

# Engineering Data Book

## Air to Water Heat Pump



### Hydro Unit

HWS-P804XWHM3-E  
HWS-P804XWHT6-E  
HWS-P804XWHT9-E  
HWS-P1104XWHM3-E  
HWS-P1104XWHT6-E  
HWS-P1104XWHT9-E



### Outdoor Unit

HWS-P804HR-E  
HWS-P1104HR-E



### Hot Water Cylinder

HWS-1501CSHM3-E  
HWS-2101CSHM3-E  
HWS-3001CSHM3-E

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# **1. INTRODUCTION**

**Air to water  
Heat Pump System**

TOSHIBA AIRCONDITIONING  
Advancing the **eco**-evolution

**Welcome Estia to your home!**  
**Air-to-water Heat Pump System**

- World-leading energy efficiency — COP of 4.77\*
- Comfortable heating and hot water supply
- Versatile installation and operation \* 11 kW model

Introducing Toshiba's super-efficient space heating and hot water supply system for homes and businesses. Estia represents breakthrough thinking in intelligent heat pump and inverter technologies, by efficiently transferring ambient thermal heat from outside air to heat water indoors. Based on Toshiba's proven light commercial air conditioning system, the Super Digital Inverter, this innovative unit features DC twin rotary compressor, DC inverter and R410A refrigerant, providing the highest coefficient of performance (COP) in its class. This means more power from less energy consumption, and the ideal ecological and economical solution for your home.

**ESTIA**

Hot water cylinder  
Hydro unit  
Outdoor unit

Outdoor unit   Hot water cylinder   Hydro unit



## Advantages

### World-leading energy efficiency - COP of 4.88\*

With its best in class COP performance, Estia air to water heat pump system delivers more heating power with less energy consumption.

Estia uses high quality components and material which contribute to the overall savings in energy consumption.

With the Toshiba advanced inverter, Estia air to water heat pump system only delivers the heating capacity required; thus consuming only the necessary electricity.

The hot water temperature is also optimized thanks to Toshiba advanced control depending on the outside air temperature. The milder outside, the air-to-water systems automatically produces lower water temperature to anticipate decreased needs of space heating. The same control logic allows to anticipate as well increasing heating needs when weather conditions become extreme; this overall temperature management gives the best conditions of comfort.

All this saving has a positive impact on the personal electricity bill and the whole community by reducing the CO<sub>2</sub> emissions in the atmosphere.



\*11kW model

### Easy to install



Quick and easy to install. The hydro module unit can be placed safely in the most suitable place within the house.

There's no need for chimney or underground captors which require additional works on site.

The compact outdoor unit can be placed anywhere outside the house or on a balcony, thanks to extensive piping options.

### Environment conscious



The use of Toshiba Estia heat pump contribute to the reduction of global CO<sub>2</sub> emissions in the atmosphere and limit the use of fossil fuels or other non-renewable energy primary sources. Whenever required for maintenance purpose, all the R410A refrigerant (non ozone depleting) can be completely sucked back to the outdoor unit through the powerful embedded Toshiba "pump down" operation.

### One system, multiple solutions



Estia heat pump systems can be used in combination with different types of emitters: existing heating low temperature radiators, floor heating or fan coil units.

### The right temperature at the right time



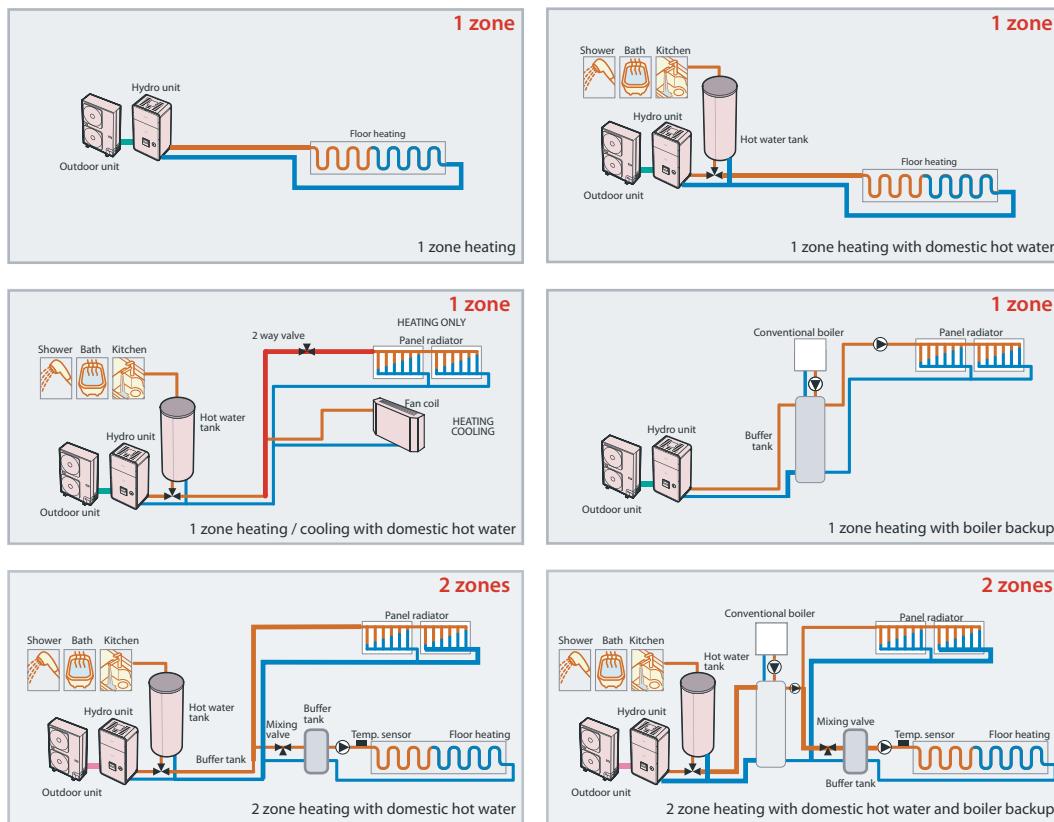
It can produce water at different temperatures for several applications simultaneously.

Toshiba Estia air to water heat pump system operates smoothly both with low outdoor air temperature down to -20 °C in winter and up to 43 °C in the summer season. The system has a unique anti-ice build-up protection embedded.



## One system, full combination flexibility

For new houses or refurbishment Estia heat pump offers a variety of combinations, some examples are shown below:



In existing dwellings already equipped with traditional gas or fuel boilers, Toshiba Estia air to water heat pump system can be combined with the existing heating system to cover exclusively and in an optimized way all the heating needs, all year round. Then, the boiler is only used as a back-up source during some extreme weather days of the winter.

The intelligent Toshiba control balances the energy source in the most efficient way.



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## **2. SYSTEM OVERVIEW**

## 2-1. System Combination

### Combination

Outdoor Unit			
Hydro Unit	HWS-P804HR-E	HWS-P1104HR-E	Backup heater
HWS-P804XWHM3-E	●	-	~, 3kW
HWS-P804XWHT6-E	●	-	3N~, 6kW
HWS-P804XWHT9-E	●	-	3N~, 9kW
HWS-P1104XWHM3-E	-	●	~, 3kW
HWS-P1104XWHT6-E	-	●	3N~, 6kW
HWS-P1104XWHT9-E	-	●	3N~, 9kW
Single phase model			

		Hot water cylinder		
		HWS-1501 CSHM3-E	HWS-2101 CSHM3-E	HWS-3001 CSHM3-E
Hydro unit	HWS-P804XWHM3-E	●		
	HWS-P804XWHT6-E	●		
	HWS-P804XWHT9-E	●		
	HWS-P1104XWHM3-E	●		
	HWS-P1104XWHT6-E	●		
	HWS-P1104XWHT9-E	●		

## 2-2. Hydro Unit

### 80 class

Hydro Unit		HWS-P804XWHM3-E	HWS-P804XWHT6-E	HWS-P804XWHT9-E
Back up heater capacity		3.0	6.0	9.0
Power supply	for back up heater	220-230V ~ 50Hz	380-400V 3N~ 50Hz	380-400V 3N~ 50Hz
	for hot water cylinder heater (option)		220-230V ~ 50Hz	
Leaving water temperature	Heating (°C)		20-60	
	Cooling (°C)		7-25	

### 112 class

Hydro Unit		HWS-P1104XWHM3-E	HWS-P1104XWHT6-E	HWS-P1104XWHT9-E
Back up heater capacity		3.0	6.0	9.0
Power supply	for back up heater	220-230V ~ 50Hz	380-400V 3N~ 50Hz	380-400V 3N~ 50Hz
	for hot water cylinder heater (option)		220-230V ~ 50Hz	
Leaving water temperature	Heating (°C)		20-60	
	Cooling (°C)		7-25	

## 2-3. Outdoor Unit

### Single Phase model

Outdoor unit		HWS-P804HR-E	HWS-P1104HR-E	
Power supply		220-230V ~ 50Hz		
Type		INVERTER		
Function		Heating & Cooling		
Heating	Capacity (kW)	8.0	11.2	
	Input (kW)	1.68	2.30	
	COP (W/W)	4.76	4.88	
Cooling	Capacity (kW)	6.0	10.0	
	Input (kW)	1.64	3.33	
	EER (W/W)	3.66	3.00	
Refrigerant		R410A		
Dimension	HxWxD (mm)	1,340x900x320		

## 2-4. Hot Water Cylinder

Hot water cylinder (option)		HWS-1501CSHM3-E	HWS-2101CSHM3-E	HWS-3001CSHM3-E
Water volume	litres	150	210	300
Max water temperature	(°C)		75	
Electric heater	(kW)		2.75 (230 V ~)	
Height	(mm)	1,090	1,474	2,040
Diameter	(mm)		550	
Material		Stainless steel		

## 2-5. Options

No.	Part name	Model name	Application	Remarks
1	External output board	TCB-PCIN3E	Boiler-linked output, Alarm output	Up to two boards (according to applications)
			Defrost signal output, compressor operation signal output	
2	External input board	TCB-PCM03E	Cooling/heating thermostat input	Up to two boards (according to applications)
			Forced-stop signal input	
3	Second Remote Controller	HWS-AMS11E	Wired Remote Controller for Room air temperature control	

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### **3. SYSTEM SPECIFICATION**

Outdoor unit			HWS-P804HR-E	HWS-P1104HR-E
Hydro unit			HWS-804XWH**-E	HWS-1404XWH**-E
Rated Heating condition 1 LWT=35°C dT=5deg	Capacity	kW	8.0	11.20
	Power input	kW	1.79	2.30
	COP	W/W	4.46	4.88
	Rated water flow	ℓ/min	22.90	32.10
Rated Cooling condition 1 LWT=7°C dT=5deg	Capacity	kW	6.0	10.0
	Power input	kW	1.94	3.26
	EER	W/W	3.10	3.07
	Rated water flow rate	ℓ/min	17.20	28.90
Power supply			1~230V 50Hz	
Maximum current		A	19.20	22.80

\* Rated condition capacity and power input are the data at rated compressor operating frequency.

\* Power input does not include water pump power.

\* Capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (°C)

LWT : Leaving water temperature (°C)

dT : Delta temperature (deg)

Leaving water temperature - return water temperature (Heating)

Return water temperature - leaving water temperature (Cooling)

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## **4. HYDRO UNIT**

## 4-1. Specification

### 4-1-1. Hydro unit specifications

Hydro unit		HWS-P804XWHM3-E	HWS-P804XWHT6-E	HWS-P804XWHT9-E
Back up heater	back up heater	kW	3.0	6.0
	Power supply		1 ~ 220-230V 50Hz	3N~ 380-400V 50Hz
	Maximum current	A	13	13 (13A*2P)
Hot water cylinder heater*	Power supply		1 ~ 220-230V 50Hz	
	Maximum current	A	12.0	
Appearance	Color		Silky shade (Muncel 1Y8.5-0.5)	
	Material		PCM	
Outer dimension	Height	mm	925	
	Width	mm	525	
	Depth	mm	355	
Unit weight		kg	49	
Packing dimension	Height	mm	1070	
	Width	mm	608	
	Depth	mm	436	
Total weight	Unit and packing	kg	53	
Heat exchanger	Type		Brazed plate	
	Water volume	litres	0.67	
	Minimum flow rate	ℓ/min	13	
Water pump	Power input	W	48	
	Delivery head	m	6.3	
Expansion vessel	Volume	litres	12	
	Initial pressure	MPa(bar)	0.1 (1)	
Pressure relief valve	Operating pressure	MPa(bar)	0.3 (3)	
Sound pressure level		dBA	27	
Operation water temp.	Heating	°C	20~60	
	Cooling	°C	7~25	
Water pipe	Outlet	mm	34.92	
	Inlet	mm	34.92	
Refrigerant pipe	Gas	mm	15.9	
	Liquid	mm	9.5	
Drain port		mm	16.0 inner diameter for drain hose	
Note		* The electric heater, incorporated in the hot water cylinder, requires separate supply to hydro unit.		

Hydro unit			HWS-P1104XWHM3-E	HWS-P1104XWHT6-E	HWS-P1104XWHT9-E
Back up heater	back up heater	kW	3	6	9
	Power supply		1 ~ 220-230V 50Hz	3N~ 380-400V 50Hz	3N~ 380-400V 50Hz
	Maximum current	A	13	13 (13A*2P)	13 (13A*3P)
Hot water cylinder heater*	Power supply		1 ~ 220-230V 50Hz		
	Maximum current	A	12.0		
Appearance	Color		Silky shade (Muncel 1Y8.5-0.5)		
	Material		PCM		
Outer dimension	Height	mm	925		
	Width	mm	525		
	Depth	mm	355		
Unit weight		kg	52		
Packing dimension	Height	mm	1070		
	Width	mm	608		
	Depth	mm	436		
Total weight	Unit and packing	kg	56		
Heat exchanger	Type		Brazed plate		
	Water volume	litres	1.18		
	Minimum flow rate	ℓ/min	17.5		
Water pump	Power input	W	87		
	Delivery head	m	8.8		
Expansion vessel	Volume	litres	12		
	Initial pressure	MPa(bar)	0.1 (1)		
Pressure relief valve	Operating pressure	MPa(bar)	0.3 (3)		
Sound pressure level		dBA	29		
Operation water temp.	Heating	°C	20~60		
	Cooling	°C	7~25		
Water pipe	Outlet	mm	34.92		
	Inlet	mm	34.92		
Refrigerant pipe	Gas	mm	15.9		
	Liquid	mm	9.5		
Drain port		mm	16.0 inner diameter for drain hose		
Note			* The electric heater, incorporated in the hot water cylinder, requires separate supply to hydro unit.		

## 4-1-2. Power Wiring specifications

Description		Model name HWS-	POWER SUPPLY	Maximum current	Installation fuse rating	Power Cable	Connection destination
Outdoor unit power	Power input	P1104HR-E	220-230 V ~ 50 Hz	22.8A	25 A	2.5 mm <sup>2</sup> or more	(L), (N)
		P804HR-E	220-230 V ~ 50 Hz	22.8A	25 A	2.5 mm <sup>2</sup> or more	
Hydro inlet heater power	Power input for backup heater	P1104XWHM3-E	220-230V ~ 50Hz	13A	16A	1.5 mm <sup>2</sup> or more	(L), (N)
		P1104XWHT6-E	380-400V 3N~ 50Hz	13A(13A x 2P)	16A	1.5 mm <sup>2</sup> or more	(L1), (L2), (L3), (N)
		P1104XWHT9-E	380-400V 3N~ 50Hz	13A(13A x 3P)	16A	1.5 mm <sup>2</sup> or more	
		P804XWHM3-E	220-230V ~ 50Hz	13A	16A	1.5 mm <sup>2</sup> or more	(L), (N)
		P804XWHT6-E	380-400V 3N~ 50Hz	13A(13A x 2P)	16A	1.5 mm <sup>2</sup> or more	(L1), (L2), (L3), (N)
		P804XWHT9-E	380-400V 3N~ 50Hz	13A(13A x 3P)	16A	1.5 mm <sup>2</sup> or more	
	Power input for cylinder heater		220-230V ~ 50Hz	12A	16A	1.5 mm <sup>2</sup> or more	(L), (N) TB03
Outdoor-Hydro unit	Connection	—	—	—	—	1.5 mm <sup>2</sup> or more	(1), (2), (3) —
Hydro -Cylinder	Connection	—	—	—	—	1.5 mm <sup>2</sup> or more	(1), (2) TB03

## 4-1-3. External Device specifications

	Power	Maximum current	Type
Motorized 3-way valve (for hot water)	AC 230 V	100 mA	Default: 2-wire spring return valve or 3 wire SPST valve Note: 3 wire SPDT valve can be used by changing DIP switch 13_1.
Motorized 2-way valve (for cooling)	AC 230 V	100 mA	spring return type (normally open)
Motorized mixing valve (for 2-zone)	AC 230 V	100 mA	Default: Drive time = 60 sec to 90° Note: 3 wire SPST or SPDT valves, with drive times between 30 and 240 seconds, can be used. Valve drive time can be changed using function code 0C.

