

THERMA V.

Air-to-Water Heat Pump / Split Type R410A/50Hz 5BPU0-02B (Replaces 5BPU0-02A)

# TOTALHVAC SOLUTION PROVIDER

**ENGINEERING PRODUCT DATA BOOK** 



P/No.: MFL66101112



General Information
Indoor Unit
Hydro Box Unit
DHW Tank Integrated Unit
Outdoor unit



## **General Information**

- 1.Model Line Up
- 2. Nomenclature

## 1. Model line up

## 1.1 Indoor Units

		External	Heater Capacity	Model Name
Category	Туре	Appearance	[kW]	Heating Capacity class* (kW)
				16.0
	Hydro Boy Type	*	6.0	AHNW16606A3 [HN1616 NK3]
	Hydro Box Type		9.0	AHNW16809A3 [HN1639 NK3]
AWHP Split Type	DHW Tank Integrated Type	Processory.	6.0	AHNW16606B0 [HN1616T NB0]

## 1.2 Outdoor Units

				Model	Name				
Category		Heating Capacity (kW)							
		5.0	7.0	9.0	12.0	14.0	16.0		
	1 Phase Model 1 Ø, 220-240 V, 50 Hz		AHUW076A3 [HU071 U43]	AHUW096A3 [HU091 U43]	AHUW126A3 [HU121 U33]	AHUW146A3 [HU141 U33]	AHUW166A3 [HU161 U33]		
Combination	AHNW16606A3 [HN1616 NK3]	0	0	0	0	0	0		
Combination	AHNW16606B0 [HN1616T NB0]	-	-	0	0	0	0		
	3 Phase Model 3 Ø, 380-415 V, 50 Hz		-	-	AHUW128A3 [HU123 U33]	AHUW148A3 [HU143 U33]	AHUW168A3 [HU163 U33]		
Combination	AHNW16809A3 [HN1639 NK3]	-	-	-	0	0	0		
Combination	AHNW16606B0 [HN1616T NB0]	-	-	-	0	0	0		
External Appearance		· Macada Barra Barra Barra Barra Salanda Anton Salanda Barra	€ LG			LG THERMAN			

**Note**\*: Actual system capacity would be different accordance with combination of outdoor unit.

## 2.1 Indoor Unit

#### **■** Global Name

Model Name	АН	N	w	16	6	06	Α	3
No.	1	2	3	4	5	6	7	8

No.	Signification
1	Air-to-Water Heat Pump for R410A
	Classification
2	N : Indoor unit of Split type U : Outdoor unit of Split type B : Monobloc type
	Model Type
3	W : Inverter Heat Pump H : Heat Pump
4	Heating Capacity (kW)
4	Ex) 9kW → '09', 12kW → '12'
	Heater Electrical ratings
5	6 : 1Ø, 220-240V, 50 Hz 8 : 3Ø, 380-415V, 50Hz A : 3Ø, 220V, 50Hz
	Heater Capacity (kW)
6	06 : 6kW Heater 09 : 9kW Heater
	Function
7	A : General heating heat pump H : Domestic Hot heating only T : High temperature heating heat pump
	B : DHW tank integrated model
8	Serial number
0	3 Series

## **■** European Name

Model Name	Н	N	16	1	6	Т	N	В	0
No.	1	2	3	4	5	6*	7	8	9

No.	Signification
1	Air-to-Water Heat Pump for R410A
	Classification
2	N : Indoor unit of Split type U : Outdoor unit of Split type M : Monobloc type
3	Heating Capacity (kW)
3	Ex) 9kW → '09', 12kW → '12'
	Heater Electrical ratings
4	1 : 1Ø, 220-240V, 50 Hz 2 : 3Ø, 220V, 50Hz 3 : 3Ø, 380-415V, 50Hz
	Nominal Heater Capacity (kW)
5	00 : None Heater 04 : 4kW heater
	Functions
6*	T : DHW tank integrated model H : High Temperature heating model (* In case of Hydro Box Low temperature type, here is blank.)
	Classification
7	N : Indoor unit of Split type U : Outdoor unit of Split type M : Monobloc type
	Platform (Chassis code)
8	K : K2,K3 Chassis B : DHW tank integrated Flatform
9	Serial number

## 2.2 Outdoor Unit

#### **■** Global Name

Model Name	АН	U	w	09	6	Α	3
No.	1	2	3	4	5	6	7

No.	Signification
1	Air-to-Water Heat Pump for R410A
	Classification
2	N : Indoor unit U : Outdoor unit - : Set
	Model Type
3	W : Inverter Heat Pump H : Heat Pump
4	Heating Capacity (kW)
4	Ex) 5kW : '05', 16kW : '16'
	Electrical ratings
5	6 : 1Ø, 220-240V AC 50 Hz 8 : 3Ø, 380-415V AC 50 Hz
	Function
6	A : General heating heat pump H : Domestic Hot heating only T : High temperature heating heat pump
7	Serial number
/	3 Series

## **■** European Name

Model Name	Н	U	05	1	-	U	4	3
No.	1	2	3	4		5	6	7

No.	Signification
1	H : Air-to-Water Heat Pump for R410A
2	Classification
	U : Outdoor unit
3	Heating Capacity (kW)
	Ex) 5kW : '05', 16kW : '16'
	Electrical ratings
4	1 : 1Ø, 220-240V AC 50 Hz 3 : 3Ø, 380-415V AC 50 Hz
	Classification
5	N : Indoor unit of Split type U : Outdoor unit of Split type M : Monobloc type
	Platform (Chassis code)
6	4 : U4 Chassis 3 : U3 Chassis
7	Serial number



**Indoor Unit** 

Hydro Box Unit DHW Tank Integrated Unit

## THERMA V<sub>TM</sub> Split Type

## **Hydro Box Unit**

- 1. Features
- 2.List of Functions
- 3. Specification
- 4. Dimensions
- **5.Wiring Diagram**
- **6. Piping Diagram**
- 7. Hydraulic Performance
- 8. Sound Levels
- 9.Installation
- 10.Accessories

## 1. Features

- Prividing eco-friendly heating
- · High energy efficiency
- · Easy installation
- Space heating, cooling, and Domestic Hot Water heating



## 2. List of Functions

Category	Function	AHNW16606A3 [HN1616 NK3] AHNW16809A3 [HN1639 NK3]
	Drain pump	X
Installation	E.S.P. control	X
Installation  Reliability	Electric heater(operation)	0
	High ceiling operation	X
	Hot start	X
Reliability	Self diagnosis	0
	Soft dry operation	X
	Auto changeover	X
	Auto cleaning	X
	Auto operation(artificial intelligence)	X
	Auto restart operation	0
	Child lock	0
Convenience	Forced operation	X
	Group control	X
	Sleep mode	0
	Timer(on/off)	0
	Timer(weekly)	0
	Two thermistor control	X
	Standard wired remote controller(control panel)	0
	Premium wired remote controller	X
Individual control	Simple wired remote controller	X
	Simple Wired remote controller(for hotel use)	X
	Wireless remote controller(simple)	X
	General central controller (Non LGAP)	X
Network function	Network Soluation(LGAP)	X
	Dry contact	PDRYCB500
	PDI(power distribution indicator)	X
	PI 485	X
		X
Sanaial & making lik	ne controller I (Communication transfer interface)	
Special function kit		X
	Electronic thermostat	X
	Remote room temperature sensor (TH8)	PQRSTA0
Others	Group control wire	X
	Telecom shelter controller	X
	Indoor Drain Pan	PHDPB
	Anti-Condensation on floor (cooling)	0
	Water Pump ON / OFF Control	0
	Flow Switch Control	0
	Thermostat Interface (230V AC)	0
	Thermostat Interface (24V AC)	X
	DHW Tank Heating (Install kit)	PHLTA
	Solar-Thermal Interface with DHWTank (Solar thermal kit)	PHLLA (Limit Temperature : 96 °C)
	PHEX Anti-Freezing Control	0
	Water Pump Forced Operation	0
	Autosetting according to Ambient Temperature	0
Air to Water Heat	Silent Operation	0
Pump Functions	Anti-overheating of Water Pipe	0
	Emergency Operation	0
	Weather Dependent Operation with Thermostat	0
	Scheduler(Domestic Hot Water Tank Heater)	0
	Timer(Domestic Hot Water Tank Heater)	0
	Quick Domestic Hot Water Tank Heating	0
		0
	Electric Heater Capacity Control	0
	Screed Drying Mode	
	Sump Heater	0
	Dry Contact (Main PCB)	0

#### 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.

## 3. Specifications

		Indoor Units			AHNW16606A3 [HN1616 NK3]	AHNW16809A3 [HN1639 NK3]	
Combination O	utdoor Units				AHUW056A3 [HU051 U43] AHUW076A3 [HU071 U43] AHUW096A3 [HU091 U43] AHUW126A3 [HU121 U33] AHUW146A3 [HU141 U33] AHUW166A3 [HU161 U33]	AHUW128A3 [HU123 U33] AHUW148A3 [HU143 U33] AHUW168A3 [HU163 U33]	
	Cooling	For Fan Coil Unit	Min. ~ Max.	°C	6~30	6~30	
Operation Range	Cooming	For under floor	Min. ~ Max.	°C	16~30	16~30	
(Leaving Water)	Heating	For Fan Coil Unit / Radiator	Min. ~ Max.	°C	15~57( * 20~55℃)	15~57( * 20~55℃)	
,		For under floor	Min. ~ Max.	°C	15~57( * 20~55℃)	15~57( * 20~55℃)	
	Туре			-	Non-Self-Priming Type of DC Pump	Non-Self-Priming Type of DC Pump	
	Motor type			-	BLDC	BLDC	
Water Pump	Number of Re	volution		RPM	500 ~ 3,500	500 ~ 3,500	
	Power input		Rated	W	130	130	
	Water Flow Ra	ate	Rated	ℓ/min	46	46	
	Туре		'	-	Brazed Plate HEX	Brazed Plate HEX	
	Quantity			-	1	1	
Heat Exchanger	Number of Pla	te		EA	76	76	
_nenange.	Water Flow Rate Heating		Rated	ℓ/min	46.0	46.0	
Volume		•	•	l	8.0	8.0	
Expansion Vessel	Water Pressure Max.			bar	3	3	
	Water Pressure Pre-charged			bar	1	1	
Ctusiusu	Mesh size		•	-	28 mesh	28 mesh	
Strainer	Material			-	Stainless Steel	Stainless Steel	
Safety Valve	Pressure Limit		Upper Limit	bar	3	3	
			•	-	Mano	meter	
Davissa for Wet	an Cinavit			-	Drain Valve	/ Fill Valve	
Devices for Wat	er Circuit			-	Shut Off Valve		
				-	Air \	/ent	
	Water	Inlet	Inner Dia.	mm(inch)	Male PT 25(1)	Male PT 25(1)	
Piping	Circuit	Outlet	Inner Dia.	mm(inch)	Male PT 25(1)	Male PT 25(1)	
Connections	Refrigerant	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)	
	Circuit	Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)	
Sound Power Level	Heating		Rated	dB(A)	44	44	
Dimonoiono	Unit		WxHxD	mm	490 x 850 x 315	490 x 850 x 315	
Dimensions	Packed Unit		WxHxD	mm	563 x 1082 x 375	563 x 1082 x 375	
Weight	Unit			kg	43.0	45.0	
(Without water)	Packed Unit			kg	51.0	52.5	
	Туре			-	Indirect heating (+Electric heater)	Indirect heating (+Electric heater)	
ŀ	Heater Capaci	ty	Max.	kW	3	3	
				V, Ø, Hz	230, 1, 50	230, 1, 50	
	Power Supply						
	Power Supply Power Supply	Туре		-	Separated power source	Separated power source	
DHW Tank**			Max.	°C	Separated power source 90	Separated power source 90	
DHW Tank** (Field Supply)	Power Supply Thermal Prote	ctor Range	Max.			90	
	Power Supply	ctor Range	Max.	°C	90		
	Power Supply Thermal Prote Relay Contact ELCB	ctor Range or	Max.	°C - A	90 Needed 40	90 Needed 40	
	Power Supply Thermal Prote Relay Contact ELCB Sensor Adapto	ctor Range or	Max.	°C -	90 Needed	90 Needed	

## 3. Specifications

Electrical Specification			AHNW16606A3 [HN1616 NK3]	AHNW16809A3 [HN1639 NK3]
	Туре	-	Sheath	Sheath
	Number of Heating Coil	EA	2	3
	Capacity Combination	kW	3.0 + 3.0	3.0 + 3.0 + 3.0
Electric Heater	Operation	-	Automatic	Automatic
Electric Heater	Heating Steps	Step	2	2
	Power Supply	V, Ø, Hz	1, 220-240, 50	3, 380-415, 50
	Rated Current	A	25.0	25.0
	Maximum Current	A	32.0	32.0
Wiring Connections	Power and Communication Cable (Included Earth)	No. x mm²	3 x 1.5 (H07RN-F)	3 x 1.5 (H07RN-F)

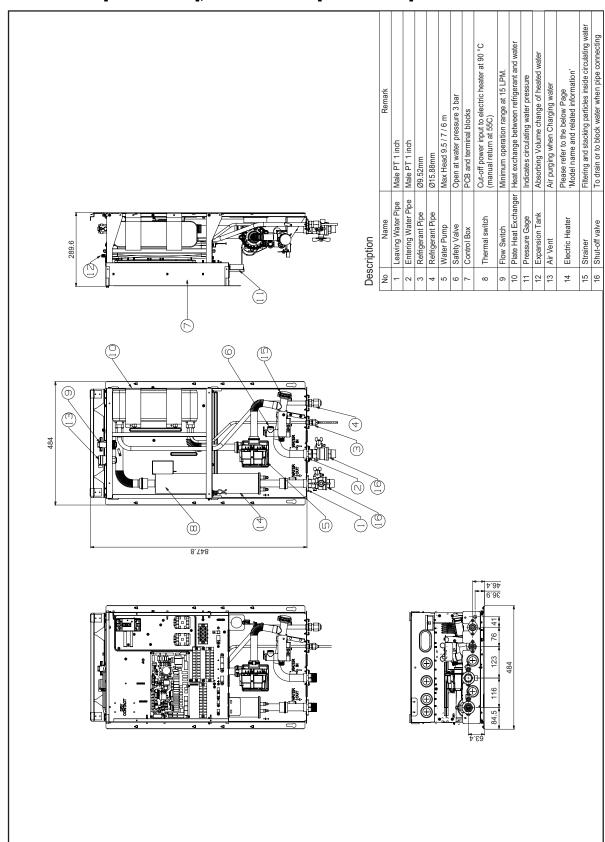
#### Note

- 1. Due to our policy of innovation some specifications may be changed without notification.
- 2. Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions:
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating: Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.
- \*: This specification is data when electric heater is not used.
- \*\*: This information is given as a guideline about the connection of DHW tank.
  \*\*\*: This Accessory Kit is required only when you want to user the electric heater function at DHW tank. If not, it's not necessary. Therma V indoor unit it self already has electric heater (back up heating) function.

#### 4. Dimensions

#### 4.1 Internal

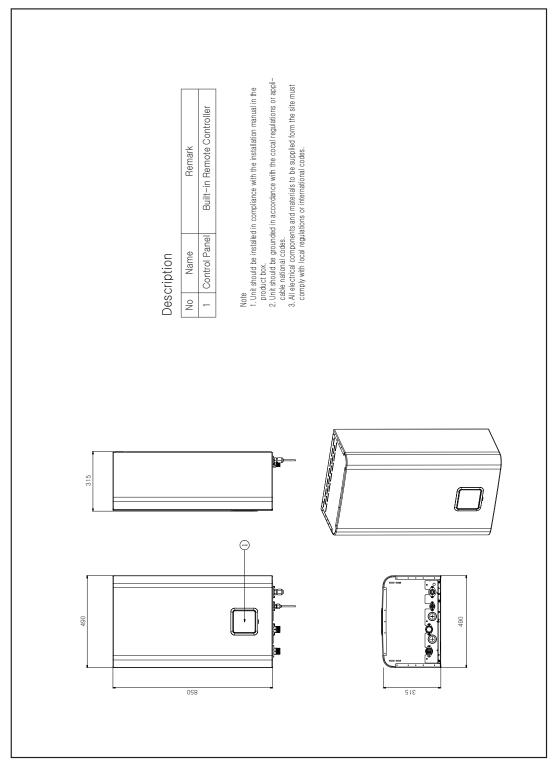
◆ AHNW16606A3 [HN1616 NK3], AHNW16809A3 [HN1639 NK3]



## 4. Dimensions

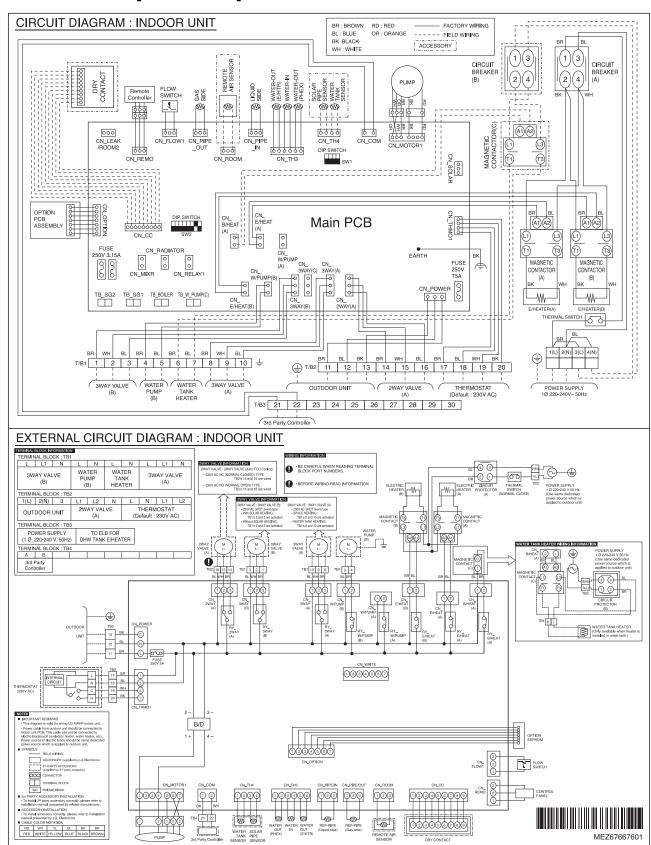
## 4.2 External

♦ AHNW16606A3 [HN1616 NK3], AHNW16606A3 [HN1616 NK3]



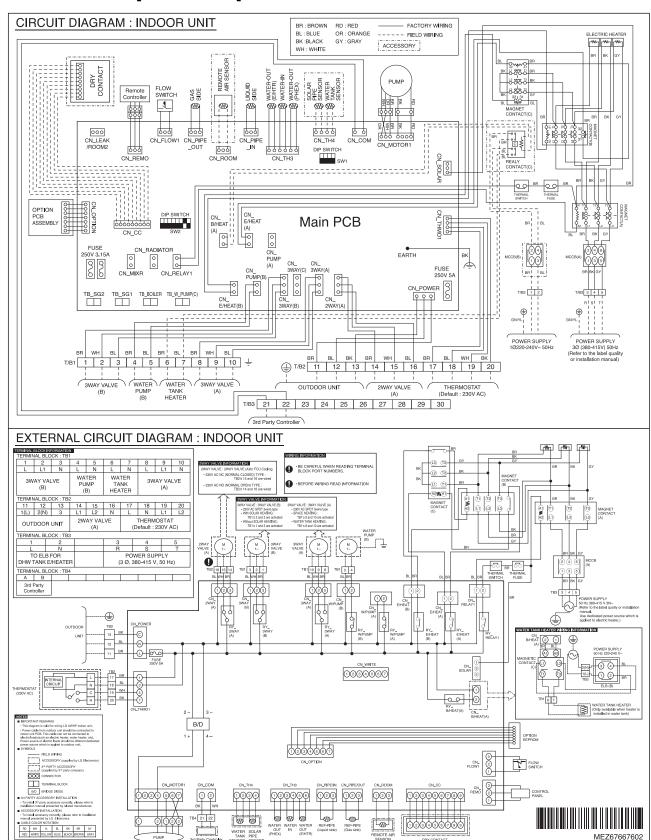
## 5. Wiring Diagrams

#### ■ AHNW16606A3 [HN1616 NK3]



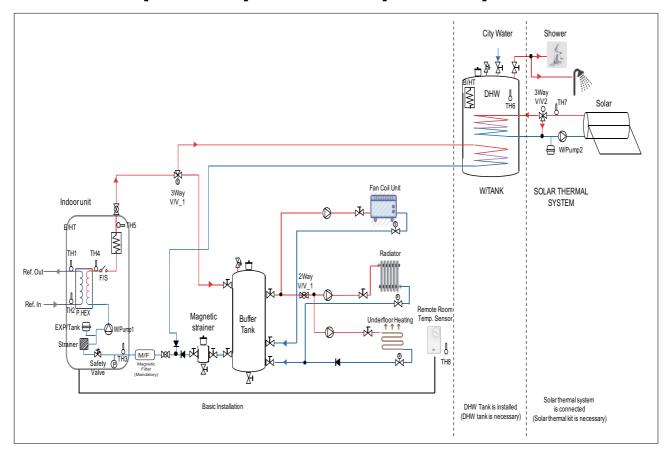
## 5. Wiring Diagrams

#### ■ AHNW16809A3 [HN1639 NK3]



## 6. Piping Diagram

## ■ AHNW16606A3 [HN1616 NK3] / AHNW16809A3 [HN1639 NK3]



## 6. Piping Diagram

Category	Symbol	Meaning	PCB Connector	Remarks	
	TH1	Refrigerant temperature sensor (Gas side)	CN_PIPE_OUT	Manipula supressed based on Casling sands	
	TH2	Refrigerant temperature sensor (Liquid side)	CN_PIPE_IN	- Meaning is expressed based on Cooling mode.	
	TH3	Entering Water temperature sensor		- TH3, TH4, and TH5 are connected at 6 pin type connector CN_TH3.	
	TH4	Interim Water temperature sensor	CN_TH3		
	TH5	Leaving Water temperature sensor			
	F/S	Flow Switch	CN_FLOW1		
Indoor Unit	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.Y12	
	W PUMP1	Internal Water Pump	CN MOTOR1	- Water Pump is connected at CN_MOTOR1	
	EXP/TANK	Expansion Tank	(no connector)	- Absorb volume change of heated water,	
	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) - 2 wire NO or NC type 2way valve is supported	
	M/F	Magnetic Filter	(No connector)	- 3rd party accessory and Field installation (sold separately)     - It is strongly recommended to install an additional filter on the heating water circuit.	
	W/TANK	DHW Tank	(no connector)	- 3rd party accessory and Field installation (sold separately)     - Generating and storing DHW 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.	
Water Heating	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		- TH6 and TH7 are connected at 4 pin type connector CN_TH4.	
	TH7	Solar-heated water temperature sensor	CN_TH4	- TH6 is a part of DHW tank kit. (Model:PHLTA) - TH7 is a part of solar thermal kit (Model:PHLLA)	
	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.	
Solar Heating	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 THER-MAL SYSTEM	- This system can include following compo- nents: Solar panel, Sensors, Thermostats, Interim heat exchanger, Water pump, etc To utilized hot water heated by SOLAR THERMAL SYSTEM, end-user must by LG AWHP Solar-Kit.	(no connector)	- 3rd party accessory and Field installation (sold separately)	

## 7. Hydraulic Performance

## 7.1 Water Pump Capacity

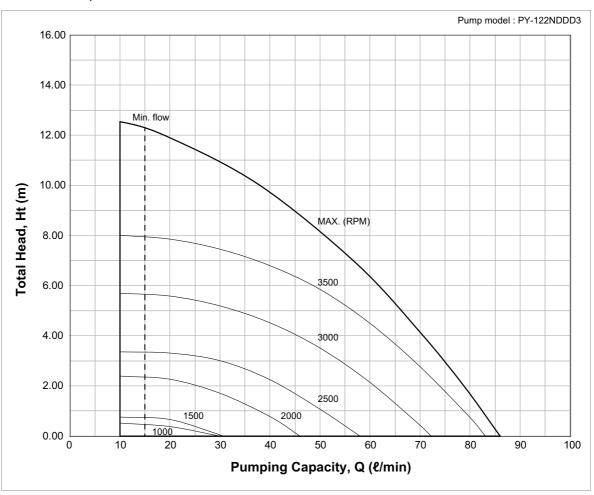
#### ■ Water volume and pump capacity

The water pump is BLDC, so it may be required to change default water pump speed in case of noise by waterflow. In most case, however, it is strongly recommended to set speed as Maximum.

