THERMA V™

Air-to-Water Heat Pump
(50Hz/R410A)
5BPU0-02E (Replace:5BPU0-02D)

LG TOTAL HVAC SOLUTION PROVIDER

ENGINEERING PRODUCT DATA BOOK

LG
Life's Good

P/No. : MFL66101110

THERMA V™

CONTENTS

THERMA V™

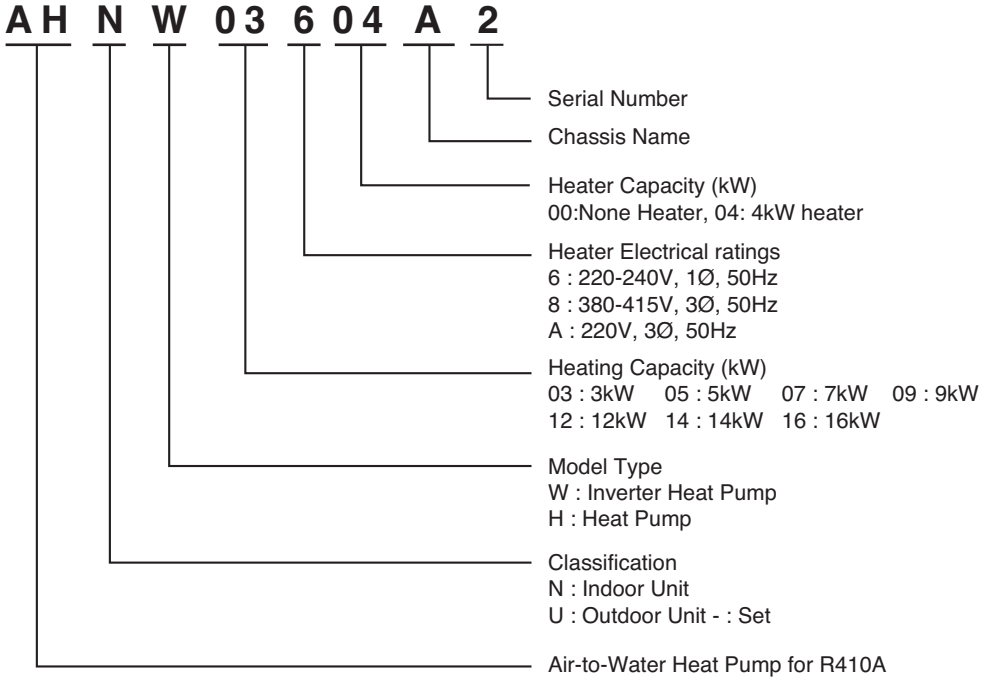
Part 1. Indoor Unit

1. Features

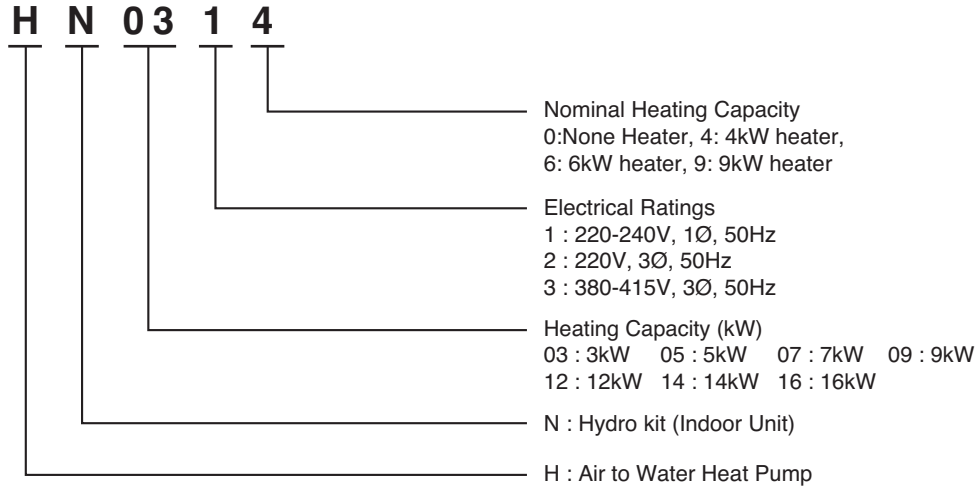
- Privіding eco-friendly heating
- High energy efficiency
- Easy installation
- Space heating, cooling, and sanitary water heating

2. Nomenclature

2.1 Global Model Name



2.2 Europe Model Name



3. List of functions

Category	Function	AHNW03604A2 (HN0314 NK2)	AHNW09604A2 (HN0914 NK2) AHNW16606A2 (HN1616 NK2) AHNW16809A2 (HN1639 NK2)
Installation	Drain pump	X	X
	E.S.P. control	X	X
	Electric heater(operation)	O	O
	High ceiling operation	X	X
Reliability	Hot start	X	X
	Self diagnosis	O	O
	Soft dry operation	X	X
Convenience	Auto changeover	X	X
	Auto cleaning	X	X
	Auto operation(artificial intelligence)	X	X
	Auto restart operation	O	O
	Child lock	O	O
	Forced operation	X	X
	Group control	X	X
	Sleep mode	X	X
	Timer(on/off)	O	O
	Timer(weekly)	O	O
	Two thermistor control	X	X
Individual control	Standard wired remote controller(control panel)	O	O
	Deluxe wired remote controller	X	X
	Simple wired remote controller	X	X
	Wired remote controller(for hotel use)	X	X
	Wireless remote controller(simple)	X	X
	Wireless LCD remote control	X	X
Network function	General central controller (Non LGAP)	X	X
	Dry contact	PQDSA	PQDSA
	Network Soluation(LGAP)	X	X
	PDI(power distribution indicator)	X	X
	PI 485	X	X
Special function kit	Zone control	X	X
	CTIE	X	X
	Electro thermostat	O	O
Others	Remote room temperature sensor (TH8)	PQRSTA0	PQRSTA0
Air to Water Heat Pump Functions	Anti-Condensation on floor (cooling)	O	O
	Water Pump ON / OFF Control	O	O
	Flow Switch Control	O	O
	Thermostat Interface (230V AC)	O	O
	Thermostat Interface (24V AC)	X	X
	Sanitary Tank Heating	O	O
	Solar-Thermal Interface with Sanitary Tank	O	O
	PHEX Anti-Freezing Control	O	O
	Water Pump Forced Operation	O	O
	Autosetting according to Ambient Temperature	O	O
	Silent Operation	O	O
	Anti-overheating of Water Pipe	O	O
	Emergency Operation	O	O
	Weather Dependent Operation with Thermostat	O	O

Note :
O : Applied, X : Not applied
Accessory model name : Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

4. Specifications

Indoor Units					AHNW03604A2(HN0314 NK2)	AHNW09604A2(HN0914 NK2)
Combination Outdoor Units					AHUW036A2 (HU031 UE2)	AHUW056A2 (HU051 U42) AHUW076A2 (HU071 U42) AHUW096A2 (HU091 U42)
Operation Range (Leaving Water)	Cooling	For Fan Coil Unit	Min. ~ Max.	°C	6~30	6~30
		For under floor	Min. ~ Max.	°C	16 ~ 30	16 ~ 30
	Heating	For Fan Coil Unit / Radiator	Min. ~ Max.	°C	15~57(* 20~55°C)	15~57(* 20~55°C)
		For under floor	Min. ~ Max.	°C	15~57(* 20~55°C)	15~57(* 20~55°C)
Water Pump	Type			-	Canned type for hot water circulation	
	Model			-	Yonos Para RS 25/6	Yonos Para RS 25/7
	Motor type			-	BLDC	BLDC
	Steps of Speed			EA	2 (In Max. / Med. / Min., Min. step is not used)	
	Power input		Rated	W	45	45
	Water Flow Rate		Min. / Rated	*l* / min	15.0 / 15.0	15.0 / 25.8
	Water Head		Max.	m	6	7
Heat Exchanger	Type			-	Brazed Plate HEX	
	Quantity				1	1
	Number of Plate			EA	32	54
	Head Loss		Rated	kPa	12	20
	Water Flow Rate		Min	*l* / min	8	25.8
Expansion Vessel	System Water Volume		Max.	*l*	8.0	8.0
	Pre-pressure			kPa	120	120
Strainer	Mesh size		W x H	mm x mm	1 x 1	1 x 1
	Material			-	1	1
Safety Valve	Pressure Limit		Upper Limit	bar	3	3
Devices for Water Circuit				-	Manometer	
				-	Drain Valve / Fill Valve	
				-	Shut Off Valve	
				-	Air Vent	
Piping Connections	Water Circuit	Inlet	Inner Dia.	mm(inch)	Male PT 25(1)	Male PT 25(1)
		Outlet	Inner Dia.	mm(inch)	Male PT 25(1)	Male PT 25(1)
	Refrigerant Circuit	Gas	Outer Dia.	mm(inch)	Ø 12.7 (1/2)	Ø 15.88 (5/8)
		Liquid	Outer Dia.	mm(inch)	Ø 6.35 (1/4)	Ø 9.52 (3/8)
Dimensions	Unit		W x H x D	mm	490 x 850 x 315	490 x 850 x 315
Weight (Without water)	Unit			kg	46	48

Electrical Specification			AHNW03604A2(HN0314 NK2)	AHNW09604A2(HN0914 NK2)
Electric Heater	Type	-	Sheath	Sheath
	Number of Heating Coil	EA	2	2
	Capacity Combination	kW	2+2	2+2
	Operation	-	Automatic	Automatic
	Heating Steps	Step	2	2
	Power Supply	V, Ø, Hz	1, 220-240, 50	1, 220-240, 50
	Rated Current	A	16.7	16.7
	Maximum Current	A	21.0	21.0
Wiring Connections	Power and Communication Cable (Included Earth)	No. x mm^2	3 x 1.5 (H07RN-F)	3 x 1.5 (H07RN-F)

Sanitary Water Tank Specification				AHNW03604A2(HN0314 NK2)	AHNW09604A2(HN0914 NK2)
Sanitary Water Tank **	Type		-	Indirect heating(+Electric heater)	
	Heater Capacity	Max.	kW	Max. 3	
	Power Supply		V, Ø, Hz	1, 230, 50	
	Power Supply Type		-	Separated Power Source	
	Thermal Protector Range	Max.	°C	Max. 90	
	Relay Contactor		-	Needed	
	ELCB		A	40	
	Sensor Adaptor Diameter		mm(inch)	Ø 12.7 (1/2)	
	Accessory Kit Model Name***		-	PHLTA (LG Supply)	

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notification.
3. * : This specification is data when electric heater is not used.
4. ** : This information is given as a guideline about the connection of sanitary water tank.
5. *** : This Accessory Kit is required only when you want to use the electric heater function at the sanitary tank. If not, it's not necessary. Therma V indoor unit it self already has electric heater(back up heating) function.

4. Specifications

Indoor Units					AHNW16606A2 (HN1616 NK2)	AHNW16809A2 (HN1639 NK2)
Combination Outdoor Units					AHUW126A2 (HU121 U32) AHUW146A2 (HU141 U32) AHUW166A2 (HU161 U32)	AHUW128A2 (HU123 U32) AHUW148A2 (HU143 U32) AHUW168A2 (HU163 U32)
Operation Range (Leaving Water)	Cooling	For Fan Coil Unit	Min. ~ Max.	°C	6~30	6~30
		For under floor	Min. ~ Max.	°C	16~30	16~30
	Heating	For Fan Coil Unit / Radiator	Min. ~ Max.	°C	15~57(* 20~55°C)	15~57(* 20~55°C)
		For under floor	Min. ~ Max.	°C	15~57(* 20~55°C)	15~57(* 20~55°C)
Water Pump	Type			-	Canned type for hot water circulation	
	Model			-	Yonos Para RS 25/9	Yonos Para RS 25/9
	Motor type			-	BLDC	BLDC
	Steps of Speed			EA	2 (In Max. / Med. / Min., Min. step is not used)	
	Power input		Rated	W	90	90
	Water Flow Rate		Min. / Rated	*l* / min	15.0 / 46.0	15.0 / 46.0
	Water Head		Max.	m	9	9
Heat Exchanger	Type			-	Brazed Plate HEX	
	Quantity				1	1
	Number of Plate			EA	76	76
	Head Loss		Rated	kPa	34	34
	Water Flow Rate		Min	*l* / min	46	46
Expansion Vessel	System Water Volume		Max.	*l*	8	8
	Pre-pressure			kPa	120	120
Strainer	Mesh size		W x H	mm x mm	1 x 1	1 x 1
	Material			-	1	1
Safety Valve	Pressure Limit		Upper Limit	bar	3	3
Devices for Water Circuit				-	Manometer	
				-	Drain Valve / Fill Valve	
				-	Shut Off Valve	
				-	Air Vent	
Piping Connections	Water Circuit	Inlet	Inner Dia.	mm(inch)	Male PT 25(1)	Male PT 25(1)
		Outlet	Inner Dia.	mm(inch)	Male PT 25(1)	Male PT 25(1)
	Refrigerant Circuit	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
		Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
Dimensions	Unit		W x H x D	mm	490 x 850 x 315	490 x 850 x 315
Weight (Without water)	Unit			kg	56	51

Electrical Specification			AHNW16606A2(HN1616 NK2)	AHNW16809A2(HN1639 NK2)
Electric Heater	Type	-	Sheath	Sheath
	Number of Heating Coil	EA	2	3
	Capacity Combination	kW	3+3	3+3+3
	Operation	-	Automatic	Automatic
	Heating Steps	Step	2	2
	Power Supply	V, Ø, Hz	1, 220-240, 50	3, 380-415, 50
	Rated Current	A	25	-
	Maximum Current	A	32	-
Wiring Connections	Power and Communication Cable (Included Earth)	No. x mm^2	3 x 1.5 (H07RN-F)	3 x 1.5 (H07RN-F)

Sanitary Water Tank Specification				AHNW16606A2(HN1616 NK2)	AHNW16809A2(HN1639 NK2)
Sanitary Water Tank **	Type		-	Indirect heating(+Electric heater)	
	Heater Capacity	Max.	kW	Max. 3	
	Power Supply		V, Ø, Hz	1, 230, 50	
	Power Supply Type		-	Separated Power Source	
	Thermal Protector Range	Max.	°C	Max. 90	
	Relay Contactor		-	Needed	
	ELCB		A	40	
	Sensor Adaptor Diameter		mm(inch)	Ø 12.7 (1/2)	
	Accessory Kit Model Name***		-	PHLTA (LG Supply)	PHLTC (LG Supply)

Note :

1. Wiring cable size must comply with the applicable local and national codes.
2. Due to our policy of innovation some specifications may be changed without notification.
3. * : This specification is data when electric heater is not used.
4. ** : This information is given as a guideline about the connection of sanitary water tank.
5. *** : This Accessory Kit is required only when you want to use the electric heater function at the sanitary tank. If not, it's not necessary. Therma V indoor unit it self already has electric heater(back up heating) function.

5. Drawing

5.1 Internal

AWHP

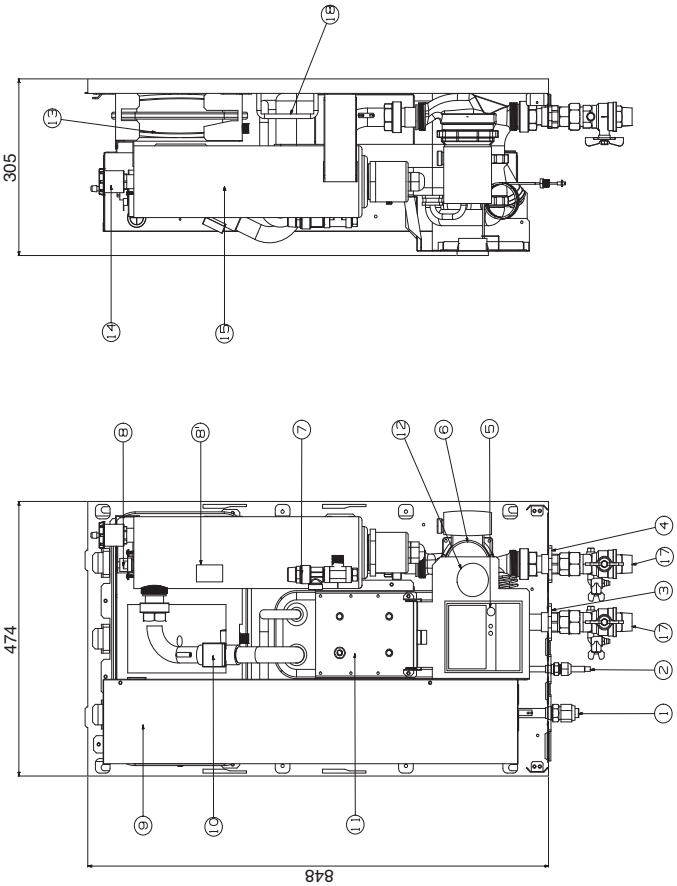
AHNW03604A2 (HN0314 NK2)
AHNW09604A2 (HN0914 NK2)
AHNW16606A2 (HN1616 NK2)
AHNW16809A2 (HN1639 NK2)

No	Name	Remarks
1	Refrigerant Pipe	Ø15.88mm(5~16kW), Ø12.7mm (3kW)
2	Refrigerant Pipe	Ø9.52mm(5~16kW), Ø6.35mm (3kW)
3	Entering Water Pipe	Male PT 1 inch
4	Leaving Water Pipe	Male PT 1 inch
5	Control Panel	Built-in Remote Controller
6	Water Pump	Max Head 7.5 / 6.5 m
7	Safety Valve	Open at water pressure 3 bar
8	Thermal switch	Cut-off power input to electric heater at 90 C (manual return at 55C) (10 Electric Heater is applied)
8'	Thermal switch	Cut-off power input to electric heater at 90 C (manual return at 55 C) (3Ø Electric Heater is applied)
9	Control Box	PCB and terminal blocks
10	Flow Switch	Minimum operation range at 12 LPM.(5~9kW) Minimum operation range at 15 LPM.(12~16kW) ※ 3kW IDU has not a flow switch.
11	Plate Heat Exchanger	Heat exchange between refrigerant and water
12	Pressure Gage	Indicates circulating water pressure
13	Expansion Tank	Absorbing Volume change of heated water
14	Air Vent	Air purging when Charging water
15	Electric Heater	Please refer Page 12
16	Strainer	Filtering and stacking particles inside circulating water
17	Shut-off valve	To drain or to block water when pipe connecting
18	Carrying handle	To carry the product

Notice : Item 8 and Item 8' will be applied exclusively

Note

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit should be grounded in accordance with the local regulations or applicable national codes.
3. All electrical components and materials to be supplied on the site must comply with the local regulations or international codes.
4. Electrical characteristics chapter should be considered for electrical work and design. Especially the capacity of power cable and circuit breaker for outdoor unit should be more than that of electrical characteristics chapter.



[Unit:mm]

