Monobloc

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1. Specification

■ 1 phase Inverter (5.5 ~ 9 kW)

Nominal Capacity and Nominal Input					FHBW056B1 [HM051HFD UA41]	FHBW076B1 [HM071HFD UA41]	FHBW096B1 [HM091HFD UA41]
-	-	Outdoor Temp.(℃)DB / WB	Leaving Water Temp.(℃)	-			
Capacity	Heating	7 / 6	35	KW	5.50	7.00	9.00
			55	KW	5.50	7.00	8.00
		2 / 1	35	KW	5.50	6.50	7.00
		-7	35	KW	5.50	7.00	9.00
			35	KW	5.50	5.70	6.00
			55	KW	5.50	7.00	8.00
	Cooling	35 / 24	18	KW	5.50	7.00	8.00
			7	KW	5.50	7.00	8.00
Power Input	Heating	7 / 6	35	KW	1.12	1.49	1.96
			55	KW	1.86	2.46	2.86
		2 / 1	35	KW	1.72	2.06	2.26
		-7	35	KW	1.93	3.41	4.50
			35	KW	1.93	2.01	2.14
			55	KW	2.89	3.78	4.44
	Cooling	35 / 24	18	KW	1.12	1.49	1.78
			7	KW	1.83	2.41	2.81
COP	Heating	7 / 6	35	W/W	4.90	4.70	4.60
			55	W/W	2.95	2.85	2.80
		2 / 1	35	W/W	3.20	3.15	3.10
		-7	35	W/W	2.85	2.05	2.00
			35	W/W	2.85	2.83	2.80
			55	W/W	1.90	1.85	1.80
EER	Cooling	35 / 24	18	W/W	4.90	4.70	4.50
			7	W/W	3.00	2.90	2.85
Seasonal space heating eff. Class			35	-	A+++	A+++	A+++
			55	-	A++	A++	A++
Seasonal space heating efficiency (ηs)			35	%	180	187	185
			55	%	140	141	143
SCOP(average climate)			35	W/W	4.58	4.75	4.70
			55	W/W	3.58	3.60	3.66
Water Flow Rate			Rated(at △T 5℃)	ℓ / min	15.8	20.1	25.9
Water Heating Efficiency (profile L)				%	130	130	130

Electrical Specifications			FHBW056B1 [HM051HFD UA41]	FHBW076B1 [HM071HFD UA41]	FHBW096B1 [HM091HFD UA41]
Power Supply		V,∅,Hz	220-240,1,50	220-240,1,50	220-240,1,50
Peak Control Running Current	Heating	A	15	18	20
	Cooling	A	7	10	13
Rated Running Curent	Heating	A	4.9	6.5	8.5
	Cooling	A	4.9	6.5	7.7
Circuit breaker		A	20	25	25
Wiring Connections	Power Supply Cable (included Earth,H07RN-F)	mm^2	4.0 x 3C	4.0 x 3C	4.0 x 3C
	Communication cable(H07RN-F)	mm^2 x cores	0.75 x 2C	0.75 x 2C	0.75 x 2C

Technical Specifications				FHBW056B1 [HM051HFD UA41]	FHBW076B1 [HM071HFD UA41]	FHBW096B1 [HM091HFD UA41]
Sound pressure level	Heating(rated,@5m)		dB(A)	31	32	34
Sound power level	Heating	Low noise	dB(A)	52	53	55
		Rated	dB(A)	53	54	56
		Daytime max.	dB(A)	61	63	64
Dimensions	Unit	W x H x D	mm	1,242 x 853 x 391	1,242 x 853 x 391	1,242 x 853 x 391
	Packed Unit	W x H x D	mm	1,330 x 1,017 x 480	1,330 x 1,017 x 480	1,330 x 1,017 x 480
Weight	Unit		kg	96	96	96
	Packed Unit		kg	108.5	108.5	108.5
Exterior	Color		-	Black STS silver solid	Black STS silver solid	Black STS silver solid
	RAL Code		-	RAL 8019	RAL 8019	RAL 8019
	Color of Front Grille		-	Light Graphite	Light Graphite	Light Graphite
	RAL Code of Front Grille		-	RAL 8022	RAL 8022	RAL 8022

1. Specification

Technical Specifications (Water side)				FHBW056B1 [HM051HFD UA41]	FHBW076B1 [HM071HFD UA41]	FHBW096B1 [HM091HFD UA41]
Operation Range (Leaving Water Temp.)	Cooling	Min.~ Max.	°C	5 ~ 27	5 ~ 27	5 ~ 27
	Heating	Min.~ Max.	°C	15 ~ 75	15 ~ 75	15 ~ 75
	DHW*	Min.~ Max.	°C	15 ~ 65(80*)	15 ~ 65(80*)	15 ~ 65(80*)
Water Pump***	Type		-	Canned type for hot water circulation		
	Model		-	OH SUNG, ODM-061P		
	Model Type		-	BLDC		
	Steps of Pumping Performance		-	Variable speed 10% to 100%		
	Power input (100% Capacity)	Min. / Rated	W	17 / 110	17 / 110	17 / 110
	Water Flow Rate	Min. / Rated	ℓ/min	5 / 15.8	5 / 20.1	5 / 25.9
Water Pump_2***	Type		-	Canned type for hot water circulation		
	Model		-	GRUNDFOS, UPM*K 20-75 CHBL		
	Motor Type		-	BLDC		
	Steps of Pumping Performance		-	Variable speed 10% to 100%		
	Power input (100% Capacity)	Min. / Rated	W	3 / 60	3 / 60	3 / 60
	Water Flow Rate	Min. / Rated	ℓ/min	5 / 15.8	5 / 20.1	5 / 25.9
Heat Exchanger	Type		-	Brazed Plate HEX		
	Quantity		-	1	1	1
	Number of Plate		EA	52	52	52
	Water Volume		ℓℓ	0.7	0.7	0.7
Flow Sensor****	Model		-	SIKA VVX20		
	Measuring range	Min.~Max.	ℓ/min	5 ~ 80	5 ~ 80	5 ~ 80
	Flow (Trigger point)	Min.	ℓ/min	5	5	5
Flow Sensor_2****	Model		-	SEBALGF-080-C20-E-C0.5V		
	Measuring range	Min.~Max.	ℓ/min	5 ~ 80	5 ~ 80	5 ~ 80
	Flow (Trigger point)	Mln.	ℓ/min	5	5	5
Water Pressure sensor	Model		-	Sensata OFM(2HMP)		
	Measuring range	Min.~Max.	bar(G)	0 ~ 20	0 ~ 20	0 ~ 20
Piping Connections	Inlet		inch	Male PT 1"according to 1S0 7-1 Capered pipe threads		
	Outlet		inch	Male PT 1"according to 1S0 7-1 Capered pipe threads		
Water strainer	Supply type		-	Loose supply(externally installed)		
	Mesh size		-	30 mesh	30 mesh	30 mesh
	Max. particle size		mm	0.6	0.6	0.6
	Material			Stainless Steel		
Relief Valve	Pressure Limit	Upper Limit	bar	3.0	3.0	3.0

Note

1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes. And “Electric characteristics” chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
3. Sound power level is measured in accordance with EN 12102-1 and ISO 9614.
   - Rated : This mode is measured on the rated condition in the semi-anechoic rooms. Therefore, these values may vary depending on operation conditions.
   - Daytime max : This mode is measured based on max. fan RPM and max. compressor Hz. that can be reached under outdoor air temperature 2°C.
   - Low noise : This mode lowers noise by limiting the compressor Hz. and fan RPM, and thus the performance may be limited.
4. Performances are accordance with EN14511 and reflect ErP testing conditions. The values indicated above are the declared values at rated conditions acc. ErP regulation. For max. capacities, please refer to Performance Data.
5. This product contains Fluorinated greenhouse gases.
6. SCOP is in accordance with EN14825.
7. Rated running currents are based on the declared values under the following conditions.
   - Heating : Outdoor Temp. 7°CDB / 6°CWB, Leaving Water Temp. 35℃
   - Cooling : Outdoor Temp. 35°C(DB) / 24°C(WB), Leaving Water Temp. 18°C
8. All installation sites must be equipped with an earth leakage circuit breaker (ELCB).
   * DHW 65~80°C Operating is available only when the booster heater is operating.
   ** This is the power input i accordance with the 80% pump capacity setting at rated water flow rate. When the OH SUNG pump is set as 80% capacity, it’s head is similar to that of the GRUNDFOS pump at rated water flow rate.
   *** In the case of integrated water pump, either water pump or water pump 2 will be applied.
   **** In the case of integrated flow sensor, either flow sensor or flow sensor 2 will be applied.
9. The RAL Code may not accurately represent the actual color.

1. Specification

Technical Specifications (Refrigerant side)				FHBW056B1 [HM051HFD UA41]	FHBW076B1 [HM071HFD UA41]	FHBW096B1 [HM091HFD UA41]
Operation Range (Outdoor Temp.)	Cooling#	Min.~ Max.	°C DB	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min.~ Max.	°C DB	-25 ~ 35	-25 ~ 35	-25 ~ 35
Compressor	Type		-	Twin Rotary		
	Model		Model x No.	EDTF420D×1		
	Motor Type		-	BLDC		
	Displacement		cm^3/Rev.	41.5	41.5	41.5
Refrigerant	Type		-	R290	R290	R290
	GWP (Global Warming Potential)		-	0.02	0.02	0.02
	Precharged Amount		g	700	700	700
	t-CO2 eq.		-	-	-	-
	Control		-	Electronic Expansion Valve		
Refrigerant Oil	Type		-	PAG VG60		
	Charged Volume		CC x No.	830	830	830
Heat Exchanger	Type			Corrugate	Corrugate	Corrugate
	Quantity			1	1	1
	Specification	Row	EA	2	2	2
		Column	EA	38	38	38
		FPI	EA	18	18	18
Fan	Type		-	Propeller		
	Air Flow Rate	Rated	m/min x No.	60.0×1	60.0×1	60.0×1
Fan Motor	Type		-	BLDC		
	Output		W x No.	124×1	124×1	124×1

Note

This operation range includes not only the continuous operation range but also operative range.

1. Specification

■ 1 phase Inverter (12 ~ 16 kW)

Nominal Capacity and Nominal Input					FHBW126B1 [HM121HFD UB41]	FHBW146B1 [HM141HFD UB41]	FHBW166B1 [HM161HFD UB41]
-	-	Outdoor Temp.(℃)DB / WB	Leaving Water Temp.(℃)	-			
Capacity	Heating	7 / 6	35	KW	12.00	14.00	16.00
			55	KW	12.00	13.00	14.00
		2 / 1	35	KW	12.00	12.50	13.00
		-7	35	KW	12.00	12.50	13.50
			35	KW	10.00	10.50	11.00
			55	KW	10.00	11.00	12.00
	Cooling	35 / 24	18	KW	12.00	12.50	13.00
			7	KW	10.50	11.00	11.50
Power Input	Heating	7 / 6	35	KW	2.61	3.11	3.64
			55	KW	4.07	4.48	5.00
		2 / 1	35	KW	3.87	4.10	4.33
		-7	35	KW	4.80	5.00	5.40
			35	KW	3.45	3.62	3.79
			55	KW	5.26	5.95	6.67
	Cooling	35 / 24	18	KW	2.55	2.72	2.89
			7	KW	3.28	3.49	3.71
COP	Heating	7 / 6	35	W/W	4.60	4.50	4.40
			55	W/W	2.95	2.90	2.80
		2 / 1	35	W/W	3.10	3.05	3.00
		-7	35	W/W	2.50	2.50	2.50
			35	W/W	2.90	2.90	2.90
			55	W/W	1.90	1.85	1.80
EER	Cooling	35 / 24	18	W/W	4.70	4.60	4.50
			7	W/W	3.20	3.15	3.10
Seasonal space heating eff. Class			35	-	A+++	A+++	A+++
			55	-	A++	A++	A++
Seasonal space heating efficiency (ηs)			35	%	187	191	189
			55	%	143	143	141
SCOP(average climate)			35	W/W	4.75	4.85	4.80
			55	W/W	3.65	3.65	3.60
Water Flow Rate			Rated(at △T 5℃)	ℓ / min	34.5	40.3	46.0
Water Heating Efficiency (profile L)				%	130	130	130

Electrical Specifications			FHBW126B1 [HM121HFD UB41]	FHBW146B1 [HM141HFD UB41]	FHBW166B1 [HM161HFD UB41]
Power Supply		V,∅,Hz	220-240,1,50	220-240,1,50	220-240,1,50
Peak Control Running Current	Heating	A	24.0	25.0	26.0
	Cooling	A	18.0	19.0	20.0
Rated Running Curent	Heating	A	13.6	16.2	19.0
	Cooling	A	13.3	14.2	15.1
Circuit breaker		A	32	32	32
Wiring Connections	Power Supply Cable (included Earth,H07RN-F)	mm^2	4.0 x 3C	4.0 x 3C	4.0 x 3C
	Communication cable(H07RN-F)	mm^2 x cores	0.75 x 2C	0.75 x 2C	0.75 x 2C

Technical Specifications				FHBW126B1 [HM121HFD UB41]	FHBW146B1 [HM141HFD UB41]	FHBW166B1 [HM161HFD UB41]
Sound pressure level	Heating(rated,@5m)		dB(A)	34	35	37
Sound power level	Heating	Low noise	dB(A)	56	56	57
		Rated	dB(A)	56	57	59
		Daytime max.	dB(A)	65	66	66
Dimensions	Unit	W x H x D	mm	1,320 x 1019 x 520	1,320 x 1019 x 520	1,320 x 1019 x 520
	Packed Unit	W x H x D	mm	1,380 x 1,200 x 575	1,380 x 1,200 x 575	1,380 x 1,200 x 575
Weight	Unit		kg	125	125	125
	Packed Unit		kg	141	141	141
Exterior	Color		-	Black STS silver solid	Black STS silver solid	Black STS silver solid
	RAL Code		-	RAL8019	RAL8019	RAL8019
	Color of Front Grille		-	Light Graphite	Light Graphite	Light Graphite
	RAL Code of Front Grille		-	RAL 8022	RAL 8022	RAL 8022

1. Specification

Technical Specifications (Water side)				FHBW126B1 [HM121HFD UB41]	FHBW146B1 [HM141HFD UB41]	FHBW166B1 [HM161HFD UB41]
Operation Range (Leaving Water Temp.)	Cooling	Min.~ Max.	°C	5 ~ 27	5 ~ 27	5 ~ 27
	Heating	Min.~ Max.	°C	15 ~ 75	15 ~ 75	15 ~ 75
	DHW*	Min.~ Max.	°C	15 ~ 80	15 ~ 80	15 ~ 80
Water Pump***	Type		-	Canned type for hot water circulation		
	Model		-	OH SUNG, ODM-061P		
	Model Type		-	BLDC		
	Steps of Pumping Performance		-	Variable speed 10% to 100%		
	Power input (100% Capacity)	Min. / Rated	W	17 / 110	17 / 110	17 / 110
	Water Flow Rate	Min. / Rated	ℓ/min	5 / 34.5	5 / 40.3	5 / 46.0
Water Pump_2***	Type		-	Canned type for hot water circulation		
	Model		-	GRUNDFOS, UPML 20-105 CHBL		
	Motor Type		-	BLDC		
	Steps of Pumping Performance		-	Variable speed 10% to 100%		
	Power input (100% Capacity)	Min. / Rated	W	3.5 / 125	3.5 / 135	3.5 / 140
	Water Flow Rate	Min. / Rated	ℓ/min	5 / 34.5	5 / 40.3	5 / 46.0
Heat Exchanger	Type		-	Brazed Plate HEX		
	Quantity		-	1	1	1
	Number of Plate		EA	76	76	76
	Water Volume		ℓ	1	1	1
Flow Sensor****	Model		-	SIKA VVX20		
	Measuring range	Min.~Max.	ℓ/min	5 ~ 80	5 ~ 80	5 ~ 80
	Flow (Trigger point)	Min.	ℓ/min	10	10	10
Flow Sensor_2****	Model		-	SEBALGF-080-C20-E-C0.5V		
	Measuring range	Min.~Max.	ℓ/min	5 ~ 80	5 ~ 80	5 ~ 80
	Flow (Trigger point)	Mln.	ℓ/min	10	10	10
Water Pressure sensor	Model		-	Sensata OFM(2HMP)		
	Measuring range	Min.~Max.	bar(G)	0 ~ 20	0 ~ 20	0 ~ 20
Piping Connections	Inlet		inch	Male PT 1"according to 1S0 7-1 Capered pipe threads		
	Outlet		inch	Male PT 1"according to 1S0 7-1 Capered pipe threads		
Water strainer	Supply type		-	Loose supply(externally installed)		
	Mesh size		-	30 mesh	30 mesh	30 mesh
	Max. particle size		mm	0.6	0.6	0.6
	Material			Stainless Steel		
Relief Valve	Pressure Limit	Upper Limit	bar	3.0	3.0	3.0

Note

1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes. And “Electric characteristics” chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
3. Sound power level is measured in accordance with EN 12102-1 and ISO 9614.
   - Rated : This mode is measured on the rated condition in the semi-anechoic rooms. Therefore, these values may vary depending on operation conditions.
   - Daytime max : This mode is measured based on max. fan RPM and max. compressor Hz. that can be reached under outdoor air temperature 2°C.
   - Low noise : This mode lowers noise by limiting the compressor Hz. and fan RPM, and thus the performance may be limited.
4. Performances are accordance with EN14511 and reflect ErP testing conditions. The values indicated above are the declared values at rated conditions acc. ErP regulation. For max. capacities, please refer to Performance Data.
5. This product contains Fluorinated greenhouse gases.
6. SCOP is in accordance with EN14825.
7. Rated running currents are based on the declared values under the following conditions.
   - Heating : Outdoor Temp. 7°CDB / 6°CWB, Leaving Water Temp. 35℃
   - Cooling : Outdoor Temp. 35°C(DB) / 24°C(WB), Leaving Water Temp. 18°C
8. All installation sites must be equipped with an earth leakage circuit breaker (ELCB).
   * DHW 65~80°C Operating is available only when the booster heater is operating.

   ** This is the power input i accordance with the 80% pump capacity setting at rated water flow rate. When the OH SUNG pump is set as 80% capacity, it’s head is similar to that of the GRUNDFOS pump at rated water flow rate.

   *** In the case of integrated water pump, either water pump or water pump 2 will be applied.

   **** In the case of integrated flow sensor, either flow sensor or flow sensor 2 will be applied.
9. The RAL Code may not accurately represent the actual color.

1. Specification

Technical Specifications (Refrigerant side)				FHBW126B1 [HM121HFD UB41]	FHBW146B1 [HM141HFD UB41]	FHBW166B1 [HM161HFD UB41]
Operation Range (Outdoor Temp.)	Cooling#	Min.~ Max.	°C DB	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min.~ Max.	°C DB	-25 ~ 35	-25 ~ 35	-25 ~ 35
Compressor	Type		-	Twin Rotary		
	Model		Model x No.	EDTQ750Dx1		
	Motor Type		-	BLDC		
	Displacement		cm^3/Rev.	75	75	75
Refrigerant	Type		-	R290	R290	R290
	GWP (Global Warming Potential)		-	0.02	0.02	0.02
	Precharged Amount		g	1000	1000	1000
	t-CO2 eq.		-	-	-	-
	Control		-	Electronic Expansion Valve		
Refrigerant Oil	Type		-	PAG VG60		
	Charged Volume		CC x No.	1250	1250	1250
Heat Exchanger	Type			Corrugate	Corrugate	Corrugate
	Quantity			1	1	1
	Specification	Row	EA	2	2	2
		Column	EA	46	46	46
		FPI	EA	18	18	18
Fan	Type		-	Propeller		
	Air Flow Rate	Rated	m/min x No.	100.0x1	100.0x1	100.0x1
Fan Motor	Type		-	BLDC		
	Output		W x No.	250x1	250x1	250x1

Note

This operation range includes not only the continuous operation range but also operative range.