#### Notice

Water pump speed: To secure enough water flow rate, do not set water pump speed as "Min." It can lead unexpected flow rate error CH14.

#### **♦** AHNW16606A3, AHNW16809A3



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



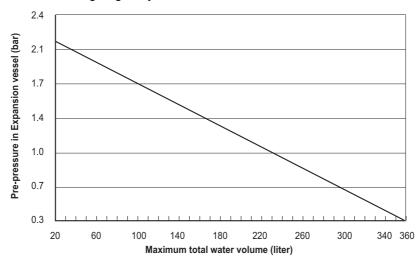
Selecting a water flowrate outside the curves can cause damage to or malfunction of the unit.

## 7. Hydraulic Performance

## 7.2 Water Volume and Expansion Vessel Pressure

Expansion vessel inside Hydro Box Unit is included which is 8 liter capacity with 1 bar pre-pressure. That means, according to the volume-pressure graph, total water volume of 230 liter is supported as default. If total water volume is changed because of installation condition, the pre-pressure should be adjusted to secure proper operation.

- · Minimum total water volume is 20 liter.
- Pre-pressure is adjusted by the total water volume. If the indoor unit is located at the highestposition of the water circuit, adjustment is not required.
- To adjust pre-pressure, use nitrogen gas by certificated installer.



#### ■ Adjusting pre-pressure of expansion vessel

• Step 1. Refer "Volume-Height" table.

	V < 230 ℓ	V ≥ 230 ℓ
H < 7m	Case B	Case A
H ≥ 7m	Case A	Case C

H: difference between indoor unit and the highest water pipe

V: total water volume of installation scene

If installation scene is belong to Case A, go to Step 2.

Otherwise, if it is Case B, do nothing. (pre-pressure adjustment is not required.)

Otherwise, if it is Case C, go to Step 3.

• Step 2. Adjust pre-pressure by following equation.

Pre-pressure [bar] = (0.1xH+0.3) [bar]where H: difference between indoor unit and the highest water pipe 0.3: minimum water pressure to secure product operation

• Step 3. Volume of expansion vessel is less than installation scene.

Please install additional expansion vessel at the external water circuit.

#### 8. Sound levels

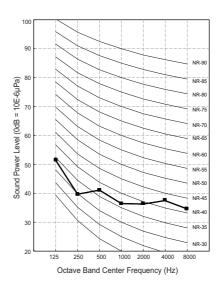
#### **■** Sound Power Level

#### Note

- 1. Data is valid at diffuse field condition.
- 2. Reference acoustic intensity 0dB = 10E-6µW/m<sup>2</sup>
- 3. Sound power level is measured on the rated condition in the reverberation rooms. Refer to the Model Specifications for nominal conditions(Power source and Ambient temperature, etc)
- 4. Sound levels can be increased in accordance with installation and operating conditions. (Operating conditions include some functional condition like Static pressure mode, air guide use, Room target temperature setting, etc and these functions are different in accordance with each model.)
- 5. 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)]	
AHNW16606A3 [HN1616 NK3]	44	
AHNW16809A3 [HN1639 NK3]	44	

#### AHNW16606A3 [HN1616 NK3], AHNW16809A3 [HN1639 NK3]



#### 9.1 Water Control

#### 9.1.1 Water quality

Water quality should be complied with EN 98/83 EC Directives.

Detailed water quality condition can be found in EN 98/83 EC Directives.

## **A** CAUTION

- If the product 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.
- It is strongly recommended to install an additional filter on the heating water circuit. Especially to remove metallic
  particles from the heating piping, it is advised to use a magnetic or cyclone filter, which can remove small
  particles. Small particles may damage the unit and will NOT removed by the standard filter of the heat pump
  system.

#### 9.1.2 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 the water volume contained in AWHP unit to this total volume.

Antifreeze type	Antifreeze mixing ratio (by volume)					
Antineeze type	0°C	-5°C	-10°C	-15°C	-20°C	-25°C
Ethylene glycol	0%	12%	20%	30%	-	-
Propylene glycol	0%	17%	25%	33%	-	-
Methanol	0%	6%	12%	16%	24%	30%

## **A** CAUTION

- 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.

## 9.2 Water Piping and water Circuit Connection

#### 9.2.1 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 forinstallation field.
- Never connect electric power while proceeding water charging.

#### 9.2.2 Water piping and water circuit connection

#### 1. 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.

#### 2. 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.

#### 3. 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.

## **M** WARNING

#### · Water condensation on the floor

While cooling operation, it is very important to keep leaving water temperature higher than 16  $^{\circ}$ C. Otherwise, dewcondensation can be occurred on the floor.If floor is in humid environment, do not set leaving water temperature below 18  $^{\circ}$ 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 drainagetreatment (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.

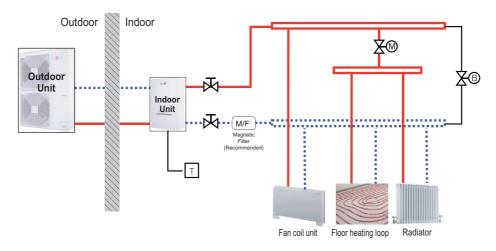
#### 9.3 Installation Scenes

If is installed with pre-existing boiler, the boiler and THERMA V should not be operated together. If entering water temperature of THERMA V 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.

#### ◆ CASE1 : Connecting heat emitters for heating and cooling

(Under floor loop, Fan coil unit and Radiator)

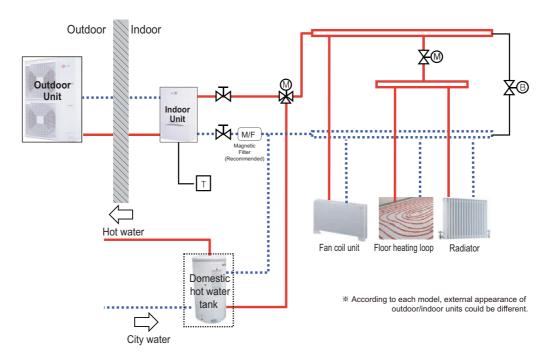


\* According to each model, external appearance of outdoor/indoor units could be different.

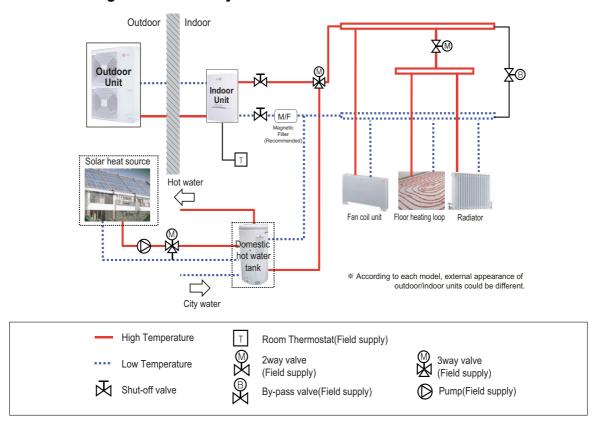


#### ◆ CASE2 : Connecting DHW tank

(Under floor loop, Fan coil unit and Radiator)



#### ◆ CASE3 : Connecting Solar thermal system



## 9.4 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, DHW tank circuit, FCU water circuit, and any other water circuitscontrolled by the product.

#### Step 2

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

#### **A** CAUTION

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



According to each model, shut off valve external appearance, direction, location etc could be different slightly

#### 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.
   Suddenwater 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
  performancedegrade, 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 watercharging inside expansion vessel.
- No air purging sound is heard or no water drop are popping out from air vent.

## 9.5 Dip switch information

Turn off electric power supply before setting DIP switch

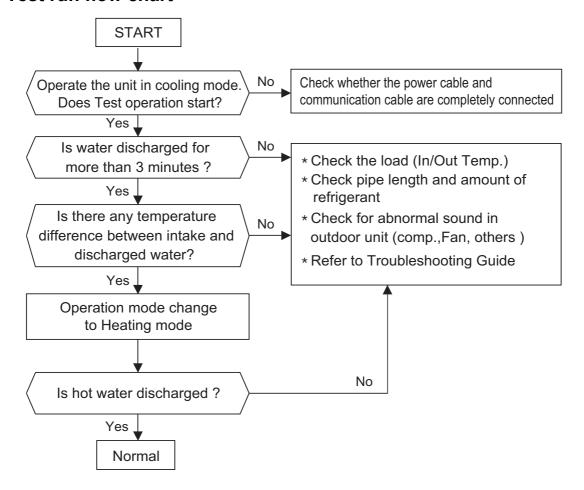
• Whenever adjusting DIP switch, turn off electric power supply to avoid electric shock.

Description		Setting	Default
Delegation control controller is a missed	1	As Master	
Role when central controller is equipped	1 ¶	As Slave	1 📗
	2 3	Indoor unit + Outdoor unit is installed	
Accessory installation information	2 1 3	Indoor unit + Outdoor unit + DHW tank is installed	2 📗
	2 ¶	Indoor unit + Outdoor unit + DHW tank + Solar thermal system is installed	
Emergency operation Level	4	High temperature cycle	4 1
Emergency operation Level	4 ¶	Low temperature cycle	4 📗
	5	External water pump is NOT installed	ln.
External water pump installation information	5 ¶	External water pump is installed	5
	6	Full capacity is uesd	
Selecting electric heater capacity	6 <b>[</b> ] 7 <b>[</b> ]	Half capacity is uesd	6 <b>[</b> ] 7 <b>[</b> ]
	6 ¶ 7 ¶	Electric heater is not used	
Thermostat installation information	8	Thermostat is NOT installed	8 📗
	8	Thermostat is installed	

#### 9.6 Test Run

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

#### 9.6.1 Test run flow chart



## 9.6.2 Check List before Starting Operation

Turn off the power before changing wiring or handling unit.

No.	Problem	Reason	Solution
	Heating or cooling is not satisfactory.	Setting target	Set target temperature correctly.
		temperature is not proper.	Check if temperature is water-based or air-based. See Function code 03 and 05 in Chapter 6.
		Charged water is notenough.	Check pressure gage and charge more water until pressure gage is indicating 200~250 kPa.
1		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.
	Although electric powersupply is OK (remote controller displays information), the unit does not start working.	Water inlet temperature is too high.	<ul> <li>If water inlet temperature is above 55 °C, the unit does not operated for the sake of system protection.</li> </ul>
2		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.
	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.
3			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 throughdrain hose.  DHW is not hot.	Too much water ischarged.	<ul> <li>Flood out the water by opening the switch of the safety valve until pressure gage is indicating 200~250 kPa.</li> </ul>
		Expansion tank is damaged.	Replace the expansion tank.
5		Thermal protector ofwater tank heater is activated.	Open the side panel of the DHW tank and push the reset button of the thermal protector. (for more detail information, please refer to installation manual of DHW tank.)
		DHW heating is disabled.	Push  button and identify if  icon is displayed on the remote controller.

## 9.6.3 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 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	Water	/ater Strainer (Water filter)	Close the shut-off valves and disassemble strainer. Then wash the strainer to make it clean.	
2			While disassembling the strainer, be careful for water flood out.	
3	Safety valve	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.	

#### 9.6.4 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.
	Confirm that 500 V megger shows 2.0 M $\Omega$ or more between power supply terminal block and ground. Do not operate in the case of 2.0 M $\Omega$ or less.
2	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. $2.0~\mathrm{M}\Omega$ as a result of refrigerant accumulation in the internal compressor.
	If the insulation resistance is less than 2.0 $M\Omega$ , turn on the main power supply.

#### 10. Accessories

## 10.1 Dry Contact (PDRYCB500)

#### 10.1.1 Safety Precautions

To prevent injury to the user or other people and property damage, the following instructions must be followed.

■ Incorrect operation due to ignoring instruction will cause harm or damage. The seriousness is classified by the following indications.



#### MARNING WARNING

If the instructions are not followed, it may cause death or severe injury of the user.



## **A** CAUTION

If the instructions are not followed, it may cause injury of the user or property damage.

- Meanings of symbols used in this manual are as shown below.
- Be sure not to do.
- Be sure to follow the instruction.

## 10.1.2 Specification

#### ■ Modbus configuration

Network: 2 wire RS485 Mode: Modbus RTU slave

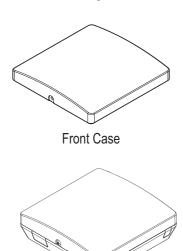
Baud: 9600 Parity: None Stop bits: 1 Register Base: 0

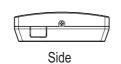
#### Data registers

Register	Name	Range	Notes
1	Operation	0 ~ 1	0 : Stop 1 : Run
30003	Indoor temperature	100 ~ 400	Degrees C × 10
30100	Error alarm	0 ~ 1	0 : No Error 1 : Error
40001	Set Run Mode	0 ~ 4	0 : Cooling 2 : Fan 3 : Al 4 : Heating
40002	Set Temperature	180 ~ 300	Degrees C × 10
40015	Set Fan Speed	1 ~ 3	1 : Low 2 : Middle 3 : High

#### 10. Accessories

#### 10.1.3 Name of each part

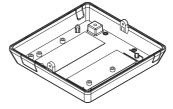




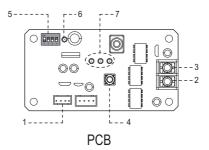
ISO View

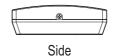


Cable(1 EA)
(For Connecting with indoor unit)



Rear Case







Installation Manual

#### ■ Modbus Gateway For Indoor Unit

CN-OUT : Indoor Unit Connector
 BUS-A : RS-485(+) Terminal
 BUS-B : RS-485(-) Terminal

4. SW1: Reset Switch

5. SWDIP: Setting Address Switch(Refer Page 11)

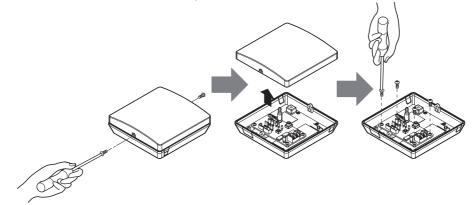
6. LED1: RS-485 Status LED

7. LED(01~03)G: Communication Status LED

#### 10. Accessories

#### 10.1.4 Installation Inside of the indoor unit

- 1. Loosen and remove two screws that secure the product.
- 2. Loosen two screws that secure the PCB to separate rear of the case from the PCB.



- 3. Connect the connection wires properly according to the connection method. (Refer to the instruction and set-up description)
- 4. Set the switch according to the setting method. (Refer to the instruction and set-up description)
- 5. Secure PCB on adequate space inside of the indoor unit.



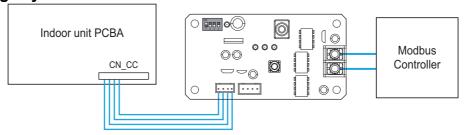
#### **CAUTION**

- 1. Install the product on flat surface and install anchoring screws at more than 2 places. Otherwise the centralcontroller may not be anchored properly.
- 2. Do not tighten anchoring screws too tightly. It may cause deformation of the case.
- 3. Do not deform the case at random. It may cause malfunction of the central controller.

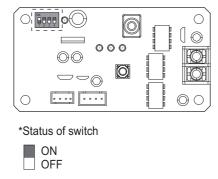
#### 10.1.5 Setting method

After change any Dry contact setting, then you must press RESET switch to reflect the setting.

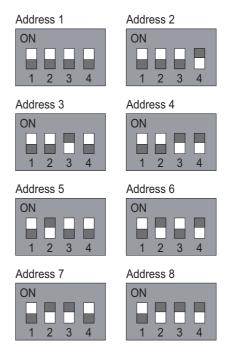
■ Connecting Drycontact with Indoor unit PCBA and Modbus Controller



#### Setting Address



In case, connect a Modbus controller with several product, Address have to be set different from others.



- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified
  persons inorder to avoid a hazard.
- · Means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- · Qualified service technician is only possible to access to product.

#### **♦** Minimum cross-sectional area of conductors

Rate	Rated current of appliance A		Nominal cross-sectional area mm <sup>2</sup>	
		≤0,2	Tinsel cord <sup>a</sup>	
>0,2	and	≤3	0,5 <sup>a</sup>	
>3	and	≤6	75	
>6	and	≤10	1,0 (0,75) <sup>b</sup>	
>10	and	≤16	1,5 (1,0) <sup>b</sup>	
>16	and	≤25	25	
>25	and	≤32	4	
>32	and	≤40	6	
>40	and	≤63	10	

- a: These cords may only be used if their length does not exceed 2 m between the point where the cord or cord guard
- b : Cords having the cross-sectional areas indicated in the parentheses may be used for portable appliances if theirlength does not exceed 2 m.

#### Note

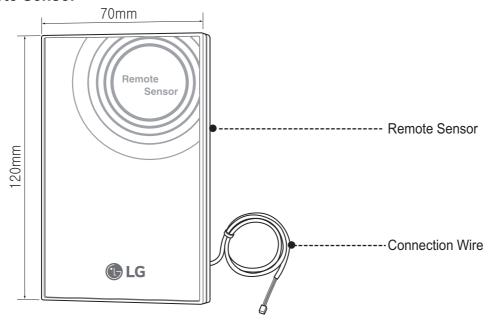
For supply cords supplied with multi-phase appliances, the nominal cross-sectional area of the conductors isbased on the maximum cross-sectional area of the conductors per phase at the supply cord connection to theappliance terminals.

## 10.2 Remote Temperature Sensor (PQRSTA0)

## 10.2.1 Part Description

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

#### **■** Remote Sensor



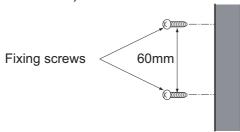
#### ■ Parts



#### 10.2.2 Installation Method

#### 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.

#### ■ How to connect the remote temperature sensor and the connection wire

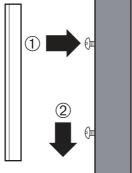


The Connection wire does not matter if you change the color of the wire because of non-polar

#### ■ How to install the remote temperature on the wall

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

Fixing the Remote Sensor



## **A** CAUTION

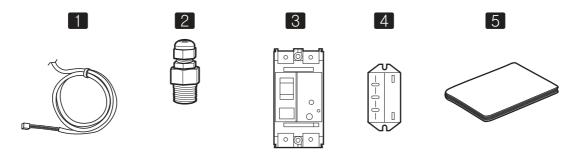
- 1. Choose the place where the average temperature can be measured for the place the indoor unit operates.
- 2. Avoid direct sunlight.
- 3. Choose the place where the cooling/heating devices do not affect the remote sensor.
- 4. Choose the place where the outlet of the cooling fan do not affect the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

## 10.3 DHW Tank Kit (PHLTA)

## 10.3.1 Part Description

DHW Tank Kit must be used for communication of DHW tank and indoor unit. It's for communication with the DHW tank which has electric heater.

- 1 Sensor (Thermister): This sensor (RHRSTA0) can be supplied separately.
- 2 Sensor Adaptor
  - It can be attached on the DHW 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



## 10.4 Solar Thermal Kit (PHLLA / PHLLB)

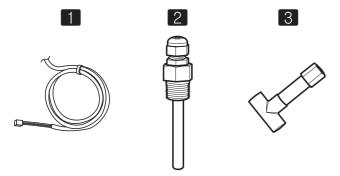
#### 10.4.1 Model

Solar Thermal Kit Must be used for communication of solar thermal component and indoor unit.

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

#### 10.4.2 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)



## 10.5 Drain Pan (PHDPB)

## 10.5.1 Part Description

#### **WARNING**

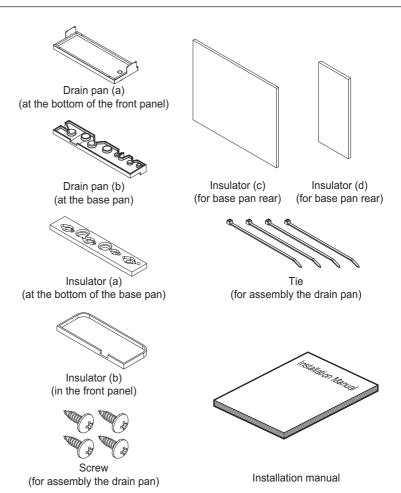
- 1. Turn the main power off when cleaning, maintaining or installing drain pump.
  - · There is risk of electric shock.

#### **A** CAUTION

- 1. Do not insert hands or other objects through the air inlet or outlet while the product is operated.
  - · There are sharp and moving parts that could cause personal injury.
- 2. Do not drink the water drained from the product.
  - It could cause serious health issues.

#### Part List

- Drain Pan (a)	1EA
- Drain Pan (b)	1EA
- Insulator (a)	1EA
- Insulator (b)	1EA
- Insulator (c)	1EA
- Insulator (d)	1EA
- Screw	4EA
- Tie	4EA
- Installation manual	1EA



#### 10.5.2 Installation

## **WARNING**

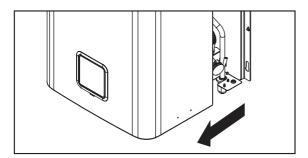
- 1. Do not Install, remove, or re-install the unit by yourself (customer).
  - There is risk of fire, electric shock, explosion, or injury.
- 2. For installation, always contact the dealer or an Authorized Service Center.
  - · There is risk of injury.
- 3. Be cautious when unpacking and installing the product.
  - · Sharp edges could cause injury. Especially careful on the product edges.

## **A** CAUTION

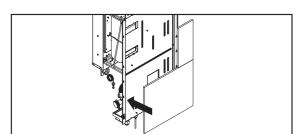
- 1. Install the drain hose to ensure that water is drained away properly.
  - A bad connection may cause water leakage and unpleasant odor.
- 2. Do not install the Product without gloves.
  - · There are sharp and moving parts that could cause personal injury.

#### ♦ How to install

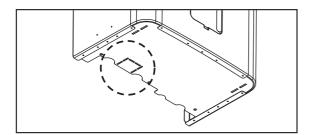
1. Uncover the front panel.



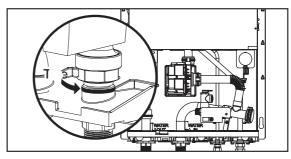
3. Attach the Insulator (c), (d) to the rear side of the base pan.



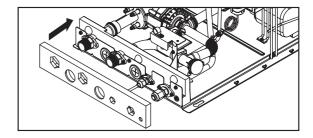
5. Remove the knock-out from the bottom of the front panel.



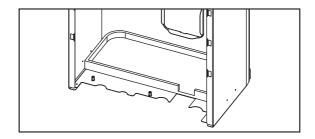
- 2. Assemble the Drain pan(b).
  - Four pipes are fastened by ties.
  - Cut the unnecessary part of ties.



4. Attach the Insulator (a) to the bottom of the base pan.

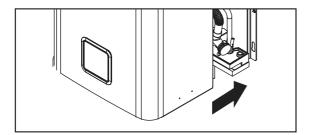


6. Insert the Insulator (b) into the front panel.

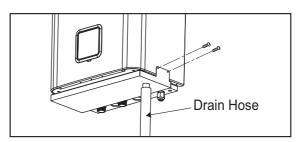


#### **A** CAUTION

- Take care that drain pan is broken by sharp edge.
- Power cable must not go through the knock-out.
- 7. Assemble the front panel.

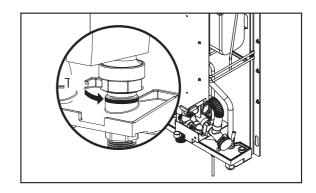


- 8. Assemble the Drain pan (a).
  - And then connect the drain hose (field supply) to the Drain pan (a).

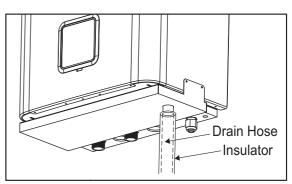


#### 10.5.3 Attention

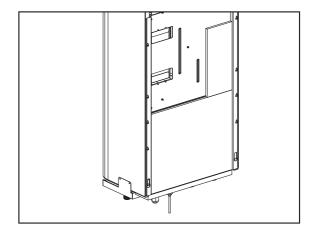
1. Four pipes (two refrigerant pipes and two waterpipes) should be fastened to the Drain Pan (b)with ties.