## 4-1-4. External Device Wiring specifications

Description	Line spec	Maximum current	Maximum length	Cable size	Connection destination
3-way valve control	2 line or 3 line	100 mA	12 m	0.75 mm <sup>2</sup> or more	(7), (8), (9) (TB05)
2-way valve control	2 line	100 mA	12 m	0.75 mm <sup>2</sup> or more	(3), (4) (TB05)
Mixing valve control	3 line	100 mA	12 m	0.75 mm <sup>2</sup> or more	(1), (2), (3) or (2), (3), (4) (TB04)
2-zone thermo sensor	2 line	100 mA	5 m	0.75 mm <sup>2</sup> or more	(C), (D) (TB06)
Cylinder thermo sensor	2+GND(shieldwire)	100 mA	5 m	0.75 mm <sup>2</sup> or more	(A), (B) (TB06)
Second remote controller	2 line	50 mA	50 m	0.5 mm <sup>2</sup> or more	(1), (2) (TB07)

## 4-1-5. External Output specifications

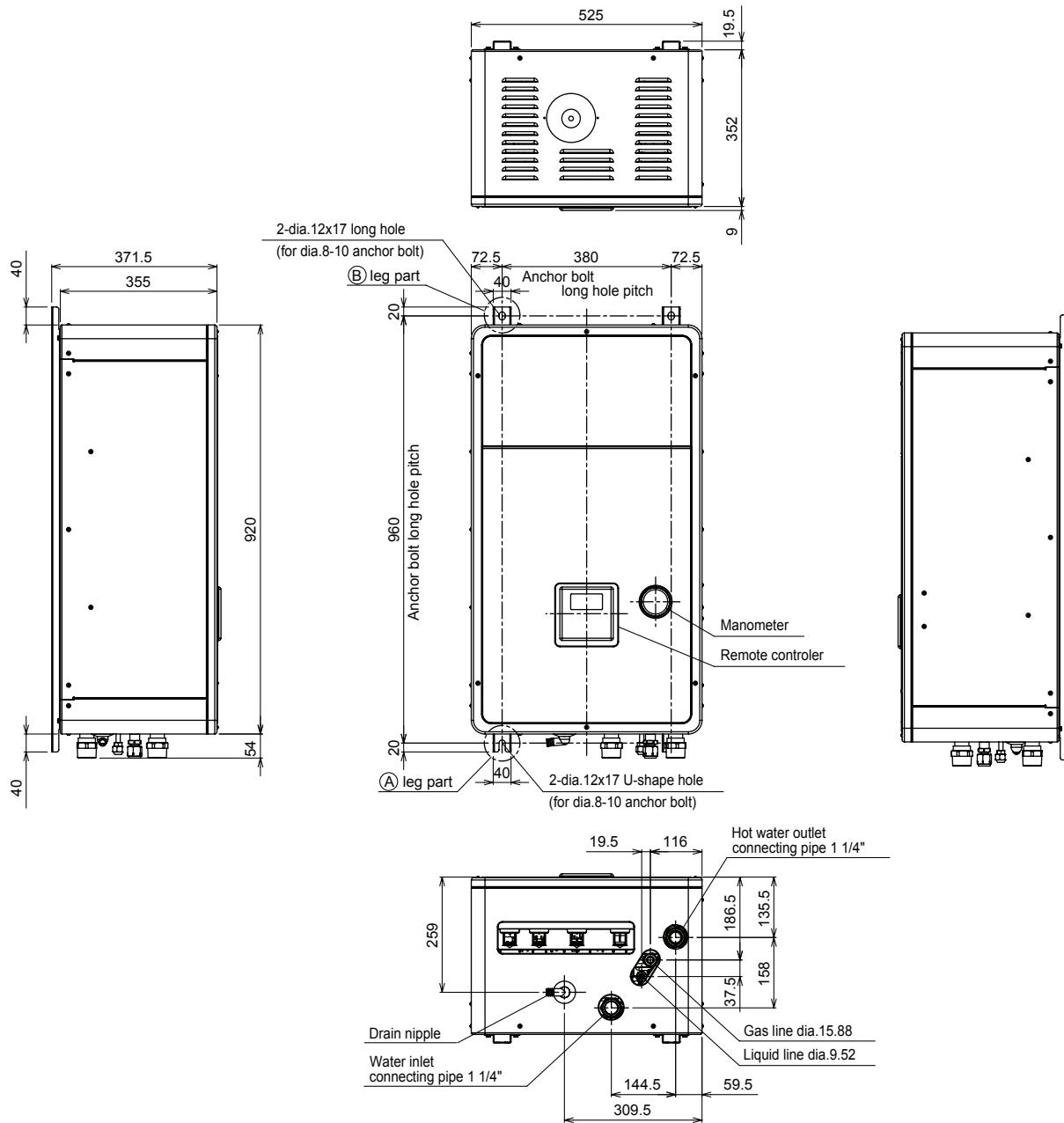
Description	Output	Maximum current	Max voltage	Maximum length	
External pump	AC230V	1 A	–	12 m	
External boost heater	AC230V	1 A	–	12 m	Output as required when outdoor air temperature is -20°C or less
Boiler control	Non-voltage contacts	0.5 A	AC230 V	12 m	Output as required when outdoor air temperature is -10°C or less. The outdoor air temperature, when the boiler output is enabled, can be changed using function code 23.
		1 A	DC24 V	12 m	
ALARM Output	Non-voltage contacts	0.5 A	AC230 V	12 m	
		1 A	DC24 V	12 m	
Compressor Operation Output	Non-voltage contacts	0.5 A	AC230 V	12 m	
		1 A	DC24 V	12 m	
Defrost Output	Non-voltage contacts	0.5 A	AC230 V	12 m	
		1 A	DC24 V	12 m	

## 4-1-6. External Input specifications

Description	Input	Maximum length
Emergency stop control	Non-voltage	12 m
Cooling thermostat input	Non-voltage	12 m
Heating thermostat input	Non-voltage	12 m

## 4-2. Dimension

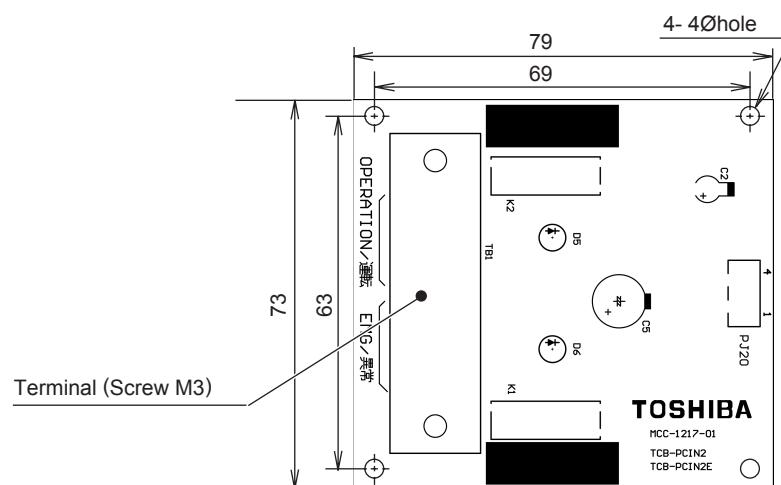
### ▼Hydro unit



## ▼External output board (TCB-PCIN3E)

Size (mm) : H22 x L73 x W79

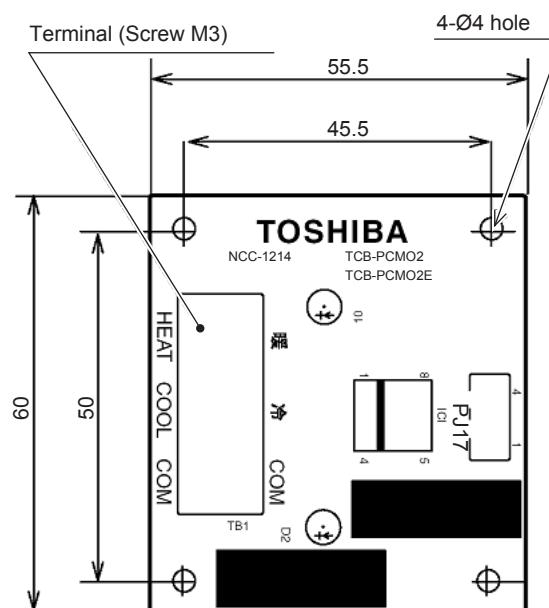
Weight (g) : 57



## ▼External input board (TCB-PCMO3E)

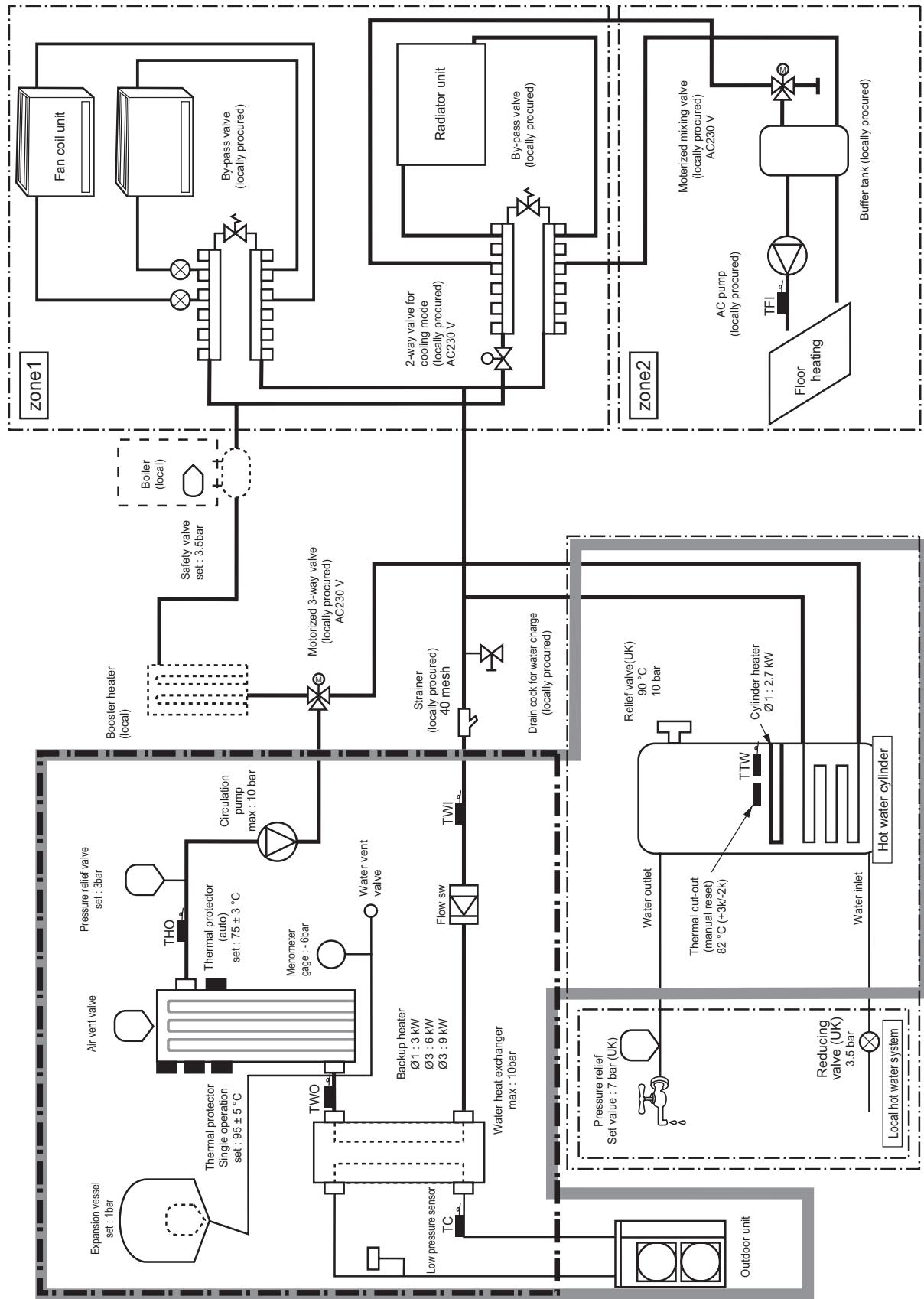
Size (mm) : H18 x L55.5 x W60

Weight (g) : 20



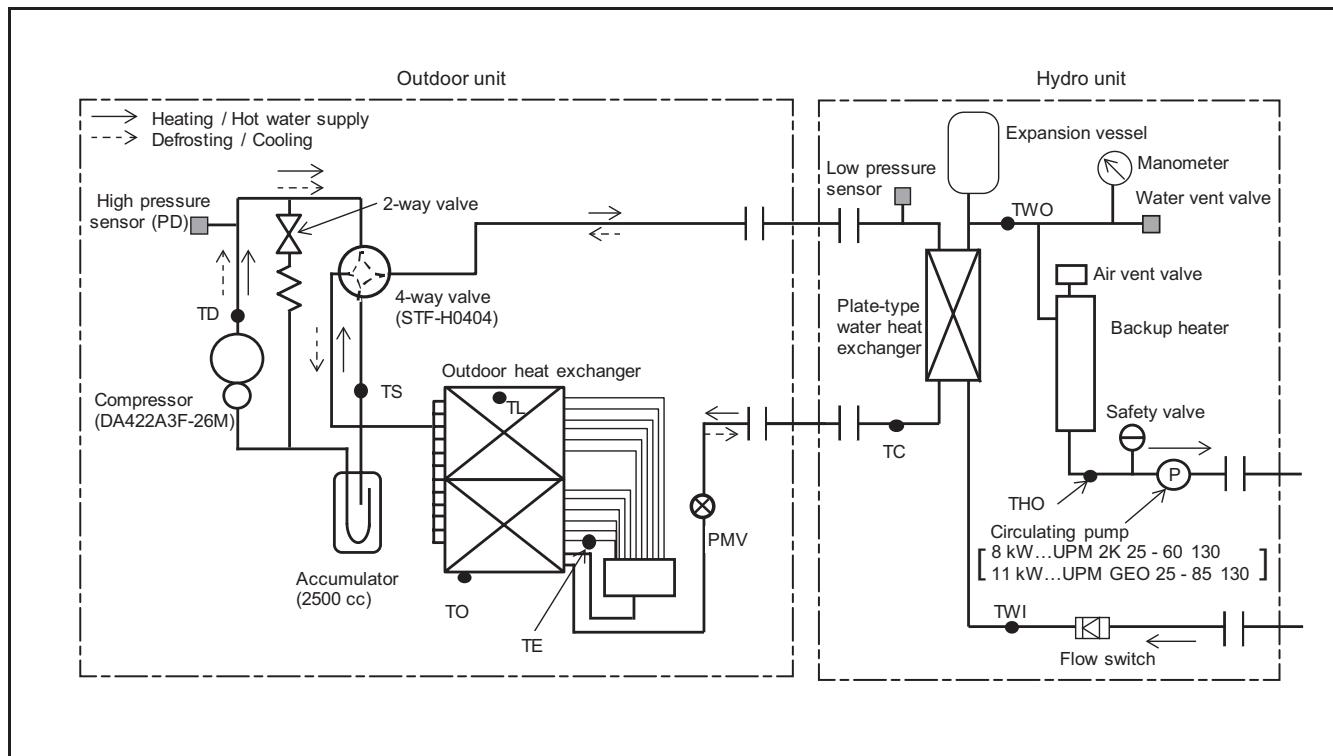
## 4-3. Piping Diagram

### Water system diagram



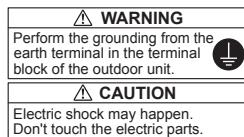
## Refrigeration cycle system diagram

HWS-P804XWHM3-E, HWS-P804XWHT6-E, HWS-P804XWHT9-E,  
 HWS-P1104XWHM3-E, HWS-P1104XWHT6-E, HWS-P1104XWHT9-E /  
 HWS-P804HR-E, HWS-P1104HR-E

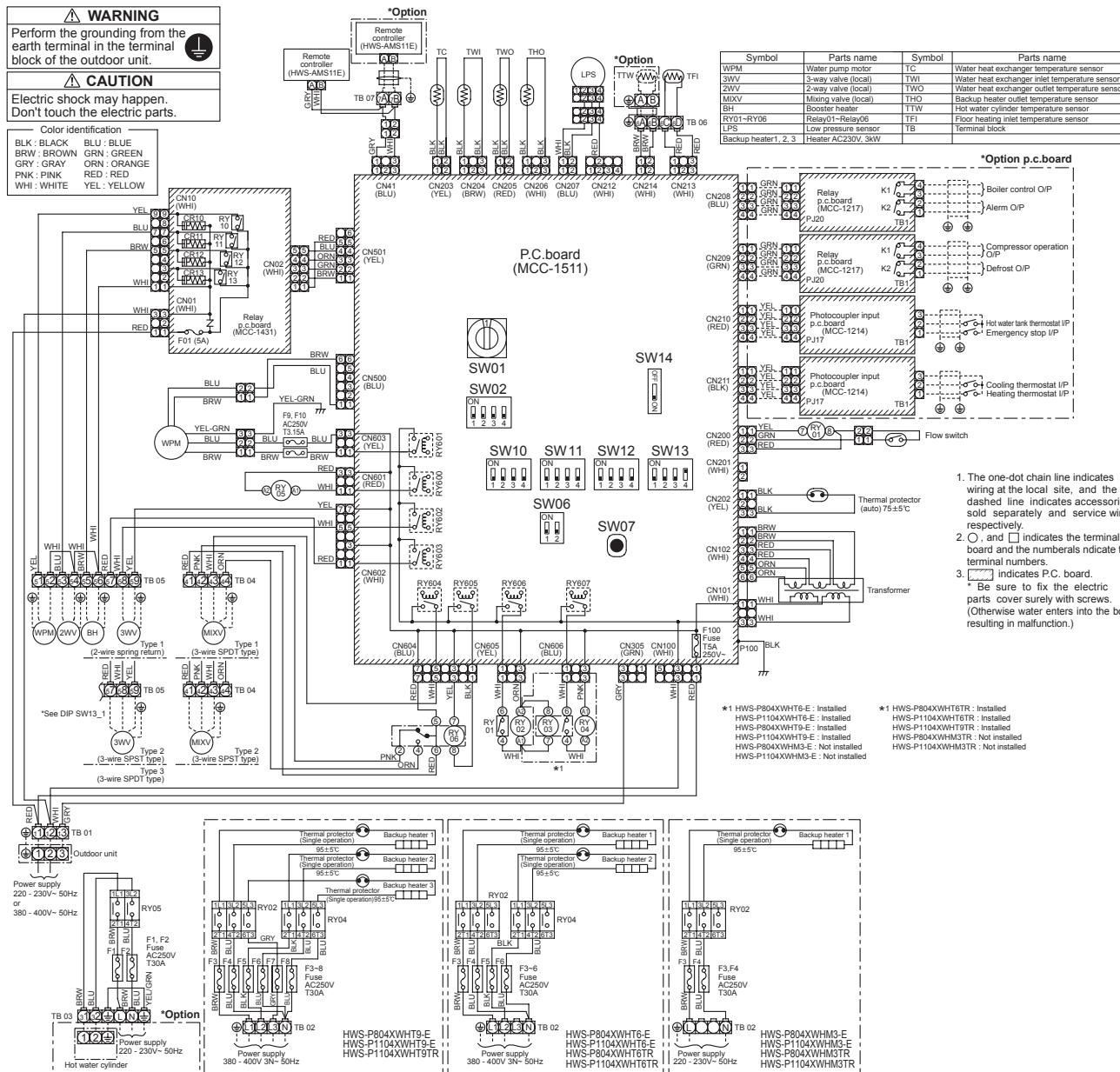


## 4-4. Wiring Diagram

### 4-4-1. Hydro unit

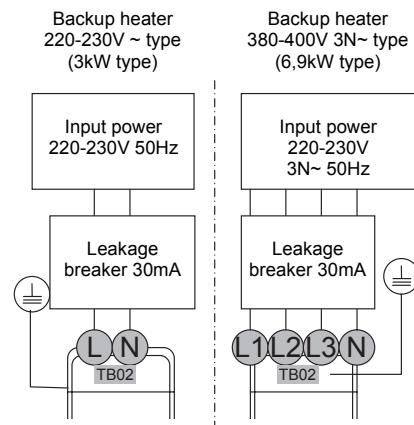


Color identification  
BLK : BLACK    BLU : BLUE  
BRW : BROWN    GRN : GREEN  
GRY : GRAY    ORN : ORANGE  
PNK : PINK    RED : RED  
WHI : WHITE    YEL : YELLOW

