



CONFIDENTIAL

***THERMA V***<sup>™</sup>  
**AIR-TO-WATER HEAT PUMP**  
**SERVICE MANUAL**  
**(Exploded View)**

**CAUTION**

Before Servicing the unit, read the safety precautions in General SVC manual.  
Only for authorized service personnel.

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# 1. Model Information

## Factory Model Name

Model	No.						
	1	2	3	4	5	6	7
Monobloc	ZH	B	W	09	6	A	0

No.	Signification
1	Air-to-Water-Heat Pump for R32
2	Classification - B : Monobloc
3	Model Type - W : Inverter Heat Pump
4	Heating Capacity - E.g) 9 kW → '09'
5	Electrical ratings - 6 : 1 phase 220-240 V~ 50 Hz - 8 : 3 phase 380-415 V~ 50 Hz
6	Function - A : General heating heat pump
7	Series Number

## Buyer Model Name

Refrigerant	Series	No.						
		1	2	3	4	5	7	8
R32	3	H	M	09	1	M	U3	3

No.	Signification
1	Air-to-Water-Heat Pump
2	Classification - M : Monobloc
3	Heating Capacity - E.g) 9 kW → '09'
4	Electrical ratings - 6 : 1 phase 220-240 V~ 50 Hz - 8 : 3 phase 380-415 V~ 50 Hz
5	Leaving Water Combination - M : Middle Temperature
6	Chassis Name - U3 : UN60A Chassis - U4 : UN36A Chassis
7	Series Number

- Additional Information : Serial number is refer to the barcode on the product.
- Max allowable pressure High side / Low side : 4.32 MPa / 2.4 MPa
- Refrigerant : R32

## Model Information

Refrigerant	Series	No.								
		1	2	3	4	5	6	7	8	9
R32	3	H	M	09	1	M	R	S	U3	3

No.	Signification
1	Air-to-Water-Heat Pump
2	Classification - M : Monobloc
3	Heating Capacity - E.g) 9 kW → '09'
4	Electrical ratings - 6 : 1 phase 220-240 V~ 50 Hz - 8 : 3 phase 380-415 V~ 50 Hz
5	Leaving Water Combination - M : Middle Temperature
6	Refrigerant - R : R32
7	Function - S : Silent
8	Chassis Name - U3 : UN60A Chassis - U4 : UN36A Chassis
9	Series Number

Refrigerant	Series	No.							
		1	2	3	4	5	6	7	8
R32	4	H	M	09	1	M	R	U3	4

No.	Signification
1	Air-to-Water-Heat Pump
2	Classification - M : Monobloc
3	Heating Capacity - E.g) 9 kW → '09'
4	Electrical ratings - 6 : 1 phase 220-240 V~ 50 Hz - 8 : 3 phase 380-415 V~ 50 Hz
5	Leaving Water Combination - M : Middle Temperature
6	Refrigerant - R : R32
7	Chassis Name - U3 : UN60A Chassis - U4 : UN36A Chassis
8	Series Number

The specifications of HM\*\*1M U\*3LAP have the equivalent of a HM\*\*1M U\*3.

- Additional Information : Serial number refers to the barcode on the product.

## Model name and related information

Model Name		Capacity (kW)		Power Source (Unit)		
Chassis	Phase(Ø)	Capacity(kW)	Heating <sup>1)</sup>		Cooling <sup>2)</sup>	
UN36A	1	5	5.5	5.5	220-240 V~ 50 Hz	
		7	7	7		
		9	9	9		
UN60A	1	9	9	9		
		12	12	12		
		14	14	14		
	3	16	16	16		
		12	12	12		380-415 V 3N~ 50 Hz
		14	14	14		
16	16	16				

1 : tested under EN 14511 Heating condition (Leaving water temperature 35°C at outdoor ambient temperature 7°C / 6°C)

2 : tested under EN 14511 Cooling condition (Leaving water temperature 18°C at outdoor ambient temperature 35°C / 24°C)

# 1. Specification

Model		ZHBW056A1[HM051MR.U44]	ZHBW076A1[HM071MR.U44]	ZHBW096A1[HM091MR.U44]
Power Supply		Ø / V / Hz	1 / 220-240 / 50	1 / 220-240 / 50
Circuit Breaker		A	16	20
Wiring Connections	For Power Supply (Included Earth)	mm <sup>2</sup> x cores	4.0 x 3	4.0 x 3
* Capacity	Cooling (LWT 18°C / 7°C)	kW	5.5 / 5.5	7 / 7
	Heating (LWT 35°C / 55°C)	kW	5.5 / 5.5	7 / 5.5
* Power Input	Cooling (LWT 18°C / 7°C)	kW	1.17 / 1.67	1.56 / 2.19
	Heating (LWT 35°C / 55°C)	kW	1.17 / 2.04	1.49 / 2.04
* EER	Cooling (LWT 18°C / 7°C)	W/W	4.70 / 3.30	4.50 / 3.20
* COP	Heating (LWT 35°C / 55°C)	W/W	4.70 / 2.70	4.70 / 2.70
Operation Range (Min.-Max.) Outdoor Temperature	Cooling	°C	5 ~ 48	5 ~ 48
	Heating	°C	-25 ~ 35	-25 ~ 35
Operation Range (Min.-Max.) Leaving Water Temperature	Cooling	°C	5 ~ 27	5 ~ 27
	Heating	°C	15 ~ 65	15 ~ 65
Sound Power Level	Heating	dB(A)	57	57
Dimensions	Net(W x H x D)	mm	1 239 x 834 x 330	1 239 x 834 x 330
	Shipping(W x H x D)	mm	1 364 x 985 x 461	1 364 x 985 x 461
Weight	Net Weight	kg	89.5	89.5
	Gross Weight	kg	100.5	100.5
Compressor	Type	-	Hermetic Motor Compressor	Hermetic Motor Compressor
	Model	-	RJB036MAA	RJB036MAA
	Quantity	EA	1	1
	Displacement	cm <sup>3</sup> /Rev.	31.6	31.6
Refrigerant	Type	-	R32	R32
	Charge	g	1 400	1 400
	Control	-	EEV	EEV
Refrigerant Oil	Type	-	FW68D	FW68D
	Charged Volume	cc	1 100	1 100
Heat Exchanger	Quantity	EA	1	1
	Rows	EA	2	2
	Columns	EA	38	38
	FPI	Fins/inch	2	2
Fan	Type	-	Propeller	Propeller
	Quantity	EA	1	1
	Air Flow Rate	CMM(l/s)	60	60
Fan Motor	Model	-	BLDC	BLDC
	Quantity	EA	1	1
	Output	W	124	124
Heat Exchanger	Type	-	Brazed Plate HEX	Brazed Plate HEX
	Quantity	EA	1	1
Pump	Type	-	BLDC	BLDC
	Power Input(Rated)	W	60	60
	Water Flowrate Limit	LPM	15	15
Expansion Vessel	Volume	ℓ	8	8
	Water Pressure(Max.)	bar	3	3
	Water Pressure(Pre)	bar	1	1
Strainer	Mesh Size	mm	30	30
	Material	-	Stainless Steel	Stainless Steel

**Note :**

1. Capacities and power inputs are based on the following conditions:

- \*1 : Cooling conditions - Water Temperature 18°C; Outdoor Air Temperature 35°CDB/24°CWB  
 Heating conditions - Water Temperature 35°C; Outdoor Air Temperature 7°CDB/6°CWB

2. Wiring cable size must comply with the applicable local and national code.

3. The specification may be subject to change without prior notice for purpose of improvement.

## Specification

Model			ZHBW126A1[HM121MR.U34]	ZHBW146A1[HM141MR.U34]	ZHBW166A1[HM161MR.U34]
Power Supply		Ø / V / Hz	1 / 220-240 / 50	1 / 220-240 / 50	1 / 220-240 / 50
Circuit Breaker		A	40	40	40
Wiring Connections	For Power Supply (Included Earth)	mm <sup>2</sup> x cores	6.0 x 3	6.0 x 3	6.0 x 3
* Capacity	Cooling (LWT 18°C / 7°C)	kW	12 / 12	14 / 14	16 / 16
	Heating (LWT 35°C / 55°C)	kW	12 / 11	14 / 11.5	16 / 12
* Power Input	Cooling (LWT 18°C / 7°C)	kW	2.53 / 3.64	3.26 / 4.24	4.00 / 5.16
	Heating (LWT 35°C / 55°C)	kW	2.45 / 3.79	2.92 / 4.04	3.40 / 4.29
* EER	Cooling (LWT 18°C / 7°C)	W/W	4.75 / 3.30	4.30 / 3.30	4.00 / 3.10
* COP	Heating (LWT 35°C / 55°C)	W/W	4.90 / 2.90	4.80 / 2.85	4.70 / 2.80
Operation Range (Min.-Max.) Outdoor Temperature	Cooling	°C	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	°C	-25 ~ 35	-25 ~ 35	-25 ~ 35
Operation Range (Min.-Max.) Leaving Water Temperature	Cooling	°C	5 ~ 27	5 ~ 27	5 ~ 27
	Heating	°C	15 ~ 65	15 ~ 65	15 ~ 65
Sound Power Level	Heating	dB(A)	60	61	61
Dimensions	Net(W x H x D)	mm	1 239 x 1380 x 330	1 239 x 1380 x 330	1 239 x 1380 x 330
	Shipping(W x H x D)	mm	1 364 x 1 532 x 461	1 364 x 1 532 x 461	1 364 x 1 532 x 461
Weight	Net Weight	kg	119.1	119.1	119.1
	Gross Weight	kg	134.1	134.1	134.1
Compressor	Type	-	Hermetic Motor Compressor	Hermetic Motor Compressor	Hermetic Motor Compressor
	Model	-	RJB036MAA	RJB036MAA	RJB036MAA
	Quantity	EA	1	1	1
	Displacement	cm <sup>3</sup> /Rev.	31.6	31.6	31.6
Refrigerant	Type	-	R32	R32	R32
	Charge	g	2,000	2,000	2,000
	Control	-	EEV	EEV	EEV
Refrigerant Oil	Type	-	FW68D	FW68D	FW68D
	Charged Volume	cc	1 100	1 100	1 100
Heat Exchanger	Quantity	EA	2	2	2
	Rows	EA	32	32	32
	Columns	EA	2	2	2
	FPI	Fins/inch	18	18	18
Fan	Type	-	Propeller	Propeller	Propeller
	Quantity	EA	2	2	2
	Air Flow Rate	CMM(l/s)	60	60	60
Fan Motor	Model	-	BLDC	BLDC	BLDC
	Quantity	EA	2	2	2
	Output	W	124	124	124
Heat Exchanger	Type	-	Brazed Plate HEX	Brazed Plate HEX	Brazed Plate HEX
	Quantity	EA	1	1	1
Pump	Type	-	BLDC	BLDC	BLDC
	Power Input(Rated)	W	140	140	140
	Water Flowrate Limit	LPM	15	15	15
Expansion Vessel	Volume	ℓ	8	8	8
	Water Pressure(Max.)	bar	3	3	3
	Water Pressure(Pre)	bar	1	1	1
Strainer	Mesh Size	mm	30	30	30
	Material	-	Stainless Steel	Stainless Steel	Stainless Steel