1. Specification

■ 3 phase Inverter (7 ~ 9 kW)

Nominal Capacity and Nominal Input					FHBW078B1 [HM073HFD UA41]	FHBW098B1 [HM093HFD UA41]
-	-	Outdoor Temp.(℃)DB / WB	Leaving Water Temp.(℃)	-		
Capacity	Heating	7 / 6	35	KW	7.00	9.00
			55	KW	7.00	8.00
		2 / 1	35	KW	6.50	7.00
		-7	35	KW	7.00	9.00
			35	KW	5.70	6.00
			55	KW	7.00	8.00
	Cooling	35 / 24	18	KW	7.00	8.00
			7	KW	7.00	8.00
Power Input	Heating	7 / 6	35	KW	1.49	1.96
			55	KW	2.46	2.86
		2 / 1	55	KW	2.06	2.26
		-7	35	KW	3.41	4.50
			35	KW	2.01	2.14
			55	KW	3.78	4.44
	Cooling	35 / 24	18	KW	1.49	1.78
			7	KW	2.41	2.81
COP	Heating	7 / 6	35	W/W	4.70	4.60
			55	W/W	2.85	2.80
		2 / 1	35	W/W	3.15	3.10
		-7	35	W/W	2.05	2.00
			35	W/W	2.83	2.80
			55	W/W	1.85	1.80
EER	Cooling	35 / 24	18	W/W	4.70	4.50
			7	W/W	2.90	2.85
Seasonal space heating eff. Class			35	-	A+++	A+++
			55	-	A++	A++
Seasonal space heating efficiency (ηs)			35	%	187	185
			55	%	141	143
SCOP(average climate)			35	W/W	4.75	4.70
			55	W/W	3.60	3.66
Water Flow Rate			Rated(at △T 5℃)	ℓ / min	20.1	25.9
Water Heating Efficiency (profile L)				%	130	130

Electrical Specifications			FHBW078B1 [HM073HFD UA41]	FHBW098B1 [HM093HFD UA41]
Power Supply		V,Ø,Hz	380-415,3,50	380-415,3,50
Peak Control Running Current	Heating	A	8	9
	Cooling	A	7	8
Rated Running Curent	Heating	A	2.8	4.0
	Cooling	A	2.8	3.3
Circuit breaker		A	16	16
Wiring Connections	Power Supply Cable (included Earth,H07RN-F)	mm^2	2.5 x 5C	2.5 x 5C
	Communication cable(H07RN-F)	mm^2 x cores	0.75 x 2C	0.75 x 2C

Technical Specifications				FHBW078B1 [HM073HFD UA41]	FHBW098B1 [HM093HFD UA41]
Sound pressure level	Heating(rated,@5m)		dB(A)	32	34
Sound power level	Heating	Low noise	dB(A)	53	55
		Rated	dB(A)	54	56
		Daytime max.	dB(A)	63	64
Dimensions	Unit	W x H x D	mm	1,242 x 853 x 391	1,242 x 853 x 391
	Packed Unit	W x H x D	mm	1,330 x 1,017 x 480	1,330 x 1,017 x 480
Weight	Unit		kg	97.5	97.5
	Packed Unit		kg	110	110
Exterior	Color		-	Black STS silver solid	Black STS silver solid
	RAL Code		-	RAL 8019	RAL 8019
	Color of Front Grille		-	Light Graphite	Light Graphite
	RAL Code of Front Grille		-	RAL 8022	RAL 8022

1. Specification

Technical Specifications (Water side)				FHBW078B1 [HM073HFD UA41]	FHBW098B1 [HM093HFD UA41]
Operation Range (Leaving Water Temp.)	Cooling	Min.~ Max.	°C	5 ~ 27	5 ~ 27
	Heating	Min.~ Max.	°C	15 ~ 75	15 ~ 75
	DHW*	Min.~ Max.	°C	15 ~ 65(80*)	15 ~ 65(80*)
Water Pump***	Type		-	Canned typr for hot water circulation	
	Model		-	OH SUNG, ODM-061P	
	Model Type		-	BLDC	
	Steps of Pumping Performance		-	Variable speed 10% to 100%	
	Power input (100% Capacity)	Min. / Rated	W	17 / 110	17 / 110
	Water Flow Rate	Min. / Rated	ℓ/min	5 / 20.1	5 / 25.9
Water Pump_2***	Type		-	Canned typr for hot water circulation	
	Model		-	GRUNDFOS, UPM*K 20-75 CHBL	
	Motor Type		-	BLDC	
	Steps of Pumping Performance		-	Variable speed 10% to 100%	
	Power input (100% Capacity)	Min. / Rated	W	3 / 60	3 / 60
	Water Flow Rate	Min. / Rated	ℓ/min	5 / 20.1	5 / 25.9
Heat Exchanger	Type		-	Brazed Plate HEX	
	Quantity		-	1	1
	Number of Plate		EA	52	52
	Water Volume		ℓ	0.7	0.7
Flow Sensor****	Model		-	SIKA VVX20	
	Measuring range	Min.~Max.	ℓ/min	5 ~ 80	5 ~ 80
	Flow (Trigger point)	Min.	ℓ/min	5	5
Flow Sensor_2****	Model		-	SEBALGF-080-C20-E-C0.5V	
	Measuring range	Min.~Max.	ℓ/min	5 ~ 80	5 ~ 80
	Flow (Trigger point)	MIn.	ℓ/min	5	5
Water Pressure sensor	Model		-	Sensata OFM(2HMP)	
	Measuring range	Min.~Max.	bar(G)	0 ~ 20	0 ~ 20
Piping Connections	Inlet		inch	Male PT 1"according to 1S0 7-1 Capered pipe threads	
	Outlet		inch	Male PT 1"according to 1S0 7-1 Capered pipe threads	
Water strainer	Supply type		-	Loose supply(externally installed)	
	Mesh size		-	30 mesh	30 mesh
	Max. particle size		mm	0.6	0.6
	Material			Stainless Steel	
Relief Valve	Pressure Limit	Upper Limit	bar	3.0	3.0

Note

1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes. And “Electric characteristics” chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
3. Sound power level is measured in accordance with EN 12102-1 and ISO 9614.
   - Rated : This mode is measured on the rated condition in the semi-anechoic rooms. Therefore, these values may vary depending on operation conditions.
   - Daytime max : This mode is measured based on max. fan RPM and max. compressor Hz. that can be reached under outdoor air temperature 2°C.
   - Low noise : This mode lowers noise by limiting the compressor Hz. and fan RPM, and thus the performance may be limited.
4. Performances are accordance with EN14511 and reflect ErP testing conditions. The values indicated above are the declared values at rated conditions acc. ErP regulation. For max. capacities, please refer to Performance Data.
5. This product contains Fluorinated greenhouse gases.
6. SCOP is in accordance with EN14825.
7. Rated running currents are based on the declared values under the following conditions.
   - Heating : Outdoor Temp. 7°CDB / 6°CWB, Leaving Water Temp. 35℃
   - Cooling : Outdoor Temp. 35°C(DB) / 24°C(WB), Leaving Water Temp. 18°C
8. All installation sites must be equipped with an earth leakage circuit breaker (ELCB).

* DHW 65~80°C Operating is available only when the booster heater is operating.

** This is the power input i accordance with the 80% pump capacity setting at rated water flow rate. When the OH SUNG pump is set as 80% capacity, it’s head is similar to that of the GRUNDFOS pump at rated water flow rate.

*** In the case of integrated water pump, either water pump or water pump 2 will be applied.

**** In the case of integrated flow sensor, either flow sensor or flow sensor 2 will be applied.

9. The RAL Code may not accurately represent the actual color.

1. Specification

Technical Specifications (Refrigerant side)				FHBW078B1 [HM073HFD UA41]	FHBW098B1 [HM093HFD UA41]
Operation Range (Outdoor Temp.)	Cooling#	Min.~ Max.	°C DB	5 ~ 48	5 ~ 48
	Heating	Min.~ Max.	°C DB	-25 ~ 35	-25 ~ 35
Compressor	Type		-	Twin Rotary	
	Model		Model x No.	EDTF420D×1	
	Motor Type		-	BLDC	
	Displacement		cm^3/Rev.	41.5	41.5
Refrigerant	Type		-	R290	R290
	GWP (Global Warming Potential)		-	0.02	0.02
	Precharged Amount		g	700	700
	t-CO2 eq.		-	-	-
	Control		-	Electronic Expansion Valve	
Refrigerant Oil	Type		-	PAG VG60	
	Charged Volume		CC x No.	830	830
Heat Exchanger	Type			Corrugate	Corrugate
	Quantity			1	1
	Specification	Row	EA	2	2
		Column	EA	38	38
		FPI	EA	18	18
Fan	Type		-	Propeller	
	Air Flow Rate	Rated	m/min x No.	60.0×1	60.0×1
Fan Motor	Type		-	BLDC	
	Output		W x No.	124×1	124×1

Note

This operation range includes not only the continuous operation range but also operative range.

1. Specification

■ 3 phase Inverter (12 ~ 16 kW)

Nominal Capacity and Nominal Input					FHBW128B1 [HM123HFD UB41]	FHBW148B1 [HM143HFD UB41]	FHBW168B1 [HM163HFD UB41]
-	-	Outdoor Temp.(℃)DB / WB	Leaving Water Temp.(℃)	-			
Capacity	Heating	7 / 6	35	KW	12.00	14.00	16.00
			55	KW	12.00	13.00	14.00
		2 / 1	35	KW	12.00	12.50	13.00
		-7	35	KW	12.00	12.50	13.50
			35	KW	10.00	10.50	11.00
			55	KW	10.00	11.00	12.00
	Cooling	35 / 24	18	KW	12.00	12.50	13.00
			7	KW	10.50	11.00	11.50
Power Input	Heating	7 / 6	35	KW	2.61	3.11	3.64
			55	KW	4.07	4.48	5.00
		2 / 1	35	KW	3.87	4.10	4.33
		-7	35	KW	4.80	5.00	5.40
			35	KW	3.45	3.62	3.79
			55	KW	5.26	5.95	6.67
	Cooling	35 / 24	18	KW	2.55	2.72	2.89
			7	KW	3.28	3.49	3.71
COP	Heating	7 / 6	35	W/W	4.60	4.50	4.40
			55	W/W	2.95	2.90	2.80
		2 / 1	35	W/W	3.10	3.05	3.00
		-7	35	W/W	2.50	2.50	2.50
			35	W/W	2.90	2.90	2.90
			55	W/W	1.90	1.85	1.80
EER	Cooling	35 / 24	18	W/W	4.70	4.60	4.50
			7	W/W	3.20	3.15	3.10
Seasonal space heating eff. Class			35	-	A+++	A+++	A+++
			55	-	A++	A++	A++
Seasonal space heating efficiency (ηs)			35	%	187	191	189
			55	%	143	143	141
SCOP(average climate)			35	W/W	4.75	4.85	4.80
			55	W/W	3.65	3.65	3.60
Water Flow Rate			Rated(at △T 5℃)	ℓ / min	34.5	40.3	46.0
Water Heating Efficiency (profile L)				%	130	130	130

Electrical Specifications			FHBW128B1 [HM123HFD UB41]	FHBW148B1 [HM143HFD UB41]	FHBW168B1 [HM163HFD UB41]
Power Supply		V,Ø,Hz	380-415,3,50	380-415,3,50	380-415,3,50
Peak Control Running Current	Heating	A	9.0	10.0	11.0
	Cooling	A	6.0	7.0	8.0
Rated Running Curent	Heating	A	3.8	4.5	5.2
	Cooling	A	3.7	3.9	4.2
Circuit breaker		A	16	16	16
Wiring Connections	Power Supply Cable (included Earth,H07RN-F)	mm^2	2.5 x 5C	2.5 x 5C	2.5 x 5C
	Communication cable(H07RN-F)	mm^2 x cores	0.75 x 2C	0.75 x 2C	0.75 x 2C

Technical Specifications				FHBW128B1 [HM123HFD UB41]	FHBW148B1 [HM143HFD UB41]	FHBW168B1 [HM163HFD UB41]
Sound pressure level	Heating(rated,@5m)		dB(A)	34	35	37
Sound power level	Heating	Low noise	dB(A)	55	56	57
		Rated	dB(A)	56	57	59
		Daytime max.	dB(A)	65	66	66
Dimensions	Unit	W x H x D	mm	1,320 x 1019 x 520	1,320 x 1019 x 520	1,320 x 1019 x 520
	Packed Unit	W x H x D	mm	1,380 x 1,200 x 575	1,380 x 1,200 x 575	1,380 x 1,200 x 575
Weight	Unit		kg	125	125	125
	Packed Unit		kg	141	141	141
Exterior	Color		-	Black STS silver solid	Black STS silver solid	Black STS silver solid
	RAL Code		-	RAL 8019	RAL 8019	RAL 8019
	Color of Front Grille		-	Light Graphite	Light Graphite	Light Graphite
	RAL Code of Front Grille		-	RAL 8022	RAL 8022	RAL 8022

1. Specification

Technical Specifications (Water side)				FHBW128B1 [HM123HFD UB41]	FHBW148B1 [HM143HFD UB41]	FHBW168B1 [HM163HFD UB41]
Operation Range (Leaving Water Temp.)	Cooling	Min.~ Max.	°C	5 ~ 27	5 ~ 27	5 ~ 27
	Heating	Min.~ Max.	°C	15 ~ 75	15 ~ 75	15 ~ 75
	DHW*	Min.~ Max.	°C	15 ~ 80	15 ~ 80	15 ~ 80
Water Pump***	Type		-	Canned type for hot water circulation		
	Model		-	OH SUNG, ODM-061P		
	Model Type		-	BLDC		
	Steps of Pumping Performance		-	Variable speed 10% to 100%		
	Power input (100% Capacity)	Min. / Rated	W	17 / 110	17 / 110	17 / 110
	Water Flow Rate	Min. / Rated	ℓ/min	5 / 34.5	5 / 40.3	5 / 46.0
Water Pump_2***	Type		-	Canned type for hot water circulation		
	Model		-	GRUNDFOS, UPML 20-105 CHBL		
	Motor Type		-	BLDC		
	Steps of Pumping Performance		-	Variable speed 10% to 100%		
	Power input (100% Capacity)	Min. / Rated	W	3.5 / 125	3.5 / 135	3.5 / 140
	Water Flow Rate	Min. / Rated	ℓ/min	5 / 34.5	5 / 40.3	5 / 46
Heat Exchanger	Type		-	Brazed Plate HEX		
	Quantity		-	1	1	1
	Number of Plate		EA	76	76	76
	Water Volume		ℓ	1	1	1
Flow Sensor****	Model		-	SIKA VVX20		
	Measuring range	Min.~Max.	ℓ/min	5 ~ 80	5 ~ 80	5 ~ 80
	Flow (Trigger point)	Min.	ℓ/min	10	10	10
Flow Sensor_2****	Model		-	SEBALGF-080-C20-E-C0.5V		
	Measuring range	Min.~Max.	ℓ/min	5 ~ 80	5 ~ 80	5 ~ 80
	Flow (Trigger point)	Mln.	ℓ/min	10	10	10
Water Pressure sensor	Model		-	Sensata OFM(2HMP)		
	Measuring range	Min.~Max.	bar(G)	0 ~ 20	0 ~ 20	0 ~ 20
Piping Connections	Inlet		inch	Male PT 1"according to 1S0 7-1 Capered pipe threads		
	Outlet		inch	Male PT 1"according to 1S0 7-1 Capered pipe threads		
Water strainer	Supply type		-	Loose supply(externally installed)		
	Mesh size		-	30 mesh	30 mesh	30 mesh
	Max. particle size		mm	0.6	0.6	0.6
	Material			Stainless Steel		
Relief Valve	Pressure Limit	Upper Limit	bar	3.0	3.0	3.0

Note

1. Due to our policy of innovation, some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes. And “Electric characteristics” chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
3. Sound power level is measured in accordance with EN 12102-1 and ISO 9614.
   - Rated : This mode is measured on the rated condition in the semi-anechoic rooms. Therefore, these values may vary depending on operation conditions.
   - Daytime max : This mode is measured based on max. fan RPM and max. compressor Hz. that can be reached under outdoor air temperature 2°C.
   - Low noise : This mode lowers noise by limiting the compressor Hz. and fan RPM, and thus the performance may be limited.
4. Performances are accordance with EN14511 and reflect ErP testing conditions. The values indicated above are the declared values at rated conditions acc. ErP regulation. For max. capacities, please refer to Performance Data.
5. This product contains Fluorinated greenhouse gases.
6. SCOP is in accordance with EN14825.
7. Rated running currents are based on the declared values under the following conditions.
   - Heating : Outdoor Temp. 7°CDB / 6°CWB, Leaving Water Temp. 35℃
   - Cooling : Outdoor Temp. 35°C(DB) / 24°C(WB), Leaving Water Temp. 18°C
8. All installation sites must be equipped with an earth leakage circuit breaker (ELCB).
   * DHW 65~80°C Operating is available only when the booster heater is operating.
   ** This is the power input i accordance with the 80% pump capacity setting at rated water flow rate. When the OH SUNG pump is set as 80% capacity, it’s head is similar to that of the GRUNDFOS pump at rated water flow rate.
   *** In the case of integrated water pump, either water pump or water pump 2 will be applied.
   **** In the case of integrated flow sensor, either flow sensor or flow sensor 2 will be applied.
9. The RAL Code may not accurately represent the actual color.

1. Specification

Technical Specifications (Refrigerant side)				FHBW128B1 [HM123HFD UB41]	FHBW148B1 [HM143HFD UB41]	FHBW168B1 [HM163HFD UB41]
Operation Range (Outdoor Temp.)	Cooling#	Min.~ Max.	°C DB	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	Min.~ Max.	°C DB	-25 ~ 35	-25 ~ 35	-25 ~ 35
Compressor	Type		-	Twin Rotary		
	Model		Model x No.	EDTQ750D×1		
	Motor Type		-	BLDC		
	Displacement		cm^3/Rev.	75	75	75
Refrigerant	Type		-	R290	R290	R290
	GWP (Global Warming Potential)		-	0.02	0.02	0.02
	Precharged Amount		g	1000	1000	1000
	t-CO2 eq.		-	-	-	-
	Control		-	Electronic Expansion Valve		
Refrigerant Oil	Type		-	PAG VG60		
	Charged Volume		CC x No.	1250	1250	1250
Heat Exchanger	Type			Corrugate	Corrugate	Corrugate
	Quantity			1	1	1
	Specification	Row	EA	2	2	2
		Column	EA	46	46	46
		FPI	EA	18	18	18
Fan	Type		-	Propeller		
	Air Flow Rate	Rated	m/min x No.	100.0x1	100.0x1	100.0x1
Fan Motor	Type		-	BLDC		
	Output		W x No.	250x1	250x1	250x1

Note

This operation range includes not only the continuous operation range but also operative range.

