CONFIDENTIAL

THERMA V™

AIR-TO-WATER HEAT PUMP

SERVICE MANUAL

(Exploded View)

MODEL : ZHNW20606I0

CAUTION

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

TABLE OF CONTENTS

1. Specification

Indoor

Indoor Unit Model Name					ZHNW20606I0 [HN0916T NB1]
Operation Range (Leaving Water)	Cooling (Min.~Max.)			°C	5 ~ 27
	Heating (Min.~Max.)			°C	15 ~ 65
	Domestic Hot Water (Min.~Max.)*			°C	15 ~ 80
DHW Tank	Type			-	Hydro module with integrated hot water tank
	Material			-	Enameled steel
	Water Volume			ℓ	200
	Internal Thermal Protect limit			°C	85
	Rated pressure (Pressure limit)			bar	10
	Insulation	Material		-	Polyurethane foam
		Thickness		mm	50
		Heat loss (for 24hr)		kWh	1.46
Buffer Tank (Accessory)	Water Volume			ℓ	40
	Material			-	P235GH steel (DIN EN 10028 - 2)
	Insulation Material			-	Closed cell foamed rubber
	Dimensions(W x H x D)			mm	518 x 560 x 175
	Weight			kg	24
Main water pump	Type			-	Canned type for hot water circulation
	Model			-	WILO Para KU 25-130/8-75/12 iPWM1
	Motor type			-	BLDC
	Steps of Pump Performance			-	Variable speed 10% to 100%
	Power input			W	7.5 ~ 75
DHW water Pump	Model			-	WILO ZRS 15/6-3 KU
	Steps of Speed			step	3 (Default : 1)
	Power input			W	45 ~ 85
Expansion vessel	Water Volume			ℓ	12
	Factory pre-charge			bar	0.75
	Max.pressure			bar	3
DHW Expansion vessel (Accessory)	Water Volume			ℓ	8
	Factory pre-charge			bar	3
	Max. pressure			bar	10
	Weight			kg	2.5
Heat Exchanger (Refrigerant ↔ Water)	Type			-	Brazed Plate HEX
	Number of Plates			EA	24
Heat Exchanger (Water ↔ DHW)	Type			-	Brazed Plate HEX
	Number of Plates			EA	26
3 Way Valve	Flow coefficient			Kvs	8
Safety Valve	Pressure Limit		Upper Limit	bar	3
DHW Safety valve	Pressure Limit		Upper Limit	bar	10
Flow Sensor	Model			-	SIKA VVXC9SNBUC00252P
	Measuring range		Min. ~ Max.	ℓ/min	5 ~ 80
	Flow(Trigger point)		Min.	ℓ/min	7
Strainer	Type			-	Intergrated to valve
	Mesh size			mesh	42.3 (0.6mm)
DHW Strainer	Mesh size			mesh	50.8 (0.5 mm)
Wiring Connections	Power and Communication Cable (H07RN-F) (included Earth)			mm^2 x cores	0.75 x 4C
Piping Connections	Refrigerant Circuit	Gas		mm(inch)	Ø 15.88 (5/8)
		Liquid		mm(inch)	Ø 9.52 (3/8)
	Water Circuit	Inlet		mm(inch)	Female Ø 22 (G1'')
		Outlet		mm(inch)	Female Ø 22 (G1'')
	DHW Tank Water Circuit	Cold Inlet		mm(inch)	Female Ø 19.75 (G3/4")
		Hot Outlet		mm(inch)	Female Ø 19.75 (G3/4")
		Recirculation		mm(inch)	Female Ø 19.75 (G3/4")
Sound Power Level				dB(A)	43
Dimensions (W × H × D)		Unit		mm	602 × 1,810 × 680
		Shipping		mm	640 × 2,050 × 790
Weight		Unit		kg	140
		Shipping		kg	156

Note
1. * : DHW 58~80℃ operating is available only when the Eletric heater is operating.
2. Due to our policy of innovation some specifications may be changed without notification.
3. Wiring cable size must comply with the applicable local and national codes and “Electric characteristics” chapter should be considered for electrical work and design.
4. LWT : Leaving Water Temperature, OAT : Outdoor Air Temperature.
5. 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.
6. Performances are accordance with EN14511 and reflect ErP testing conditions. Above gives the declared values at rated conditions acc. ErP regulation.
7. This product contains fluorinated greenhouse gases.

