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1.1 Combination table

MODELS		POWER INVERTER		ZUBADAN			POWER INVERTER											ZUBADAN				
TYPE		PACKAGE					SPLIT															
		Heat pump																				
REFRIGERANT		R410A																				
TYPE	Model name	PUHZ-W50VHA	PUHZ-W85VHA2	PUHZ-HW112YHA2	PUHZ-HW140VHA2	PUHZ-HW140YHA2	PUHZ-RP35VHA4	PUHZ-RP50VHA4	PUHZ-RP60VHA4	PUHZ-RP71VHA4	PUHZ-RP100VKA	PUHZ-RP100YKA	PUHZ-RP125VKA	PUHZ-RP125YKA	PUHZ-RP140VKA	PUHZ-RP140YKA	PUHZ-RP200YKA	PUHZ-RP250YKA	PUHZ-HRP71VHA2	PUHZ-HRP100VHA2	PUHZ-HRP100YHA2	PUHZ-HRP125YHA2	PUHZ-HRP200YKA
CYLINDER UNIT	EHST20C-VM6HA						●	●	●	●	●	●	●	●	●	●			●	●	●	●	
	EHST20C-YM9HA						●	●	●	●	●	●	●	●	●	●			●	●	●	●	
	EHST20C-VM6A						●	●	●	●	●	●	●	●	●	●			●	●	●	●	
	EHST20C-YM9A						●	●	●	●	●	●	●	●	●	●			●	●	●	●	
	EHST20C-VM6SA						●	●	●	●	●	●	●	●	●	●			●	●	●	●	
	EHPT20X-VM2HA	●	●	●	●	●																	
	EHPT20X-VM6HA	●	●	●	●	●																	
	EHPT20X-YM9HA	●	●	●	●	●																	
	EHPT20X-VM6A	●	●	●	●	●																	
	EHPT20X-YM9A	●	●	●	●	●																	
HYDRO BOX	EHSC-VM6A						●	●	●	●	●	●	●	●	●	●			●	●	●	●	
	EHSC-YM9A						●	●	●	●	●	●	●	●	●	●			●	●	●	●	
	EHPX-VM2A	●	●	●	●	●																	

● : Combination is available.

Blank: Combination is NOT available.

1.2 Cylinder unit

* If the water flow rate exceeds maximum, the flow speed will be greater than 1.5 m/s, which could corrode the pipes.
** If the water flow rate is less than minimum, the flow switch will be activated.
*** The environment must be frost-free.

Model name				EHPT20X-VM2HA	EHPT20X-VM6HA	EHPT20X-YM9HA	EHPT20X-VM6A	EHPT20X-YM9A
		Heat exchanger						
		Domestic hotwater tank		X	X	X	X	X
		Booster heater (Phase)		X (1Phase)	X (1Phase)	X (3Phase)	X (1Phase)	X (3Phase)
		Immersion heater		X	X	X		
		Solar circuit						
Dimensions	Without package	Height	mm	1600	1600	1600	1600	1600
		Width	mm	595	595	595	595	595
		Depth	mm	680	680	680	680	680
	With package	Height	mm	1850	1850	1850	1850	1850
		Width	mm	660	660	660	660	660
		Depth	mm	800	800	800	800	800
Casing	Munsell		-	1Y 9.2/0.2	1Y 9.2/0.2	1Y 9.2/0.2	1Y 9.2/0.2	1Y 9.2/0.2
	RAL code		-	RAL 9001	RAL 9001	RAL 9001	RAL 9001	RAL 9001
	Material		-	Pre-coated metal	Pre-coated metal	Pre-coated metal	Pre-coated metal	Pre-coated metal
Product weight (empty)			kg	119	119	119	118	118
Product weight (full)			kg	332	332	332	331	331
Gross weight			kg	136	136	136	135	135
Type of Installation			-	Floor standing	Floor standing	Floor standing	Floor standing	Floor standing
Power supply			Ph	~/N	~/N	~/N	~/N	~/N
			V	230	230	230	230	230
			Hz	50	50	50	50	50
Heater	Booster heater	Power supply	Ph	~/N	~/N	3~	~/N	3~
			V	230	230	400	230	400
			Hz	50	50	50	50	50
		Capacity	kW	2	6 (2/4/6)	9 (3/6/9)	6 (2/4/6)	9 (3/6/9)
		Heater step	-	1	3	3	3	3
		Current	A	9	26	13	26	13
		Breaker	A	16	32	16	32	16
	Immersion heater	Power supply	Ph	~/N	~/N	~/N	-	-
			V	230	230	230	-	-
			Hz	50	50	50	-	-
		Capacity	kW	3	3	3	-	-
		Current	A	13	13	13	-	-
		Breaker	A	16	16	16	-	-
Water circulation pump (Primary circuit)	Input	Speed Ⅰ	W	95	95	95	95	95
		Speed Ⅱ	W	125	125	125	125	125
		Speed Ⅲ	W	149	149	149	149	149
	Current	Speed Ⅰ	A	0.46	0.46	0.46	0.46	0.46
		Speed Ⅱ	A	0.58	0.58	0.58	0.58	0.58
		Speed Ⅲ	A	0.65	0.65	0.65	0.65	0.65
	Head difference	Max.	m	7.1	7.1	7.1	7.1	7.1
		20L/min	m	6.3	6.3	6.3	6.3	6.3
	Performance curve		-	Refer to the following page				
Flowrate	Primary circuit	Max. *	L/min	27.7	27.7	27.7	27.7	27.7
		Min. **	L/min	7.1	7.1	7.1	7.1	7.1
Heat exchanger	Refrigerant - Primary circuit water		-	-	-	-	-	-
	Primary circuit water - Domestic hot water		-	Coil in tank	Coil in tank	Coil in tank	Coil in tank	Coil in tank
		Coil: Surface area	m^2	1.1*2	1.1*2	1.1*2	1.1*2	1.1*2
		Coil: Length	m	14*2	14*2	14*2	14*2	14*2
		Coil: Capacity	L	6.8*2	6.8*2	6.8*2	6.8*2	6.8*2
		Coil: Material	-	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Domestic hot water tank	Volume		L	200	200	200	200	200
	Material		-	Duplex 2304stainless steel (EN10088)	Duplex 2304stainless steel (EN10088)	Duplex 2304stainless steel (EN10088)	Duplex 2304stainless steel (EN10088)	Duplex 2304stainless steel (EN10088)
Expansion vessel (Primary circuit)	Volume		L	12	12	12	12	12
	Charge pressure		MPa	0.1	0.1	0.1	0.1	0.1
Safety device	Primary circuit	Control thermistor	°C	1~80	1~80	1~80	1~80	1~80
		Pressure relief valve	MPa	0.3	0.3	0.3	0.3	0.3
		Flow switch (Min. flow)	L/min	5.5±1.0	5.5±1.0	5.5±1.0	5.5±1.0	5.5±1.0
		BH manual reset thermostat	°C	90	90	90	90	90
		BH thermal Cut Off	°C	121	121	121	121	121
	DHW tank	Control thermistor	°C	75	75	75	75	75
		IH manual reset thermostat	°C	85	85	85	85	85
		Temperature & pressure relief valve	°C	90	-	-	-	-
			MPa	0.7	1.0	1.0	1.0	1.0
Connections	Water	Primary circuit	mm	28	28	28	28	28
		DHW circuit	mm	22	22	22	22	22
		Solar circuit	mm	-	-	-	-	-
	Refrigerant (R410A)	Gas	mm	-	-	-	-	-
		Liquid	mm	-	-	-	-	-
Operating ambient condition ***			℃	0~35	0~35	0~35	0~35	0~35
Operating range	Heating	Room temperature	℃	10~30	10~30	10~30	10~30	10~30
		Flow temperature	℃	25~60	25~60	25~60	25~60	25~60
	DHW		℃	40~60	40~60	40~60	40~60	40~60
	Legionella prevention		℃	Max 70	Max 70	Max 70	Max 70	Max 70
Sound level (SPL)			dB(A)	28	28	28	28	28

* If the water flow rate exceeds maximum, the flow speed will be greater than 1.5 m/s, which could corrode the pipes.
** If the water flow rate is less than minimum, the flow switch will be activated.
*** The environment must be frost-free.

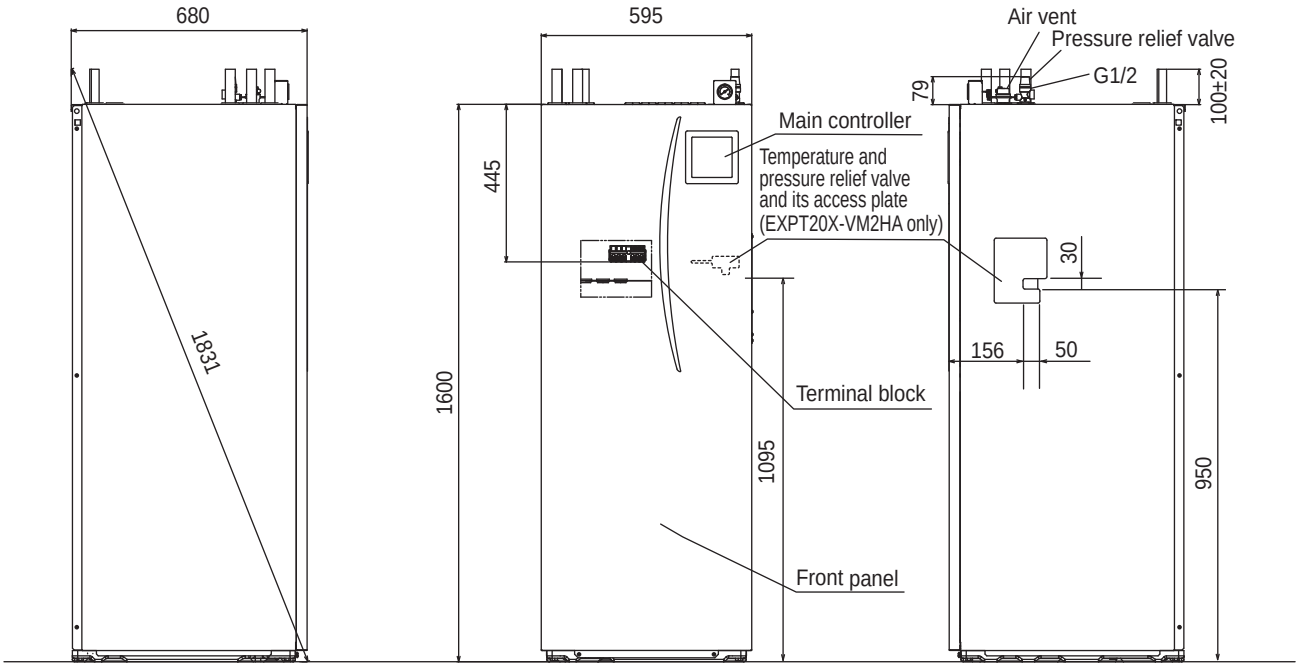
Model name				EHST20C-VM6HA	EHST20C-YM9HA	EHST20C-VM6A	EHST20C-YM9A	EHST20C-VM6SA
		Heat exchanger		X	X	X	X	X
		Domestic hotwater tank		X	X	X	X	X
		Booster heater (Phase)		X (1Phase)	X (3Phase)	X (1Phase)	X (3Phase)	X (1Phase)
		Immersion heater		X	X			
		Solar circuit						X
Dimensions	Without package	Height	mm	1600	1600	1600	1600	1600
		Width	mm	595	595	595	595	595
		Depth	mm	680	680	680	680	680
	With package	Height	mm	1850	1850	1850	1850	1850
		Width	mm	660	660	660	660	660
		Depth	mm	800	800	800	800	800
Casing	Munsell		-	1Y 9.2/0.2	1Y 9.2/0.2	1Y 9.2/0.2	1Y 9.2/0.2	1Y 9.2/0.2
	RAL code		-	RAL 9001	RAL 9001	RAL 9001	RAL 9001	RAL 9001
	Material		-	Pre-coated metal	Pre-coated metal	Pre-coated metal	Pre-coated metal	Pre-coated metal
Product weight (empty)			kg	131	131	130	130	131
Product weight (full)			kg	346	346	345	345	346
Gross weight			kg	148	148	147	147	148
Type of Installation			-	Floor standing	Floor standing	Floor standing	Floor standing	Floor standing
Power supply			Ph	~/N	~/N	~/N	~/N	~/N
			V	230	230	230	230	230
			Hz	50	50	50	50	50
Heater	Booster heater	Power supply	Ph	~/N	3~	~/N	3~	~/N
			V	230	400	230	400	230
			Hz	50	50	50	50	50
		Capacity	kW	6 (2/4/6)	9 (3/6/9)	6 (2/4/6)	9 (3/6/9)	6 (2/4/6)
		Heater step	-	3	3	3	3	3
		Current	A	26	13	26	13	26
		Breaker	A	32	16	32	16	32
	Immersion heater	Power supply	Ph	~/N	~/N	-	-	-
			V	230	230	-	-	-
			Hz	50	50	-	-	-
		Capacity	kW	3	3	-	-	-
		Current	A	13	13	-	-	-
		Breaker	A	16	16	-	-	-
Water circulation pump (Primary circuit)	Input	Speed Ⅰ	W	95	95	95	95	95
		Speed Ⅱ	W	125	125	125	125	125
		Speed Ⅲ	W	149	149	149	149	149
	Current	Speed Ⅰ	A	0.46	0.46	0.46	0.46	0.46
		Speed Ⅱ	A	0.58	0.58	0.58	0.58	0.58
		Speed Ⅲ	A	0.65	0.65	0.65	0.65	0.65
	Head difference	Max.	m	7.1	7.1	7.1	7.1	7.1
		20L/min	m	6.3	6.3	6.3	6.3	6.3
	Performance curve		-	Refer to the following page				
Flowrate	Primary circuit	Max. *	L/min	27.7	27.7	27.7	27.7	27.7
		Min. **	L/min	7.1	7.1	7.1	7.1	7.1
Heat exchanger	Refrigerant - Primary circuit water		-	Plate	Plate	Plate	Plate	Plate
	Primary circuit water - Domestic hot water		-	Coil in tank	Coil in tank	Coil in tank	Coil in tank	Coil in tank
		Coil: Surface area	m^2	1.1*2	1.1*2	1.1*2	1.1*2	1.1+1.1 (Solar)
		Coil: Length	m	14*2	14*2	14*2	14*2	14+14 (Solar)
		Coil: Capacity	L	6.8*2	6.8*2	6.8*2	6.8*2	6.8+6.8 (Solar)
		Coil: Material	-	Stainless steel	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Domestic hot water tank	Volume		L	200	200	200	200	200
	Material		-	Duplex 2304stainless steel (EN10088)	Duplex 2304stainless steel (EN10088)	Duplex 2304stainless steel (EN10088)	Duplex 2304stainless steel (EN10088)	Duplex 2304stainless steel (EN10088)
Expansion vessel (Primary circuit)	Volume		L	12	12	12	12	12
	Charge pressure		MPa	0.1	0.1	0.1	0.1	0.1
Safety device	Primary circuit	Control thermistor	℃	1~80	1~80	1~80	1~80	1~80
		Pressure relief valve	MPa	0.3	0.3	0.3	0.3	0.3
		Flow switch (Min. flow)	L/min	5.5±1.0	5.5±1.0	5.5±1.0	5.5±1.0	5.5±1.0
		BH manual reset thermostat	℃	90	90	90	90	90
		BH thermal Cut Off	℃	121	121	121	121	121
	DHW tank	Control thermistor	℃	75	75	75	75	75
		IH manual reset thermostat	℃	85	85	85	85	85
		Temperature & pressure relief valve	℃	-	-	-	-	-
			MPa	1.0	1.0	1.0	1.0	1.0
Connections	Water	Primary circuit	mm	28	28	28	28	28
		DHW circuit	mm	22	22	22	22	22
		Solar circuit	mm	-	-	-	-	22
	Refrigerant (R410A)	Gas	mm	15.88	15.88	15.88	15.88	15.88
		Liquid	mm	9.52	9.52	9.52	9.52	9.52
Operating ambient condition ***			℃	0~35	0~35	0~35	0~35	0~35
Operating range	Heating	Room temperature	℃	10~30	10~30	10~30	10~30	10~30
		Flow temperature	℃	25~60	25~60	25~60	25~60	25~60
	DHW		℃	40~60	40~60	40~60	40~60	40~60
	Legionella prevention		℃	Max 70	Max 70	Max 70	Max 70	Max 70
Sound level (SPL)			dB(A)	28	28	28	28	28

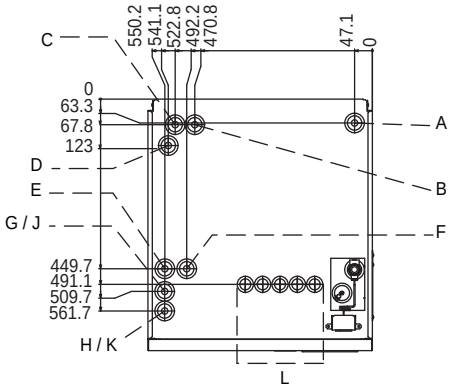
1.3 Hydrobox

* If the water flow rate exceeds maximum, the flow speed will be greater than 1.5 m/s, which could corrode the pipes.
** If the water flow rate is less than minimum, the flow switch will be activated.
*** The environment must be frost-free.

Model name				EHPX-VM2A	EHSC-VM6A	EHSC-YM9A
		Heat exchanger			X	X
		Domestic hotwater tank				
		Booster heater (Phase)		X (1Phase)	X (1Phase)	X (3Phase)
		Immersion heater				
		Solar circuit				
Dimensions	Without package	Height	mm	800	800	800
		Width	mm	530	530	530
		Depth	mm	360	360	360
	With package	Height	mm	990	990	990
		Width	mm	600	600	600
		Depth	mm	560	560	560
Casing	Munsell		-	1Y 9.2/0.2	1Y 9.2/0.2	1Y 9.2/0.2
	RAL code		-	RAL 9001	RAL 9001	RAL 9001
	Material		-	Pre-coated metal	Pre-coated metal	Pre-coated metal
Product weight (empty)			kg	39	54	54
Product weight (full)			kg	44	60	60
Gross weight			kg	52	66	66
Type of Installation			-	Wall mounted	Wall mounted	Wall mounted
Power supply			Ph	~/N	~/N	~/N
			V	230	230	230
			Hz	50	50	50
Heater	Booster heater	Power supply	Ph	~/N	~/N	3~
			V	230	230	400
			Hz	50	50	50
		Capacity	kW	2	6 (2/4/6)	9 (3/6/9)
		Heater step	-	1	3	3
		Current	A	9	26	13
		Breaker	A	16	32	16
	Immersion heater	Power supply	Ph	-	-	-
			V	-	-	-
			Hz	-	-	-
		Capacity	kW	-	-	-
		Current	A	-	-	-
		Breaker	A	-	-	-
Water circulation pump (Primary circuit)	Input	Speed Ⅰ	W	95	95	95
		Speed Ⅱ	W	125	125	125
		Speed Ⅲ	W	149	149	149
	Current	Speed Ⅰ	A	0.46	0.46	0.46
		Speed Ⅱ	A	0.58	0.58	0.58
		Speed Ⅲ	A	0.65	0.65	0.65
	Head difference	Max.	m	7.1	7.1	7.1
		20L/min	m	6.3	6.3	6.3
	Performance curve		-	Refer to the following page		
Flowrate	Primary circuit	Max. *	L/min	27.7	27.7	27.7
		Min. **	L/min	7.1	7.1	7.1
Heat exchanger	Refrigerant - Primary circuit water		-	-	Plate	Plate
	Primary circuit water - Domestic hot water		-	-	-	-
		Coil: Surface area	m^2	-	-	-
		Coil: Length	m	-	-	-
		Coil: Capacity	L	-	-	-
		Coil: Material	-	-	-	-
Domestic hot water tank	Volume		L	-	-	-
	Material		-	-	-	-
Expansion vessel (Primary circuit)	Volume		L	10	10	10
	Charge pressure		MPa	0.1	0.1	0.1
Safety device	Primary circuit	Control thermistor	°C	1~80	1~80	1~80
		Pressure relief valve	MPa	0.3	0.3	0.3
		Flow switch (Min. flow)	L/min	5.5±1.0	5.5±1.0	5.5±1.0
		BH manual reset thermostat	°C	90	90	90
		BH thermal Cut Off	°C	121	121	121
	DHW tank	Control thermistor	°C	-	-	-
		IH manual reset thermostat	°C	-	-	-
		Temperature & pressure relief valve	°C	-	-	-
			MPa	-	-	-
Connections	Water	Primary circuit	mm	28	28	28
		DHW circuit	mm	-	-	-
		Solar circuit	mm	-	-	-
	Refrigerant (R410A)	Gas	mm	-	15.88	15.88
		Liquid	mm	-	9.52	9.52
Operating ambient condition ***			℃	0~35	0~35	0~35
Operating range	Heating	Room temperature	℃	10~30	10~30	10~30
		Flow temperature	℃	25~60	25~60	25~60
	DHW		℃	-	-	-
	Legionella prevention		℃	-	-	-
Sound level (SPL)			dB(A)	28	28	28