### Note :

1. Capacities and power inputs are based on the following conditions:

- \*1 : Cooling conditions - Water Temperature 18°C; Outdoor Air Temperature 35°CDB/24°CWB  
 Heating conditions - Water Temperature 35°C; Outdoor Air Temperature 7°CDB/6°CWB

2. Wiring cable size must comply with the applicable local and national code.

3. The specification may be subject to change without prior notice for purpose of improvement.

## Specification

Model			ZHBW128A1[HM123MR.U34]	ZHBW148A1[HM143MR.U34]	ZHBW168A1[HM163MR.U34]
Power Supply		Ø / V / Hz	3 / 380-415 / 50	3 / 380-415 / 50	3 / 380-415 / 50
Circuit Breaker		A	16	16	16
Wiring Connections	For Power Supply (Included Earth)	mm <sup>2</sup> x cores	4.0 x 5	4.0 x 5	4.0 x 5
* Capacity	Cooling (LWT 18°C / 7°C)	kW	12 / 12	14 / 14	16 / 16
	Heating (LWT 35°C / 55°C)	kW	12 / 11	14 / 11.5	16 / 12
* Power Input	Cooling (LWT 18°C / 7°C)	kW	2.53 / 3.64	3.26 / 4.24	4.00 / 5.16
	Heating (LWT 35°C / 55°C)	kW	2.45 / 3.79	2.92 / 4.04	3.40 / 4.29
* EER	Cooling (LWT 18°C / 7°C)	W/W	4.75 / 3.30	4.30 / 3.30	4.00 / 3.10
* COP	Heating (LWT 35°C / 55°C)	W/W	4.90 / 3.30	4.80 / 2.85	4.70 / 2.80
Operation Range (Min.~Max.) Outdoor Temperature	Cooling	°C	5 ~ 48	5 ~ 48	5 ~ 48
	Heating	°C	-25 ~ 35	-25 ~ 35	-25 ~ 35
Operation Range (Min.~Max.) Leaving Water Temperature	Cooling	°C	5 ~ 27	5 ~ 27	5 ~ 27
	Heating	°C	15 ~ 65	15 ~ 65	15 ~ 65
Sound Power Level	Heating	dB(A)	60	61	61
Dimensions	Net(W x H x D)	mm	1 239 x 1 380 x 330	1 239 x 1 380 x 330	1 239 x 1 380 x 330
	Shipping(W x H x D)	mm	1 364 x 1 532 x 461	1 364 x 1 532 x 461	1 364 x 1 532 x 461
Weight	Net Weight	kg	119.1	119.1	119.1
	Gross Weight	kg	134.1	134.1	134.1
Compressor	Type	-	Hermetic Motor Compressor	Hermetic Motor Compressor	Hermetic Motor Compressor
	Model	-	RJB036MAA	RJB036MAA	RJB036MAA
	Quantity	EA	1	1	1
	Displacement	cm <sup>3</sup> /Rev.	31.6	31.6	31.6
Refrigerant	Type	-	R32	R32	R32
	Charge	g	2 000	2 000	2 000
	Control	-	EEV	EEV	EEV
Refrigerant Oil	Type	-	FW68D	FW68D	FW68D
	Charged Volume	cc	1 100	1 100	1 100
Heat Exchanger	Quantity	EA	2	2	2
	Rows	EA	2	2	2
	Columns	EA	32	32	32
	FPI	Fins/inch	2	2	2
Fan	Type	-	Propeller	Propeller	Propeller
	Quantity	EA	2	2	2
	Air Flow Rate	CMM(l/s)	60	60	60
Fan Motor	Model	-	BLDC	BLDC	BLDC
	Quantity	EA	2	2	2
	Output	W	124	124	124
Heat Exchanger	Type	-	Brazed Plate HEX	Brazed Plate HEX	Brazed Plate HEX
	Quantity	EA	1	1	1
Pump	Type	-	BLDC	BLDC	BLDC
	Power Input(Rated)	W	140	140	140
	Water Flowrate Limit	LPM	15	15	15
Expansion Vessel	Volume	ℓ	8	8	8
	Water Pressure(Max.)	bar	3	3	3
	Water Pressure(Pre)	bar	1	1	1
Strainer	Mesh Size	mm	30	30	30
	Material	-	Stainless Steel	Stainless Steel	Stainless Steel

**Note :**

1. Capacities and power inputs are based on the following conditions:

- \*1 : Cooling conditions - Water Temperature 18°C; Outdoor Air Temperature 35°CDB/24°CWB  
 Heating conditions - Water Temperature 35°C; Outdoor Air Temperature 7°CDB/6°CWB

2. Wiring cable size must comply with the applicable local and national code.

3. The specification may be subject to change without prior notice for purpose of improvement.

## 2. Functions

■ Basic functions of Unit

Water Side

Category	Functions	ZHBW056A1[HM051MR.U44] ZHBW076A1[HM071MR.U44] ZHBW096A1[HM091MR.U44]	ZHBW126A1[HM121MR.U34] ZHBW146A1[HM141MR.U34] ZHBW166A1[HM161MR.U34]	ZHBW128A1[HM123MR.U34] ZHBW148A1[HM143MR.U34] ZHBW168A1[HM163MR.U34]
Installation	Drain pump	X	X	X
	E.S.P control	X	X	X
	Backup heater (Install kit)	O (Accessory)	O (Accessory)	O (Accessory)
	High ceiling operation	X	X	X
Reliability	Auto Elevation Grille	X	X	X
	Hot start	X	X	X
	Self diagnosis	O	O	O
Network function	Soft dry operation	X	X	X
	Network solution(LGAP)	O	O	O
Convenience	Modbus connectivity (without gateway)	O	O	O
	Auto Restart	O	O	O
	Child lock*	O	O	O
	Sleep mode	O	O	O
	Timer (on/off)	O	O	O
	Timer (weekly)*	O	O	O
	Two thermistor control	X	X	X
Air to Water Heat Pump Functions	Anti-condensation on floor (cooling)	O	O	O
	Water pump on / off Control	O	O	O
	Flow Sensor Control	O	O	O
	Thermostat interface (230V AC)	O	O	O
	Thermostat interface (24V AC)	X	X	X
	DHW(Domestic Hot Water) Tank heater	O (Accessory)	O (Accessory)	O (Accessory)
	Solar thermal kit	X	X	X
	PHEX anti-freezing control	O	O	O
	Water pump forced operation	O	O	O
	Autosetting according to ambient temperature	O	O	O
	Silent operation	O	O	O
	2 <sup>nd</sup> Circuit	O	O	O
	3 <sup>rd</sup> Party Boiler	O	O	O
	Anti-overheating of water pipe	O	O	O
	Emergency operation	O	O	O
	Weather Dependent Operation with Thermostat	O	O	O
	Scheduler (DHW Tank Heater)	O	O	O
	Timer (Domestic Hot Water Tank Heater)	O	O	O
	Quick Domestic Hot Water Tank Heating	O	O	O
	Electric Heater Capacity Control	X	X	X
	Screed Drying Mode	O	O	O
	Sump Heater	O	O	O
	Base Pan Heater	O	O	O
	Dry Contact (Main PCB)	O	O	O
	Solar thermal system <sup>1)</sup>	O	O	O
	Water pump anti-stuck function	O	O	O
	Weather compensation for heating and cooling (Auto mode)	O	O	O
	Low noise operation	O	O	O
	Integrated Dry Contact (CN-EXT)	O	O	O
	Water flow control	O	O	O
	Water pressure monitoring	O	O	O
	Digital input for energy saving (ESS)	O	O	O

Notes

1) This function requires the 3rd party accessory, PT-1000 sensor. (field supply)



Refrigerant Side

Category	Functions	ZHBW056A1[HM051MR.U44]	ZHBW126A1[HM121MR.U34]	ZHBW128A1[HM123MR.U34]
		ZHBW076A1[HM071MR.U44]	ZHBW146A1[HM141MR.U34]	ZHBW148A1[HM143MR.U34]
		ZHBW096A1[HM091MR.U44]	ZHBW166A1[HM161MR.U34]	ZHBW168A1[HM163MR.U34]
Reliability	Defrost / Deicing	O	O	O
	High pressure switch	O	O	O
	Low pressure switch	X	X	X
	Phase protection	X	X	O
	Restart delay (3-minutes)	O	O	O
	Self diagnosis	O	O	O
	Soft start	X	X	X
Convenience	Test function	X	X	X
	Low Noise Operation	O	O	O
	Wiring Error Check	X	X	X
	Peak Control	O	O	O
	Mode Lock	O	O	O
	Forced Cooling Operation (Outdoor Unit)	X	X	X
	Base Pan Heater	O	O	O
SLC(Smart Load Control)	X	X	X	
Network function	Network solution(LGAP)	O	O	O