- 2. The drain hose (field supply) should be wrappedby thermal insulator (field supply) with minimum 10 mm thickness.
- Be sure that there is no water leakage at the connection of the drain hose.
- Remove water in the drain pan and the drainhose in cold season to avoid freezing.



3. Four insulators (Insulator (a), Insulator (b),Insulator (c) and Insulator (d)) should be attached without vacancy.



#### **A** CAUTION

- When installing the drain pan, be careful the sharp edges of product.
- If water is not drained, check the drain hose and drain pan installation.



# **DHW Tank Integrated Unit**

- 1.Features
- 2.List of functions
- 3. Specification
- 4. Drawing
- **5.Wiring Diagrams**
- **6.Piping Diagrams**
- 7. Performance Data
- 8. Water Pump Capacity
- 9.Installation
- 10.Accessories

## 1. Features

- · Providing Eco-friendly heating
- · High energy efficiency
  - Pressure Control & Quick Operating Response
- · Quiet operation
- · All in one solution
  - Hydro Box for Space heating/cooling + Domestic How Water Tank + Buffer Tank
  - Small space for product installation
  - Easy and quick installation
- · Weather dependent operation



## 2. List of Functions

#### **♦** List of functions

Category	Functions	AHNW16606B0 [HN1616T NB0]
	Electric heater	0
Installation	Domestic Hot Water Tank heater (Install Kit)	X
	Screed Drying Mode	0
Reliability	Self diagnosis	0
	Auto Restart operation	0
	Child lock	0
	Sleep mode	X
Convenience	Timer (on/off)	0
	Timer (weekly)	0
	Group Control	X
	Remote room temperature sensing	X
	Outdoor Temperature sensing	X
	Zone control (2 heating circuits)	0
	Zone control (max. 4 heating circuits)	X
	Pool cooling heat utilisation	X
Special function kit	Solar / Biomass heat utilisation	X
	Wi-Fi control	X
	Group control wire	X
	2-Remo control wire	X
	Extension wire	X
	Thermostat Interface (230V AC)	X
	Thermostat Interface (24V AC)	X
	Water Pump ON / OFF Control	0
	Water Pump Forced Operation	0
	Flow Switch Control	0
	Solar-Thermal kit interface with Domestic Hot Water Tank	0
	Anti-Condensation on floor (cooling)	0
	PHEX Anti-Freezing Control	0
	Anti-overheating of Water Pipe	0
Water Circuit	Emergency Operation	0
Control	Autosetting according to Ambient Temperature	0
	Weather Dependent Operation with Thermostat	0
	Silent Operation	0
	Scheduler (Domestic Hot Water Tank Heater)	0
	Timer (Domestic Hot Water Tank Heater)	0
	Quick Domestic Hot Water Tank Heating	0
	Electric Heater Capacity Control	0
	Sump Heater	X
	Dry Contact	X
	Gas/Oil boiler heat utilisation (hybrid function)	0
Remote Controller	Wired Remote Controller	X
Supply	Wireless Remote Controller	Х

#### 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.

#### **◆** Accessory Compatibility List

Accessory		Accessory Function	AHNW16606B0	
Category	Model name	Accessory Function	[HN1616T NB0]	
PI485	PP485B00K	- Gateway for communication indoor unit and outdoor unit - Connected on the outdoor unit	0	

<sup>2.</sup> Some functions can be limited by remote controller.

#### **◆ Technical Specifications**

Cooling   (Min.~Max.)   For Fan Coil Unit   °C   7 ~ 25     Heating   For Fan Coil Unit   7 C   7 ~ 25     Heating   For Fan Coil Unit   7 C   7 ~ 25     Heating   For Fan Coil Unit   7 C   25 ~ 58     Heating   For Fan Coil Unit   7 C   25 ~ 58     Heating   For Fan Coil Unit   7 C   25 ~ 58     Heating   For Fan Coil Unit   7 C   25 ~ 58     Heating   For Fan Coil Unit   7 C   25 ~ 58     Heat   For under floor   °C   25 ~ 58     Heat   For Under floor   °C   25 ~ 58     Heat   For Under floor   °C   10 ~ 60     Domestic Hot Water (Min.~Max.)   °C   10 ~ 60     Domestic Hot Water (Min.~Max.)   °C   5 ~ 35     Type	
Range (Leaving (Leaving (Leaving Water)   Heating (Leaving (Min.~Max.)   For Fan Coil Unit /Radiator (°C (25 ~ 58)     Heating (Min.~Max.)   For under floor (°C (25 ~ 58)     Heating (Min.~Max.)   For under floor (°C (25 ~ 58)     Domestic Hot Water (Min.~Max.)   °C (25 ~ 58)     Domestic Hot Water (Min.~Max.)   For Under floor (Min.~Max.)     Domestic Hot Water (Min.~Max.)   For Under floor (Min.~Max.)     Domestic Hot Water (Min	
Cleaving Water   Wat	
Water   Steep powder coated   Steep powde	
Domestic Hot Water (Min.~Max.)   °C   10 ~ 60	
Type	
Material	
DHW Tank   Thermal Protect limit	
DHW Tank	
DHW Tank	
Maximum water pressure limit         bar         10           Buffer Tank         Mater Volume         Rated         ℓ         40           Buffer Tank         Material         -         Steel powder coated           Insulation Material         -         Closed cell foamed rubber           Type         -         Canned type for hot water circulation           Model         -         Yonos PARA RS25/7 PWM1           Motor type         -         BLDC           Steps of Speed         EA         Variable speed 13% to 100%           Power input         W         3 ~ 45           Water Flow Rate         Min.         ℓ / min         46.0           Pressure drop         Max.         kPa         70           Heat         Quantity         -         Brazed Plate HEX           Water Volume         ℓ         3.3           Water Flow Rate (Min. ~ Max.)         ℓ / min         13 ~ 70	
Insulation	
Insulation	
Heat loss (for 24hr)   kWh   1.67	
Buffer Tank         Water Volume         Rated         ℓ         40           Material         -         Steel powder coated           Insulation Material         -         Closed cell foamed rubber           Type         -         Canned type for hot water circulation           Model         -         Yonos PARA RS25/7 PWM1           Motor type         -         BLDC           Steps of Speed         EA         Variable speed 13% to 100%           Power input         W         3 ~ 45           Water Flow Rate         Min.         ℓ / min         16.0           Pressure drop         Max.         kPa         70           Type         -         Brazed Plate HEX           Heat         Quantity         -         Brazed Plate HEX           Water Volume         ℓ         3.3           Water Flow Rate (Min. ~ Max.)         ℓ / min         13 ~ 70	
Buffer Tank         Material         - Steel powder coated           Insulation Material         - Closed cell foamed rubber           Water Pump         Type         - Canned type for hot water circulation           Model         - Yonos PARA RS25/7 PWM1           Motor type         - BLDC           Steps of Speed         EA         Variable speed 13% to 100%           Power input         W         3 ~ 45           Water Flow Rate         Min. ℓ / min         16.0           Pressure drop         Max. kPa         70           Type         - Brazed Plate HEX           Quantity         - Brazed Plate HEX           Water Volume         ℓ         3.3           Water Flow Rate (Min. ~ Max.)         ℓ / min         13 ~ 70	
Insulation Material   -   Closed cell foamed rubber	
Type	
Model         -         Yonos PARA RS25/7 PWM1           Motor type         -         BLDC           Steps of Speed         EA         Variable speed 13% to 100%           Power input         W         3 ~ 45           Water Flow Rate         Min.	
Motor type         -         BLDC           Steps of Speed         EA         Variable speed 13% to 100%           Power input         W         3 ~ 45           Water Flow Rate         Min.	
Water Pump         Steps of Speed Power input         EA         Variable speed 13% to 100%           Water Flow Rate         Min.	
Water Pump         Power input         W         3 ~ 45           Water Flow Rate         Min.	
Water Flow Rate	
Water Flow Rate         Rated ℓ / min         46.0           Pressure drop         Max.         kPa         70           Heat Exchanger (Water Side)         Type         -         Brazed Plate HEX           Quantity         -         1           Exchanger (Water Flow Rate (Min. ~ Max.)         ℓ / min         3.3           Water Flow Rate (Min. ~ Max.)         ℓ / min         13 ~ 70	
Rated   ℓ / min   46.0     Pressure drop   Max.   kPa   70     Type   -   Brazed Plate HEX     Heat   Quantity   -   1     Exchanger   Water Volume   ℓ   3.3     (Water Side)   Water Flow Rate (Min. ~ Max.)   ℓ / min   13 ~ 70	
Type	
Heat Exchanger (Water Side)         Quantity         -         1           Exchanger (Water Side)         Water Flow Rate (Min. ~ Max.)         ℓ / min         13 ~ 70	
Exchanger (Water Volume         ℓ         3.3           (Water Side)         Water Flow Rate (Min. ~ Max.)         ℓ / min         13 ~ 70	
(Water Side) Water Flow Rate (Min. ~ Max.)	
, , , , , , , , , , , , , , , , , , , ,	
Insulation Material - Closed cell foamed rubber	
Safety Valve Pressure Limit Max. bar 3	
- Manometer	
Devices for Water Circuit  - Drain Valve / Fill Valve	
-   Snut Off Valve	
- Air Vent	
Refrigerant Gas (Outer Dia.) mm(inch) Ø 15.88 (5/8)	
Circuit Liquid (Outer Dia.) mm(inch) Ø 9.52 (3/8)	
Piping Water Inlet (Inner Dia.) mm(inch) Male PT 25 (1)	
Connections   Circuit   Outlet (Inner Dia.)   Inni(Inch)   Wale PT 25 (1)	
DHW Tank   Cold Inlet (Outer Dia.)   mm(inch)   Male PT 19.05 (3/4)	
Water Hot Outlet (Outer Dia.) mm(inch) Male PT 25 (1)	
Circuit Recirculation (Outer Dia.) mm(inch) Male PT 19.05 (3/4)	
Sound Pressure Level dB(A) 27	
Sound Power Level dB(A) 36	
Dimensions (W × H × D)	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
Weight Unit kg 228	
(without water) Shipping kg 238	

Note

- 1. Due to our policy of innovation some specifications may be changed without notification.
- 2. Wiring cable size must comply with the applicable local and national code. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
- Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Capacities are net capacities and based on the following conditions. Refer to the Outdoor Unit Specifications for calculating the real capacity.
  - Cooling : Indoor Water Temp. 23°C / 18°C, Outdoor Ambient Temp. 35°CDB / 24°CWB
  - Heating : Indoor Water Temp. 30°C / 35°C, Outdoor Ambient Temp. 7°CDB / 6°CWB
  - Interconnected Pipe is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. Sound pressure levels at a distance of 1m.
- 6. This is true for pipe connections of suitable dimensions and joint distance of up to 20m.

Pipe dimensions and types of pumps must always be verified or determined by the designing engineer of electrical installations. Circulation pumps must be dimensioned in such a way so as to ensure rated voltage (see table) through the device.

#### **♦** Electrical Specifications

Indoor Unit Model Name			AHNW16606B0 [HN1616T NB0]		
	Power Supply	V, Ø, Hz	230, 1, 50		
	Power Cable (Included Earth)1)	No. × mm²	3C × 4.0 (H07RN-F)		
	Power connection wiring <sup>2)</sup>	-	L1,N,Earth		
	Heater Type	-	Sheath		
	Number of Heating Coil	EA	1		
Electric Heater (1)	Capacity Combination	kW	2.0		
1 Phase)	Operation	-	Automatic		
i Filase)	Heating Steps	Step	1		
	Rated Current	A	8.7		
	Maximum Current	A	11.1		
	Fuses	A	16		
	Maximum electrical power <sup>3)</sup>	kW	2.52		
	Power Supply	V, Ø, Hz	230, 1, 50		
	Power Cable (Included Earth)1)	No. × mm²	3C × 4.0 (H07RN-F)		
	Power connection wiring <sup>2)</sup>	-	L1,N,Earth (needs connect Bridge to L2 from L1)		
	Heater Type	-	Sheath		
lectric	Number of Heating Coil	EA	2		
Heater (2) (1 Phase)	Capacity Combination	kW	2.0 + 2.0		
	Operation	-	Automatic		
,	Heating Steps	Step	1		
	Rated Current	A	17.4		
	Maximum Current	A	19.9		
	Fuses	A	20		
	Maximum electrical power <sup>3)</sup>	kW	4.52		
	Power Supply	V, Ø, Hz	400, 3, 50		
	Power Cable (Included Earth)1)	No. × mm²	5C × 2.5 (H07RN-F)		
	Power connection wiring <sup>2)</sup>	-	L1,L2,L3,N,Earth		
	Heater Type	-	Sheath		
	Number of Heating Coil	EA	3		
lectric	Capacity Combination	kW	2.0 + 2.0 + 2.0		
Heater (3)	Operation	-	Automatic		
	Heating Steps	Step	1		
	Rated Current	A	8.7		
	Maximum Current	A	11.1		
	Fuses	A	16 + 16 + 16		
lata	Maximum electrical power <sup>3)</sup>	kW	6.52		

Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electricalwork and design. Especially the power cable and circuit breaker should be selected in accordance with that.

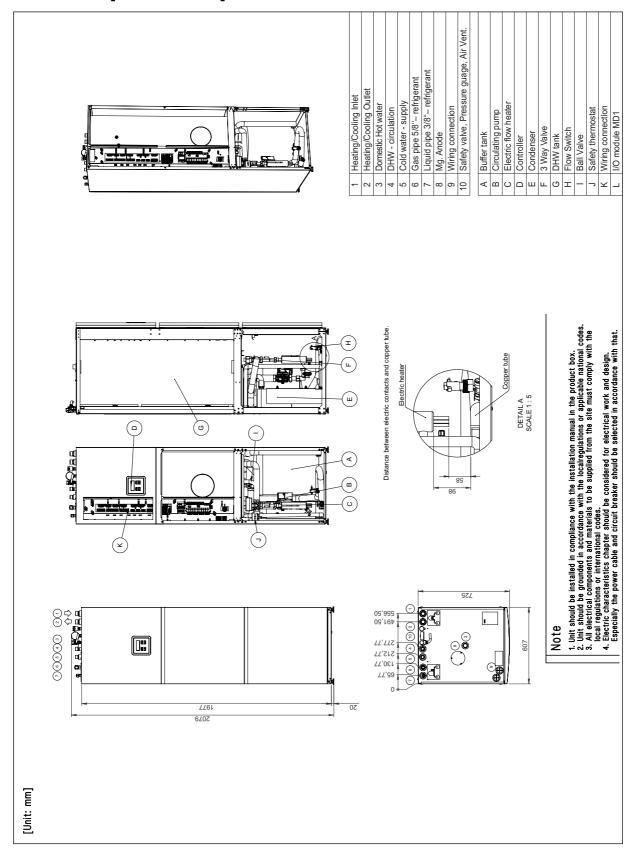
<sup>2.</sup> The guideline about cable is taken into account laying B2 from the table A.52.4 – IEC 60364-5-52. The cable in the installation pipe is fixed to the wall.

<sup>3.</sup> The size of Electrical Heater and the Fuses depend on the choice of the connection power.

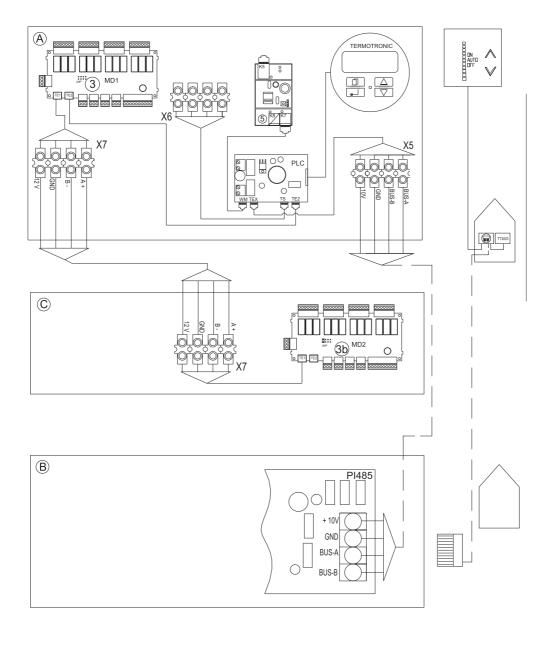
Joint maximal load (circulation pumps, electronic valves ...) which can be connected to or powered by the internal unit, must not exceed the specifiedvalue. Higher consumed parts (i.e. pumps) should have their own supply.

## 4. Drawing

#### AHNW16606B0 [HN1616T NB0]

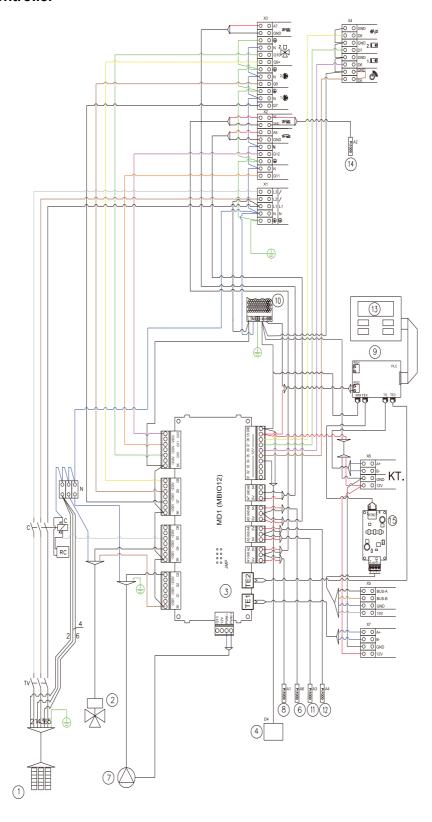


## ■ AHNW16606B0 [HN1616T NB0]



Elements mark	Connecting Terminals	Description			
A : Indoor unit C	ontroller				
	-	Basic input/output module MD1			
3	TE1	Communication with I/O module MD2			
	TE2	Communication with the control electronics of the PLC screen module			
JMP	-	Set-up of bridges (without)			
	-	Connecting terminal for communication with expansion module MD2			
X7	A+, B-	Communication			
	GND, 12V	Power supply			
	-	Connecting terminal for spatial corrector (optional)			
X6	A+, B-	Communication			
	GND, 12V	Power supply			
\ <u></u>	-	Connecting terminal for communication with external module Gateway PI485 in WPLV device			
X5	BUS-A, BUS-B	Communication			
	GND, 10V	Power supply			
	-	Connecting terminal for communication with external module Gateway PI485 in WPLV device			
5	TW MODBUS	Communication with PLC			
	TX MODBUS	Not in use			
	Ethernet	Internet (Ethernet) connection			
	-	Process module			
	WM	Communication with Web module			
PLC	TEX	Communication with outdoor unit - PI485 Gateway			
	TS	Communication with the spatial corrector			
	TE2	Communication with the basic V/I module MD1			
B : Gateway PI 4	85 in the outdoo	r unit			
_	-	External PI485 in the outdoor unit			
PI485	BUS-A, BUS-B	Communication with the control electronics of the Process module PLC			
	GND, + 10V	Power supply			
C : Expansion w	all unit (3rd party	()			
- Expansion input/output module MD2		Expansion input/output module MD2			
3b	TE1	Communication with the basic V/I module MD1			
	TE2	Not in use			
JMP	-	Set-up of bridges (in first position)			
	-	Connecting terminal for communication with I/O module MD1			
X7	A+, B-	Communication			
	GND, 12V	Power supply			

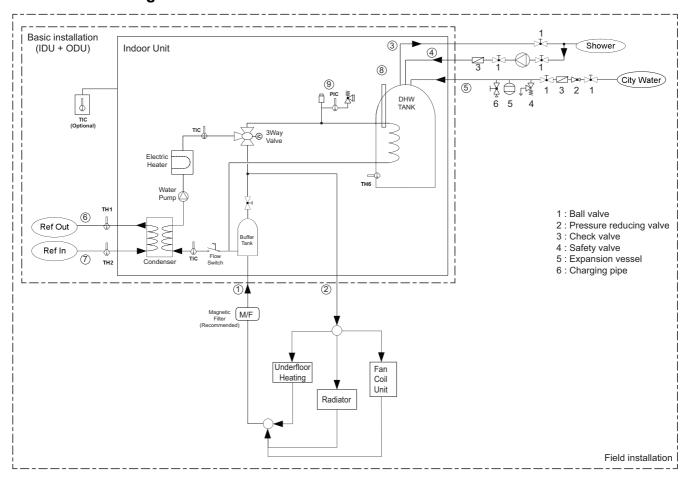
## ♦ Indoor unit Controller



Element Marks	Connecting Terminals	Description		
X1	L1, L2, L3, N, PE	Power cable		
	A5, GND	Temperature sensor for external temperature		
X2	Q11, N	Cooling valve		
	Q12, N, PE	Additional external source		
	Q7, N, PE	Circulation pump of heating cycle 1 (optional)		
Х3	Q8, N, PE	Circulation pump of heating cycle 2 (optional)		
Λ3	N, Q9+, Q10-	Mixing valve of heating cycle 2 (optional)		
	A7, GND	Temperature sensor of mixing-heating cycle 2 (optional)		
	D8, GND	Switch heating/cooling and/or PV signal (optional)		
X4	D7, GND	Thermostat of heating cycle 2 (optional)		
A <del>4</del>	D6, GND	Thermostat of heating cycle 1 (optional)		
	D5, GND	Remote on/off (optional)		
X5	BUS-A, BUS-B, GND, 10 V	Communication with the ODU		
X6	A+, B-, 12 V, GND	Communication spatial corrector (optional)		
X7	A+, B-, 12 V, GND	Communication with expansion unit (optional)		
1	-	Flow electrical heater		
2	-	Tree way valve for switching between heating and DHW		
3	-	Basic input/output module MD1		
4	D4	Flow switch		
	-	Web module (OPTIONAL)		
5	TW Modbus	Communication with PLC		
5	TX Modbus	Not in use		
	Ethernet	Internet connection		
6	A6	Temperature sensor of the supply pipe		
7	Q3	Main circulation pump		
8	A1	Temperature sensor of the return line		
	-	Process module - PLC		
	WM	Communication with the Web module		
	TEX	MODBUS communication with the ODU		
9	TS	Communication with the spatial corrector		
	TE2	Communication with the basic module MD1		
	RQ1	ALARM dry contact		
	RQ2	RESET dry contact		
	-	Power supply ~ 230 V / 12 V		
	L	Phase 230 V 50 Hz		
10	N	Neutral 230 V 50 Hz		
10	-	Protective earth		
	V-	GND		
	V+	12 V dc		
11	A3	Temperature sensor refrigerant pipe - condenser inlet.		
12	A4	Temperature sensor refrigerant pipe - condenser outlet.		
13	<u>-</u>	Membrane Keyboard		
14	A2	Temperature sensor of DHW		
С	-	Electrical contactor of the electrical heater		
TV	-	Thermal protection of the electrical heater		
RC	<del></del>	RC Filter.		

# 6. Piping diagrams

#### ■ DHW Tank Integrated Unit

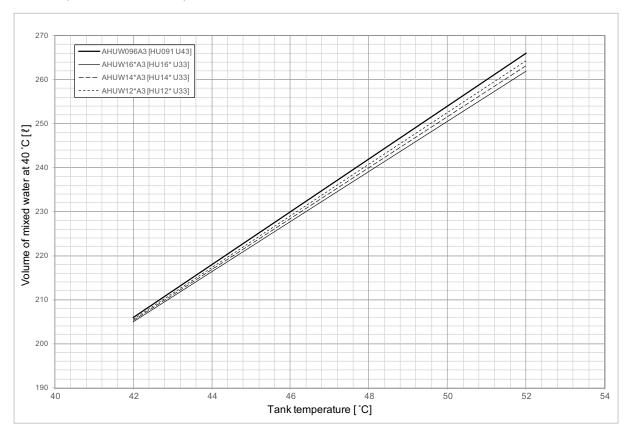


Symbol	System	Description	
1	Cooling / Heating	Return flow	
2		Heating Supply flow	
3		Hot Water Outlet	
4	Domestic Hot Water	Circulation flow Inlet	
5		Cold Water Outleet	
6	Outdoor Unit of Heat Pump	Gas pipe to ODU (based Cooling)	
7	Outdoor Offic of Fleat Fulfip	Liquid pipe from ODU (based Cooling)	
8		Mg. Annode	
9 Devices of Indoor Unit		Safety group (Pressure indicator, safety valve, automatic air vent)	
TIC	Devices of indoor offic	Temperature sensor	
PIC		Pressure indicator	
M/F	Magnetic Filter	3rd party accessory and Field installation It is strongly recommended to install an additional filter on the heating water circuit.	

