screen and cannot manually set T1S. T1S is set as T1S = T5 + dT1S5.

The Figure on the right illustrates the operation of the heat pump and immersion heater(optional) in DHW mode. If the DHW tank water temperature (T5) is less than the minimum of the DHW set temperature (T5S) and the heat pump leaving water temperature operating limit (T5stop) less **dT5_ON**, the heat pump starts providing heated water to the DHW tank. After **t_TBH_delay** minutes have elapsed, the immersion heater is turned on. If T5 reaches T5stop, the heat pump stops but the immersion heater continues running until T5 has reached T5S + **dT5_TBH_OFF**

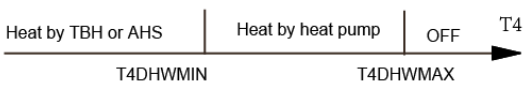
DHW mode operation



Abbreviations:
T5: DHW tank water temperature
T5S: DHW set temperature
T5stop: DHW mode leaving water temperature operating limit
TBH: Immersion heater in DHW tank

T4DHWMAX sets the ambient temperature above which the heat pump will not operate in DHW mode. The highest value that **T4DHWMAX** can take is 43°C, which is the DHW mode upper ambient temperature operating limit of the heat pump.

T4DHWMAX and T4DHWMIN



Abreviations:
HP: Heat pump
TBH: DWH tank immersion heater
AHS: Additional heating source

T4DHWMIN sets the ambient temperature below which the heat pump will not operate in DHW mode. The lowest value that **T4DHWMIN** can take is -25°C, which is the DHW mode lower ambient temperature operating limit of the heat pump.

t_INTERVAL_DHW sets the DHW mode compressor re-start delay. When the compressor stops running, it will not re-start

until at least **t_INTERVAL_DHW** minutes have elapsed.

dT5_TBH_OFF sets the temperature difference between the DHW set temperature (T5S) and the DHW tank water temperature (T5) below which the immersion is not used. When T5 ≥ Min(T5S+dT5_TBH_OFF, 65°C), the immersion heater is off.

T4_TBH_ON sets the ambient temperature above which the immersion heater will not be used.

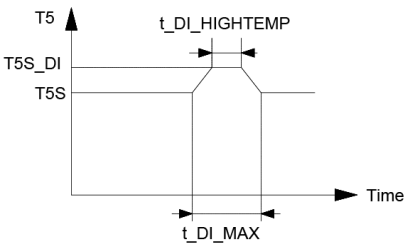
t_TBH_DELAY sets the delay between the compressor starting and the immersion heater being turned on.

T5S_DISINFECT sets the DHW tank disinfection operation target temperature. Caution: during the disinfection operation (duration: **t_DI_MAX**) the domestic hot water temperature at the hot water taps will at times be equal to the value set for **T5S_DI**.

t_DI_HIGHTEMP sets that length of time that the DHW tank disinfection operation target temperature is maintained.

t_DI_MAX sets the total duration of the DHW tank disinfect operation.

DHW tank disinfection



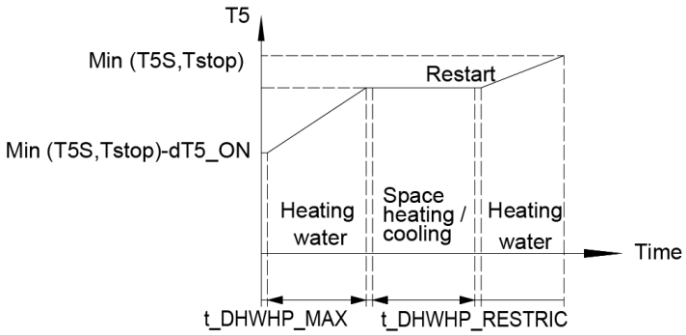
Abbreviations:
T5: DHW tank water temperature
T5S: DHW set temperature

t_DHWHP_RESTRICT sets the maximum length of time that the heat pump will run in space heating or space cooling modes before switching to DHW mode, if a requirement for DHW mode exists. When running in space heating mode or space cooling mode, the heat pump becomes available for DHW mode either as soon as the space heating/cooling set temperatures have been reached (refer to Part 3, 7.5 “COOL MODE SETTING Menu” and Part 3, 7.6 “HEAT MODE SETTING Menu”) or after **t_DHWHP_MAX** minutes have elapsed.

t_DHWHP_MAX sets the maximum length of time that the heat pump will run in DWH mode before switching to space heating mode or space cooling mode if a requirement for space heating/cooling modes exists. When running in DHW mode, the heat pump becomes available for space heating/cooling either as soon as the DHW tank water temperature (T5) reaches the DHW set temperature (T5S) or after **t_DHWHP_MAX** minutes have elapsed.

The figure below illustrates the effects of **t_DHWHP_MAX** and **t_DHWHP_RESTRICT** when **DHW PRIORITY** is enabled. The heat pump initially runs in DWH mode. After **t_DHWHP_MAX** minutes, T5 has not reached

Operation in DHW PRIORITY



Abbreviations:
T5: DHW tank water temperature
T5S: DHW set temperature
T5stop: DHW mode leaving water temperature operating limit

PUMP_D TIMER sets whether or not the user is able to set the DHW pump (field supply) in DHW mode. For installations

with a DHW pump, select ON so that the user is able to set pump start times.

PUMP_D RUNNING TIME sets the length of time the pump runs for at each of the user-specified start times on the **DHW PUMP** tab on the **DOMESTIC HOT WATER (DHW)** menu, if **TIMER RUNNING** is enabled.

PUMP_D DISINFECT RUN sets wether or not the DHW pump (field supply) operates during the disinfection mode.

1.5 COOL MODE SETTING Menu

MENU > **FOR SERVICEMAN** > **COOL MODE SETTING**

COOL MODE SETTING menu

2 COOL MODE SETTING	1/3
2.1 COOL MODE	YES
2.2 t_T4_FRESH_C	2.0HRS
2.3 T4CMAX	43°C
2.4 T4CMIN	20°C
2.5 dT1SC	5°C
ADJUST	

2 COOL MODE SETTING	2/3
2.6 dTSC	2°C
2.7 t_INTERVAL_C	5MIN
2.8 T1SetC1	10°C
2.9 T1SetC2	16°C
2.10 T4C1	35°C
ADJUST	

2 COOL MODE SETTING	3/3
2.11 T4C2	25°C
2.12 ZONE1 C-EMISSION	FCU
2.13 ZONE2 C-EMISSION	FLH
ADJUST	

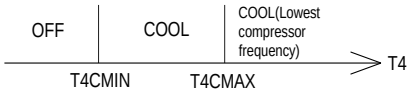
In **COOL MODE SETTING** the following parameters should be set.

COOL MODE enables or disables cooling mode. For installations with space cooling terminals, select **YES** to enable cooling mode. For installations without space cooling terminals, select **NON** to disable cooling mode.

t_T4_FRESH_C sets the refresh time of cooling model climate temperature curve.

T4CMAX sets the ambient temperature above which the heat pump will operate in cooling mode with lowest compressor frequency. The highest value that **T4CMAX** can take is 46°C, which is the cooling mode upper ambient temperature operating limit of the heat pump.

T4CMAX, T4CMIN

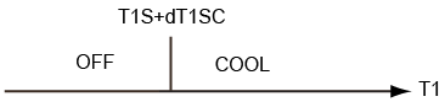


Abreviations:
T4: Outdoor ambient temperature

T4CMIN sets the ambient temperature below which the heat pump will not operate in cooling mode. The lowest value that **T4CMIN** can take is -5°C, which is the cooling mode lower ambient temperature operating limit of the heat pump.

dT1SC sets the minimum temperature difference between the heat pump leaving water temperature (T1) and the heat pump leaving water set temperature (T1S) at which the heat pump provides chilled water to the space cooling terminals. When T1 – T1S ≥ dT1SC the heat pump provides chilled water to the space cooling terminals and when T1 ≤ T1S the heat pump does not provide chilled water to the space cooling terminals.

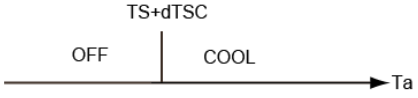
dT1SC



Abreviations:
T1: Heat pump leaving water temperature
T1S: Heat pump leaving water set temperature

dTSC sets the temperature difference between the actual room temperature (Ta) and set room temperature (TS) above which the heat pump provides chilled water to the space cooling terminals. When Ta – TS ≥ dTSC the heat pump provides chilled water to the space cooling terminals and when Ta ≤ TS the heat pump does not provide chilled water to the space cooling terminals. **dTSC** is only applicable if **YES** is selected for **ROOM TEMP** in the **TEMP. TYPE SETTING** menu.

dTSC



t_INTERVAL_C sets the cooling mode compressor re-start delay. When the compressor stops running, it will not re-start until at least **t_INTERVAL_C** minutes have elapsed.

T1SetC1 sets the temperature 1 of automatic setting curve for cooling mode.

T1SetC2 sets the temperature 2 of automatic setting curve for cooling mode.

T4C1 sets the ambient temperature 1 of automatic setting curve for cooling mode.

T4C2 sets the ambient temperature 2 of automatic setting curve for cooling mode.

ZONE1 C-EMISSION sets the emission type of zone1 for cooling mode.

ZONE2 C-EMISSION sets the emission type of zone2 for cooling mode.

1.6 HEAT MODE SETTING Menu

MENU > **FOR SERVICEMAN** > **HEAT MODE SETTING**

HEAT MODE SETTING menu

3 HEAT MODE SETTING	1/3
3.1 HEAT MODE	YES
3.2 t_T4_FRESH_H	2.0HRS
3.3 T4HMAX	16°C
3.4 T4HMIN	-15°C
3.5 dT1SH	5°C
ADJUST	

3 HEAT MODE SETTING	2/3
3.6 dTSH	2°C
3.7 t_INTERVAL_H	5MIN
3.8 T1SetH1	35°C
3.9 T1SetH2	28°C
3.10 T4H1	-5°C
ADJUST	

3 HEAT MODE SETTING	3/3
3.11 T4H2	7°C
3.12 ZONE1 H-EMISSION	RAD.
3.13 ZONE2 H-EMISSION	FLH
3.14 t_DELAY_PUMP	2MIN
ADJUST	

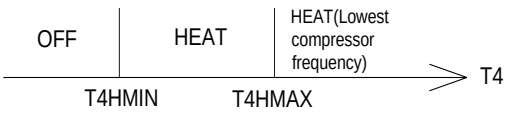
In **HEAT MODE SETTING** the following parameters should be set.

HEAT MODE enables or disables heating mode.

t_T4_FRESH_H sets the refresh time of heating model climate temperature curve.

T4HMAX sets the ambient temperature above which the heat pump will operate heating mode with lowest compressor frequency. The highest value that **T4HMAX** can take is 35°C, which is the heating mode upper ambient temperature operating limit of the heat pump.

T4HMAX, T4HMIN

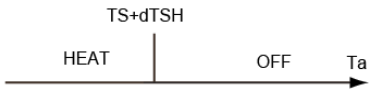


Abreviations:
T4: Outdoor ambient temperature

T4HMIN sets the ambient temperature below which the heat pump will not operate in heating mode. The lowest value that **T4CMIN** can take is -25°C, which is the heating mode lower ambient temperature operating limit of the heat pump.

dT1SH sets the temperature difference between the heat pump leaving water temperature (T1) and the heat pump leaving water set temperature (T1S) above which the heat pump provides heated water to the space heating terminals.

dTSH



Note:
Only when ROOM TEMP is enabled will this function be available

dTSH sets the temperature difference between the actual room temperature (Ta) and set room temperature (TS) above which the heat pump provides heated water to the space heating terminals. When TS – Ta ≥ dTSH the heat pump provides heated water to the space heating terminals and when Ta ≥ TS the heat pump does not provide heated water to the space heating terminals. **dTSH** is only relevant if **YES** is selected for **ROOM TEMP** in the **TEMP. TYPE SETTING** menu.

t_INTERVAL_H sets the heating mode compressor re-start delay. When the compressor stops running, it will not re-start until at least **t_INTERVAL_H** minutes have elapsed.

T1SetH1 sets the temperature 1 of automatic setting curve for heating mode.

T1SetH2 sets the temperature 2 of automatic setting curve for heating mode.

T4H1 sets the ambient temperature 1 of automatic setting curve for heating mode.

T4H2 sets the ambient temperature 2 of automatic setting curve for heating mode.

ZONE1 H-EMISSION sets the emission type for heating mode.

ZONE2 H-EMISSION sets the emission type for heating mode.

1.7 AUTO MODE SETTING Menu

MENU > **FOR SERVICEMAN** > **AUTO MODE SETTING**

AUTO MODE SETTING menu

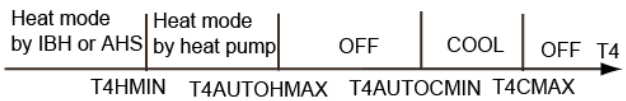
4 AUTO. MODE SETTING	
4.1 T4AUTOCMIN	25°C
4.2 T4AUTOHMAX	17°C
ADJUST	

In **AUTO MODE SETTING** the following parameters should be set.