Indoor Unit Model Name			ZHNW20606I0 [HN0916T NB1]
Electric Heater (Case 1)	Power Supply	V, Ø, Hz	220-240, 1, 50
	Power Supply Cable (H07RN-F) (Included Earth)*	mm^2 x cores	4.0 x 3C
	Power connection wiring**	-	L1,N,Earth
	Heater Type	-	Sheath
	Number of Heating Coil	EA	1
	Capacity Combination	kW	2.0
	Operation	-	Automatic
	Rated Current	A	8.7
	Maximum Current	A	11.1
	Fuses	A	16
	Maximum electrical power***	kW	2.52
Electric Heater (Case 2)	Power Supply	V, Ø, Hz	220-240, 1, 50
	Power Supply Cable (H07RN-F) (Included Earth)*	mm^2 x cores	4.0 x 3C
	Power connection wiring**	-	L1,N,Earth (needs connect Bridge to L2 from L1)
	Heater Type	-	Sheath
	Number of Heating Coil	EA	2
	Capacity Combination	kW	2.0 + 2.0
	Operation	-	Automatic
	Rated Current	A	17.4
	Maximum Current	A	19.9
	Fuses	A	20
	Maximum electrical power***	kW	4.52
Electric Heater (Case 3)	Power Supply	V, Ø, Hz	318-415, 3, 50
	Power Supply Cable (H07RN-F) (Included Earth)*	mm^2 x cores	2.5 x 5C
	Power connection wiring**	-	L1,L2,L3,N,Earth
	Heater Type	-	Sheath
	Number of Heating Coil	EA	3
	Capacity Combination	kW	2.0 + 2.0 + 2.0
	Operation	-	Automatic
	Rated Current	A	8.7 (X3)
	Maximum Current	A	11.1 (X3)
	Fuses	A	16 + 16 + 16
	Maximum electrical power***	kW	6.52

Note

1. * 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.
2. ** The size of Electrical Heater and the Fuses depend on the choice of the connection power.
3. *** Joint maximal load (circulation pumps, electronic valves ...) which can be connected to or powered by the internal unit, must not exceed the specified value. Higher consumed parts (i.e. pumps) should have their own supply.
4. 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.

2. List of Function

Basic functions of Unit (indoor unit)

Category	Functions	ZHNW20606I0 [HN0916T NB1]
Installation	Electric heater	O
	Domestic Hot Water Tank heater*	X
	Screed Drying Mode	O
Reliability	Self diagnosis	O
Convenience	Auto Restart operation	O
	Child lock	O
	Sleep mode	O
	Timer (on/off)	O
	Timer (weekly)	O
	Remote room temperature sensing	O
Special function	Outdoor Temperature sensing	O
	Zone control (2 heating circuits)	O
	Zone control (max. 4 heating circuits)	X
	Wi-Fi control	O
	Group control	X
	2-Remo control	O
	External controller (CN-EXT)	O
Water Circuit Control	Thermostat Interface (230V AC)	O
	Thermostat Interface (24V AC)	X
	Water Pump ON / OFF Control	O
	Water Pump Forced Operation	O
	Current flow rate monitoring	O
	Solar-Thermal system	X
	Anti-Condensation on floor (cooling)	O
	PHEX Anti-Freezing Control	O
	Anti-overheating of Water Pipe	O
	Emergency Operation	O
	Seasonal auto mode	O
	Low Noise Operation	O
	Scheduler	O
	Timer	O
	Quick Domestic Hot Water Tank Heating	O
	Electric heater capacity control by wiring	O
	Dry Contact	O
Remote Controller Supply	Wired Remote Controller	O
	Wireless Remote Controller	X

Note

1. O : Applied, X : Not applied
2. Some functions can be limited by remote controller.
3. * : Tank can be heated by Electric heater

■ Accessory Compatibility List

Indoor unit

Category		Product	Remark	ZHNW20606I0 [HN0916T NB1]
Wired Remote Controller	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
		PDRYCB500	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	Mixing valve	OSHA-MV	3/4” DN20	O
		OSHA-MV1	1” DN25	O
	3way valve	OSHA-3V	-	X
	Solar thermal kit	PHLLA	For hydro box	X
	2nd Circuit Thermistor	PRSTAT5K10	-	O
	Backup heater	AHEH036A [HA031M E1]	220-240 V, 1Ø For Monobloc	X
		AHEH066A [HA061M E1]	220-240 V, 1Ø For Monobloc	X
		AHEH068A [HA063M E1]	380-415 V, 3Ø For Monobloc	X
	Drain pan	PHDPB	For hydro box unit	X
	Cover plate	PDC-HK10	For Split, IWT	O
	Buffer Tank (40ℓ)	OSHB-40KT	For IWT (integrable)	O
	DHW expansion vessel (8ℓ)	OSHE-12KT	For IWT (integrable)	O

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))

