



Changes for the Better

MODEL

PWFY-P100VM-E-BU

PWFY-P100VM-E-AU

PWFY-P200VM-E-AU

DATA BOOK

2nd edition

Safety Precautions

- Before installing the unit, thoroughly read the following safety precautions.
- Observe these safety precautions for your safety.

WARNING

This symbol is intended to alert the user to the presence of important instructions that must be followed to avoid the risk of serious injury or death.

CAUTION

This symbol is intended to alert the user to the presence of important instructions that must be followed to avoid the risk of serious injury or damage to the unit.

- After reading this manual, give it to the user to retain for future reference.
- Keep this manual for easy reference. When the unit is moved or repaired, give this manual to those who provide these services.

When the user changes, make sure that the new user receives this manual.

WARNING

- **Do not use steel pipes as water pipes.**
 - Copper pipes are recommended.
- **The water circuit should be a closed circuit.**
- **Ask the dealer or an authorized technician to install the air conditioner.**
 - Improper installation by the user may result in water leakage, electric shock, or fire.
- **Install the unit in a place that can withstand its weight.**
 - Inadequate strength may cause the unit to fall down, resulting in injuries.
- **Do not touch the unit. The unit surface can be hot.**
- **Do not install the unit where corrosive gas is generated.**
- **Use the specified cables for wiring. Make the connections securely so that the outside force of the cable is not applied to the terminals.**
 - Inadequate connection and fastening may generate heat and cause a fire.
- **Prepare for rain and other moisture and earthquakes and install the unit at the specified place.**
 - Improper installation may cause the unit to topple and result in injury.
- **Always use an strainer and other accessories specified by Mitsubishi Electric.**
 - Ask an authorized technician to install the accessories. Improper installation by the user may result in water leakage, electric shock, or fire.
- **Never repair the unit. If the air conditioner must be repaired, consult the dealer.**
 - If the unit is repaired improperly, water leakage, electric shock, or fire may result.
- **Do not touch the refrigerant pipes and Water pipes.**
 - Improper handling may result in injury.
- **When handling this product, always wear protective equipment.**
 - Improper handling may result in injury.

EG: Gloves, full arm protection namely boiler suit, and safety glasses.

- **If refrigerant gas leaks during installation work, ventilate the room.**
 - If the refrigerant gas comes into contact with a flame, poisonous gases will be released.
- **Install the unit according to this Installation Manual.**
 - If the unit is installed improperly, water leakage, electric shock, or fire may result.
- **Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard" and "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit.**
 - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result.
- **Keep the electric parts away from water (washing water etc.).**
 - It might result in electric shock, catching fire or smoke.
- **Securely install the heat source unit terminal cover (panel).**
 - If the terminal cover (panel) is not installed properly, dust or water may enter the heat source unit and fire or electric shock may result.
- **When installing and moving the air conditioner to another site, do not charge it with a refrigerant different from the refrigerant (R410A) specified on the unit.**
 - If a different refrigerant or air is mixed with the original refrigerant, the refrigerant cycle may malfunction and the unit may be damaged.
- **If the air conditioner is installed in a small room, measures must be taken to prevent the refrigerant concentration from exceeding the safety limit even if the refrigerant should leak.**
 - Consult the dealer regarding the appropriate measures to prevent the safety limit from being exceeded. Should the refrigerant leak and cause the safety limit to be exceeded, hazards due to lack of oxygen in the room could result.
- **When moving and reinstalling the air conditioner, consult the dealer or an authorized technician.**
 - If the air conditioner is installed improperly, water leakage, electric shock, or fire may result.

- After completing installation work, make sure that refrigerant gas is not leaking.
- If the refrigerant gas leaks and is exposed to a fan heater, stove, oven, or other heat source, it may generate noxious gases.
- **Do not reconstruct or change the settings of the protection devices.**
- If the pressure switch, thermal switch, or other protection device is shorted and operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result.
- To dispose of this product, consult your dealer.
- The installer and system specialist shall secure safety against leakage according to local regulation or standards.
- Following standards may be applicable if local regulation are not available.
- Pay a special attention to the place, such as a basement, etc. where refrigeration gas can stay, since refrigeration is heavier than the air.