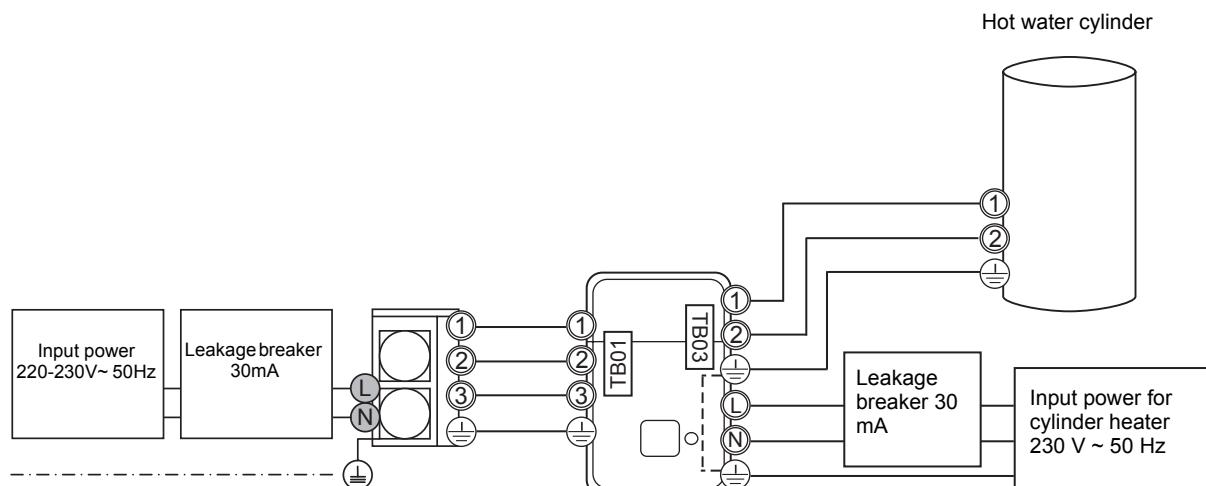


## 4-4-2. Power line

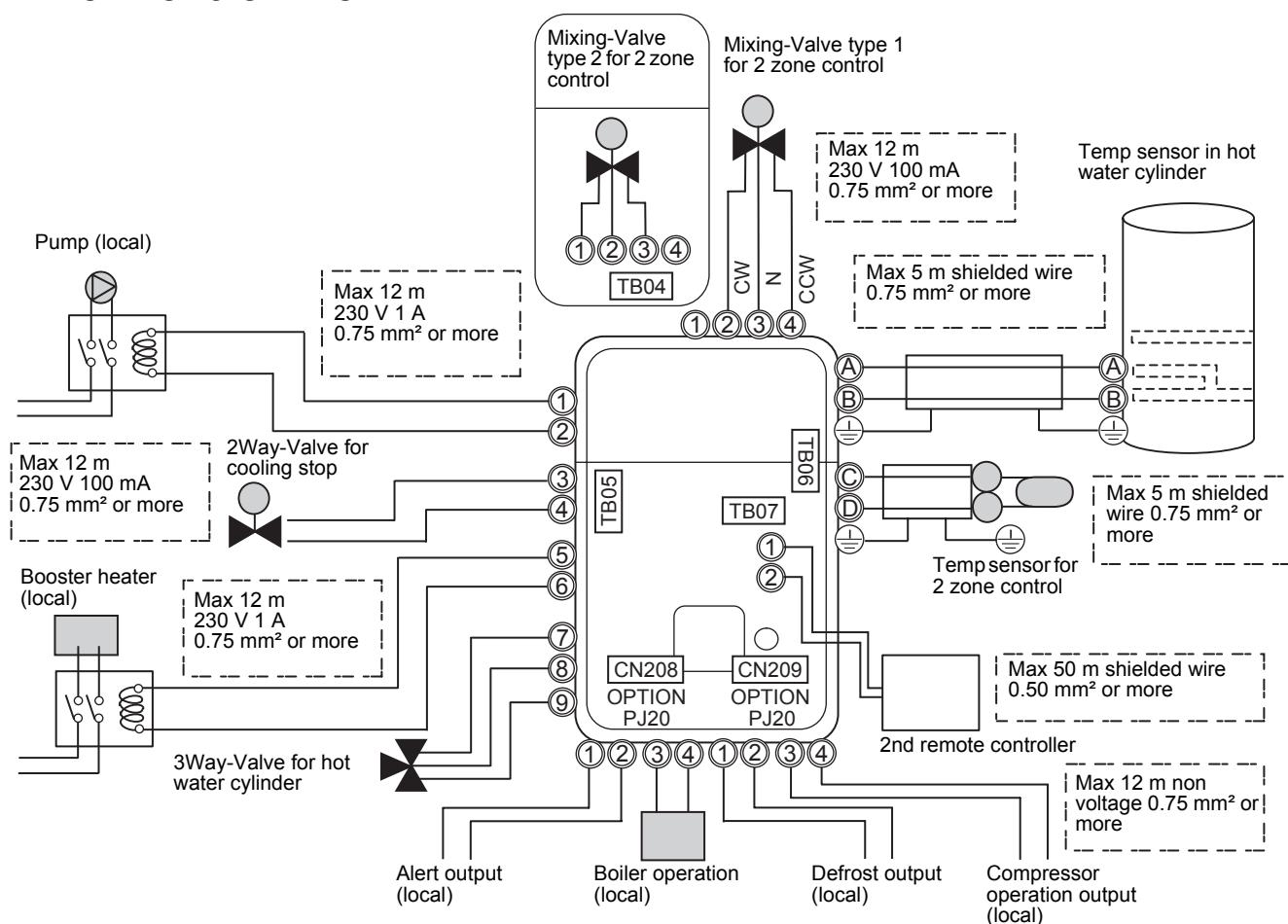
### Electrical connection to hydro unit



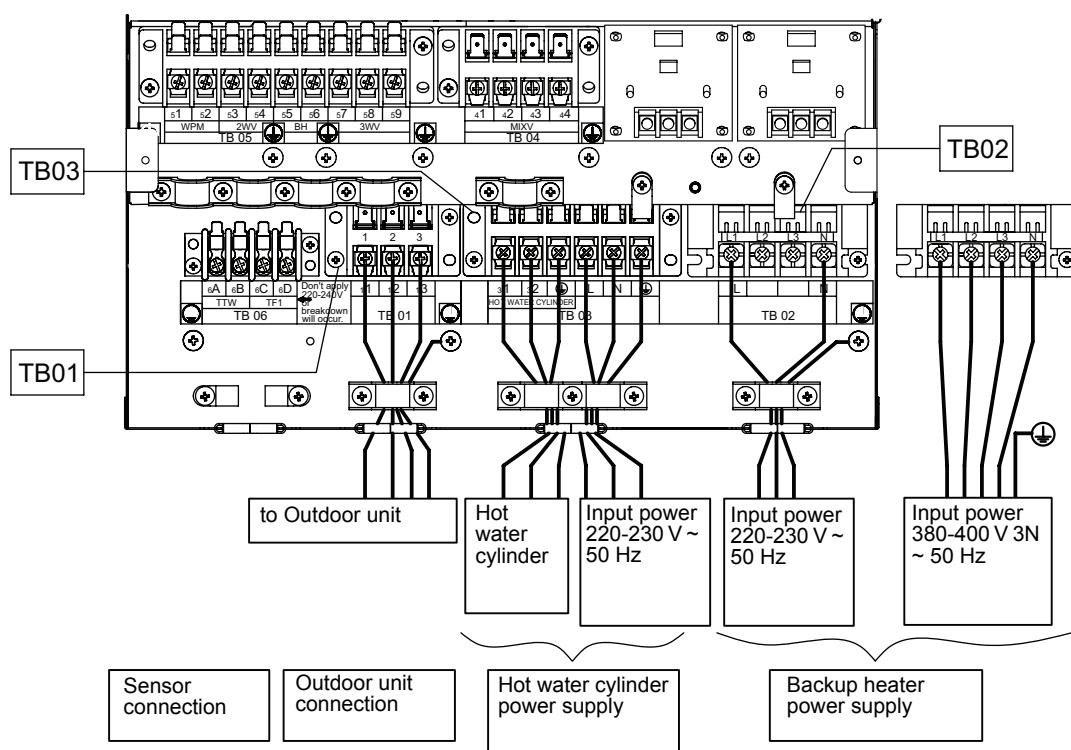
### Outdoor unit to hydro unit electrical connection



### 4-4-3. Control line

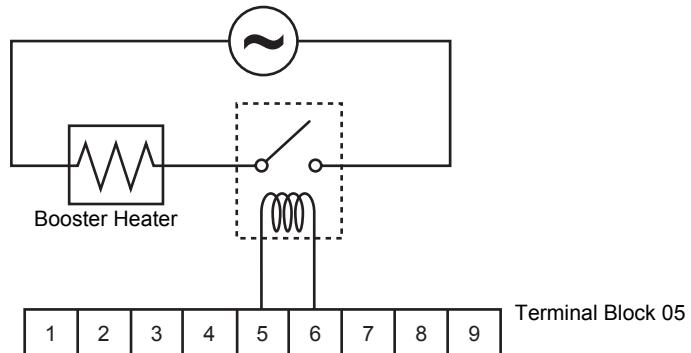


4

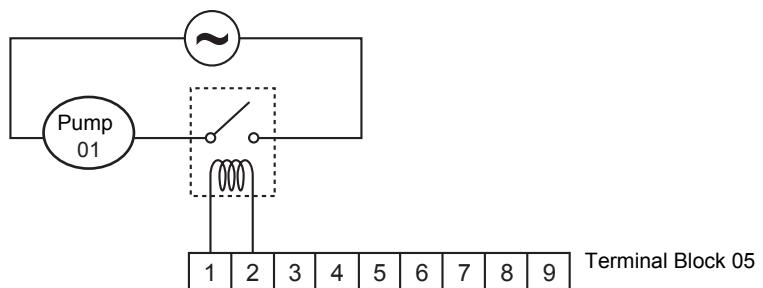


## 4-4-4. External Device

### Electrical connection for external booster heater



### Electrical connection for external additional pumps



## 3-way valve (diverter) connection

### Required Valve Specification:

Electrical Specification: 230 V; 50 Hz; <100 mA

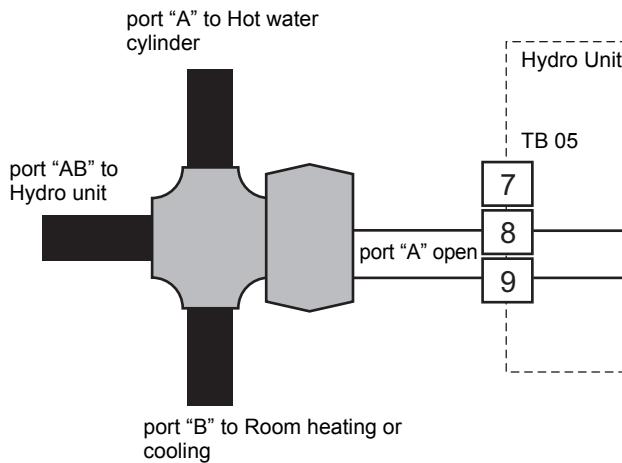
Valve Diameters: Port A, Port B: Ø 1 1/4"

Return Mechanism: 3 types of 3-way valve (diverter) can be used.

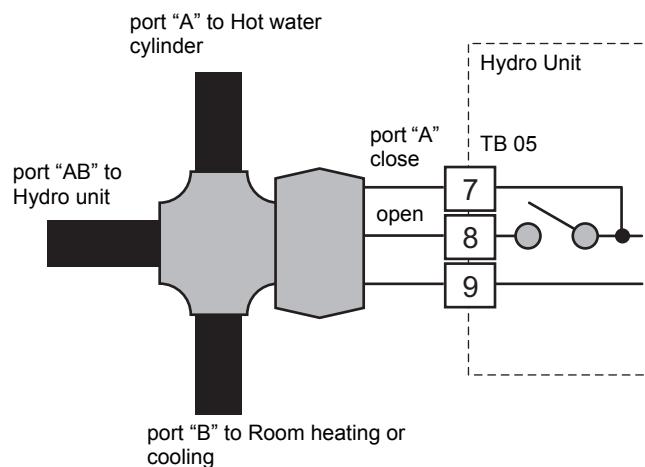
Set the 3-way valve in use with the DIP switch SW13-1 on the Hydro Unit board.

		SW13-1
Type 1	2-wire spring return	OFF
Type 2	3-wire SPST	OFF
Type 3	3-wire SPDT	ON

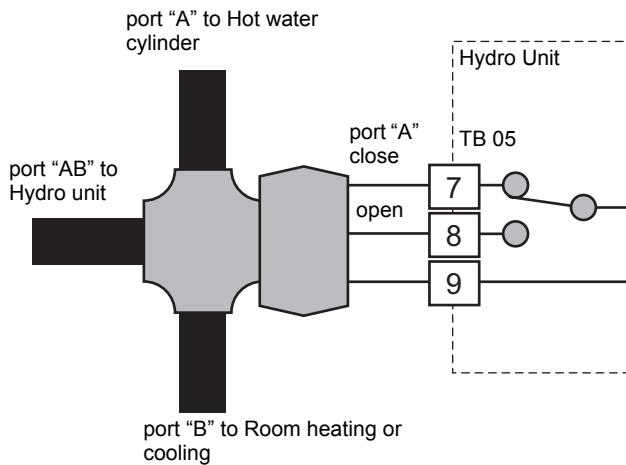
### Type 1: SPRING RETURN



### Type 2: SPST



### Type 3: SPDT



### 3-way mixing valve connection

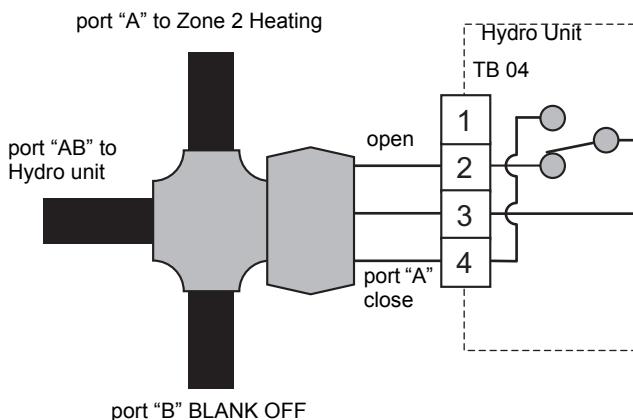
#### Required Actuator Specification

Electrical Specification: 230 V; 50 Hz; <100 mA

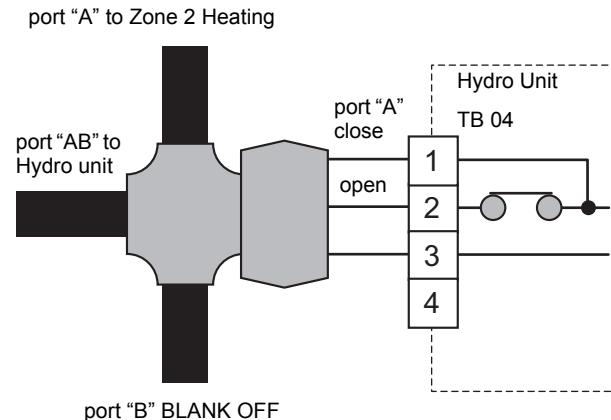
The 3-way mixing valve is used to achieve the temperature differential needed in a 2-zone heating system.

- Connect the 3-way mixing valve to terminals 2, 3 and 4 on Terminal Block 04 (for Type 1 mixing valve) or on terminals 1, 2 and 3 on Terminal Block 04 (for Type 2 mixing valve).
- Connect the 3-way mixing valve in accordance with the diagrams below:-

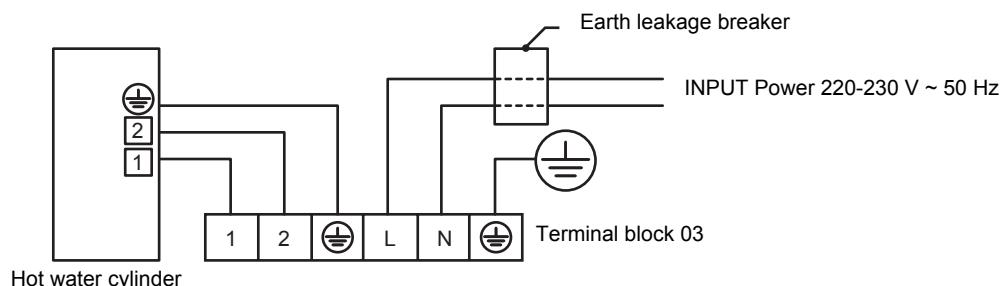
Type 1: SPDT



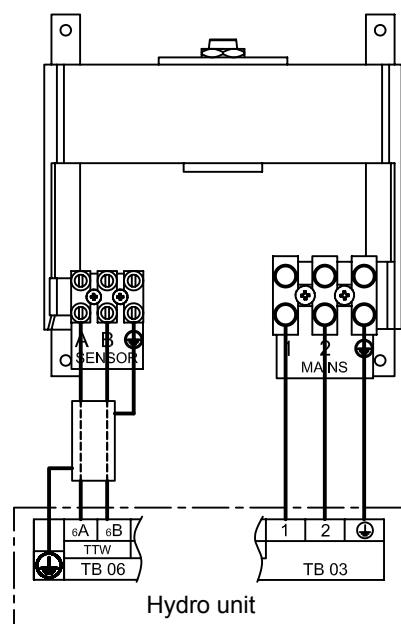
Type 2: SPST



### Hot water cylinder connection (optional)



### Hot water cylinder electrical box connections



## 4-5. Capacity Tables

▼Outdoor unit HWS-P804HR-E  
 Hydro unit HWS-P804XWH\*\*-E

### Rated heating capacity and power input

Rated condition LWT=35°C dT=5deg	Capacity	kW	8.0
	Power input	kW	1.68
	COP	W/W	4.76
	Rated water flow rate	ℓ/min	22.9

\* Rated heating capacity and power input are the data at rated compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

dT : Delta temperature (deg)

Leaving water temperature - return water temperature

## Heating average capacity and power input

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	4.71	4.62	4.19	—	—	—	—
	-20	6.04	5.94	5.49	5.04	—	—	—
	-15	7.37	7.26	6.79	6.31	5.84	—	—
	-7	9.50	9.38	8.87	8.36	7.84	7.33	—
	-2	10.97	10.69	10.03	9.36	8.70	8.04	7.37
	2	12.14	11.74	10.96	10.17	9.39	8.60	7.82
	7	15.20	13.87	15.46	14.00	12.54	11.08	9.62
	10	19.69	18.21	16.60	15.00	13.39	11.79	10.18
	12	20.61	19.06	17.36	15.66	13.96	12.26	—
	15	21.99	20.35	18.50	16.66	14.81	12.97	—
	20	24.29	22.49	20.41	18.32	16.24	14.15	—

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	2.82	2.94	3.06	—	—	—	—
	-20	3.06	3.17	3.29	3.44	—	—	—
	-15	3.23	3.33	3.45	3.59	3.77	—	—
	-7	3.43	3.52	3.62	3.75	3.90	4.09	—
	-2	3.43	3.54	3.62	3.70	3.81	3.95	4.11
	2	3.43	3.56	3.61	3.68	3.75	3.85	3.96
	7	3.64	3.74	4.22	4.20	4.17	4.13	4.08
	10	4.06	4.09	4.07	4.05	4.02	3.98	3.94
	12	3.97	4.00	3.98	3.96	3.93	3.90	—
	15	3.86	3.89	3.87	3.85	3.82	3.79	—
	20	3.71	3.74	3.73	3.70	3.68	3.65	—

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	1.67	1.57	1.37	—	—	—	—
	-20	1.98	1.88	1.67	1.46	—	—	—
	-15	2.28	2.18	1.97	1.76	1.55	—	—
	-7	2.77	2.67	2.45	2.23	2.01	1.79	—
	-2	3.20	3.02	2.77	2.53	2.28	2.04	1.79
	2	3.54	3.30	3.03	2.77	2.50	2.24	1.97
	7	4.18	3.70	3.66	3.33	3.01	2.68	2.36
	10	4.85	4.45	4.08	3.71	3.33	2.96	2.59
	12	5.19	4.76	4.36	3.95	3.55	3.14	—
	15	5.70	5.23	4.78	4.33	3.87	3.42	—
	20	6.55	6.01	5.48	4.95	4.41	3.88	—

\* Heating capacity and power input are include defrost cycle data.

\* Heating capacity and power input are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Heating peak capacity and power input

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	6.81	6.18	5.79	—	—	—	—
	-20	8.35	7.77	7.25	6.72	—	—	—
	-15	9.89	9.37	8.71	8.04	7.38	—	—
	-7	12.35	11.92	11.04	10.16	9.28	8.40	—
	-2	14.45	13.74	12.65	11.56	10.48	9.39	8.30
	2	16.14	15.19	13.94	12.69	11.43	10.18	8.93
	7	18.31	16.92	15.46	14.00	12.54	11.08	9.62
	10	19.69	18.21	16.60	15.00	13.39	11.79	10.18
	12	20.61	19.06	17.36	15.66	13.96	12.26	—
	15	21.99	20.35	18.50	16.66	14.81	12.97	—
	20	24.29	22.49	20.41	18.32	16.24	14.15	—

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	3.43	3.40	3.53	—	—	—	—
	-20	3.68	3.66	3.76	3.88	—	—	—
	-15	3.87	3.85	3.93	4.02	4.13	—	—
	-7	4.11	4.08	4.12	4.17	4.23	4.32	—
	-2	4.16	4.22	4.22	4.23	4.24	4.26	4.28
	2	4.19	4.31	4.29	4.27	4.25	4.23	4.20
	7	4.22	4.25	4.22	4.20	4.17	4.13	4.08
	10	4.06	4.09	4.07	4.05	4.02	3.98	3.94
	12	3.97	4.00	3.98	3.96	3.93	3.90	—
	15	3.86	3.89	3.87	3.85	3.82	3.79	—
	20	3.71	3.74	3.73	3.70	3.68	3.65	—

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	1.98	1.82	1.64	—	—	—	—
	-20	2.27	2.13	1.93	1.73	—	—	—
	-15	2.55	2.43	2.22	2.00	1.79	—	—
	-7	3.01	2.92	2.68	2.44	2.19	1.95	—
	-2	3.48	3.26	2.99	2.73	2.47	2.21	1.94
	2	3.85	3.53	3.25	2.97	2.69	2.41	2.13
	7	4.34	3.98	3.66	3.33	3.01	2.68	2.36
	10	4.85	4.45	4.08	3.71	3.33	2.96	2.59
	12	5.19	4.76	4.36	3.95	3.55	3.14	—
	15	5.70	5.23	4.78	4.33	3.87	3.42	—
	20	6.55	6.01	5.48	4.95	4.41	3.88	—

\* Heating capacity and power input are shown peak value during operation.