Outdoor unit

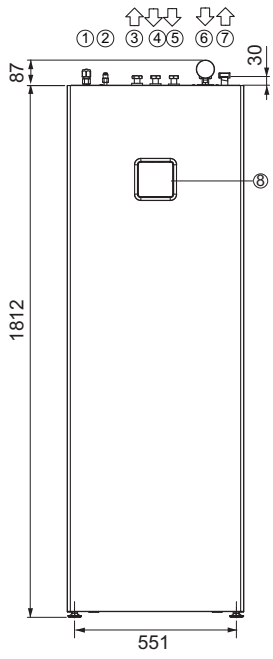
Category		Product	Remark	**ZHUW056A0 [HU051MR U44] ZHUW076A0 [HU071MR U44] ZHUW096A0 [HU091MR U44]**
Central Controller	AC EZ	PQCSZ250S0	AC EZ	X
	AC Ez Touch	PACEZA000	AC Ez Touch	O
	AC Smart	PACS4B000	AC Smart IV	O
		PACS5A000	AC Smart 5	O
	ACP	PACP4B000	ACP IV	O
		PACP5A000	ACP 5	O
	AC Manager **	PACM4B000	AC Manager IV	O
		PACM5A000	AC Manager 5	O
Gateway	IDU PI485	PHNFP14A0	Connected with Indoor Units	X
		PSNFP14A0	Connected with Indoor Units	X
	ODU PI485	PMNFP14A1	PI 485 Gateway	O
	BACnet	PQNFB17C0	ACP BACnet	O
	Lonworks	PLNWKB000	ACP Lonworks	O
ETC	PDI	PPWRDB000	PDI Standard	O
		PQNUD1S40	PDI Prem	O
	ACS IO Module	PEXPMB000	-	X

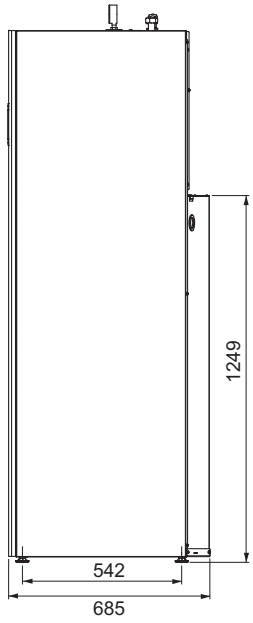
Note
1. O: Possible, X: Impossible, - : Not applicable
2. * : Some advanced functions controlled by individual controller cannot be operated.
3. ** : ACP, AC Smart, ACP BACnet or ACP Lonworks is needed.
4. If you need more detail, please refer to the manual of product.
   (http://partner.lge.com/global : Home> Doc.Library> Product > Control(BECON)))

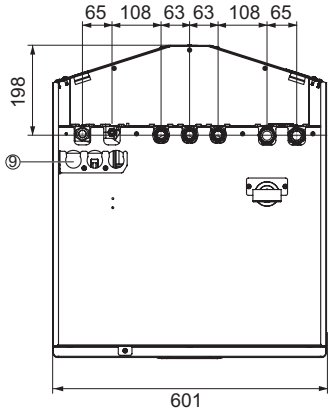
3. Components

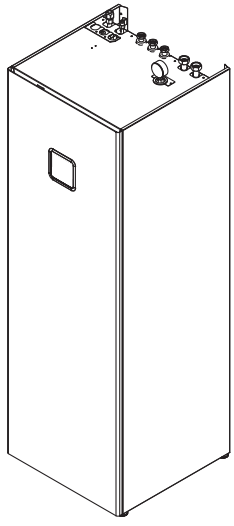
Indoor unit : External

(unit : mm)