Notes

1. O : Applied, X : Not applied
2. \* : Some advanced functions controlled by individual controller cannot be operated.

## Functions

### ■ Accessory Compatibility List

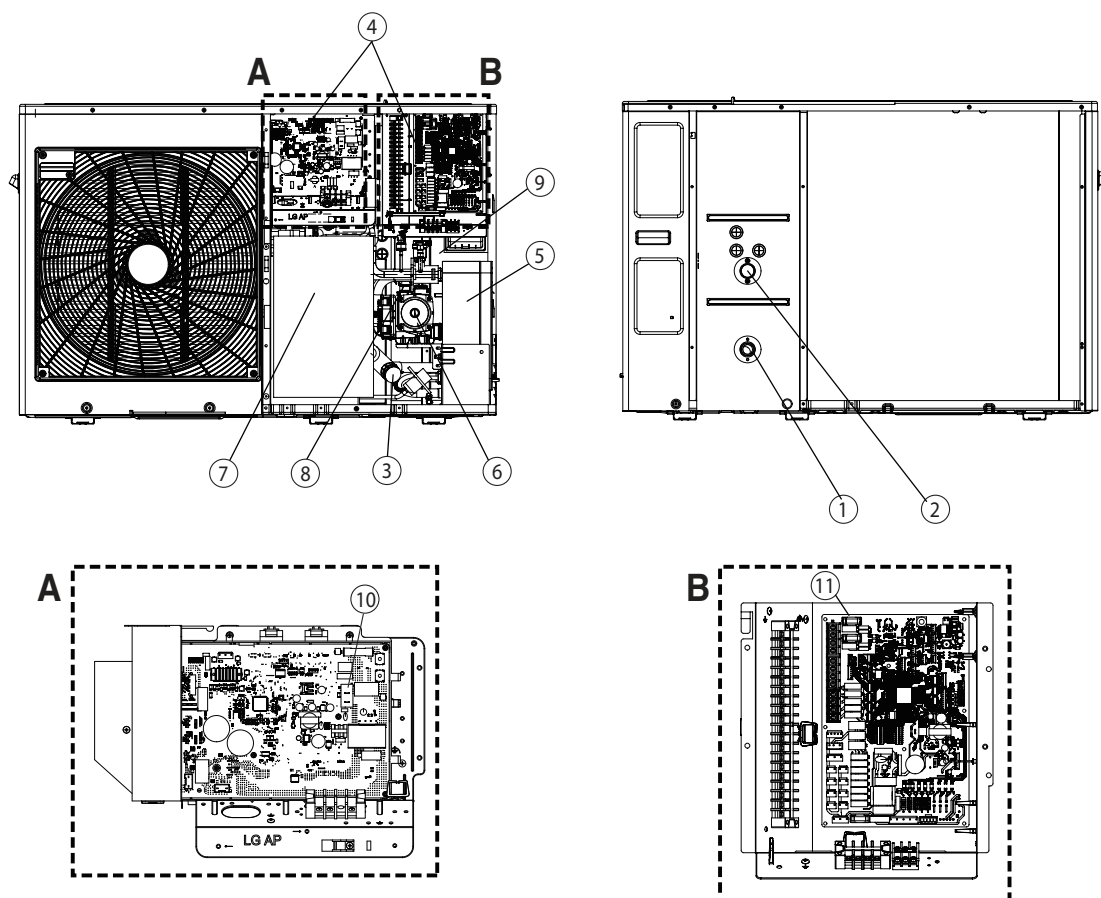
		Accessory Model name	Remark	ZHBW056A1[HM051MR.U44] ZHBW076A1[HM071MR.U44] ZHBW096A1[HM091MR.U44] ZHBW126A1[HM121MR.U34] ZHBW146A1[HM141MR.U34] ZHBW166A1[HM161MR.U34] ZHBW128A1[HM123MR.U34] ZHBW148A1[HM143MR.U34] ZHBW168A1[HM163MR.U34]
Wired Remote Controller	Network Standard	PREMTW101	New standard (White)	O
Dry contact	Simple Contact	PDRYCB000	Simple Dry Contact	O
	Communication type	PDRYCB400	2 Points Dry Contact (For Setback)	X
		PDRYCB300	8 Point Dry Contact(For Thermostat)	O
		PDRYCB500	Dry Contact For Modbus	X
Gateway	IDU PI485	PHNFP14A0	Connected with the Indoor Units	X
		PSNFP14A0	Connected with the Indoor Units	X
	ODU PI485	PMNFP14A1	PI485 Gateway	O
	BACnet	PQNFB17C0	ACP BACnet	O
	Lonworks	PLNWKB000	ACP Lonworks	O
	Modbus	PMBUSB00A	-	O
Accessory Kit for AWHP	Remote Controller Kit	-	-	O
	DHW Tank Kit	PHLTB	-	O
	Solar Thermal kit	PHLLA	-	X
	Heater Box kit	HA031M E1 /HA061M E1 /HA063M E1	-	O
	Thermistor for DHW Tank	PHRSTA0	-	O
	DHW tanks (Single coil)	OSHW-200F	200 L	O
		OSHW-300F	300 L	O
		OSHW-500F	500 L	O
	DHW tanks (Double coil)	OSHW-300FD	300 L	O
	DHW sensor	PHRSTA0	included in PHLTA kit	O
	Thermostatic mixing valve	OSHA-MV	3/4" DN20	O
		OSHA-MV1	1" DN25	O
	3way valve	OSHA-3V	-	O
Central Controller	AC EZ	PQCSZ250S0	AC EZ	O
	AC Ez Touch	PACEZA000	AC Ez Touch	O
	AC Smart	PACS4B000	AC Smart IV	O
		PACS5A000	AC Smart 5	O
	ACP	PACP4B000	ACP IV	O
		PACP5A000	ACP 5	O
	AC Manager **	PACM4B000	AC Manager IV	O
		PACM5A000	AC Manager 5	O
ETC	Remote temperature sensor	PQRSTA0	-	O
	Zone controller	ABZCA	-	X
	Electronic thermostat	AQETC	-	X
	CTI (Communication transfer interface)	PKFC0	-	X
	Meter Interface	PENKTH000	Energe check	O
	CO2 Sensor	PES-C0RV0	For ERV, ERV DX Indoor units	X
	Group control wire	PZCWRCG3	0.25m	X
	2-Remo Control Wire	PZCWRC2	0.25m	X
	Extension Wire	PZCWRC1	10m	O
	Wi-Fi Controller*	PWFMD200	-	O
	ESS	D008KE1N211	HOME 8 (PCS)	O
		D010KE1N211	HOME 10 (PCS)	O
		BLGRESU7H	HB7H(Battery)	O
		BLGRESU10H	HB10H(Battery)	O
	2 Zone Valve Controller	PZNVVB200	-	X
	PDI	PPWRDB000	PDI Standard	O
		PQNUD1S40	PDI Premium	O
	ACS IO Module	PEXPMB000	-	X

#### Note

- O: Possible, X: Impossible, -: Not applicable
- \*: Some advanced functions controlled by individual controller cannot be operated.
- Accessory model is installed at field, ordered and purchased separately by the corresponding model name, and supplied with separate package.
- If you need more detail, please refer to the BECON PDB or the manual of product.  
(<http://partner.lge.com/global> : Home > Download > Manuals)

# 3. Components

UN36A (1Ø : 5, 7, 9 kW)



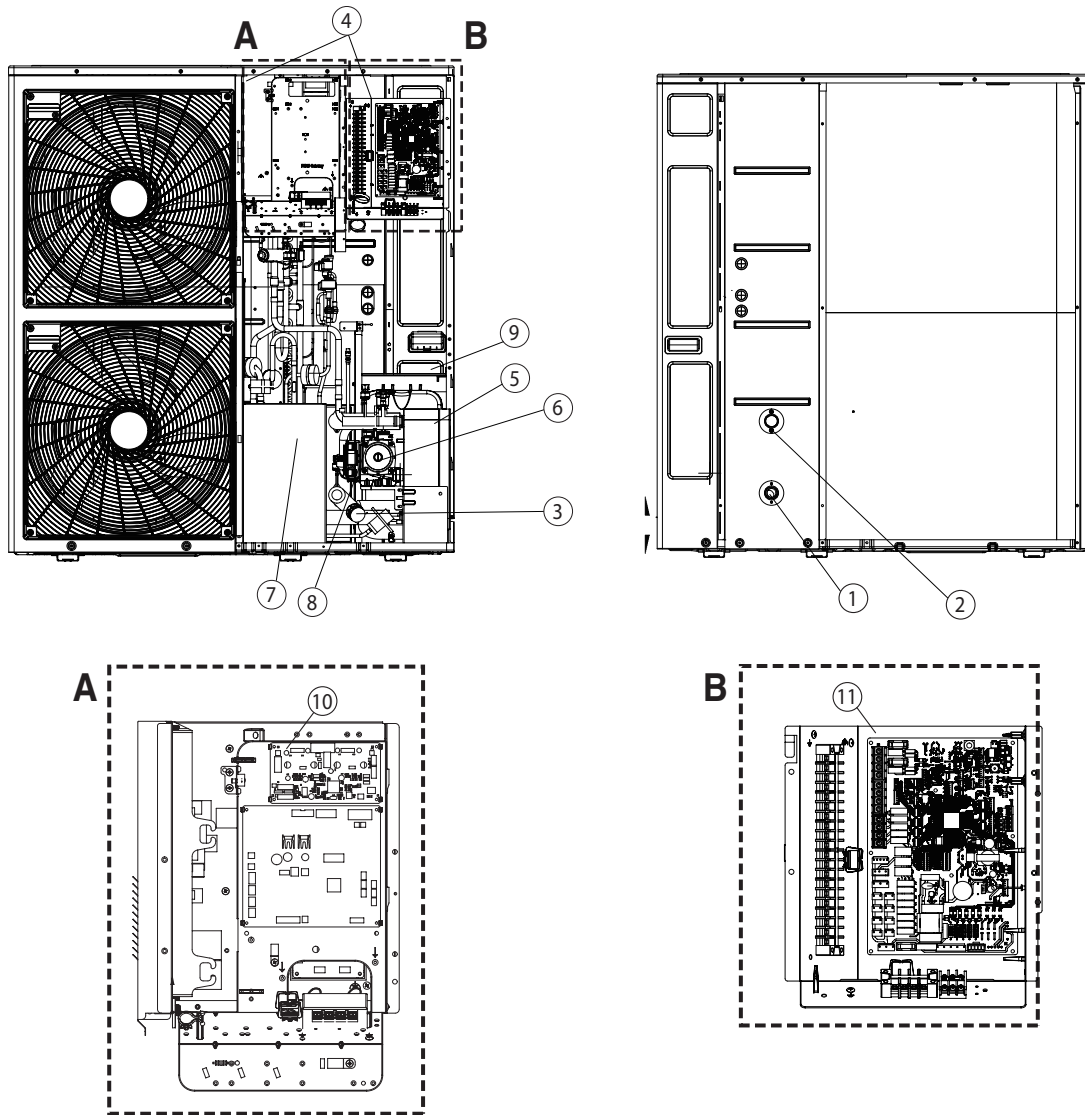
\* The shape may differ depending on the model. Refer to “Exploded View” in SVC Manual.

## Description

No	Name	Remarks
1	Entering water pipe	PT 25.4 mm(Female type)
2	Leaving water pipe	PT 25.4 mm(Female type)
3	Strainer	Filtering and stacking particles inside circulating water
4	Control box	PCB and terminal blocks
5	Plate heat exchanger	Heat exchange between refrigerant and water
6	Water pump	Circulating the water
7	Shield Bracket	Reducing Noise
8	Safety valve	Open at water pressure 3 bar
9	Expansion vassel	Protecting components from water pressure
10	Main PCB assembly (A)	This PCB controls the cycle parts of the unit
11	Main PCB assembly (B)	This PCB controls the functioning of the unit

## Components

### UN60A (1Ø : 9, 12, 14, 16 kW)

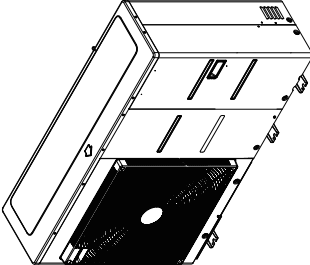
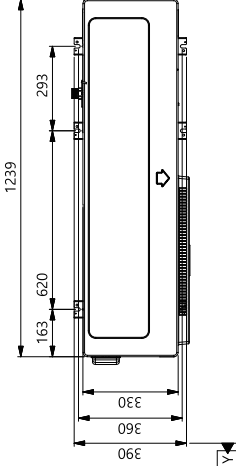
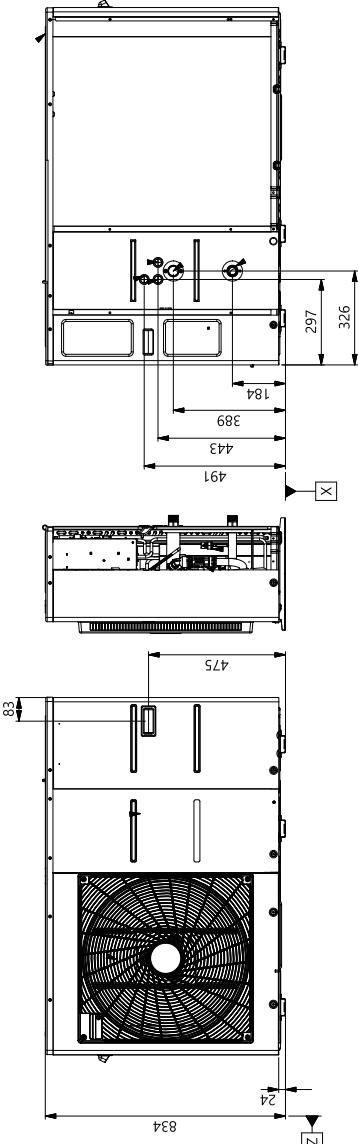


\* The shape may differ depending on the model. Refer to “Exploded View” in SVC Manual.

