LG

THERMA V™

Air-to-Water Heat Pump / Split Type / Indoor unit
R410A/50Hz
5BPU0-01B(Replaces 5BPU0-01A)

TOTAL HVAC SOLUTION PROVIDER

ENGINEERING PRODUCT DATA BOOK

LG
Life's Good

P/No. : MFL66101123

THERMA V™

Split Type

General Information

Indoor Unit

Hydro Box Unit

THERMA V™

Split Type

General Information

1. Model Line Up
2. Nomenclature

1. Model line up

1.1 Indoor Units

Category	Type	External Appearance	Back up heater Capacity [kW]	Model Name / Heating Capacity class* (kW) / 16.0	Features
AWHP Split Type	Hydro Box Type		6.0	**AHNW16606A4 [HN1616M NK5]**	• Providing eco-friendly heating • High energy efficiency • Easy installation • Space heating, cooling, and Domestic Hot Water heating
				AHNW16806A4 [HN1636M NK5]	

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

1.2 Combination of Outdoor Units

Category		Model Name					
		Heating Capacity (kW)					
		12.0		14.0		16.0	
1 Phase Model 1 Ø, 220-240 V, 50 Hz		**AHUW126A3 [HU121 U33]**	**AHUW126A4 [HU121MA U33]**	**AHUW146A3 [HU141 U33]**	**AHUW146A4 [HU141MA U33]**	**AHUW166A3 [HU161 U33]**	**AHUW166A4 [HU161MA U33]**
Combination	**AHNW16606A4 [HN1616M NK5]**	O	O	O	O	O	O
3 Phase Model 3 Ø, 380-415 V, 50 Hz		**AHUW128A3 [HU123 U33]**	**AHUW128A4 [HU123MA U33]**	**AHUW148A3 [HU143 U33]**	**AHUW148A4 [HU143MA U33]**	**AHUW168A3 [HU163 U33]**	**AHUW168A4 [HU163MA U33]**
Combination	**AHNW16806A4 [HN1636M NK5]**	O	O	O	O	O	O
External Appearance							

2. Nomenclature

■ Factory Model Name

Model Name	AH	N	W	16	6	06	A	4
No.	1	2	3	4	5	6	7	8

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

2. Nomenclature

■ Buyer Model Name

Model Name	H	N	16	1	6	M	N	K	5
No.	1	2	3	4	5	6*	7	8	9

No.	Signification
1	**Air-to-Water Heat Pump for R410A**
2	**Classification** N : Indoor unit of Split type U : Outdoor unit of Split type M : Monobloc type
3	**Heating Capacity (kW)** Ex) 9kW → '09', 12kW → '12'
4	**Heater Electrical ratings** 1 : 1Ø, 220-240V, 50 Hz 2 : 3Ø, 220V, 50Hz 3 : 3Ø, 380-415V, 50Hz
5	**Nominal Heater Capacity (kW)** 00 : None Heater 06 : 6kW heater
6*	**Functions** H : High Temperature heating model M : Mid Temperature (* In case of Hydro Box Low temperature type, here is blank.)
7	**Classification** N : Indoor unit of Split type U : Outdoor unit of Split type M : Monobloc type
8	**Platform (Chassis code)** K : K2,K3 Chassis
9	**Serial number**

THERMA V™

Split Type

Indoor Unit

Hydro Box Unit

THERMA V™

Split Type

Hydro Box Unit

1. List of Functions

■ Basic functions of Unit

Category	Function	AHNW16606A4 [HN1616M NK5] AHNW16806A4 [HN1636M NK5]
Installation	Back up heater (Operation)	O
Reliability	Self diagnosis	O
Convenience	Auto Restart	O
	Child lock	O
	Sleep mode	O
	Timer (on/off)	O
	Timer (weekly)	O
	Two thermistor control	X
Network function	Network solution(LGAP)	O
	Modbus connectivity (without gateway)	O
Air to Water Heat Pump Functions	Anti-condensation on floor (cooling)	O
	Digital output for external pump	O
	Current flow rate monitoring	O
	Thermostat interface (230V AC)	O
	Thermostat interface (24V AC)	X
	Solar thermal system	O (Accessory)
	DHW(Domestic Hot Water) heating	O (Accessory)
	PHEX anti-freezing control	O
	Water pump anti-stuck function	O
	Weather compensation for heating and cooling (Auto mode)	O
	Low noise operation	O
	Anti-overheating of water pipe	O
	Emergency operation	O
	Weather Dependent Operation with Thermostat	O
	Scheduler (DHW Tank Heater)	O
	Timer (Domestic Hot Water Tank Heater)	O
	Quick Domestic Hot Water Tank Heating	O
	Screed Drying Mode	O
	Base Pan Heating	O
	External input and output control(CN-EXT)	O
	Water flow control	O
	Water pressure monitoring	O
	Digital input for energy saving (ESS)	O

Note

1. O : Applied, X : Not applied
   Accessory : Ordered and purchased separately the accessory package referring to the model name provided and install at field.
   Accessory line-ups varies by region, so check your local catalogue or local sales material.

1. List of Functions

■ Accessory Compatibility List

Category		Product	Remark	AHNW16606A4 [HN1616M NK5] AHNW16806A4 [HN1636M NK5]
Wired RemoteController	Standard	PREMTW101	New standard (White)	O
Dry Contact	Simple Contact	PDRYCB000	Simple Dry Contact	O
	Communication Type	PDRYCB400	2 Points Dry Contact (For Setback)	X
		PDRYCB320	For 3rd party Thermostat	O
		PDRZCB500	Dry Contact for Modbus	X
ETC	Remote temperature sensor	PQRSTA0	-	O
	Group control wire	PZCWRCG3	0.25 m	X
	2-Remo Control Wire	PZCWRC2	0.25 m	O
	Extension wire	PZCWRC1	10 m	O
	Wi-Fi controller *	PWFMDD200	USB Cable : 0.6 m Extension cable : 0.5 m	O
	Wi-Fi Extension cable	PWYREW000	USB Extension cable : 10 m	O
	Meter Interface Module***	PENKTH000	Interface between IDU and Meter	O
	2 Zone Valve Controller	PZNVVB200	-	O
Accessory Kit for AWHP	DHW tanks (Single coil)	OSHW-200F	200 L	O
		OSHW-300F	300 L	O
		OSHW-500F	500 L	O
	DHW tanks (Double coil)	OSHW-300FD	300 L	O
	DHW tank kit	PHLTA	For Split (1Φ)	O
		PHLTB	For Monobloc	X
		PHLTC	For Split (3Φ)	O
	DHW sensor	PHRSTA0	included in PHLTA kit	O
	Mixing Valve	OSHA-MV	3/4" DN20	O
		OSHA-MV1	1" DN25	O
	3way valve	OSHA-3V	-	O
	Solar thermal kit	PHLLA	For hydro box unit	X
	2nd Circuit Thermistor	PRSTAT5K10	-	O
	Backup heater	AHEH036A [HA031M E1]	220-240 V, 1Φ, For monobloc	X
		AHEH066A [HA061M E1]	220-240 V, 1Φ, For monobloc	X
		AHEH068A [HA063M E1]	380-415 V, 3Φ, For monobloc	X
	Drain Pan	PHDPC	For hydro box unit	O
	Cover plate	PDC-HK10	For Split, IWT	O
	Buffer Tank (40ℓ)	OSHB-40KT	For IWT(integrable)	X
	DHW expansion vessel (8ℓ)	OSHE-12KT	For IWT (integrable)	X

