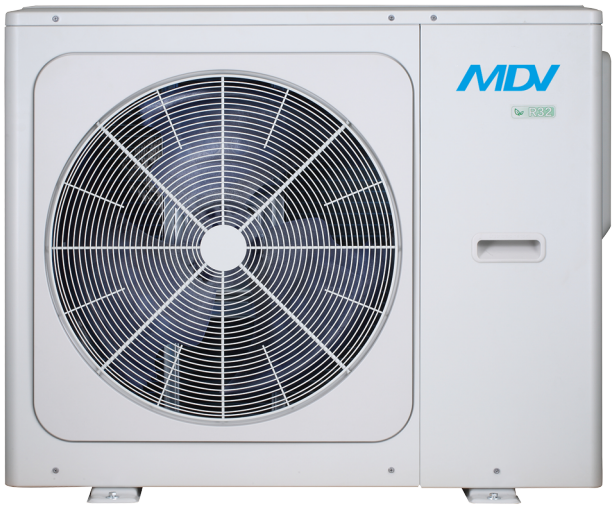
Midea Building Technologies

Engineering Data

Aqua Eco Mini Heat Pump



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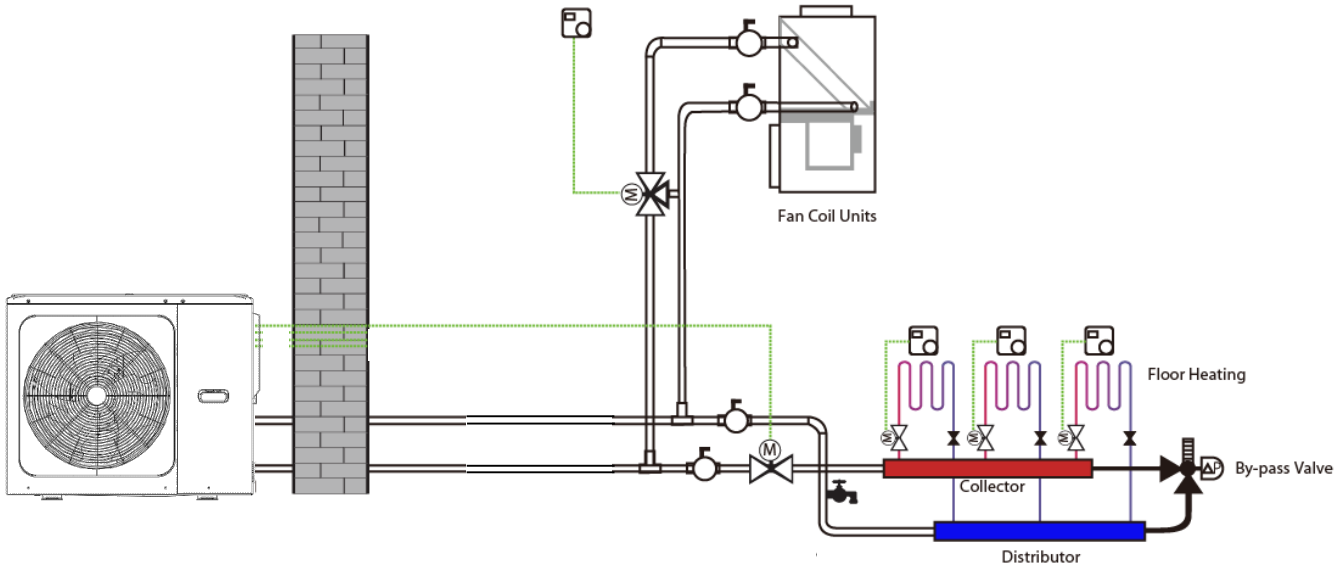
Part 1

General Information

1 Heat pump system

1.1 System Schematic



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

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

1.2 System Configurations

Heat pump can be configured to run with the electric heater either enabled or disabled and can also be used in conjunction with an auxiliary heat source such as a boiler.

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

Configuration 1: Heat pump only

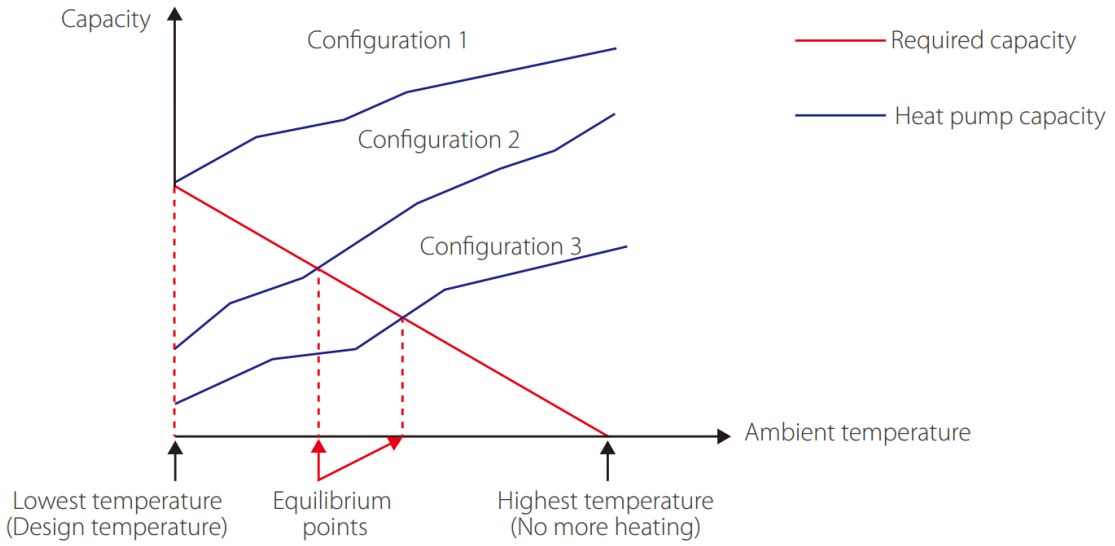
- The heat pump covers the required capacity and no extra heating capacity is necessary.
- Requires selection of larger capacity heat pump and implies higher initial investment.
- Ideal for new construction in projects where energy efficiency is paramount.

Configuration 2: Heat pump and backup electric heater

- Heat pump covers the required capacity until the ambient temperature drops below the point at which the heat pump is able to provide sufficient capacity. When the ambient temperature is below this equilibrium point, the backup electric heater supplies the required additional heating capacity.
- Best balance between initial investment and running costs, results in lowest lifecycle cost.
- Ideal for new construction.

Configuration 3: Heat pump with auxiliary heat source

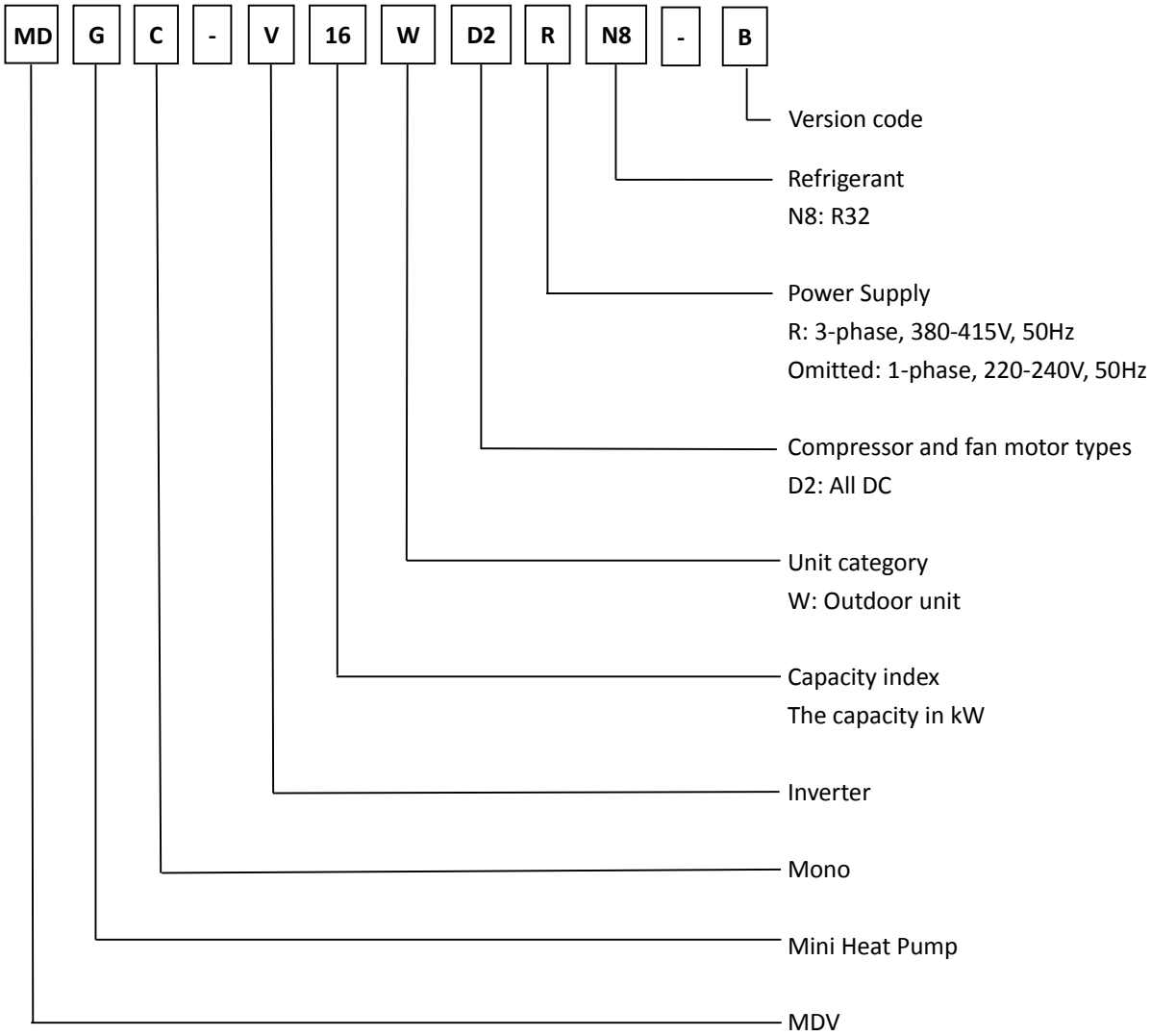
- Heat pump covers the required capacity until the ambient temperature drops below the point at which the heat pump is able to provide sufficient capacity. When the ambient temperature is below this equilibrium point, depending on the system settings, either the auxiliary heat source supplies the required additional heating capacity or the heat pump does not run and the auxiliary heat source covers the required capacity.
- Enables selection of lower capacity heat pump.
- Ideal for refurbishments and upgrades.



2 Product lineup

Model	Power supply(V/Ph/Hz)	Refrigerant	Appearance
MDGC-V5WD2N8-B	220-240/1 /50	R32	
MDGC-V7WD2N8-B	220-240/1 /50	R32	
MDGC-V9WD2N8-B	220-240/1 /50	R32	
MDGC-V12WD2N8-B	220-240/1 /50	R32	
MDGC-V14WD2N8-B	220-240/1 /50	R32	
MDGC-V16WD2N8-B	220-240/1 /50	R32	
MDGC-V12WD2RN8-B	380-415/3/50	R32	
MDGC-V14WD2RN8-B	380-415/3/50	R32	
MDGC-V16WD2RN8-B	380-415/3/50	R32	

3 Nomenclature



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 heat pump unit capacity based on nominal capacity

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

Is corrected heat pump unit capacity ≥ Required total heat load on outdoor units[2]

Yes

Heat pump system selection is complete

No

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 heat pump'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 units which satisfy not only the total heating load requirements but also the total cooling load requirements.

4.2 Heat pump Leaving Water Temperature (LWT) Selection

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

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

4.3 Optimizing System Design

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

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

Part 2

Engineering Data

1 Specifications

Model			MDGC-V5WD2N8-B	MDGC-V7WD2N8-B	MDGC-V9WD2N8-B
Power supply(V/Ph/Hz)			220-240/1/50	220-240/1/50	220-240/1/50
Heating A7W35	Capacity	W	6500	8400	10000
	Rated input	W	1226	1663	2128
	COP		5.30	5.05	4.70
Heating A7W45	Capacity	W	6600	8500	10200
	Rated input	W	1650	2237	2795
	COP		4.00	3.80	3.65
Heating A7W55	Capacity	W	6300	8200	9400
	Rated input	W	1969	2603	3032
	COP		3.20	3.15	3.10
Heating A2W35	Capacity	W	5600	7100	8200
	Rated input	W	1333	1797	2158
	COP		4.20	3.95	3.80
Heating A2W45	Capacity	W	6500	7500	8500
	Rated input	W	2063	2459	2881
	COP		3.15	3.05	2.95
Heating A2W55	Capacity	W	6300	7600	8400
	Rated input	W	2250	2815	3170
	COP		2.80	2.70	2.65
Heating A-7W35	Capacity	W	6200	7100	8000
	Rated input	W	1938	2254	2667
	COP		3.20	3.15	3.00
Heating A-7W45	Capacity	W	6100	6800	7400
	Rated input	W	2346	2720	3083
	COP		2.60	2.50	2.40
Heating A-7W55	Capacity	W	5700	6600	7200
	Rated input	W	2651	3143	3512
	COP		2.15	2.10	2.05
Cooling A35W18	Capacity	W	6500	8300	10000
	Rated input	W	1275	1711	2326
	COP		5.10	4.85	4.30
Cooling A35W7	Capacity	W	5500	7400	9000
	Rated input	W	1692	2349	3103
	COP		3.25	3.15	2.90
Seasonal space heating energy efficiency class	Water outlet at 35°C		A+++	A+++	A+++
	Water outlet at 55°C		A++	A++	A++
SCOP	Warmer climate	35°C	6.78	6.94	7.05
		55°C	4.35	4.74	4.91
	Average climate	35°C	5.12	5.18	5.12
		55°C	3.59	3.67	3.71
	Colder climate	35°C	4.41	4.44	4.44
		55°C	2.90	3.02	3.14

SEER	Water outlet at 35℃		5.09	5.19	5.08
	Water outlet at 55℃		7.81	8.09	8.31
Sound power level[2]	Heating A7W35	dB	60	63	65
	Heating max	dB	64	66	68
	Heating slince mode 1	dB	58	61	63
	Heating slince mode 2	dB	56	58	60
	Cooling A35W18	dB	60	63	65
	Cooling max	dB	64	66	68
	Cooling slince mode1	dB	58	61	63
	Cooling slince mode2	dB	56	58	60
Compressor	Type		DC twin rotary	DC twin rotary	DC twin rotary
Fan	Type		DC motor	DC motor	DC motor
	Number		1	1	1
	Air flow	m^3/h	3900	4500	4500
Air side heat exchanger	Type		Fin coil	Fin coil	Fin coil
Throttle	Type		Electronic expansion valve		
Refrigerant	Type		R32	R32	R32
	Charged volume	kg	1.25	1.25	1.25
Water side heat exchanger	Type		Plate	Plate	Plate
Rated water flow	m^3/h		1.12	1.44	1.72
Water flow range	m^3/h		0.40~1.25	0.40~1.65	0.40~2.10
Water pump	Type		DC	DC	DC
	Maximum pump head	m	9	9	9
Expansion vessel	Volume	L	5	5	5
	Maximum working pressure	bar	8	8	8
Safety valve	MPa		0.3	0.3	0.3
Flow switch	m^3/h		0.36	0.36	0.36
Water side connection			G1"BSP	G1"BSP	G1"BSP
Unit dimension (W×H×D)		mm	865×1040×410	865×1040×410	865×1040×410
Packing dimension (W×H×D)		mm	970×1190×560	970×1190×560	970×1190×560
Net weight		kg	87	87	87
Gross weight		kg	103	103	103
Ambient temperature range	Cooling	℃	-5 ~ 43	-5 ~ 43	-5 ~ 43
	Heating	℃	-25 ~ 35	-25 ~ 35	-25 ~ 35
Water setting temperature range	Cooling	℃	5~25	5~25	5~25
	Heating	℃	25~65	25~65	25~65

Note:

1. The above data test reference standard EN14511; EN14825; EN50564; EN12102; (EU) No:811/2013; (EU)No:813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1

Aqua Eco Mini Heat Pump

Model			MDGC-V12WD2N8-B	MDGC-V14WD2N8-B	MDGC-V16WD2N8-B
Power supply(V/Ph/Hz)			220-240/1/50	220-240/1/50	220-240/1/50
Heating A7W35	Capacity	W	12200	14100	16000
	Rated input	W	2490	3000	3556
	COP		4.90	4.70	4.50
Heating A7W45	Capacity	W	12500	14500	16200
	Rated input	W	3378	4085	4696
	COP		3.70	3.55	3.45
Heating A7W55	Capacity	W	12000	14000	16000
	Rated input	W	4000	4746	5614
	COP		3.00	2.95	2.85
Heating A2W35	Capacity	W	12300	13000	14500
	Rated input	W	3417	3714	4462
	COP		3.60	3.50	3.25
Heating A2W45	Capacity	W	12000	13000	14300
	Rated input	W	4138	4643	5296
	COP		2.90	2.80	2.70
Heating A2W55	Capacity	W	12000	13000	13500
	Rated input	W	5106	5603	5870
	COP		2.35	2.32	230
Heating A-7W35	Capacity	W	11600	12500	13500
	Rated input	W	4070	4464	5000
	COP		2.85	2.80	2.70
Heating A-7W45	Capacity	W	11500	12500	13500
	Rated input	W	4792	5435	6000
	COP		2.40	2.30	2.25
Heating A-7W55	Capacity	W	10800	11700	12800
	Rated input	W	5143	5625	6244
	COP		2.10	2.08	2.05
Cooling A35W18	Capacity	W	12200	13900	15400
	Rated input	W	2652	3159	3667
	COP		4.60	4.40	4.20
Cooling A35W7	Capacity	W	11600	13400	14000
	Rated input	W	3742	4573	4828
	COP		3.10	2.93	2.90
Seasonal space heating energy efficiency class	Water outlet at 35°C		A+++	A+++	A+++
	Water outlet at 55°C		A++	A++	A++
SCOP	Warmer climate	35°C	6.63	6.59	6.46
		55°C	4.55	4.63	4.72
	Average climate	35°C	5.08	4.89	4.84
		55°C	3.62	3.62	3.59
	Colder climate	35°C	4.30	4.36	4.35
		55°C	3.23	3.24	3.18
SEER	Water outlet at 35℃		5.07	5.09	5.11
	Water outlet at 55℃		7.79	7.59	7.49

Sound power level[2]	Heating A7W35	dB	70	72	72
	Heating max	dB	74	74	74
	Heating slince mode 1	dB	66	67	67
	Heating slince mode 2	dB	64	64	64
	Cooling A35W18	dB	69	71	71
	Cooling max	dB	74	74	74
	Cooling slince mode1	dB	66	67	67
	Cooling slince mode2	dB	64	64	64
Compressor	Type		DC twin rotary	DC twin rotary	DC twin rotary
Fan	Type		DC motor	DC motor	DC motor
	Number		1	1	1
	Air flow	m^3/h	5200	5200	5200
Air side heat exchanger	Type		Fin coil	Fin coil	Fin coil
Throttle	Type		Electronic expansion valve		
Refrigerant	Type		R32	R32	R32
	Charged volume	kg	1.8	1.8	1.8
Water side heat exchanger	Type		Plate	Plate	Plate
Rated water flow	m^3/h		2.10	2.43	2.75
Water flow range	m^3/h		0.70~2.50	0.70~2.75	0.70~3.00
Water pump	Type		DC	DC	DC
	Maximum pump head	m	9	9	9
Expansion vessel	Volume	L	5	5	5
	Maximum working pressure	bar	8	8	8
Safety valve	MPa		0.3	0.3	0.3
Flow switch	m^3/h		0.6	0.6	0.6
Water side connection			G5/4"BSP	G5/4"BSP	G5/4"BSP
Unit dimension (W×H×D)		mm	865×1040×410	865×1040×410	865×1040×410
Packing dimension (W×H×D)		mm	970×1190×560	970×1190×560	970×1190×560
Net weight		kg	106	106	106
Gross weight		kg	122	122	122
Ambient temperature range	Cooling	℃	-5 ~ 43	-5 ~ 43	-5 ~ 43
	Heating	℃	-25 ~ 35	-25 ~ 35	-25 ~ 35
Water setting temperature range	Cooling	℃	5~25	5~25	5~25
	Heating	℃	25~65	25~65	25~65