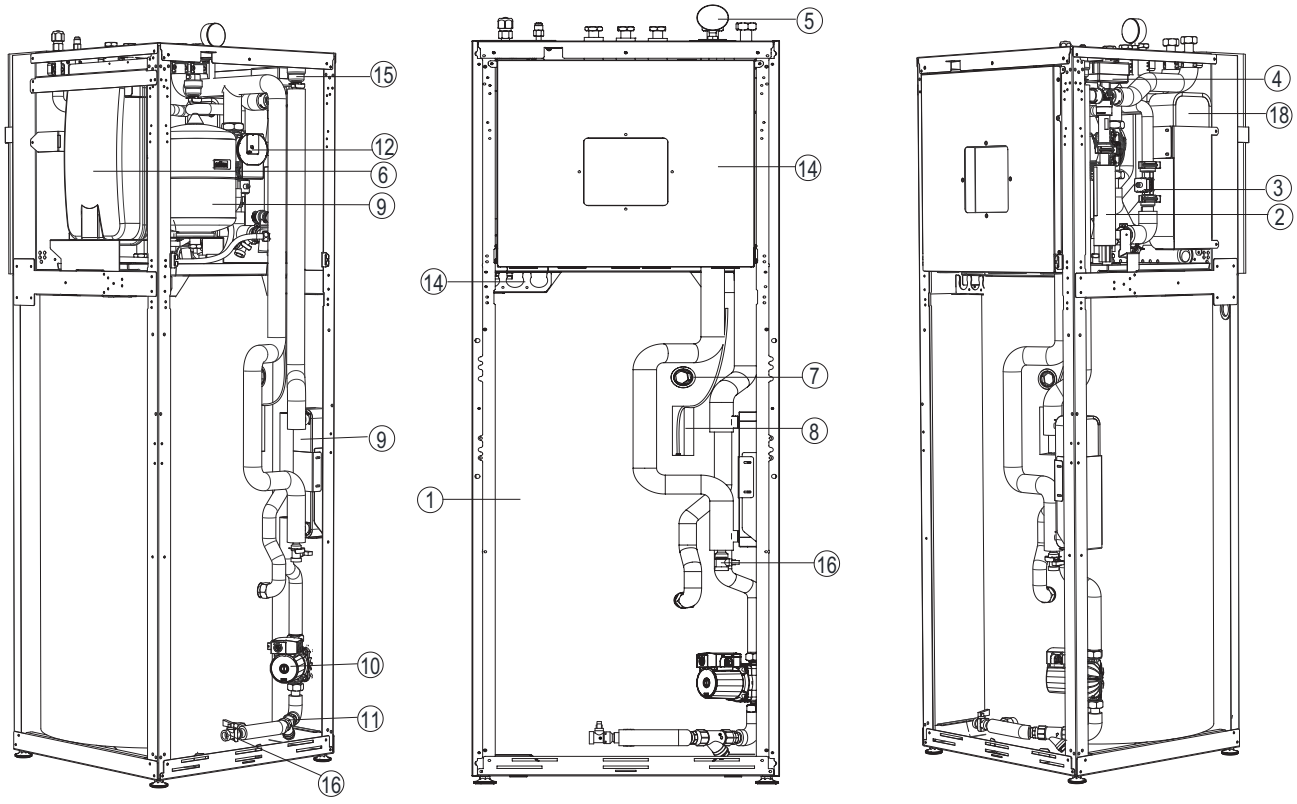


Description

1	SAE 5/8" Refrigerant gas pipe
2	SAE 3/8" Refrigerant liquid pipe
3	G3/4" Domestic hot water outlet
4	G3/4" Domestic cold water inlet
5	G3/4" DHW Re-circulation
6	G1" Heating circuit inlet
7	G1" Heating circuit outlet
8	Built-in Remote controller
9	Cable lead throughs

Indoor unit : Internal

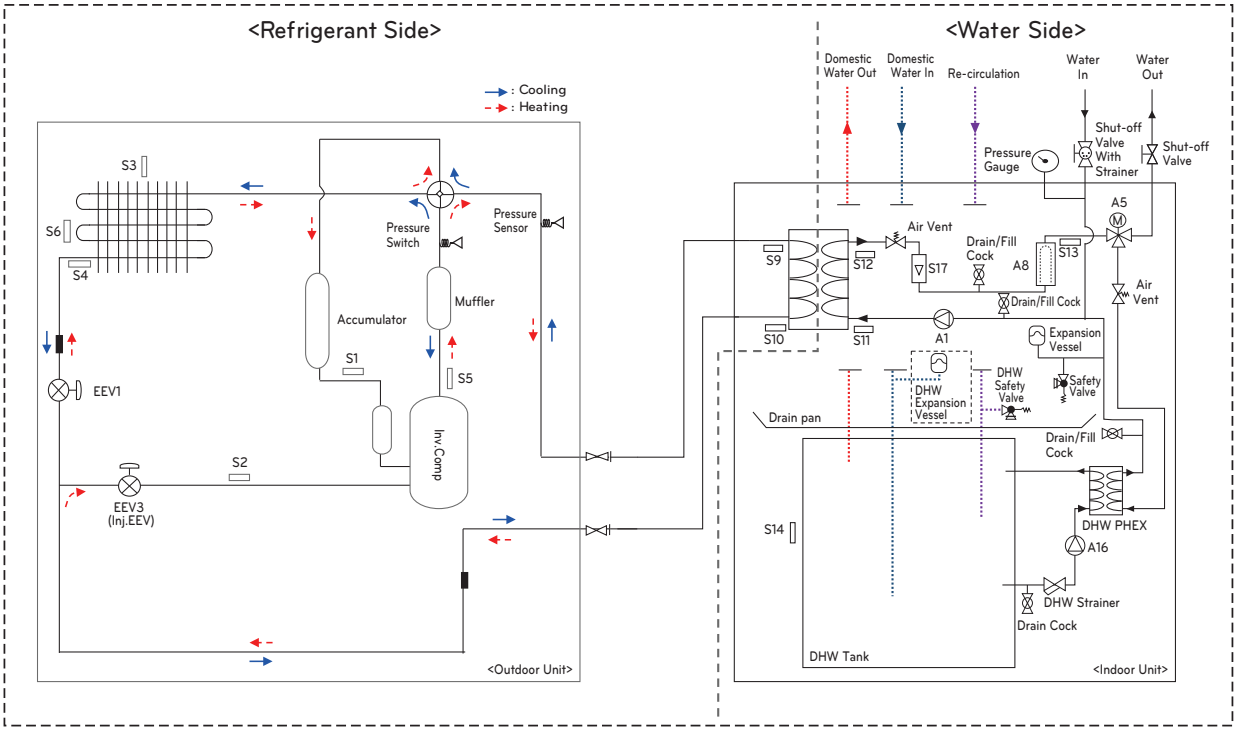
(unit : mm)