Note

1. O: Possible, X: Impossible, - : Not applicable, Embedded : Included with product.
2. * : Some advanced functions controlled by individual controller cannot be operated.
3. ** : It could not be operated some functions.
4. *** Meter interface cannot be connected at the same time with 3rd-party controller.
5. If you need more detail, please refer to the ***BECON*** PDB or the manual of product. (http://partner.lge.com/global : Home> Doc.Library> Product > Control(BECON))

2. Specifications

Indoor Units					AHNW16606A4 [HN1616M NK5]	AHNW16806A4 [HN1636M NK5]
Operation Range (Leaving Water)	Cooling	For Fan Coil Unit	Min. ~ Max.	°C	5 ~ 27	5 ~ 27
		For under floor	Min. ~ Max.	°C	16 ~ 27	16 ~ 27
	Heating	For Fan Coil Unit / Radiator	Min. ~ Max.	°C	15 ~ 57	15 ~ 57
		For under floor	Min. ~ Max.	°C	15 ~ 57	15 ~ 57
	DHW(Domestic Hot Water)*		Min. ~ Max.	°C	15 ~ 80	15 ~ 80
Water Pump	Type			-	Canned type for hot water circulation	
	Motor type			-	BLDC	BLDC
	Number of Revolution (setting range)			-	Variable capacity 10% to 100%	
	Power input		Rated	W	140	140
Heat Exchanger	Type			-	Brazed Plate HEX	Brazed Plate HEX
	Quantity			-	1	1
	Number of Plate			EA	76	76
Flow Sensor	Type			-	Vortex	Vortex
	Model			-	SIKA VVX20	SIKA VVX20
	Measuring Range		Min. ~ Max.	ℓ/min	5 ~ 80	5 ~ 80
	Flow (Trigger point)		Min.	ℓ/min	7	7
Water Pressure Sensor	Model			-	Sensata OFM (2HMP)	Sensata OFM (2HMP)
	Measuring Range		Min. ~ Max.	bar(G)	0 ~ 20	0 ~ 20
Expansion Vessel	Volume			ℓ	8.0	8.0
	Water Pressure		Max.	bar	3	3
	Water Pressure		Pre-charged	bar	1	1
Strainer	Mesh size			-	30 mesh	30 mesh
	Material			-	Stainless Steel	Stainless Steel
Safety Valve	Pressure Limit		Upper Limit	bar	3	3
Piping Connections	Water Circuit	Inlet	Inner Dia.	mm(inch)	Male PT 25.4(1)	Male PT 25.4(1)
		Outlet	Inner Dia.	mm(inch)	Male PT 25.4(1)	Male PT 25.4(1)
	Refrigerant Circuit	Gas	Outer Dia.	mm(inch)	Ø 15.88 (5/8)	Ø 15.88 (5/8)
		Liquid	Outer Dia.	mm(inch)	Ø 9.52 (3/8)	Ø 9.52 (3/8)
Sound Power Level	Heating		Rated	dB(A)	44	44
Dimensions	Unit		W x H x D	mm	490 x 850 x 315	490 x 850 x 315
	Packed Unit		W x H x D	mm	563 x 1,082 x 375	563 x 1,082 x 375
Weight (Without water)	Unit			kg	40.0	41.0
	Packed Unit			kg	46.0	47.0
Exterior	Color			-	Noble White	Noble White
	RAL Code			-	RAL 9016	RAL 9016
Wiring Connections	Power and Communication Cable (H07RN-F) (Included Earth)			mm² x cores	0.75 x 4C	0.75 x 4C
DHW Tank** (Field Supply)	Type			-	Indirect heating (+Booster heater)	Indirect heating (+Booster heater)
	Heater Capacity		Max.	kW	3	3
	Power Supply			V / Ø / Hz	230 / 1 / 50	230 / 1 / 50
	Power Supply Type			-	Separated power source	Separated power source
	Thermal Protector Range		Max.	°C	90	90
	Relay Contactor			-	Needed	Needed
	ELCB			A	40	40
	Sensor Adaptor Diameter			mm(inch)	12.7 (1/2)	12.7 (1/2)
	Accessory Kit Model Name***			-	PHLTA (LG Supply)	PHLTC (LG Supply)
	MCCB			A	32	32

Note

* : DHW 50 ~ 80 °C Operating is available only when the booster heater is operating.

** : This information is given as a guideline about the connection of DHW tank.

*** : This Accessory Kit is required only when you want to use the Booster heater function at DHW tank. If not, it's not necessary. Therma V indoor unit itself already has Backup heater function.

2. Specifications

Indoor Units			AHNW16606A4 [HN1616M NK5]	AHNW16806A4 [HN1636M NK5]
Backup heater	Type	-	Sheath	Sheath
	Number of Heating Coil	EA	2	3
	Capacity Combination	kW	3.0 + 3.0	2.0 + 2.0 + 2.0
	Operation	-	Automatic	Automatic
	Heating Steps	Step	2	2
	Power Supply	V, Ø, Hz	1, 220-240, 50	3, 380-415, 50
	Rated Current	A	25.0	8.7
	Power Cable (H07RN-F) (Included Earth)	mm² x cores	4.0 x 3C	2.5 x 4C