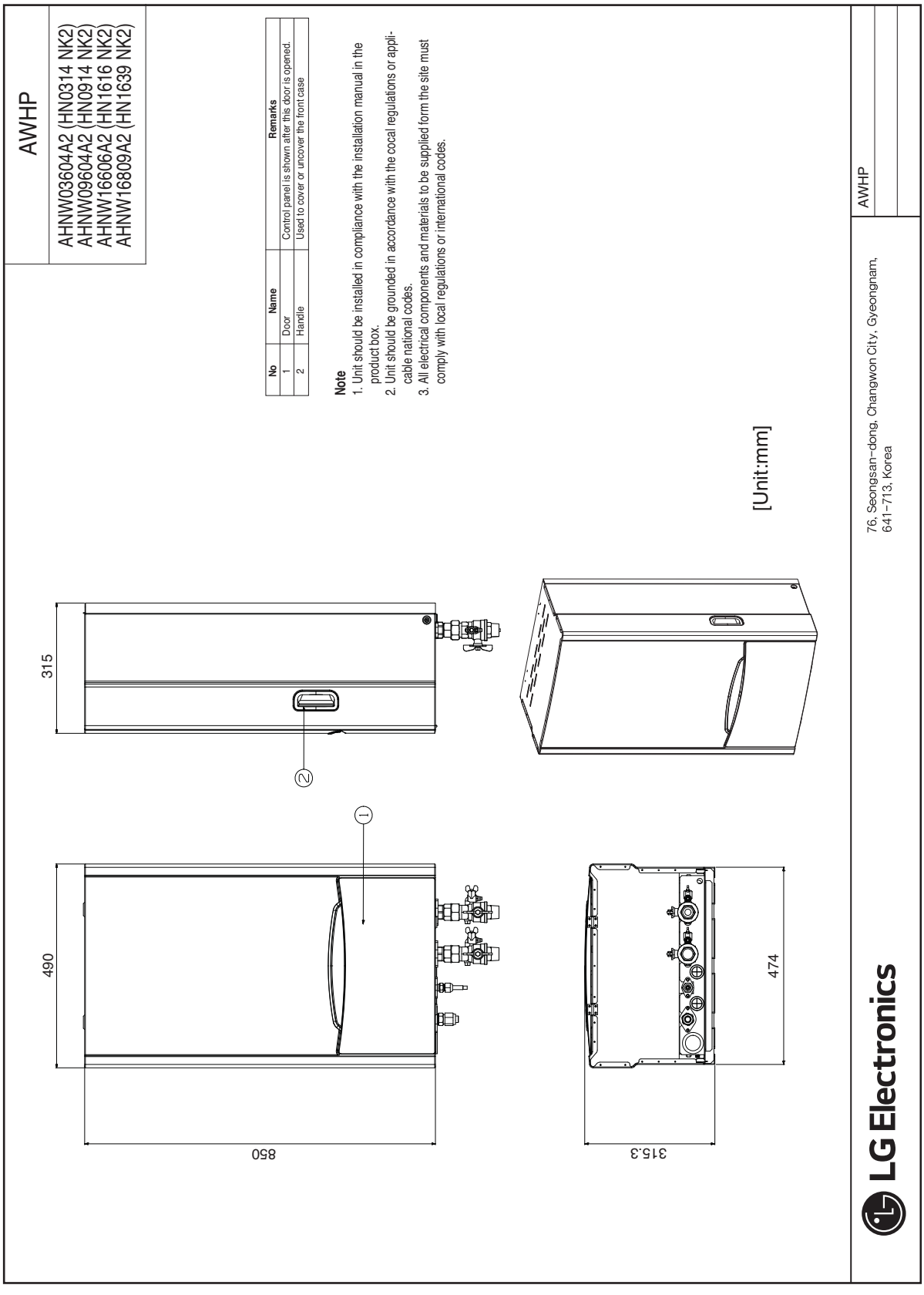
LG Electronics

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

AWHP

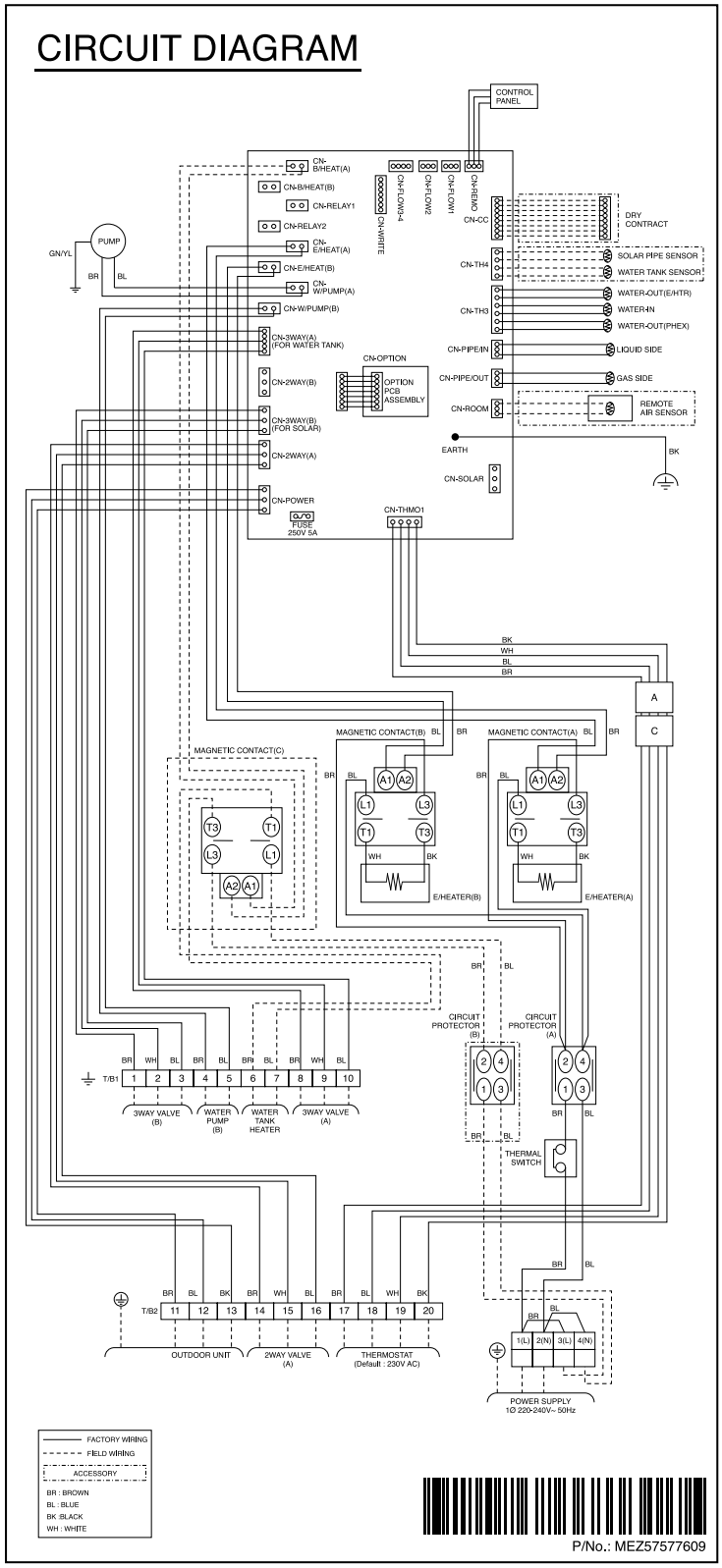
5. Drawing

5.2 External



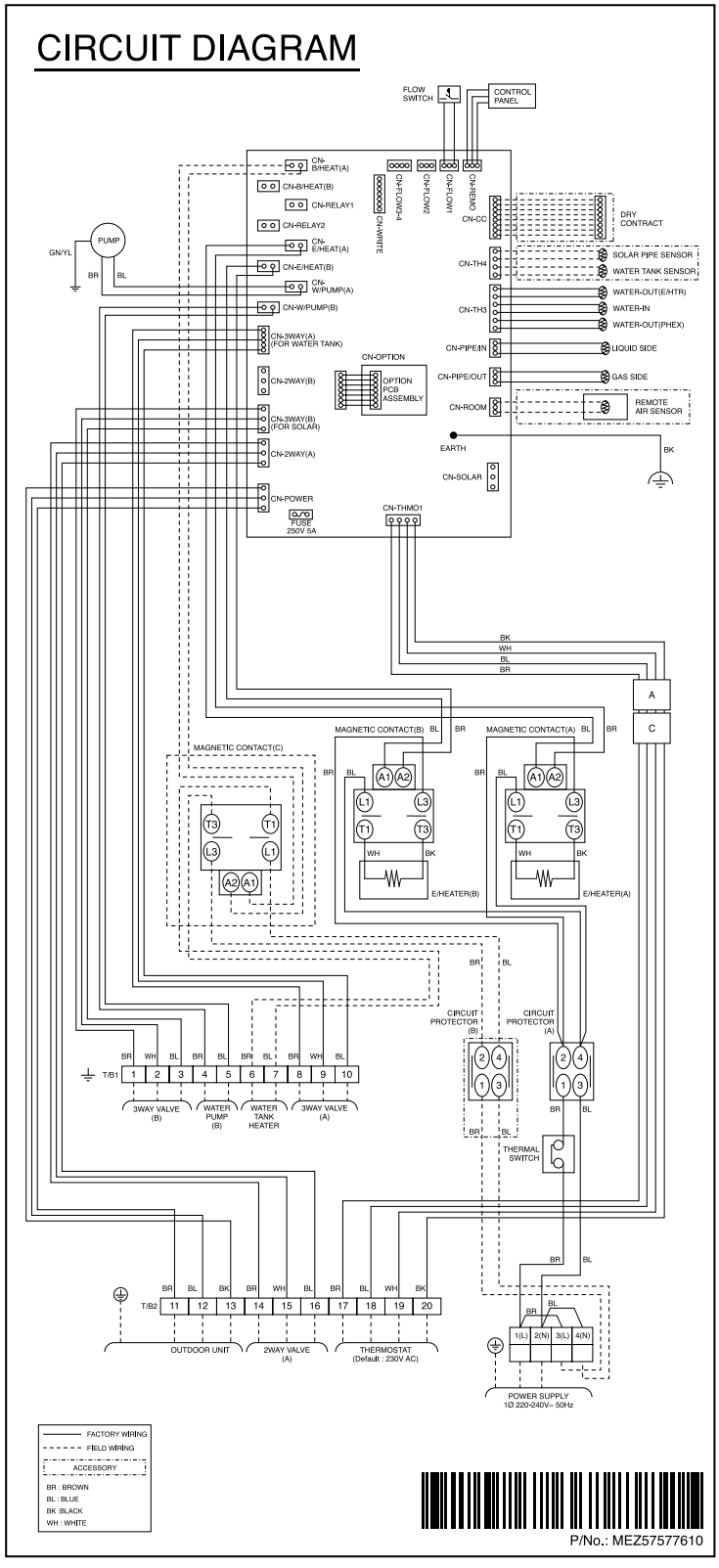
6. Wiring Diagram (External Connection)

Model : AHNW03604A2 (HN0314 NK2)



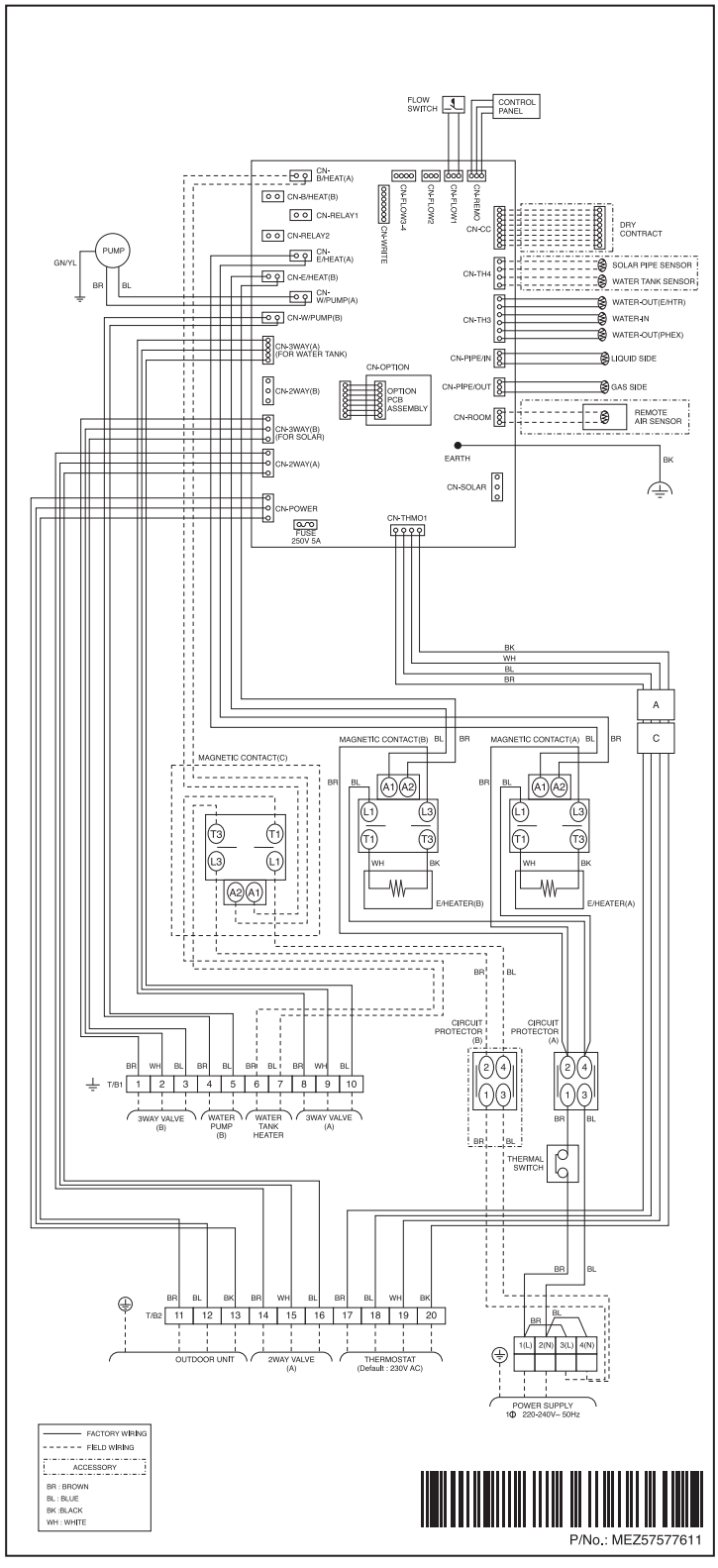
6. Wiring Diagram (External Connection)

Model : AHNW09604A2 (HN0914 NK2)



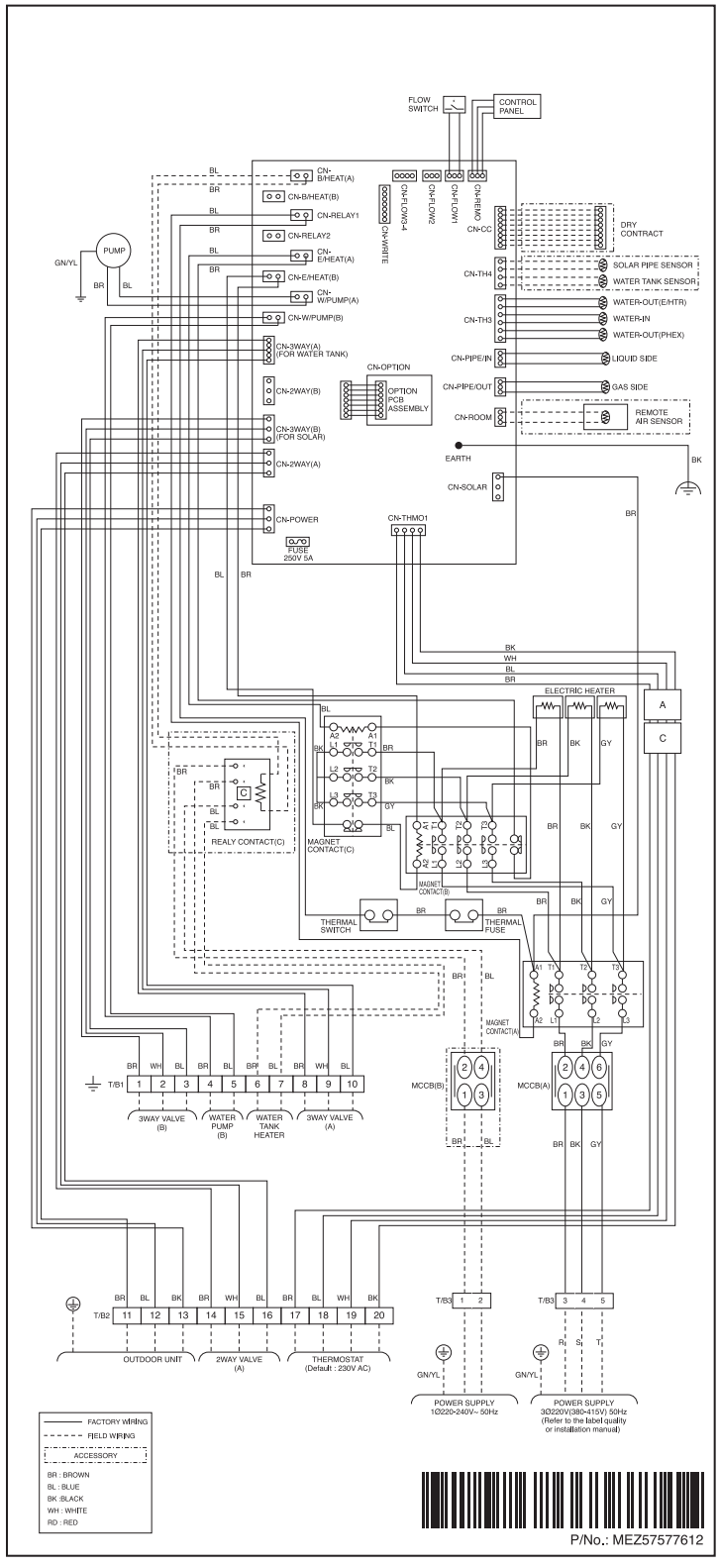
6. Wiring Diagram (External Connection)

Model : AHNW16606A2 (HN1616 NK2)



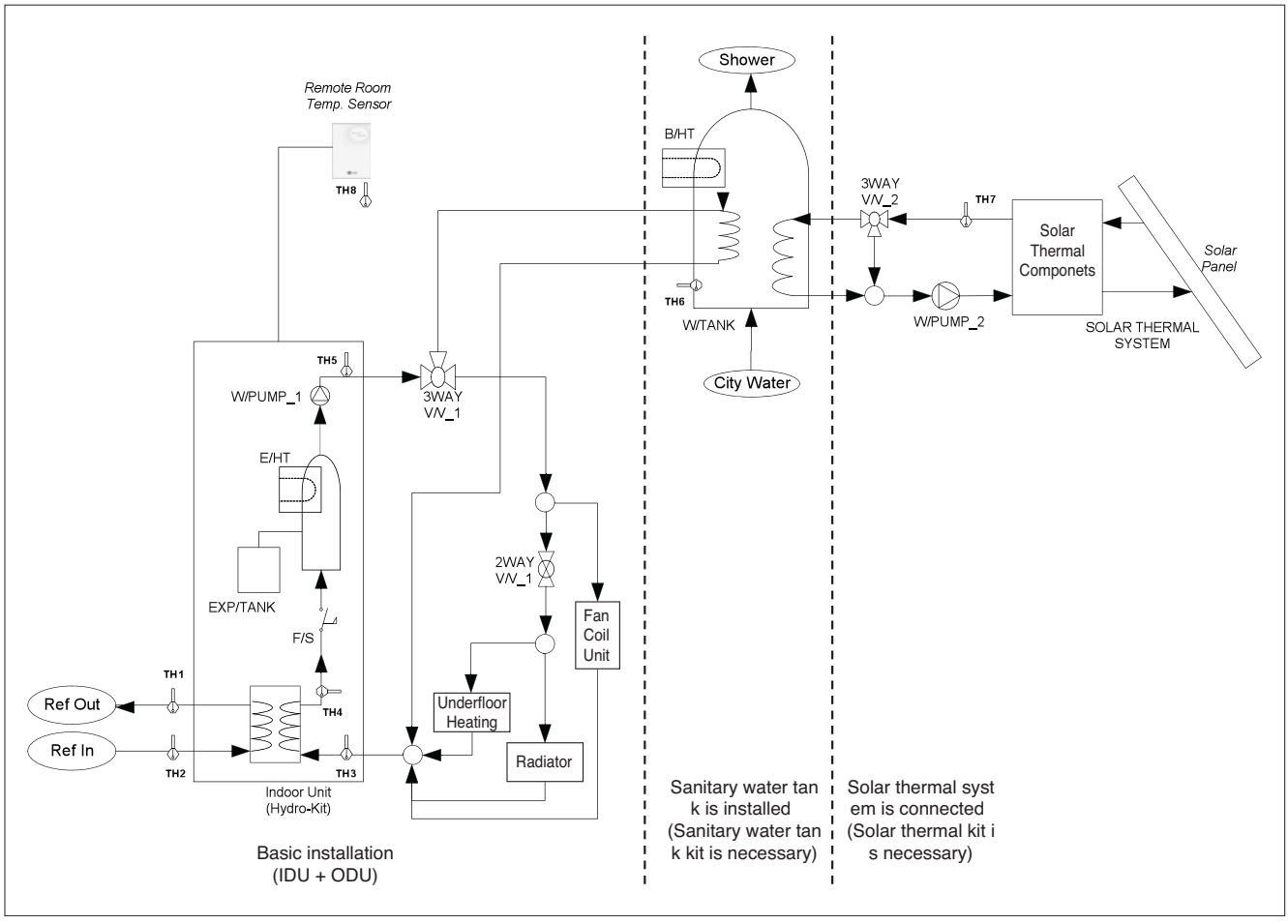
6. Wiring Diagram (External Connection)

Model : AHNW16606A2 (HN1616 NK2)



7. Piping Diagram

Model : AHNW03604A2 (HN0314 NK2), AHNW09604A2 (HN0914 NK2), AHNW16606A2 (HN1616 NK2), AHNW16809A2 (HN1639 NK2)



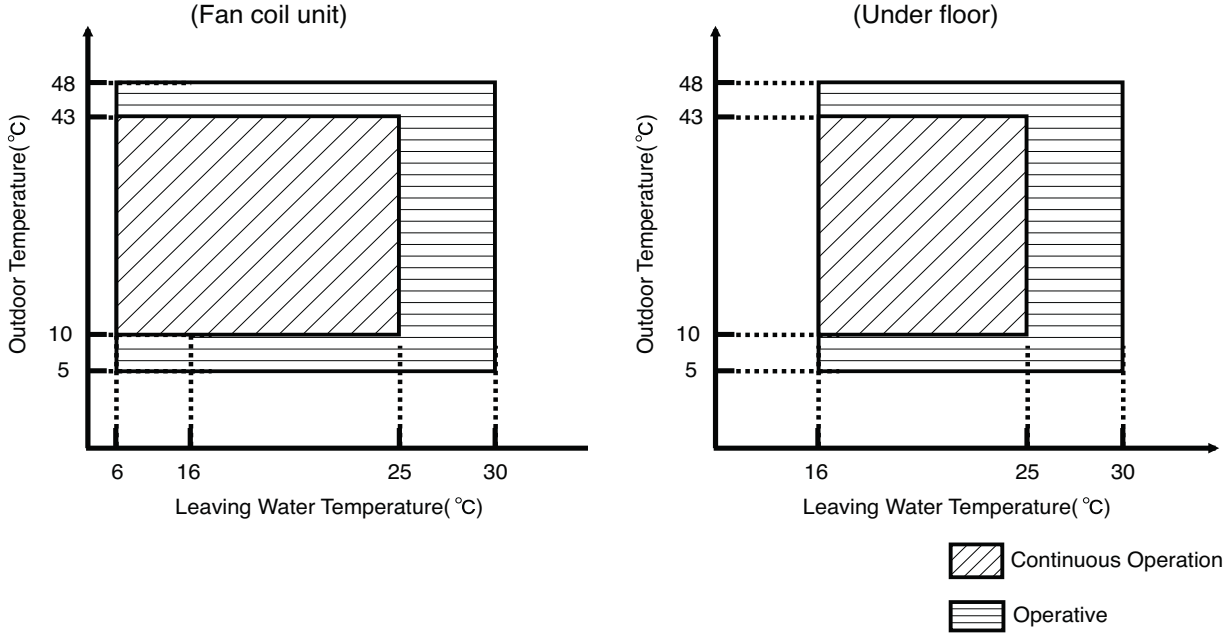
7. Piping Diagram

Category	Symbol	Meaning	PCB Connector	Remarks
Indoor Unit	TH1	Refrigerant temperature sensor (Gas side)	CN_PIPE/OUT	- Meaning is expressed based on Cooling mode.
	TH2	Refrigerant temperature sensor (Liquid side)	CN_PIPE	
	TH3	Entering Water temperature sensor	CN_TH3	- TH3, TH4, and TH5 are connected at 6 pin type connector CN_TH3.
	TH4	Interim Water temperature sensor		
	TH5	Leaving Water temperature sensor		
	F/S	Flow Switch	CN_FLOW1	
	E/HT	Electric Heater	CN_E/HEAT(A) CN_E/HEAT(B)	- 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(230V AC 50Hz) 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_W/PUMP(A)	- Operating power(230V AC 50Hz) of internal water pump is supplied by the connector.
	EXP/TANK	Expansion Tank	(no connector)	- Absorb volume change of heated water,
	TH8	Remote Air temperature sensor	CN_ROOM	- Optional accessory (sold separately) - Model : PQRSTA0
	CTR/PNL	Control Panel (or 'Remote Controller')	CN_REMO	- Pre built-in at indoor unit
	2WAY V/V_1	To control water flow for Fan Coil Unit	CN_2WAY(A)	- 3rd party accessory and Field installation (sold separately) - 2wire NO or NC type 2way valve is supported.
Water Heating	W/TANK	Sanitary Water Tank	(no connector)	- 3rd party accessory and Field installation (sold separately) - Generating and storing sanitary hot water by AWHP or built-in electric heater-
	B/HT	Electric Heater	CN_B/HEAT(A)	- 3rd 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 indoor unit. - Flow direction switching between under-floor and water tank	CN_3WAY(A)	- 3rd 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
	TH6	W/TANK water temperature sensor	CN_TH4	- TH6 and TH7 are connected at 4 pin type connector CN_TH4. - TH6 is a part of sanitary water tank kit. (Model:PHLTA) - TH7 is a part of solar thermal kit (Model:PHLLA)
Solar Heating	TH7	Solar-heated water temperature sensor		
	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)	- 3rd party accessory and Field installation (sold separately) - SPDT type 3way valve is supported.
	W_PUMP/2	External Water Pump	CN_W/PUMP(B)	- 3rd 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 buy LG AWHP Solar-Kit.	(no connector)	- 3rd party accessory and Field installation (sold separately)

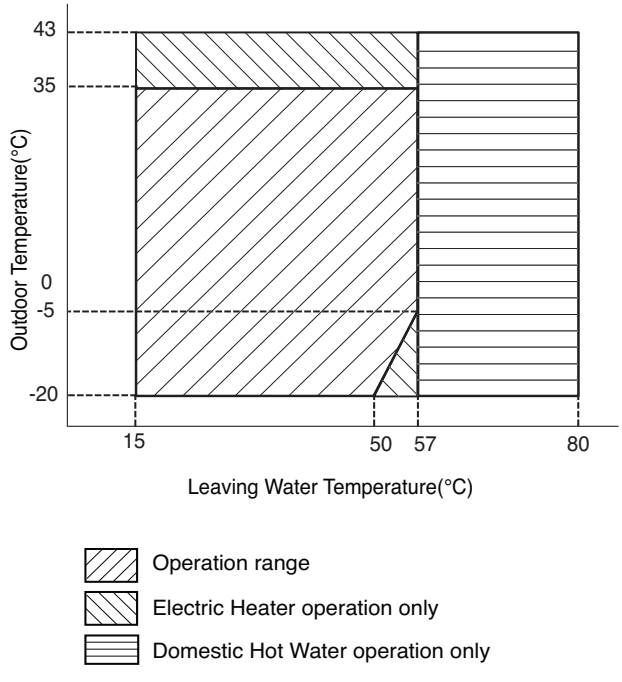
8. Operation Range

Model : AHNW03604A2 (HN0314 NK2), AHNW09604A2 (HN0914 NK2)
AHNW16606A2 (HN1616 NK2), AHNW16809A2 (HN1639 NK2)