### Description

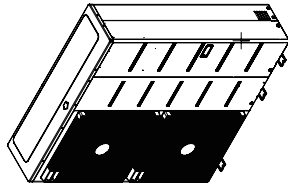
No	Name	Remarks
1	Entering water pipe	PT 25.4mm(Female type)
2	Leaving water pipe	PT 25.4mm(Female type)
3	Strainer	Filtering and stacking particles inside circulating water
4	Control box	PCB and terminal blocks
5	Plate heat exchanger	Heat exchange between refrigerant and water
6	Water pump	Circulating the water
7	Shield Bracket	Reducing Noise
8	Safety valve	Open at water pressure 3 bar
9	Expansion vassel	Protecting components from water pressure
10	Main PCB assembly (A)	This PCB controls the cycle parts of the unit
11	Main PCB assembly (B)	This PCB controls the functioning of the unit

# 4. Dimensions

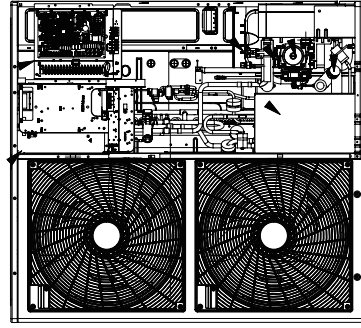
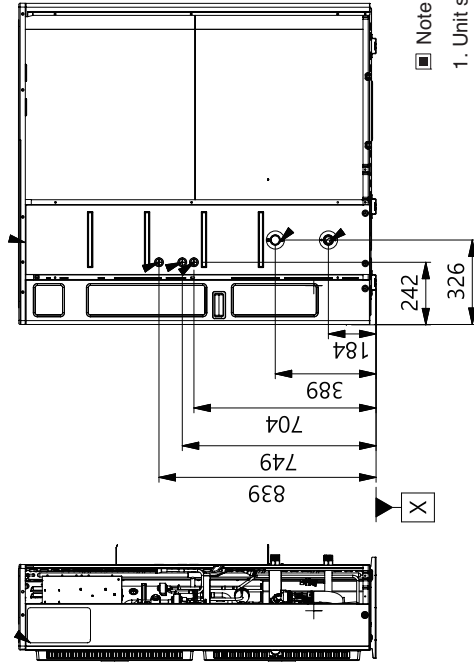
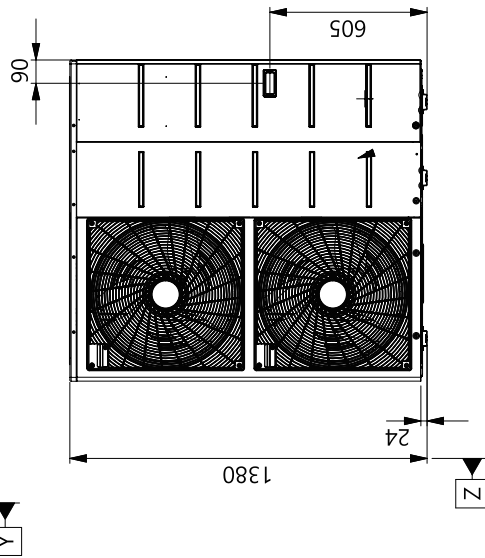
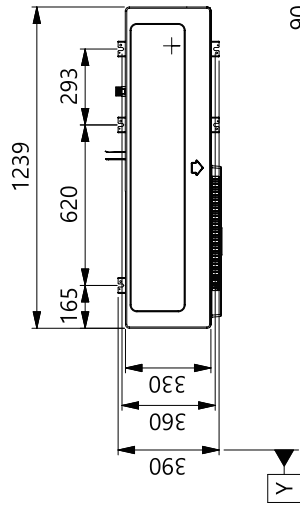
<p><b>THERMA V™</b> (Air-to-Water Heat Pump) 5, 7, 9 kW</p>		<p>■ Note</p> <ol style="list-style-type: none"> <li>1. Unit should be installed in compliance with the installation manual in the product box.</li> <li>2. Unit shall be grounded in accordance with the local regulations or applicable national codes.</li> </ol>
		<p>76, Seongsan-dong, Changwon City, Gyeongnam, 641-713, Korea</p> <p><b>LG Electronics</b></p> <p>CHASSIS CODE : UN36A</p>

**THERMA V™** (Air-to-Water Heat Pump)

12, 14, 16 kW



3D VIEW



■ Note

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit shall be grounded in accordance with the local regulations or applicable national codes.



**LG Electronics**

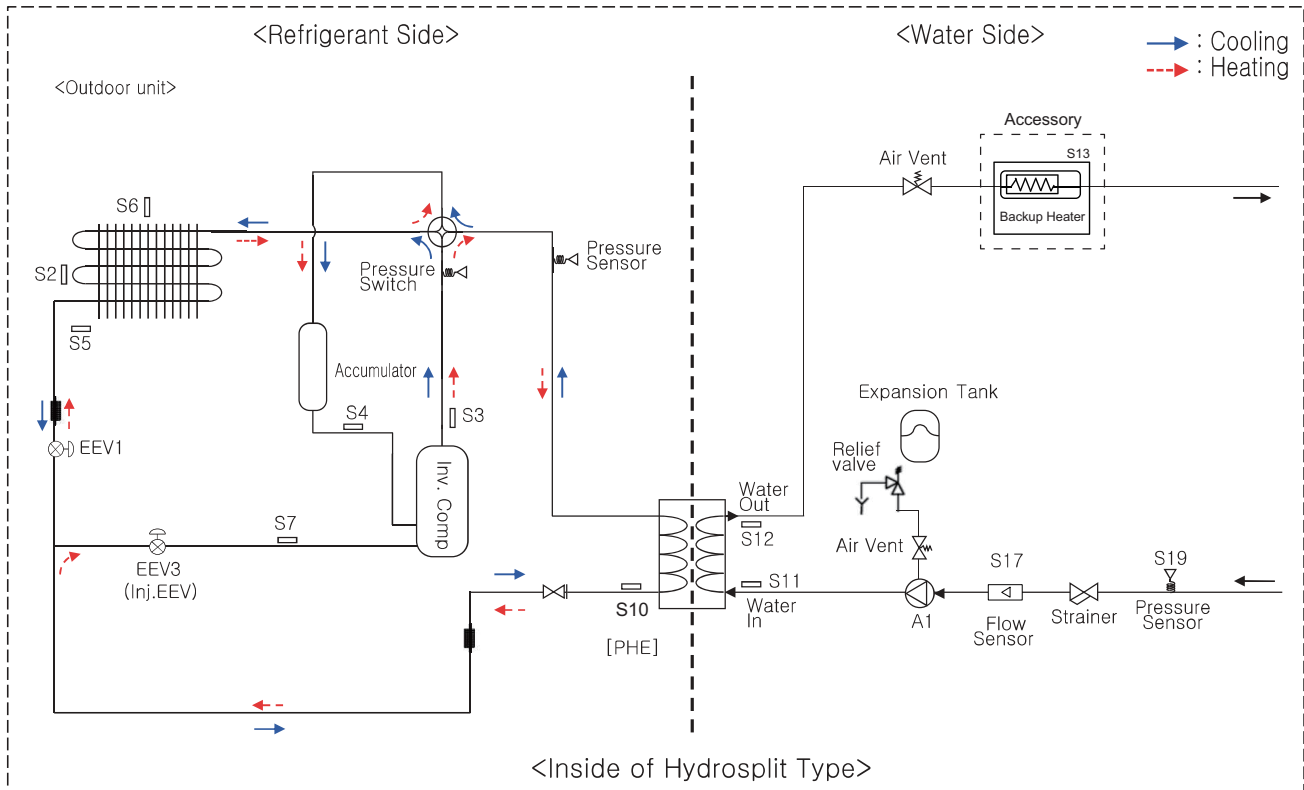
76, Seongsan-dong, Changwon City, Gyeongnam,  
641-713, Korea