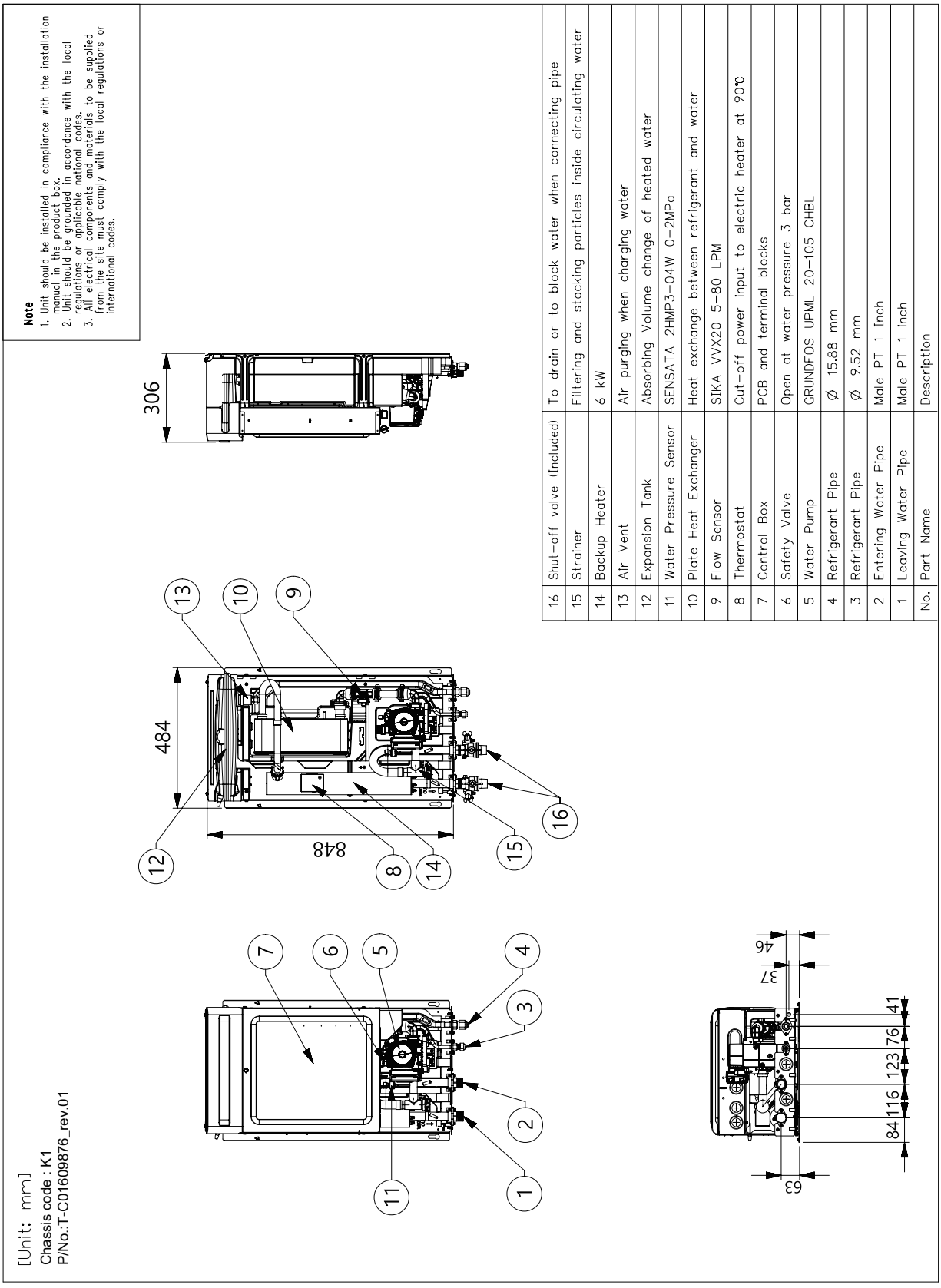
Note

1. Due to our policy of innovation some specifications may be changed without notification.
2. Wiring cable size must comply with the applicable local and national codes. And “Electric characteristics” chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
3. Sound power level is measured on the rated condition in according with ISO 9614 standard. Therefore, these values can be increased owing to ambient conditions during operation.
4. Performances are based on the following conditions (It is according to EN14511) :
   - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is 0m.
5. This product contains Fluorinated greenhouse gases.

3. Dimensions

3.1 Internal

◆ AHNW16606A4 [HN1616M NK5], AHNW16806A4 [HN1636M NK5]

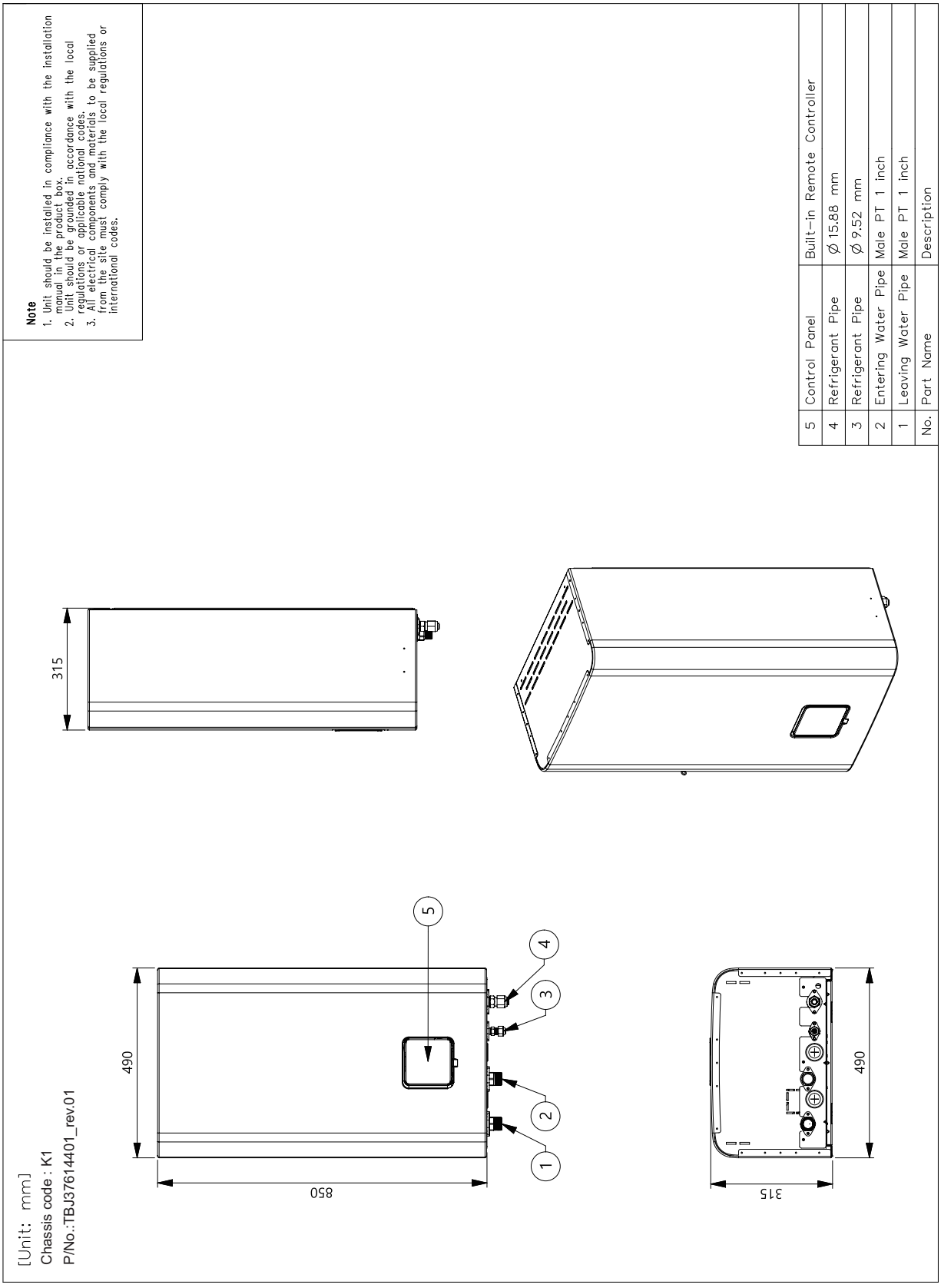


No.	Part Name	Description
1	Leaving Water Pipe	Male PT 1 Inch
2	Entering Water Pipe	Male PT 1 Inch
3	Refrigerant Pipe	Ø 9.52 mm
4	Refrigerant Pipe	Ø 15.88 mm
5	Water Pump	GRUNDFOS UPML 20-105 CHBL
6	Safety Valve	Open at water pressure 3 bar
7	Control Box	PCB and terminal blocks
8	Thermostat	Cut-off power input to electric heater at 90℃
9	Flow Sensor	SIKA VVX20 5-80 LPM
10	Plate Heat Exchanger	Heat exchange between refrigerant and water
11	Water Pressure Sensor	SENSATA 2HMP3-04W 0-2MPa
12	Expansion Tank	Absorbing Volume change of heated water
13	Air Vent	Air purging when charging water
14	Backup Heater	6 kW
15	Strainer	Filtering and stacking particles inside circulating water
16	Shut-off valve (Included)	To drain or to block water when connecting pipe