8.1 Cooling Operation



8.2 Heating Operation



THERMA V™

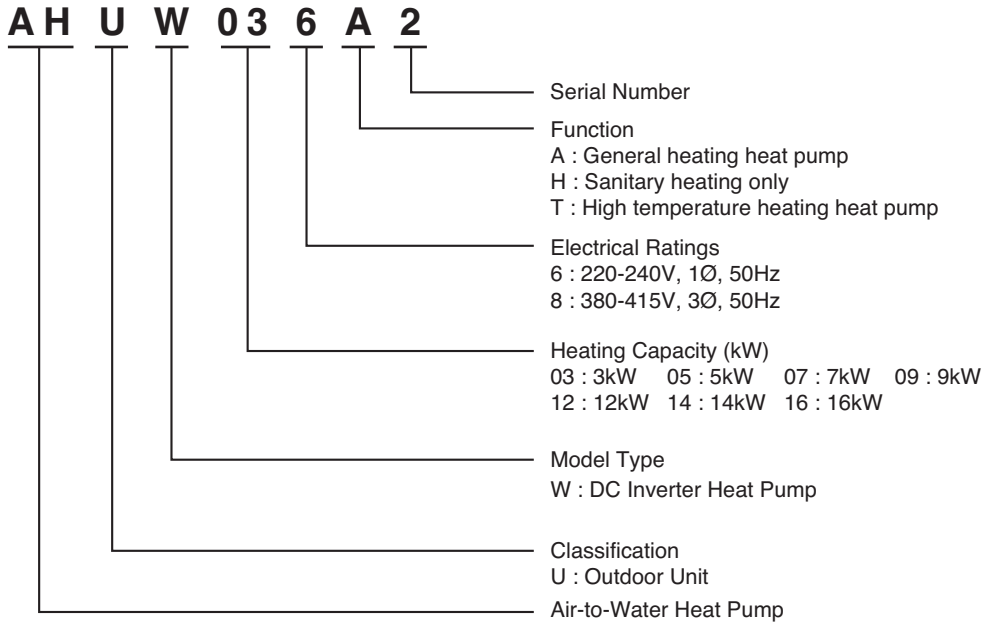
Part 2. Outdoor Unit

1. Features

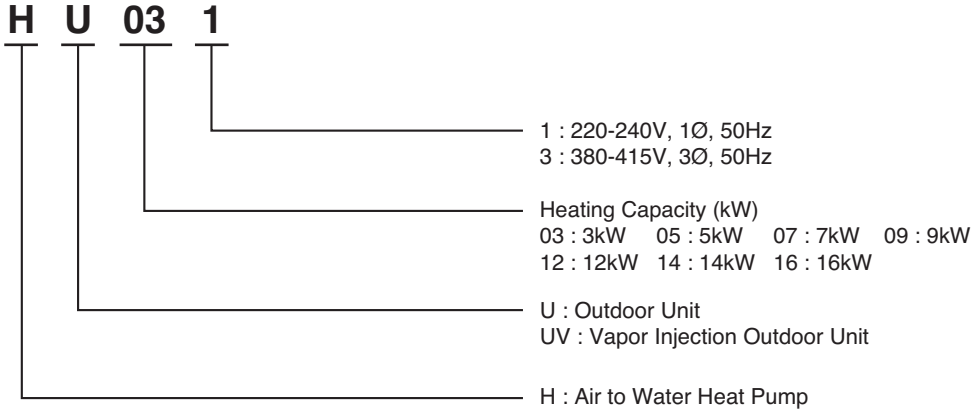
- Privіding eco-friendly heating
- High energy efficiency
- Easy installation
- Space heating and sanitary water heating

2. Nomenclature

2.1 Global Model Name



2.2 Europe Model Name



3. List of functions

Category	Function	AHUW036A2	AHUW056A2 (HU051 U42) AHUW076A2 (HU071 U42) AHUW096A2 (HU091 U42) AHUW126A2 (HU121 U32) AHUW146A2 (HU141 U32) AHUW166A2 (HU161 U32)	AHUW128A2 (HU123 U32) AHUW148A2 (HU143 U32) AHUW168A2 (HU163 U32)
Reliability	Defrost / Deicing	O	O	O
	High pressure switch	O	O	O
	Low pressure switch	O	O	O
	Phase protection	X	X	O
	Restart delay (3-minutes)	O	O	O
	Self diagnosis	O	O	O
	Soft start	X	X	X
	Test function	X	X	X
Convenience	Auto operation(Artificial intelligence)	X	X	X
	Auto restart operation	X	X	X
Network function	Network soluation(LGAP)	X	X	X
	PDI(Power Distribution Indicator)	X	X	X
	PI485	PMNFP14A0	PMNFP14A0	PMNFP14A0
Special function kit	Low ambient operation	X	X	X
Others	Thermistor	X	X	X
AWHP	Sanitary Tank Heating	O	O	O
	Silent Operation	O	O	O
	Emergency Operation	O	O	O
	Sump Heater	O	O	O
	Electrical Heating cable (Condensing Pan)	X	O	O

Note :
O : Applied, X : Not applied
Accessory model name : Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

4. Specifications

Nominal Capacity and Nominal Input			AHUW036A2 (HU031 UE2)	AHUW056A2 (HU051 U42)
Capacity (Rated)	Cooling	kW	3.0	5.0
	Heating	kW	3.0	5.0
Power Input (Rated)	Cooling	kW	0.75	1.35
	Heating	kW	0.65	1.07
EER	Cooling	W/W	4.00	3.70
COP	Heating	W/W	4.62	4.67

Outdoor Units				AHUW036A2 (HU031 UE2)	AHUW056A2 (HU051 U42)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-20 ~ 30	-20 ~ 30
	Domestic Hot Water	Min. ~ Max.	°C DB	-	-
Compressor	Type		-	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GKT141MBC x 1	GJT240MAA x 1
	Motor Type		-	BLDC	BLDC
	Motor Output	Rated	W x No.	1,500 x 1	2,137 x 1
Refrigerant	Type		-	R410A	R410A
	GWP (Global Warming Potential)		-	2,087.5	2,087.5
	Precharged Amount		g	1,000	1,550
	t-CO2 eq.		-	2.09	3.24
	Chargeless-Pipe Length		m	7.5	7.5
	Additional Charging Volume		g/m	20	40
	Control		-	Electronic Expansion Valve	
Refrigerant Oil	Type		-	FVC68D	FVC68D
	Charged Volume		cc x No.	570	900
Heat Exchanger	(Row x Column x Fins per inch) x No.		EA	(2 x 28 x 14) x 1	(2 x 38 x 14) x 1
Heating Cable *	Type		-	-	Electric Heating Cable
	Output		W	-	90
Fan	Type		-	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	50.0 x 1	58.0 x 1
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	43.0 x 1	124 x 1
Sound Pressure Level	Cooling	Rated	dB(A)	52	54
	Heating	Rated	dB(A)	52	54
Silent Sound Pressure Level	Cooling	Rated	dB(A)	42	46
	Heating	Rated	dB(A)	43	48
Sound Power Level	Cooling	Rated	dB(A)	60	65
	Heating	Rated	dB(A)	60	65
Piping Connections	Liquid	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 6.35 (1/4)	Ø 9.52 (3/8)
	Gas	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 12.7 (1/2)	Ø 15.88 (5/8)
Piping Length		Min.	m	-	-
		Standard	m	7.5	7.5
		Max.	m	30	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30
Dimensions	Unit	W x H x D	mm	870 x 655 x 320	950 x 834 x 330
Weight	Unit		kg	46.0	64.0

Electrical Specification			AHUW036A2 (HU031 UE2)	AHUW056A2 (HU051 U42)
Power Supply		V, Ø, Hz	1, 220-240, 50	1, 220-240, 50
Maximum Running Current	Cooling	A	10.0	15.0
	Heating	A	10.0	15.0
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm^2	3 x 2.5 (H07RN-F)	3 x 2.5 (H07RN-F)

Note :

1. Capacities are based on the following conditions:
   - Cooling conditions - Indoor Water Temperature 23°C/18°C
     Outdoor Air Temperature 35°CDB/24°CWB
   - Heating conditions - Indoor Water Temperature 30°C/35°C
     Outdoor Air Temperature 7°CDB/6°CWB
   - Standard piping length 7.5m
   - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
2. Wiring cable size must comply with the applicable local and national codes.
3. Due to our policy of innovation some specifications may be changed without notification.
4. Sound Level Values are measured at Anechoic chamber. Therefore, these values can be increased owing to ambient conditions during operation.
5. This product contains Fluorinated Greenhouse Gases.
6. * : Electric heating cable for prevent frost from condensing water at the condensing pan

4. Specifications

Nominal Capacity and Nominal Input			AHUW076A2 (HU071 U42)	AHUW096A2 (HU091 U42)
Capacity (Rated)	Cooling	kW	6.4	7.0
	Heating	kW	7.0	9.0
Power Input (Rated)	Cooling	kW	1.77	1.93
	Heating	kW	1.59	2.09
EER	Cooling	W/W	3.62	3.63
COP	Heating	W/W	4.40	4.30

Outdoor Units				AHUW076A2 (HU071 U42)	AHUW096A2 (HU091 U42)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-20 ~ 30	-20 ~ 30
	Domestic Hot Water	Min. ~ Max.	°C DB	-	-
Compressor	Type		-	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GJT240MAA x 1	GJT240MAA x 1
	Motor Type		-	BLDC	BLDC
	Motor Output	Rated	W x No.	2,137 x 1	2,137 x 1
Refrigerant	Type		-	R410A	R410A
	GWP (Global Warming Potential)		-	2,087.5	2,087.5
	Precharged Amount		g	1,550	1,550
	t-CO2 eq.		-	3.24	3.24
	Chargeless-Pipe Length		m	7.5	7.5
	Additional Charging Volume		g/m	40	40
	Control		-	Electronic Expansion Valve	
Refrigerant Oil	Type		-	FVC68D	FVC68D
	Charged Volume		cc x No.	900	900
Heat Exchanger	(Row x Column x Fins per inch) x No.		EA	(2 x 38 x 14) x 1	(2 x 38 x 14) x 1
Heating Cable *	Type		-	Electric Heating Cable	Electric Heating Cable
	Output		W	90	90
Fan	Type		-	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	58.0 x 1	58.0 x 1
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	124 x 1	124 x 1
Sound Pressure Level	Cooling	Rated	dB(A)	54	54
	Heating	Rated	dB(A)	54	54
Silent Sound Pressure Level	Cooling	Rated	dB(A)	46	46
	Heating	Rated	dB(A)	48	48
Sound Power Level	Cooling	Rated	dB(A)	65	65
	Heating	Rated	dB(A)	65	65
Piping Connections	Liquid	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Min.	m	-	-
		Standard	m	7.5	7.5
		Max.	m	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30
Dimensions	Unit	W x H x D	mm	950 x 834 x 330	950 x 834 x 330
Weight	Unit		kg	64.0	64.0

Electrical Specification			AHUW076A2 (HU071 U42)	AHUW096A2 (HU091 U42)
Power Supply		V, Ø, Hz	1, 220-240, 50	1, 220-240, 50
Maximum Running Current	Cooling	A	15.0	15.0
	Heating	A	15.0	15.0
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm^2	3 x 2.5 (H07RN-F)	3 x 2.5 (H07RN-F)

Note :

1. Capacities are based on the following conditions:
   - Cooling conditions - Indoor Water Temperature 23°C/18°C
     Outdoor Air Temperature 35°CDB/24°CWB
   - Heating conditions - Indoor Water Temperature 30°C/35°C
     Outdoor Air Temperature 7°CDB/6°CWB
   - Standard piping length 7.5m
   - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
2. Wiring cable size must comply with the applicable local and national codes.
3. Due to our policy of innovation some specifications may be changed without notification.
4. Sound Level Values are measured at Anechoic chamber. Therefore, these values can be increased owing to ambient conditions during operation.
5. This product contains Fluorinated Greenhouse Gases.
6. * : Electric heating cable for prevent frost from condensing water at the condensing pan

4. Specifications

Nominal Capacity and Nominal Input			AHUW126A2 (HU121 U32)	AHUW146A2 (HU141 U32)
Capacity (Rated)	Cooling	kW	10.4	12.0
	Heating	kW	12.0	14.0
Power Input (Rated)	Cooling	kW	2.67	3.25
	Heating	kW	2.70	3.19
EER	Cooling	W/W	3.89	3.69
COP	Heating	W/W	4.44	4.39

Outdoor Units				AHUW126A2 (HU121 U32)	AHUW146A2 (HU141 U32)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-20 ~ 30	-20 ~ 30
	Domestic Hot Water	Min. ~ Max.	°C DB	-	-
Compressor	Type		-	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GPT442MBA	GPT442MBA
	Motor Type		-	BLDC	BLDC
	Motor Output	Rated	W x No.	2,137 x 1	2,137 x 1
Refrigerant	Type		-	R410A	R410A
	GWP (Global Warming Potential)		-	2,087.5	2,087.5
	Precharged Amount		g	2,300	2,300
	t-CO2 eq.		-	4.80	4.80
	Chargeless-Pipe Length		m	7.5	7.5
	Additional Charging Volume		g/m	40	40
	Control		-	Electronic Expansion Valve	
Refrigerant Oil	Type		-	FVC68D	FVC68D
	Charged Volume		cc x No.	1,300	1,300
Heat Exchanger	(Row x Column x Fins per inch) x No.		EA	2 x 70 x 14	2 x 70 x 14
Heating Cable *	Type		-	Electric Heating Cable	Electric Heating Cable
	Output		W	90	90
Fan	Type		-	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	60 x 2	60 x 2
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	124.2	124.2
Sound Pressure Level	Cooling	Rated	dB(A)	54	54
	Heating	Rated	dB(A)	53	53
Silent Sound Pressure Level	Cooling	Rated	dB(A)	51	51
	Heating	Rated	dB(A)	50	50
Sound Power Level	Cooling	Rated	dB(A)	66	68
	Heating	Rated	dB(A)	66	68
Piping Connections	Liquid	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Min.	m	-	-
		Standard	m	7.5	7.5
		Max.	m	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30
Dimensions	Unit	W x H x D	mm	950 x 1,380 x 330	950 x 1,380 x 330
Weight	Unit		kg	94	94

Electrical Specification			AHUW126A2 (HU121 U32)	AHUW146A2 (HU141 U32)
Power Supply		V, Ø, Hz	1, 220-240, 50	1, 220-240, 50
Maximum Running Current	Cooling	A	25	25
	Heating	A	25	25
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm^2	3 x 2.5 (H07RN-F)	3 x 2.5 (H07RN-F)

Note :

1. Capacities are based on the following conditions:
   - Cooling conditions - Indoor Water Temperature 23°C/18°C
     Outdoor Air Temperature 35°CDB/24°CWB
   - Heating conditions - Indoor Water Temperature 30°C/35°C
     Outdoor Air Temperature 7°CDB/6°CWB
   - Standard piping length 7.5m
   - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
2. Wiring cable size must comply with the applicable local and national codes.
3. Due to our policy of innovation some specifications may be changed without notification.
4. Sound Level Values are measured at Anechoic chamber. Therefore, these values can be increased owing to ambient conditions during operation.
5. This product contains Fluorinated Greenhouse Gases.
6. * : Electric heating cable for prevent frost from condensing water at the condensing pan

4. Specifications

Nominal Capacity and Nominal Input			AHUW166A2 (HU161 U32)	AHUW128A2 (HU123 U32)
Capacity (Rated)	Cooling	kW	13.2	10.4
	Heating	kW	16.0	12.0
Power Input (Rated)	Cooling	kW	3.65	2.67
	Heating	kW	3.86	2.70
EER	Cooling	W/W	3.62	3.89
COP	Heating	W/W	4.15	4.44

Outdoor Units				AHUW166A2 (HU161 U32)	AHUW128A2 (HU123 U32)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-20 ~ 30	-20 ~ 30
	Domestic Hot Water	Min. ~ Max.	°C DB	-	-
Compressor	Type		-	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GPT442MBA	GPT442MAA
	Motor Type		-	BLDC	BLDC
	Motor Output	Rated	W x No.	2,137 x 1	2,137 x 1
Refrigerant	Type		-	R410A	R410A
	GWP (Global Warming Potential)		-	2,087.5	2,087.5
	Precharged Amount		g	2,300	2,300
	t-CO2 eq.		-	4.80	4.80
	Chargeless-Pipe Length		m	7.5	7.5
	Additional Charging Volume		g/m	40	40
	Control		-	Electronic Expansion Valve	
Refrigerant Oil	Type		-	FVC68D	FVC68D
	Charged Volume		cc x No.	1,300	1,300
Heat Exchanger	(Row x Column x Fins per inch) x No.		EA	2 x 70 x 14	2 x 70 x 14
Heating Cable *	Type		-	Electric Heating Cable	Electric Heating Cable
	Output		W	90	90
Fan	Type		-	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	60 x 2	60 x 2
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	124.2	124.2
Sound Pressure Level	Cooling	Rated	dB(A)	54	54
	Heating	Rated	dB(A)	53	53
Silent Sound Pressure Level	Cooling	Rated	dB(A)	51	51
	Heating	Rated	dB(A)	50	50
Sound Power Level	Cooling	Rated	dB(A)	69	66
	Heating	Rated	dB(A)	69	66
Piping Connections	Liquid	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Min.	m	-	-
		Standard	m	7.5	7.5
		Max.	m	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30
Dimensions	Unit	W x H x D	mm	950 x 1,380 x 330	950 x 1,380 x 330
Weight	Unit		kg	94	96

Electrical Specification			AHUW166A2 (HU161 U32)	AHUW128A2 (HU123 U32)
Power Supply		V, Ø, Hz	1, 220-240, 50	3, 380-415, 50
Maximum Running Current	Cooling	A	25	11
	Heating	A	25	11
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm^2	3 x 2.5 (H07RN-F)	3 x 2.5 (H07RN-F)

Note :

1. Capacities are based on the following conditions:
   - Cooling conditions - Indoor Water Temperature 23°C/18°C
     Outdoor Air Temperature 35°CDB/24°CWB
   - Heating conditions - Indoor Water Temperature 30°C/35°C
     Outdoor Air Temperature 7°CDB/6°CWB
   - Standard piping length 7.5m
   - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
2. Wiring cable size must comply with the applicable local and national codes.
3. Due to our policy of innovation some specifications may be changed without notification.
4. Sound Level Values are measured at Anechoic chamber. Therefore, these values can be increased owing to ambient conditions during operation.
5. This product contains Fluorinated Greenhouse Gases.
6. * : Electric heating cable for prevent frost from condensing water at the condensing pan

4. Specifications

Nominal Capacity and Nominal Input			AHUW148A2 (HU143 U32)	AHUW168A2 (HU163 U32)
Capacity (Rated)	Cooling	kW	12.0	13.2
	Heating	kW	14.0	16.0
Power Input (Rated)	Cooling	kW	3.25	3.65
	Heating	kW	3.19	3.86
EER	Cooling	W/W	3.69	3.62
COP	Heating	W/W	4.39	4.15

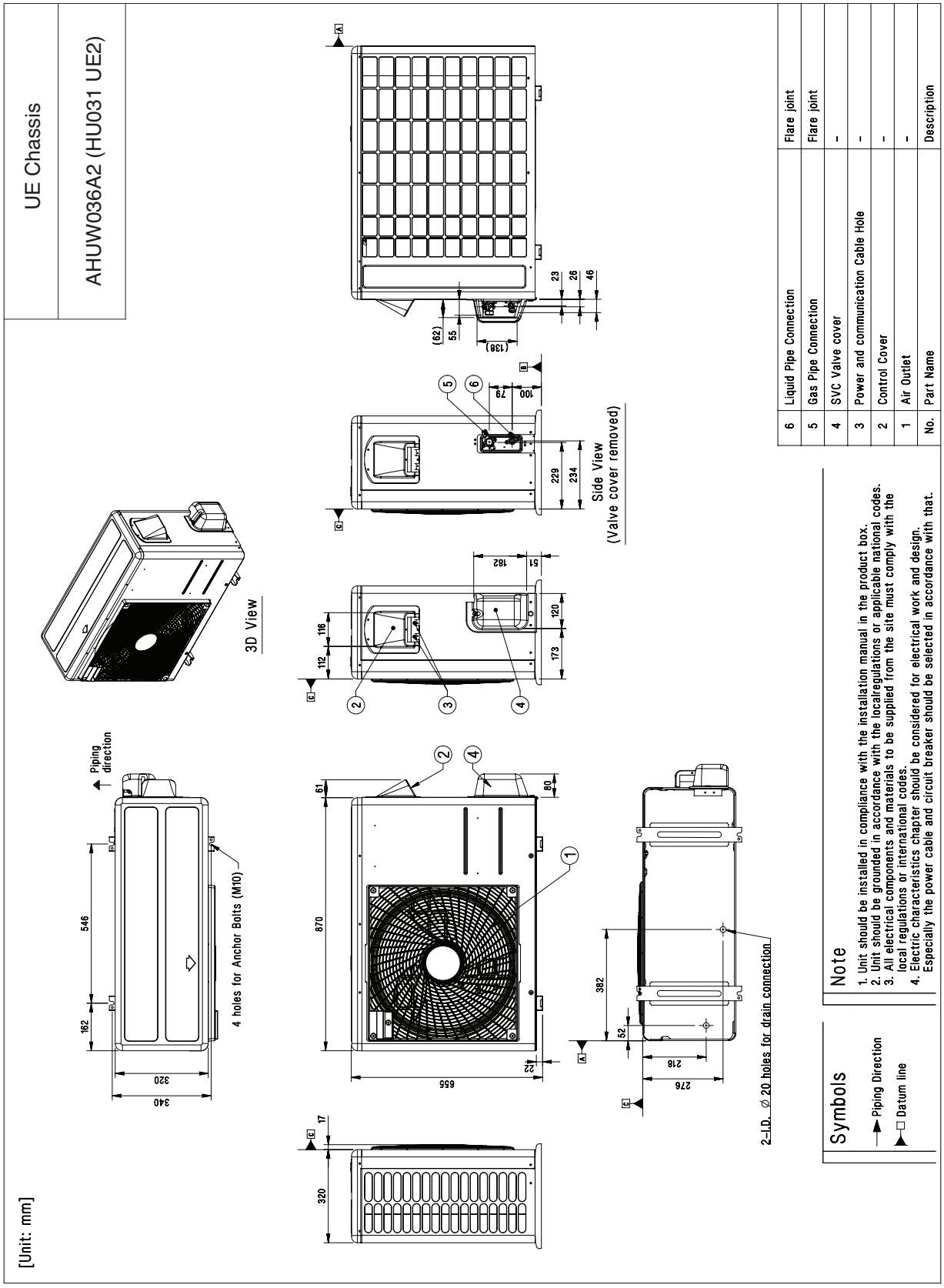
Outdoor Units				AHUW148A2 (HU143 U32)	AHUW168A2 (HU163 U32)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-20 ~ 30	-20 ~ 30
	Domestic Hot Water	Min. ~ Max.	°C DB	-	-
Compressor	Type		-	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GPT442MAA	GPT442MAA
	Motor Type		-	BLDC	BLDC
	Motor Output	Rated	W x No.	2,137 x 1	2,137 x 1
Refrigerant	Type		-	R410A	R410A
	GWP (Global Warming Potential)		-	2,087.5	2,087.5
	Precharged Amount		g	2,300	2,300
	t-CO2 eq.		-	4.80	4.80
	Chargeless-Pipe Length		m	7.5	7.5
	Additional Charging Volume		g/m	40	40
	Control		-	Electronic Expansion Valve	
Refrigerant Oil	Type		-	FVC68D	FVC68D
	Charged Volume		cc x No.	1,300	1,300
Heat Exchanger	(Row x Column x Fins per inch) x No.		EA	2 x 70 x 14	2 x 70 x 14
Heating Cable *	Type		-	Electric Heating Cable	Electric Heating Cable
	Output		W	90	90
Fan	Type		-	Propeller	Propeller
	Air Flow Rate	Rated	m^3/min x No.	60 x 2	60 x 2
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	124.2	124.2
Sound Pressure Level	Cooling	Rated	dB(A)	54	54
	Heating	Rated	dB(A)	53	53
Silent Sound Pressure Level	Cooling	Rated	dB(A)	51	51
	Heating	Rated	dB(A)	50	50
Sound Power Level	Cooling	Rated	dB(A)	68	69
	Heating	Rated	dB(A)	68	69
Piping Connections	Liquid	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
	Gas	Type	-	Flare	Flare
		Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Piping Length		Min.	m	-	-
		Standard	m	7.5	7.5
		Max.	m	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30
Dimensions	Unit	W x H x D	mm	950 x 1,380 x 330	950 x 1,380 x 330
Weight	Unit		kg	96	96

Electrical Specification			AHUW148A2 (HU143 U32)	AHUW168A2 (HU163 U32)
Power Supply		V, Ø, Hz	3, 380-415, 50	3, 380-415, 50
Maximum Running Current	Cooling	A	11	11
	Heating	A	11	11
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm^2	3 x 2.5 (H07RN-F)	3 x 2.5 (H07RN-F)

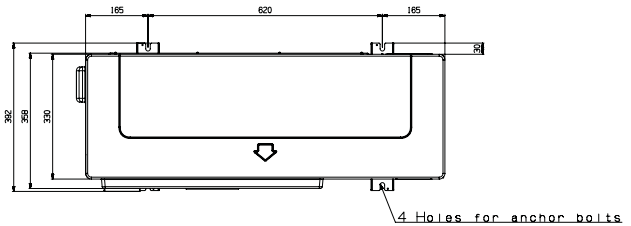
Note :