\* Heating capacity and power input are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

▼Outdoor unit   **HWS-P804HR-E**  
 Hydro unit       **HWS-P804XWS\*\*-E**

**Rated cooling capacity and power input**

Rated condition LWT=7°C dT=5deg	Capacity	kW	6.0
	Power input	kW	1.64
	EER	W/W	3.66
	Rated water flow rate	ℓ/min	17.2

\* Rated cooling capacity and power input are the data at rated compressor operating frequency.

\* Power input does not include water pump power.

\* Cooling capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C)

LWT : Leaving water temperature (°C)

dT : Delta temperature (deg)

Return water temperature - leaving water temperature

## Cooling peak capacity and power input

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	7.82	8.41	8.99	8.99	8.99
	27	7.53	8.01	8.50	8.82	9.30
	30	7.41	7.96	8.51	8.88	9.43
	35	7.20	7.91	8.62	9.03	9.65
	40	6.50	7.14	7.77	8.20	8.84
	43	6.08	6.69	7.31	7.72	8.35

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	1.30	1.30	1.29	1.29	1.29
	27	1.67	1.67	1.67	1.67	1.67
	30	1.83	1.83	1.83	1.83	1.83
	35	2.09	2.10	2.11	2.10	2.10
	40	2.31	2.33	2.35	2.36	2.37
	43	2.44	2.48	2.51	2.52	2.54

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	6.00	6.49	6.97	6.97	6.97
	27	4.81	5.09	5.38	5.57	5.86
	30	4.29	4.59	4.89	5.09	5.38
	35	3.44	3.77	4.09	4.29	4.59
	40	2.84	3.10	3.35	3.52	3.78
	43	2.49	2.70	2.91	3.06	3.29

\* Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1.

\* Power input does not include water pump power.

\* Cooling capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C)

LWT : Leaving water temperature (°C)

## Heating capacity and input specifications

▼Outdoor unit HWS-P1104HR-E  
 Hydro unit HWS-P1104XWH\*\*-E

### Rated heating capacity and power input

Rated condition LWT=35°C dT=5deg	Capacity kW	11.2
	Power input kW	2.30
	COP W/W	4.88
	Rated water flow rate ℓ/min	32.1

\* Rated heating capacity and power input are the data at rated compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

dT : Delta temperature (deg)  
 Leaving water temperature - return water temperature

## Heating average capacity and power input

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	6.23	5.95	5.11	—	—	—	—
	-20	7.21	7.00	6.24	5.47	—	—	—
	-15	8.20	8.06	7.36	6.67	5.98	—	—
	-7	9.77	9.74	9.16	8.59	8.01	7.44	—
	-2	11.13	10.97	10.34	9.71	9.08	8.45	7.82
	2	12.22	11.96	11.28	10.61	9.93	9.26	7.79
	7	14.87	14.32	16.39	14.74	13.08	11.43	9.77
	10	20.38	18.94	17.22	15.50	13.78	12.06	10.34
	12	21.21	19.54	17.78	16.01	14.25	12.49	—
	15	22.44	20.43	18.61	16.78	14.95	13.12	—
	20	24.50	21.92	19.99	18.05	16.12	14.18	—

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	3.61	3.68	3.62	—	—	—	—
	-20	3.63	3.69	3.68	3.67	—	—	—
	-15	3.64	3.69	3.72	3.75	3.80	—	—
	-7	3.66	3.69	3.76	3.84	3.94	4.06	—
	-2	3.62	3.65	3.72	3.80	3.89	4.01	4.15
	2	3.59	3.62	3.69	3.76	3.86	3.97	3.94
	7	3.50	3.72	4.26	4.23	4.18	4.12	4.05
	10	4.18	4.12	4.09	4.06	4.02	3.98	3.92
	12	4.07	4.01	3.99	3.97	3.94	3.90	—
	15	3.93	3.88	3.86	3.84	3.82	3.79	—
	20	3.74	3.70	3.69	3.67	3.66	3.64	—

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	1.72	1.62	1.41	—	—	—	—
	-20	1.99	1.90	1.70	1.49	—	—	—
	-15	2.25	2.18	1.98	1.78	1.57	—	—
	-7	2.67	2.64	2.44	2.23	2.03	1.83	—
	-2	3.08	3.01	2.78	2.56	2.33	2.11	1.88
	2	3.40	3.30	3.06	2.82	2.57	2.33	1.98
	7	4.25	3.85	3.85	3.49	3.13	2.77	2.42
	10	4.88	4.60	4.21	3.82	3.42	3.03	2.64
	12	5.21	4.87	4.45	4.04	3.62	3.21	—
	15	5.71	5.27	4.82	4.37	3.92	3.47	—
	20	6.55	5.93	5.42	4.91	4.41	3.90	—

\* Heating capacity and power input are include defrost cycle data.

\* Heating capacity and power input are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Heating peak capacity and power input

Capacity (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	8.36	7.81	7.15	—	—	—	—
	-20	9.82	9.19	8.42	7.64	—	—	—
	-15	12.78	11.23	9.68	8.13	6.58	—	—
	-7	13.62	12.79	11.70	10.61	9.51	8.42	—
	-2	15.41	14.39	13.17	11.95	10.73	9.51	8.29
	2	16.85	15.67	14.35	13.03	11.70	10.38	9.25
	7	19.15	18.05	16.39	14.74	13.08	11.43	9.77
	10	20.38	18.94	17.22	15.50	13.78	12.06	10.34
	12	21.21	19.54	17.78	16.01	14.25	12.49	—
	15	22.44	20.43	18.61	16.78	14.95	13.12	—
	20	24.50	21.92	19.99	18.05	16.12	14.18	—

Power input (kW)		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	4.30	4.32	4.31	—	—	—	—
	-20	4.34	4.33	4.32	4.31	—	—	—
	-15	4.34	4.34	4.33	4.32	4.31	—	—
	-7	4.40	4.35	4.34	4.33	4.31	4.30	—
	-2	4.37	4.35	4.33	4.31	4.29	4.26	4.23
	2	4.35	4.35	4.33	4.30	4.28	4.25	4.19
	7	4.37	4.29	4.26	4.23	4.18	4.12	4.05
	10	4.18	4.12	4.09	4.06	4.02	3.98	3.92
	12	4.07	4.01	3.99	3.97	3.94	3.90	—
	15	3.93	3.88	3.86	3.84	3.82	3.79	—
	20	3.74	3.70	3.69	3.67	3.66	3.64	—

COP		LWT (°C)						
		30	35	40	45	50	55	60
TO (°C)	-25	1.94	1.81	1.66	—	—	—	—
	-20	2.26	2.12	1.95	1.77	—	—	—
	-15	2.94	2.59	2.24	1.88	1.53	—	—
	-7	3.10	2.94	2.70	2.45	2.21	1.96	—
	-2	3.53	3.31	3.04	2.77	2.50	2.23	1.96
	2	3.87	3.61	3.32	3.03	2.74	2.45	2.21
	7	4.38	4.20	3.85	3.49	3.13	2.77	2.42
	10	4.88	4.60	4.21	3.82	3.42	3.03	2.64
	12	5.21	4.87	4.45	4.04	3.62	3.21	—
	15	5.71	5.27	4.82	4.37	3.92	3.47	—
	20	6.55	5.93	5.42	4.91	4.41	3.90	—

\* Heating capacity and power input are shown peak value during operation.

\* Heating capacity and power input are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Cooling capacity and input specifications

▼Outdoor unit HWS-P1104HR-E  
 Hydro unit HWS-P1104XWH\*\*-E

### Rated cooling capacity and power input

Rated condition 1 LWT=7°C dT=5deg	Capacity kW	10.0
	Power input kW	3.33
	EER W/W	3.00
	Rated water flow rate ℓ/min	28.9

\* Rated cooling capacity and power input are the data at rated compressor operating frequency.

\* Power input does not include water pump power.

\* Cooling capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C)

LWT : Leaving water temperature (°C)

dT : Delta temperature (deg)

Return water temperature - leaving water temperature

## Cooling peak capacity and power input

Capacity (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	11.21	12.05	12.89	13.38	14.12
	27	10.67	11.45	12.22	12.74	13.51
	30	10.44	11.21	11.97	12.48	13.25
	35	10.06	10.86	11.66	12.12	12.81
	40	8.75	9.23	9.70	10.01	10.49
	43	7.97	8.57	9.16	9.14	9.09

Power input (kW)		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	2.07	2.07	2.08	2.07	2.07
	27	2.63	2.65	2.67	2.68	2.70
	30	2.87	2.89	2.92	2.94	2.97
	35	3.27	3.31	3.36	3.38	3.42
	40	3.49	3.40	3.31	3.25	3.16
	43	3.62	3.60	3.58	3.35	3.01

COP		LWT (°C)				
		7	10	13	15	18
TO (°C)	20	5.42	5.81	6.20	6.45	6.83
	27	4.33	4.62	4.91	5.10	5.40
	30	3.86	4.11	4.36	4.53	4.78
	35	3.08	3.27	3.47	3.58	3.75
	40	2.53	2.74	2.95	3.09	3.30
	43	2.20	2.38	2.56	2.75	3.02

\* Cooling capacity and power input are the data at rated compressor operating frequency of rated condition 1.

\* Power input does not include water pump power.

\* Cooling capacity and power input are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C)

LWT : Leaving water temperature (°C)

## 4-6. Part Load Tables

**Specifications part load heating capacity and input (peak) LWT(°C) =35°C**

▼Outdoor unit   **HWS-P804HR-E**  
Hydro unit       **HWS-P804XWH\*\*-E**

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	6.18	5.56	4.94	4.33	3.71	3.09	2.15	2.15	2.15	2.24
	-20	7.77	7.00	6.22	5.44	4.66	3.89	2.70	2.70	2.70	2.82
	-15	9.37	8.43	7.50	6.56	5.62	4.68	3.25	3.25	3.25	3.40
	-7	11.92	10.73	9.54	8.34	7.15	5.96	4.14	4.14	4.14	4.32
	-2	13.74	12.36	10.99	9.62	8.24	6.87	4.77	4.77	4.77	4.98
	2	15.19	13.67	12.15	10.63	9.11	7.60	5.27	5.27	5.27	5.50
	7	16.92	15.23	13.54	11.84	10.15	8.46	6.77	5.08	3.38	2.07
	10	18.21	16.38	14.56	12.74	10.92	9.10	7.28	5.46	3.64	2.34
	12	19.06	17.16	15.25	13.34	11.44	9.53	7.62	5.72	3.81	2.52
	15	20.35	18.31	16.28	14.24	12.21	10.17	8.14	6.10	4.07	2.79
	20	22.49	20.24	17.99	15.74	13.49	11.25	9.00	6.75	4.50	3.24

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	3.40	2.99	2.58	2.17	1.76	1.49	0.99	0.99	0.99	1.11
	-20	3.66	3.22	2.78	2.33	1.89	1.60	1.07	1.07	1.07	1.20
	-15	3.85	3.39	2.92	2.46	2.00	1.69	1.13	1.13	1.13	1.26
	-7	4.08	3.59	3.10	2.60	2.11	1.78	1.19	1.19	1.19	1.33
	-2	4.22	3.71	3.20	2.69	2.18	1.84	1.23	1.23	1.23	1.38
	2	4.31	3.79	3.27	2.75	2.23	1.88	1.26	1.26	1.26	1.41
	7	4.25	3.68	3.11	2.54	2.19	1.85	1.50	1.15	0.80	0.53
	10	4.09	3.60	3.10	2.61	2.11	1.77	1.43	1.09	0.75	0.51
	12	4.00	3.52	3.04	2.56	2.08	1.74	1.40	1.06	0.73	0.50
	15	3.89	3.43	2.96	2.50	2.03	1.70	1.36	1.03	0.69	0.48
	20	3.74	3.30	2.86	2.42	1.98	1.65	1.31	0.97	0.64	0.45

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	1.82	1.86	1.92	1.99	2.11	2.08	2.16	2.16	2.16	2.02
	-20	2.13	2.18	2.24	2.33	2.46	2.43	2.52	2.52	2.52	2.36
	-15	2.43	2.49	2.56	2.67	2.82	2.78	2.88	2.88	2.88	2.70
	-7	2.92	2.99	3.08	3.20	3.39	3.34	3.47	3.47	3.47	3.24
	-2	3.26	3.33	3.43	3.57	3.78	3.72	3.87	3.87	3.87	3.61
	2	3.53	3.61	3.72	3.87	4.09	4.03	4.19	4.19	4.19	3.91
	7	3.98	4.14	4.35	4.66	4.63	4.58	4.52	4.42	4.24	3.92
	10	4.45	4.56	4.70	4.89	5.17	5.14	5.08	5.00	4.84	4.59
	12	4.76	4.87	5.02	5.22	5.51	5.48	5.44	5.37	5.25	5.07
	15	5.23	5.35	5.50	5.70	6.00	5.99	5.98	5.95	5.89	5.82
	20	6.01	6.13	6.29	6.50	6.81	6.83	6.87	6.93	7.06	7.21

\* Heating capacity and power input are include defrost cycle data.

\* Heating capacity and power input at 100% load are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load heating capacity and input (peak) LWT(°C) =45°C

▼Outdoor unit HWS-P804HR-E  
Hydro unit HWS-P804XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	6.72	6.05	5.38	4.71	4.03	2.73	2.73	2.73	2.73	2.96
	-15	8.04	7.24	6.44	5.63	4.83	3.42	3.42	3.42	3.42	3.54
	-7	10.16	9.14	8.13	7.11	6.10	4.52	4.52	4.52	4.52	4.48
	-2	11.56	10.41	9.25	8.09	6.94	5.07	5.07	5.07	5.07	5.10
	2	12.69	11.42	10.15	8.88	7.61	5.50	5.50	5.50	5.50	5.59
	7	14.00	12.60	11.20	9.80	8.40	7.00	5.67	5.67	5.67	5.67
	10	15.00	13.50	12.00	10.50	9.00	7.50	6.28	6.28	6.28	6.28
	12	15.66	14.10	12.53	10.96	9.40	7.83	6.69	6.69	6.69	6.69
	15	16.66	14.99	13.33	11.66	10.00	8.33	7.30	7.30	7.30	7.30
	20	18.32	16.49	14.66	12.82	10.99	9.16	8.31	8.31	8.31	8.31

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	3.88	3.47	3.06	2.65	2.24	1.65	1.65	1.65	1.65	1.62
	-15	4.02	3.59	3.17	2.75	2.32	1.72	1.72	1.72	1.72	1.68
	-7	4.17	3.73	3.29	2.85	2.41	1.79	1.79	1.79	1.79	1.75
	-2	4.23	3.79	3.34	2.89	2.45	1.77	1.77	1.77	1.77	1.77
	2	4.27	3.82	3.37	2.92	2.47	1.76	1.76	1.76	1.76	1.79
	7	4.20	3.75	3.30	2.85	2.39	1.98	1.59	1.59	1.59	1.59
	10	4.05	3.61	3.17	2.73	2.29	1.89	1.57	1.57	1.57	1.57
	12	3.96	3.53	3.10	2.67	2.24	1.84	1.56	1.56	1.56	1.56
	15	3.85	3.41	2.97	2.53	2.15	1.77	1.54	1.54	1.54	1.54
	20	3.70	3.27	2.84	2.41	2.04	1.68	1.51	1.51	1.51	1.51

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	1.73	1.74	1.76	1.77	1.80	1.66	1.66	1.66	1.66	1.82
	-15	2.00	2.01	2.03	2.05	2.08	1.99	1.99	1.99	1.99	2.11
	-7	2.44	2.45	2.47	2.49	2.53	2.52	2.52	2.52	2.52	2.56
	-2	2.73	2.75	2.77	2.80	2.84	2.86	2.86	2.86	2.86	2.88
	2	2.97	2.99	3.01	3.04	3.08	3.13	3.13	3.13	3.13	3.13
	7	3.33	3.36	3.40	3.44	3.51	3.54	3.58	3.58	3.58	3.58
	10	3.71	3.74	3.78	3.84	3.92	3.96	4.01	4.01	4.01	4.01
	12	3.95	3.99	4.04	4.11	4.20	4.25	4.30	4.30	4.30	4.30
	15	4.33	4.40	4.49	4.62	4.65	4.70	4.74	4.74	4.74	4.74
	20	4.95	5.04	5.16	5.32	5.38	5.46	5.51	5.51	5.51	5.51

\* Heating capacity and power input are include defrost cycle data.

\* Heating capacity and power input at 100% load are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

**Specifications part load heating capacity and input (peak) LWT(°C) =55°C**
**▼Outdoor unit HWS-P804HR-E**  
**Hydro unit HWS-P804XWH\*\*-E**

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	—	—	—	—	—	—	—	—	—	—
	-15	—	—	—	—	—	—	—	—	—	—
	-7	8.40	7.56	6.72	5.88	5.04	4.09	4.09	4.09	4.09	4.18
	-2	9.39	8.45	7.51	6.57	5.63	4.48	4.48	4.48	4.48	4.67
	2	10.18	9.16	8.15	7.13	6.11	4.80	4.80	4.80	4.80	5.06
	7	11.08	9.97	8.86	7.76	6.65	5.54	5.20	5.20	5.20	5.20
	10	11.79	10.61	9.43	8.25	7.07	5.89	5.75	5.75	5.75	5.75
	12	12.26	11.03	9.81	8.58	7.36	6.13	6.11	6.11	6.11	6.11
	15	12.97	11.67	10.38	9.08	7.78	6.66	6.66	6.66	6.66	6.66
	20	14.15	12.74	11.32	9.91	8.49	7.58	7.58	7.58	7.58	7.58

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	—	—	—	—	—	—	—	—	—	—
	-15	—	—	—	—	—	—	—	—	—	—
	-7	4.32	3.89	3.46	3.03	2.61	2.21	2.21	2.21	2.21	2.18
	-2	4.26	3.83	3.41	2.99	2.57	2.13	2.13	2.13	2.13	2.15
	2	4.23	3.80	3.38	2.96	2.56	2.08	2.08	2.08	2.08	2.14
	7	4.13	3.72	3.31	2.90	2.50	2.10	1.97	1.97	1.97	1.97
	10	3.98	3.59	3.19	2.80	2.41	2.02	1.97	1.97	1.97	1.97
	12	3.90	3.51	3.13	2.74	2.36	1.97	1.97	1.97	1.97	1.97
	15	3.79	3.42	3.05	2.67	2.29	1.97	1.97	1.97	1.97	1.97
	20	3.65	3.30	2.95	2.58	2.20	1.96	1.96	1.96	1.96	1.96

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	—	—	—	—	—	—	—	—	—	—
	-15	—	—	—	—	—	—	—	—	—	—
	-7	1.95	1.94	1.94	1.94	1.93	1.85	1.85	1.85	1.85	1.91
	-2	2.21	2.20	2.20	2.20	2.19	2.10	2.10	2.10	2.10	2.17
	2	2.41	2.41	2.41	2.40	2.39	2.31	2.31	2.31	2.31	2.37
	7	2.68	2.68	2.68	2.67	2.66	2.64	2.63	2.63	2.63	2.63
	10	2.96	2.96	2.95	2.95	2.94	2.92	2.92	2.92	2.92	2.92
	12	3.14	3.14	3.14	3.13	3.12	3.11	3.11	3.11	3.11	3.11
	15	3.42	3.41	3.40	3.40	3.39	3.39	3.39	3.39	3.39	3.39
	20	3.88	3.86	3.84	3.85	3.86	3.87	3.87	3.87	3.87	3.87

\* Heating capacity and power input are include defrost cycle data.