T4AUTOCMIN sets the ambient temperature below which the heat pump will not provide chilled water for space cooling in auto mode.

T4AUTOHMAX sets the ambient temperature above which the heat pump will not provide heated water for space heating in auto mode.

T4AUTOCMAX, T4AUTOCMIN

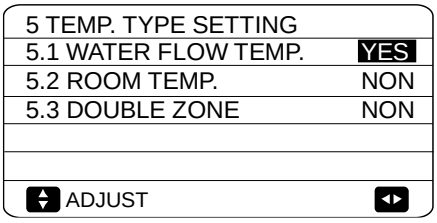


Abreviations:
HP: Heat pump
AHS: Additional heating source
IBH: Backup electric heater
T4CMAX: The ambient temperature above which the heat pump will not operate in cooling mode.
T4HMIN: The ambient temperature below which the heat pump will not operate in heating mode.

1.8 TEMP. TYPE SETTING Menu

MENU > **FOR SERVICEMAN** > **TEMP. TYPE SETTING**

TEMP. TYPE SETTING menu



The TEMP. TYPE SETTING is used for selecting whether the water flow temperature or room temperature is used to control the ON/OFF of the heat pump.

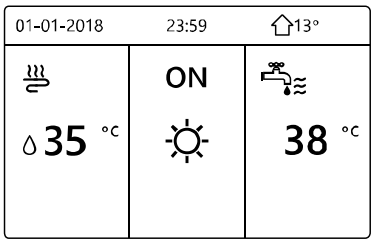
When ROOM TEMP. is enabled, the target water flow temperature will be calculated from climate-related curves (refer to "9 Climate related curves").

For installations without room thermostats, space heating and cooling modes can be controlled in one of two different ways:

- according to the M thermal Mono's leaving water temperature alone
- according to the room temperature detected by the M thermal Split user interface's built-in temperature sensor alone

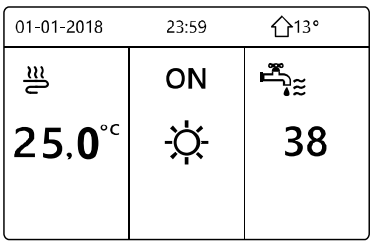
WATER FLOW TEMP. sets whether space heating/cooling modes are controlled according to the M thermal Mono's leaving water temperature. If **YES** is selected, the user is able to set the M thermal Mono unit's leaving water temperature set temperature on the user interface's main screen.

Only set WATER FLOW TEMP to YES



ROOM TEMP. sets whether space heating/cooling modes are controlled according to the room temperature detected by the temperature sensor in the M thermal Mono user interface. If **YES** is selected, the user is able to set the room temperature set temperature on the user interface's main screen, no matter what is the setting of **WATER FLOW TEMP.**

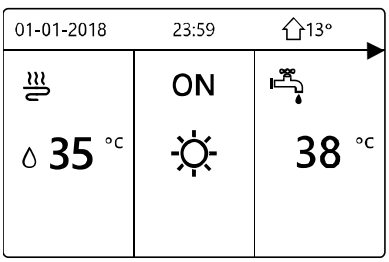
Only set ROOM TEMP to YES



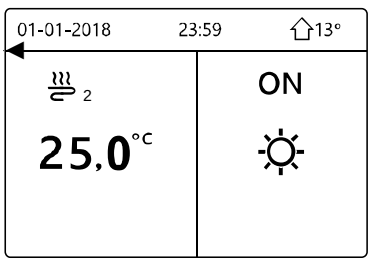
DOUBLE ZONE sets whether there are two zones.

If set WATER FLOW TEMP. and ROOM TEMP. to YES, meanwhile set DOUBLE ZONE to NON or YES, the following pages will be displayed. In this case, the setting value of zone 1 is T1S, the setting value of zone 2 is TS(The corresponding TIS2 is calculated according to the climate related curves.)

DOUBLE ZONE to NON or YES



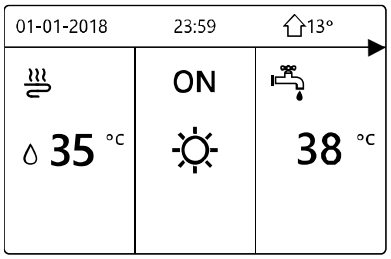
Homepage (zone 1)



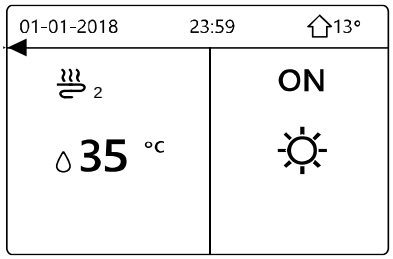
Addition page (zone 2)
(Double zone is effective)

If set DOUBLE ZONE to YES and set ROOM TEMP. to NON, meanwhile set WATER FLOW TEMP. to YES or NON, the following pages will be displayed. In this case, the setting value of zone 1 is T1S, the setting value of zone 2 is T1S2.

DOUBLE ZONE to YES and set ROOM TEMP. to NON meanwhile set WATER FLOW TEMP. to YES or NON



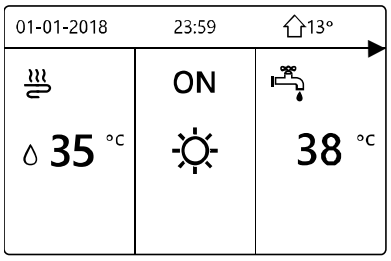
Homepage (zone 1)



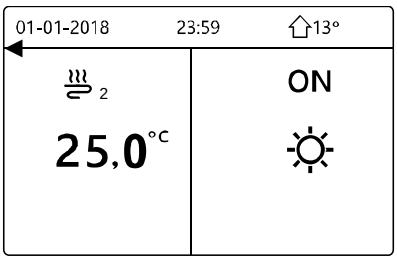
Addition page (zone 2)

If set DOUBLE ZONE and ROOM TEMP. to YES, meanwhile set WATER FLOW TEMP. to YES or NON, the following page will be displayed. In this case, the setting value of zone 1 is T1S, the setting value of zone 2 is TS (The corresponding TIS2 is calculated according to the climate related curves.)

DOUBLE ZONE and set ROOM TEMP. to YES meanwhile set WATER FLOW TEMP. to YES or NON



Homepage (zone 1)



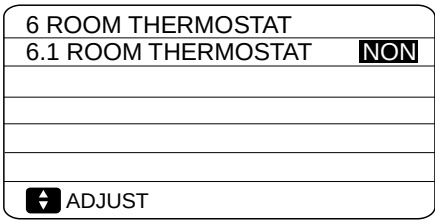
Addition page (zone 2)
(Double zone is effective)

1.9 ROOM THERMOSTAT Menu

MENU > **FOR SERVICEMAN** > **ROOM THERMOSTAT**

As an alternative to controlling space heating/cooling modes according the M thermal Mono unit's leaving water temperature and/or the room temperature detected by the temperature sensor in the M thermal Mono user interface, separate room thermostat can be installed and used to control space heating/cooling modes.

ROOM THERMOSTAT menu



In **ROOM THERMOSTAT** the following parameters should be set.

ROOM THERMOSTAT sets whether or not room thermostats are installed. For installations with room thermostats, select **YES**. For installations without room thermostats, select **NON**.

ROOM THERMOSTAT = NON: No room thermostat.

ROOM THERMOSTAT = MODE SET: Room thermostat can control heating and cooling individually.

ROOM THERMOSTAT=ONE ZONE: Room thermostat provides the switch signal to unit.

ROOM THERMOSTAT=DOUBLE ZONE: Indoor unit is connected with two room thermostat.

1.10 OTHER HEATING SOURCE Menu

1.10.1 OTHER HEATING SOURCE menu overview

MENU > **FOR SERVICEMAN** > **OTHER HEATING SOURCE**

OTHER HEATING SOURCE menu

7 OTHER HEATING SOURCE 1/2	
7.1 dT1_IBH_ON	5°C
7.2 t_IBH_DELAY	30MIN
7.3 T4_IBH_ON	-5°C
7.4 dT1_AHS_ON	5°C
7.5 t_AHS_DELAY	30MIN
ADJUST	

7 OTHER HEATING SOURCE 2/2	
7.6 T4_AHS_ON	-5°C
7.7 IBH LOCATE	PIPE LOOP
7.8 P_IBH1	0.0kW
7.9 P_IBH2	0.0kW
7.10 P_TBH	2.0kW
ADJUST	

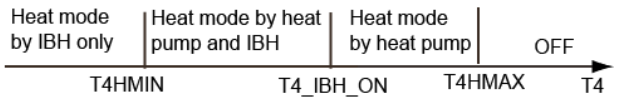
In **OTHER HEATING SOURCE** the following parameters should be set. Backup electric heater is optional.

dT1_IBH_ON sets the temperature difference between the heat pump's leaving water set temperature (T1S) and the heat pump's leaving water temperature (T1) above which the backup electric heater heating element(s) are on. When T1S - T1 ≥ dT1_IBH_ON the backup electric heater is on (on models where the backup electric heater has a simple on/off control function).

t_IBH_DELAY sets the delay between the compressor starting and the backup electric heater being turned on.

T4_IBH_ON sets the ambient temperature below which the backup electric heater is used. If the ambient temperature is above **T4_IBH_ON**, the backup electric heater is not used.

T4_IBH_ON



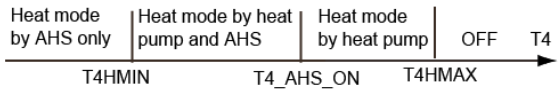
Abreviations:
T4: Outdoor ambient temperature
IBH: Backup electric heater

dT1_ASH_ON sets the temperature difference between the heat pump's leaving water set temperature (T1S) and the heat pump's leaving water temperature (T1) above which the additional heating source is on. When T1S - T1 ≥ dT1_AHS_ON the additional heating source is on.

t_ASH_DELAY sets the delay between the compressor starting and the additional heating source being turned on.

T4_AHS_ON sets the ambient temperature below which the additional heating source is used. If the ambient temperature is above **T4_ASH_ON**, the additional heating source is not used. The relationship between operation of the additional heating source and the ambient is shown in the picture below.

T4_AHS_ON



Abreviations:
AHS: *Additional heating source*
T4: Outdoor ambient temperature

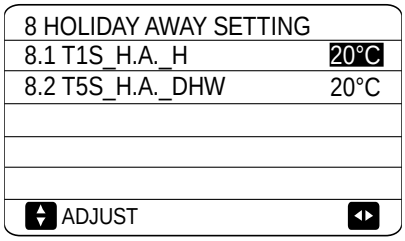
IBH LOCATE means IBH is installed for pipe heating.
P_IBH1, P_IBH2 set heating capacity of IBH and P_TBH sets heating capacity of TBH, which are used for energy consumption statistics.

1.11 HOLIDAY AWAY SETTING Menu

MENU > FOR SERVICEMAN > HOLIDAY AWAY SETTING

The **HOLIDAY AWAY SETTING** menu settings are used to set the outlet water temperature to prevent water pipes freezing when away from home in cold weather seasons. In **HOLIDAY AWAY SETTING** the following parameters should be set.

HOLIDAY AWAY SETTING menu



T1S_H.A._H sets the heat pump's leaving water set temperature for space heating mode when in holiday away mode.

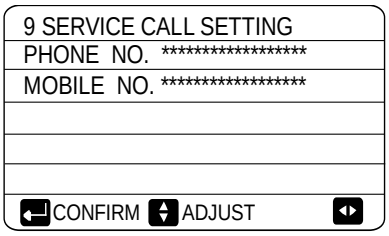
T5S_H.M_DHW sets the heat pump's leaving water set temperature for DHW mode when in holiday away mode.

1.12 SERVICE CALL Menu

MENU > FOR SERVICEMAN > SERVICE CALL

In **SERVICE CALL** the following parameters can be set.

SERVICE CALL menu



PHONE NO. and **MOBILE NO.** can be used to set after-sales service contact numbers. If set, these numbers are displayed to users in **MENU** > **FOR SERVICEMAN > SERVICE CALL**

Use ▼ ▲ to adjust the numerical values. The maximum length of the phone numbers is 14 digits.

The black rectangle found between 0 and 9 when scrolling up and down using ▼ ▲ is converted to a blank space when the phone numbers are displayed to users in **MENU** > **FOR SERVICEMAN > SERVICE CALL** and can be used for phone numbers less than 14 digits in length.

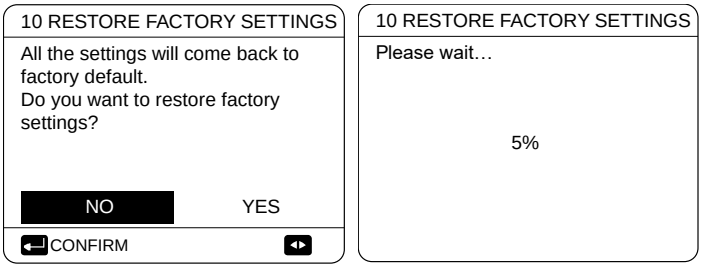
1.13 RESTORE FACTORY SETTINGS

MENU > FOR SERVICEMAN > RESTORE FACTORY SETTINGS

RESTORE FACTORY SETTINGS is used to restore all the parameters set in the user interface to their factory defaults.