2.1 Cylinder unit



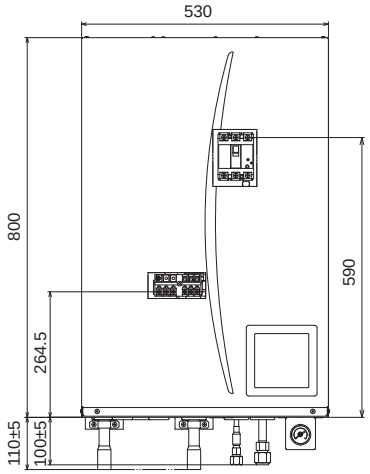


<Top>

Letter	Pipe description	Connection size/type
A	DHW outlet connection	22 mm/Compression
B	Cold water inlet connection	22 mm/Compression
C/D	Solar (ancillary heat source) connection	22 mm/Compression
E	Space heating return connection	28 mm/Compression
F	Space heating flow connection	28 mm/Compression
G	Flow from heat pump connection (No plate heat exchanger)	28 mm/Compression
H	Return to heat pump connection (No plate heat exchanger)	28 mm/Compression
J	Refrigerant (GAS) (With plate heat exchanger)	15.88 mm/Flare
K	Refrigerant (LIQUID) (With plate heat exchanger)	9.52 mm/Flare
L	Electrical cable inlets	— * The leftmost hole is for wireless receiver (option) (PAR-WR41R-E)

2.2 Hydrobox

<EHSC> (Split model system)



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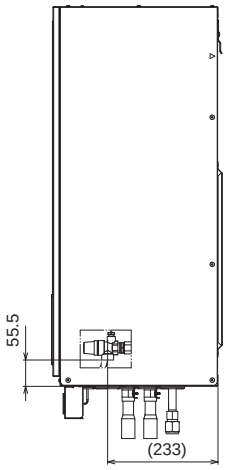

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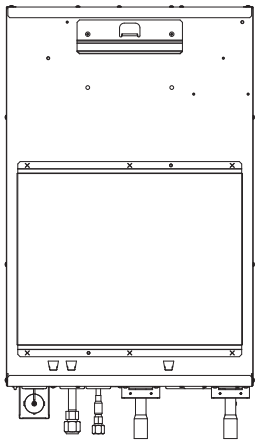

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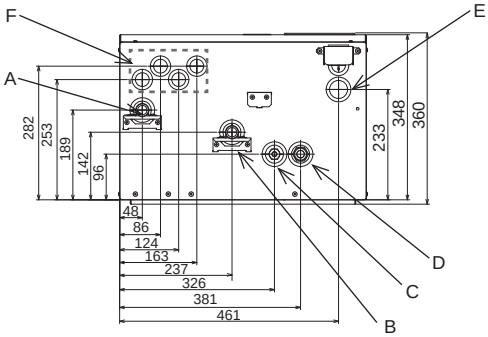
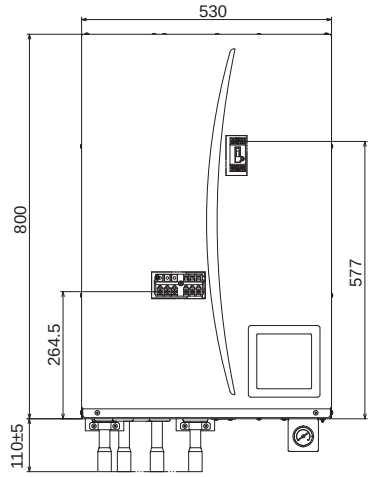


<View from below>

Letter	Pipe description	Connection size/type
A	Space heating/Indirect DHW cylinder (primary) return connection	28 mm/Compression
B	Space heating/Indirect DHW cylinder (primary) flow connection	28 mm/Compression
C	Refrigerant (Liquid)	9.52 mm/Flare
D	Refrigerant (Gas)	15.88 mm/Flare
E	Discharge pipe (by installer) from pressure relief valve	G1/2" female (valve port within hydrobox casing)
F	Electrical cable inlets	— *The leftmost inlet is for wireless receiver (option)

<EHPX> (Packaged model system)



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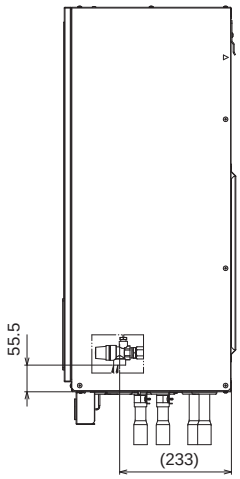

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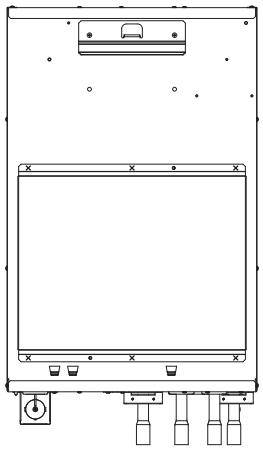

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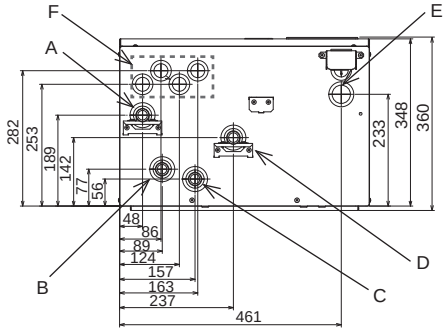
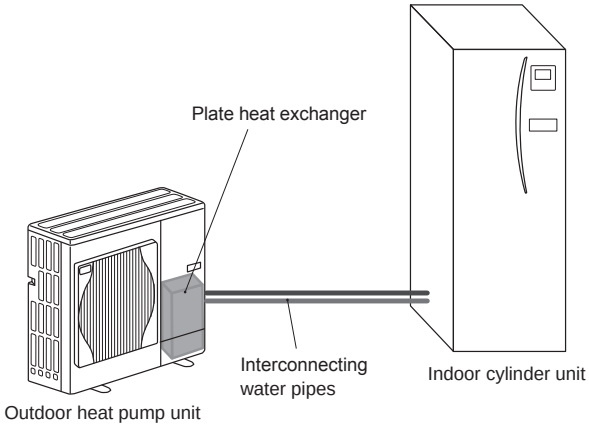
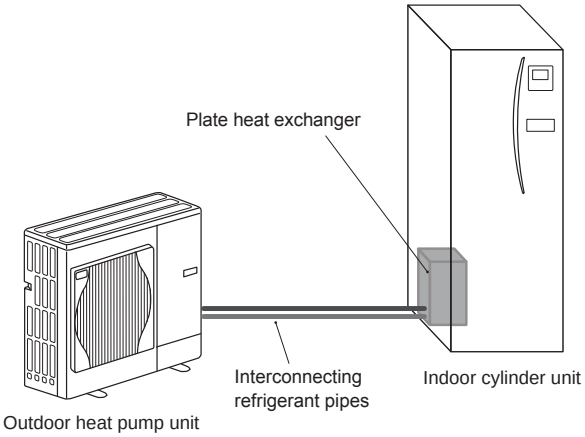
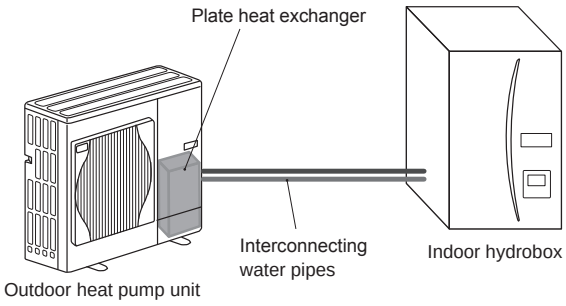
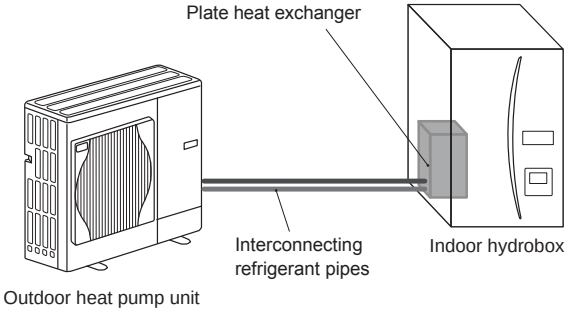


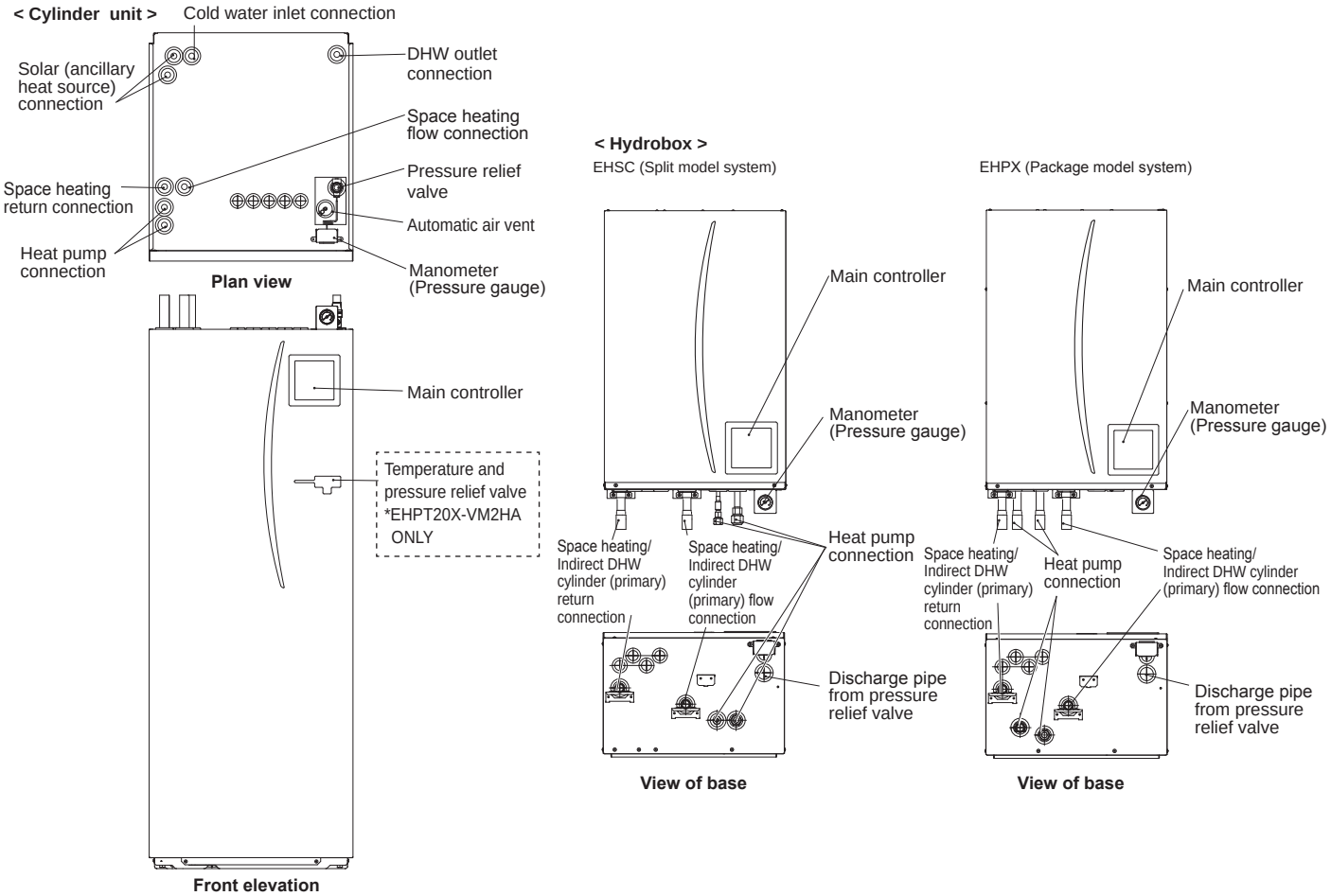
<View from below>

Letter	Pipe description	Connection size/type
A	Space heating/Indirect DHW cylinder (primary) return connection	28 mm/Compression
B	Flow connection from heat pump	28 mm/Compression
C	Return connection to heat pump	28 mm/Compression
D	Space heating/Indirect DHW cylinder (primary) flow connection	28 mm/Compression
E	Discharge pipe (by installer) from pressure relief valve	G1/2" female (valve port within hydrobox casing)
F	Electrical cable inlets	— *The leftmost inlet is for wireless receiver (option)

2.3 System configuration

	Packaged model system	Split model system
Model name	**EHPT20X-**	**EHST20C-**
Cylinder unit		
Model name	**EHPX-**	**EHSC-**
Hydrobox		

■ Important Parts of the Units - Points to Note

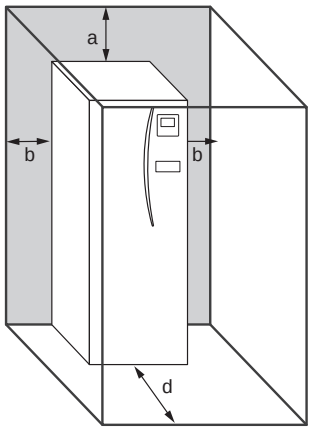


2.4 Service access diagrams

■ Cylinder unit

Service access	
Parameter	Dimension (mm)
a	300
b	150
c (distance behind unit not visible in Figure 2.5.1)	10
d	500

Sufficient space MUST be left for the provision of discharge pipework as detailed in National and Local building regulations.



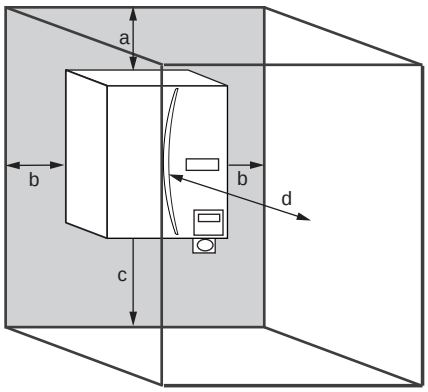
<Figure 2.5.1>
Service access

The cylinder unit must be located indoors and in a frost-free environment, for example in a utility room, to minimise heat loss from stored water.

■ Hydrobox

Service access	
Parameter	Dimension (mm)
a	200
b	150
c	500
d	500

Sufficient space MUST be left for the provision of discharge pipework as detailed in National and Local building regulations.



<Figure 2.5.2>
Service access

The hydrobox must be located indoors and in a frost-free environment, for example in a utility room.

3.1 Cylinder unit

■ EHST20C-VM6HA

Table 1 External input

Name	Terminal block	Connector	Item	OFF (Open)	ON (Short)
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

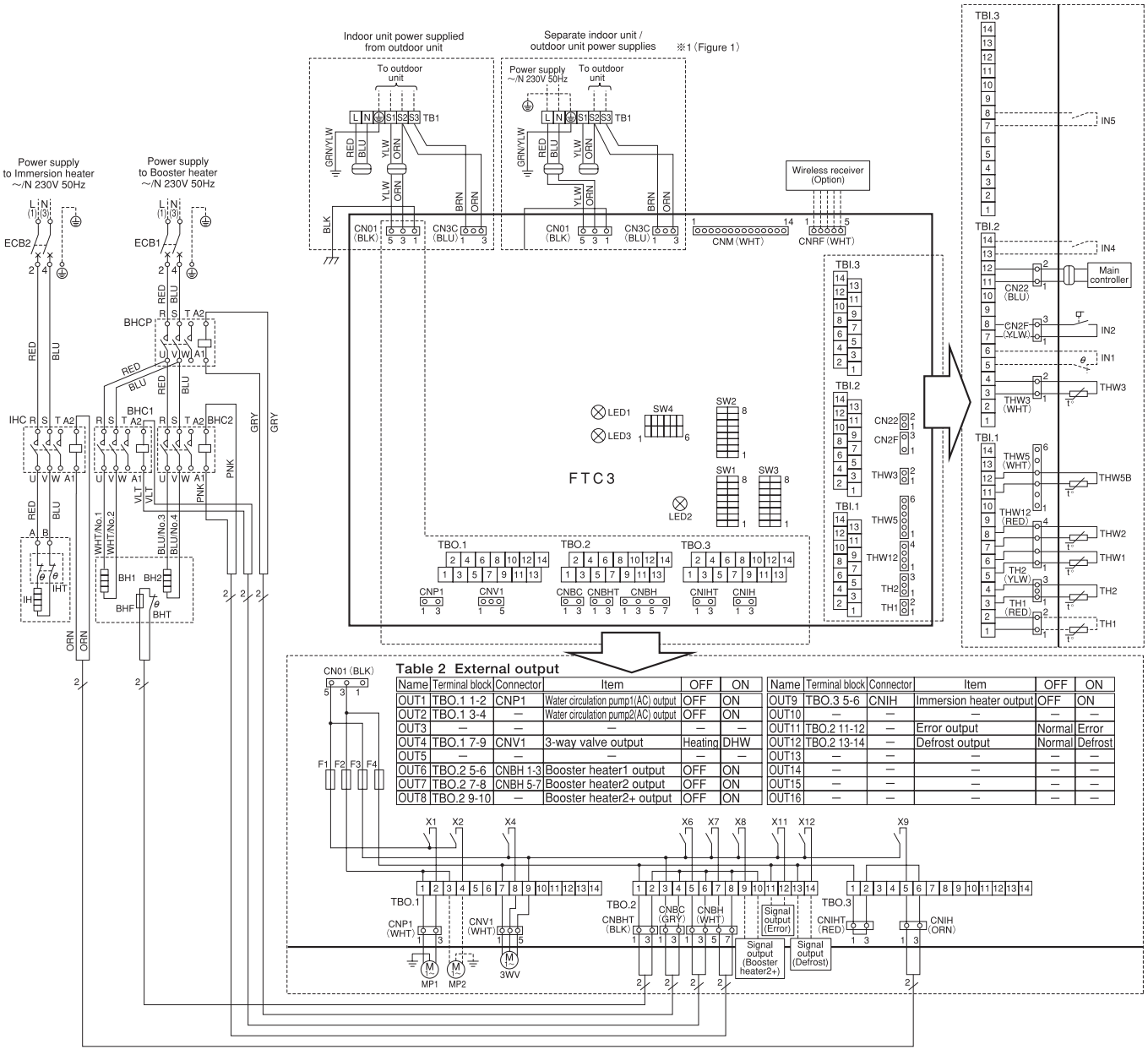


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater	
IH	Immersion heater	
IHC	Contactor for immersion heater	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
TH2	Thermistor(Ref. liquid temp)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊙⊙ : connector, □□□ : terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

■ EHST20C-YM9HA

Table 1 External input

Name	Terminal block	Connector	Item	OFF (Open)	ON (Short)
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

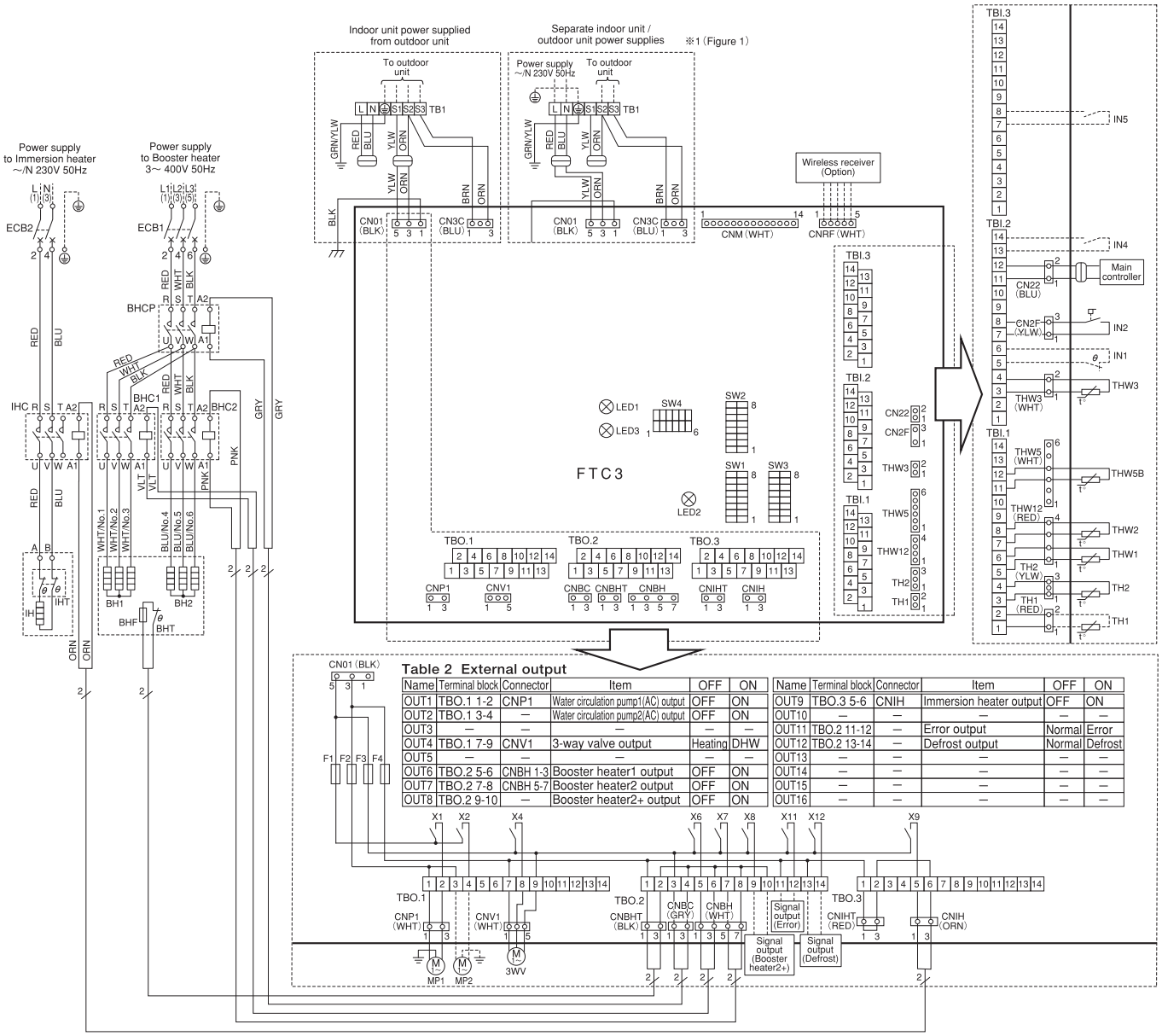


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block 〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater	
IH	Immersion heater	
IHC	Contactor for immersion heater	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
TH2	Thermistor(Ref. liquid temp)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊙⊙: connector, □□□: terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