Precautions for handling units for use with R410A



CAUTION

- **Do not use the existing refrigerant piping.**
- The old refrigerant and refrigerant oil in the existing piping contains a large amount of chlorine which may cause the refrigerant oil of the new unit to deteriorate.
- R410A is a high-pressure refrigerant and can cause the existing piping to burst.
- **Use refrigerant piping made of C1220 (CU-DHP) phosphorus deoxidized copper as specified in the JIS H3300 "Copper and copper alloy seamless pipes and tubes". In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.**
- Contaminants on the inside of the refrigerant piping may cause the refrigerant residual oil to deteriorate.
- **Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Store elbows and other joints in a plastic bag.)**
- If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result.
- **Apply a small amount of ester oil, ether oil, or alkyl benzene to flares. (for indoor unit)**
- Infiltration of a large amount of mineral oil may cause the refrigerant oil to deteriorate.
- **Use liquid refrigerant to fill the system.**
- If gas refrigerant is used to seal the system, the composition of the refrigerant in the cylinder will change and performance may drop.
- **Do not use a refrigerant other than R410A.**
- If another refrigerant (R22, etc.) is mixed with R410A, the chlorine in the refrigerant may cause the refrigerant oil to deteriorate.
- **Use a vacuum pump with a reverse flow check valve.**
- The vacuum pump oil may flow back into the refrigerant cycle and cause the refrigerant oil to deteriorate.
- **Do not use the following tools that are used with conventional refrigerants.**
(Gauge manifold, charge hose, gas leak detector, reverse flow check valve, refrigerant charge base, refrigerant recovery equipment)
- If the conventional refrigerant and refrigerant oil are mixed in the R410A, the refrigerant may deteriorate.
- If water is mixed in the R410A, the refrigerant oil may deteriorate.
- Since R410A does not contain any chlorine, gas leak detectors for conventional refrigerants will not react to it.
- **Do not use a charging cylinder.**
- Using a charging cylinder may cause the refrigerant to deteriorate.
- **Do not use antioxidant or leak-detection additive.**
- **Be especially careful when managing the tools.**
- If dust, dirt, or water gets in the refrigerant cycle, the refrigerant may deteriorate.

Before installing the unit

WARNING

- **Do not install the unit where combustible gas may leak.**
 - If the gas leaks and accumulates around the unit, an explosion may result.
- **Do not use the air conditioner where food, pets, plants, precision instruments, or artwork are kept.**
 - The quality of the food, etc. may deteriorate.
- **Do not use the air conditioner in special environments.**
 - Oil, steam, sulfuric smoke, etc. can significantly reduce the performance of the air conditioner or damage its parts.
- **When installing the unit in a hospital, communication station, or similar place, provide sufficient protection against noise.**
 - The inverter equipment, private power generator, high-frequency medical equipment, or radio communication equipment may cause the air conditioner to operate erroneously, or fail to operate. On the other hand, the air conditioner may affect such equipment by creating noise that disturbs medical treatment or image broadcasting.
- **Do not install the unit on a structure that may cause leakage.**
 - When the room humidity exceeds 80 % or when the drain pipe is clogged, condensation may drip from the indoor unit. Perform collective drainage work together with the unit, as required.

Before installing the unit (moving and reinstalling the unit) and performing electrical work

CAUTION

- **Ground the unit.**
 - Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground lines. Improper grounding may result in electric shock.
- **Install the power cable so that tension is not applied to the cable.**
 - Tension may cause the cable to break and generate heat and cause a fire.
- **Install a leak circuit breaker, as required.**
 - If a leak circuit breaker is not installed, electric shock may result.
- **Use power line cables of sufficient current carrying capacity and rating.**
 - Cables that are too small may leak, generate heat, and cause a fire.
- **Use only a circuit breaker and fuse of the specified capacity.**
 - A fuse or circuit breaker of a larger capacity or a steel or copper wire may result in a general unit failure or fire.
- **Do not wash the air conditioner units.**
 - Washing them may cause an electric shock.
- **Be careful that the installation base is not damaged by long use.**
 - If the damage is left uncorrected, the unit may fall and cause personal injury or damage property.
- **Install the drain piping according to this Installation Manual to ensure proper drainage. Wrap thermal insulation around the pipes to prevent condensation.**
 - Improper drain piping may cause water leakage and damage to furniture and other possessions.
- **Be very careful about product transportation.**
 - If the unit weighs more than 20kg, carry the unit with more than one person.
 - Some products use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.
 - When transporting the unit, support it at the specified positions on the unit base. Also support the unit at four points so that it cannot slip side ways.
- **Safely dispose of the packing materials.**
 - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.
 - Tear apart and throw away plastic packaging bags so that it is out of reach of children. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.