Note:

1. The above data test reference standard EN14511; EN14825; EN50564; EN12102; (EU) No:811/2013; (EU)No:813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1

Aqua Eco Mini Heat Pump

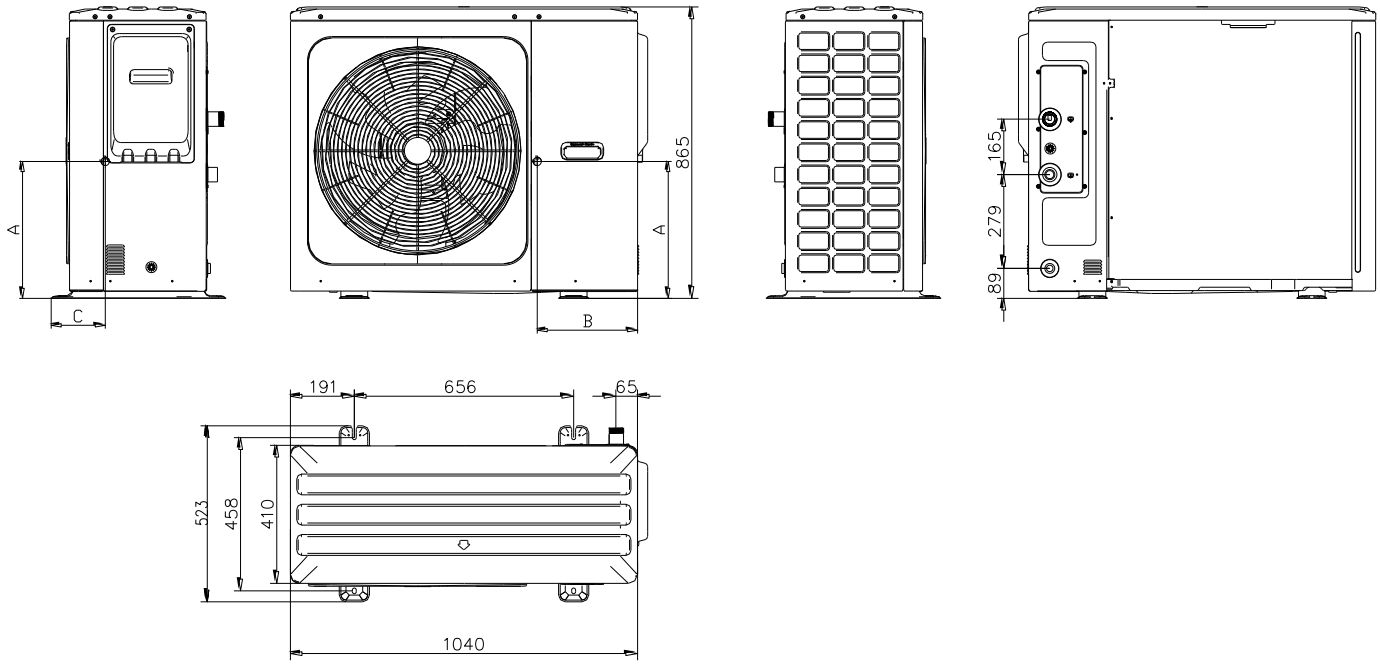
Model			MDGC-V12WD2RN8-B	MDGC-V14WD2RN8-B	MDGC-V16WD2RN8-B
Power supply(V/Ph/Hz)			380-415/3/50	380-415/3/50	380-415/3/50
Heating A7W35	Capacity	W	12200	14100	16000
	Rated input	W	2490	3000	3556
	COP		4.90	4.70	4.50
Heating A7W45	Capacity	W	12500	14500	16200
	Rated input	W	3378	4085	4696
	COP		3.70	3.55	3.45
Heating A7W55	Capacity	W	12000	14000	16000
	Rated input	W	4000	4746	5614
	COP		3.00	2.95	2.85
Heating A2W35	Capacity	W	12300	13000	14500
	Rated input	W	3417	3714	4462
	COP		3.60	3.50	3.25
Heating A2W45	Capacity	W	12000	13000	14300
	Rated input	W	4138	4643	5296
	COP		2.90	2.80	2.70
Heating A2W55	Capacity	W	12000	13000	13500
	Rated input	W	5106	5603	5870
	COP		2.35	2.32	2.30
Heating A-7W35	Capacity	W	11600	12500	13500
	Rated input	W	4070	4464	5000
	COP		2.85	2.80	2.70
Heating A-7W45	Capacity	W	11500	12500	13500
	Rated input	W	4792	5435	6000
	COP		2.40	2.30	2.25
Heating A-7W55	Capacity	W	10800	11700	12800
	Rated input	W	5143	5625	6244
	COP		2.10	2.08	2.05
Cooling A35W18	Capacity	W	12200	13900	15400
	Rated input	W	2652	3159	3667
	COP		4.60	4.40	4.20
Cooling A35W7	Capacity	W	11600	13400	14000
	Rated input	W	3742	4573	4828
	COP		3.10	2.93	2.90
Seasonal space heating energy efficiency class	Water outlet at 35°C		A+++	A+++	A+++
	Water outlet at 55°C		A++	A++	A++
SCOP	Warmer climate	35°C	6.64	6.59	6.46
		55°C	4.55	4.64	4.72
	Average climate	35°C	5.08	4.89	4.84
		55°C	3.62	3.62	3.59
	Colder climate	35°C	4.30	4.36	4.35
		55°C	3.23	3.24	3.18
SEER	Water outlet at 35℃		5.11	5.12	5.14
	Water outlet at 55℃		7.86	7.65	7.54

Sound power level[2]	Heating A7W35	dB	70	72	72
	Heating max	dB	74	74	74
	Heating slince mode 1	dB	66	67	67
	Heating slince mode 2	dB	64	64	64
	Cooling A35W18	dB	69	71	71
	Cooling max	dB	74	74	74
	Cooling slince mode1	dB	66	67	67
	Cooling slince mode2	dB	64	64	64
Compressor	Type		DC twin rotary	DC twin rotary	DC twin rotary
Fan	Type		DC motor	DC motor	DC motor
	Number		1	1	1
	Air flow	m^3/h	5200	5200	5200
Air side heat exchanger	Type		Fin coil	Fin coil	Fin coil
Throttle	Type		Electronic expansion valve		
Refrigerant	Type		R32	R32	R32
	Charged volume	kg	1.8	1.8	1.8
Water side heat exchanger	Type		Plate	Plate	Plate
Rated water flow	m^3/h		2.10	2.43	2.75
Water flow range	m^3/h		0.70~2.50	0.70~2.75	0.70~3.00
Water pump	Type		DC	DC	DC
	Maximum pump head	m	9	9	9
Expansion vessel	Volume	L	5	5	5
	Maximum working pressure	bar	8	8	8
Safety valve	MPa		0.3	0.3	0.3
Flow switch	m^3/h		0.6	0.6	0.6
Water side connection			G5/4"BSP	G5/4"BSP	G5/4"BSP
Unit dimension (W×H×D)		mm	865×1040×410	865×1040×410	865×1040×410
Packing dimension (W×H×D)		mm	970×1190×560	970×1190×560	970×1190×560
Net weight		kg	120	120	120
Gross weight		kg	136	136	136
Ambient temperature range	Cooling	℃	-5 ~ 43	-5 ~ 43	-5 ~ 43
	Heating	℃	-25 ~ 35	-25 ~ 35	-25 ~ 35
Water setting temperature range	Cooling	℃	5~25	5~25	5~25
	Heating	℃	25~65	25~65	25~65

Note:

1. The above data test reference standard EN14511; EN14825; EN50564; EN12102; (EU) No:811/2013; (EU)No:813/2013; OJ 2014/C 207/02.
2. Sound power test condition：EN12102-1

2 Dimensions and Center of Gravity

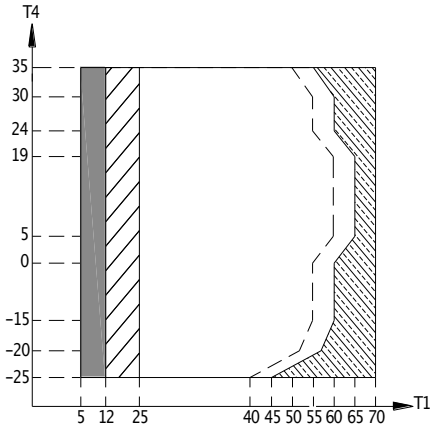


Unit： mm

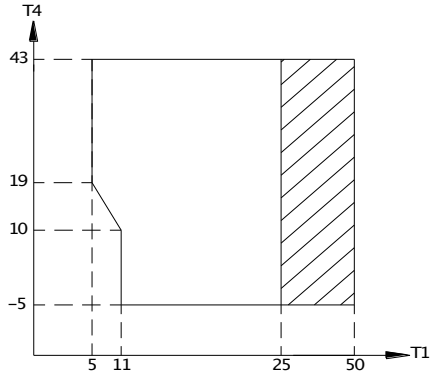
Model	A	B	C
MDGC-V5WD2N8-B MDGC-V7WD2N8-B MDGC-V9WD2N8-B	350	355	285
MDGC-V12WD2N8-B MDGC-V14WD2N8-B MDGC-V16WD2N8-B	540	390	255
MDGC-V12WD2RN8-B MDGC-V14WD2RN8-B MDGC-V16WD2RN8-B	500	400	275

3 Operating Limits

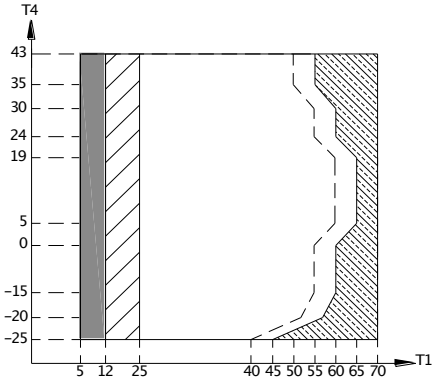
Heating operating limits



Cooling operating limits



Domestic hot water operating limits



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

Notes:

If IBH/AHS setting is valid, only IBH/AHS turns on;

If IBH/AHS setting is invalid, only heat pump turns on, limitation and protection may occur.

Heat pump turns off, only IBH/AHS turns on.

(IBH can heat the water temperature up to 65℃, AHS can heat the water temperature up to 70℃)

Operation range by heat pump with possible limitation and protection

Maximum inlet water temperature line for heat pump operation

4 Capactiy Tables

4.1 Heating Capacity Tables (Test standard：EN14511)

Part load: Maximum

MDGC-V5WD2N8-B

DB	LWT																										
	25			30			35			40			45			50			55			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	3.78	1.58	2.39	3.77	1.69	2.23	3.76	1.80	2.09	3.73	1.92	1.94	3.69	2.05	1.80	/	/	/	/	/	/	/	/	/	/	/	/
-20	4.59	1.72	2.67	4.58	1.85	2.48	4.56	1.97	2.32	4.50	2.09	2.15	4.46	2.24	1.99	4.40	2.39	1.84	4.37	2.50	1.75	/	/	/	/	/	/
-15	5.50	1.84	2.99	5.48	1.99	2.76	5.45	2.12	2.57	5.39	2.26	2.38	5.31	2.42	2.19	5.24	2.58	2.03	5.21	2.73	1.91	5.01	2.83	1.77	/	/	/
-10	6.53	1.94	3.37	6.50	2.10	3.10	6.46	2.25	2.87	6.38	2.43	2.63	6.28	2.60	2.42	6.17	2.78	2.22	6.02	2.87	2.10	5.66	2.92	1.94	/	/	/
-7	6.79	1.82	3.73	6.73	1.97	3.41	6.64	2.13	3.12	6.54	2.29	2.85	6.44	2.47	2.61	6.33	2.65	2.39	6.28	2.80	2.24	5.89	2.85	2.07	/	/	/
-5	7.01	1.79	3.92	6.95	1.95	3.56	6.85	2.11	3.24	6.75	2.28	2.96	6.65	2.46	2.70	6.51	2.64	2.47	6.32	2.72	2.32	5.76	2.68	2.15	/	/	/
-2	7.23	1.70	4.26	7.19	1.87	3.84	7.08	2.03	3.48	6.97	2.21	3.15	6.85	2.40	2.85	6.71	2.58	2.60	6.50	2.67	2.43	6.04	2.70	2.24	/	/	/
0	7.42	1.64	4.52	7.38	1.82	4.05	7.28	2.00	3.64	7.16	2.18	3.28	7.03	2.37	2.97	6.88	2.56	2.69	6.67	2.66	2.51	6.18	2.66	2.32	/	/	/
2	7.43	1.54	4.84	7.40	1.72	4.31	7.29	1.89	3.85	7.17	2.08	3.45	7.03	2.27	3.10	6.87	2.45	2.80	6.81	2.43	2.80	6.30	2.64	2.39	/	/	/
5	8.13	1.44	5.65	8.06	1.62	4.97	7.97	1.81	4.41	7.91	2.00	3.96	7.82	2.20	3.56	7.72	2.40	3.21	7.65	2.58	2.97	7.25	2.69	2.70	6.64	2.70	2.46
7	8.48	1.37	6.20	8.44	1.56	5.41	8.47	1.69	5.00	8.31	1.96	4.25	8.14	2.11	3.85	7.94	2.35	3.38	7.87	2.46	3.20	7.23	2.56	2.82	6.79	2.66	2.55
10	9.00	1.24	7.28	8.86	1.43	6.20	8.71	1.63	5.36	8.54	1.82	4.68	8.35	2.03	4.12	8.14	2.23	3.65	8.07	2.42	3.34	7.35	2.44	3.01	6.40	2.36	2.71
12	9.25	1.16	8.00	9.09	1.35	6.73	8.94	1.55	5.75	8.76	1.76	4.99	8.56	1.96	4.36	8.34	2.17	3.85	8.23	2.35	3.50	7.48	2.38	3.14	6.73	2.40	2.81
15	9.29	1.00	9.30	9.14	1.19	7.65	8.97	1.40	6.43	8.78	1.60	5.50	8.57	1.80	4.76	8.35	2.01	4.16	8.28	2.21	3.75	7.47	2.23	3.35	7.22	2.42	2.98
20	8.77	0.81	10.8	8.62	0.95	9.08	8.44	1.16	7.28	8.25	1.32	6.23	8.05	1.43	5.64	7.82	1.62	4.83	7.74	1.81	4.28	7.49	2.05	3.65	/	/	/
25	9.51	0.82	11.6	9.33	0.88	10.6	9.14	1.13	8.12	8.92	1.28	6.99	8.70	1.44	6.03	8.44	1.59	5.30	8.34	1.81	4.61	8.06	2.10	3.83	/	/	/
30	9.80	0.79	12.5	9.61	0.84	11.4	9.40	1.05	8.96	9.17	1.19	7.71	8.93	1.34	6.66	8.65	1.51	5.72	8.53	1.77	4.83	8.23	2.08	3.95	/	/	/
35	/	/	/	10.7	0.88	12.1	10.4	1.05	9.89	10.2	1.21	8.43	9.90	1.40	7.08	9.60	1.61	5.95	9.54	1.87	5.10	/	/	/	/	/	/

MDGC-V7WD2N8-B

DB	LWT																										
	25			30			35			40			45			50			55			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	4.24	1.81	2.34	4.23	1.94	2.18	4.21	2.05	2.05	4.17	2.18	1.91	4.13	2.33	1.77	/	/	/	/	/	/	/	/	/	/	/	/
-20	5.14	1.98	2.6	5.12	2.11	2.43	5.1	2.25	2.27	5.05	2.39	2.11	4.99	2.55	1.96	4.91	2.71	1.81	4.88	2.80	1.74	/	/	/	/	/	/
-15	6.17	2.11	2.92	6.13	2.26	2.71	6.1	2.42	2.52	6.03	2.59	2.33	5.95	2.77	2.15	5.85	2.94	1.99	5.74	3.04	1.89	5.23	2.95	1.77	/	/	/
-10	7.31	2.22	3.29	7.28	2.40	3.03	7.22	2.57	2.81	7.13	2.76	2.58	7.03	2.95	2.38	6.79	3.10	2.19	6.65	3.20	2.08	6.15	3.19	1.93	/	/	/
-7	7.8	2.15	3.62	7.71	2.32	3.32	7.61	2.50	3.05	7.51	2.69	2.79	7.39	2.89	2.56	7.12	3.03	2.35	6.96	3.14	2.22	6.54	3.19	2.05	/	/	/
-5	8.14	2.14	3.8	8.06	2.32	3.47	7.96	2.51	3.17	7.84	2.71	2.89	7.71	2.92	2.64	7.35	3.02	2.43	7.18	3.14	2.29	6.46	3.03	2.13	/	/	/
-2	8.37	2.03	4.12	8.31	2.22	3.74	8.2	2.42	3.39	8.07	2.63	3.07	7.92	2.83	2.8	7.76	3.04	2.55	7.59	3.18	2.39	6.64	2.99	2.22	/	/	/
0	8.61	1.98	4.35	8.57	2.19	3.92	8.45	2.39	3.54	8.31	2.59	3.21	8.17	2.82	2.9	8	3.03	2.64	7.8	3.15	2.48	6.8	2.97	2.29	/	/	/
2	8.67	1.87	4.63	8.65	2.08	4.15	8.52	2.29	3.72	8.38	2.49	3.36	8.22	2.71	3.03	8.22	3.00	2.74	8	3.13	2.56	6.95	2.94	2.36	/	/	/
5	9.49	1.78	5.34	9.42	1.98	4.76	9.31	2.19	4.25	9.19	2.39	3.84	9.1	2.63	3.46	8.99	2.87	3.13	8.98	3.10	2.9	7.94	2.97	2.67	7.3	2.99	2.44
7	9.73	1.65	5.89	9.68	1.87	5.19	9.72	2.05	4.75	9.48	2.30	4.13	9.28	2.51	3.69	9.08	2.75	3.3	9.06	2.97	3.05	8.18	2.94	2.78	7.5	2.95	2.54
10	10.1	1.45	6.95	9.94	1.66	5.98	9.77	1.88	5.2	9.57	2.09	4.57	9.37	2.32	4.04	9.15	2.55	3.59	9.12	2.77	3.29	8.14	2.71	3	7.66	2.84	2.7
12	10.4	1.36	7.64	10.2	1.57	6.5	10.1	1.79	5.6	9.86	2.02	4.87	9.64	2.25	4.28	9.4	2.48	3.79	9.37	2.71	3.46	8.34	2.66	3.13	7.76	2.77	2.8
15	10.2	1.13	9.05	10.1	1.35	7.49	9.89	1.56	6.33	9.69	1.78	5.43	9.46	2.00	4.72	9.23	2.23	4.13	9.19	2.46	3.74	8.92	2.68	3.33	8.02	2.71	2.96
20	9.85	0.98	10.1	9.66	1.11	8.71	9.48	1.34	7.06	9.27	1.52	6.09	9.05	1.70	5.31	8.81	1.93	4.56	8.71	2.15	4.05	8.43	2.27	3.72	/	/	/
25	9.51	0.87	10.9	9.33	0.97	9.65	9.14	1.16	7.88	8.93	1.31	6.8	8.7	1.49	5.85	8.45	1.68	5.02	8.34	1.90	4.4	8.06	2.07	3.9	/	/	/
30	10.7	0.92	11.7	10.5	1.00	10.5	10.3	1.20	8.56	10.0	1.35	7.45	9.77	1.52	6.41	9.49	1.74	5.46	9.45	2.03	4.65	9.11	2.24	4.06	/	/	/
35	/	/	/	11.8	1.03	11.5	11.6	1.22	9.45	11.3	1.35	8.32	11.0	1.61	6.8	10.6	1.81	5.86	10.6	2.14	4.94	/	/	/	/	/	/

