



Midea Building Technologies

# Engineering Data

## M thermal Arctic Split



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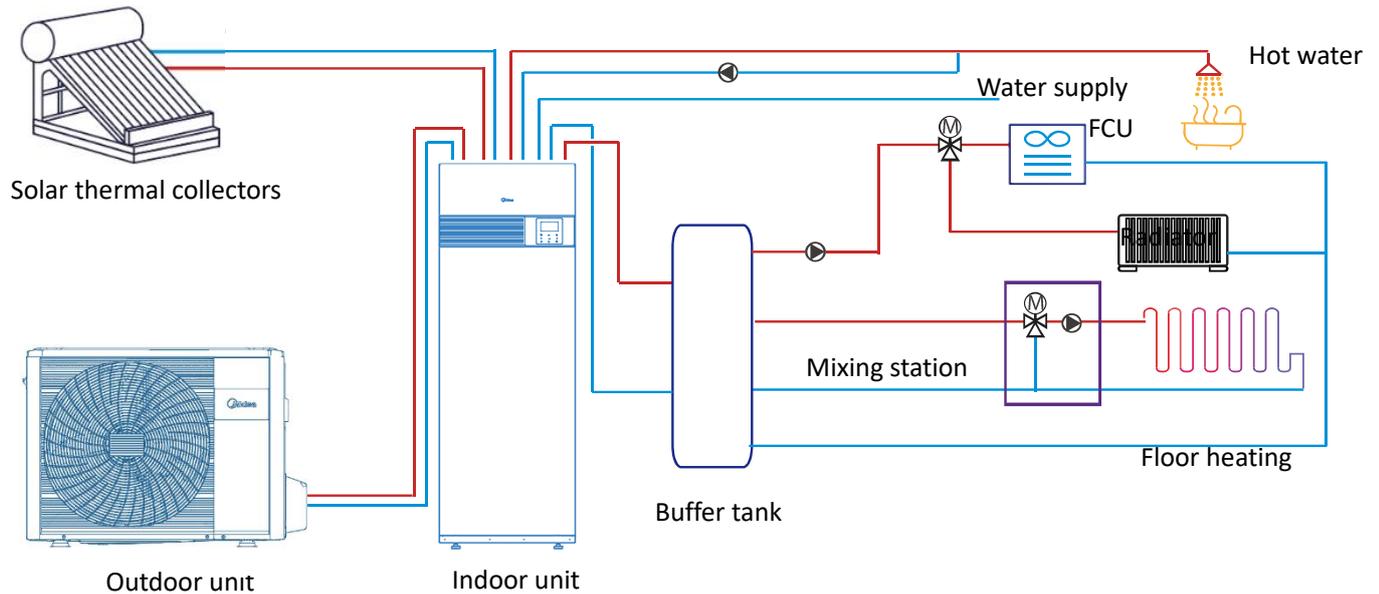
# Part 1

## General Information

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## 1 M thermal Split 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 hydro module with water tank. The heated water in the hydro module circulates to low temperature heat emitters (under-floor heating loops or low temperature radiators) to provide space heating. The 4-way valve in the outdoor unit can reverse the refrigerant cycle so that the hydro module can provide chilled water for cooling using fan coil units. Because the water tank is integrated design in the hydro module, so it can provide hot water directly to the users.

The heating capacity of heat pumps decreases with ambient temperature dropping. Backup electric heater is standard equipped to provide additional heating capacity for use during extremely cold weather when the heat pump capacity is insufficient.

## 1.2 System Configurations

M thermal Split is configured to run with the electric heater either 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.

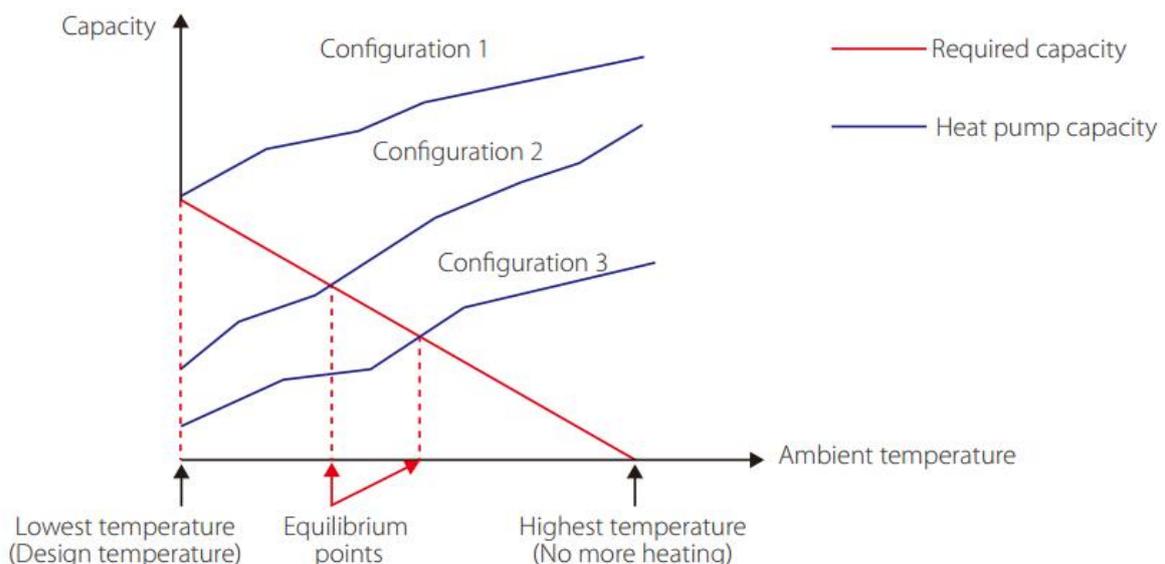
### Configuration 2: Heat pump and backup electric heater (Hydro module with water tank is standard with 3kW backup electric heater)

- 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 conjunction 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.

### System configurations



## 2 Unit Capacities

### 2.1 Outdoor unit

Model	MHA-V4W/D2N8-B2	MHA-V6W/D2N8-B2
Appearance		

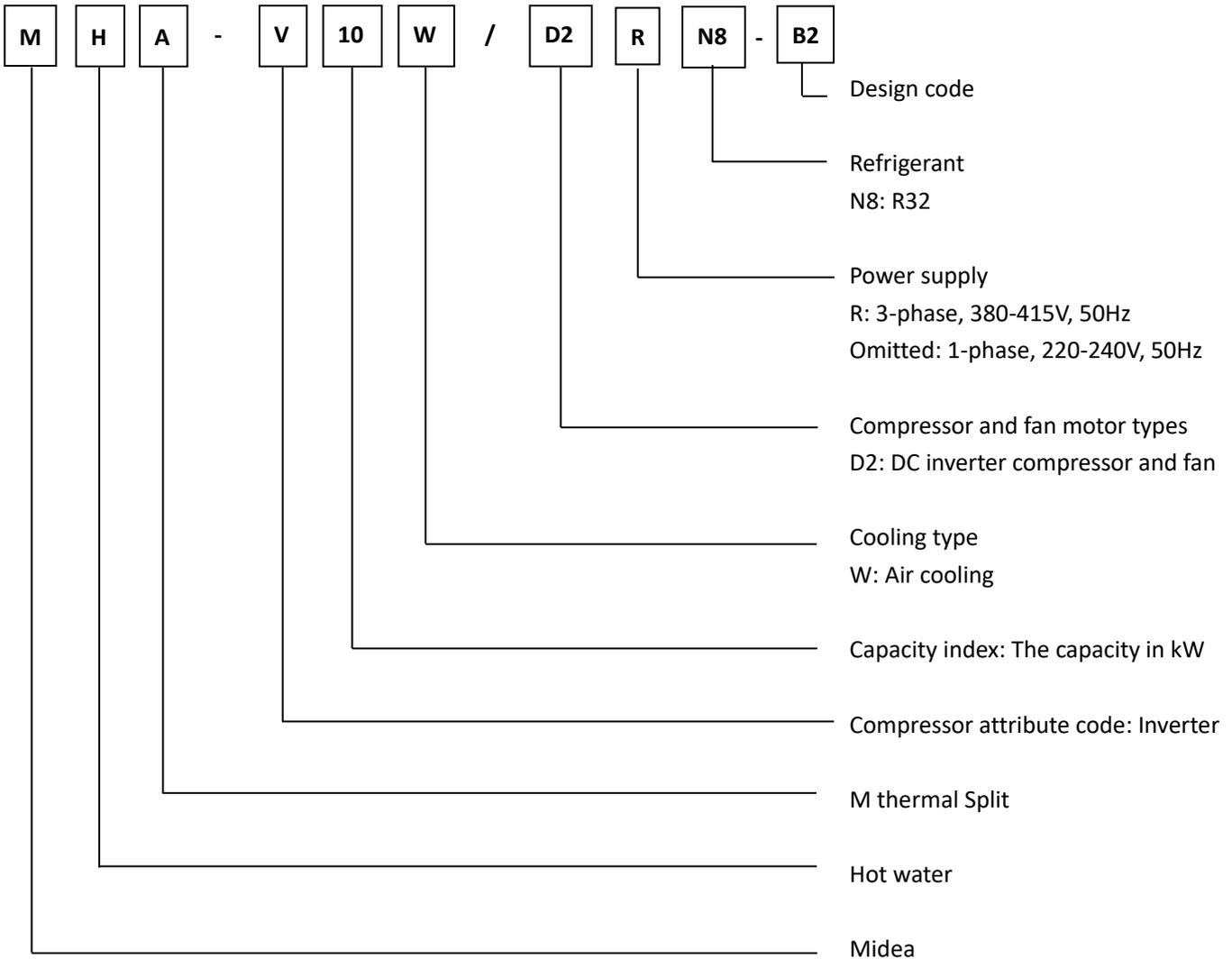
Model	MHA-V8W/D2 N8-B2	MHA-V10W/D2 N8-B2	MHA-V12W/D2 N8-B2	MHA-V12W/D2 RN8-B2	MHA-V14W/D2 N8-B2	MHA-V14W/D2 RN8-B2	MHA-V16W/D2 N8-B2	MHA-V16W/D2 RN8-B2
Appearance								

### 2.2 Hydro module with water tank

Model	HBT-A100/190CD30GN8-B	HBT-A100/240CD30GN8-B	HBT-A160/240CD30GN8-B
Compatible outdoor unit model	MHA-V4W/D2N8-B2 MHA-V6W/D2N8-B2 MHA-V8W/D2N8-B2 MHA-V10W/D2N8-B2	MHA-V4W/D2N8-B2 MHA-V6W/D2N8-B2 MHA-V8W/D2N8-B2 MHA-V10W/D2N8-B2	MHA-V12W/D2N8-B2 MHA-V14W/D2N8-B2 MHA-V16W/D2N8-B2 MHA-V12W/D2RN8-B2 MHA-V14W/D2RN8-B2 MHA-V16W/D2RN8-B2
Appearance			

### 3 Nomenclature

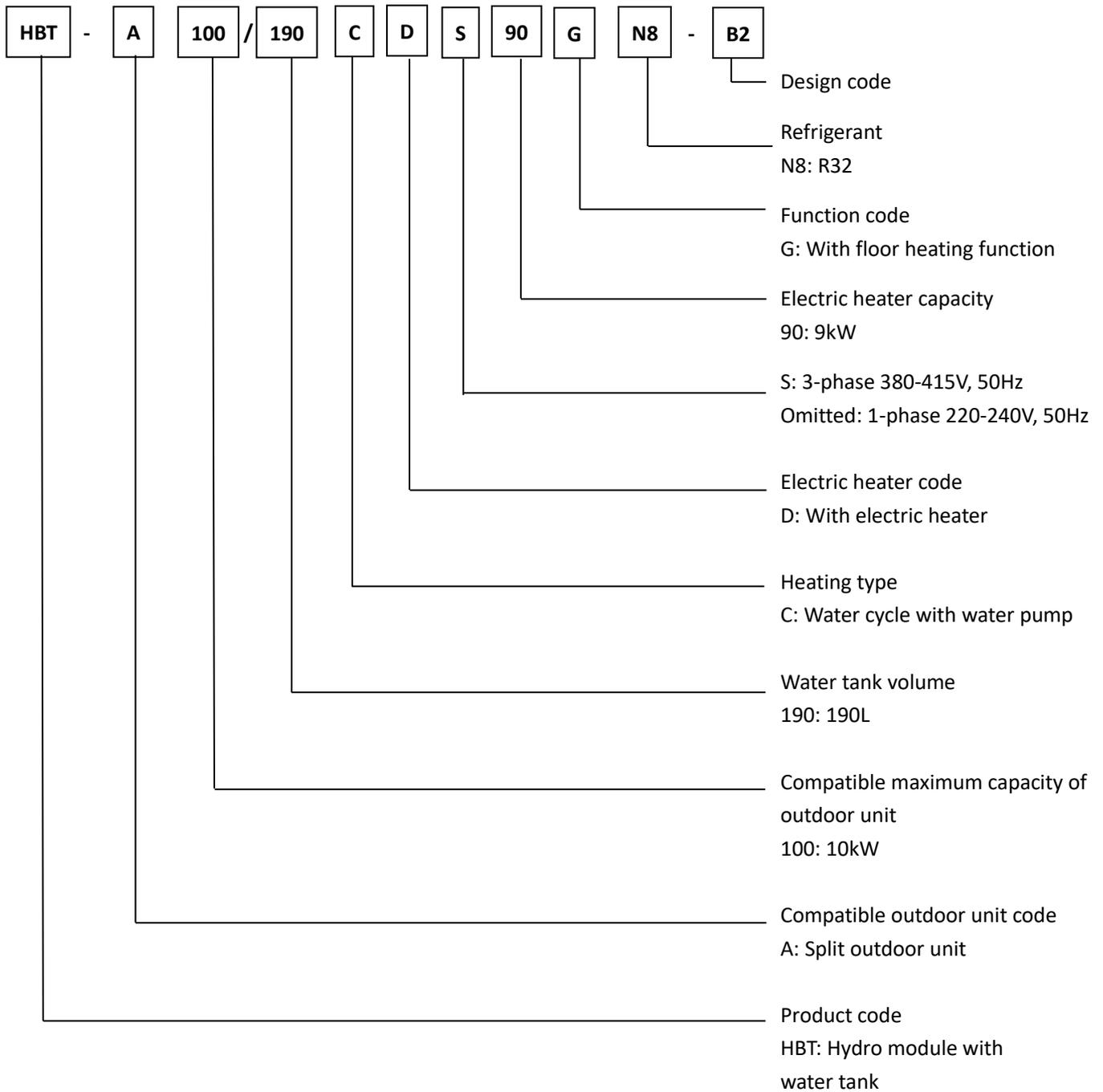
#### 3.1 Outdoor unit



# M thermal Arctic Split



## 3.2 Hydro module with water tank



## 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 Split unit capacity based on nominal capacity

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

Is corrected M thermal Split unit capacity  $\geq$  Required total heat load on outdoor units<sup>2</sup>

Yes

No

M thermal Split system selection is complete

Select a larger model or enable backup electric heater operation

#### Notes:

1. If the required water temperatures of the heat emitters are not all the same, the M thermal Split'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 Split units which satisfy both total heating and cooling load requirements.

## M thermal Arctic Split

### 4.2 M thermal Leaving Water Temperature (LWT) Selection

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

- For floor heating: 30 to 35°C
- For fan coil units: 40 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 hydro 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 not be reached with heat pump only. In this case, tank back up heater is needed in order to reach T5S.

#### T5stop value:

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

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

### 4.5 Water Circuit Anti-freeze Protection

Ice formation can cause damage to the hydronic system. All internal hydronic parts are insulated to reduce heat loss. Insulation must also be added to the field piping.

- The software contains special functions using the heat pump to protect the entire system against freezing. When the temperature of the water flow in the system drops to a certain value, the unit will heat the water, either using the heat pump, or the backup heater. The freeze protection function will turn off only when the temperature increases to a certain value.
- In event of a power failure, the above features would not protect the unit from freezing. Since a power failure could happen when the unit is unattended, the supplier recommends use anti-freeze fluid to the water system.
- Depending on the expected lowest outdoor temperature, make sure the water system is filled with a concentration of glycol as mentioned in the table below. When glycol is added to the system, the freezing point of water will be lower and the performance of the unit will be affected. The correction factor of the unit capacity, flow rate and pressure drop of the system is listed below.

Concentration of ethylene glycol (%)	Modification coefficient				Minimum outdoor temperature (°C)
	Cooling capacity modification	Power input modification	Water resistance	Water flow modification	
0	1.000	1.000	1.000	1.000	0
10	0.984	0.998	1.118	1.019	-5
20	0.973	0.995	1.268	1.051	-15
30	0.965	0.992	1.482	1.092	-25

Concentration of propylene glycol (%)	Modification coefficient				Minimum outdoor temperature (°C)
	Cooling capacity modification	Power input modification	Water resistance	Water flow modification	
0	1.000	1.000	1.000	1.000	0
10	0.976	0.996	1.071	1.000	-4
20	0.961	0.992	1.189	1.016	-12
30	0.948	0.988	1.380	1.034	-20

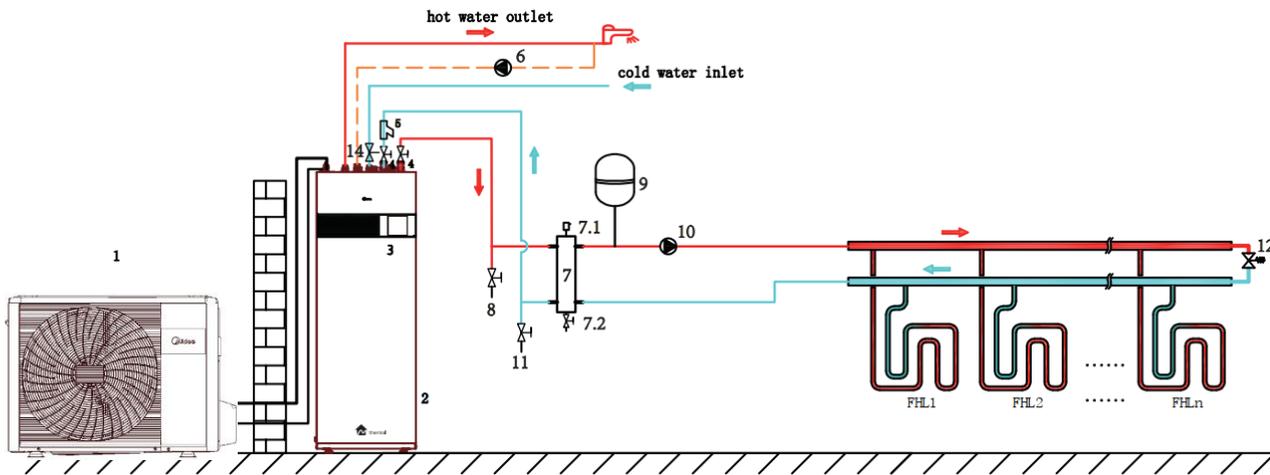
Glycol absorbs water from its environment. Therefore do NOT add glycol that has been exposed to air. Leaving the cap off the glycol container causes the concentration of water to increase. The glycol concentration is then lower than assumed. As a result, the hydraulic components might freeze up after all. Take preventive actions to ensure a minimal exposure of the glycol to air.

Due to the presence of glycol, corrosion of the system is possible. Uninhibited glycol will turn acidic under the influence of oxygen. This process is accelerated by presence of copper and at higher temperatures. The acidic uninhibited glycol attacks metal surfaces and forms galvanic corrosion cells that cause severe damage to the system. It is of extreme importance:

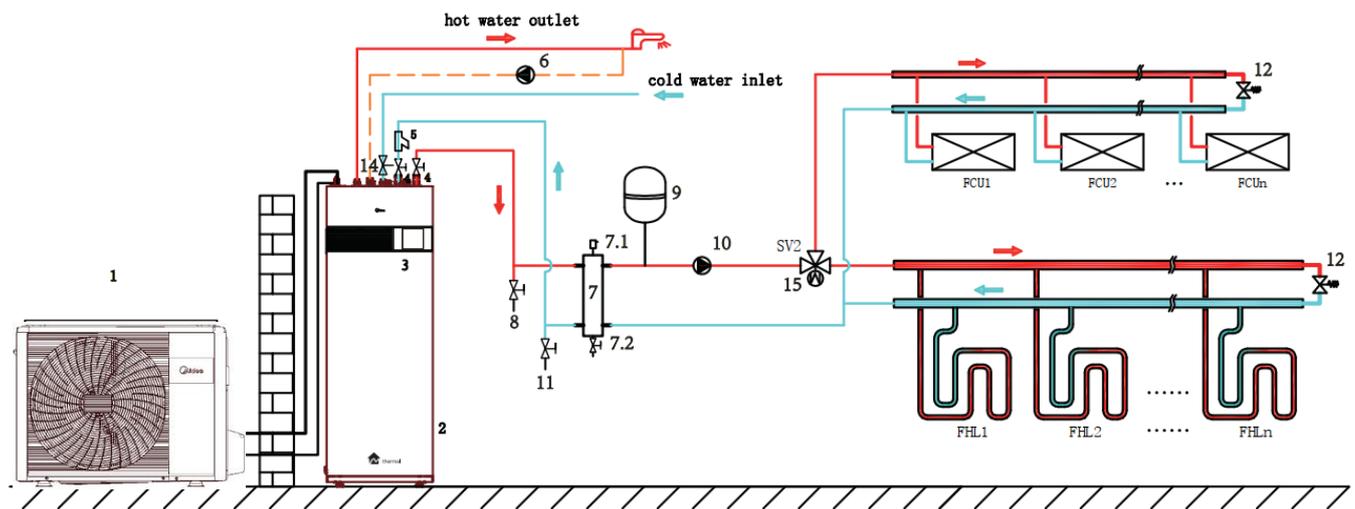
- That the water treatment is correctly executed by a qualified water specialist.
- That a glycol with corrosion inhibitors is selected to counteract acids formed by the oxidation of glycols.
- That in case of an installation with a domestic hot water tank, only the use of propylene glycol is allowed. If the system does NOT contain a domestic hot water tank, then you can use either propylene glycol or ethylene glycol;
- That no automotive glycol is used because their corrosion inhibitors have a limited lifetime and contain silicates that can foul or plug the system;
- That galvanized piping is not used in glycol systems since it may lead to the precipitation of certain elements in the glycol's corrosion inhibitor;
- To ensure that the glycol is compatible with the materials used in the system.
- Protection against bursting: the glycol will prevent the piping from bursting, but NOT the liquid inside the piping from freezing.
- Protection against freezing: the glycol will prevent the liquid inside the piping from freezing.
- The required concentration might differ depending on the type of glycol. ALWAYS compare the requirements from the table above with the specifications provided by the glycol manufacturer. If necessary, meet the requirements set by the glycol manufacturer.
- If the liquid in the system is frozen, the pump will NOT be able to start. Mind that if you only prevent the system from bursting, the liquid inside might still freeze.
- When water is at standstill inside the system, the system is very likely to freeze and get damaged.

## 5 Typical Applications

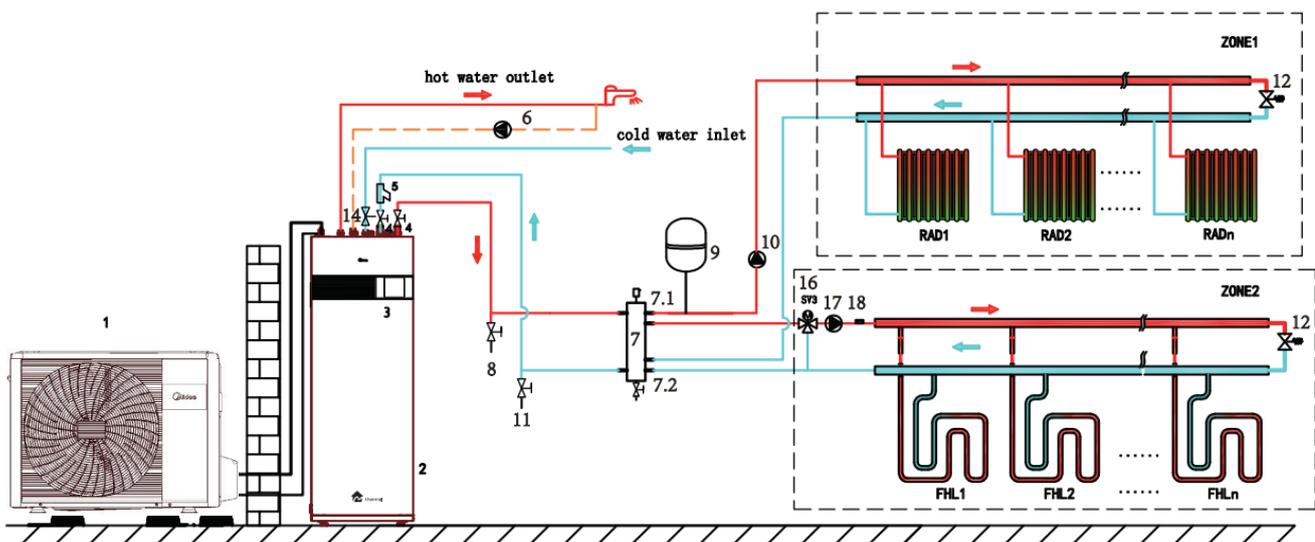
One zone for floor heating loops



One zone for floor heating loops and fan coil



Double zone for floor heating loops and radiators



Legend			
Code	Assembly unit	Code	Assembly unit
1	Outdoor unit	9	Expansion vessel (Field supply)
2	Indoor unit with tank	10	P_o: Outside circulation pump (Field supply)
3	User interface	11	Filling valve (Field supply)
4	Shut-off valve (Field supply)	12	Bypass valve (Field supply)
5	Filter (Accessory)	13	Plate heat exchanger (Field supply)
6	P_d: DHW circulation pump (Field supply)	14	Pressure relief valve (Field supply)
7	Hydraulic separator	15	SV2: 3-way valve (Field supply)
7.1	Automatic air purge valve	16	SV3: 3-way valve (Field supply)
7.2	Drainage valve	17	P_c: zone2 circulation pump (Field supply)
8	Drainage valve (Field supply)	18	Tw2: zone 2 temperature sensor (optional)



# Part 2

# Engineering Data

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## 1 Specifications

Outdoor Unit Model				MHA-V4W/ D2N8-B2	MHA-V6W/ D2N8-B2	MHA-V8W/ D2N8-B2	MHA-V10W/ D2N8-B2
Indoor Unit Model				HBT-A100/190CD30GN8-B2			
Heating	A7W35	Capacity	kW	4.25	6.20	8.30	10.00
		Rated input	kW	0.82	1.24	1.60	2.00
		COP			5.20	5.00	5.20
	A7W45	Capacity	kW	4.35	6.35	8.20	10.00
		Rated input	kW	1.14	1.69	2.08	2.63
		COP			3.80	3.75	3.95
	A-7W35	Capacity	kW	4.8	6.10	7.10	8.25
		Rated input	kW	1.52	2.00	2.18	2.62
		COP			3.15	3.05	3.25
	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
Cooling	A35W18	Capacity	kW	4.50	6.55	8.40	10.00
		Rated input	kW	0.81	1.34	1.66	2.08
		EER			5.55	4.90	5.05
	A35W7	Capacity	kW	4.70	7.00	7.40	8.20
		Rated input	kW	1.36	2.33	2.19	2.48
		EER			3.45	3.00	3.38
DHW	Tapping profile according EN16147			L			
	Water heating energy efficiency class(1)	Warm climate	class	A+	A+	A+	A+
			COP	3.80	3.80	3.66	3.66
		Average climate	class	A+	A+	A+	A+
			COP	3.10	3.10	3.02	3.02
		Cold climate	class	A	A	A	A
COP			2.50	2.50	2.61	2.61	
Seasonal space heating energy efficiency	Warmer climate at 35°C		SCOP	6.46	6.57	6.99	7.09
	Warmer climate at 55°C		SCOP	4.15	4.21	4.50	4.58
	Average climate at 35°C	class	A+++	A+++	A+++	A+++	
		SCOP	4.85	4.95	5.22	5.20	
	Average climate at 55°C	class	A++	A++	A++	A++	
		SCOP	3.31	3.52	3.36	3.49	
	Colder climate at 35°C		SCOP	4.06	4.21	4.33	4.32
	Colder climate at 55°C		SCOP	2.63	2.85	2.88	2.99
Seasonal space cooling energy efficiency	Water outlet at 7°C		SEER	4.98	5.31	5.83	5.96
	Water outlet at 18°C		SEER	7.77	8.25	8.95	8.80
Rated water flow			m <sup>3</sup> /h	0.73	1.07	1.43	1.72
Outdoor Unit	Power supply		V/Ph/Hz	220-240/1/50			
	Rated input		W	2200	2600	3300	3600
	Rated current		A	10.5	12.0	14.5	16.0
	Unit dimension (W×H×D)		mm	1008×712×426		1118×865×523	

Packing dimension (W×H×D)		mm	1065×810×485		1190×970×560	
Net/Gross weight		kg	58 / 63.5		75 / 89	
Refrigerant	Type(GWP)		R32(675)			
	Charged volume		kg	1.50		1.65
	Refrigerant to be added		g/m	20		38
Refrigerant piping connections	Liquid/Gas side		mm	φ6.35 / φ15.9		φ9.52 / φ15.9
	Max. piping length		m	30		
	Max. difference in height		m	20		
Drain connection			DN32			
Outdoor unit sound Power Level(3)		dB	56	58	59	60
Ambient temperature range	Heating		°C	-25~35		
	Cooling		°C	-5~43		
	Domestic hot water		°C	-25~43		
Power supply		V/Ph/Hz	220-240/1/50			
Rated input		W	3095			
Rated current		A	13.5			
DHW Tank	Type		Stainless steel			
	Material		-	SUS 316L		
	Water Volume		l	190		
	Disinfection water temperature		°C	70		
	Maximum water pressure limit		bar	10		
	Insulation	Material		-	Polyurethane (Cyclopentane)	
Thickness		mm	45			
Heat Exchanger			Plate heat exchanger			
Backup E-heater	Standard mounted		kW	3		
	Capacity steps		1			
Water Pump	Type		DC-Inverter			
	Max. head		m	9		
Expansion vessel	Volume		L	8		
Water Piping connection	Water circuit		Inlet	R1"		
			Outlet			
	DHW tank water circuit		Cold Inlet	R3/4"		
			Hot Outlet			
Recirculation						
Unit dimension (W×H×D)		mm	600*1683*600			
Packing dimension (W×H×D)		mm	730*1920*730			
Net/Gross weight		kg	140 / 161			
Ambient temperature range		°C	5~35			
LWT setting range	Heating		°C	25~65		
	Cooling		°C	5~25		
	Domestic hot water		°C	30~60		
Indoor unit sound Power Level(2)		dB	38	38	40	40
Sound pressure(1m)		dB	22	24	22	22

(1)According to EN16147/2017;EU No:811/2013

(2)Sound power in heating mode, measured according to the EN 12102 under conditions of the EN 1482