\* Heating capacity and power input at 100% load are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load cooling capacity and input LWT(°C) =7°C

▼Outdoor unit HWS-P804HR-E  
 Hydro unit HWS-P804XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	7.82	7.04	6.26	5.48	4.70	3.91	3.13	2.35	1.56	0.98
	27	7.53	6.77	6.03	5.27	4.52	3.77	3.04	3.04	3.04	3.04
	30	7.41	6.66	5.93	5.18	4.45	3.70	2.98	2.98	2.98	2.98
	35	7.20	6.48	5.76	5.04	4.32	3.60	2.90	2.90	2.90	2.90
	40	6.50	5.85	5.20	4.55	3.90	3.25	3.02	3.02	3.02	3.02
	43	6.08	5.47	4.87	4.25	3.64	3.04	2.83	2.83	2.83	2.83

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	1.30	1.18	1.06	0.94	0.82	0.70	0.58	0.46	0.34	0.25
	27	1.67	1.52	1.36	1.21	1.05	0.90	0.74	0.74	0.74	0.74
	30	1.83	1.66	1.49	1.32	1.16	0.98	0.82	0.82	0.82	0.82
	35	2.09	1.90	1.71	1.51	1.32	1.12	0.93	0.93	0.93	0.93
	40	2.31	2.10	1.88	1.67	1.46	1.25	1.17	1.17	1.17	1.17
	43	2.44	2.22	1.99	1.77	1.54	1.31	1.24	1.24	1.24	1.24

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	6.00	5.96	5.91	5.80	5.71	5.59	5.41	5.15	4.57	3.87
	27	4.51	4.47	4.42	4.36	4.29	4.19	4.08	4.08	4.08	4.08
	30	4.05	4.02	3.97	3.93	3.85	3.77	3.64	3.64	3.64	3.64
	35	3.44	3.42	3.37	3.33	3.28	3.21	3.11	3.11	3.11	3.11
	40	2.81	2.78	2.76	2.72	2.67	2.61	2.59	2.59	2.59	2.59
	43	2.49	2.46	2.45	2.41	2.36	2.32	2.28	2.28	2.28	2.28

\* Cooling capacity and power input at 100% load are the data at rated compressor operating frequency of rated condition 1.

\* Power input does not include water pump power.

\* Cooling capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load cooling capacity and input LWT(°C) =13°C

▼Outdoor unit HWS-P804HR-E  
 Hydro unit HWS-P804XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	8.99	8.10	7.20	6.30	5.40	4.50	3.59	2.70	2.42	2.42
	27	8.50	7.65	6.79	5.94	5.09	4.25	4.25	4.25	4.25	4.25
	30	8.51	7.66	6.80	5.96	5.11	4.26	4.26	4.26	4.26	4.26
	35	8.62	7.75	6.89	6.04	5.17	4.32	4.32	4.32	4.32	4.32
	40	7.77	6.99	6.21	5.45	4.67	4.30	4.30	4.30	4.30	4.30
	43	7.31	6.58	5.84	5.12	4.38	4.04	4.04	4.04	4.04	4.04

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	1.29	1.15	1.01	0.88	0.74	0.60	0.46	0.32	0.28	0.28
	27	1.67	1.49	1.31	1.13	0.96	0.77	0.77	0.77	0.77	0.77
	30	1.83	1.64	1.44	1.25	1.05	0.85	0.85	0.85	0.85	0.85
	35	2.11	1.88	1.66	1.43	1.21	0.98	0.98	0.98	0.98	0.98
	40	2.35	2.09	1.84	1.59	1.34	1.22	1.22	1.22	1.22	1.22
	43	2.51	2.24	1.97	1.70	1.43	1.31	1.31	1.31	1.31	1.31

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	6.97	7.04	7.13	7.17	7.32	7.53	7.84	8.46	8.65	8.65
	27	5.09	5.12	5.19	5.24	5.32	5.50	5.50	5.50	5.50	5.50
	30	4.65	4.68	4.72	4.78	4.86	4.98	4.98	4.98	4.98	4.98
	35	4.09	4.13	4.16	4.23	4.29	4.42	4.42	4.42	4.42	4.42
	40	3.31	3.35	3.37	3.43	3.48	3.52	3.52	3.52	3.52	3.52
	43	2.91	2.93	2.97	3.00	3.07	3.09	3.09	3.09	3.09	3.09

\* Cooling capacity and power input at 100% load are the data at rated compressor operating frequency of rated condition 1.

\* Power input does not include water pump power.

\* Cooling capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load cooling capacity and input LWT(°C) =18°C

▼Outdoor unit HWS-P804HR-E  
 Hydro unit HWS-P804XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	8.99	8.10	7.19	6.30	5.40	4.50	3.60	3.22	3.22	3.22
	27	9.30	8.37	7.44	6.51	5.58	5.23	5.23	5.23	5.23	5.23
	30	9.43	8.49	7.54	6.60	5.66	5.30	5.30	5.30	5.30	5.30
	35	9.65	8.68	7.71	6.76	5.79	5.43	5.43	5.43	5.43	5.43
	40	8.84	7.95	7.07	6.18	5.37	5.37	5.37	5.37	5.37	5.37
	43	8.35	7.51	6.68	5.84	5.07	5.07	5.07	5.07	5.07	5.07

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	1.29	1.19	1.03	0.87	0.71	0.55	0.39	0.32	0.32	0.32
	27	1.67	1.47	1.28	1.07	0.87	0.80	0.80	0.80	0.80	0.80
	30	1.83	1.61	1.40	1.18	0.96	0.88	0.88	0.88	0.88	0.88
	35	2.10	1.85	1.60	1.35	1.11	1.00	1.00	1.00	1.00	1.00
	40	2.37	2.09	1.81	1.53	1.27	1.27	1.27	1.27	1.27	1.27
	43	2.54	2.23	1.93	1.63	1.35	1.35	1.35	1.35	1.35	1.35

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	6.97	6.80	6.97	7.22	7.57	8.24	9.29	10.10	10.10	10.10
	27	5.57	5.68	5.83	6.09	6.39	6.50	6.50	6.50	6.50	6.50
	30	5.15	5.26	5.40	5.60	5.89	6.03	6.03	6.03	6.03	6.03
	35	4.59	4.69	4.82	5.01	5.23	5.40	5.40	5.40	5.40	5.40
	40	3.72	3.80	3.90	4.05	4.24	4.24	4.24	4.24	4.24	4.24
	43	3.29	3.36	3.46	3.59	3.76	3.76	3.76	3.76	3.76	3.76

\* Cooling capacity and power input at 100% load are the data at rated compressor operating frequency of rated condition 1.

\* Power input does not include water pump power.

\* Cooling capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load heating capacity and input (peak) LWT(°C) =35°C

### ▼Outdoor unit HWS-P1104HR-E Hydro unit HWS-P1104XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	7.81	7.03	6.25	5.46	4.68	3.90	2.83	2.83	2.83	2.83
	-20	9.19	8.27	7.35	6.43	5.52	4.60	3.33	3.33	3.33	3.33
	-15	11.23	10.11	8.98	7.86	6.74	5.62	4.07	4.07	4.07	4.07
	-7	12.79	11.51	10.23	8.96	7.68	6.40	4.64	4.64	4.64	4.64
	-2	14.39	12.95	11.52	10.08	8.64	7.20	5.22	5.22	5.22	5.22
	2	15.67	14.11	12.54	10.97	9.40	7.84	5.68	5.68	5.68	5.68
	7	18.05	16.24	14.44	12.63	10.83	9.02	7.22	5.41	3.61	2.21
	10	18.94	17.05	15.15	13.26	11.37	9.47	7.58	5.68	3.79	2.43
	12	19.54	17.59	15.63	13.68	11.72	9.77	7.82	5.86	3.91	2.58
	15	20.43	18.39	16.35	14.30	12.26	10.22	8.17	6.13	4.09	2.79
	20	21.92	19.73	17.54	15.35	13.15	10.96	8.77	6.58	4.38	3.16

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	4.32	3.80	3.28	2.76	2.24	1.89	1.41	1.41	1.41	1.41
	-20	4.33	3.81	3.29	2.76	2.24	1.89	1.42	1.42	1.42	1.42
	-15	4.34	3.81	3.29	2.77	2.24	1.90	1.42	1.42	1.42	1.42
	-7	4.35	3.82	3.30	2.78	2.25	1.90	1.42	1.42	1.42	1.42
	-2	4.35	3.82	3.30	2.77	2.25	1.90	1.42	1.42	1.42	1.42
	2	4.35	3.82	3.30	2.77	2.25	1.90	1.42	1.42	1.42	1.42
	7	4.29	3.72	3.15	2.57	2.22	1.87	1.51	1.16	0.81	0.53
	10	4.12	3.62	3.12	2.63	2.13	1.79	1.44	1.10	0.76	0.51
	12	4.01	3.53	3.05	2.57	2.09	1.75	1.41	1.07	0.73	0.50
	15	3.88	3.42	2.96	2.49	2.03	1.70	1.36	1.03	0.69	0.48
	20	3.70	3.26	2.83	2.39	1.96	1.63	1.29	0.96	0.63	0.44

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	1.81	1.85	1.91	1.98	2.10	2.07	2.00	2.00	2.00	2.00
	-20	2.12	2.17	2.24	2.33	2.46	2.43	2.35	2.35	2.35	2.35
	-15	2.59	2.65	2.73	2.84	3.00	2.96	2.87	2.87	2.87	2.87
	-7	2.94	3.01	3.10	3.23	3.41	3.36	3.26	3.26	3.26	3.26
	-2	3.31	3.39	3.49	3.63	3.84	3.79	3.67	3.67	3.67	3.67
	2	3.61	3.69	3.80	3.96	4.18	4.12	4.00	4.00	4.00	4.00
	7	4.20	4.37	4.59	4.91	4.88	4.84	4.77	4.67	4.47	4.14
	10	4.60	4.71	4.85	5.05	5.34	5.30	5.25	5.16	4.99	4.73
	12	4.87	4.98	5.12	5.32	5.62	5.59	5.55	5.48	5.35	5.16
	15	5.27	5.38	5.53	5.73	6.03	6.02	6.00	5.97	5.92	5.84
	20	5.93	6.05	6.20	6.41	6.71	6.74	6.78	6.84	6.96	7.12

\* Heating capacity and power input are include defrost cycle data.

\* Heating capacity and power input at 100% load are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load heating capacity and input (peak) LWT(°C) =45°C

### ▼Outdoor unit HWS-P1104HR-E Hydro unit HWS-P1104XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	7.64	6.88	6.11	5.35	4.58	3.37	3.37	3.37	3.37	3.37
	-15	8.13	7.32	6.50	5.69	4.88	3.58	3.58	3.58	3.58	3.58
	-7	10.61	9.55	8.49	7.42	6.36	4.67	4.67	4.67	4.67	4.67
	-2	11.95	10.76	9.56	8.37	7.17	5.27	5.27	5.27	5.27	5.27
	2	13.03	11.72	10.42	9.12	7.82	5.74	5.74	5.74	5.74	5.74
	7	14.74	13.26	11.79	10.32	8.84	7.37	5.97	5.97	5.97	5.97
	10	15.50	13.95	12.40	10.85	9.30	7.75	6.48	6.48	6.48	6.48
	12	16.01	14.41	12.81	11.21	9.61	8.01	6.82	6.82	6.82	6.82
	15	16.78	15.10	13.42	11.74	10.07	8.39	7.34	7.34	7.34	7.34
	20	18.05	16.25	14.44	12.64	10.83	9.03	8.19	8.19	8.19	8.19

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	4.31	3.86	3.40	2.95	2.49	1.80	1.80	1.80	1.80	1.80
	-15	4.32	3.86	3.41	2.95	2.50	1.81	1.81	1.81	1.81	1.81
	-7	4.33	3.87	3.41	2.96	2.50	1.81	1.81	1.81	1.81	1.81
	-2	4.31	3.86	3.40	2.95	2.49	1.80	1.80	1.80	1.80	1.80
	2	4.30	3.85	3.40	2.94	2.49	1.80	1.80	1.80	1.80	1.80
	7	4.23	3.77	3.32	2.86	2.41	1.99	1.60	1.60	1.60	1.60
	10	4.06	3.62	3.18	2.74	2.31	1.90	1.57	1.57	1.57	1.57
	12	3.97	3.54	3.11	2.67	2.24	1.85	1.56	1.56	1.56	1.56
	15	3.84	3.40	2.96	2.52	2.15	1.77	1.53	1.53	1.53	1.53
	20	3.67	3.25	2.82	2.39	2.03	1.66	1.50	1.50	1.50	1.50

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	1.77	1.78	1.80	1.82	1.84	1.87	1.87	1.87	1.87	1.87
	-15	1.88	1.89	1.91	1.93	1.95	1.98	1.98	1.98	1.98	1.98
	-7	2.45	2.47	2.49	2.51	2.55	2.58	2.58	2.58	2.58	2.58
	-2	2.77	2.79	2.81	2.84	2.88	2.92	2.92	2.92	2.92	2.92
	2	3.03	3.05	3.07	3.10	3.14	3.19	3.19	3.19	3.19	3.19
	7	3.49	3.52	3.55	3.60	3.67	3.70	3.74	3.74	3.74	3.74
	10	3.82	3.85	3.90	3.95	4.04	4.07	4.12	4.12	4.12	4.12
	12	4.04	4.08	4.13	4.19	4.28	4.33	4.38	4.38	4.38	4.38
	15	4.37	4.44	4.53	4.65	4.69	4.74	4.78	4.78	4.78	4.78
	20	4.91	5.01	5.12	5.29	5.34	5.43	5.48	5.48	5.48	5.48

\* Heating capacity and power input are include defrost cycle data.

\* Heating capacity and power input at 100% load are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load heating capacity and input (peak) LWT(°C) =55°C

### ▼Outdoor unit HWS-P1104HR-E Hydro unit HWS-P1104XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	—	—	—	—	—	—	—	—	—	—
	-15	—	—	—	—	—	—	—	—	—	—
	-7	8.42	7.58	6.74	5.89	5.05	4.19	4.19	4.19	4.19	4.19
	-2	9.51	8.56	7.61	6.66	5.71	4.73	4.73	4.73	4.73	4.73
	2	10.38	9.34	8.30	7.27	6.23	5.16	5.16	5.16	5.16	5.16
	7	11.43	10.28	9.14	8.00	6.86	5.71	5.36	5.36	5.36	5.36
	10	12.06	10.86	9.65	8.44	7.24	6.03	5.88	5.88	5.88	5.88
	12	12.49	11.24	9.99	8.74	7.49	6.24	6.22	6.22	6.22	6.22
	15	13.12	11.81	10.50	9.19	7.87	6.74	6.74	6.74	6.74	6.74
	20	14.18	12.76	11.35	9.93	8.51	7.60	7.60	7.60	7.60	7.60

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	—	—	—	—	—	—	—	—	—	—
	-15	—	—	—	—	—	—	—	—	—	—
	-7	4.30	3.87	3.44	3.02	2.60	2.17	2.17	2.17	2.17	2.17
	-2	4.26	3.84	3.42	2.99	2.58	2.16	2.16	2.16	2.16	2.16
	2	4.25	3.82	3.40	2.98	2.57	2.15	2.15	2.15	2.15	2.15
	7	4.12	3.71	3.31	2.90	2.50	2.10	1.97	1.97	1.97	1.97
	10	3.98	3.58	3.19	2.80	2.41	2.02	1.97	1.97	1.97	1.97
	12	3.90	3.51	3.13	2.74	2.36	1.97	1.96	1.96	1.96	1.96
	15	3.79	3.42	3.05	2.67	2.29	1.96	1.96	1.96	1.96	1.96
	20	3.64	3.29	2.94	2.57	2.19	1.96	1.96	1.96	1.96	1.96

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	-25	—	—	—	—	—	—	—	—	—	—
	-20	—	—	—	—	—	—	—	—	—	—
	-15	—	—	—	—	—	—	—	—	—	—
	-7	1.96	1.96	1.96	1.95	1.94	1.93	1.93	1.93	1.93	1.93
	-2	2.23	2.23	2.23	2.23	2.21	2.19	2.19	2.19	2.19	2.19
	2	2.45	2.44	2.44	2.44	2.43	2.41	2.41	2.41	2.41	2.41
	7	2.77	2.77	2.76	2.76	2.74	2.73	2.72	2.72	2.72	2.72
	10	3.03	3.03	3.03	3.02	3.01	2.99	2.99	2.99	2.99	2.99
	12	3.21	3.20	3.19	3.19	3.18	3.17	3.17	3.17	3.17	3.17
	15	3.47	3.46	3.45	3.44	3.44	3.44	3.44	3.44	3.44	3.44
	20	3.90	3.88	3.86	3.87	3.88	3.89	3.89	3.89	3.89	3.89

\* Heating capacity and power input are include defrost cycle data.

\* Heating capacity and power input at 100% load are shown at maximum compressor operating frequency.

\* Power input does not include water pump power.

\* Heating capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load cooling capacity and input LWT(°C) =7°C

▼Outdoor unit HWS-P1104HR-E  
 Hydro unit HWS-P1104XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	11.21	10.09	8.97	7.85	6.73	5.61	4.48	3.36	2.25	1.92
	27	10.67	9.61	8.54	7.47	6.40	5.34	5.14	5.14	5.14	5.14
	30	10.44	9.40	8.35	7.31	6.27	5.23	5.04	5.04	5.04	5.04
	35	10.06	9.05	8.05	7.04	6.04	5.03	4.85	4.85	4.85	4.85
	40	8.75	7.87	7.00	6.12	5.26	4.83	4.83	4.83	4.83	4.83
	43	7.97	7.17	6.37	5.57	4.78	4.39	4.39	4.39	4.39	4.39

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	2.07	1.83	1.59	1.37	1.17	0.97	0.79	0.62	0.47	0.42
	27	2.63	2.32	2.02	1.75	1.48	1.24	1.19	1.19	1.19	1.19
	30	2.87	2.53	2.21	1.90	1.62	1.35	1.31	1.31	1.31	1.31
	35	3.27	2.88	2.52	2.16	1.84	1.53	1.49	1.49	1.49	1.49
	40	3.49	3.08	2.69	2.31	1.96	1.80	1.80	1.80	1.80	1.80
	43	3.62	3.19	2.78	2.41	2.04	1.88	1.88	1.88	1.88	1.88

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	5.42	5.53	5.64	5.73	5.76	5.77	5.67	5.43	4.78	4.54
	27	4.06	4.15	4.22	4.28	4.33	4.32	4.31	4.31	4.31	4.31
	30	3.64	3.72	3.78	3.85	3.88	3.87	3.86	3.86	3.86	3.86
	35	3.08	3.15	3.20	3.25	3.28	3.28	3.26	3.26	3.26	3.26
	40	2.51	2.56	2.61	2.65	2.68	2.68	2.68	2.68	2.68	2.68
	43	2.20	2.25	2.29	2.32	2.34	2.34	2.34	2.34	2.34	2.34

\* Cooling capacity and power input at 100% load are the data at rated compressor operating frequency of rated condition 1.

\* Power input does not include water pump power.