MDGC-V9WD2N8-B

DB	LWT																										
	25			30			35			40			45			50			55			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	4.36	1.89	2.31	4.35	2.00	2.17	4.38	2.16	2.03	4.35	2.30	1.89	4.3	2.44	1.76	/	/	/	/	/	/	/	/	/	/	/	/
-20	5.29	2.06	2.57	5.27	2.19	2.41	5.31	2.38	2.23	5.26	2.53	2.08	5.19	2.69	1.93	5.12	2.86	1.79	4.95	2.88	1.72	/	/	/	/	/	/
-15	6.54	2.29	2.85	6.51	2.45	2.66	6.45	2.62	2.46	6.38	2.80	2.28	6.29	2.98	2.11	6.2	3.16	1.96	6.09	3.27	1.86	5.28	3.00	1.76	/	/	/
-10	7.76	2.42	3.21	7.72	2.59	2.98	7.63	2.77	2.75	7.54	2.99	2.52	7.43	3.19	2.33	7.26	3.39	2.14	7.06	3.46	2.04	6.45	3.38	1.91	/	/	/
-7	8.48	2.51	3.38	8.41	2.60	3.23	8.32	2.80	2.97	8.2	3.01	2.72	8.08	3.23	2.5	7.81	3.40	2.3	7.53	3.45	2.18	6.91	3.39	2.04	/	/	/
-5	8.66	2.41	3.59	8.72	2.58	3.38	8.61	2.79	3.09	8.42	2.96	2.84	8.29	3.20	2.59	7.87	3.28	2.4	7.63	3.38	2.26	6.99	3.33	2.1	/	/	/
-2	9.2	2.35	3.91	9.18	2.54	3.62	9.06	2.75	3.29	8.85	2.94	3.01	8.78	3.22	2.73	8.24	3.27	2.52	7.98	3.35	2.38	7.21	3.29	2.19	/	/	/
0	9.49	2.29	4.15	9.49	2.50	3.8	9.35	2.72	3.44	9.13	2.92	3.13	9.05	3.19	2.84	8.48	3.25	2.61	8.21	3.35	2.45	7.38	3.27	2.26	/	/	/
2	9.79	2.21	4.43	9.78	2.45	4	9.64	2.67	3.61	9.4	2.87	3.27	9.31	3.16	2.95	8.8	3.26	2.7	8.42	3.33	2.53	7.54	3.24	2.33	/	/	/
5	10.9	2.15	5.08	10.8	2.38	4.56	10.7	2.61	4.11	10.7	2.86	3.72	10.6	3.13	3.37	10.3	3.34	3.07	9.82	3.43	2.86	8.78	3.34	2.63	7.93	3.29	2.41
7	11.3	2.03	5.56	11.2	2.27	4.94	11.1	2.51	4.43	11.0	2.78	3.95	10.9	3.04	3.58	10.6	3.30	3.22	9.96	3.32	3	9.06	3.31	2.74	8.16	3.25	2.51
10	11.8	1.84	6.43	11.7	2.08	5.62	11.5	2.32	4.94	11.3	2.58	4.37	11.0	2.84	3.89	10.6	3.03	3.49	9.84	3.03	3.25	8.87	3.01	2.95	7.89	2.93	2.69
12	12.0	1.69	7.09	11.8	1.94	6.11	11.6	2.18	5.33	11.4	2.44	4.68	11.2	2.70	4.13	10.9	2.97	3.67	10.1	2.97	3.41	9.11	2.95	3.09	8.07	2.88	2.8
15	12.0	1.46	8.21	11.8	1.69	6.95	11.6	1.94	5.96	11.4	2.20	5.17	11.1	2.46	4.52	10.9	2.72	3.99	10.6	2.90	3.65	9.5	2.88	3.3	8.38	2.82	2.97
20	11.9	1.32	9.01	11.7	1.44	8.12	11.5	1.71	6.69	11.2	1.92	5.84	11.0	2.13	5.14	10.7	2.40	4.45	10.4	2.59	4.01	9.14	2.48	3.68	/	/	/
25	10.7	1.08	9.92	10.5	1.17	9.02	10.3	1.40	7.39	10.1	1.54	6.55	9.83	1.76	5.6	9.55	1.95	4.89	9.52	2.24	4.25	9.21	2.37	3.89	/	/	/
30	12.1	1.11	10.9	11.8	1.19	9.95	11.6	1.41	8.22	11.3	1.57	7.21	11.0	1.81	6.09	10.7	2.02	5.3	10.7	2.36	4.53	10.3	2.57	4.02	/	/	/
35	/	/	/	13.3	1.23	10.8	13.0	1.44	9.01	12.7	1.58	8.01	12.3	1.91	6.46	12.0	2.09	5.74	11.9	2.48	4.8	/	/	/	/	/	/

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

Part load: Maximum

MDGC-V12WD2N8-B, MDGC-V12WD2RN8-B

DB	LWT																										
	25			30			35			40			45			50			55			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	6.83	3.13	2.18	6.93	3.34	2.07	7.04	3.58	1.97	7.14	3.84	1.86	5.69	3.08	1.85	/	/	/	/	/	/	/	/	/	/	/	/
-20	8.18	3.38	2.42	8.30	3.63	2.29	8.42	3.89	2.16	8.53	4.17	2.05	8.63	4.47	1.93	8.73	4.79	1.82	6.87	3.85	1.79	/	/	/	/	/	/
-15	9.70	3.62	2.68	9.83	3.88	2.53	9.96	4.18	2.39	10.1	4.49	2.25	10.2	4.82	2.11	10.3	5.17	1.99	9.82	5.27	1.87	6.06	3.38	1.79	/	/	/
-10	11.4	3.81	2.99	11.6	4.11	2.81	11.7	4.43	2.64	11.8	4.79	2.47	11.9	5.14	2.32	12.0	5.54	2.17	11.0	5.35	2.05	10.8	5.54	1.95	/	/	/
-7	10.6	3.49	3.03	10.9	3.78	2.88	11.2	4.11	2.73	11.5	4.48	2.56	11.5	4.80	2.39	11.7	5.19	2.25	11.7	5.40	2.17	10.9	5.45	2.00	/	/	/
-5	10.8	3.35	3.21	11.1	3.66	3.04	11.4	3.98	2.87	11.7	4.35	2.69	11.5	4.64	2.49	11.7	5.03	2.33	11.9	5.22	2.27	10.6	5.15	2.05	/	/	/
-2	10.9	3.10	3.51	11.3	3.41	3.30	11.6	3.74	3.10	11.8	4.09	2.89	11.9	4.46	2.67	12.1	4.85	2.50	12.7	5.31	2.39	11.0	5.11	2.15	/	/	/
0	11.3	3.02	3.75	11.6	3.32	3.51	12.0	3.66	3.28	12.2	4.01	3.04	12.3	4.36	2.81	12.1	4.85	2.50	12.9	5.23	2.47	11.4	5.10	2.23	/	/	/
2	11.7	2.92	4.01	12.1	3.23	3.73	12.4	3.56	3.48	12.6	3.93	3.21	12.7	4.27	2.96	12.8	4.69	2.74	13.1	5.13	2.56	11.9	5.10	2.32	/	/	/
5	13.1	2.86	4.58	13.4	3.19	4.21	13.8	3.52	3.92	14.1	3.95	3.57	14.6	4.32	3.37	14.5	4.71	3.09	14.4	4.99	2.88	14.0	5.31	2.63	8.56	3.71	2.31
7	13.8	2.66	5.17	14.1	3.00	4.71	14.4	3.31	4.35	14.4	3.66	3.93	14.5	4.03	3.60	14.5	4.42	3.28	14.4	4.70	3.06	14.4	5.23	2.75	8.87	3.72	2.39
10	14.9	2.40	6.19	14.9	2.74	5.44	14.9	3.06	4.87	14.8	3.41	4.35	14.8	3.78	3.91	14.7	4.15	3.53	14.6	4.46	3.27	14.2	4.87	2.92	8.57	3.41	2.51
12	15.3	2.28	6.73	15.3	2.61	5.87	15.3	2.94	5.21	15.2	3.28	4.62	15.1	3.65	4.13	15.0	4.03	3.71	14.9	4.36	3.42	14.8	4.85	3.04	8.92	3.42	2.61
15	14.5	1.84	7.87	14.4	2.16	6.66	14.3	2.49	5.73	14.1	2.82	5.01	14.0	3.17	4.42	13.8	3.52	3.93	13.5	3.82	3.54	13.2	4.18	3.16	9.07	3.30	2.75
20	14.8	1.39	10.7	14.6	1.71	8.57	14.5	2.04	7.10	14.4	2.39	6.02	14.2	2.72	5.20	13.9	3.07	4.54	13.2	3.30	3.98	9.26	2.72	3.41	/	/	/
25	14.4	0.93	15.4	14.7	1.23	11.9	14.1	1.57	9.00	13.9	1.90	7.32	13.7	2.22	6.14	13.5	2.56	5.25	13.3	2.88	4.61	10.2	2.64	3.85	/	/	/
30	/	/	/	15.7	0.96	16.4	15.5	1.31	11.9	15.3	1.66	9.22	15.1	2.03	7.45	14.8	2.38	6.21	14.3	2.74	5.22	11.5	2.61	4.40	/	/	/
35	/	/	/	/	/	/	17.6	1.05	16.7	17.2	1.43	12.1	17.0	1.82	9.30	16.6	2.22	7.49	15.5	2.68	5.77	/	/	/	/	/	/

MDGC-V14WD2N8-B, MDGC-V14WD2RN8-B

DB	LWT																										
	25			30			35			40			45			50			55			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	7.30	3.42	2.14	7.44	3.66	2.03	7.57	3.92	1.93	7.70	4.21	1.83	5.69	3.08	1.85	/	/	/	/	/	/	/	/	/	/	/	/
-20	8.75	3.71	2.36	8.89	3.98	2.24	9.03	4.26	2.12	9.18	4.59	2.00	9.31	4.92	1.89	9.46	5.30	1.79	6.87	3.85	1.79	/	/	/	/	/	/
-15	10.4	3.98	2.61	10.6	4.28	2.46	10.7	4.60	2.33	10.8	4.94	2.20	11.0	5.32	2.07	11.1	5.72	1.95	10.7	5.81	1.83	6.83	3.82	1.79	/	/	/
-10	12.2	4.21	2.90	12.4	4.54	2.73	12.6	4.89	2.57	12.7	5.27	2.41	12.9	5.68	2.26	12.8	5.95	2.14	11.7	5.79	2.02	11.4	5.89	1.93	/	/	/
-7	11.6	4.01	2.89	12.0	4.34	2.76	12.4	4.72	2.63	12.7	5.14	2.47	12.8	5.51	2.33	12.7	5.77	2.20	12.6	5.87	2.14	11.4	5.77	1.98	/	/	/
-5	11.9	3.88	3.05	12.3	4.21	2.91	12.7	4.61	2.76	13.0	5.01	2.59	12.9	5.35	2.42	12.9	5.64	2.28	13.0	5.84	2.23	11.3	5.59	2.02	/	/	/
-2	12.2	3.71	3.29	12.6	4.05	3.11	13.0	4.43	2.94	13.3	4.84	2.75	13.6	5.25	2.58	13.5	5.58	2.43	13.4	5.66	2.36	11.7	5.55	2.11	/	/	/
0	12.5	3.54	3.52	12.9	3.88	3.32	13.3	4.25	3.12	13.5	4.66	2.90	13.8	5.07	2.72	14.0	5.54	2.53	13.9	5.73	2.42	12.1	5.52	2.20	/	/	/
2	13.0	3.45	3.75	13.4	3.80	3.52	13.8	4.18	3.30	14.0	4.59	3.06	14.3	5.00	2.85	14.5	5.46	2.65	14.2	5.64	2.51	12.7	5.54	2.28	/	/	/
5	14.4	3.30	4.34	14.8	3.66	4.03	15.2	4.06	3.74	15.6	4.54	3.43	16.1	4.96	3.25	16.2	5.41	2.99	15.9	5.62	2.83	14.9	5.77	2.59	9.27	4.02	2.30
7	15.6	3.25	4.80	16.0	3.61	4.42	16.4	4.03	4.07	16.5	4.43	3.71	16.7	4.86	3.43	16.6	5.29	3.14	16.6	5.55	2.98	15.5	5.74	2.70	9.58	4.01	2.39
10	16.6	2.87	5.78	16.6	3.23	5.16	16.7	3.60	4.63	16.7	3.99	4.18	16.7	4.42	3.78	16.7	4.84	3.44	17.0	5.26	3.23	15.4	5.30	2.91	9.40	3.73	2.52
12	17.1	2.70	6.33	17.1	3.06	5.59	17.1	3.44	4.98	17.1	3.84	4.46	17.1	4.27	4.02	17.1	4.69	3.64	17.2	5.08	3.39	16.1	5.30	3.04	9.73	3.72	2.61
15	16.4	2.20	7.44	16.7	2.66	6.30	16.2	2.93	5.53	16.9	3.53	4.80	15.9	3.69	4.31	15.7	4.09	3.85	16.0	4.49	3.55	15.2	4.87	3.12	9.84	3.59	2.74
20	16.5	1.65	10.0	16.4	2.00	8.17	16.3	2.37	6.85	16.1	2.75	5.85	15.9	3.12	5.08	15.6	3.51	4.46	15.0	3.86	3.89	9.26	2.72	3.41	/	/	/
25	15.7	1.10	14.3	16.0	1.41	11.3	15.3	1.78	8.61	15.2	2.13	7.10	15.0	2.50	5.99	14.7	2.85	5.15	14.6	3.21	4.53	10.2	2.64	3.85	/	/	/
30	/	/	/	16.8	1.10	15.4	16.7	1.47	11.3	16.4	1.83	8.93	16.2	2.23	7.28	15.9	2.60	6.10	15.4	3.00	5.13	11.5	2.61	4.40	/	/	/
35	/	/	/	/	/	/	18.7	1.19	15.8	18.5	1.60	11.6	18.2	2.01	9.02	17.8	2.43	7.32	16.5	2.72	6.05	/	/	/	/	/	/

MDGC-V16WD2N8-B, MDGC-V16WD2RN8-B

DB	LWT																										
	25			30			35			40			45			50			55			60			65		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-25	7.89	3.83	2.06	8.04	4.10	1.96	8.20	4.41	1.86	8.24	4.64	1.78	5.69	3.08	1.85	/	/	/	/	/	/	/	/	/	/	/	/
-20	9.45	4.19	2.26	9.62	4.49	2.14	9.80	4.83	2.03	9.81	5.06	1.94	10.1	5.56	1.82	10.2	5.85	1.74	6.87	3.85	1.79	/	/	/	/	/	/
-15	11.2	4.50	2.49	11.4	4.85	2.35	11.6	5.21	2.22	11.8	5.61	2.10	12.0	6.03	1.98	11.9	6.27	1.89	11.0	6.05	1.81	7.13	4.00	1.78	/	/	/
-10	13.2	4.78	2.76	13.4	5.16	2.60	13.6	5.55	2.45	13.8	6.00	2.30	13.7	6.23	2.19	13.2	6.26	2.11	12.2	6.09	2.00	11.9	6.20	1.92	/	/	/
-7	12.4	4.49	2.76	12.9	4.88	2.64	13.3	5.31	2.51	13.7	5.76	2.37	13.6	6.08	2.24	13.3	6.13	2.16	12.8	6.24	2.05	12.0	6.10	1.96	/	/	/
-5	12.7	4.34	2.92	13.1	4.72	2.79	13.6	5.15	2.65	14.0	5.60	2.49	13.5	5.71	2.36	13.4	5.97	2.24	13.6	6.16	2.20	11.7	5.81	2.01	/	/	/
-2	13.1	4.15	3.15	13.6	4.52	3.00	14.1	4.95	2.84	14.5	5.48	2.64	14.3	5.67	2.53	14.1	5.89	2.39	14.3	6.14	2.32	12.1	5.76	2.10	/	/	/
0	13.7	4.07	3.36	14.1	4.45	3.18	14.6	4.87	3.00	15.0	5.34	2.80	15.0	5.67	2.64	14.7	5.89	2.49	14.5	6.07	2.40	12.6	5.75	2.18	/	/	/
2	14.2	3.99	3.57	14.7	4.38	3.37	15.2	4.81	3.17	15.6	5.27	2.95	15.5	5.63	2.76	14.9	5.69	2.62	14.9	5.98	2.48	13.1	5.77	2.27	/	/	/
5	16.4	4.08	4.01	16.9	4.50	3.75	17.4	4.96	3.51	17.9	5.53	3.24	18.8	6.05	3.11	17.6	6.03	2.92	17.1	6.17	2.78	15.3	5.95	2.57	9.42	4.08	2.31
7	17.6	3.94	4.47	18.1	4.36	4.16	18.6	4.82	3.86	18.8	5.30	3.54	19.1	5.81	3.28	18.3	6.00	3.06	17.7	6.08	2.91	16.0	5.98	2.67	9.86	4.13	2.39
10	19.0	3.58	5.30	19.1	4.00	4.78	19.2	4.44	4.33	19.3	4.90	3.94	19.4	5.39	3.59	18.6	5.58	3.33	17.9	5.64	3.17	16.1	5.56	2.89	9.72	3.86	2.52
12	19.2	3.30	5.83	19.3	3.71	5.21	19.4	4.14	4.68	19.4	4.60	4.23	19.5	5.09	3.83	19.5	5.58	3.49	18.4	5.50	3.34	16.8	5.57	3.01	10.2	3.89	2.62
15	19.1	2.75	6.96	19.1	3.16	6.04	19.0	3.58	5.30	18.9	4.03	4.69	18.7	4.48	4.18	18.6	4.95	3.75	18.3	5.37	3.40	16.7	5.33	3.14	10.8	3.88	2.77
20	18.6	2.00	9.30	18.6	2.41	7.72	18.4	2.81	6.55	18.2	3.22	5.66	18.0	3.65	4.94	17.9	4.10	4.35	16.0	4.17	3.84	9.26	2.72	3.41	/	/	/
25	16.3	1.18	13.8	16.7	1.51	11.1	16.1	1.90	8.42	15.8	2.26	6.99	15.6	2.63	5.93	15.4	3.01	5.10	15.2	3.38	4.49	10.2	2.64	3.85	/	/	/
30	/	/	/	18.3	1.28	14.3	18.1	1.68	10.8	17.8	2.07	8.60	17.6	2.48	7.08	17.3	2.90	5.95	16.7	3.32	5.02	11.5	2.61	4.40	/	/	/
35	/	/	/	/	/	/	20.3	1.39	14.7	20.0	1.82	11.0	19.7	2.26	8.70	19.4	2.72	7.11	16.5	2.72	6.05	/	/	/	/	/	/