Before the test run

CAUTION

- **Turn on the power at least 12 hours before starting operation.**
 - Starting operation immediately after turning on the main power switch can result in severe damage to internal parts. Keep the power switch turned on during the operational season.
- **Do not touch the switches with wet fingers.**
 - Touching a switch with wet fingers can cause electric shock.
- **Do not touch the refrigerant pipes during and immediately after operation.**
 - During and immediately after operation, the refrigerant pipes are may be hot and may be cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes.
- **Do not operate the air conditioner with the panels and guards removed.**
 - Rotating, hot, or high-voltage parts can cause injuries.
- **Do not turn off the power immediately after stopping operation.**
 - Always wait at least five minutes before turning off the power. Otherwise, water leakage and trouble may occur.
- **Do not touch the surface of the compressor during servicing.**
 - If unit is connected to the supply and not running, crank case heater at compressor is operating.
- **Do not touch the panels near the fan outlet with bare hands: they can get hot while the unit is in operation (even if it is stopped) or immediately after operation to prevent burns. Wear gloves to protect your hands when it is necessary to touch the panels.**
- **While the unit is in operation or immediately after operation, high-temperature exhaust air may blow out of the fan exhaust outlet. Do not hold your hands over the outlet or touch the panels near the outlet.**
- **Be sure to provide a pathway for the exhaust air from the fan.**
- **Water pipes can get very hot, depending on the preset temperature. Wrap the water pipes with insulating materials to prevent burns.**

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I General Equipment Descriptions

1. Unit configuration table

Model	PWFY-P100VM-E-BU	PWFY-P100VM-E-AU	PWFY-P200VM-E-AU
Outdoor unit	PURY-(E)P•Y(S)HM-A(-BS) / PQRY-P•Y(S)HM-A	PUHY-(E)(H)P•Y(S)HM-A(-BS) / PQHY-P•(S)HM-A PURY-(E)P•Y(S)HM-A(-BS) / PQRY-P•Y(S)HM-A	
Connection	BC controller WCB	BC controller: CMB-P104,105,106,108,1010,1013,1016V-G Main BC controller: CMB-P108,1010,1013,1016V-GA / CMB-P1016V-HA Sub BC controller: CMB-P104,108V-GB / CMB-P1016V-HB CMB-PW202V-J	

2. Operable temperature range

<PWFY-P100VM-E-BU>

		Only PWFY	PWFY with standard indoor unit	Only standard indoor units
		Heating		
Inlet water temperature	R2/WR2 series	10 to 70°C	10 to 70°C	—
Outdoor temperature	R2 series	-20 to 32°CWB	-20 to 32°CWB	-20 to 15.5°CWB
Circulating water temperature	WR2 series	10 to 45°C	10 to 45°C	10 to 45°C

<PWFY-P100,200VM-E-AU>

		Only PWFY		PWFY with standard indoor units	
		Cooling	Heating	Cooling	Heating
Inlet water temperature	R2/WR2 series	10 to 35°C	10 to 40°C	10 to 35°C	10 to 40°C
	Y/HP/WY series	10 to 35°C	10 to 40°C	10 to 35°C	10 to 40°C
Outdoor temperature	R2 series	-5 to 43°CDB	-20 to 32°CWB	-5 to 43°CDB	-20 to 32°CWB
	Y series	-5 to 43°CDB	-20 to 15.5°CWB	-5 to 43°CDB	-20 to 15.5°CWB
	HP series	-5 to 43°CDB	-25 to 15.5°CWB	-5 to 43°CDB	-25 to 15.5°CWB
Circulating water temperature	WR2 series	10 to 45°C	10 to 45°C	10 to 45°C	10 to 45°C
	WYseries	10 to 45°C	10 to 45°C	10 to 45°C	10 to 45°C

		Only standard indoor units	
		Cooling	Heating
Outdoor temperature	R2 series	-5 to 43°CDB	-20 to 15.5°CWB
	Y series	-5 to 43°CDB	-20 to 15.5°CWB
	HP series	-5 to 43°CDB	-25 to 15.5°CWB
Circulating water temperature	WR2 series	10 to 45°C	10 to 45°C
	WYseries	10 to 45°C	10 to 45°C

3. Connectable outdoor unit/heat source unit capacity range

<PWFY-P100VM-E-BU>

		Only PWFY	PWFY with standard indoor unit	Only standard indoor units
		50 to 100%	50 to 150%*1	50 to 150%*1
	R2/WR2 series	50 to 100%	50 to 150%*1	50 to 150%*1

*1 In case of WCB connection, the capacity range will be "50 to 130%".

<PWFY-P100,200VM-E-AU>

		Only PWFY	PWFY with standard indoor unit	Only standard indoor units
		50 to 100%	50 to 150%*1	50 to 150%*1
	R2/WR2 series	50 to 100%	50 to 150%*1	50 to 150%*1
	Y/HP/WY series	50 to 100%	50 to 130%	50 to 130%

*1 In case of WCB connection, the capacity range will be "50 to 130%".