(3)Sound pressure(1m) is the calculated value for reference only

# M thermal Arctic Split



Outdoor Unit Model				MHA-V4W/ D2N8-B2	MHA-V6W/ D2N8-B2	MHA-V8W/ D2N8-B2	MHA-V10W/ D2N8-B2
Indoor Unit Model				HBT-A100/240CD30GN8-B2			
Heating	A7W35	Capacity	kW	4.25	6.20	8.30	10.00
		Rated input	kW	0.82	1.24	1.60	2.00
		COP			5.20	5.00	5.20
	A7W45	Capacity	kW	4.35	6.35	8.20	10.00
		Rated input	kW	1.14	1.69	2.08	2.63
		COP			3.80	3.75	3.95
	A-7W35	Capacity	kW	4.8	6.10	7.10	8.25
		Rated input	kW	1.52	2.00	2.18	2.62
		COP			3.15	3.05	3.25
	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
Cooling	A35W18	Capacity	kW	4.50	6.55	8.40	10.00
		Rated input	kW	0.81	1.34	1.66	2.08
		EER			5.55	4.90	5.05
	A35W7	Capacity	kW	4.70	7.00	7.40	8.20
		Rated input	kW	1.36	2.33	2.19	2.48
		EER			3.45	3.00	3.38
DHW	Tapping profile according EN16147			XL			
	Water heating energy efficiency class(1)	Warm climate	class	A+	A+	A+	A+
			COP	4.24	4.24	4.18	4.18
		Average climate	class	A+	A+	A+	A+
			COP	3.34	3.34	3.36	3.36
		Cold climate	class	A	A	A	A
COP			2.63	2.63	2.72	2.72	
Seasonal space heating energy efficiency	Warmer climate at 35°C		SCOP	6.46	6.57	6.99	7.09
	Warmer climate at 55°C		SCOP	4.15	4.21	4.50	4.58
	Average climate at 35°C	class	A+++	A+++	A+++	A+++	
		SCOP	4.85	4.95	5.22	5.20	
	Average climate at 55°C	class	A++	A++	A++	A++	
		SCOP	3.31	3.52	3.36	3.49	
	Colder climate at 35°C		SCOP	4.06	4.21	4.33	4.32
Colder climate at 55°C		SCOP	2.63	2.85	2.88	2.99	
Seasonal space cooling energy efficiency	Water outlet at 7°C		SEER	4.98	5.31	5.83	5.96
	Water outlet at 18°C		SEER	7.77	8.25	8.95	8.80
Rated water flow			m <sup>3</sup> /h	0.73	1.07	1.43	1.72
Outdoor Unit	Power supply		V/Ph/Hz	220-240/1/50			
	Rated input		W	2200	2600	3300	3600
	Rated current		A	10.5	12.0	14.5	16.0
	Unit dimension (W×H×D)		mm	1008×712×426		1118×865×523	
	Packing dimension (W×H×D)		mm	1065×810×485		1190×970×560	
	Net/Gross weight		kg	58 / 63.5		75 / 89	

	Refrigerant	Type(GWP)		R32(675)				
		Charged volume	kg	1.50		1.65		
		Refrigerant to be added	g/m	20.00		38.00		
	Refrigerant piping connections	Liquid/Gas side	mm	φ6.35 / φ15.9		φ9.52 / φ15.9		
		Max. piping length	m	30				
		Max. difference in height	m	20				
	Drain connection		DN32					
	Outdoor unit sound Power Level(3)		dB	56	58	59	60	
	Ambient temperature range	Heating	°C	-25~35				
		Cooling	°C	-5~43				
		Domestic hot water	°C	-25~43				
	Indoor Unit	Power supply		V/Ph/Hz	220-240/1/50			
		Rated input		W	3095			
		Rated current		A	13.5			
		DHW Tank	Type		Stainless steel			
Material			-	SUS 316L				
Water Volume			l	240				
Disinfection water temperature			°C	70				
Maximum water pressure limit			bar	10				
Insulation			Material	-	Polyurethane (Cyclopentane)			
		Thickness	mm	45				
Heat Exchanger		Plate heat exchanger						
Backup E-heater		Standard mounted		kW	3			
		Capacity steps		1				
Water Pump		Type		DC Inverter				
		Max. head		m	9			
Expansion vessel	Volume		L	8				
Water Piping connection	Water circuit	Inlet	R1					
		Outlet						
	DHW tank water circuit	Cold Inlet	R3/4					
		Hot Outlet						
Recirculation								
Unit dimension (W×H×D)		mm	600*1943*600					
Packing dimension (W×H×D)		mm	730*2180*730					
Net/Gross weight		kg	157 / 178					
Ambient temperature range		°C	5~35					
LWT setting range	Heating	°C	25~65					
	Cooling	°C	5~25					
	Domestic hot water	°C	30~60					
Indoor unit sound Power Level(2)		dB	38	38	40	40		
Sound pressure(1m)		dB	22	24	22	22		

Notes:

(1)According to EN16147/2017;EU No:811/2013

(2)Sound power in heating mode, measured according to the EN 12102 under conditions of the EN 1482

(3)Sound pressure(1m) is the calculated value for reference only

# M thermal Arctic Split



Outdoor Unit Model				MHA-V12W/D 2N8-B2	MHA-V14W/D 2N8-B2	MHA-V16W/D 2N8-B2
Indoor Unit Model				HBT-A160/240CD30GN8-B2		
Heating	A7W35	Capacity	kW	12.10	14.50	16.00
		Rated input	kW	2.44	3.09	3.56
		COP			4.95	4.70
	A7W45	Capacity	kW	12.30	14.20	16.00
		Rated input	kW	3.24	3.89	4.44
		COP			3.80	3.65
	A-7W35	Capacity	kW	10.00	12.00	13.30
		Rated input	kW	3.33	4.29	4.93
		COP			3.00	2.80
	A-7W55	Capacity	kW	10.00	11.00	12.50
		Rated input	kW	4.88	5.37	6.19
		COP			2.05	2.05
Cooling	A35W18	Capacity	kW	12.00	13.50	14.2
		Rated input	kW	3.00	3.74	3.94
		EER			4.00	3.61
	A35W7	Capacity	kW	11.60	12.70	14.00
		Rated input	kW	4.22	4.98	5.71
		EER			2.75	2.55
DHW	Tapping profile according EN16147			XL		
	Water heating energy efficiency class(1)	Warm climate	class	A+	A+	A+
			COP	3.73	3.73	3.73
		Average climate	class	A+	A+	A+
			COP	3.00	3.00	3.00
		Cold climate	class	A	A	A
			COP	2.24	2.24	2.24
	Seasonal space heating energy efficiency	Warmer climate at 35°C		SCOP	6.48	6.58
Warmer climate at 55°C		SCOP	4.43	4.45	4.48	
Average climate at 35°C		class	A+++	A+++	A+++	
		SCOP	4.81	4.72	4.62	
Average climate at 55°C		class	A++	A++	A++	
		SCOP	3.45	3.47	3.41	
Colder climate at 35°C		SCOP	4.08	4.07	4.02	
Colder climate at 55°C		SCOP	3.02	3.05	3.12	
Seasonal space cooling energy efficiency	Water outlet at 7°C		SEER	4.93	4.89	4.68
	Water outlet at 18°C		SEER	7.14	6.94	6.75
Rated water flow			m <sup>3</sup> /h	2.08	2.49	2.75
Outdoor Unit	Power supply		V/Ph/Hz	220-240/1/50		
	Rated input		W	5400	5700	6100
	Rated current		A	24.5	25.0	26.0
	Unit dimension (W×H×D)		mm	1118×865×523		
	Packing dimension (W×H×D)		mm	1190×970×560		
	Net/Gross weight		kg	97 / 110.5		

	Refrigerant	Type(GWP)		R32(675)			
		Charged volume	kg	1.84			
		Refrigerant to be added	g/m	38			
	Refrigerant piping connections	Liquid/Gas side	mm	φ9.52 / φ15.9			
		Max. piping length	m	30			
		Max. difference in height	m	20			
	Drain connection		DN32				
	Outdoor unit sound Power Level(3)		dB	64	65	68	
	Ambient temperature range	Heating	℃	-25~35			
		Cooling	℃	-5~43			
Domestic hot water		℃	-25~43				
Indoor Unit	Power supply		V/Ph/Hz	220-240/1/50			
	Rated input		W	3095			
	Rated current		A	13.5			
	DHW Tank	Type		Stainless steel			
		Material		-	SUS 316L		
		Water Volume		l	240		
		Disinfection water temperature		℃	70		
		Maximum water pressure limit		bar	10		
		Insulation	Material	-	Polyurethane (Cyclopentane)		
	Thickness		mm	45			
	Heat Exchanger		Plate heat exchanger				
	Backup E-heater	Standard mounted		kW	3		
		Capacity steps		1			
	Water Pump	Type		DC Inverter			
		Max. head		m	9		
	Expansion vessel	Volume		L	8		
	Water Piping connection	Water circuit	Inlet	R1"			
			Outlet				
		DHW tank water circuit	Cold Inlet	R3/4"			
			Hot Outlet				
	Recirculation						
	Unit dimension (W×H×D)		mm	600*1943*600			
	Packing dimension (W×H×D)		mm	730*2180*730			
	Net/Gross weight		kg	159 / 180			
	Ambient temperature range		℃	5~35			
	LWT setting range	Heating	℃	25~65			
		Cooling	℃	5~25			
Domestic hot water		℃	30~60				
Indoor unit sound Power Level(2)		dB	42	44	44		
Sound pressure(1m)		dB	24	25	24		

Notes:

(1)According to EN16147/2017;EU No:811/2013

(2)Sound power in heating mode, measured according to the EN 12102 under conditions of the EN 1482

(3)Sound pressure(1m) is the calculated value for reference only

# M thermal Arctic Split



Outdoor Unit Model				MHA-V12W/D 2RN8-B2	MHA-V14W/D 2RN8-B2	MHA-V16W/D 2RN8-B2
Indoor Unit Model				HBT-A160/240CD30GN8-B2		
Heating	A7W35	Capacity	kW	12.10	14.50	16.00
		Rated input	kW	2.44	3.09	3.56
		COP			4.95	4.70
	A7W45	Capacity	kW	12.30	14.20	16.00
		Rated input	kW	3.24	3.89	4.44
		COP			3.80	3.65
	A-7W35	Capacity	kW	10.00	12.00	13.30
		Rated input	kW	3.33	4.29	4.93
		COP			3.00	2.80
	A-7W55	Capacity	kW	10.00	11.00	12.50
		Rated input	kW	4.88	5.37	6.19
		COP			2.05	2.05
Cooling	A35W18	Capacity	kW	12.00	13.50	14.2
		Rated input	kW	3.00	3.74	3.94
		EER			4.00	3.61
	A35W7	Capacity	kW	11.60	12.70	14.00
		Rated input	kW	4.22	4.98	5.71
		EER			2.75	2.55
DHW	Tapping profile according EN16147			XL		
	Water heating energy efficiency class(1)	Warm climate	class	A+	A+	A+
			COP	3.73	3.73	3.73
		Average climate	class	A+	A+	A+
			COP	3.00	3.00	3.00
		Cold climate	class	A	A	A
COP			2.24	2.24	2.24	
Seasonal space heating energy efficiency	Warmer climate at 35°C		SCOP	6.47	6.57	6.28
	Warmer climate at 55°C		SCOP	4.42	4.44	4.47
	Average climate at 35°C	class	A+++	A+++	A+++	
		SCOP	4.81	4.72	4.62	
	Average climate at 55°C	class	A++	A++	A++	
		SCOP	3.45	3.47	3.41	
	Colder climate at 35°C		SCOP	4.08	4.07	4.02
	Colder climate at 55°C		SCOP	3.02	3.05	3.12
Seasonal space cooling energy efficiency	Water outlet at 7°C		SEER	4.90	4.86	4.66
	Water outlet at 18°C		SEER	7.08	6.89	6.70
Rated water flow			m <sup>3</sup> /h	2.08	2.49	2.75
Outdoor Unit	Power supply		V/Ph/Hz	380-415/3/50		
	Rated input		W	5400	5700	6100
	Rated current		A	9.0	10.0	11.0
	Unit dimension (W×H×D)		mm	1118×865×523		
	Packing dimension (W×H×D)		mm	1190×970×560		
	Net/Gross weight		kg	112 / 125.5		

	Refrigerant	Type(GWP)		R32(675)			
		Charged volume	kg	1.84			
		Refrigerant to be added	g/m	38			
	Refrigerant piping connections	Liquid/Gas side	mm	φ9.52 / φ15.9			
		Max. piping length	m	30			
		Max. difference in height	m	20			
	Drain connection		DN32				
	Outdoor unit sound Power Level(3)		dB	64	65	68	
	Ambient temperature range	Heating	°C	-25~35			
		Cooling	°C	-5~43			
Domestic hot water		°C	-25~43				
Indoor Unit	Power supply		V/Ph/Hz	220-240/1/50			
	Rated input		W	3095			
	Rated current		A	13.5			
	DHW Tank	Type		Stainless steel			
		Material		-	SUS 316L		
		Water Volume		l	240		
		Disinfection water temperature		°C	70		
		Maximum water pressure limit		bar	10		
		Insulation	Material	-	Polyurethane (Cyclopentane)		
	Thickness		mm	45			
	Heat Exchanger		Plate heat exchanger				
	Backup E-heater	Standard mounted		kW	3		
		Capacity steps		1			
	Water Pump	Type		DC Inverter			
		Max. head		m	9		
	Expansion vessel	Volume		L	8		
	Water Piping connection	Water circuit	Inlet		R1"		
			Outlet				
		DHW tank water circuit	Cold Inlet		R3/4"		
			Hot Outlet				
	Recirculation						
	Unit dimension (W×H×D)		mm	600*1943*600			
	Packing dimension (W×H×D)		mm	730*2180*730			
	Net/Gross weight		kg	159 / 180			
	Ambient temperature range		°C	5~35			
	LWT setting range	Heating		°C	25~65		
		Cooling		°C	5~25		
Domestic hot water		°C	30~60				
Indoor unit sound Power Level(2)		dB	42	44	44		
Sound pressure(1m)		dB	24	25	24		

Notes:

(1)According to EN16147/2017;EU No:811/2013

(2)Sound power in heating mode, measured according to the EN 12102 under conditions of the EN 1482

(3)Sound pressure(1m) is the calculated value for reference only

## 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)
MHA-V4W/D2N8-B2	220~240	50	198	264	12	18	25	-	11.5	0.10	0.5
MHA-V6W/D2N8-B2	220~240	50	198	264	14	18	25	-	13.5	0.10	0.5
MHA-V8W/D2N8-B2	220~240	50	198	264	16	19	25	-	14.5	0.17	1.5
MHA-V10W/D2N8-B2	220~240	50	198	264	17	19	25	-	15.5	0.17	1.5
MHA-V12W/D2N8-B2	220~240	50	198	264	25	30	35	-	23.5	0.17	1.5
MHA-V14W/D2N8-B2	220~240	50	198	264	26	30	35	-	24.5	0.17	1.5
MHA-V16W/D2N8-B2	220~240	50	198	264	27	30	35	-	25.5	0.17	1.5
MHA-V12W/D2RN8-B2	380~415	50	342	456	10	14	16	-	9.15	0.17	1.5
MHA-V14W/D2RN8-B2	380~415	50	342	456	11	14	16	-	10.15	0.17	1.5
MHA-V16W/D2RN8-B2	380~415	50	342	456	12	14	16	-	11.15	0.17	1.5

Note:

MCA: Min. Circuit Amps. (A)

TOCA: Total Over-current Amps. (A)

MFA: Max. Fuse Amps. (A)

MSC: Max. Starting Amps. (A)

RLA: Rated Load Amps. (A)

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

kW: Rated Motor Output

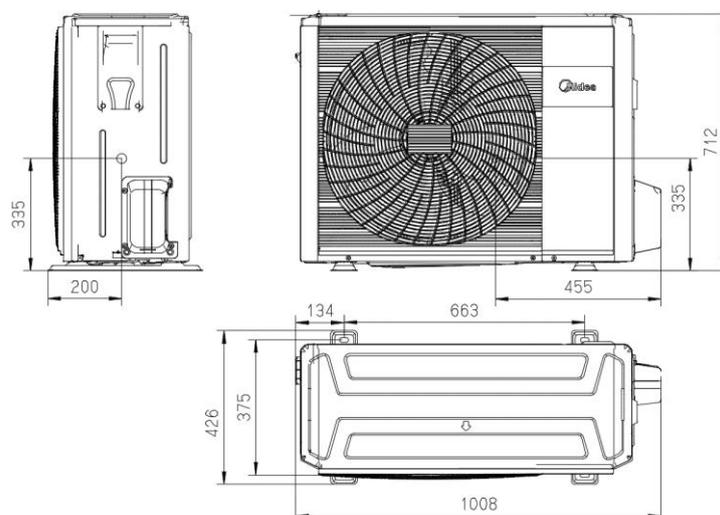
FLA: Full Load Amps. (A)

## 3 Dimensions and center of gravity

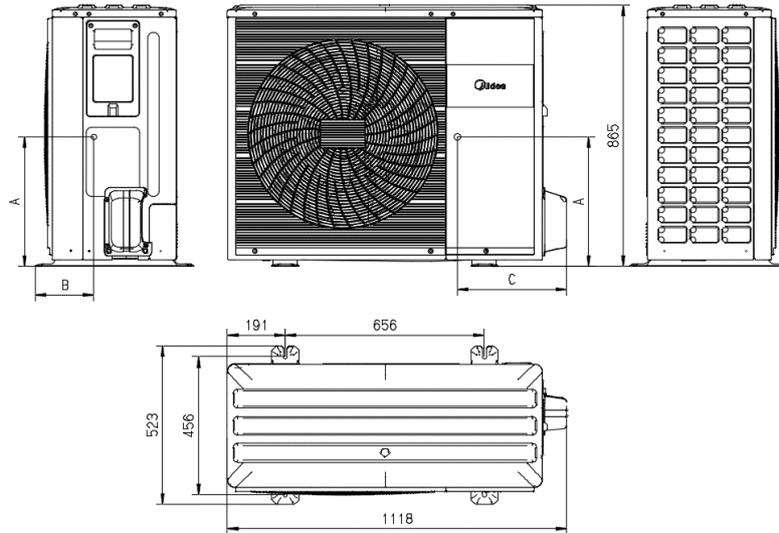
### 3.1 Outdoor Unit

MHA-V4(6)W/D2N8-B2

Unit: mm

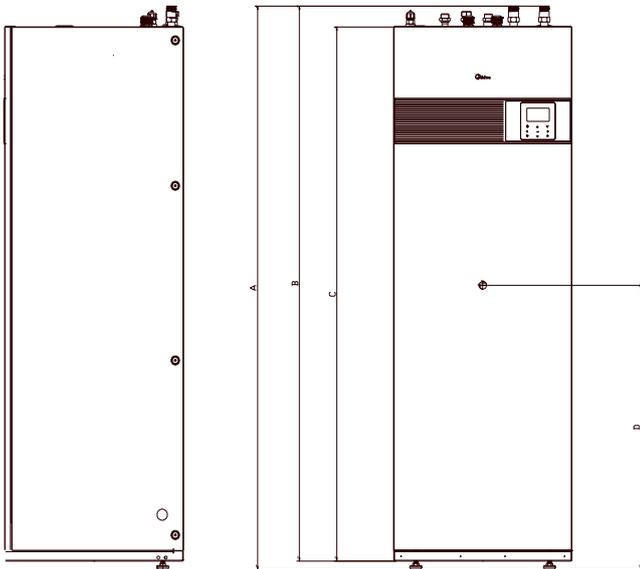


MHA-V8(10,12,14,16)W/D2N8-B2, MHA-V12(14,16)W/D2RN8-B2

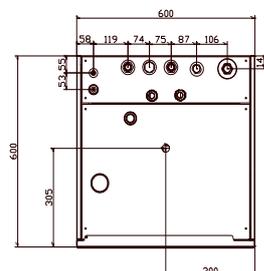


Model	A(Unit: mm)	B(Unit: mm)	C(Unit: mm)
MHA-V8W/D2N8-B2 MHA-V10W/D2N8-B2	350	220	560
MHA-V12W/D2N8-B2 MHA-V14W/D2N8-B2 MHA-V16W/D2N8-B2	355	275	520
MHA-V12W/D2RN8-B2 MHA-V14W/D2RN8-B2 MHA-V16W/D2RN8-B2	465	250	445

### 3.2 Hydro module



Model	A(mm)	B(mm)	C(mm)	D(mm)
HBT-A100/190CD30GN8-B2	1775	1748	1682	915
HBT-A100/240CD30GN8-B2	2034	2007	1942	1045
HBT-A160/240CD30GN8-B2	2034	2007	1942	1045

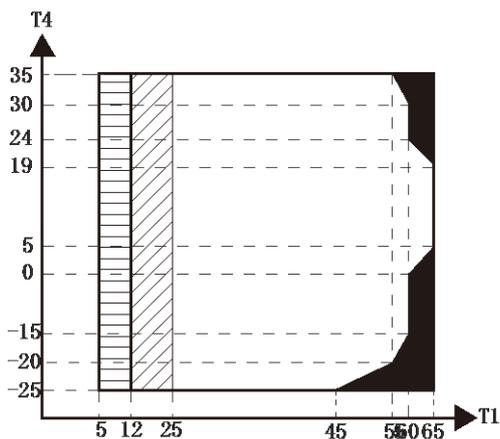


# M thermal Arctic Split

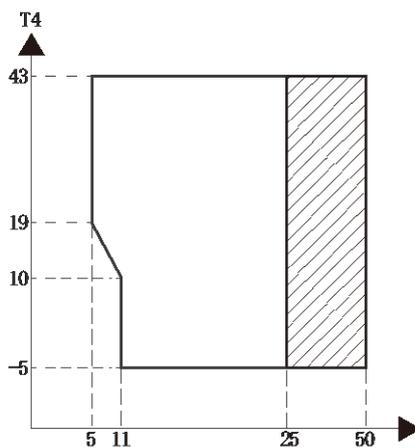


## Operating Limits

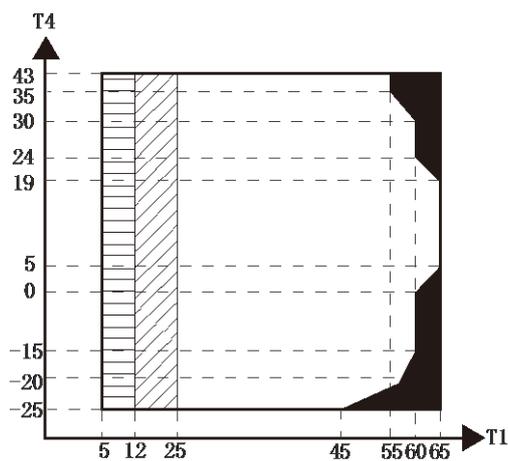
Heating operating limits



Cooling operating limits



Domestic hot water operating limits



Abbreviations:

T4: Outdoor temperature (°C)

T1: Leaving water temperature (°C)

Notes:

1. If IBH/AHS setting is valid, only IBH/AHS turns on; if IBH/AHS setting is invalid, only heat pump turns on
2. Water flow temperature drop or rise interval
3. IBH/AHS only

## 4 Capacity Tables

### 4.1 Heating Capacity Tables (Test standard: EN14511)

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													
-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)

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	4.80	1.52	3.15	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	4.45	1.10	4.05	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	4.25	0.82	5.20	4.38	0.95	4.64	4.35	1.14	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)

## Heating capacity for 4kW models

Minimum																
DB	LWT															
	25			30			35			40			45			
	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										
-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)

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)

## 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	6.10	2.00	3.05	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	1.39	3.95	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	6.20	1.24	5.00	6.44	1.55	4.14	6.35	1.69	3.75	
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													
-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	2.00	3.00	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)

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)

## 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	1.67	5.81	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)

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	7.10	2.18	3.25	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	8.30	1.60	5.20	8.00	1.84	4.34	8.20	2.08	3.95	
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	1.48	5.98	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)

## 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	0.66	6.44	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)

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)

## 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	8.25	2.62	3.15	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	2.03	4.05	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	2.00	5.00	10.14	2.36	4.29	10.00	2.63	3.80	
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)

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)

## 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	16.28	2.08	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)

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	9.30	2.35	3.95	10.07	2.81	3.58	10.70	3.57	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	3.24	3.80	
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	13.51	1.58	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	10.00	4.88	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	11.40	4.47	2.55	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	12.00	3.87	3.10	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)

## 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	9.52	1.05	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)

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	8.09	5.36	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	10.31	5.43	1.90	
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	10.39	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	11.24	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	12.01	4.79	2.51	
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)

## 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	4.29	2.80	11.87	4.46	2.66	11.80	5.02	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	11.40	3.12	3.65	11.55	3.40	3.40	11.70	4.09	2.86	
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	3.09	4.70	14.58	3.52	4.15	14.20	3.89	3.65	
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												
-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	8.52	4.28	1.99
7	14.00	4.40	3.18	13.80	4.60	3.00	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	9.76	3.69	2.65
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)

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	9.80	1.39	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	5.26	3.29	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	7.27	3.48	2.09	
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	8.69	3.16	2.75	
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	8.60	3.05	2.82	
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)

## 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	12.54	6.27	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	5.70	1.88	
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	4.98	2.49	
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	15.30	4.25	3.60	14.95	4.41	3.39	13.86	4.36	3.18	13.14	4.39	3.00	/	/	/	
25	15.60	3.72	4.20	14.06	3.70	3.80	13.26	3.93	3.37	12.73	4.15	3.07	/	/	/	
30	15.71	3.28	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)

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	13.30	4.93	2.70	13.09	4.98	2.63	12.90	5.79	2.23	
-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	3.71	3.50	12.72	3.97	3.20	12.80	4.49	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	16.00	3.56	4.50	15.74	3.99	3.94	16.00	4.44	3.60	
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	5.88	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	6.19	2.02	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	9.30	5.24	1.77	7.88	5.32	1.48	/	/	/	
-2	12.49	5.19	2.41	11.96	5.45	2.19	9.68	5.14	1.88	8.04	4.99	1.61	/	/	/	
0	12.88	4.97	2.59	12.48	5.43	2.30	9.86	4.96	2.01	8.26	4.69	1.76	/	/	/	
2	13.02	4.88	2.67	13.40	5.58	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	4.54	1.95	
7	15.97	4.92	3.24	16.00	5.52	2.90	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	3.83	2.63	
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	11.36	2.96	3.84	11.19	3.10	3.61	10.61	3.15	3.36	10.22	3.24	3.15	/	/	/	
25	11.66	2.61	4.47	10.59	2.62	4.04	10.07	2.83	3.57	9.73	3.01	3.23	/	/	/	
30	11.86	2.34	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)

## 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	6.53	1.41	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	6.56	1.22	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	3.63	2.08	
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	3.29	2.73	
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	9.55	2.37	4.03	9.82	2.62	3.75	9.58	2.74	3.50	9.42	2.87	3.28	/	/	/	
25	9.89	2.11	4.69	9.38	2.23	4.21	9.17	2.47	3.71	9.04	2.69	3.36	/	/	/	
30	10.08	1.89	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)

# M thermal Arctic Split



## 4.2 Cooling Capacity Tables (Test standard: EN14511)

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												
-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												
-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	0.81	5.55	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												
-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)

## 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														
-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												
-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	6.55	1.34	4.90	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												
-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)

## 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														
-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	10.0 <sub>4</sub>	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												
-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	10.8 <sub>0</sub>	1.82	5.94	12.9	1.95	6.61		
35	5.75	1.79	3.20	7.40	2.19	3.28	7.70	1.89	4.07	7.82	1.86	4.21	8.32	1.74	4.77	8.40	1.66	5.05	10.2 <sub>5</sub>	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												
-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)

## 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											
-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									
-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	6.26	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	2.48	3.30	8.57	2.16	3.96	8.68	2.13	4.07	9.09	2.05	4.43	10.00	2.08	4.80	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									
-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)

## 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	/	/	/	/	/	/	1051	2.32	4.53	1091	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	969	2.41	4.01	1182	2.83	4.19	1223	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	1009	2.56	3.94	1215	2.96	4.10	1255	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	1209	3.38	3.57	1380	3.61	3.82	1420	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	1188	3.96	3.00	1343	4.13	3.25	1378	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	1181	4.38	2.70	1307	4.72	2.77	1336	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	1003	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	635	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	CC	PI
-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	841	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	944	2.08	4.54	986	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	983	2.20	4.46	1022	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	1133	2.71	4.17	1174	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	1119	3.18	3.52	1156	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	11.69	4.22	2.75	1213	4.25	2.85	1210	4.02	3.01	11.97	3.28	3.65	12.00	3.00	4.00	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	CC	PI
-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)

## 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											
-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			
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									
-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	8.34	4.12	2.27	12.70	4.98	2.55	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									
-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)

## 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	1141	2.94	3.87	1350	3.29	4.10	1386	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	1188	3.12	3.80	1404	3.55	3.96	1438	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	1424	4.13	3.45	1594	4.32	3.69	1624	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	1426	5.10	2.79	1551	5.11	3.04	1585	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	1418	6.17	2.30	1509	6.00	2.52	1537	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	1021	5.18	1.97	1086	4.89	2.22	1103	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	1079	2.42	4.45	1118	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	1135	2.63	4.31	1171	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	1147	3.09	3.71	1308	3.25	4.02	1342	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	1142	3.79	3.01	1293	3.93	3.29	1330	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	1400	5.71	2.45	1419	5.23	2.71	1427	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)

Performance curves in domestic hot water production

- 15°C~45°C
- 15°C~50°C
- 15°C~55°C

MHA-V4(6)W/D2N8-B2 + HBT-A100/190CD30(S90)GN8-B	MHA-V4(6)W/D2N8-B2 + HBT-A100/240CD30(S90)GN8-B																																																																																																																
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# M thermal Arctic Split



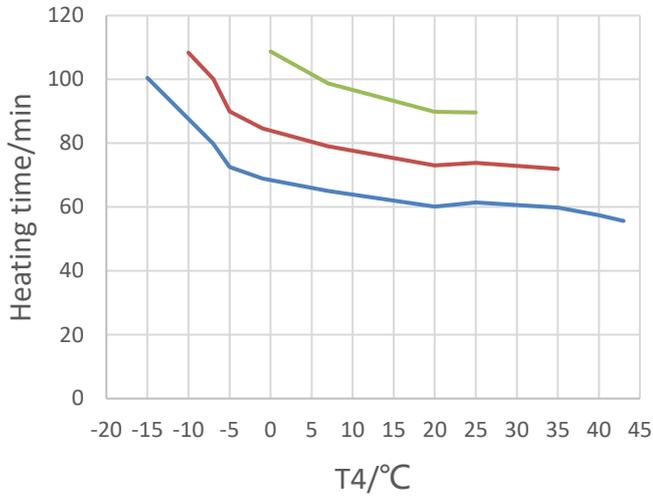
- 15~45
- 15~50
- 15~55

MHA-V8(10)W/D2N8-B2 + HBT-A100/190CD30(S90)GN8-B	MHA-V8(10)W/D2N8-B2 + HBT-A100/240CD30(S90)GN8-B
<p>Heat up</p>	<p>Heat up</p>
<p>Heating Capacity</p>	<p>Heating Capacity</p>
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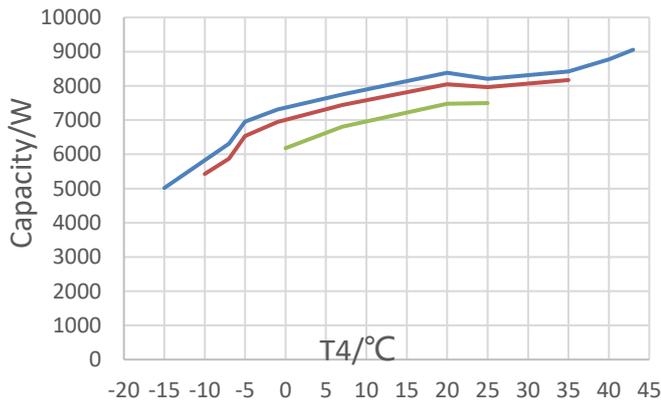
- 15~45
- 15~50
- 15~55