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

4.2 Cooling Capacity Tables (Test standard： EN14511)

Part load: Maximum

MDGC-V5WD2N8-B																				
DB	LWT																			
	5			7			10			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
-5	/	/	/	/	/	/	/	/	/	4.56	0.56	8.21	4.79	0.57	8.41	4.96	0.58	8.60	5.47	0.60	9.04
0	/	/	/	/	/	/	/	/	/	4.56	0.56	8.21	4.79	0.57	8.41	4.96	0.58	8.60	5.47	0.60	9.04
5	/	/	/	/	/	/	/	/	/	4.67	0.58	8.13	4.92	0.59	8.31	5.04	0.59	8.51	5.57	0.62	8.91
10	/	/	/	/	/	/	/	/	/	4.98	0.63	7.84	5.21	0.65	8.02	5.34	0.65	8.20	5.87	0.68	8.57
15	/	/	/	/	/	/	6.34	0.80	7.97	7.01	0.93	7.55	7.54	1.01	7.48	7.61	0.95	8.02	7.57	0.91	8.29
20	6.33	1.19	5.32	6.69	1.19	5.64	7.26	1.18	6.17	7.40	1.07	6.95	7.39	1.11	6.66	7.40	0.99	7.49	7.48	0.93	8.03
25	7.03	1.61	4.38	7.43	1.61	4.60	8.03	1.62	4.97	9.10	1.62	5.64	9.78	1.61	6.07	10.23	1.60	6.38	11.39	1.58	7.19
30	7.57	2.11	3.59	7.98	2.13	3.75	8.61	2.16	3.99	9.72	2.20	4.42	9.65	1.94	4.97	10.09	1.94	5.19	11.20	1.95	5.75
35	7.13	2.39	2.98	6.92	2.23	3.11	8.45	2.48	3.40	9.52	2.56	3.72	9.27	2.17	4.27	9.66	2.20	4.40	10.72	2.22	4.83
40	5.95	2.14	2.78	6.03	2.06	2.93	7.49	2.41	3.11	8.26	2.38	3.46	8.85	2.42	3.66	9.01	2.33	3.87	10.02	2.36	4.24
43	5.14	1.92	2.68	5.35	1.92	2.79	6.48	2.17	2.99	7.36	2.22	3.31	7.90	2.25	3.51	8.27	2.26	3.65	9.24	2.31	4.01
MDGC-V7WD2N8-B																				
DB	LWT																			
	5			7			10			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
-5	/	/	/	/	/	/	/	/	/	4.84	0.59	8.15	5.09	0.61	8.35	5.27	0.62	8.55	5.81	0.65	8.98
0	/	/	/	/	/	/	/	/	/	4.84	0.59	8.15	5.09	0.61	8.35	5.27	0.62	8.55	5.81	0.65	8.98
5	/	/	/	/	/	/	/	/	/	4.97	0.62	8.07	5.23	0.63	8.26	5.35	0.63	8.45	5.92	0.67	8.86
10	/	/	/	/	/	/	/	/	/	5.27	0.68	7.79	5.51	0.69	7.97	5.66	0.69	8.15	6.21	0.73	8.53
15	/	/	/	/	/	/	6.96	0.87	8.04	7.71	1.05	7.38	8.29	1.13	7.32	8.67	1.13	7.65	8.59	1.02	8.42
20	7.06	1.35	5.22	7.47	1.35	5.52	8.08	1.34	6.03	8.94	1.35	6.63	9.10	1.44	6.34	9.11	1.28	7.10	9.42	1.20	7.87
25	7.72	1.80	4.30	8.18	1.81	4.51	8.80	1.80	4.88	9.99	1.81	5.51	10.70	1.80	5.94	11.20	1.80	6.22	11.67	1.68	6.96
30	8.26	2.36	3.50	8.70	2.38	3.65	10.35	2.85	3.63	10.36	2.35	4.40	10.86	2.27	4.78	11.11	2.18	5.10	11.49	1.91	6.01
35	8.27	2.76	2.99	8.72	2.80	3.11	9.40	2.85	3.29	9.93	2.62	3.79	10.41	2.55	4.09	10.64	2.45	4.34	11.03	2.14	5.14
40	7.04	2.53	2.78	7.42	2.56	2.90	8.02	2.61	3.08	9.04	2.66	3.40	9.70	2.70	3.60	10.13	2.72	3.73	10.55	2.43	4.34
43	6.31	2.39	2.64	6.66	2.42	2.76	7.23	2.46	2.93	8.17	2.51	3.25	8.77	2.54	3.45	9.20	2.56	3.59	9.98	2.49	4.02
MDGC-V9WD2N8-B																				
DB	LWT																			
	5			7			10			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
-5	/	/	/	/	/	/	/	/	/	5.13	0.63	8.10	5.39	0.65	8.30	5.58	0.66	8.50	6.15	0.69	8.92
0	/	/	/	/	/	/	/	/	/	5.13	0.63	8.10	5.39	0.65	8.30	5.58	0.66	8.50	6.15	0.69	8.92
5	/	/	/	/	/	/	/	/	/	5.26	0.66	8.02	5.54	0.68	8.20	5.67	0.67	8.40	6.27	0.71	8.80
10	/	/	/	/	/	/	/	/	/	5.86	0.76	7.75	6.13	0.77	7.93	6.29	0.78	8.11	6.91	0.81	8.48
15	/	/	/	/	/	/	8.05	1.18	6..81	9.12	1.27	7.19	9.80	1.37	7.13	10.24	1.37	7.46	11.47	1.44	7.97
20	7.81	1.53	5.10	8.25	1.53	5.40	8.92	1.51	5.90	10.08	1.48	6.83	10.83	1.76	6.14	11.36	1.69	6.72	12.34	1.71	7.23
25	8.54	2.12	4.04	9.00	2.13	4.22	9.74	2.16	4.50	10.71	2.08	5.14	11.20	1.99	5.63	11.46	1.93	5.95	11.95	1.82	6.56
30	9.17	2.78	3.30	9.65	2.82	3.43	10.00	2.69	3.73	10.34	2.35	4.41	10.83	2.26	4.79	11.09	2.17	5.11	11.49	1.85	6.20
35	9.12	3.21	2.84	9.58	3.26	2.94	9.58	2.95	3.25	9.94	2.62	3.79	10.38	2.53	4.10	10.62	2.44	4.35	11.02	2.14	5.15
40	7.04	2.53	2.78	7.42	2.59	2.86	8.02	2.61	3.08	9.07	2.67	3.39	9.70	2.70	3.60	10.15	2.72	3.73	10.52	2.42	4.35
43	6.31	2.39	2.64	6.66	2.42	2.76	7.20	2.45	2.94	8.17	2.51	3.25	8.78	2.54	3.45	9.18	2.56	3.59	10.21	2.58	3.95

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

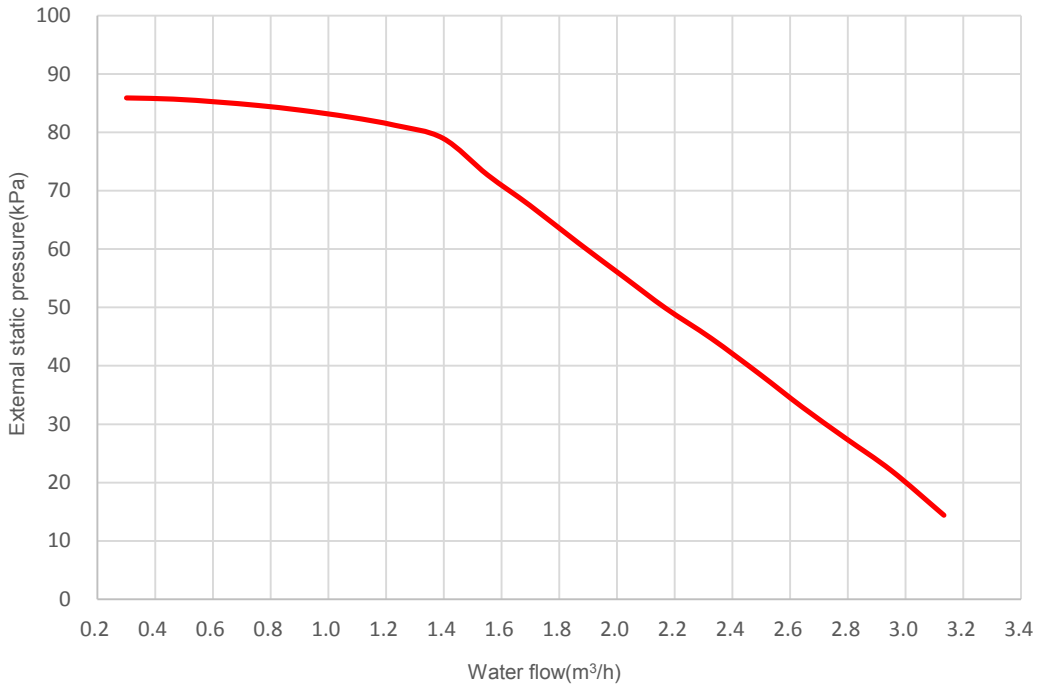
Part load: Maximum

MDGC-V12WD2N8-B, MDGC-V12WD2RN8-B																					
DB	LWT																				
	5			7			10			15			18			20			25		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-5	/	/	/	/	/	/	/	/	/	10.28	1.47	7.00	10.92	1.55	7.04	11.60	1.49	7.77	12.49	1.79	6.99
0	/	/	/	/	/	/	/	/	/	10.53	1.30	8.08	10.92	1.55	7.04	11.70	1.44	8.15	12.49	1.79	6.97
5	/	/	/	/	/	/	/	/	/	10.53	1.31	8.03	11.11	1.44	7.69	11.60	1.51	7.70	12.61	1.73	7.29
10	/	/	/	/	/	/	/	/	/	11.16	1.47	7.59	11.89	1.48	8.02	12.29	1.61	7.64	13.33	1.94	6.87
15	/	/	/	/	/	/	11.49	1.55	7.43	12.88	1.77	7.27	13.63	1.91	7.12	14.34	1.93	7.44	15.24	2.39	6.36
20	11.70	2.31	5.07	12.37	2.31	5.36	13.43	2.31	5.81	14.36	2.76	5.20	16.22	2.24	7.25	16.06	2.99	5.38	17.78	3.01	5.91
25	13.00	3.17	4.11	13.58	3.14	4.32	14.71	3.19	4.62	15.55	3.93	3.95	18.10	3.48	5.20	18.38	3.32	5.54	20.33	3.61	5.63
30	13.93	4.14	3.36	14.70	4.22	3.48	15.86	4.33	3.67	17.83	4.50	3.96	17.57	3.88	4.53	18.38	3.94	4.67	20.28	4.03	5.04
35	13.79	4.78	2.88	14.35	4.78	3.01	15.45	4.91	3.15	17.31	5.12	3.38	16.81	4.32	3.89	17.58	4.40	4.00	18.68	4.19	4.46
40	12.74	4.93	2.58	13.17	4.87	2.70	13.19	4.45	2.96	13.22	3.86	3.43	13.22	3.52	3.76	13.22	3.30	4.01	13.62	2.91	4.68
43	10.16	3.93	2.59	10.18	3.73	2.73	10.19	3.44	2.96	10.21	2.98	3.43	10.21	2.72	3.76	10.21	2.54	4.01	10.57	2.24	4.72
MDGC-V14WD2N8-B, MDGC-V14WD2RN8-B																					
DB	LWT																				
	5			7			10			15			18			20			25		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-5	/	/	/	/	/	/	/	/	/	10.76	1.61	6.66	11.51	1.72	6.68	12.08	1.73	6.99	13.20	2.00	6.60
0	/	/	/	/	/	/	/	/	/	11.02	1.44	7.64	11.51	1.73	6.66	12.29	1.60	7.68	13.20	2.01	6.58
5	/	/	/	/	/	/	/	/	/	11.02	1.45	7.60	11.70	1.61	7.27	12.29	1.61	7.64	13.33	1.94	6.87
10	/	/	/	/	/	/	/	/	/	11.63	1.62	7.19	12.49	1.65	7.57	12.97	1.71	7.58	13.84	2.13	6.50
15	/	/	/	/	/	/	12.48	1.79	6.97	14.44	1.82	7.94	14.92	2.07	7.22	15.83	2.11	7.52	16.35	2.78	5.89
20	13.01	2.70	4.82	13.67	2.69	5.08	14.95	2.76	5.41	16.71	2.73	6.12	17.92	2.75	6.53	17.31	3.68	4.70	18.87	3.40	5.55
25	14.06	3.56	3.95	14.99	3.68	4.07	16.09	3.71	4.33	17.81	3.81	4.68	18.10	3.48	5.20	18.88	3.51	5.37	20.13	3.72	5.41
30	15.08	4.77	3.16	15.84	4.84	3.27	16.98	4.95	3.43	18.91	5.12	3.69	17.57	3.88	4.53	18.38	3.94	4.67	20.28	4.03	5.04
35	14.98	5.53	2.71	15.69	5.62	2.79	16.61	5.64	2.94	18.08	5.62	3.22	16.81	4.32	3.89	17.58	4.40	4.00	18.68	4.19	4.46
40	12.84	5.00	2.57	13.17	4.87	2.70	13.19	4.45	2.96	13.22	3.86	3.43	13.22	3.52	3.76	13.22	3.30	4.01	13.62	2.91	4.68
43	10.16	3.93	2.59	10.18	3.73	2.73	10.19	3.44	2.96	10.21	2.98	3.43	10.21	2.72	3.76	10.21	2.54	4.01	10.57	2.24	4.72
MDGC-V16WD2N8-B, MDGC-V16WD2RN8-B																					
DB	LWT																				
	5			7			10			15			18			20			25		
	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP	HC	PI	COP
-5	/	/	/	/	/	/	/	/	/	11.45	1.73	6.62	12.19	1.84	6.63	12.64	1.91	6.63	13.71	2.19	6.25
0	/	/	/	/	/	/	/	/	/	11.63	1.61	7.23	12.19	1.84	6.62	12.75	1.84	6.92	13.71	2.20	6.23
5	/	/	/	/	/	/	/	/	/	11.63	1.62	7.19	12.39	1.72	7.22	12.86	1.78	7.22	13.84	2.13	6.50
10	/	/	/	/	/	/	/	/	/	12.24	1.79	6.83	13.08	1.83	7.16	13.54	1.89	7.16	14.60	2.27	6.43
15	/	/	/	/	/	/	13.14	1.96	6.70	14.95	1.95	7.65	15.49	2.26	6.84	16.11	2.37	6.80	17.31	2.73	6.35
20	13.33	2.80	4.76	13.99	2.79	5.01	15.27	2.86	5.33	17.19	2.88	5.96	18.22	2.84	6.41	18.79	3.07	6.12	20.01	3.53	5.67
25	14.97	3.99	3.75	15.59	3.97	3.93	16.80	4.05	4.15	18.65	4.24	4.40	18.10	3.48	5.20	18.88	3.51	5.37	20.01	3.53	5.67
30	15.65	5.09	3.07	16.40	5.17	3.17	17.52	5.27	3.32	19.43	5.45	3.57	17.57	3.88	4.53	18.38	3.94	4.67	20.28	4.03	5.04
35	15.62	5.96	2.62	16.22	5.98	2.71	17.13	5.99	2.86	18.57	5.96	3.11	16.81	4.32	3.89	17.58	4.40	4.00	18.68	4.19	4.46
40	12.84	5.00	2.57	13.17	4.87	2.70	13.19	4.45	2.96	13.22	3.86	3.43	13.22	3.52	3.76	13.22	3.30	4.01	13.62	2.91	4.68
43	10.16	3.93	2.59	10.18	3.73	2.73	10.19	3.44	2.96	10.21	2.98	3.43	10.21	2.72	3.76	10.21	2.54	4.01	10.57	2.24	4.72

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

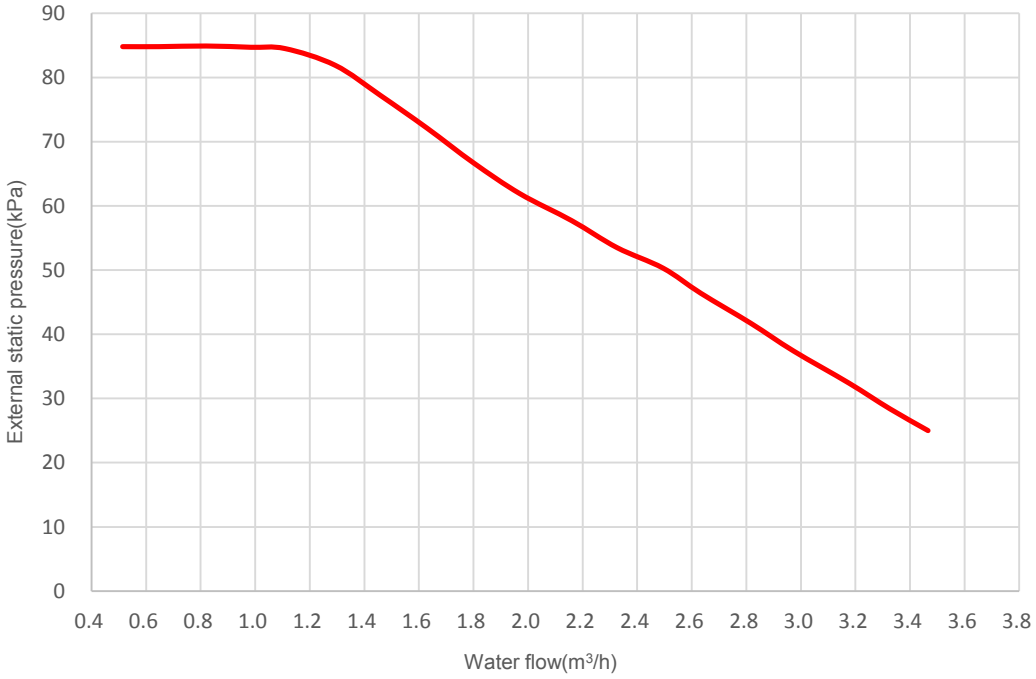
5 Hydronic Performance

MDGC-V5WD2N8-B / MDGC-V7WD2N8-B / MDGC-V9WD2N8-B



MDGC-V12WD2N8-B / MDGC-V14WD2N8-B / MDGC-V16WD2N8-B

MDGC-V12WD2RN8-B / MDGC-V14WD2RN8-B / MDGC-V16WD2RN8-B



6 Sound Levels

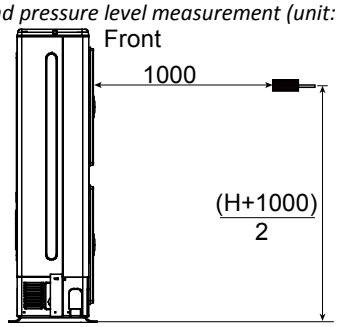
6.1 Overall

Model name	dB(A) [2]
MDGC-V5WD2N8-B	48
MDGC-V7WD2N8-B	51
MDGC-V9WD2N8-B	53
MDGC-V12WD2N8-B	56
MDGC-V14WD2N8-B	58
MDGC-V16WD2N8-B	58
MDGC-V12WD2RN8-B	57
MDGC-V14WD2RN8-B	59
MDGC-V16WD2RN8-B	59