On selecting **YES**, the process of restoring all settings to their factory defaults begins and progress is displayed as a percentage.

RESTORE FACTORY SETTINGS screens



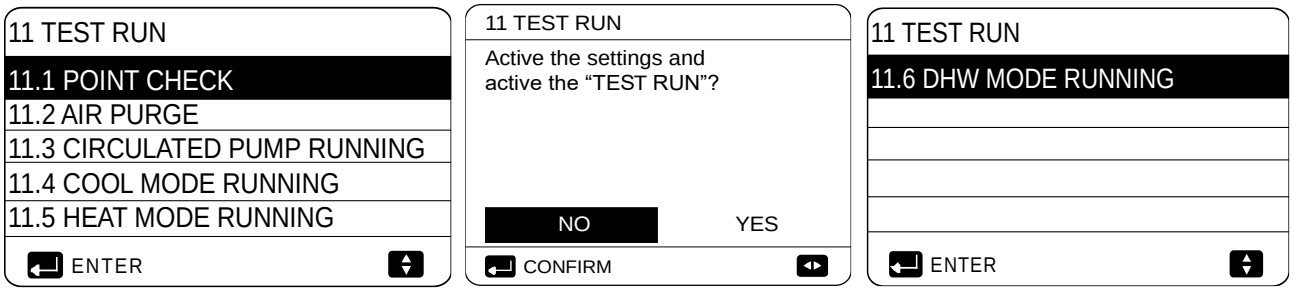
1.14 TEST RUN

1.14.1 TEST RUN Menu overview

MENU > FOR SERVICEMAN > TEST RUN

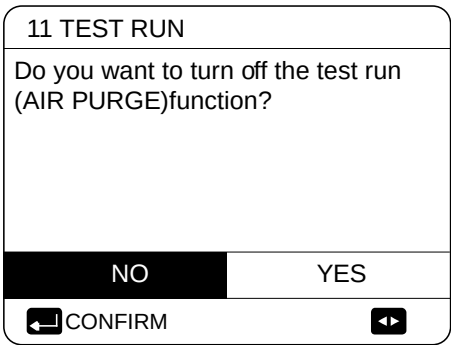
TEST RUN is used to check that the valves, air purge function, circulation pump, space cooling mode, space heating mode and DHW mode are all operating correctly.

TEST RUN start screen and TEST RUN menu



During test run, all buttons except OK are invalid. If you want to turn off the test run, please press OK. For example, when the unit is in air purge mode, after you press OK, the following page will be displayed:

Exit air purge screen

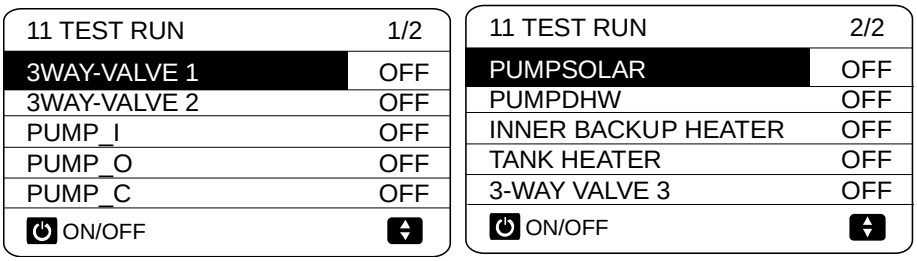


1.14.2 POINT CHECK menu

MENU > FOR SERVICEMAN > TEST RUN > POINT CHECK

The **POINT CHECK** menu is used to check the operation of individual components. Use ▼▲ to scroll to the components you want to check and press ON/OFF to toggle the on/off state of the component. If a valve does not turn on/off when its on/off state is toggled or if a pump/heater does not operate when turned on, check the component's connection to the hydronic system main PCB.

POINT CHECK menu



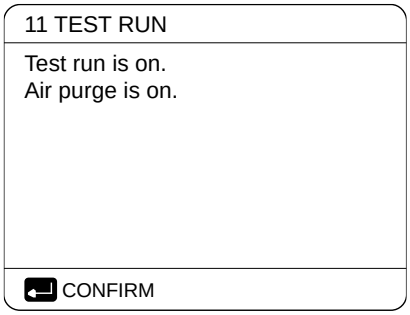
1.14.3 AIR PURGE operation

MENU > FOR SERVICEMAN > TEST RUN > AIR PURGE

Once installation is complete it is important to run the air purge function to remove any air which may be present in the water piping and which could cause malfunctions during operation.

The **AIR PURGE** operation is used to remove air from the water piping. Before running AIR PURGE mode, make sure that the air purge valve is open. When the air purge operation starts, SV1 valve opens and SV2 valve closes. 60 secs later the pump in the unit (PUMPI) operates for 10min during which the flow switch does not work. After the pump stops, SV1 valve closes and SV2 valve opens. 60 secs later both PUMPI and PUMPO operate until the next command is received. If any error code is displayed during the air purge operation, the cause should be investigated. Refer to Part 3, 10 “Error Code table”.

AIR PURGE operation

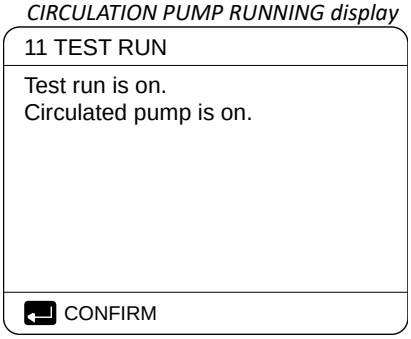


1.14.4 CIRCULATION PUMP RUNNING operation

MENU > FOR SERVICEMAN > TEST RUN > CIRCULATION PUMP RUNNING

The **CIRCULATION PUMP RUNNING** operation is used to check the operation of the circulation pump. When the circulation pump running operation starts, all running components stop. 60 secs later, the 3-way valve opens and the 3-way valve closes. After a further 60 secs PUMPI starts. 30 seconds later, if the flow switch detects that the water flow is normal, PUMPI operates for 3 mins. After the pump stops 60s, the 3-way valve closes and the 3-way valve opens. 60s later both PUMI and PUMPO will operate. After a further 2 mins the flow switch start to check the water flow. If the water flow rate is sufficient, both PUMPI and PUMPO operate until the next command is received. If the water flow rate is insufficient over any 15-second period, PUMPI and PUMPO stop and error code E8 is displayed. Refer to Part 3, 10 “Error Code table”.

CIRCULATION PUMP RUNNING display



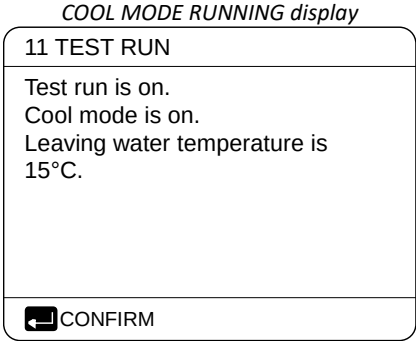
1.14.5 COOL MODE RUNNING operation

MENU > FOR SERVICEMAN > TEST RUN > COOL MODE RUNNING

The **COOL MODE RUNNING** operation is used to check the operation of the system in space cooling mode.

During the **COOL MODE RUNNING** operation, the M thermal Mono unit leaving water set temperature is 7°C. The current actual leaving water temperature is displayed on the user interface. The unit operates until the leaving water temperature drops to the set temperature or the next command is received.

COOL MODE RUNNING display

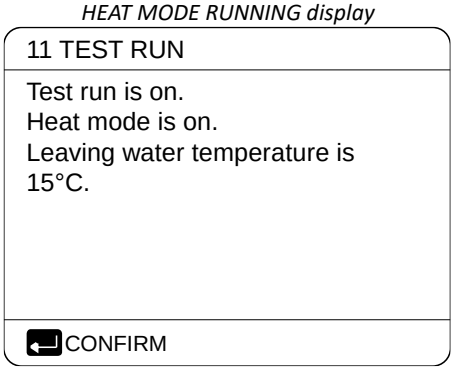


If any error code is displayed during the cool mode running operation, the cause should be investigated.

1.14.6 HEAT MODE RUNNING operation

The **HEAT MODE RUNNING** operation is used to check the operation of the system in space heating mode.

HEAT MODE RUNNING display



During the **HEAT MODE RUNNING** operation the M thermal Split unit leaving water set temperature is 35°C. The current actual leaving water temperature is displayed on the user interface. When the **HEAT MODE RUNNING** operation starts, the heat pump first runs for 10 mins.

After 10 mins:

- On systems where an auxiliary heat source (AHS) is installed, the AHS starts and runs for 10 mins (whilst the heat pump continues running), after which the AHS stops and the heat pump continues to operate until the water temperature rises to the set temperature or the heat mode running operation is exited by pressing **OK**.
- On systems where a backup electric heater is being used, the backup heater turn on (on models where the backup heater has a simple on/off control function). 3 mins later the backup electric heater will turn off. The heat pump will then operate until the water temperature rises to the set temperature or the **next command is received.**
- On systems with no auxiliary heat source (AHS), the heat pump will then operate until the water temperature rises to the set temperature or the **next command is received.**

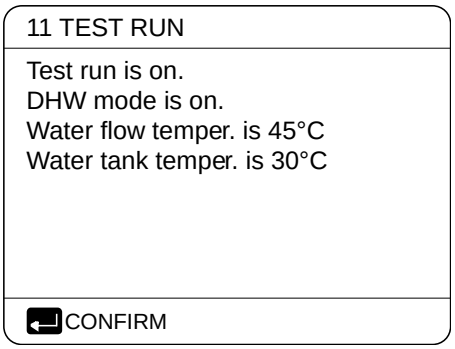
If any error code is displayed during the cool mode running operation, the cause should be investigated. Refer to Part 3, 8.2 “Error Code table”.

1.14.7 DHW MODE RUNNING operation

The **DHW MODE RUNNING** operation is used to check the operation of the system in DHW mode.

During the **DHW MODE RUNNING** operation, the DHW set temperature is 55°C. On systems where a tank boost heater is installed, the tank boost heater will turn on once the heat pump has run for 10 mins. The tank boost heater will turn off 3 mins later and the heat pump will operate until the water temperature rises to the set temperature or the **next command is received.**

DHW MODE RUNNING display

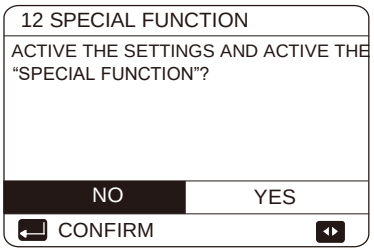


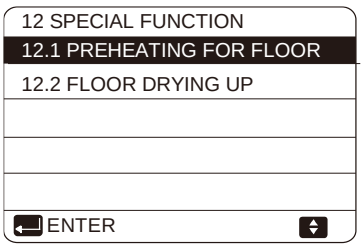
1.15 SPECIAL FUNCTION

1.15.1 SPECIAL FUNCTION menu overview

MENU > FOR SERVICEMAN > SPECIAL FUNCTION

Special functions menu





SPECIAL FUNCTION is used to pre-heating floor and drying up floor once installation is complete or the first time start up the unit or restart the unit after a long time stop.

1.15.2 PREHEATING FOR FLOOR

MENU > **FOR SERVICEMAN** > **SPECIAL FUNCTION** > **PREHEATING FOR FLOOR**

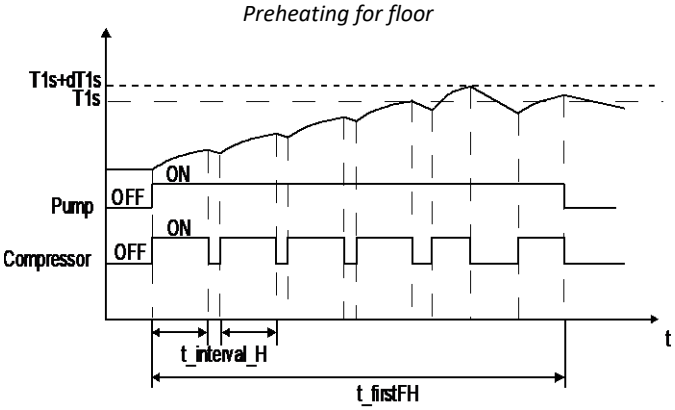
Before floor heating, if a large amount of water remains on the floor, the floor may be warped or even rupture during floor heating operation, in order to protect the floor, floor drying is necessary, during which the temperature of the floor should be increased gradually.

During first operation of the unit, air may remain in the water system which can cause malfunctions during operation. It is necessary to run the air purge function to release the air (make sure the air purge valve is open).