<BC controller>

	Connectable unit
CMB-P104/P105/106/107/1010/1013/1016V-G	PURY-(E)P200-350YHM-A(-BS) PQRY-P200-300YHM-A
CMB-P108/1010/1013/1016V-GA	PURY-(E)P200-650Y(S)HM-A(-BS) PQRY-P200-600Y(S)HM-A
CMB-P1016V-HA	PURY-P700-800YSHM-A(-BS)
CMB-P104/108V-GB, CMB-P1016V-HB	CMB-P108/1010/1013/1016V-GA, CMB-P1016V-HA

<WCB>

	Connectable unit
CMB-PW202V-J	PURY-(E)P200-350YHM-A(BS) PQRY-P200-300YHM-A

II | Product Specifications

1. Specifications

(1) PWFY-P100VM-E-BU

Model	PWFY-P100VM-E-BU				
Power source	1-phase 220-230-240V 50/60Hz				
Heating capacity (Nominal)	*1	kW	12.5		
	*1	kcal / h	10,800		
	*1	BTU / h	42,700		
Power input	kW		2.48		
Current input	A		11.63 - 11.12 - 10.66		
Temp. range of heating	Outdoor temp.	W.B	-20~32°C (-4~90°F) PURY-series		
	Circulating Water temp.	-	10~45°C (50~113°F) PQRY-series		
	Inlet Water temp.	-	10~70°C (50~158°F)		
Connectable outdoor unit /heat source unit	Total capacity	50~100% of outdoor unit/heat source unit capacity			
	Model / Quantity	PURY-(E)P · Y(S)HM-A(-BS) PQRY-P · Y(S)HM-A			
Sound pressure level (measured in anechoic room)	dB<A>	44			
Diameter of refrigerant pipe	Liquid	mm(in.)	Φ9.52 (Φ3/8") Brazed		
	Gas	mm(in.)	Φ15.88 (Φ5/8") Brazed		
Diameter of water pipe	Inlet	mm(in.)	PT3/4 Screw		
	Outlet	mm(in.)	PT3/4 Screw		
Field drain pipe size	mm(in.)	Φ32 (1-1/4")			
External finish	NO				
External dimension H × W × D	mm	800 (785 without legs) × 450 × 300			
	in.	31-1/2" (30-15/16" without legs) × 17-3/4" × 11-13/16"			
Net weight	kg(lb)	60 (133)			
Compressor	Type	Inverter rotary hermetic compressor			
	Maker	MITSUBISHI ELECTRIC CORPORATION			
	Starting method	Inverter			
	Motor output	kW	1.0		
	Lubricant	NEO22			
Circulating water	Operation volume Range	m³/h	0.6~2.15		
Protection on Internal circuit (R134a)	High pressure protection	High pressure sensor, High pressure switch at 3.60 MPa (601 psi)			
	Inverter circuit (COMP)	Over-heat protection, Over-current protection			
	Compressor	Discharge thermo protection, Over-current protection			
Refrigerant	Type × original charge	R134a × 1.1kg (0.50lb)			
	Control	LEV			
Design pressure	R410a	MPa	4.15		
	R134a	MPa	3.60		
	Water	MPa	1.00		
Drawing	External	WK94L762			
	Wiring	E64C226X01			
Standard attachment	Document	Installation Manual, Instruction Book			
	Accessory	Strainer, Heat insulation material, 2 × Connector sets			
Optional parts	NONE				
Remark	Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.				
Note:	*1 Nominal heating conditions <PURY-series> Outdoor Temp. : 7°CDB/6°CWB (45°FDB / 43°FWB) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0m (0ft) Inlet water Temp 65°C Water flow rate 2.15m³/h				
	<PQRY-series> Circulating water Temp. : 20°C (68°F) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0m (0ft)				
	Inlet water Temp 65°C Water flow rate 2.15m³/h				
	* Due to continuing improvement, the above specifications may be subject to change without notice. * The unit is not designed for outside installations. * Please don't use the steel material for the water piping material. * Please always make water circulate or add the brine to the circulation water when the ambient temperature becomes 0°C or less. * Please always make water circulate or pull out the circulation water completely when not using it. * Please do not use groundwater and well water.				
	* Install the unit in an environment where the wet bulb Temp. will not exceed 32degC. * The water circuit must use the closed circuit. * Please do not use it as a drinking water.				
	* The specification data is subject to rounding variation.				
	Unit converter kcal = kW × 860 BTU/h = kW × 3,412 cfm = m³/min × 35.31 lb = kg / 0.4536				