MHA-V12(14,16)W/D2(R)N8-B + HBT-A160/240CD30(S90)GN8-B

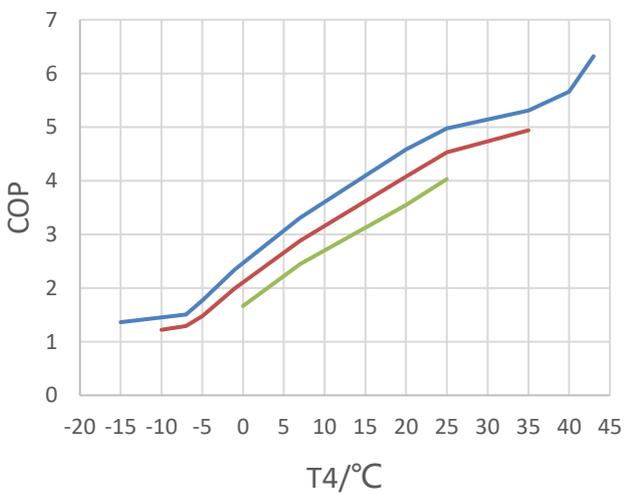
Heat up



Capacity

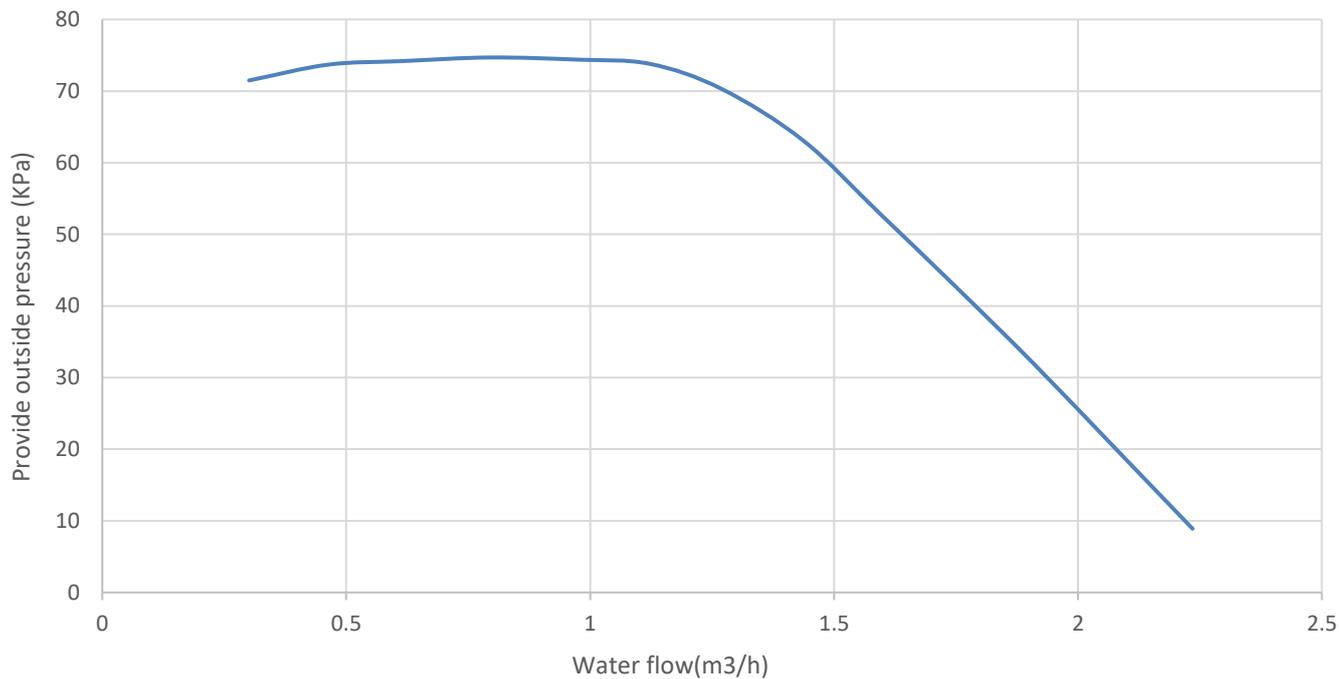


COP

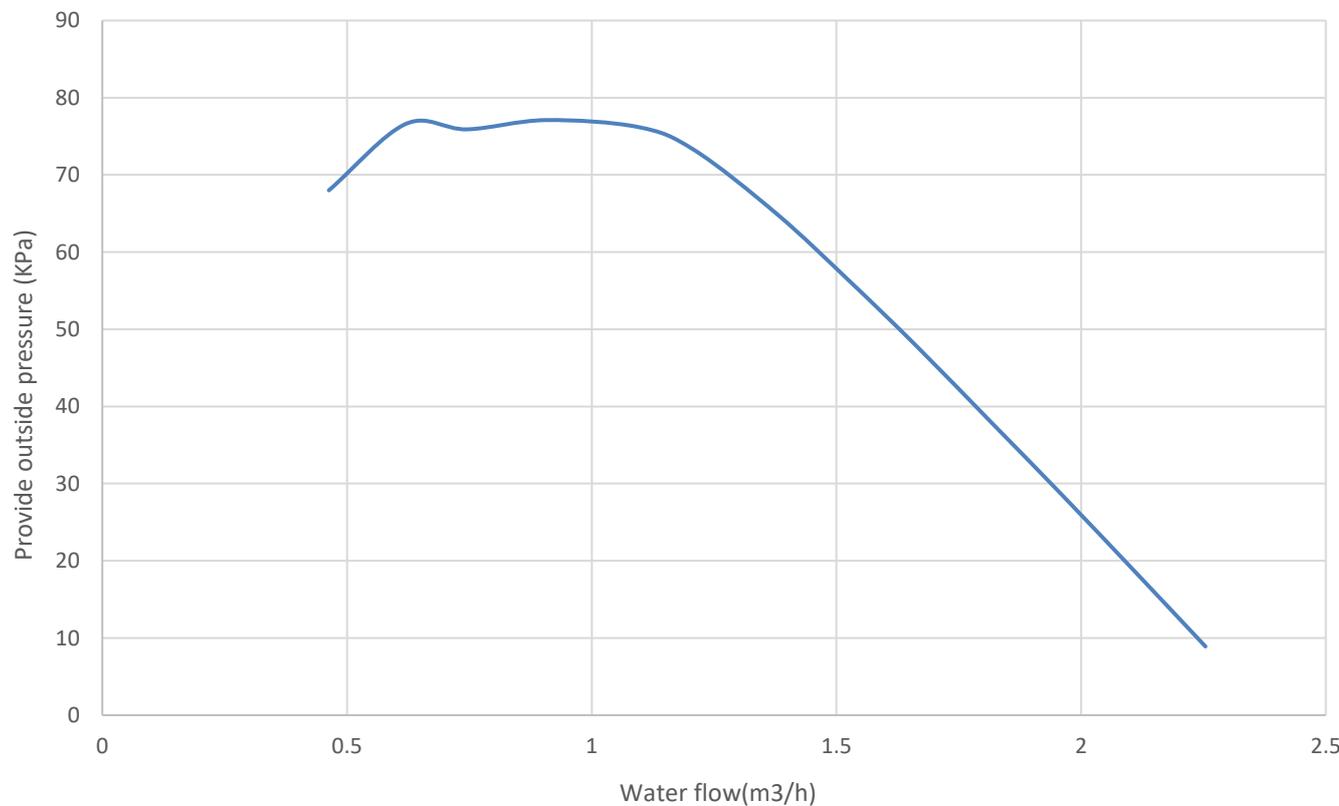


## 5 Hydronic Performance

Hydro module with 190L water tank



Hydro module with 240L water tank



## 6 Sound Levels

### 6.1 Outdoor unit

We measure noise of the unit from 4 sides as below, with a rated frequency at the distance of 1m.



The conditions we've tested is illustrated as below:

Heating A7W35: Evaporator air in 7°C, 85% R.H., Condenser water in/out 30/35°C

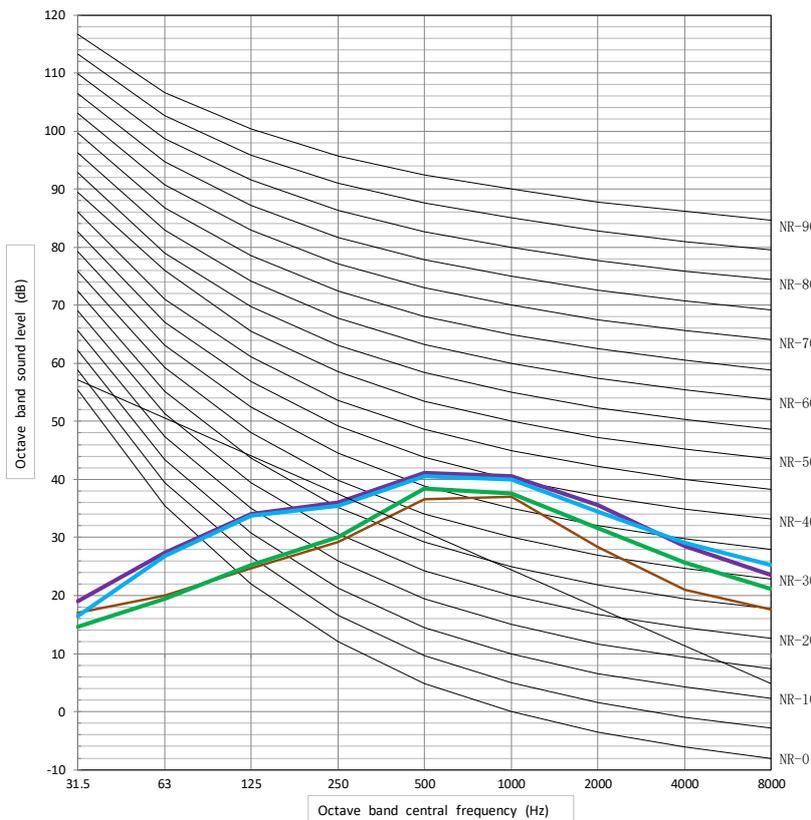
Heating A7W45: Evaporator air in 7°C, 85% R.H., Condenser water in/out 40/45°C

Cooling A35W18: Condenser air in 35°C. Evaporator water in/out 23/18°C

Cooling A35W7: Condenser air in 35°C. Evaporator water in/out 12/7°C

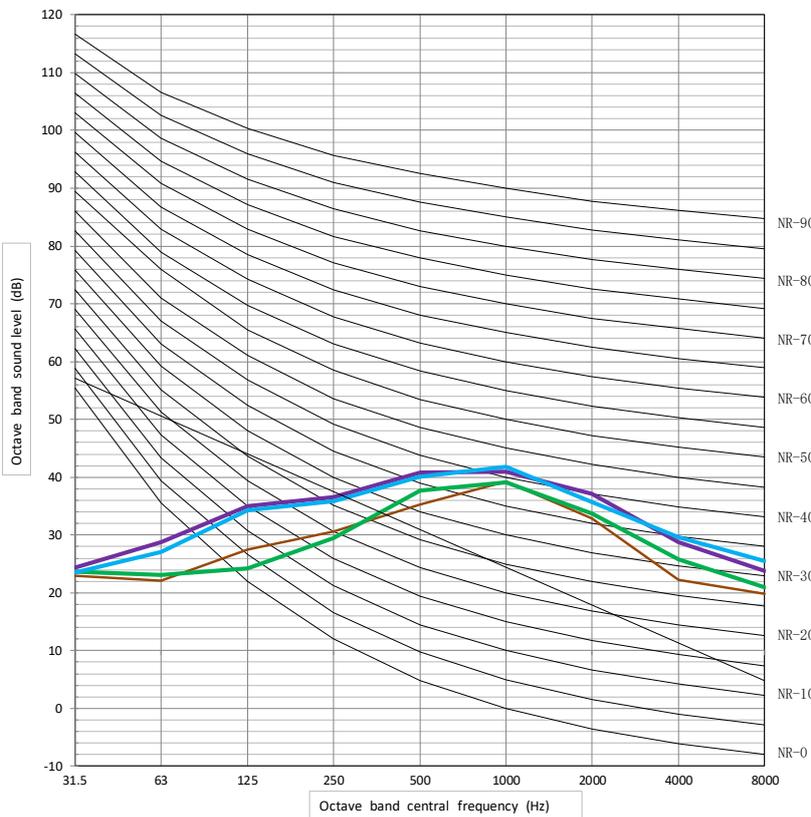
### Heating A7W35

A B C D



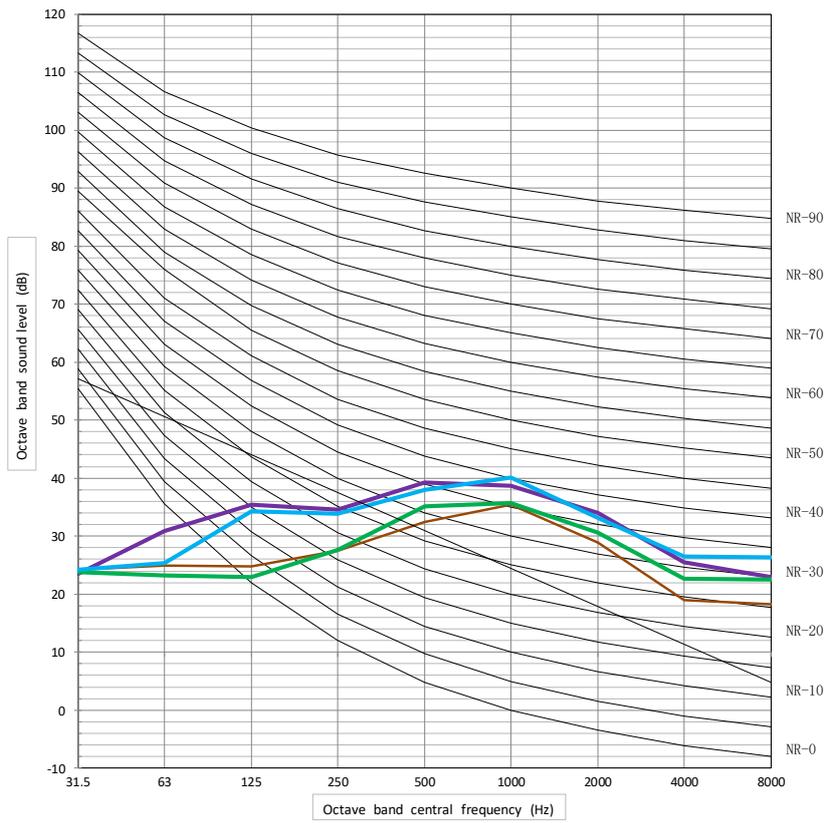
### Heating A7W45

A B C D



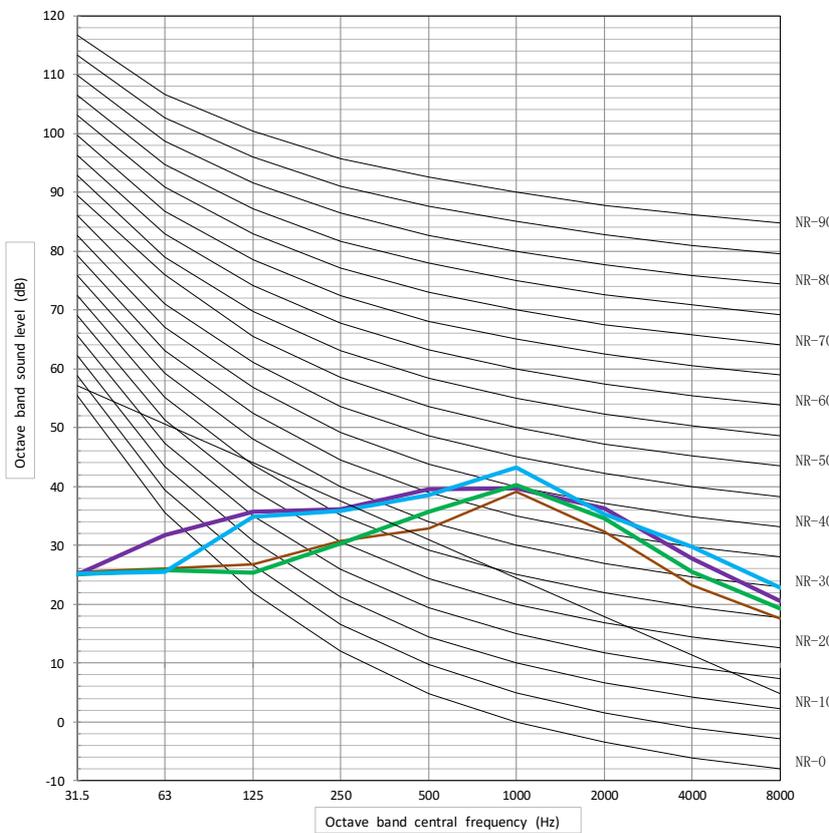
Heating A35W18

A B C D



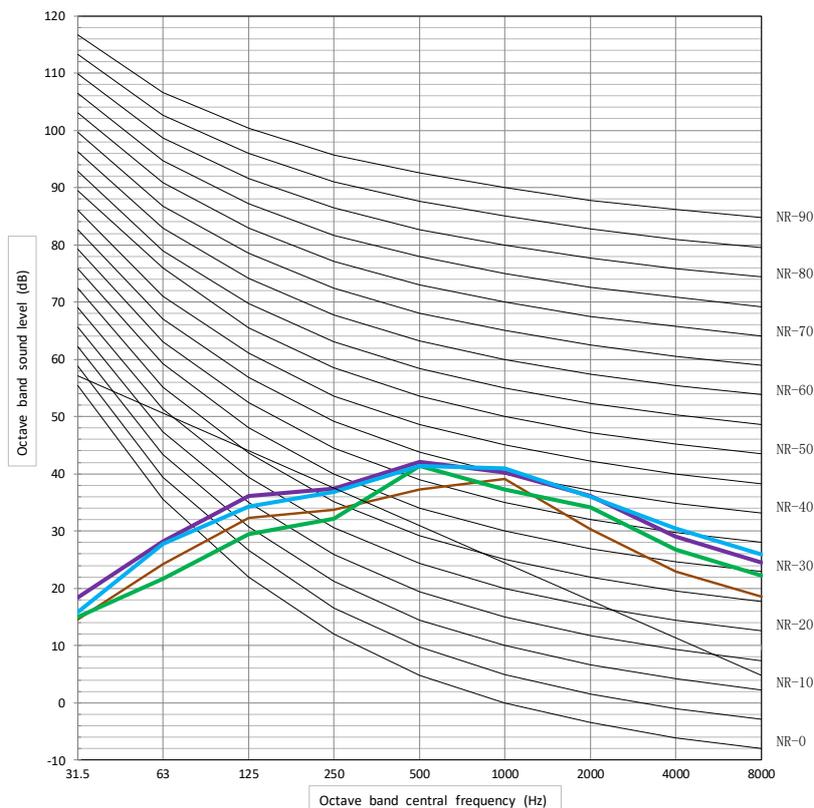
Heating A35W7

A B C D



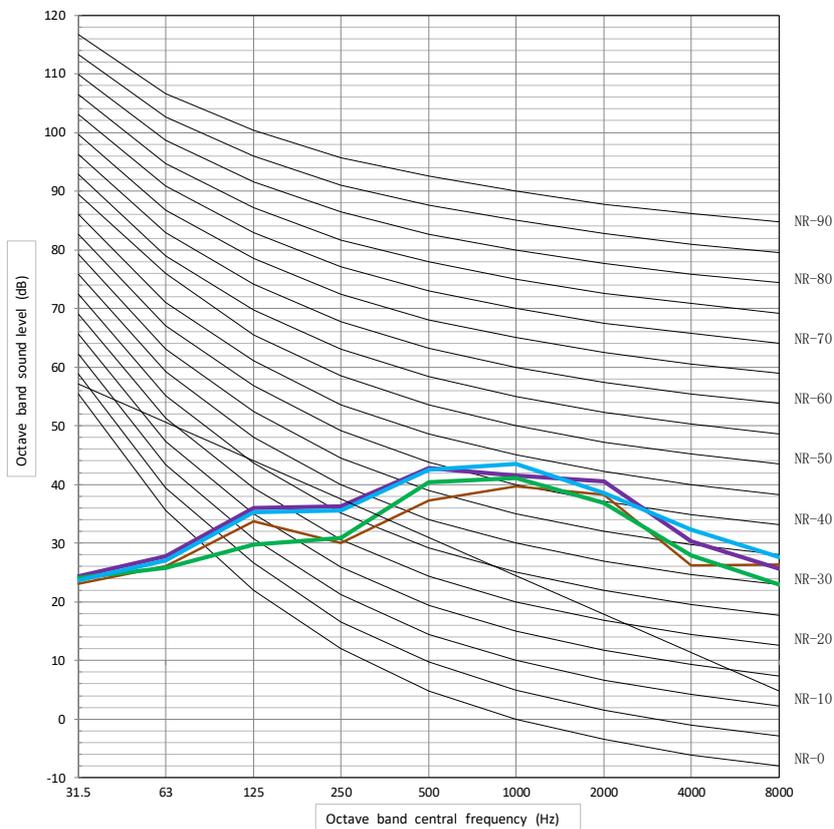
### Heating A7W35

A B C D



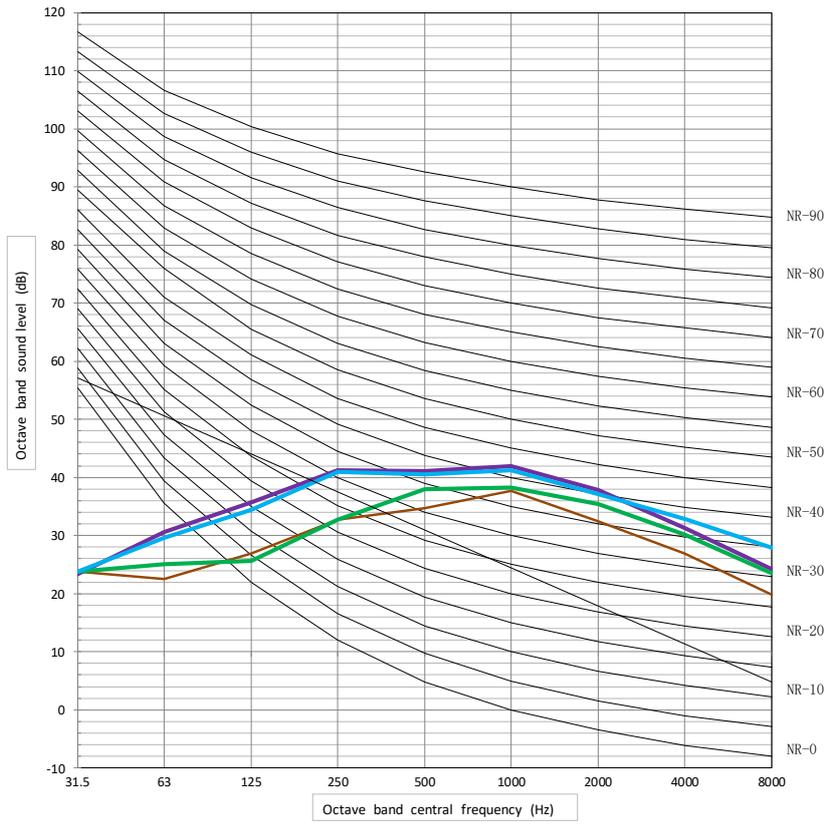
### Heating A7W45

A B C D



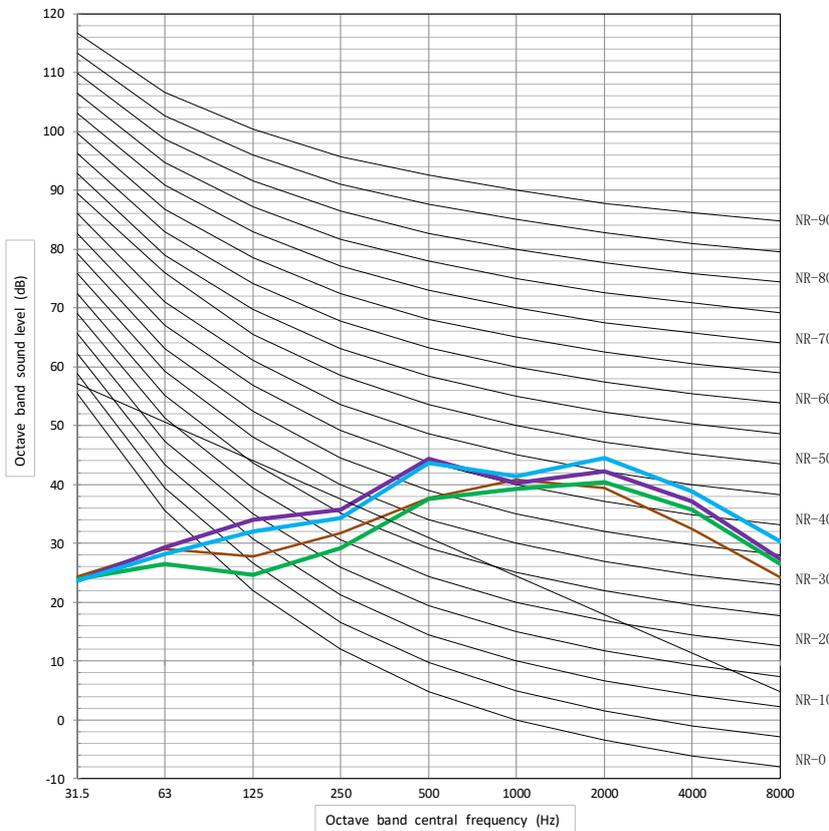
Heating A35W18

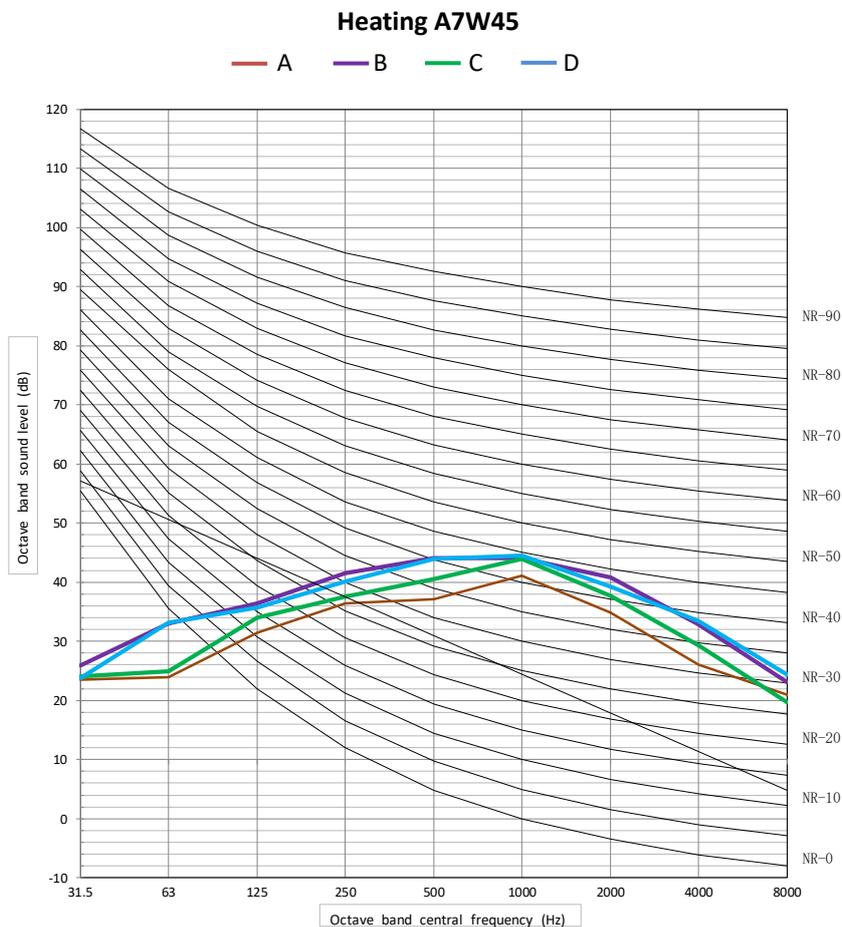
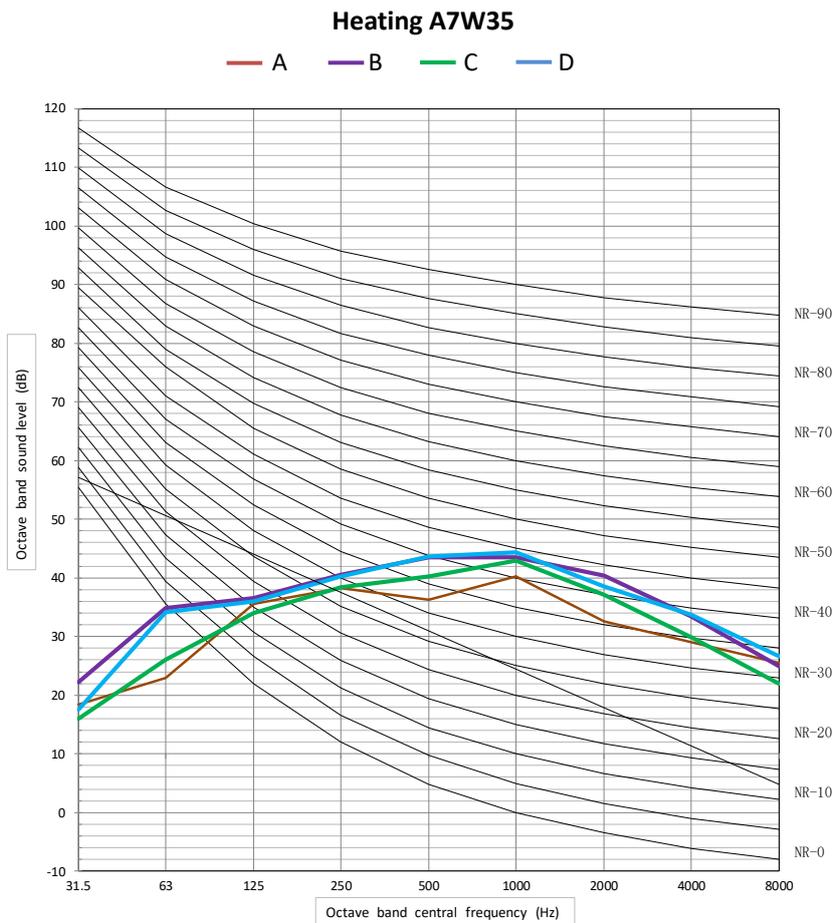
A B C D