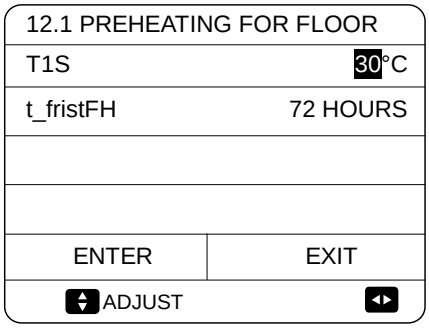
T1S sets the heat pump's leaving water set temperature in preheating for floor mode.

t_fristFH sets the duration of preheating for floor mode.

Preheating for floor



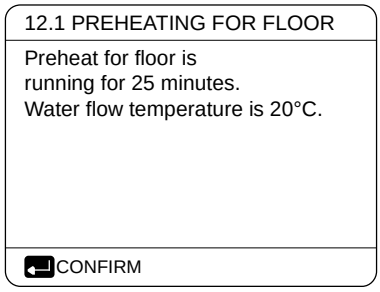
Preheating for floor menu

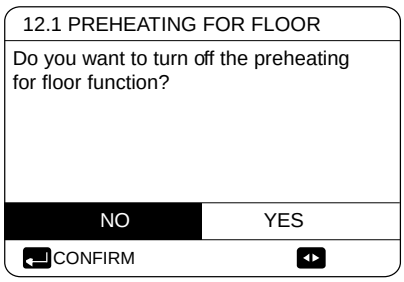


Abreviations:
t_interval_H: Compressor re-start delay in space heating mode. (Refer to Part 3, 8.6 "HEAT MODE SETTING Menu").

Whilst the preheating for floor operation is running, the number of minutes that it has been running for and the heat pump's leaving water temperature are displayed on the user interface. During the preheating for floor operation all buttons except **OK** are inactivated. To exit the preheating for floor operation, press **OK** and then select **YES** when prompted.

Preheating for floor screens

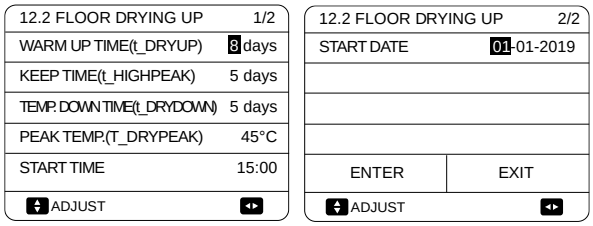




1.15.3 FLOOR DRYING UP

MENU > FOR SERVICEMAN > SPECIAL FUNCTION > FLOOR DRYING UP

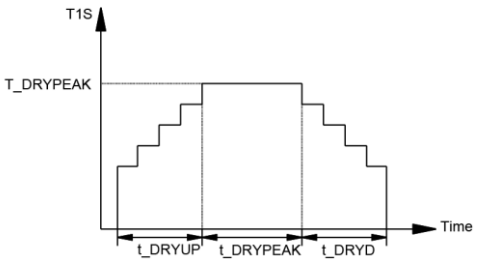
FLOOR DRYING UP menu



For newly-installed under-floor heating systems, floor drying up mode can be used to remove moisture from the floor slab and subfloor to prevent warping or rupture of the floor during floor heating operation. There are three phases to the floor drying up operation:

- Phase 1: gradual temperature increase from a starting point of 25°C to the peak temperature
- Phase 2: maintain peak temperature
- Phase 3: gradual temperature decrease from the peak temperature to 45°C

FLOOR DRYING UP settings



WARM UP TIME(t_DRYUP) sets the duration of Phase 1.

KEEP TIME(t_HIGHPEAK) sets the duration of Phase 2.

TEMP. DOWN TIME(t_DRYDOWN) is the duration of Phase 3.

PEAK TEMP.(T_DRYPEAK) sets the heat pump's leaving water set temperature for Phase 2.

START TIME sets the floor drying up operation start time.

START DATE sets the floor drying up operation start date.

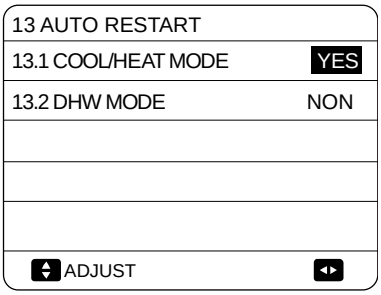
During the floor drying up operation all buttons except **OK** are inactivated. To exit the floor drying up operation, press **OK** and then select **YES** when prompted.

Note: In the event of a heat pump malfunction, floor drying up mode will continue if a backup electric heater and/or additional heating source is available and configured to support space heating mode.

1.16 AUTO RESTART

MENU > FOR SERVICEMAN > AUTO RESTART

AUTO RESTART menu



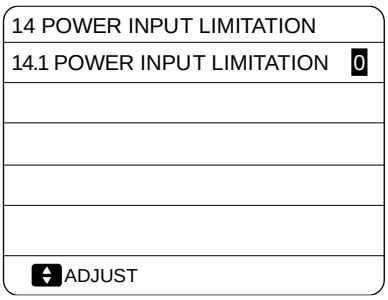
AUTO RESTART sets whether or not the unit re-applies the user interface settings when the power returns following a power failure. Select **YES** to enable auto restart or **NON** to disable auto restart.

If the auto restart function is enabled, when the power returns following a power failure, the unit re-applies the user interface settings from before the power failure. If the auto restart function is disabled, when the power returns after a power failure, the unit won't auto restart.

1.17 POWER INPUT LIMITATION

MENU > FOR SERVICEMAN > POWER INPUT LIMITATION

POWER INPUT LIMITATION menu



POWER INPUT LIMITATION sets the type of power input limitation and the setting range is 0-8. If the unit will operate at larger power input, 0 should be selected. If the unit will operate at a lower power input, 1-8 should be selected and the power input and capacity will decrease.

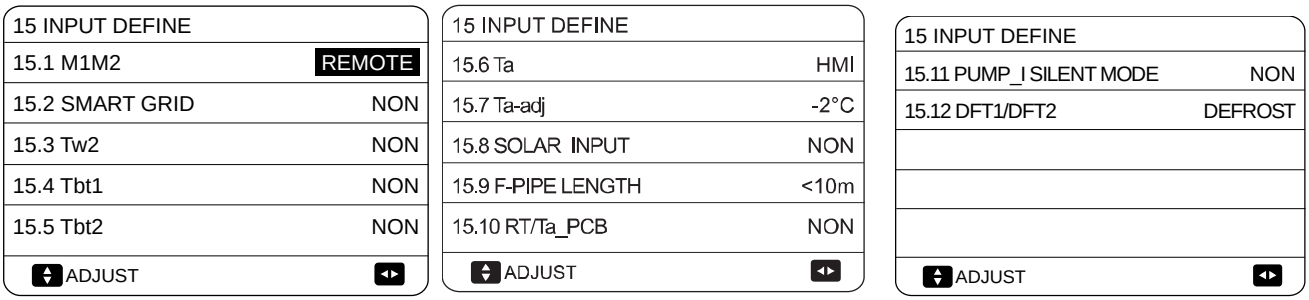
Limitation value (unit:A)

Model / No.	0	1	2	3	4	5	6	7	8
4/6kW	18	18	16	15	14	13	12	12	12
8/10kW	19	19	18	16	14	12	12	12	12
12/14kW(1N)	30	30	28	26	24	22	20	18	16
16kW(1N)	30	30	29	27	25	23	21	19	17
12/14kW(3N)	14	14	13	12	11	10	9	9	9
16kW(3N)	14	14	13	12	11	10	9	9	9

1.18 INPUT DEFINE

MENU > FOR SERVICEMAN > INPUT DEFINE

INPUT DEFINE



INPUT DEFINE sets sensors and functions to fulfill with installation.

M1M2 sets the control function of M1M2 for remote ON/OFF of unit or AHS or TBH

SMART GRID sets whether SMART GRID control signal is connected to hydronic PCB.

Tw2 sets whether T1b sensor exist in the installation.

Tbt1 set whether balance tank temperature sensors are installed in the balance tank. (Tbt1 sensor, individually purchase;Tbt2, reserved)

Ta sets the Ta sensor connection type (HMI: Ta on wired controller; IDU: Ta connected on hydronic PCB)

Ta-adj is an correction value for Ta.

SOLAR INPUT sets whether solar control signal is connected to hydronic PCB. (0=NON; 1=CN18; Tsolar 2=CN11SL1SL2)

F-PIPE LENGTH sets the length of refrigerant pipes between outdoor unit and indoor unit.

RT/Ta_PCB sets whether M-kit is valid.

Pump silent mode can decrease water pump maximum output by 5% in order to decrease the noise of heat pump.

DFT1/DFT2 sets DFT1 and DFT2 port of the hydro module as DEFROST or Alarm(ALARM function can be valid only with IDU software version higher than V99)

1.19 CASCADE SET

MENU > FOR SERVICEMAN > CASCADE SET

CASCADE SET

16 CASCADE SET	
16.1 PER_START	20%
16.2 TIME_ADJUST	5 MIN
16.3 ADDRESS RESET	FF
ADJUST	

PER_START sets the start-up percentage of multiple units for the first time start-up after power on. For example:

Total units	PER_START	Starting units
6	50%	3
6	30%	2

TIME_ADJUST sets the judgment period of adding and subtracting units

ADDRESS RESET resets the address code of unit.(“FF” is an invalid address code.) Normally, program will set the address for each unit automatically, only when unit lost address and Hd error code appears then we need to use this function. After setting the address, you need to press the “UNLOCK” key to confirm.

1.20 HMI ADDRESS SET

MENU > FOR SERVICEMAN > HMI ADDRESS SET

HMI ADDRESS SET

17 HMI ADDRESS SET	
17.1 HMI SET	MASTER
17.2 HMI ADDRESS FOR BMS	1
17.3 STOP BIT	1

HMI SET sets the wired controller is master or slave. (0=MASTER, 1=SLAVE)
When HMI SET is set to SLAVE, the controller can only switch the operation mode, turn on or off, set the temperature, and cannot set other parameters and functions.

HMI ADDRESS FOR BMS sets the HMI address code for BMS.(only valid for master controller)
The **STOP BIT** of wired controller and upper computer software should be the same to ensure the reliability of data transformation.

2 Operation parameter

MENU > **OPERATION PARAMETER**

This menu is for installer or service engineer reviewing the operation parameters. There are nine pages for the operating parameter as following

Operation parameter

OPERATION PARAMETER	#01
ONLINE UNITS NUMBER	1
OPERATE MODE	COOL
SV1 STATE	ON
SV2 STATE	OFF
SV3 STATE	OFF
PUMP_I	ON
ADDRESS	1/9

OPERATION PARAMETER	#01
PUMP-O	OFF
PUMP-C	OFF
PUMP-S	OFF
PUMP-D	OFF
PIPE BACKUP HEATER	OFF
TANK BACKUP HEATER	ON
ADDRESS	2/9

OPERATION PARAMETER	#01
GAS BOILER	OFF
T1 LEAVING WATER TEMP.	35°C
WATER FLOW	1.72m 3/h
HEAT PUMP CAPACTIY	11.52kW
POWER CONSUM.	1000kWh
Ta ROOM TEMP	25°C
ADDRESS	3/9

OPERATION PARAMETER	#01
T5 WATER TANK TEMP.	53°C
Tw2 CIRCUIT2 WATER TEMP.	35°C
TIS' C1 CLIMATE CURVE TEMP.	35°C
TIS2' C2 CLIMATE CURVE TEMP.	35°C
TW_O PLATE W-OUTLET TEMP.	35°C
TW_I PLATE W-OUTLET TEMP.	30°C
ADDRESS	4/9

OPERATION PARAMETER	#01
Tbt1 BUFFERTANK_UP TEMP.	35°C
Tbt2 BUFFERTANK_LOW TEMP.	35°C
Tsolar	25°C
IDU SOFTWARE	01-09-2019V01
ADDRESS	5/9

OPERATION PARAMETER	#01
ODU MODEL	6kW
COMP.CURRENT	12A
COMP.FREQENCY	24Hz
COMP.RUN TIME	54 MIN
COMP.TOTAL RUN TIME	1000Hrs
EXPANSION VALVE	200P
ADDRESS	6/9

OPERATION PARAMETER	#01
FAN SPEED	600R/MIN
IDU TARGET FREQUENCY	46Hz
FREQUENCY LIMITED TYPE	5
SUPPLY VOLTAGE	230V
DC GENERATRIX VOLTAGE	420V
DC GENERATRIX CURRENT	18A
ADDRESS	7/9

OPERATION PARAMETER	#01
TW_O PLATE W-OUTLET TEMP.	35°C
TW_I PLATE W-INLET TEMP.	30°C
T2 PLATE F-OUT TEMP.	35°C
T2B PLATE F-IN TEMP.	35°C
Th COMP. SUCTION TEMP.	5°C
Tp COMP. DISCHARGE TEMP.	75°C
ADDRESS	8/9

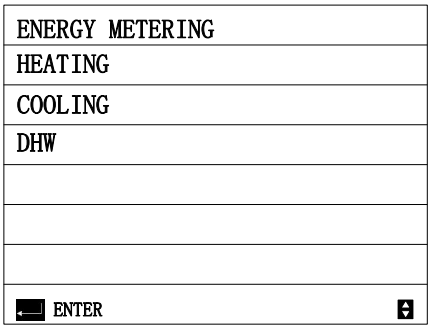
OPERATION PARAMETER	#01
T3 OUTDOOR EXCHARGE TEMP.	5°C
T4 OUTDOOR AIR TEMP.	5°C
TF MODULE TEMP.	55°C
P1 COMP. PRESSURE	2300kPa
ODU SOFTWARE	01-09-2018V01
HMI SOFTWARE	01-09-2018V01
ADDRESS	9/9

3 Energy metering

MENU > **ENERGY METERING**

3.1 Energy metering function

After the energy metering function is enabled, select ENERGY METERING in the main menu to view the heating, cooling and hot water energy data of the unit; in each mode, the real-time, cumulative, daily, weekly, monthly, annually and calendar year energy data can be viewed respectively.