■ EHST20C-VM6A
■ EHST20C-VM6SA

Table 1 External input

Name	Terminal block	Connector	Item	OFF (Open)	ON (Short)
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

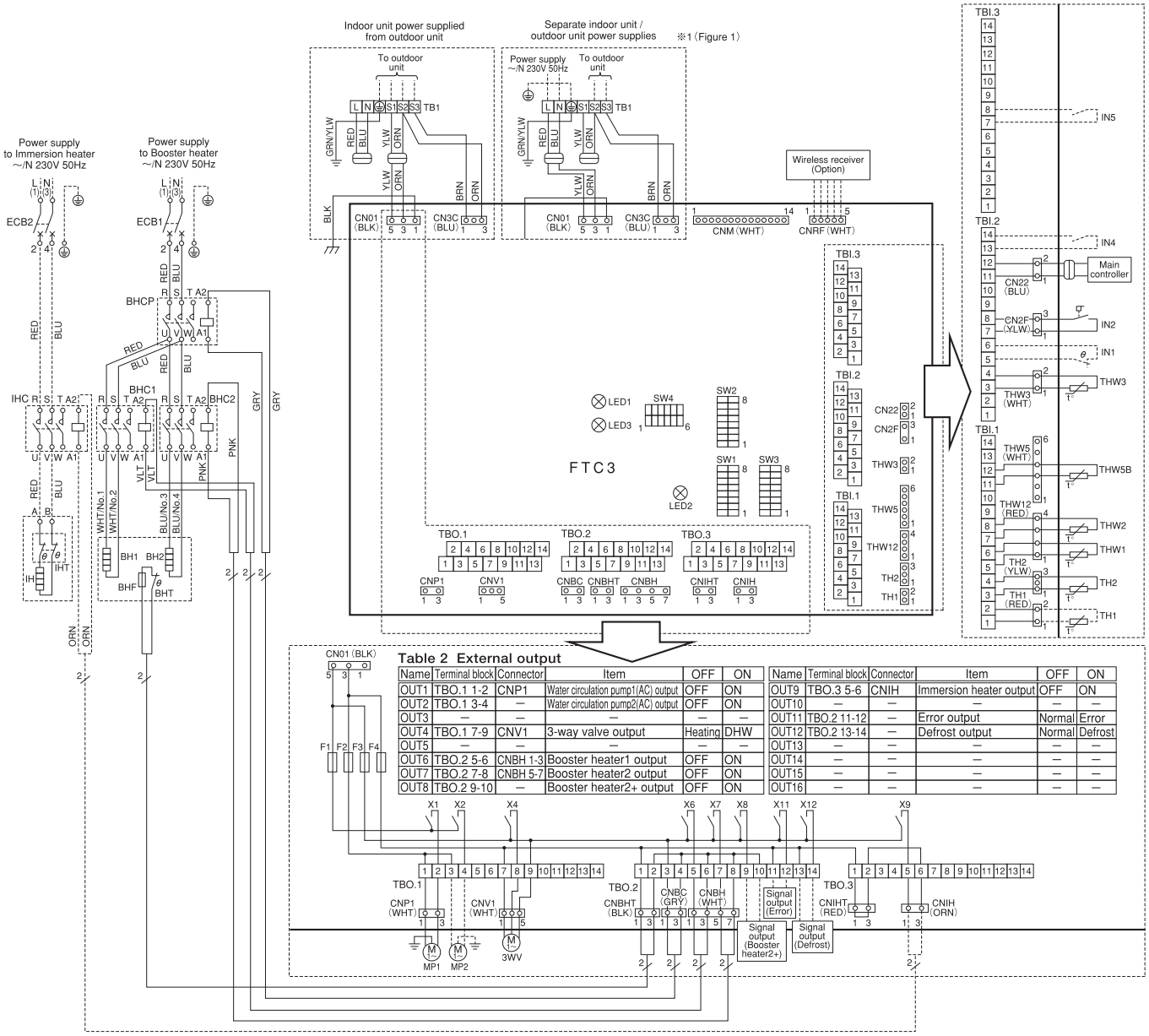


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater (Option)	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater (Option)	
IH	Immersion heater(Option)	
IHC	Contactor for immersion heater(Option)	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
TH2	Thermistor(Ref. liquid temp)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊡⊡: connector, □□□: terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

EHST20C-YM9A

Table 1 External input

Name	Terminal block	Connector	Item	OFF〈Open〉	ON〈Short〉
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

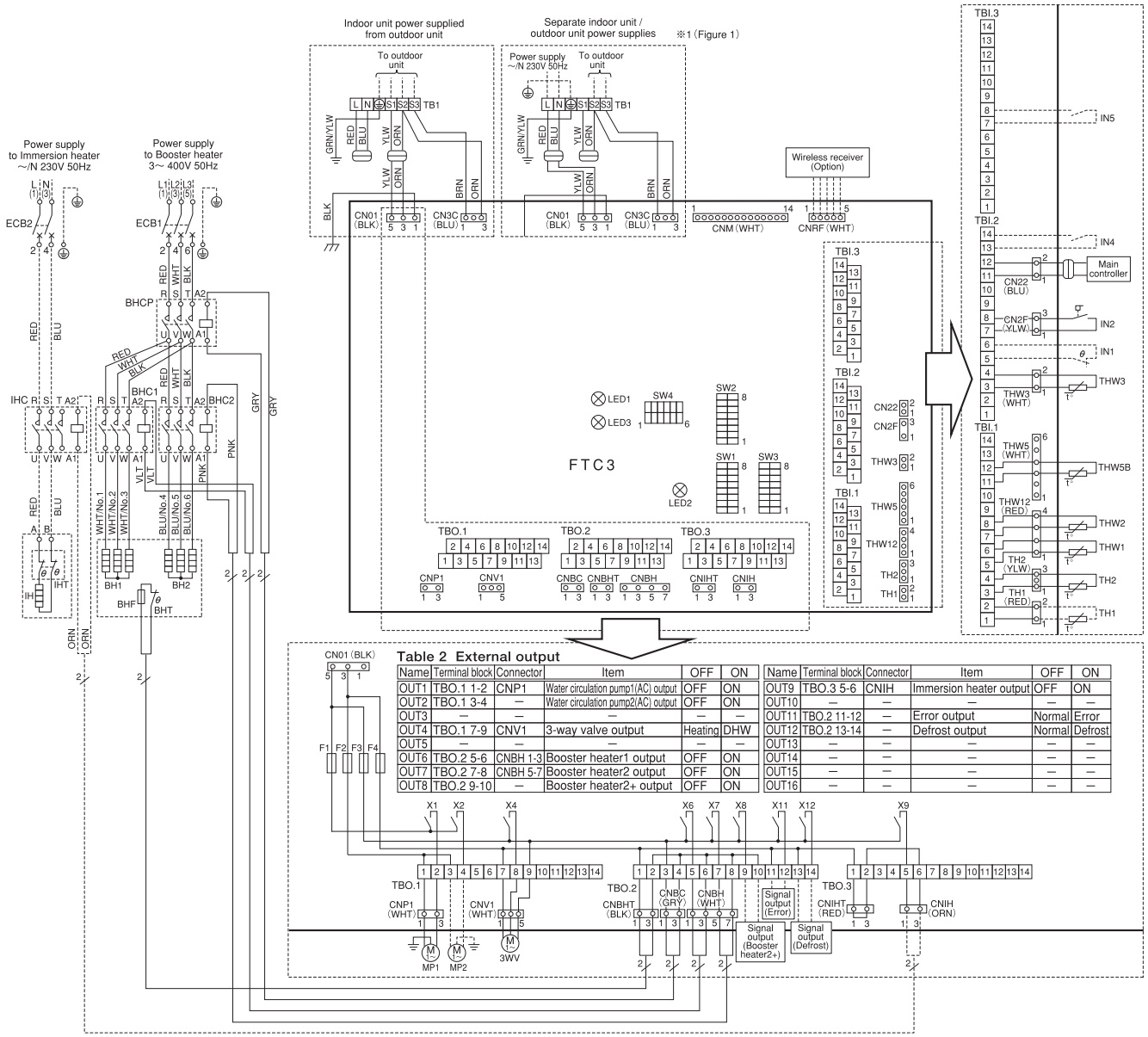


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater (Option)	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater (Option)	
IH	Immersion heater(Option)	
IHC	Contactor for immersion heater(Option)	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
TH2	Thermistor(Ref. liquid temp)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ○○ : connector, □□□ : terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

■ EHPT20X-VM2HA

Table 1 External input

Name	Terminal block	Connector	Item	OFF〈Open〉	ON〈Short〉
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

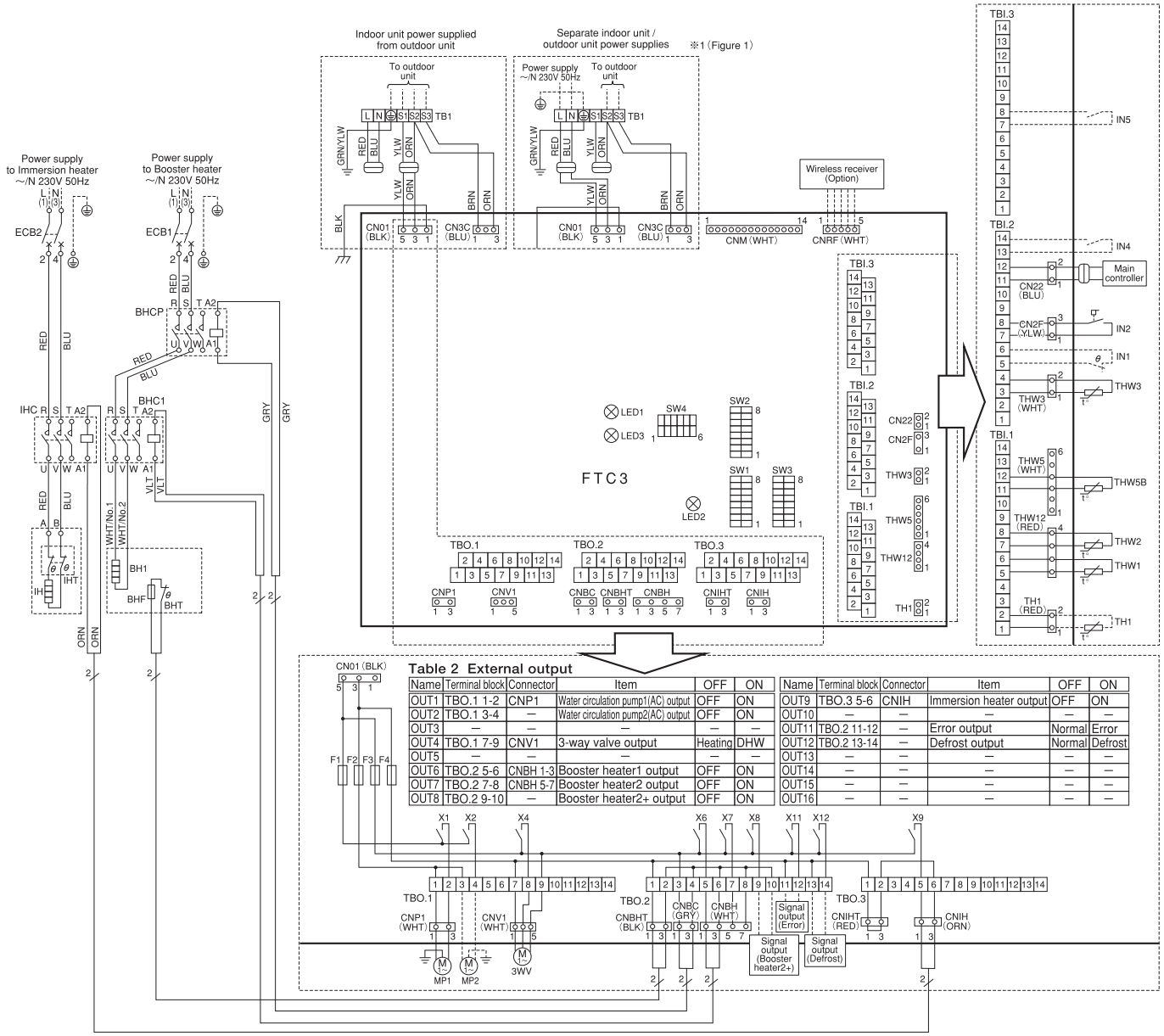


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BHC1	Contactor for booster heater1	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater	
IH	Immersion heater	
IHC	Contactor for immersion heater	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ○○ : connector, □□□ : terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

■ EHPT20X-VM6HA

Table 1 External input

Name	Terminal block	Connector	Item	OFF〈Open〉	ON〈Short〉
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

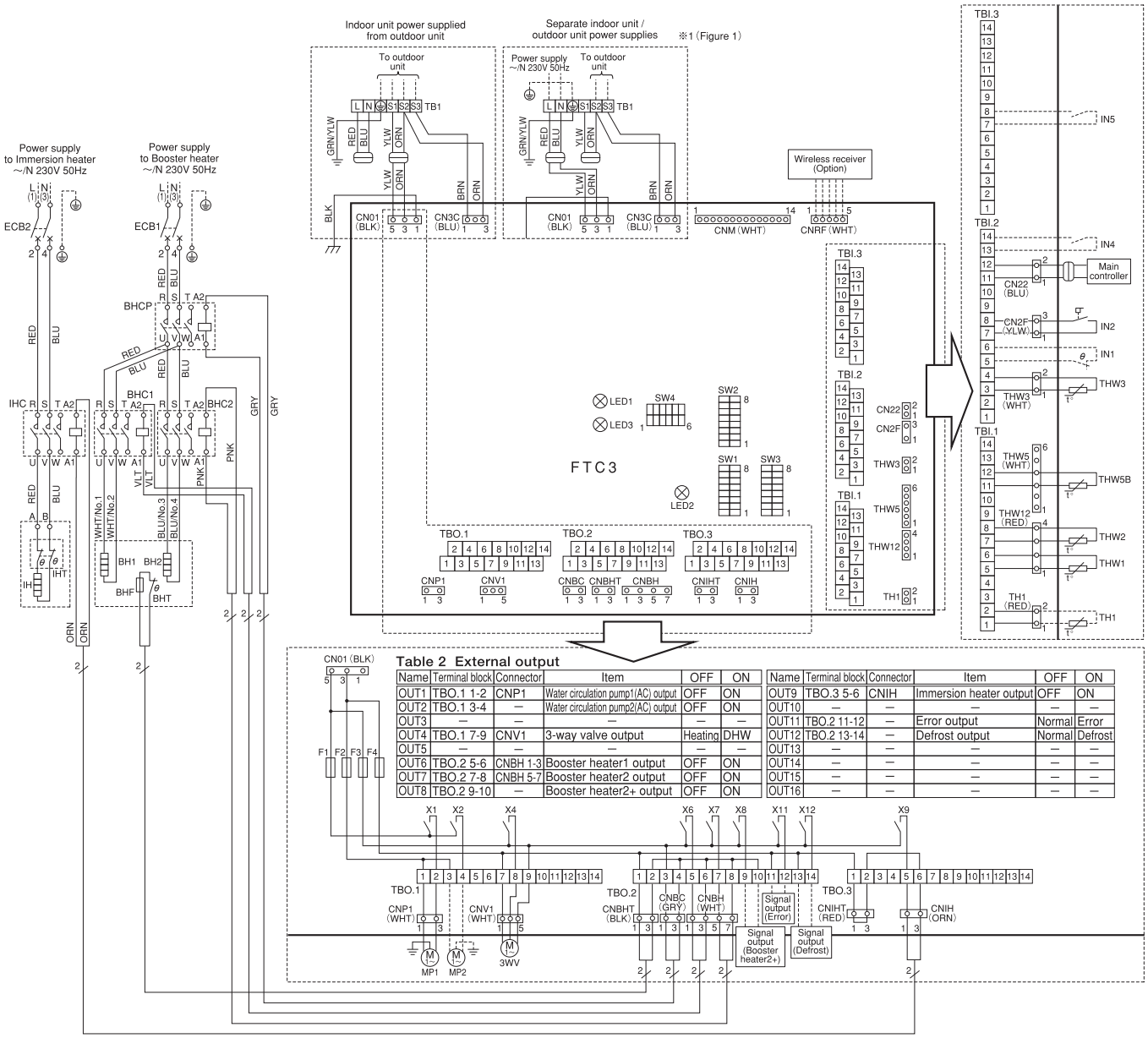


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater	
IH	Immersion heater	
IHC	Contactor for immersion heater	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊙⊙: connector, □□□: terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

■ EHPT20X-YM9HA

Table 1 External input

Name	Terminal block	Connector	Item	OFF (Open)	ON (Short)
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

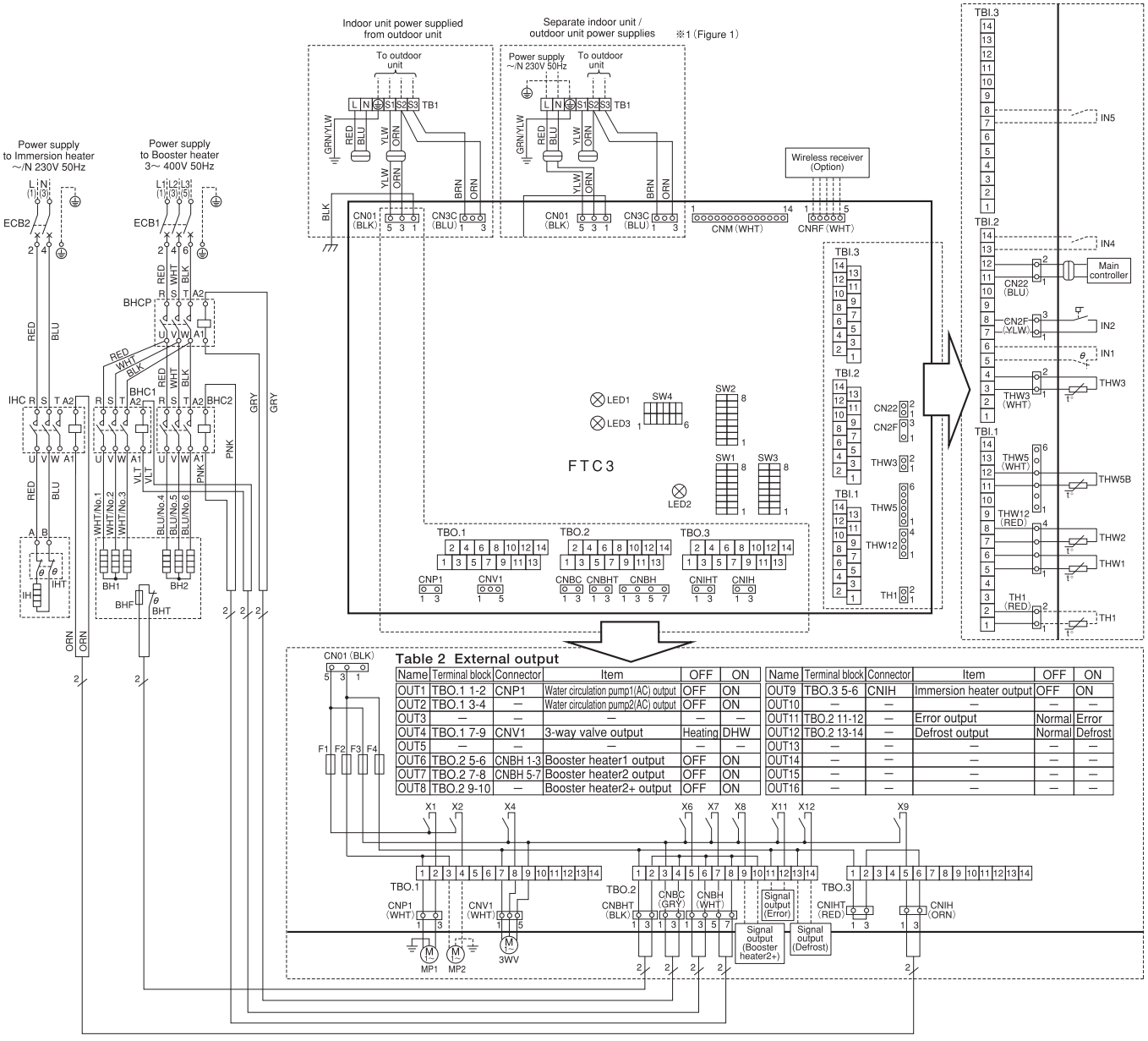


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater	
IH	Immersion heater	
IHC	Contactor for immersion heater	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊙⊙ : connector, □□□ : terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