(2) PWFY-P100VM-E-AU

Model		PWFY-P100VM-E-AU	
Power source		1-phase 220-230-240V 50/60Hz	
Heating capacity (Nominal)	*1 kW	12.5	
	*1 kcal / h	10,800	
	*1 BTU / h	42,700	
	Power input kW	0.015	
	Current input A	0.068 - 0.065 - 0.063	
	Outdoor temp.	-20~32°C (-4~90°F) PURY - series	
Temp. range of heating	W.B	-20~15.5°C (-4~60°F) PUHY - series	
	W.B	10~45°C (50~113°F) PQRY - series	
	Circulating Water temp.	- 10~45°C (50~113°F) PQHY - series	
	Inlet Water temp.	10~40°C (50~104°F)	
Cooling capacity (Nominal)	*2 kW	11.2	
	*2 kcal / h	9,600	
	*2 BTU / h	38,200	
	Power input kW	0.015	
	Current input A	0.068 - 0.065 - 0.063	
	Outdoor temp.	-5~43°C (23~110°F) PURY - series	
Temp. range of cooling	D.B	-5~43°C (23~110°F) PUHY - series	
	D.B	10~45°C (50~113°F) PQRY - series	
	Circulating Water temp.	- 10~45°C (50~113°F) PQHY - series	
	Inlet Water temp.	10~35°C (50~95°F)	
Connectable outdoor unit /heat source unit	Total capacity	50~100% of outdoor unit/heat source unit capacity	
	Model / Quantity	PUHY-(E)(H)P · Y(S)HM-A-(BS) PQHY-P · Y(S)HM-A PURY-(E)P · Y(S)HM-A-(BS) PQRY-P · Y(S)HM-A	
Sound pressure level (measured in anechoic room)		29	
Diameter of refrigerant pipe	Liquid mm(in.)	Φ9.52 (Φ3/8") Brazed	
	Gas mm(in.)	Φ15.88 (Φ5/8") Brazed	
Diameter of water pipe	Inlet mm(in.)	PT3/4 Screw	
	Outlet mm(in.)	PT3/4 Screw	
Field drain pipe size	mm(in.)	Φ32 (1-1/4")	
External finish			
External dimension H × W × D		NO	
Net weight	mm	800 (785 without legs) × 450 × 300	
	in.	31-1/2" (30-15/16" without legs) × 17-3/4" × 11-13/16"	
Circulating water		kg(lb)	
Design pressure	Operation Volume Range	m³/h	0.6~2.15
	R410a	MPa	4.15
Drawing	Water	MPa	1.00
	External		WKB94L763
Standard attachment	Wiring		E00C223
	Document		Installation Manual, Instruction Book
Accessory		Strainer, Heat insulation material, 2 × Connector sets	
Optional parts		NONE	
Remark		Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	
Note:	*1 Nominal heating conditions <PUHY/PURY-series> Outdoor Temp. : 7°CDB/6°CWB (45°FDB / 43°FWB) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0m (0ft) Inlet water Temp 30°C Water flow rate 2.15m³/h	<PQHY/PQRY-series> Circulating water Temp. : 20°C (68°F) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0m (0ft) Inlet water Temp 30°C Water flow rate 2.15m³/h	
	*2 Nominal cooling conditions <PUHY/PURY-series> Outdoor Temp. : 35°CDB (95°FDB) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0m (0ft) Inlet water Temp 23°C Water flow rate 1.93m³/h	<PQHY/PQRY-series> Circulating water Temp. : 30°C (86°F) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0m (0ft) Inlet water Temp 23°C Water flow rate 1.93m³/h	
* Due to continuing improvement, the above specifications may be subject to change without notice. * The unit is not designed for outside installations. * Please don't use the steel material for the water piping material. * Please always make water circulate or add the brine to the circulation water when the ambient temperature becomes 0°C or less. * Please always make water circulate or pull out the circulation water completely when not using it. * Please do not use it as a drinking water. * Please do not use groundwater and well water.	* Install the unit in an environment where the wet bulb Temp. will not exceed 32degC. * The water circuit must use the closed circuit. * Please do not use it as a drinking water.		
Unit converter kcal = kW × 860 BTU/h= kW × 3,412 cfm = m³/min × 35.31 lb = kg / 0.4536 * The specification data is subject to rounding variation.			