2. List of Functions

Category	Functions	FHBW056B1 [HM051HFD UA41] FHBW076B1 [HM071HFD UA41] FHBW096B1 [HM091HFD UA41] FHBW126B1 [HM121HFD UB41] FHBW146B1 [HM141HFD UB41] FHBW166B1 [HM161HFD UB41]	FHBW078B1 [HM073HFD UA41] FHBW098B1 [HM093HFD UA41] FHBW128B1 [HM123HFD UB41] FHBW148B1 [HM143HFD UB41] FHBW168B1 [HM163HFD UB41]
Reliability	Defrost / Deicing	O	O
	High pressure switch	O	O
	Low pressure switch	X	X
	Phase protection	X	O
	Restart delay (3-minutes)	O	O
	Self diagnosis	O	O
	Soft start	X	X
Convenience	Test function	X	X
	Low Noise Operation	O	O
	Wiring Error Check	X	X
	Peak Control(Step 1&2)	O	O
	Mode Lock	X	X
	Forced Cooling Operation (Outdoor Unit)	X	X
	Base Pan Heater	O	O
	SLC(Smart Load Control)	X	X
Network	Network solution(LGAP)	O	O

Note
1. O : Applied, X : Not applied

3. Accessory Compatibility List

Category		Product	Remark	FHBW056B1 [HM051HFD UA41] FHBW076B1 [HM071HFD UA41] FHBW096B1 [HM091HFD UA41] FHBW078B1 [HM073HFD UA41] FHBW098B1 [HM093HFD UA41] FHBW126B1 [HM121HFD UB41] FHBW146B1 [HM141HFD UB41] FHBW166B1 [HM161HFD UB41] FHBW128B1 [HM123HFD UB41] FHBW148B1 [HM143HFD UB41] FHBW168B1 [HM163HFD UB41]
Central Controller	AC EZ	PQCSZ250S0	AC EZ	X
	AC Ez Touch	PACEZA000	AC Ez Touch	X
	AC Smart	PACS5A000	AC Smart 5	X
	ACP	PACP5A000	ACP 5	X
	AC Manager **	PACM5A000	AC Manager 5	X
Gateway	IDU PI485	PHNFP14A0	Without case	X
		PSNFP14A0	With case	X
	ODU PI485	PP485A00T	PI 485 Gateway	X
		PMNFP14A1	PI 485 Gateway (Produced before 1st of Sep. of 2021)	X
	BACnet	PQNFB17C0	ACP BACnet	X
	Lonworks	PLNWKB000	ACP Lonworks	X
	Modbus	PMBUSB00A	-	O
	Cloud Gateway	PWFMDB200	Cloud (ThinQ, BECON)	O
ETC	PDI	PPWRDB000	PDI Standard	X
		PQNUD1S40	PDI Premium	X
	ACS IO Module	PEXPMB000	-	X
	Cascade control	PHCM0	Cascade control unit	O

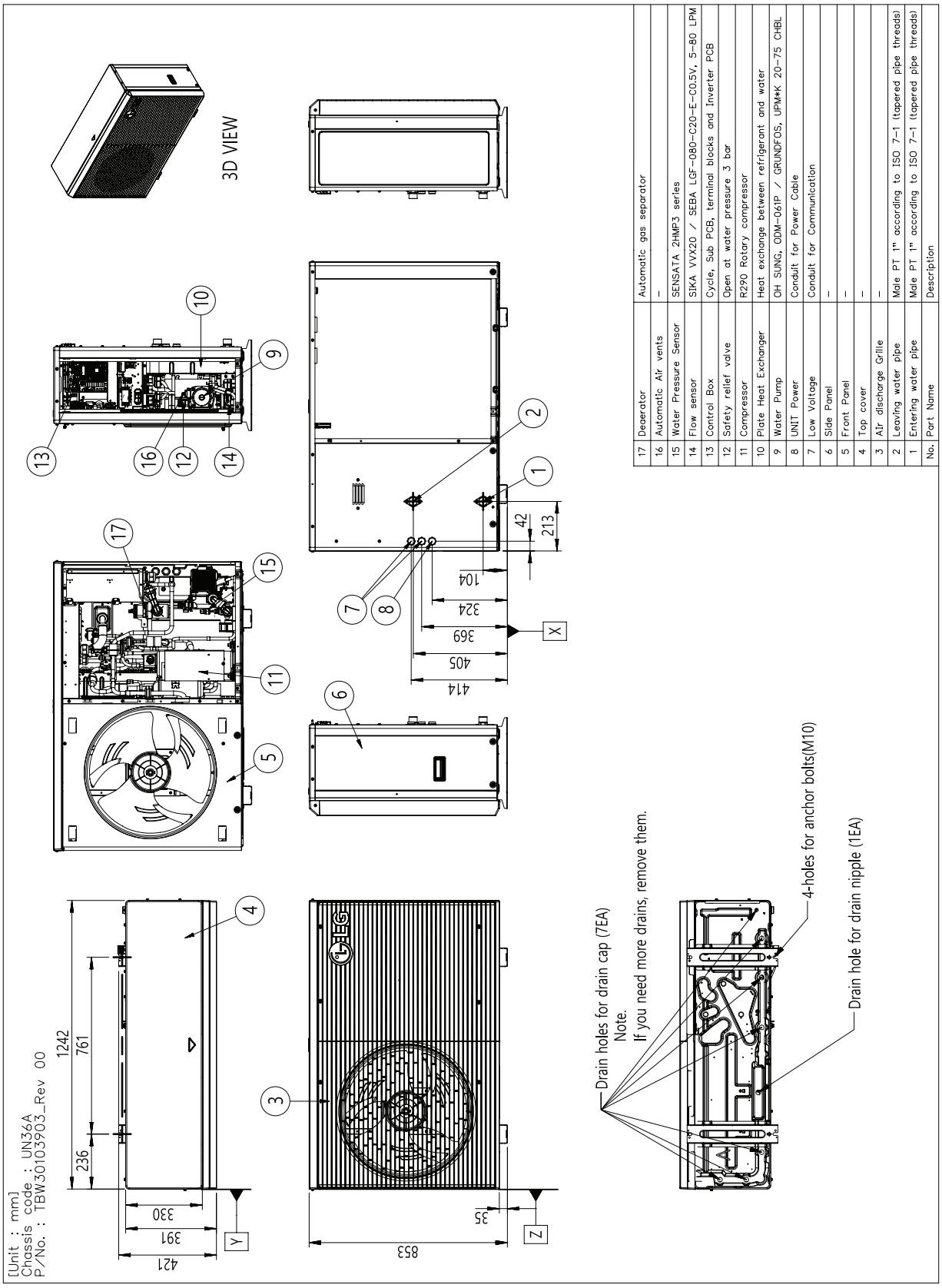
Note

1. O: Possible, X: Impossible, - : Not applicable
2. ** : ACP or AC Smart is needed.
3. If you need more detail, please refer to the manual of product.
   (http://partner.lge.com > Select Your Region : Home> Doc.Library> Product > Control(BECON))

4. Dimensions

■ Product

◆ FHBW056B1 [HM051HFD UA41] / FHBW076B1 [HM071HFD UA41] / FHBW096B1 [HM091HFD UA41] / FHBW078B1 [HM073HFD UA41] / FHBW098B1 [HM093HFD UA41]

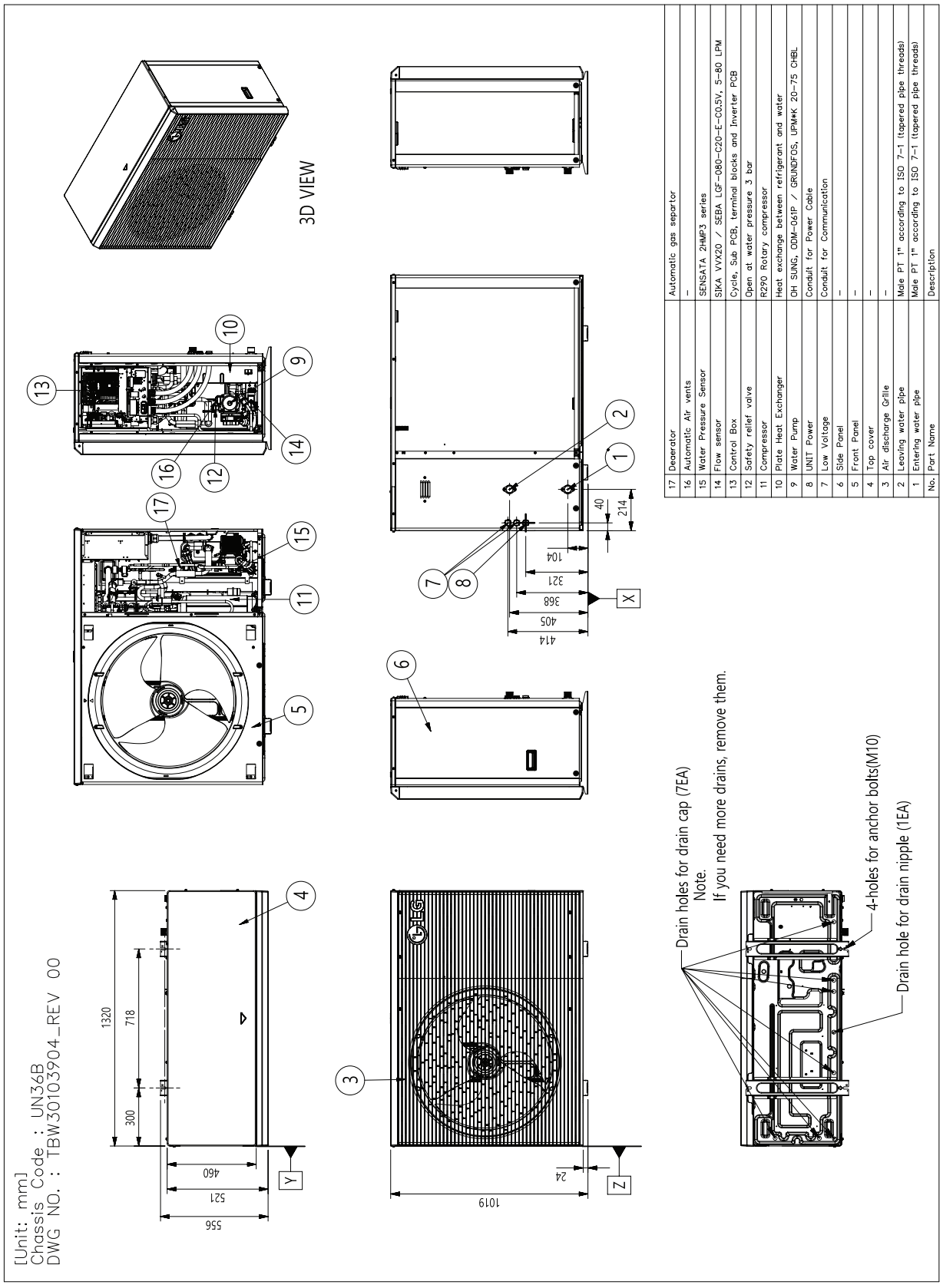


No.	Part Name	Description
17	Deaerator	Automatic gas separator
16	Automatic Air vents	–
15	Water Pressure Sensor	SENSATA 2HMP3 series
14	Flow sensor	SIKA VVX20 / SEBA LGF-080-C20-E-C0.5V, 5-80 LPM
13	Control Box	Cycle, Sub PCB, terminal blocks and Inverter PCB
12	Safety relief valve	Open at water pressure 3 bar
11	Compressor	R290 Rotary compressor
10	Plate Heat Exchanger	Heat exchange between refrigerant and water
9	Water Pump	OH SUNG, ODM-06JP / GRUNDFOS, UPM*K 20-75 CHBL
8	UNIT Power	Conduit for Power Cable
7	Low Voltage	Conduit for Communication
6	Side Panel	–
5	Front Panel	–
4	Top cover	–
3	Air discharge Grille	–
2	Leaving water pipe	Male PT 1" according to ISO 7-1 (tapered pipe threads)
1	Entering water pipe	Male PT 1" according to ISO 7-1 (tapered pipe threads)

4. Dimensions

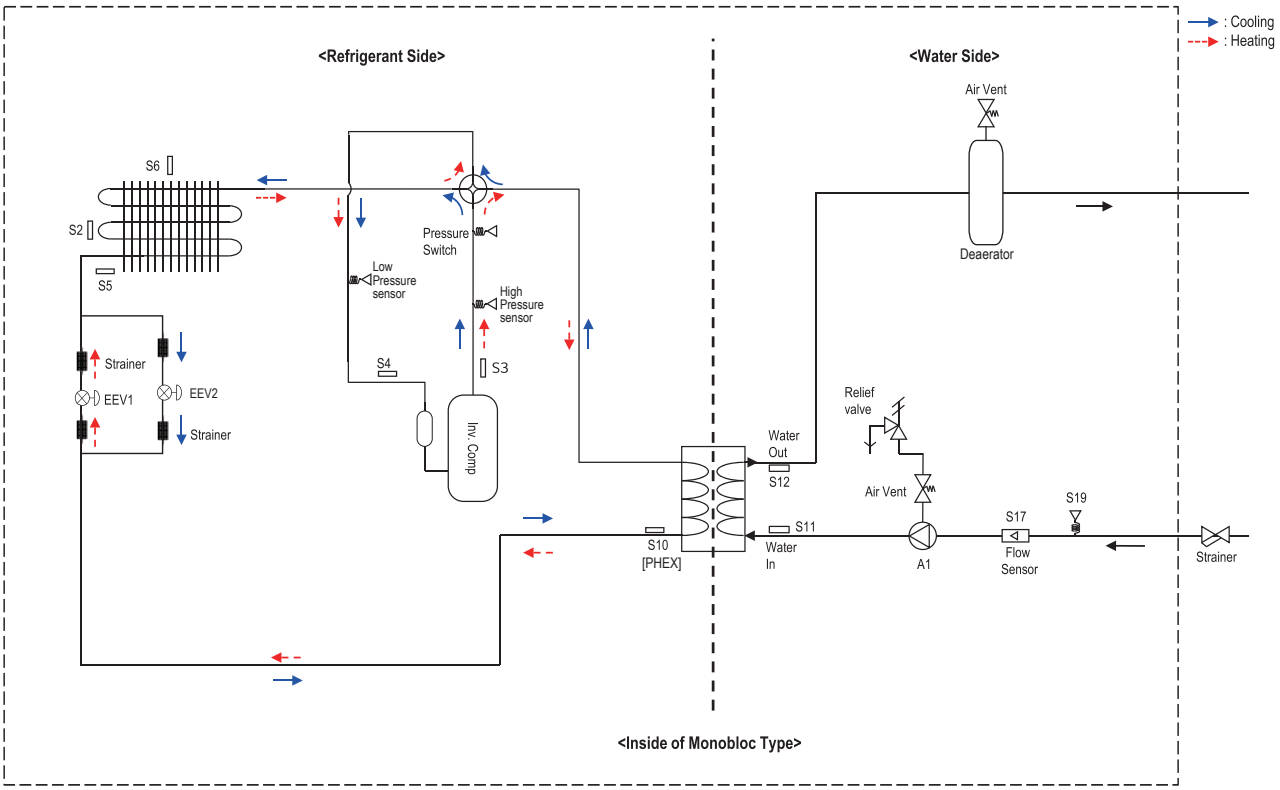
■ Product

◆ FHBW126B1 [HM121HFD UB41] / FHBW146B1 [HM141HFD UB41] / FHBW166B1 [HM161HFD UB41] / FHBW128B1 [HM123HFD UB41] / FHBW148B1 [HM143HFD UB41] / FHBW168B1 [HM163HFD UB41]



No.	Part Name	Description
17	Deaerator	Automatic gas separtor
16	Automatic Air vents	–
15	Water Pressure Sensor	SENSATA 2HMP3 series
14	Flow sensor	SIKA VYX20 / SEBA LGF-080-C20-E-C0.5V, 5~80 LPM
13	Control Box	Cycle, Sub PCB, terminal blocks and Inverter PCB
12	Safety relief valve	Open at water pressure 3 bar
11	Compressor	R290 Rotary compressor
10	Plate Heat Exchanger	Heat exchange between refrigerant and water
9	Water Pump	OH SUNG, ODM-06IP / GRUNDFOS, UPM#K 20-75 CHBL
8	UNIT Power	Conduit for Power Cable
7	Low Voltage	Conduit for Communication
6	Side Panel	–
5	Front Panel	–
4	Top cover	–
3	Air discharge Grille	–
2	Leaving water pipe	Male PT 1" according to ISO 7~1 (tapered pipe threads)
1	Entering water pipe	Male PT 1" according to ISO 7~1 (tapered pipe threads)

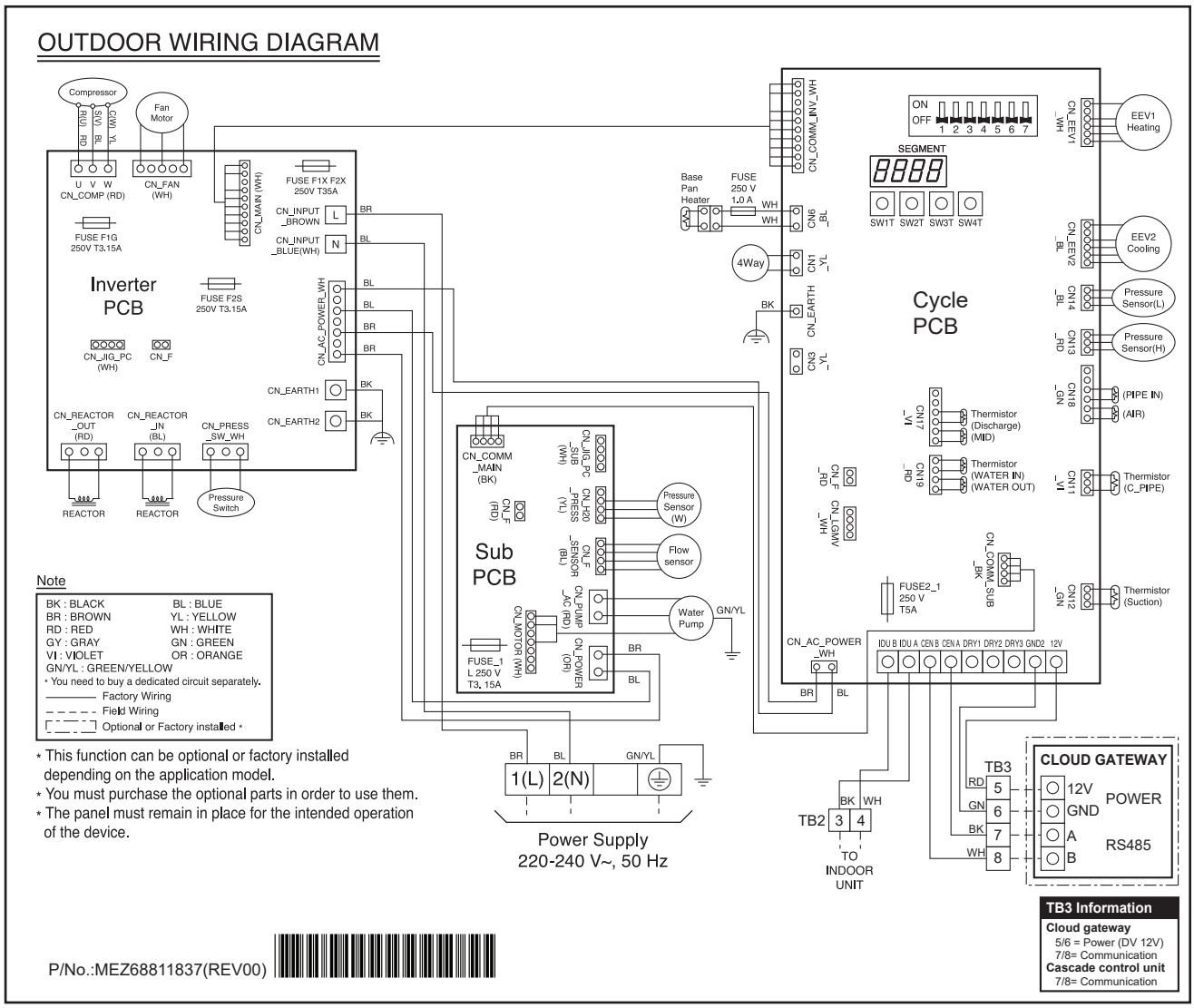
5. Piping Diagram



Category	Symbol	Meaning
Refrigerant side	S10	PHEX liquid temp. sensor
	S3	Compressor-discharge pipe temperature sensor
	S4	Compressor-suction pipe temperature sensor
	S2	Outdoor-HEX middle temp. sensor
	S5	Outdoor-HEX temp. sensor
	S6	Outdoor air temperature sensor
	EEV1	Electronic Expansion Valve (Heating)
	EEV2	Electronic Expansion Valve (Cooling)
Water Side	S11	Inlet water temperature sensor
	S12	Outlet water temperature sensor
	S17	Flow sensor
	S19	Water pressure sensor
	A1	Main Water Pump