■ EHPT20X-VM6A

Table 1 External input

Name	Terminal block	Connector	Item	OFF (Open)	ON (Short)
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

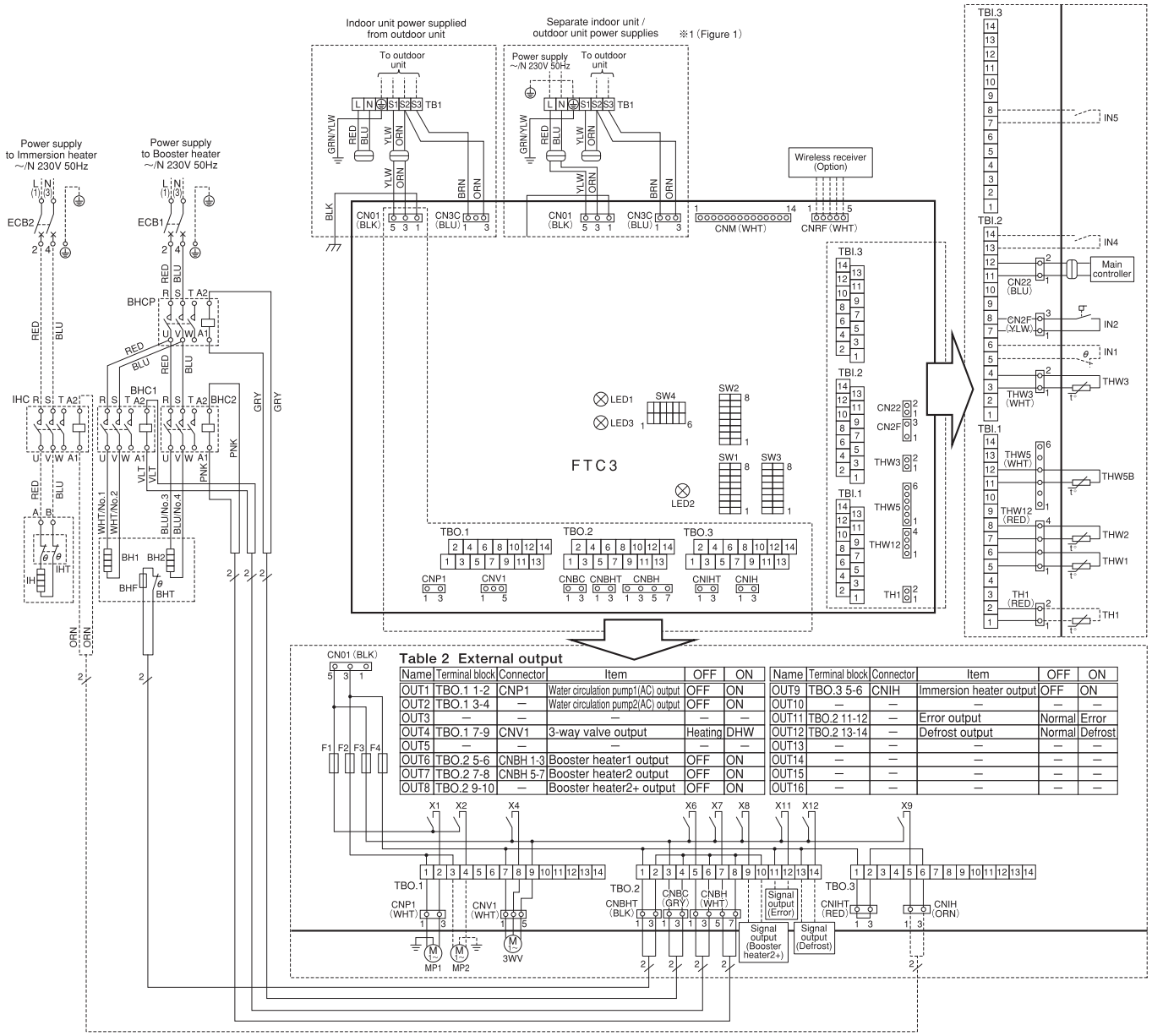


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater (Option)	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater (Option)	
IH	Immersion heater(Option)	
IHC	Contactor for immersion heater(Option)	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ○○: connector, □□□: terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

■ EHPT20X-YM9A

Table 1 External input

Name	Terminal block	Connector	Item	OFF (Open)	ON (Short)
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

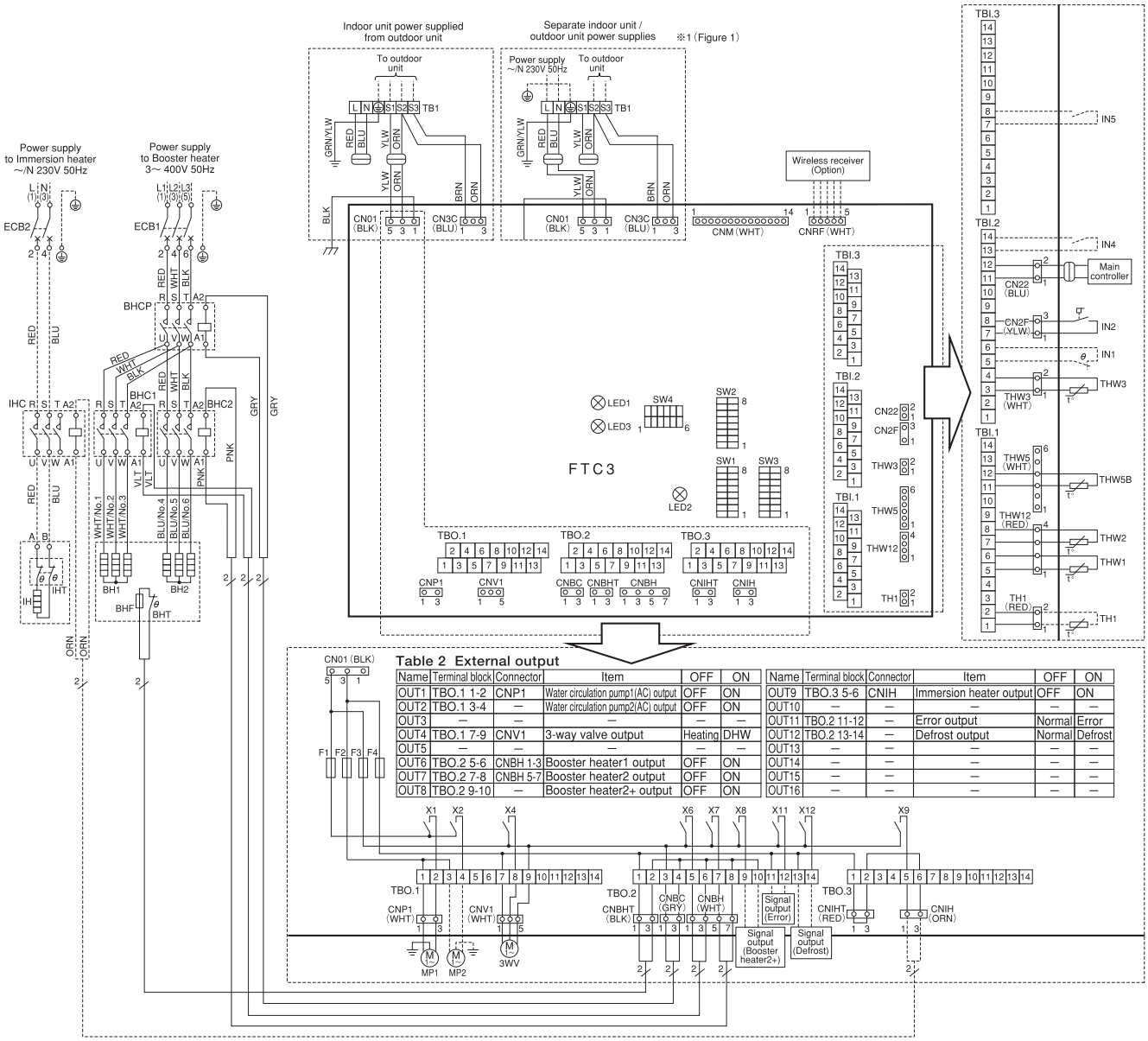


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	—	—	—	—	—
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
ECB2	Earth leakage circuit breaker for immersion heater (Option)	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV	3-way valve	OUT4(CNV1)
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	
IHT	Thermostat (Fixed temperature) for immersion heater (Option)	
IH	Immersion heater(Option)	
IHC	Contactor for immersion heater(Option)	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-19.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊡⊡: connector, □□□: terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.

■ Dip switch setting (Cylinder unit)

Dip switch		Function	OFF	ON	Default (Indoor unit Ref.)
SW1	SW1-1	—	—	—	OFF
	SW1-2	Heat pump maximum outlet water temperature	55 °C	60 °C	OFF:EHS****-*M** (✻1) ON :EHP****-*M**
	SW1-3	DHW tank	WITHOUT DHW tank	WITH DHW tank	ON
	SW1-4	Immersion heater	WITHOUT immersion heater	WITH immersion heater	OFF:EH*****-*M** ON :EH*****-*M*H*
	SW1-5	Booster heater	WITHOUT booster heater	WITH booster heater	ON
	SW1-6	Booster heater function	For heating only	For heating and DHW	ON
	SW1-7	Outdoor unit type	Split type	Packaged type	OFF:EHS****-*M** ON :EHP****-*M**
	SW1-8	Wireless remote controller	WITHOUT wireless remote controller	WITH wireless remote controller	OFF
SW2	SW2-1	Room thermostat input (IN1) logic change	Operation stop at thermostat short	Operation stop at thermostat open	OFF
	SW2-2	Flow switch input (IN2) logic change	Failure detection at short	Failure detection at open	ON
	SW2-3	Booster heater capacity restriction	Inactive	Active	OFF ON: EHPT20X-VM2HA
	SW2-4	—	—	—	OFF
	SW2-5	Automatic switch to backup heater only operation (When outdoor unit stops by error)	Inactive	Active (✻3)	OFF
	SW2-6	—	—	—	OFF
	SW2-7	—	—	—	OFF
	SW2-8	—	—	—	OFF
SW3	SW3-1	—	—	—	OFF
	SW3-2	—	—	—	OFF
	SW3-3	—	—	—	OFF
	SW3-4~8	—	—	—	OFF
SW4	SW4-1~4	—	—	—	OFF
	SW4-5	Emergency mode (Heater only operation)	Normal	Emergency mode (Heater only operation) (To be activated only when powered ON)	OFF (✻2)
	SW4-6	—	—	—	OFF

Notes: **✻1. For packaged model system, the max outlet water temperature is always 60°C so default Dip switch SW1-2 is ON.**
For split model system, the max outlet water temperature is usually 55°C except in the case of PUHZ-HRP outdoor model where the max outlet water temperature is 60°C and DIP switch SW1-2 should be changed to ON.
✻2. If emergency mode is no longer required, please turn off both outdoor and indoor unit power supply before returning SW4-5 to OFF position.
✻3. For safety reasons, this function is not available for certain errors. (System operation must be stopped and only pump keeps running.)
External output (OUT11) will be available.

3.2 Hydrobox

■ EHSC-VM6A

Table 1 External input

Name	Terminal block	Connector	Item	OFF (Open)	ON (Short)
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

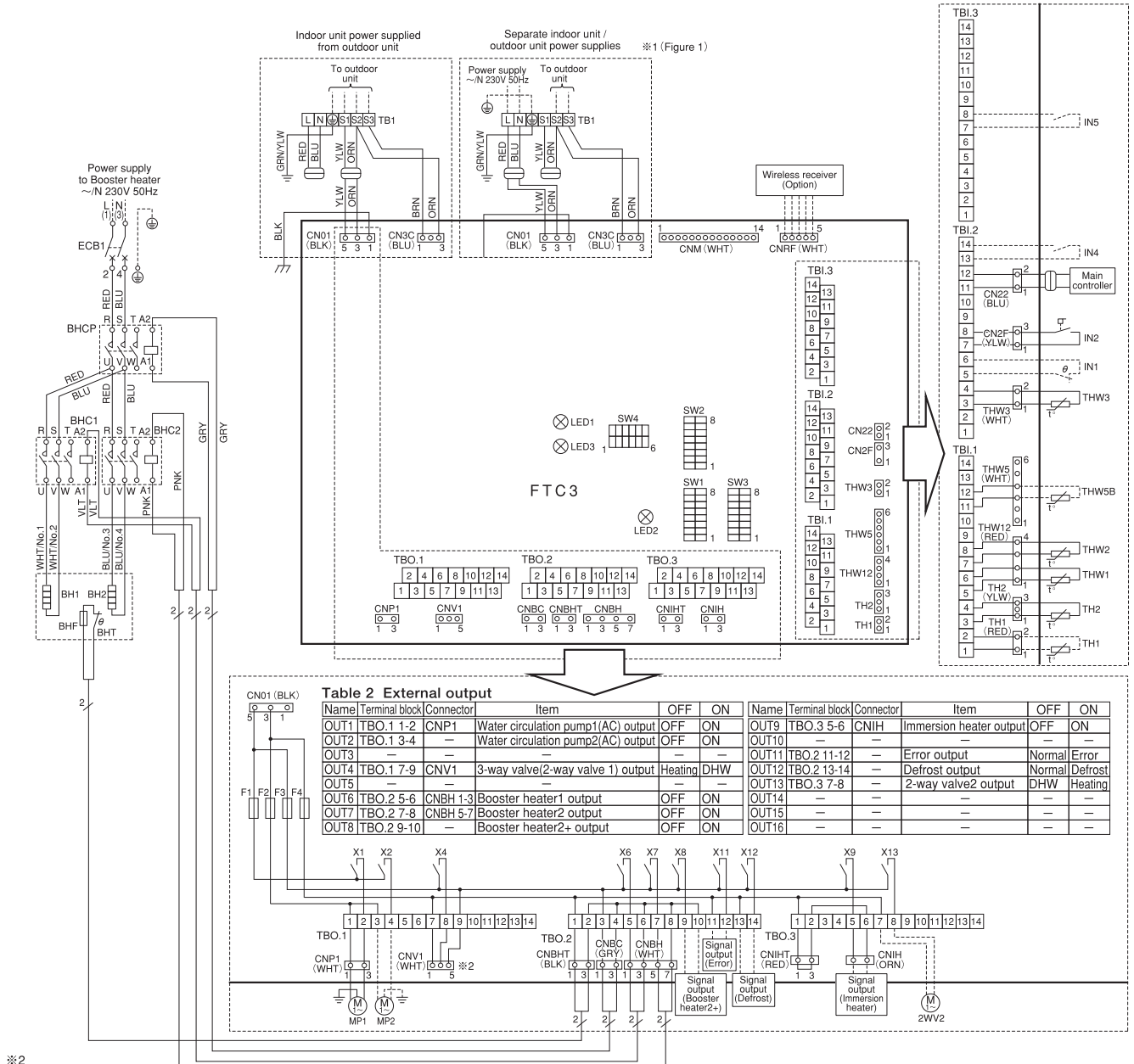


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve(2-way valve 1) output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	TBO.3 7-8	—	2-way valve2 output	DHW	Heating
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

※2

3WV	2WV1
CNV1 (WHT) 1 3 5	CNV1 (WHT) 1 3 5
3WV	2WV1

Symbol	Name	Remark
TB1	Terminal block (Power supply, Outdoor unit)	
ECB1	Earth leakage circuit breaker for booster heater	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV(2WV1)	3-way valve(2-way valve1) (Locally supplied)	OUT4(CNV1)
2WV2	2-way valve2 (Locally supplied)	OUT13
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
TH2	Thermistor(Ref. liquid temp)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B) (Tank is locally supplied)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay * See Page B-23.
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊡⊡: connector, ⊡⊡⊡: terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.
7. Do not fit immersion heater (locally supplied) without thermal cutout.

■ EHSC-YM9A

Table 1 External input

Name	Terminal block	Connector	Item	OFF (Open)	ON (Short)
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

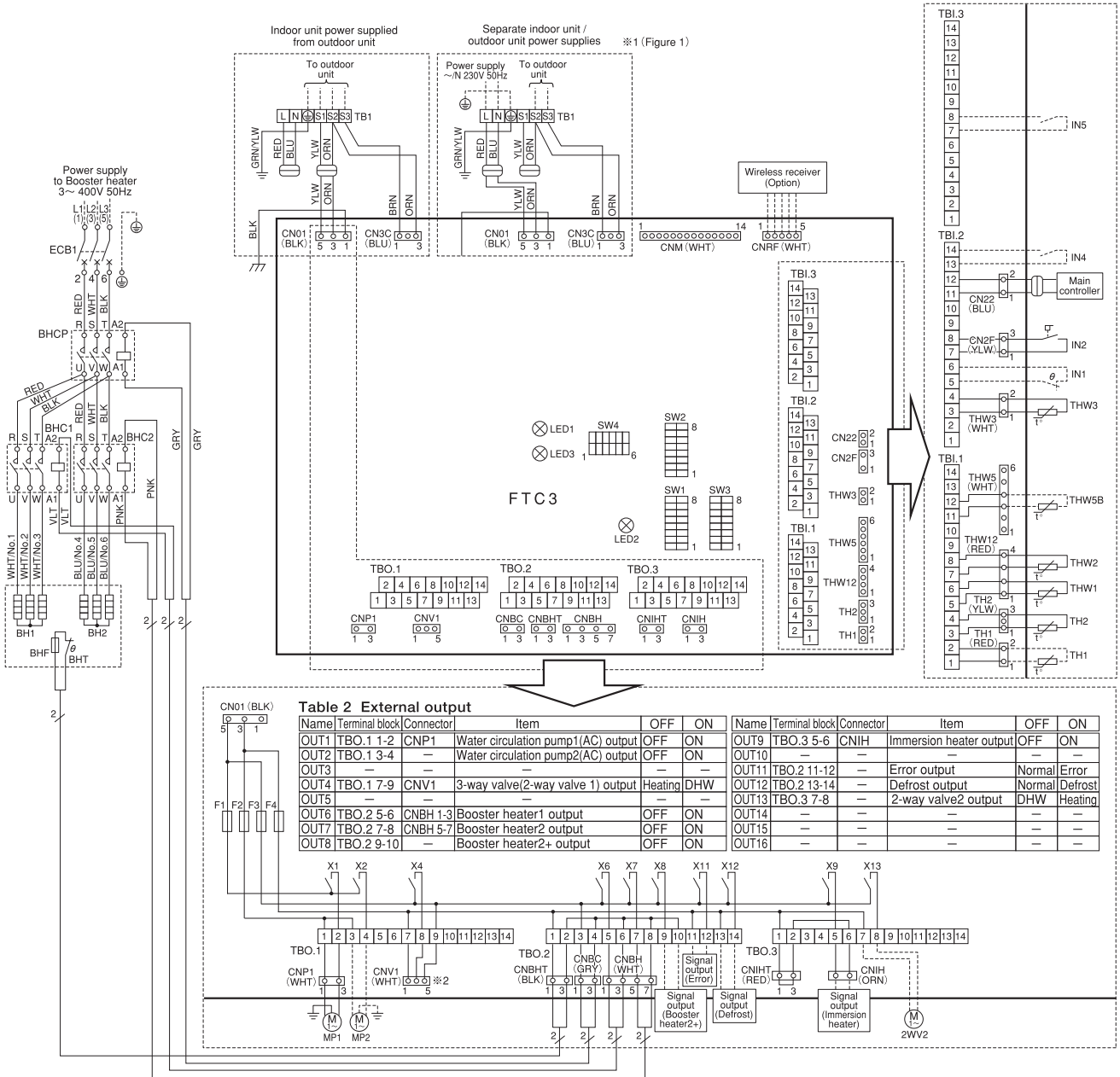
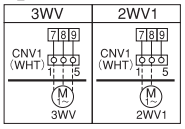


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-9	CNV1	3-way valve(2-way valve 1) output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	TBO.3 7-8	—	2-way valve2 output	DHW	Heating
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

※2



Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV(2WV1)	3-way valve(2-way valve1) (Locally supplied)	OUT4(CNV1)
2WV2	2-way valve2 (Locally supplied)	OUT13
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BH2	Booster heater2	
BHC1	Contactor for booster heater1	
BHC2	Contactor for booster heater2	
BHCP	Contactor for booster heater protection	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
TH2	Thermistor(Ref. liquid temp)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B) (Tank is locally supplied)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1~3	Terminal block(External output)
TBI.1~3	Terminal block(External input contact signal, Thermistor)
F1~4	Fuse(T6.3AL250V)
SW1~4	Switch * See Page B-23.
CNM	Connector(A-Control service tool)
X1,2,4~13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊡⊡ : connector, ⊡⊡⊡ : terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.
7. Do not fit immersion heater (locally supplied) without thermal cutout.