(3) PWFY-P200VM-E-AU

Model	PWFY-P200VM-E-AU				
Power source	1-phase 220-230-240V 50/60Hz				
Heating capacity (Nominal)	*1 kW	25.0			
	*1 kcal / h	21,500			
	*1 BTU / h	85,300			
Power input	kW	0.015			
Current input	A	0.068 - 0.065 - 0.063			
Temp. range of heating	Outdoor temp.	W.B	-20~32°C (-4~90°F) PURY - series		
		W.B	-20~15.5°C (-4~60°F) PUHY - series		
	Circulating Water temp.	-	10~45°C (50~113°F) PQRY - series		
		-	10~45°C (50~113°F) PQHY - series		
	Inlet Water temp.	-	10~40°C (50~104°F)		
Cooling capacity (Nominal)	*2 kW	22.4			
	*2 kcal / h	19,300			
	*2 BTU / h	76,400			
Power input	kW	0.015			
Current input	A	0.068 - 0.065 - 0.063			
Temp. range of cooling	Outdoor temp.	D.B	-5~43°C (23~110°F) PURY - series		
		D.B	-5~43°C (23~110°F) PUHY - series		
	Circulating Water temp.	-	10~45°C (50~113°F) PQRY - series		
		-	10~45°C (50~113°F) PQHY - series		
	Inlet Water temp.	-	10~35°C (50~95°F)		
Connectable outdoor unit /heat source unit	Total capacity	50~100% of outdoor unit/heat source unit capacity			
	Model / Quantity	PUHY-(E)/(H)P · Y(S)HM-A-(BS) PQHY-P · Y(S)HM-A PURY-(E)P · Y(S)HM-A-(BS) PQRY-P · Y(S)HM-A			
Sound pressure level (measured in anechoic room)	dB<A>	29			
Diameter of refrigerant pipe	Liquid	mm(in.)	Φ9.52 (Φ3/8") Brazed		
	Gas	mm(in.)	Φ19.05 (Φ3/4") Brazed		
Diameter of water pipe	Inlet	mm(in.)	PT 1 Screw		
	Outlet	mm(in.)	PT 1 Screw		
Field drain pipe size		mm(in.)	Φ32 (1-1/4")		
External finish	NO				
External dimension H × W × D	mm	800 (785 without legs) × 450 × 300			
	in.	31-1/2" (30-15/16" without legs) × 17-3/4" × 11-13/16"			
Net weight	kg(lb)	38 (84)			
Circulating water	Operation Volume Range	m³/h	1.2~4.30		
Design pressure	R410a	MPa	4.15		
	Water	MPa	1.00		
Drawing	External		WKB94L763		
	Wiring		E94C228X01		
Standard attachment	Document	Installation Manual, Instruction Book			
	Accessory	Strainer, Connector, Heat insulation material, 2 × Connector sets, Expansion joint			
Optional parts	NONE				
Remark	Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.				
Note:	*1 Nominal heating conditions <PUHY/PURY-series> Outdoor Temp. : 7°CDB/6°CWB (45°FDB / 43°FWB) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0m (0ft) Inlet water Temp 30°C Water flow rate 4.30m³/h				
	<PUHY/PURY-series> Circulating water Temp. : 20°C (68°F) Pipe length : 7.5 m (24-9/16 ft)				
	*2 Nominal cooling conditions <PUHY/PURY-series> Outdoor Temp. : 35°CDB (95°FDB) Pipe length : 7.5 m (24-9/16 ft) Level difference : 0m (0ft) Inlet water Temp 23°C Water flow rate 3.86m³/h				
	<PUHY/PURY-series> Circulating water Temp. : 30°C (86°F) Pipe length : 7.5 m (24-9/16 ft)				
*	Due to continuing improvement, the above specifications may be subject to change without notice.				
*	The unit is not designed for outside installations.				
*	Please don't use the steel material for the water piping material.				
*	Please always make water circulate or add the brine to the circulation water when the ambient temperature becomes 0°C or less.				
*	Please always make water circulate or pull out the circulation water completely when not using it.				
*	Please do not use it as a drinking water.				
*	Please do not use groundwater and well water.				
	* Install the unit in an environment where the wet bulb Temp. will not exceed 32degC. * The water circuit must use the closed circuit. * Please do not use it as a drinking water.				
	Unit converter kcal = kW × 860 BTU/h= kW × 3,412 cfm = m³/min × 35.31 lb = kg / 0.4536 * The specification data is subject to rounding variation.				

(4) CMB-P104V-G

*Other models of BC controller are available. For unit information, refer to the Data Book.