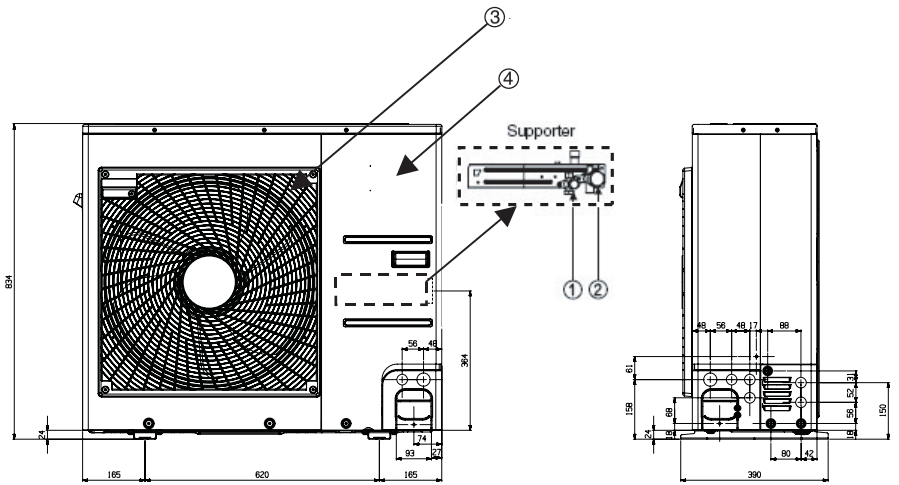
1. Capacities are based on the following conditions:
   - Cooling conditions - Indoor Water Temperature 23°C/18°C
     Outdoor Air Temperature 35°CDB/24°CWB
   - Heating conditions - Indoor Water Temperature 30°C/35°C
     Outdoor Air Temperature 7°CDB/6°CWB
   - Standard piping length 7.5m
   - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
2. Wiring cable size must comply with the applicable local and national codes.
3. Due to our policy of innovation some specifications may be changed without notification.
4. Sound Level Values are measured at Anechoic chamber. Therefore, these values can be increased owing to ambient conditions during operation.
5. This product contains Fluorinated Greenhouse Gases.
6. * : Electric heating cable for prevent frost from condensing water at the condensing pan

5. Drawing


UE Chassis
AHUW036A2 (HU031 UE2)
[Unit: mm]
3D View
Side View
(Valve cover removed)
Piping direction
4 holes for Anchor Bolts (M10)
2-I.D. ∅20 holes for drain connection
Symbols
Piping Direction
Datum line
Note
1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit should be grounded in accordance with the localregulations or applicable national codes.
3. All electrical components and materials to be supplied from the site must comply with the local regulations or international codes.
4. 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.
No. Part Name Description
6 Liquid Pipe Connection Flare joint
5 Gas Pipe Connection Flare joint
4 SVC Valve cover -
3 Power and communication Cable Hole -
2 Control Cover -
1 Air Outlet -

OUTDOOR UNIT
AHUW056A2 (HU051 U42)
AHUW076A2 (HU071 U42)
AHUW096A2 (HU091 U42)





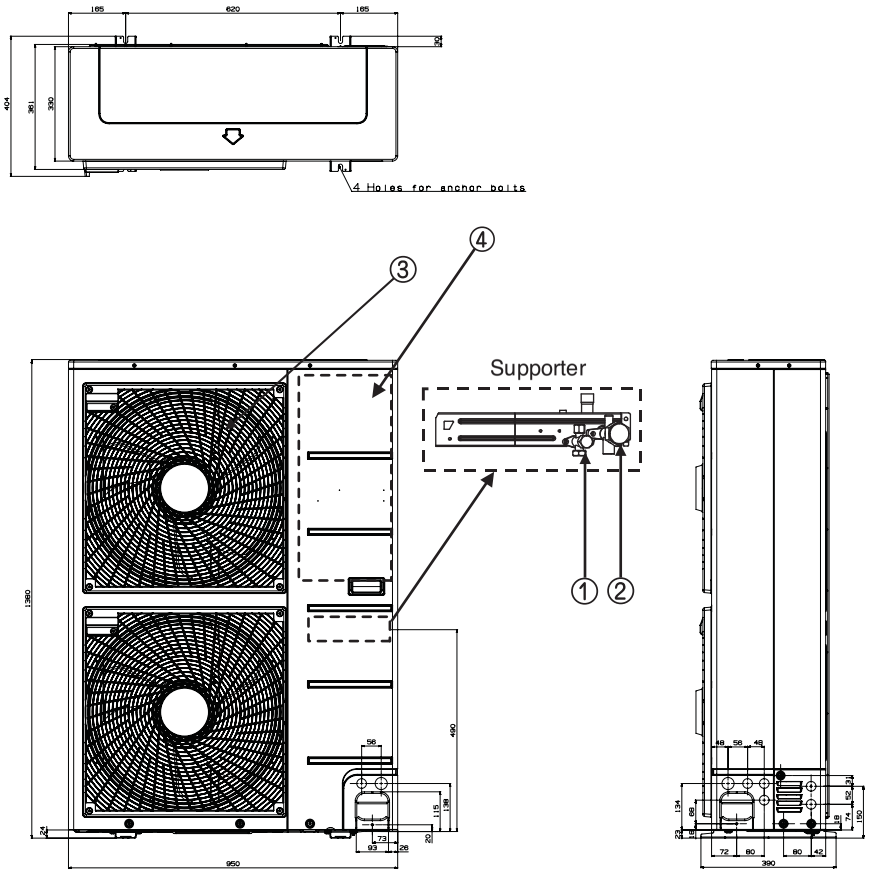
Item No.	Part Name	Remark
1	Liquid side service valve(mm)	
2	Gas side service valve(mm)	
3	Air discharge grill	
4	Control Cover	

▣ Note

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit should be grounded in accordance with the local regulations or applicable national codes.
3. All electrical components and materials to be supplied on the site must comply with the local regulations or international codes.
4. Electrical characteristics chapter should be considered for electrical work and design. Especially the capacity of power cable and circuit breaker for outdoor unit should be more than that of electrical characteristics chapter.

[Unit:mm]

OUTDOOR UNIT
AHUW126A2 (HU121 U32)
AHUW146A2 (HU141 U32)
AHUW166A2 (HU161 U32)
AHUW128A2 (HU123 U32)
AHUW148A2 (HU143 U32)
AHUW168A2 (HU163 U32)



[Unit:mm]

Item No.	Part Name	Remark
1	Liquid side service valve(mm)	
2	Gas side service valve(mm)	
3	Air discharge grill	
4	Control Cover	

▣ Note

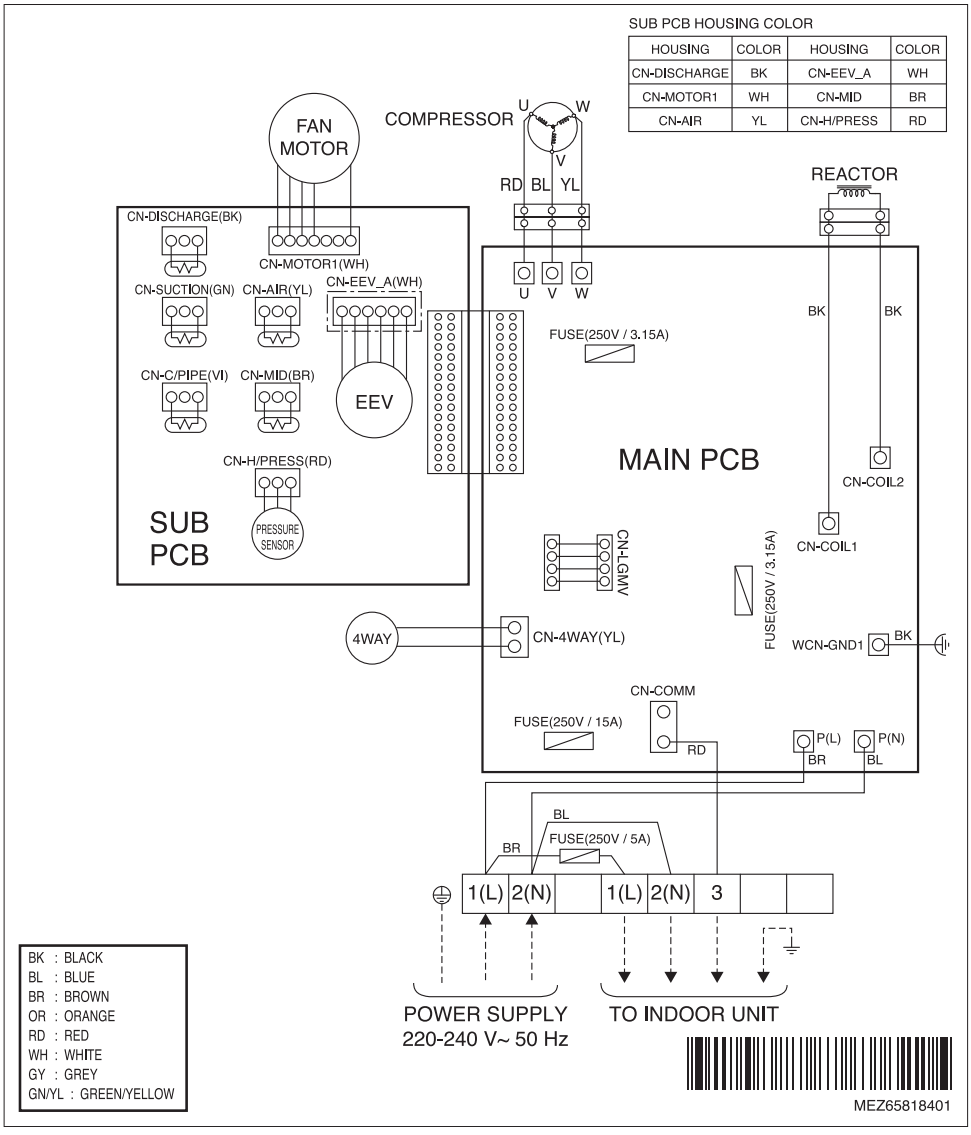
1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit should be grounded in accordance with the local regulations or applicable national codes.
3. All electrical components and materials to be supplied on the site must comply with the local regulations or international codes.
4. Electrical characteristics chapter should be considered for electrical work and design. Especially the capacity of power cable and circuit breaker for outdoor unit should be more than that of electrical characteristics chapter.

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

CHASSIS CODE: U3

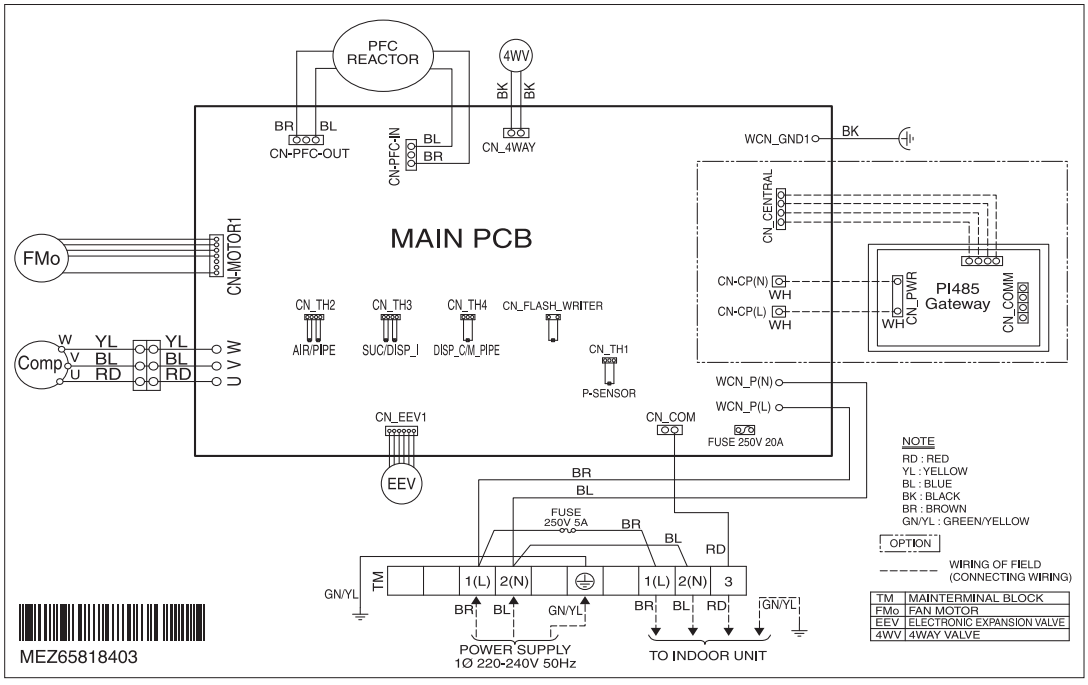
6. Wiring Diagram

Model : AHUW036A2 (HU031 UE2)

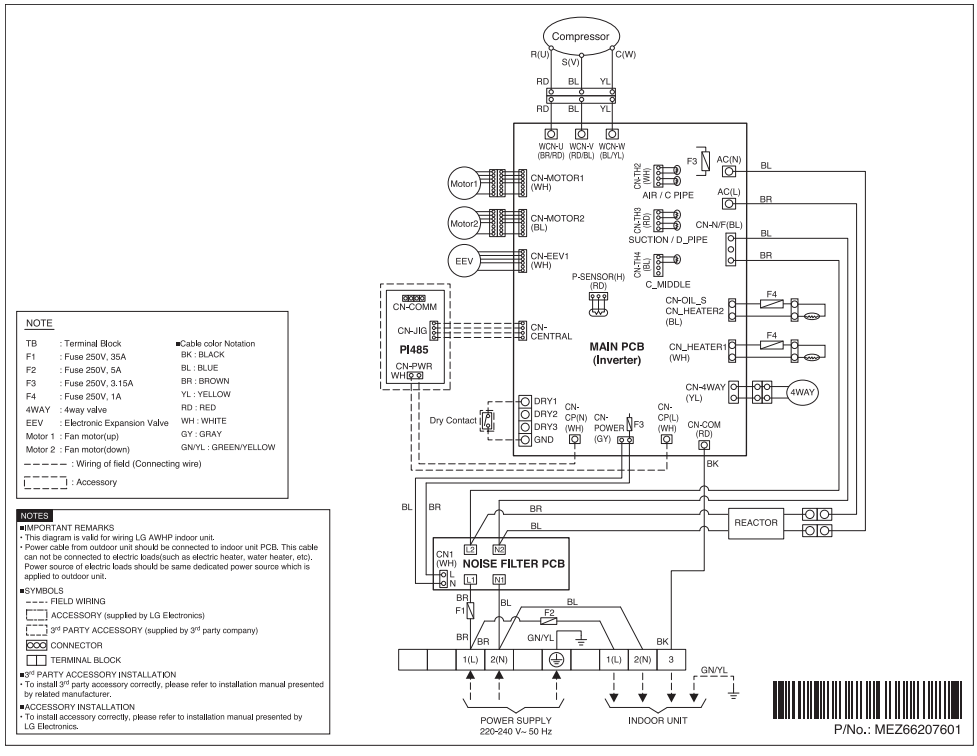


6. Wiring Diagram

Model : AHUW056A2 (HU051 U42), AHUW076A2 (HU071 U42), AHUW096A2 (HU091 U42)

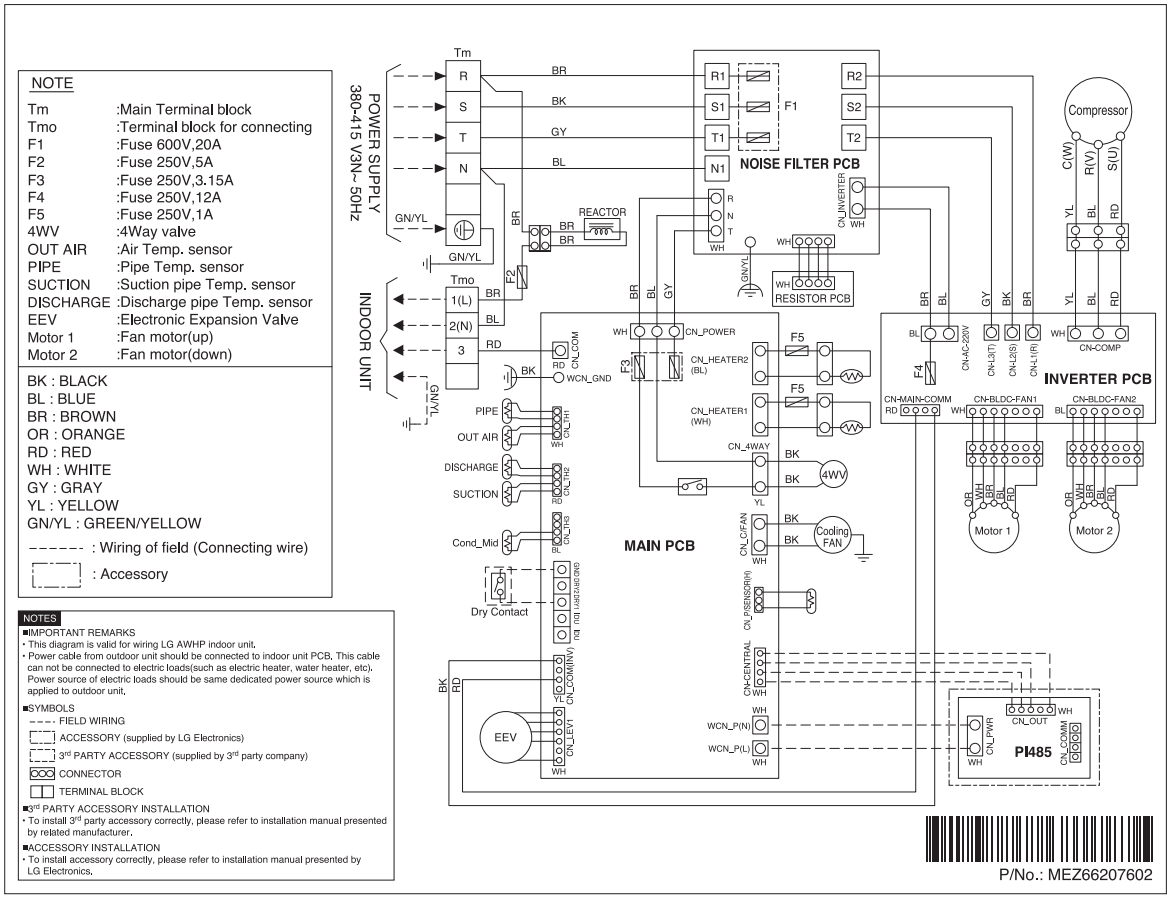


Model : AHUW126A2 (HU121 U32), AHUW146A2 (HU141 U32), AHUW166A2 (HU161 U32)



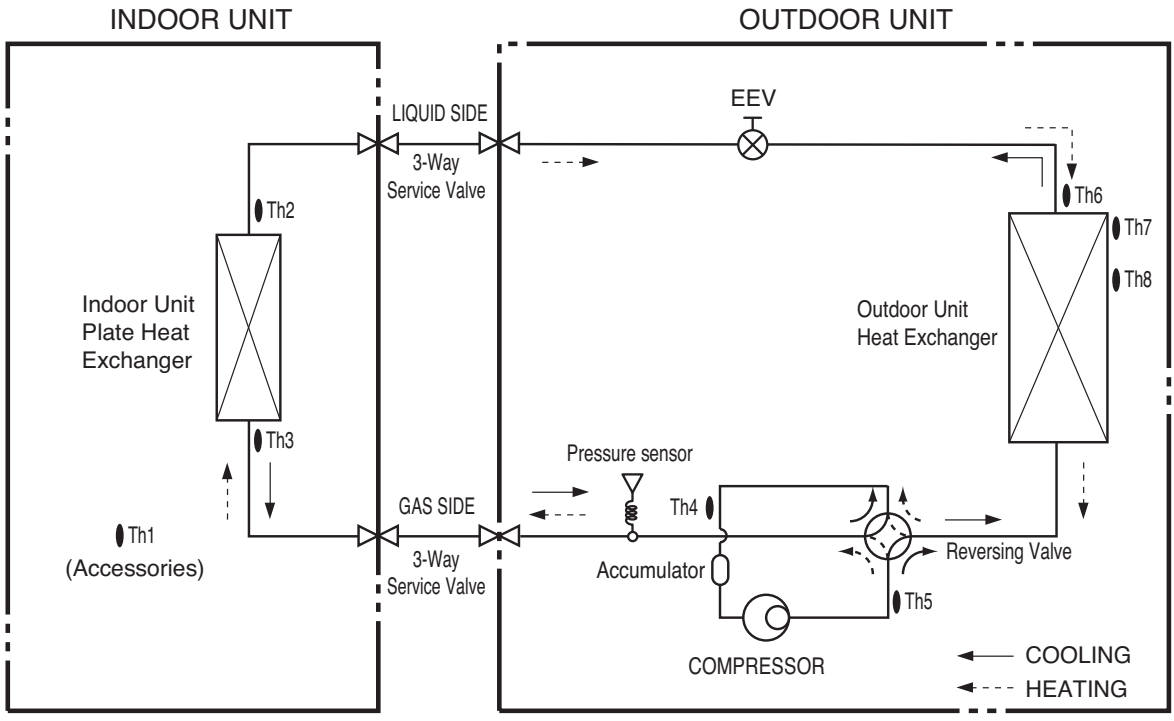
6. Wiring Diagram

Model : AHUW128A2 (HU123 U32), AHUW148A2 (HU143 U32), AHUW168A2 (HU163 U32)



7. Piping Diagram

**Model : AHUW036A2 (HU031 UE2), AHUW056A2 (HU051 U42), AHUW076A2 (HU071 U42)
AHUW096A2 (HU091 U42), AHUW126A2 (HU121 U32), AHUW146A2 (HU141 U32)
AHUW166A2 (HU161 U32), AHUW128A2 (HU123 U32), AHUW148A2 (HU143 U32)
AHUW168A2 (HU163 U32)**



Description

Category	Symbol	Meaning	PCB Connector	Remarks
Indoor Unit	Th1	Remote air temperature sensor	CN_ROOM	- Optional accessory (being sold separately) - Not shown in diagram
	Th2	Inlet evaporator temperature sensor	CN_PIPE	- Meaning is expressed based on Cooling mode.
	Th3	Outlet evaporator temperature sensor	CN_PIPE/O	
Outdoor Unit	Th4	Compressor-suction pipe temperature sensor	CN_TH3	- Th4 and Th5 are connected at 4 pin type connector CN_TH3.
	Th5	Compressor-discharge pipe temperature sensor	CN_TH3	
	Th6	Condenser temperature sensor	CN_TH2	- Description is expressed based on Cooling mode - Th6 and Th7 are connected at 4 pin type connector CN_TH2
	Th7	Outdoor air temperature sensor	CN_TH2	
	Th8*1	Condenser middle temperature sensor	CN_TH3	- Th8 is connected at 4 pin type connector CN_TH3
	EEV	Electronic Expansion Valve	CN_LEV1	

8. Performance Data

8.1 Cooling Operation

Model : AHUW036A2 (HU031 UE2)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	2.19	0.46	2.47	0.49	2.74	0.53	2.98	0.56	3.23	0.59	3.46	0.63		
30°C DB	2.49	0.71	2.61	0.72	2.82	0.78	3.08	0.75	3.15	0.74	3.28	0.73		
35°C DB	2.29	0.77	2.50	0.79	2.69	0.81	2.91	0.82	3.00	0.75	3.10	0.80	3.22	0.83
40°C DB	2.18	0.86	2.32	0.88	2.54	0.90	2.70	0.91	2.75	0.83	2.86	0.85	2.97	0.86
45°C DB	1.84	0.92	2.04	0.93	2.25	0.95	2.44	0.96	2.64	0.98	2.72	0.97	2.81	0.96

Model : AHUW056A2 (HU051 U42)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	3.65	0.83	4.11	0.89	4.57	0.95	4.97	1.01	5.38	1.07	5.76	1.13		
30°C DB	4.15	1.29	4.35	1.30	4.70	1.41	5.13	1.35	5.24	1.33	5.47	1.32		
35°C DB	3.82	1.38	4.17	1.43	4.49	1.46	4.86	1.47	5.00	1.35	5.17	1.45	5.37	1.50
40°C DB	3.64	1.54	3.86	1.58	4.24	1.62	4.50	1.64	4.59	1.50	4.76	1.53	4.95	1.56
45°C DB	3.07	1.65	3.41	1.68	3.74	1.71	4.06	1.73	4.40	1.76	4.54	1.74	4.68	1.72