Heating A35W7

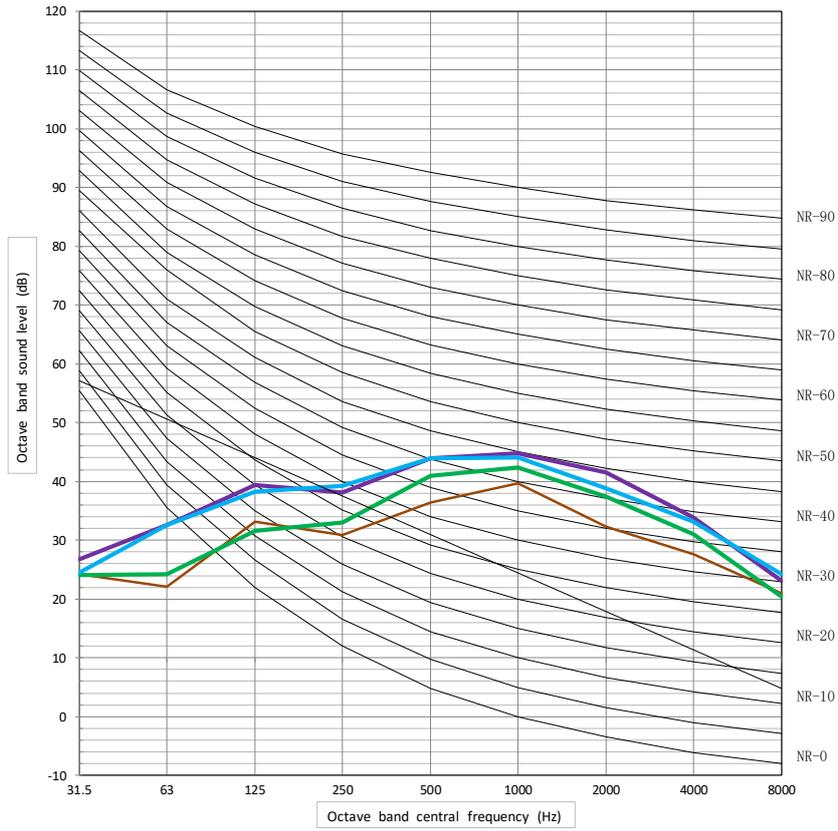
A B C D





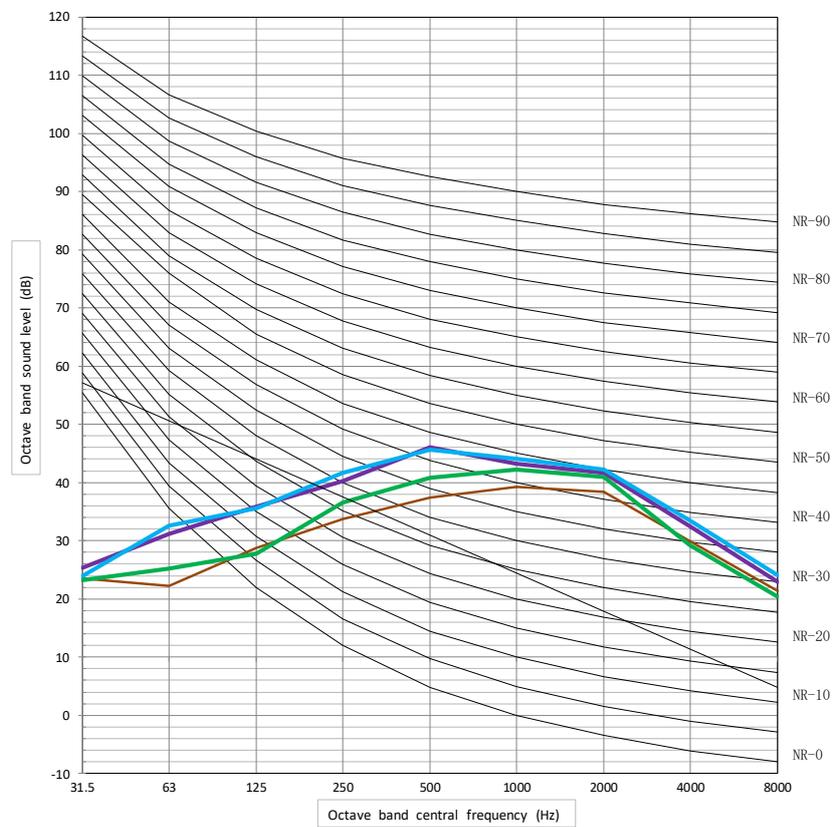
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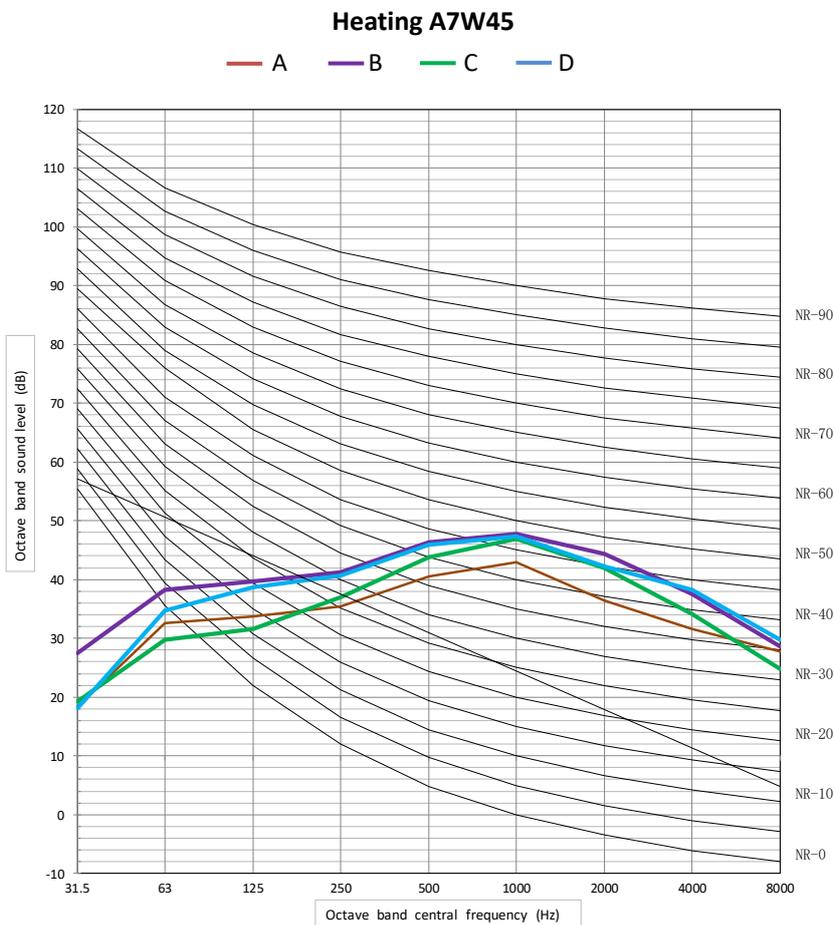
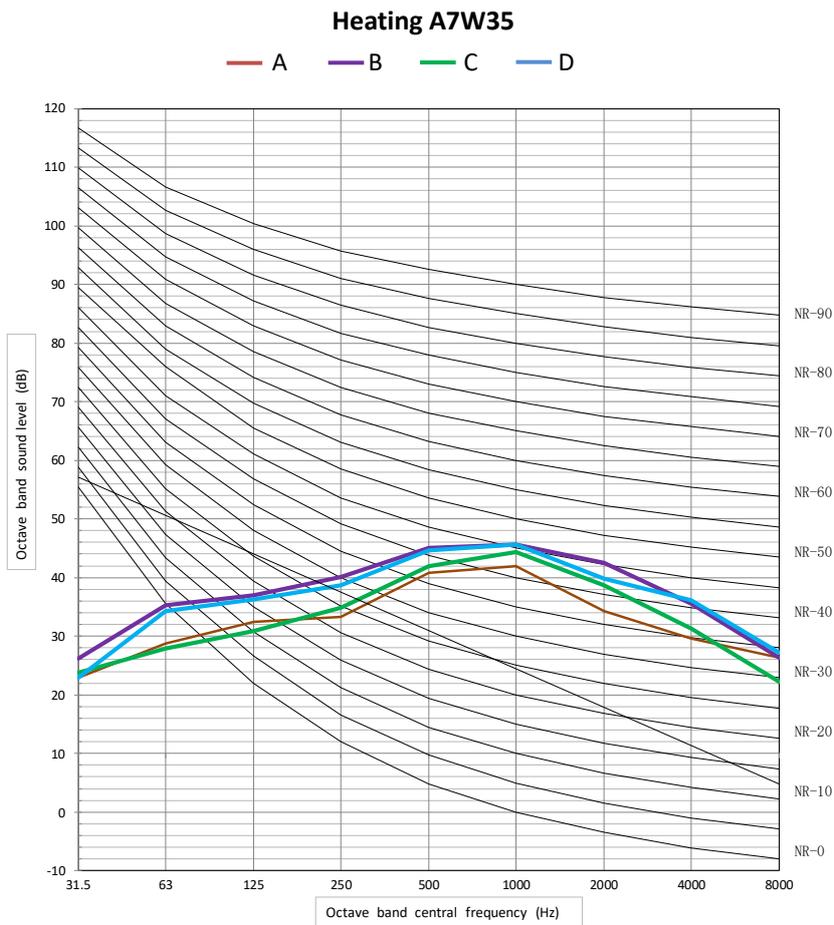
A B C D



Heating A35W7

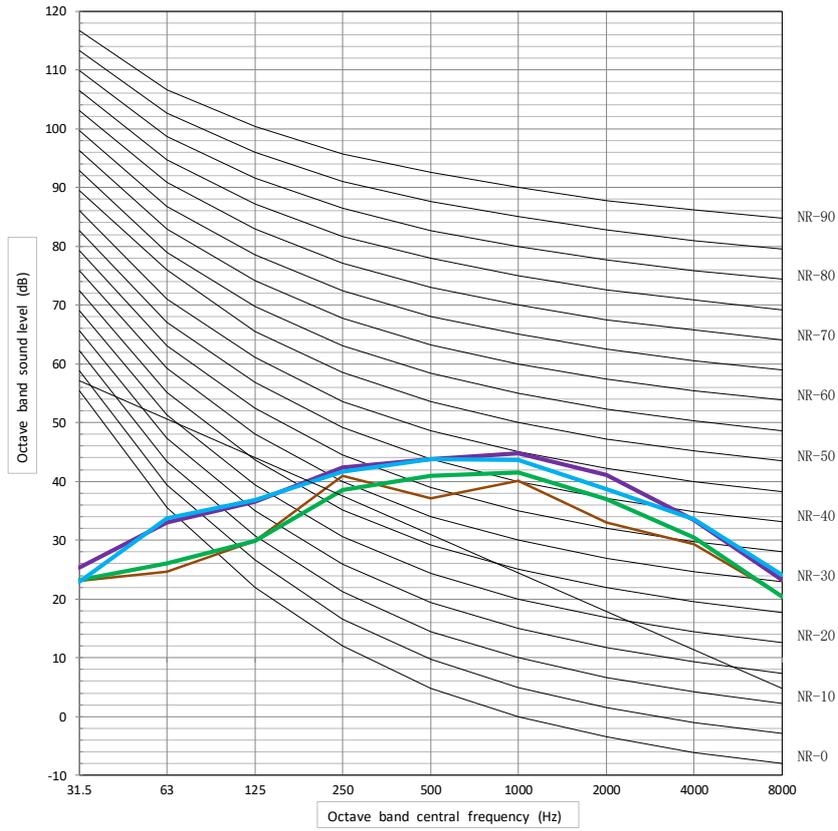
A B C D





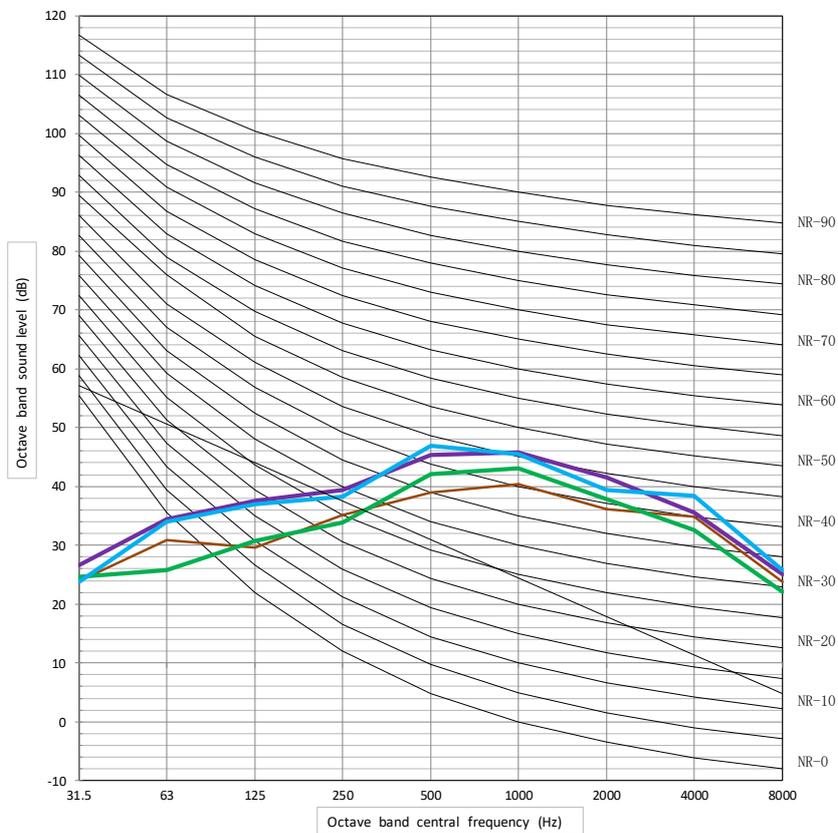
Heating A35W18

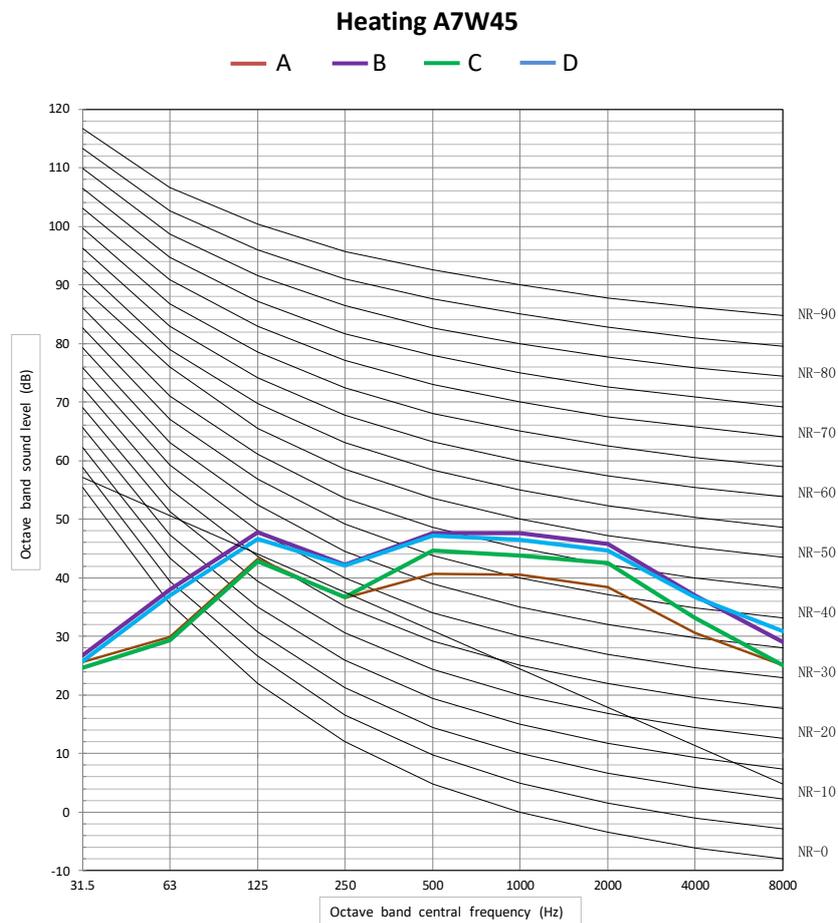
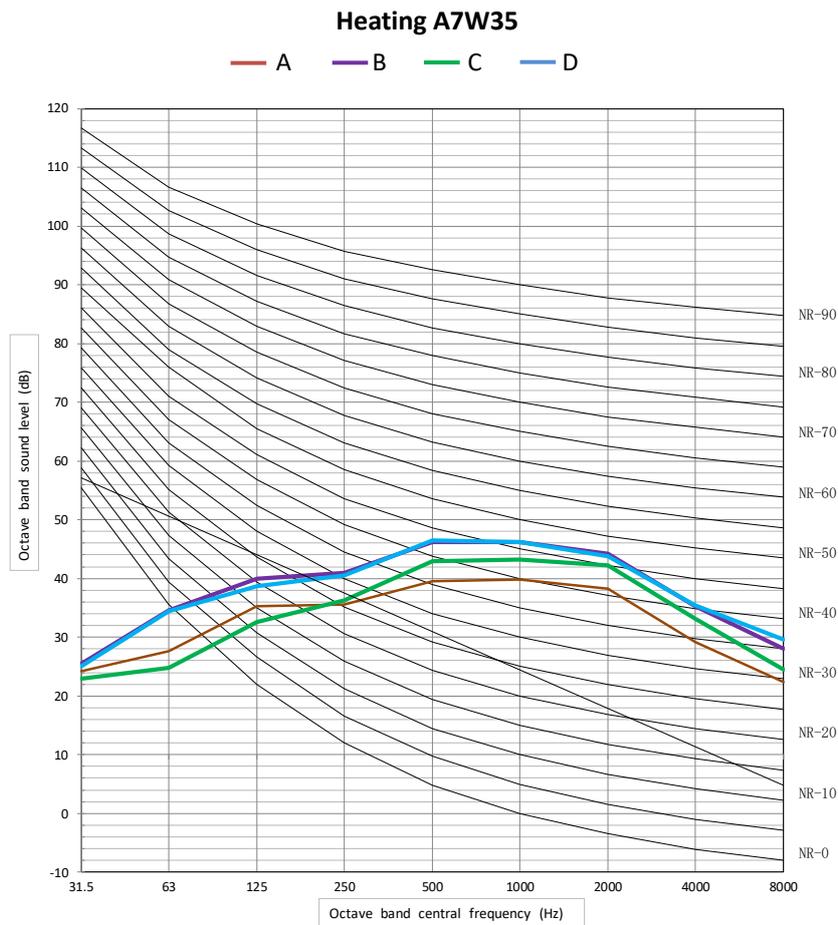
A B C D



Heating A35W7

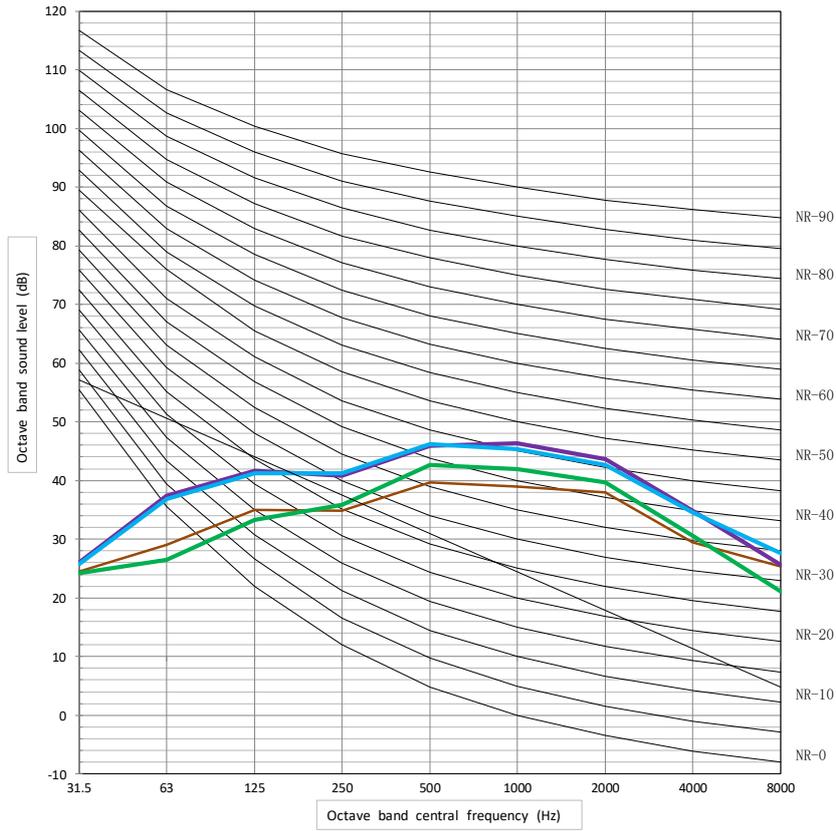
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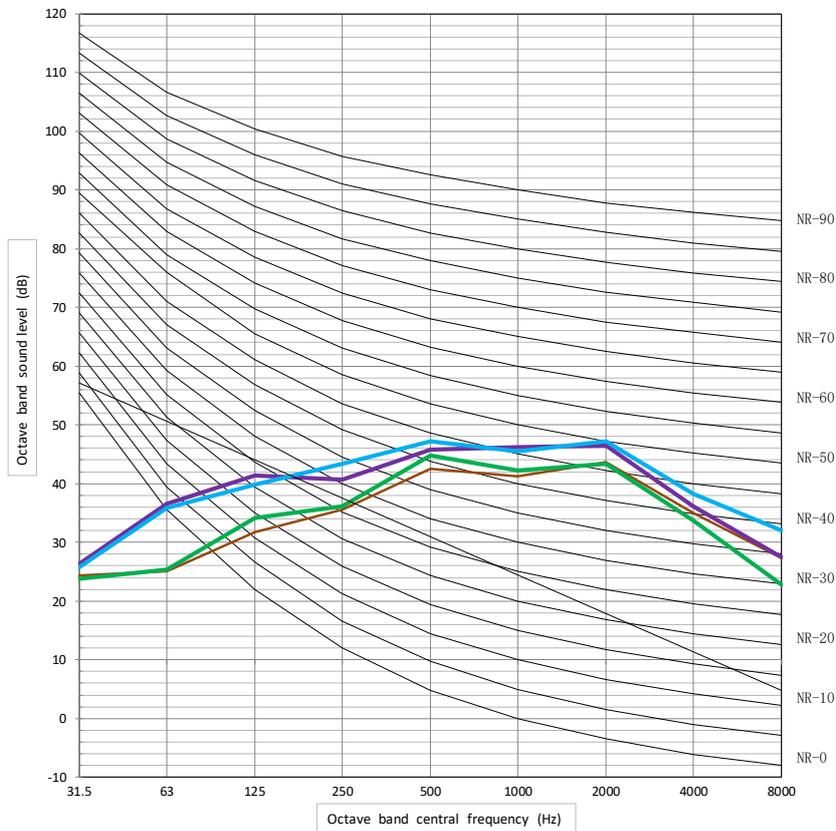
Heating A35W18

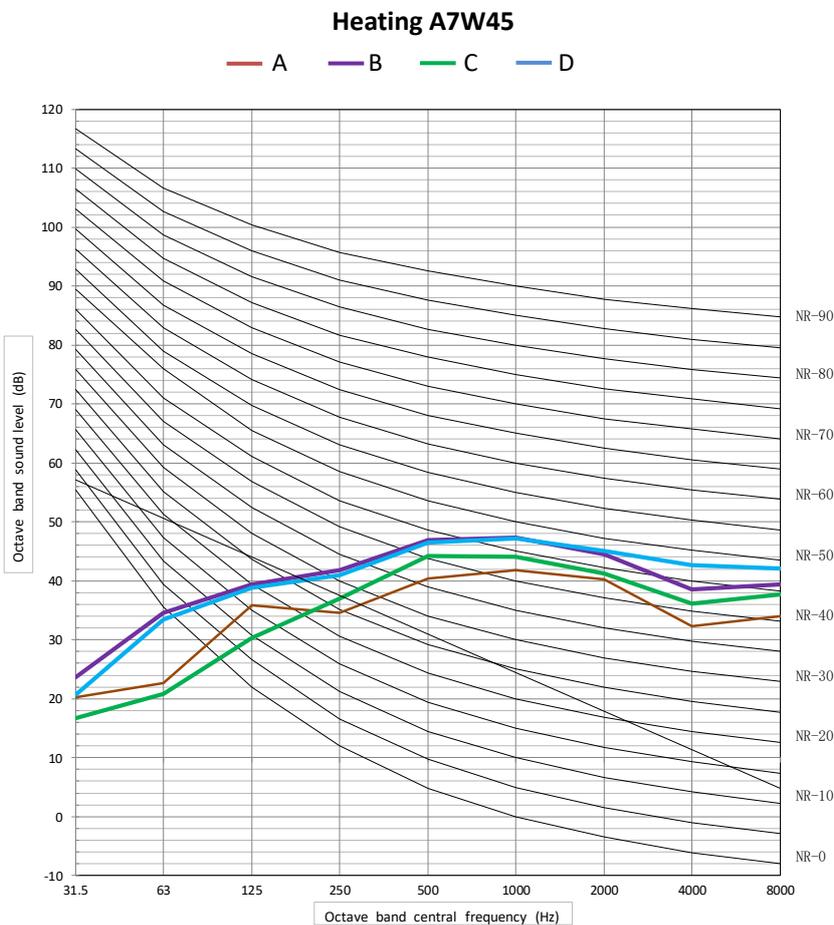
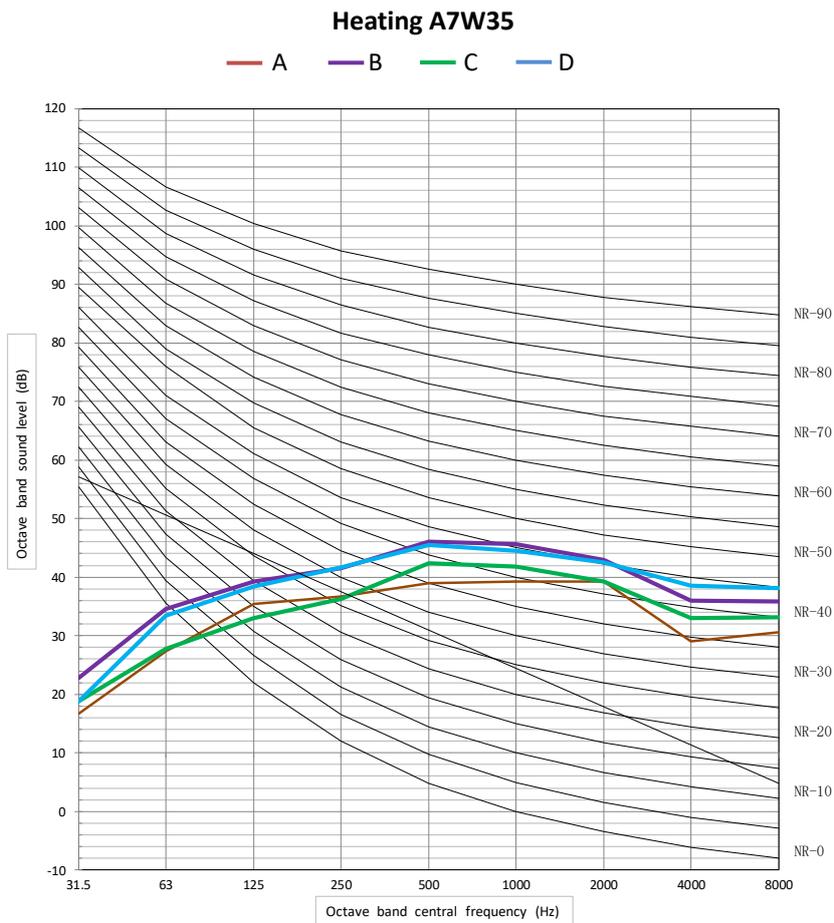
A B C D