## 7. Performance Data

#### 7.1 Domestic Hot Water Volume

Water Volume means amount of water that can be tapped with a temperature of  $40\,^{\circ}$ C when the DHW tank has been heated up to a indicated temperature.

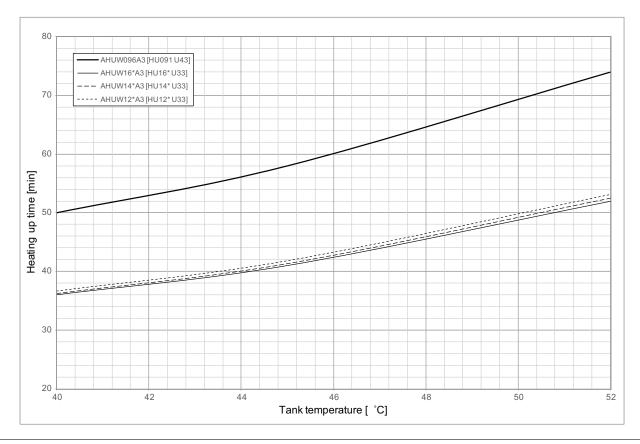


- It is based on the condition that water inlet temperature is 10 ℃.
- For using a higher daily Volume, additional heat up operation by electrical heater are required within 24 hours. Refer to the Owners or Installation manual for more information.
- · Heat losses of domestic hot water tank (According to EN 12897; XL-profile)

Tank Volume (ℓ)	Heat Lossed (kWh/24h)	
200	1.67	

## 7. Performance Data

## 7.2 Domestic Hot Water Performance



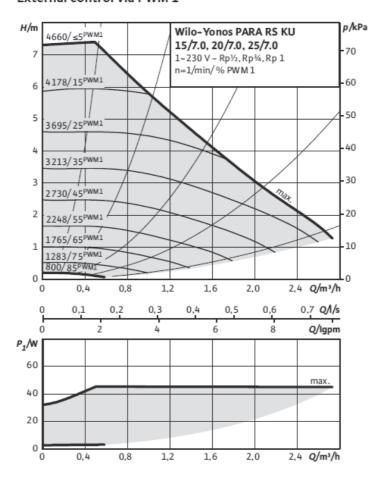
- Heat up time means time required to heat up the water in tank starting from a temperature of 10 °C up to the indicated temperature.
- · It is based on heatpump only operation.

## 8. Water Pump Capacity

The water pump is three speed-adjustable (Maximum / Medium / Minimum), but Minimum step is not used. It is recommended to use Maximum or Medium steps. In case of noise by water flow, it may be required to change default water pump speed. In most case, however, it is strongly recommended to set speed as Maximum.

#### ♦ Yonos PARA RS 25/7.0 PWM1 Ku

#### External control via PWM 1



#### Note

- · Max.: high speed setting
- Operation cutoff range
- To secure enough water flow rate, do not set water pump speed as "Min."



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

#### 9.1 Water Control

#### 9.1.1 Water quality

Water quality should be complied with EN 98/83 EC Directives.

Detailed water quality condition can be found in EN 98/83 EC Directives.

## **A** CAUTION

- If the product 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.
- It is strongly recommended to install an additional filter on the heating water circuit. Especially to remove metallic
  particles from the heating piping, it is advised to use a magnetic or cyclone filter, which can remove small
  particles. Small particles may damage the unit and will NOT removed by the standard filter of the heat pump
  system.

#### 9.1.2 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					
Antineeze type	0°C	-5°C	-10°C	-15°C	-20°C	-25°C
Ethylene glycol	0%	12%	20%	30%	-	-
Propylene glycol	0%	17%	25%	33%	-	-
Methanol	0%	6%	12%	16%	24%	30%

## **⚠** CAUTION

- 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.

## 9.2 Water Piping and water Circuit Connection

#### 9.2.1 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 forinstallation field.
- Never connect electric power while proceeding water charging.

#### 9.2.2 Water piping and water circuit connection

#### 1. 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.

#### 2. 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.

#### 3. 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.

## **M** WARNING

#### Water condensation on the floor

While cooling operation, it is very important to keep leaving water temperature higher than 16  $^{\circ}$ C. Otherwise, dewcondensation can be occurred on the floor.If floor is in humid environment, do not set leaving water temperature below 18  $^{\circ}$ 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 drainagetreatment (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.

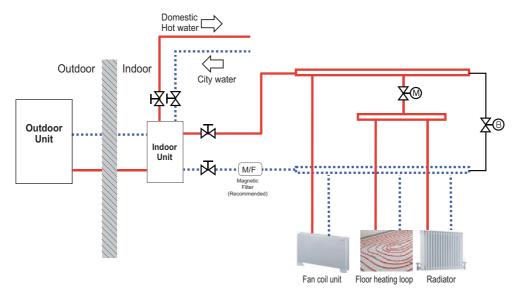
#### 9.3 Installation Scenes

If is installed with pre-existing boiler, the boiler and THERMA V should not be operated together. If entering water temperature of THERMA V 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.

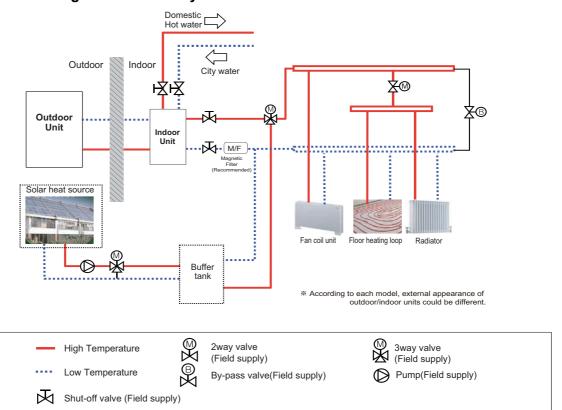
Some installation scenes are presented for example. As these scenes are conceptual figures, installer should optimize the installation scene according to the installation conditions.

#### ◆ CASE1 : Connecting heat emitters for heating and cooling

(Under floor loop, Fan coil unit and Radiator)

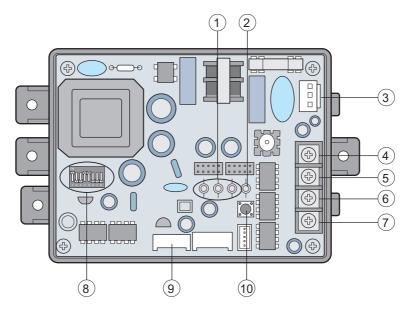


#### ◆ CASE2 : Connecting Solar thermal system



## 10.1 Modbus Converter (PP485B00K)

## 10.1.1 Part Description



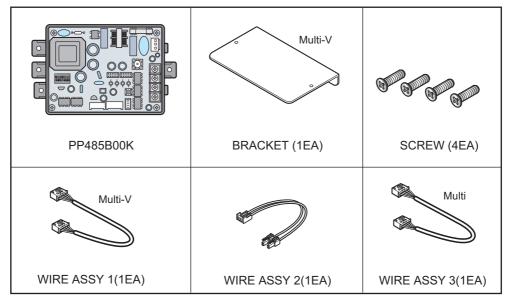
## ■ Modbus Gateway For Indoor Unit

- ① LED01G, 02G, 03G: Communication Status LED
- 2 LED1:RS-485 Status LED
- 3 CN PWR: 220V~ Connector
- 4 +10V: DC 10 V Terminal
- ⑤ GND: Ground
- 6 BUS\_A: \*RS-485 (+) Terminal (Refer to note)
- 7 BUS B: \*RS-485 (-) Terminal
- 8 DIP Switch: Product Selection (Refer to the 「DIP Switch Configuration」)
- 9 CN\_OUT: Outdoor Unit Connector
- 10 Reset Switch: Modbus Converter Reset

#### Note

\*: RS-485 is one of the international interface standards for serial communication.

#### Accessory Part List



Others: Tie Wrap (3 EA) - Cable Tie

Clamp (1 EA)

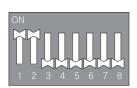
#### 10.1.2 Installation Guide

- 1. 9 Connect CN\_OUT with Outdoor Unit by the cable(provided).
- 2. ⑥, ⑦ Connect RS-485 BUS\_A(+) and BUS\_(B)(-) with other network products. (ex. Central Controller, I-Gateway.....)
- 3. 8 Select DIP Switch Configuration.
- 4. Connect CN PWR with Outdoor PCB Power connector.
- 5. After Power is ON, check the Communication LED①
  - LED2G(Yellow), LED3G(Orange)
    - Normal: LED blinks continuously
    - Error : Check the DIP Switch setting & wiring connections0
- 6. ② Check RS-485 Communication Status LED:
  - Normal: LED blinks when PI485 receives data from central controller.
  - Error : Check the wiring connections.
- 7. Finally if all of the above steps are OK, then tie the cables by tie wraps & clamp



· Install the modbus converter after checking the hole for screw.

## 10.1.3 DIP Switch Configuration



#### **A** CAUTION

- Switch No.1 and 2 sould be ON, and all others should be OFF.
- The wrong setting of DIP switches could cause malfunctioning.
   Switch setting must be done carefully.
- Push the Reset button after changing the DIP switch.

# THERMA V<sub>TM</sub> Split Type

## **Outdoor unit**

- 1.List of functions
- 2. Specification
- 3. Dimensions
- 4. Wiring Diagram
- **5. Piping Diagram**
- **6.Performance Data**
- 7. Operation Range
- **8. Electric Characteristics**
- 9. Sound Levels
- 10.Installation

# 1. List of functions

#### **■** List of functions

Category		AHUW056A3 [HU051 U43] AHUW076A3 [HU071 U43] AHUW096A3 [HU091 U43]	AHUW126A3 [HU121 U33] AHUW146A3 [HU141 U33] AHUW166A3 [HU161 U33]	AHUW128A3 [HU123 U33] AHUW148A3 [HU143 U33] AHUW168A3 [HU163 U33]
	Defrost / Deicing	0	0	0
	High pressure switch	X	X	X
	Low pressure switch	X	X	X
Reliability	Phase protection	X	X	Х
	Restart delay (3-minutes)	0	0	0
	Self diagnosis	0	0	0
	Soft start	X	X	Х
	Test function	X	X	X
	Night Low Noise Operation	0	0	0
	Wiring Error Check	X	X	X
Convenience	Peak Control	X	X	X
	Mode Lock	0	0	0
	Forced Cooling Operation (Outdoor Unit)	Х	Х	Х
	SLC (Smart Load Control)	Х	Х	Х
Network function	Network solution (LGAP)	X	X	Х
ODU Dry Contact function		X	Х	X

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

## 2.1 Nominal Capacity and Power Input

#### ■ Combination with Hydro Box type

Model Names	Outdoor Unit		AHUW056A3 [HU051 U43]	AHUW076A3 [HU071 U43]
Widdel Names	Indoor Unit		AHNW16606A3 [HN1616 NK3]	AHNW16606A3 [HN1616 NK3]
Capacity	Cooling	kW	5.0	7.0
(Rated)	Heating	kW	5.0	7.0
Power Input	Cooling	kW	1.09	1.56
(Rated)	Heating	kW	1.01	1.47
EER	Cooling	W/W	4.60	4.50
COP	Heating	W/W	4.93	4.75
Prated (Low tem	p. Average)	kW	5.50	6.00
Prated (High ten	np. Average)	kW	5.60	5.60
SCOP (Low tem	p. Average)	W/W	4.52	4.45
SCOP (High tem	ip. Average)	W/W	3.23	3.23

Model Names	Outdoor Unit		AHUW096A3 [HU091 U43]	AHUW126A3 [HU121 U33]
Widdel Names	Indoor Unit		AHNW16606A3 [HN1616 NK3]	AHNW16606A3 [HN1616 NK3]
Capacity	Cooling	kW	9.0	10.4
(Rated)	Heating	kW	9.0	12.0
Power Input (Rated)	Cooling	kW	2.37	2.60
(Rated)	Heating	kW	2.05	2.64
EER	Cooling	W/W	3.80	4.00
COP	Heating	W/W	4.40	4.55
Prated (Low tem	p. Average)	kW	6.50	9.00
Prated (High tem	np. Average)	kW	5.60	9.90
SCOP (Low tem	p. Average)	W/W	4.34	4.45
SCOP (High tem	p. Average)	W/W	3.23	3.32

Model Names	Outdoor Unit		AHUW146A3 [HU141 U33]	AHUW166A3 [HU161 U33]
Widdel Names	Indoor Unit		AHNW16606A3 [HN1616 NK3]	AHNW16606A3 [HN1616 NK3]
Capacity	Cooling	kW	12.0	13.0
(Rated)	Heating	kW	14.0	16.0
Power Input	Cooling	kW	3.08	3.60
(Rated)	Heating	kW	3.18	3.76
EER	Cooling	W/W	3.90	3.61
COP	Heating	W/W	4.41	4.26
Prated (Low tem)	o. Average)	kW	9.50	10.00
Prated (High tem	p. Average)	kW	9.90	9.90
SCOP (Low temp	o. Average)	W/W	4.45	4.30
SCOP (High tem	p. Average)	W/W	3.32	3.32

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- 2. Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions:
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating : Inlet/Outlet Water Temp.  $30^{\circ}\text{C}/35^{\circ}\text{C}$ , Outdoor Air Temp.  $7^{\circ}\text{CDB}$  /  $6^{\circ}\text{CWB}$
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.

Model Names	Outdoor Unit		AHUW128A3 [HU123 U33]	AHUW148A3 [HU143 U33]
Woder Names	Indoor Unit		AHNW16809A3 [HN1639 NK3]	AHNW16809A3 [HN1639 NK3]
Capacity	Cooling	kW	10.4	12.0
(Rated)	Heating	kW	12.0	14.0
Power Input	Cooling	kW	2.60	3.08
(Rated)	Heating	kW	2.64	3.18
EER	Cooling	W/W	4.00	3.90
COP	Heating	W/W	4.55	4.41
Prated (Low tem	p. Average)	kW	9.00	9.50
Prated (High tem	p. Average)	kW	9.90	9.90
SCOP (Low temp. Average) W/W		4.45	4.45	
SCOP (High tem	p. Average)	W/W	3.32	3.32

Model Names	Outdoor Unit		AHUW168A3 [HU163 U33]
Woder Names	Indoor Unit		AHNW16809A3 [HN1639 NK3]
Capacity	Cooling	kW	13.0
(Rated)	Heating	kW	16.0
Power Input	Cooling	kW	3.60
(Rated)	Heating	kW	3.76
EER	Cooling	W/W	3.61
COP	Heating	W/W	4.26
Prated (Low tem	p. Average)	kW	10.00
Prated (High tem	np. Average)	kW	9.90
(		W/W	4.30
SCOP (High tem	p. Average)	W/W	3.32

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- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions :
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.

#### ■ Combination with DHW tank Integrated type

Model Names	Outdoor Unit		AHUW096A3 [HU091 U43]	AHUW126A3 [HU121 U33]
Woder Names	Indoor Unit		AHNW16606B0 [HN1616T NB0]	AHNW16606B0 [HN1616T NB0]
Capacity	Cooling	kW	9.0	10.4
(Rated)	Heating	kW	9.0	12.0
Power Input	Cooling	kW	2.88	3.30
(Rated)	Heating	kW	2.23	2.78
EER	Cooling	W/W	3.12	3.15
COP	Heating	W/W	4.04	4.32
Prated (Low tem	p. Average)	kW	6.50	9.80
Prated (High terr	np. Average)	kW	5.60	9.80
SCOP (Low tem)	o. Average)	W/W	4.04	4.20
SCOP (High tem	p. Average)	W/W	2.88	3.00

Model Names	Outdoor Unit		AHUW146A3 [HU141 U33]	AHUW166A3 [HU161 U33]
Widdel Names	Indoor Unit		AHNW16606B0 [HN1616T NB0]	AHNW16606B0 [HN1616T NB0]
Capacity	Cooling	kW	11.0	12.0
(Rated)	Heating	kW	14.0	16.0
Power Input	Cooling	kW	3.53	4.00
(Rated)	Heating	kW	3.43	4.18
EER	Cooling	W/W	3.12	3.00
COP	Heating	W/W	4.08	3.83
Prated (Low tem)	o. Average)	kW	10.40	10.80
Prated (High tem	p. Average)	kW	9.80	9.80
SCOP (Low temp	o. Average)	W/W	4.15	4.15
SCOP (High tem	p. Average)	W/W	3.00	3.00

Model Names	Outdoor Unit		AHUW128A3 [HU123 U33]	AHUW148A3 [HU143 U33]
Woder Names	Indoor Unit		AHNW16606B0 [HN1616T NB0]	AHNW16606B0 [HN1616T NB0]
Capacity	Cooling	kW	10.4	11.0
(Rated)	Heating	kW	12.0	14.0
Power Input	Cooling	kW	3.30	3.53
(Rated)	Heating	kW	2.78	3.43
EER		W/W	3.15	3.12
COP	1	W/W	4.32	4.08
Prated (Low temp		kW	9.80	10.40
Prated (High tem		kW	9.80	9.80
SCOP (Low temp		W/W	4.20	4.15
SCOP (High temp	o. Average)	W/W	3.00	3.00

Model Names	Outdoor Unit Indoor Unit		AHUW168A3 [HU163 U33]	
Widdel Names			AHNW16606B0 [HN1616T NB0]	
Capacity	Cooling	kW	12.0	
(Rated)	Heating	kW	16.0	
Power Input	Cooling	kW	4.00	
(Rated)	Heating	kW	4.18	
EER	Cooling	W/W	3.00	
COP	Heating	W/W	3.83	
Prated (Low terr	np. Average)	kW	10.80	
Prated (High ten	np. Average)	kW	9.80	
SCOP (Low temp. Average) W/W		W/W	4.15	
SCOP (High ten	np. Average)	W/W	3.00	

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- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions :
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.

# 2.2 Outdoor Unit Specifications

Outdoor Units				AHUW056A3 [HU051 U43]	AHUW076A3 [HU071 U43]
Operation Range	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48
(Outdoor Tempera-	Heating	Min. ~ Max.	°C DB	-20 ~ 35	-20 ~ 35
ture)	Domestic Hot Water	Min. ~ Max.	°C DB	-	-
	Туре		-	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GJT240MAA x 1	GJT240MAA x 1
Compressor	Diplacement		cm³/Rev.	24	24
Compressor	Capacity		kW	7.41	7.41
	Motor Type		-	BLDC	BLDC
	Motor Output	Rated	W x No.	2,137 x 1	2,137 x 1
	Туре		-	R410A	R410A
	GWP (Global Warming	g Potential)	-	2,087.5	2,087.5
Defrigerent	Precharged Amo	ount	g	1,800	1,800
Refrigerant	t-CO2 eq.		-	3.76	3.76
	Chargeless-Pipe	e Length	m	7.5	7.5
	Additional Charging Volume		g/m	40	40
	Control		-	Electronic Expansion Valve	Electronic Expansion Valve
Defricerent Oil	Туре		-	FVC68D	FVC68D
Refrigerant Oil	Charged Volume		cc x No.	570 x 1	570 x 1
	Quantity		EA	1	1
Heat Evelopes		Row	EA	2	2
Heat Exchanger	Specifications	Column	EA	38	38
		Fins per Inch	EA	14	14
Fan	Туре		-	Propeller	Propeller
ran	Air Flow Rate	Rated	m³/min x No.	58 x 1	58 x 1
Fan Motor	Туре		-	BLDC	BLDC
ran wotor	Output		W x No.	124 x 1	124 x 1
Sound Power Level	Heating	Rated	dB(A)	65	65
	Liquid	Type	-	Flare	Flare
Piping Connections	Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
riping Connections	Gas	Type	-	Flare	Flare
	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Dining Langth		Standard	m	7.5	7.5
Piping Length		Max.	m	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30
Dimensions	Unit	WxHxD	mm	950 x 834 x 330	950 x 834 x 330
Dimensions	Packed Unit	WxHxD	mm	1,065 x 918 x 461	1,065 x 918 x 461
\\/a:= a4	Unit		kg	59.0	59.0
Weight	Packed Unit		kg	65.0	65.0

	Electrical Specification		AHUW056A3 [HU051 U43]	AHUW076A3 [HU071 U43]
Power Supply		V, Ø, Hz	220-240 / 1 / 50	220-240 / 1 / 50
Maximum Running	Cooling	Α	19.0	19.0
Current	Heating	Α	19.0	19.0
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm²	3 x 4.0 (H07RN-F)	3 x 4.0 (H07RN-F)

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- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions :
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.

	Outdoor U	nits		AHUW096A3 [HU091 U43]	AHUW126A3 [HU121 U33]
Operation Pange	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-20 ~ 35	-20 ~ 35
ture)	Domestic Hot Water	Min. ~ Max.	°C DB	-	-
	Туре		-	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GJT240MAA x 1	GPT442MAA x 1
Comproceor	Diplacement		cm³/Rev.	24	44.2
Compressor	Capacity		kW	7.41	13.92
	Motor Type		-	BLDC	BLDC
	Motor Output	Rated	W x No.	2,137 x 1	4,000 x 1
	Туре	•	-	R410A	R410A
	GWP (Global Warming	g Potential)	-	2,087.5	2,087.5
Dafei a a sa sat	Precharged Amo		g	1,800	2,300
Reingerant	t-CO2 eq.		-	3.76	4.80
	Chargeless-Pipe	e Length	m	7.5	7.5
	Additional Charg	ging Volume	g/m	40	40
Refrigerant Refrigerant Oil Reat Exchanger an Ran Motor Round Power Level Riping Connections Riping Length Riping Level	Control		-	Electronic Expansion Valve	Electronic Expansion Valve
2 - foi + O!I	Туре		-	FVC68D	FVC68D
Refrigerant Oil	Charged Volume		cc x No.	570 x 1	1,300 x 1
Refrigerant Oil	Quantity		EA	1	2
	,	Row	EA	2	2
Heat Exchanger	Specifications	Column	EA	38	32
		Fins per Inch	EA	14	14
	Туре		-	Propeller	Propeller
-an	Air Flow Rate	Rated	m³/min x No.	58 x 1	55 x 2
N4-4	Туре		-	BLDC	BLDC
-an Motor	Output		W x No.	124 x 1	124 x 2
Sound Power Level	Heating	Rated	dB(A)	65	66
		Туре	- ′	Flare	Flare
Dining Compositions	Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
Piping Connections	Gas	Туре	- 1	Flare	Flare
	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Dining Langeth	in a Languida		m	7.5	7.5
iping Length		Max.	m	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30
Dimonoiono	Unit	WxHxD	mm	950 x 834 x 330	950 x 1,380 x 330
DIMENSIONS	Packed Unit	WxHxD	mm	1,065 x 918 x 461	1,140 x 1,462 x 461
Maiabt	Unit		kg	59.0	94.0
vveigni	Packed Unit		kg	65.0	107.0

	Electrical Specification		AHUW096A3 [HU091 U43]	AHUW126A3 [HU121 U33]
Power Supply		V, Ø, Hz	220-240 / 1 / 50	220-240 / 1 / 50
Maximum Running	Cooling	Α	19.0	25.0
Current	Heating	Α	19.0	25.0
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm²	3 x 4.0(H07RN-F)	3 x 6.0 (H07RN-F)

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- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions:
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.