3. Dimensions

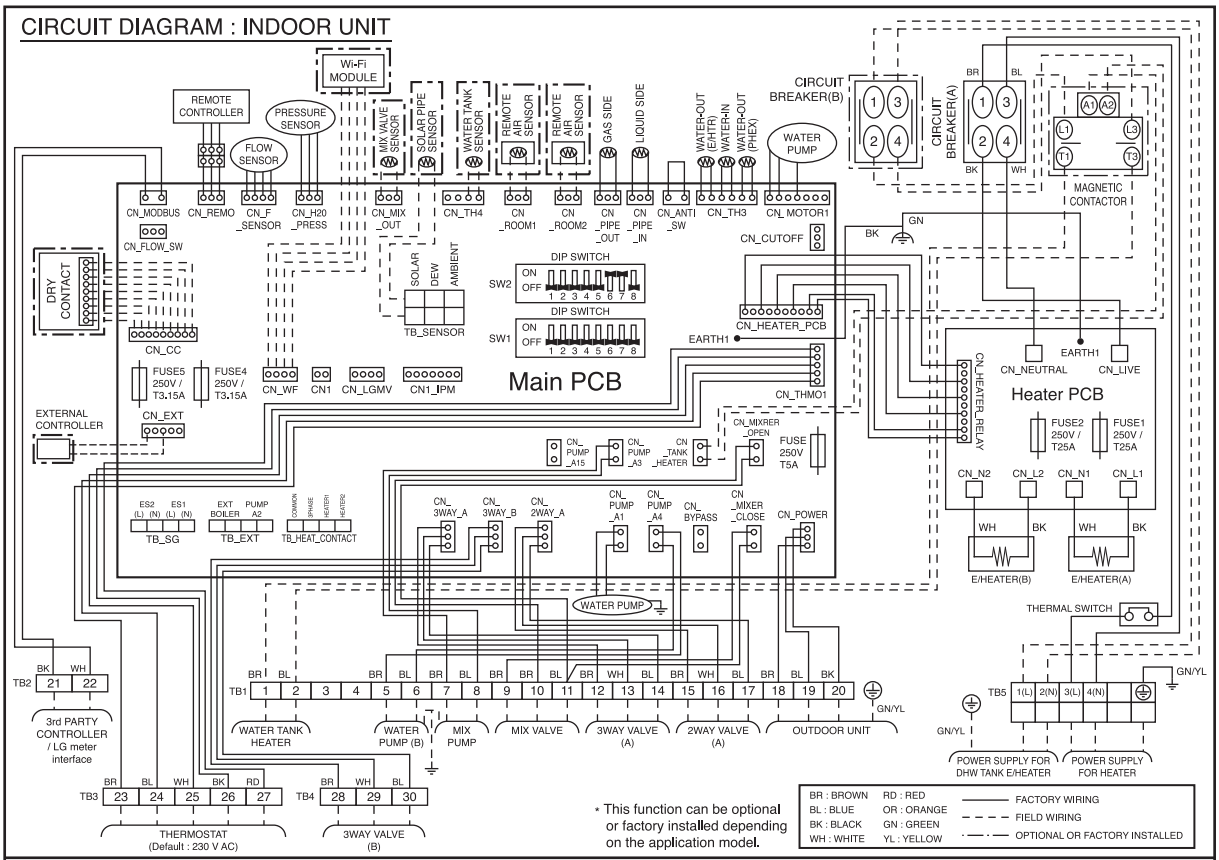
3.2 External

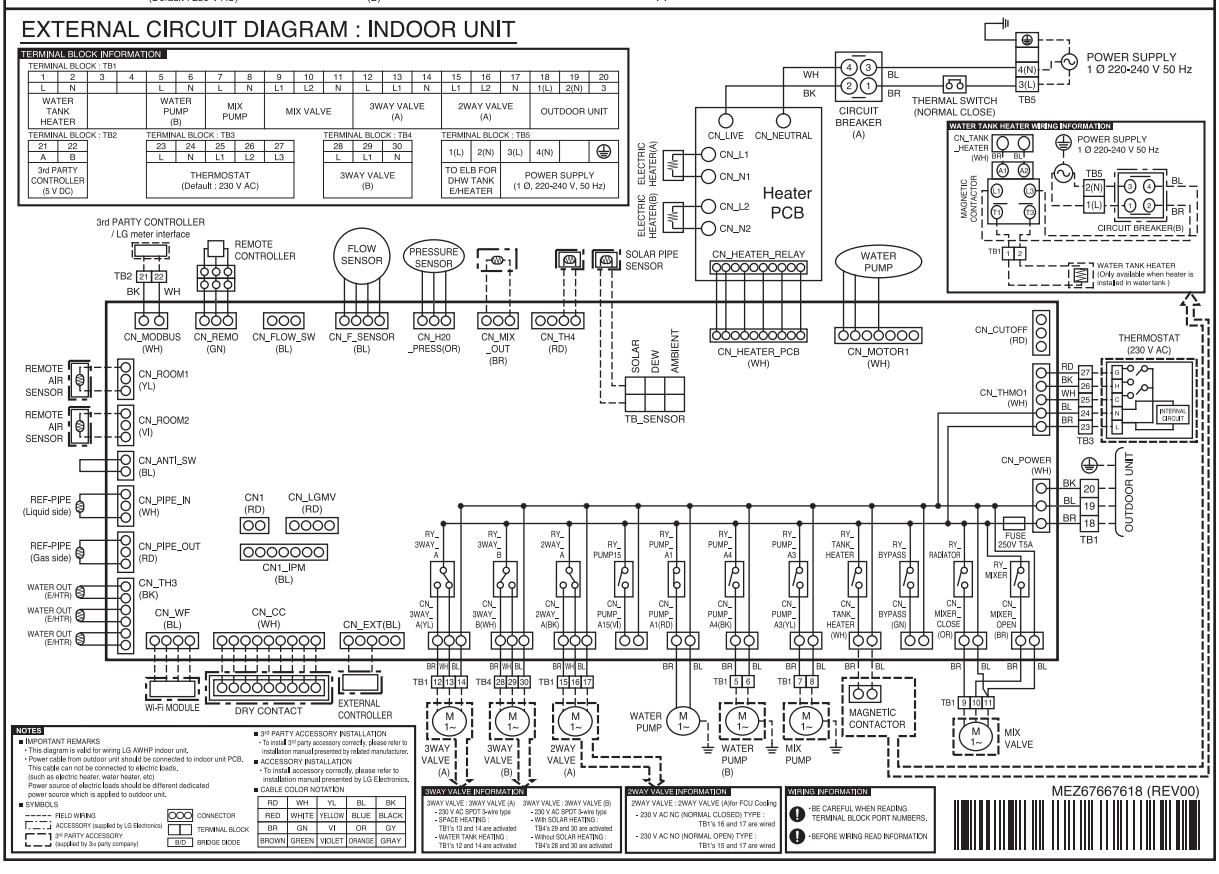
◆ AHNW16606A4 [HN1616M NK5], AHNW16806A4 [HN1636M NK5]