Model : AHUW076A2 (HU071 U42)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	4.68	1.08	5.26	1.16	5.85	1.24	6.35	1.32	6.89	1.40	7.37	1.48		
30°C DB	5.31	1.68	5.57	1.70	6.02	1.84	6.57	1.77	6.71	1.75	7.00	1.72		
35°C DB	4.88	1.81	5.33	1.87	5.74	1.91	6.21	1.92	6.40	1.77	6.61	1.89	6.87	1.96
40°C DB	4.65	2.01	4.94	2.06	5.42	2.12	5.76	2.15	5.87	1.96	6.09	1.99	6.33	2.03
45°C DB	3.93	2.16	4.36	2.20	4.79	2.23	5.19	2.27	5.63	2.31	5.81	2.28	5.99	2.25

Model : AHUW096A2 (HU091 U42)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	5.11	1.18	5.76	1.26	6.40	1.35	6.95	1.44	7.53	1.53	8.06	1.61		
30°C DB	5.80	1.83	6.09	1.86	6.58	2.01	7.18	1.93	7.34	1.91	7.65	1.88		
35°C DB	5.34	1.98	5.83	2.04	6.28	2.08	6.80	2.10	7.00	1.93	7.23	2.06	7.51	2.14
40°C DB	5.09	2.20	5.40	2.25	5.93	2.31	6.30	2.34	6.42	2.13	6.66	2.17	6.92	2.22
45°C DB	4.29	2.35	4.77	2.39	5.24	2.44	5.68	2.47	6.15	2.52	6.35	2.48	6.55	2.45

LWT : Leaving Water Temperature
TC: Total Capacity (kW)
* : Total Capacity (Averaged value including defrost effect, kW)
PI : Power Input(kW)
Notice : • Measuring procedure follows EN-14511
• Above table values may not be matched according to installation condition

8. Performance Data

Model : AHUW126A2 (HU121 U32)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	7.60	1.63	8.55	1.75	9.51	1.87	10.33	1.99	11.19	2.11	11.98	2.23		
30°C DB	8.62	2.53	9.05	2.57	9.78	2.78	10.67	2.67	10.90	2.64	11.37	2.60		
35°C DB	7.94	2.73	8.66	2.82	9.33	2.88	10.10	2.90	10.40	2.67	10.75	2.85	11.16	2.96
40°C DB	7.56	3.04	8.02	3.11	8.81	3.20	9.36	3.24	9.54	2.95	9.89	3.01	10.28	3.07
45°C DB	6.38	3.26	7.08	3.31	7.79	3.37	8.44	3.42	9.14	3.48	9.44	3.43	9.73	3.39

Model : AHUW146A2 (HU141 U32)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	8.13	1.90	9.87	2.13	10.97	2.28	11.92	2.42	12.91	2.57	13.82	2.71		
30°C DB	9.24	2.96	10.44	3.13	11.29	3.39	12.31	3.25	12.58	3.21	13.12	3.16		
35°C DB	8.50	3.20	9.99	3.43	10.76	3.50	11.65	3.53	12.00	3.25	12.40	3.47	12.88	3.60
40°C DB	8.10	3.56	9.25	3.79	10.17	3.89	10.80	3.94	11.01	3.59	11.42	3.66	11.86	3.73
45°C DB	7.17	3.43	8.17	4.03	8.99	4.10	9.73	4.17	10.55	4.24	10.89	4.18	11.23	4.13

Model : AHUW166A2 (HU161 U32)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	8.67	2.00	10.85	2.39	12.07	2.56	13.11	2.72	14.20	2.89	15.20	3.05		
30°C DB	9.85	3.11	11.48	3.52	12.41	3.80	13.55	3.65	13.84	3.60	14.43	3.55		
35°C DB	9.06	3.35	10.99	3.86	11.84	3.93	12.82	3.96	13.20	3.65	13.64	3.90	14.17	4.04
40°C DB	8.64	3.72	10.18	4.25	11.19	4.37	11.88	4.42	12.11	4.03	12.56	4.11	13.05	4.19
45°C DB	7.64	3.59	8.99	4.53	9.88	4.61	10.71	4.68	11.60	4.76	11.98	4.70	12.35	4.64

Model : AHUW128A2 (HU123 U32)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	7.60	1.63	8.55	1.75	9.51	1.87	10.33	1.99	11.19	2.11	11.98	2.23		
30°C DB	8.62	2.53	9.05	2.57	9.78	2.78	10.67	2.67	10.90	2.64	11.37	2.60		
35°C DB	7.94	2.73	8.66	2.82	9.33	2.88	10.10	2.90	10.40	2.67	10.75	2.85	11.16	2.96
40°C DB	7.56	3.04	8.02	3.11	8.81	3.20	9.36	3.24	9.54	2.95	9.89	3.01	10.28	3.07
45°C DB	6.38	3.26	7.08	3.31	7.79	3.37	8.44	3.42	9.14	3.48	9.44	3.43	9.73	3.39

LWT : Leaving Water Temperature
TC: Total Capacity (kW)
* : Total Capacity (Averaged value including defrost effect, kW)
PI : Power Input(kW)
Notice : • Measuring procedure follows EN-14511
• Above table values may not be matched according to installation condition

8. Performance Data

Model : AHUW148A2 (HU143 U32)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	8.13	1.90	9.87	2.13	10.97	2.28	11.92	2.42	12.91	2.57	13.82	2.71		
30°C DB	9.24	2.96	10.44	3.13	11.29	3.39	12.31	3.25	12.58	3.21	13.12	3.16		
35°C DB	8.50	3.20	9.99	3.43	10.76	3.50	11.65	3.53	12.00	3.25	12.40	3.47	12.88	3.60
40°C DB	8.10	3.56	9.25	3.79	10.17	3.89	10.80	3.94	11.01	3.59	11.42	3.66	11.86	3.73
45°C DB	7.17	3.43	8.17	4.03	8.99	4.10	9.73	4.17	10.55	4.24	10.89	4.18	11.23	4.13

Model : AHUW168A2 (HU163 U32)

Outdoor Temperature	LWT 7°C		LWT 10°C		LWT 13°C		LWT 15°C		LWT 18°C		LWT 20°C		LWT 22°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20°C DB	8.67	2.00	10.85	2.39	12.07	2.56	13.11	2.72	14.20	2.89	15.20	3.05		
30°C DB	9.85	3.11	11.48	3.52	12.41	3.80	13.55	3.65	13.84	3.60	14.43	3.55		
35°C DB	9.06	3.35	10.99	3.86	11.84	3.93	12.82	3.96	13.20	3.65	13.64	3.90	14.17	4.04
40°C DB	8.64	3.72	10.18	4.25	11.19	4.37	11.88	4.42	12.11	4.03	12.56	4.11	13.05	4.19
45°C DB	7.64	3.59	8.99	4.53	9.88	4.61	10.71	4.68	11.60	4.76	11.98	4.70	12.35	4.64

LWT : Leaving Water Temperature
TC: Total Capacity (kW)
* : Total Capacity (Averaged value including defrost effect, kW)
PI : Power Input(kW)
Notice : • Measuring procedure follows EN-14511
• Above table values may not be matched according to installation condition

8. Performance Data

8.2 Heating Operation

Model : AHUW036A2 (HU031 UE2)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	2.02	1.15	1.86	1.13	1.63	1.17	1.56	1.15				
-15°C DB	2.52	1.12	2.33	1.10	2.04	1.14	1.95	1.12	1.89	1.20		
-7°C DB	2.57	0.94	2.45	0.95	2.24	1.02	2.17	1.04	2.05	1.06	1.97	1.13
-2°C DB	2.60	0.73	2.52	0.69	2.36	0.89	2.31	0.90	2.15	0.98	2.07	1.00
*2°C DB	2.64	0.75	2.55	0.80	2.39	0.88	2.34	0.89	2.18	0.93	2.09	0.94
7°C DB	3.10	0.69	3.00	0.65	2.81	0.84	2.75	0.85	2.56	0.92	2.46	0.94
10°C DB	3.27	0.72	3.24	0.77	3.09	0.82	3.04	0.87	2.70	0.90	2.49	0.91
15°C DB	3.45	0.64	3.39	0.64	3.24	0.73	3.15	0.81	2.89	0.91	2.33	0.81
18°C DB	3.55	0.66	3.50	0.67	3.34	0.75	3.21	0.82	3.00	0.93	2.24	0.75

Model : AHUW056A2 (HU051 U42)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	3.37	1.69	3.11	1.67	2.74	1.74	2.61	1.69				
-15°C DB	4.21	1.65	3.89	1.63	3.42	1.69	3.26	1.65	3.16	1.78		
-7°C DB	4.29	1.38	4.08	1.40	3.74	1.51	3.62	1.53	3.43	1.56	3.29	1.60
-2°C DB	4.34	1.08	4.20	1.13	3.95	1.32	3.85	1.33	3.59	1.44	3.45	1.48
*2°C DB	4.39	1.12	4.25	1.19	3.99	1.31	3.90	1.32	3.64	1.38	3.49	1.39
7°C DB	5.17	1.02	5.00	1.07	4.70	1.25	4.59	1.26	4.28	1.35	4.11	1.39
10°C DB	5.46	1.06	5.40	1.14	5.16	1.21	5.08	1.29	4.52	1.34	4.16	1.34
15°C DB	5.76	0.94	5.66	0.95	5.41	1.08	5.25	1.19	4.82	1.34	3.90	1.20
18°C DB	5.92	0.98	5.84	0.99	5.58	1.12	5.36	1.22	5.01	1.37	3.74	1.12

Model : AHUW076A2 (HU071 U42)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	4.70	2.49	4.34	2.46	3.82	2.55	3.64	2.49				
-15°C DB	5.87	2.43	5.43	2.40	4.77	2.48	4.55	2.43	4.40	2.61		
-7°C DB	6.00	2.03	5.71	2.06	5.23	2.22	5.06	2.26	4.78	2.29	4.58	2.37
-2°C DB	6.07	1.59	5.88	1.69	5.51	1.94	5.38	1.96	5.02	2.11	4.81	2.18
*2°C DB	6.15	1.65	5.95	1.75	5.58	1.92	5.45	1.94	5.08	2.04	4.87	2.04
7°C DB	7.23	1.50	7.00	1.59	6.56	1.83	6.41	1.85	5.98	1.99	5.73	2.06
10°C DB	7.63	1.57	7.55	1.68	7.21	1.79	7.09	1.89	6.31	1.97	5.81	1.99
15°C DB	8.04	1.39	7.91	1.39	7.56	1.59	7.34	1.76	6.74	1.97	5.44	1.78
18°C DB	8.28	1.44	8.16	1.46	7.80	1.64	7.49	1.79	7.00	2.03	5.22	1.64

LWT : Leaving Water Temperature
TC: Total Capacity (kW)
* : Total Capacity (Averaged value including defrost effect, kW)
PI : Power Input(kW)
Notice : • Measuring procedure follows EN-14511
• Above table values may not be matched according to installation condition

8. Performance Data

Model : AHUW096A2 (HU091 U42)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	6.04	3.12	5.58	3.06	4.90	3.19	4.68	3.11				
-15°C DB	7.55	3.04	6.98	2.99	6.13	3.11	5.85	3.03	5.66	3.27		
-7°C DB	7.71	2.60	7.34	2.58	6.72	2.88	6.51	2.81	6.15	2.86	5.90	2.95
-2°C DB	7.80	1.99	7.56	2.22	7.08	2.44	6.93	2.46	6.46	2.64	6.19	2.72
*2°C DB	7.90	2.05	7.65	2.19	7.17	2.42	7.01	2.42	6.54	2.54	6.26	2.54
7°C DB	9.29	1.88	9.00	2.09	8.43	2.30	8.25	2.32	7.69	2.49	7.37	2.57
10°C DB	9.81	1.96	9.71	2.09	9.27	2.23	9.12	2.37	8.11	2.45	7.47	2.48
15°C DB	10.34	1.73	10.17	1.73	9.71	1.99	9.44	2.19	8.67	2.46	7.00	2.21
18°C DB	10.64	1.76	10.49	1.82	10.03	2.05	9.63	2.23	9.00	2.53	6.71	2.05

Model : AHUW126A2 (HU121 U32)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	10.03	6.23	9.38	6.00	7.96	5.99	7.51	5.98				
-15°C DB	10.13	4.22	9.40	4.10	8.31	4.36	7.95	4.24	7.60	4.75		
-7°C DB	12.26	4.19	11.48	4.16	10.61	4.53	10.40	4.79	9.48	4.60	7.74	4.21
-2°C DB	8.93	2.53	8.65	2.85	8.24	3.05	8.10	3.09	7.94	3.30	7.27	3.54
*2°C DB	9.81	2.69	9.40	2.80	8.79	3.06	8.59	3.06	8.50	3.41	8.17	3.46
7°C DB	12.48	2.66	12.00	2.70	11.28	3.20	11.00	3.18	10.30	3.41	9.85	3.58
10°C DB	13.49	2.81	13.32	2.99	12.62	3.12	12.38	3.37	11.19	3.69	10.10	3.50
15°C DB	14.20	2.50	14.06	2.53	13.34	2.87	12.79	3.16	11.64	3.50	9.40	3.13
18°C DB	14.61	2.68	14.51	2.65	13.77	2.94	13.03	3.22	11.92	3.55	8.98	2.90

Model : AHUW146A2 (HU141 U32)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	11.13	5.93	10.19	5.90	8.73	5.89	8.27	5.88				
-15°C DB	11.75	4.97	10.86	4.90	9.54	5.08	9.10	4.97	8.81	5.34		
-7°C DB	14.03	4.49	13.11	4.85	11.89	5.15	11.35	5.17	10.71	5.24	8.88	4.87
-2°C DB	10.62	3.01	10.19	3.30	9.54	3.61	9.32	3.63	9.14	3.95	8.42	4.13
*2°C DB	11.09	3.04	10.69	3.22	10.09	3.58	9.88	3.59	9.78	4.00	9.46	4.04
7°C DB	14.46	3.08	14.00	3.19	13.12	3.77	12.83	3.80	11.97	4.08	11.47	4.20
10°C DB	15.11	3.17	14.94	3.39	14.27	3.63	14.05	3.83	12.49	3.97	11.62	4.06
15°C DB	15.93	2.81	15.65	2.81	14.96	3.21	14.53	3.56	13.35	4.00	10.89	3.62
18°C DB	16.38	2.85	16.15	2.95	15.44	3.31	14.83	3.63	13.87	4.10	10.44	3.35

LWT : Leaving Water Temperature
TC: Total Capacity (kW)
* : Total Capacity (Averaged value including defrost effect, kW)
PI : Power Input(kW)
Notice : • Measuring procedure follows EN-14511
• Above table values may not be matched according to installation condition

8. Performance Data

Model : AHUW166A2 (HU161 U32)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	11.84	5.83	10.90	5.80	9.50	5.79	9.03	5.78				
-15°C DB	13.35	5.75	12.30	5.73	10.73	5.71	10.20	5.70	10.00	5.88		
-7°C DB	15.93	5.96	14.80	5.61	12.56	5.34	12.05	5.42	11.83	5.84	9.98	5.51
-2°C DB	12.38	3.51	11.76	3.73	10.82	4.06	10.51	4.17	10.30	4.63	9.56	4.72
*2°C DB	12.28	3.37	11.90	3.62	11.33	4.00	11.14	4.13	11.03	4.60	10.74	4.62
7°C DB	16.40	3.49	16.00	3.86	14.95	4.29	14.60	4.45	13.62	4.77	13.08	4.82
10°C DB	17.08	3.62	16.93	3.87	16.29	4.25	16.08	4.38	14.07	4.31	13.10	4.62
15°C DB	18.03	3.18	17.59	3.16	16.94	3.64	16.67	4.05	15.44	4.60	12.35	4.11
18°C DB	18.55	3.40	18.15	3.32	17.49	3.77	17.02	4.14	16.27	4.77	11.90	3.80

Model : AHUW128A2 (HU123 U32)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	10.03	6.23	9.38	6.00	7.96	5.99	7.51	5.98				
-15°C DB	10.13	4.22	9.40	4.10	8.42	4.44	8.04	4.36	7.66	4.68		
-7°C DB	12.26	4.19	11.48	4.16	10.49	4.54	10.02	4.61	9.37	4.58	7.73	4.23
-2°C DB	8.93	2.53	8.65	2.85	8.32	3.12	8.14	3.16	7.99	3.40	7.31	3.58
*2°C DB	9.81	2.69	9.40	2.80	8.81	3.11	8.63	3.13	8.55	3.49	8.21	3.50
7°C DB	12.48	2.66	12.00	2.70	11.49	3.27	11.28	3.31	10.52	3.54	9.94	3.64
10°C DB	13.49	2.81	13.32	2.99	12.63	3.22	12.43	3.41	11.24	3.61	10.10	3.53
15°C DB	14.20	2.50	14.06	2.53	13.18	2.84	12.77	3.14	11.70	3.51	9.45	3.15
18°C DB	14.61	2.68	14.51	2.65	13.61	2.92	13.02	3.20	12.11	3.59	9.05	2.91

Model : AHUW148A2 (HU143 U32)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	11.13	5.93	10.19	5.90	8.73	5.89	8.27	5.88				
-15°C DB	11.75	4.97	10.86	4.90	9.74	5.17	9.29	5.12	8.82	5.26		
-7°C DB	14.03	4.49	13.11	4.85	11.57	5.09	11.00	5.06	10.58	5.20	8.81	4.86
-2°C DB	10.62	3.01	10.19	3.30	9.60	3.64	9.34	3.69	9.18	4.00	8.40	4.14
*2°C DB	11.09	3.04	10.69	3.22	10.10	3.60	9.90	3.66	9.83	4.07	9.43	4.05
7°C DB	14.46	3.08	14.00	3.19	13.37	3.82	13.16	3.92	12.27	4.20	11.46	4.22
10°C DB	15.11	3.17	14.94	3.39	14.46	3.79	14.26	3.95	12.91	4.04	11.55	4.06
15°C DB	15.93	2.81	15.65	2.81	14.89	3.21	14.56	3.56	13.44	4.02	10.85	3.62
18°C DB	16.38	2.85	16.15	2.95	15.38	3.31	14.87	3.64	14.06	4.14	10.43	3.35

LWT : Leaving Water Temperature
TC: Total Capacity (kW)
* : Total Capacity (Averaged value including defrost effect, kW)
PI : Power Input(kW)
Notice : • Measuring procedure follows EN-14511
• Above table values may not be matched according to installation condition

8. Performance Data

Model : AHUW168A2 (HU163 U32)

Outdoor Temperature	LWT 30°C		LWT 35°C		LWT 40°C		LWT 45°C		LWT 50°C		LWT 55°C	
	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20°C DB	11.84	5.83	10.90	5.80	9.50	5.79	9.03	5.78				
-15°C DB	14.09	5.96	12.98	5.98	11.37	6.01	10.83	6.02	10.10	5.92		
-7°C DB	15.93	6.09	14.92	5.95	12.86	5.74	12.17	5.67	11.95	5.91	9.99	5.54
-2°C DB	12.72	3.74	12.08	3.92	11.04	4.20	10.69	4.29	10.54	4.63	9.57	4.74
*2°C DB	12.61	3.60	12.22	3.82	11.55	4.15	11.33	4.26	11.29	4.73	10.75	4.64
7°C DB	16.40	3.71	16.00	3.86	15.56	4.42	15.41	4.62	14.37	4.95	13.09	4.84
10°C DB	17.49	3.83	17.34	4.10	16.73	4.51	16.53	4.65	15.23	4.69	13.11	4.64
15°C DB	18.05	3.19	17.61	3.18	16.95	3.66	16.68	4.07	15.45	4.62	12.36	4.13
18°C DB	18.57	3.42	18.17	3.34	17.50	3.79	17.04	4.16	16.28	4.79	11.91	3.82

LWT : Leaving Water Temperature
TC: Total Capacity (kW)
* : Total Capacity (Averaged value including defrost effect, kW)
PI : Power Input(kW)
Notice : • Measuring procedure follows EN-14511
• Above table values may not be matched according to installation condition

9. Electric Characteristics

Wiring of Main Power Supply and Equipment Capacity

1. Separate power supply lines for the indoor units from outdoor unit..
2. Bear in mind ambient conditions (ambient temperature,direct sunlight, rain water,etc.) when proceeding with the wiring and connections.
3. The wire size is the minimum value for metal conduit wiring. The power cord size should be 1 rank thicker taking into account the line voltage drops. Make sure the power-supply voltage does not drop more than 10%.
4. Specific wiring requirements should adhere to the wiring regulations of the region.
5. Power supply cords of parts of appliances for outdoor use should not be lighter than polychloroprene sheathed flexible cord.
6. Don't install an individual switch or electrical outlet to disconnect each of indoor unit separately from the power supply.

⚠ CAUTION

- **Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations and guidance of each electric power company.**
- **Make sure to use specified wires for connections so that no external force is imparted to terminal connections. If connections are not fixed firmly, it may cause heating or fire.**
- **Make sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.**

⚠ CAUTION

- **Some installation site may require attachment of an earth leakage breaker. If no earth leakage breaker is installed, it may cause an electric shock.**
- **Do not use anything other than breaker and fuse with correct capacity. Using fuse and wire or copper wire with too large capacity may cause a malfunction of unit or fire.**

9. Electric Characteristics

Model			Core Component Electrical Spec.								MCA, MOP & Circuit Breaker								
			Compressor		Electric Heater			Sanitary Tank Heater			For Heat Pump			For Electric Heater (without S/Heater)			For Electric Heater (with S/Heater)		
Indoor	Outdoor	Power Supply	RLA (A)	FLA (A)	Capacity (kW)	Power	RLA (A)	Capacity (kW)	Power Supply	RLA (A)	MCA (A)	MOP (A)	Circuit Breaker (A)	MCA (A)	MOP (A)	Circuit Breaker (A)	MCA (A)	MOP (A)	Circuit Breaker (A)
AHNW03604A2 (HN0314 NK2)	AHUW036A2 (HU031 UE2)	1~ 220-240V 50Hz	8.0	10.0	-	-	-	3	1~230V	12.5	9.0	16.6	20	15	27	30	25	45	40
AHNW09604A2 (HN0914 NK2)	AHUW056A2 (HU051 U42)		9.7	15.0	2+2	1~230V	8.3				13.0	23.9	20	15	27	30	25	45	40
	AHUW076A2 (HU071 U42)																		
	AHUW096A2 (HU091 U42)																		
AHNW16606A2 (HN1616 NK2)	AHUW126A2 (HU121 U32)		17.0	25.0	3+3		12.5				22.0	40.3	40	23	41	40	29	53	50
	AHUW146A2 (HU141 U32)																		
	AHUW166A2 (HU161 U32)																		
AHNW16809A2 (HN1639 NK2)	AHUW128A2 (HU123 U32)	3N~ 380-415V 50Hz	5.3	9.9	3+3+3	3N~400V	8.7				6.0	11.1	10	12	22	20	21	38	30
	AHUW148A2 (HU143 U32)																		
	AHUW168A2 (HU163 U32)																		

Note :

1. Voltage range
   Voltage supplied to the unit terminals should be within the minimum and maximum range
2. Maximum allowable voltage unbalance betweenphase is 2 %
3. FLA is measured as running current of fan motor(s) at rated test condition.
4. Select wire spec. based on the larger value of MCA.
5. MSC means the Max. current during the starting ofcompressor.
6. Recommended circuit breaker is ELCB (Earth Leakage Circuit Breaker)
7. MFA is used to select the circuit breaker and ground fault circuit interrupter (earth leakage circuit breaker)

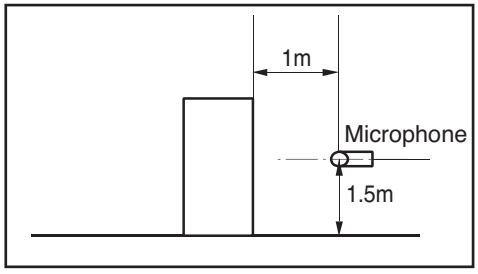
Symbols:

MCA : Minimum Circuit Amperes (A)
MSC : Maximum Starting Current(A)
RLA : Rated Load Amperes (A)
OFM : Outdoor Fan Motor
IFM : Indoor Fan Motor
kW : Fan Motor rated output (kW)
FLA : Full Load Amperes (A)