Heating A35W7

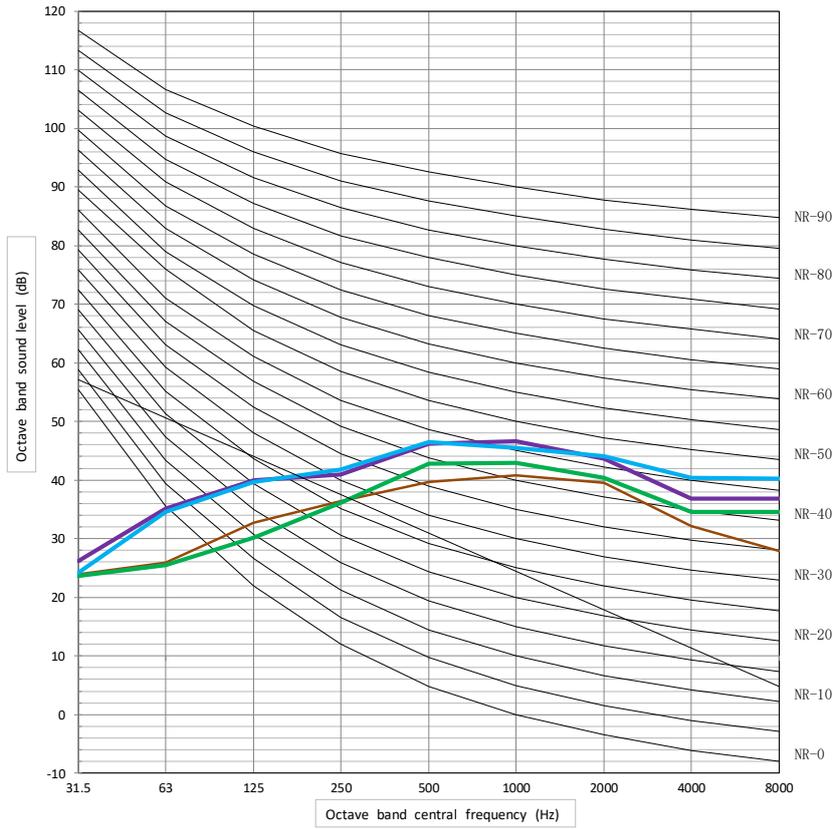
A B C D





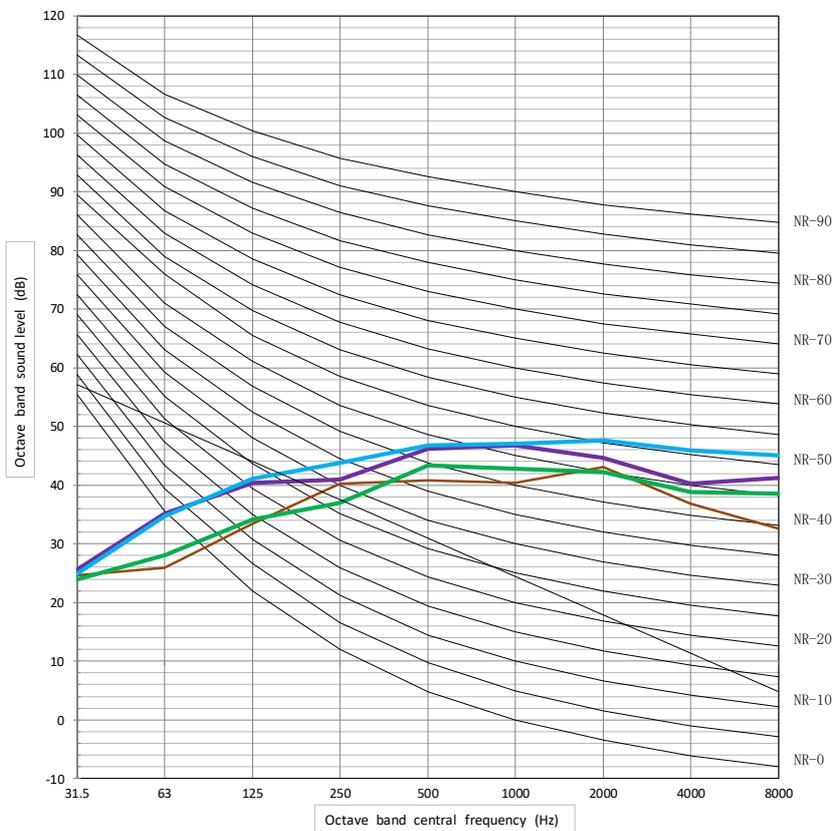
Heating A35W18

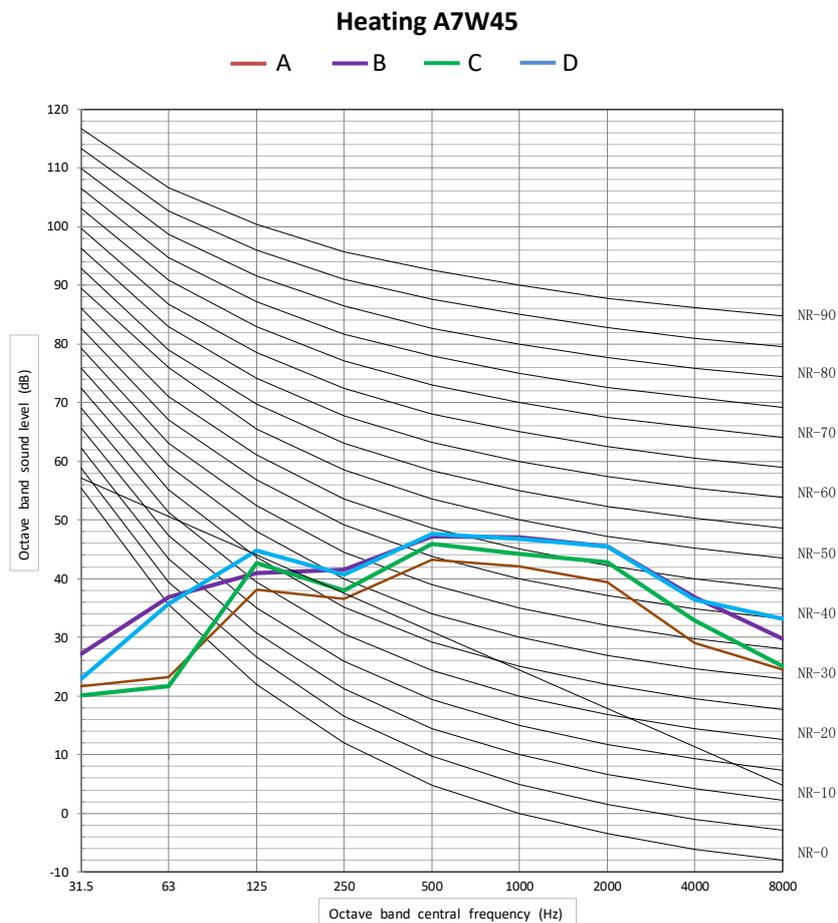
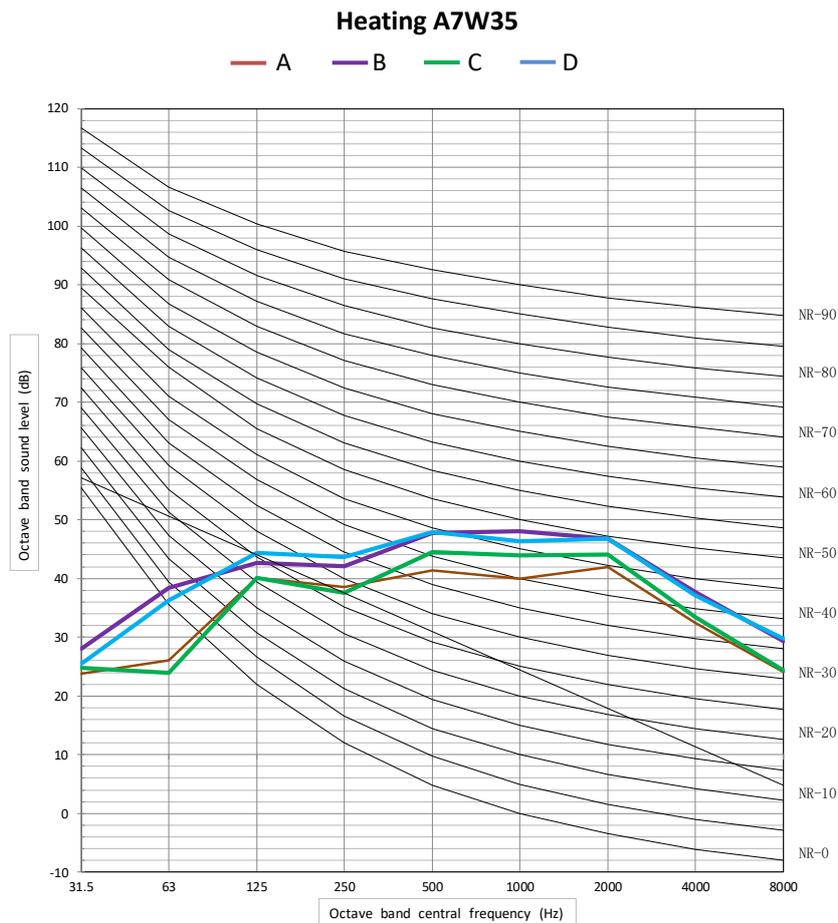
A B C D



Heating A35W7

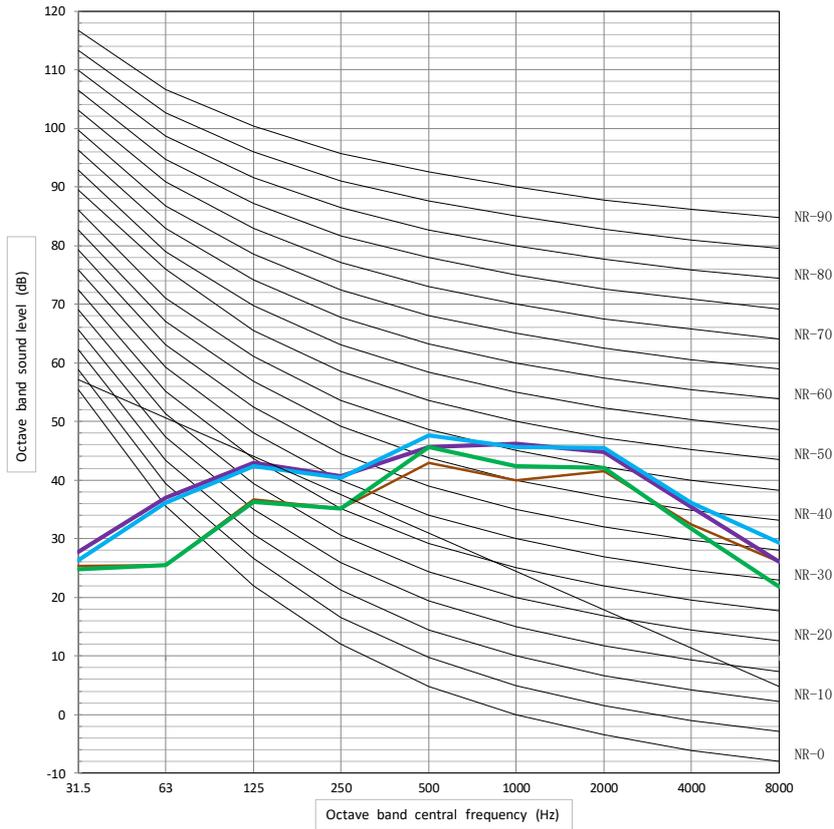
A B C D





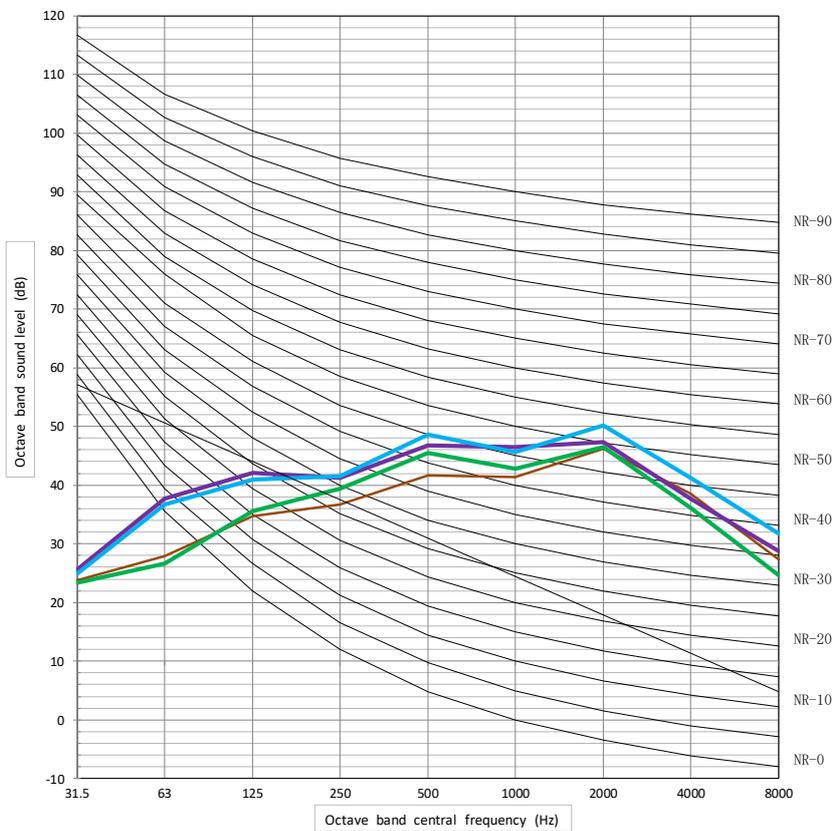
Heating A35W18

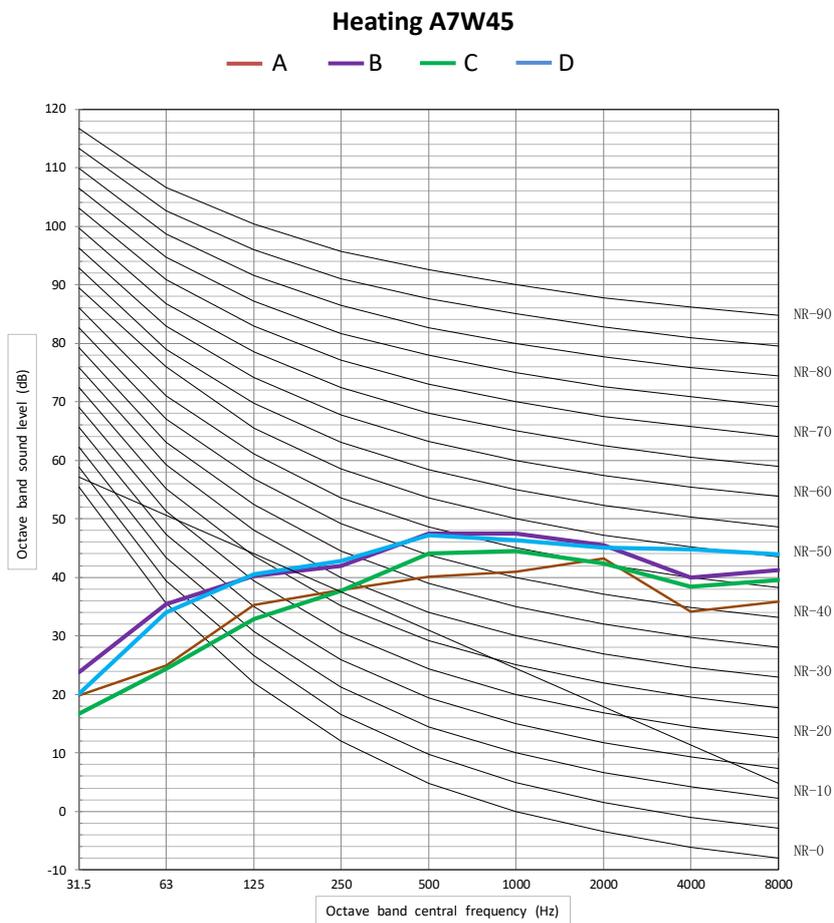
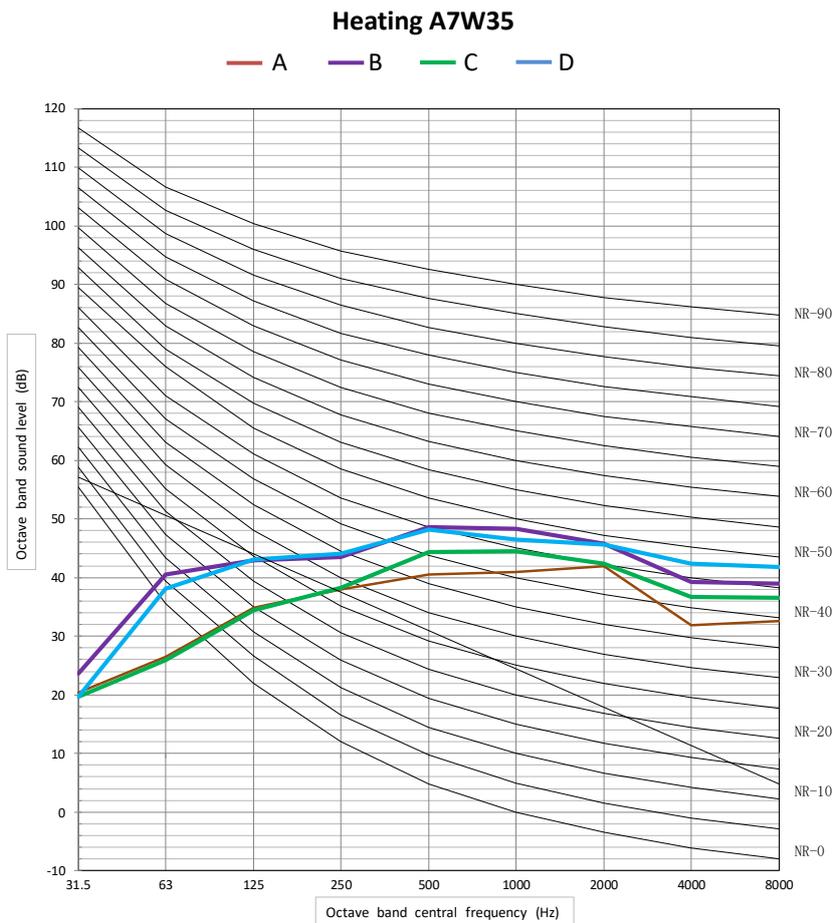
A B C D



Heating A35W7

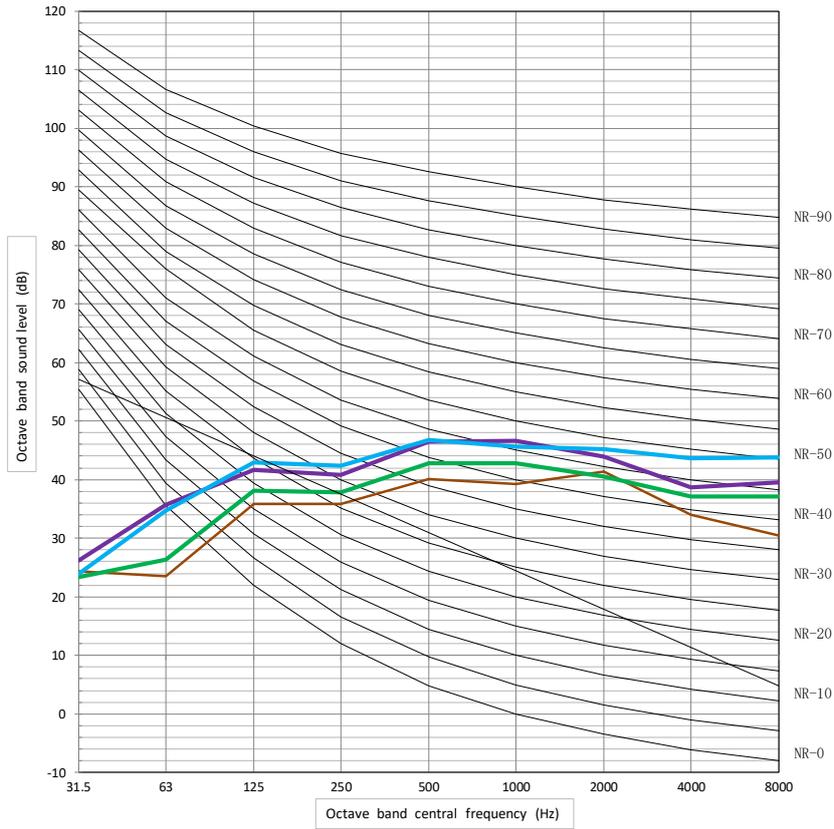
A B C D





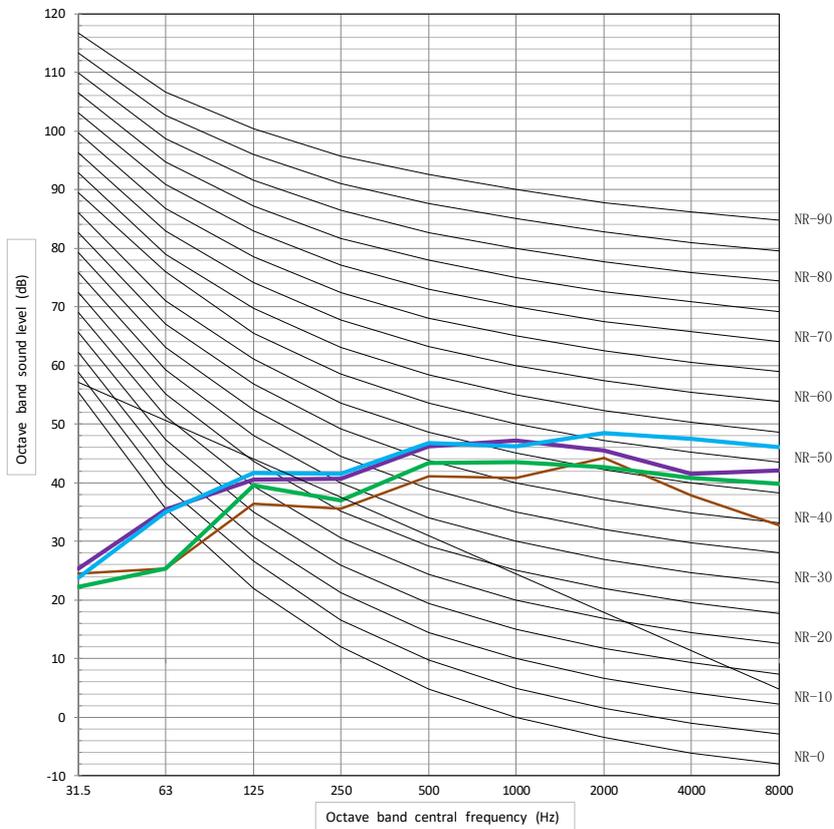
Heating A35W18

A B C D



Heating A35W7

A B C D

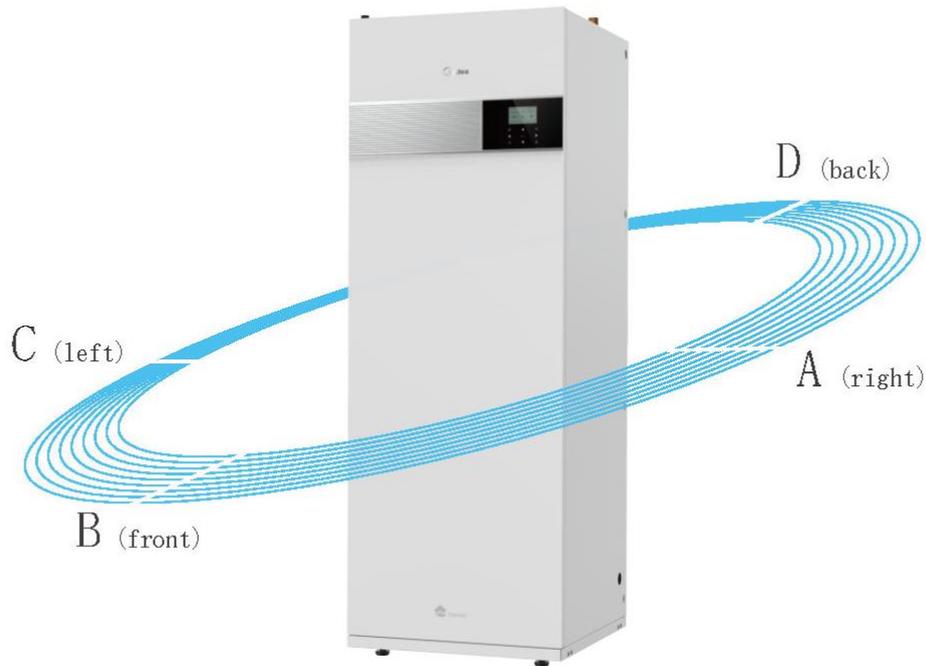


## M thermal Arctic Split



### 6.2 Indoor unit with water tank

We measure noise of the unit from 1 sides as below, with a rated frequency at the distance of 1m.



The conditions we've tested is illustrated as below:

Heating A7W35: Evaporator air in 7°C, 85% R.H., Condenser water in/out 30/35°C

Heating A7W45: Evaporator air in 7°C, 85% R.H., Condenser water in/out 40/45°C

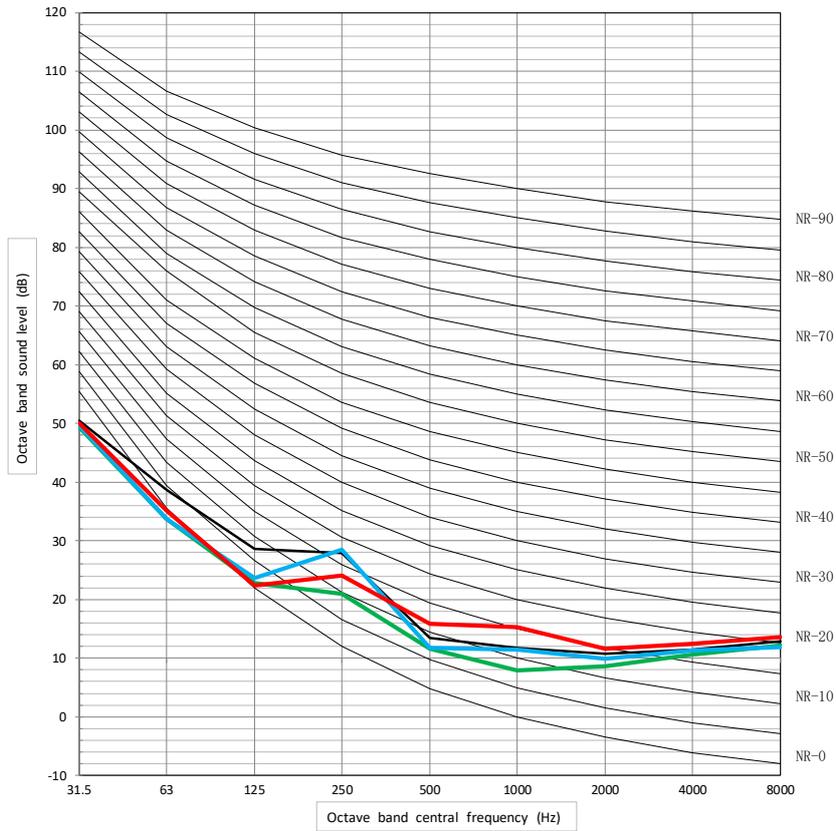
Cooling A35W18: Condenser air in 35°C. Evaporator water in/out 23/18°C