Select the mode to view the energy metering data through the ▲ ▼ key, and press the OK key to enter the viewing interface of this mode;

Viewing the energy metering data for each mode is done in the same way.

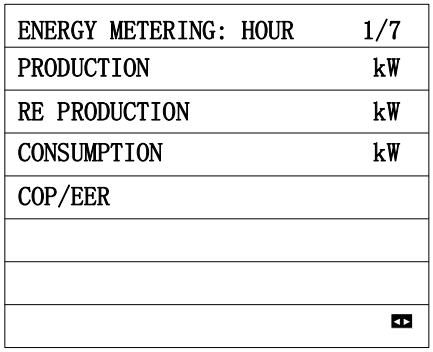
The following table is the energy data parameter table:

Item	Mode	Explanation
PRODUCED	Heating/DHW	Heating capacity (include electric heater capacity)
	Cooling	Cooling capacity
RE PRODUCED	Heating/DHW	The raised heating capacity by heat pump compared to electric heater with the same amount of electricity consumed, which is for reference only.
	Cooling	The raised cooling capacity by heat pump compared to semiconductor refrigeration with the same amount of electricity consumed, which is for reference only.
CONSUMED	Heating/DHW/Cooling	Total power consumption(include electric heater)
COP/EER	Heating/DHW	COP = Heating capacity / Total power consumption
	Cooling	EER = Cooling capacity / Total power consumption

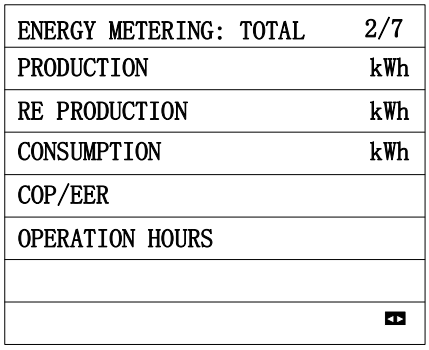
3.1.1 Data display interface of real-time, cumulative, current day, current week, current month and current year

Select the mode to view the energy metering data through the ▲ ▼ key, and press the OK key to enter the viewing interface of this mode.

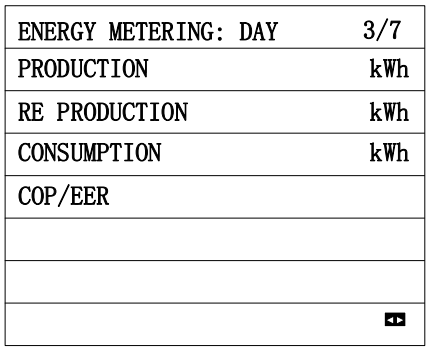
1/7: Real-Time Energy Data



2/7: Cumulative Energy Data



3/7: Energy Data of the Day



4/7: Energy Data of the Week

ENERGY METERING: WEEK	4/7
PRODUCTION	kWh
RE PRODUCTION	kWh
CONSUMPTION	kWh
COP/EER	

5/7: Energy Data of the Month

ENERGY METERING: MONTH	5/7
PRODUCTION	kWh
RE PRODUCTION	kWh
CONSUMPTION	kWh
COP/EER	

6/7: Energy Data of the Year

ENERGY METERING: YEAR	6/7
PRODUCTION	kWh
RE PRODUCTION	kWh
CONSUMPTION	kWh
COP/EER	

Press ◀▶ to turn pages to view the parameters (turn a page each time); press "BACK" to return to the previous page, and the invalid data will be displayed as "----".

3.1.2 Display interface of energy data HISTORICAL DATA over the years

On the ENERGY METERING: YEAR page, press ▸ to scroll to the right to view the HISTORICAL DATA energy data page over the years.

7/7: Calendar Year Energy Data

ENERGY METERING	7/7
HISTORICAL DATA	
CONFIRM	

Full Year 2022 Energy Data

ENERGY METERING	2022 TOTAL
PRODUCTION	kWh
RE PRODUCTION	kWh
CONSUMPTION	kWh
COP/EER	
MONTH	YEAR

January 2022 Energy Data

ENERGY METERING	2022 JAN
PRODUCTION	kWh
RE PRODUCTION	kWh
CONSUMPTION	kWh
COP/EER	
MONTH	YEAR

Energy data over the years shall be stored monthly and annually for at least 10 years (including the current year).

Press ▸ and ▼ ▲ to turn pages to view parameters (turn a page each time), press "BACK" to return to the previous page, and invalid data will be displayed as "----".

Explain

1) The data can be refreshed and displayed after the wired controller is powered on for more than 10 minutes, and all the above data are displayed as 0 within 10 minutes;
2) OPERATION HOURS is the operating time of the host compressor.
3) Installation setting option 5.4 ENERGY METERING determines whether to display or not according to whether the indoor and outdoor units support energy consumption calculation. Both the indoor and outdoor units support energy consumption calculation, and the installation setting option is displayed. If either of the indoor or outdoor units supports energy consumption calculation, the installation setting option is hidden. If the indoor or outdoor unit is not connected, the installation setting options are hidden.
4) Data calculation and display of MENU menu-> ENERGY METERING of wired controller (including synchronous uploading of data to cloud and plug-in display) shall meet the requirement of supporting energy consumption calculation for internal and external units at the same time. 5.4 ENERGY METERING on wired controller is set to YES.

4 Network Configuration Guidelines

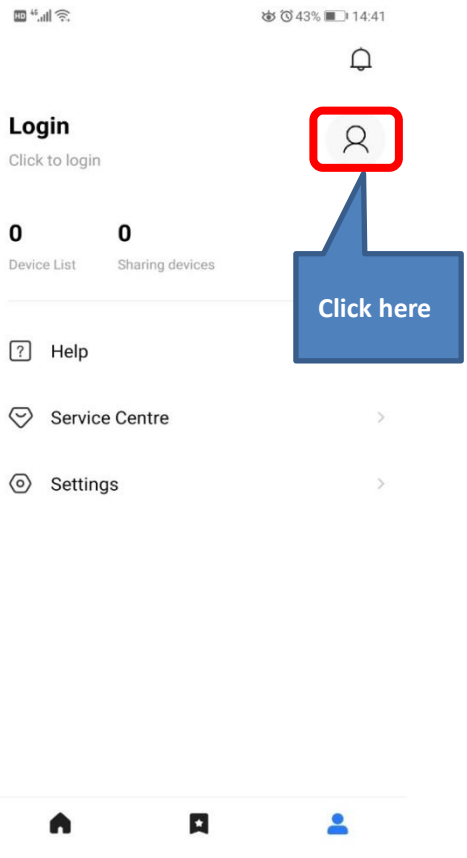
The wired controller realizes intelligent control with a built-in WIFI module, which receives control signal from the APP. Before connecting the WLAN, please check for it if the router in your environment is active and make sure that the wired controller is well-connected to the wireless signal. When the product is connected to the network, please make sure that the phone is as close as possible to the product. Midea only supports 2.4GHz band routers at present. Special characters (punctuation, spaces, etc.) are not recommended as part of the WLAN name. It is recommended that you connect no more than 10 devices to a single router lest home appliances are affected by weak or unstable network signal. If the password of the router or WLAN is changed, clear all settings and reset the appliance. APP interface changes from time to time as APP is updated and may change slightly vary from those in this document.

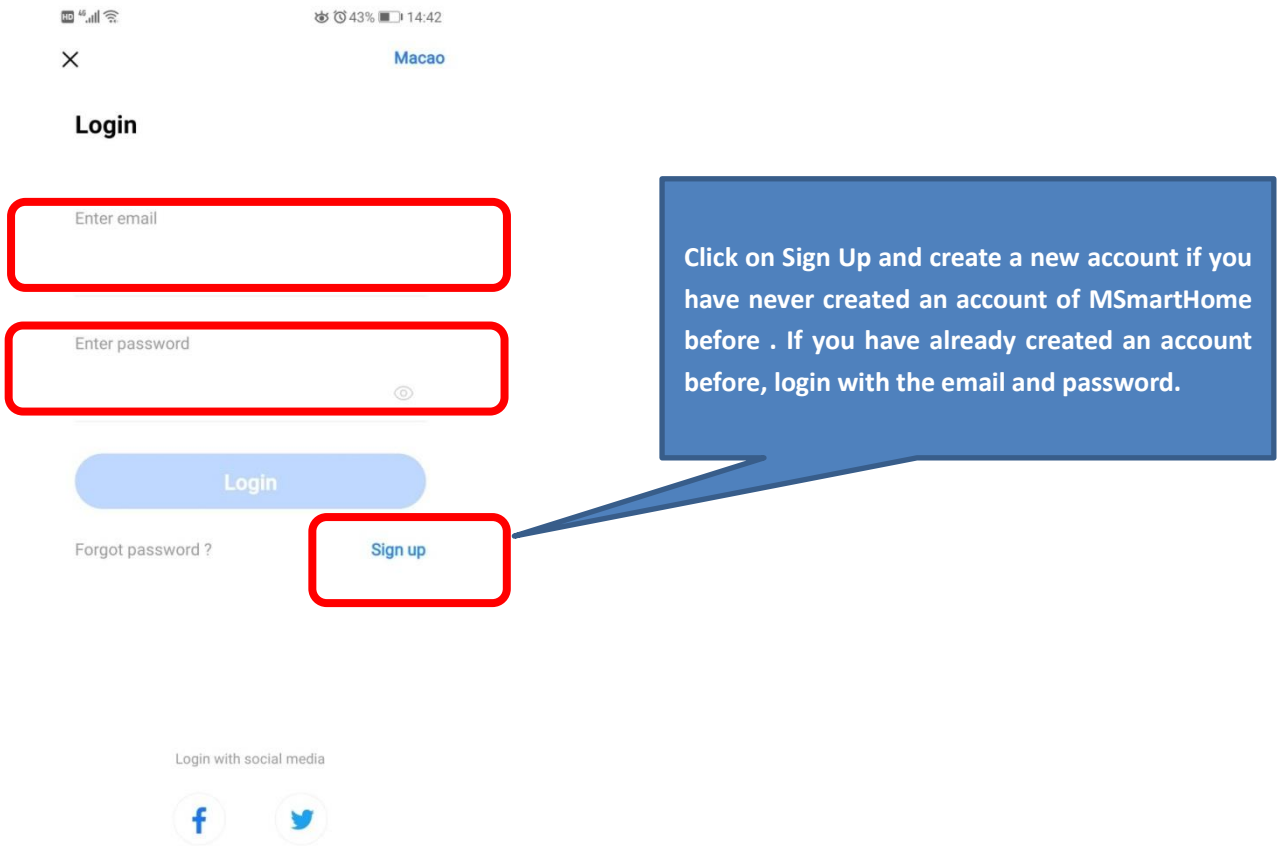
4.1 Install APP

Scan the following QR code or research "MSmartHome" in APP STORE or GOOGLE PLAY to install the APP.