■ EHPX-VM2A

Table 1 External input

Name	Terminal block	Connector	Item	OFF〈Open〉	ON〈Short〉
IN1	TBI.2 5-6	—	Room thermostat input	Refer to SW2-1	
IN2	TBI.2 7-8	CN2F	Flow switch input	Refer to SW2-2	
IN3	—	—	—	—	—
IN4	TBI.2 13-14	—	Heat source OFF input	Normal	Heat source OFF
IN5	TBI.3 7-8	—	Outdoor thermostat input	Standard operation	Heater operation
IN6	—	—	—	—	—
IN7	—	—	—	—	—
IN8	—	—	—	—	—

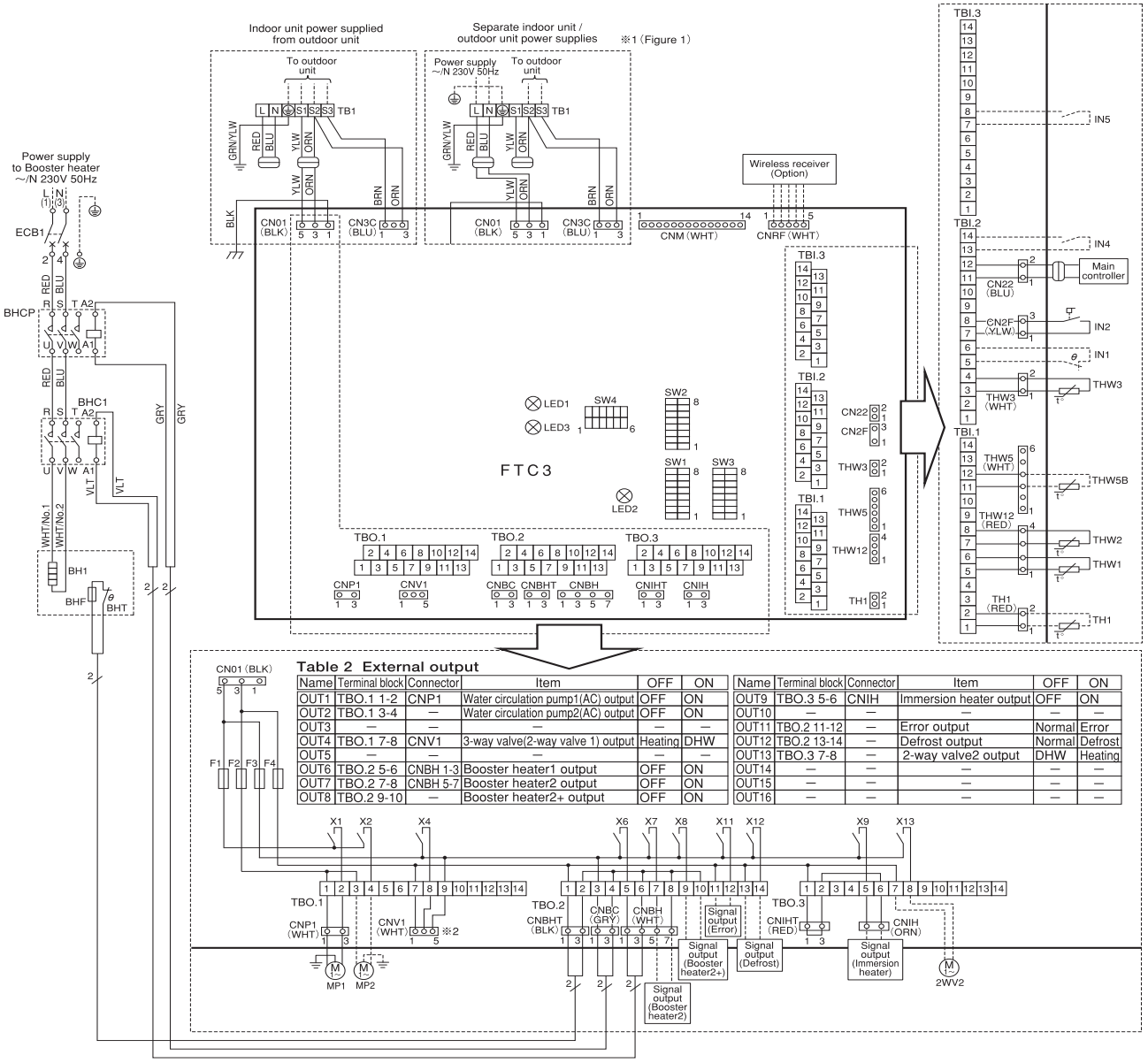
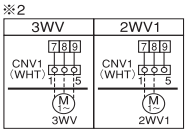


Table 2 External output

Name	Terminal block	Connector	Item	OFF	ON
OUT1	TBO.1 1-2	CNP1	Water circulation pump1(AC) output	OFF	ON
OUT2	TBO.1 3-4	—	Water circulation pump2(AC) output	OFF	ON
OUT3	—	—	—	—	—
OUT4	TBO.1 7-8	CNV1	3-way valve(2-way valve 1) output	Heating	DHW
OUT5	—	—	—	—	—
OUT6	TBO.2 5-6	CNBH 1-3	Booster heater1 output	OFF	ON
OUT7	TBO.2 7-8	CNBH 5-7	Booster heater2 output	OFF	ON
OUT8	TBO.2 9-10	—	Booster heater2+ output	OFF	ON

Name	Terminal block	Connector	Item	OFF	ON
OUT9	TBO.3 5-6	CNIH	Immersion heater output	OFF	ON
OUT10	—	—	—	—	—
OUT11	TBO.2 11-12	—	Error output	Normal	Error
OUT12	TBO.2 13-14	—	Defrost output	Normal	Defrost
OUT13	TBO.3 7-8	—	2-way valve2 output	DHW	Heating
OUT14	—	—	—	—	—
OUT15	—	—	—	—	—
OUT16	—	—	—	—	—

※2



Symbol	Name	Remark
TB1	Terminal block〈Power supply, Outdoor unit〉	
ECB1	Earth leakage circuit breaker for booster heater	
MP1	Water circulation pump1(AC)	OUT1(CNP1)
MP2	Water circulation pump2(AC)(Locally supplied)	OUT2
3WV(2WV1)	3-way valve(2-way valve1) (Locally supplied)	OUT4(CNV1)
2WV2	2-way valve2 (Locally supplied)	OUT13
BHT	Thermostat for booster heater	
BHF	Thermal fuse for booster heater	
BH1	Booster heater1	
BHC1	Contactor for booster heater1	
BHCP	Contactor for booster heater protection	

Symbol	Name
TH1	Thermistor(Room temp)(Option)
THW1	Thermistor(Flow water temp)
THW2	Thermistor(Return water temp)
THW5B	Thermistor(Tank water temp B) (Tank is locally supplied)
THW3	Thermistor(Booster heater temp)
IN1	Room thermostat(Locally supplied)
IN2	Flow switch
IN4	Heat source OFF signal(Locally supplied)
IN5	Outdoor thermostat(Locally supplied)
FLOW TEMP. CONTROLLER(FTC3)	
TBO.1～3	Terminal block(External output)
TBI.1～3	Terminal block(External input contact signal, Thermistor)
F1～4	Fuse(T6.3AL250V)
SW1～4	Switch * See Page B-23.
CNM	Connector(A-Control service tool)
X1,2,4～13	Relay
LED1	Power supply(FTC3)
LED2	Power supply(Main controller)
LED3	Communication(FTC3-Outdoor unit)

1. Symbols used in wiring diagram are, ⊙⊙ : connector, □□□ : terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1,S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for servicing.
4. This diagram shows the wiring of indoor unit and outdoor unit connecting wires (specification of 230V), adopting superimposed system of power and signal.
   ※1: When work to supply power separately to indoor unit and outdoor unit was applied, refer to Figure 1.
5. Do not connect to the terminals that are indicated as "-" in the "Terminal block" field of Table 2.
6. Do not fit booster heater 2+ (locally supplied) without thermal cutout.
7. Do not fit immersion heater (locally supplied) without thermal cutout.

■ Dip switch setting (Hydrobox)

Dip switch		Function	OFF	ON	Default (Indoor unit Ref.)
SW1	SW1-1	—	—	—	OFF
	SW1-2	Heat pump maximum outlet water temperature	55 °C	60 °C	OFF: EHSC (✻1) ON : EHPX
	SW1-3	DHW tank	WITHOUT DHW tank	WITH DHW tank	OFF
	SW1-4	Immersion heater	WITHOUT immersion heater	WITH immersion heater	OFF
	SW1-5	Booster heater	WITHOUT booster heater	WITH booster heater	ON
	SW1-6	Booster heater function	For heating only	For heating and DHW	OFF
	SW1-7	Outdoor unit type	Split type	Packaged type	OFF: EHSC ON : EHPX
	SW1-8	Wireless remote controller	WITHOUT wireless remote controller	WITH wireless remote controller	OFF
SW2	SW2-1	Room thermostat input (IN1) logic change	Operation stop at thermostat short	Operation stop at thermostat open	OFF
	SW2-2	Flow switch input (IN2) logic change	Failure detection at short	Failure detection at open	ON
	SW2-3	Booster heater capacity restriction	Inactive	Active	OFF: EHSC ON : EHPX-VM2A
	SW2-4	—	—	—	OFF
	SW2-5	Automatic switch to backup heater only operation (When outdoor unit stops by error)	Inactive	Active (✻3)	OFF
	SW2-6	—	—	—	OFF
	SW2-7	—	—	—	OFF
	SW2-8	—	—	—	OFF
SW3	SW3-1	—	—	—	OFF
	SW3-2	—	—	—	OFF
	SW3-3	—	—	—	OFF
	SW3-4~8	—	—	—	OFF
SW4	SW4-1~4	—	—	—	OFF
	SW4-5	Emergency mode (Heater only operation)	Normal	Emergency mode (Heater only operation) (To be activated only when powered ON)	OFF (✻2)
	SW4-6	—	—	—	OFF

Notes: **✻1. For packaged model system, the max outlet water temperature is always 60°C so default Dip switch SW1-2 is ON.**
For split model system, the max outlet water temperature is usually 55°C except in the case of PUHZ-HRP outdoor model where the max outlet water temperature is 60°C and DIP switch SW1-2 should be changed to ON.
✻2. If emergency mode is no longer required, please turn off both outdoor and indoor unit power supply before returning SW4-5 to OFF position.
✻3. For safety reasons, this function is not available for certain errors. (System operation must be stopped and only pump keeps running.)
External output (OUT11) will be available.

■ Automatic switch to backup heater only operation

Back-up heater operation (*1) will automatically run when the indoor unit stops abnormally.
To enable the function, switch Dip SW 2-5 to ON.
During the back-up operation, an error code(s) and the contact number will be displayed alternately.
External output (OUT11) will be available.
To clear the fault(s), reset the power breakers on the indoor and outdoor units.

<Applicable error codes (*2)>
E6 to 9, Ed, P8, U1 to 8, Ud, UE, UF, UL, UP

(*1) Prolonged running of the back-up operation may affect the life of the heater.
(*2) For safety reasons, this function is not available for certain faults. (System operation must be stopped and only pump keeps running.)

■ Caution on connecting DHW tank (Hydrobox)

Note:
- Be aware that the respective DHW operations are greatly effected by the selections of the components such as tank, immersion heater, or the like.
- Follow your local regulations to perform system configuration.

1. To enable switching of the water circulation circuit between the DHW mode and the heating mode, install a 3-way valve (field supply). The 3-way valve and the DHW tank should be positioned as shown in the system diagram on the page B-27 as applicable.
   The use of two 2-way valves can perform the same function as a 3-way valve.
2. Install the enclosed thermistor THW5B on the DHW tank.
   It is recommended to position the thermistor at the mid point of the DHW tank capacity. Insulate thermistor from ambient air. Especially for double (insulated) tank, thermistor should be attached to the inner side (to detect the water temperature).
3. Connect the thermistor lead to the THW5 connector on the FTC3.
   If the thermistor lead is too long it can be cut to the required length and then connected directly to the THW5B labeled terminals on the terminal block TBI.1.
4. The external output terminals for the 3-way valve is TBO.1-7, 8, 9 (OUT4).
   The TBO.1-7, 8, 9 terminals on the FTC3 are shown in the wiring diagram on the right.
   Choose the terminals that the 3-way valve is connected to between TBO.1-7, 8, or TBO. 1- 7, 8, 9, according to the rated voltage.
   When the rated current of the 3-way valve exceeds 0.1A, be sure to use a relay with maximum voltage and current ratings of 230V AC / 0.1A when connecting to the FTC3. Do not directly connect the 3-way valve cable to the FTC3.
   Connect the relay cable to the TBO. 1-7, 8 terminals.For systems using 2-way valves instead of a 3-way valve please read the following;

Specification of 2-way valve (field supply)
- Power supply: 230V AC
- Current: 0.1A Max **(If over 0.1A you must use a relay)**
- Type: Normally closed

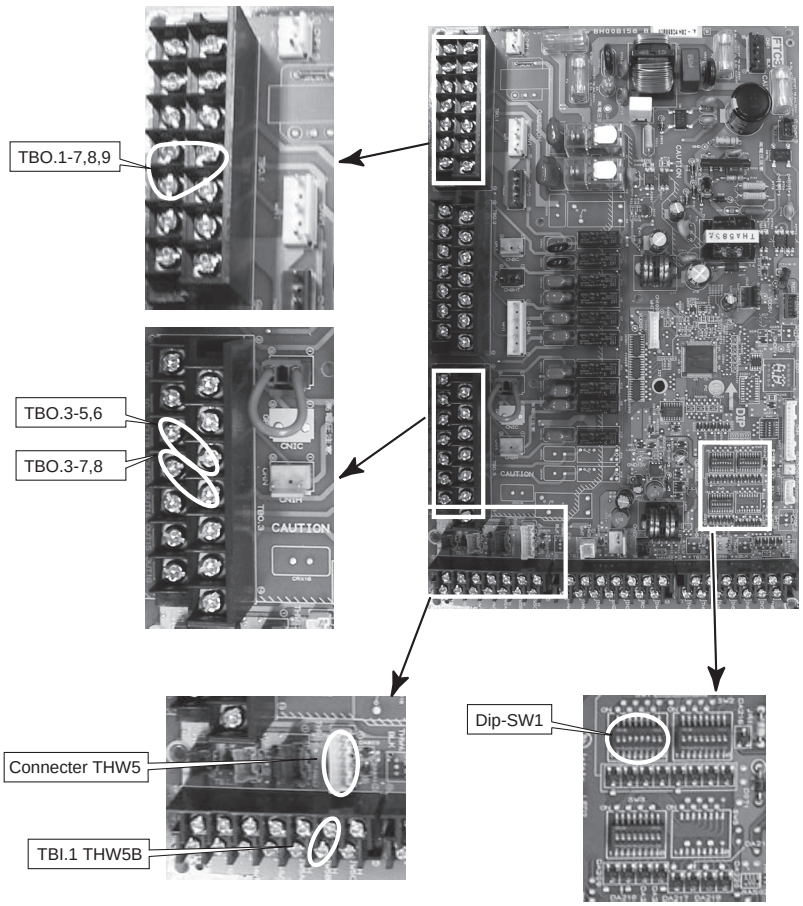
	Installation position	Electrical connection terminal block	Output signal		
			Heating	DHW	System OFF
2-way valve1	DHW	TBO.1 7-8	OFF (closed)	ON (open)	OFF (closed)
2-way valve2	Heating	TBO.3 7-8	ON (open)	OFF (closed)	OFF (closed)

Note: Should the 2-way valve become blocked the water circulation will stop.
A by-pass valve or circuit should be installed between pump and 2-way valve for safety.
The TBO.3-7, 8 terminals on the FTC3 are shown in the wiring diagram on the right.
The 2-way valve (field supply) should be installed according to the instructions supplied with it. Follow 2-way valve maker's instructions as to whether to connect an earth cable or not.
- For the 2-way valve, choose the one that slowly opens and shuts off to prevent water hammer sound.
- Choose the 2-way valve equipped with manual override, which is necessary for topping up or draining of water.

5. Turn the DIP SW1-3 on the FTC3 to ON.

6. When using the immersion heater (field supply), connect a contact relay cable for the immersion heater to TBO.3-5, 6 (OUT9), and turn the Dip SW1-4 to ON. Do NOT directly connect the power cable to the FTC3.

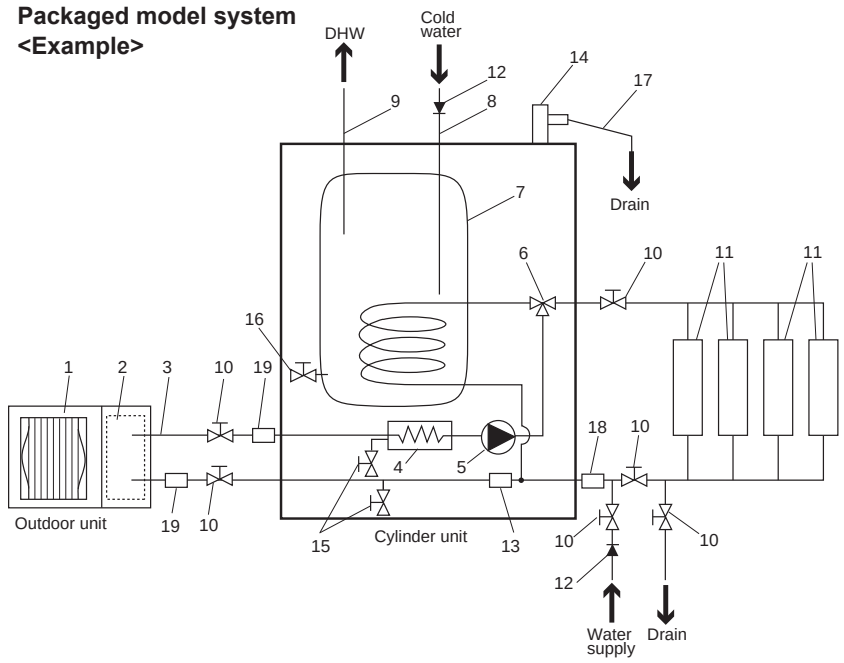
Note:
- When an immersion heater is installed, select appropriate breaker capacity and a cable with appropriate diameter on the basis of heater output.
- When wiring an immersion heater in the field, always install an earth leakage breaker to prevent accidental electric shock.



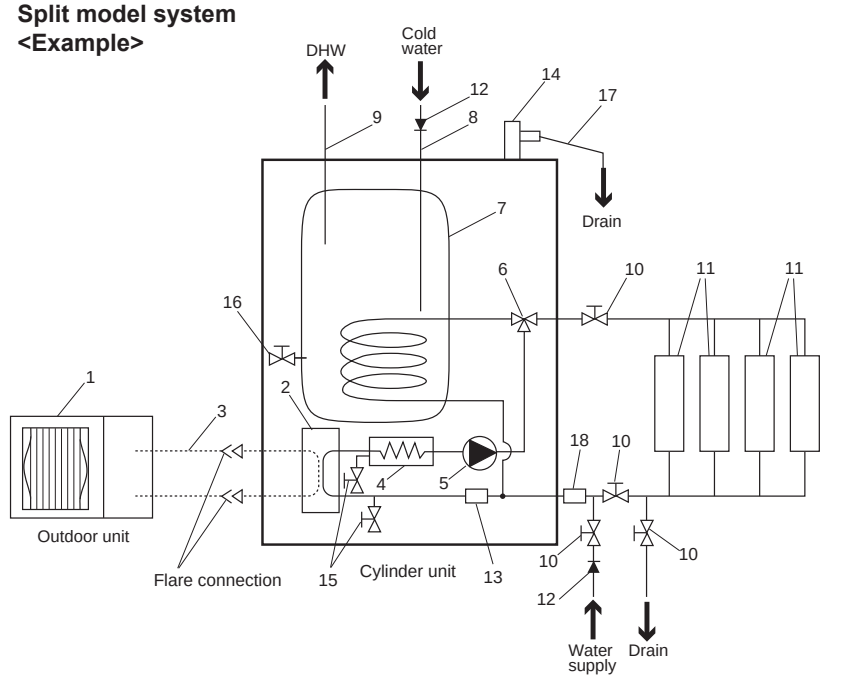
⚠ **WARNING: When connecting DHW tank**
(1) When installing an immersion heater, use an overheat protection thermostat.
(2) Connect a pressure relief valve on the sanitary water side.
(3) Attach the enclosed thermistor THW5B.
(4) Always use earth leakage breaker when connecting immersion heater.