	Outdoor Ur	nits		AHUW146A3 [HU141 U33]	AHUW166A3 [HU161 U33]
Operation Bango	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48
	Heating	Min. ~ Max.	°C DB	-20 ~ 35	-20 ~ 35
ture)	Domestic Hot Water	Min. ~ Max.	°C DB	-	-
	Туре		-	Hermetic Motor	Hermetic Motor
	Model		Model x No.	GPT442MAA x 1	GPT442MAA x 1
Compressor	Diplacement		cm³/Rev.	44.2	44.2
Compressor	Capacity		kW	13.92	13.92
	Motor Type		-	BLDC	BLDC
	Motor Output	Rated	W x No.	4,000 x 1	4,000 x 1
	Туре		-	R410A	R410A
	GWP (Global Warming		-	2,087.5	2,087.5
Defrigerent	Precharged Amo	ount	g	2,300	2,300
Reingerani	t-CO2 eq.		-	4.80	4.80
	Chargeless-Pipe		m	7.5	7.5
	Additional Charg	ging Volume	g/m	40	40
Compressor  Refrigerant Refrigerant Oil Heat Exchanger Fan Fan Motor Cound Power Level Piping Connections Piping Length Piping Level Difference	Control		-	Electronic Expansion Valve	Electronic Expansion Valve
Define and Oil	Туре		-	FVC68D	FVC68D
Reingerant Oil	Charged Volume	•	cc x No.	1,300 x 1	1,300 x 1
	Quantity		EA	2	2
Piping Connections Piping Length Piping Level	·	Row	EA	2	2
	Specifications	Column	EA	32	32
	'	Fins per Inch	EA	14	14
Г	Type	•	-	Propeller	Propeller
ran	Air Flow Rate	Rated	m³/min x No.	55 x 2	55 x 2
Can Matan	Туре		-	BLDC	BLDC
Fan Motor	Output		W x No.	124 x 2	124 x 2
Sound Power Level	Heating	Rated	dB(A)	66	66
	Liquid	Type	- '	Flare	Flare
Dining Connections	Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
Piping Connections	Gas	Type	-	Flare	Flare
	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
Dining Longth		Standard	m	7.5	7.5
Piping Length		Max.	m	50	50
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30
Dimensione	Unit	WxHxD	mm	950 x 1,380 x 330	950 x 1,380 x 330
Dimensions	Packed Unit	WxHxD	mm	1,140 x 1,462 x 461	1,140 x 1,462 x 461
Moight	Unit		kg	94.0	94.0
vveignt	Packed Unit		kg	107.0	107.0

	Electrical Specification		AHUW146A3 [HU141 U33]	AHUW166A3 [HU161 U33]
Power Supply		V, Ø, Hz	220-240 / 1 / 50	220-240 / 1 / 50
Maximum Running	Cooling	Α	25.0	25.0
Current	Heating	Α	25.0	25.0
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm²	3 x 6.0 (H07RN-F)	3 x 6.0 (H07RN-F)

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- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions:
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.

	Outdoor U	nits		AHUW128A3 [HU123 U33]	AHUW148A3 [HU143 U33]		
Operation Dance	Cooling	Min. ~ Max.	°C DB	5 ~ 48	5 ~ 48		
	Heating	Min. ~ Max.	°C DB	-20 ~ 35	-20 ~ 35		
ture)	Domestic Hot Water	Min. ~ Max.	°C DB	-	-		
	Туре		-	Hermetic Motor	Hermetic Motor		
	Model		Model x No.	GPT442MAA x 1	GPT442MAA x 1		
Compressor	Diplacement		cm³/Rev.	44.2	44.2		
Compressor	Capacity		kW	13.92			
	Motor Type		-	BLDC			
	Motor Output	Rated	W x No.	4,000 x 1			
	Туре	•	-	R410A	R410A		
	GWP (Global Warming		-	2,087.5	2,087.5		
Defrigerent	Precharged Amo	ount	g	2,300	2,300		
Reingerani	t-CO2 eq.		-	4.80	4.80		
	Chargeless-Pipe	e Length	m	7.5	7.5		
	Additional Charg	ging Volume	g/m	40	40		
	Control		-	Electronic Expansion Valve	Electronic Expansion Valve		
Define a mant Oil	Туре		-	FVC68D	-20 ~ 35  -20 ~ 35  -35  Hermetic Motor GPT442MAA x 1  44.2  13.92  BLDC  4,000 x 1  R410A  2,087.5  2,300  4.80  7.5  40		
Reingerant Oil	gerant Oil Type Charged Volur Quantity		cc x No.	1,300 x 1	1,300 x 1		
Compressor  Refrigerant  Refrigerant Oil  Heat Exchanger  Fan Motor  Sound Power Level  Piping Connections  Piping Length	Quantity		EA	2	2		
	_	Row	EA	2	2		
	Specifications	Column	EA	32	32		
		Fins per Inch	EA	14	14		
Г	Туре		-	Propeller	Propeller		
ran	Air Flow Rate	Rated	m³/min x No.	55 x 2	55 x 2		
C M-4	Туре		-	BLDC	BLDC		
Fan Motor	Output		W x No.	124 x 2	124 x 2		
Sound Power Level	Heating	Rated	dB(A)	66	66		
	<u> </u>	Туре	- ′	Flare	Flare		
Distance Oscars attance	Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)		
Piping Connections	0	Туре	-	Flare			
	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	otor Hermetic Motor Ax 1 GPT442MAA x 1  44.2  13.92  BLDC  4,000 x 1  R410A  2,087.5  2,300  4.80  7.5  40  Sion Valve Electronic Expansion Valve FVC68D  1,300 x 1  2  2  32  14  r Propeller 55 x 2  BLDC 124 x 2  66  Flare 8) Ø 9.52 (3/8)  Flare //8) Ø 15.88 (5/8)  7.5  50  30  x 330  y 50 x 1,380 x 330 x 461  1,140 x 1,462 x 461 94.0		
Distinct Law ette		Standard	m	7.5			
		Max.	m	50	50		
Piping Level Difference	Outdoor Unit ~ Indoor Unit	Max.	m	30	30		
	Unit	WxHxD	mm	950 x 1,380 x 330	950 x 1,380 x 330		
Dimensions	Packed Unit	WxHxD	mm	1,140 x 1,462 x 461			
	Unit		kg	94.0			
vveight	Packed Unit		kg	107.0	2,300 4.80 7.5 40 Electronic Expansion Valve FVC68D 1,300 x 1 2 2 32 14 Propeller 55 x 2 BLDC 124 x 2 66 Flare Ø 9.52 (3/8) Flare Ø 15.88 (5/8) 7.5 50 30 950 x 1,380 x 330 1,140 x 1,462 x 461 94.0		

	Electrical Specification		AHUW128A3 [HU123 U33]	AHUW148A3 [HU143 U33]
Power Supply		V, Ø, Hz	380-415 / 1 / 50	380-415 / 1 / 50
Maximum Running	Cooling	Α	16.1	16.1
Current	Heating	Α	16.1	16.1
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm²	5 x 2.5 (H07RN-F)	5 x 2.5 (H07RN-F)

- 1. Due to our policy of innovation some specifications may be changed without notification.
- 2. Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions:
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.

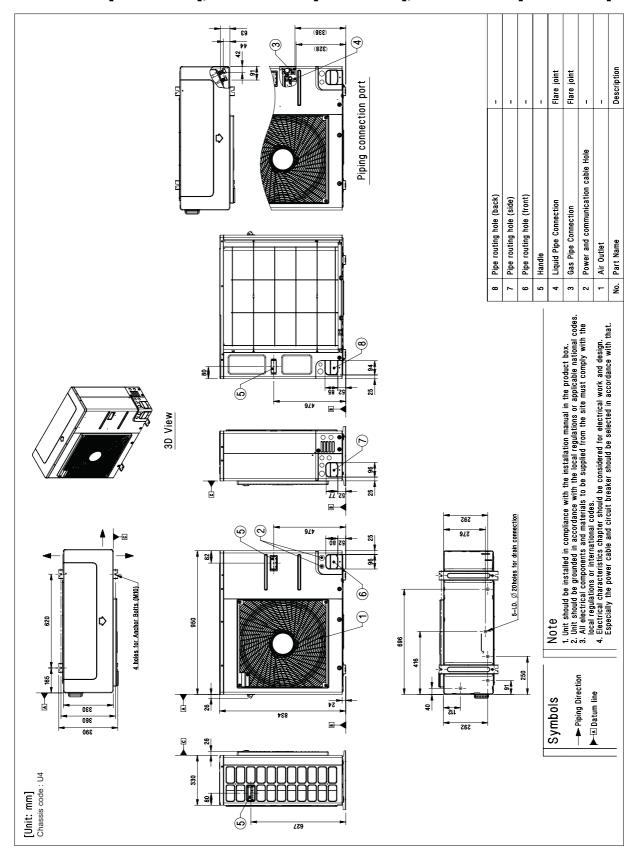
Operation Range (Outdoor Tempera-ture)         Cooling (Outdoor Tempera-ture)         Min. ~ Max. ~ °C DB         5 ~ 48           Ture)         Min. ~ Max. ~ °C DB         -20 ~ 35           Compressor         Min. ~ Max. ~ °C DB         -           Compressor         Model — Model × No. GPT442MAA x 1           Diplacement — cm²/Rev. — Moder Vol. —		Outdoor U	nits		AHUW168A3 [HU163 U33]
(Outdoor Tempera- ture)         Preating Min. * Max.         * C DB         -20*35           Domestic Hot Water         Min. * Max.         * C DB         -           Type         -         Hermetic Motor           Model         Model × No.         GPT442MAX × 1           Diplacement         cm²/Rev.         44.2           Capacity         kW         13.92           Motor Type         BLDC           Motor Output   Rated         W x No.         4,000 x 1           Type         -         R410A           GWP         -         R410A           GWP         -         R400A           Global Warming Potential)         -         2,087.5           Refrigerant         Percharged Amount         g         2,300           T-CO2 eq.         -         4.80           Chargeless-Pipe Length         m         7.5           Additional Charging Volume         g/m         40           Control         -         Electronic Expansion Valve           Refrigerant Oil         Type         -         FVC68D           Chargeless-Pipe Length         m         7.5         A           Refrigerant Oil         Type         -         PVC68BD </td <td>Operation Dance</td> <td>Cooling</td> <td>Min. ~ Max.</td> <td>°C DB</td> <td></td>	Operation Dance	Cooling	Min. ~ Max.	°C DB	
Domestic Hot Water   Water   Water   Type			Min. ~ Max.	°C DB	-20 ~ 35
Model	ture)	Domestic Hot Water	Min. ~ Max.	°C DB	-
Diplacement				-	
Capacity					
Capacity   Rew   13.92	Compressor				
Motor Output	Compressor			kW	
Type		Motor Type			
Refrigerant   GWP		Motor Output	Rated	W x No.	
Refrigerant   Refrigerant   Precharged Amount   G   C,0300			•	-	R410A
T-CO2 eq.   -   -     4.80		(Global Warming	g Potential)	-	2,087.5
T-CO2 eq.   -   -     4.80	Dofrigorant	Precharged Amo	ount	g	2,300
Additional Charging Volume   g/m   Electronic Expansion Valve	Reingerani	t-CO2 eq.		-	4.80
Control   Control   Control   Control   Type   Cox No.   Type   Type   Cox No.   Type   Type   Cox No.   Type				m	7.5
Type		Additional Charg	ging Volume	g/m	
Charged Volume		Control		-	Electronic Expansion Valve
Heat Exchanger	Defrigerent Oil	Туре		-	FVC68D
Heat Exchanger   Specifications   Row   EA   32	Reingerant Oil	Charged Volume	Э	cc x No.	1,300
Specifications   Column	Heat Exchanger Fan	Quantity		EA	2
Specifications   Column   EA   14   14   14   15   15   15   15   15			Row	EA	
Fan         Type         -         Propeller           Air Flow Rate         Rated         m³/min x No.         55 x 2           Fan Motor         Type         -         BLDC           Output         W x No.         124 x 2           Sound Power Level         Heating         Rated         dB(A)         66           Piping Connections         Liquid         Type         -         Flare           Outer Dia.         mm(inch)         Ø 9.52 (3/8)           Flare         Outer Dia.         mm(inch)         Ø 15.88 (5/8)           Piping Length         Standard         m         7.5           Max.         m         50           Piping Level Difference         Outdoor Unit Indoor Unit In		Specifications	Column	EA	32
Fan			Fins per Inch	EA	14
Fan Motor   Type	Fon	Туре		-	Propeller
Fan Motor	ran	Air Flow Rate	Rated	m³/min x No.	55 x 2
Pain Motor   Output	Can Mater	Туре	•	-	BLDC
Piping Connections         Liquid         Type Outer Dia. mm(inch)         Flare Myse           Gas         Type Outer Dia. mm(inch)         Flare Myse           Piping Length         Standard Myse         7.5           Piping Level Difference         Outdoor Unit Myse         Max. Myse         Max. Myse           Dimensions         Unit Myse HxD Myse         Myse         950 x 1,380 x 330           Weight         Unit Myse         Myse         94.0	ran wotor	Output			124 x 2
Piping Connections         Liquid         Type Outer Dia. mm(inch)         Flare Myse           Gas         Type Outer Dia. mm(inch)         Flare Myse           Piping Length         Standard Myse         7.5           Piping Level Difference         Outdoor Unit Myse         Max. Myse         Max. Myse           Dimensions         Unit Myse HxD Myse         Myse         950 x 1,380 x 330           Weight         Unit Myse         Myse         94.0	Sound Power Level	Heating	Rated	dB(A)	66
Piping Connections         Outer Dia.         Him(litch)         Ø 9.32 (3/6)           Type         -         Flare           Outer Dia.         mm(inch)         Ø 15.88 (5/8)           Piping Length         Max.         m         7.5           Piping Level Difference         Outdoor Unit Indoor Unit Indoo		Liquid	Type	-	
Piping Length   Piping Level   Duter Dia   Max.   m   Standard   Max.   m   Standard   Standard   Max.   m   Standard   Standard   Max.   Ma	Dining Connections	Liquid		mm(inch)	
Outer Dia.   mm(inch)   15.88 (5/8)	Piping Connections	Coo	Туре	-	
Piping Length		Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)
Max.   m   50	Dining Langth	•	Standard	m	7.5
Difference         Indoor Unit         Max.         m         30           Dimensions         Unit         W x H x D         mm         950 x 1,380 x 330           Packed Unit         W x H x D         mm         1,140 x 1,462 x 461           Weight         Unit         kg         94.0	Piping Length		Max.	m	50
Packed Unit   W x H x D   mm   1,140 x 1,462 x 461   Weight   Unit   kg   94.0	Piping Level Difference	Indoor Unit	Ī	m	
Packed Unit   W x H x D   mm	Dimensions	Unit	WxHxD	mm	950 x 1,380 x 330
Weight Unit kg 94.0	Dimensions	Packed Unit		mm	
Weight	\\\\a\:\a\:\a\:\a\		ı		
	vveignt	Packed Unit		kg	

	Electrical Specification		AHUW168A3 [HU163 U33]				
Power Supply		V, Ø, Hz	380-415 / 3 / 50				
Maximum Running	Cooling	Α	16.1				
Current	Heating	Α	16.1				
Wiring Connections	Power Supply Cable (Included Earth)	No. x mm²	5 x 2.5 (H07RN-F)				

- 1. Due to our policy of innovation some specifications may be changed without notification.
- 2. Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
- 3. Sound Level Values are measured at Anechoic chamber. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- 4. Performances are based on the following conditions:
  - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
  - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
  - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- 5. This product contains Fluorinated greenhouse gases.

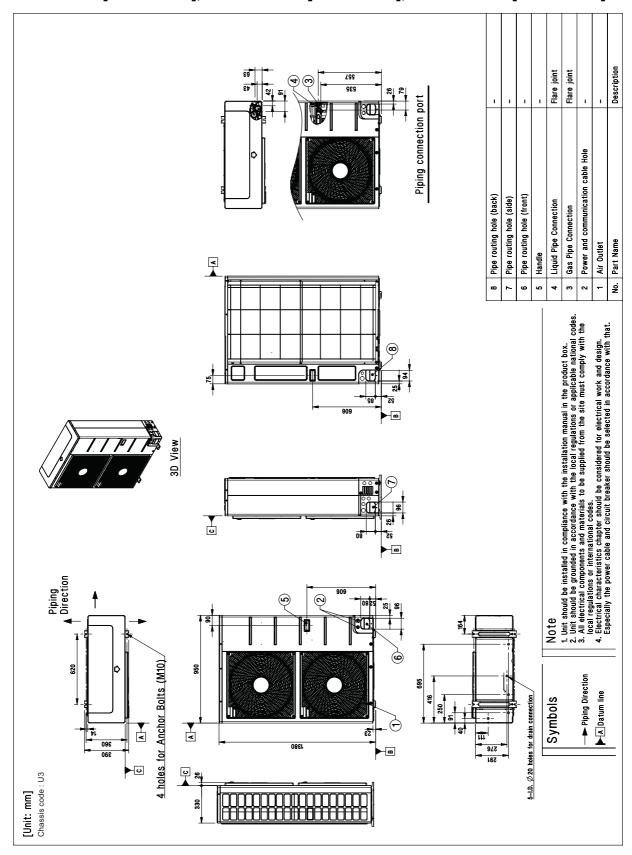
## 3. Dimensions

## ■ AHUW056A3 [HU051 U43], AHUW076A3 [HU071 U43], AHUW096A3 [HU091 U43]



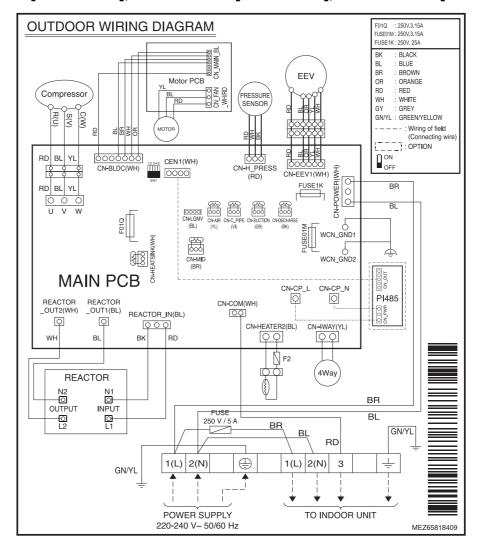
## 3. Dimensions

■ AHUW146A3 [HU141 U33], AHUW166A3 [HU161 U33], AHUW128A3 [HU123 U33], AHUW148A3 [HU143 U33], AHUW168A3 [HU163 U33], AHUW126A3 [HU121 U33]



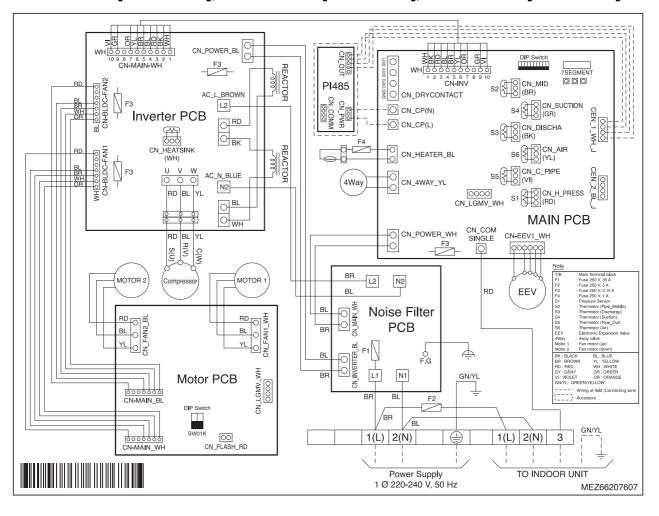
# 4. Wiring Diagrams

## ■ AHUW056A3 [HU051 U43], AHUW076A3 [HU071 U43], AHUW096A3 [HU091 U43]



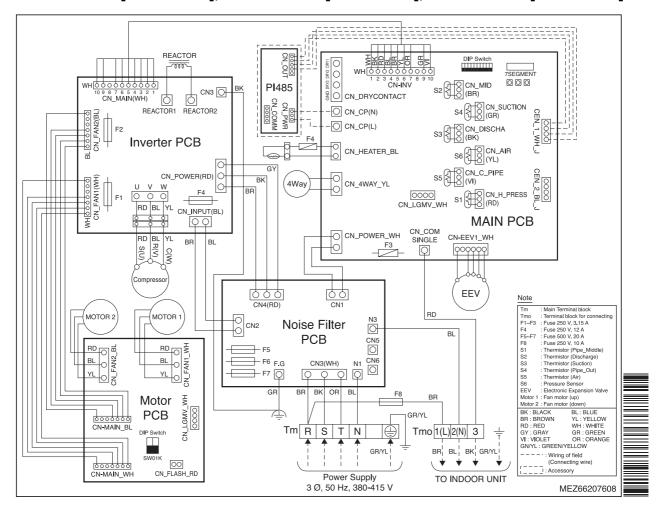
# 4. Wiring Diagrams

## ■ AHUW126A3 [HU121 U33], AHUW146A3 [HU141 U33], AHUW166A3 [HU161 U33]

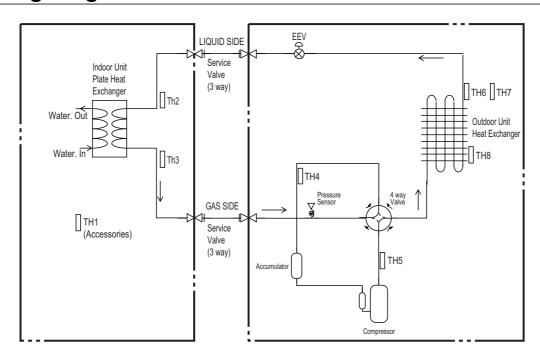


# 4. Wiring Diagrams

### ■ AHUW128A3 [HU123 U33], AHUW148A3 [HU143 U33], AHUW168A3 [HU163 U33]



# 5. Piping Diagram



## **♦** Description

Category	Symbol	Meaning	PCB Connector	Remarks
	Th1	Remote air temperature sensor	CN_ROOM	- Optional accessory (being sold separately) - Not shown in diagram
Indoor Unit	Th2	Inlet evaporator temperature sensor	CN_PIPE_IN	- Meaning is expressed based on Cooling mode.
	Th3	Outlet evaporator temperature sensor	CN_PIPE_OUT	- Weathing is expressed based off Cooling filode.
	Th4	Compressor-suction pipe temperature sensor	CN_SUCTION	
	Th5	Compressor-discharge pipe temperature sensor	CN_DISCHA	
Outdoor Unit	Th6	Condenser temperature sensor	CN_C_PIPE	- Description is expressed based on Cooling mode.
Offic	Th7	Outdoor air temperature sensor	CN_AIR	
	Th8	Condenser middle temperature sensor	CN_MID	
	EEV	Electronic Expansion Valve	CN_LEV1	

## 6.1 Cooling Operation

## 6.1.1 Combination with Hydro Box type

### ■ AHUW056A3 [HU051 U43] + AHNW16606A3 [HN1616 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI												
20℃ DB	3.65	0.67	4.11	0.72	4.57	0.77	4.97	0.82	5.38	0.86	5.76	0.91	-	-
30℃ DB	4.15	1.04	4.35	1.05	4.70	1.14	5.13	1.09	5.24	1.07	5.47	1.07	-	-
35℃ DB	3.82	1.11	4.17	1.15	4.49	1.18	4.86	1.19	5.00	1.09	5.17	1.17	5.37	1.21
40℃ DB	3.64	1.24	3.86	1.28	4.24	1.31	4.50	1.32	4.59	1.21	4.76	1.24	4.95	1.26
45℃ DB	3.07	1.33	3.41	1.36	3.74	1.38	4.06	1.40	4.40	1.42	4.54	1.40	4.68	1.39

#### ■ AHUW076A3 [HU071 U43] + AHNW16606A3 [HN1616 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI												
20℃ DB	5.12	0.95	5.75	1.02	6.40	1.09	6.95	1.16	7.54	1.23	8.06	1.30	-	-
30℃ DB	5.81	1.48	6.09	1.50	6.58	1.62	7.19	1.56	7.34	1.54	7.66	1.52	-	-
35℃ DB	5.34	1.60	5.83	1.66	6.28	1.68	6.79	1.69	7.00	1.56	7.23	1.67	7.51	1.73
40℃ DB	5.09	1.77	5.40	1.82	5.93	1.87	6.30	1.89	6.42	1.73	6.66	1.75	6.92	1.79
45℃ DB	4.30	1.90	4.77	1.94	5.24	1.97	5.68	2.00	6.16	2.04	6.35	2.01	6.55	1.98