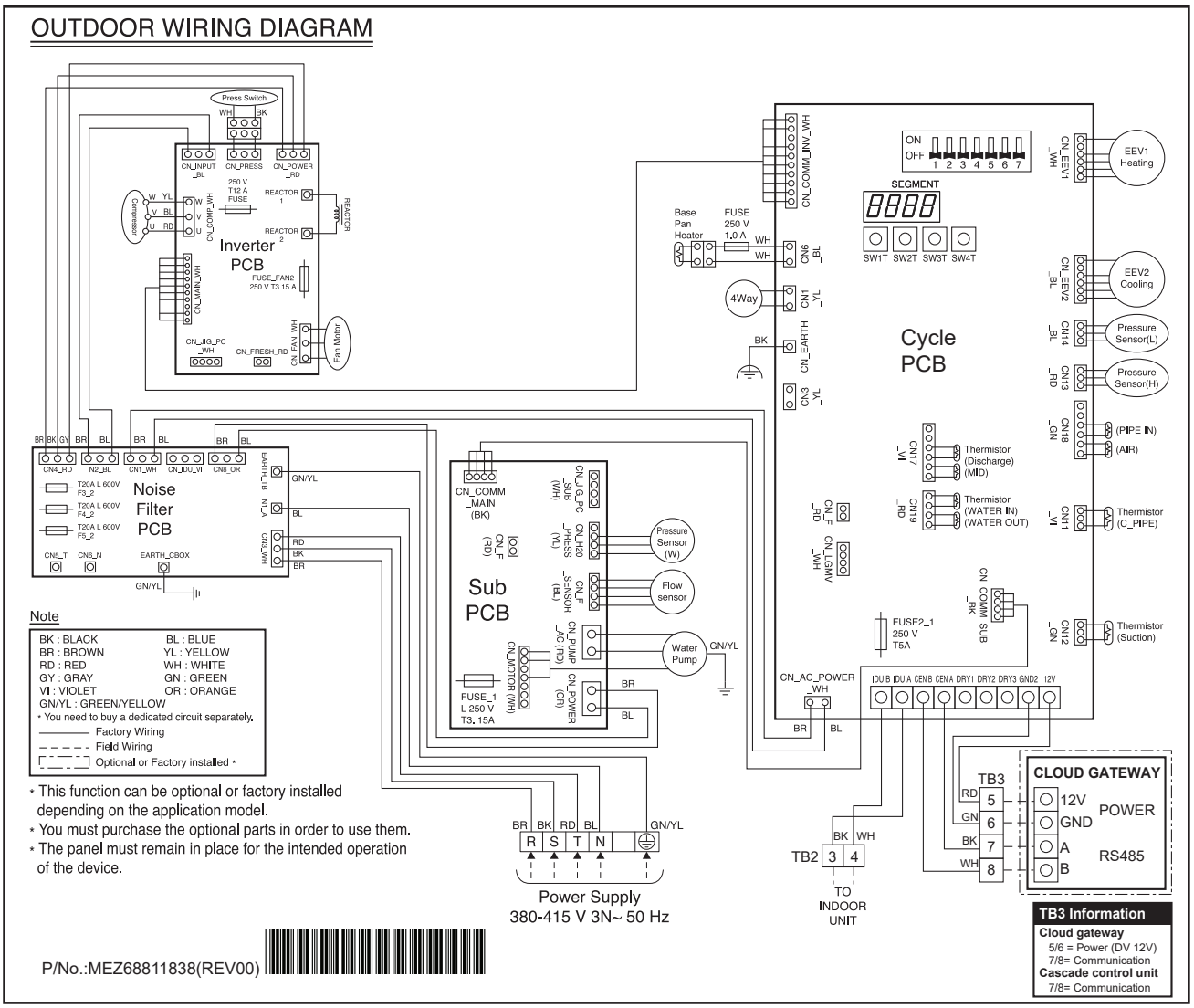
6. Wiring Diagram

◆ FHBW056B1 [HM051HFD UA41] / FHBW076B1 [HM071HFD UA41] / FHBW096B1 [HM091HFD UA41]



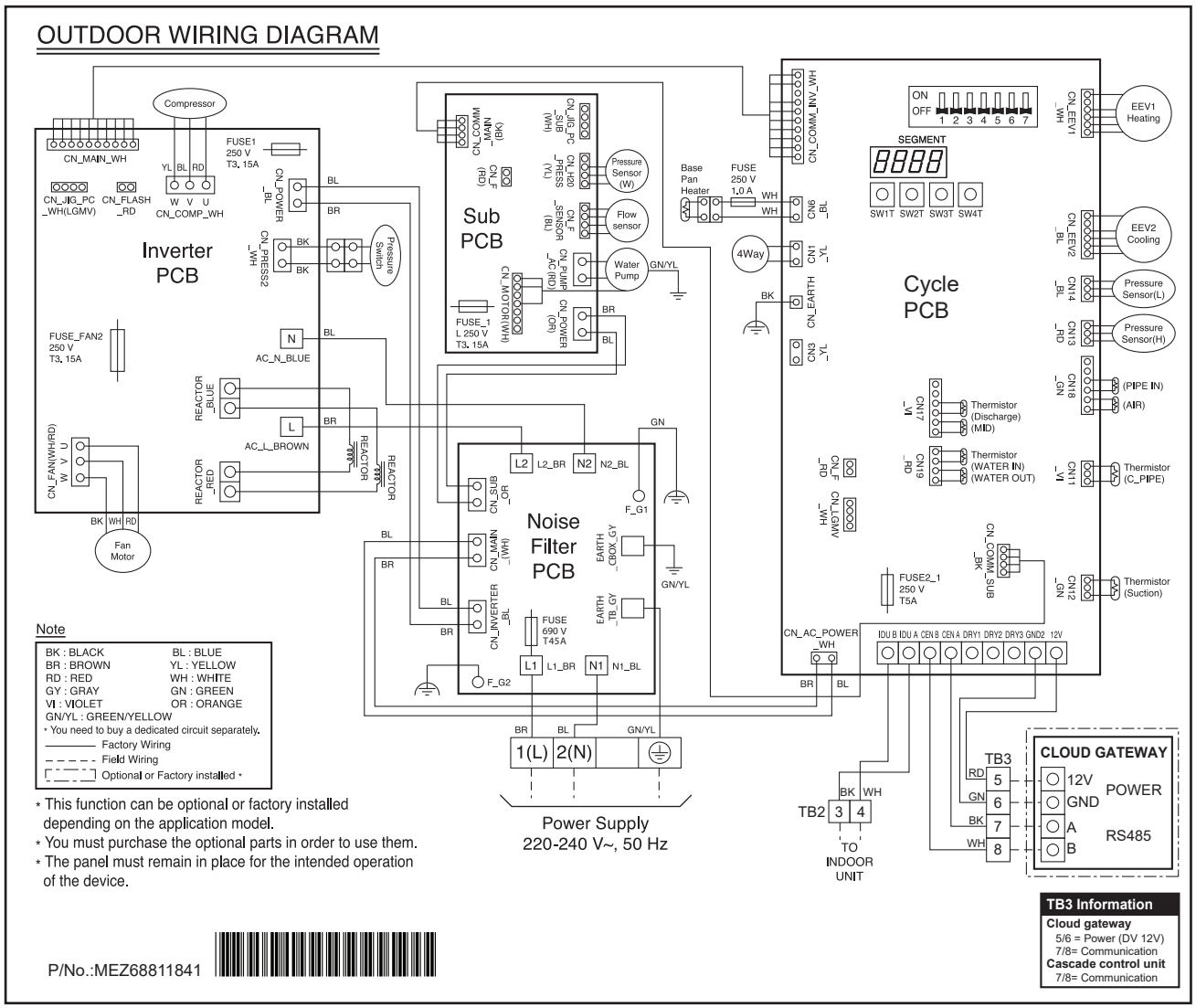
6. Wiring Diagram

◆ FHBW078B1 [HM073HFD UA41] / FHBW098B1 [HM093HFD UA41]



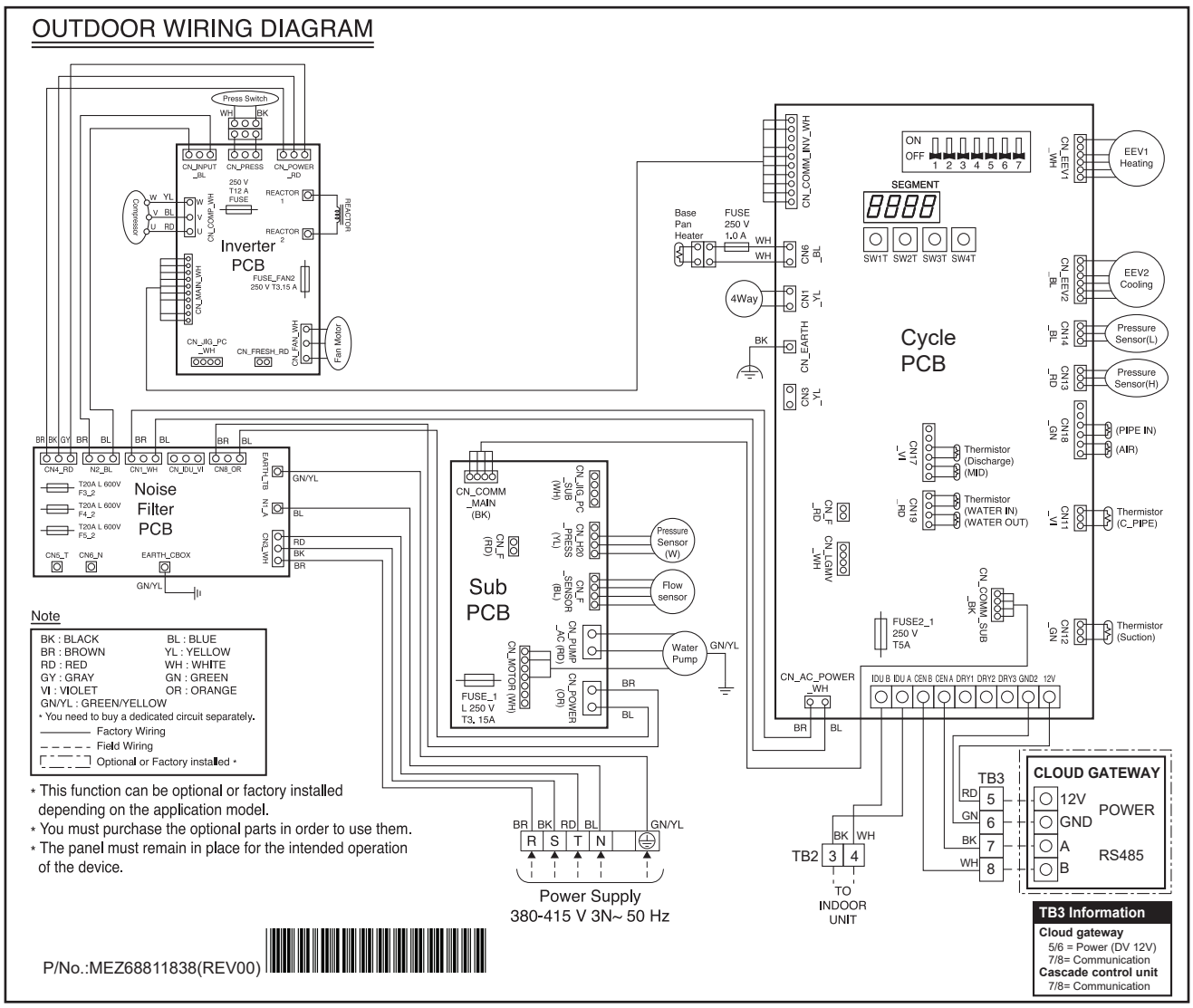
6. Wiring Diagram

◆ FHBW126B1 [HM121HFS UB41] / FHBW146B1 [HM141HFS UB41] / FHBW166B1 [HM161HFS UB41]



6. Wiring Diagram

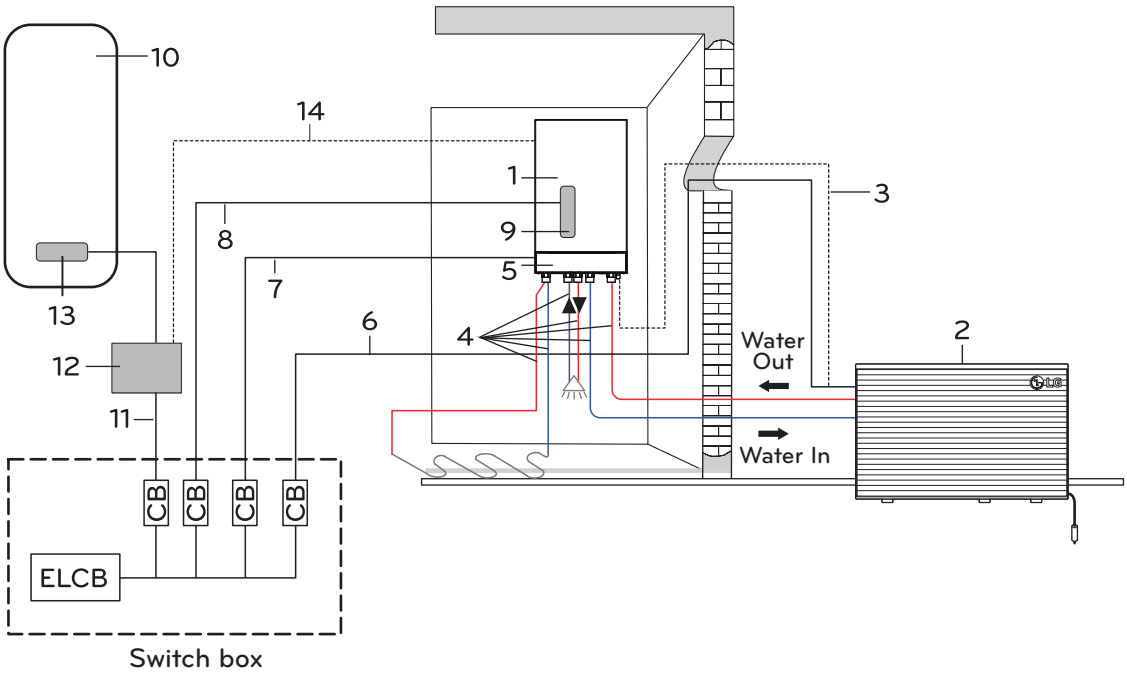
◆ FHBW128A1 [HM123HFS UB41] / FHBW148A1 [HM143HFS UB41] / FHBW168A1 [HM163HFS UB41]



6. Wiring Diagram

■ Field Wiring

◆ For Hydro Unit type



※ It can be different by model.

Description

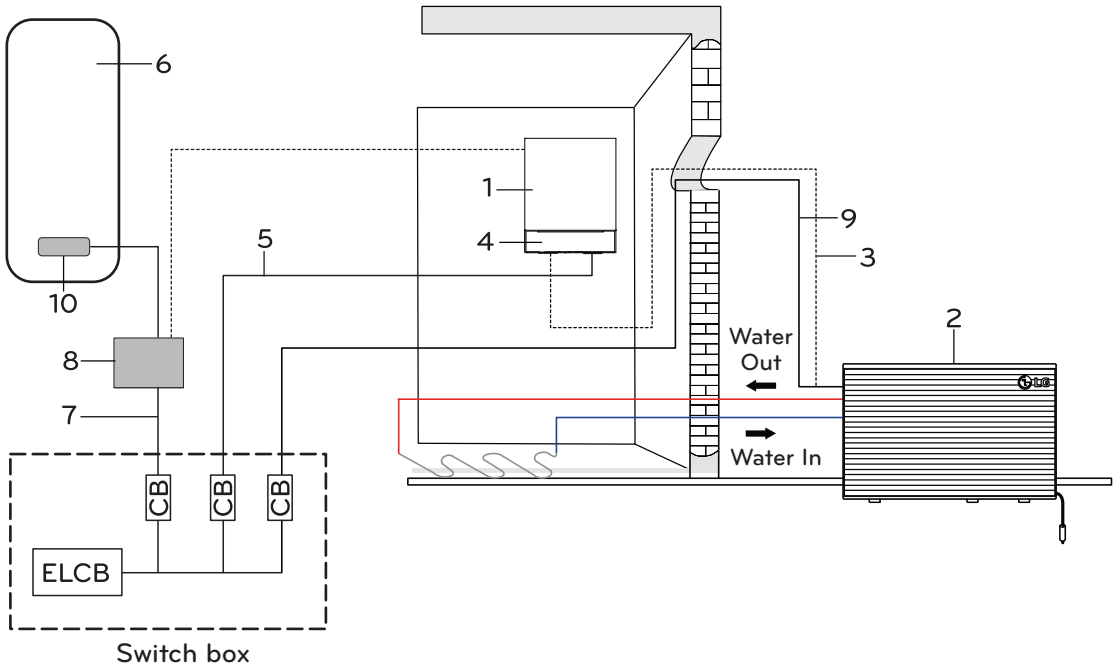
No	Name	No	Name
1	Hydro unit	9	Backup heater
2	Outdoor unit	10	DHW tank*
3	Communication cable	11	Power supply DHW boost heater*
4	Heating water pipes	12	DHW tank kit (PHLTB)*
5	HMI	13	DHW boost heater*
6	Power supply outdoor unit	14	Connecting cable for DHW tank kit
7	Power supply indoor unit	*Optional	
8	Power supply backup heater*		

ELCB : Earth-leakage circuit breaker
CB : Circuit breaker

6. Wiring Diagram

■ Field Wiring

◆ For Control Unit type



Description

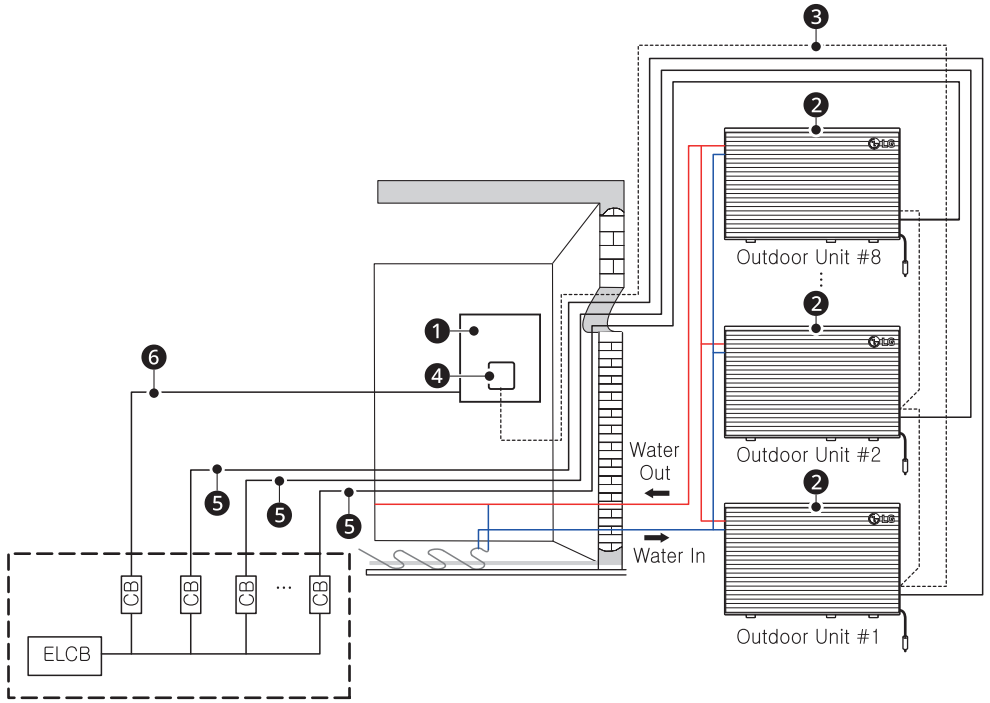
No	Name	No	Name
1	Control Unit	7	Power supply DHW boost heater*
2	Outdoor unit	8	DHW tank kit (PHLTB)*
3	Communication cable	9	Power supply outdoor unit
4	HMI	10	DHW boost heater*
5	Power supply indoor unit	11	Connecting cable for DHW tank kit
6	DHW tank*	*Optional	

ELCB : Earth-leakage circuit breaker
CB : Circuit breaker

6. Wiring Diagram

■ Field Wiring

◆ For Cascade Control Unit type



※ It can be different by model.