Cooling A35W7: Condenser air in 35°C. Evaporator water in/out 12/7°C

Indoor unit: 190L model + Outdoor unit: 4kW

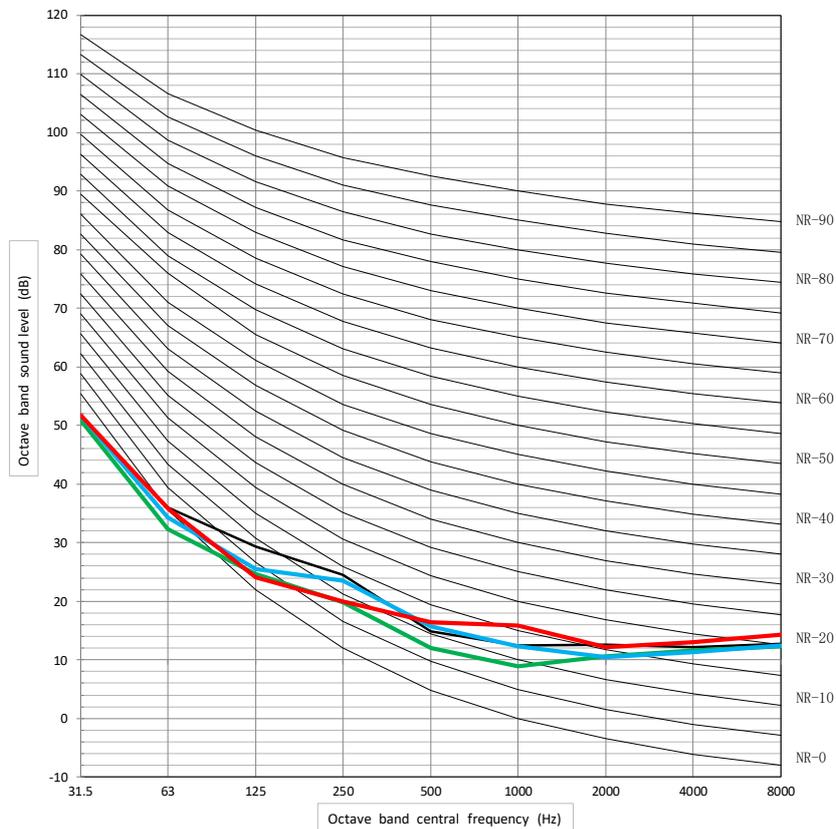
Heating A7W35

— A — B — C — D



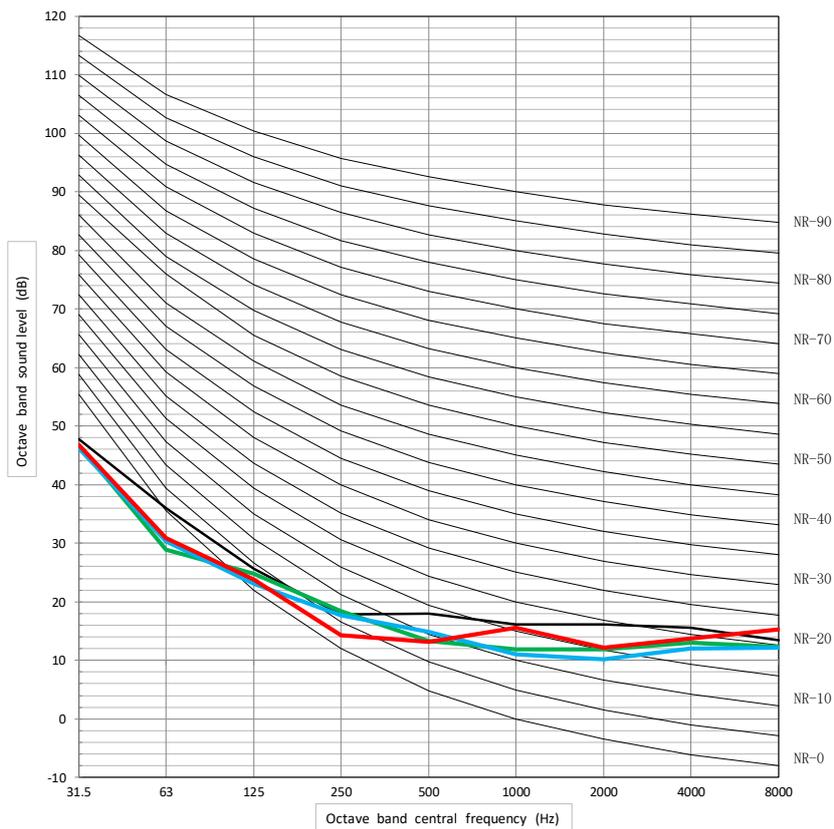
Heating A7W45

— A — B — C — D



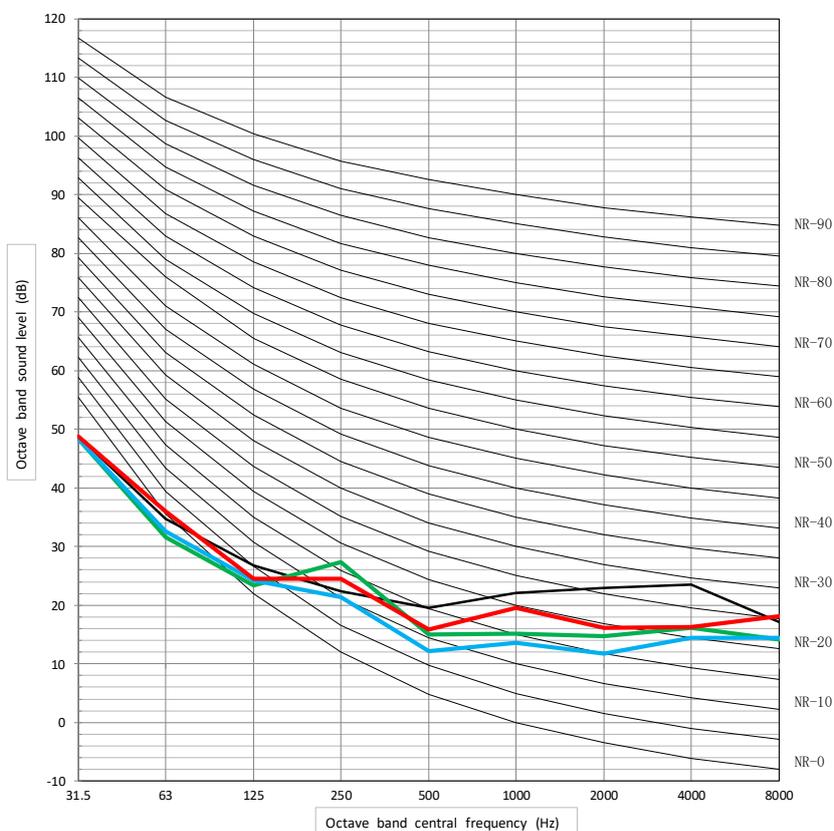
Heating A35W18

— A — B — C — D



Heating A35W7

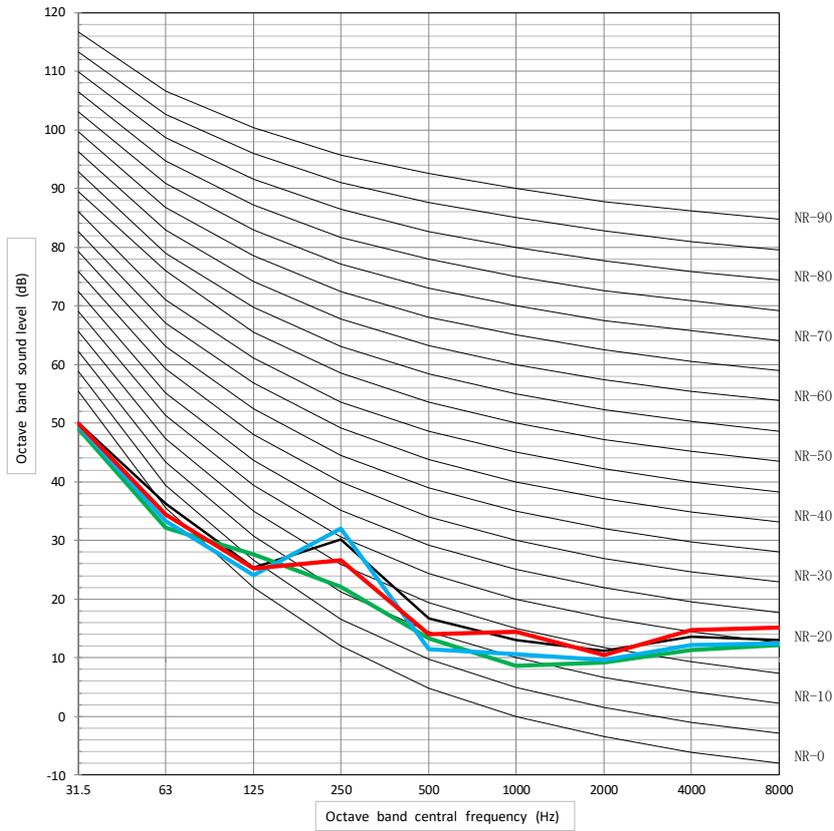
— A — B — C — D



Indoor unit: 190L model + Outdoor unit: 6kW

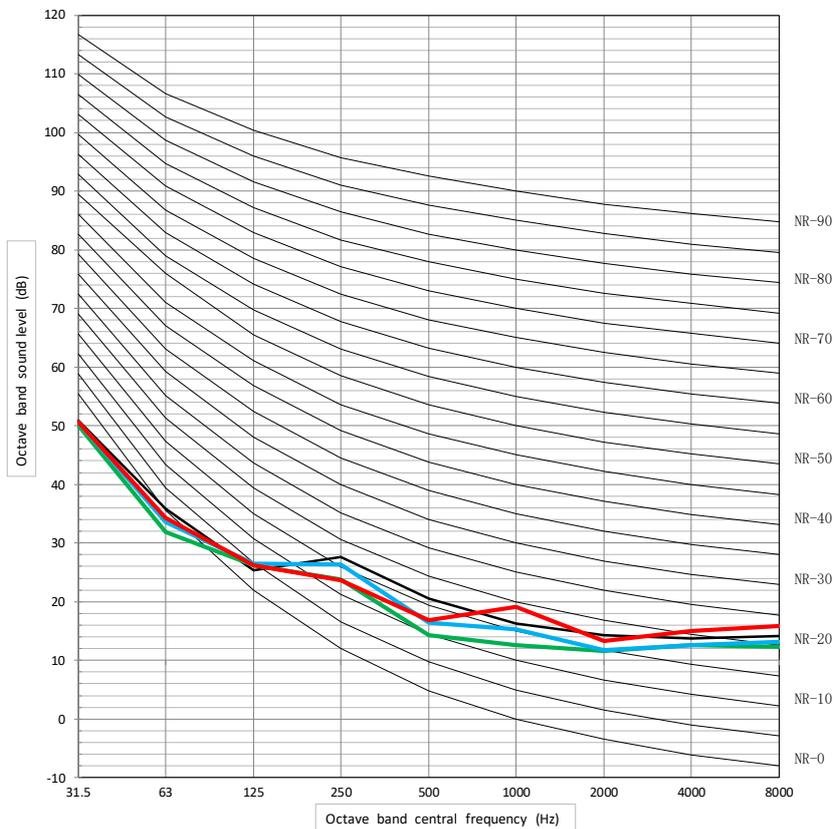
Heating A7W35

— A — B — C — D



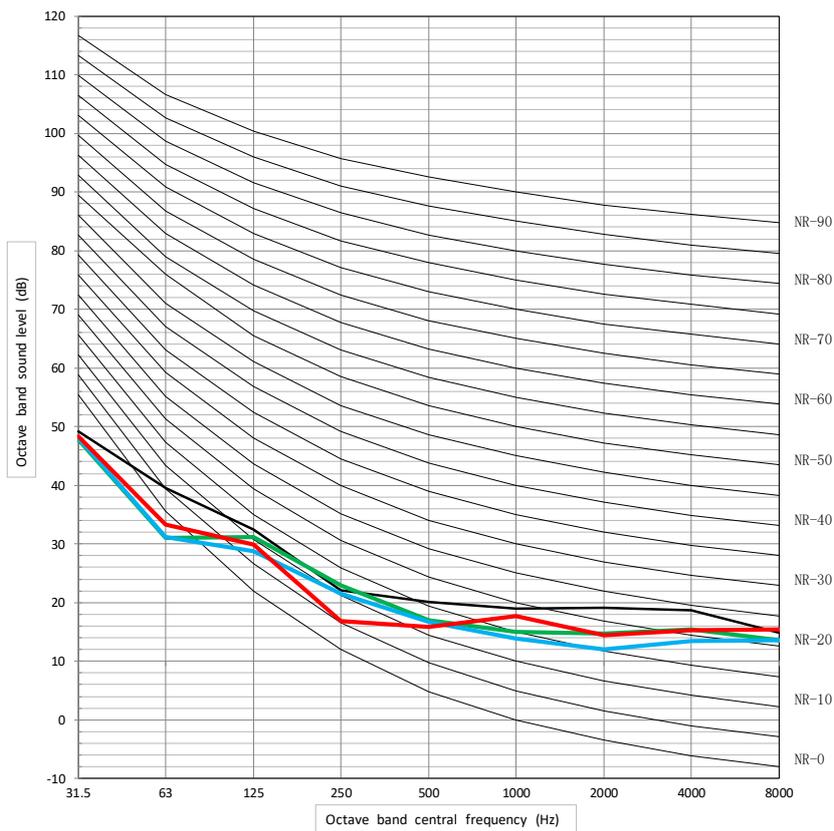
Heating A7W45

— A — B — C — D



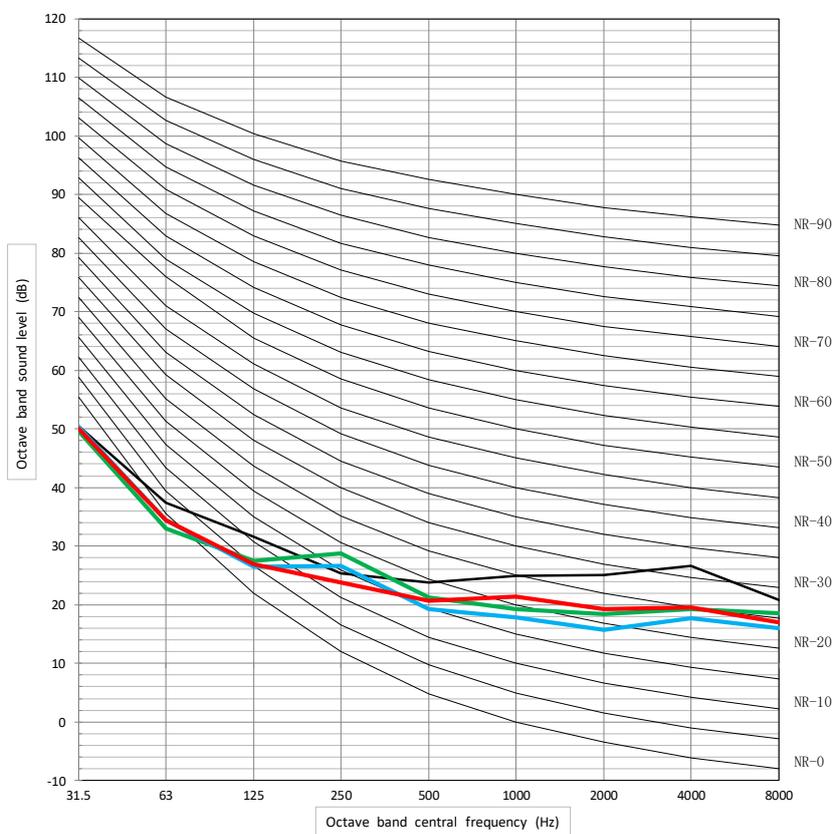
Heating A35W18

— A — B — C — D



Heating A35W7

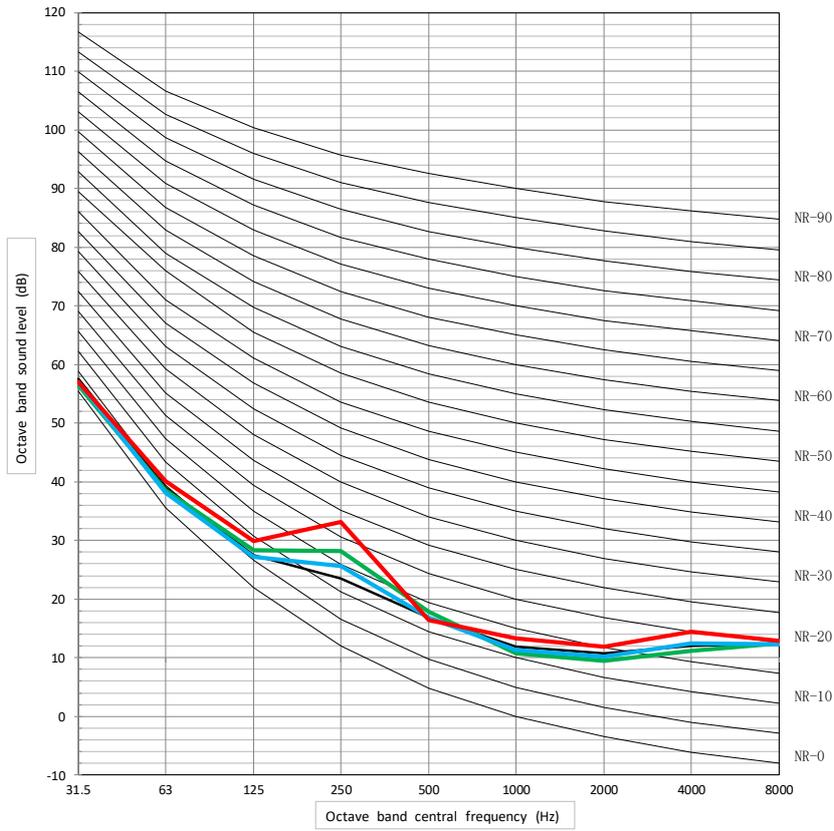
— A — B — C — D



Indoor unit: 190L model + Outdoor unit: 8kW

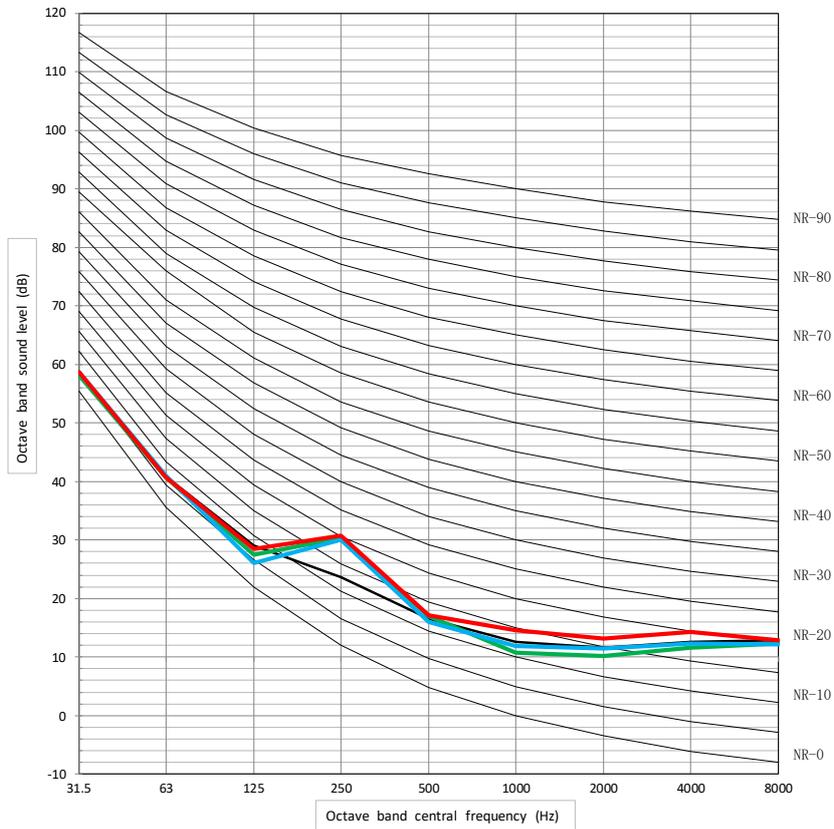
### Heating A7W35

— A — B — C — D



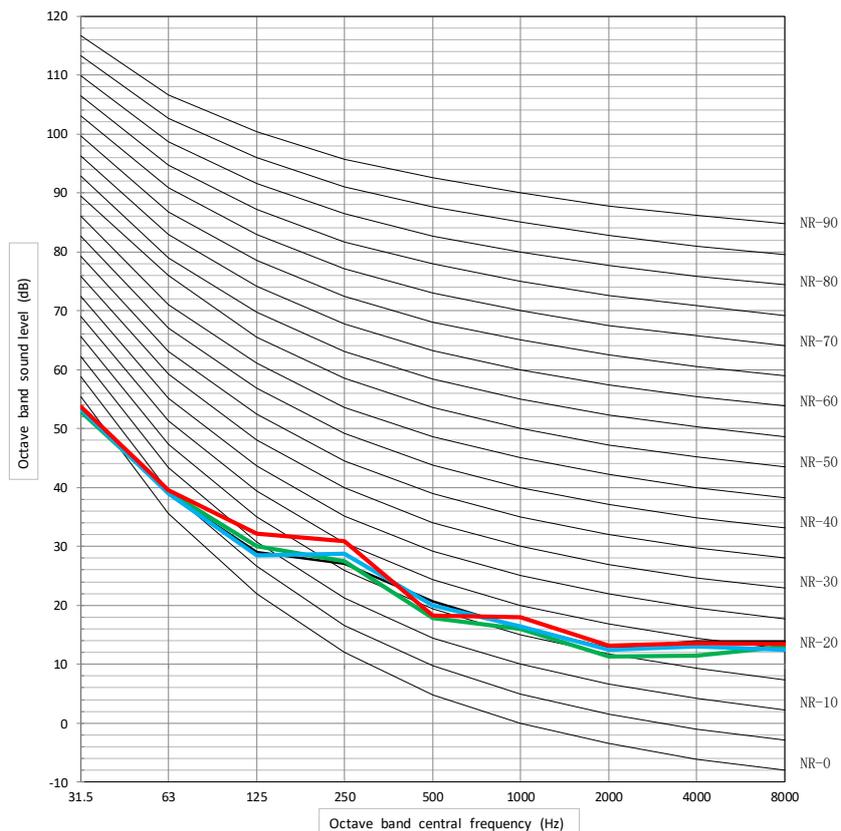
### Heating A7W45

— A — B — C — D



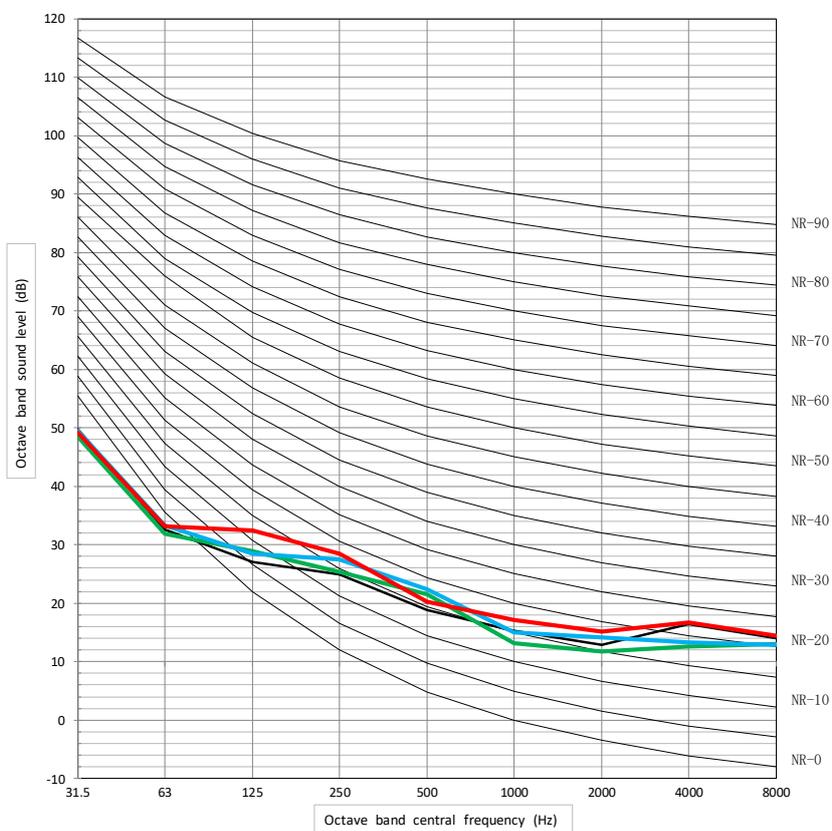
Heating A35W18

— A — B — C — D



Heating A35W7

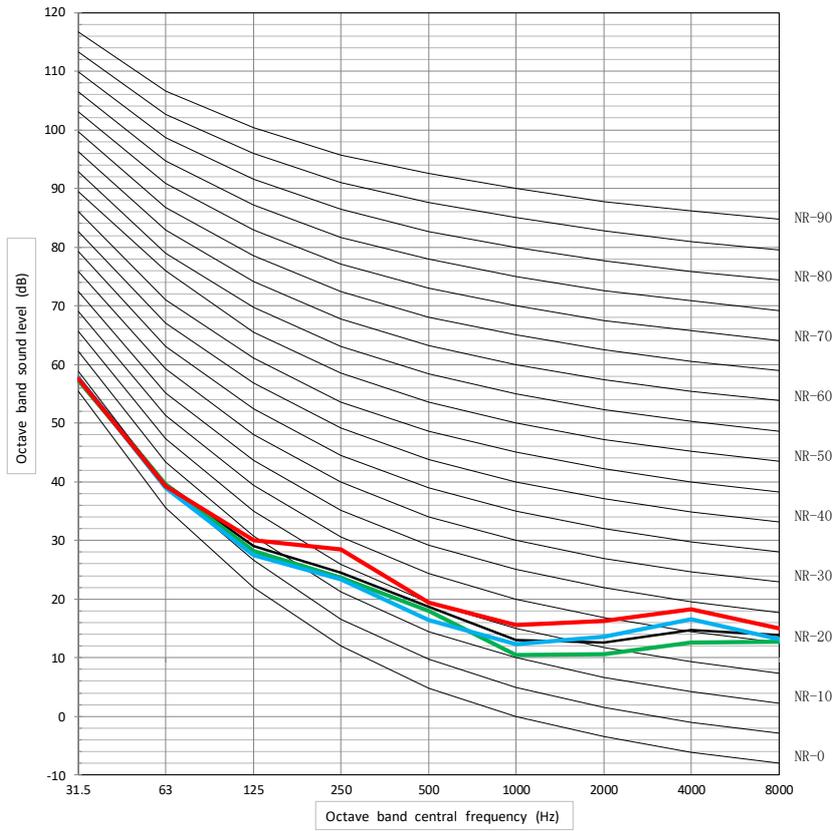
— A — B — C — D



Indoor unit: 190L model + Outdoor unit: 10kW

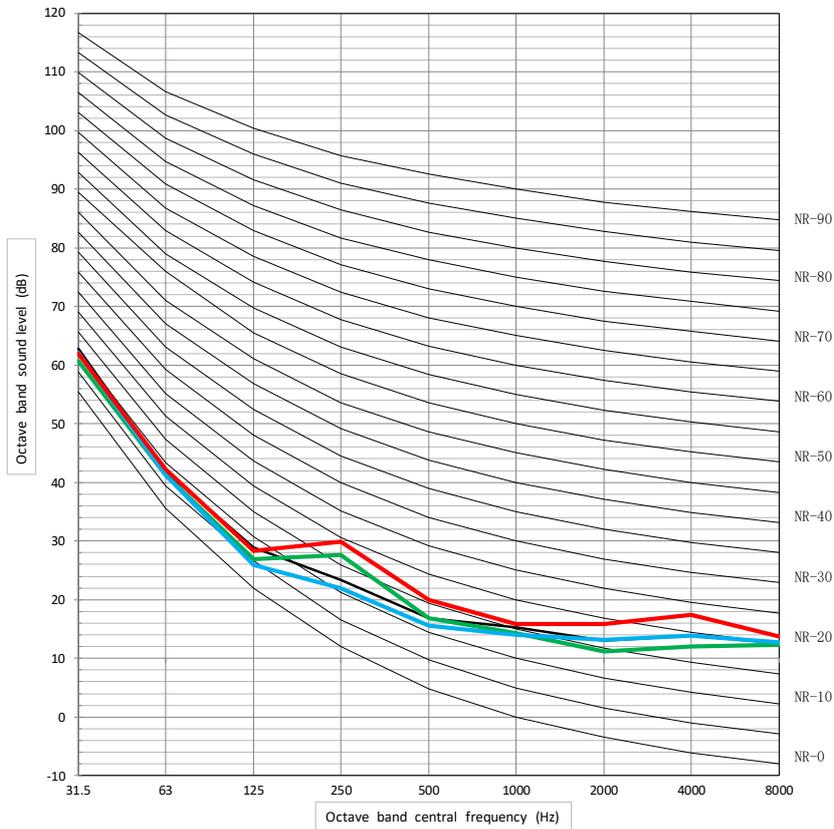
### Heating A7W35

— A — B — C — D



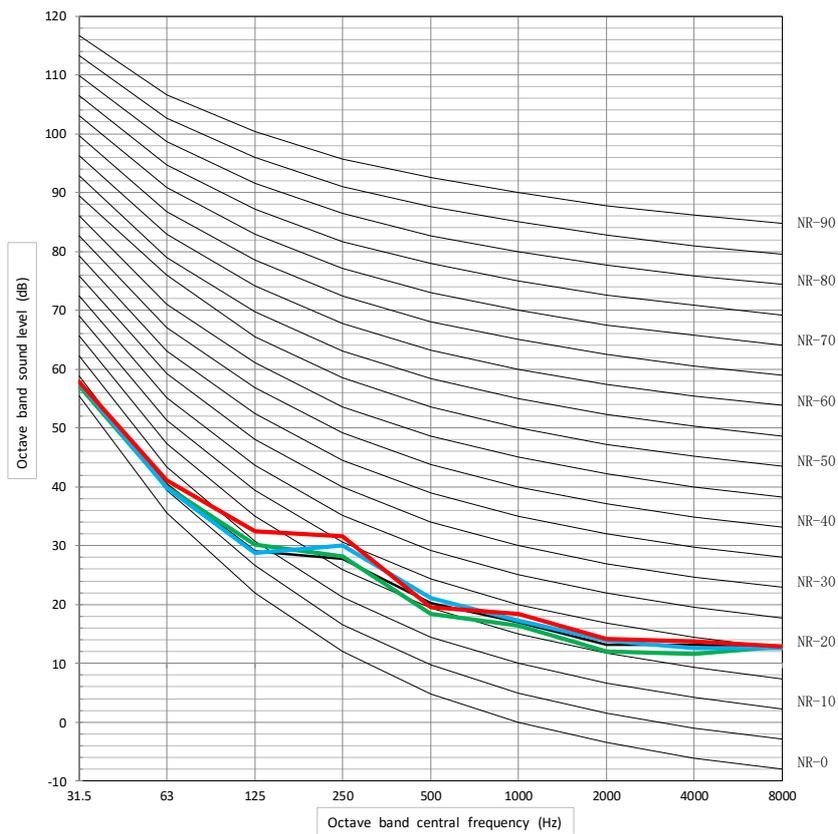
### Heating A7W45

— A — B — C — D



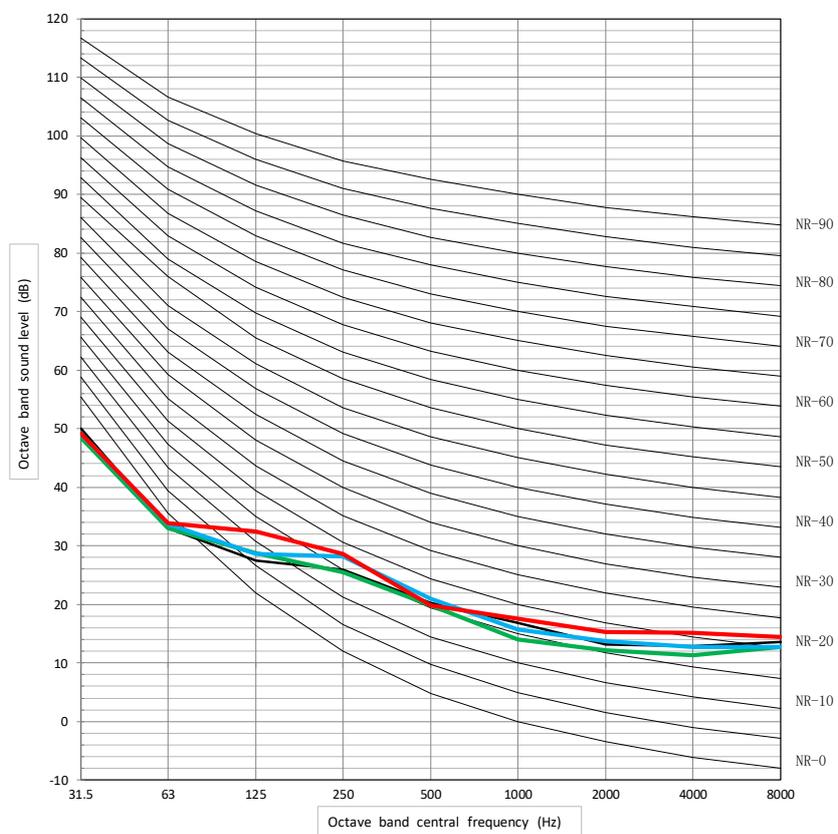
Heating A35W18

— A — B — C — D



Heating A35W7

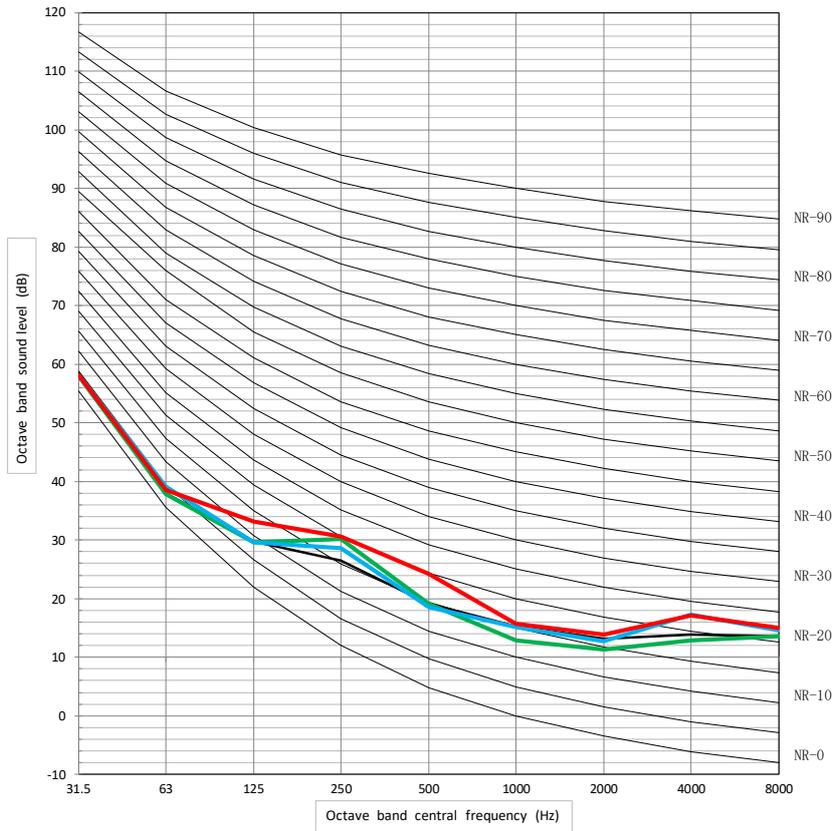
— A — B — C — D



Indoor unit: 240L model + Outdoor unit: 12kW

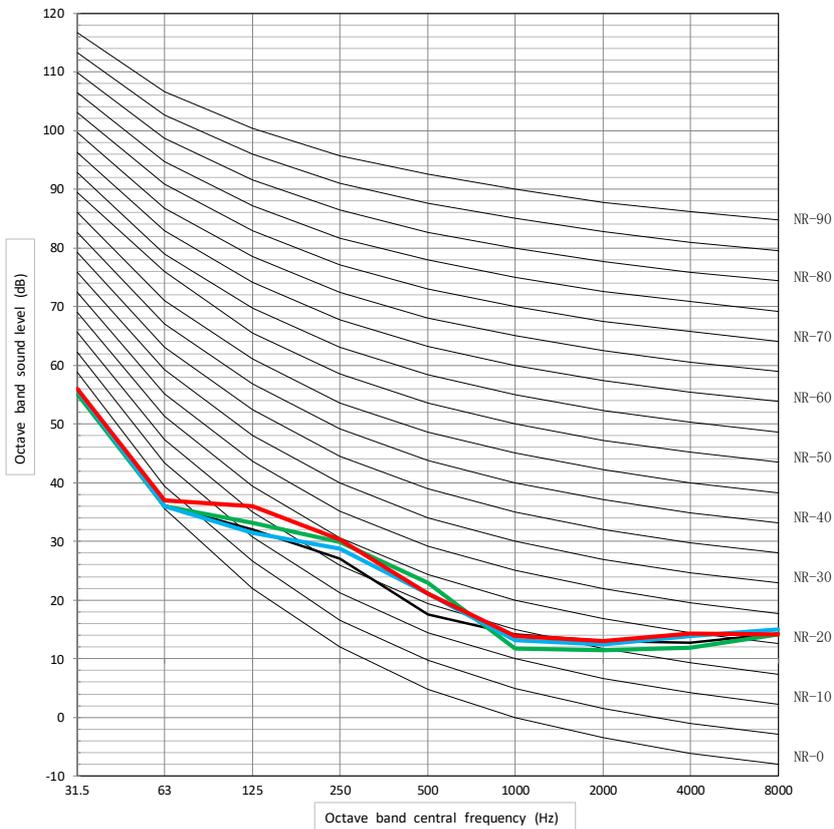
### Heating A7W35

— A — B — C — D



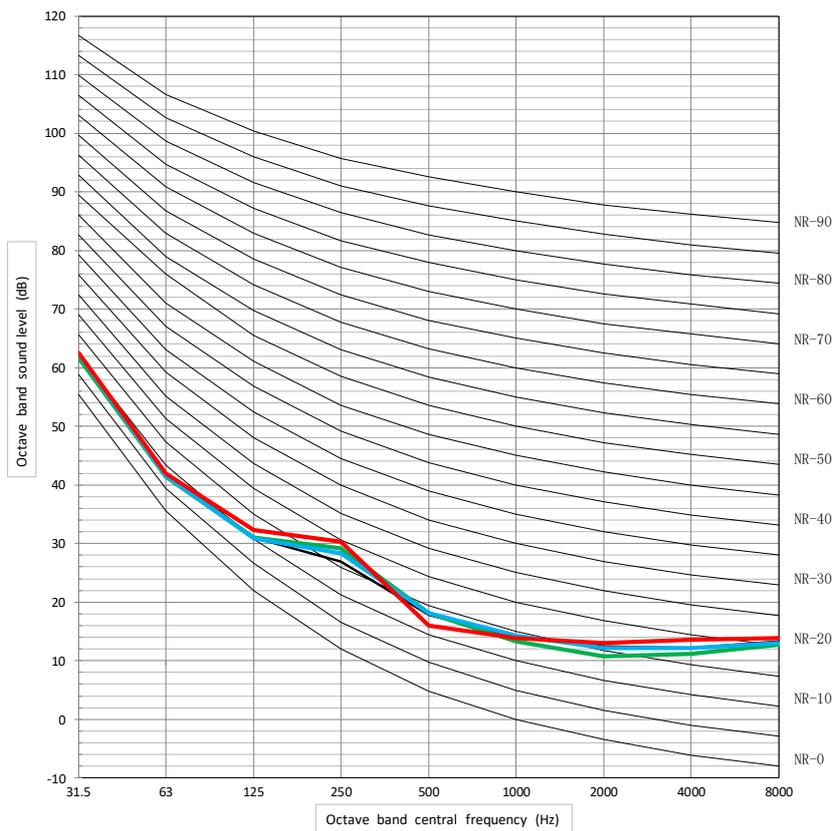
### Heating A7W45

— A — B — C — D



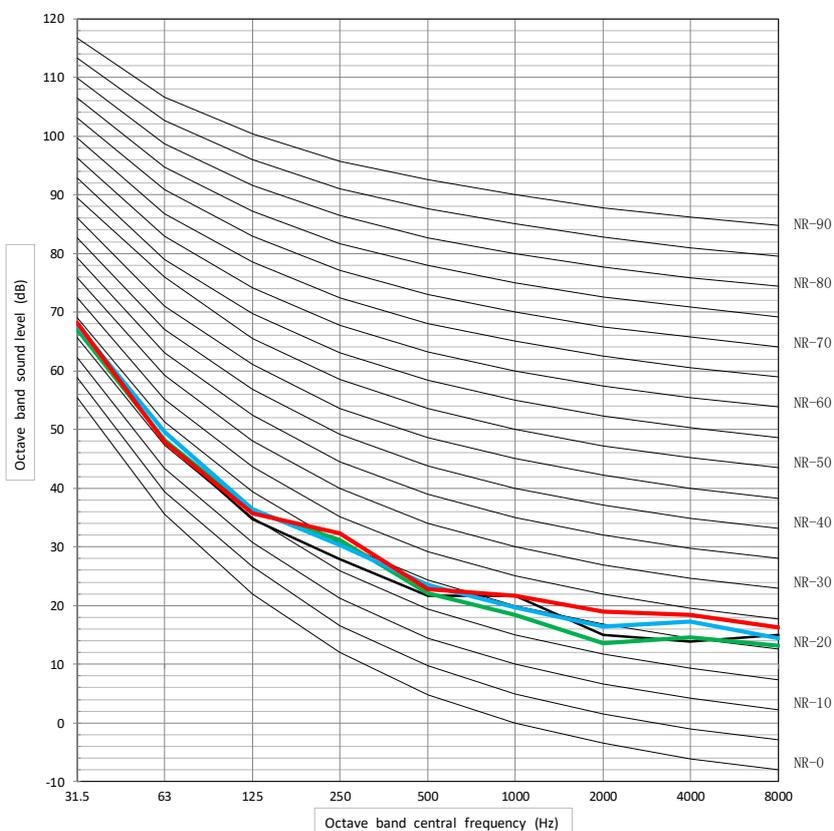
Heating A35W18

— A — B — C — D



Heating A35W7

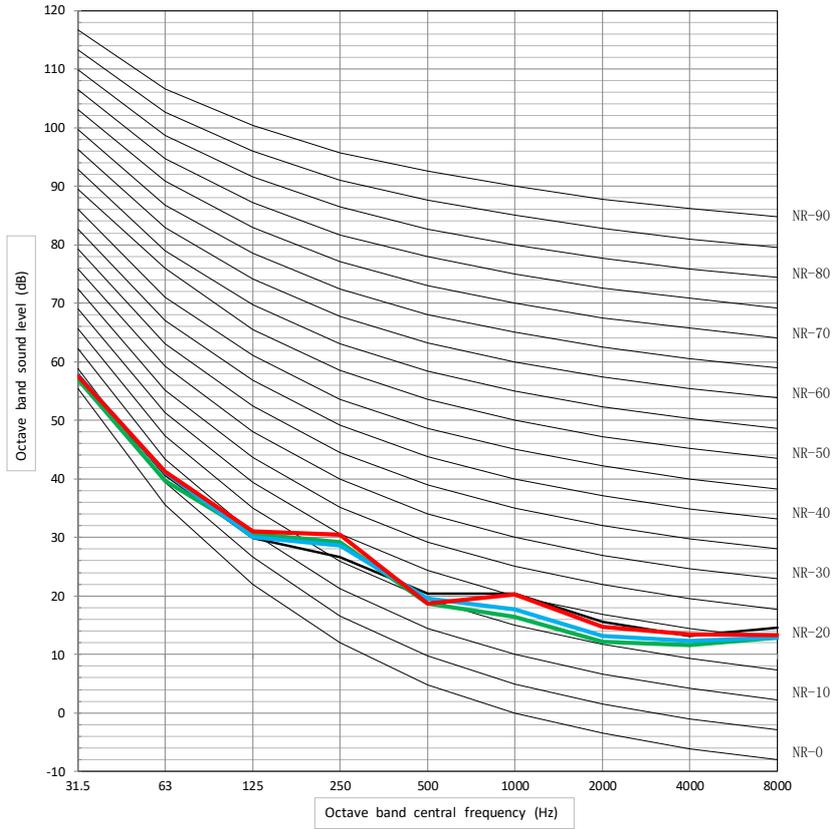
— A — B — C — D



Indoor unit: 240L model + Outdoor unit: 14kW

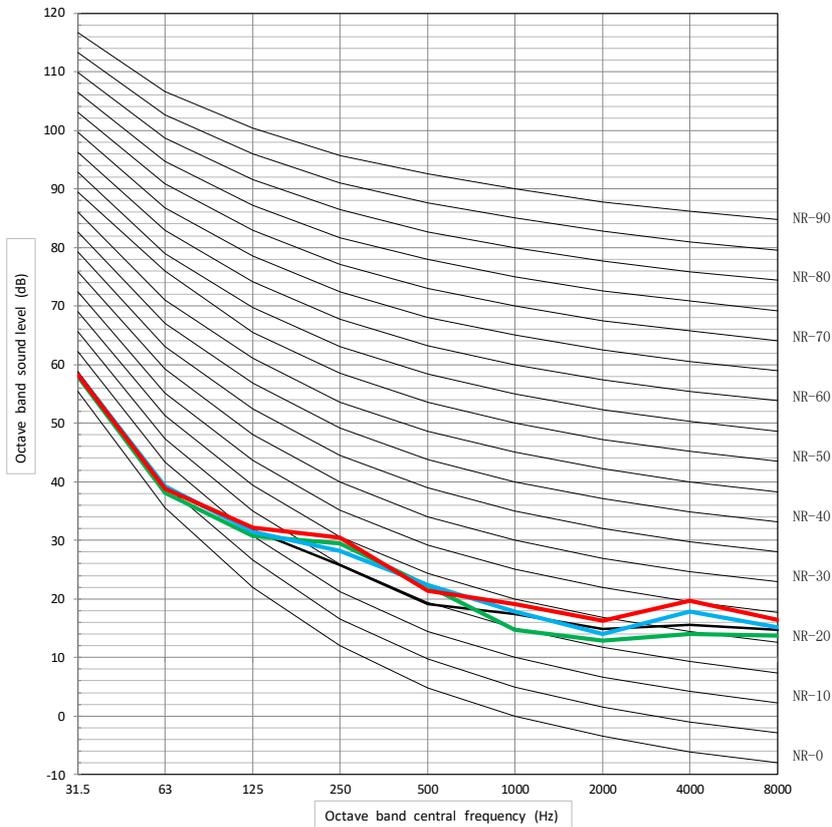
Heating A7W35

— A — B — C — D



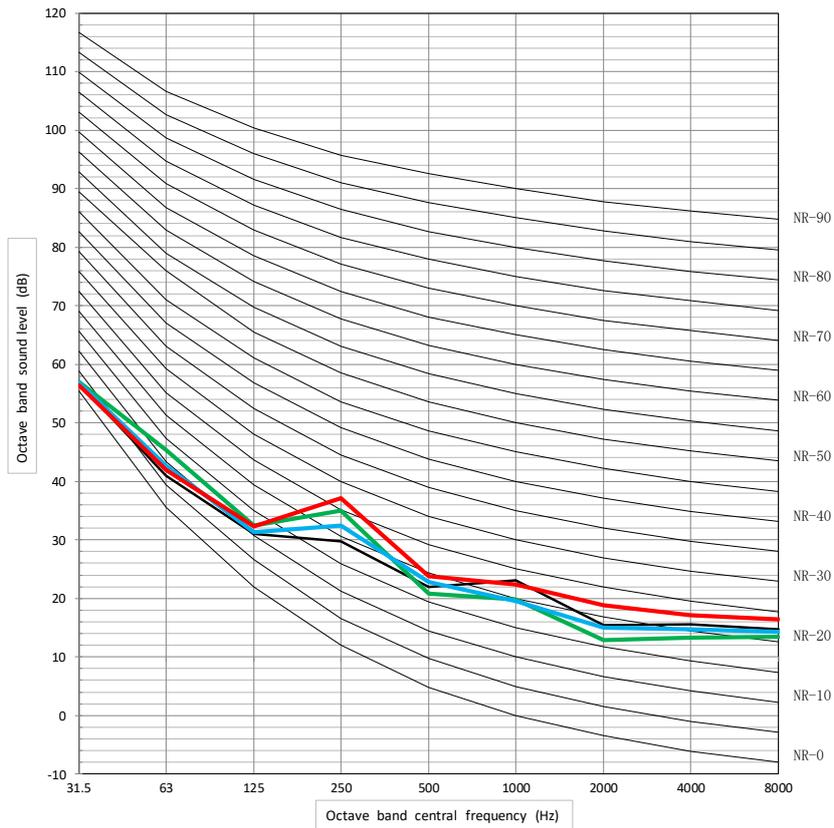
Heating A7W45

— A — B — C — D



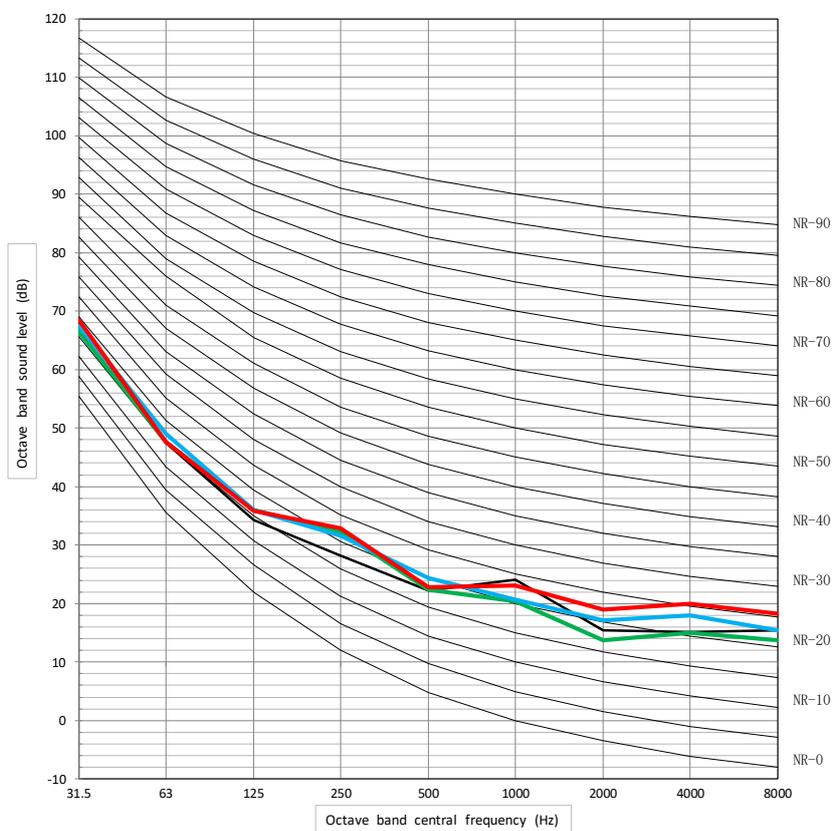
Heating A35W18

— A — B — C — D



Heating A35W7

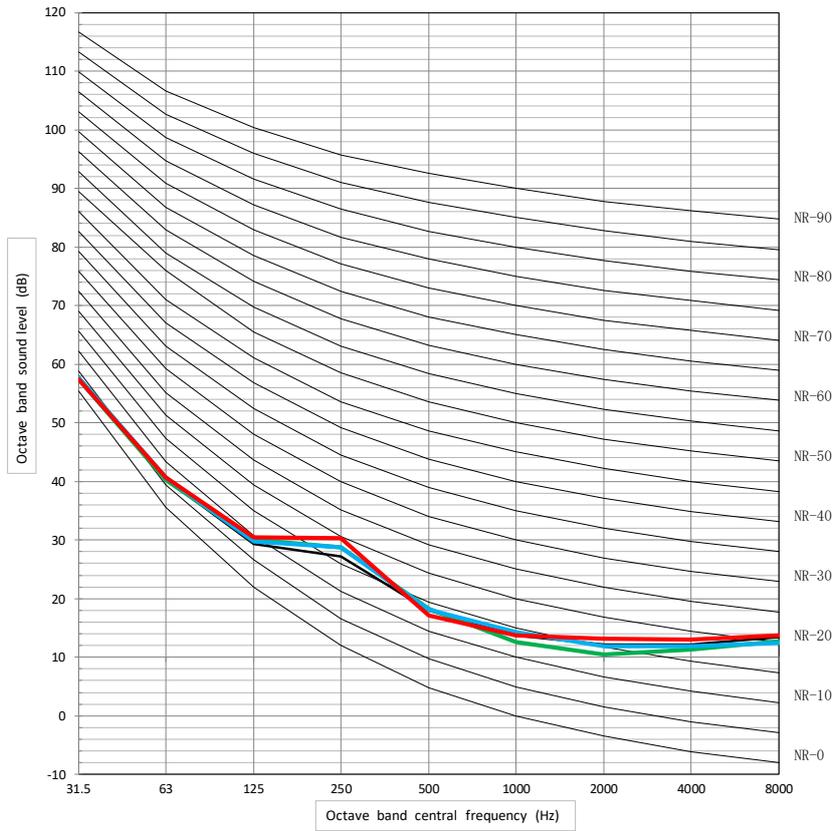
— A — B — C — D



Indoor unit: 240L model + Outdoor unit: 16kW

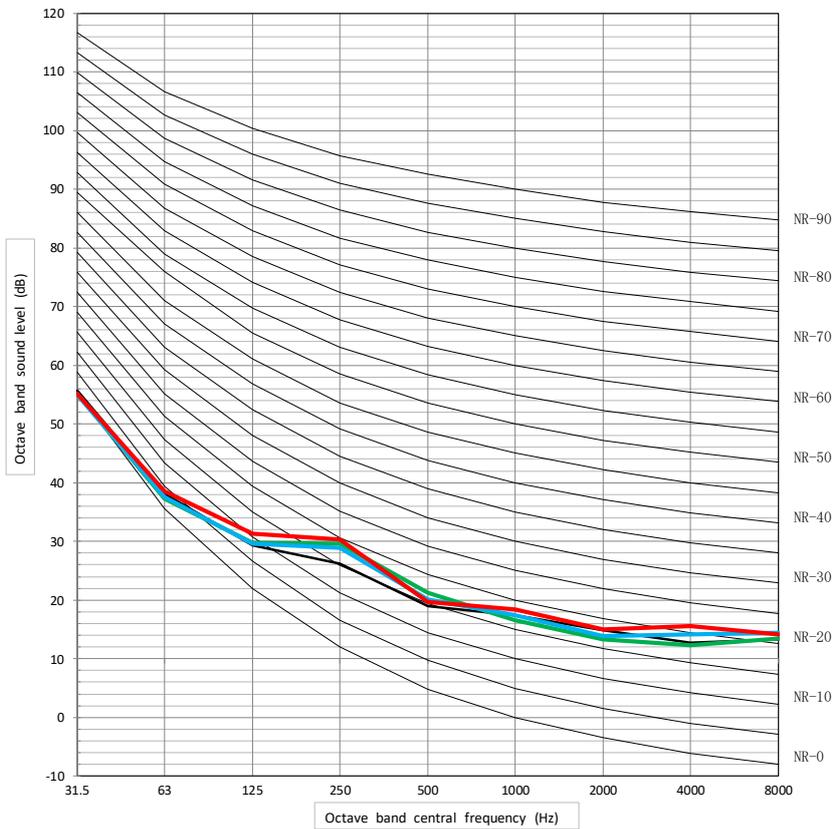
## Heating A7W35

— A — B — C — D



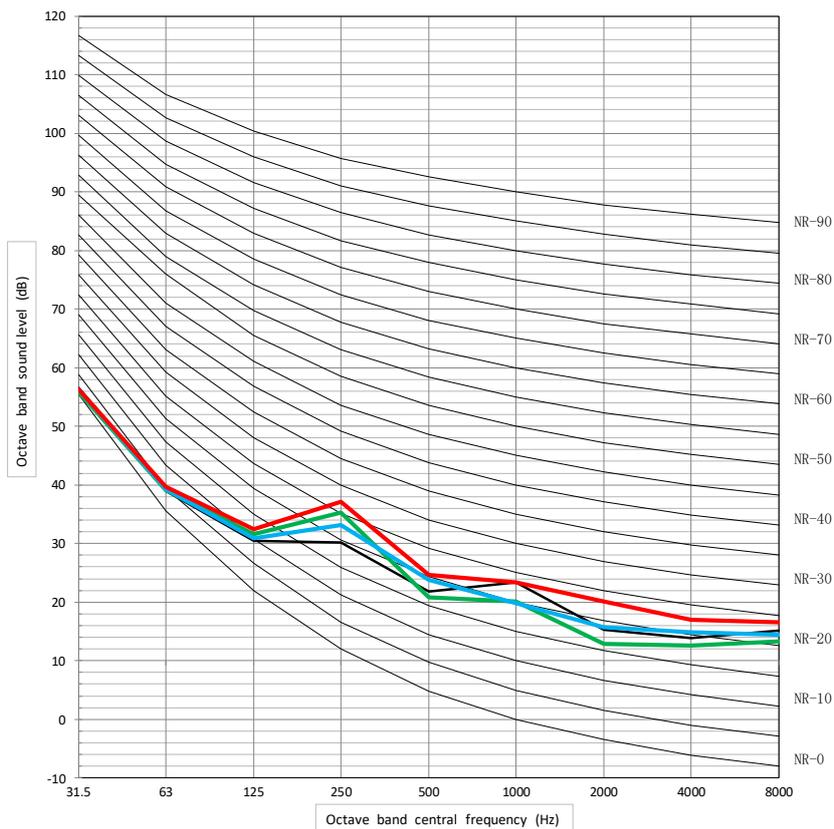
## Heating A7W45

— A — B — C — D



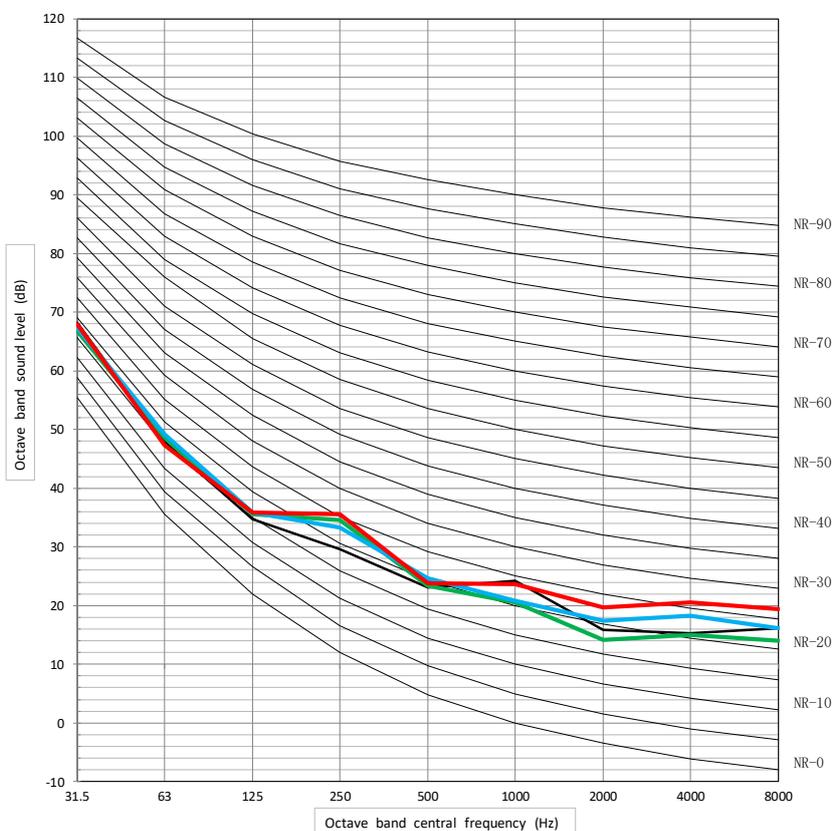
## Heating A35W18

— A — B — C — D



## Heating A35W7

— A — B — C — D



# Part 3

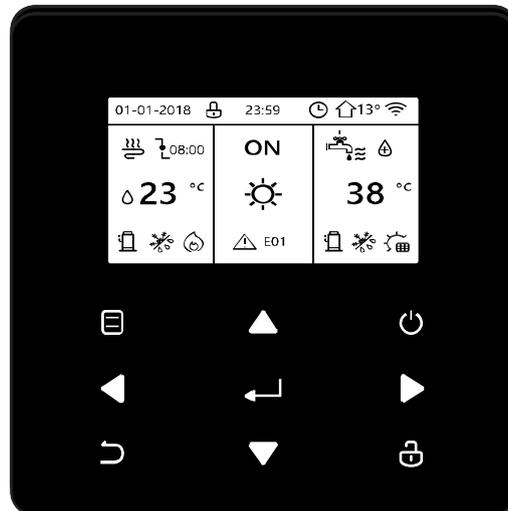
# Field Settings

<b>1 User Interface Field Settings.....</b>	<b>92</b>
<b>2 Operation Parameter Checking .....</b>	<b>111</b>
<b>3 Energy metering.....</b>	<b>112</b>
<b>4 Climate Related Curves .....</b>	<b>114</b>

## 1 User Interface Field Settings

### 1.1 Introduction

During installation, the M thermal 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 user interface. The user interface is integrated design in the hydro module.



Keys	Function
	Menu: Go to the menu structure
	Adjust: Navigate the cursor on the display Navigate in the menu structure Adjust settings
	On/Off Turn on/off the space heating/cooling operation or DHW mode Turn on/off functions in the menu structure
	Back: Come back to the up level
	Unlock: Long press for unlock/lock the controller Unlock /lock some functions such as "DHW temperature adjusting"
	Enter: 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



# M thermal Arctic Split

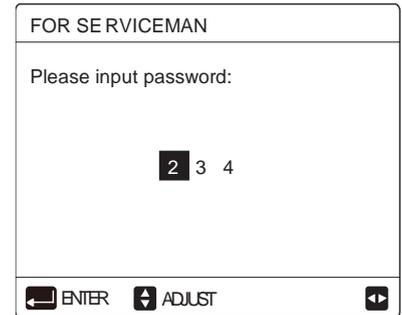
## 1.3 FOR SERVICEMAN Menu

**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. The password is 234.

Then the following pages will be displayed after putting the password.

*FOR SERVICEMAN password screen*



*FOR SERVICEMAN menu*