\* Cooling capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load cooling capacity and input LWT(°C) =13°C

▼Outdoor unit HWS-P1104HR-E  
 Hydro unit HWS-P1104XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	12.89	11.60	10.31	9.02	7.73	6.45	5.16	3.87	3.78	3.78
	27	12.22	11.00	9.78	8.56	7.34	6.82	6.82	6.82	6.82	6.82
	30	11.97	10.78	9.58	8.38	7.18	6.69	6.69	6.69	6.69	6.69
	35	11.66	10.50	9.33	8.16	7.00	6.51	6.51	6.51	6.51	6.51
	40	9.70	8.73	7.76	6.79	5.99	5.99	5.99	5.99	5.99	5.99
	43	9.16	8.25	7.33	6.42	5.66	5.66	5.66	5.66	5.66	5.66

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	2.08	1.86	1.59	1.34	1.11	0.89	0.69	0.51	0.50	0.50
	27	2.67	2.31	1.97	1.66	1.37	1.26	1.26	1.26	1.26	1.26
	30	2.92	2.53	2.16	1.82	1.51	1.38	1.38	1.38	1.38	1.38
	35	3.36	2.91	2.49	2.10	1.73	1.59	1.59	1.59	1.59	1.59
	40	3.31	2.87	2.45	2.07	1.77	1.77	1.77	1.77	1.77	1.77
	43	3.58	3.10	2.65	2.24	1.91	1.91	1.91	1.91	1.91	1.91

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	6.20	6.24	6.50	6.75	6.98	7.26	7.47	7.61	7.55	7.55
	27	4.59	4.76	4.95	5.15	5.34	5.43	5.43	5.43	5.43	5.43
	30	4.10	4.26	4.43	4.60	4.76	4.86	4.86	4.86	4.86	4.86
	35	3.47	3.61	3.74	3.89	4.04	4.09	4.09	4.09	4.09	4.09
	40	2.93	3.04	3.16	3.29	3.39	3.39	3.39	3.39	3.39	3.39
	43	2.56	2.66	2.77	2.87	2.97	2.97	2.97	2.97	2.97	2.97

\* Cooling capacity and power input at 100% load are the data at rated compressor operating frequency of rated condition 1.

\* Power input does not include water pump power.

\* Cooling capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

LWT : Leaving water temperature (°C)

## Specifications part load cooling capacity and input LWT(°C) =18°C

▼Outdoor unit HWS-P1104HR-E  
Hydro unit HWS-P1104XWH\*\*-E

Capacity (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	14.12	12.71	11.30	9.89	8.48	7.06	5.65	5.31	5.31	5.31
	27	13.51	12.16	10.81	9.45	8.24	8.24	8.24	8.24	8.24	8.24
	30	13.25	11.92	10.60	9.27	8.09	8.09	8.09	8.09	8.09	8.09
	35	12.81	11.53	10.25	8.96	7.82	7.82	7.82	7.82	7.82	7.82
	40	10.49	9.44	8.39	7.34	6.95	6.95	6.95	6.95	6.95	6.95
	43	9.09	8.18	7.28	6.36	6.03	6.03	6.03	6.03	6.03	6.03

Power input (kW)		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	2.07	1.85	1.55	1.27	1.02	0.79	0.57	0.53	0.53	0.53
	27	2.70	2.30	1.92	1.58	1.30	1.30	1.30	1.30	1.30	1.30
	30	2.97	2.53	2.12	1.74	1.42	1.42	1.42	1.42	1.42	1.42
	35	3.42	2.91	2.44	2.00	1.64	1.64	1.64	1.64	1.64	1.64
	40	3.16	2.69	2.26	1.85	1.71	1.71	1.71	1.71	1.71	1.71
	43	3.01	2.56	2.15	1.76	1.63	1.63	1.63	1.63	1.63	1.63

COP		Load (%)									
		100	90	80	70	60	50	40	30	20	10
TO (°C)	20	6.83	6.87	7.30	7.78	8.32	8.96	9.87	10.07	10.07	10.07
	27	5.01	5.29	5.63	6.00	6.35	6.35	6.35	6.35	6.35	6.35
	30	4.47	4.71	5.00	5.34	5.69	5.69	5.69	5.69	5.69	5.69
	35	3.75	3.97	4.20	4.48	4.76	4.76	4.76	4.76	4.76	4.76
	40	3.32	3.51	3.72	3.97	4.07	4.07	4.07	4.07	4.07	4.07
	43	3.02	3.20	3.39	3.61	3.70	3.70	3.70	3.70	3.70	3.70

\* Cooling capacity and power input at 100% load are the data at rated compressor operating frequency of rated condition 1.

\* Power input does not include water pump power.

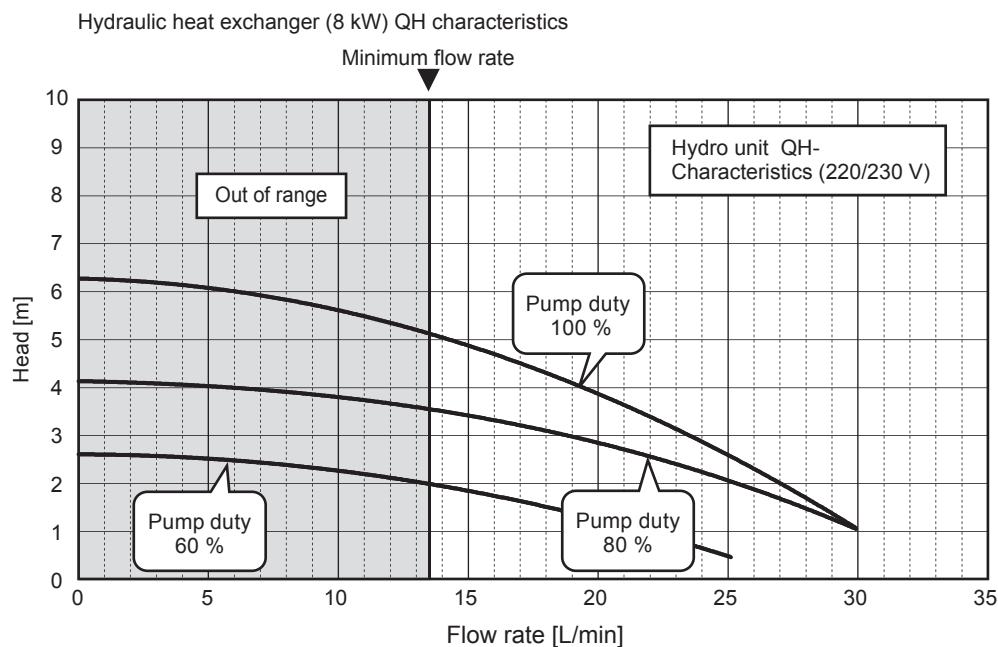
\* Cooling capacity and power input at 100% load are measured in accordance with EN14511.

TO : Outdoor temperature (DB°C) RH85%

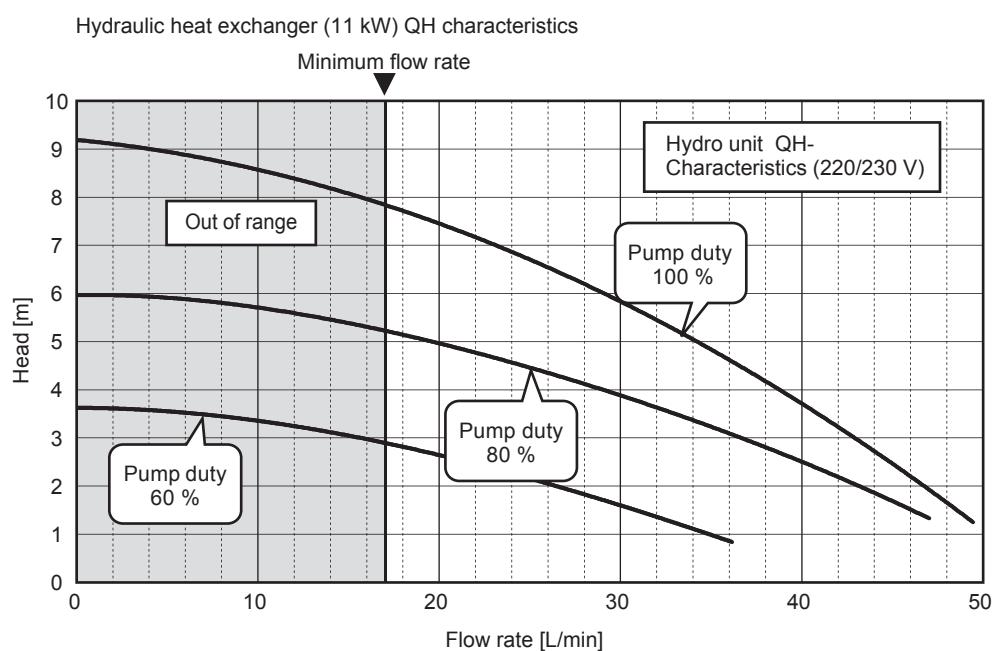
LWT : Leaving water temperature (°C)

## 4-7. Q-H characteristics of hydro unit

### 4-7-1. HWS-P804XWHM3-E, T6-E, T9-E



### 4-7-2. HWS-P1104XWHM3-E, T6-E, T9-E



## 4-8. Options

### Optional parts

No.	Part name	Model name	Application	Remarks
1	External output board	TCB-PCIN3E	Boiler-linked output, Alarm output	Up to two boards (according to applications)
			Defrost signal output, Compressor operation signal output	
2	External input board	TCB-PCMO3E	Cooling/heating thermostat input	Up to two boards (according to applications)
			Forced-stop signal input	

### ▼External output board

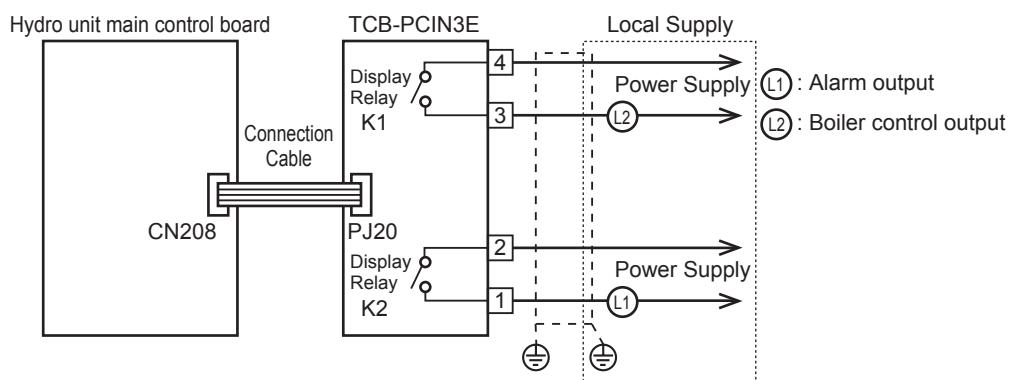
#### Feature

Operation and Error monitoring is possible by using Error output control board "TCB-PCIN3E"

#### Function / Electric wiring diagram

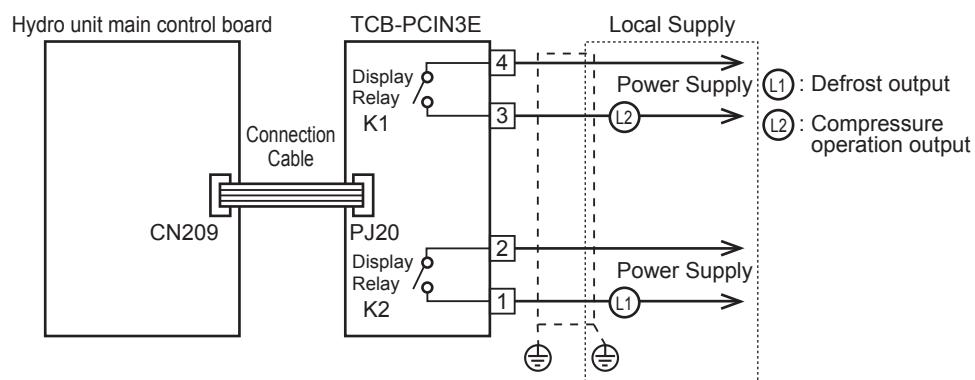
Alarm output : Output enabled when the system is in alarm / fault condition.

Boiler control output : Output enabled when outdoor ambient temperature <-10 °C



Operation output : Display relay is ON with outdoor unit compressor operation.

Defrost output : Display relay is ON when the system in defrost.



#### CAUTION

- Be sure to prepare a non-voltage point for each terminal.
- Display Relay capacity of "ALERM" and "BOILER", "OPERATION" and "DEFROST" Below AC230V 0.5A (COS Ø =100%). when connecting load such as relay coil to "L1,L2" load, insert the noise surge absorber.  
Below DC24V 1A (Non-inductive load). when connecting load such as relay coil to "L1,L2" load, insert the bypass circuit.

## ▼External input board

### Feature

\* "TCB-PCMO3E" is used for the following external master controls.

1. Room thermostat input
2. Emergency shutdown input

Refer to "Function/Electric wiring diagram" for feature of each control because connection is different according to the control.

### Function / Electric wiring diagram

#### Room thermostat input

2-3 : Room thermostat input for cooling mode

1-3 : Room thermostat input for heating mode

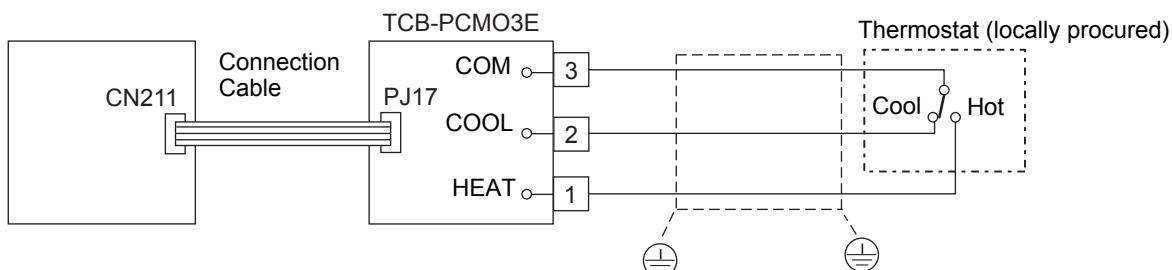
- Output enabled when either heating or cooling mode selected on room thermostat. (locally procured)

- Volt free details :

- Connection details :

Cooling connection :Terminals 3 (COM) and 2 (COOL) on TCB-PCMO3E (See Schematic below)

Heating connection :Terminals 3 (COM) and 1 (HEAT) on TCB-PCMO3E (See Schematic below)



#### Thermostat operation

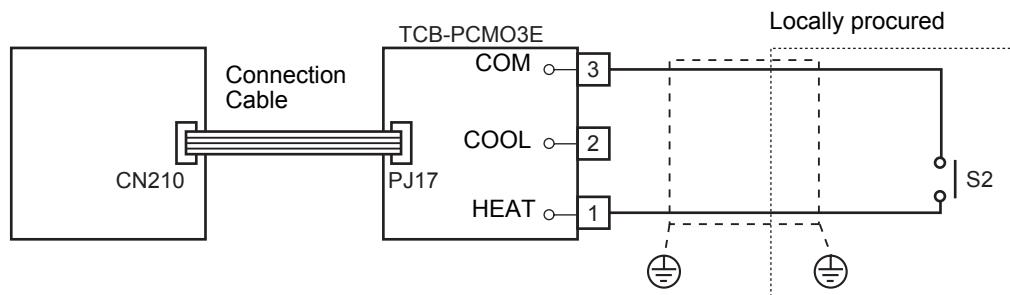
	Cooling		Heating	
	on	off	on	off
2 - 3	open	close	-	-
1 - 3	-	-	close	open

#### Emergency shutdown input

S2 : Emergency stop input

- Non-voltage contacts
- Connection details :

Emergency stop :Terminals 3 (COM) and 1 (HEAT) on TCB-PCMO3E (See Schematic below)



### CAUTION

- Be sure to prepare non voltage continuous point of contact for each terminal.
- Supplementary Insulation must be added to user touched to user touchabel part of switches.

---

## **5. OUTDOOR UNIT**

## 5-1. Specification

### 5-1-1. Outdoor unit specifications

Unit name	Hydro unit	HWS-P804XWHM3-E, P804XWHT6-E, P804XWHT9-E	
	Outdoor unit	HWS-P80	
Heating capacity *1 (kW)	8.0		
Cooling capacity *2 (kW)	6.0		
Variable range of compressor frequency	10 - 70 Hz		
Power source	Single phase 50 Hz 220-230 V		
Operation mode	Heating	Cooling	
Electric characteristic *1 *2	Hydro unit	Current (A)	0.44
		Power (kW)	0.06
		Power factor (%)	59.3
	Outdoor unit	Current (A)	7.57
		Power (kW)	1.62
		Power factor (%)	93.0
	Total	Starting current (A)	8.01
			7.83
Operating noise *1 *2 *4	Hydro unit (dB (A))		27
	Outdoor unit (dB (A))		49
Coefficient of performance *1 *2	4.76		3.66
Hydro unit	Outer dimension	Height (mm)	925
		Width (mm)	525
		Depth (mm)	355
	Net weight (kg)	49	
	Color	Silky shade (Munsell 1Y8.5/0.5)	
	Remote controller	Height (mm)	120
		Width (mm)	120
		Depth (mm)	16
	Circulating pump	Motor output (W)	125 (MAX)
		Flow rate (L/min)	22.9
		Type	Non-self-suction centrifugal pump
	Heat exchanger	Plate-type heat exchange	
Outdoor unit	Outer dimension	Height (mm)	1340
		Width (mm)	900
		Depth (mm)	320
	Net weight (kg)	92	
	Color	Silky shade (Munsell 1Y8.5/0.5)	
	Compressor	Motor output (W)	2500
		Type	Twin rotary type with DC-inverter variable speed control
		Model	DA422A3F-26M
	Fan motor	Standard air capacity (m³/min)	103.0
		Motor output (W)	100 x 2
Refrigerant piping	Connection method	Flare connection	
	Hydro unit	Liquid	Ø9.52
		Gas	Ø15.9
	Outdoor unit	Liquid	Ø9.52
		Gas	Ø15.9
	Maximum length (m)	30	
	Maximum chargeless length (m)	30	
	Maximum height difference (m)	±30	
	Minimum length (m)	5	
	Refrigerant	R410A	
Water piping	Charge amount (kg)	2.7	
	Pipe diameter	R1 1/4	
	Maximum length (m)	None (Need the flow rate 13ℓ/min or more)	
	Maximum height difference (m)	±7	
Operating temperature range	Maximum working water pressure (kPa)	300	
	Hydro unit (°C)	5-32	
	Outdoor unit (°C)	-20-43	
Operating humidity range	Hydro unit (%)	15-85	
	Outdoor unit (%)	15-100	
Wiring connection	Power wiring	3 wires: including earth wire (Outdoor unit)	
	Connecting line	4 wires: including earth wire	

\*1 Heating performance measurement conditions: outside air temperature 7 °C, water supply temperature 30 °C, outlet temperature 35 °C, refrigerant piping length 7.5 m (no height difference).

\*2 Cooling performance measurement conditions: outside air temperature 35 °C, water supply temperature 12 °C, outlet temperature 7 °C, refrigerant piping length 7.5 m (no height difference).

\*3 • The remote controller should be shipped with the hydro unit.

• Use two 1.5-meter wires to connect the hydro unit with the remote controller.

\*4 The outdoor unit operating noise is measured at the point of 1 m away from the unit back surface centre and 1.5 m high from the ground. The hydro unit operating noise is measured at the point of 1 m away from the unit front surface centre.

The value of the operating noise varies depending on room structure where the unit is installed.

\*5 Do not leave the hydro unit at 5 °C or below.

\*6 Check the water piping for leakage under the maximum operating pressure.