No.	Name	No.	Name
1	Cascade Control unit	6	Power supply indoor unit
2	Outdoor unit	* Optional ELCB : Earth-leakage circuit breaker CB : Circuit breaker	
3	Communication cable		
4	Remote controller		
5	Power supply outdoor unit		

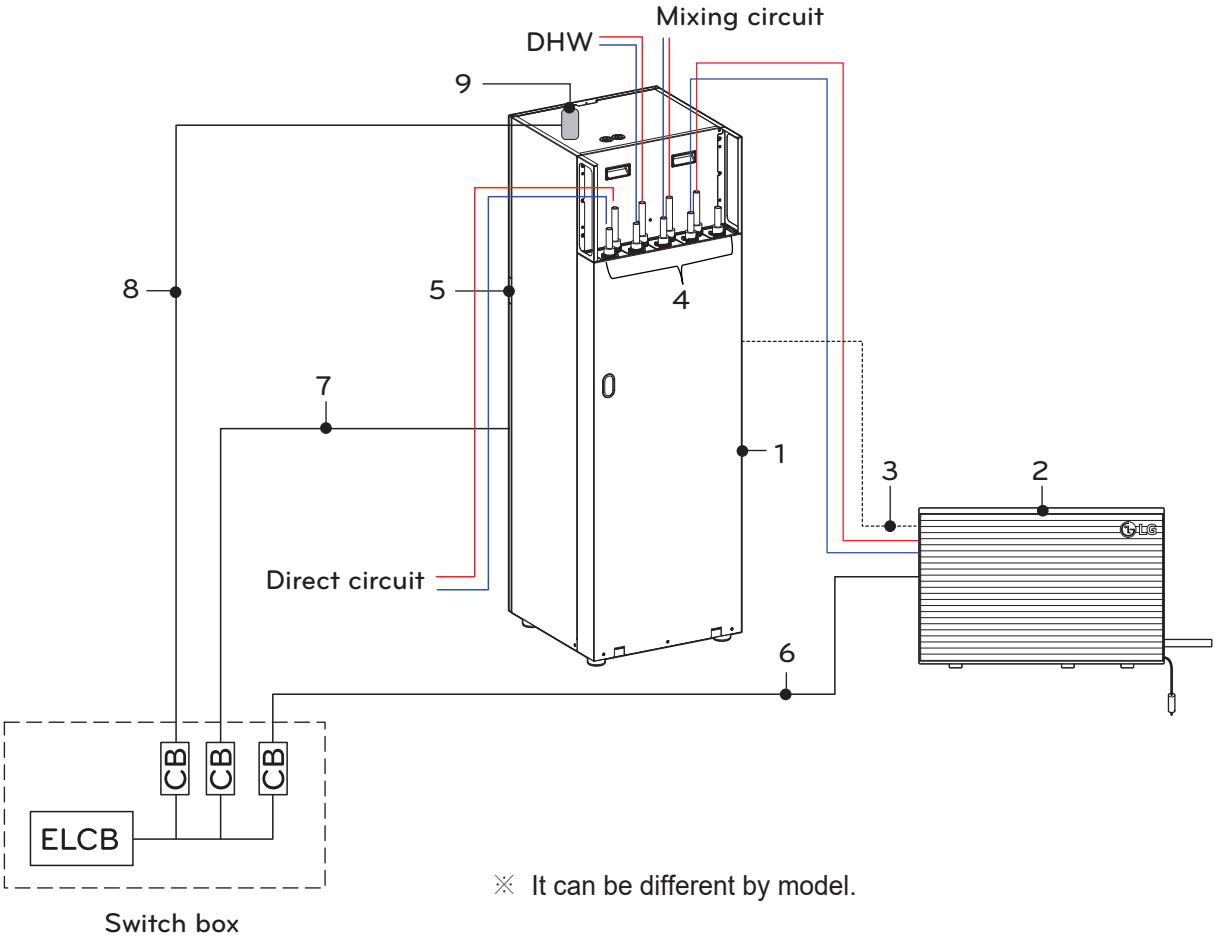
Note

1. Voltage supplied to the unit terminals should be within the minimum and maximum range.
2. Maximum allowable voltage unbalance between phase is 2%.
3. All installation sites must be equipped with an earth leakage circuit breaker (ELCB).

6. Wiring Diagram

■ Field Wiring

◆ For Combi Unit 2C type



※ It can be different by model.

Description

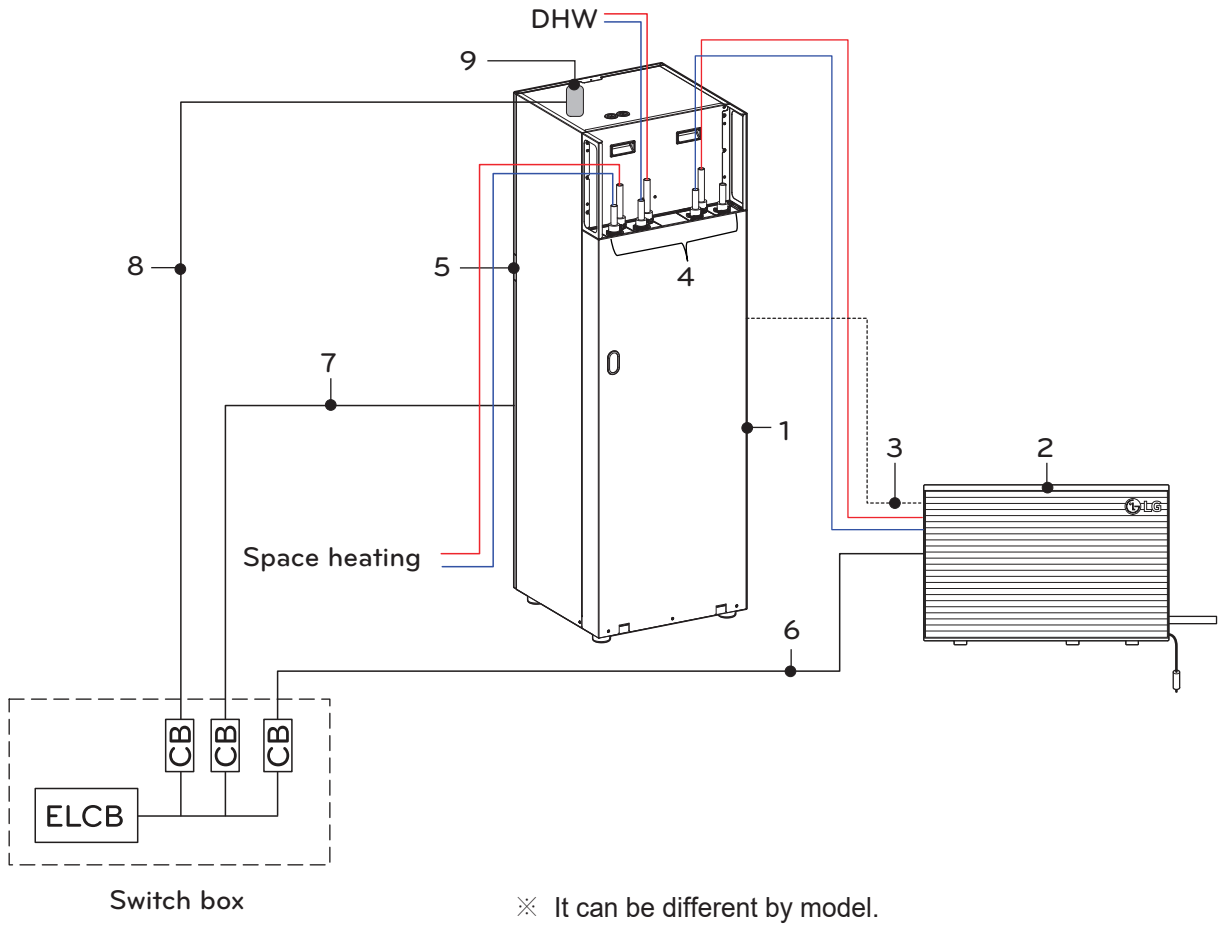
No	Name	No	Name
1	Combi unit 2C	6	Power supply outdoor unit
2	Outdoor unit	7	Power supply indoor unit
3	Communication cable	8	Power supply backup heater*
4	Heating water pipes	9	Backup heater
5	HMI	* Optional	

ELCB : Earth-leakage circuit breaker
CB : Circuit breaker

6. Wiring Diagram

■ Field Wiring

◆ For Combi Unit 1C type



※ It can be different by model.

Description

No

No	Name	No	Name
1	Combi unit 1C	6	Power supply outdoor unit
2	Outdoor unit	7	Power supply indoor unit
3	Communication cable	8	Power supply backup heater*
4	Heating water pipes	9	Backup heater
5	HMI	* Optional	

ELCB: Earth-leakage circuit breaker
CB : Circuit breaker

7. Performance Data

7.1 Cooling Operation

■ Maximum Cooling Capacity

◆ FHBW056B1 [HM051HFD UA41]

Outdoor Temp. [°C DB]	Water flow rate 15.8 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20	5.50	3.99	5.50	4.52	5.50	5.05	5.50	5.41	5.50	5.95	5.50	6.31	5.50	6.68
30	5.50	3.25	5.50	3.67	5.50	4.09	5.50	4.38	5.50	4.81	5.50	5.10	5.50	5.39
35	5.50	3.00	5.50	3.26	5.50	3.63	5.50	3.88	5.50	4.25	5.50	4.50	5.50	4.75
40	4.91	2.55	5.50	2.86	5.50	3.17	5.50	3.88	5.50	3.70	5.50	3.91	5.50	4.13
45	4.67	2.20	5.05	2.46	5.50	2.72	5.50	2.89	5.50	3.15	5.50	3.33	5.50	3.50

◆ FHBW076B1 [HM071HFD UA41] / FHBW078B1[HM073HFD UA41]

Outdoor Temp. [°C DB]	Water flow rate 20.1 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20	7.00	4.04	7.00	4.56	7.00	5.09	7.00	5.45	7.00	5.99	7.00	6.36	7.00	6.72
30	7.00	3.03	7.00	3.71	7.00	4.12	7.00	4.40	7.00	4.83	7.00	5.12	7.00	5.41
35	7.00	2.90	7.00	3.31	7.00	3.67	7.00	3.91	7.00	4.28	7.00	4.53	7.00	4.78
40	6.25	2.63	7.00	2.93	7.00	3.23	7.00	3.44	7.00	3.75	7.00	3.96	7.00	4.17
45	5.94	2.30	6.42	2.55	7.00	2.80	7.00	2.97	7.00	3.22	7.00	3.39	7.00	3.55

◆ FHBW096B1 [HM091HFD UA41] / FHBW098B1[HM093HFD UA41]

Outdoor Temp. [°C DB]	Water flow rate 25.9 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20	9.00	3.94	9.00	4.48	9.00	5.01	9.00	5.37	9.00	5.91	9.00	6.27	9.00	6.63
30	9.00	3.20	9.00	3.63	9.00	4.07	9.00	4.35	9.00	4.78	9.00	5.07	9.00	5.36
35	8.00	2.85	8.89	3.21	9.00	3.59	9.00	3.84	9.00	4.22	9.00	4.47	9.00	4.72
40	8.00	2.47	8.26	2.79	8.52	3.12	8.69	3.33	9.00	3.65	9.00	3.87	9.00	4.09
45	7.54	2.10	7.63	2.37	7.73	2.64	7.80	2.82	7.90	3.09	7.96	3.27	8.03	3.45

Note

1. DB : Dry bulb temperature(℃), LWT : Leaving water temperature(℃), LPM : Liter per minute (ℓ/min)
2. TC : Total capacity(kW), EER: Energy efficiency ratio(kW/kW), COP : Coefficient of performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN14511.
   - Rated values are based on standard conditions, and it can be found on specifications.
   - Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   - In accordance with the test standard(or nations), the results may vary.
5. The Shaded areas are not guaranteed continuous operation.

7. Performance Data

7.1 Cooling Operation

■ Maximum Cooling Capacity

◆ FHBW126B1 [HM121HFD UB41] / FHBW128B1[HM123HFD UB41]

Outdoor Temp. [°C DB]	Water flow rate 34.5 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20	12.00	4.41	12.00	4.82	12.00	5.23	12.00	5.50	12.00	5.90	12.00	6.17	12.00	6.44
30	10.06	3.48	10.79	3.88	11.53	4.28	12.00	4.54	12.00	4.93	12.00	5.16	12.00	5.38
35	9.01	3.02	9.65	3.41	10.36	3.81	10.96	4.10	12.00	4.70	12.00	4.78	12.00	4.86
40	7.95	2.55	8.37	2.92	8.79	3.30	9.07	3.54	9.37	3.90	9.43	4.12	9.42	4.33
45	6.89	2.09	7.04	2.43	7.19	2.77	7.29	3.00	7.43	3.34	7.53	3.57	7.63	3.80

◆ FHBW146B1 [HM141HFD UB41] / FHBW148B1[HM143HFD UB41]

Outdoor Temp. [°C DB]	Water flow rate 40.3 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20	12.84	4.29	14.00	4.74	14.00	5.19	14.00	5.48	14.00	5.93	14.00	6.22	14.00	6.52
30	10.61	3.46	11.50	3.86	12.39	4.27	12.98	4.53	13.76	4.93	14.00	5.17	14.00	5.42
35	9.50	3.04	10.28	3.42	11.10	3.81	11.75	4.08	13.75	4.60	12.78	4.69	12.60	4.87
40	8.39	2.62	8.95	2.97	9.51	3.32	9.88	3.55	10.35	3.89	10.55	4.11	10.70	4.32
45	7.28	2.20	7.58	2.51	7.89	2.82	8.09	3.03	8.39	3.35	8.60	3.56	8.80	3.77

◆ FHBW166B1 [HM161HFD UB41] / FHBW168B1[HM163HFD UB41]

Outdoor Temp. [°C DB]	Water flow rate 46 LPM													
	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
20	13.50	4.25	14.82	4.72	16.00	5.19	16.00	5.50	16.00	5.97	16.00	6.29	16.00	6.60
30	11.16	3.47	12.20	3.87	13.24	4.28	13.93	4.54	14.91	4.94	15.49	5.20	16.00	5.45
35	9.99	3.08	10.89	3.45	11.83	3.82	12.53	4.07	14.30	4.50	13.88	4.67	14.01	4.88
40	8.83	2.70	9.52	3.02	10.21	3.35	10.68	3.57	11.32	3.89	11.68	4.10	11.99	4.30
45	7.66	2.31	8.12	2.59	8.58	2.88	8.89	3.07	9.36	3.35	9.67	3.54	9.98	3.73

Note

1. DB : Dry bulb temperature(℃), LWT : Leaving water temperature(℃), LPM : Liter per minute (ℓ/min)
2. TC : Total capacity(kW), EER: Energy efficiency ratio(kW/kW), COP : Coefficient of performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN14511.
   - Rated values are based on standard conditions, and it can be found on specifications.
   - Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   - In accordance with the test standard(or nations), the results may vary.
5. The Shaded areas are not guaranteed continuous operation.

7. Performance Data

7.2 Heating Operation

■ Maximum Heating Capacity (Include defrost effect)

◆ FHBW056B1 [HM051HFD UA41]

Outdoor Temp.	Water flow rate 15.8 LPM								Water flow rate 9.9 LPM				Water flow rate 7.9 LPM							
	LWT 30℃		LWT 35℃		LWT 40℃		LWT 45℃		LWT 50℃		LWT 55℃		LWT 60℃		LWT 65℃		LWT 70℃		LWT 75℃	
[°C DB]	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25	4.98	2.00	4.85	1.90	4.72	1.69	4.59	1.69	4.47	1.59	4.34	1.48	4.21	1.38						
-20	5.50	2.21	5.29	2.10	5.09	1.92	4.90	1.92	4.69	1.81	4.45	1.57	4.11	1.54	3.66	1.35				
-15	5.50	2.37	5.50	2.30	5.50	2.15	5.21	2.15	4.94	2.05	4.83	1.69	4.29	1.66	3.89	1.62	3.49	1.47	3.10	1.32
-7	5.50	2.54	5.50	2.85	5.50	2.60	5.50	2.53	5.50	2.47	5.50	1.90	4.68	1.86	4.23	1.84	3.77	1.81	3.31	1.62
-4	5.50	2.66	5.50	2.87	5.50	2.80	5.50	2.80	5.50	2.68	5.50	2.36	4.85	2.34	4.36	2.15	3.88	1.94	3.39	1.73
-2	5.50	2.77	5.50	2.97	5.50	2.96	5.50	2.96	5.50	2.82	5.50	2.63	4.97	2.45	4.45	2.25	3.95	2.03	3.44	1.80
2	5.50	3.17	5.50	3.20	5.50	3.30	5.50	3.30	5.50	3.12	5.50	2.76	5.19	2.70	4.63	2.47	4.08	2.21	3.55	1.95
7	5.50	4.78	5.50	4.90	5.50	3.79	5.50	3.79	5.50	3.57	5.50	2.95	5.50	2.85	4.83	2.75	4.25	2.45	3.68	2.14
10	5.50	4.97	5.50	5.00	5.50	4.09	5.50	4.09	5.50	3.84	5.50	3.58	5.50	3.25	4.95	2.92	4.35	2.59	3.76	2.25
15	5.50	5.19	5.50	5.10	5.50	4.60	5.50	4.60	5.50	4.29	5.50	3.95	5.50	3.59	5.15	3.21	4.52	2.83	3.89	2.44
18	5.50	5.68	5.50	5.49	5.50	4.91	5.50	4.91	5.50	4.56	5.50	4.19	5.50	3.79	5.27	3.39	4.62	2.97	3.92	2.55
20	5.50	6.02	5.50	5.77	5.50	5.13	5.50	5.13	5.50	4.75	5.50	4.35	5.50	3.93	5.35	3.50	4.69	3.07	3.96	2.63
35	5.50	8.62	5.50	8.02	5.50	6.81	5.50	6.81	5.50	6.21	5.50	5.60	5.50	5.00	5.50	4.40	5.20	3.80	4.00	3.19

◆ FHBW076B1 [HM071HFD UA41] / FHBW078B1[HM073HFD UA41]