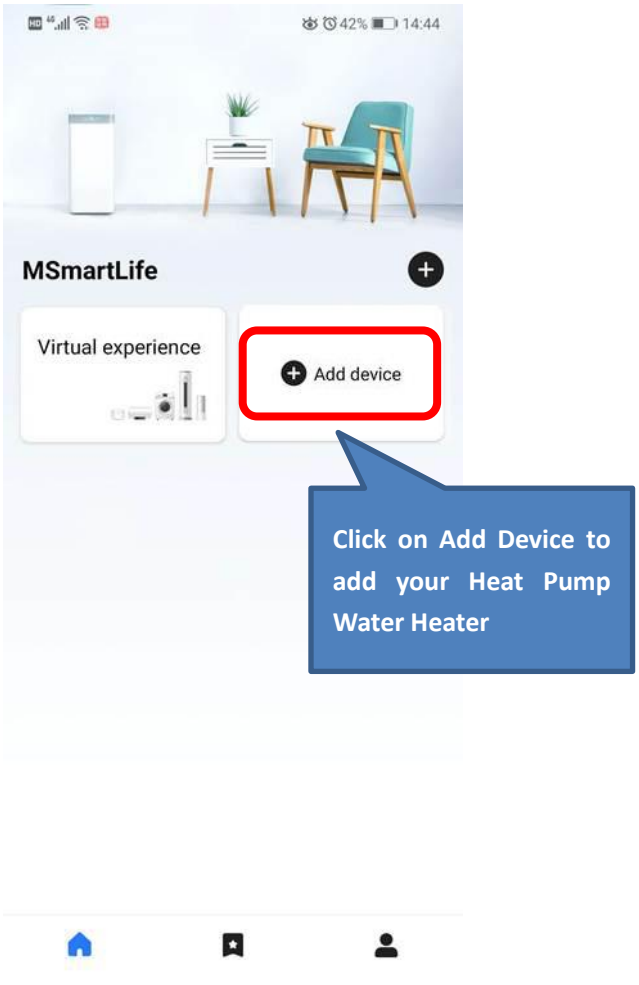
4.2 Sign in

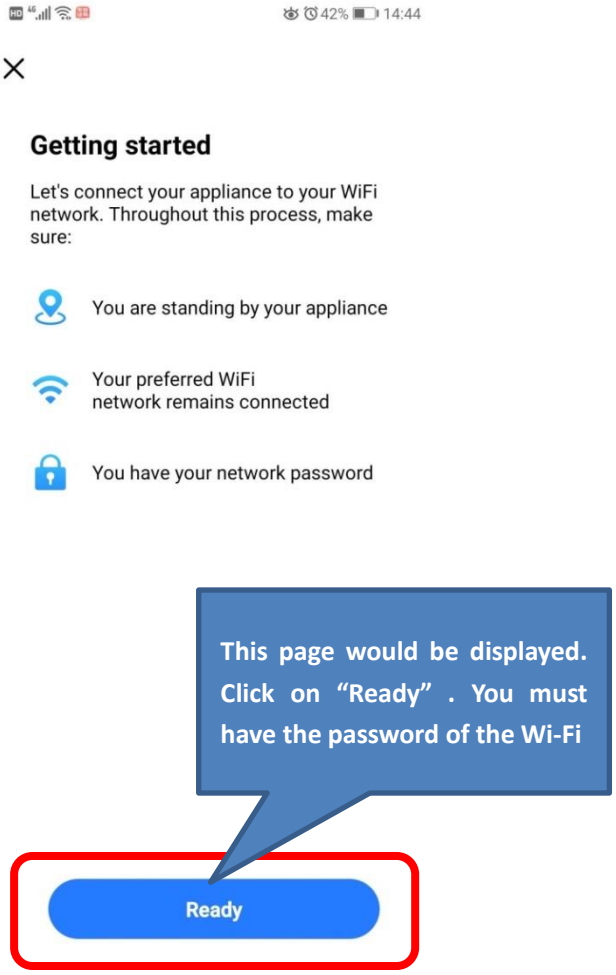
After installation, open the APP and login.

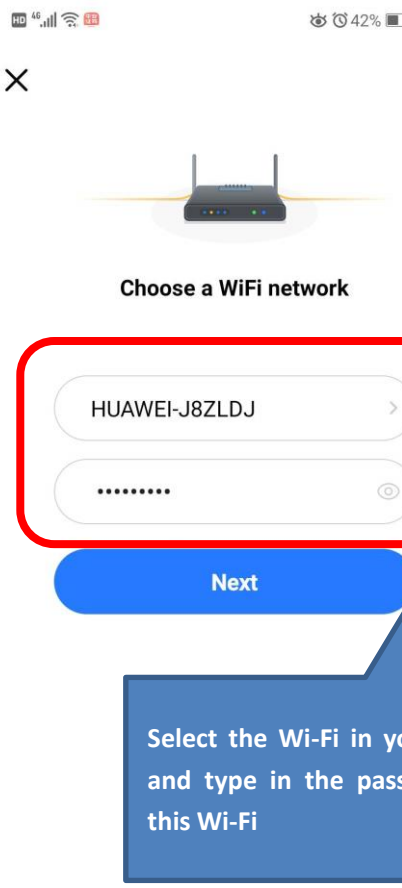


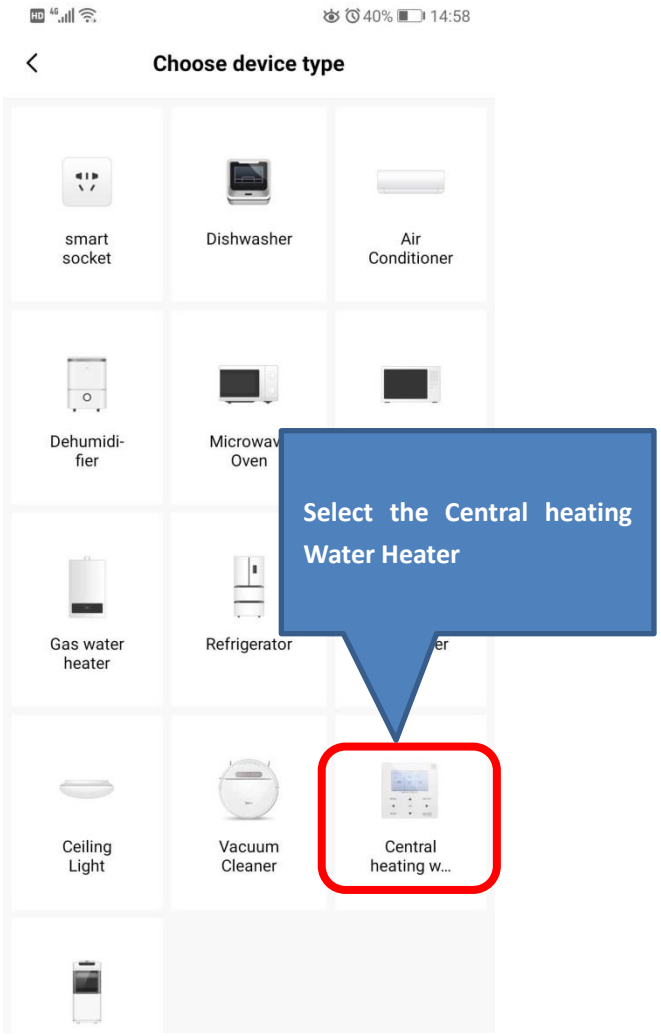


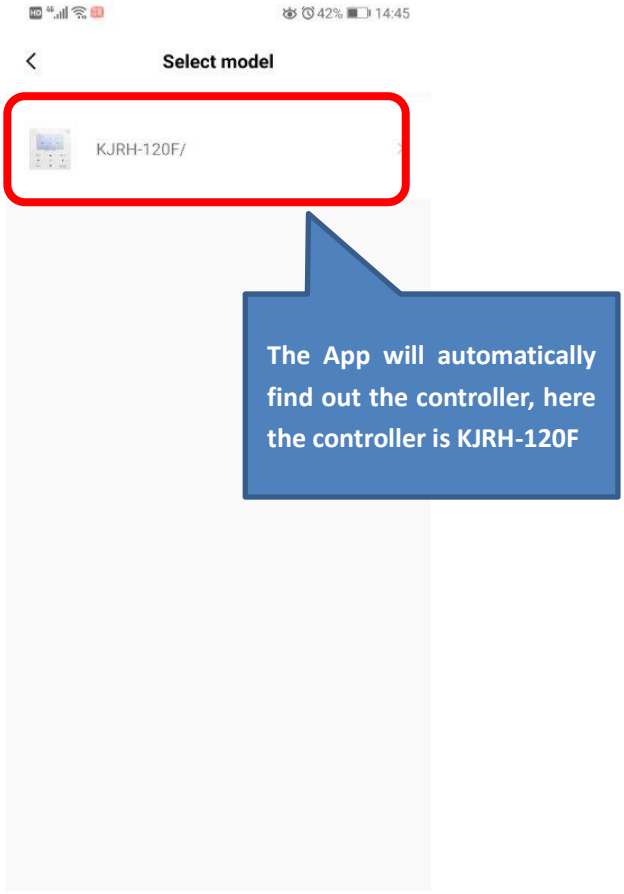
4.3 Add device and login to home Wi-Fi

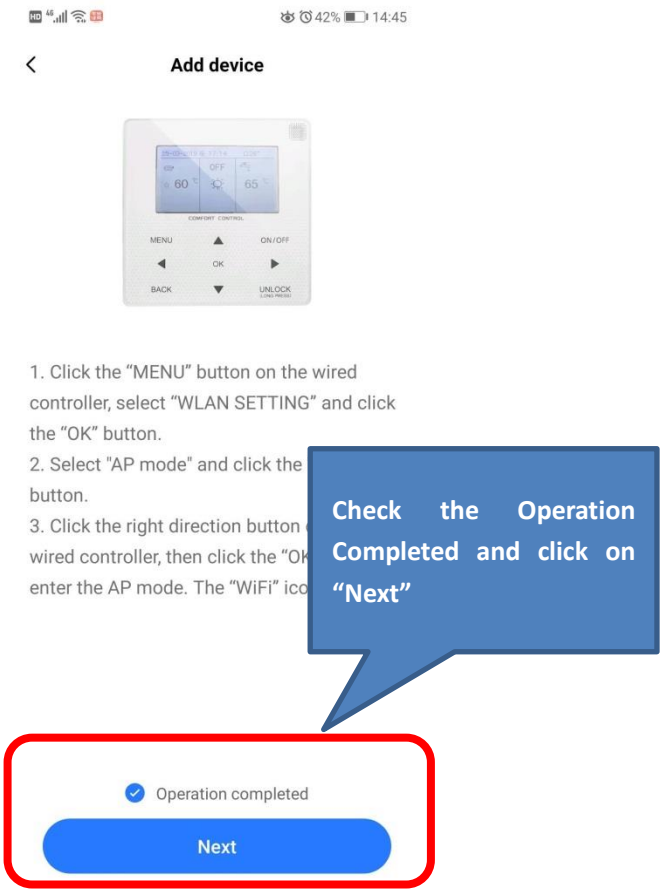






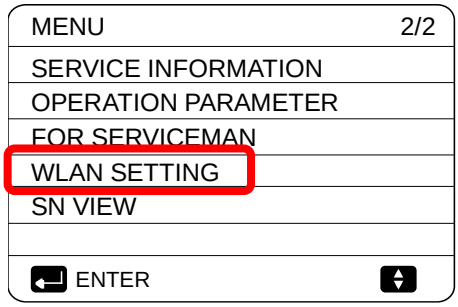


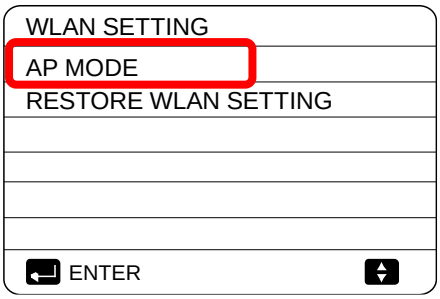


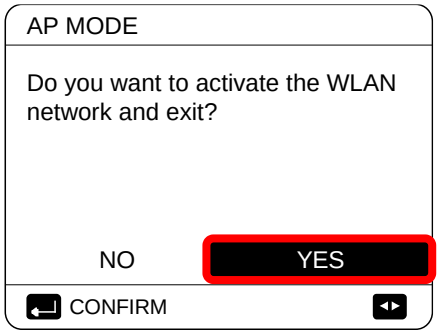


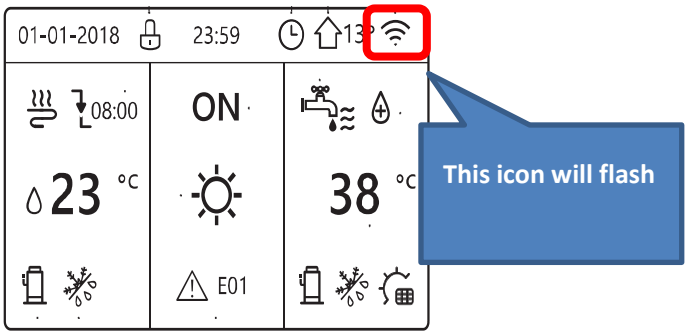
4.4 Wired Controller Setting

Go to "**MENU**"> "**WLAN SETTING**"> "**AP MODE**". Press "**OK**" to activate the WLAN. Select **YES**, press **OK** to select AP mode. Select **AP Mode** correspondingly on the mobile device and continue the follow-up settings according to the APP prompts. During the Wireless distribution process, the LCD icon "" flashes to indicate that the network is being deployed. After the process is completed, the icon "" will be constantly on.