Description

No	Item	No	Item
1	Domestic hot water tank	10	DHW water pump
2	Electric heater	11	DHW strainer
3	Flow sensor	12	Main water pump
4	3-way-valve DHW / Heating	13	DHW Expansion vessel (Accessory)
5	Pressure gauge	14	Control box
6	Expansion vessel for Heating	15	Air vent
7	Magnesium anode	16	Drain cock
8	DHW tank sensor	17	Conduits for electrical wiring
9	Plate-heat-exchanger (Water/DHW)	18	Plate-heat-exchanger (Refrigerant/Water)

4. Cycle Diagrams



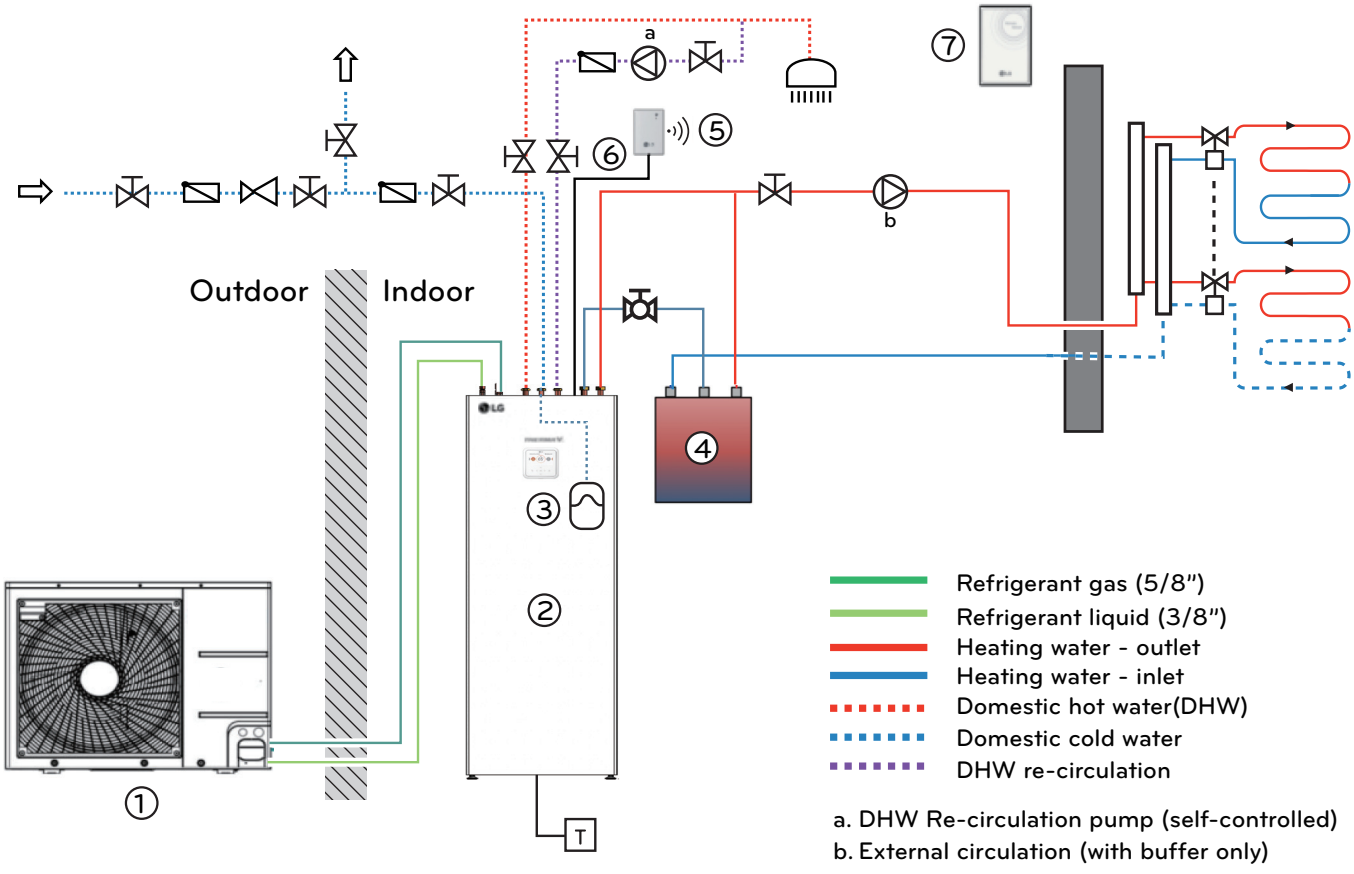
Description

Category	Symbol	Meaning	PCB Connector
Refrigerant side	S1	Compressor-suction pipe temperature sensor	CN_SUCTION
	S2	Inlet IHEX temperature sensor	CN_VI_IN
	S3	Outdoor air temperature sensor	CN_AIR
	S4	Outdoor-HEX temp. sensor	CN_C_PIPE
	S5	Compressor-discharge pipe temperature sensor	CN_DISCHARGE
	S6	Outdoor-HEX middle temp. sensor	CN_MID
	S9	PHEX gas temp. sensor	CN_PIPE/OUT
	S10	PHEX liquid temp. sensor	CN_PIPE/IN
	EEV1	Electronic Expansion Valve (Heating)	CN_EEV1(WH)