Unit name	Hydro unit	HWS-P1104XWHM3-E, P1104XWHT6-E, P1104XWHT9-E			
	Outdoor unit	HWS-1104H-E			
Heating capacity *1 (kW)	11.2				
Cooling capacity *2 (kW)	10.0				
Variable range of compressor frequency	10 - 60 Hz				
Power source	Single phase 50 Hz 220-230 V				
Operation mode	Heating Cooling				
Electric characteristic *1 *2	Hydro unit	Current (A)	0.66		
		Power (kW)	0.09		
		Power factor (%)	59.2		
	Outdoor unit	Current (A)	10.33		
		Power (kW)	2.21		
		Power factor (%)	93		
	Total	Starting current (A)	10.99		
			15.65		
Operating noise *1 *2 *4	Hydro unit (dB (A))	29			
	Outdoor unit (dB (A))	49			
Coefficient of performance *1 *2		4.88	3.00		
Hydro unit	Outer dimension	Height (mm)	925		
		Width (mm)	525		
		Depth (mm)	355		
	Net weight (kg)	52			
	Color	Silky shade (Munsell 1Y8.5/0.5)			
	Remote controller Outer dimension *3	Height (mm)	120		
		Width (mm)	120		
		Depth (mm)	16		
	Circulating pump	Motor output (W)	190 (MAX)		
		Flow rate (L/min)	32.1 28.9		
		Type	Non-self-suction centrifugal pump		
	Heat exchanger	Plate-type heat exchange			
Outdoor unit	Outer dimension	Height (mm)	1340		
		Width (mm)	900		
		Depth (mm)	320		
	Net weight (kg)	92			
	Color	Silky shade (Munsell 1Y8.5/0.5)			
	Compressor	Motor output (W)	2500		
		Type	Twin rotary type with DC-inverter variable speed control		
		Model	DA422A3F-26M		
	Fan motor	Standard air capacity (m³/min)	103.0		
		Motor output (W)	100 × 2		
	Connection method	Flare connection			
Refrigerant piping	Hydro unit	Liquid	Ø9.52		
		Gas	Ø15.9		
	Outdoor unit	Liquid	Ø9.52		
		Gas	Ø15.9		
	Maximum length (m)	30			
	Maximum chargeless length (m)	30			
	Maximum height difference (m)	±30			
	Minimum length (m)	5			
Refrigerant	Refrigerant name	R410A			
	Charge amount (kg)	2.7			
Water piping	Pipe diameter	R1 1/4			
	Maximum length (m)	None (Need the flow rate 17.5ℓ/min or more)			
	Maximum height difference (m)	±7			
	Maximum working water pressure (kPa)	300			
Operating temperature range	Hydro unit (°C)	5-32			
	Outdoor unit (°C)	-20-43			
Operating humidity range	Hydro unit (%)	15-85			
	Outdoor unit (%)	15-100			
Wiring connection	Power wiring	3 wires: including earth wire (Outdoor unit)			
	Connecting line	4 wires: including earth wire			

\*1 Heating performance measurement conditions: outside air temperature 7 °C, water supply temperature 30 °C, outlet temperature 35 °C, refrigerant piping length 7.5 m (no height difference).

\*2 Cooling performance measurement conditions: outside air temperature 35 °C, water supply temperature 12 °C, outlet temperature 7 °C, refrigerant piping length 7.5 m (no height difference).

\*3 • The remote controller should be shipped with the hydro unit.

• Use two 1.5-meter wires to connect the hydro unit with the remote controller.

\*4 The outdoor unit operating noise is measured at the point of 1 m away from the unit back surface centre and 1.5 m high from the ground. The hydro unit operating noise is measured at the point of 1 m away from the unit front surface centre.

The value of the operating noise varies depending on room structure where the unit is installed.

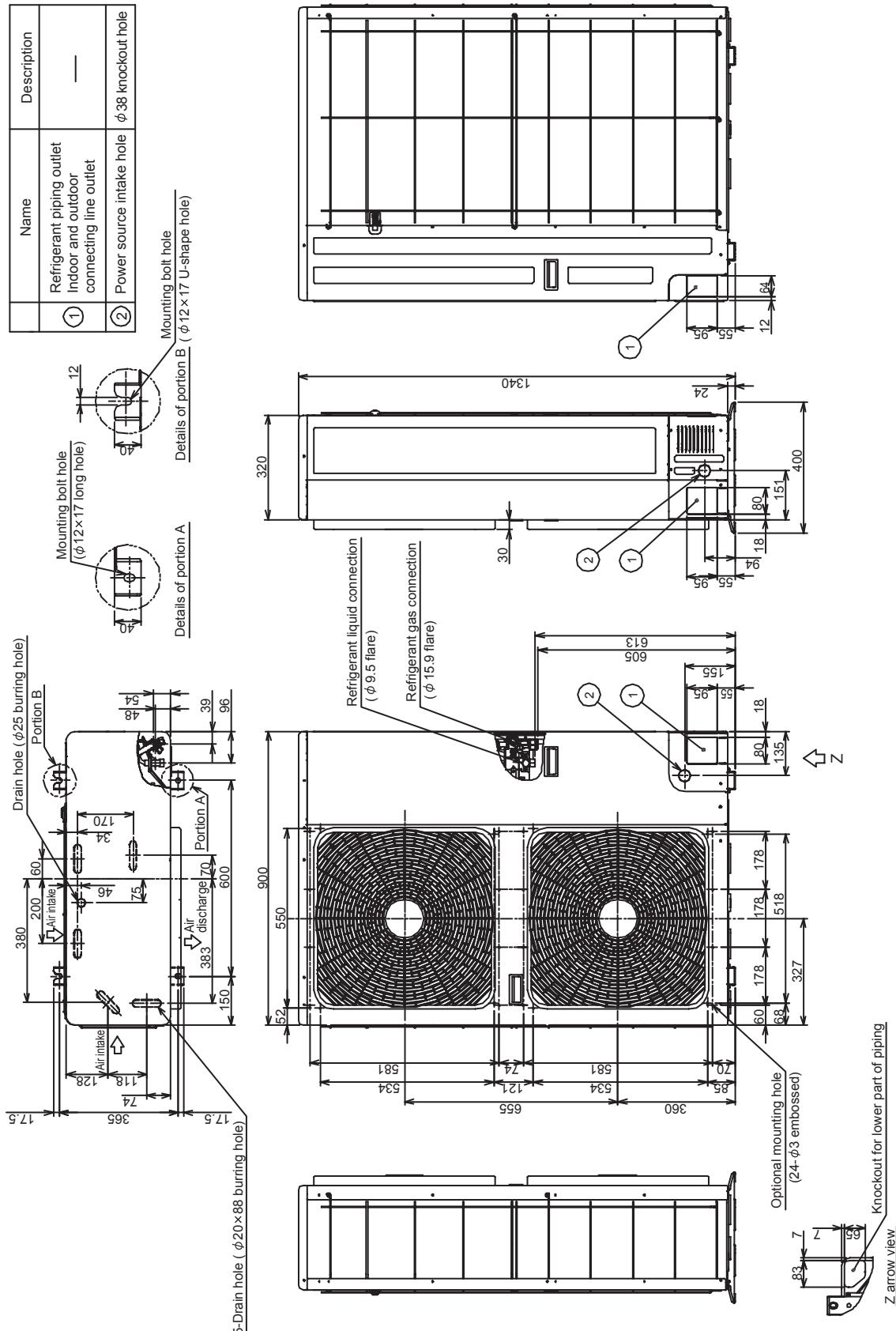
\*5 Do not leave the hydro unit at 5 °C or below.

\*6 Check the water piping for leakage under the maximum operating pressure.

## 5-2. Dimension

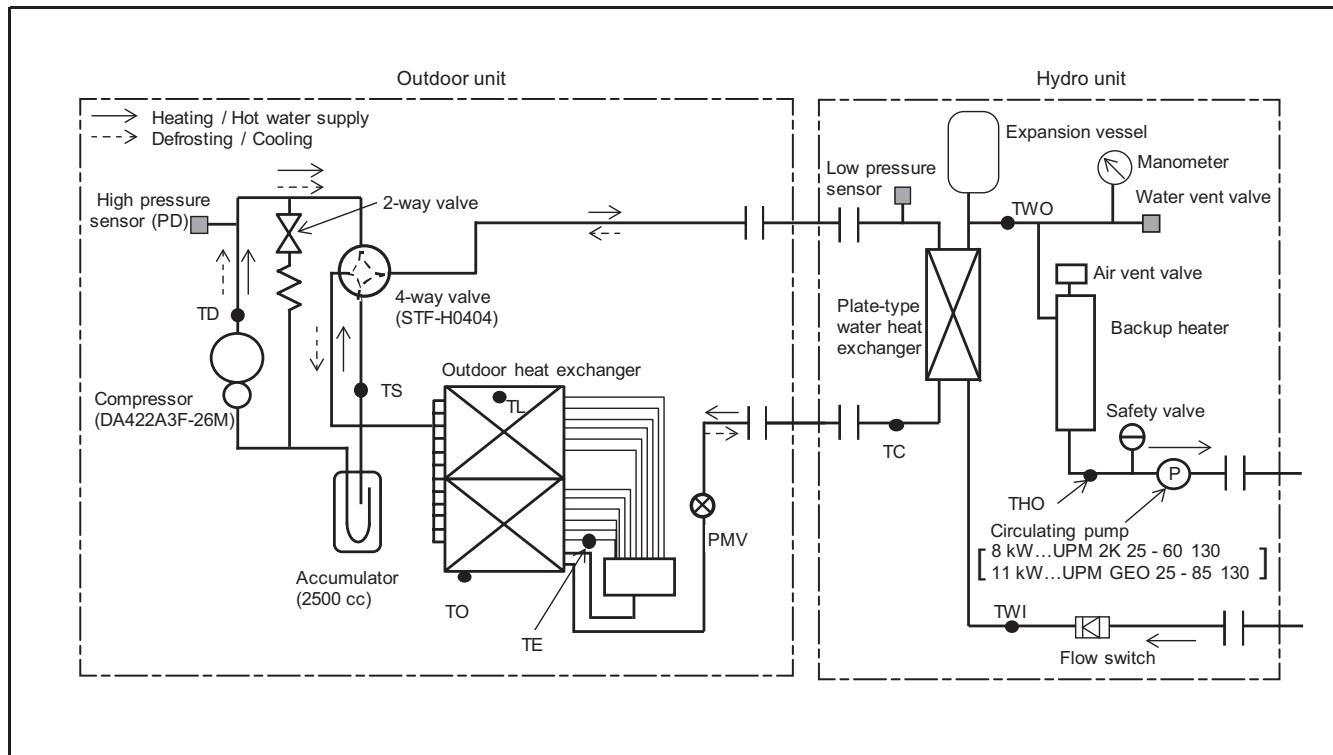
### 5-2-1. HWS-P804HR-E, P1104HR-E

Unit: mm



## 5-3. Piping Diagram

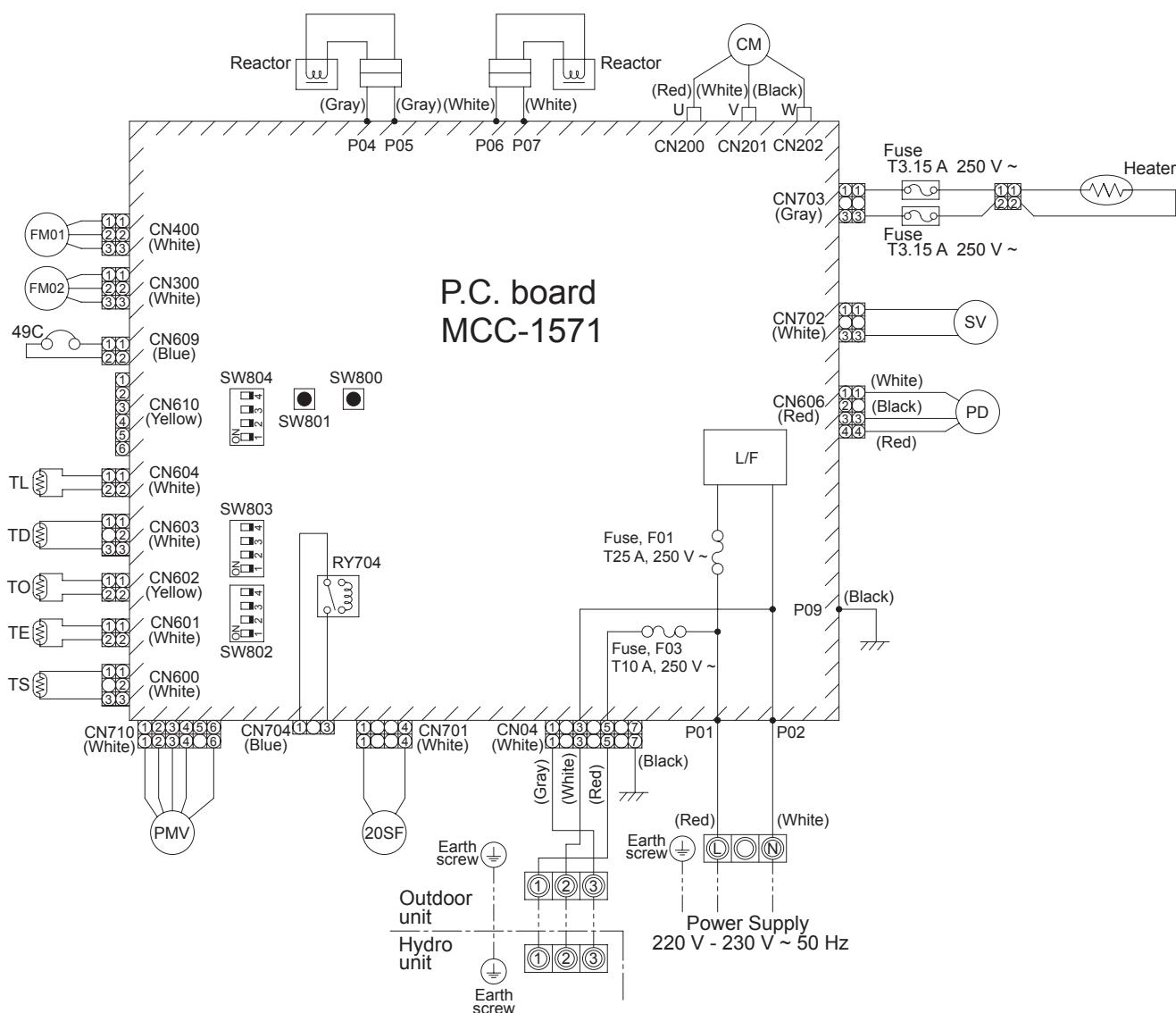
HWS-P804XWHM3-E, HWS-P804XWHT6-E, HWS-P804XWHT9-E,  
 HWS-P1104XWHM3-E, HWS-P1104XWHT6-E, HWS-P1104XWHT9-E /  
 HWS-P804HR-E, HWS-P1104HR-E



## 5-4. Wiring Diagram

### 5-4-1. Outdoor Unit (Single phase type)

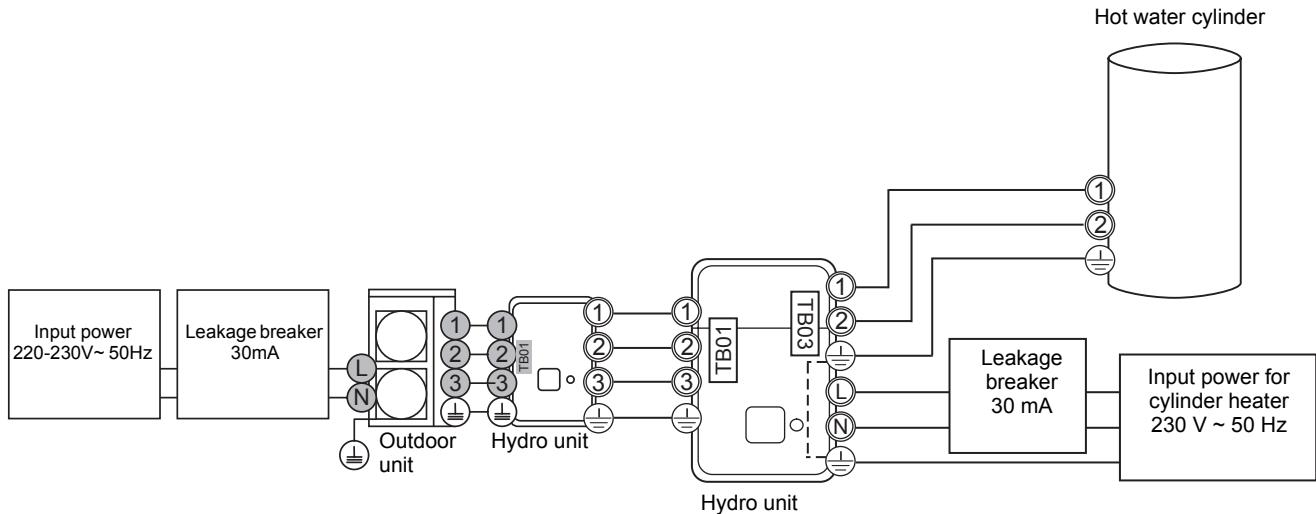
▼HWS-P804HR-E, HWS-P1104HR-E



Symbol	Part name
CM	Compressor
FM01	Fan motor
FM02	
PMV	Pulse motor valve
TD	Pipe temperature sensor(Discharge)
TS	Pipe temperature sensor(Suction)
TE	Heat exchanger sensor 1
TL	Heat exchanger sensor 2
TO	Outside temperature sensor
20SF	4-way valve coil
SV	2-way valve coil
PD	Pressure sensor
49C	Compressor case thermostat
RY	Relay
L/F	Line Filter

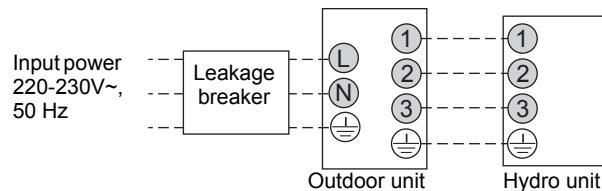
- ① indicates the terminal block. Alphanumeric characters in the cycle indicate the terminal No.
- The two-dot chain line indicates the wiring procured locally.
- ▨ indicates the P.C. board.
- For the hydro unit circuit, refer to the wiring diagram of the hydro unit.