#### ■ AHUW096A3 [HU091 U43] + AHNW16606A3 [HN1616 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI								
20℃ DB	6.57	1.45	7.41	1.55	8.23	1.66	8.94	1.77	9.68	1.88	10.36	1.98	-	-
30℃ DB	7.46	2.25	7.83	2.28	8.46	2.47	9.23	2.37	9.44	2.35	9.84	2.31	-	-
35℃ DB	6.87	2.43	7.50	2.51	8.07	2.55	8.74	2.58	9.00	2.37	9.30	2.53	9.66	2.63
40℃ DB	6.54	2.70	6.94	2.76	7.62	2.84	8.10	2.87	8.25	2.62	8.56	2.66	8.90	2.73
45℃ DB	5.52	2.89	6.13	2.93	6.74	3.00	7.30	3.03	7.91	3.09	8.16	3.05	8.42	3.01

### ■ AHUW126A3 [HU121 U33] + AHNW16606A3 [HN1616 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	7.60	1.59	8.55	1.70	9.51	1.82	10.33	1.94	11.19	2.05	11.98	2.17	-	-
30℃ DB	8.62	2.46	9.05	2.50	9.78	2.71	10.67	2.60	10.90	2.57	11.37	2.53	-	-
35℃ DB	7.94	2.66	8.66	2.75	9.33	2.80	10.10	2.82	10.40	2.60	10.75	2.78	11.16	2.88
40℃ DB	7.56	2.96	8.02	3.03	8.81	3.12	9.36	3.16	9.54	2.87	9.89	2.93	10.28	2.99
45℃ DB	6.38	3.17	7.08	3.22	7.79	3.28	8.44	3.33	9.14	3.39	9.44	3.34	9.73	3.30

#### ■ AHUW146A3 [HU141 U33] + AHNW16606A3 [HN1616 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	8.13	1.80	9.87	2.02	10.97	2.16	11.92	2.29	12.91	2.44	13.82	2.57	-	-
30℃ DB	9.24	2.81	10.44	2.97	11.29	3.21	12.31	3.08	12.58	3.04	13.12	2.99	-	-
35℃ DB	8.50	3.03	9.99	3.25	10.76	3.32	11.65	3.35	12.00	3.08	12.40	3.29	12.88	3.41
40℃ DB	8.10	3.37	9.25	3.59	10.17	3.69	10.80	3.73	11.01	3.40	11.42	3.47	11.86	3.53
45℃ DB	7.17	3.25	8.17	3.82	8.99	3.89	9.73	3.95	10.55	4.02	10.89	3.96	11.23	3.91

- 1. DB : Dry bulb temperature( $^{\circ}$ ), LWT : Leaving water temperature( $^{\circ}$ )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. Direct interpolation is permissible. Do not extrapolate.
- 4. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW166A3 [HU161 U33] + AHNW16606A3 [HN1616 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	8.54	1.97	10.69	2.36	11.89	2.52	12.91	2.68	13.98	2.85	14.97	3.01	-	-
30℃ DB	9.70	3.07	11.31	3.47	12.22	3.75	13.34	3.60	13.63	3.55	14.21	3.50	-	-
35℃ DB	8.92	3.30	10.82	3.81	11.66	3.88	12.63	3.91	13.00	3.60	13.43	3.85	13.96	3.98
40℃ DB	8.51	3.67	10.03	4.19	11.02	4.31	11.70	4.36	11.93	3.97	12.37	4.05	12.85	4.13
45℃ DB	7.52	3.54	8.85	4.47	9.73	4.55	10.55	4.62	11.42	4.69	11.80	4.64	12.16	4.58

### ■ AHUW128A3 [HU123 U33] + AHNW16809A3 [HN1639 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	7.60	1.59	8.55	1.70	9.51	1.82	10.33	1.94	11.19	2.05	11.98	2.17	-	-
30℃ DB	8.62	2.46	9.05	2.50	9.78	2.71	10.67	2.60	10.90	2.57	11.37	2.53	-	-
35℃ DB	7.94	2.66	8.66	2.75	9.33	2.80	10.10	2.82	10.40	2.60	10.75	2.78	11.16	2.88
40℃ DB	7.56	2.96	8.02	3.03	8.81	3.12	9.36	3.16	9.54	2.87	9.89	2.93	10.28	2.99
45℃ DB	6.38	3.17	7.08	3.22	7.79	3.28	8.44	3.33	9.14	3.39	9.44	3.34	9.73	3.30

#### ■ AHUW148A3 [HU143 U33] + AHNW16809A3 [HN1639 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	8.13	1.80	9.87	2.02	10.97	2.16	11.92	2.29	12.91	2.44	13.82	2.57	-	-
30℃ DB	9.24	2.81	10.44	2.97	11.29	3.21	12.31	3.08	12.58	3.04	13.12	2.99	-	-
35℃ DB	8.50	3.03	9.99	3.25	10.76	3.32	11.65	3.35	12.00	3.08	12.40	3.29	12.88	3.41
40℃ DB	8.10	3.37	9.25	3.59	10.17	3.69	10.80	3.73	11.01	3.40	11.42	3.47	11.86	3.53
45℃ DB	7.17	3.25	8.17	3.82	8.99	3.89	9.73	3.95	10.55	4.02	10.89	3.96	11.23	3.91

### ■ AHUW168A3 [HU163 U33] + AHNW16809A3 [HN1639 NK3]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	8.54	1.97	10.69	2.36	11.89	2.52	12.91	2.68	13.98	2.85	14.97	3.01	-	-
30℃ DB	9.70	3.07	11.31	3.47	12.22	3.75	13.34	3.60	13.63	3.55	14.21	3.50	-	-
35℃ DB	8.92	3.30	10.82	3.81	11.66	3.88	12.63	3.91	13.00	3.60	13.43	3.85	13.96	3.98
40℃ DB	8.51	3.67	10.03	4.19	11.02	4.31	11.70	4.36	11.93	3.97	12.37	4.05	12.85	4.13
45℃ DB	7.52	3.54	8.85	4.47	9.73	4.55	10.55	4.62	11.42	4.69	11.80	4.64	12.16	4.58

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. Direct interpolation is permissible. Do not extrapolate.
- 4. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

## 6.1.2 Combination with DHW tank Integrated type

### ■ AHUW096A3 [HU091 U43] + AHNW16606B0 [HN1616T NB0]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	7.30	2.51	8.09	2.54	8.89	2.57	9.42	2.59	10.21	2.61	10.75	2.63	-	-
30℃ DB	6.72	2.68	7.45	2.71	8.18	2.74	8.67	2.76	9.40	2.79	9.89	2.81	-	-
35℃ DB	6.43	2.76	7.13	2.79	7.83	2.83	8.30	2.85	9.00	2.88	9.47	2.90	9.94	2.92
40℃ DB	6.14	2.85	6.81	2.88	7.48	2.91	7.93	2.94	8.60	2.97	9.04	2.99	9.49	3.01
45℃ DB	5.85	2.93	6.49	2.97	7.13	3.00	7.55	3.02	8.19	3.06	8.62	3.08	9.04	3.10

#### ■ AHUW126A3 [HU121 U33] + AHNW16606B0 [HN1616T NB0]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	7.03	2.41	8.06	2.43	9.10	2.45	9.79	2.47	10.82	2.49	11.51	2.50	-	-
30℃ DB	6.85	2.93	7.85	2.96	8.86	2.99	9.53	3.00	10.54	3.03	11.21	3.05	-	-
35℃ DB	6.75	3.20	7.75	3.22	8.74	3.25	9.41	3.27	10.40	3.30	11.06	3.32	11.73	3.34
40℃ DB	6.66	3.46	7.64	3.49	8.62	3.52	9.28	3.54	10.26	3.57	10.91	3.59	11.57	3.61
45℃ DB	6.57	3.72	7.54	3.75	8.50	3.79	9.15	3.81	10.12	3.84	10.76	3.86	11.41	3.89

### ■ AHUW146A3 [HU141 U33] + AHNW16606B0 [HN1616T NB0]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	7.43	2.58	8.53	2.60	9.62	2.62	10.35	2.64	11.45	2.66	12.18	2.68	-	-
30℃ DB	7.24	3.14	8.31	3.17	9.37	3.19	10.08	3.21	11.15	3.24	11.86	3.26	-	-
35℃ DB	7.14	3.42	8.19	3.45	9.25	3.48	9.95	3.50	11.00	3.53	11.70	3.55	12.40	3.57
40℃ DB	7.05	3.70	8.08	3.73	9.12	3.77	9.81	3.79	10.85	3.82	11.54	3.84	12.23	3.86
45℃ DB	6.95	3.98	7.97	4.02	8.99	4.05	9.68	4.07	10.70	4.11	11.38	4.13	12.06	4.16

#### ■ AHUW166A3 [HU161 U33] + AHNW16606B0 [HN1616T NB0]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	8.11	2.92	9.30	2.95	10.50	2.97	11.30	2.99	12.49	3.02	13.29	3.03	-	-
30℃ DB	7.90	3.56	9.06	3.59	10.22	3.62	11.00	3.64	12.16	3.67	12.94	3.69	-	-
35℃ DB	7.79	3.87	8.94	3.91	10.09	3.94	10.85	3.97	12.00	4.00	12.77	4.02	13.53	4.05
40℃ DB	7.69	4.19	8.82	4.23	9.95	4.27	10.70	4.29	11.84	4.33	12.59	4.35	13.35	4.38
45℃ DB	7.58	4.51	8.70	4.55	9.81	4.59	10.56	4.62	11.67	4.66	12.42	4.68	13.16	4.71

### ■ AHUW128A3 [HU123 U33] + AHNW16606B0 [HN1616T NB0]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	7.03	2.41	8.06	2.43	9.10	2.45	9.79	2.47	10.82	2.49	11.51	2.50	-	-
30℃ DB	6.85	2.93	7.85	2.96	8.86	2.99	9.53	3.00	10.54	3.03	11.21	3.05	-	-
35℃ DB	6.75	3.20	7.75	3.22	8.74	3.25	9.41	3.27	10.40	3.30	11.06	3.32	11.73	3.34
40℃ DB	6.66	3.46	7.64	3.49	8.62	3.52	9.28	3.54	10.26	3.57	10.91	3.59	11.57	3.61
45℃ DB	6.57	3.72	7.54	3.75	8.50	3.79	9.15	3.81	10.12	3.84	10.76	3.86	11.41	3.89

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. Direct interpolation is permissible. Do not extrapolate.
- 4. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - · In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW148A3 [HU143 U33] + AHNW16606B0 [HN1616T NB0]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	7.43	2.58	8.53	2.60	9.62	2.62	10.35	2.64	11.45	2.66	12.18	2.68	-	-
30℃ DB	7.24	3.14	8.31	3.17	9.37	3.19	10.08	3.21	11.15	3.24	11.86	3.26	-	-
35℃ DB	7.14	3.42	8.19	3.45	9.25	3.48	9.95	3.50	11.00	3.53	11.70	3.55	12.40	3.57
40℃ DB	7.05	3.70	8.08	3.73	9.12	3.77	9.81	3.79	10.85	3.82	11.54	3.84	12.23	3.86
45℃ DB	6.95	3.98	7.97	4.02	8.99	4.05	9.68	4.07	10.70	4.11	11.38	4.13	12.06	4.16

### ■ AHUW168A3 [HU163 U33] + AHNW16606B0 [HN1616T NB0]

Outdoor	LWT	7°C	LWT	10°C	LWT	13°C	LWT	15°C	LWT	18°C	LWT	20°C	LWT	22°C
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
20℃ DB	8.11	2.92	9.30	2.95	10.50	2.97	11.30	2.99	12.49	3.02	13.29	3.03	-	-
30℃ DB	7.90	3.56	9.06	3.59	10.22	3.62	11.00	3.64	12.16	3.67	12.94	3.69	-	-
35℃ DB	7.79	3.87	8.94	3.91	10.09	3.94	10.85	3.97	12.00	4.00	12.77	4.02	13.53	4.05
40℃ DB	7.69	4.19	8.82	4.23	9.95	4.27	10.70	4.29	11.84	4.33	12.59	4.35	13.35	4.38
45℃ DB	7.58	4.51	8.70	4.55	9.81	4.59	10.56	4.62	11.67	4.66	12.42	4.68	13.16	4.71

- 1. DB : Dry bulb temperature( ${}^{\circlearrowright}$ ), LWT : Leaving water temperature( ${}^{\circlearrowright}$ )
- 2. TC : Total capacity(kW), PI : Power Input(kW)
- 3. Direct interpolation is permissible. Do not extrapolate.
- 4. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

# **6.2 Heating Operation**

## 6.2.1 Combination with Hydro Box type

### ■ AHUW056A3 [HU051 U43] + AHNW16606A3 [HN1616 NK3]

#### **◆** Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	PC	PI										
-20 ℃ DB	2.72	0.94	3.11	1.67	3.50	2.40	3.89	3.13	-	-	-	-
-15 ℃ DB	3.40	0.92	3.89	1.63	4.38	2.34	4.86	3.06	5.35	3.77	-	-
-7 ℃ DB	3.86	0.89	4.41	1.58	4.96	2.28	5.51	2.97	6.06	3.66	6.61	4.36
-2 ℃ DB	4.04	0.78	4.62	1.38	5.20	1.98	5.77	2.59	6.35	3.19	6.93	3.79
2 ℃ DB	4.19	0.68	4.79	1.22	5.39	1.75	5.98	2.28	6.58	2.81	7.18	3.34
7 ℃ DB	4.38	0.57	5.00	1.01	5.63	1.45	6.25	1.89	6.88	2.34	7.50	2.78
10 ℃ DB	4.49	0.50	5.13	0.89	5.77	1.28	6.41	1.66	7.05	2.05	7.69	2.44
15 ℃ DB	4.67	0.38	5.34	0.68	6.01	0.98	6.67	1.28	7.34	1.58	8.01	1.88
18 ℃ DB	4.78	0.31	5.47	0.56	6.15	0.80	6.83	1.05	7.52	1.29	8.20	1.54

#### ◆ Total Capacity (Included defrost effect)

-	• •				•							
Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	2.61	0.90	2.99	1.60	3.36	2.30	3.73	3.01	-	-	-	-
-15 ℃ DB	3.27	0.88	3.73	1.56	4.20	2.25	4.67	2.93	5.13	3.62	-	-
-7 ℃ DB	3.70	0.86	4.23	1.52	4.76	2.19	5.29	2.85	5.82	3.52	6.35	4.18
-2 ℃ DB	3.74	0.71	4.27	1.26	4.81	1.80	5.34	2.35	5.87	2.90	6.41	3.45
2 ℃ DB	3.73	0.59	4.26	1.05	4.79	1.50	5.33	1.96	5.86	2.42	6.39	2.87
7 ℃ DB	4.38	0.57	5.00	1.01	5.63	1.45	6.25	1.89	6.88	2.34	7.50	2.78
10 ℃ DB	4.49	0.50	5.13	0.89	5.77	1.28	6.41	1.66	7.05	2.05	7.69	2.44
15 ℃ DB	4.67	0.38	5.34	0.68	6.01	0.98	6.67	1.28	7.34	1.58	8.01	1.88
18 ℃ DB	4.78	0.31	5.47	0.56	6.15	0.80	6.83	1.05	7.52	1.29	8.20	1.54

- 1. DB : Dry bulb temperature( $^{\circ}$ C), LWT : Leaving water temperature( $^{\circ}$ C)
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC : Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW076A3 [HU071 U43] + AHNW16606A3 [HN1616 NK3]

#### Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	4.26	1.90	4.34	2.46	4.42	3.02	4.50	3.57	-	-	-	-
-15 ℃ DB	5.33	1.86	5.43	2.40	5.53	2.94	5.62	3.49	5.72	4.03	-	-
-7 ℃ DB	6.06	1.72	6.17	2.22	6.28	2.72	6.39	3.22	6.50	3.72	6.61	4.23
-2 ℃ DB	6.35	1.51	6.47	1.95	6.58	2.39	6.70	2.83	6.81	3.27	6.93	3.71
2 ℃ DB	6.58	1.34	6.70	1.73	6.82	2.12	6.94	2.51	7.06	2.90	7.18	3.29
7 ℃ DB	6.88	1.13	7.00	1.46	7.13	1.79	7.25	2.12	7.38	2.45	7.50	2.78
10 ℃ DB	7.05	1.00	7.18	1.30	7.31	1.59	7.43	1.88	7.56	2.17	7.69	2.47
15 ℃ DB	7.34	0.79	7.48	1.02	7.61	1.26	7.74	1.49	7.88	1.72	8.01	1.95
18 ℃ DB	7.52	0.67	7.65	0.86	7.79	1.06	7.93	1.25	8.06	1.45	8.20	1.64

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	TC	PI										
-20 ℃ DB	4.09	1.83	4.17	2.36	4.24	2.90	4.32	3.43	-	-	-	-
-15 ℃ DB	5.12	1.78	5.21	2.30	5.31	2.83	5.40	3.35	5.49	3.87	-	-
-7 ℃ DB	5.82	1.65	5.92	2.13	6.03	2.61	6.13	3.09	6.24	3.57	6.35	4.06
-2 ℃ DB	5.87	1.37	5.98	1.77	6.09	2.17	6.19	2.57	6.30	2.97	6.41	3.37
2 ℃ DB	5.86	1.15	5.97	1.49	6.07	1.82	6.18	2.16	6.29	2.50	6.39	2.83
7 ℃ DB	6.88	1.13	7.00	1.46	7.13	1.79	7.25	2.12	7.38	2.45	7.50	2.78
10 ℃ DB	7.05	1.00	7.18	1.30	7.31	1.59	7.43	1.88	7.56	2.17	7.69	2.47
15 ℃ DB	7.34	0.79	7.48	1.02	7.61	1.26	7.74	1.49	7.88	1.72	8.01	1.95
18 ℃ DB	7.52	0.67	7.65	0.86	7.79	1.06	7.93	1.25	8.06	1.45	8.20	1.64

### ■ AHUW096A3 [HU091 U43] + AHNW16606A3 [HN1616 NK3]

#### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	5.81	2.79	5.58	3.06	5.35	3.33	5.12	3.61	-	-	-	-
-15 ℃ DB	7.27	2.72	6.98	2.99	6.69	3.26	6.40	3.53	6.11	3.79	-	-
-7 ℃ DB	8.26	2.60	7.93	2.85	7.60	3.11	7.27	3.36	6.94	3.62	6.61	3.87
-2 ℃ DB	8.66	2.33	8.31	2.56	7.97	2.79	7.62	3.02	7.27	3.25	6.93	3.48
2 ℃ DB	8.98	2.12	8.62	2.33	8.26	2.54	7.90	2.75	7.54	2.96	7.18	3.17
7 ℃ DB	9.38	1.86	9.00	2.05	8.63	2.23	8.25	2.41	7.88	2.59	7.50	2.78
10 ℃ DB	9.61	1.71	9.23	1.87	8.84	2.04	8.46	2.21	8.08	2.38	7.69	2.54
15 ℃ DB	10.01	1.44	9.61	1.58	9.21	1.73	8.81	1.87	8.41	2.01	8.01	2.15
18 ℃ DB	10.25	1.29	9.84	1.41	9.43	1.54	9.02	1.66	8.61	1.79	8.20	1.92

#### Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	5.52	2.67	5.30	2.94	5.08	3.20	4.86	3.46	-	-	-	-
-15 ℃ DB	6.91	2.61	6.63	2.87	6.35	3.13	6.08	3.38	5.80	3.64	-	-
-7 ℃ DB	7.85	2.49	7.53	2.74	7.22	2.98	6.91	3.23	6.59	3.47	6.28	3.72
-2 ℃ DB	7.97	2.12	7.65	2.33	7.33	2.54	7.01	2.75	6.69	2.96	6.37	3.17
2 ℃ DB	7.99	1.83	7.67	2.01	7.35	2.19	7.03	2.37	6.71	2.55	6.39	2.73
7 ℃ DB	9.38	1.86	9.00	2.05	8.63	2.23	8.25	2.41	7.88	2.59	7.50	2.78
10 ℃ DB	9.61	1.71	9.23	1.87	8.84	2.04	8.46	2.21	8.08	2.38	7.69	2.54
15 ℃ DB	10.01	1.44	9.61	1.58	9.21	1.73	8.81	1.87	8.41	2.01	8.01	2.15
18 ℃ DB	10.25	1.29	9.84	1.41	9.43	1.54	9.02	1.66	8.61	1.79	8.20	1.92

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- $2.\ TC: Total\ capacity(kW),\ PI: Power\ Input(kW)$
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW126A3 [HU121 U33] + AHNW16606A3 [HN1616 NK3]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	11.36	2.62	11.36	3.31	11.36	4.99	11.36	5.69	-	-	-	-
-15 ℃ DB	11.62	2.63	11.74	3.36	11.86	4.09	11.98	5.53	11.13	5.85	-	-
-7 ℃ DB	11.62	2.55	11.74	3.26	11.86	3.97	11.98	4.68	11.87	5.49	11.09	5.84
-4 ℃ DB	11.62	2.52	11.74	3.22	11.86	3.93	11.98	4.63	12.11	5.34	11.35	5.69
-2 ℃ DB	11.62	2.50	11.74	3.20	11.86	3.90	11.98	4.59	12.11	5.29	11.53	5.65
2 ℃ DB	11.62	2.46	11.74	3.18	11.86	3.83	11.98	4.52	12.11	5.20	11.88	5.72
7 ℃ DB	11.88	2.06	12.00	2.64	12.13	3.21	12.25	3.79	12.38	4.36	12.50	4.94
10 ℃ DB	12.03	1.82	12.16	2.33	12.28	2.84	12.41	3.35	12.54	3.86	12.66	4.37
15 ℃ DB	12.29	1.43	12.42	1.83	12.55	2.23	12.67	2.63	12.80	3.03	12.93	3.42
18 ℃ DB	12.44	1.19	12.57	1.52	12.70	1.86	12.83	2.19	12.96	2.52	13.10	2.86

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	10.89	2.58	11.00	3.30	11.37	5.12	11.74	5.97	-	-	-	-
-15 ℃ DB	10.89	2.53	11.00	3.24	11.37	4.01	11.74	5.51	10.99	5.82	-	-
-7 ℃ DB	10.89	2.46	11.00	3.14	11.37	3.89	11.74	4.65	11.72	5.46	11.09	5.84
-4 ℃ DB	10.66	2.40	10.77	3.07	11.17	3.80	11.58	4.57	11.83	5.26	11.35	5.69
-2 ℃ DB	10.54	2.37	10.65	3.03	11.07	3.76	11.49	4.49	11.89	5.25	11.53	5.65
2 ℃ DB	10.22	2.29	10.33	2.93	10.79	3.64	11.26	4.37	11.74	5.12	11.88	5.72
7 ℃ DB	11.88	2.06	12.00	2.64	12.13	3.21	12.25	3.79	12.38	4.36	12.50	4.94
10 ℃ DB	12.03	1.82	12.16	2.33	12.28	2.84	12.41	3.35	12.54	3.86	12.66	4.37
15 ℃ DB	12.29	1.43	12.42	1.83	12.55	2.23	12.67	2.63	12.80	3.03	12.93	3.42
18 ℃ DB	12.44	1.19	12.57	1.52	12.70	1.86	12.83	2.19	12.96	2.52	13.10	2.86

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW146A3 [HU141 U33] + AHNW16606A3 [HN1616 NK3]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	12.84	3.67	12.50	4.12	12.06	5.30	11.36	5.69	-	-	-	-
-15 ℃ DB	13.08	3.46	12.74	4.02	12.40	4.58	11.86	5.48	11.13	5.85	-	-
-7 ℃ DB	13.46	3.32	13.11	3.86	12.76	4.39	12.41	4.93	11.87	5.49	11.09	5.84
-4 ℃ DB	13.60	3.27	13.25	3.79	12.90	4.32	12.54	4.85	12.15	5.36	11.35	5.69
-2 ℃ DB	13.70	3.23	13.34	3.75	12.99	4.27	12.63	4.84	12.27	5.36	11.53	5.65
2 ℃ DB	13.89	3.16	13.53	3.67	13.17	4.25	12.81	4.83	12.44	5.35	11.88	5.72
7 ℃ DB	14.38	2.73	14.00	3.18	13.63	3.62	13.25	4.10	12.88	4.54	12.50	4.94
10 ℃ DB	14.66	2.48	14.28	2.88	13.90	3.28	13.52	3.68	13.13	4.08	12.75	4.48
15 ℃ DB	15.15	2.05	14.75	2.38	14.36	2.71	13.96	3.04	13.57	3.38	13.17	3.71
18 ℃ DB	15.44	1.80	15.03	2.08	14.63	2.37	14.23	2.66	13.83	2.95	13.42	3.24