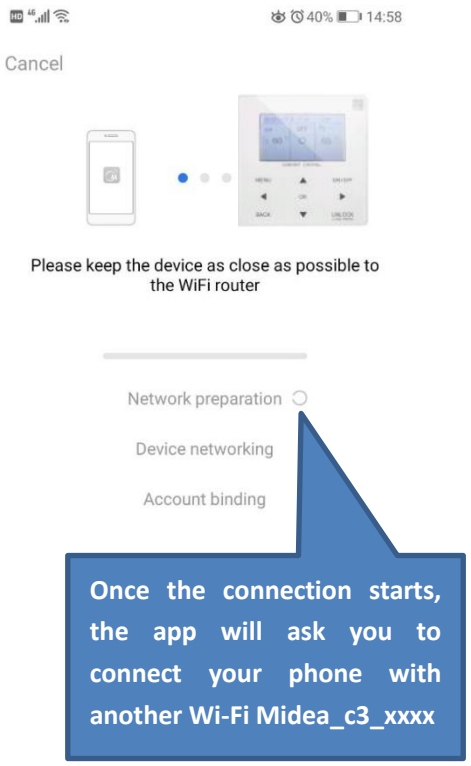


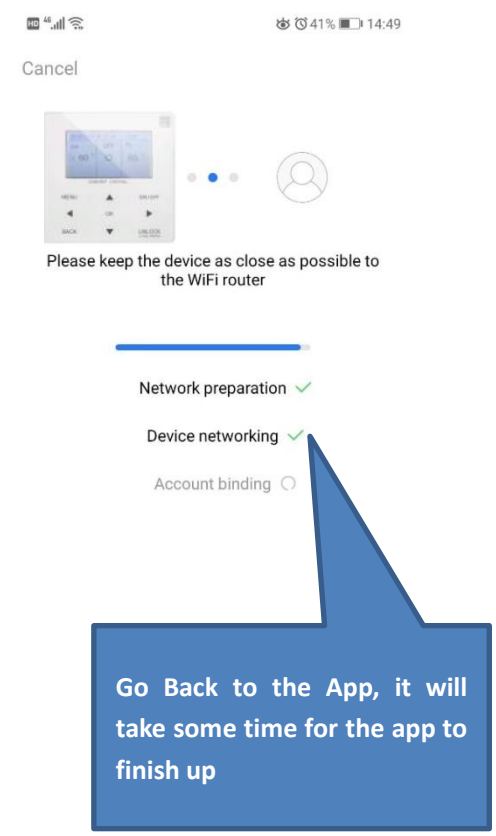


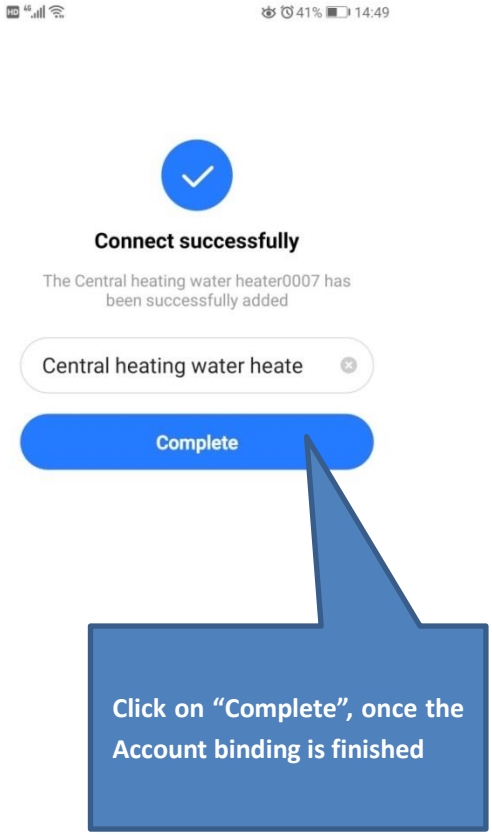




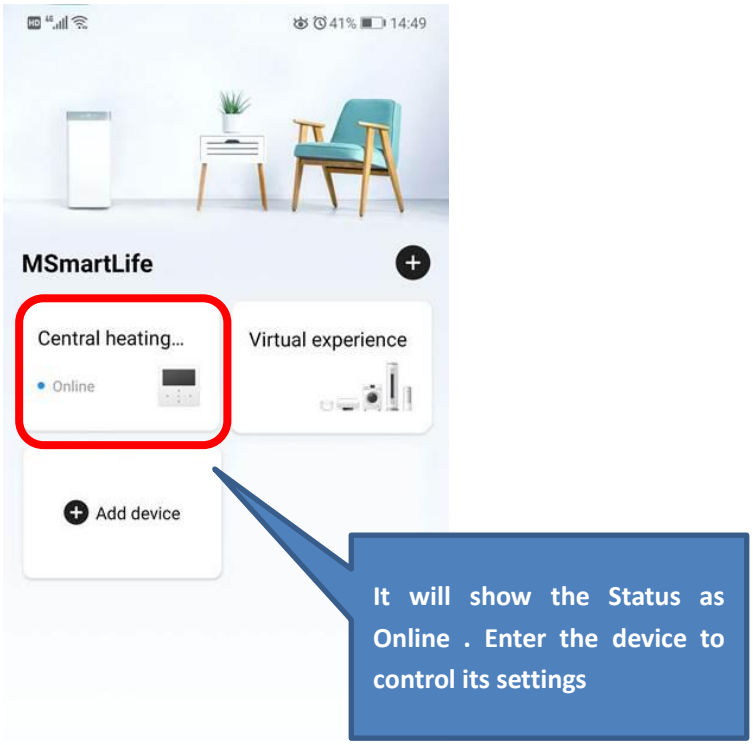
4.4.1 Connect to new Wi-Fi







4.4.2 Finishing up



5 USB function guidelines

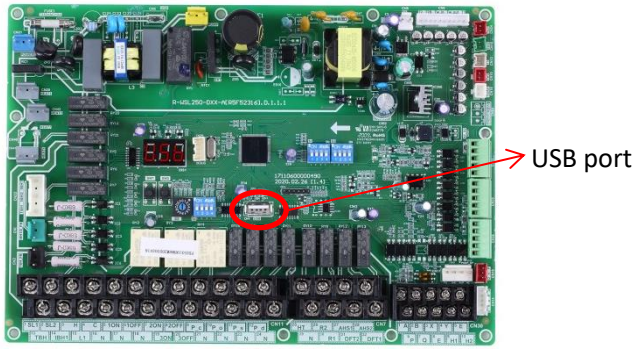
5.1 Parameters setting transfer between wired controllers

Installer can quickly copy the wired controller parameter settings from unit A to unit B via USB disk, which save the time of on-site installation. Steps are as follows:

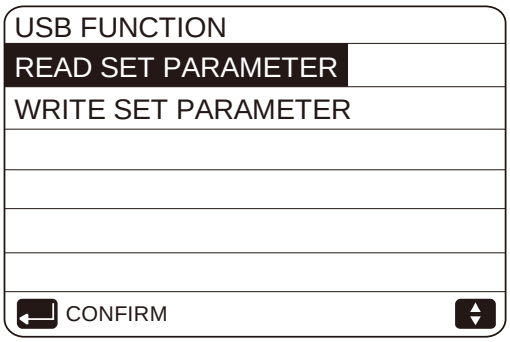
Step 1:

Plug U disk into the port of hydronic PCB of A unit.

"USB" appears on digital display



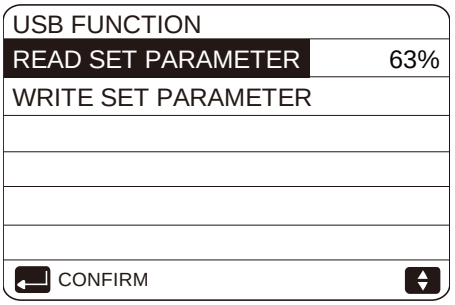
Wired controller interface automatically changes



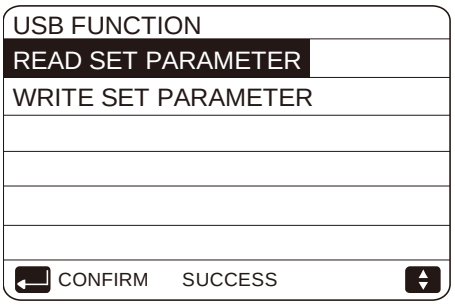
Step 2:

Select "READ SET PARAMETER" and press "OK" button then rate of progress will appear. When the process is finished, "SUCCESS" appears below and an EXCEL file which can not be seen in the wired controller interface but users can find it on computer will be generated inside the USB disk.

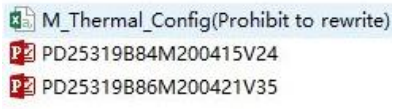
Select "READ SET PARAMETER"



Finished



EXCEL generated

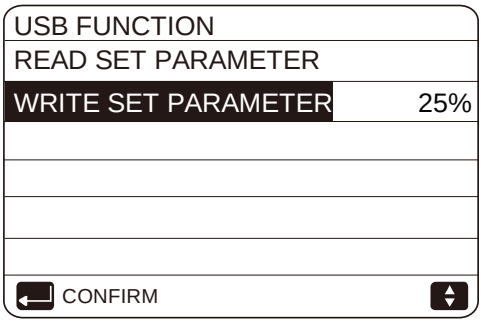


After that, if parameter correction is needed, please connect the USB with computer and open the EXCEL file to change parameters and then save it. Please do not change the file name or format. Parameters are not allowed for non-professionals to change and Midea recommends to use the wired controller to change the parameters.

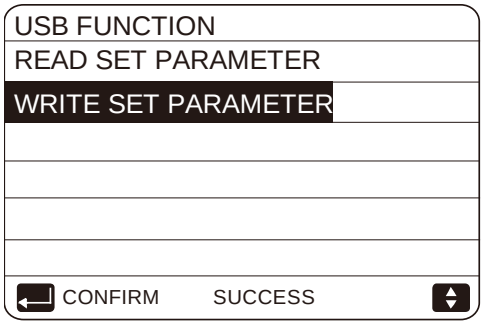
Step 3:

Plug USB disk into the port of hydronic PCB of B unit and select "WRITE SET PARAMETER" then rate of progress will appear. When the process is finished, "SUCCESS" appears below.

Select "WRITE SET PARAMETER"



Finished



5.2 Convenient program upgrade for unit

There is no need to carry any heavy equipment but only USB disk can realize program upgrade. Steps are as follows:

Step 1:

Copy new program in U disk root directory where other files in bin format are not allowed in

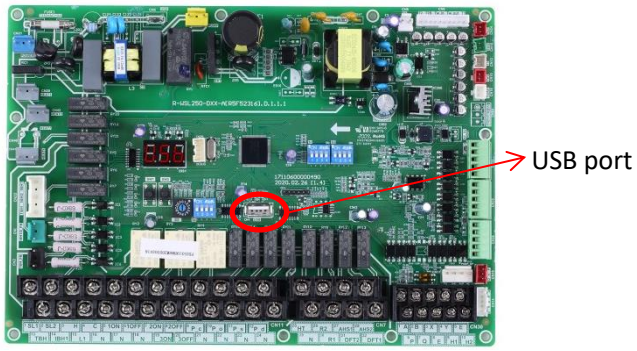
Step 2:

Power on and make sure communication is normal.

Step 3:

Plug U disk into the port of hydronic PCB.

"USb" appears on digital display



Wired controller interface automatically changes

USB FUNCTION
RATED SET PARAMETER
WRITE SET PARAMETER
PD25319B84M200415V24.bin
PD25319B86M200415V24.bin
CONFIRM

Step 4:

Please distinguish between programs for main control PCB and hydronic PCB. Select one of them and press "OK" button then rate of progress appears. When the process is finished, "SUCCESS" appears below. For upgrading outdoor unit, the process normally lasts for several minutes while only few seconds is needed for indoor unit.

Select program

USB FUNCTION	
RATED SET PARAMETER	
WRITE SET PARAMETER	
PD25319B84M200415V24.bin	51%
PD25319B86M200415V24.bin	
CONFIRM	

Finished

USB FUNCTION
RATED SET PARAMETER
WRITE SET PARAMETER
PD25319B84M200415V24.bin
PD25319B86M200415V24.bin
CONFIRM

Step 5:

Pull out U disk and power on again to finish upgrading program. Check the program version to make sure upgrade is successful.

Check IDU software version

OPERATION PARAMETER	#00
Tbt1 BUFFERTANK_UP TEMP.	XX ℃
Tbt2 BUFFERTANK_LOW TEMP.	XX ℃
Tsolar	XX ℃
IDU SOFTWARE	XX-XX-XXXXXXX
ADDRESS	5/9

Check ODU software version

OPERATION PARAMETER	#00
T3 OUTDOOR EXCHANGE TEMP.	XX ℃
T4 OUTDOOR AIR TEMP	XX ℃
TF MODULE TEMP.	XX ℃
P1 COMP PRESSURE	XX Kpa
ODU SOFTWARE	XX-XX-XXXXXXX
HMI SOFTWARE	XX-XX-XXXXXXX
ADDRESS	9/9

6 Climate Related Curves

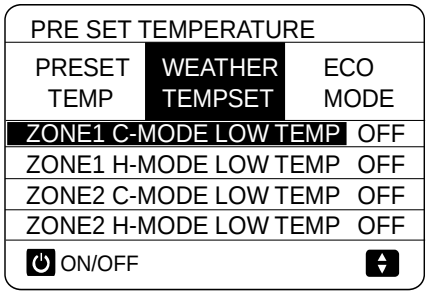
The climate related curves can be selected in the user interface, **MENU > PRESET TEMPERATURE > WEATHER TEMP. SET**.

In cooling/mode mode, eight curves which are already set in the user interface can be selected. Once the curve is selected, the leaving water set temperature (T1s) is determined by the outdoor temperature(T4).