CHASSIS CODE : UN60A

# 5. Piping Diagrams

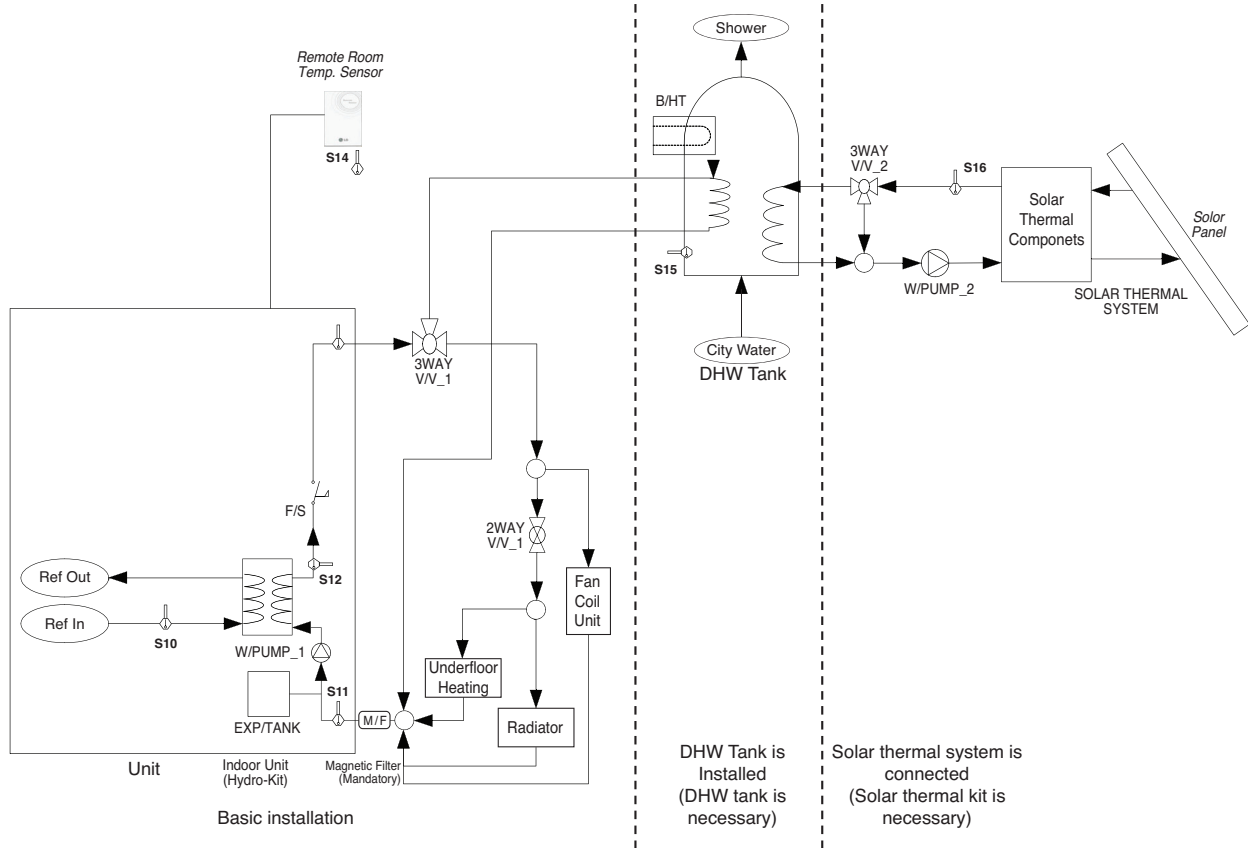
UN36A (5, 7, 9 kW)

UN60A (12, 14, 16 kW)



Category	Symbol	Meaning	PCB Connector
Refrigerant side	S1	PHEX liquid temperature sensor	CN_PIPE_IN
	S2	Outdoor-HEX middle temperature sensor	CN_MID
	S3	Compressor-discharge pipe temperature sensor	CN_DISCHARGE
	S4	Compressor-suction pipe temperature sensor	CN_SUCTION
	S5	Outdoor-HEX temperature sensor	CN_C_PIPE
	S6	Outdoor air temperature sensor	CN_AIR
	S7	Compressor-injection pipe temperature sensor	CN_VI_IN
	EEV1	Electronic Expansion Valve (Heating/Cooling)	CN_EEV1
Water Side	EEV2	Electronic Expansion Valve (Injection)	CN_EEV_MAIN
	S12	Outlet water temperature sensor	CN_WATER_OUT
	S11	Inlet water temperature sensor	CN_WATER_IN
	S13	Backup heater outlet sensor	CN_TH3
	S17	Flow sensor	CN_F_SENSOR
	S19	Water pressure sensor	CN_H20_PRESS
	A1	Main Water Pump	CN_PUMP_A1 CN_MOTOR1
	A8	Electric backup heater (1Ø, Optional accessory)	CN_HEATER_PCB
A9	Electric backup heater (3Ø, Optional accessory)	HEATER1	

Water cycle



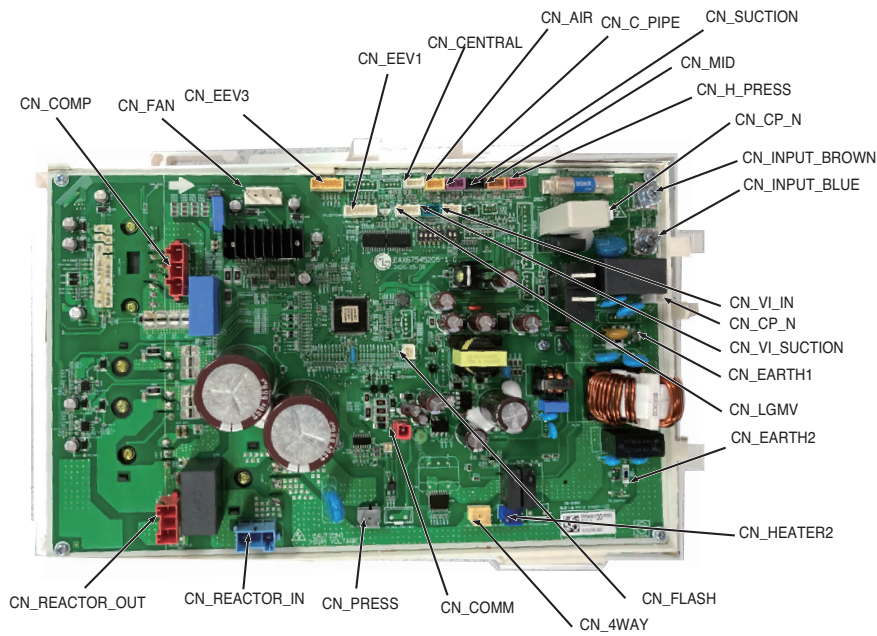


**Description**

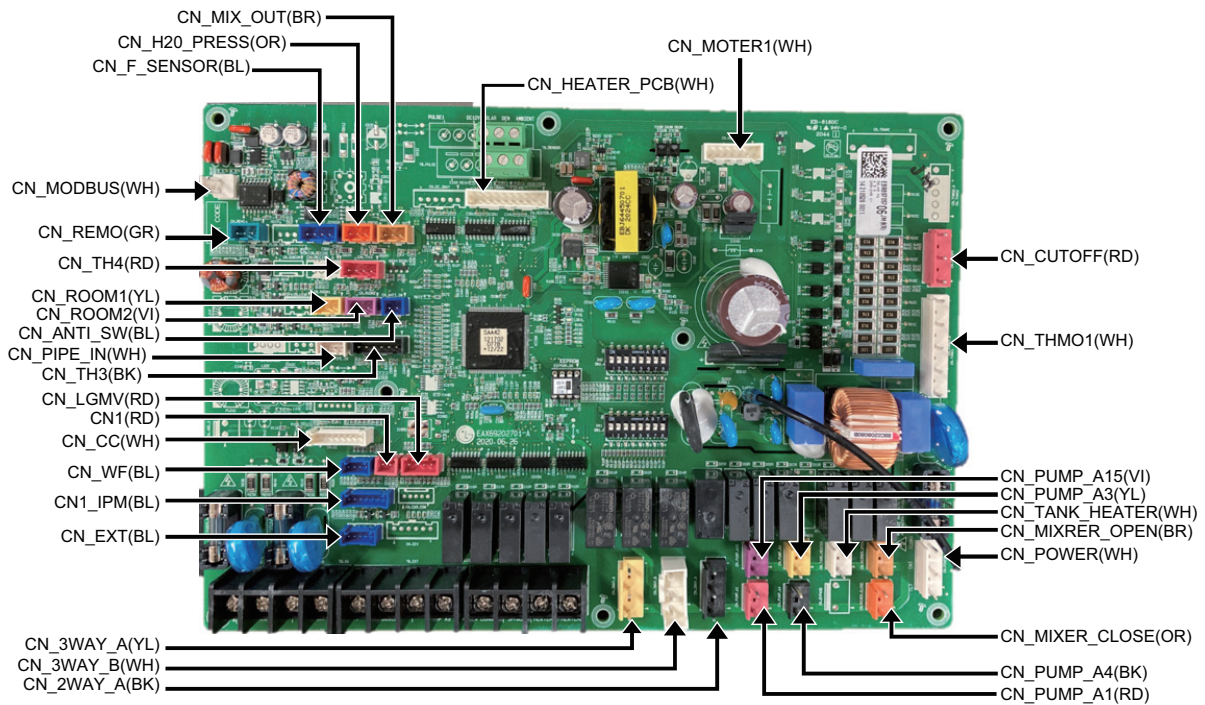
Category	Symbol	Meaning	PCB Connector	Remarks
Unit	S9	Refrigerant temperature sensor (Gas side)	CN_PIPE_OUT	- Meaning is expressed based on Cooling mode.
	S10	Refrigerant temperature sensor (Liquid side)	CN_PIPE_IN	
	S7	Inlet IHEX temperature sensor	CN_VI_IN	
	S8	Outlet IHEX temperature sensor	CN_VI_OUT	
	S11	Water temperature sensor (Water In)	Water_IN	
	S12	Water temperature sensor (Water Out)	Water_OUT	
	S3	Compressor-discharge pipe temperature sensor	CN_DISCHA	
	F/S	Flow Switch	CN_FLOW1	
	E/HT	Electric Heater	CN_E/HEAT(A) CN_E/HEAT(B)	- Optional accessory (sold separately) - Model : HA**1A E1 - Heating capacity is divided into two level : partial capacity by E/HEAT(A) and full capacity by E/HEAT(A) + E/HEAT(B). - Operating power(220-240 V~ 50 Hz) of E/HEAT(A) and E/HEAT(B) are supplied by external power source via relay connector and ELB.
	W_PUMP1	Internal Water Pump	CN_MOTOR1	- Water Pump is connected at CN_MOTOR1
	EXP/TANK	Expansion Tank	(no connector)	- Absorb volume change of heated water,
	S14	Remote Air temperature sensor	CN_ROOM	- Optional accessory (sold separately) - Model : PQRSTA0
	CTR/PNL	Remote Controller	CN_REMO	
	2WAY V/V_1	To control water flow for Fan Coil Unit	CN_2WAY(A)	- 3 <sup>rd</sup> party accessory and Field installation (sold separately) - 2 wire NO or NC type 2way valve is supported.
M / F	Magnetic Filter	(No connector)	- 3 <sup>rd</sup> party accessory and Field installation (sold separately) - It is Mandatory to install an additional filter on the heating water circuit.	
Water Heating	W/TANK	DHW Tank	(no connector)	- 3 <sup>rd</sup> party accessory and Field installation (sold separately) - Generating and storing DHW by AWHP or built-in electric heater
	B/HT	Booster heater(in DHW tank)	CN_B/HEAT(A)	- 3 <sup>rd</sup> party accessory and Field installation (usually built-in at W/TANK) - Supplying additional water heating capacity.
	3WAY V/V_1	- Flow control for water which is leaving from unit. - Flow direction switching between underfloor and water tank	CN_3WAY(A)	- 3 <sup>rd</sup> party accessory and Field installation (sold separately) - SPDT type 3way valve is supported.
	CITY WATER	Water to be heated by Indoor unit and B/HT of W/TANK	(no connector)	- Field installation
	SHOWER	Water supplied to end-user	(no connector)	- Field installation
	S15	W/TANK water temperature sensor	CN_TH4	- S15 and S16 are connected at 4 pin type connector CN_TH4. - S15 is a part of DHW tank kit.(Model : PHLTB) - S16 is a part of solar thermal kit (Model:PHLLA)
S16	Solar-heated water temperature sensor			
Solar Heating	3WAY V/V_2	- Flow control for water which is heated and circulated by SOLAR THERMAL SYSTEM. - Flow direction switching between SOLAR THERMAL SYSTEM and W/TANK	CN_3WAY(B)	- 3 <sup>rd</sup> party accessory and Field installation (sold separately) - SPDT type 3way valve is supported.
	W_PUMP/2	External Water Pump	CN_W/PUMP(B)	- 3 <sup>rd</sup> party accessory and Field installation (sold separately) - If water pump of SOLAR THERMAL SYSTEM is incapable of circulation,external water pump can be used.
	SOLAR THERMAL SYSTEM	- This system can include following components : Solar panel, Sensors, Thermostats, Interim heat exchanger, Water pump, etc. - To utilized hot water heated by SOLAR THERMAL SYSTEM, end-user must by LG AWHP Solar-Kit.	(no connector)	- 3 <sup>rd</sup> party accessory and Field installation (sold separately)