	EEV3	Electronic Expansion Valve (Injection)	CN_EEV3(YL)
Water Side	S11	Inlet water temperature sensor	CN_TH3
	S12	Outlet water temperature sensor	
	S13	Electric heater outlet sensor	
	S14	DHW tank temperature sensor	CN_TH4
	S17	Flow sensor	CN_F_METER
	A1	Main water pump	CN_MOTOR1 CN_W_PUMP_A
	A16	DHW Water pump	CN_W_PUMP_B
	A5	3Way Valve	CN_3WAY_A
	A8	Electric backup heater	CN_E_HEAT_A

5. Piping Diagrams

CAUTION

The diagram represents a schematic overview of the required system components and their location. It does not include all necessary components and safety devices according to DIN EN 12828, and eventually required equipment for maintenance and service. Local/national regulation needs to be followed! Subject to technical changes.



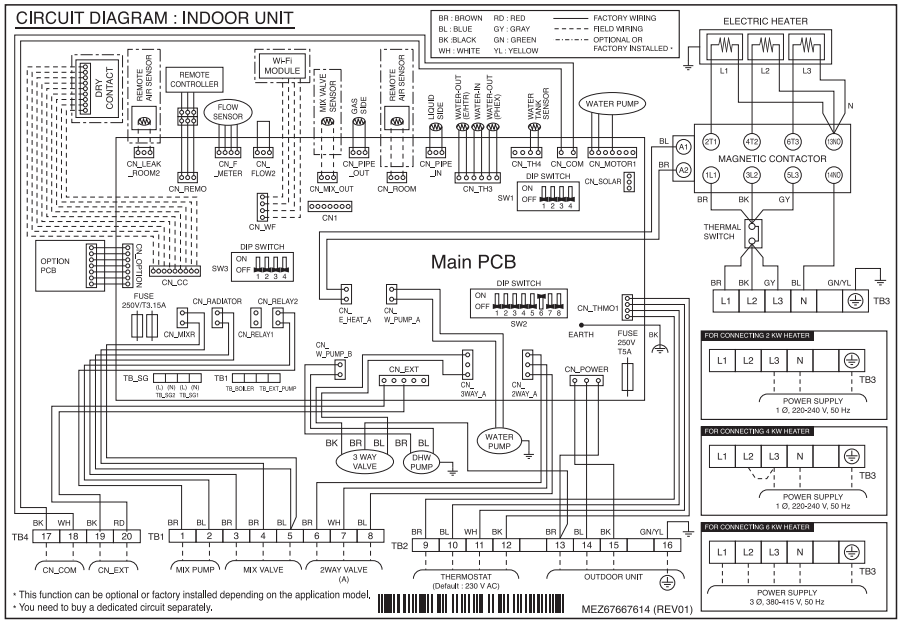
LG supply

① Outdoor unit [HU0X1MR.U44]
② Indoor unit [HN0916T.NB1]
③ DHW expansion vessel (8l) [OSHE-12KT]
④ Buffer tank (40l) [OSHB-40KT]
⑤ WIFI modem [PWFMDD200]
⑥ Extension cable(10m) [PWYREW000]
⑦ Room air sensor [PQRSTA0]