■ Cylinder unit

Packaged model system
<Example>



Split model system
<Example>



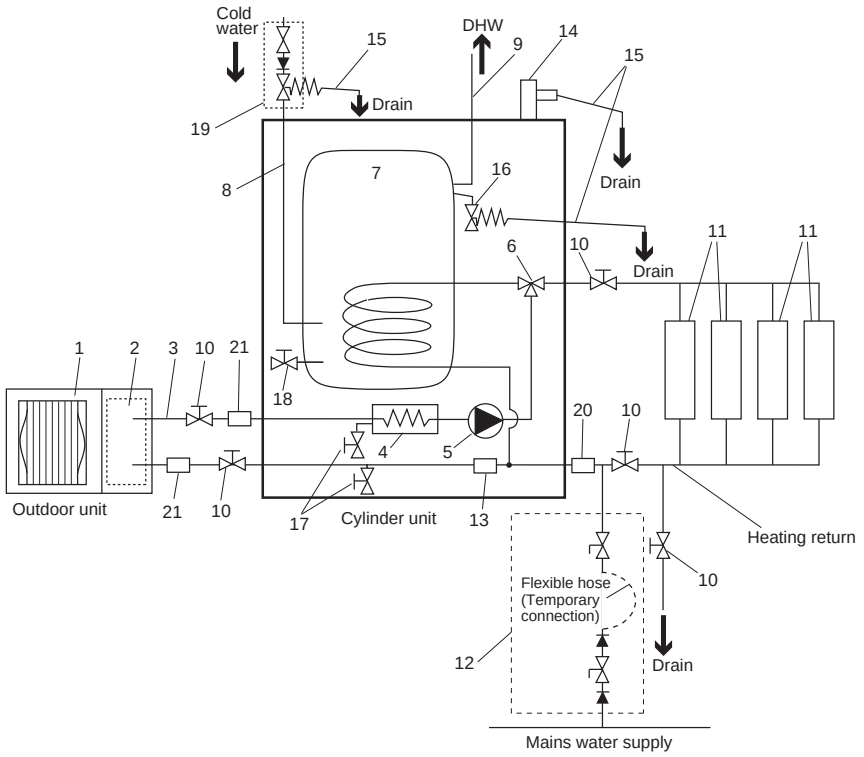
1. Outdoor unit
2. Plate heat exchanger
3. Interconnecting pipe work
   Packaged model system—Water
   Split model system—Refrigerant
4. Booster heater
5. Water circulation pump
6. 3-way valve
7. DHW Tank
8. Cold water inlet pipe
9. DHW outlet connection
10. Isolating valve (field supply)
11. Heat emitters
    (E.g. Radiator, Floor heating, Fan coil)
12. Back flow prevention device (field supply)
13. Strainer
14. Pressure relief valve
15. Drain cock (primary circuit)
16. Drain cock (DHW tank)
17. Drain pipe (field supply)
18. **Magnetic filter is recommended. (field supply)**

For new pipework — FERNOX Boiler Buddy
For existing pipework — FERNOX Total Filter TF1

19. Strainer (field supply)

Note
- To enable draining of the cylinder unit an isolating valve should be positioned on both the inlet and outlet pipework.
- Be sure to install a strainer, on the inlet pipe work to the cylinder unit.
- Suitable drain pipe work should be attached to all relief valves in accordance with your country's regulations.
- A backflow prevention device must be installed on the cold water supply pipework (IEC 61770)
- When using components made from different metals or connecting pipes made of different metals insulate the joints to prevent a corrosive reaction taking place which will damage the pipework.

UK Packaged model system
<Example>



1. Outdoor unit
2. Plate heat exchanger
3. Interconnecting pipe work (WATER)
4. Booster heater
5. Water circulation pump
6. 3-way valve
7. DHW Tank
8. Cold water inlet pipe
9. DHW outlet connection
10. Isolating valve
11. Heat emitters (E.g. Radiator, Floor heating, Fan coil)
12. Filling loop (ball valves, check valves and flexible hose) supplied with UK model only*
13. Strainer
14. Pressure relief valve (primary circuit)
15. Drain pipe (field supply)
16. T&P valve (factory fitted)
17. Drain cock (primary circuit)
18. Drain cock (DHW tank)
19. Inlet control group supplied with UK model ONLY*

* Please refer to PAC-WK01UK-E Installation Manual for more information on accessories.

20. Magnetic filter is recommended. (field supply)

For new pipework — FERNOX Boiler Buddy
For existing pipework — FERNOX Total Filter TF1

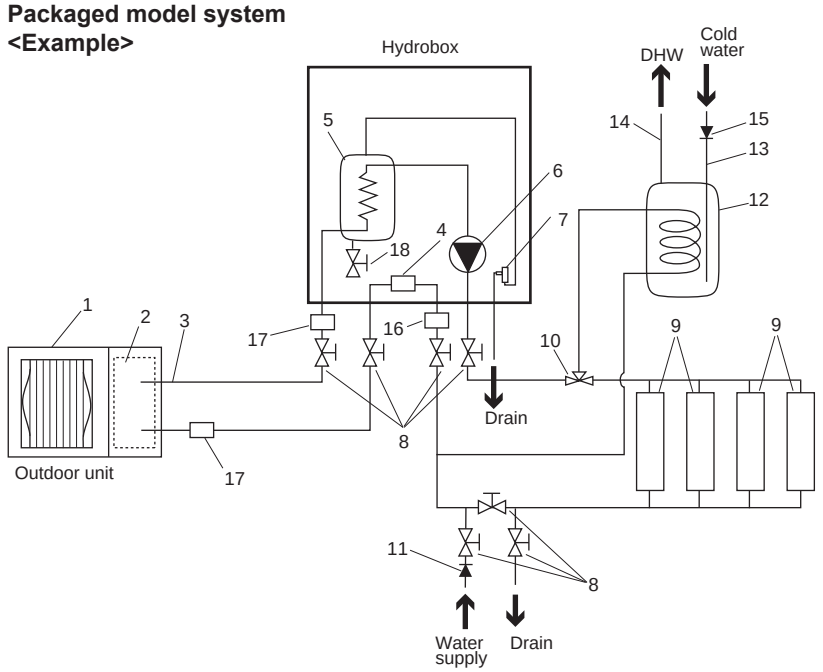
21. Strainer (field supply)

Model name	EHPT20X-VM2HA
Maximum supply pressure to the pressure reducing valve	16 bar
Operating pressure (Potable side)	3.5 bar
Expansion vessel charge setting pressure (Potable side)	3.5 bar
Expansion valve setting pressure (Potable side)	6.0 bar
Immersion heater specification (Potable side) * EN60335/Type 3000W single phase 230V 50Hz, length 460mm ** Use only Mitsubishi Electric service parts as a direct replacement.	3000 W, 230 V
Domestic hot water tank capacity	200 L
Mass of the unit when full	332 kg
Maximum primary working pressure	2.5 bar

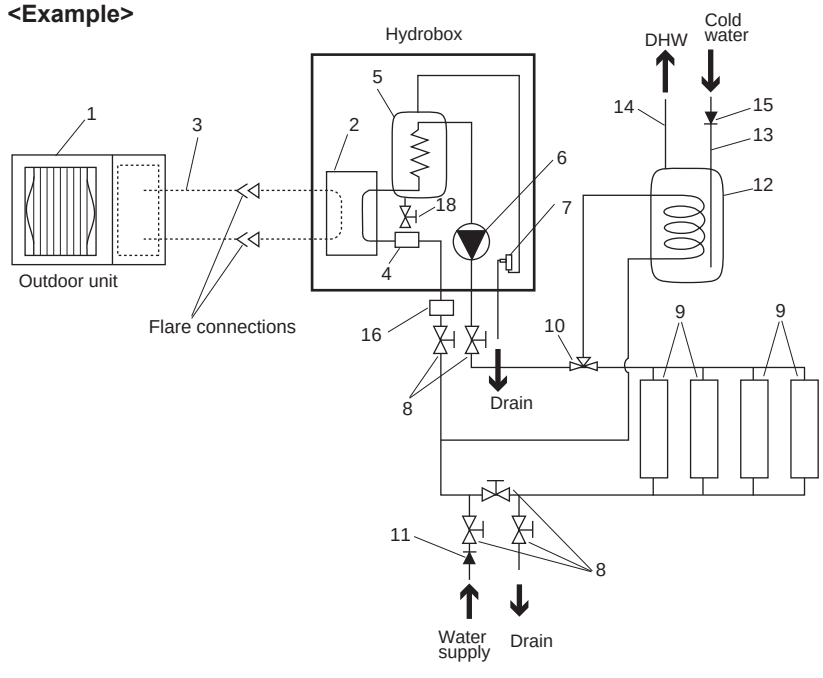
Note
- To enable draining of the cylinder unit an isolating valve should be positioned on both the inlet and outlet pipework. No valve should be fitted between the expansion valve (item 19) and the cylinder (safety matter).
- Be sure to install a strainer, on the inlet pipe work to the cylinder unit.
- Suitable drain pipe work should be attached to all relief valves in accordance with your country's regulations.
- When using components made from different metals or connecting pipes made of different metals insulate the joints to prevent a corrosive reaction taking place which may damage the pipework.
- Filling loop's flexible hose must be removed following the filling procedure. Item provided with unit as loose accessory.

■ Hydrobox

Packaged model system
<Example>



Split model system
<Example>



1. Outdoor unit
2. Plate heat exchanger
3. Interconnecting pipe work
   Packaged model system—Water
   Split model system—Refrigerant
4. Strainer
5. Booster heater
6. Water circulation pump
7. Pressure relief valve (discharge pipe by installer)
8. Isolating valve (field supply)
9. Heat emitters (e.g. radiator, UFH, fan coil)
10. 3-way valve (field supply)
11. Back flow prevention device
12. DHW indirect unvented cylinder (field supply)
13. Cold water inlet pipe (field supply)
14. DHW outlet connection (field supply)
15. Back flow prevention device (field supply)
16. **Magnetic filter is recommended. (field supply)**

For new pipework — FERNOX Boiler Buddy
For existing pipework — FERNOX Total Filter TF1

17. Strainer (field supply)
18. Drain cock (primary circuit)

Note
- Be sure to follow your local regulations to perform system configuration of the DHW connections.
- DHW connections are not included in the hydrobox package. All required parts are to be sourced locally.
- To enable draining of the hydrobox an isolating valve should be positioned on both the inlet and outlet pipework.
- Be sure to install a strainer, on the inlet pipe work to the hydrobox.
- Suitable drain pipework should be attached to all relief valves in accordance with your country's regulations.
- A backflow prevention device must be installed on water supply pipework (IEC 61770).
- When using components made from different metals or connecting pipes made of different metals insulate the joints to prevent a corrosive reaction taking place which will damage the pipework.

4.1 Water quality and system preparation

■ General

- Water quality should be to European Directive 98/83 EC standards.
  - ► pH value of 6.5-8.0 (Recommended: pH6.5 - 7.5)
  - ► Calcium ≤ 100 mg/l
  - ► Chlorine ≤ 100 mg/l
  - ► Iron/Manganese ≤ 0.5 mg/l
- In known hard water areas, to prevent/minimise scaling, it is beneficial to restrict the routine stored water temperature (DHW max. temp.) to 55°C.

■ New Installation

- Before connecting outdoor unit, thoroughly cleanse pipe work of building debris, solder etc using a suitable chemical cleansing agent.
- Flush the system to remove chemical cleanser.
- For all packaged systems add a combined inhibitor and anti-freeze solution to prevent damage to the pipe work and system components.
- For split systems the responsible installer should decide if anti-freeze solution is necessary for each site's conditions. Corrosion inhibitor however should always be used.

■ Existing Installation

- Before connecting outdoor unit the existing heating circuit MUST be chemically cleansed to remove existing debris from the heating circuit.
- Flush the system to remove chemical cleanser.
- For all packaged systems add a combined inhibitor and anti-freeze solution to prevent damage to the pipe work and system components.
- For split systems the responsible installer should decide if anti-freeze solution is necessary for each site's conditions. Corrosion inhibitor however should always be used.

When using chemical cleansers and inhibitors always follow manufacturer's instructions and ensure the product is appropriate for the materials used in the water circuit

4.2 Water pipe work

■ Hot water pipe work

The cylinder unit is UNVENTED. When installing unvented hot water systems building regulations part G3 (England and Wales), P3 (Scotland) and P5 (Northern Ireland) should be adhered to. If outside of the UK please adhere to your own country's regulations for unvented hot water systems.

Connect the flow for the DHW to pipe (*1).
The function of the following safety components of the cylinder unit and hydrobox should be checked on installation for any abnormalities;
- Pressure relief valve
- Temperature and pressure relief valve (EHPT20X-VM2HA ONLY)
- Expansion vessel pre-charge

The instruction on the following pages regarding safe discharge of hot water from Safety devices should be followed carefully.
- The pipe work will become very hot, so should be insulated to prevent burns.
- When connecting pipe work, ensure that no foreign objects such as debris or the like do not enter the pipe

■ Cold water pipe work

Cold water of a suitable standard (see section 4.1) should be introduced to the system by connecting pipes (*1) using appropriate fittings.

■ Hydraulic filter work (ONLY EHPT series)

Install a hydraulic filter or strainer (field supply) at the water intake.

Note: For the detail about positions for connecting pipes, refer to the appropriate Installation manuals.

■ Pipe work connections

Connections to the cylinder unit and hydrobox should be made using the 22 mm or 28 mm compression as appropriate.
Do not over-tighten compression fittings as this will lead to deformation of the olive ring and potential leaks.
Note: To weld the pipes in the field, cool the pipes on the cylinder unit using wet towel etc.

■ Insulation of pipe work

- All exposed water pipe work should be insulated to prevent unnecessary heat loss and condensation. To prevent condensate entering the cylinder unit and hydrobox, the pipe work and connections should be carefully insulated.
- Cold and hot water pipe work should not be run close together where possible, to avoid unwanted heat transfer.
- Pipe work between outdoor heat pump unit and cylinder unit and hydrobox should be insulated with suitable pipe insulation material with a thermal conductivity of ≤ 0.04 W/m.K.

■ Filling the system (Primary circuit)

Filling

1. Check all connections including factory fitted ones are tight.
2. Insulate pipe work between cylinder and hydrobox and outdoor unit.
3. Thoroughly clean and flush, system of all debris. (see section 4.2 for detailed instructions.)
4. Fill cylinder with potable water. Fill primary heating circuit with water and suitable anti-freeze and inhibitor as necessary. **Always use a filling loop with double check valve when filling the primary circuit to avoid back flow contamination of water supply.**

- Anti-freeze should always be used for package systems. It is the responsibility of the installer to decide if anti-freeze solution should be used in split systems depending on each site's conditions. Corrosion inhibitor should be used in both split and package systems.
- When connecting metal pipes of different materials insulate the joints to prevent a corrosive reaction taking place which will damage the pipework.

5. Check for leaks. If leaks are found, retighten the screws on the connections.
6. Pressurise system to 1 bar.
7. Release all trapped air using air vents during and following heating period.
8. Top up with water as necessary. (If pressure is below 1 bar)

■ Sizing expansion vessels

To size the expansion vessel for the heating circuit the following formula and graph can be used.

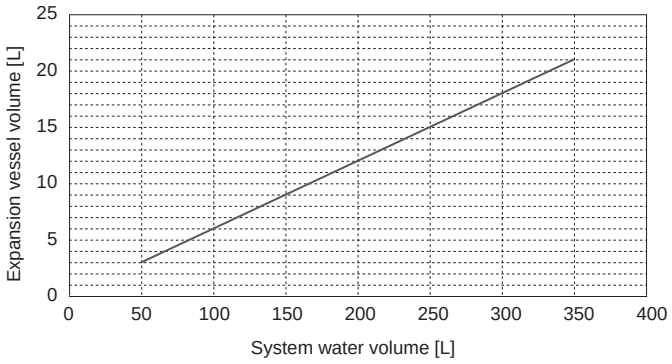
$$V = \frac{\varepsilon \times G}{1 + \frac{P_1 + 0.098}{P_2 + 0.098}}$$

Where;
V : Necessary expansion vessel volume
ε : Water expansion coefficient
G : Total volume of water in the system
P_1 : Expansion vessel setting pressure
P_2 : Max pressure during operation

Graph below is for the following values

ε : at 65 °C = 0.0198
P_1 : 0.1 MPa
P_2 : 0.3 MPa
*A 30% safety margin has been added.

Expansion vessel sizing



<Figure 4.2.1>

■ Water circulation pump characteristics

Pump speed can be selected on the pump (see Section 4.4).
Adjust the pump speed setting so that the flow rate in the primary circuit is appropriate for the outdoor unit installed see Table 4.2.1. It may be necessary to add an additional pump to the system depending on the length and lift of the primary circuit.

<Second pump >
If a second pump is required for the installation please read the following carefully.
If a second pump is used in the system it can be positioned in 2 ways.
The position of the pump influences which terminal of the FTC3 the signal cable should be wired to. If the additional pump(s) have current greater than 1A please use appropriate relay. Pump signal cable can either be wired to TBO.1 1-2 or CNP1 but not both.

Option 1 (Space heating only)
If the second pump is being used for the heating circuit only then the signal cable should be wired to TBO.1 terminals 3 and 4 (OUT2). In this position the pump can be run at a different speed to the cylinder unit's in-built pump.

Option 2 (Primary circuit DHW and space heating)
If the second pump is being used in the primary circuit between the cylinder unit and the outdoor unit (Package system ONLY) then the signal cable should be wired to TBO.1 terminals 1 and 2 (OUT1). In this position the pump speed **MUST** match the speed of the cylinder unit's in-built pump.

Outdoor heat pump unit		Water flow rate range [L/min]
Packaged	PUHZ-W50	7.1 - 14.3
	PUHZ-W85	10.0 - 25.8
	PUHZ-HW112	14.4 - 27.7
	PUHZ-HW140	17.9 - 27.7
Split	PUHZ-RP35	7.1 - 11.8
	PUHZ-RP50	7.1 - 17.2
	PUHZ-RP60	8.6 - 20.1
	PUHZ-(H)RP71	10.2 - 22.9
	PUHZ-(H)RP100	14.4 - 27.7
	PUHZ-(H)RP125	17.9 - 27.7
	PUHZ-RP140	20.1 - 27.7

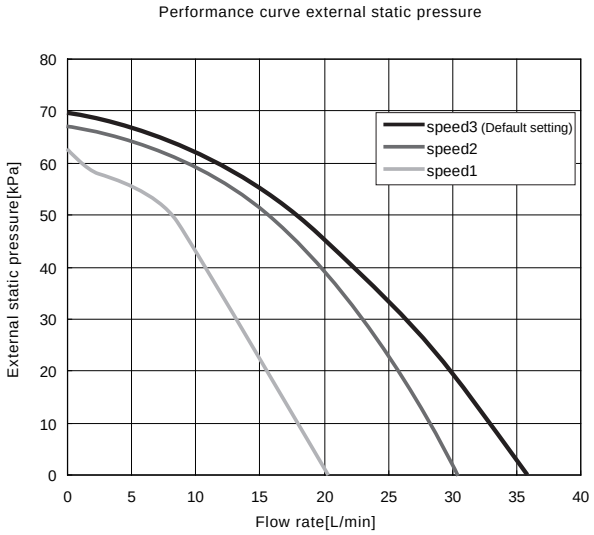
<Table 4.2.1>

* If the water flow rate is less than 7.1 L/min, the flow switch will be activated. If the water flow rate exceeds 27.7 L/min, the flow speed will be greater than 1.5 m/s, which could corrode the pipes.

4.3 Performance curve external pressure

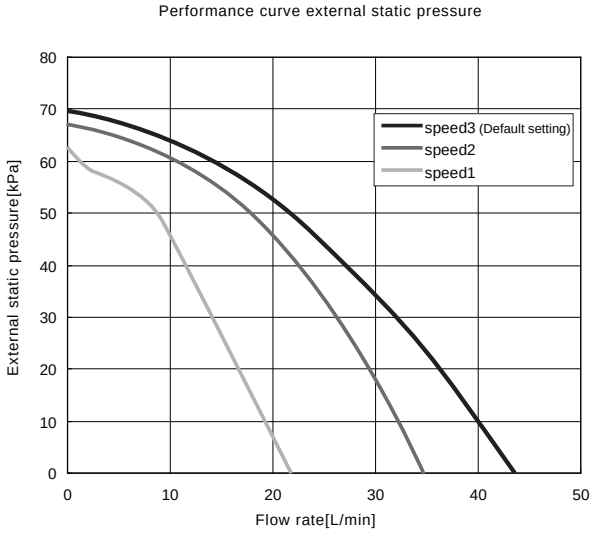
■ Cylinder unit

EHST20C-VM6HA, EHST20C-YM9HA, EHST20C-VM6A, EHST20C-YM9A, EHST20C-VM6SA
EHPT20X-VM2HA, EHPT20X-VM6HA, EHPT20X-YM9HA, EHPT20X-VM6A, EHPT20X-YM9A

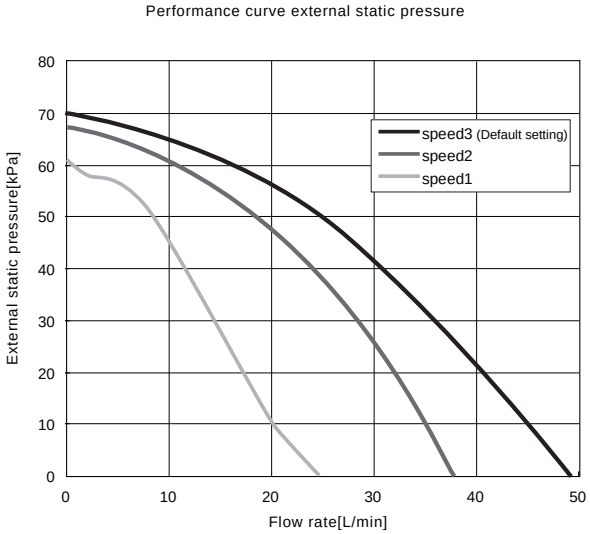


■ Hydrobox

EHSC-VM6A, EHSC-YM9A



EHPX-VM2A



■ Safety device connections <Cylinder unit>

The expansion relief valve on the secondary hot water side, and the temperature and pressure (T&P) relief valve (*1), situated part way down the tank on the right hand side, both need appropriate discharge pipe work. In accordance with Building Regulations a tundish must be fitted into the pipework within 500 mm of the safety device. Due to the distance between the two safety devices it may be necessary to fit each safety device with its own tundish before you run the pipework together to a safe discharge (see Figure 4.3.1). The right side panel has a window (*2) so that connection can be made to the factory fitted temperature and pressure relief valve. If you wish to make the connection in a different position you will have to cut a hole in the side panel yourself. However it remains necessary that the drainage parameters outlined in the appropriate Building Regulations are complied with.