4. Wiring Diagrams

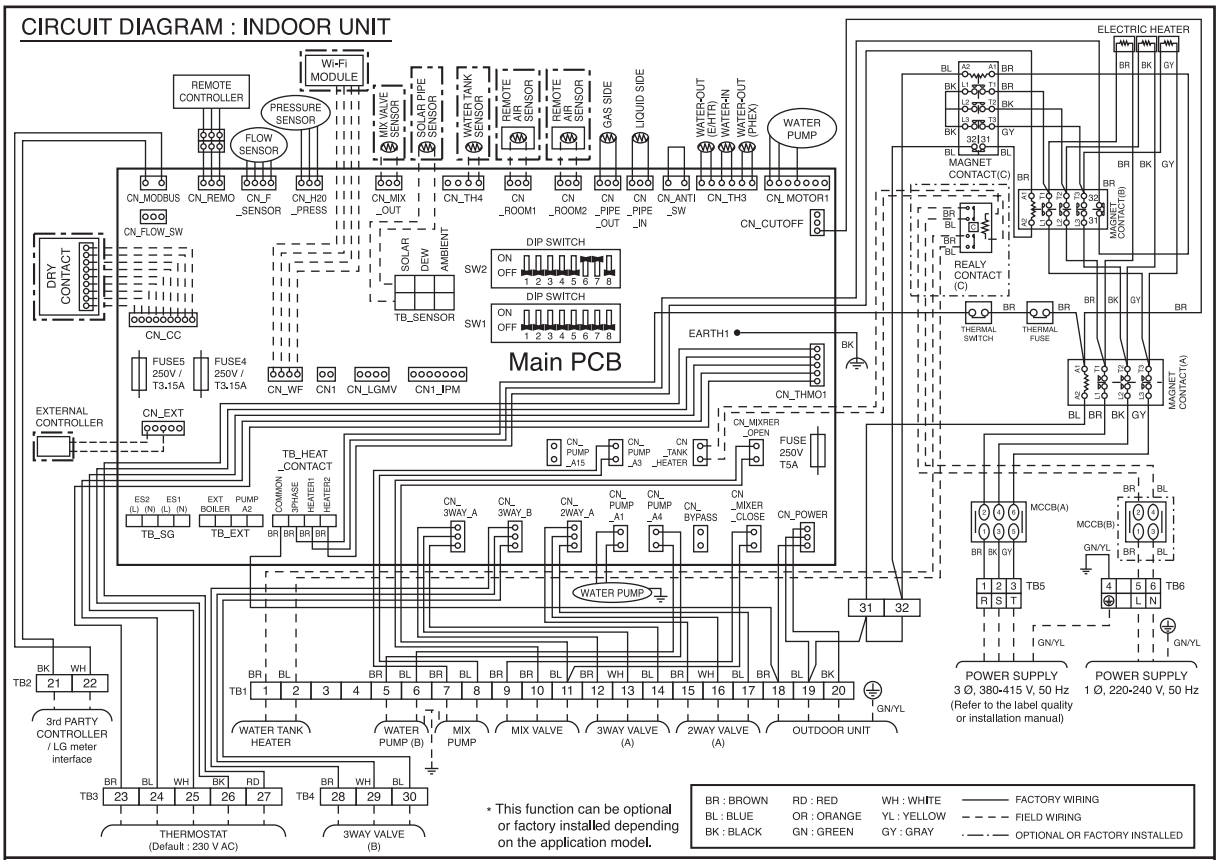
■ AHNW16606A4 [HN1616M NK5]