FOR SERVICEMAN	1/3
<b>1. DHW MODE SETTING</b>	
2. COOL MODE SETTING	
3. HEAT MODE SETTING	
4. AUTO MODE SETTING	
5. TEMP.TYPE SETTING	
6. ROOM THERMOSTAT	
ENTER	ADJUST

FOR SERVICEMAN	2/3
<b>7. OTHER HEATING SOURCE</b>	
8. HOLIDAY AWAY SETTING	
9. SERVICE CALL SETTING	
10. RESTORE FACTORY SETTINGS	
11. TEST RUN	
12. SPECIAL FUNCTION	
ENTER	ADJUST

FOR SERVICEMAN	3/3
<b>13. AUTO RESTART</b>	
14. POWER INPUT LIMITATION	
15. INPUT DEFINE	
16. CASCADE SET	
17. HMI ADDRESS SET	
ENTER	ADJUST

## 1.4 DHW MODE SETTING Menu

### 1.4.1 DHW MODE SETTING menu overview

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

1 DHW MODE SETTING	1/5
1.1 DHW MODE	<b>YES</b>
1.2 DISINFECT	YES
1.3 DHW PRIORITY	YES
1.4 DHW PUMP_D	YES
1.5 DHW PRIORITY TIME SET	NON
ADJUST	

1 DHW MODE SETTING	2/5
1.6 dT5_ON	<b>5</b> °C
1.7 dT1S5	10 °C
1.8 T4DHWMAX	43 °C
1.9 T4DHWMIN	-10 °C
1.10 t_INTERVAL_DHW	5 MIN
ADJUST	

1 DHW MODE SETTING	3/5
1.11 dT5_TBH_OFF	<b>5</b> °C
1.12 T4_TBH_ON	5 °C
1.13 t_TBH_DELAY	30 MIN
1.14 T5S_DISINFECT	65 °C
1.15 t_DI_HIGHTEMP.	15MIN
ADJUST	

1 DHW MODE SETTING	4/5
1.16 t_DI_MAX	<b>210</b> MIN
1.17 t_DHWHP_RESTRICT	30 MIN
1.18 t_DHWHP_MAX	120 MIN
1.19 PUMP_D TIMER	YES
1.20 PUMP_D RUNNING TIME	5 MIN
ADJUST	

1 DHW MODE SETTING	5/5
1.21 PUMP_D DISINFECT RUN	<b>NON</b>
ADJUST	

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

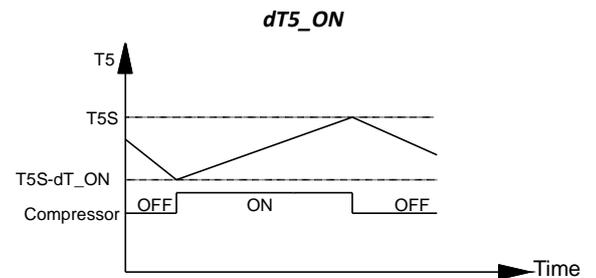
**DHW PUMP PRIORITY TIME SET** set the operation time of DHW during **DHW PRIORITY** mode.

**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  $T5S - T5 \geq dT5\_ON$  the heat pump providing heated water to the DHW tank.

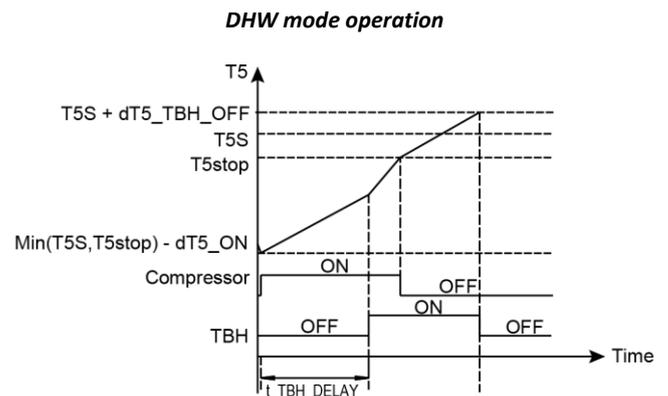
Note: When the heat pump's leaving water temperature is above the DHW mode leaving water temperature operating limit (T5stop), the heat pump does not provide heated water to the DHW tank.

**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  $T1S = T5 + dT1S5$ .

Figure on 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  $T5S + dT5\_TBH\_OFF$ .



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



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 heat pump and AHS/IBH may have different actions.

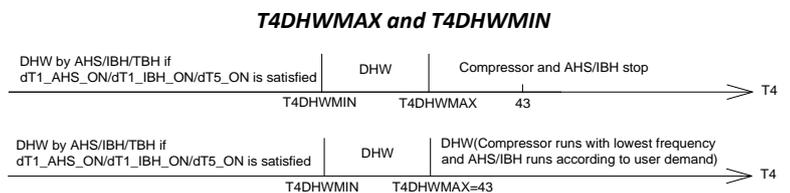
When  $T4DHWMAX \leq T4$  and  $T4DHWMAX < 43$ , both compressor and AHS/IBH stop running.

When  $T4HMAX \leq T4$  and  $T4DHWMAX = 43$ , compressor runs with lowest frequency and AHS/IBH runs according to user demand.

**T4DHWMIN** sets the ambient temperature below which heat pump stops, while AHS/IBH/TBH can run if  $dT1\_AHS\_ON/dT1\_IBH\_ON/dT5\_ON$  is satisfied.

**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



Abbreviations:  
HP: Heat pump  
TBH: DWH tank immersion heater  
AHS: Additional heating source  
IBH: Internal backup heater

## M thermal Arctic Split

temperature ( $T5$ ) below which the immersion is not used. When  $T5 > \text{Min}(T5\text{Stop}+dT5\_TBH\_OFF, 65^\circ\text{C})$ , the immersion heater is off.

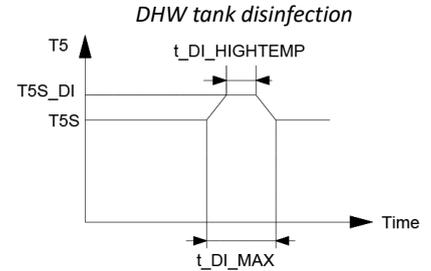
**T4\_TBH\_ON** sets the ambient temperature above which the immersion heater will not be used.

**t\_TBH\_DELAY** sets the delay between the compressor starting and the immersion heater being turned on.

**T5S\_DI** 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.

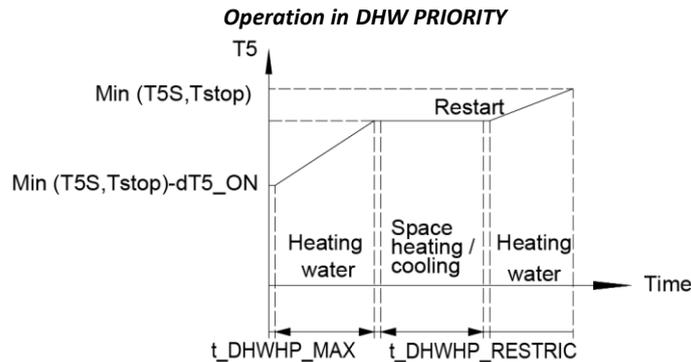


Abbreviations:  
 T5: DHW tank water temperature  
 T5S: DHW set temperature

**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 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.

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



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

**DHW PUMP TIME RUN** 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 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.