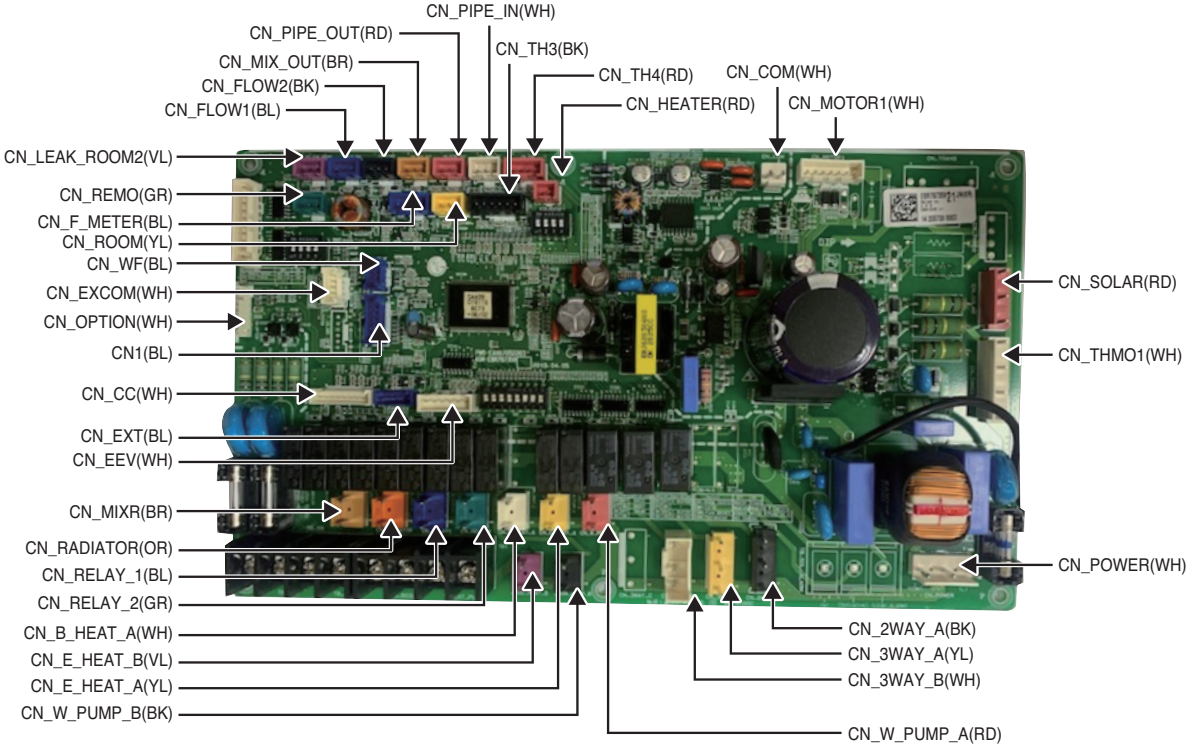
6. Wiring Diagrams

Indoor Unit(Including field wiring) : Electric Heater 1Ø & 3Ø

MEZ67667614

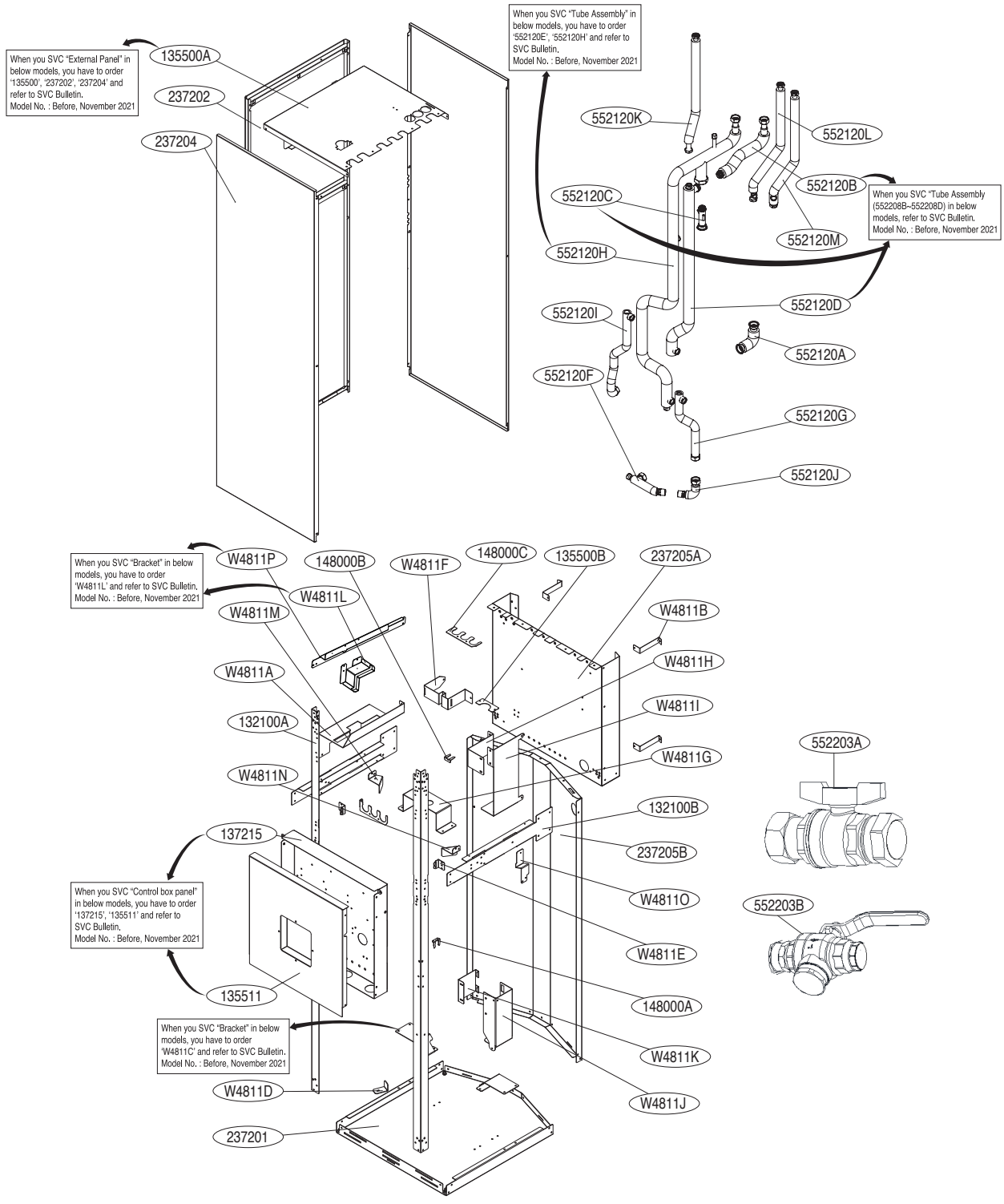


Indoor PCB

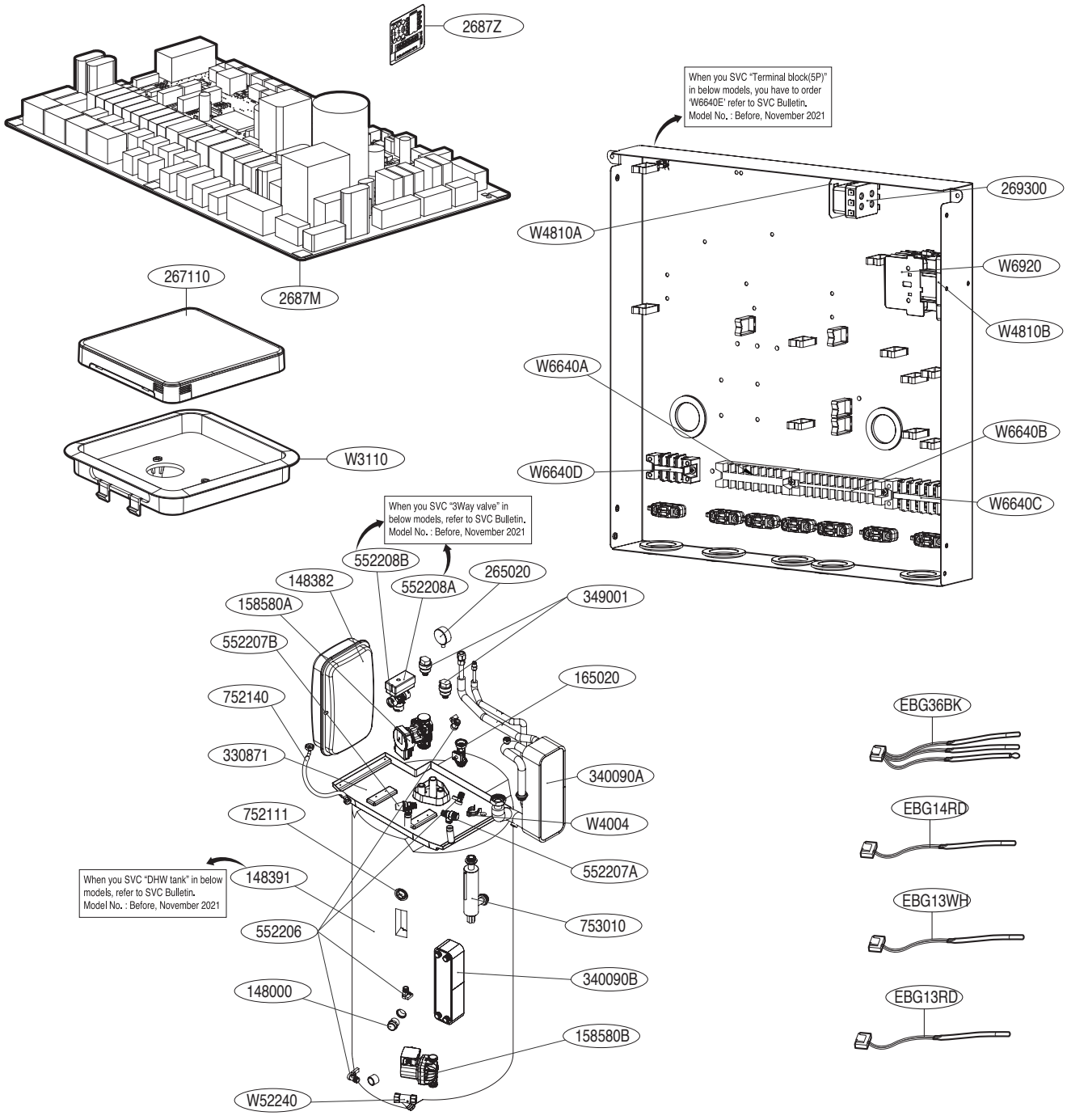


7. Exploded View

Indoor Unit



Location No.	Description	Remark
552203A	Closing valve	Ball valve, 1 inch
552203B	Filter - strainer valve	Filter / strainer valve, 1 inch female thread



Thermistor Assembly, NTC

Location No.	Thermistor Description	Housing Color	Remark
EBG36BK	Water out (E/HTR) / Water in / Water out (PHEX)	Black	CN_TH3
EBG14RD	Water tank temperature sensor	Red	CN_TH4
EBG13WH	Gas side temperature sensor	White	CN_PIPE_IN
EBG13RD	Liquid side temperature sensor	Red	CN_PIPE_OUT

P/NO : MFL68681915