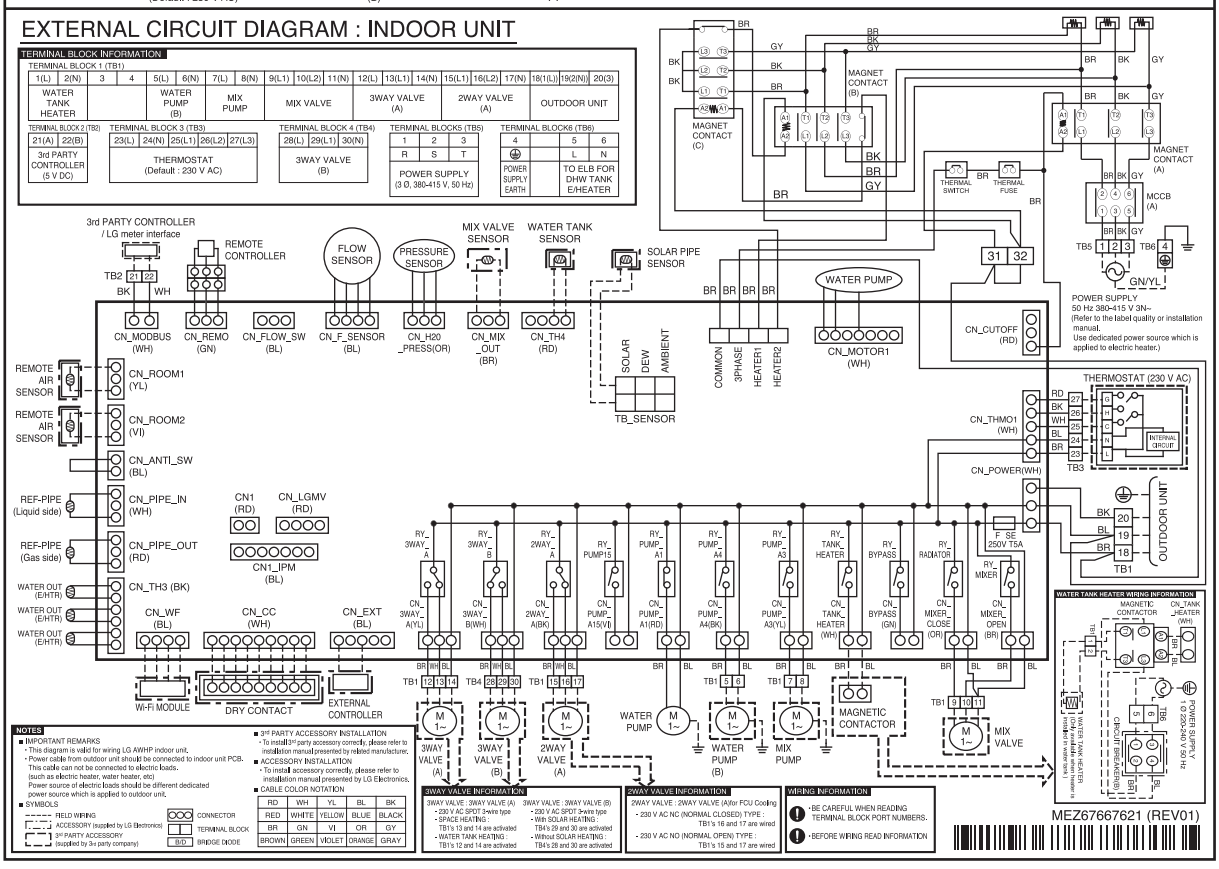




4. Wiring Diagrams

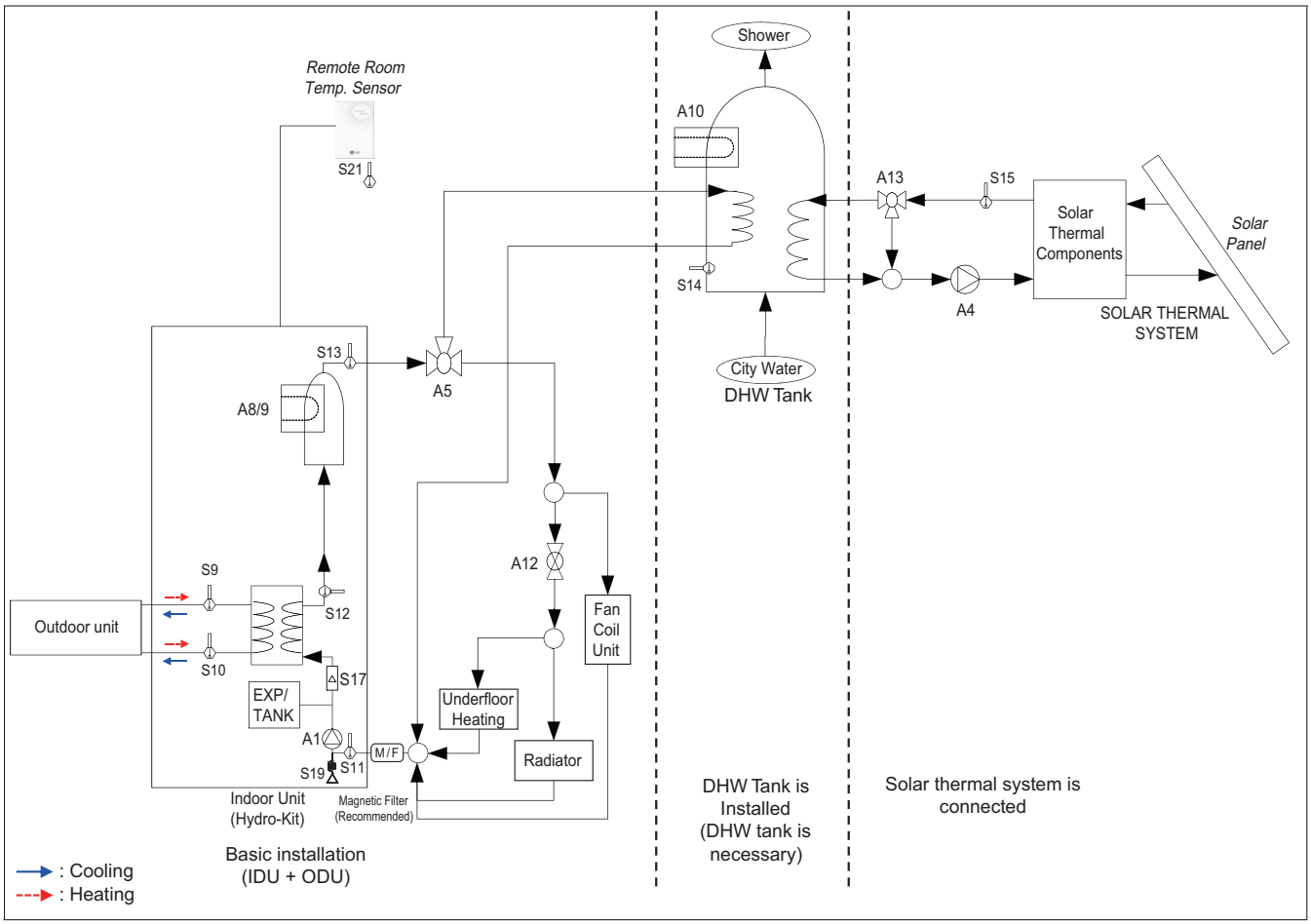
■ AHNW16806A4 [HN1636M NK5]





5. Piping Diagram

■ AHNW16606A4 [HN1616M NK5] / AHNW16806A4 [HN1636M NK5]



5. Piping Diagram

Category	Symbol	Meaning	PCB Connector	Remarks
Indoor unit / Main circuit	S9	Refrigerant temperature sensor (Gas side)	CN_PIPE_OUT	- NTC5kOhm
	S10	Refrigerant temperature sensor (Liquid side)	CN_PIPE_IN	- NTC5kOhm
	S11	Entering water temperature sensor	CN_TH3 (WATER IN)	- NTC5kOhm - S11,S12 and S13 are connected at 6-pin-type connector CN_TH3
	S12	Leaving water temperature sensor	CN_TH3 (PHEX OUT)	
	S13	Electric heater outlet temperature sensor	CN_TH3 (HEATER OUT)	
	S17	Flow Sensor	CN_F_SENSOR	- to monitor water flow rate
	S19	Entering Water Pressure sensor	CN_H2O_PRESS	- to monitor water pressure
	S20	Reserved	TB_SENSOR (AMBIENT)	
	S21	Remote room air sensor (Direct circuit)	CN_ROOM1	- Accessory: PQRSTA0 - NTC10kOhm
	A1	Internal water pump	CN_PUMP_A1 CN_MOTOR1	- Power is supplied via CN_PUMP_A1 - PWM signal is supplied via CN_MOTOR1
	A2	External pump	TB_EXT (PUMP A2)	- voltage-free contact - External water pump if head of internal pump is not sufficient or if parallel buffer tank is used
	A8 / A9	Backup heater (2 steps)	Coil 1: CN_L1, CN_N1 Coil 2: CN_L2, CN_N2 on HEATER-PCB	- Operating power(230 V AC 50 Hz) is supplied by external power source via Terminal block
	A12	2-way valve to block underfloor circuit from cooling water	CN_2WAY_A	- 3rd party accessory and Field installation (sold separately) - 2-wire NO- or NC-type 2-way valve is supported.
	EXP/TANK	Expansion vessel	-	- Absorbs volume change of heating water
	CTR/PNL	Control panel / Remote controller	CN_REMO	
	M/F	Magnetic filter	-	- 3rd party accessory and Field installation (sold separately) - It is strongly recommended to install an additional filter on the heating water circuit.
Domestic hot water circuit	S14	DHW tank temperature	CN_TH4 (BOOST)	- S14 is connected at 4-pin-type connector CN_TH4 - Accessory: PHRSTA0 - S14 is a part of DHW tank kit (Model : PHLTA,PHLTC)
	A5	3-way valve for changing between heating(cooling) and DHW tank	CN_3WAY_A	- 3rd party accessory and Field installation (sold separately) - SPDT type 3way valve is supported.
	A10	DHW boost heater	CN_TANK_HEATER	- 3rd party accessory and Field installation (sold separately) - Operating power (230 V AC 50 Hz) is supplied by external power source via Terminal block - Accessory: PHLTA (Relay, harness and DHW sensor)
	W/TANK	Domestic hot water tank	-	- Accessory (OSHW-series) or third-party tank suitable for heat pumps
	A15	Reserved	CN_PUMP A15	
	S23	Reserved	CN_RECIRC	
Solarthermal circuit	S15	Solar collector sensor	TB_SENSOR (SOLAR)	- 3rd party accessory and Field installation (sold separately) - PT1000
	S16	Reserved	CN_TH4 (SOLAR)	-for solar collector sensor use S15
	A4	Solar collector pump	CN_PUMP_A4	- 3rd party accessory and Field installation (sold separately)
	A13	3way-valve Solar	CN_3WAY_B	- 3rd party accessory and Field installation (sold separately) - SPDT type 3way valve is supported.
	Solarthermal system	Solarthermal equipment such as collector, solar pump, PT1000 sensor, solar heat-exchanger	-	- 3rd party accessory and Field installation (sold separately)