**DHW PUMP DI RUN** sets whether or not the DHW pump (field supply) operates during the disinfection mode.

## 1.5 COOL MODE SETTING Menu

MENU > FOR SERVICEMAN > COOL MODE SETTING

2 COOL MODE SETTING	1/3	2 COOL MODE SETTING	2/3	2 COOL MODE SETTING	3/3
2.1 COOL MODE	<b>YES</b>	2.6 dTSC	<b>2°C</b>	2.11 T4C2	<b>25°C</b>
2.2 t_T4_FRESH_C	2.0HRS	2.7 t_INTERVAL_C	5MIN	2.12 ZONE1 C-EMISSION	FCU
2.3 T4CMAX	43°C	2.8 T1SetC1	10°C	2.13 ZONE2 C-EMISSION	FLH
2.4 T4CMIN	20°C	2.9 T1SetC2	16°C		
2.5 dT1SC	5°C	2.10 T4C1	35°C		
↕ ADJUST	↔	↕ ADJUST	↔	↕ 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 mode 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.

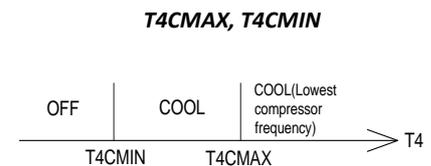
**T4CMIN** sets the ambient temperature below which the heat pump will not operate in cooling mode. The lowest value that **T4CMIN** can take is -5°C, which is the cooling mode lower ambient temperature operating limit of the heat pump.

**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  $T1 - T1S \geq dT1SC$  the heat pump provides chilled water to the space cooling terminals and when  $T1 \leq T1S$  the heat pump does not provide chilled water to the space cooling terminals.

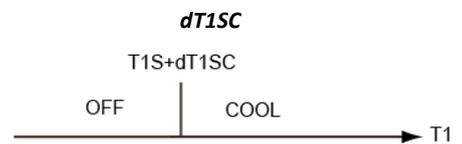
**dTSC** sets the temperature difference between the actual room temperature (Ta) and set room temperature (TS) above which the heat pump provides chilled water to the space cooling terminals. When  $Ta - TS \geq dTSC$  the heat pump provides chilled water to the space cooling terminals and when  $Ta \leq TS$  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. Refer to Part 3, 8.8 “TEMP. TYPE SETTING Menu”.

**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.

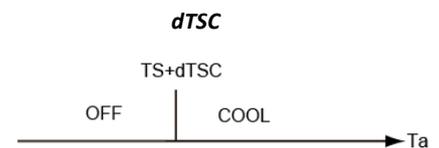
**T1SetC1** sets the temperature 1 of automatic setting curve for cooling mode.



Abbreviations:  
T4: Outdoor ambient temperature



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



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**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**

3 HEAT MODE SETTING 1/3	3 HEAT MODE SETTING 2/3	3 HEAT MODE SETTING 3/3
3.1 HEAT MODE <b>YES</b>	3.6 dTSH <b>2°C</b>	3.11 T4H2 <b>7°C</b>
3.2 t_T4_FRESH_H 2.0HRS	3.7 t_INTERVAL_H 5MIN	3.12 ZONE1 H-EMISSION RAD.
3.3 T4HMAX 16°C	3.8 T1SetH1 35°C	3.13 ZONE2 H-EMISSION FLH
3.4 T4HMIN -15°C	3.9 T1SetH2 28°C	3.14 t_DELAY_PUMP 2MIN
3.5 dT1SH 5°C	3.10 T4H1 -5°C	
ADJUST	ADJUST	ADJUST

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

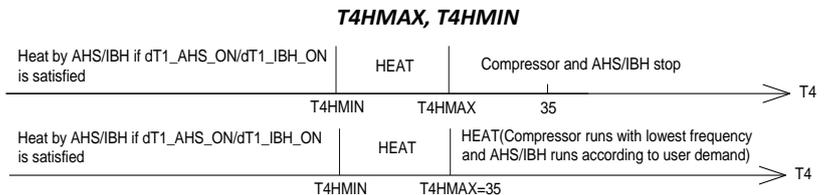
**HEAT MODE** enables or disables heating mode.

**t\_T4\_FRESH\_H** sets the refresh time of heating model climate temperature curve.

**T4HMAX** sets the ambient temperature above which heat pump and AHS/IBH may have different actions.

When  $T4HMAX \leq T4$  and  $T4HMAX < 35$ , both compressor and AHS/IBH stop running.

When  $T4HMAX \leq T4$  and  $T4HMAX = 35$ , compressor runs at lowest frequency and AHS/IBH runs according to user demand.



Abbreviations:  
 T4: Outdoor ambient temperature  
 AHS: Additional heating source  
 IBH: Internal backup heater

**T4HMIN** sets the ambient temperature below which heat pump stops, while AHS/IBH can run if dT1\_AHS\_ON/dT1\_IBH\_ON is satisfied.

**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** 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  $TS - Ta \geq dTSH$  the heat pump provides heated water to the space heating terminals and when  $Ta \geq TS$  the heat pump does not provide heated water to the space heating terminals.



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



# M thermal Arctic Split



## 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.

5 TEMP. TYPE SETTING	
5.1 WATER FLOW TEMP.	YES
5.2 ROOM TEMP.	NON
5.3 DOUBLE ZONE	NON
ADJUST	

When ROOM TEMP. is enabled, the target water flow temperature will be calculated from 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 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 leaving water temperature. If **YES** is selected, the user is able to set the M thermal Split unit's leaving water temperature set temperature on the user interface's main screen.

Only set WATER FLOW TEMP to YES

01-01-2018	23:59	↑13°
 35 °C	ON 	 38 °C

**ROOM TEMP.** sets whether space heating/cooling modes are controlled according to the room temperature detected by the temperature sensor in the M thermal Split 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

01-01-2018	23:59	↑13°
 25.0 °C	ON 	 38

**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 T1S2 (The corresponding T1S2 is calculated according to the climate related curves.)

Set WATER FLOW TEMP. and ROOM TEMP. to YES; Set DOUBLE ZONE to NON or YES

01-01-2018	23:59	↑13°
 35 °C	ON 	 38 °C

01-01-2018	23:59	↑13°
 25.0 °C	ON 	

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.



# M thermal Arctic Split



## 1.10.1 OTHER HEATING SOURCE menu overview

MENU > FOR SERVICEMAN > OTHER HEATING SOURCE

### OTHER HEATING SOURCE menu

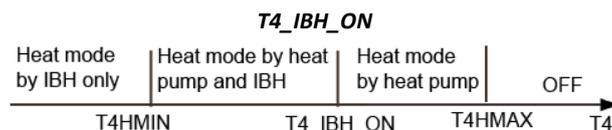
7 OTHER HEATING SOURCE 1/2	7 OTHER HEATING SOURCE 2/2
7.1 dT1_IBH_ON 5°C	7.6 T4_AHS_ON 5°C
7.2 t_IBH_DELAY 30MIN	7.7 IBH LOCATE PIPE LOOP
7.3 T4_IBH_ON -5°C	7.8 P_IBH1 0.0kW
7.4 dT1_AHS_ON 5°C	7.9 P_IBH2 0.0kW
7.5 t_AHS_DELAY 30MIN	7.10 P_TBH 2.0kW
ADJUST	ADJUST

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  $T1S - T1 \geq dT1\_IBH\_ON$  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. The relationship between operation of the backup heater and the ambient is shown on right.

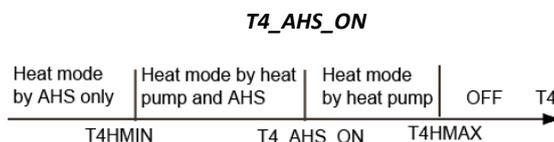


Abbreviations:  
T4: Outdoor ambient temperature  
IBH: Backup electric heater

**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  $T1S - T1 \geq dT1\_ASH\_ON$  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\_AHS\_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.



Abbreviations:  
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.

**T1S\_H.A.\_H** sets the heat pump's leaving water set temperature for space heating mode when in holiday away mode.

**T5S\_H.A.\_DHW** sets the heat pump's leaving water set temperature for DHW mode when in holiday away mode.

*HOLIDAY AWAY SETTING menu*

8 HOLIDAY AWAY SETTING	
8.1 T1S_H.A._H	20°C
8.2 T5S_H.A._DHW	20°C
⏪ ADJUST	⏩

### 1.12 SERVICE CALL Menu

#### MENU > FOR SERVICEMAN > SERVICE CALL

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

**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.

*SERVICE CALL menu*

9 SERVICE CALL SETTING	
PHONE NO.	*****
MOBILE NO.	*****
⏪ CONFIRM	⏩ ADJUST

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*

10 RESTORE FACTORY SETTINGS

All the settings will come back to factory default.  
Do you want to restore factory settings?

NO
YES

⏪ CONFIRM ⏩

10 RESTORE FACTORY SETTINGS

Please wait...

5%

### 1.14 TEST RUN

# M thermal Arctic Split

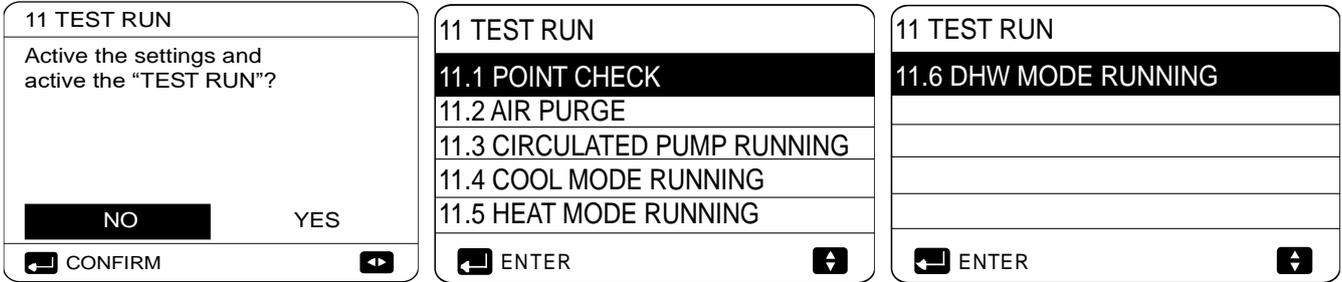


## 1.14.1 TEST RUN Menu overview

MENU > FOR SERVICEMAN > TEST RUN

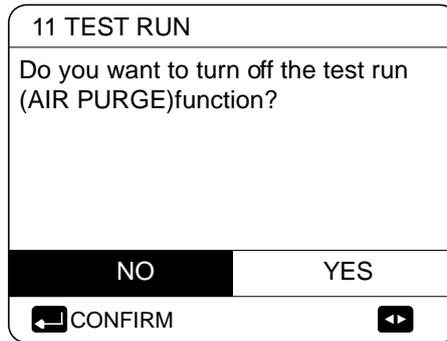
TEST RUN is used to check that the valves, air purge function, circulation pump, space cooling mode, space heating mode and DHW mode are all operating correctly.

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

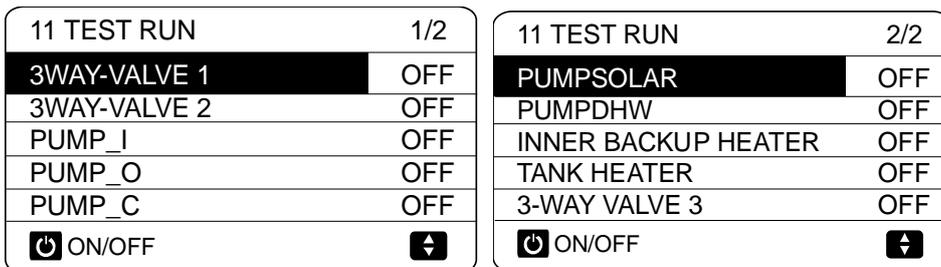


## 1.14.2 POINT CHECK menu

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 hydro system main PCB.

POINT CHECK menu

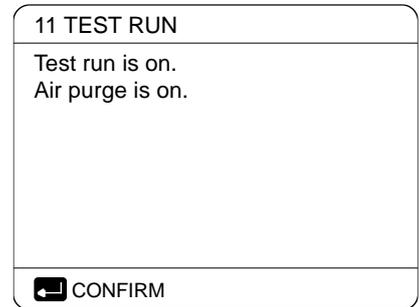


## 1.14.3 AIR PURGE operation

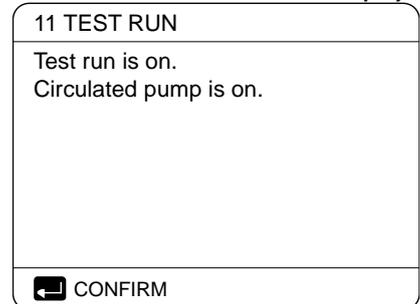
**MENU > FOR SERVICEMAN > TEST RUN > AIR PURGE**

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, the 3-way valve opens and the 2-way 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, the 3-way valve closes and the 2-way 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.

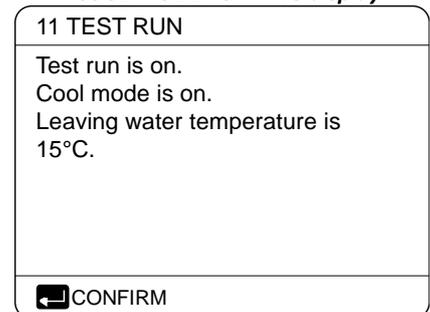
**AIR PURGE operation**

**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 2-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 min. After the pump stops 60s, the 3-way valve closes and the 2-way valve opens. 60s later both PUMI and PUMPO will operate. After a further 2 min 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, 8.2 "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 Split 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. Refer to Part 3, 8.2 "Error Code table".

**1.14.6 HEAT MODE RUNNING operation**

## M thermal Arctic Split

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

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 min later and the heat pump will operate until the water temperature rises to the set temperature or the **next command is received**.

#### *HEAT MODE RUNNING display*

11 TEST RUN

Test run is on.  
Heat mode is on.  
Leaving water temperature is  
15°C.

 CONFIRM

#### *DHW MODE RUNNING display*

11 TEST RUN

Test run is on.  
DHW mode is on.  
Water flow temper. is 45°C  
Water tank temper. is 30°C

 CONFIRM

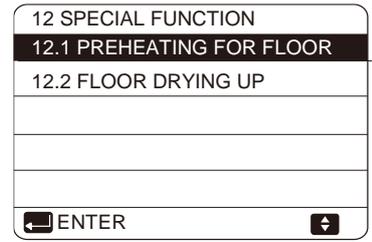
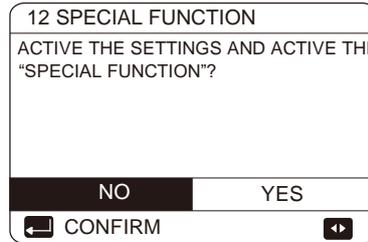
## 1.15 SPECIAL FUNCTION

### 1.15.1 SPECIAL FUNCTION menu overview

**MENU > FOR SERVICEMAN > SPECIAL FUNCTION**

**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.

*Special functions menu*



### 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.

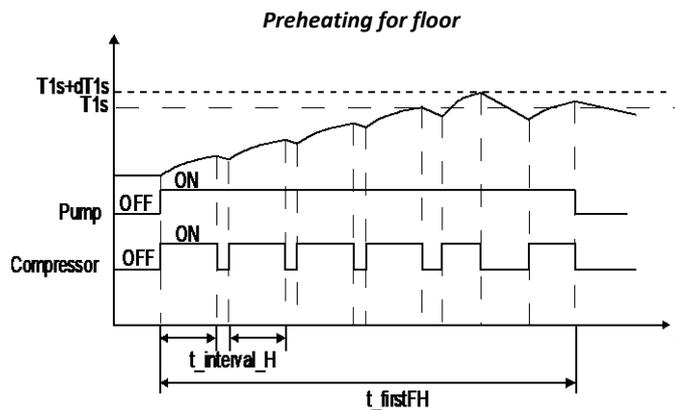
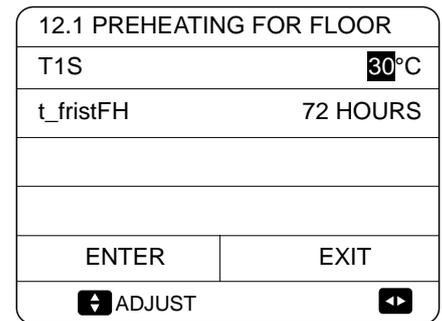
During first operation of the unit, air may remain in the water system which can cause malfunctions during operation. It is necessary to run the air purge function to release the air (make sure the air purge valve is open).

**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.

The operation of the unit during preheating for floor mode is illustrated below.

*Preheating for floor menu*

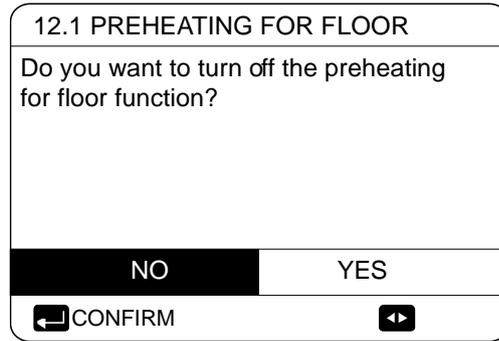
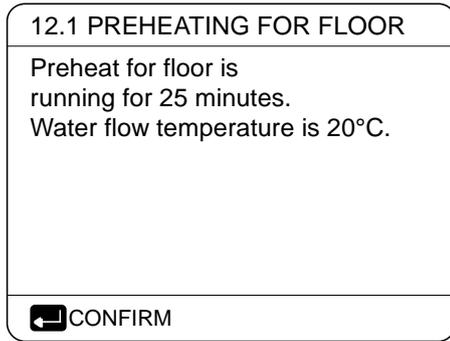


Abbreviations:

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. Refer to below:

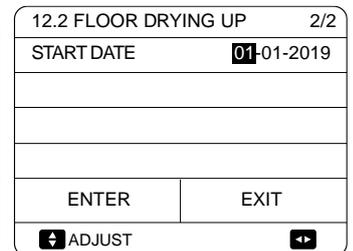
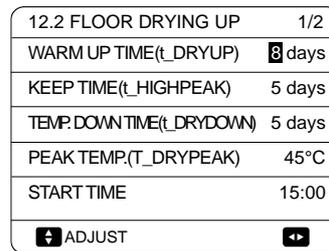
Preheating for floor screens



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

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.

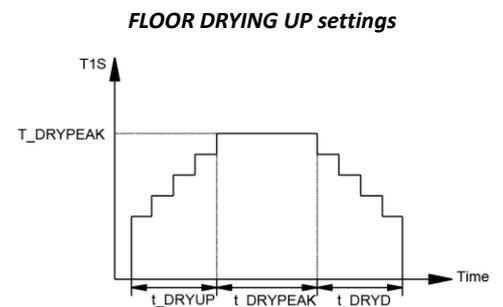
PEAK TEMP(T\_DRYPEAK) sets the heat pump's leaving water set temperature for Phase 2.

START TIME sets the floor drying up operation start time.

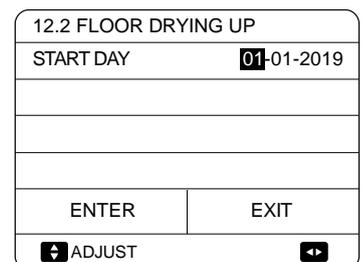
START DATE sets the floor drying up operation start date.

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.



FLOOR DRYING UP screen





## M thermal Arctic Split

**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 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 Checking

### 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	#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 <sup>3</sup> /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.FREQUENCY	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.

ENERGY METERING
HEATING
COOLING
DHW
ENTER

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

ENERGY METERING: HOUR	1/7
PRODUCTION	kW
RE PRODUCTION	kW
CONSUMPTION	kW
COP/EER	

2/7: Cumulative Energy Data

ENERGY METERING: TOTAL	2/7
PRODUCTION	kWh
RE PRODUCTION	kWh
CONSUMPTION	kWh
COP/EER	
OPERATION HOURS	

3/7: Energy Data of the Day

ENERGY METERING: DAY	3/7
PRODUCTION	kWh
RE PRODUCTION	kWh
CONSUMPTION	kWh
COP/EER	

## 4/7: Energy Data of the Week

## 5/7: Energy Data of the Month

## 6/7: Energy Data of the Year

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

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

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.

# M thermal Arctic Split



## 4 Climate Related Curves

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

**WEATHER TEMP.SET menu**

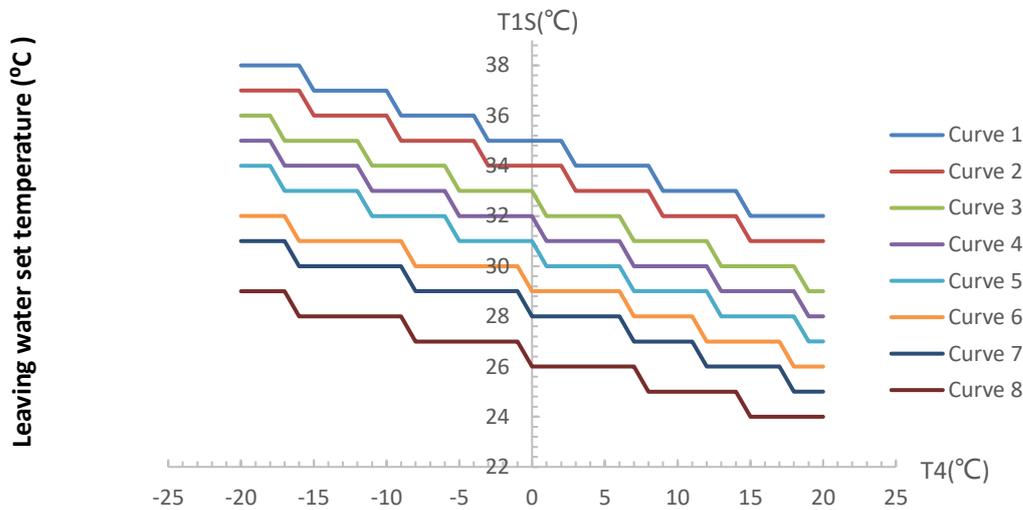
PRE SET TEMPERATURE		
PRESET TEMP	WEATHER TEMPSET	ECO MODE
ZONE1 C-MODE LOW TEMP	OFF	OFF
ZONE1 H-MODE LOW TEMP	OFF	OFF
ZONE2 C-MODE LOW TEMP	OFF	OFF
ZONE2 H-MODE LOW TEMP	OFF	OFF
ON/OFF		↕

In cooling/heating 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.

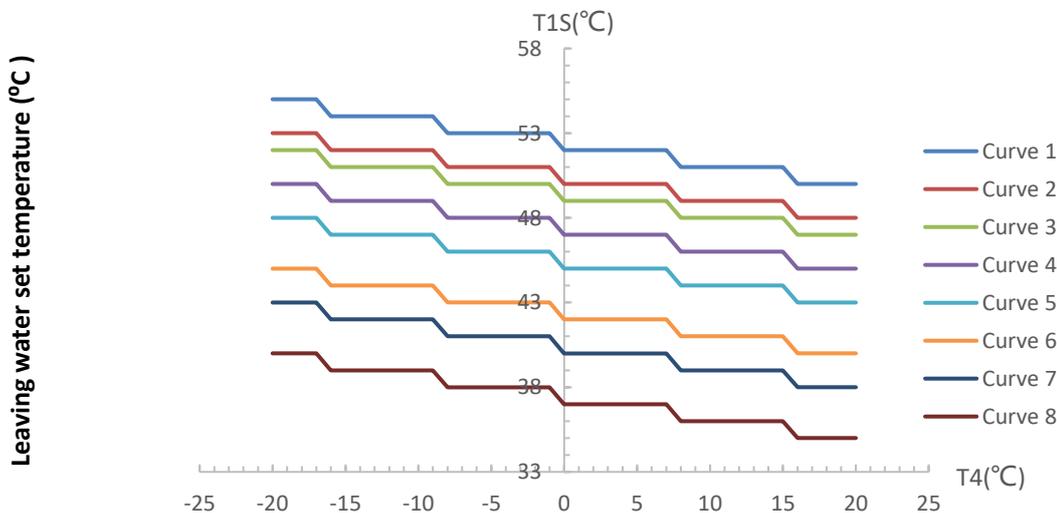
**Low temperature curves for heating mode<sup>1</sup>**



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.

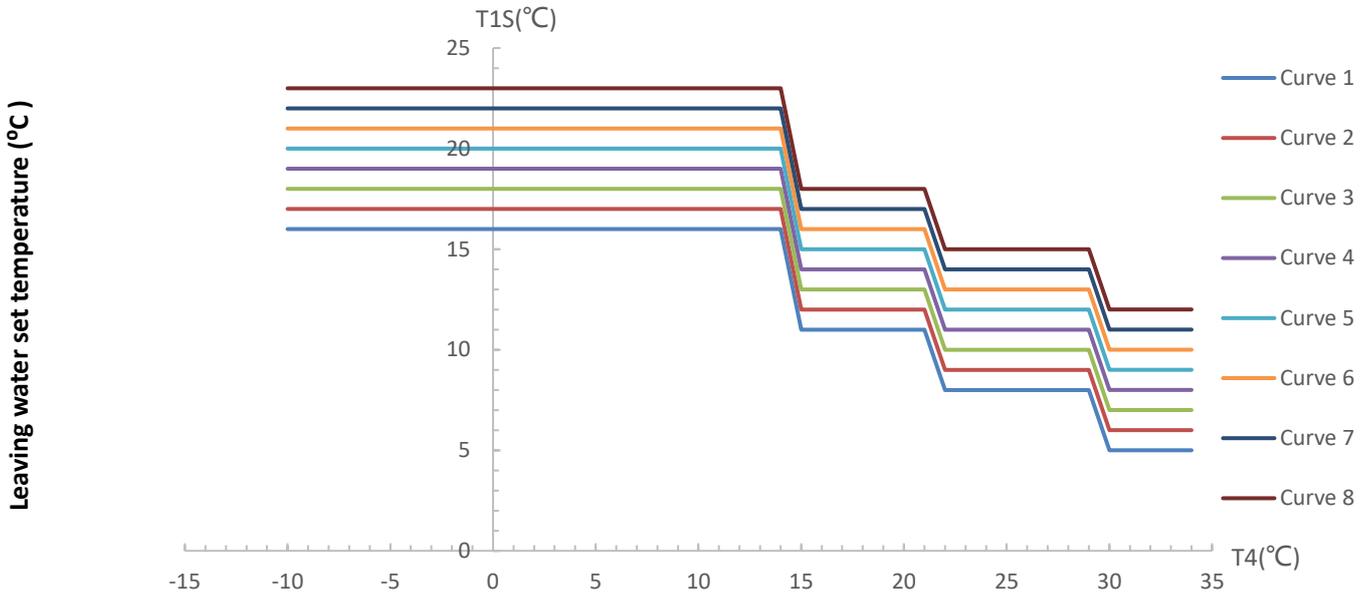
**High temperature curves for heating mode<sup>1</sup>**



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.

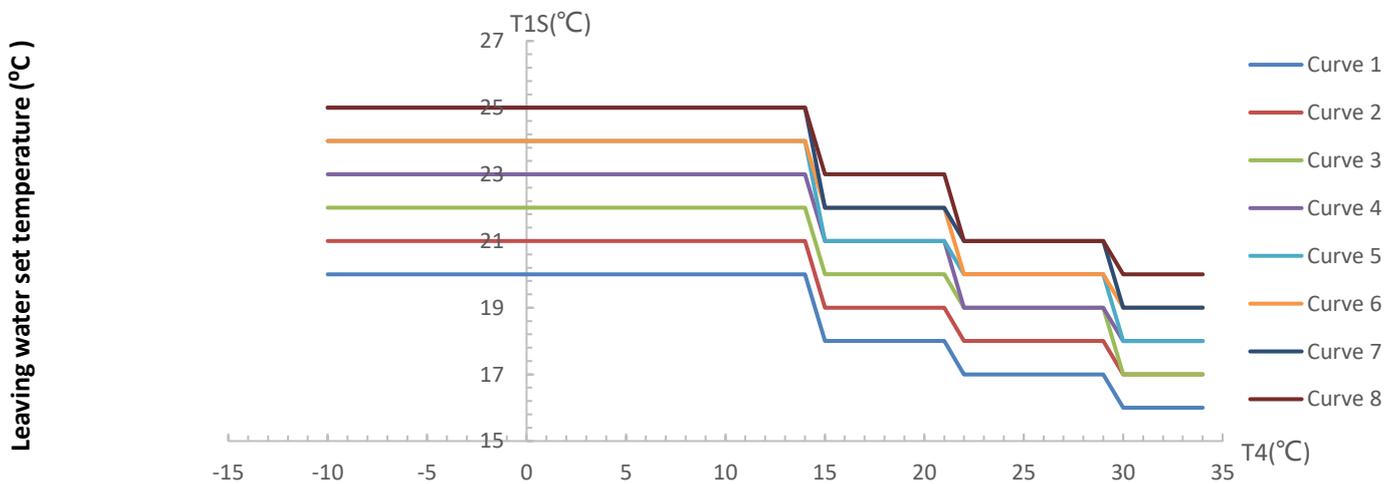
### Low temperature curves for cooling mode<sup>1</sup>



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.

### High temperature curves for cooling mode<sup>1</sup>



Notes:

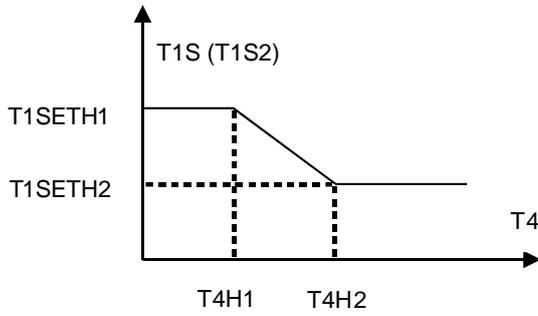
1. It only has the curves of the high temperature setting for cooling, if the high temperature is set for cooling.
2. Curve 4 is default in high temperature cooling mode.

## M thermal Arctic Split

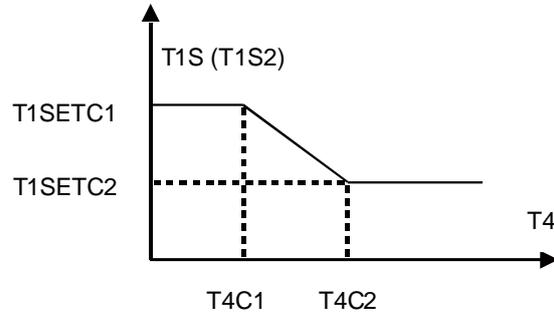


There is one customized curve which can set by user according to using habits. Users just need to input the ambient temperature and desire water temperature for two working condition to build the customized curve. The setting of T1SETH1, T1SETH2, T4H1, T4H2 refer to Part 3, 1.6" HEATING MODE SETTING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