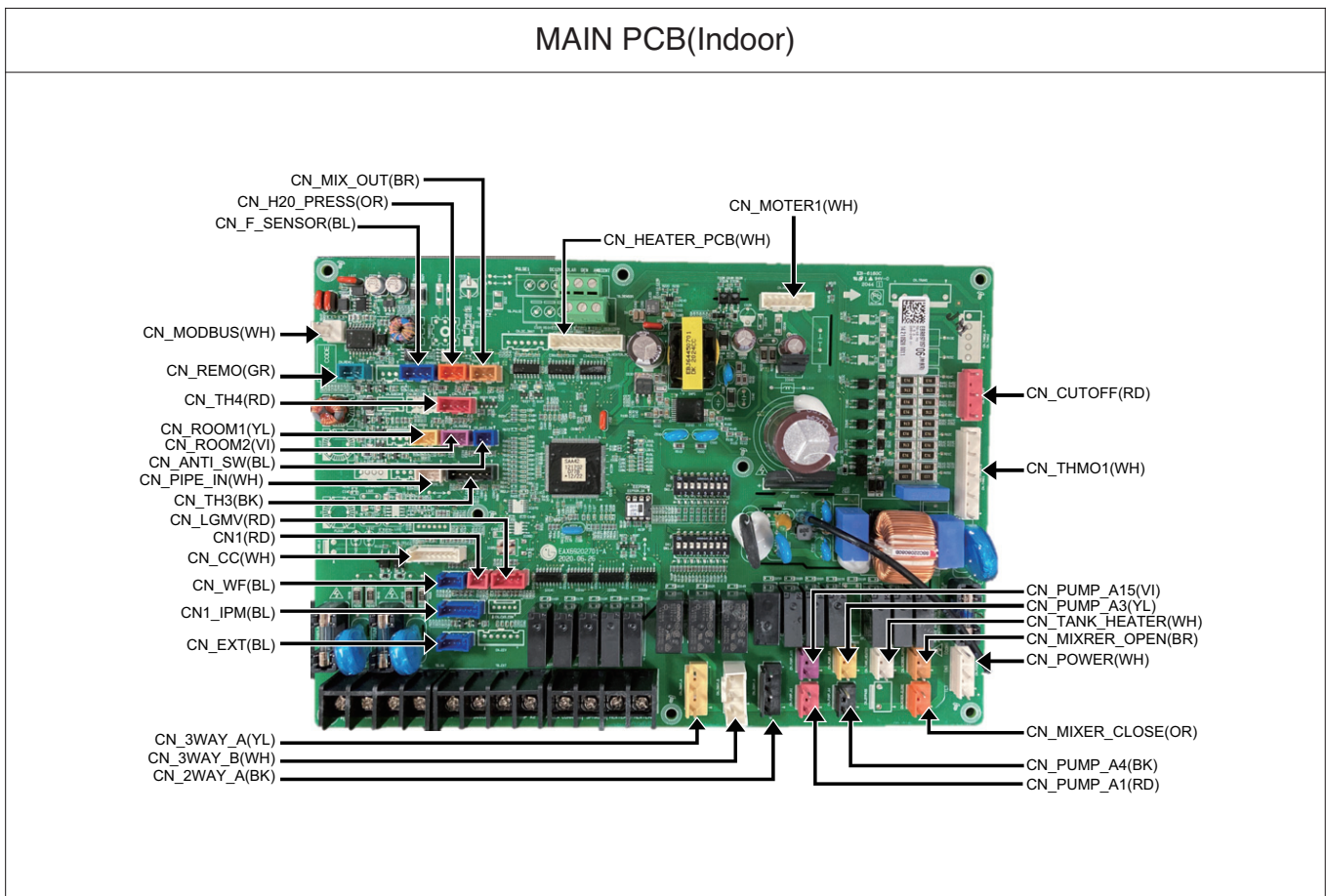
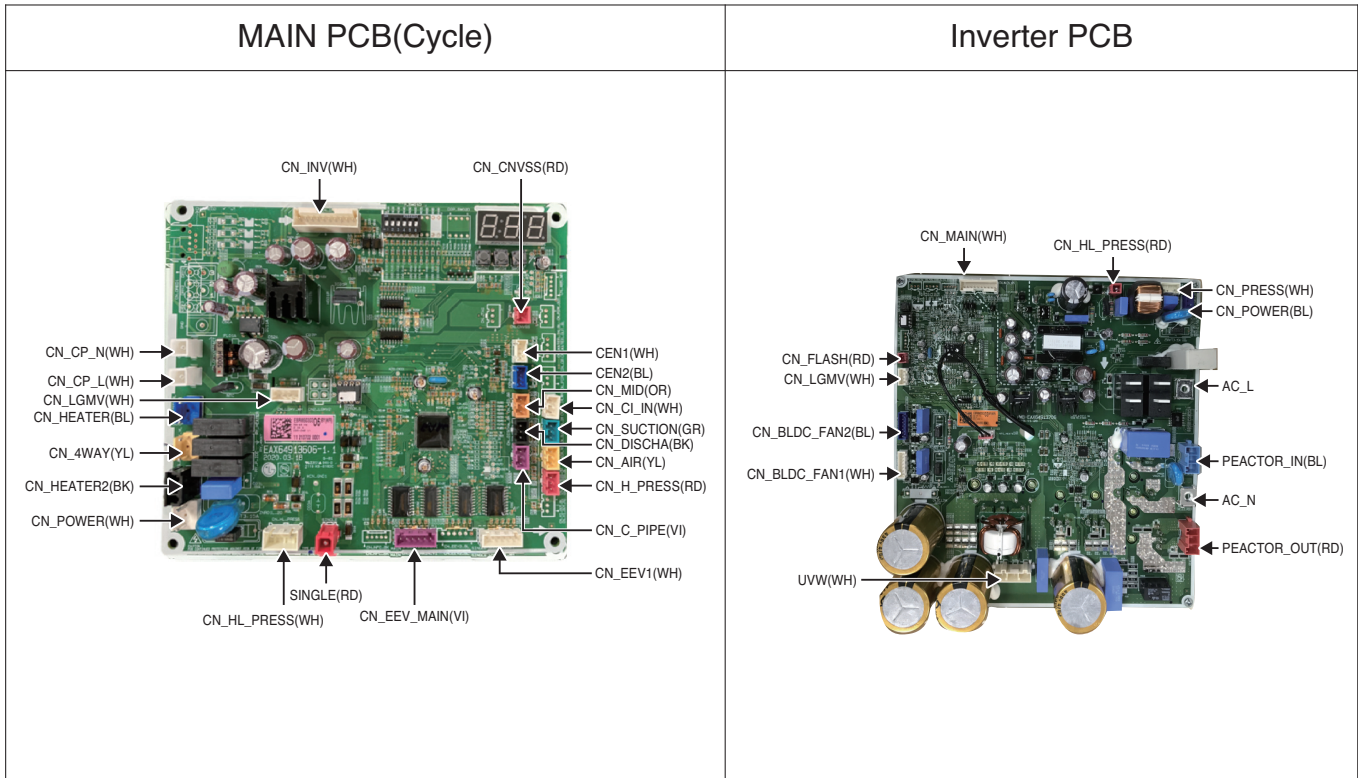
### MAIN PCB(Cycle)



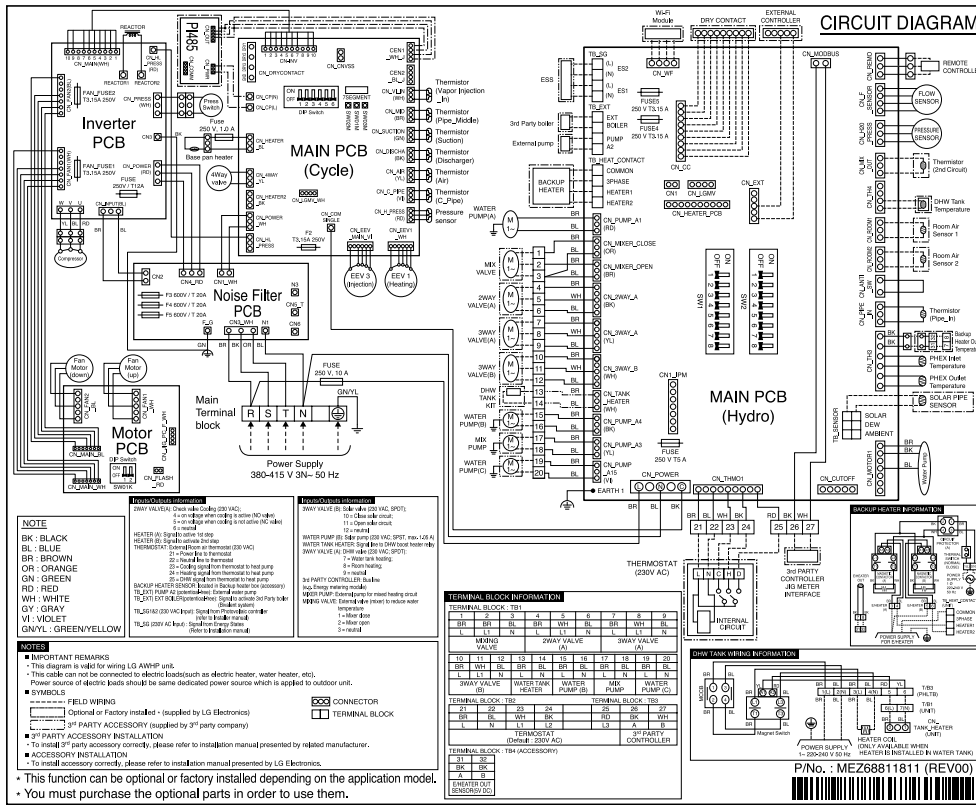
### MAIN PCB(Indoor)