Notes:

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

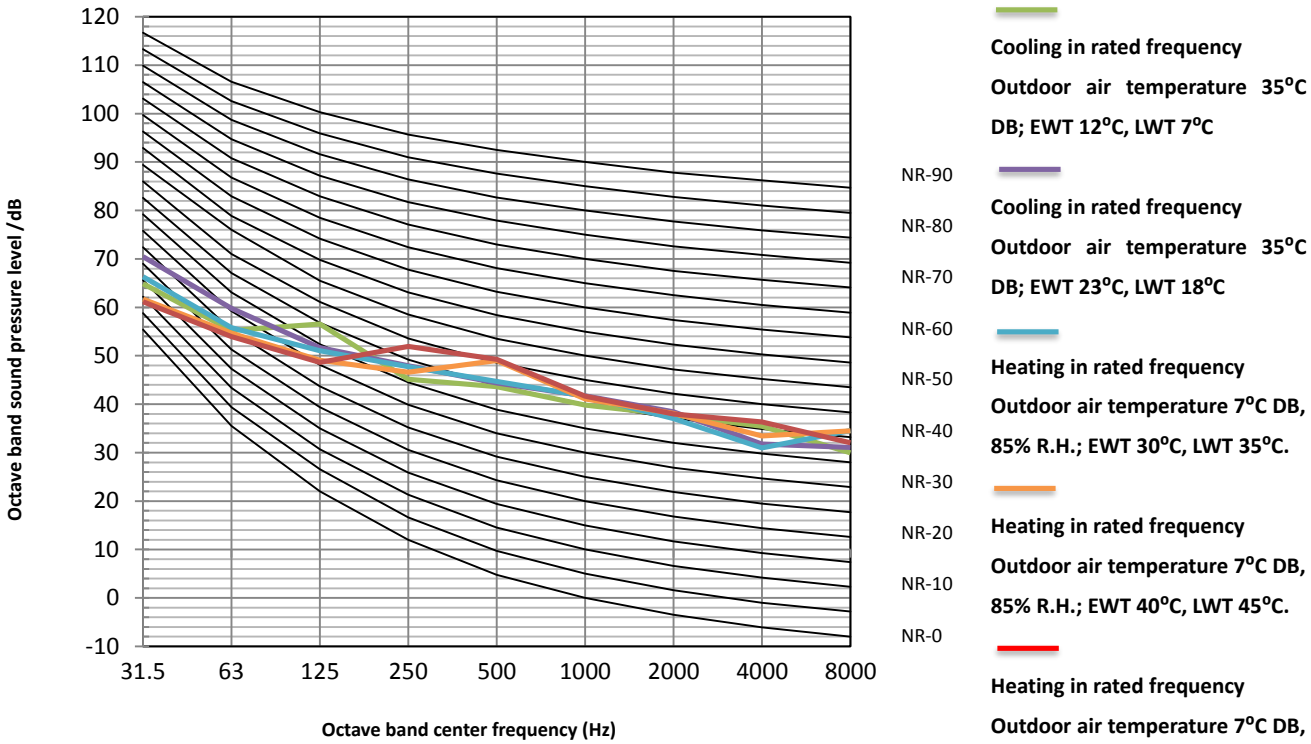
Sound pressure level measurement (unit: mm)



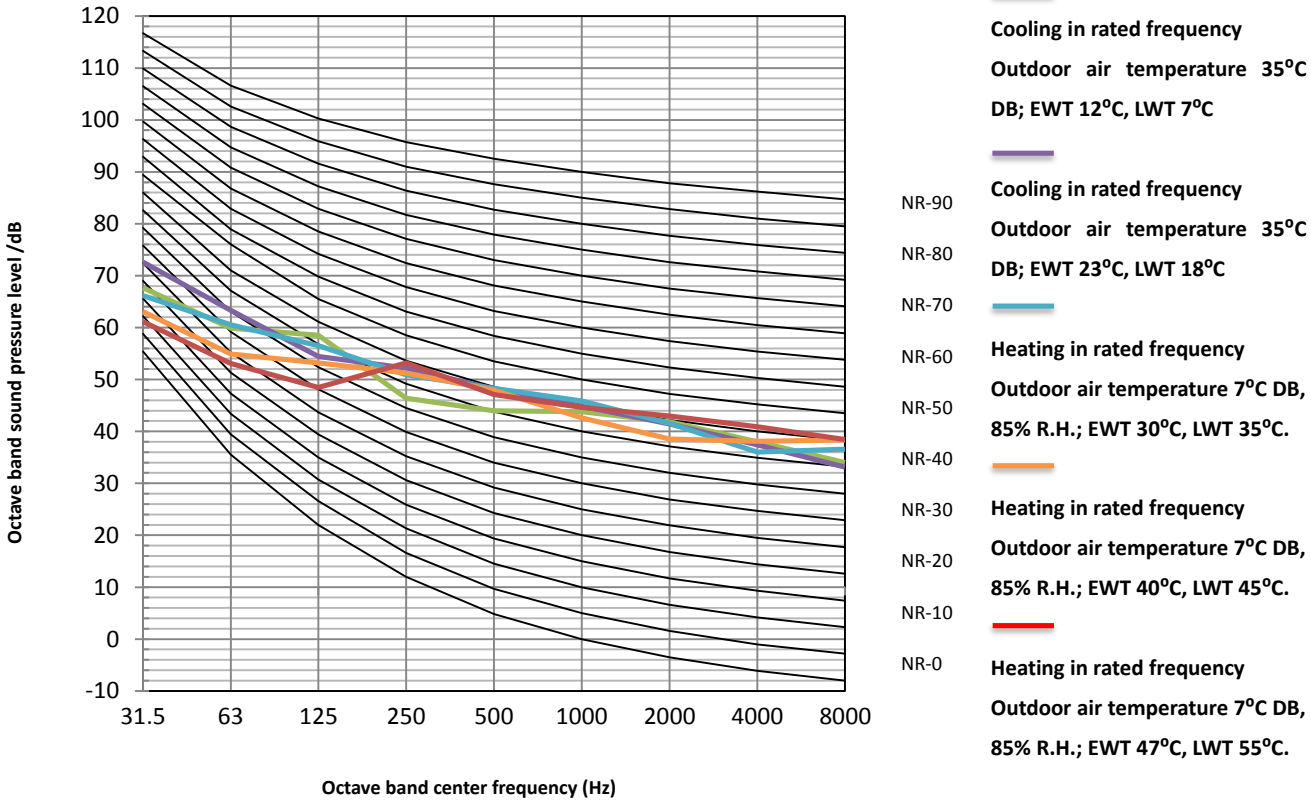
2. dB(A) is the maximum value tested under the conditions below:
   Outdoor air temperature 7°C DB, 6°C WB; EWT 30°C, LWT 35°C. Free compressor frequency.
   Outdoor air temperature 7°C DB, 6°C WB; EWT 47°C, LWT 55°C. Free compressor frequency.

6.2 Octave Band Levels(NR)

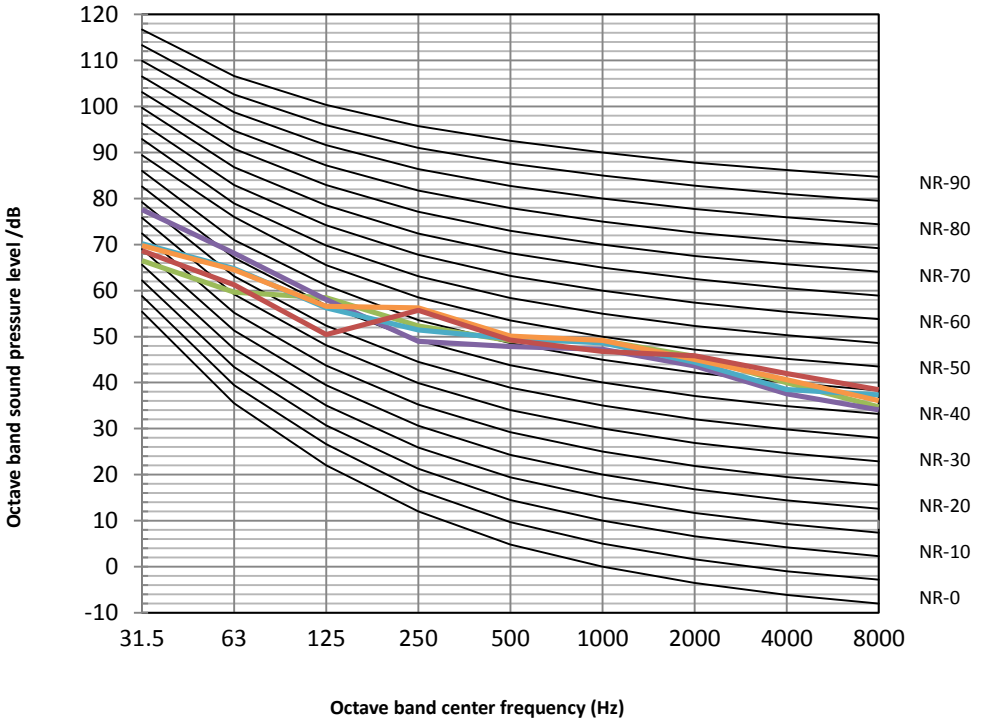
MDGC-V5WD2N8-B octave band levels



MDGC-V7WD2N8-B octave band levels



MDGC-V9WD2N8-B octave band levels



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

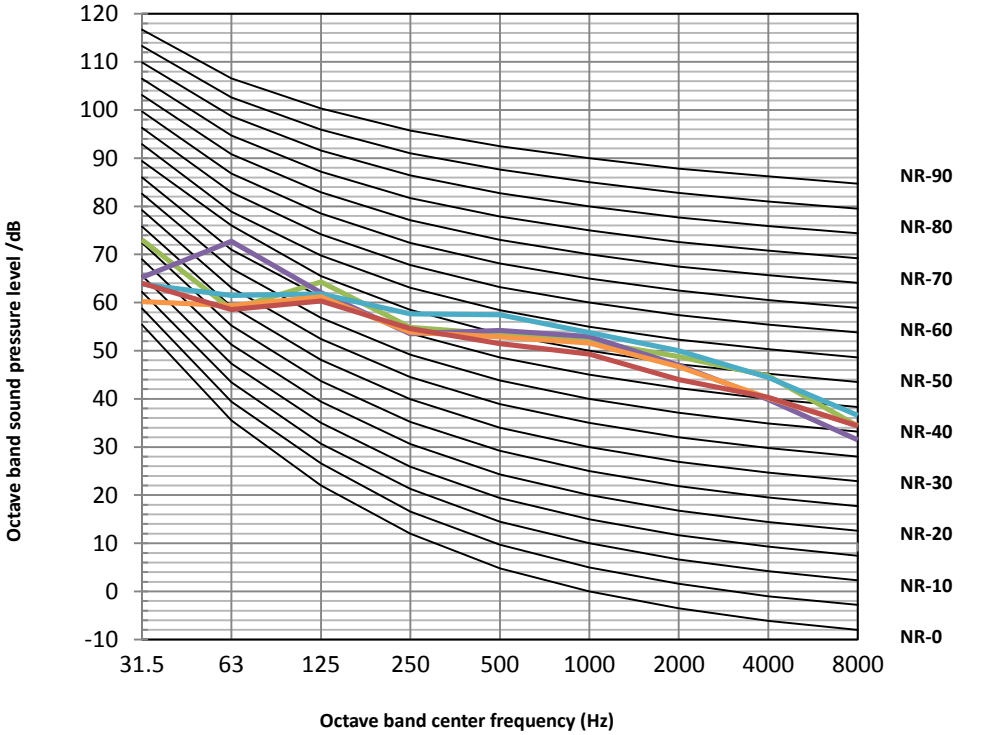
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

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

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

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

MDGC-V12WD2N8-B octave band levels



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

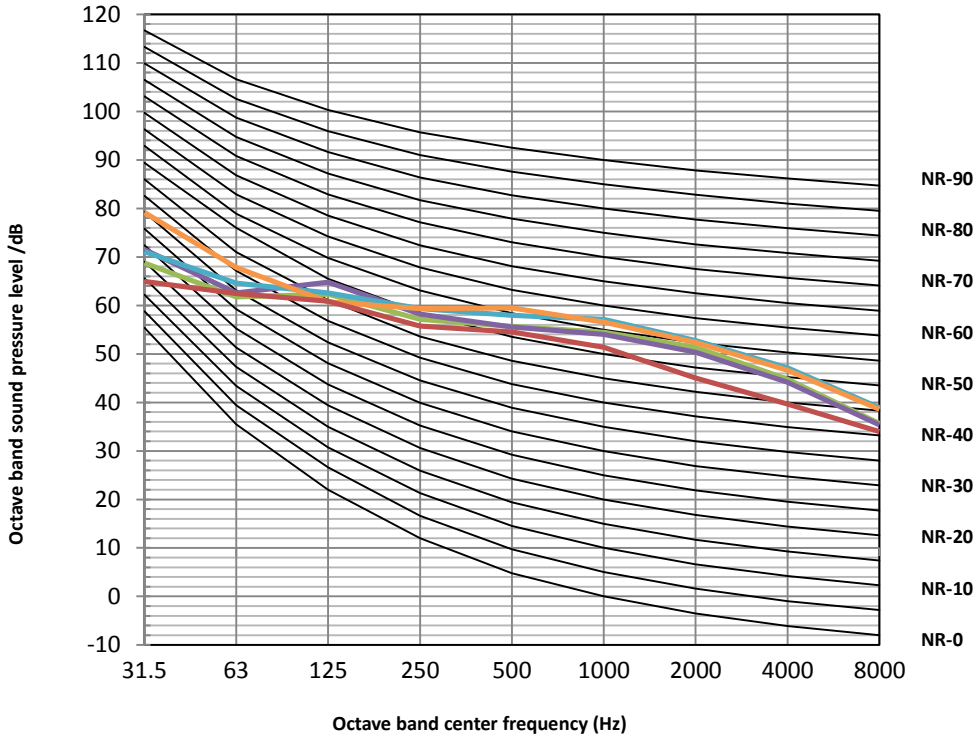
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

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

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

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

MDGC-V14WD2N8-B octave band levels



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

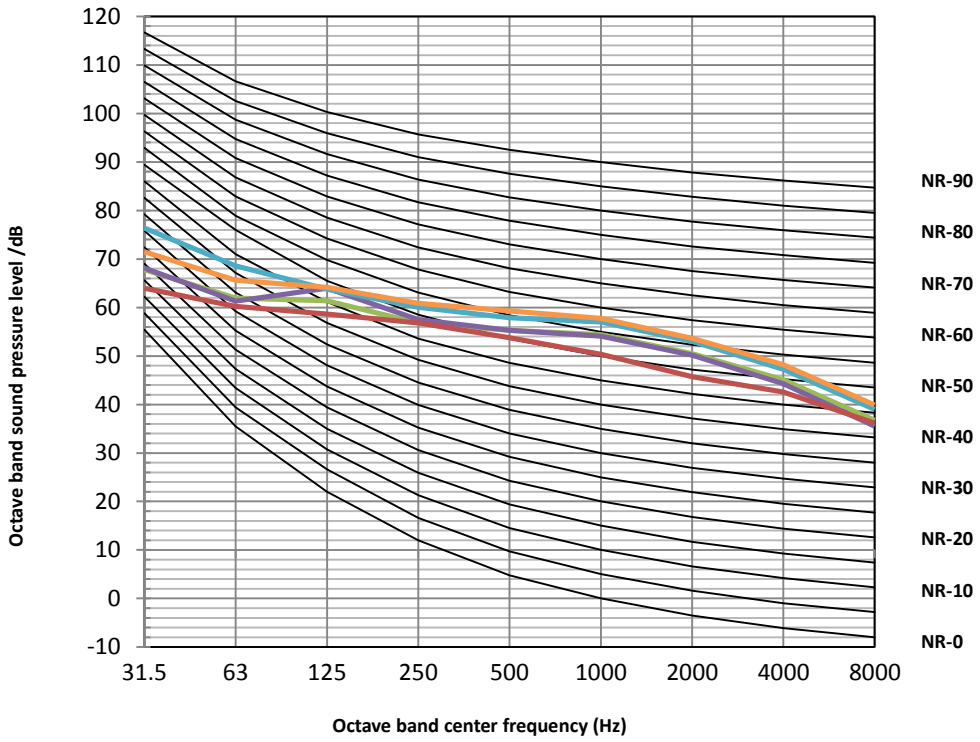
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

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

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

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

MDGC-V16WD2N8-B octave band levels



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

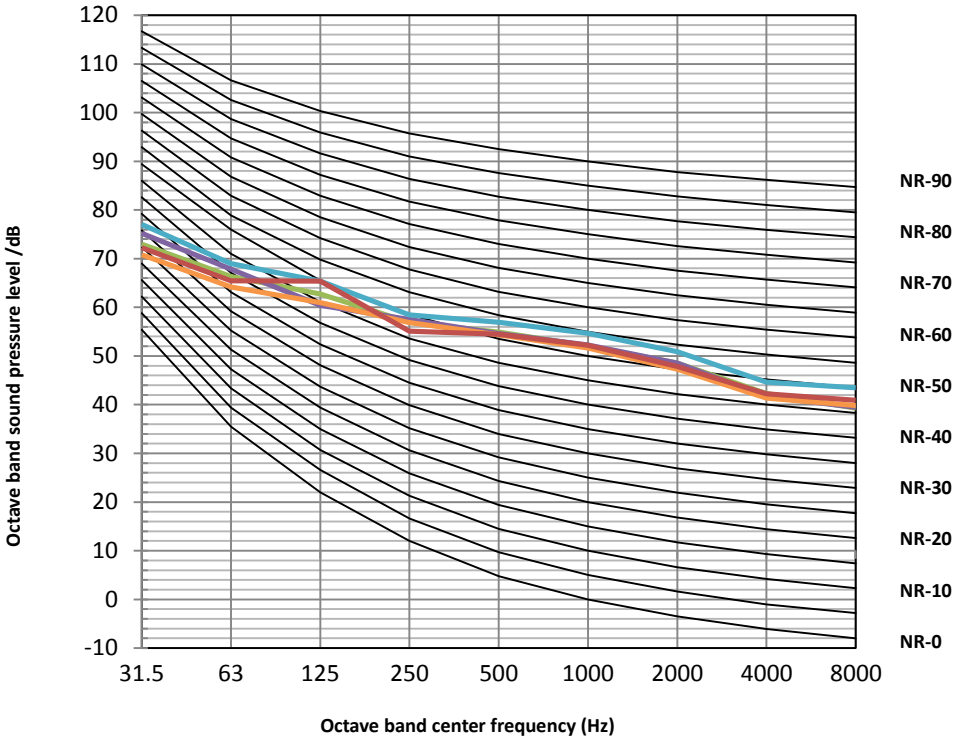
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