*1 Temperature and pressure relief valve fitted on EHPT20X-VM2HA ONLY.
*2 Unscrew the plate on the right-side panel, connect the T&P valve to the pipework, and refit the plate. Always replace the plate so that no gaps exist between the plate and side panel and the plate and drain pipe to avoid heat loss.

Note:
Alternatively the discharges from the expansion relief valve and T&P relief valve may commonly discharge to a singular tundish, so long as this tundish is located within 500 mm of the T&P relief valve. When connecting discharge pipes to the safety devices, beware not to strain the inlet connections.

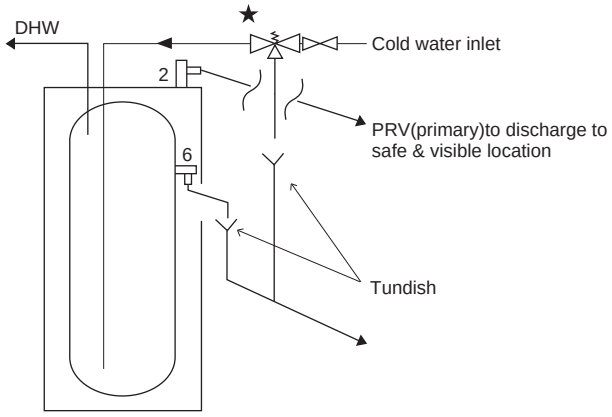
Diagram part No.	Description	Connection size	Connection type
2	Pressure relief valve	G 1/2	Female
6	Temperature and pressure relief valve (Factory fitted)	15 mm	Compression
★	Expansion relief valve (part of inlet control group)	15 mm	Compression

<Table 4.3.1>

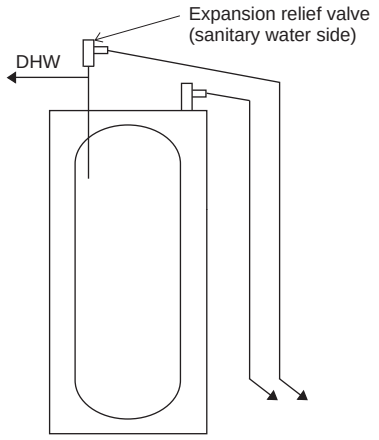
Always refer to local regulations when installing discharge pipework.
Install discharge pipe work in a frost-free environment.
It is necessary to provide appropriate drainage from the pressure relief valve situated on top of the cylinder to prevent damage to the unit and the surrounding area from any steam or hot water released. Relief valves MUST NOT be used for any other purpose.

For UK use WK01UK-E kit, for other countries please see below;
• Any discharge pipework should be capable of withstanding discharge of hot water. Discharge pipework should be installed in a continuously downward direction. Discharge pipework must be left open to the environment.

EHPT20X-VM2HA (for UK)



Other models • • • The expansion vessel on the sanitary water side shall be installed as necessary in accordance with your local regulations.



<Figure 4.3.1>

<Pressure relief valve included with the cylinder unit>
Applicable model:
EHPT20X-VM2HA

	Item	Quantity
①	Pressure relief valve (0.3 MPa (3 bar))	1

Install the pressure relief valve (0.3 MPa (3 bar)) on the local piping connected to the space heating flow.
The connecting size is G1/2" (the drain connection size G1/2").
The space heating flow can be identified on the diagram label on top of the cylinder unit.

Applicable models:
EHST20C-VM6HA, EHST20C-YM9HA, EHST20C-VM6A, EHST20C-YM9A, EHST20C-VM6SA, EHPT20X-VM6HA, EHPT20X-YM9HA, EHPT20X-VM6A, EHPT20X-YM9A

	Item	Quantity
①	Pressure relief valve (0.3 MPa (3 bar))	1
②	Pressure relief valve (1.0 MPa (10 bar))	2

Install the pressure relief valve (0.3 MPa (3 bar)) on the local piping connected to the space heating flow.
The connecting size is G1/2" (the drain connection size G1/2").
The space heating flow can be identified on the diagram label on top of the cylinder unit.
Install the two pressure relief valves (1.0MPa (10 bar)) on the local piping connected to the cold water inlet.
The pressure relief valves should be installed between the pressure reducing valve and the cylinder unit.
The connection size is G1/2" (the drain connection size G3/4").
The cold water inlet can be identified on the diagram label on top of the cylinder unit.

<Accessory location>
The pressure relief valve accessory pack can be found inside the cylinder unit, taped to the base.

4.4 Safety device discharge arrangements for UK (G3)

The following instructions are a requirement of British building regulations and must be adhered to. For other countries please refer to local legislation. If you are in any doubt please seek advice from local building planning office.

1. Position the inlet control group so that discharge from both safety valves can be joined together via a 15 mm end feed Tee.
2. Connect the tundish and route the discharge pipe as shown in Figure 4.4.1.
3. The tundish should be fitted vertically and as close to the safety device as possible and within 500 mm of the device.
4. The tundish should be visible to occupants and positioned away from electrical devices.
5. The discharge pipe (D2) from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge, be of metal construction and:

A) Be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9 m long i.e. discharge pipes between 9 m and 18 m equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device, between 18 and 27 m at least 3 sizes larger, and so on. Bends must be taken into account in calculating the flow resistance. Refer to Figure 4.4.1, Table 4.4.1 and the worked example. An alternative approach for sizing discharge pipes would be to follow BS 6700: 1987 specification for design installation, testing and maintenance of services supplying water for domestic use within buildings and their cartilages.

B) Have a vertical section of pipe at least 300 mm long, below the tundish before any elbows or bends in the pipe work.

C) Be installed with a continuous fall.

D) Have discharges visible at both the tundish and the final point of discharge but where this is not possible or is practically difficult there should be clear visibility at one or other of these locations. Examples of acceptable discharge arrangements are:

i. Ideally below a fixed grating and above the water seal in a trapped gully.

ii. Downward discharges at low level; i.e. up to 100 mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that where children may play or otherwise come into contact with discharges a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility.

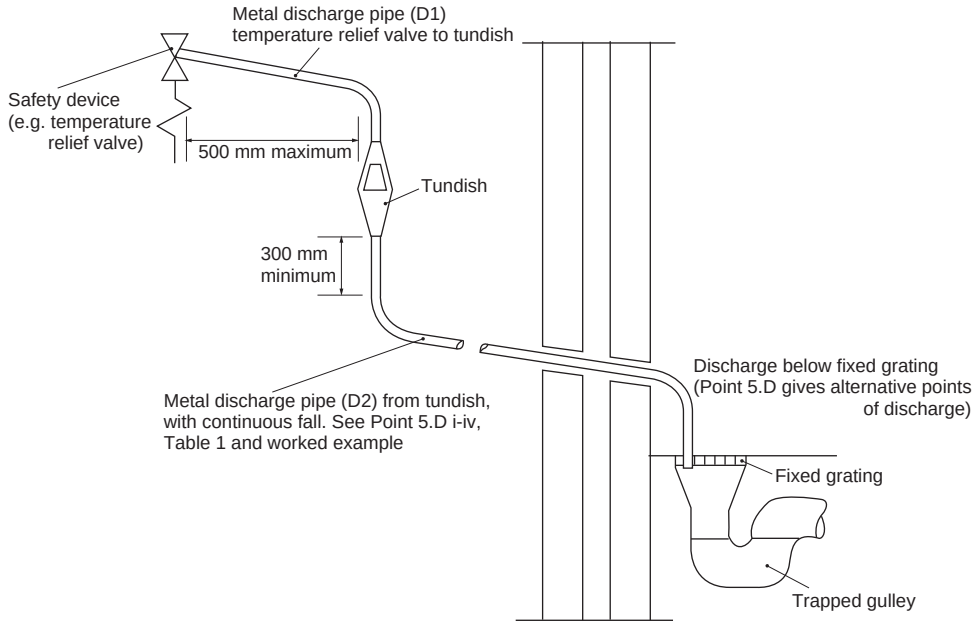
iii. Discharges at high level; e.g. into a metal hopper and metal down pipe with the end of the discharge pipe clearly visible (tundish visible or not) or onto a roof capable of withstanding high temperature discharges of water and 3 m from any plastics guttering system that would collect such discharges (tundish visible).

iv. Where a single pipe serves a number of discharges, such as in blocks of flats, the number served should be limited to not more than 6 systems so that any installation discharging can be traced reasonably easily. The single common discharge pipe should be at least one pipe size larger than the largest individual discharge pipe (D2) to be connected. If unvented hot water storage systems are installed where discharges from safety devices may not be apparent i.e. in dwellings occupied by blind, infirm or disabled people, consideration should be given to the installation of an electronically operated device to warn when discharge takes place.

Note: The discharge will consist of scalding water and steam. Asphalt, roofing felt and nonmetallic rainwater goods may be damaged by such discharges.

Worked example: The example below is for a G½ temperature relief valve with a discharge pipe (D2) having 4 No. elbows and length of 7 m from the tundish to the point of discharge.

From Table 4.4.1: Maximum resistance allowed for a straight length of 22 mm copper discharge pipe (D2) from a G½ temperature relief valve is: 9.0 m subtract the resistance for 4 No. 22 mm elbows at 0.8 m each = 3.2 m. Therefore the maximum permitted length equates to: 5.8 m. 5.8 m is less than the actual length of 7 m, therefore calculate the next largest size. Maximum resistance allowed for a straight length of 28 mm pipe (D2) from a G½ temperature relief valve equates to: 18 m
Subtract the resistance for 4 No. 28 mm elbows at 1.0 m each = 4 m. Therefore the maximum permitted length equates to: 14 m. As the actual length is 7 m, a 28 mm (D2) copper pipe will be satisfactory.



<Figure 4.4.1>

Valve outlet size	Minimum size of discharge pipe D1	Minimum size of discharge pipe D2 from tundish	Maximum resistance allowed, expressed as a length of straight pipe (no elbows or bends)	Resistance created by each elbow or bend
G 1/2	15 mm	22 mm	Up to 9 m	0.8 m
		28 mm	Up to 18 m	1.0 m
		35 mm	Up to 27 m	1.4 m
G 3/4	22 mm	28 mm	Up to 9 m	1.0 m
		35 mm	Up to 18 m	1.4 m
		42 mm	Up to 27 m	1.7 m
G1	28 mm	35 mm	Up to 9 m	1.4 m
		42 mm	Up to 18 m	1.7 m
		54 mm	Up to 27 m	2.3 m

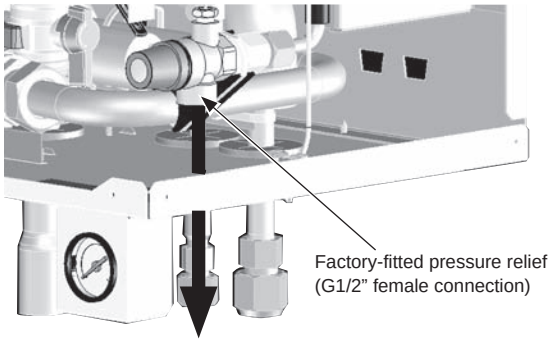
<Table 4.4.1>

■ Safety device connections <Hydrobox>

The hydrobox contains a pressure relief valve. (see <Figure 4.4.2>) The connection size is G1/2" female. The installer MUST connect appropriate discharge pipework from this valve in accordance with local and national regulations.
Failure to do so will result in discharge from the pressure relief valve directly into the hydrobox and cause serious damage to the product.

A pressure relief valve (3 bar) is supplied as a loose accessory with the hydrobox in addition to the pressure relief valve that is installed on the hydrobox. Install the pressure relief valve on the local piping connected to the space heating flow.
The connection size is G1/2" (the drain connection size G1/2").
The space heating/indirect DHW cylinder primary flow can be identified on the pipe diagram label on the bottom of the hydrobox.

All pipework used should be capable of withstanding discharge of hot water. Relief valves should NOT be used for any other purpose, and their discharges should terminate in a safe and appropriate manner in accordance with local regulation requirements.
Note: Beware that the manometer and the pressure relief valve are NOT strained on its capillary side and on its inlet side respectively.



<Figure 4.4.2>

5.1 Combination performance

■ Combination performance (Split type)

			Cylinder unit					Hydrobox	
			EHST20C-VM6HA	EHST20C-YM9HA	EHST20C-VM6A	EHST20C-YM9A	EHST20C-VM6SA	EHSC-VM6A	EHSC-YM9A
Outdoor unit			PUHZ-RP35VHA4						
Heating A7/W35	Capacity	kW	4.10						
	COP	-	4.14						
	Power input(*)	kW	0.99						
Heating A7/W45	Capacity	kW	4.10						
	COP	-	3.06						
	Power input(*)	kW	1.34						
Heating A2/W35	Capacity	kW	4.10						
	COP	-	2.93						
	Power input(*)	kW	1.40						
Outdoor unit			PUHZ-RP50VHA4						
Heating A7/W35	Capacity	kW	6.00						
	COP	-	3.73						
	Power input(*)	kW	1.61						
Heating A7/W45	Capacity	kW	6.00						
	COP	-	2.88						
	Power input(*)	kW	2.08						
Heating A2/W35	Capacity	kW	5.00						
	COP	-	2.50						
	Power input(*)	kW	2.00						
Outdoor unit			PUHZ-RP60VHA4						
Heating A7/W35	Capacity	kW	7.00						
	COP	-	4.29						
	Power input(*)	kW	1.63						
Heating A7/W45	Capacity	kW	7.00						
	COP	-	3.27						
	Power input(*)	kW	2.14						
Heating A2/W35	Capacity	kW	6.80						
	COP	-	2.94						
	Power input(*)	kW	2.31						
Outdoor unit			PUHZ-RP71VHA4						
Heating A7/W35	Capacity	kW	8.00						
	COP	-	4.21						
	Power input(*)	kW	1.90						
Heating A7/W45	Capacity	kW	8.00						
	COP	-	3.20						
	Power input(*)	kW	2.50						
Heating A2/W35	Capacity	kW	7.50						
	COP	-	2.92						
	Power input(*)	kW	2.57						
Outdoor unit			PUHZ-RP100VKA/YKA						
Heating A7/W35	Capacity	kW	11.20						
	COP	-	4.31						
	Power input(*)	kW	2.60						
Heating A7/W45	Capacity	kW	11.20						
	COP	-	3.20						
	Power input(*)	kW	3.50						
Heating A2/W35	Capacity	kW	10.50						
	COP	-	2.90						
	Power input(*)	kW	3.62						
Outdoor unit			PUHZ-RP125VKA/YKA						
Heating A7/W35	Capacity	kW	14.00						
	COP	-	4.24						
	Power input(*)	kW	3.30						
Heating A7/W45	Capacity	kW	14.00						
	COP	-	3.10						
	Power input(*)	kW	4.51						
Heating A2/W35	Capacity	kW	11.50						
	COP	-	2.70						
	Power input(*)	kW	4.26						
Outdoor unit			PUHZ-RP140VKA/YKA						
Heating A7/W35	Capacity	kW	16.00						
	COP	-	4.10						
	Power input(*)	kW	3.90						
Heating A7/W45	Capacity	kW	16.00						
	COP	-	3.09						
	Power input(*)	kW	5.17						
Heating A2/W35	Capacity	kW	11.80						
	COP	-	2.78						
	Power input(*)	kW	4.24						

* The pump input value is not included.
Heating A7W35: Heating Outside air DB 7°C/WB 6°C, Water outlet temperature 35°C (ΔT=5°C)
A7W45: Heating Outside air DB 7°C/WB 6°C, Water outlet temperature 45°C (ΔT=5°C)
A2W35: Heating Outside air DB 2°C/WB 1°C, Water outlet temperature 35°C (ΔT=5°C)

■ Combination performance (Split type)

			Cylinder unit					Hydrobox	
			EHST20C-VM6HA	EHST20C-YM9HA	EHST20C-VM6A	EHST20C-YM9A	EHST20C-VM6SA	EHSC-VM6A	EHSC-YM9A
Outdoor unit			PUHZ-HRP71VHA2						
Heating A7/W35	Capacity	kW	8.00						
	COP	-	4.40						
	Power input(*)	kW	1.82						
Heating A7/W45	Capacity	kW	8.00						
	COP	-	3.24						
	Power input(*)	kW	2.47						
Heating A2/W35	Capacity	kW	8.00						
	COP	-	3.24						
	Power input(*)	kW	2.47						
Outdoor unit			PUHZ-HRP100VHA2/YHA2						
Heating A7/W35	Capacity	kW	11.20						
	COP	-	4.26						
	Power input(*)	kW	2.63						
Heating A7/W45	Capacity	kW	11.20						
	COP	-	3.24						
	Power input(*)	kW	3.46						
Heating A2/W35	Capacity	kW	11.20						
	COP	-	3.02						
	Power input(*)	kW	3.71						
Outdoor unit			PUHZ-HRP125YHA2						
Heating A7/W35	Capacity	kW	14.00						
	COP	-	4.22						
	Power input(*)	kW	3.32						
Heating A7/W45	Capacity	kW	14.00						
	COP	-	3.20						
	Power input(*)	kW	4.38						
Heating A2/W35	Capacity	kW	14.00						
	COP	-	2.70						
	Power input(*)	kW	5.19						

■ Combination performance (Package type)

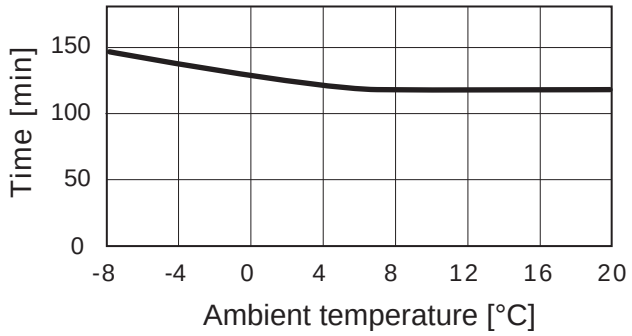
			Cylinder unit					Hydrobox
			EHPT20X-VM2HA	EHPT20X-VM6HA	EHPT20X-YM9HA	EHPT20X-VM6A	EHPT20X-YM9A	EHPX-VM2A
Outdoor unit			PUHZ-W50VHA(-BS)					
Heating A7/W35	Capacity	kW	5.00					
	COP	-	4.10					
	Power input(**)	kW	1.22					
Heating A7/W45	Capacity	kW	5.00					
	COP	-	3.21					
	Power input(**)	kW	1.56					
Heating A2/W35	Capacity	kW	5.00					
	COP	-	3.13					
	Power input(**)	kW	1.60					
Outdoor unit			PUHZ-W85VHA2(-BS)					
Heating A7/W35	Capacity	kW	9.00					
	COP	-	4.18					
	Power input(**)	kW	2.15					
Heating A7/W45	Capacity	kW	9.00					
	COP	-	3.24					
	Power input(**)	kW	2.78					
Heating A2/W35	Capacity	kW	8.50					
	COP	-	3.17					
	Power input(**)	kW	2.68					
Outdoor unit			PUHZ-HW112YHA2(-BS)					
Heating A7/W35	Capacity	kW	11.20					
	COP	-	4.42					
	Power input(**)	kW	2.53					
Heating A7/W45	Capacity	kW	11.20					
	COP	-	3.39					
	Power input(**)	kW	3.30					
Heating A2/W35	Capacity	kW	11.20					
	COP	-	3.11					
	Power input(**)	kW	3.60					
Outdoor unit			PUHZ-HW140VHA2/YHA2(-BS)					
Heating A7/W35	Capacity	kW	14.00					
	COP	-	4.25					
	Power input(**)	kW	3.29					
Heating A7/W45	Capacity	kW	14.00					
	COP	-	3.35					
	Power input(**)	kW	4.18					
Heating A2/W35	Capacity	kW	14.00					
	COP	-	3.11					
	Power input(**)	kW	4.50					

* The pump input value is not included.
** The pump input value is included (based on EN 14511).
Heating A7W35: Heating Outside air DB 7°C/WB 6°C, Water outlet temperature 35°C (ΔT=5°C)
A7W45: Heating Outside air DB 7°C/WB 6°C, Water outlet temperature 45°C (ΔT=5°C)
A2W35: Heating Outside air DB 2°C/WB 1°C, Water outlet temperature 35°C (ΔT=5°C)