6. Hydraulic Performance

6.1 Water Pump Capacity

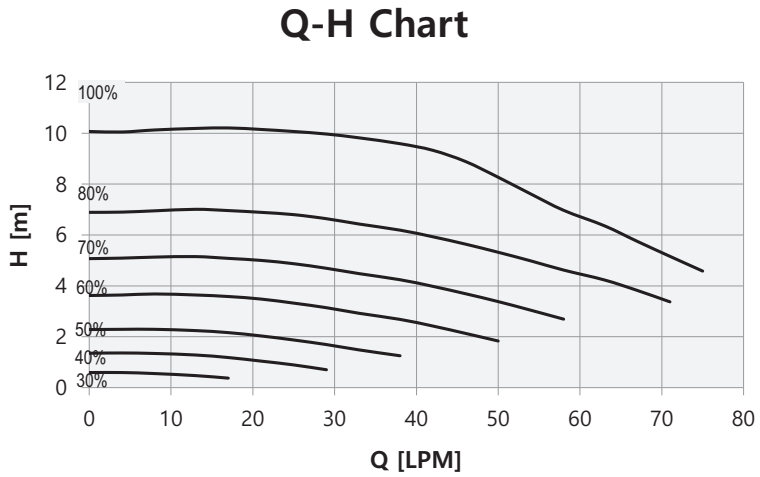
The water pump is variable type which is capable to change flow rate, so it may be required to change default water pump capacity in case of noise by water flow. In most case, however, it is strongly recommended to set capacity as maximum.

■ Pressure Drop

Capacity [kW]	Rated flow-rate [LPM]	Pump Head [m] (at rated flow-rate)	Product pressure drop [m] (Plate heat exchanger)	Serviceable Head [m]	Min. flow-rate [LPM] (Recommend)
16	46.00	9.0	1.4	7.6	20
14	40.25	9.3	1.1	8.2	
12	34.50	9.8	0.8	9.0	

Note

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



Note

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

7. Sound levels

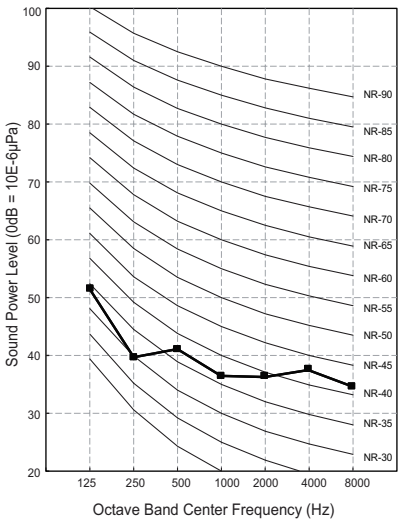
■ Sound Power Level

Note

1. Data is valid at diffuse field condition.
2. Reference acoustic intensity 0dB = 10E-6μW/m^2
3. Sound power level is measured on the rated condition in the reverberation rooms. Refer to the Model Specifications for nominal conditions(Power source and Ambient temperature, etc)
4. Sound levels can be increased in accordance with installation and operating conditions.
5. Sound level will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of particular installed place in which the equipment in installed.
6. Sound power level is measured on the rated condition in accordance with ISO 9614 standard.
   Therefore, these values can be increased owing to ambient conditions during operation.

Model	Sound Power Level [dB(A)]
AHNW16606A4 [HN1616M NK5]	44
AHNW16806A4 [HN1636M NK5]	44

AHNW16606A4 [HN1616M NK5]
AHNW16806A4 [HN1636M NK5]



THERMA V™

Indoor unit

Design and installation

1. Select the Best Location
2. Installation Space
3. Water Control
4. Dip Switch Setting

1. Select the Best Location

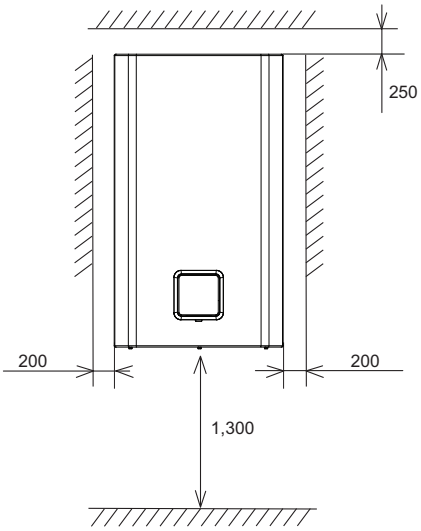
Select space for installing unit, which will meet the following conditions:

- The place where the unit shall be installed inside.
- The place shall easily bear a load exceeding four times of the unit weight.
- The place where the unit shall be leveled.
- The place shall allow easy water drainage.
- The place where the unit shall be connected to the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- The place where there should not be any heat source or steam near the unit.

2. Installation Space

2.1 General considerations

- The following values are the least space for installation. If any service area is needed for service according to field circumstance, obtain enough service space.
- Ensure that the spaces indicated by arrows around bottom, side, and top side.
- Wider spaces are preferred for easy maintenance and piping.
- If minimum service space is not secured, air circulation can be troubled and internal parts of the indoor unit can be damaged by overheating.



(unit : mm)

Note

- The default setting of the product is for heating only. To use the cooling system together, DIP S/W 4 should be turned ON and additional drain pan accessory should be installed.

3. Water Control

3.1 Water quality

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

⚠ 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 be removed by the standard filter of the heat pump system.
- Water quality check should be implemented before completing the installation of system.
  Detailed guide can be found in the table as below.

Water contents	Value			
pH	7.5~9.0			
Conductivity	10~500 uS/cm			
TDS (Total dissolved solids)	8~400 ppm			
Alkalinity (HCO_3^-)	60~300 (mg/L)			
Total hardness	4 ~ 8.5 °dH			
	71.4 ~ 151.7 (mg/L)			
Iron (Fe)	≤ 0.2 (mg/L)			
Sulphate (SO_4^{2-})	≤ 100 (mg/L)			
Nitrite (NO_3^-)	≤ 100 (mg/L)			
Free chlorine (Cl_2)	≤ 1 (mg/L)			
Chlorides (Cl^-)	ppm		STS316	STS304
	pH7	15℃	3,000	180
		40℃	500	50
		60℃	200	30
		80℃	125	20
	pH9	15℃	18,000	700
		40℃	2,600	250
		60℃	1,000	170
		80℃	550	130

3. Water Control

3.2 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 heat pump unit supplier for locally approved solutions in your area.

Calculate the approximate volume of water in the system. And add the water volume contained in the heat pump to this total volume.