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	12.24	3.44	11.92	3.99	11.61	5.23	11.08	5.64	-	-	-	-
-15 ℃ DB	12.47	3.35	12.14	3.89	11.96	4.47	11.56	5.43	10.99	5.82	-	-
-7 ℃ DB	12.83	3.21	12.50	3.73	12.31	4.29	12.12	4.85	11.72	5.46	11.09	5.84
-4 ℃ DB	12.28	3.02	11.96	3.51	11.95	4.08	11.93	4.70	11.83	5.26	11.35	5.69
-2 ℃ DB	12.01	2.92	11.70	3.39	11.79	4.00	11.85	4.64	11.89	5.25	11.53	5.65
2 ℃ DB	11.12	2.66	10.83	3.09	11.20	3.77	11.53	4.47	11.82	5.15	11.88	5.72
7 ℃ DB	14.38	2.73	14.00	3.18	13.63	3.62	13.25	4.10	12.88	4.54	12.50	4.94
10 ℃ DB	14.66	2.48	14.28	2.88	13.90	3.28	13.52	3.68	13.13	4.08	12.75	4.48
15 ℃ DB	15.15	2.05	14.75	2.38	14.36	2.71	13.96	3.04	13.57	3.38	13.17	3.71
18 ℃ DB	15.44	1.80	15.03	2.08	14.63	2.37	14.23	2.66	13.83	2.95	13.42	3.24

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW166A3 [HU161 U33] + AHNW16606A3 [HN1616 NK3]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	13.45	4.53	12.76	4.91	12.06	5.30	11.36	5.69	-	-	-	-
-15 ℃ DB	14.04	4.36	13.31	4.73	12.58	5.10	11.86	5.48	11.13	5.85	-	-
-7 ℃ DB	14.98	4.09	14.20	4.44	13.42	4.79	12.65	5.14	11.87	5.49	11.09	5.84
-4 ℃ DB	15.33	3.99	14.53	4.33	13.74	4.67	12.94	5.01	12.15	5.36	11.35	5.69
-2 °C DB	15.56	3.92	14.76	4.25	13.95	4.59	13.14	5.04	12.33	5.39	11.53	5.65
2 ℃ DB	16.03	3.78	15.20	4.12	14.37	4.64	13.54	5.10	12.71	5.46	11.88	5.72
7 ℃ DB	16.88	3.46	16.00	3.76	15.13	4.05	14.25	4.41	13.38	4.72	12.50	4.94
10 ℃ DB	17.38	3.26	16.48	3.54	15.58	3.82	14.68	4.10	13.78	4.38	12.88	4.66
15 ℃ DB	18.23	2.94	17.28	3.19	16.34	3.44	15.39	3.70	14.45	3.95	13.50	4.20
18 ℃ DB	18.73	2.75	17.76	2.98	16.79	3.22	15.82	3.45	14.85	3.69	13.88	3.92

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	TC	PI										
-20 ℃ DB	12.79	4.44	12.13	4.82	11.61	5.23	11.08	5.64	-	-	-	-
-15 ℃ DB	13.35	4.28	12.65	4.64	12.12	5.03	11.56	5.43	10.99	5.82	-	-
-7 ℃ DB	14.24	4.01	13.50	4.35	12.93	4.72	12.34	5.09	11.72	5.46	11.09	5.84
-4 ℃ DB	13.73	3.71	13.02	4.03	12.67	4.43	12.27	4.84	11.83	5.26	11.35	5.69
-2 ℃ DB	13.37	3.52	12.68	3.82	12.48	4.24	12.22	4.78	11.89	5.25	11.53	5.65
2 ℃ DB	12.60	3.15	11.95	3.41	12.07	4.07	12.09	4.69	12.03	5.24	11.88	5.72
7 ℃ DB	16.88	3.46	16.00	3.76	15.13	4.05	14.25	4.41	13.38	4.72	12.50	4.94
10 ℃ DB	17.38	3.26	16.48	3.54	15.58	3.82	14.68	4.10	13.78	4.38	12.88	4.66
15 ℃ DB	18.23	2.94	17.28	3.19	16.34	3.44	15.39	3.70	14.45	3.95	13.50	4.20
18 ℃ DB	18.73	2.75	17.76	2.98	16.79	3.22	15.82	3.45	14.85	3.69	13.88	3.92

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW128A3 [HU123 U33] + AHNW16809A3 [HN1639 NK3]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	11.36	2.62	11.36	3.31	11.36	4.99	11.36	5.69	-	-	-	-
-15 ℃ DB	11.62	2.63	11.74	3.36	11.86	4.09	11.98	5.53	11.13	5.85	-	-
-7 ℃ DB	11.62	2.55	11.74	3.26	11.86	3.97	11.98	4.68	11.87	5.49	11.09	5.84
-4 °C DB	11.62	2.52	11.74	3.22	11.86	3.93	11.98	4.63	12.11	5.34	11.35	5.69
-2 ℃ DB	11.62	2.50	11.74	3.20	11.86	3.90	11.98	4.59	12.11	5.29	11.53	5.65
2 ℃ DB	11.62	2.46	11.74	3.18	11.86	3.83	11.98	4.52	12.11	5.20	11.88	5.72
7 ℃ DB	11.88	2.06	12.00	2.64	12.13	3.21	12.25	3.79	12.38	4.36	12.50	4.94
10 ℃ DB	12.03	1.82	12.16	2.33	12.28	2.84	12.41	3.35	12.54	3.86	12.66	4.37
15 ℃ DB	12.29	1.43	12.42	1.83	12.55	2.23	12.67	2.63	12.80	3.03	12.93	3.42
18 ℃ DB	12.44	1.19	12.57	1.52	12.70	1.86	12.83	2.19	12.96	2.52	13.10	2.86

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	TC	PI										
-20 ℃ DB	10.89	2.58	11.00	3.30	11.37	5.12	11.74	5.97	-	-	-	-
-15 ℃ DB	10.89	2.53	11.00	3.24	11.37	4.01	11.74	5.51	10.99	5.82	-	-
-7 ℃ DB	10.89	2.46	11.00	3.14	11.37	3.89	11.74	4.65	11.72	5.46	11.09	5.84
-4 ℃ DB	10.66	2.40	10.77	3.07	11.17	3.80	11.58	4.57	11.83	5.26	11.35	5.69
-2 ℃ DB	10.54	2.37	10.65	3.03	11.07	3.76	11.49	4.49	11.89	5.25	11.53	5.65
2 ℃ DB	10.22	2.29	10.33	2.93	10.79	3.64	11.26	4.37	11.74	5.12	11.88	5.72
7 ℃ DB	11.88	2.06	12.00	2.64	12.13	3.21	12.25	3.79	12.38	4.36	12.50	4.94
10 ℃ DB	12.03	1.82	12.16	2.33	12.28	2.84	12.41	3.35	12.54	3.86	12.66	4.37
15 ℃ DB	12.29	1.43	12.42	1.83	12.55	2.23	12.67	2.63	12.80	3.03	12.93	3.42
18 ℃ DB	12.44	1.19	12.57	1.52	12.70	1.86	12.83	2.19	12.96	2.52	13.10	2.86

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW148A3 [HU143 U33] + AHNW16809A3 [HN1639 NK3]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	12.84	3.67	12.50	4.12	12.06	5.30	11.36	5.69	-	-	-	-
-15 ℃ DB	13.08	3.46	12.74	4.02	12.40	4.58	11.86	5.48	11.13	5.85	-	-
-7 ℃ DB	13.46	3.32	13.11	3.86	12.76	4.39	12.41	4.93	11.87	5.49	11.09	5.84
-4 ℃ DB	13.60	3.27	13.25	3.79	12.90	4.32	12.54	4.85	12.15	5.36	11.35	5.69
-2 ℃ DB	13.70	3.23	13.34	3.75	12.99	4.27	12.63	4.84	12.27	5.36	11.53	5.65
2 ℃ DB	13.89	3.16	13.53	3.67	13.17	4.25	12.81	4.83	12.44	5.35	11.88	5.72
7 ℃ DB	14.38	2.73	14.00	3.18	13.63	3.62	13.25	4.10	12.88	4.54	12.50	4.94
10 ℃ DB	14.66	2.48	14.28	2.88	13.90	3.28	13.52	3.68	13.13	4.08	12.75	4.48
15 ℃ DB	15.15	2.05	14.75	2.38	14.36	2.71	13.96	3.04	13.57	3.38	13.17	3.71
18 ℃ DB	15.44	1.80	15.03	2.08	14.63	2.37	14.23	2.66	13.83	2.95	13.42	3.24

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	12.24	3.44	11.92	3.99	11.61	5.23	11.08	5.64	-	-	-	-
-15 ℃ DB	12.47	3.35	12.14	3.89	11.96	4.47	11.56	5.43	10.99	5.82	-	-
-7 ℃ DB	12.83	3.21	12.50	3.73	12.31	4.29	12.12	4.85	11.72	5.46	11.09	5.84
-4 ℃ DB	12.28	3.02	11.96	3.51	11.95	4.08	11.93	4.70	11.83	5.26	11.35	5.69
-2 ℃ DB	12.01	2.92	11.70	3.39	11.79	4.00	11.85	4.64	11.89	5.25	11.53	5.65
2 ℃ DB	11.12	2.66	10.83	3.09	11.20	3.77	11.53	4.47	11.82	5.15	11.88	5.72
7 ℃ DB	14.38	2.73	14.00	3.18	13.63	3.62	13.25	4.10	12.88	4.54	12.50	4.94
10 ℃ DB	14.66	2.48	14.28	2.88	13.90	3.28	13.52	3.68	13.13	4.08	12.75	4.48
15 ℃ DB	15.15	2.05	14.75	2.38	14.36	2.71	13.96	3.04	13.57	3.38	13.17	3.71
18 ℃ DB	15.44	1.80	15.03	2.08	14.63	2.37	14.23	2.66	13.83	2.95	13.42	3.24

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW168A3 [HU163 U33] + AHNW16809A3 [HN1639 NK3]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	13.45	4.53	12.76	4.91	12.06	5.30	11.36	5.69	-	-	-	-
-15 ℃ DB	14.04	4.36	13.31	4.73	12.58	5.10	11.86	5.48	11.13	5.85	-	-
-7 ℃ DB	14.98	4.09	14.20	4.44	13.42	4.79	12.65	5.14	11.87	5.49	11.09	5.84
-4 ℃ DB	15.33	3.99	14.53	4.33	13.74	4.67	12.94	5.01	12.15	5.36	11.35	5.69
-2 ℃ DB	15.56	3.92	14.76	4.25	13.95	4.59	13.14	5.04	12.33	5.39	11.53	5.65
2 ℃ DB	16.03	3.78	15.20	4.12	14.37	4.64	13.54	5.10	12.71	5.46	11.88	5.72
7 ℃ DB	16.88	3.46	16.00	3.76	15.13	4.05	14.25	4.41	13.38	4.72	12.50	4.94
10 ℃ DB	17.38	3.26	16.48	3.54	15.58	3.82	14.68	4.10	13.78	4.38	12.88	4.66
15 ℃ DB	18.23	2.94	17.28	3.19	16.34	3.44	15.39	3.70	14.45	3.95	13.50	4.20
18 ℃ DB	18.73	2.75	17.76	2.98	16.79	3.22	15.82	3.45	14.85	3.69	13.88	3.92

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	12.79	4.44	12.13	4.82	11.61	5.23	11.08	5.64	-	-	-	-
-15 ℃ DB	13.35	4.28	12.65	4.64	12.12	5.03	11.56	5.43	10.99	5.82	-	-
-7 ℃ DB	14.24	4.01	13.50	4.35	12.93	4.72	12.34	5.09	11.72	5.46	11.09	5.84
-4 ℃ DB	13.73	3.71	13.02	4.03	12.67	4.43	12.27	4.84	11.83	5.26	11.35	5.69
-2 ℃ DB	13.37	3.52	12.68	3.82	12.48	4.24	12.22	4.78	11.89	5.25	11.53	5.65
2 ℃ DB	12.60	3.15	11.95	3.41	12.07	4.07	12.09	4.69	12.03	5.24	11.88	5.72
7 ℃ DB	16.88	3.46	16.00	3.76	15.13	4.05	14.25	4.41	13.38	4.72	12.50	4.94
10 ℃ DB	17.38	3.26	16.48	3.54	15.58	3.82	14.68	4.10	13.78	4.38	12.88	4.66
15 ℃ DB	18.23	2.94	17.28	3.19	16.34	3.44	15.39	3.70	14.45	3.95	13.50	4.20
18 ℃ DB	18.73	2.75	17.76	2.98	16.79	3.22	15.82	3.45	14.85	3.69	13.88	3.92

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

## 6.2.2 Combination with DHW tank Integrated type

### ■ AHUW096A3 [HU091 U43] + AHNW16606B0 [HN1616T NB0]

#### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 °C DB	7.38	3.67	6.93	3.92	6.49	4.48	6.05	5.05	-	-	-	-
-15 ℃ DB	7.78	3.38	7.32	3.61	6.85	4.10	6.38	4.63	5.91	4.93	-	-
-7 ℃ DB	8.44	2.91	7.93	3.11	7.42	3.50	6.92	3.95	6.41	4.21	5.90	3.89
-4 °C DB	8.68	2.73	8.16	2.92	7.64	3.28	7.12	3.69	6.60	3.93	6.07	3.66
-2 ℃ DB	8.84	2.62	8.31	2.79	7.78	3.12	7.25	3.52	6.72	3.75	6.19	3.50
2 ℃ DB	9.17	2.38	8.62	2.54	8.07	2.82	7.52	3.18	6.97	3.39	6.42	3.19
7 ℃ DB	9.58	2.09	9.00	2.23	8.43	2.37	7.85	2.55	7.28	2.72	6.70	2.79
10 ℃ DB	9.82	1.91	9.23	2.04	8.64	2.17	8.05	2.30	7.46	2.42	6.87	2.55
15 ℃ DB	10.22	1.61	9.61	1.72	8.99	1.83	8.38	1.94	7.77	2.05	7.15	2.16
18 ℃ DB	10.46	1.43	9.84	1.53	9.21	1.63	8.58	1.73	7.95	1.82	7.32	1.92

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	45℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	7.00	3.52	6.58	3.76	6.24	4.35	5.89	4.95	-	-	-	-
-15 ℃ DB	7.39	3.24	6.95	3.46	6.59	3.98	6.22	4.53	5.84	4.88	-	-
-7 ℃ DB	8.01	2.79	7.53	2.98	7.14	3.40	6.74	3.87	6.33	4.16	5.90	3.89
-4 °C DB	7.95	2.56	7.47	2.74	7.15	3.14	6.82	3.59	6.46	3.88	6.07	3.66
-2 ℃ DB	7.89	2.41	7.42	2.58	7.15	2.96	6.86	3.40	6.54	3.69	6.19	3.50
2 ℃ DB	7.77	2.13	7.30	2.27	7.14	2.64	6.94	3.04	6.70	3.32	6.42	3.19
7 ℃ DB	9.58	2.09	9.00	2.23	8.43	2.37	7.85	2.55	7.28	2.72	6.70	2.79
10 ℃ DB	9.82	1.91	9.23	2.04	8.64	2.17	8.05	2.30	7.46	2.42	6.87	2.55
15 ℃ DB	10.22	1.61	9.61	1.72	8.99	1.83	8.38	1.94	7.77	2.05	7.15	2.16
18 ℃ DB	10.46	1.43	9.84	1.53	9.21	1.63	8.58	1.73	7.95	1.82	7.32	1.92

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC : Total capacity(kW), PI : Power Input(kW)
- 3. PC : Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW126A3 [HU121 U33] + AHNW16606B0 [HN1616T NB0]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	10.66	2.68	10.77	3.31	11.12	5.26	10.61	5.54	-	-	-	-
-15 ℃ DB	10.72	2.65	10.82	3.26	11.13	3.95	11.07	5.33	10.66	5.69	-	-
-7 ℃ DB	10.83	2.59	10.93	3.20	11.14	3.84	11.15	4.72	11.37	5.33	10.63	5.54
-4 °C DB	10.51	2.49	11.04	3.19	11.16	4.08	11.21	4.52	11.45	5.12	10.87	5.40
-2 ℃ DB	10.58	2.48	11.11	3.19	11.21	3.97	11.30	4.42	11.47	5.01	11.04	5.35
2 ℃ DB	11.03	2.55	11.15	3.14	11.26	3.74	11.38	4.34	11.49	4.94	11.37	5.42
7 ℃ DB	11.88	2.25	12.00	2.78	12.13	3.31	12.25	3.84	12.38	4.36	12.50	4.89
10 ℃ DB	12.38	2.07	12.51	2.56	12.64	3.05	12.77	3.53	12.90	4.02	13.03	4.51
15 ℃ DB	13.23	1.78	13.37	2.19	13.50	2.61	13.64	3.03	13.78	3.45	13.92	3.86
18 ℃ DB	13.73	1.60	13.88	1.97	14.02	2.35	14.17	2.73	14.31	3.10	14.46	3.48

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	10.29	2.66	10.39	3.28	10.72	5.19	10.61	5.63	-	-	-	-
-15 ℃ DB	10.32	2.62	10.41	3.23	10.75	3.90	11.07	5.42	10.53	5.66	-	-
-7 ℃ DB	10.34	2.54	10.44	3.14	10.79	3.80	11.15	4.80	11.23	5.31	10.63	5.54
-4 ℃ DB	10.12	2.49	10.23	3.07	10.61	3.99	10.99	4.52	11.33	5.11	10.87	5.40
-2 ℃ DB	10.01	2.45	10.11	3.03	10.51	3.84	10.91	4.35	11.31	4.99	11.04	5.35
2 ℃ DB	9.71	2.38	9.81	3.12	10.25	3.56	10.70	4.20	11.15	4.86	11.37	5.42
7 ℃ DB	11.88	2.25	12.00	2.78	12.13	3.31	12.25	3.84	12.38	4.36	12.50	4.89
10 ℃ DB	12.38	2.07	12.51	2.56	12.64	3.05	12.77	3.53	12.90	4.02	13.03	4.51
15 ℃ DB	13.23	1.78	13.37	2.19	13.50	2.61	13.64	3.03	13.78	3.45	13.92	3.86
18 ℃ DB	13.73	1.60	13.88	1.97	14.02	2.35	14.17	2.73	14.31	3.10	14.46	3.48

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW146A3 [HU141 U33] + AHNW16606B0 [HN1616T NB0]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	12.30	3.69	11.98	4.12	11.55	5.46	10.88	5.68	-	-	-	-
-15 ℃ DB	12.53	3.59	12.20	4.02	11.87	4.45	11.35	5.47	10.66	5.69	-	-
-7 ℃ DB	12.89	3.45	12.56	3.86	12.22	4.27	11.88	5.03	11.37	5.33	10.63	5.54
-4 °C DB	13.03	3.39	12.69	3.79	12.35	4.51	12.01	4.85	11.64	5.20	10.87	5.40
-2 ℃ DB	13.12	3.35	12.78	3.75	12.44	4.40	12.09	4.73	11.75	5.13	11.04	5.35
2 ℃ DB	13.31	3.28	12.96	3.67	12.61	4.19	12.26	4.68	11.92	5.12	11.37	5.42
7 ℃ DB	14.38	3.07	14.00	3.43	13.63	3.80	13.25	4.16	12.88	4.54	12.50	4.89
10 ℃ DB	15.02	2.94	14.63	3.29	14.23	3.64	13.84	3.99	13.45	4.34	13.06	4.69
15 ℃ DB	16.09	2.73	15.67	3.05	15.25	3.37	14.83	3.70	14.41	4.02	13.99	4.35
18 ℃ DB	16.73	2.60	16.29	2.91	15.86	3.22	15.42	3.53	14.98	3.83	14.55	4.14

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	11.72	3.57	11.42	3.99	11.12	5.38	10.61	5.63	-	-	-	-
-15 ℃ DB	11.94	3.48	11.63	3.89	11.46	4.34	11.07	5.42	10.53	5.66	-	-
-7 ℃ DB	12.29	3.33	11.97	3.73	11.79	4.16	11.61	4.99	11.23	5.31	10.63	5.54
-4 ℃ DB	11.76	3.14	11.45	3.51	11.45	4.30	11.42	4.70	11.33	5.11	10.87	5.40
-2 ℃ DB	11.51	3.03	11.21	3.39	11.29	4.12	11.35	4.53	11.39	5.03	11.04	5.35
2 ℃ DB	10.65	2.76	10.37	3.30	10.72	3.72	11.04	4.33	11.32	4.93	11.37	5.42
7 ℃ DB	14.38	3.07	14.00	3.43	13.63	3.80	13.25	4.16	12.88	4.54	12.50	4.89
10 ℃ DB	15.02	2.94	14.63	3.29	14.23	3.64	13.84	3.99	13.45	4.34	13.06	4.69
15 ℃ DB	16.09	2.73	15.67	3.05	15.25	3.37	14.83	3.70	14.41	4.02	13.99	4.35
18 ℃ DB	16.73	2.60	16.29	2.91	15.86	3.22	15.42	3.53	14.98	3.83	14.55	4.14

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW166A3 [HU161 U33] + AHNW16606B0 [HN1616T NB0]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	12.88	5.01	12.22	5.23	11.55	5.46	10.88	5.68	-	-	-	-
-15 ℃ DB	13.45	4.82	12.75	5.04	12.05	5.25	11.35	5.47	10.66	5.69	-	-
-7 ℃ DB	14.34	4.52	13.60	4.73	12.86	4.93	12.11	5.13	11.37	5.33	10.63	5.54
-4 °C DB	14.68	4.41	13.92	4.61	13.16	4.81	12.40	5.00	11.64	5.20	10.87	5.40
-2 ℃ DB	14.90	4.34	14.13	4.53	13.36	4.73	12.59	4.92	11.81	5.16	11.04	5.35
2 ℃ DB	15.35	4.19	14.56	4.38	13.76	4.57	12.97	4.94	12.17	5.23	11.37	5.42
7 ℃ DB	16.88	4.00	16.00	4.18	15.13	4.36	14.25	4.53	13.38	4.72	12.50	4.89
10 ℃ DB	17.79	3.88	16.87	4.06	15.94	4.23	15.02	4.40	14.10	4.58	13.18	4.75
15 ℃ DB	19.31	3.69	18.31	3.86	17.31	4.02	16.31	4.19	15.30	4.35	14.30	4.52
18 ℃ DB	20.22	3.58	19.17	3.74	18.12	3.90	17.08	4.06	16.03	4.22	14.98	4.38

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	TC	PI										
-20 ℃ DB	12.25	4.92	11.61	5.14	11.12	5.38	10.61	5.63	-	-	-	-
-15 ℃ DB	12.78	4.73	12.12	4.94	11.61	5.18	11.07	5.42	10.53	5.66	-	-
-7 ℃ DB	13.64	4.44	12.93	4.64	12.38	4.86	11.81	5.08	11.23	5.31	10.63	5.54
-4 ℃ DB	13.15	4.11	12.47	4.29	12.13	4.56	11.75	4.83	11.33	5.11	10.87	5.40
-2 ℃ DB	12.81	3.89	12.14	4.07	11.95	4.36	11.70	4.67	11.40	5.03	11.04	5.35
2 ℃ DB	12.07	3.48	11.45	3.64	11.56	4.01	11.58	4.54	11.52	5.02	11.37	5.42
7 ℃ DB	16.88	4.00	16.00	4.18	15.13	4.36	14.25	4.53	13.38	4.72	12.50	4.89
10 ℃ DB	17.79	3.88	16.87	4.06	15.94	4.23	15.02	4.40	14.10	4.58	13.18	4.75
15 ℃ DB	19.31	3.69	18.31	3.86	17.31	4.02	16.31	4.19	15.30	4.35	14.30	4.52
18 ℃ DB	20.22	3.58	19.17	3.74	18.12	3.90	17.08	4.06	16.03	4.22	14.98	4.38