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

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

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

MDGC-V12WD2RN8-B octave band levels



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

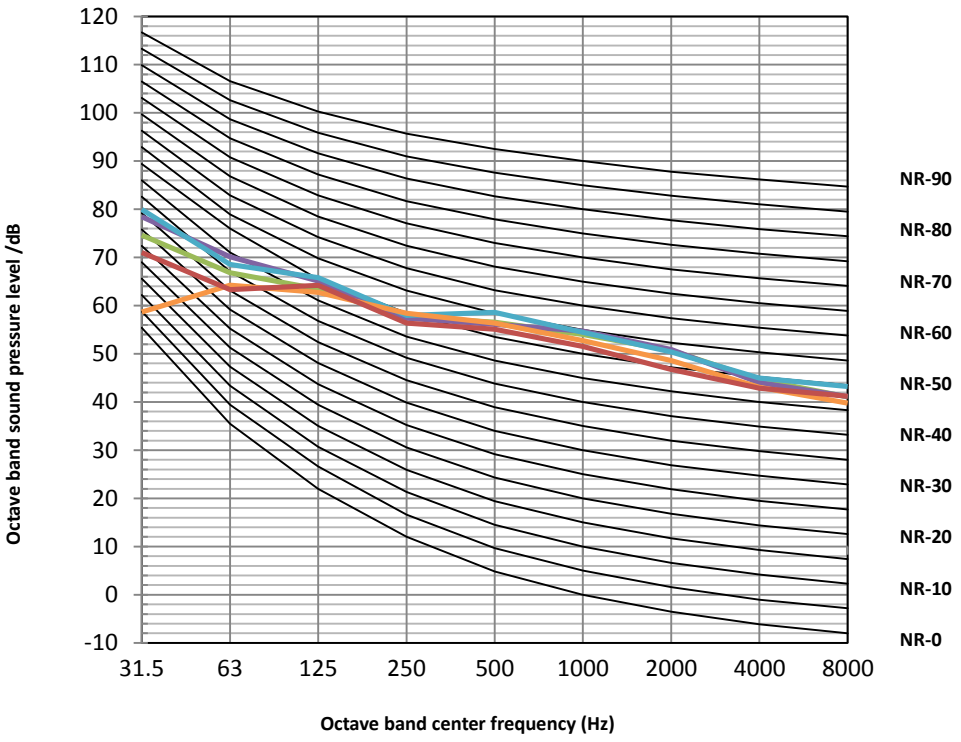
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

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

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

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

MDGC-V14WD2RN8-B octave band levels



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

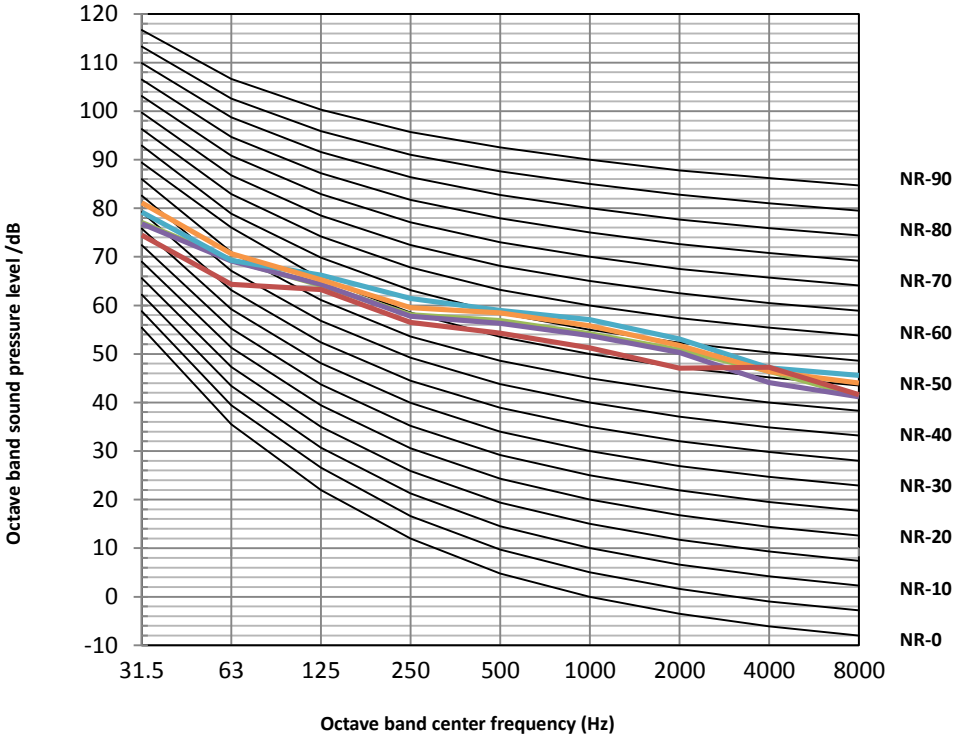
Cooling in rated frequency Outdoor air temperature 35°C DB; EWT 23°C, LWT 18°C

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

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

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

MDGC-V16WD2RN8-B octave band levels



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

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

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

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

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

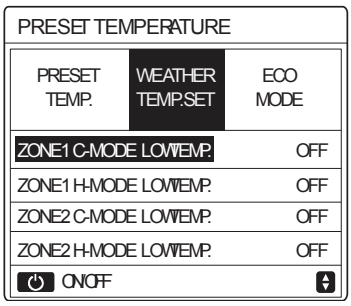
7 Climate Related Curves

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

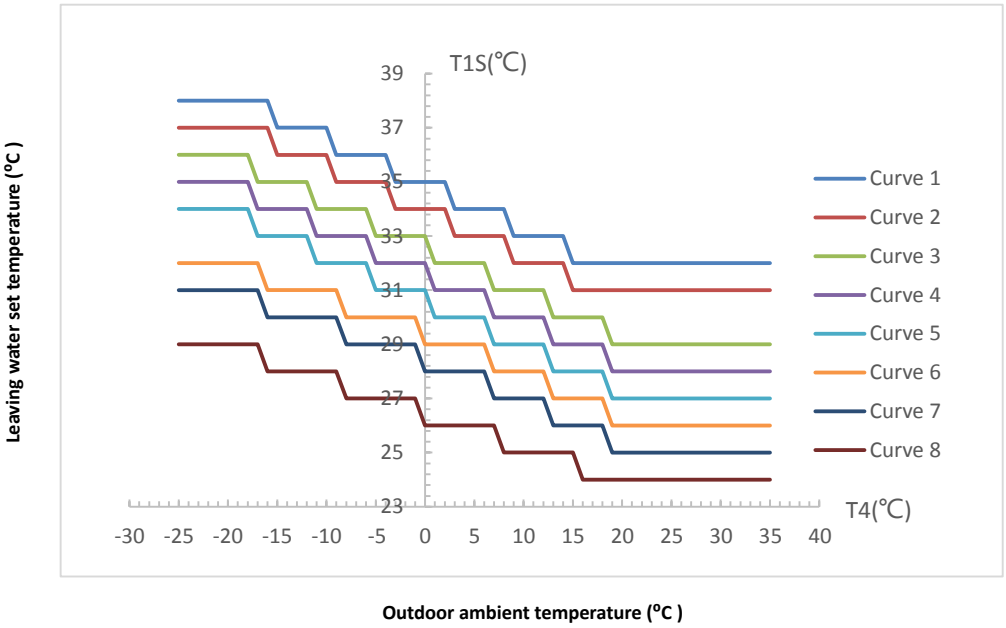
If WEATHER TEMP. SET is active, the leaving water set temperature (T1s) will automatically change as outdoor ambient temperature (T4) changes. Totally 32 weather temperature curves are already set by experienced engineer and one personalized curve is available, which meets the diversified requirements of temperature.

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

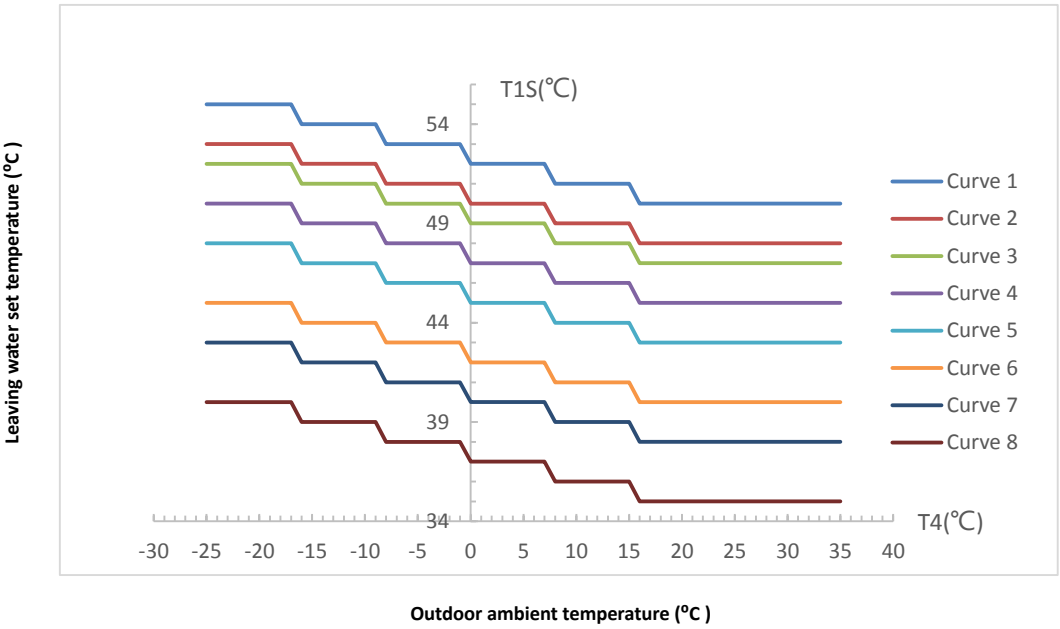
WEATHER TEMP. SET menu



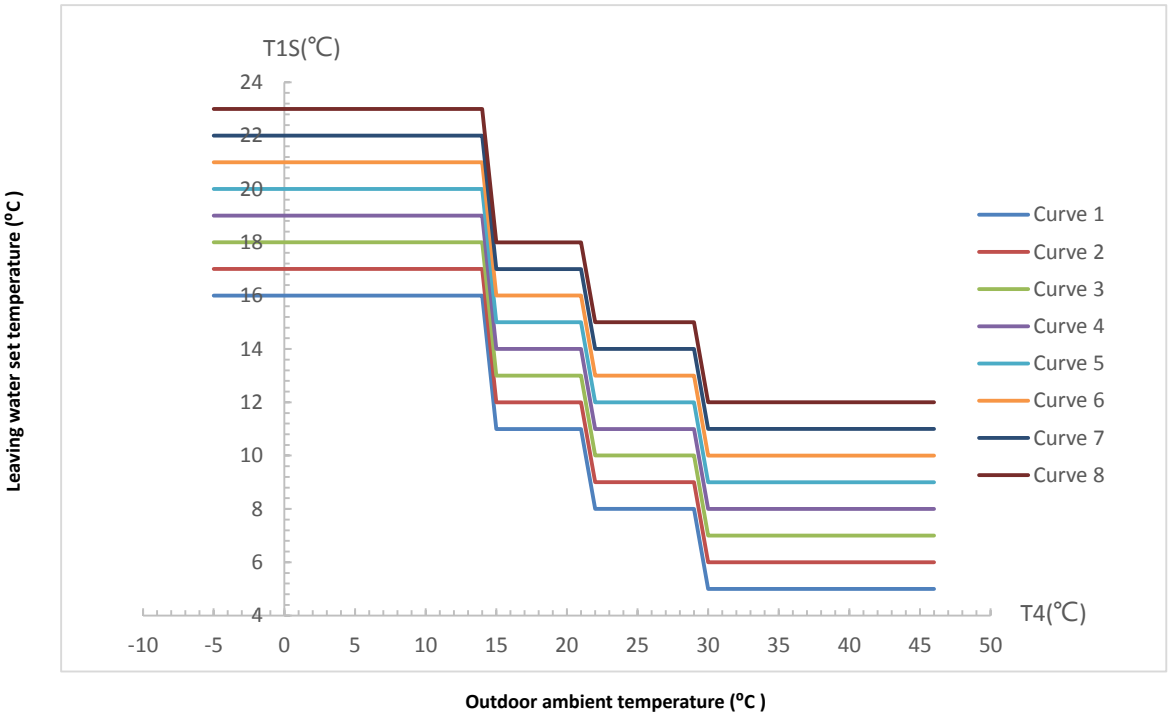
Low temperature curves for heating mode[1]



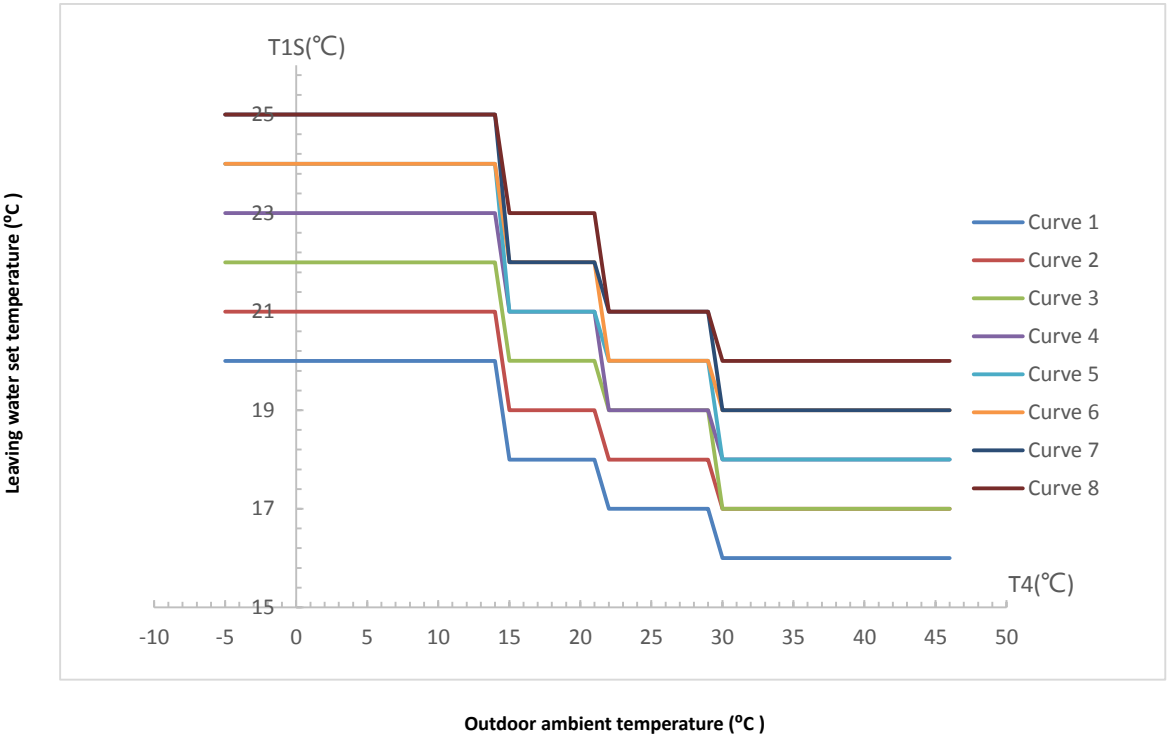
High temperature curves for heating mode[1]



Low temperature curves for cooling mode[1]

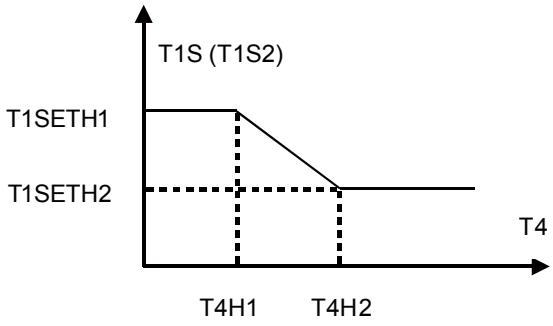


High temperature curves for cooling mode[1]

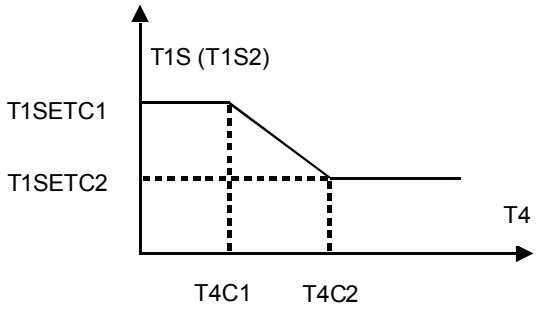


The automatic setting curves are the ninth curve for cooling and heating mode.

Automatic setting curve for heating mode



Automatic setting curve for cooling mode

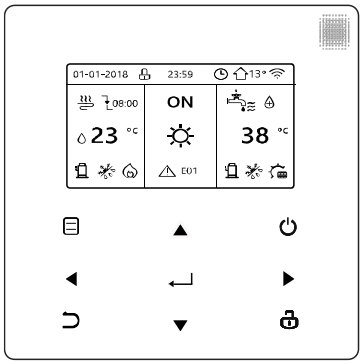


Part 3 Installation and Field Settings

1 User Interface Field Settings

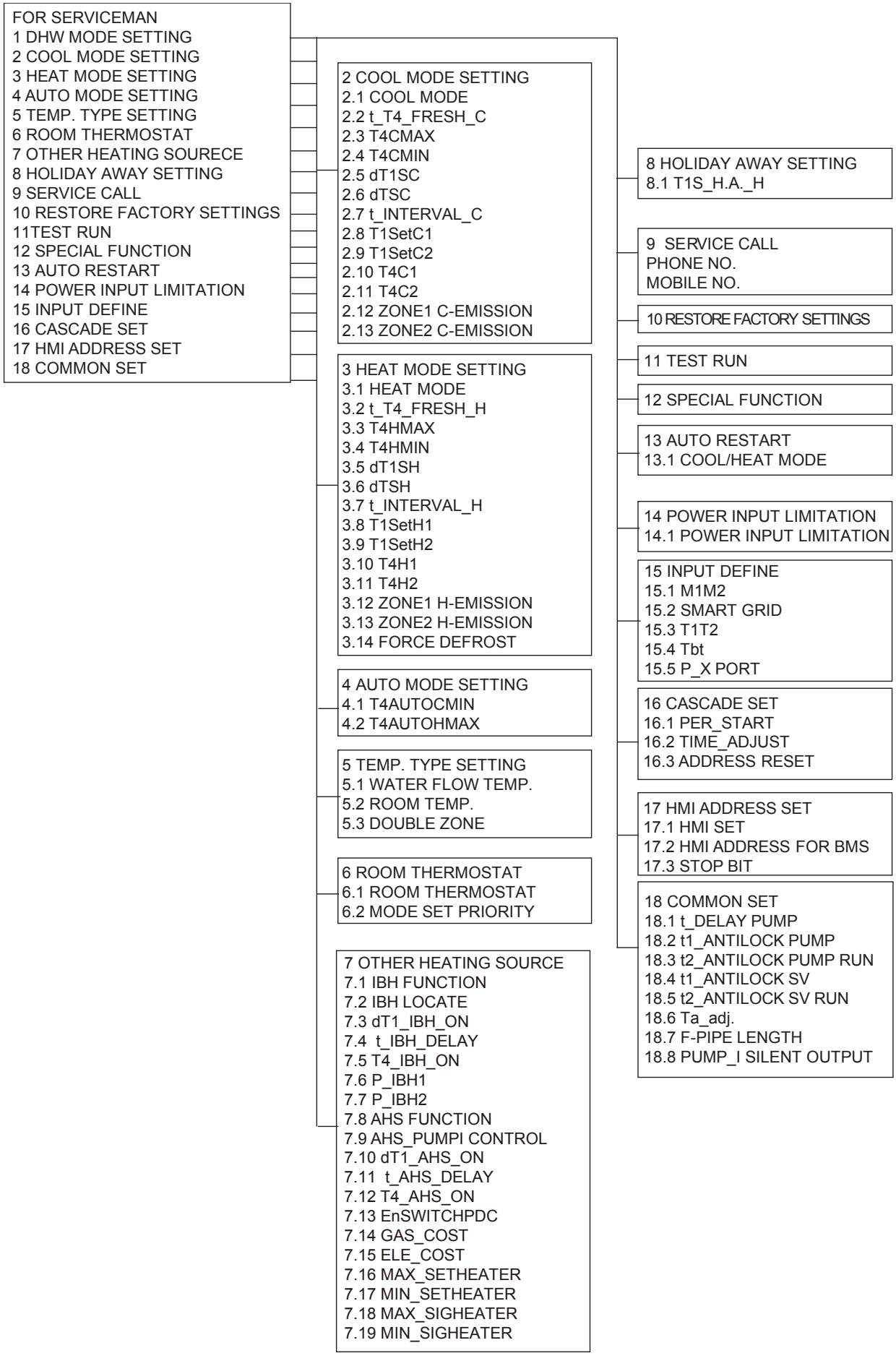
1.1 Introduction

During installation, the 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 user interface. The user interface menus and settings can be navigated using the user interface's touch-sensitive keys, as shown below：