Model		CMB-P104V-G					
Number of branch		4					
Power source		1N ~ 220/230/240V					
Power input		kW	50Hz	60Hz			
Power input			Cooling : 0.067/0.076/0.085 Heating : 0.030/0.034/0.038	Cooling : 0.054/0.061/0.067 Heating : 0.024/0.027/0.030			
Current		A	Cooling : 0.31/0.34/0.36 Heating : 0.14/0.15/0.16	Cooling : 0.25/0.27/0.28 Heating : 0.11/0.12/0.13			
External finish			Galvanized steel plate (Lower part drain pan painting N1.5)				
Connectable outdoor unit/heat source unit			PURY-(E)P200/250/300/350YHM-A(-BS) / PQRY-P200/250/300YHM-A				
Indoor unit capacity connectable to 1 branch		kW	Model P80 or smaller (Use optional joint pipe combining 2 branches when the total capacity exceeds 81.) (Use the reducer (standard accessory) when the indoor unit Model 50 or smaller is connected.)				
External dimension H x W x D		mm(in.)	284 x 648 x 432 (11-3/16 x 25-9/16 x 17-1/16)				
Refrigerant piping diameter	To outdoor unit /heat source unit	High press. pipe	mm(in.)	P200 P250/P300 P350			
		Low press. pipe	mm(in.)	ø15.88 (ø5/8") Brazed ø19.05 (ø3/4") Brazed ø19.05 (ø3/4") Brazed			
	To indoor unit	Liquid pipe	mm(in.)	ø22.2 (ø7/8") Brazed ø28.58 (ø1-1/8") Brazed			
		Gas pipe	mm(in.)	ø9.52 (ø3/8") Flare ø15.88 (ø5/8") Flare			
Field drain pipe size			ø12.7 (ø1/2") with attached reducer used, ø12.7 (ø1/2") with optional joint pipe used.)				
Net weight		kg(lb)	24 (53)	27 (60)			
Accessories			·Drain Connection pipe (with flexible hose and insulation) ·Reducer				
Note:							
*1. Installation/foundation work, electrical connection work, duct work, insulation work, power source switch, and other items shall be referred to the Installation Manual.							
*2. The equipment is for R410A refrigerant.							
*3. Install this product in a location where noise (refrigerant noise) emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background noise, position the BC CONTROLLER at least 5m away from any indoor units.)							
*4. Indoor units P100,P125,P140 can be connected to 1 branch. (In this case, cooling capacity decrease a little.)							

(5) CMB-PW202V-J

Model		CMB-PW202V-J					
Number of branch		2					
Power source		1N ~ 220/230/240V					
Power input		kW	50Hz	60Hz			
Power input			Cooling : 0.019/0.020/0.021 Heating : 0.020/0.022/0.024	Cooling : 0.018/0.019/0.019 Heating : 0.019/0.020/0.021			
Current		A	Cooling : 0.09/0.09/0.09 Heating : 0.10/0.10/0.10	Cooling : 0.09/0.09/0.09 Heating : 0.09/0.09/0.09			
External finish			Galvanized steel plate (Lower part drain pan painting N1.5)				
Connectable outdoor unit			PURY-(E)P200/250/300/350YHM-A (-BS) PQRY-P200/250/300YHM-A				
Connectable unit capacity		Total	50% ~ 130% of outdoor unit/heat source unit				
		Indoor / PWFY branch	up to 130% of outdoor unit/heat source unit				
		PWFY branch	up to 100% of outdoor unit/heat source unit				
External dimension H x W x D		mm(in.)	284 x 648 x 432 (11-3/16" x 25-9/16" x 17-1/16")				
Refrigerant piping diameter	To outdoor unit /heat source unit	High press. pipe	mm(in.)	Connectable outdoor unit capacity			
		Low press. pipe	mm(in.)	P200 P250/P300 P350			
	To indoor/ PWFY unit	High press. pipe	mm(in.)	ø15.88 (ø5/8") Brazed ø19.05 (ø3/4") Brazed ø19.05 (ø3/4") Brazed			
		Low press. pipe	mm(in.)	ø19.05 (ø3/4") Brazed ø22.2 (ø7/8") Brazed ø28.58 (ø1-1/8") Brazed			
			Total down-stream Indoor unit capacity				
		Liquid pipe	mm(in.)	~P140 P141~P200 P201~P300 P301~P400 P401~			
				ø9.52 (ø3/8") Brazed ø9.52 (ø3/8") Brazed ø9.52 (ø3/8") Brazed ø12.70 (ø1/2") Brazed ø15.88 (ø5/8") Brazed			
		Gas pipe	mm(in.)	ø15.88 (ø5/8") Brazed ø19.05 (ø3/4") Brazed ø22.2 (ø7/8") Brazed ø28.58 (ø1-1/8") Brazed ø28.58 (ø1-1/8") Brazed			
Field drain pipe size			O.D. 32mm (1-1/4")				
Net weight		kg(lb)	20 (45)				
Accessories			·Drain Connection pipe (with flexible hose and insulation) ·Refrigerant connection pipe				
Note:							
*1. For installation/foundation work, electrical connection work, insulation work, and power source switch etc., refer to the Installation Manual.							
*2. The equipment is for R410A refrigerant.							
*3. Install this product in a location where noise (refrigerant noise) emitted by the unit will not disturb the neighbors. (For use in quiet environments with low background noise, position the Water system Connection Box at least 5m away from any indoor units.)							
*4. Install the unit horizontally.							
*5. The indoor / PWFY unit branch is for cooling / heating. The indoor / PWFY unit cannot be simultaneously operated in different operation modes.							
*6. The PWFY unit branch is for the heating only.							
*7. Seal the unused branch using the optional cover cap (CMY-S202-J).							