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

CAUTION

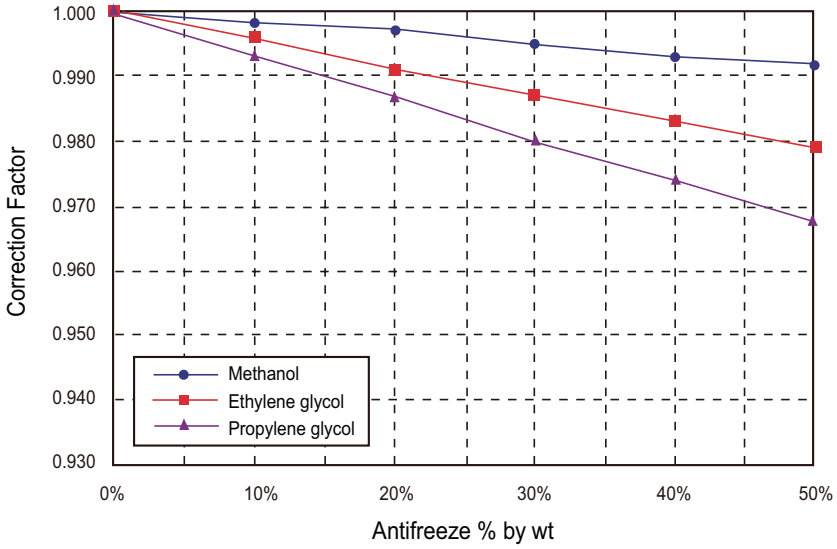
- Use only one of the above antifreeze.
- If a antifreeze is used, pressure drop and capability degradation of the system can be occurred.
- If one of antifreezes is used, corrosion can be occurred. So please add corrosion inhibitor.
- Please check the concentration of the antifreeze periodically to 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 antifreeze usage.

3. Water Control

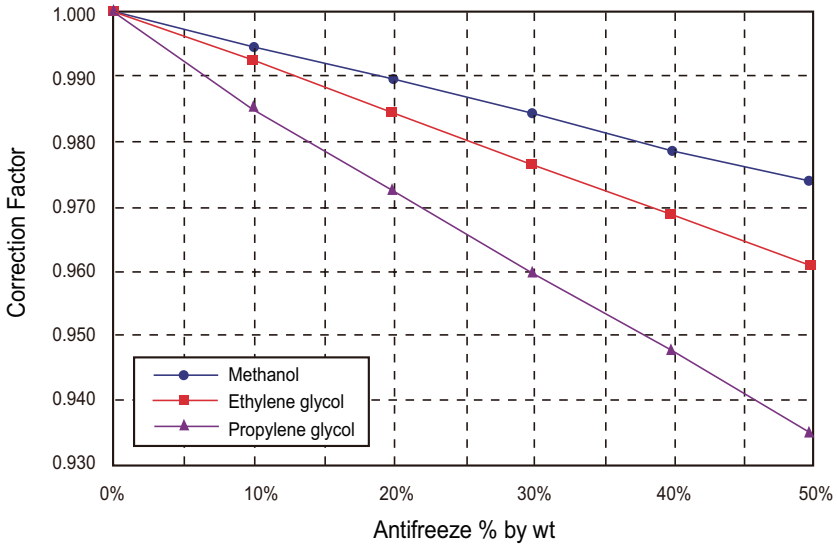
3.3 Capacity correction factor by antifreeze

Antifreeze Type	Item	Antifreeze % by wt				
		10%	20%	30%	40%	50%
Methanol	Cooling	0.998	0.997	0.995	0.993	0.992
	Heating	0.995	0.990	0.985	0.979	0.974
	Pressure Drop	1.023	1.057	1.091	1.122	1.160
Ethylene glycol	Cooling	0.996	0.991	0.987	0.983	0.979
	Heating	0.993	0.985	0.977	0.969	0.961
	Pressure Drop	1.024	1.068	1.124	1.188	1.263
Propylene glycol	Cooling	0.993	0.987	0.980	0.974	0.968
	Heating	0.966	0.973	0.960	0.948	0.935
	Pressure Drop	1.040	1.098	1.174	1.273	1.405

◆ Correction factor of cooling capacity



◆ Correction factor of heating capacity



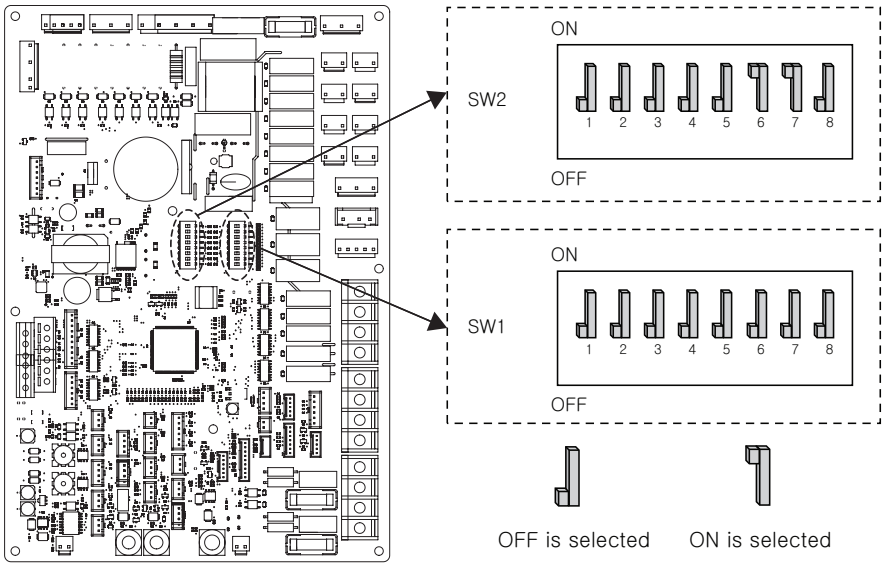
4. Dip Switch Setting

4.1 Information

Turn off electric power supply before setting DIP switch

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

■ Indoor PCB



4. Dip Switch Setting

◆ Dip switch SW1

Description	Setting		Default
MODBUS Communication Type	1	As Master (LG extension modules)	1
	1	As Slave (3rd party controller)	
MODBUS Function	2	REGINE	2
	2	Unified Open Protocol	
ANTIFREEZE	8	Antifreeze agent is not used	8
	8	Antifreeze agent in used*	

Note

*Possibility to allow colder water temperature by setting.

Bridge at CN_ANTI_SW on Hydro_PCB must be dis-connected to enable setting.

◆ Dip switch SW2

Description	Setting		Default
Group control	1	As Master	1
	1	As Slave	
Accessory installation information	2 3	Heat pump is installed (Heating(Cooling) circuit only)	2 3
	2 3	Heat pump + DHW tank is installed	
	2 3	Heat pump + DHW tank + Solar thermal system is installed	
	2 3	Unused	
Cycle	4	Heating Only	4
	4	Heating & Cooling	
Room Air Sensor	5	Room Air Sensor is not installed	5
	5	Room Air Sensor is installed	
Selecting Backup Heater capacity	6 7	Electric Heater is not used	6 7
	6 7	Half capacity is used	
	6 7	Unused	
	6 7	Full capacity is used	
Thermostat installation information	8	Thermostat is NOT installed	8
	8	Thermostat is installed	

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