5.2 Heat time data (DHW mode)

■ PUHZ-W50VHA

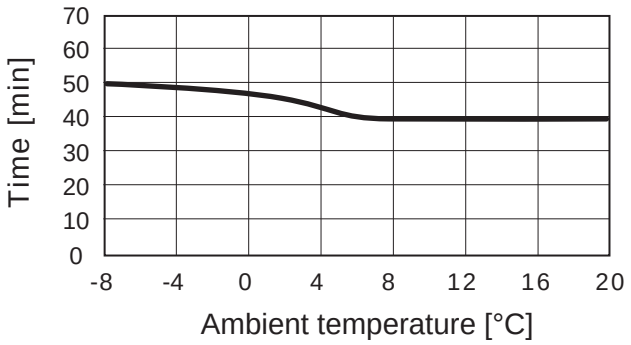
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	145	130	120	120

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55[°C]

Reheat time

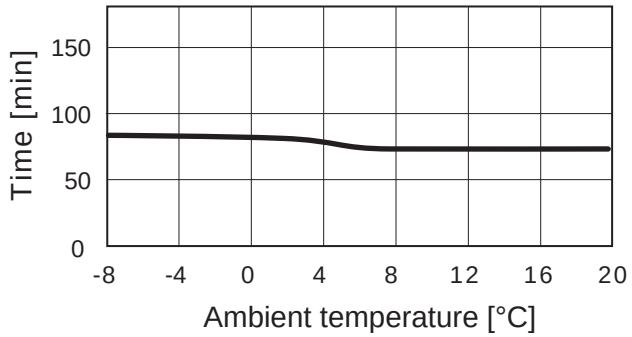


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	50	45	40	40

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-W85VHA2

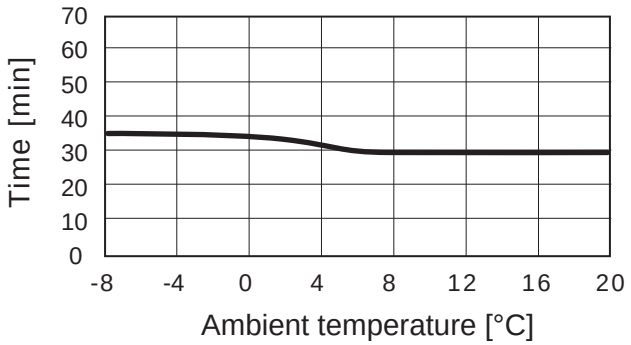
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	85	80	75	75

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

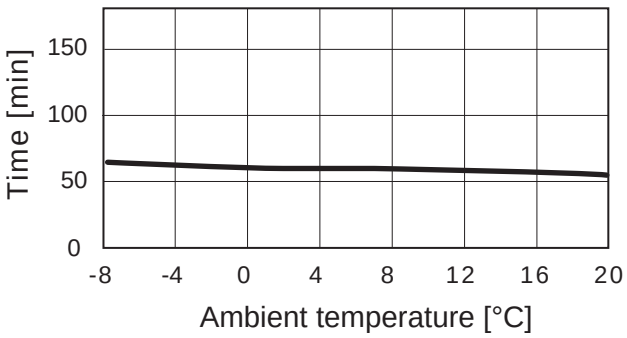


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	35	35	30	30

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-HW112YHA2

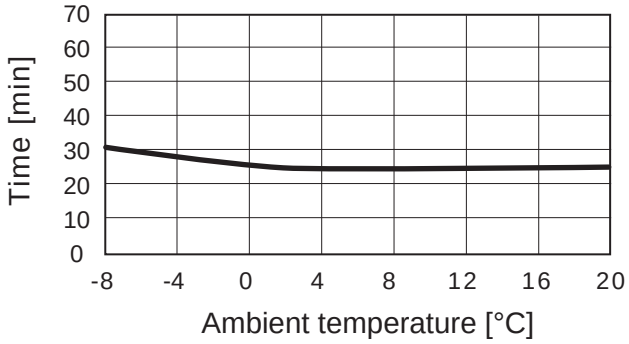
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	65	60	60	55

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

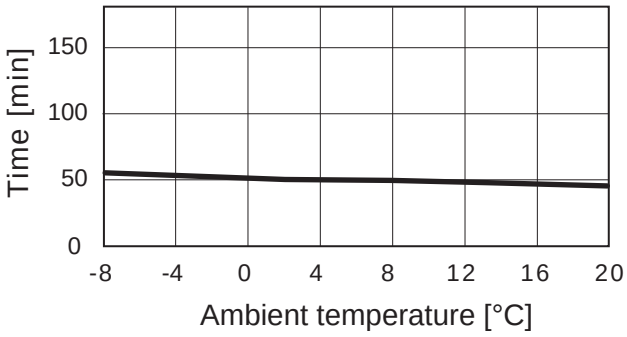


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	30	25	25	25

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-HW140VHA2/YHA2

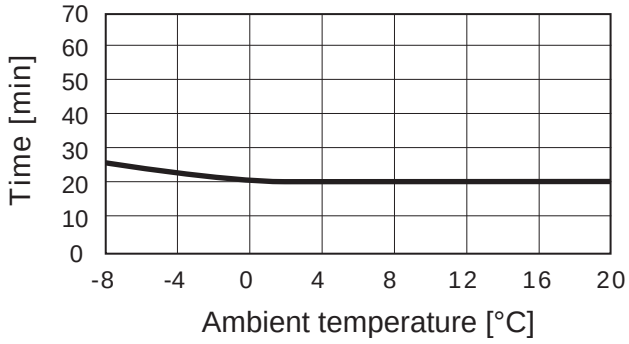
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	55	50	50	45

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

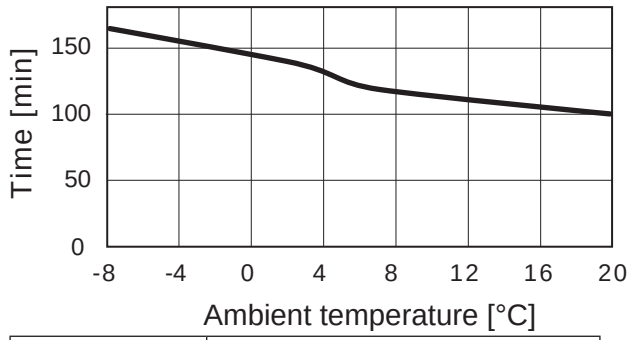


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	25	20	20	20

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-RP35VHA4

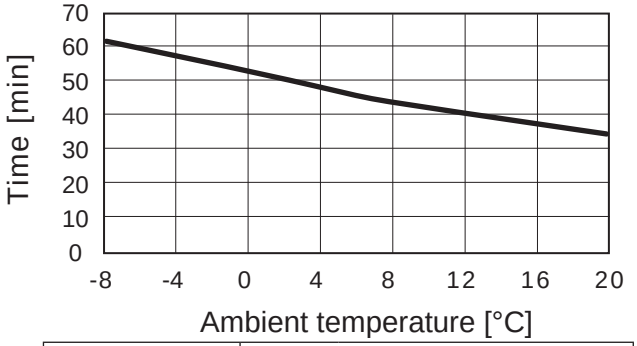
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	165	140	120	100

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

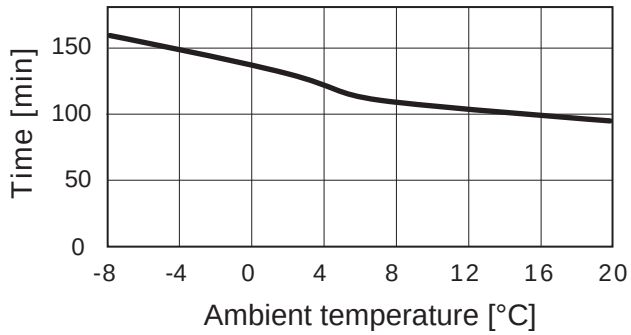


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	60	50	44	35

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-RP50VHA4

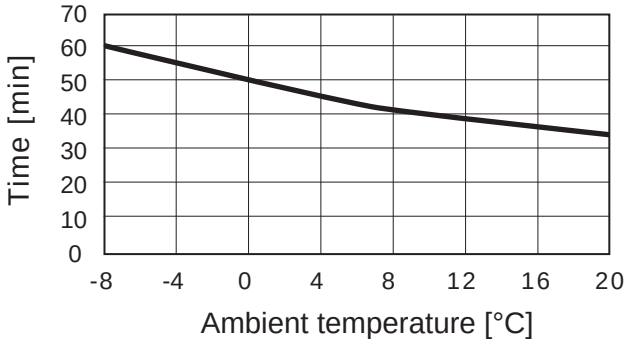
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	160	130	110	95

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

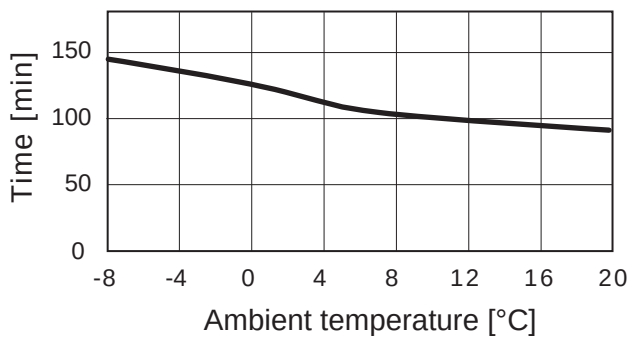


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	58	48	42	34

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-RP60VHA4

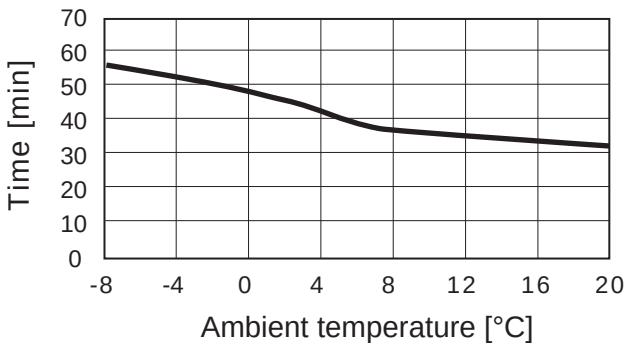
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	140	120	105	90

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

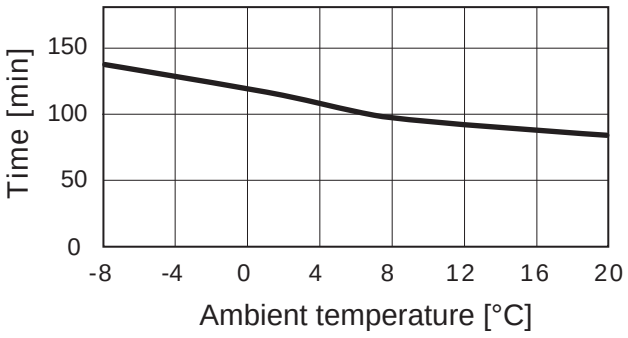


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	55	46	38	32

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-RP71VHA4

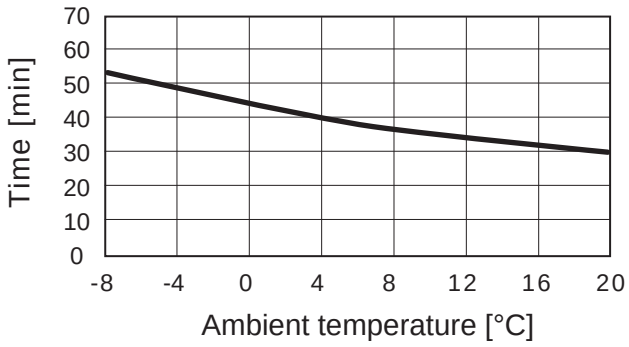
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	135	115	100	85

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

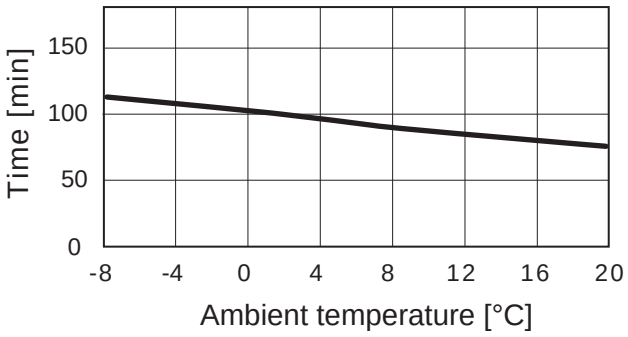


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	52	44	36	30

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-RP100VKA/YKA

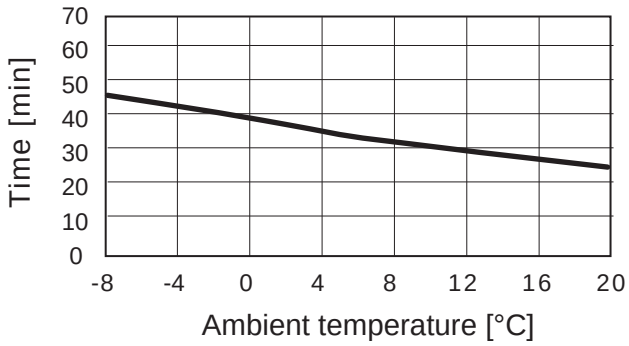
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	110	100	90	75

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

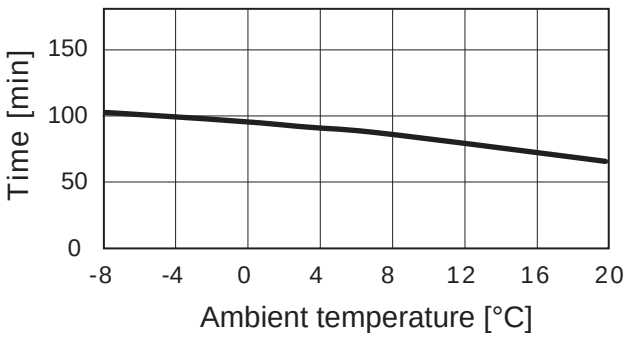


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	46	40	34	26

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-RP125VKA/YKA

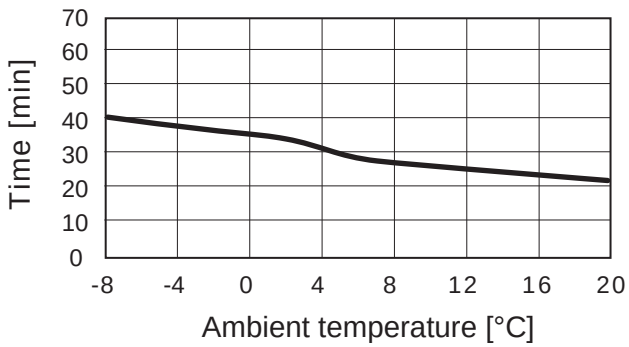
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	100	90	80	65

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

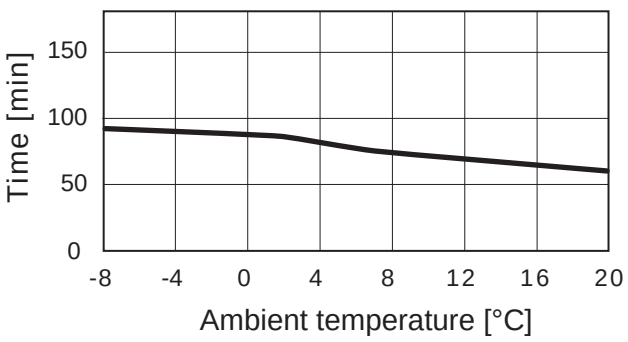


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	40	35	28	22

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ **PUHZ-RP140VKA/YKA**

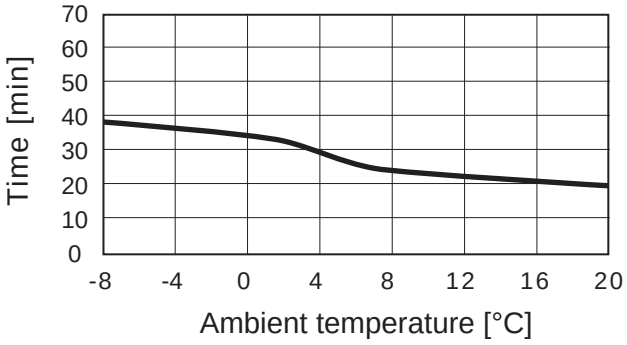
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	90	85	75	60

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55 [°C]

Reheat time

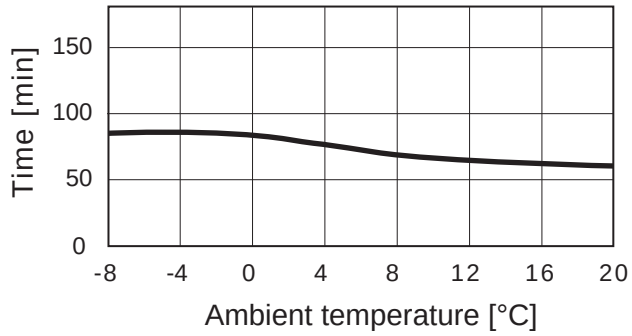


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	38	32	25	20

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50% (100 [L]) of DHW tank to 55 [°C]

■ PUHZ-HRP71VHA2

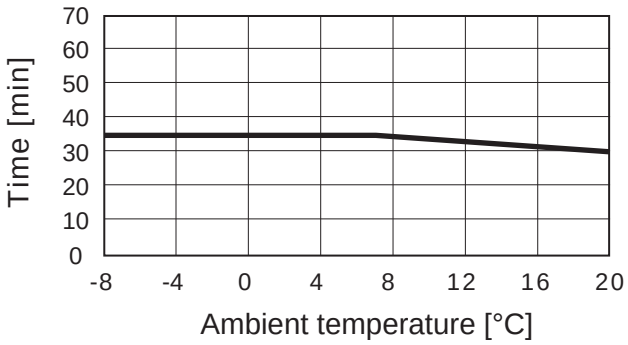
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	85	80	70	60

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55[°C]

Reheat time

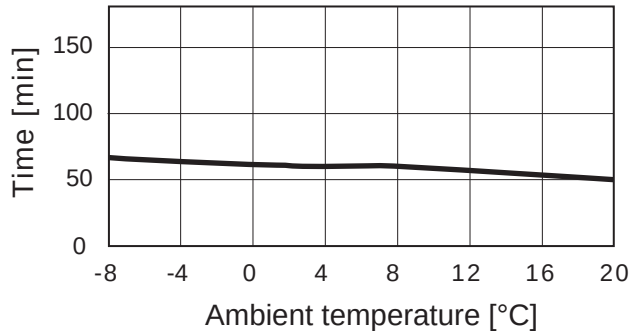


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	35	35	35	30

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50%(100 [L]) of DHW tank to 55 [°C]

■ PUHZ-HRP100VHA2/YHA2

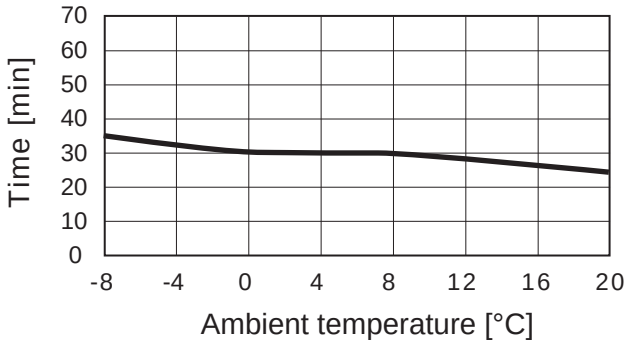
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	65	60	60	50

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55[°C]

Reheat time

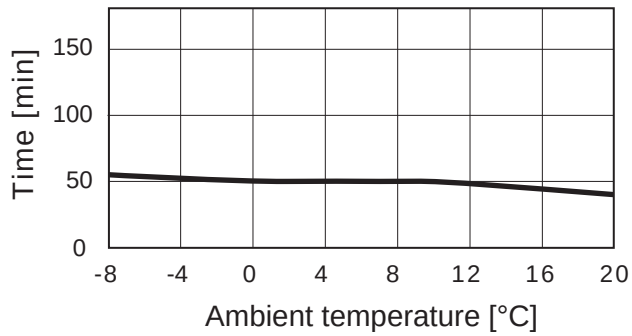


	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	35	30	30	25

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50%(100 [L]) of DHW tank to 55 [°C]

■ PUHZ-HRP125YHA2

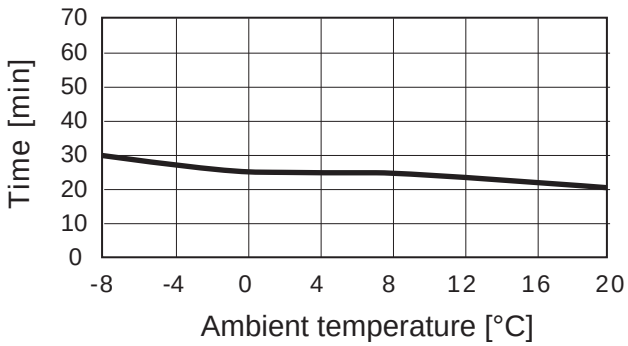
Heat time



	Ambient temperature [°C]			
	-7	2	7	20
Heat time (min)	55	50	50	40

•Mitsubishi's domestic hot water tank (200 [L])
•Time to raise DHW tank temperature 15 – 55[°C]

Reheat time



	Ambient temperature [°C]			
	-7	2	7	20
Reheat time (min)	30	25	25	20

•Mitsubishi's domestic hot water tank (200 [L])
•Time to reheat 50%(100 [L]) of DHW tank to 55 [°C]