10. Noise Criteria

10.1 Sound pressure level

Overall

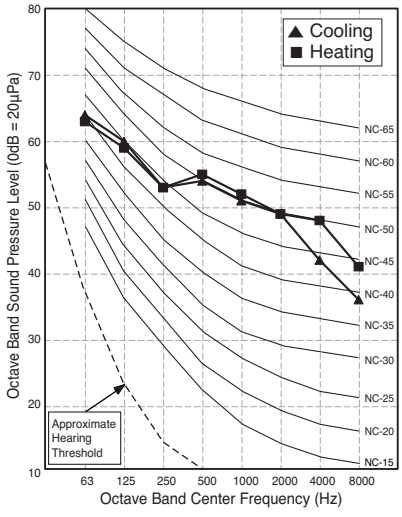


Notes:
- Sound measured at 1m away with 1.5m height.
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- Reference acoustic pressure acoustic 0dB = 20μPa.
- Sound level will vary depending on a range of factors such as the construction(acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

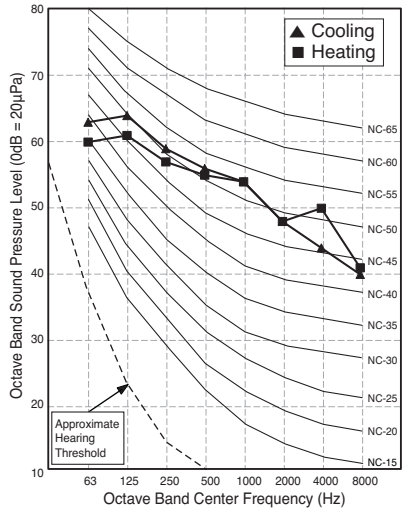
Model	Sound Pressure Level (dB(A))	
	Cooling	Heating
AHUW036A2 (HU031 UE2)	52	52
AHUW056A2 (HU051 U42)	54	54
AHUW076A2 (HU071 U42)	54	54
AHUW096A2 (HU091 U42)	54	54
AHUW126A2 (HU121 U32)	54	53

Model	Sound Pressure Level (dB(A))	
	Cooling	Heating
AHUW146A2 (HU141 U32)	54	53
AHUW166A2 (HU161 U32)	54	53
AHUW128A2 (HU123 U32)	54	53
AHUW148A2 (HU143 U32)	54	53
AHUW168A2 (HU163 U32)	54	53

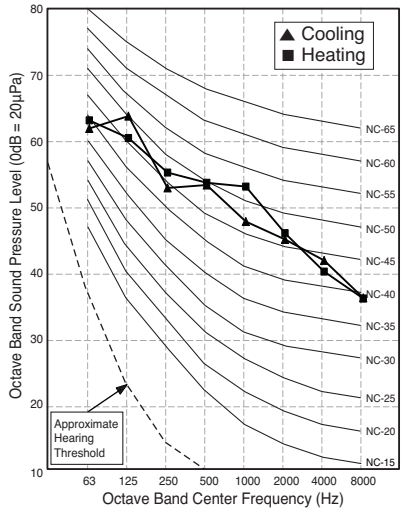
AHUW036A2 (HU031 UE2)



AHUW056A2 (HU051 U42)
AHUW076A2 (HU071 U42)
AHUW096A2 (HU091 U42

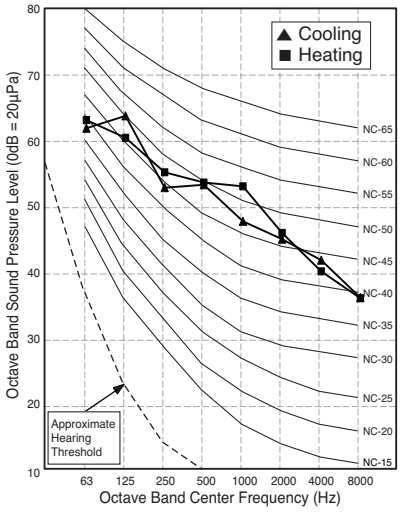


AHUW126A2 (HU121 U32)
AHUW146A2 (HU141 U32
AHUW166A2 (HU161 U32)



10. Noise Criteria

AHUW128A2 (HU123 U32)
AHUW148A2 (HU143 U32
AHUW168A2 (HU163 U32)



10. Noise Criteria

10.2 Sound power level

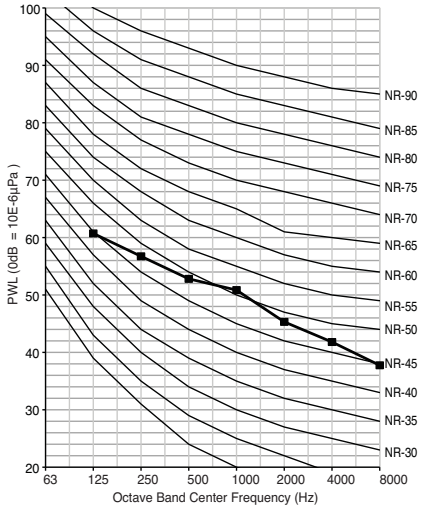
Notes:

1. Reference acoustic intensity 0dB = 10E-6μW/m²
2. Sound level will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of particular room in which the equipment in installed.

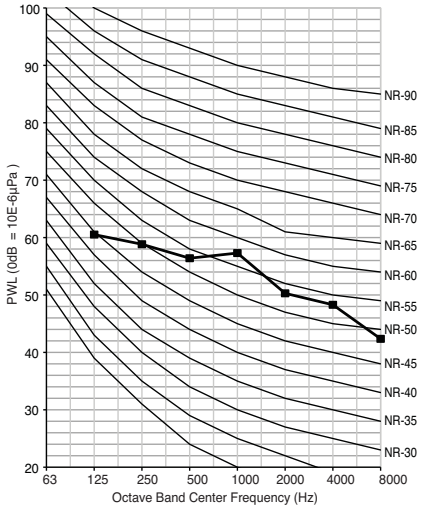
Model	Sound Power Level (dB(A))
	H
AHUW036A2 (HU031 UE2)	60
AHUW056A2 (HU051 U42)	65
AHUW076A2 (HU071 U42)	65
AHUW096A2 (HU091 U42)	65
AHUW126A2 (HU121 U32)	66

Model	Sound Power Level (dB(A))
	H
AHUW146A2 (HU141 U32)	68
AHUW166A2 (HU161 U32)	69
AHUW128A2 (HU123 U32)	66
AHUW148A2 (HU143 U32)	68
AHUW168A2 (HU163 U32)	69

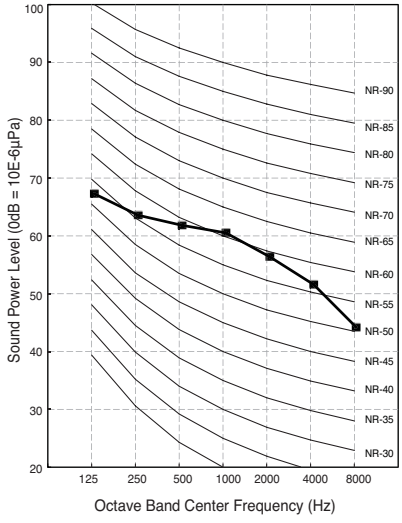
AHUW036A2 (HU031 UE2)



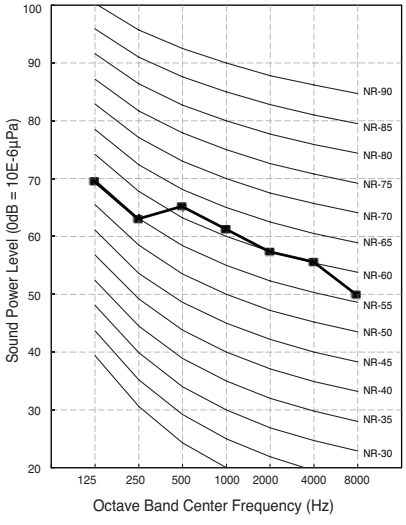
AHUW056A2 (HU051 U42)
AHUW076A2 (HU071 U42)
AHUW096A2 (HU091 U42)



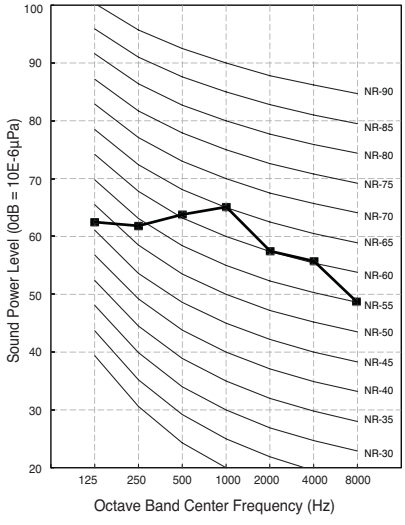
AHUW126A2 (HU121 U32)



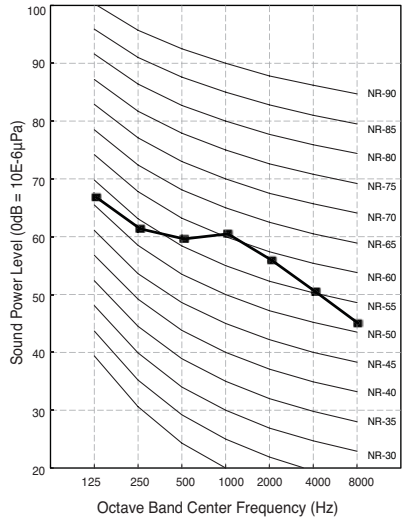
AHUW146A2 (HU141 U32)



AHUW166A2 (HU161 U32)

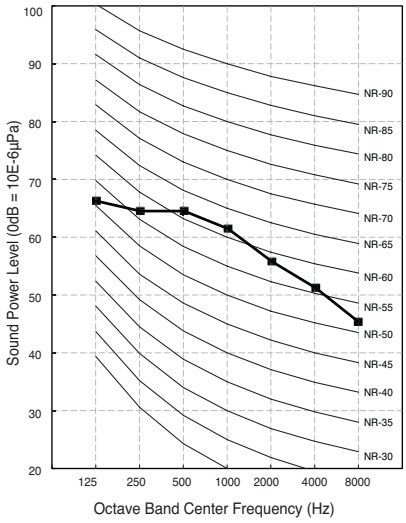


AHUW128A2 (HU123 U32)

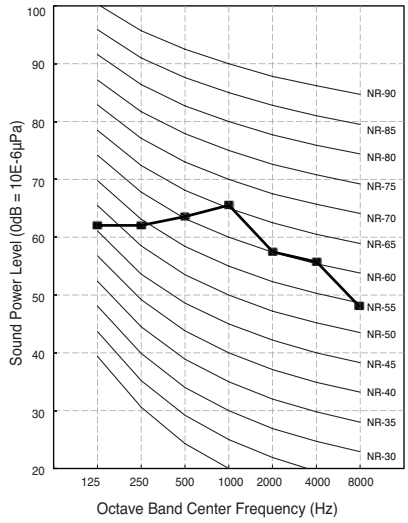


10. Noise Criteria

AHUW148A2 (HU143 U32)



AHUW168A2 (HU163 U32)



THERMAV™

Part 3. Design and installation

1. Alternative Refrigerant R410A

2. Select the Best Location

3. Installation Space

4. Water Control

5. Lifting Method

6. Installation

7. Electrical Wiring

8. Test Run

1. Alternative Refrigerant R410A

• The refrigerant R410A has the property of higher operating pressure in comparison with R22.
Therefore, all materials have the characteristics of higher resisting pressure than R22 ones and this characteristic should be also considered during the installation.
R410A is an azeotrope of R32 and R125 mixed at 50:50, so the ozone depletion potential (ODP) of R410A is 0.

⚠CAUTION

- The wall thickness of the piping should comply with the relevant local and national regulations for the designed pressure 3.8MPa
- Since R410A is a mixed refrigerant, the required additional refrigerant must be charged in its liquid state. If the refrigerant is charged in its gaseous state, its composition changes and the system will not work properly.
- Do not place the refrigerant container under the direct rays of the sun to prevent it from exploding.
- For high-pressure refrigerant, any unapproved pipe must not be used.
- Do not heat pipes more than necessary to prevent them from softening.
- Be careful not to install wrongly to minimize economic loss because it is expensive in comparison with R22.

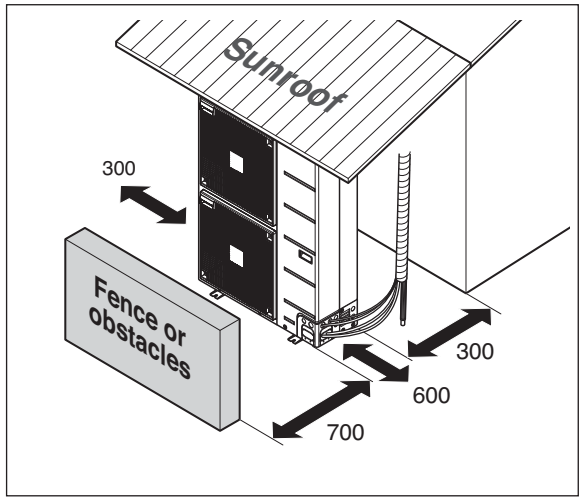
2. Select the Best Location

1. Select space for installing unit, which will meet the following conditions:
   - No direct thermal radiation from other heat sources
   - No possibility of annoying neighbors by noise from unit• No exposition to strong wind
   - With strength which bears weight of unit
   - Note that drain flows out of unit when heating
   - With space for air passage and service work shown next
   - Because of the possibility of fire, do not install unit to the space where generation, inflow, stagnation, and leakage of combustible gas is expected.
   - Avoid unit installation in a place where acidic solution and spray (sulfur) are often used.
   - Do not use unit under any special environment where oil, steam and sulfuric gas exist.
   - It is recommended to fence round the unit in order to prevent any person or animal from accessing the unit.
   - If installation site is area of heavy snowfall, then the following directions should be observed.
     - Make the foundation as high as possible.
     - Fit a snow protection hood.
2. Select installation location considering following conditions to avoid bad condition when additionally performing defrost operation.
   - Install the unit at a place well ventilated and having a lot of sunshine in case of installing the product at a place with a high humidity in winter (near beach, coast, lake, etc).
     (Ex) Rooftop where sunshine always shines.
   - Performance of heating will be reduced and preheat time of the unit may be lengthened in case of installing the unit in winter at following location:
     - Shade position with a narrow space
     - Location with much moisture in neighboring floor.
     - Location with much humidity around.
     - Location where ventilation is good.
       It is recommended to install the unit at a place with a lot of sunshine as possible as.
     - Location where water gathers since the floor is not even.
3. When installing the unit in a place that is constantly exposed to a strong wind like a coast or on a high story of a building, secure a normal fan operation by using a duct or a wind shield.
   - Install the unit so that its discharge port faces to the wall of the building.
     Keep a distance 300mm or more between the unit and the wall surface.
   - Supposing the wind direction during the operation season of the air conditioner, install the unit so that the discharge port is set at right angle to the wind direction.

3. Installation Space

3.1 General considerations

- If a sunroof is built over the unit to prevent direct sunlight or rain exposure, make sure that heat radiation from the heat exchanger is not restricted.
- Ensure that the spaces indicated by arrows around front, back and side of the unit.
- Do not place animals and plants in the path of the warm air.
- Take the weight of the unit into account and select a place where noise and vibration are minimum.
- Select a place so that the warm air and noise from the unit do not disturb neighbors.
- The surface of the ground or the structure must be strong enough to bear the weight of the unit.



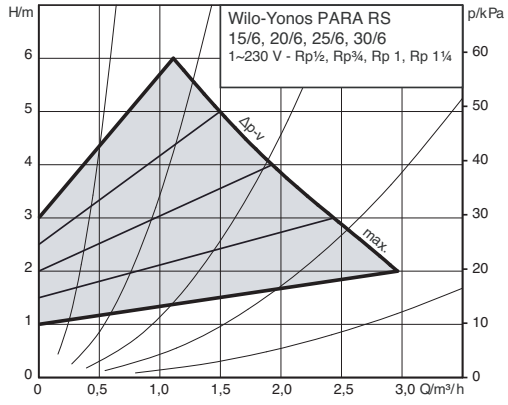
4. Water Control

4.1 Water Pump Performance Graph

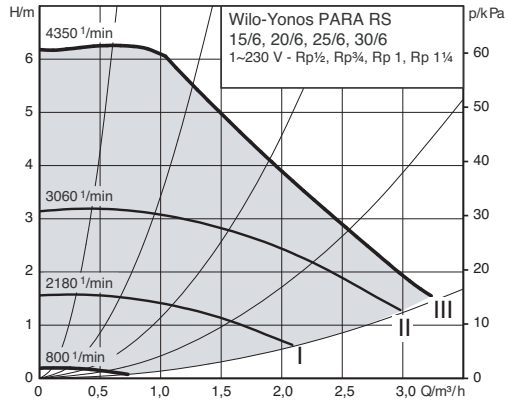
The water pump is three speed-adjustable (Maximum / Medium / Minimum), so it may be required to change default water pump speed in case of noise by water flow. In most case, however, it is strongly recommended to set speed as Maximum.

Product Heating Capacity: 3 kW

Δp-v (variable)

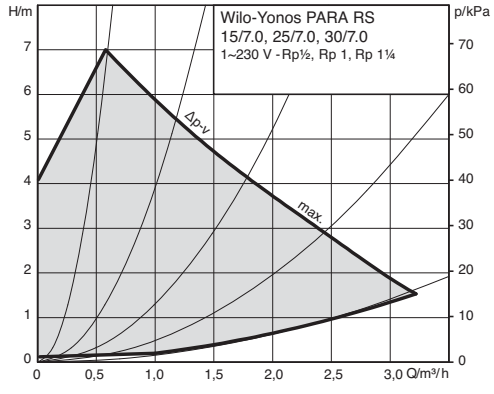


Constant speed I, II, III

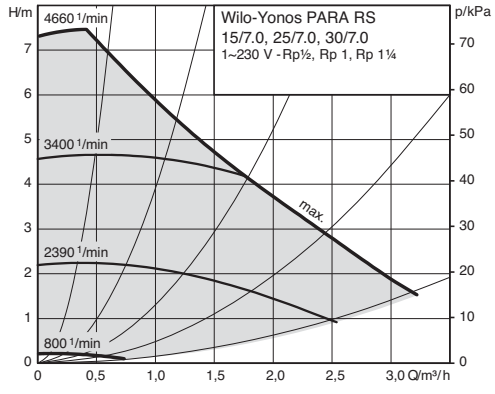


Product Heating Capacity: 5, 7, 9 kW

Δp-v (variable)



Constant speed I, II, III



Max. : high speed setting

Warning : Selecting a water flowrate outside the curves can cause damage to or malfunction of the unit.

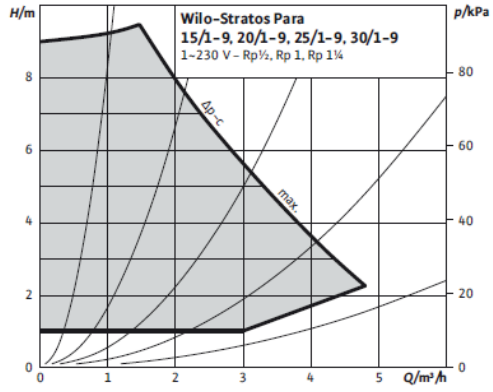
: Operation cutoff range

* To secure enough water flow rate, do not set water pump speed as "Min."

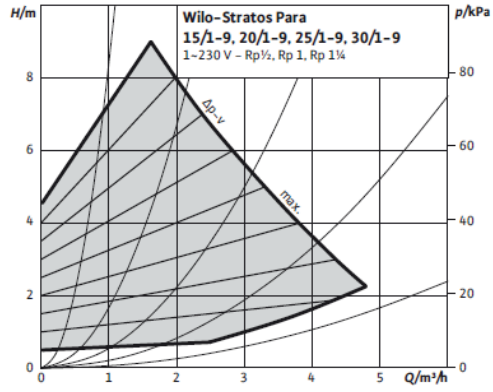
4. Water Control

Product Heating Capacity : 12, 14, 16 kW

-c (constant)



Δp-v (variable)



: Operation cutoff range

⚠WARNING

Selecting a water flowrate outside the curves can cause damage to or malfunction of the unit.

4. Water Control

4.2 Water quality

Water quality should be complied with EN 98/83 EC Directives. Requirement for resolved chemical ingredients is following table. Detailed water quality condition can be found in EN 98/83 EC Directives.

Parameter	Value	Parameter	Value
Acrylamide	0.10 *μg/l*	Fluoride	1.5 *mg/l*
Antimony	5.0 *μg/l*	Lead	10 *μg/l*
Arsenic	10 *μg/l*	Mercury	1.0 *μg/l*
Benzene	1.0 *μg/l*	Nickel	20 *μg/l*
Benzo(a)pyrene	0.010 *μg/l*	Nitrate	50 *mg/l*
Boron	1.0 *mg/l*	Nitrite	0.50 *mg/l*
Bromate	10 *μg/l*	Pesticides	0.10 *μg/l*
Cadmium	5.0 *μg/l*	Pesticides — Total	0.50 *μg/l*
Chromium	50 *μg/l*	Polycyclic aromatic hydrocarbons	0.10 *μg/l*
Copper	2.0 *mg/l*	Selenium	10 *μg/l*
Cyanide	50 *μg/l*	Tetrachloroethene and Trichloroethene	10 *μg/l*
1.2-dichloroethane	3.0 *μg/l*	Trihalomethanes — Total	100 *μg/l*
Epichlorohydrin	0.10 *μg/l*	Vinyl chloride	0.50 *μg/l*

- If the unit is installed at existing hydraulic water loop, it is important to clean hydraulic pipes to remove sludge and scale.
- Installing sludge strainer in the water loop is very important to prevent performance degrade.
- Chemical treatment to prevent rust should be performed by installer.

4.3 Frost protection

In areas of the country where entering water temperatures drop below 0 °C, the water pipe must be protected by using an approved antifreeze solution. Consult your AWHP unit supplier for locally approved solutions in your area. Calculate the approximate volume of water in the system. (Except the AWHP unit.) And add six litters to this total volume to allow for the water contained in AWHP unit.

Antifreeze type	Antifreeze mixing ratio					
	0°C	-5°C	-10°C	-15°C	-20°C	-25°C
Ethylene glycol	0%	12%	20%	30%	-	-
Propylene glycol	0%	17%	25%	33%	-	-

- Use only one of the above antifreeze.
- If a antifreeze is used, pressure drop and capability degradation of the system can be occurred.
- If one of antifreezes is used, corrosion can be occurred. So please add corrosion inhibitor.
- Please check the concentration of the antifreeze periodically to keep same concentration.
- When the antifreeze is used (for installation or operation), take care to ensure that antifreeze must not be touched.
- Ensure to respect all laws and norms of your country about Anti-freeze usage.

5. Lifting Method

• When carrying the suspended unit, pass the ropes between legs of base panel under the unit.
• Always lift the unit with ropes attached at four points so that impact is not applied to the unit.
• Attach the ropes to the unit at an angle of 40° or less.
• Use only accessories and parts which are of the designated specification when installing.

Be very careful while carrying the unit.

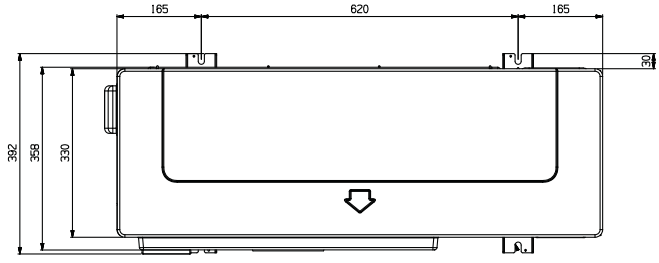
- Do not have only one person carry the unit if it is more than 20 kg (44.1 lbs).
- PP bands are used to pack some products. Do not use them as a mean for transportation because they are dangerous.
- Do not touch heat exchanger fins with your bare hands. Otherwise you may get a cut in your hands.
- Tear plastic packaging bag and scrap it so that children cannot play with it. Otherwise plastic packaging bag may suffocate children to death.
- When carrying the unit, be sure to support it at 4-points. Carrying and lifting the unit with 3-point support may make it unstable, resulting in a fall.