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW128A3 [HU123 U33] + AHNW16606B0 [HN1616T NB0]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	10.66	2.68	10.77	3.31	11.12	5.26	10.61	5.54	-	-	-	-
-15 ℃ DB	10.72	2.65	10.82	3.26	11.13	3.95	11.07	5.33	10.66	5.69	-	-
-7 ℃ DB	10.83	2.59	10.93	3.20	11.14	3.84	11.15	4.72	11.37	5.33	10.63	5.54
-4 °C DB	10.51	2.49	11.04	3.19	11.16	4.08	11.21	4.52	11.45	5.12	10.87	5.40
-2 ℃ DB	10.58	2.48	11.11	3.19	11.21	3.97	11.30	4.42	11.47	5.01	11.04	5.35
2 ℃ DB	11.03	2.55	11.15	3.14	11.26	3.74	11.38	4.34	11.49	4.94	11.37	5.42
7 ℃ DB	11.88	2.25	12.00	2.78	12.13	3.31	12.25	3.84	12.38	4.36	12.50	4.89
10 ℃ DB	12.38	2.07	12.51	2.56	12.64	3.05	12.77	3.53	12.90	4.02	13.03	4.51
15 ℃ DB	13.23	1.78	13.37	2.19	13.50	2.61	13.64	3.03	13.78	3.45	13.92	3.86
18 ℃ DB	13.73	1.60	13.88	1.97	14.02	2.35	14.17	2.73	14.31	3.10	14.46	3.48

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	10.29	2.66	10.39	3.28	10.72	5.19	10.61	5.63	-	-	-	-
-15 ℃ DB	10.32	2.62	10.41	3.23	10.75	3.90	11.07	5.42	10.53	5.66	-	-
-7 ℃ DB	10.34	2.54	10.44	3.14	10.79	3.80	11.15	4.80	11.23	5.31	10.63	5.54
-4 ℃ DB	10.12	2.49	10.23	3.07	10.61	3.99	10.99	4.52	11.33	5.11	10.87	5.40
-2 ℃ DB	10.01	2.45	10.11	3.03	10.51	3.84	10.91	4.35	11.31	4.99	11.04	5.35
2 ℃ DB	9.71	2.38	9.81	3.12	10.25	3.56	10.70	4.20	11.15	4.86	11.37	5.42
7 ℃ DB	11.88	2.25	12.00	2.78	12.13	3.31	12.25	3.84	12.38	4.36	12.50	4.89
10 ℃ DB	12.38	2.07	12.51	2.56	12.64	3.05	12.77	3.53	12.90	4.02	13.03	4.51
15 ℃ DB	13.23	1.78	13.37	2.19	13.50	2.61	13.64	3.03	13.78	3.45	13.92	3.86
18 ℃ DB	13.73	1.60	13.88	1.97	14.02	2.35	14.17	2.73	14.31	3.10	14.46	3.48

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW148A3 [HU143 U33] + AHNW16606B0 [HN1616T NB0]

### ◆ Peak Capacity (Not included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	12.30	3.69	11.98	4.12	11.55	5.46	10.88	5.68	-	-	-	-
-15 ℃ DB	12.53	3.59	12.20	4.02	11.87	4.45	11.35	5.47	10.66	5.69	-	-
-7 ℃ DB	12.89	3.45	12.56	3.86	12.22	4.27	11.88	5.03	11.37	5.33	10.63	5.54
-4 °C DB	13.03	3.39	12.69	3.79	12.35	4.51	12.01	4.85	11.64	5.20	10.87	5.40
-2 ℃ DB	13.12	3.35	12.78	3.75	12.44	4.40	12.09	4.73	11.75	5.13	11.04	5.35
2 ℃ DB	13.31	3.28	12.96	3.67	12.61	4.19	12.26	4.68	11.92	5.12	11.37	5.42
7 ℃ DB	14.38	3.07	14.00	3.43	13.63	3.80	13.25	4.16	12.88	4.54	12.50	4.89
10 ℃ DB	15.02	2.94	14.63	3.29	14.23	3.64	13.84	3.99	13.45	4.34	13.06	4.69
15 ℃ DB	16.09	2.73	15.67	3.05	15.25	3.37	14.83	3.70	14.41	4.02	13.99	4.35
18 ℃ DB	16.73	2.60	16.29	2.91	15.86	3.22	15.42	3.53	14.98	3.83	14.55	4.14

#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	40℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	TC	PI										
-20 ℃ DB	11.72	3.57	11.42	3.99	11.12	5.38	10.61	5.63	-	-	-	-
-15 ℃ DB	11.94	3.48	11.63	3.89	11.46	4.34	11.07	5.42	10.53	5.66	-	-
-7 ℃ DB	12.29	3.33	11.97	3.73	11.79	4.16	11.61	4.99	11.23	5.31	10.63	5.54
-4 ℃ DB	11.76	3.14	11.45	3.51	11.45	4.30	11.42	4.70	11.33	5.11	10.87	5.40
-2 ℃ DB	11.51	3.03	11.21	3.39	11.29	4.12	11.35	4.53	11.39	5.03	11.04	5.35
2 ℃ DB	10.65	2.76	10.37	3.30	10.72	3.72	11.04	4.33	11.32	4.93	11.37	5.42
7 ℃ DB	14.38	3.07	14.00	3.43	13.63	3.80	13.25	4.16	12.88	4.54	12.50	4.89
10 ℃ DB	15.02	2.94	14.63	3.29	14.23	3.64	13.84	3.99	13.45	4.34	13.06	4.69
15 ℃ DB	16.09	2.73	15.67	3.05	15.25	3.37	14.83	3.70	14.41	4.02	13.99	4.35
18 ℃ DB	16.73	2.60	16.29	2.91	15.86	3.22	15.42	3.53	14.98	3.83	14.55	4.14

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

### ■ AHUW168A3 [HU163 U33] + AHNW16606B0 [HN1616T NB0]

### ◆ Peak Capacity (Not included defrost effect)

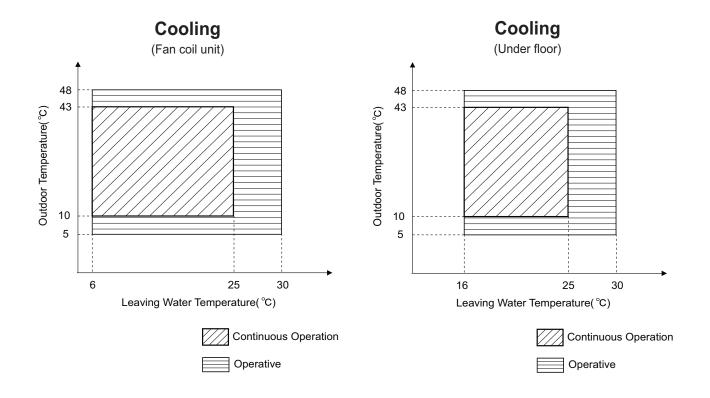
Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	45℃	LWT	50℃	LWT	55℃
Temperature	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI	PC	PI
-20 ℃ DB	12.88	5.01	12.22	5.23	11.55	5.46	10.88	5.68	-	-	-	-
-15 ℃ DB	13.45	4.82	12.75	5.04	12.05	5.25	11.35	5.47	10.66	5.69	-	-
-7 ℃ DB	14.34	4.52	13.60	4.73	12.86	4.93	12.11	5.13	11.37	5.33	10.63	5.54
-4 °C DB	14.68	4.41	13.92	4.61	13.16	4.81	12.40	5.00	11.64	5.20	10.87	5.40
-2 ℃ DB	14.90	4.34	14.13	4.53	13.36	4.73	12.59	4.92	11.81	5.16	11.04	5.35
2 ℃ DB	15.35	4.19	14.56	4.38	13.76	4.57	12.97	4.94	12.17	5.23	11.37	5.42
7 ℃ DB	16.88	4.00	16.00	4.18	15.13	4.36	14.25	4.53	13.38	4.72	12.50	4.89
10 ℃ DB	17.79	3.88	16.87	4.06	15.94	4.23	15.02	4.40	14.10	4.58	13.18	4.75
15 ℃ DB	19.31	3.69	18.31	3.86	17.31	4.02	16.31	4.19	15.30	4.35	14.30	4.52
18 ℃ DB	20.22	3.58	19.17	3.74	18.12	3.90	17.08	4.06	16.03	4.22	14.98	4.38

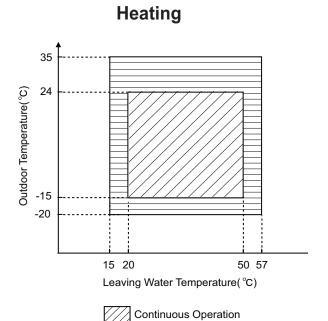
#### ◆ Total Capacity (Included defrost effect)

Outdoor	LWT	30℃	LWT	35℃	LWT	<b>40</b> ℃	LWT	<b>45</b> ℃	LWT	50℃	LWT	<b>55</b> ℃
Temperature	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
-20 ℃ DB	12.25	4.92	11.61	5.14	11.12	5.38	10.61	5.63	-	-	-	-
-15 ℃ DB	12.78	4.73	12.12	4.94	11.61	5.18	11.07	5.42	10.53	5.66	-	-
-7 ℃ DB	13.64	4.44	12.93	4.64	12.38	4.86	11.81	5.08	11.23	5.31	10.63	5.54
-4 ℃ DB	13.15	4.11	12.47	4.29	12.13	4.56	11.75	4.83	11.33	5.11	10.87	5.40
-2 ℃ DB	12.81	3.89	12.14	4.07	11.95	4.36	11.70	4.67	11.40	5.03	11.04	5.35
2 ℃ DB	12.07	3.48	11.45	3.64	11.56	4.01	11.58	4.54	11.52	5.02	11.37	5.42
7 ℃ DB	16.88	4.00	16.00	4.18	15.13	4.36	14.25	4.53	13.38	4.72	12.50	4.89
10 ℃ DB	17.79	3.88	16.87	4.06	15.94	4.23	15.02	4.40	14.10	4.58	13.18	4.75
15 ℃ DB	19.31	3.69	18.31	3.86	17.31	4.02	16.31	4.19	15.30	4.35	14.30	4.52
18 ℃ DB	20.22	3.58	19.17	3.74	18.12	3.90	17.08	4.06	16.03	4.22	14.98	4.38

- 1. DB : Dry bulb temperature(  ${}^{\circlearrowright}$  ), LWT : Leaving water temperature(  ${}^{\circlearrowright}$  )
- 2. TC: Total capacity(kW), PI: Power Input(kW)
- 3. PC: Peak Capacity (Not included defrost effect, kW)
- 4. Direct interpolation is permissible. Do not extrapolate.
- 5. Measuring procedure follows EN-14511.
  - Rated values are based on standard conditions, and it can be found on specifications.
  - · Above table values may not be matched according to installation condition. Except for rated value, the performance is not guaranteed.
  - In accordance with the test standard(or nations), the rating will vary slightly.

# 7. Operation Range





Operative

### 8. Electric characteristics

### ■ Wiring of Main Power Supply and Equipment Capacity

- 1. Use a separate power supply for the Outdoor Unit and Indoor Unit.
- 2. Bear in mind ambient conditions (ambient temperature, direct sunlight, rain liquid, 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 (design 60245 IEC57).
- 6. Don't install an individual switch or electrical outlet to disconnect each of indoor unit separately from the power supply.

## Λ

#### WARNING

- Follow ordinance of local regulation 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.
- Some installation site may require attachment of an earth leakage breaker. If no earth leakage breaker is installed, it may cause an electric shock.



#### CAUTION

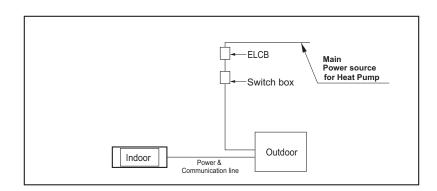
 Do not use anything other than breaker and fuse with correct capacity. Using fuse and wire or copper wire with too large capacity may cause a malfunction of unit or fire.

## 8. Electric characteristics

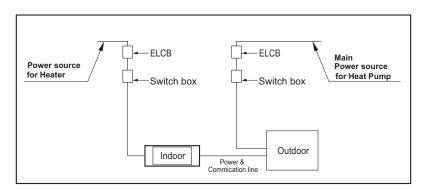
### ■ Outdoor Unit and Hydro Box Unit

	Model		Power Supply for Heat Pump			Power	Supply for H	eater	
		Dhasa		Back-up	Heater	DHW Tar	nk Heater	Circuit B	reaker (A)
Indoor Unit	Outdoor Unit	Phase Volts Hz	Circuit Breaker (A)	Capacity (kW)	Power Supply	Capacity (kW)	Power Supply	Back-up Heater	Back-up Heater + DHW Tank Heater
	AHUW056A3								
	AHUW076A3		30					35	50
AHNW16606A3	AHUW096A3	1~ 220-240V		2+2	1Ø 230V				
ATINW 10000A3	AHUW126A3	50Hz		3+3	10 2300	3	1Ø 230V		
	AHUW146A3		40					35	50
	AHUW166A3								
	AHUW128A3	3N~ 380-415V							
AHNW16809A3	AHUW148A3		20	3+3+3	3Ø 400V	400V		20	35
	AHUW168A3	50Hz							

#### [Power Supply for Heat Pump]



#### [Power Supply for Electric Heater]



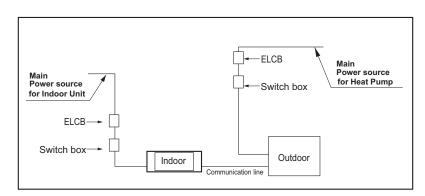
- 1. Voltage supplied to the unit terminals should be within the minimum and maximum range.
- 2. Maximum allowable voltage unbalance between phase is 2%.
- 3. Recommended circuit breaker type is ELCB (Earth Leakage Circuit Breaker).

## 8. Electric characteristics

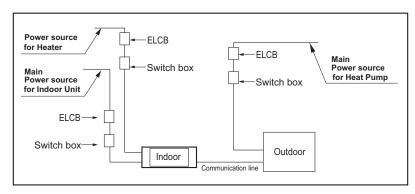
### ■ DHW Tank integrated Unit

	Model			Power Supply for Electric Heater	
Indoor Unit	Combination of Electric Heater (kW)	Phase Volts Hz	Capacity (kW)	Power	Circuit Breaker (A)
	2.0	1~ 220-240V 50Hz	2.0	1~ 230V 50Hz	16.0
AHNW16606B0	2.0+2.0	1~ 220-240V 50Hz	4.0	1~ 230V 50Hz	20.0
	2.0+2.0+2.0	3N~ 380-415V 50Hz	6.0	3N~ 400V 50Hz	16.0

#### [Power Supply for Heat Pump]



#### [Power Supply for Electric Heater]



- 1. Voltage supplied to the unit terminals should be within the minimum and maximum range.
- 2. Maximum allowable voltage unbalance between phase is 2%.
- 3. Recommended circuit breaker type is ELCB (Earth Leakage Circuit Breaker).

### 9. Sound Levels

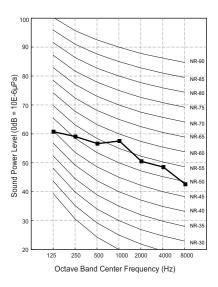
#### Note

- 1. Data is valid at diffuse field condition.
- 2. Reference acoustic intensity 0dB = 10E-6µW/m<sup>2</sup>
- 3. Sound power level is measured on the rated condition in the reverberation rooms. Refer to the Model Specifications for nominal conditions(Power source and Ambient temperature, etc)
- 4. Sound levels can be increased in accordance with installation and operating conditions. (Operating conditions include some functional condition like Static pressure mode, air guide use, Room target temperature setting, etc and these functions are different in accordance with each model.)
- 5. 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.

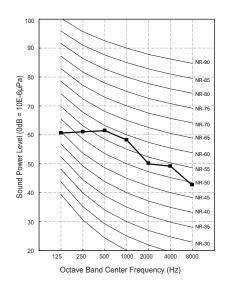
#### ■ Sound Power Level

Model	Sound Power Level (dB(A))
Wodel	Н
AHUW056A3 [HU051 U43]	65
AHUW076A3 [HU071 U43]	65
AHUW096A3 [HU091 U43]	65
AHUW126A3 [HU121 U33]	66
AHUW146A3 [HU141 U33]	66
AHUW166A3 [HU161 U33]	66
AHUW128A3 [HU123 U33]	66
AHUW148A3 [HU143 U33]	66
AHUW168A3 [HU163 U33]	66
AHUW168A2 (HU163 U32)	69

AHUW056A3 [HU051 U43] AHUW076A3 [HU071 U43] AHUW096A3 [HU091 U43]



AHUW126A3 [HU121 U33], AHUW146A3 [HU141 U33] AHUW166A3 [HU161 U33], AHUW128A3 [HU123 U33] AHUW148A3 [HU143 U33], AHUW168A3 [HU163 U33]



## 10.1 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.

# **A** 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.

### 10.2 Select the Best Location

Select space for installing outdoor unit, which will meet the following conditions:

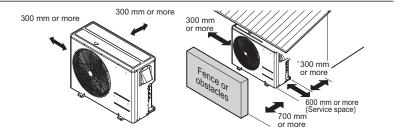
- · No direct thermal radiation from other heat sources
- No possibility of annoying neighbors by noise from unit
- No exposition to strong wind
- With strength which bears weight of unit
- Note that drain flows out of unit when heating (Heat pump model)
- With space for air passage and service work shown next
- Because of the possibility of fire, do not install unit to the space where generation, inflow, stagnation, andleakage 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 outdoor unit in order to prevent any person or animal from accessing theoutdoor 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.
- Select installation location considering following conditions to avoid bad condition when additionally performingdefrost operation. (Heat pump model)
  - 1. Install the outdoor 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.
  - 2. Performance of heating will be reduced and pre-heat time of the indoor unit may be lengthened in case ofinstalling the outdoor unit in winter at following location:
    - 1) Shade position with a narrow space
    - 2) Location with much moisture in neighboring floor.
    - 3) Location with much humidity around.
    - 4) Location where liquid gathers since the floor is not even.

- 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.
  - 1. 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.
  - 2. 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.

## 10.3 Installation Space

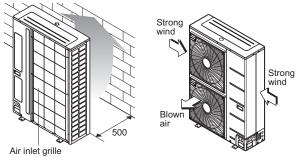
#### 10.3.1 Clearance around outdoor units

 Ensure that the space around the back is or more more than 300 mm on the opposite to the PCB side and secure 600 mm space near the compressor and PCB side of the air conditioner for service.



\* Outdoor unit is representative. Actual appearance of outdoor unit may be different but clearances will stay the same.

- Install the unit so that its discharge port faces to the wall of the building. Keep a distance 500mm 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.



Turn the air outlet side toward the building's wall, fence or windbreak screen.

Set the outlet side at a right angle to the direction of the wind.

\* Outdoor unit is representative. Actual appearance of outdoor unit may be different but clearances will stay the same.

## 10.4 Lifting Method

- When carrying the suspended unit, pass the ropes under the unit and use the two suspension points each at the front and rear.
- 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.

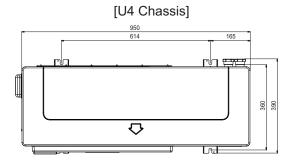
#### **CAUTION**

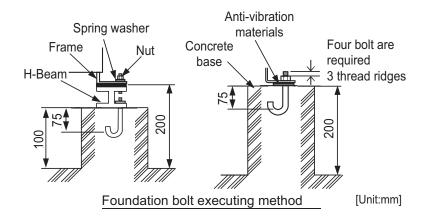
- Do not have only one person carry product if it is more than 20 kg.
- PP bands are used to pack some products. Do not use them as a mean for transportation because they aredangerous.
- Do not touch heat exchanger fins with your bare hands. Otherwise you may get a cut in your hands.
- Tear plastic packaging bag and scrap it so that children cannot play with it. Otherwise plastic packaging bag may suffocate children to death.
- When carrying in Outdoor Unit, be sure to support it at four points. Carrying in and lifting with 3-point support may make Outdoor Unit unstable, resulting in a fall.
- Place extra cloth or bodards in the locations where the casing comes in contact with the sling to prevent damage.
- Hoist the unit making sure it is being lifted at its center of gravity.

### 10.5 Installation of outdoor units

#### 10.5.1 Foundation for Installation

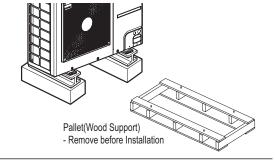
- Check the strength and level of the installation ground so that the unit will not cause any operating vibration ornoise after installation.
- Fix the unit securely by means of the foundation bolts. (Prepare 4sets of M12 foundation bolts, nuts and washerseach which are available on the market.)
- It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







- Be sure to remove the Pallet(Wood Support) of the bottom side of the outdoor unit Base Pan before fixing the bolt. It may cause the unstable state of the outdoor 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 outdoor unit before welding. Not removing Pallet(Wood Support) causes hazard of fire during welding.



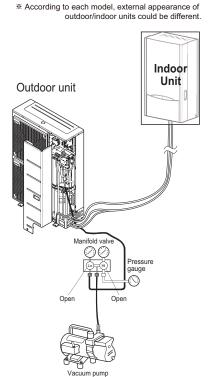
#### 10.5.2 Evacuation

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 isopen. 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 counterclockwise to fully open the valve.
- 3. Loosen the charge hose connected to the gas side service port slightly to release the pressure, thenremove 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.

## 10.6 Electrical Wiring

#### 10.6.1 Caution

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

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#### 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 Outdoor Unit communication 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 Outdoor Unit.

# A

#### CAUTION

- Be sure to correct the outdoor 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 Indoor and Outdoor Units, because the box is sometimes removed at the time of service work.
- 5. Never connect the main power source to terminal block of communication line. If connected, electrical parts will be burnt out.
- Only the communication line specified should be connected to the terminal block for Outdoor Unit communication.

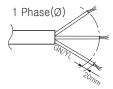
# Λ

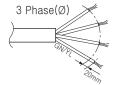
#### CAUTION

- 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 cables.
- 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.

#### ■ 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)

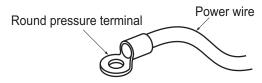




If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

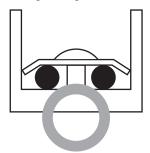
### Precautions when laying power wiring

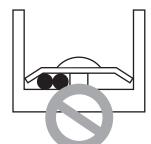
Use round pressure terminals for connections to the power terminal block.



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.







- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal block.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tighterning impossible.
- · Over-tightening the terminal screws may break them.

# **A** CAUTION

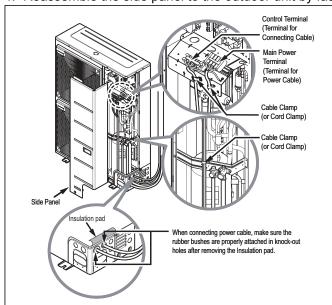
 When the 400 volt power supply is applied to "N" phase by mistake, replace inverter PCB and transformer in control box.

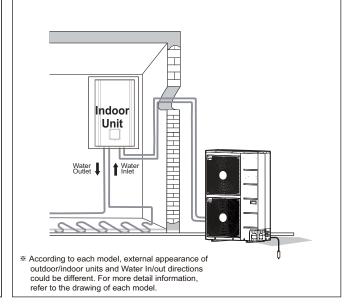
### ■ Connecting Cable Specification

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.

### 10.6.2 Wiring Procedure for Power Cable and Connecting Cable

- 1. Disassemble the side panel from the outdoor unit by loosing screws.
- 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 bebigger than 1.6mm2 to secure safety. The earth cable is connected to the terminal block where earthsymbol 
   is marked.
- 3. Use cable clamps (or cord clamps) to prevent unintended move of Power cable and Connecting cable.
- 4. Reassemble the side panel to the outdoor unit by fastening screws.





#### Note

#### 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.





#### Air Solution

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