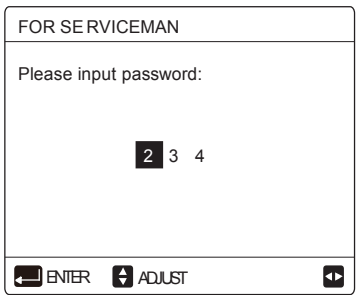
Keys	Function
	Go to the menu structure(on the home page)
	Navigate the cursor on the display Navigate in the menu structure Adjust settings
	Turn on/off the space heating/cooling operation or DHW mode Turn on/off functions in the menu structure
	Come back to the up level
	Long press for unlock/lock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

1.2 Menu Structure



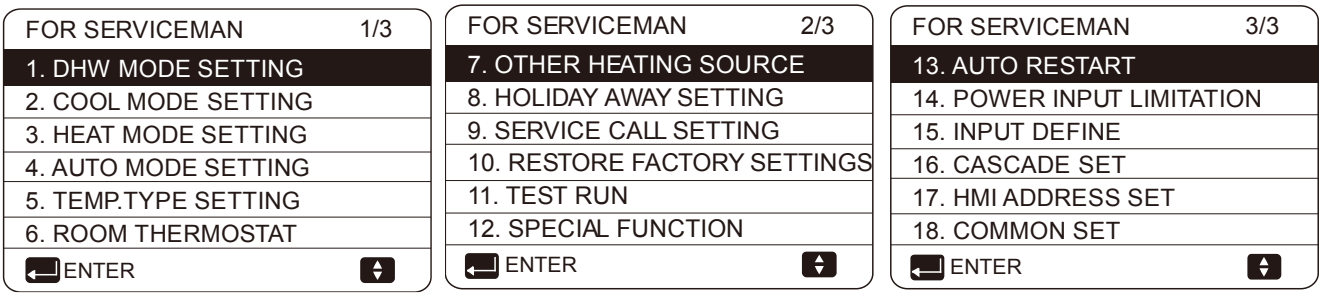
1.3 FOR SERVICEMAN Menu

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



Enter the password, using ◄ ► to navigate between digits and using ▼ ▲ to adjust the numerical values. The password is 234.
Then the following pages will be displayed after putting the password.

FOR SERVICEMAN menu



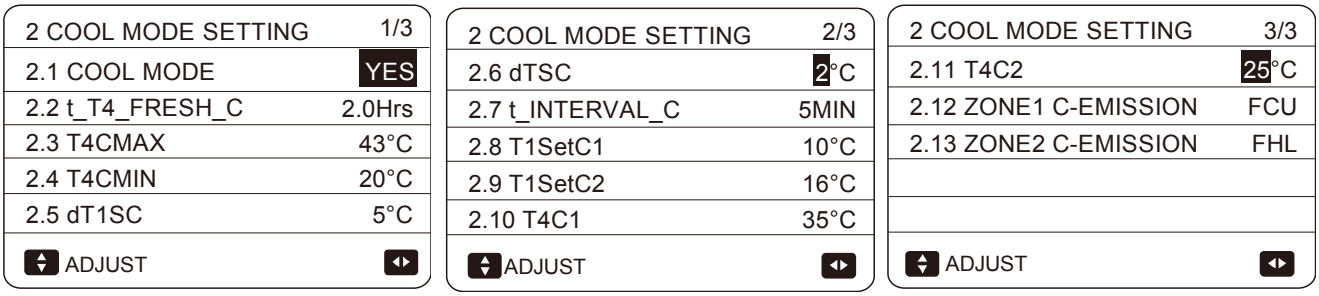
1.4 DHW MODE SETTING Menu

Because Aqua Eco Mini Heat Pump has no DHW function, so this menu can not be set.

1.5 COOL MODE SETTING Menu

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

COOL MODE SETTING menu



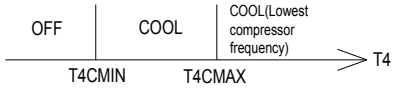
COOL MODE enables or disables cooling mode. For installations with space cooling terminals, select **YES** to enable cooling mode. For installations without space cooling terminals, select **NON** to disable cooling mode.

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.

T4CMIN sets the ambient temperature below which the heat pump will not operate in cooling mode.

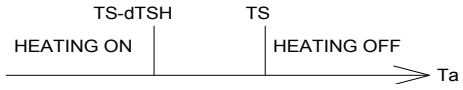
T4CMAX, T4CMIN



Abreviations:
T4: Outdoor ambient temperature

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

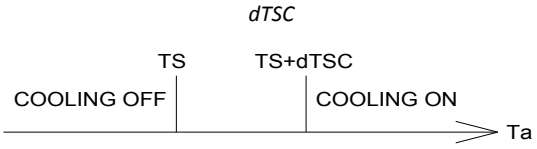
dT1SC



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

dTSC sets the temperature difference between the actual room temperature (Ta) and set room temperature (TS) above which the heat pump provides chilled water to the space cooling terminals. When Ta – TS ≥ dTSC the heat pump provides chilled water to the space cooling terminals and when Ta ≤ TS the heat pump does not provide chilled water to the space cooling terminals. **dTSC** is only applicable if **YES** is selected for **ROOM TEMP** in the 5 **TEMP. TYPE SETTING** menu.

dTSC



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

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

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

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

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

ZONE1 C-EMISSION sets the emission type of zone1 for cooling mode. (FCU: Fan coil unit; FHL: Floor heating loop; RAD.: Radiator)

ZONE2 C-EMISSION sets the emission type of zone2 for cooling mode. (FCU: Fan coil unit; FHL: Floor heating loop; RAD.: Radiator)

1.6 HEAT MODE SETTING Menu

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

HEAT MODE SETTING menu

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

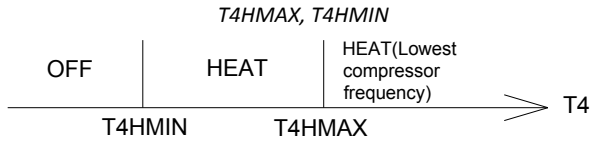
3 HEAT MODE SETTING	2/3
3.6 dTSH	2°C
3.7 t_INTERVAL_H	5MIN
3.8 T1SetH1	35°C
3.9 T1SetH2	28°C
3.10 T4H1	-5°C
ADJUST	

3 HEAT MODE SETTING	3/3
3.11 T4H2	7°C
3.12 ZONE1 H-EMISSION	RAD.
3.13 ZONE2 H-EMISSION	FHL
3.14 FORCE DEFROST	NON
ADJUST	

HEAT MODE enables or disables heating mode.

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

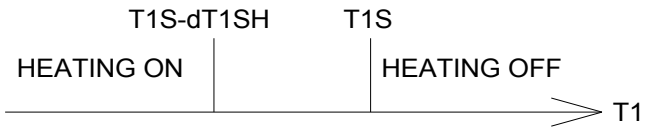
T4HMAX sets the ambient temperature above which the heat pump will operate heating mode with lowest compressor frequency.



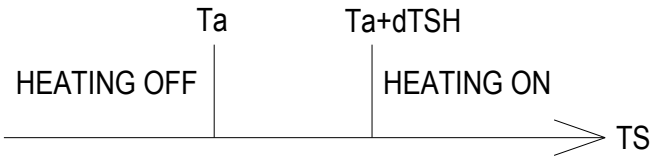
Abreviations:
T4: Outdoor ambient temperature

T4HMIN sets the ambient temperature below which the heat pump will not operate in heating mode.

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 hot 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 hot water to the space heating terminals. When TS – Ta ≥ dTSH the heat pump provides hot water to the space heating terminals and when Ta ≥ TS the heat pump does not provide hot water to the space heating terminals. **dTSH** is only relevant if **YES** is selected for **ROOM TEMP** in the 5 **TEMP. TYPE SETTING** menu.



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

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

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

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

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

ZONE1 H-EMISSION sets the emission type for heating mode. (FCU: Fan coil unit; FHL: Floor heating loop; RAD.: Radiator)

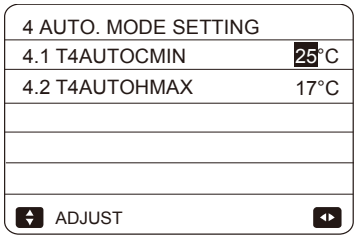
ZONE2 H-EMISSION sets the emission type for heating mode. (FCU: Fan coil unit; FHL: Floor heating loop; RAD.: Radiator)

FORCE DEFROST enable heat pump enters defrost mode by manual operation when heat pump runs for 10min and air side heat exchanger outlet temperature T3<0℃ lasts for more than 6min.

1.7 AUTO MODE SETTING Menu

MENU > FOR SERVICEMAN > AUTO MODE SETTING

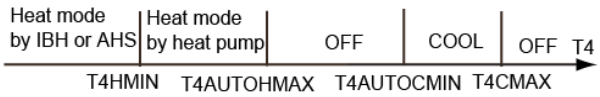
AUTO MODE SETTING menu



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

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

T4AUTOCMAX, T4AUTOCMIN

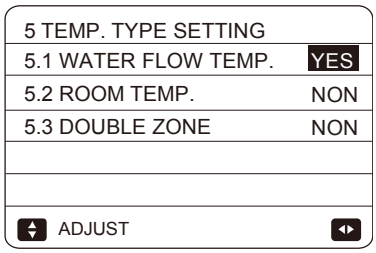


Abreviations:
AHS: Additional heating source
IBH: Backup electric heater
T4CMAX: The ambient temperature above which the heat pump will not operate in cooling mode.
T4HMIN: The ambient temperature below which the heat pump will not operate in heating mode.

1.8 TEMP. TYPE SETTING Menu

MENU > FOR SERVICEMAN > TEMP. TYPE SETTING

TEMP. TYPE SETTING menu

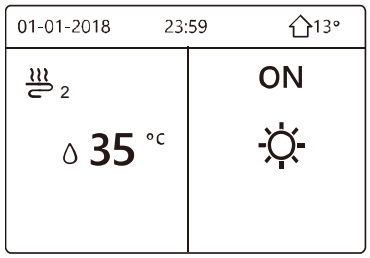


The TEMP. TYPE SETTING is used for selecting whether the water flow temperature or room temperature is used to control the ON/OFF of the heat pump.

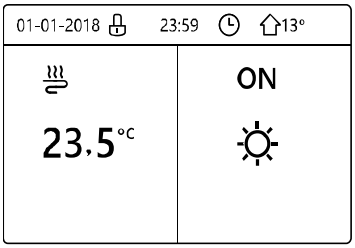
When ROOM TEMP. is enabled, the target water flow temperature will be calculated from climate curves.

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

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



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



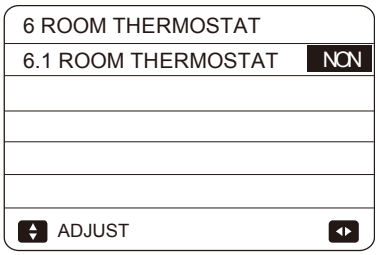
DOUBLE ZONE sets whether there are two zones.

WATER FLOW TEMP.		ROOM TEMP.	DOUBLE ZONE		Double zones control
YES		YES	YES	NO	Zone 1: Water temperature control
					Zone 2: Climate curve control
YES	NO	NO	YES		Zone 1: Water temperature control
					Zone 2: Water temperature control
YES	NO	YES	YES		Zone 1: Water temperature control
					Zone 2: Climate curve control

1.9 ROOM THERMOSTAT Menu

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

ROOM THERMOSTAT menu



As an alternative to control space heating/cooling modes according to the leaving water temperature and/or the room temperature detected by the temperature sensor inside the user interface, separate room thermostat can be installed and used to control space heating/cooling modes.

ROOM THERMOSTAT sets whether or not room thermostats are installed:

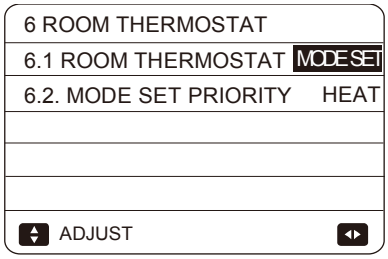
ROOM THERMOSTAT = NON: No room thermostat.

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

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

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

If **ROOM THERMOSTAT** is set as MODE SET, the interface appears:



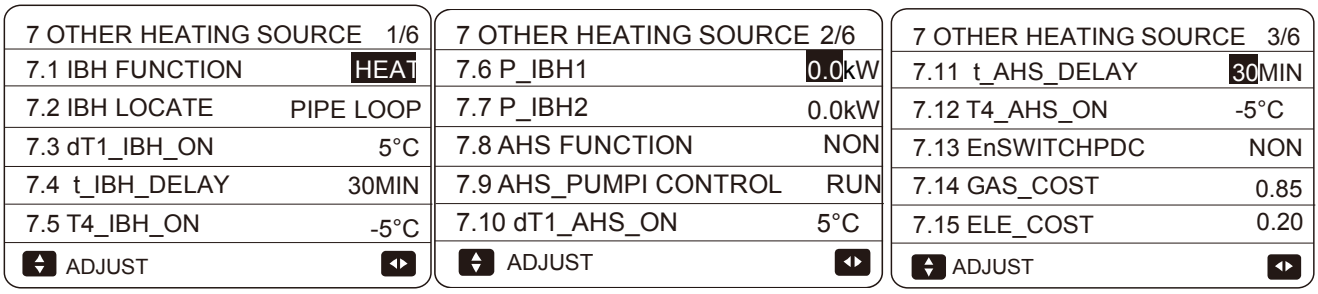
MODE SET PRIORITY sets whether cooling mode or heating mode takes priority. When CL port and HL port close at the same time, heat pump will run corresponding to the MODE SET PRIORITY setting.

1.10 OTHER HEATING SOURCE Menu

1.10.1 OTHER HEATING SOURCE menu overview

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

OTHER HEATING SOURCE menu



7 OTHER HEATING SOURCE	4/6
7.16 MAX_SETHEATER	80°C
7.17 MIN_SETHEATER	30°C
7.18 MAX_SIGHEATER	10V
7.19 MIN_SIGHEATER	3V
ADJUST	

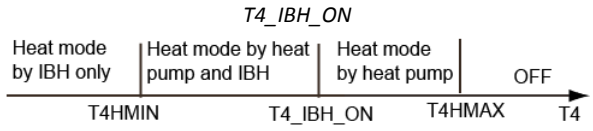
IBH FUNCTION set IBH runs for heat mode.

IBH LOCATE means IBH is installed for pipe heating. (Default setting: PIPE LOOP)

dT1_IBH_ON sets the temperature difference between the heat pump leaving water set temperature (T1S) and the heat pump leaving water temperature (T1) above which the backup electric heater is on. When T1S - T1 ≥ dT1_IBH_ON the backup electric heater is on.

t_IBH_DELAY sets the delay time for the electric heater to turn on after the compressor starts.

T4_IBH_ON sets the ambient temperature below which the backup electric heater is on.



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

P_IBH1 sets heating capacity of IBH1, which is used for energy consumption statistics.

P_IBH2 sets heating capacity of IBH2, which is used for energy consumption statistics.

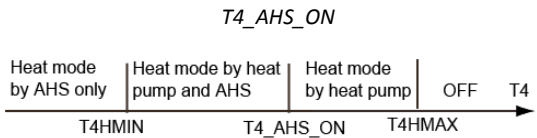
AHS FUNCTION sets enable or disable the additional heating source function.

AHS_PUMPI CONTROL select the pump operating status when only AHS runs

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

t_ASH_DELAY sets the delay time for the AHS to turn on after the compressor starts.

T4_AHS_ON sets the ambient temperature below which the additional heating source is on.



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

EnSWITCHPDC enable or disable the function that heat pump and additional heating source switch automatically based on running cost

GAS_COST set the price of gas

ELE_COST set the price of electricity

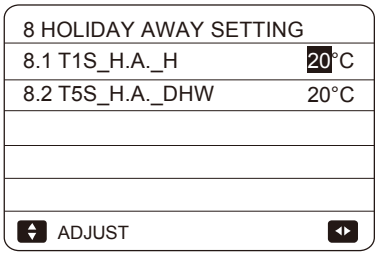
MAX_SETHEATER sets the maximum temperature of additional heating source.

MIN_SETHEATER sets the minimum temperature of additional heating source.

1.11 HOLIDAY AWAY SETTING Menu

MENU > FOR SERVICEMAN > HOLIDAY AWAY SETTING

HOLIDAY AWAY SETTING menu



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.

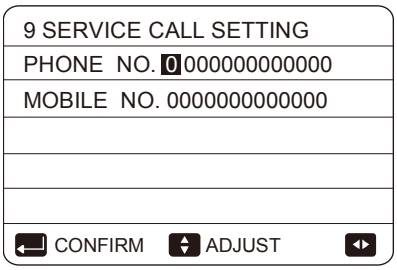
T1S_H.A._H sets the heat pump leaving water set temperature for space heating mode when in holiday away mode.

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

1.12 SERVICE CALL Menu

MENU > FOR SERVICEMAN > SERVICE CALL

SERVICE CALL menu



PHONE NO. and **MOBILE NO.** can be used to set after-sales service contact numbers. Use ▼ ▲ to adjust the numerical values. The maximum length of the phone numbers is 13 digits.

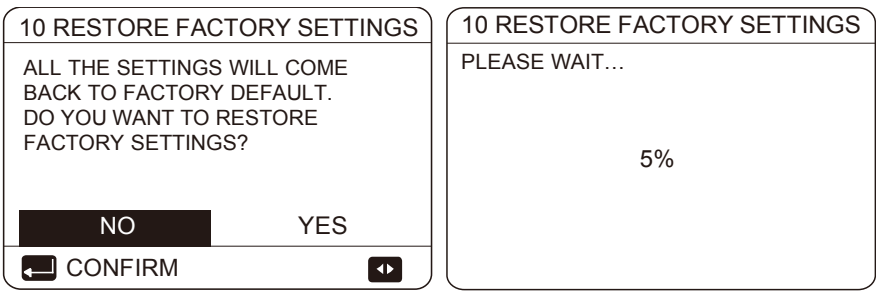
1.13 RESTORE FACTORY SETTINGS

MENU > FOR SERVICEMAN > RESTORE FACTORY SETTINGS

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

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

RESTORE FACTORY SETTINGS screens

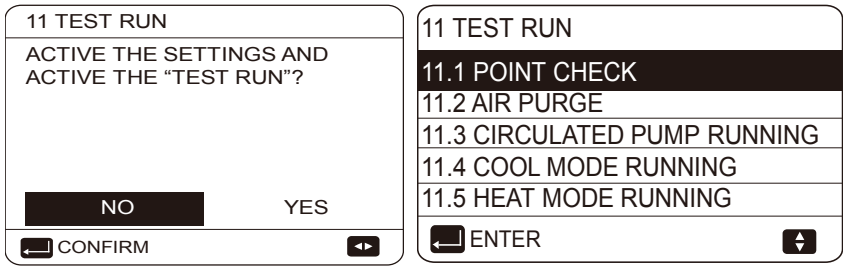


1.14 TEST RUN

MENU > FOR SERVICEMAN > TEST RUN

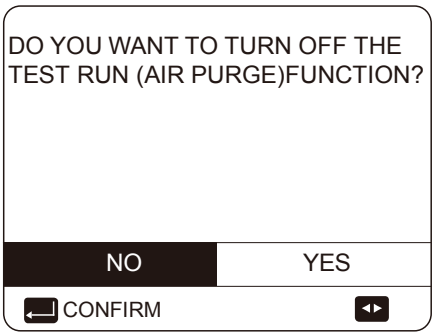
TEST RUN is used to do the point check and check that air purge function, circulation pump, space cooling mode, space heating mode are all operating correctly.