6. Installation

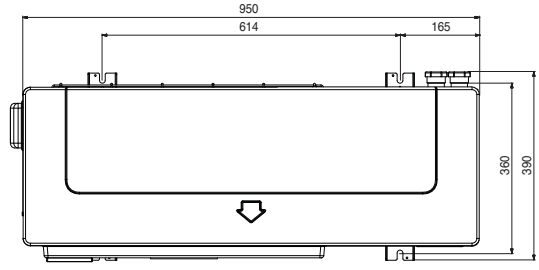
6.1 Foundation for Installation

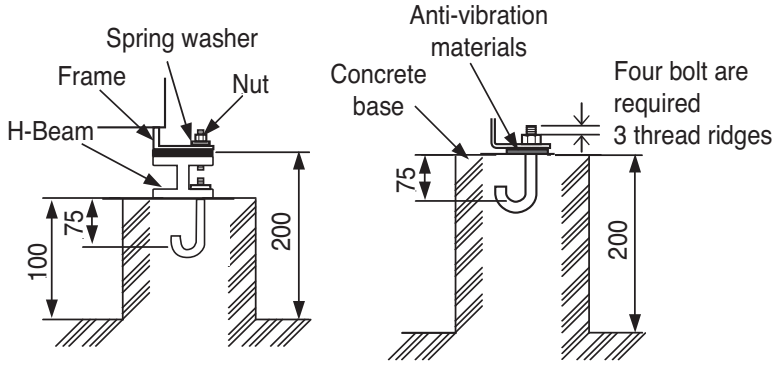
- Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise after installation.
- Fix the unit securely by means of the foundation bolts. (Prepare 4sets of M12 foundation bolts, nuts and washers each which are available on the market.)
- It is best to screw in the foundation bolts until their length are 20mm from the foundation surface.

[UN4 / UN3 Chassis]



[U4 Chassis]

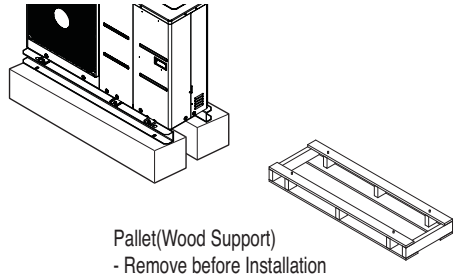




Foundation bolt executing method [Unit:mm]

⚠ WARNING

- Be sure to remove the Pallet(Wood Support) of the bottom side of the unit Base Pan before fixing the bolt. It may cause the unstable state of the unit settlement, and may cause freezing of the heat exchanger resulting in abnormal operations.
- Be sure to remove the Pallet(Wood Support) of the bottom side of the unit before welding. Not removing Pallet(Wood Support) causes hazard of fire during welding.



Pallet(Wood Support)
- Remove before Installation

6.2 Water Piping and Water Circuit Connection

1) General considerations

Followings are should be considered before beginning water circuit connection.

- Service space should be secured.
- Water pipes and connections should be cleaned using water.
- Space for installing external water pump should be provided if internal water pump capacity is not enough for installation field.
- Never connect electric power while proceeding water charging.

2) Water piping and water circuit connection

Definition of terms are as follow :

- Water piping : Installing pipes where water is flowing inside the pipe.
- Water circuit connecting : Making connection between the unit and water pipes or between pipes and pipes. Connecting valves or elbows are, for example, in this category.

Configuration of water circuit is shown in 6.3 Installation Scenes. All connections should be complied with presented diagram.

While installing water pipes, followings should be considered :

- While inserting or putting water pipes, close the end of the pipe with pipe cap to avoid dust entering.
- When cutting or welding the pipe, always be careful that inner section of the pipe should not be defective. For example, no weldments or no burrs are found inside the pipe.
- Drain piping should be provided in case of water discharge by the operation of the safety valve. This situation can be happened when the internal pressure is over 3.0 bar and water inside the indoor unit will be discharged to drain hose.

While connecting water pipes, followings should be considered :

- Pipe fittings (e.g. L-shape elbow, T-shape tee, diameter reducer, etc) should be tightened strongly to be free from water leakage.
- Connected sections should be leakage-proof treatment by applying tefron tape, rubber bushing, sealant solution, etc.
- Appropriate tools and tooling methods should be applied to prevent mechanical breakage of the connections.
- Operation time of flow control valve(e.g. 3way valve or 2way valve) should be less than 90 seconds.
- Drain hose should be connected with drain piping.

⚠ WARNING

- **Water condensation on the floor**
  While cooling operation, it is very important to keep leaving water temperature higher than 16 °C. Otherwise, dew condensation can be occurred on the floor.
  If floor is in humid environment, do not set leaving water temperature below 18 °C.
- **Water condensation on the radiator**
  While cooling operation, cold water may not flow to the radiator. If cold water enters to the radiator, dew generation on the surface of the radiator can be occurred.
- **Drainage treatment**
  While cooling operation, condensed dew can drop down to the bottom of the unit. In this case, prepare drainage treatment (for example, vessel to contain condensed dew) to avoid water drop.
- **Shutoff Valve**
- **While assembling two shut-off valves, that are found inside 'AWHP Installation Kit', pop sound will be heard when valve is open or close by rotating handles. It is normal condition because the sound is due to leakage of charged nitrogen gas inside the valve. The nitrogen gas is applied to secure quality assurance.**
- **Before starting water charging, these two shut-off valves should be assembled with water inlet and outlet pipe of the indoor unit.**

6. Installation

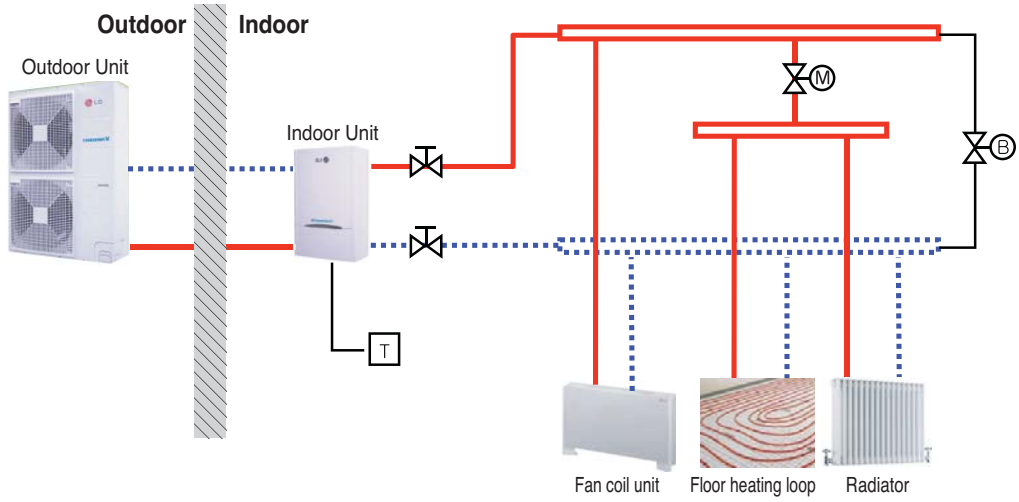
6.3 Installation Scenes

If is installed with pre-existing boiler, the boiler and THERMAV should not be operated together. If entering water temperature of THERMAV is above 57 °C, the system will stop operation to prevent mechanical damage of the unit. For detailed electric wiring and water piping, please contact authorized installer.

Some installation scenes are presented for example. As these scenes are conceptual figures, installer should optimize the installation scene according to the installation conditions.

1) CASE 1: Connecting heat emitters for heating and cooling

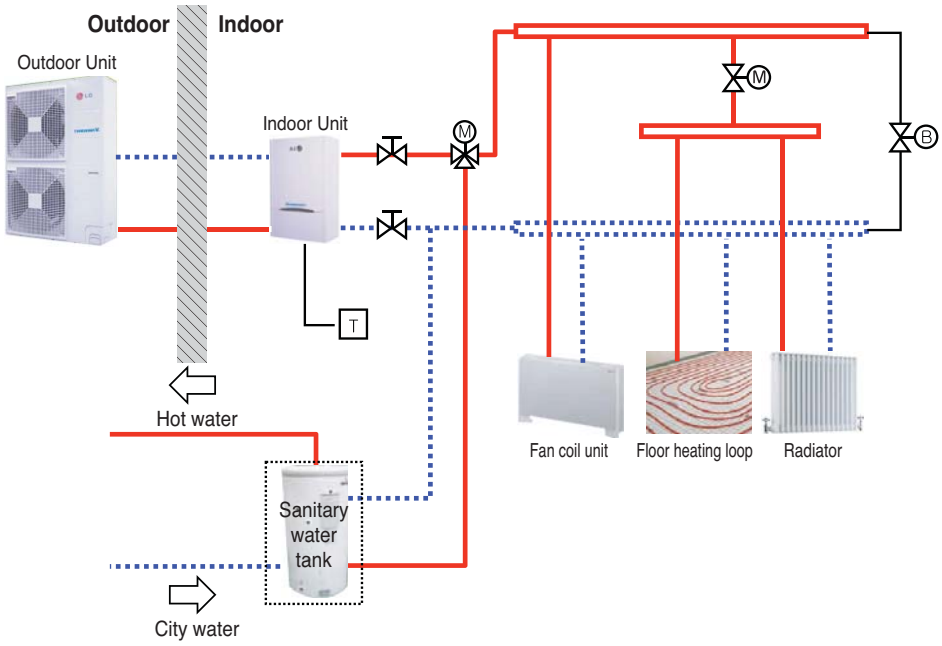
(Under floor loop, Fan coil unit, and Radiator)



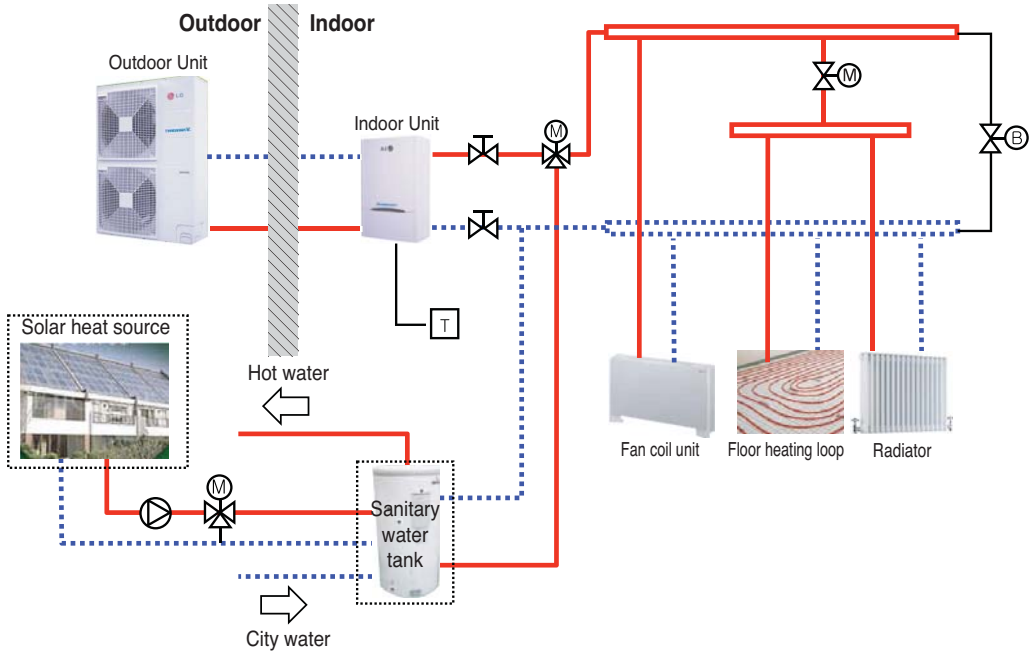
High Temperature		T	Room Thermostat(Field supply)		Shut-off valve
Low Temperature		M	2way valve (Field supply)	B	By-pass valve(Field supply)

2) CASE 2: Connecting sanitary water tank

(Under floor loop, Fan coil unit, and Radiator)



3) CASE 3: Connecting Solar thermal system



High Temperature	T	Room Thermostat(Field supply)	
Low Temperature	M	2way valve (Field supply)	M 3way valve (Field supply)
Shut-off valve	B	By-pass valve(Field supply)	Pump(Field supply)

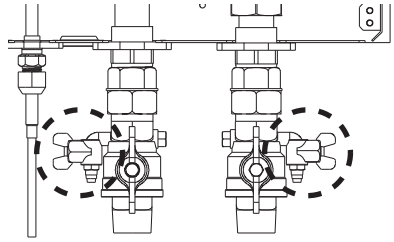
6. Installation

6.4 Water charging

For water charging, please follow below procedures.

Step 1. Open all valves of whole water circuit. Supplied water should be charged not only inside the indoor unit, but also in the under floor water circuit, sanitary water tank circuit, FCU water circuit, and any other water circuits controlled by the product.

Step 2. Connect supply water into drain valve and fill valve located at the side of the shut-off valve.



> **⚠ CAUTION**
>
> No water-leakage permitted at the drain and fill valve. Leakage-proof treatment which is described in previous section should be applied

Step 3. Start to supply water. While supplying water, following should be kept.
- Pressure of supplying water should be 2.0 bar approximately.
- For supplying water pressure, time to be taken from 0 bar to 2.0 bar should be more than 1 minute. Sudden water supply can yield water drain through safety valve.
- Fully open the cap of air vent to assure air purging. If air is exist inside the water circuit, then performance degrade, noise at the water pipe, mechanical damage at the surface of electric heater coil.

Step 4. Stop water supplying when the pressure gage located in front of the control panel indicates 2.0 bar.

Step 5. Close drain valve and fill valve. Then wait for 20~30 seconds to observe water pressure being stabilized.

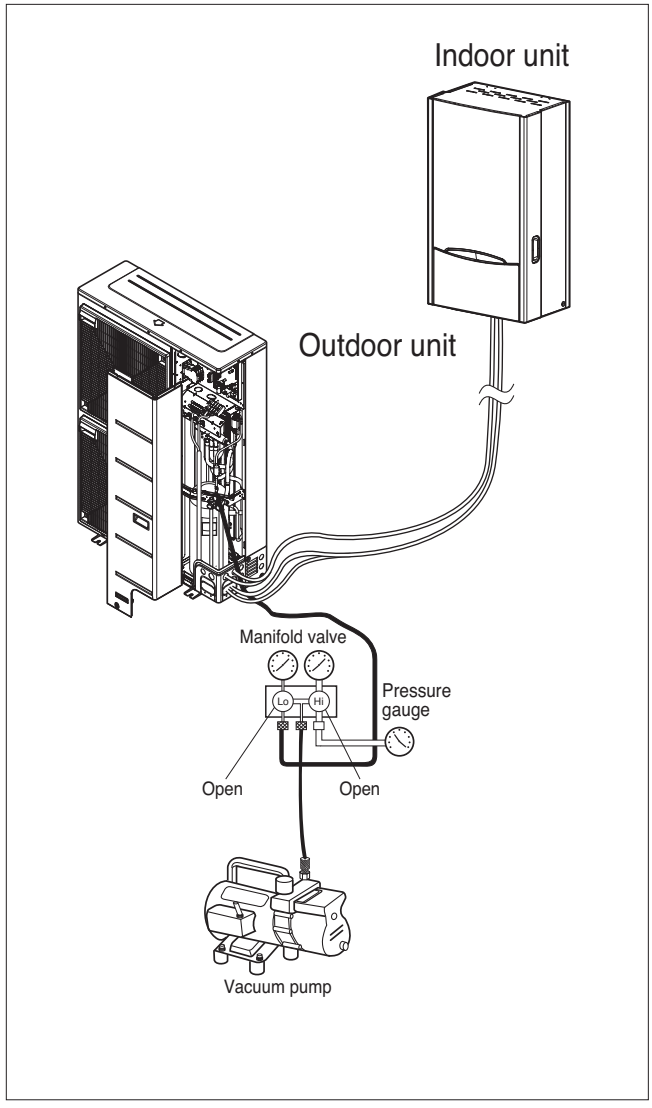
Step 6. If following conditions are satisfactory, then go to step 7(pipe insulation). Otherwise, go to step 3.
- Pressure gage indicates 2.0 bar. Note that sometimes pressure in decreased after step 5 due to water charging inside expansion vessel.
- No air purging sound is heard or no water drop are popping out from air vent.

6.5 Evacuation

1. Connect the charge hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit.
   Confirm the "Lo and Hi" knob of the manifold valve is open. Then, run the vacuum pump.
   The operation time for evacuation varies with tubing length and capacity of the pump. The following table shows the time required for evacuation.

Required time for evacuation when 30 gal/h vacuum pump is used	
If tubing length is less than 10 m(33 ft)	If tubing length is longer than 10 m(33 ft)
30 min. or more	60 min. or more
0.5 torr or less	

2. When the desired vacuum is reached, close the "Lo and Hi" knob of the manifold valve and stop the vacuum pump.



Finishing the job

1. With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
2. Turn the valve stem of gas side valve counter-clockwise to fully open the valve.
3. Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
4. Replace the flare nut and its bonnet on the gas side service port and fasten the flare nut securely with an adjustable wrench. This process is very important to prevent leakage from the system.
5. Replace the valve caps at both gas and liquid side service valves and fasten them tight.
   This completes air purging with a vacuum pump.
   The air conditioner is now ready to test run.

7. Electrical Wiring

7.1 Areas of Caution

1. Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations and guidance of each electric power company.

⚠ WARNING

Be sure to have authorized electrical engineers do the electric work using special circuits in accordance with regulations and this installation manual. If power supply circuit has a lack of capacity or electric work deficiency, it may cause an electric shock or fire.

2. Install the Unit transmission line away from the power source wiring so that it is not affected by electric noise from the power source. (Do not run it through the same conduit.)
3. Be sure to provide designated grounding work to Unit.

⚠ CAUTION

Be sure to correct the unit to earth. Do not connect earth line to any gas pipe, liquid pipe, lightening rod or telephone earth line. If earth is incomplete, it may cause an electric shock.

4. Give some allowance to wiring for electrical part box of Units, because the box is sometimes removed at the time of service work.
5. Never connect the main power source to terminal block of transmission line. If connected, electrical parts will be burnt out.
6. Only the transmission line specified should be connected to the terminal block for Unit transmission.

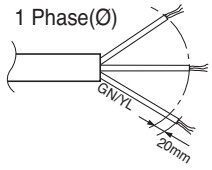
⚠ CAUTION

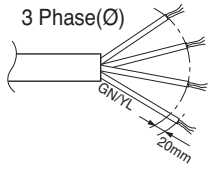
- **This product have reversed phase protection detector that only works when the power is turned on. If there exists black out or the power goes on and off which the product is operating, attach a reversed phase protection circuit locally. running the product in reversed phase may break the compressor and other parts.**
- **Use the 2-core shield cables for communication lines. Never use them together with power lines.**
- **The conductive shielding layer of cable should be grounded to the metal part of both units.**
- **Never use multi-core cable**
- **As this unit is equipped with an inverter, to install a phase leading capacitor not only will deteriorate power factor improvement effect, but also may cause capacitor abnormal heating. Therefore, never install a phase leading capacitor.**
- **Make sure that the power unbalance ratio is not greater than 2%. If it is greater, the unit's lifespan will be reduced.**
- **Introducing with a missing N-phase or with a mistaken N-phase will break the equipment.**

7. Electrical Wiring

◆ Wire specification

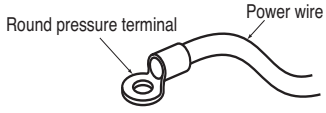
Power Cable Specification : The power cord connected to the outdoor unit should be complied with IEC 60245 or HD 22.4 S4(Rubber insulated cord, type 60245 IEC 66 or H07RN-F)





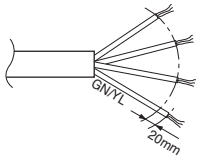
If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

Terminal Specification of Power Cable and related Cautions :
Use round pressure terminals for connections to the power terminal block.



When none are available, follow the instructions below.
- Do not connect wiring of different thicknesses to the power terminal block. (Slack in the power wiring may cause abnormal heat.)
- When connecting wiring which is the same thickness, do as shown in the figure below.

Connecting Cable Specification : The connecting cable, being used to connect the indoor unit and outdoor unit, should be complied with IEC 60335-1 standard (This equipment shall be provided with a cord set complying with the national regulation).

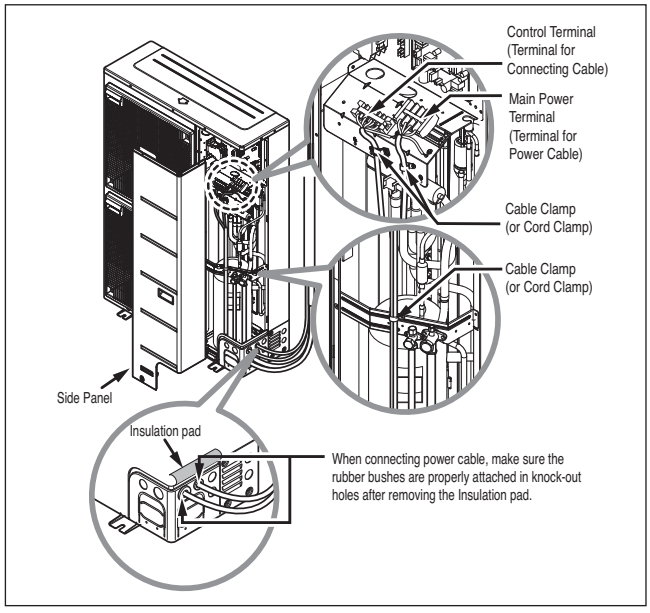


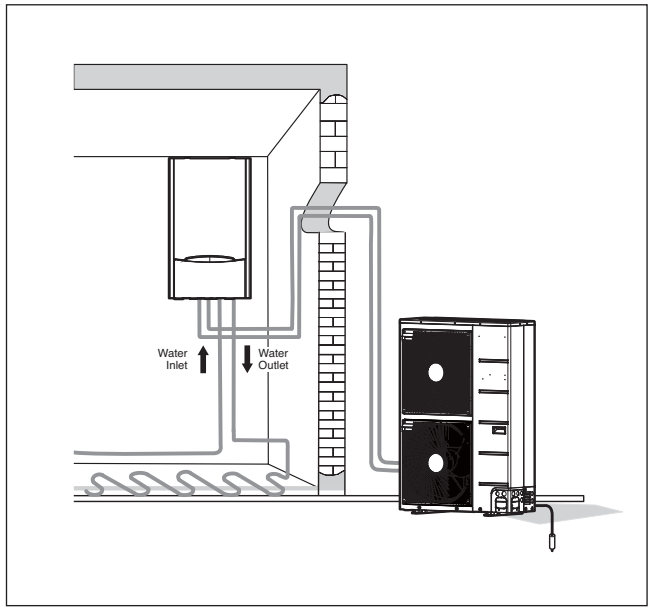
If the supply cable is damaged, it must be replaced by a special cable or assembly available from the manufacturer or its service agent.

7. Electrical Wiring

7.2 Wiring Procedure for Power Cable and Connecting Cable

Step 1. : Disassemble the side panel from the outdoor unit by loosing screws.
Step 2. : Connect Power cable to Main Power Terminal and Connecting cable to Control Terminal, respectively. See below figure for detailed information. When connecting earth cable, the diameter of cable should be bigger than 1.6mm^2 to secure safety. The earth cable is connected to the terminal block where earth symbol ⏚ is marked.
Step 3. : Use cable clamps (or cord clamps) to prevent unintended move of Power cable and Connecting cable.
Step 4. : Reassemble the side panel to the outdoor unit by fastening screws.





⚠ CAUTION

After checking and confirming following conditions, start wiring work.

1. Secure dedicated power source for the Air-to-Water heat pump. The wiring diagram (attached inside the control box of the indoor unit) is presenting related information.
2. Provide a circuit breaker switch between power source and the outdoor unit.
3. Although it is very rare case, sometimes the screws used to fasten internal wires can be loosen due to the vibration while product transportation. Check these screws and make it sure if they are all fastened tightly. If not tightened, burn-out of the wire can be occurred.
4. Check the specification of power source such as phase, voltage, frequency, etc.
5. Confirm that electrical capacity is sufficient.
6. Be sure that the starting voltage is maintained at more than 90 percent of the rated voltage marked on the name plate.
7. Confirm that the cable thickness is as specified in the power sources specification. (Particularly note the relation between cable length and thickness.)
8. Provide an ELB(electric leakage breaker) when the installation place is wet or moist.
9. The following troubles would be caused by abnormal voltage supply such as sudden voltage increasing or voltage drop-down.
   - Chattering of a magnetic switch (frequent on and off operation)
   - Physical damage of parts where magnetic switch is contacted
   - Break of fuse
   - Malfunction of overload protection parts or related control algorithms.
   - Failure of compressor start up
10. Ground wire to ground outdoor unit to prevent electrical shock.