## 5-4-2. Power line



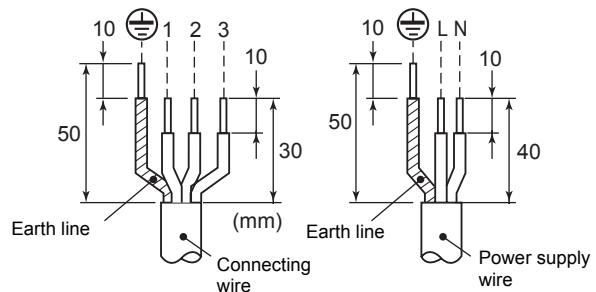
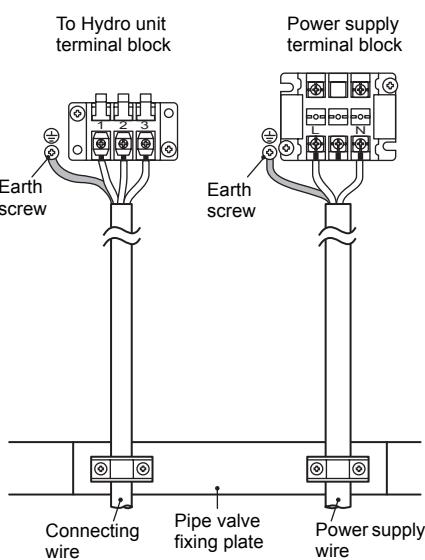
## 5-4-3. Wiring between Hydro Unit and Outdoor Unit

▼ HWS-P804HR-E, HWS-P1104HR-E



▼ HWS-P804HR-E  
HWS-P1104HR-E

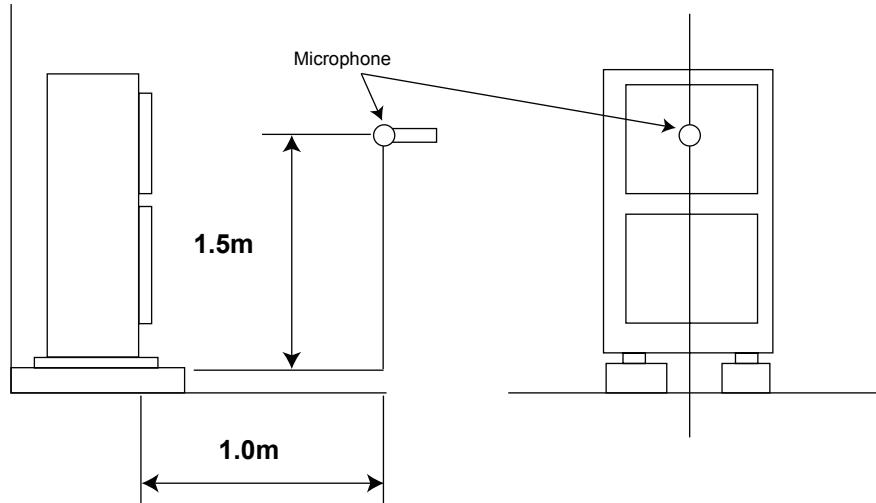
### Stripping length power cord and connecting wire



## 5-5. Sound Data

### 5-5-1. Sound pressure level measurement

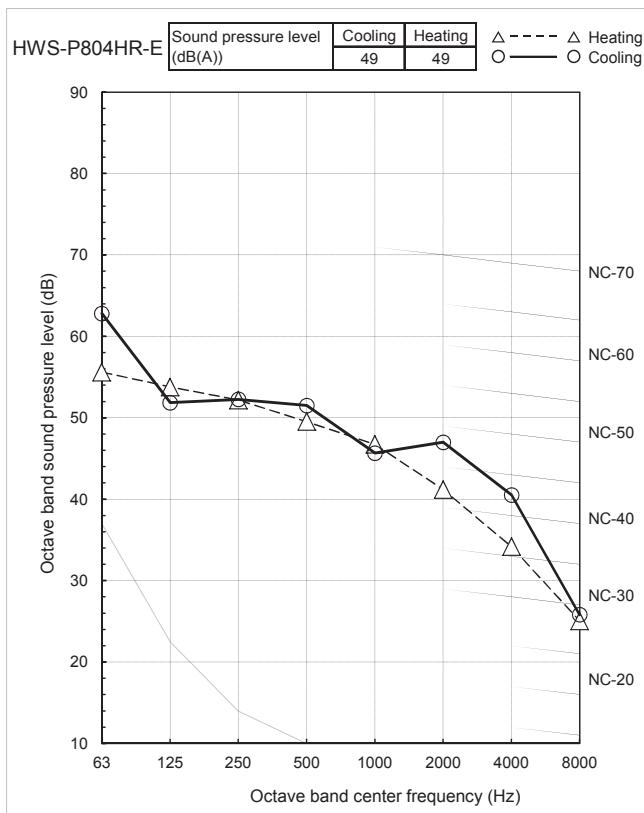
▼HWS-P804HR-E, HWS-P1104HR-E



## 5-5-2. Sound Characteristics (NC Curve)

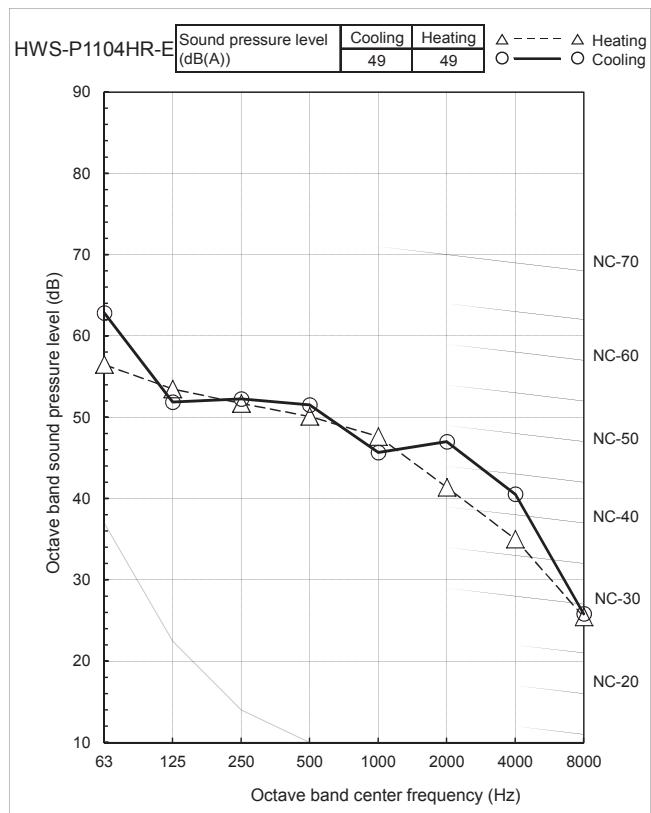
### ▼HWS-P804HR-E

(8kW,230V ~50Hz)



### ▼HWS-P1104HR-E

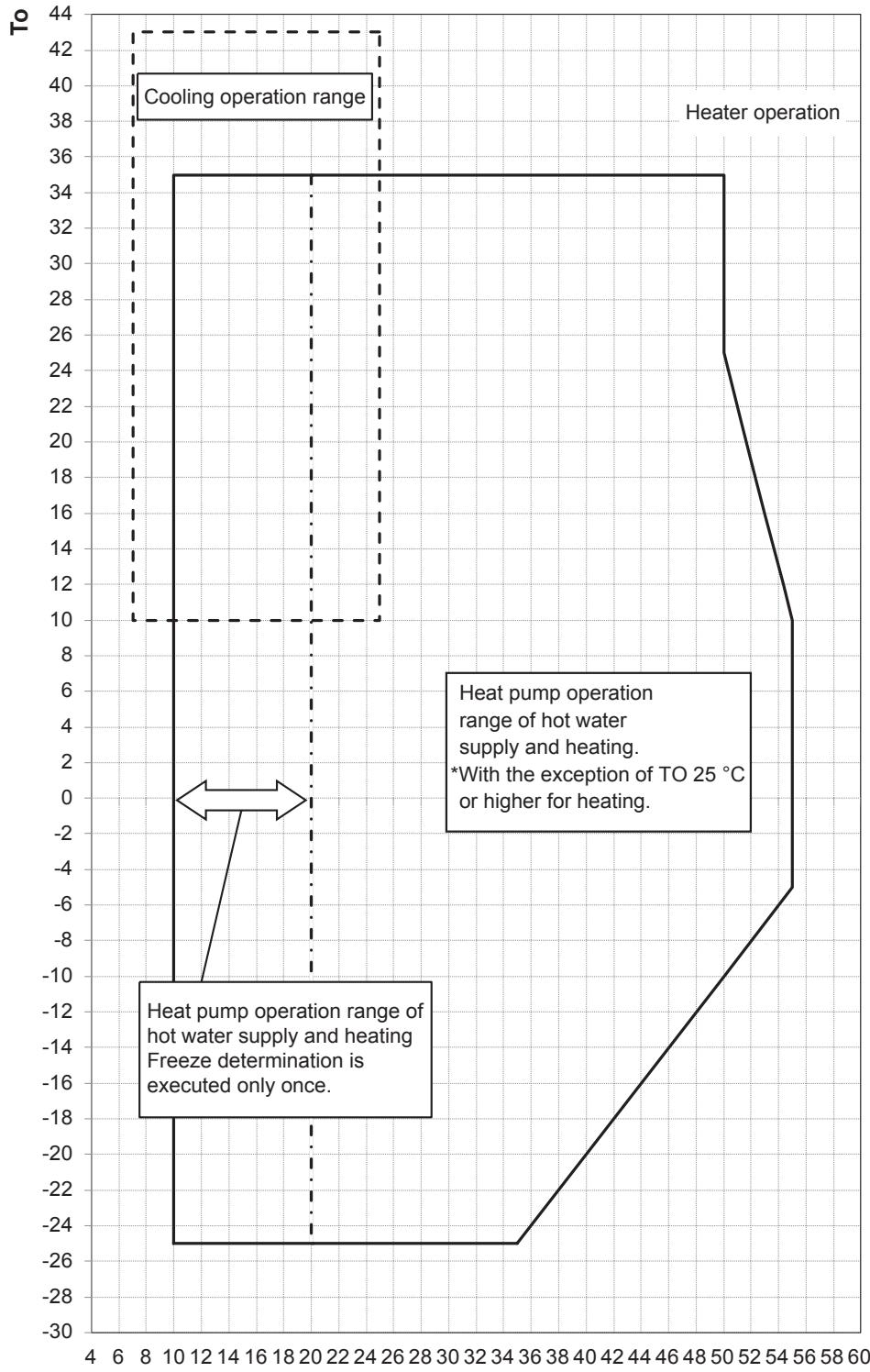
(11kW,230V ~50Hz)



## 5-6. Operation Range

**8 kW, 11 kW class**

**Cooling operation**



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## **6. HOT WATER CYLINDER**

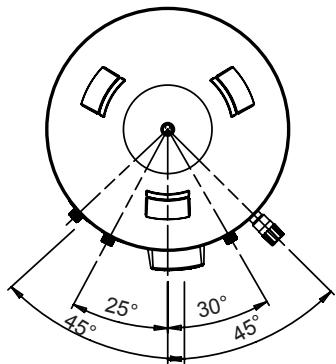
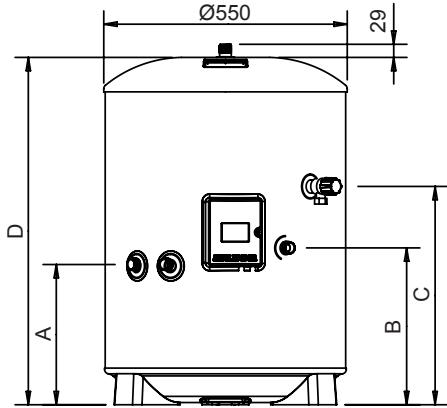
## 6-1. Specification

### Hot water cylinder specifications

Hot water cylinder			HWS-1501 CSHM3-E	HWS-2101 CSHM3-E	HWS-3001 CSHM3-E
Water volume		litres	150	210	300
Appearance	Color		White		
	Material		Plastic coated steel		
Cylinder	Material		Stainless steel		
Insulation	Material		Flame retardant expanded polyurethane foam		
	Thickness	mm	50		
Heat exchanger	Material		Stainless steel tube		
Immersion heater	Type		Single straight, Alloy 825 sheathed		
	Capacity	kW	2.75		
Outer dimension	Height	mm	1,090	1,474	2,040
	Diameter	mm	550		
Unit weight		kg	31	41	59
Packing dimension	Height	mm	1,213	1,781	2,118
	Width	mm	576		
	Depth	mm	640		
Total weight	unit and packing	kg	37	44	59
Maximum water temperature		°C	75		
Maximum water pressure		bar	10		
Water pipe Hydro-cylinder	Inlet	mm	22		
	Outlet	mm	22		
Water pipe Domestic water-cylinder	Inlet	mm	22		
	Outlet	mm	22		
Standard accessories	Expansion Vessel	litres	Not included		
	Installation manual				
	Safety group NF7bar				
	Compression nuts and olives				
	Cylinder heater key spanner				

## 6-2. Dimension

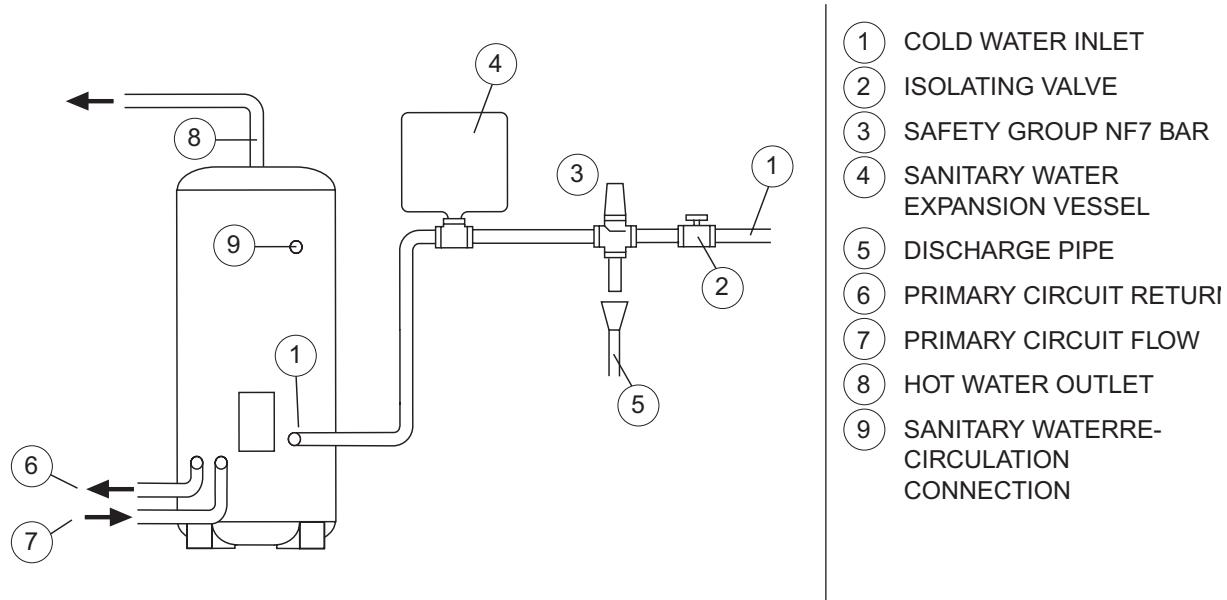
### General dimensions and performance



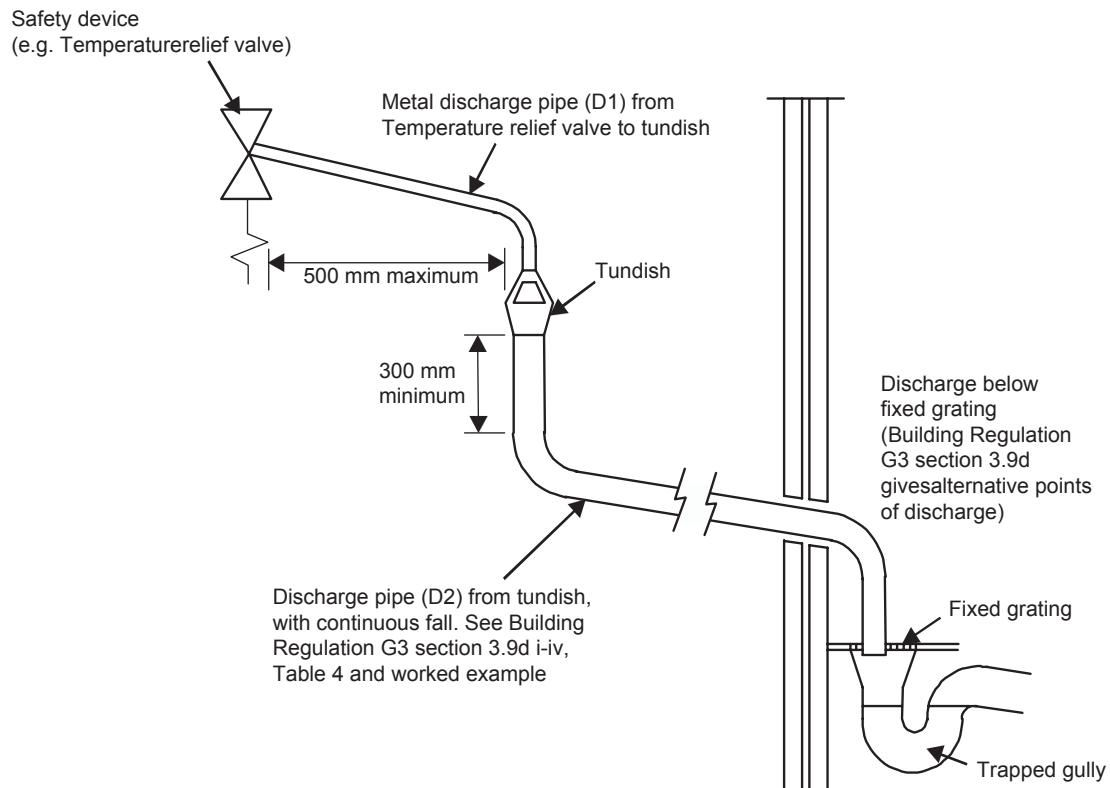
MODEL	HWS-1501CSHM3-E	HWS-2101CSHM3-E	HWS-3001CSHM3-E
NOMINAL CAPACITY (litres)	150	210	300
A (mm)	315	315	315
B (mm)	354	354	354
C (mm)	800	1184	1474
D (mm)	1090	1474	2040
SURFACE AREA (sq.m)	0.65	0.79	0.79
HOT WATER OUTPUT AT 60°C (litres)	102	163	254
MIXED HOT WATER OUTPUT AT 40°C (litres)	243	329.5	476
HEATLOSS (kWh/24h)	1.45	1.91	2.52
HEATING TIME 15°C TO 60°C - USING ELECTRIC CYLINDER HEATER ONLY (mins)	123	188	262
CAPACITY HEATED USING ELECTRIC CYLINDER HEATER ONLY (litres)	102	163	254

## 6-3. Piping Diagram

▼HWS-1501CSHM3-E, HWS-2101CSHM3-E, HWS-3001CAHM3-E

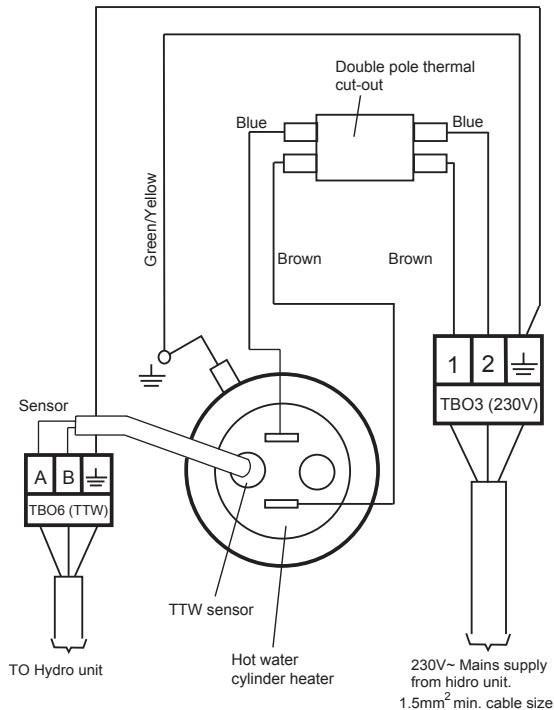


**Typical discharge pipe arrangement  
(extract from Building Regulation G3 Guidance section 3.9)**

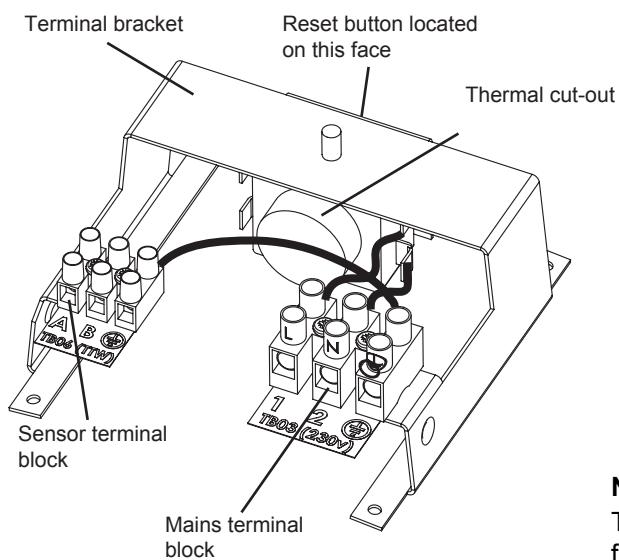


## 6-4. Wiring Diagram

### ▼HWS-1501CSHM3-E, HWS-2101CSHM3-E, HWS-3001CSHM3-E Electrical Connections (Schematic)



### Thermal cut-out



**NOTE:**

The cover and element assembly have been removed from this view for clarity

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## **Air to Water Heat Pump Engineering Data Book**

**September 2014 First Edition**

**Model name:**

HWS-P804HR-E HWS-P804XWHM3-E  
HWS-P1104HR-E HWS-P804XWHT6-E  
HWS-P804XWHT9-E  
HWS-P1104XWHM3-E  
HWS-P1104XWHT6-E  
HWS-P1104XWHT9-E

**TOSHIBA CARRIER CORPORATION**