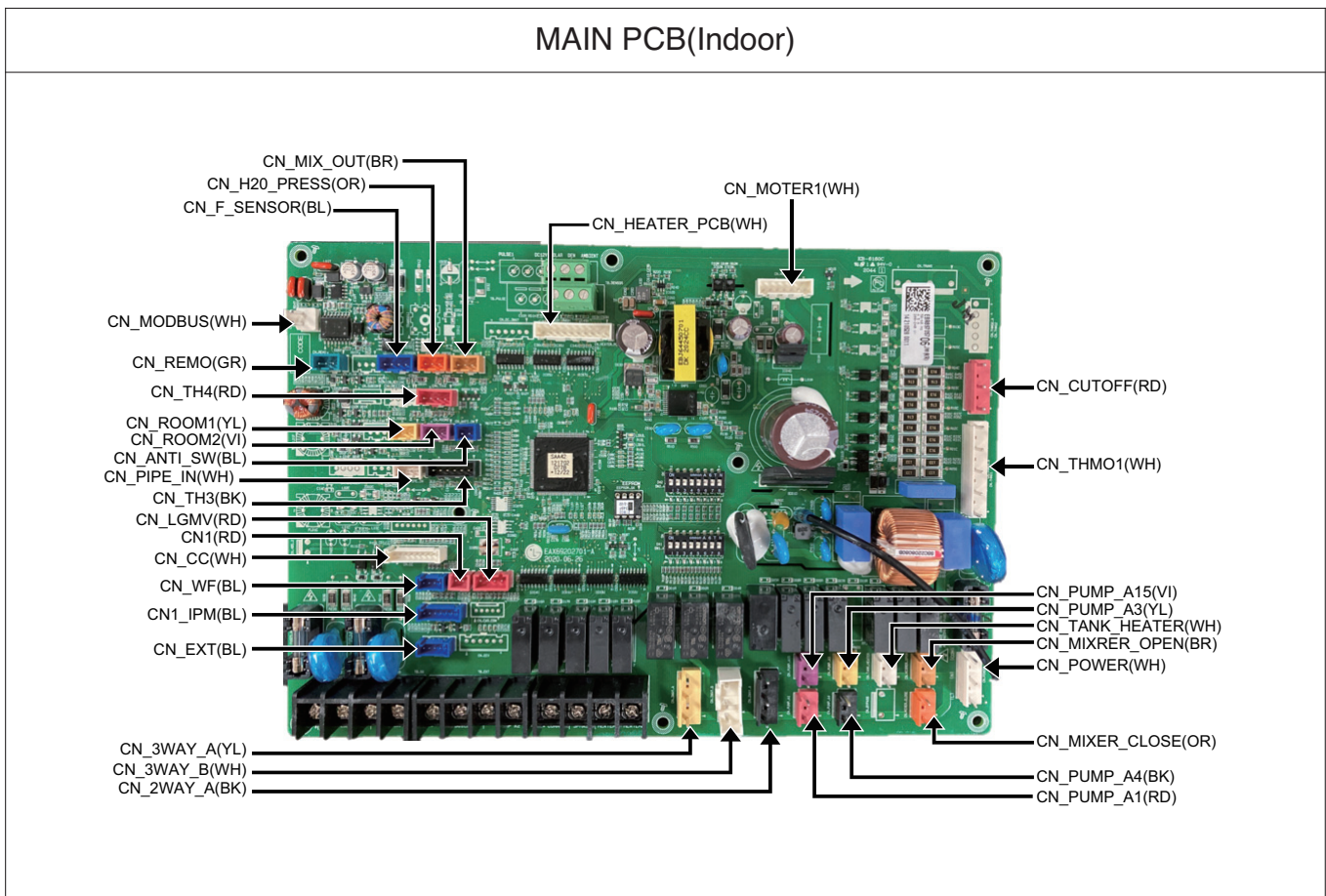
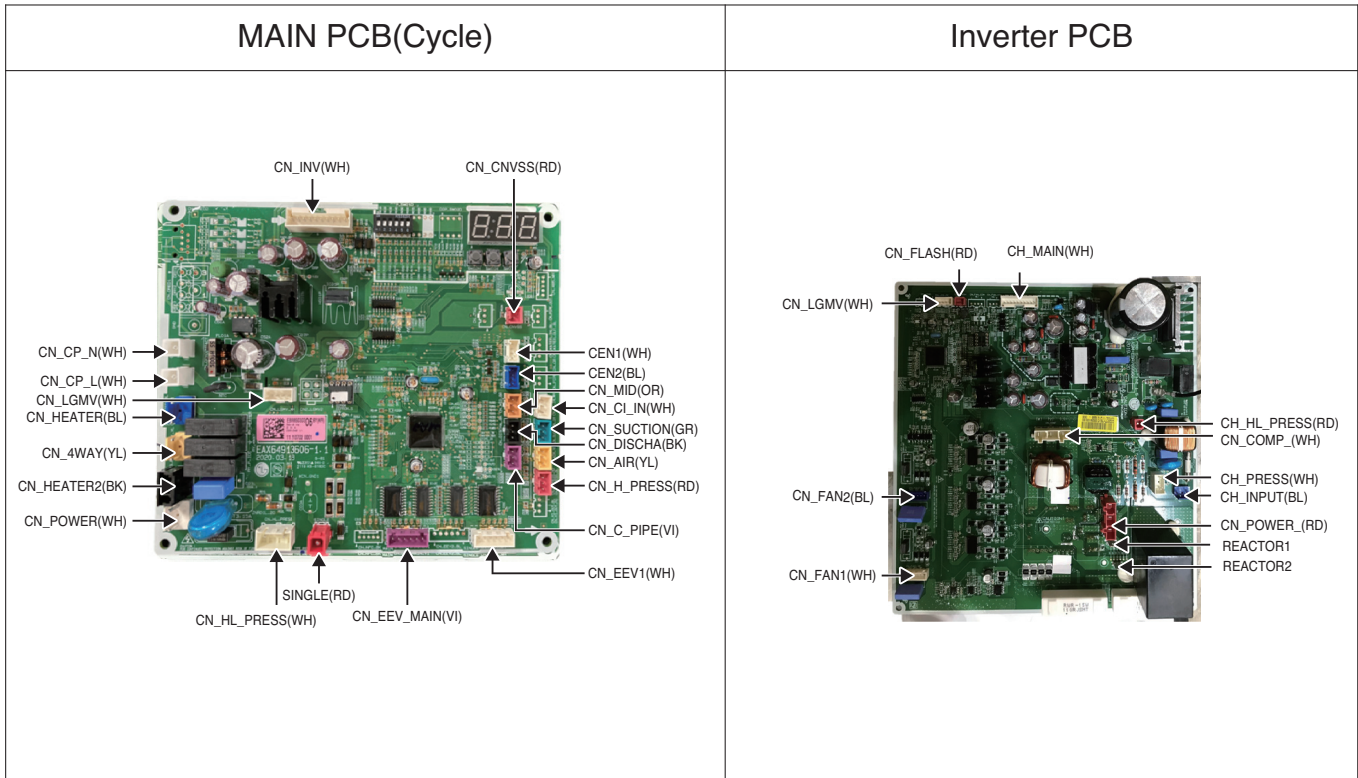






UN60A (3Ø : 12, 14, 16 kW)



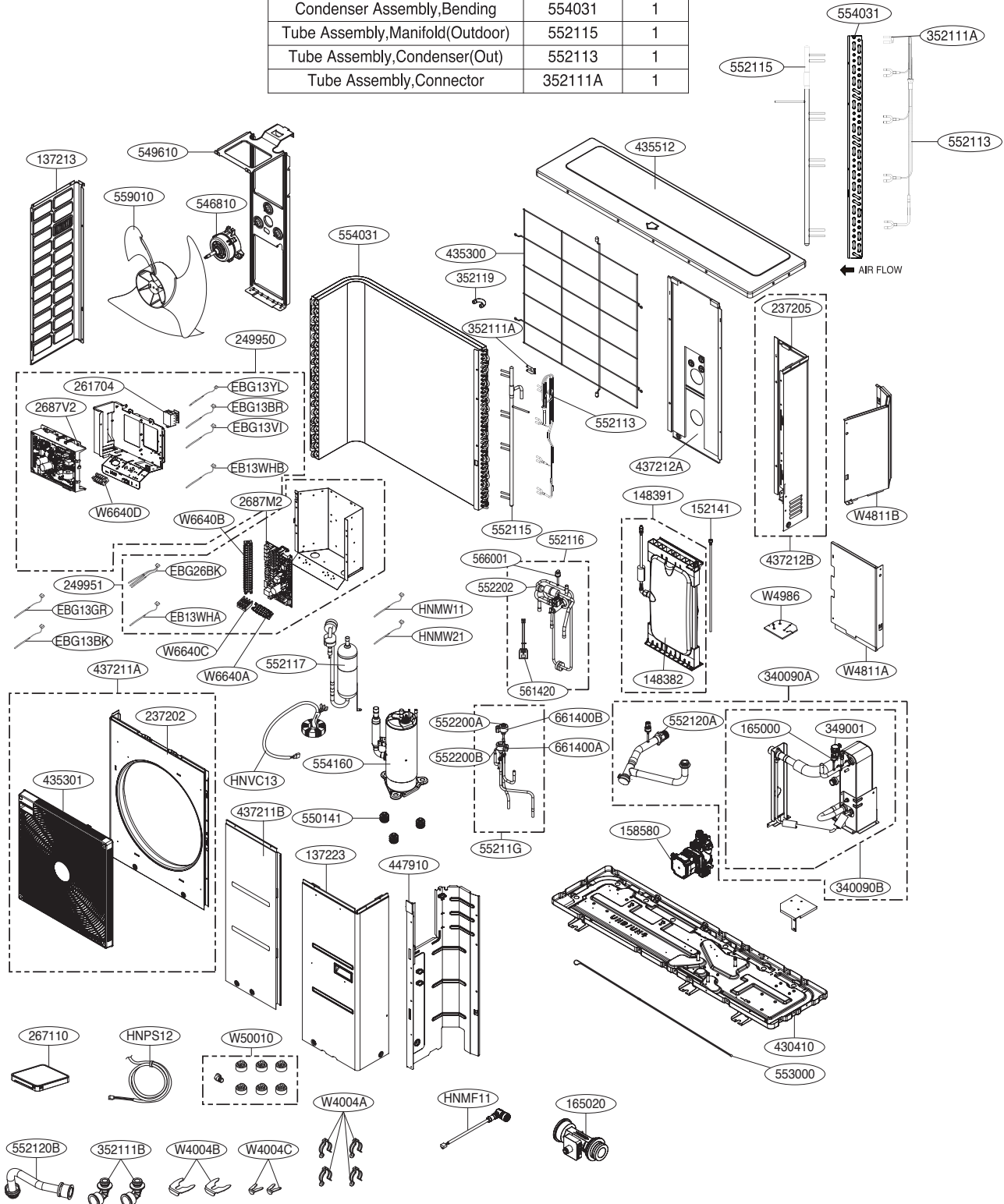


# 7. Exploded View

UN36A (1Ø : 5, 7, 9kW)