TEST RUN start screen and TEST RUN menu



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

Exit air purge screen

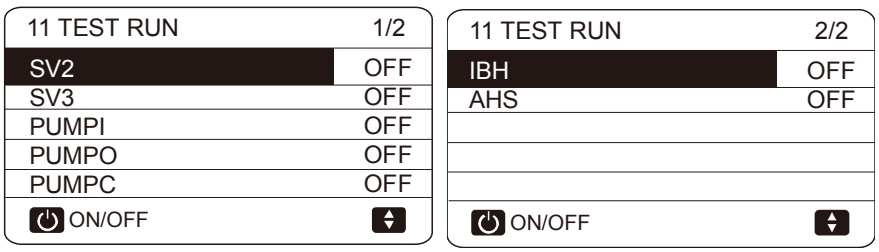


If any error code is displayed during the test run operation, the cause should be investigated.

1.14.1 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 COMFIRM to toggle the on/off state of the component. If a valve does not turn on/off when its on/off state is toggled or if a pump/heater does not operate when turned on, check the component's connection to the hydronic system main PCB.

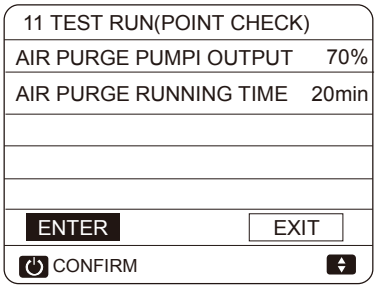
POINT CHECK menu



1.14.2 AIR PURGE operation

MENU > FOR SERVICEMAN > TEST RUN > AIR PURGE

AIR PURGE operation display



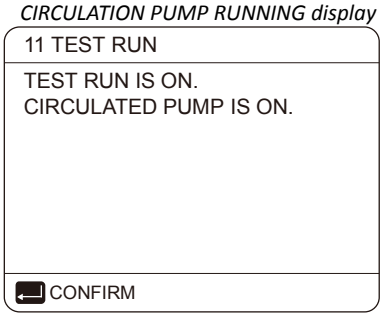
Once installation is complete it is important to run the air purge function to remove any air which may be present in the water piping and which could cause malfunctions during operation.

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. PUMPI will run according to the output and running time that has been set

1.14.3 CIRCULATED PUMP RUNNING operation

MENU > FOR SERVICEMAN > TEST RUN > CIRCULATED PUMP RUNNING

CIRCULATION PUMP RUNNING display

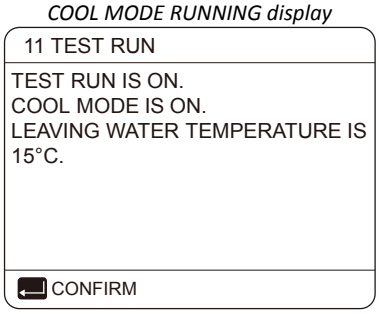


CIRCULATED PUMP RUNNING operation is used to check the operation of the circulation pump. When circulation pump running is turned on, all running components will stop. 60 seconds later, the SV1 will be off, the SV2 will be on, 60 seconds later PUMPI will operate. 30s later, if the flow switch checked normal flow, PUMPI will operate for 3min, after the pump stops 60 seconds, the SV1 will close and the SV2 will be off. 60s later the both PUMPI and PUMPO will operate, 2 mins later, the flow switch will check the water flow. If the flow switch closes for 15s, PUMPI and PUMPO will operate until the next command is received.

1.14.4 COOL MODE RUNNING operation

MENU > FOR SERVICEMAN > TEST RUN > COOL MODE RUNNING

COOL MODE RUNNING display

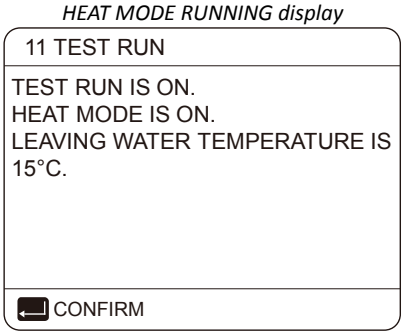


The **COOL MODE RUNNING** operation is used to check the operation of the system in space cooling mode.

During the **COOL MODE RUNNING** operation, the 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.

1.14.5 HEAT MODE RUNNING operation

HEAT MODE RUNNING display



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

During HEAT MODE test running, the default target outlet water temperature is 35°C. The IBH (backup heater) will turn on after the compressor runs for 10 min. After the IBH runs for 3 minutes, the IBH will turn off, the heat pump will operate until the water temperature increase to a certain value or the next command is received.

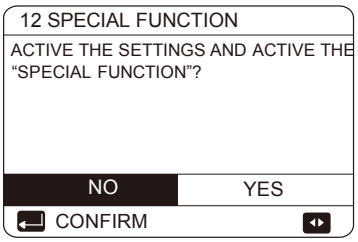
1.15 SPECIAL FUNCTION

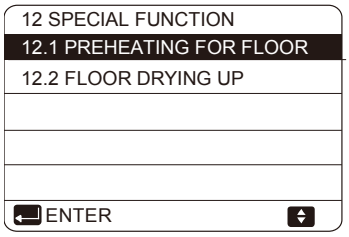
1.15.1 SPECIAL FUNCTION menu overview

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**

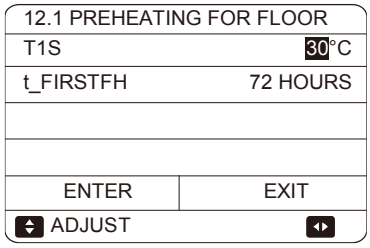
Before floor heating, if a large amount of water remains on the floor, the floor may be warped or even rupture during floor heating operation, in order to protect the floor, floor drying is necessary, during which the temperature of the floor should be increased gradually.

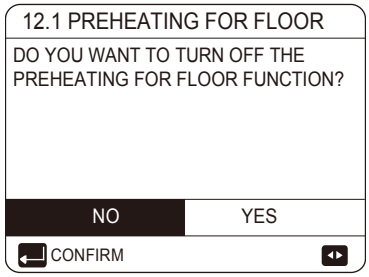
During first operation of the unit, air may remain in the water system which can cause malfunctions during operation. It is necessary to run the air purge function to release the air (make sure the air purge valve is open).

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

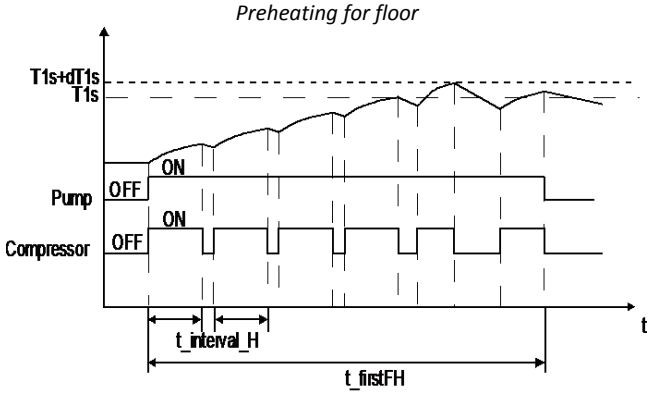
t_FIRSTFH sets the duration of preheating for floor mode.

Preheating for floor menu





Preheating for floor



Abreviations:
t_interval_H: Compressor re-start delay in space heating mode.

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

1.15.3 FLOOR DRYING UP

MENU > FOR SERVICEMAN > SPECIAL FUNCTION > FLOOR DRYING UP

FLOOR DRYING UP menu

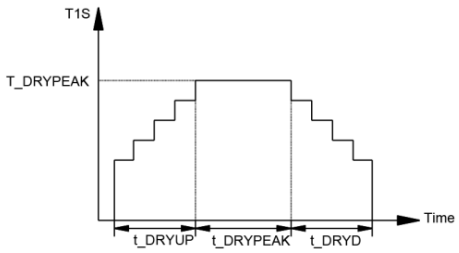
12.2 INPUT DEFINE	1/2
WARM UP TIME(t_DRYUP)	8 DAYS
KEEP TIME(t_HIGHPEAK)	5 DAYS
TEMP.DOWN TIME(t_DRYD)	5 DAYS
PEAK TEMP.(t_DRYPEAK)	45°C
START TIME	21:00
ADJUST	

12.2 INPUT DEFINE	2/2
START DATE	21-10-2021
ENTER	EXIT
ENTER	

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

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

FLOOR DRYING UP settings



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

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

TEMP. DOWN TIME(t_DRYD) sets the duration of Phase 3.

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

START TIME sets the floor drying up operation start time.

START DATE sets the floor drying up operation start date.

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

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

1.16 AUTO RESTART

MENU > FOR SERVICEMAN > AUTO RESTART

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

AUTO RESTART menu

13 AUTO RESTART	
13.1 COOL/HEAT MODE	YES
ADJUST	

1.17 POWER INPUT LIMITATION

MENU > FOR SERVICEMAN > POWER INPUT LIMITATION

POWER INPUT LIMITATION

14 POWER INPUT LIMITATION	
14.1POWER INPUT LIMITATION	0
ADJUST	

POWER INPUT LIMITATION sets the type of power input limitation and the setting range is 1-8. If the unit will operate at larger power input, 1 should be selected. If the unit will operate at a lower power input, 2-8 should be selected and the power input and capacity will decrease.

Limitation value (unit:A)

Model / No.	1	2	3	4	5	6	7	8
5/7/9kW	16	15	14	13	12	11	10	9
12/14/16kW(1N)	28	26	24	22	20	18	16	14
12/14/16kW(3N)	11	10	9	8	7	6	5	5

1.18 INPUT DEFINE

MENU > FOR SERVICEMAN > INPUT DEFINE

INPUT DEFINE

15 INPUT DEFINE	
15.1 M1M2	REMOTE ON/OFF
15.2 SMART GRID	NON
15.3 T1T2	NON
15.4 Tbt	NON
15.5 P_X PORT	DEFROST
ADJUST	

INPUT DEFINE sets sensors and functions to fulfill with installation.

M1M2 sets the remote control function of M1M2 for ON/OFF of heat pump

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

T1T2 sets control options of Port T1T2 (0: NON; 1: RT/Ta_PCB)

Tbt set whether balance tank temperature sensors are installed in the balance tank.

P_X PORT is set DEFORST by default. When P_X PORT is set ALARM, it represents the fault signal output of the unit. (0: DEFORST; 1: ALARM)

1.19 CASCADE SET

MENU > FOR SERVICEMAN > CASCADE SET

CASCADE SET

16 CASCADE SET	
16.1 PER_START	10%
16.2 TIME_ADJUST	5 MIN
16.3 ADDRESS RESET	FF
ADJUST	

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

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

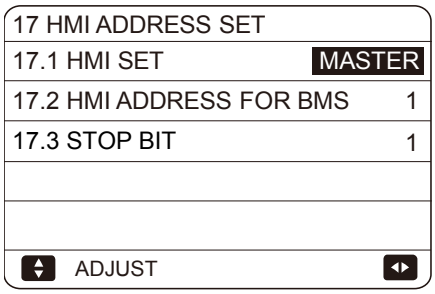
TIME_ADJUST sets the judgment period of adding and subtracting units

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

1.20 HMI ADDRESS SET

MENU > FOR SERVICEMAN > HMI ADDRESS SET

HMI ADDRESS SET



HMI SET sets the wired controller is master or slave. (0=MASTER, 1=SLAVE)

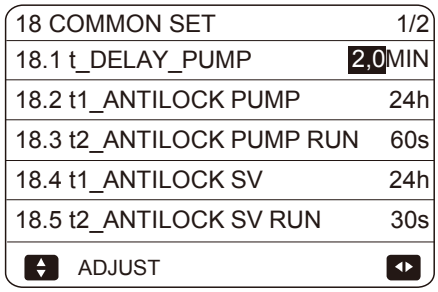
When HMI SET is set to SLAVE, the controller can only switch the operation mode, turn on or off, set the temperature, and cannot set other parameters and functions.

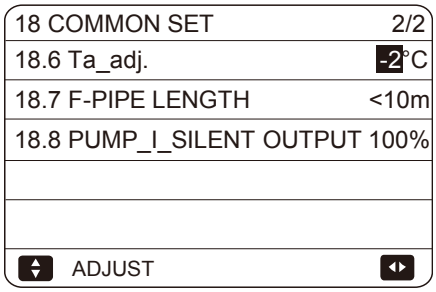
HMI ADDRESS FOR BMS sets the HMI address code for BMS.(only valid for master controller)

STOP BIT set upper computer stop bit(1: STOP BIT1; 2:STOP BIT2)

1.21 COMMON SET

MENU > FOR SERVICEMAN > COMMON SET





t_DELAY PUMP sets the delay time for the pump to turn off after the compressor stops.

t1_ANTILOCK PUMP sets the interval time that the pump runs in order to antilock

t2_ANTILOCK PUMP RUN sets the running time for pump antilock operation

t1_ANTILOCK SV sets the interval time that the valve works in order to antilock

t2_ANTILOCK SV RUN sets the running time for valve antilock operation

Ta-adj is an correction value for Ta which is inside the wired controller.

F-PIPE LENGTH select the total length in the liquid pipe (0=F-PIPE LENGTH<10m, 1=F-PIPE LENGTH>=10m)

PUMP_I_SLIENT OUTPUT can decrease water pump maximum output in order to decrease the noise of heat pump.

2 Operation parameter

MENU > **OPERATION PARAMETER**

This menu is for installer or service engineer reviewing the operation parameters.

Operation parameter

OPPERATION PARAMETER	#00
ONLINE UNITS NUMBER	1
ODU MODEL	16 kW
OPERATION MODE	COOL
FREQUENCY ORDER	ON
FREQUENCY LIMITED TYPE	0
COMP. RUN TIME	1 MIN
ADDRESS	1/10

OPPERATION PARAMETER	#00
COMP. FREQUENCY	37 Hz
FAN SPEED	810 R/MIN
EXPAN VALVE	280 P
Tp COMP. DISCHARGE TEMP.	60℃
Th COMP. SUCTION TEMP.	23℃
T3 OUTDOOR EXCHANGE TEMP.	42℃
ADDRESS	2/10

OPPERATION PARAMETER	#00
T4 OUTDOOR AIR TEMP.	32℃
TF MODULE TEMP.	50℃
P1 COMP. PRESSURE	2970 kPa
P2 COMP. PRESSURE	1380 kPa
T2B PLATE F-IN TEMP.	21℃
T2 PLATE F-OUT TEMP.	19℃
ADDRESS	3/10

OPPERATION PARAMETER	#00
TW_I PLATE W-INLET TEMP.	23℃
TW_O PLATE W-OUTLET TEMP.	20℃
T1 LEAVING WATER TEMP.	- -℃
TW2 CIRCUIT2 WATER TEMP.	- -℃
Ta ROOM TEMP.	- -℃
RH ROOM HUMIDITY	- - %
ADDRESS	4/10

OPPERATION PARAMETER	#00
T5 WATER TANK TEMP.	- -℃
T5_2 WATER TANK TEMP.	- -℃
Tbt BUFFER TANK TEMP.	0℃
Tsolar	0℃
T1S' C1 CLI. CURVE TEMP.	0℃
T1S2' C1 CLI. CURVE TEMP.	0℃
ADDRESS	5/10

OPPERATION PARAMETER	#00
WATER PRESSURE	- - bar
WATER FLOW	2.65 M3/H
HEAT PUMP CAPACITY	0.00 kW
ODU CURRENT	3 A
ODU VOLTAGE	232 V
DC GENERATRIX VOLTAGE	490 V
ADDRESS	6/10

OPPERATION PARAMETER	#00
DC GENERATRIX CURRENT	9 A
POWER CONSUM	53 kWh
SV1	OFF
SV2	OFF
SV3	OFF
PUMP_I	ON
ADDRESS	7/10

OPPERATION PARAMETER	#00
PUMP_O	ON
PUMP_C	OFF
PUMP_S	OFF
PUMP_D	OFF
IBH1	OFF
IBH2	OFF
ADDRESS	8/10

OPPERATION PARAMETER	#00
TBH	OFF
AHS	OFF
COM. TOTAL RUN TIME	8 Hrs
FAN TOTAL RUN TIME	8 Hrs
PUMPI TOTAL RUN TIME	8 Hrs
IBH1 TOTAL RUN TIME	0 Hrs
ADDRESS	9/10

OPPERATION PARAMETER	#00
IHB2 TOTAL RUN TIME	0 Hrs
THB TOTAL RUN TIME	- - Hrs
AHS TOTAL RUN TIME	0 Hrs
IDU SOFTWARE	29-09-2021V15
ODU SOFTWARE	28-09-2021V25
HMI SOFTWARE	16-10-2021V19
ADDRESS	10/10

The following parameter ranges are used to roughly determine whether the system is running properly:

Discharge temperature(Tp) for heating mode	
T4＜-10℃	Twout+15＜Tp＜Tw_out+40
-10℃≤T4＜10℃	Twout+10＜Tp＜Tw_out+35
10℃≤T4＜25℃	Twout+10＜Tp＜Tw_out+30
T4≥25℃	Twout+10＜Tp＜Tw_out+28
Note: T4 means ambient temperature Tw_out means leaving water temperature.	

Discharge pressure(P1) for heating mode									
Tw_out(℃)	25	30	35	40	45	50	55	60	65
P1（kPa）	1750±150	2000±150	2270±150	2560±150	2890±150	3250±150	3630±150	3900±150	4200±150
Note: P1 is absolute pressure.									

Discharge temperature(Tp) for cooling mode				
Tp	Fx＜44Hz	44Hz≤Fx＜62Hz	62Hz≤Fx＜72Hz	Fx≥72Hz
T4＜25℃	52±10	56±10	58±10	62±10
25℃≤T4＜30℃	56±10	62±10	68±10	74±10
30℃≤T4＜35℃	65±10	70±10	75±10	80±10
35℃≤T4＜40℃	70±10	75±10	80±10	85±10
40℃≤T4＜46℃	75±10	80±10	85±10	90±10
T4≥46℃	78±10	80±10	85±10	90±10
Note: Fx means compressor operating frequency.				

Suction pressure(P1) for cooling mode							
Tw_out(℃)	5～7	8～10	11～13	14～16	17～19	20～22	23～25
P1（kPa）	880±100	955±100	1050±100	1150±100	1250±100	1360±100	1500±100
Note: P1 is absolute pressure.							

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