Outdoor Temp.	Water flow rate 20.1 LPM								Water flow rate 12.6 LPM				Water flow rate 10.0 LPM							
	LWT 30℃		LWT 35℃		LWT 40℃		LWT 45℃		LWT 50℃		LWT 55℃		LWT 60℃		LWT 65℃		LWT 70℃		LWT 75℃	
[°C DB]	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25	6.34	1.95	6.17	1.85	6.01	1.75	5.85	1.65	5.68	1.55	5.42	1.41	5.36	1.35						
-20	7.00	2.15	6.73	2.05	6.48	1.96	6.23	1.87	5.97	1.77	5.86	1.58	5.23	1.50	4.65	1.32				
-15	7.00	2.31	7.00	2.24	7.00	2.18	6.63	2.10	6.29	2.00	6.12	1.65	5.36	1.60	4.85	1.50	4.44	1.42	3.95	1.28
-7	7.00	2.48	7.00	2.58	7.00	2.47	7.00	2.34	7.00	2.12	7.00	1.85	5.95	1.75	5.38	1.65	4.80	1.53	4.21	1.43
-4	7.00	2.59	7.00	2.75	7.00	2.79	7.00	2.72	7.00	2.59	7.00	2.43	6.17	2.25	5.55	2.07	4.93	1.87	4.31	1.67
-2	7.00	2.70	7.00	2.89	7.00	2.94	7.00	2.86	7.00	2.71	7.00	2.53	6.32	2.35	5.67	2.16	5.02	1.95	4.38	1.74
2	7.00	3.98	7.00	3.01	7.00	3.30	7.00	3.17	7.00	2.98	7.00	2.70	6.61	2.57	5.89	2.35	5.20	2.12	4.51	1.88
7	7.00	3.77	7.00	4.70	7.00	3.85	7.00	3.30	7.00	3.16	7.00	2.85	7.00	2.73	6.15	2.61	5.41	2.34	4.68	2.06
10	7.00	4.18	7.00	4.73	7.00	4.13	7.00	3.87	7.00	3.60	7.00	3.33	7.00	3.05	6.30	2.77	5.54	2.47	4.78	2.17
15	7.00	4.85	7.00	4.78	7.00	4.58	7.00	4.31	7.00	4.01	7.00	3.69	7.00	3.37	6.55	3.03	5.75	2.69	4.95	2.35
18	7.00	5.28	7.00	5.12	7.00	4.88	7.00	4.59	7.00	4.26	7.00	3.92	7.00	3.56	6.71	3.20	5.88	2.83	5.05	2.46
20	7.00	5.58	7.00	5.36	7.00	5.09	7.00	4.78	7.00	4.43	7.00	4.07	7.00	3.69	6.81	3.31	4.96	2.92	5.11	2.53
35	7.00	7.90	7.00	7.37	7.00	6.83	7.00	6.29	7.00	5.75	7.00	5.22	7.00	4.68	7.00	4.14	6.62	3.61	5.20	3.07

◆ FHBW096B1 [HM091HFD UA41] / FHBW098B1[HM093HFD UA41]

Outdoor Temp.	Water flow rate 25.9 LPM								Water flow rate 16.2 LPM				Water flow rate 12.9 LPM							
	LWT 30℃		LWT 35℃		LWT 40℃		LWT 45℃		LWT 50℃		LWT 55℃		LWT 60℃		LWT 65℃		LWT 70℃		LWT 75℃	
[°C DB]	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25	6.65	1.90	6.92	1.81	6.89	1.71	6.86	1.61	6.82	1.51	6.79	1.42	6.47	1.32						
-20	8.09	2.09	7.74	2.00	7.51	1.92	7.32	1.83	7.16	1.72	6.98	1.60	6.72	1.55	6.35	1.28				
-15	9.00	2.25	8.45	2.19	8.08	2.13	7.77	2.05	7.50	1.94	7.35	1.73	6.93	1.67	6.60	1.59	6.26	1.38	5.69	1.24
-7	9.00	2.41	9.00	2.53	8.80	2.60	8.38	2.47	8.05	2.34	8.00	1.80	7.34	1.75	6.95	1.72	6.54	1.69	5.72	1.51
-4	9.00	2.52	9.00	2.69	8.87	2.73	8.56	2.64	8.25	2.50	8.00	2.24	7.52	2.16	7.09	1.99	6.65	1.80	5.75	1.62
-2	8.20	2.63	8.30	2.82	8.30	2.86	8.20	2.77	8.10	2.62	8.00	2.44	7.64	2.26	7.19	2.07	6.72	1.88	5.80	1.68
2	8.00	2.97	8.00	3.10	8.10	3.19	8.10	3.05	8.10	2.85	8.00	2.64	7.90	2.45	7.38	2.25	6.86	2.04	5.83	1.82
7	9.00	3.60	9.00	4.60	9.00	3.69	9.00	3.42	9.00	3.17	9.00	2.70	8.24	2.65	7.63	2.47	7.04	2.24	5.85	1.99
10	9.00	3.95	9.00	4.50	9.00	3.92	9.00	3.65	9.00	3.38	9.00	3.10	8.39	2.86	7.77	2.62	7.15	2.36	5.90	2.10
15	9.00	4.53	9.00	4.48	9.00	4.30	9.00	4.04	9.00	3.75	9.00	3.46	8 .64	3.16	7.99	2.87	7.33	2.57	6.06	2.27
18	9.00	4.90	9.00	4.77	9.00	4.56	9.00	4.28	9.00	3.98	9.00	3.66	8.81	3.34	8.13	3.02	7.43	2.70	6.22	2.37
20	9.00	5.16	9.00	4.98	9.00	4.74	9.00	4.45	9.00	4.13	9.00	3.80	8.93	3.46	8.23	3.12	7.50	2.78	6.30	2.44
35	9.00	7.24	9.00	6.77	9.00	6.29	9.00	5.81	9.00	5.33	9.00	4.86	9.00	4.38	9.00	3.90	8.07	3.43	6.35	2.95

Note

1. DB : Dry bulb temperature(℃), LWT : Leaving water temperature(℃), LPM : Liter per minute (ℓ/min)
2. TC : Total capacity(kW), EER: Energy efficiency ratio(kW/kW), COP : Coefficient of performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN14511.
   - Rated values are based on standard conditions, and it can be found on specifications.
   - Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   - In accordance with the test standard(or nations), the results may vary.
5. The Shaded areas are not guaranteed continuous operation.

7. Performance Data

7.2 Heating Operation

■ Maximum Heating Capacity (Include defrost effect)

◆ FHBW126B1 [HM121HFD UB41] / FHBW128B1[HM123HFD UB41]

Outdoor Temp.	Water flow rate 34.5 LPM								Water flow rate 21.6 LPM				Water flow rate 17.3 LPM		Water flow rate 11.5 LPM					
	LWT 30℃		LWT 35℃		LWT 40℃		LWT 45℃		LWT 50℃		LWT 55℃		LWT 60℃		LWT 65℃		LWT 70℃		LWT 75℃	
[°C DB]	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25	8.97	2.04	8.70	1.92	8.43	1.79	8.16	1.67	7.90	1.54	7.63	1.42	7.36	1.29						
-20	9.85	2.53	9.53	2.36	9.18	2.20	8.82	2.04	8.45	1.88	8.07	1.72	7.68	1.57	7.29	1.42				
-15	10.75	3.01	10.37	2.81	9.95	2.61	9.49	2.42	9.01	2.22	8.52	2.02	8.01	1.83	7.50	1.62	6.98	1.42	6.48	1.21
-7	12.00	3.40	12.00	3.17	11.26	2.94	10.62	2.72	10.13	2.49	10.00	2.26	8.56	2.02	7.87	1.77	7.17	1.52	6.46	1.25
-4	12.00	3.66	12.00	3.41	11.81	3.16	11.07	2.92	10.50	2.68	10.30	2.43	8.77	2.17	8.01	1.90	7.24	1.61	6.45	1.31
-2	12.00	3.83	12.00	3.57	12.00	3.31	11.37	3.06	10.74	2.80	10.51	2.54	8.91	2.27	8.11	1.98	7.29	1.68	6.45	1.35
2	12.00	4.17	12.00	3.87	12.00	3.60	11.97	3.33	11.00	3.05	10.90	2.77	9.19	2.48	8.31	2.16	7.42	1.82	6.44	1.43
7	12.00	5.11	12.00	4.60	12.00	4.41	12.00	4.09	11.52	3.76	11.35	3.41	9.53	3.05	8.58	2.68	7.63	2.28		
10	12.00	5.41	12.00	5.01	12.00	4.67	12.00	4.33	11.80	3.98	10.73	3.61	9.72	3.24	8.73	2.86	7.76	2.46		
15	12.00	5.92	12.00	5.51	12.00	5.12	12.00	4.74	12.00	4.35	11.09	3.96	10.02	3.57	8.98	3.17	7.99	2.77		
18	12.00	6.23	12.00	5.80	12.00	5.39	12.00	4.99	12.00	4.58	11.28	4.17	10.18	3.77	9.12	3.36	8.15	2.97		
20	12.00	6.43	12.00	5.99	12.00	5.57	12.00	5.15	12.00	4.73	11.41	4.31	10.29	3.90	9.20	3.48	7.93	2.99		
35	12.00	7.91	12.00	7.40	12.00	6.89	12.00	6.37	12.00	5.86	12.00	5.35	10.81	4.83	9.43	4.32				

◆ FHBW146B1 [HM141HFD UB41] / FHBW148B1[HM143HFD UB41]

Outdoor Temp.	Water flow rate 40.3 LPM								Water flow rate 25.2 LPM				Water flow rate 20.1 LPM		Water flow rate 13.4 LPM					
	LWT 30℃		LWT 35℃		LWT 40℃		LWT 45℃		LWT 50℃		LWT 55℃		LWT 60℃		LWT 65℃		LWT 70℃		LWT 75℃	
[°C DB]	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25	9.40	2.01	9.15	1.89	8.90	1.78	8.65	1.66	8.40	1.54	8.15	1.43	7.90	1.31						
-20	10.27	2.50	9.94	2.34	9.60	2.19	9.26	2.04	8.92	1.89	8.57	1.73	8.23	1.59	7.90	1.44				
-15	11.14	2.99	10.74	2.80	10.32	2.61	9.88	2.42	9.44	2.23	8.99	2.04	8.54	1.85	8.09	1.65	7.66	1.45	7.29	1.24
-7	12.56	3.39	12.50	3.16	11.92	2.94	11.31	2.72	11.15	2.51	11.00	2.28	9.02	2.06	8.39	1.82	7.74	1.56	7.09	1.30
-4	13.11	3.65	13.04	3.40	12.40	3.16	11.70	2.93	11.42	2.70	11.13	2.46	9.21	2.21	8.50	1.95	7.77	1.67	7.02	1.37
-2	13.49	3.82	13.40	3.56	12.72	3.31	11.97	3.07	11.62	2.83	11.26	2.58	9.33	2.32	8.58	2.04	7.79	1.74	6.97	1.42
2	14.00	4.16	13.68	3.85	12.89	3.60	12.04	3.35	11.70	3.09	11.35	2.82	9.58	2.54	8.75	2.24	7.87	1.91	6.87	1.51
7	14.00	5.09	14.00	4.50	13.66	4.41	12.66	4.13	12.07	3.82	11.48	3.49	9.91	3.16	9.00	2.80	8.06	2.42		
10	14.00	5.40	14.00	4.99	14.00	4.69	13.00	4.38	12.26	4.05	11.52	3.72	10.12	3.37	9.17	3.01	8.21	2.62		
15	14.00	5.93	14.00	5.54	14.00	5.17	13.53	4.82	12.60	4.46	11.66	4.10	10.45	3.74	9.45	3.37	8.47	2.99		
18	14.00	6.24	14.00	5.84	14.00	5.46	13.84	5.08	12.76	4.71	11.70	4.34	10.65	3.97	9.62	3.59	8.66	3.24		
20	14.00	6.45	14.00	6.04	14.00	5.65	14.00	5.26	12.94	4.88	11.85	4.50	10.78	4.12	9.72	3.75	8.48	3.28		
35	14.00	7.97	14.00	7.52	14.00	7.06	14.00	6.61	14.00	6.16	12.89	5.71	11.53	5.26	10.17	4.82				

◆ FHBW166B1 [HM161HFD UB41] / FHBW168B1[HM163HFD UB41]

Outdoor Temp.	Water flow rate 46 LPM								Water flow rate 28.8 LPM				Water flow rate 23 LPM		Water flow rate 15.3 LPM					
	LWT 30℃		LWT 35℃		LWT 40℃		LWT 45℃		LWT 50℃		LWT 55℃		LWT 60℃		LWT 65℃		LWT 70℃		LWT 75℃	
[°C DB]	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP	TC	COP
-25	9.82	1.98	9.59	1.88	9.36	1.77	9.13	1.66	8.90	1.55	8.67	1.45	8.44	1.34						
-20	10.83	2.49	10.52	2.34	10.20	2.19	9.86	2.04	9.51	1.89	9.17	1.74	8.84	1.60	8.55	1.46				
-15	11.84	3.00	11.45	2.80	11.03	2.61	10.58	2.42	10.12	2.23	9.65	2.04	9.20	1.85	8.76	1.66	8.37	1.46	8.10	1.28
-7	14.02	3.42	13.50	3.18	12.90	2.96	12.22	2.73	12.11	2.51	12.00	2.28	9.71	2.04	9.04	1.80	8.38	1.57	7.72	1.34
-4	14.67	3.69	14.12	3.42	13.44	3.18	12.68	2.94	12.37	2.70	12.07	2.45	9.90	2.20	9.14	1.94	8.37	1.68	7.58	1.42
-2	15.10	3.86	14.56	3.58	13.82	3.33	12.97	3.08	12.54	2.84	12.12	2.58	10.01	2.31	9.20	2.04	8.36	1.76	7.48	1.47
2	15.39	4.21	14.94	3.87	14.03	3.62	13.56	3.37	12.87	3.11	12.19	2.83	10.25	2.54	9.33	2.25	8.37	1.94	7.29	1.58
7	16.00	5.16	16.00	4.40	14.89	4.45	13.66	4.18	12.99	3.86	12.31	3.53	10.53	3.19	9.52	2.85	8.49	2.49		
10	16.00	5.50	16.00	5.04	15.20	4.75	13.97	4.45	13.20	4.12	12.43	3.78	10.69	3.43	9.64	3.08	8.58	2.72		
15	16.00	6.07	16.00	5.66	15.57	5.29	14.00	4.94	13.23	4.58	12.78	4.21	10.95	3.85	9.84	3.49	8.76	3.15		
18	16.00	6.41	16.00	6.00	15.81	5.61	14.64	5.23	13.44	4.86	12.97	4.48	11.10	4.11	9.95	3.75	8.90	3.43		
20	16.00	6.63	16.00	6.22	16.00	5.82	14.79	5.43	13.58	5.05	13.09	4.67	11.18	4.29	10.02	3.93	8.65	3.51		
35	16.00	8.27	16.00	7.83	16.00	7.38	16.00	6.94	14.51	6.50	13.81	6.06	11.60	5.61	10.21	5.17				

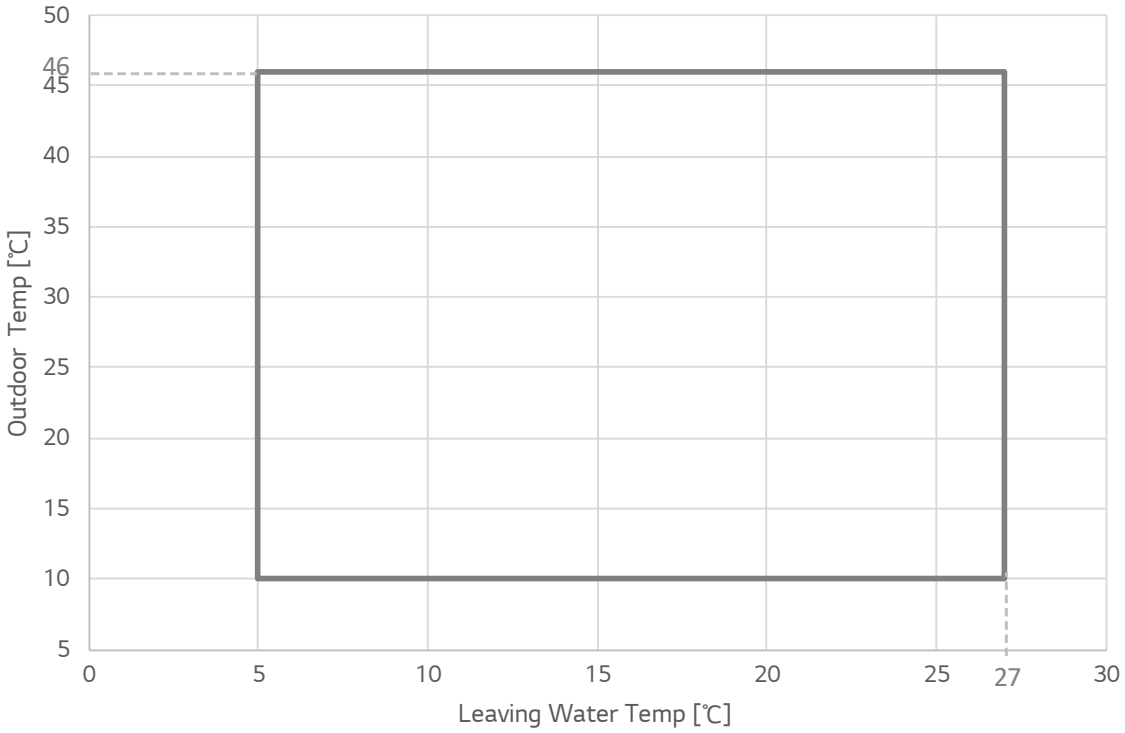
Note

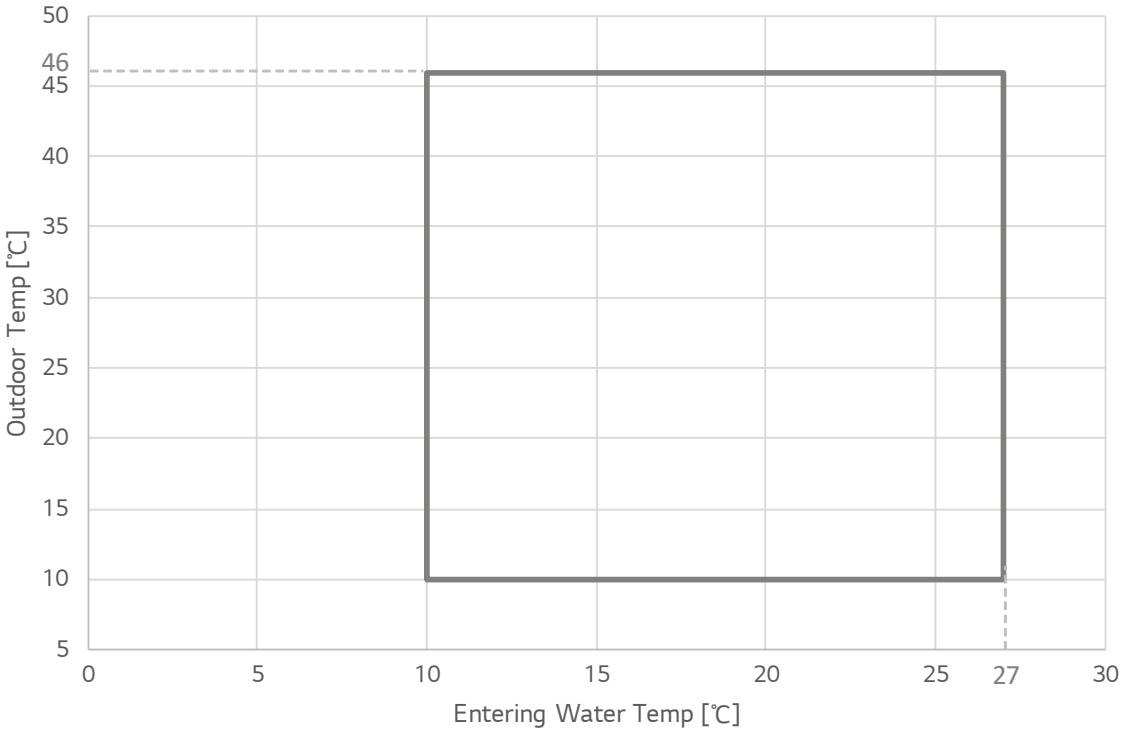
1. DB : Dry bulb temperature(℃), LWT : Leaving water temperature(℃), LPM : Liter per minute (ℓ/min)
2. TC : Total capacity(kW), EER: Energy efficiency ratio(kW/kW), COP : Coefficient of performance (kW/kW)
3. Direct interpolation is permissible. Do not extrapolate.
4. Measuring procedure follows EN14511.
   - Rated values are based on standard conditions, and it can be found on specifications.
   - Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
   - In accordance with the test standard(or nations), the results may vary.
5. The Shaded areas are not guaranteed continuous operation.