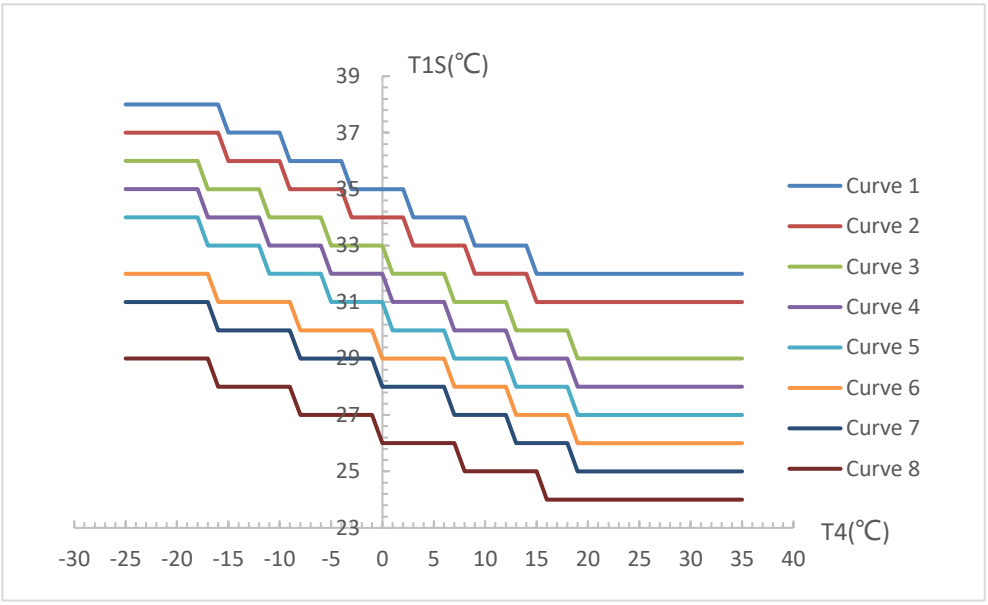
ECO mode is only suitable for heating mode. It has lower water temperature setting inside the program, which is more energy saving.

The relationship between outdoor ambient temperature (T4) and leaving water set temperature (T1s) is described as below.

WEATHER TEMP. SET menu



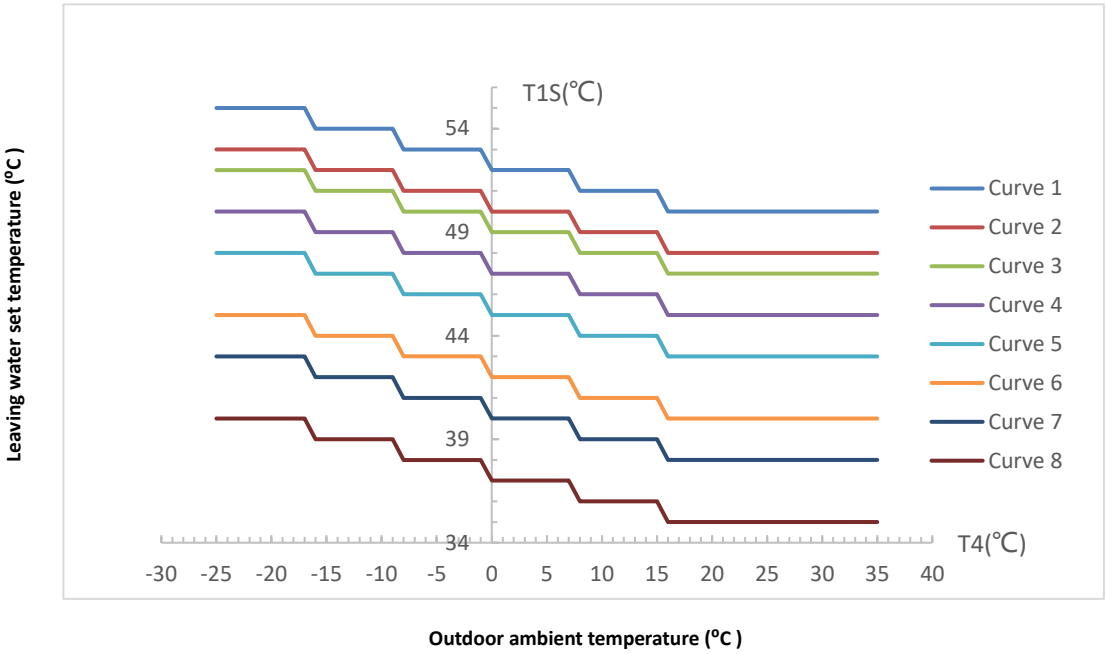
Low temperature curves for heating mode[1]



Notes:

1. It only has the curves of the low temperature setting for heating, if the low temperature is set for heating.
2. Curve 4 is default in low temperature heating mode and curve 6 is default in ECO mode.

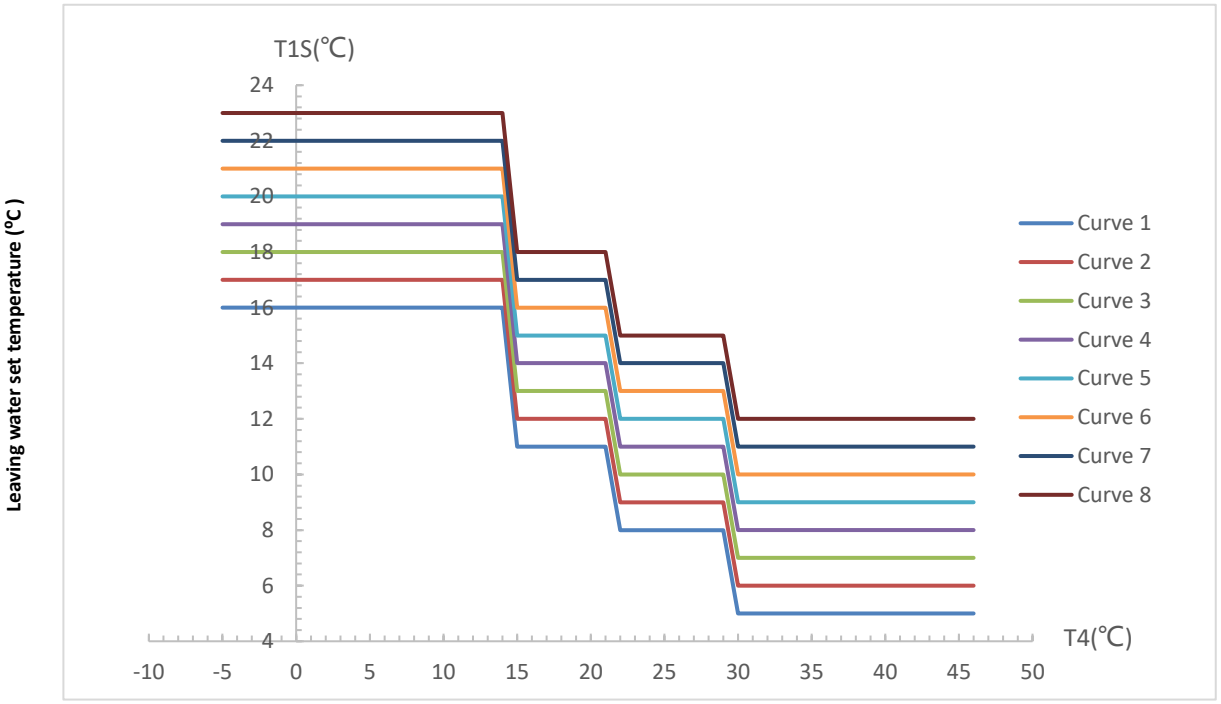
High temperature curves for heating mode[1]



Notes:

1. It only has the curves of the high temperature setting for heating, if the high temperature is set for heating.
2. Curve 4 is default in high temperature heating mode and curve 6 is default in ECO mode.

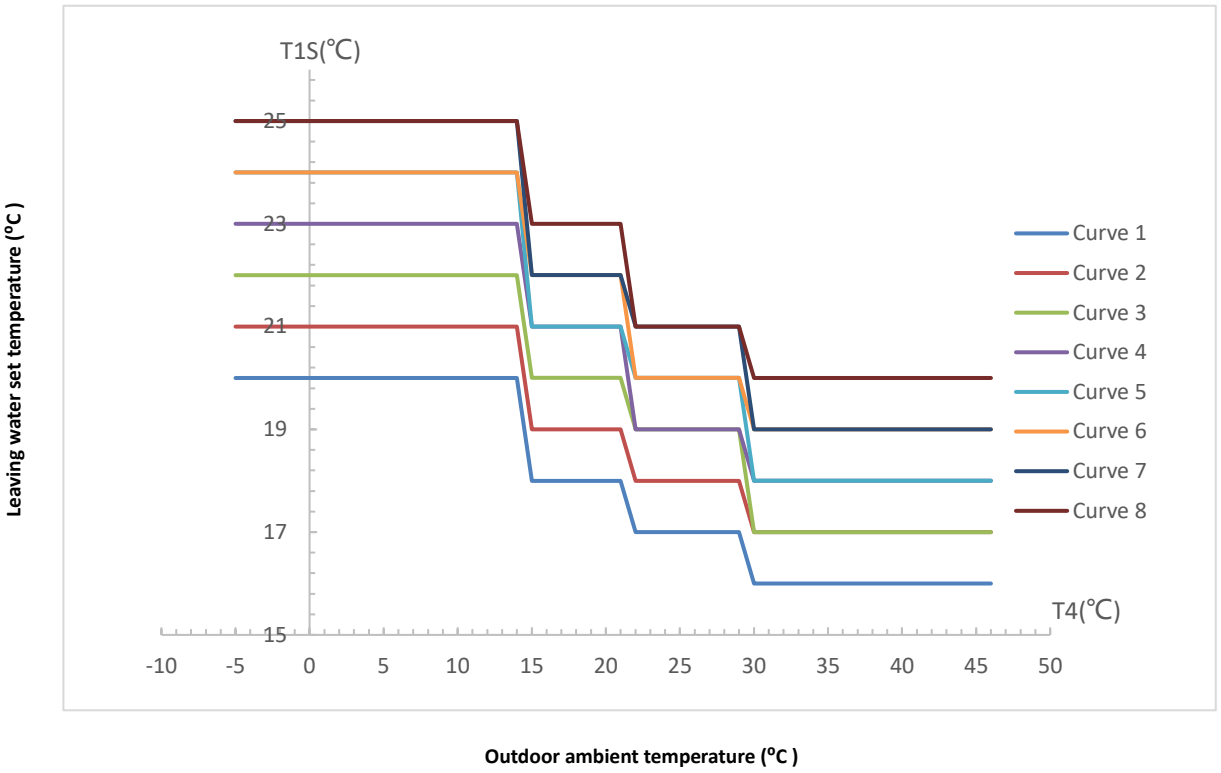
Low temperature curves for cooling mode[1]



Notes:

1. It only has the curves of the low temperature setting for cooling, if the low temperature is set for cooling.
2. Curve 4 is default in low temperature cooling mode and curve 6 is default in ECO mode.

High temperature curves for cooling mode[1]

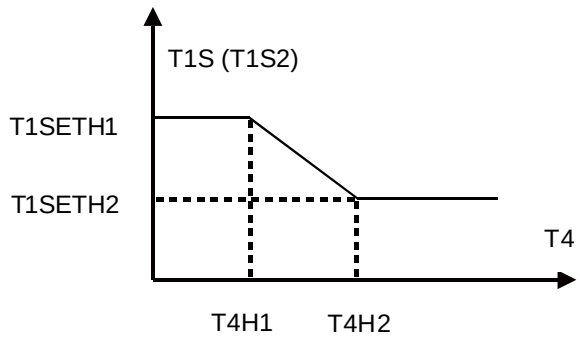


Notes:

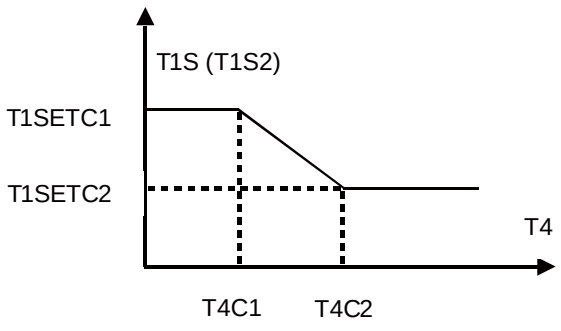
1. It only has the curves of the high temperature setting for cooling, if the high temperature is set for cooling.
2. Curve 4 is default in high temperature cooling mode and curve 6 is default in ECO mode.

There is one customized curve which can set by user according to using habits. Users just need to input the ambient temperature and desire water temperature for two working condition to build the customized curve. The setting of T1SETH1, T1SETH2, T4H1, T4H2 refer to Part 3, 1.6" HEATING MODE SETTING Menu" and T1SETC1, T1SETC2, T4C1, T4C2 refer to Part 3, 1.5" COOLING MODE SETTING Menu".

Automatic setting curve for heating mode



Automatic setting curve for cooling mode



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