\* Condenser Assembly Repaired Parts

Description	Location No.	Quantity
Condenser Assembly,Bending	554031	1
Tube Assembly,Manifold(Outdoor)	552115	1
Tube Assembly,Condenser(Out)	552113	1
Tube Assembly,Connector	352111A	1





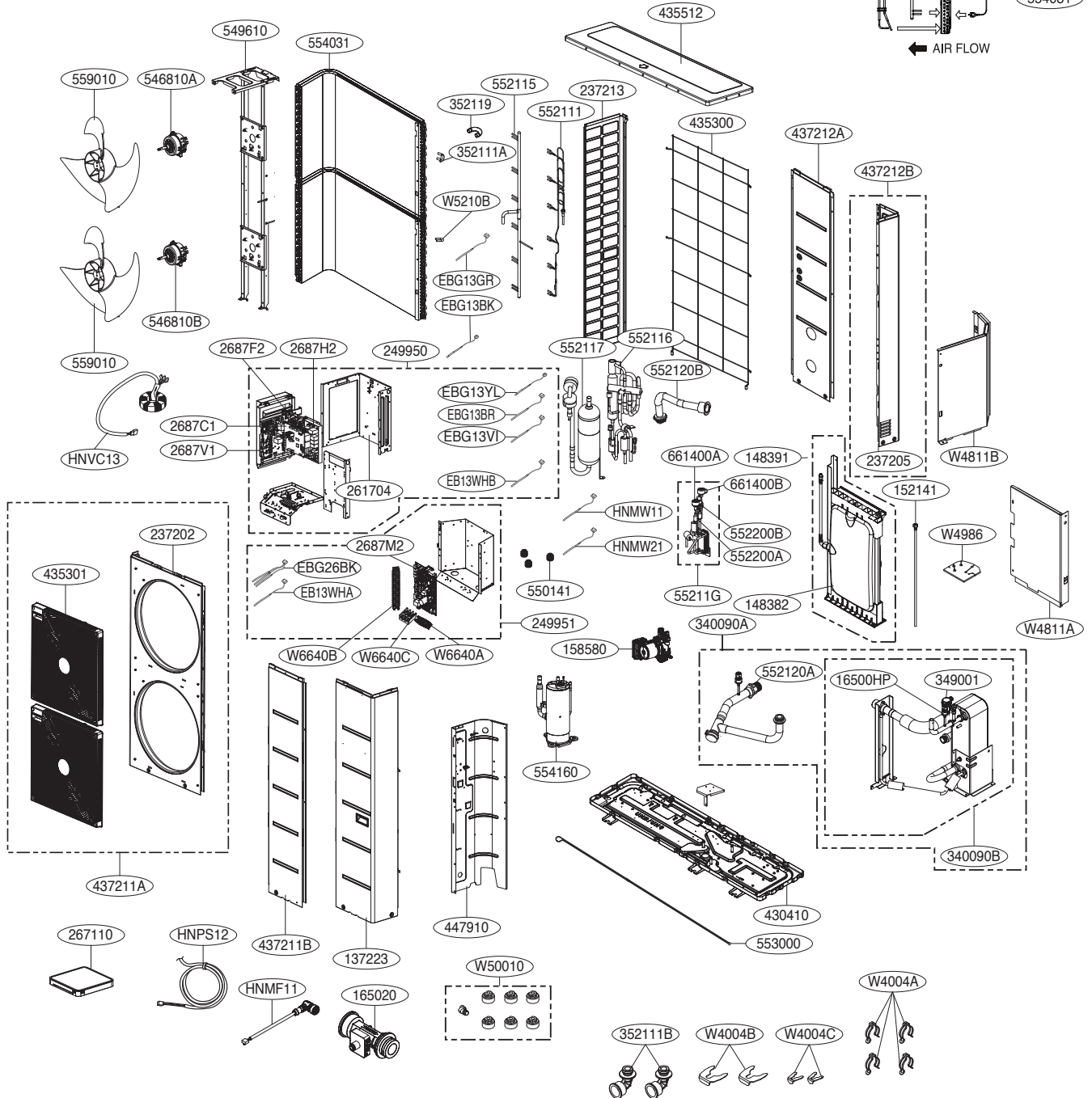
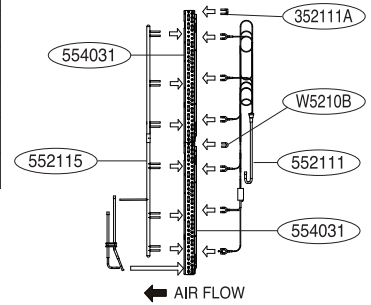
**Thermistor Assembly,NTC**

Location No.	Thermistor Description	Housing Color
EBG26BK	Water In/Water Out/PHE Out	Black
EB13WHA	Pipe In	White
EBG13GR	SUCTION	Green
EBG13BK	DISCHA	Black
EBG13YL	AIR	Yellow
EBG13BR	MID-PIPE	Brown
EBG13VI	CONDENSER_PIPE	Violet
EB13WHB	VI_IN	White

UN60A (1Ø :12, 14, 16kW)

\* Condenser Assembly Repaired Parts

Description	Location No.	Quantity
Condenser Assembly, Bending	554031	2
Tube Assembly, Manifold(Outdoor)	552115	2
Tube Assembly, Connector	352111A	1
Tube Assembly, Capillary	552111	1
Tube, Connector	W5210B	1



**Thermistor Assembly,NTC**

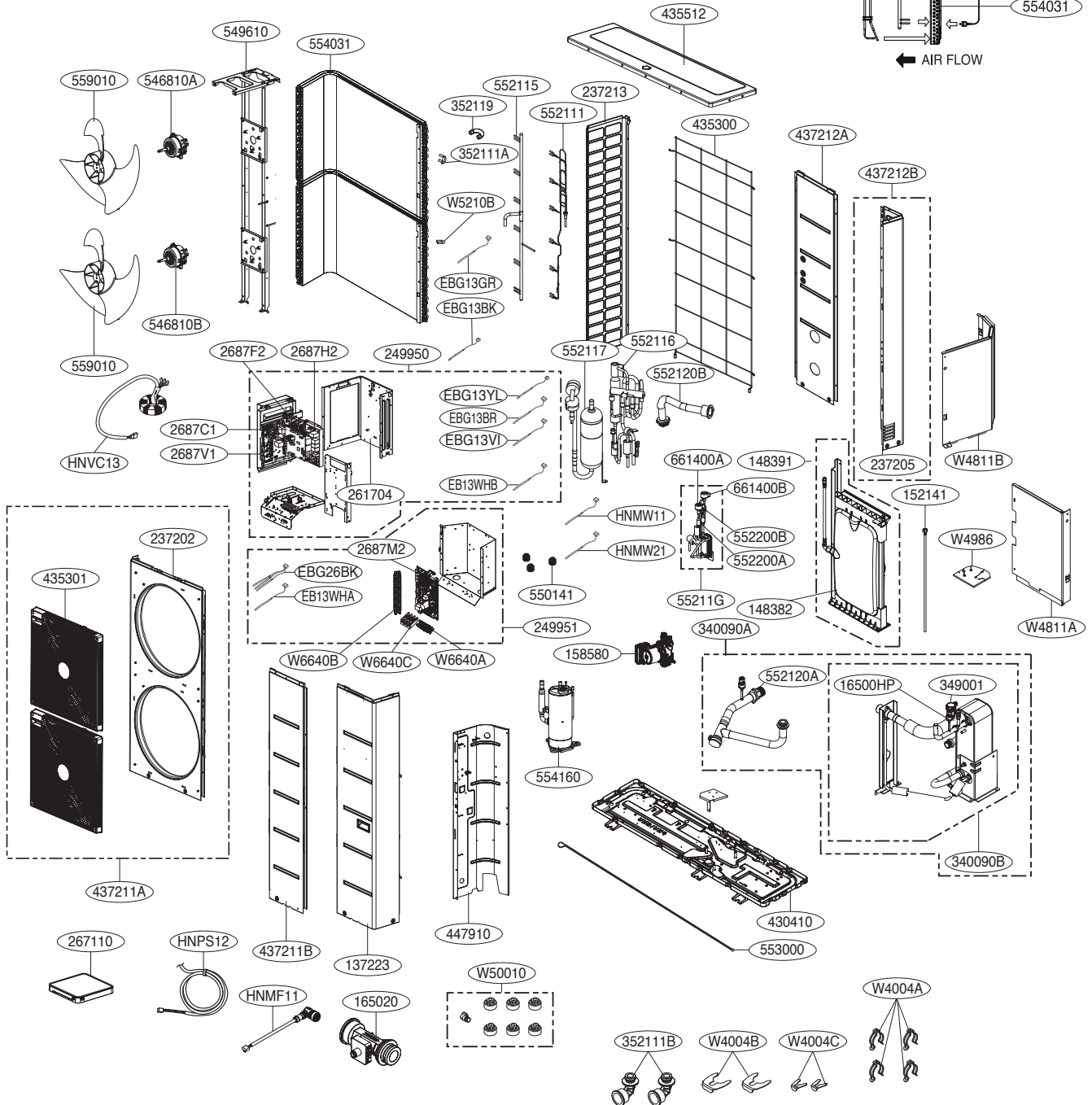
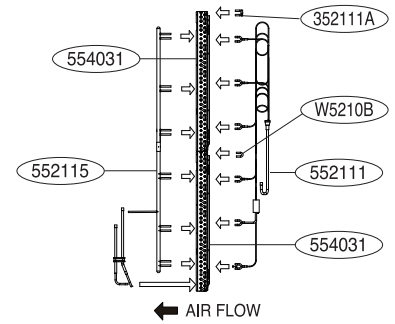
Location No.	Thermistor Description	Housing Color
EBG26BK	Water In/Water Out/PHE Out	Black
EB13WHA	Pipe In	White
EBG13GR	SUCTION	Green
EBG13BK	DISCHA	Black
EBG13YL	AIR	Yellow
EBG13BR	MID-PIPE	Brown
EBG13VI	CONDENSER_PIPE	Violet
EB13WHB	VI_IN	White

Exploded View

UN60A (3Ø : 12, 14, 16kW)

\* Condenser Assembly Repaired Parts

Description	Location No.	Quantity
Condenser Assembly, Bending	554031	2
Tube Assembly, Manifold(Outdoor)	552115	2
Tube Assembly, Connector	352111A	1
Tube Assembly, Capillary	552111	1
Tube, Connector	W5210B	1



**Thermistor Assembly,NTC**

Location No.	Thermistor Description	Housing Color
EBG26BK	Water In/Water Out/PHE Out	Black
EB13WHA	Pipe In	White
EBG13GR	SUCTION	Green
EBG13BK	DISCHA	Black
EBG13YL	AIR	Yellow
EBG13BR	MID-PIPE	Brown
EBG13VI	CONDENSER_PIPE	Violet
EB13WHB	VI_IN	White



P/NO : MFL68063505