8. Operation Range

8.1 Cooling

■ FHBW056B1 [HM051HFD UA41] / FHBW076B1 [HM071HFD UA41] / FHBW096B1 [HM091HFD UA41] / FHBW078B1 [HM073HFD UA41] / FHBW098B1 [HM093HFD UA41]

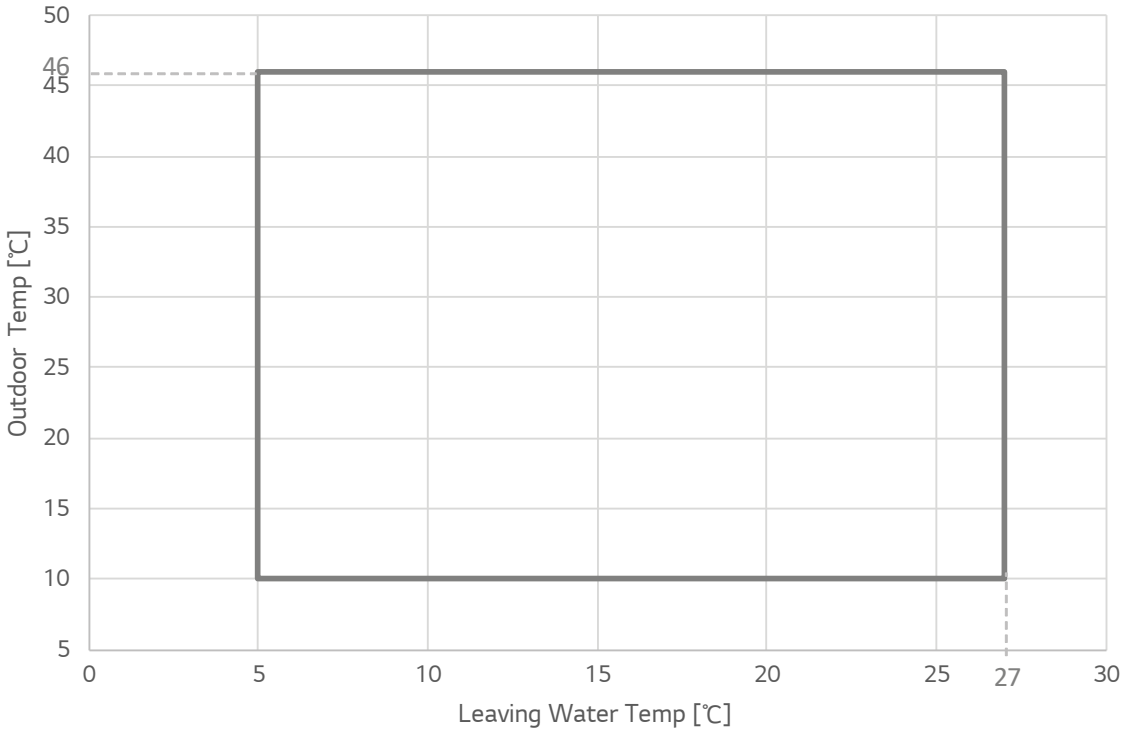


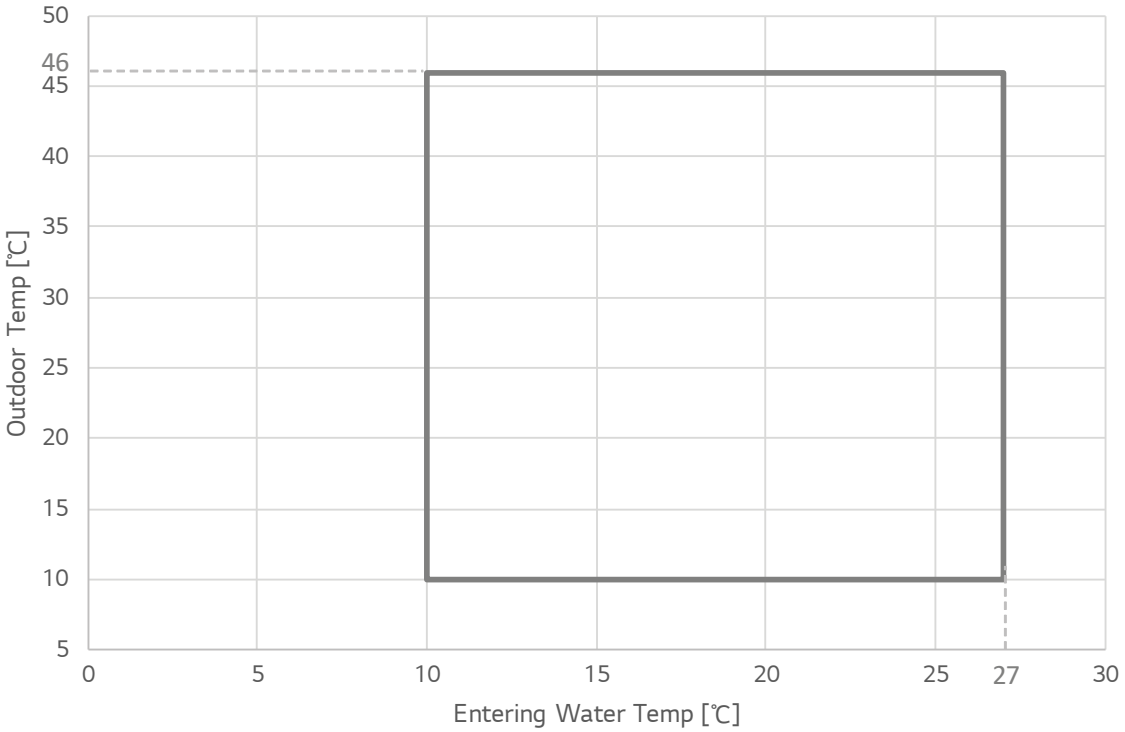


8. Operation Range

8.1 Cooling

■ FHBW126B1 [HM121HFD UB41] / FHBW146B1 [HM141HFD UB41] / FHBW166B1 [HM161HFD UB41] / FHBW128B1 [HM123HFD UB41] / FHBW148B1 [HM143HFD UB41] / FHBW168B1 [HM163HFD UB41]

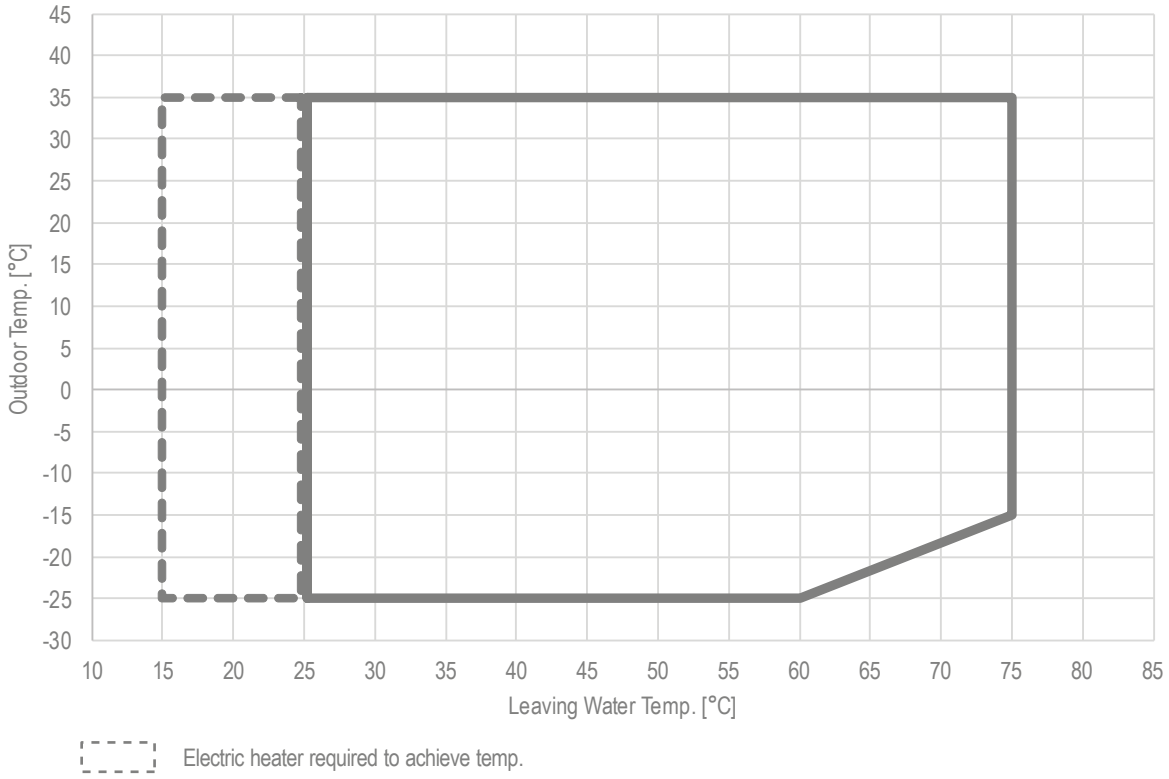


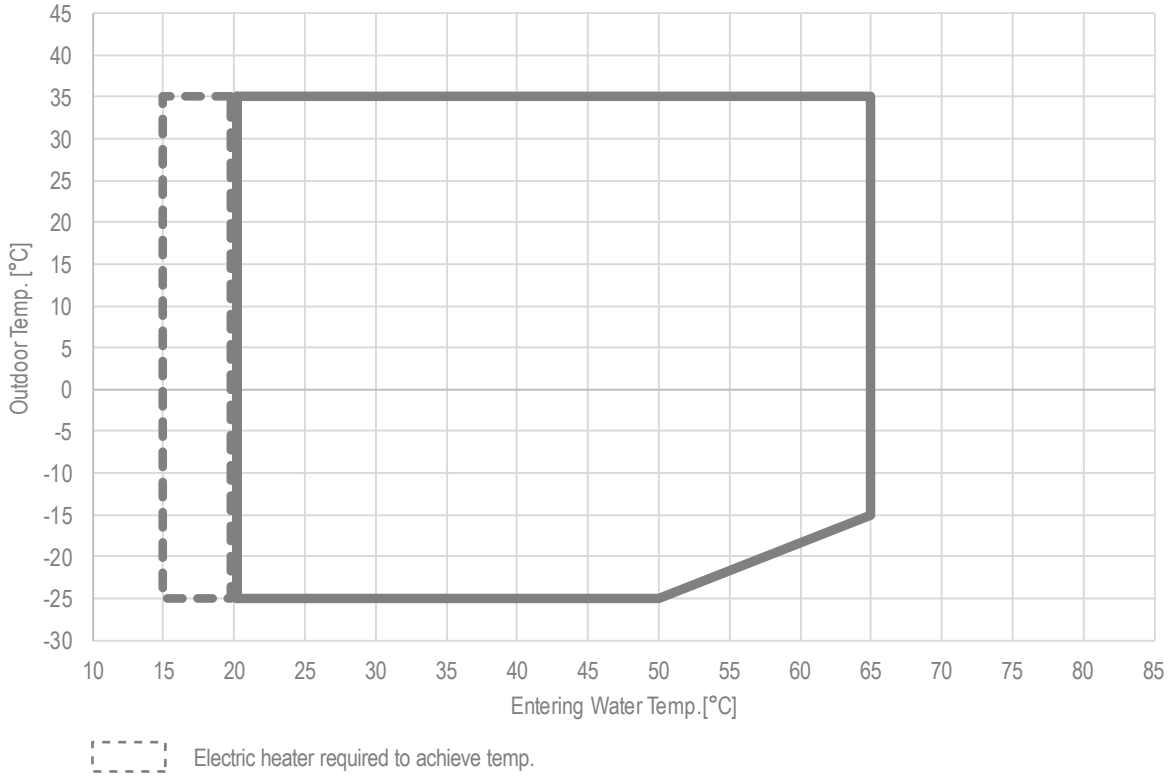


8. Operation Range

8.2 Heating

■ FHBW056B1 [HM051HFD UA41] / FHBW076B1 [HM071HFD UA41] / FHBW096B1 [HM091HFD UA41] / FHBW078B1 [HM073HFD UA41] / FHBW098B1 [HM093HFD UA41]

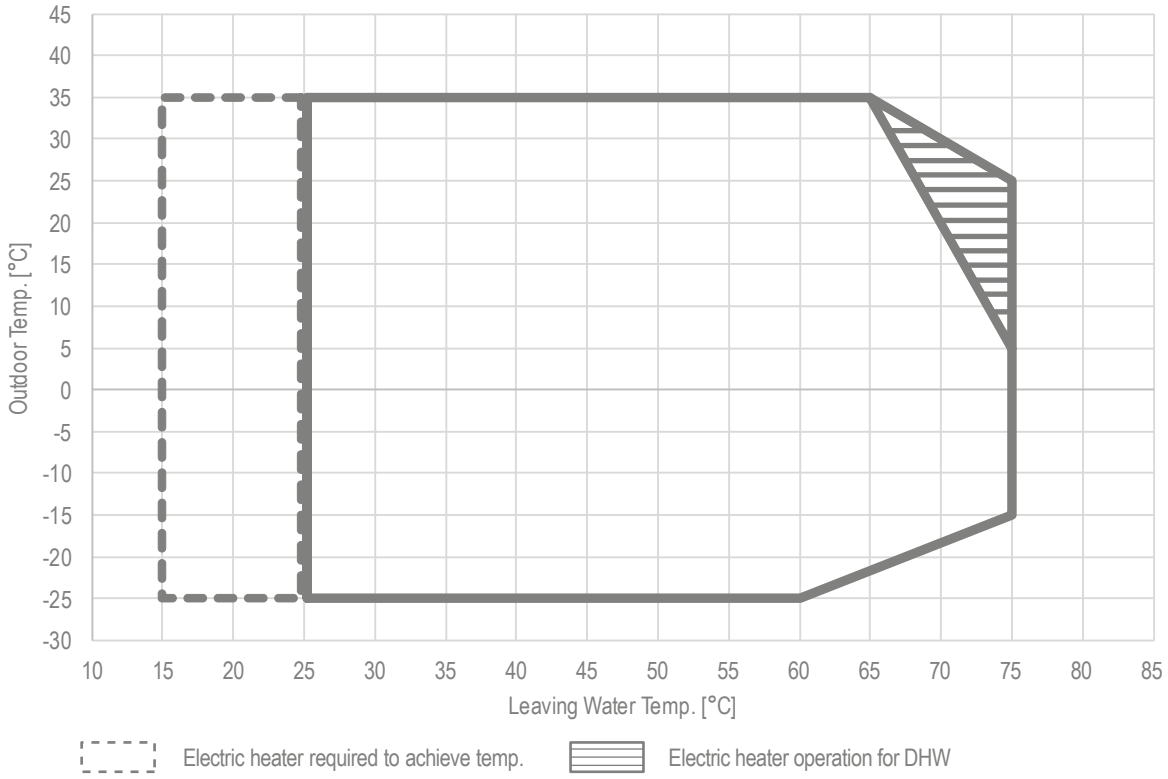


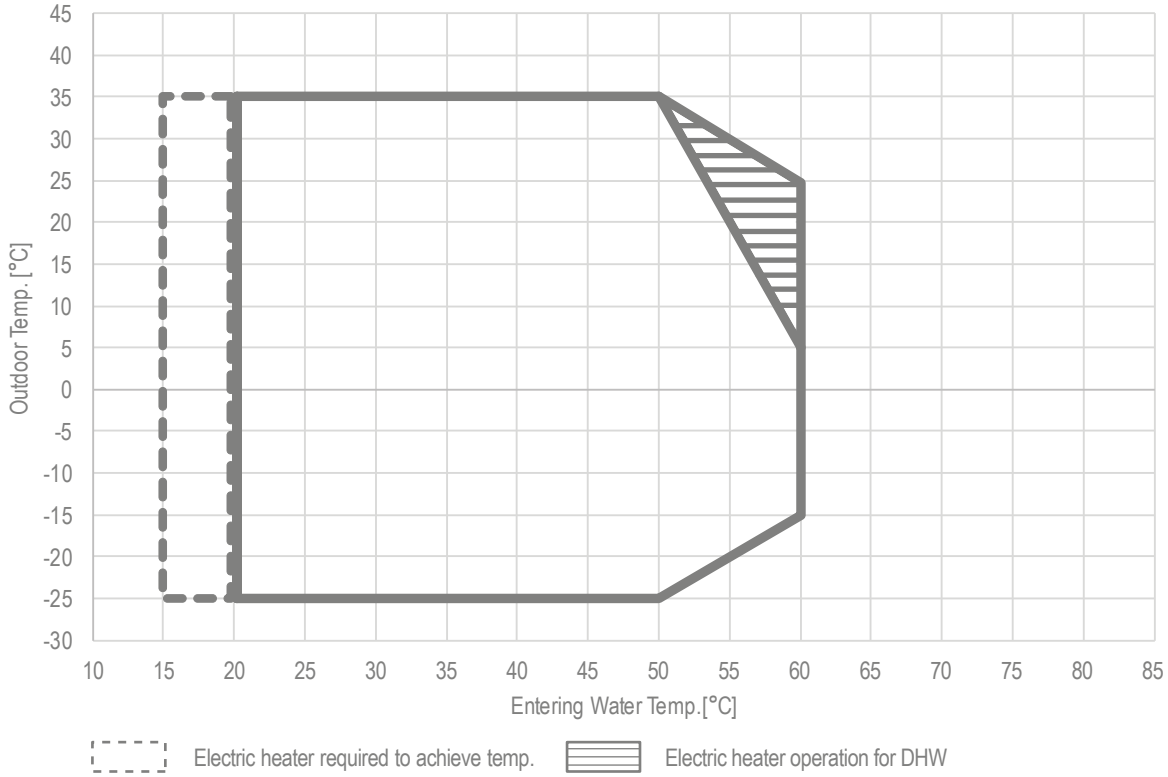


8. Operation Range

8.2 Heating

■ FHBW126B1 [HM121HFD UB41] / FHBW146B1 [HM141HFD UB41] / FHBW166B1 [HM161HFD UB41] / FHBW128B1 [HM123HFD UB41] / FHBW148B1 [HM143HFD UB41] / FHBW168B1 [HM163HFD UB41]