7.3 DIP switch information

Turn off electric power supply before setting DIP switch

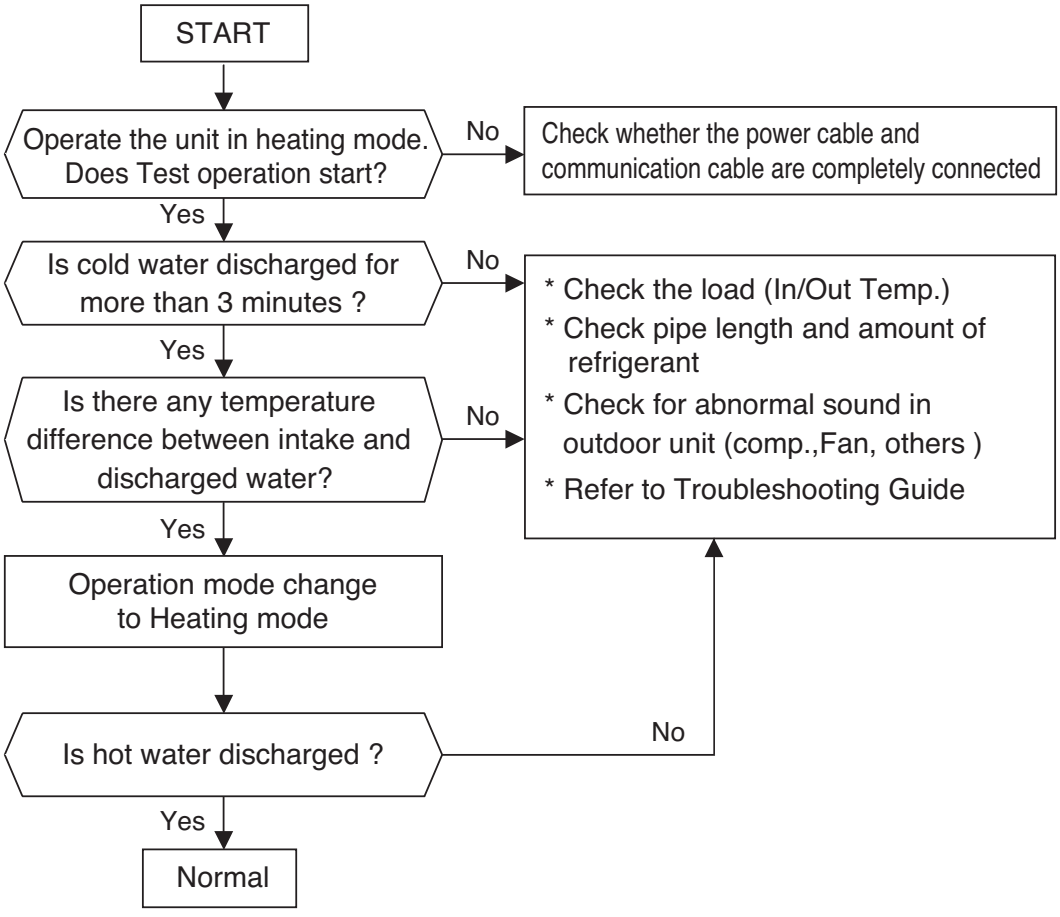
• Whenever adjusting DIP switch, turn off electric power supply to avoid electric shock.

Description	Setting	Default
Accessory installation information	2 3  Indoor unit + Outdoor unit is installed	2 3 
	2 3  Indoor unit + Outdoor unit + Sanitary water tank is installed	
	2 3  Indoor unit + Outdoor unit + Sanitary water tank + Solar thermal system is installed	
Emergency operation Level	4  High temperature cycle	4 
	4  Low temperature cycle	
External water pump installation information	5  External water pump is NOT installed	5 
	5  External water pump is installed	
Selecting electric heater capacity	6 7  Step 2 capacity is used → Full capacity	6 7 
	6 7  Step 1 capacity is used → Half capacity	
	6 7  Electric heater is not used	
Thermostat installation information	8  Thermostat is NOT installed	8 
	8  Thermostat is installed	

8. Test Run

• Before starting operation, pre-check points are described in this chapter.

8.1 Test run flow chart



8. Test Run

8.2 Check List before Starting Operation

Turn off the power before changing wiring or handling unit.

No	Problem	Reason	Solution
1	Heating or cooling is not satisfactory.	• Setting target temperature is not proper.	• Set target temperature correctly. • Check if temperature is water-based or air-based. See Function code 03 and 05 in Chapter 6.
		• Charged water is not enough.	• Check pressure gage and charge more water until pressure gage is indicating 200~250 kPa.
		• Water flow rate is low.	• Check if strainer gathers too much particles. If so, strainer should be cleaned. • Check if internal water pump speed is NOT set as 'High'. It should be set as 'High.' • Check if pressure gage indicates above 30 kPa. • Check if water pipe is getting closed due to stacked particles or lime.
2	Although electric power supply is OK (remote controller displays information), the unit does not start working.	• Water inlet temperature is too high.	• If water inlet temperature is above 55 °C, the unit does not operated for the sake of system protection.
		• Water inlet temperature is too low.	• If water inlet temperature is below 5 °C, the unit does not operated for the sake of system protection. Wait while unit warms up the water inlet temperature.
3	Water pump noise.	• Air purging is not completely finished.	• Open the cap of air purge and charge more water until pressure gage is indicating 200~250 kPa. • If water does not splash out when the tip (at the top of the hole) is pressed, then air purging is not completed yet. If well purged, the water will splash out like fountain.
		• Water pressure is low.	• Check if pressure gage indicates above 30 kPa. • Check if the expansion tank and pressure gage operates well.
4	Water is flood out through drain hose.	• Too much water is charged.	• Flood out the water by opening the switch of the safety valve until pressure gage is indicating 200~250 kPa.
		• Expansion tank is damaged.	• Replace the expansion tank.
5	Sanitary water is not hot.	• Thermal protector of water tank heater is activated.	• Open the side panel of the sanitary water tank and push the reset button of the thermal protector. (for more detail information, please refer to installation manual of sanitary water tank.)
		• Sanitary water heating is disabled.	• Push button and identify if icon is displayed on the remote controller.

8.3 Maintenance

To assure best performance of THERMA V , it is required to perform periodical check and maintenance. It is recommended to proceed following check list for once a year.

Turn off the power before proceeding maintenance

No	Category	Item	Check Point
1	Water	Water pressure	• In normal state, the pressure gage (in front of the indoor unit) should indicate 2.0~2.5 bar. • If the pressure is less than 0.3 bar, please recharge the water.
2		Strainer(Water filter)	• Close the shut-off valves and disassemble strainer. Then wash the strainer to make it clean. • While disassembling the strainer, be careful for water flood out.
3		Safety valve	• Open the switch of the safety valve and check if water is flood out through the drain hose. • After checking, close the safety valve.
4	Electricity	Terminal block wiring	• Look and inspect if there is loosen or defected connection on the terminal block.

8.4 Check before Test run

1	Check to see whether there is any refrigerant leakage, and check whether the power or transmission cable is connected properly.
2	Confirm that 500 V megger shows 2.0 MΩ or more between power supply terminal block and ground. Do not operate in the case of 2.0 MΩ or less. **NOTE**: Never carry out mega ohm check over terminal control board. Otherwise the control board may break. Immediately after mounting the unit or after leaving it turned off for an extended length of time, the resistance of the insulation between the power supply terminal board and the ground may decrease to approx. 2.0 MΩ as a result of refrigerant accumulation in the internal compressor. If the insulation resistance is less than 2.0 MΩ, turn on the main power supply.

THERMA V™

Part 4. Accessories

1. Dry Contact (PQDSA)
2. Remote Temperature Sensor (PQRSTA0)
3. Sanitary Water Tank Kit(PHLTA)
4. Solar Thermal Kit(PHLLA / PHLLB)

1. Dry Contact (PQDSA)

1.1 Overview

LG Dry Contact is a solution for automatic control of air conditioning system at the owner's behest.
In simple words, it's a switch which can be used to turn the unit On/Off after getting the signal from external sources like key-in lock, door or window switch etc specially used in Hotel rooms.

It's a small PCB that either can be fit inside the control box of Indoor unit or can be outside the unit in a plastic case if there is no sufficient space inside the Indoor unit.

Apart from simple installation, all connecting wires & an additional small PDB for looping is provided along with Dry Contact.

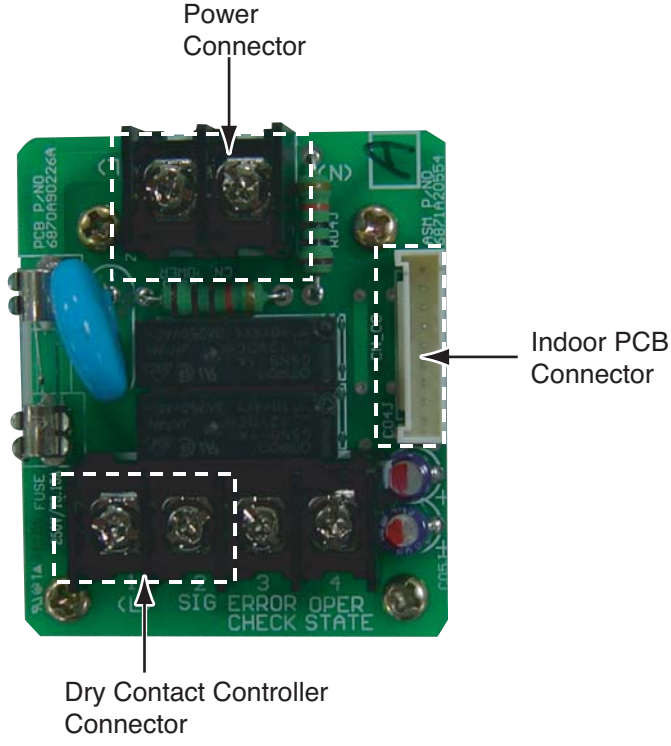
Dry Contact can be used in two ways.

1. It can be used to actually turn On/Off the system on receiving the signal from the source.
   In this case, user doesn't need to use remote controller anymore to turn On/Off the system.
   However all the further settings like temperature, fan speed, mode etc can be done through remote controller only.
2. Other way is almost similar as above but in this case, after getting the On signal from the external source, user has to turn On the system from remote controller only. Dry contact just activates the system.
   However system can be turned Off directly from the external source. So only On mode is different here.

So in both of above conditions, system can't be operated without signal from external source which prevents unnecessary use of system & facilitates its operation only when its required.

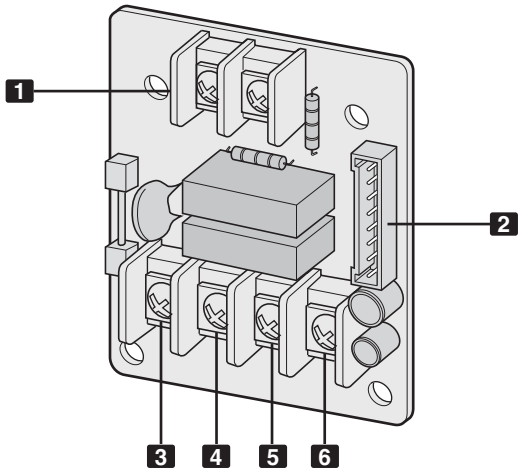
These settings can be selected from the remote controller whose details have been explained in the later part of this manual

So depending upon the requirement, Dry Contact offers a variety of applications to suit the customer's requirement in the best possible way.



1. Dry Contact (PQDSA)

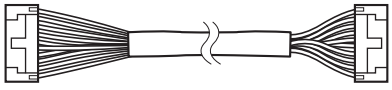
1.2 Part Description

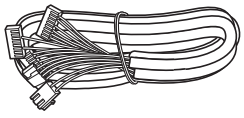


1. CN-POWER : AC 220V Connector
2. CN-CC : Indoor PCB Connector
3. CN_DRY (L) : DRY CONTROLLER Connector
4. CN_DRY (SIG) : DRY CONTROLLER Connector
5. CN_DRY (ERROR CHECK) : ERROR Check Display Connector
6. CN_DRY(OPER STATE): Operation Display Connector

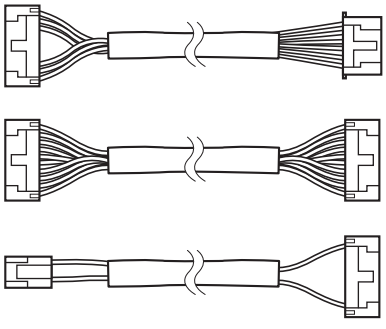
1.2.1 Accessory

Cable 1EA
(for Central controller)

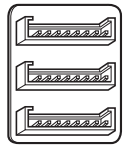




Cable 3EA
(for connecting with indoor unit)



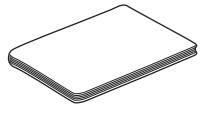
[Structure of each cable]



Connecting PCB
(6871A30056A)
***for Central Controller**

Dry contact
(For installation, 4EA)

Dry contact - 4EA
(For assembly the case)



User/Installation
Manual

NOTE

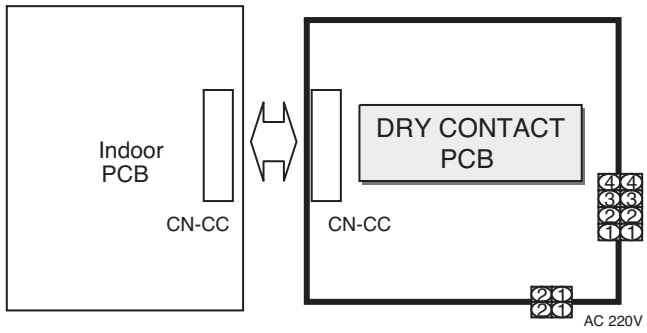
- These cable using for connection between Dry contact and Indoor unit.
- So before using these things Please check the connector type first and use cables on proper indoor unit.

1. Dry Contact (PQDSA)

1.3 Installation Guide

1.3.1 Step 1

Connect CN-CC with Indoor PCB by the cable(provided)
- Connection of Dry contact only



1. Dry Contact (PQDSA)

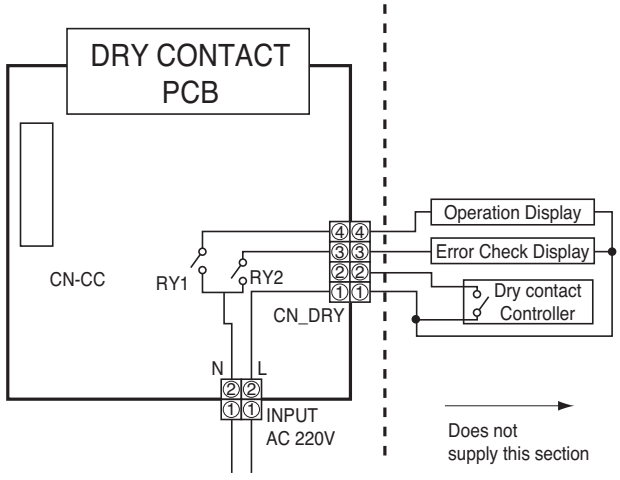
1.3.2 Step 2

Dry Contact is a solution for automatic control of HVAC system at the owner's best.
In simple words, it's a switch which can be used to turn the unit On/Off after getting the signal from external sources like key-in lock, door or window switch etc specially used in Hotel rooms.

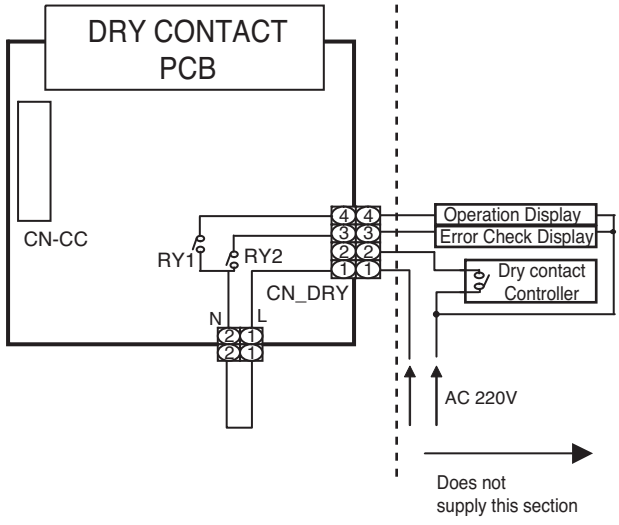
How to Install Dry Contact

Connect CN_DRY with Control Unit.

- To apply power source through Dry Contact PCB.



- To apply power source directly to external source.

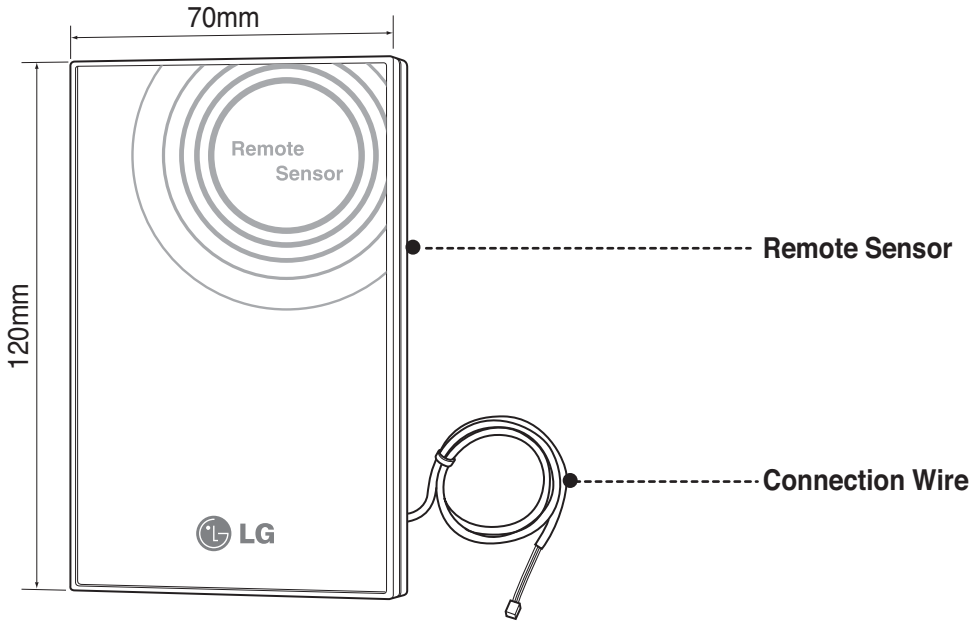


2. Remote Temperature Sensor (PQRSTA0)

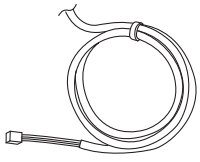
2.1 Part Description

Remote temperature sensor can be installed any place a user wants to detect the temperature.

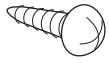
2.1.1 Remote Sensor



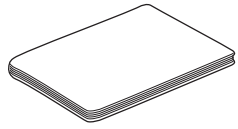
2.1.2 Parts



Connection wire
15m(1EA)



Fixing screw for
Remote Sensor(2EA)



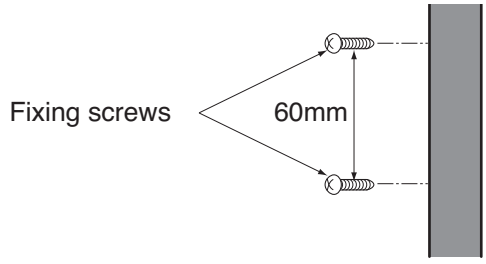
Installation Manual

2. Remote Temperature Sensor (PQRSTA0)

2.2 Installation Method

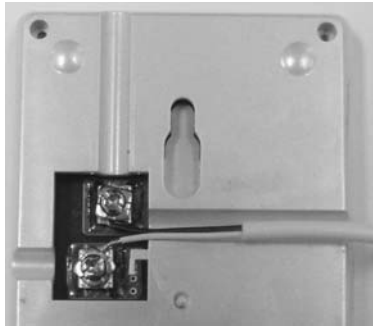
2.2.1 How to use

1. After deciding where the remote temperature sensor is installed, decide the location and height of the fixing screws.
   (Interval between the screws : 60mm)



2. Insert the connector of the connection wire into the space for the connector in place of the room temperature sensor. (CN_ROOM)
3. Separately, set the option code of the attached controller on the indoor unit.
   In detail, refer to "installer setting mode" in the owner's manual.

2.2.2 How to connect the remote temperature sensor and the connection wire

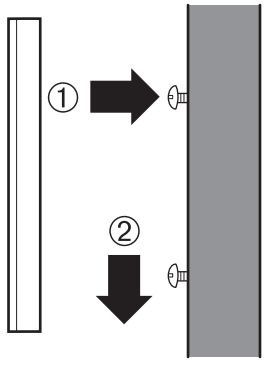


The Connection wire does not matter if you change the color of the wire because of non-polar

2.2.3 How to install the remote temperature sensor on the wall

Integrate the remote temperature sensor with the screws as the order of arrows.

Fixing the
Remote Sensor



⚠CAUTION

1. Choose the place where the average temperature can be measured for the place the indoor unit operates.
2. Avoid direct sunlight.
3. Choose the place where the cooling/heating devices do not affect the remote sensor.
4. Choose the place where the outlet of the cooling fan do not affect the remote sensor.
5. Choose the place where the remote sensor isn't affected when door is open.

3. Sanitary Water Tank Kit(PHLTA)

It's for communication with the sanitary water tank which has electric heater.
It's not necessary to use this kit if you will not use the electric heater function at the sanitary water tank.

3.1 Part Description

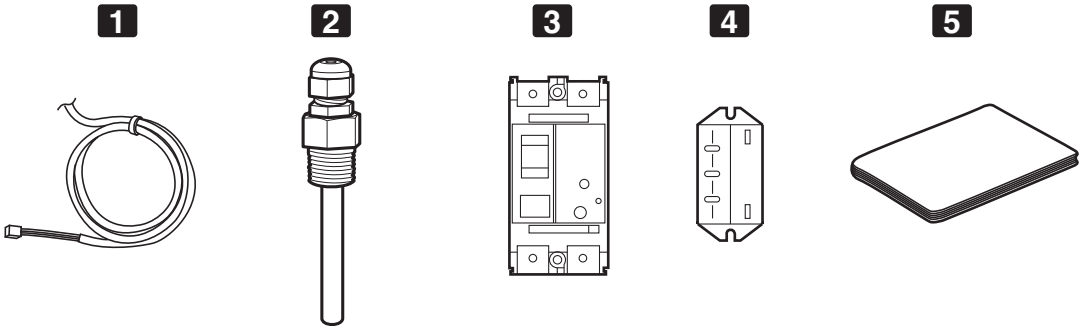
1 Sensor (Thermister) : This sensor (RHRSTA0) can be supplied separately.

2 Sensor Adaptor
- It can be attached on the sanitary water tank
- Thermister is inserted in the sensor adaptor
- connection 1/2"(12.7mm) BSP

3 ELB (Earth Leakage Breaker) 40A

4 Relay contactor

5 Installation Manual



4. Solar Thermal Kit(PHLLA / PHLLB)

- Must be used for communication of solar thermal component and indoor unit.

4.1 Model

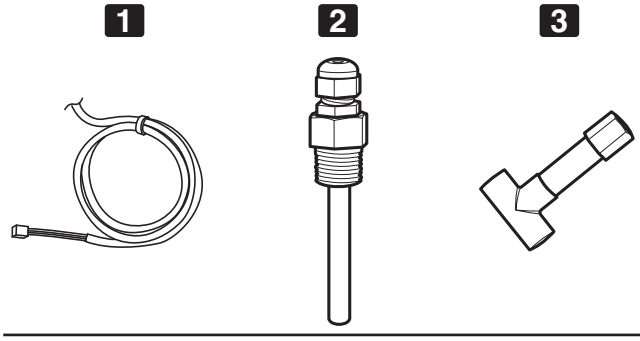
- PHLLA : Sensor's limit temperature 100°C
- PHLLB : Sensor's limit temperature 120°C

4.2 Part Description

1 Sensor (Thermister)

2 Sensor Adaptor
- It can be attached on T type pipe fitting attatched in the pipe of solar thermal component
- Thermister is inserted in the sensor adaptor
- connection 1/2"(12.7mm) BSP

3 T type pipe fitting (option)



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The air conditioners manufactured by LG have received ISO9001 certificate for quality assurance and ISO14001 certificate for environmental management system.