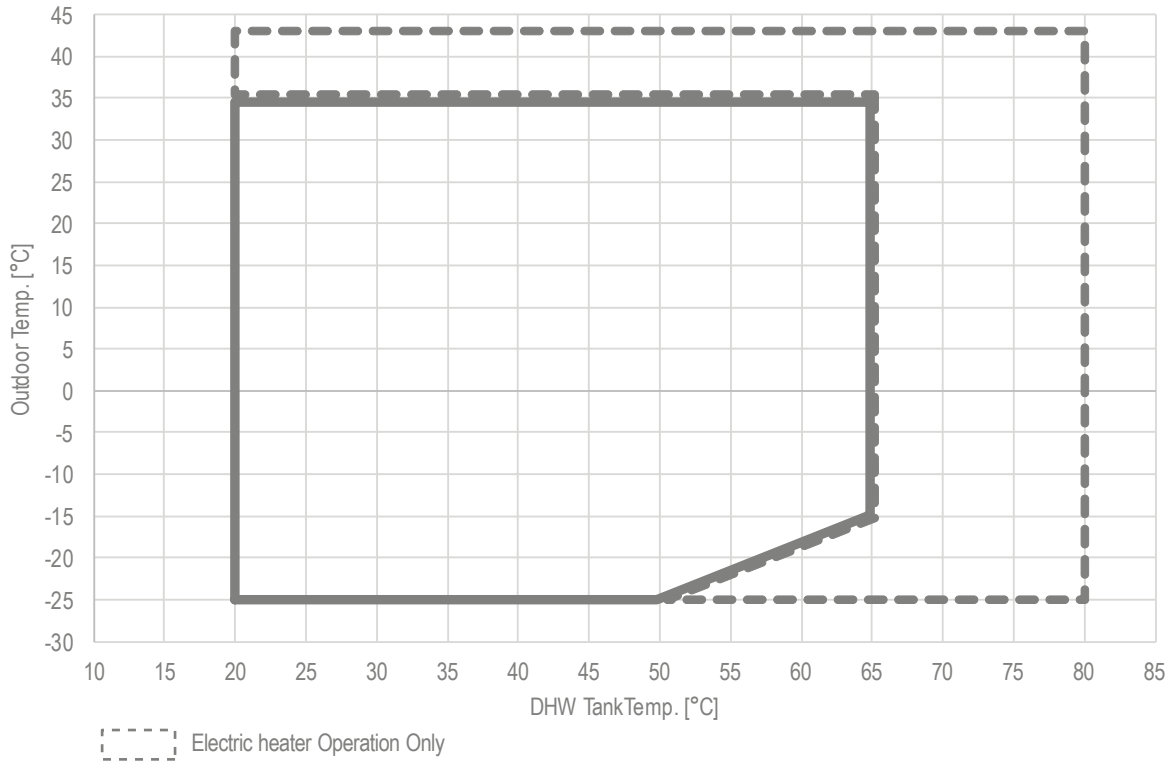




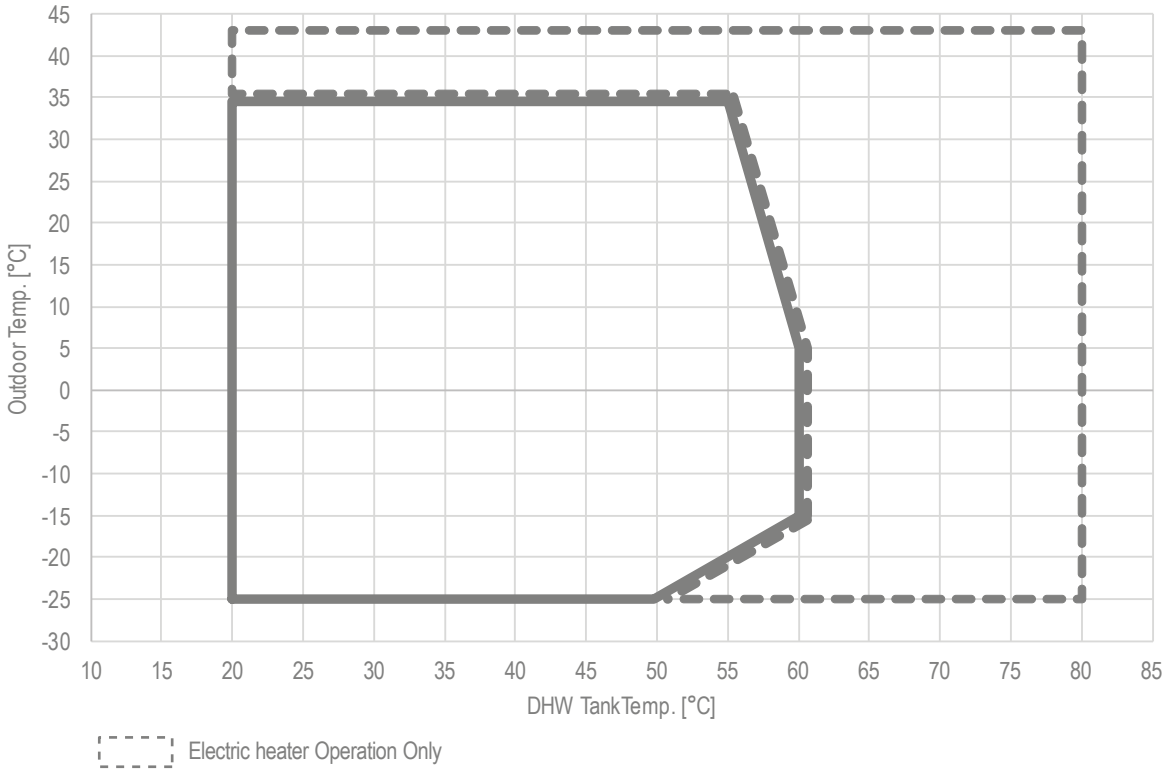
8. Operation Range

8.3 DHW

■ FHBW056B1 [HM051HFD UA41] / FHBW076B1 [HM071HFD UA41] / FHBW096B1 [HM091HFD UA41] / FHBW078B1 [HM073HFD UA41] / FHBW098B1 [HM093HFD UA41]



■ FHBW126B1 [HM121HFD UB41] / FHBW146B1 [HM141HFD UB41] / FHBW166B1 [HM161HFD UB41] / FHBW128B1 [HM123HFD UB41] / FHBW148B1 [HM143HFD UB41] / FHBW168B1 [HM163HFD UB41]



9. Sound levels

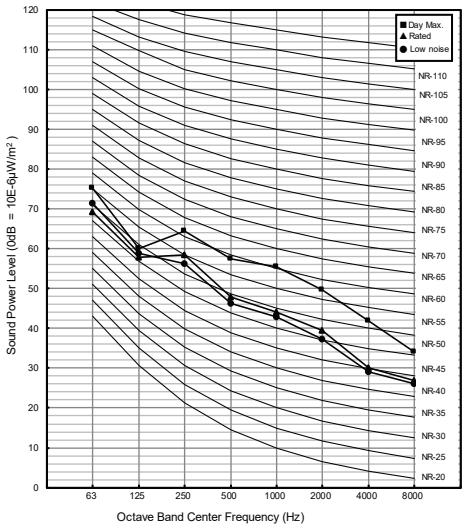
9.1 Sound power level

Note

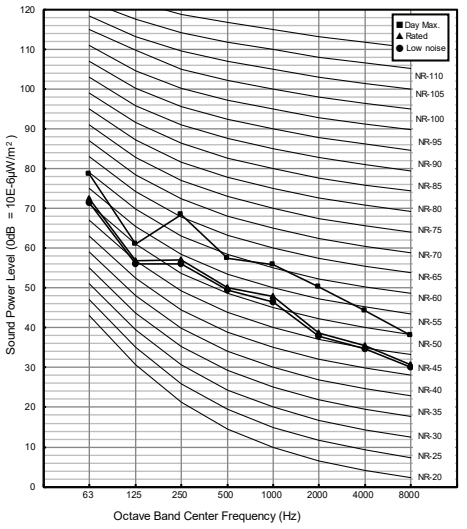
1. Data is valid at diffuse field condition.
2. Reference acoustic intensity 0dB = 10E-6μW/m^2
3. Sound power level is measured on the rated condition in the reverberation rooms. Refer to the Model Specifications for nominal conditions(Power source and Ambient temperature, etc)
4. Sound levels can be increased in accordance with installation and operating conditions.
5. Sound level will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of particular installed place in which the equipment in installed.
6. Sound power level is measured in accordance with EN 12102-1 and ISO 9614.
   - Rated : This mode is measured on the rated condition in the semi-anechoic rooms. Therefore, these values may vary depending on operation conditions.
   - Daytime max : This mode is measured based on max. fan RPM and max. compressor Hz. that can be reached under outdoor air temperature 2°C.
   - Low noise : This mode lowers noise by limiting the compressor Hz. and fan RPM, and thus the performance may be limited.

Model	Heating [dB(A)]		
	Day max	Rated	Low noise
FHBW056B1 [HM051HFD UA41]	61	53	52
FHBW076B1 [HM071HFD UA41]	63	54	53
FHBW096B1 [HM091HFD UA41]	64	56	55
FHBW078B1 [HM073HFD UA41]	63	54	53
FHBW098B1 [HM093HFD UA41]	64	56	55

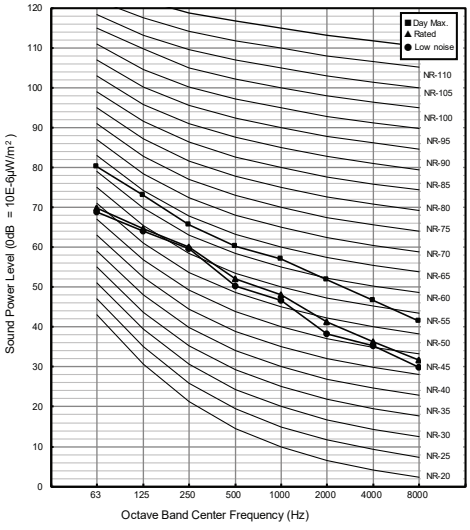
FHBW056B1 [HM051HFD UA41]



FHBW076B1 [HM071HFD UA41]
FHBW078B1 [HM073HFD UA41]



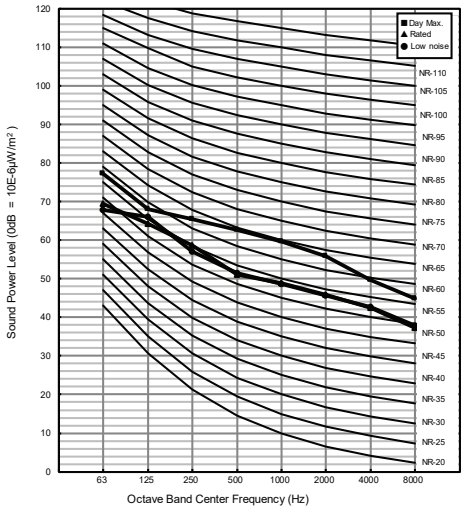
FHBW096B1 [HM091HFD UA41]
FHBW098B1 [HM093HFD UA41]



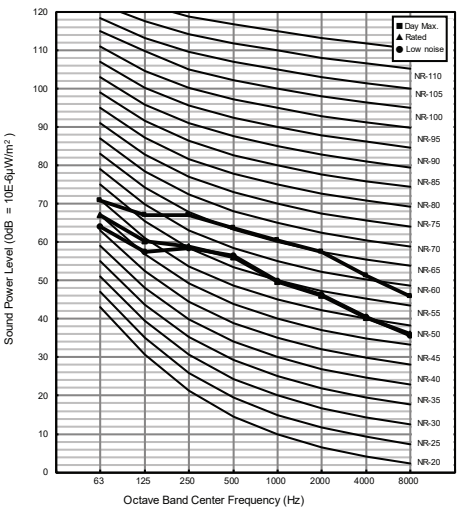
9. Sound levels

Model	Heating [dB(A)]		
	Day max	Rated	Low noise
FHBW126B1 [HM121HFD UB41]	65	56	55
FHBW146B1 [HM141HFD UB41]	66	57	56
FHBW166B1 [HM161HFD UB41]	66	59	57
FHBW128B1 [HM123HFD UB41]	65	56	55
FHBW148B1 [HM143HFD UB41]	66	57	56
FHBW168B1 [HM163HFD UB41]	66	59	57

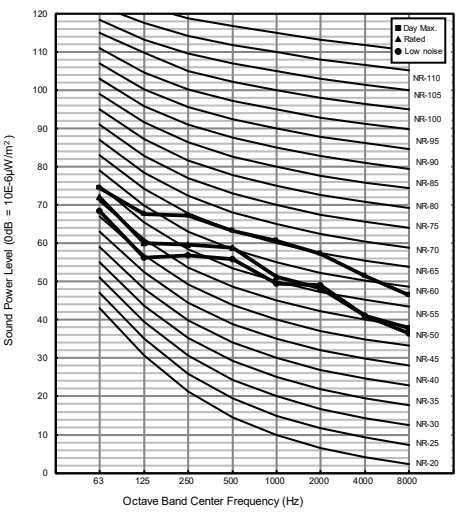
FHBW126B1 [HM121HFD UB41]
FHBW128B1 [HM123HFD UB41]



FHBW146B1 [HM141HFD UB41]
FHBW148B1 [HM143HFD UB41]



FHBW166B1 [HM161HFD UB41]
FHBW168B1 [HM163HFD UB41]



10. Hydraulic Performance

The water pump is variable type which is capable to change flow rate, so it may be required to change default water pump capacity in case of noise by water flow. In most case, however, it is strongly recommended to set capacity as Maximum.

■ Pressure Drop

◆ For GRUNDFOS Water Pump

Capacity [kW]	Rated flow-rate [LPM]	Pump Head [m] (at rated flow- rate)	Product pressure drop [m] (Plate heat exchanger)	Serviceable Head [m]	Min. flow-rate [LPM] (Recommend)
5	15.8	7.5	0.2	7.3	15
7	20.1	7.3	0.3	7.0	
9	25.9	6.1	0.4	5.7	
12	34.5	9.8	0.8	9.0	20
14	40.3	9.3	1.1	8.2	
16	46.0	9.0	1.4	7.6	

◆ For OH SUNG Water Pump

Capacity [kW]	Rated flow-rate [LPM]	Pump Head [m] (at rated flow- rate)	Product pressure drop [m] (Plate heat exchanger)	Serviceable Head [m]	Min. flow-rate [LPM] (Recommend)
5	15.8	7.6	0.2	7.4	15
7	20.1	7.1	0.3	6.8	
9	25.9	6.1	0.4	5.7	
12	34.5	9.7	0.8	8.9	20
14	40.3	9.1	1.1	8.0	
16	46.0	8.3	1.4	6.9	

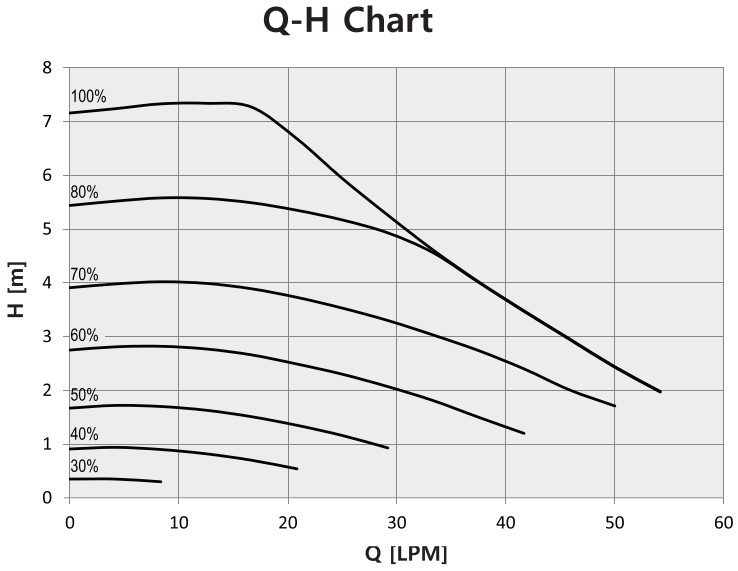
Note

- To secure enough water flow rate, do not set water pump capacity as Minimum.
  It can lead unexpected flow rate error CH14.
- When installing the product, install additional pump in consideration of the pressure loss and pump performance.
- If flow-rate is low, overloading of product can occur.

10. Hydraulic Performance

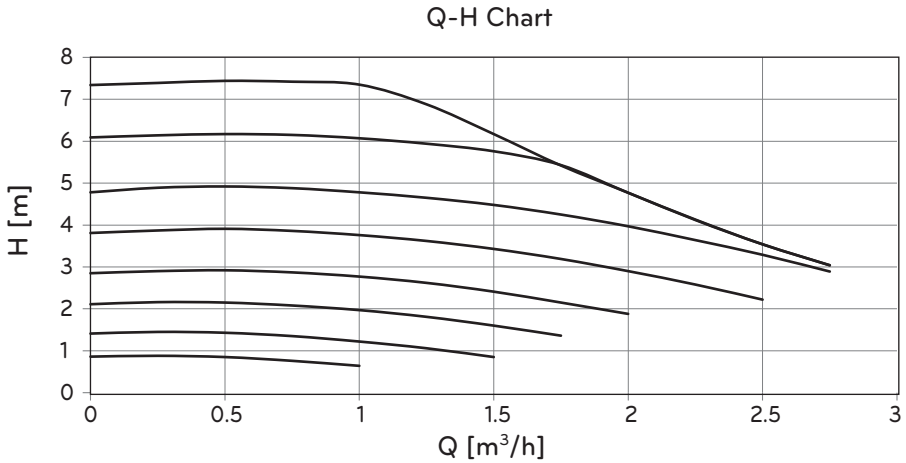
■ GRUNDFOS Water Pump (UPM3K 20 - 75 CHBL)

◆ UN36A Chassis (5, 7, 9 kW)



■ GRUNDFOS Water Pump (UPM4K 20 – 75 CHBL)

◆ UN36A Chassis(5,7,9kw)



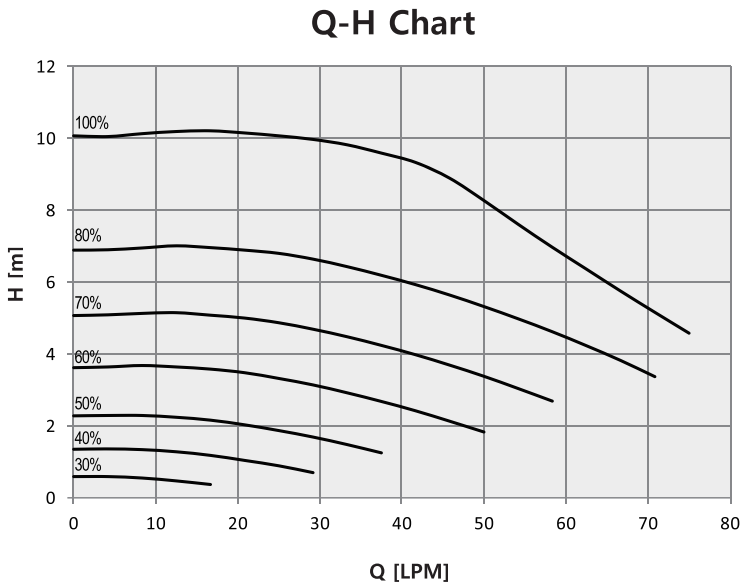
Note

Performance test based on standard ISO 9906 with pre-pressure 2.0 bar and liquid temperature 20°C.

10. Hydraulic Performance

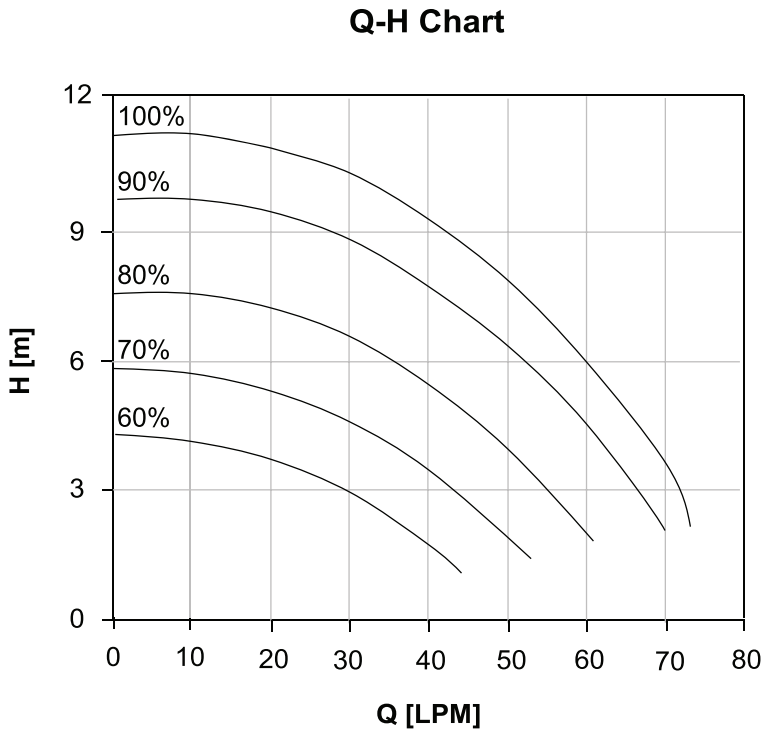
■ GRUNDFOS Water Pump (UPML 20 - 105 CHBL)

◆ UN36B Chassis (12, 14, 16 kW)



■ OH SUNG Water Pump (ODM - 061P)

◆ UN36A Chassis (5, 7, 9 kW) / UN36B Chassis (12, 14, 16 kW)



Note

Performance test based on standard ISO 9906 with pre-pressure 2.0 bar and liquid temperature 20°C.