2. External Dimensions

(1) PWFY-P100VM-E-BU



<Accessories>

- Y-type strainer (RC3/4) 1pc.
- Heat insulation material 1pc.
- Connector set 2set

Note 1. Ensure no rain water or debris can enter the unit through any gaps around wiring or piping.

2. Ensure adequate service space is right around the unit, according to Fig A.

3. Please always make water circulate or add the brine to the circulation water when the ambient temperature becomes 0°C or less.

4. The unit is not designed for outside installations.

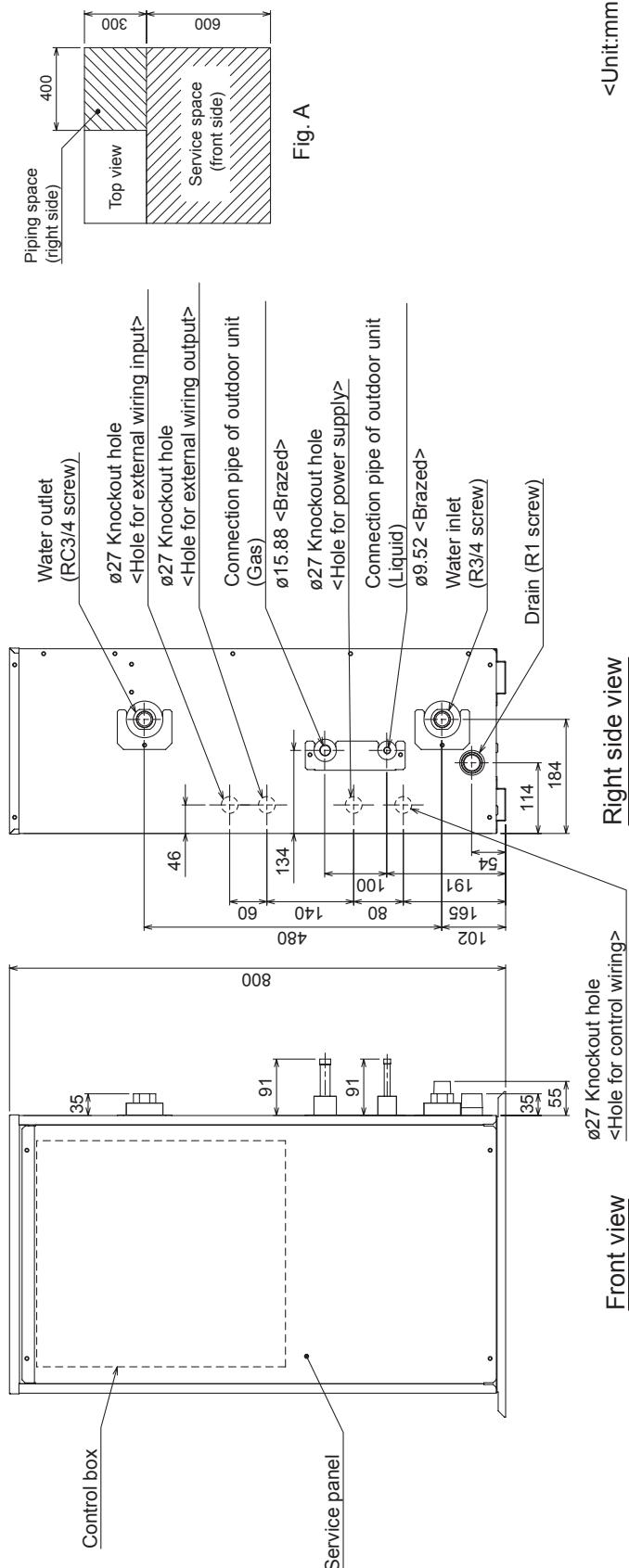
5. Install the unit in an environment where the wet bulb Temp. will not exceed 32degC.

6. Please always make water circulate or pull out the circulation water completely when not using it.

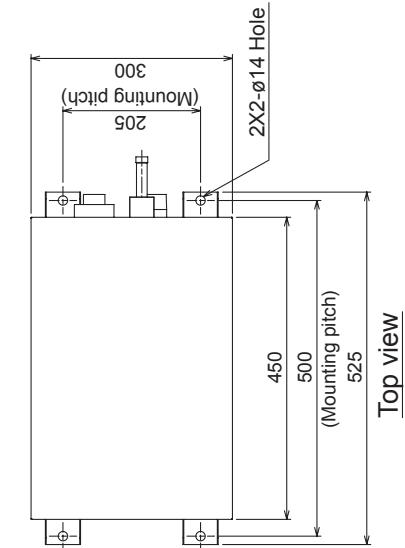
7. The water circuit must use the closed circuit.

8. Please don't use the steel material for the water piping material.

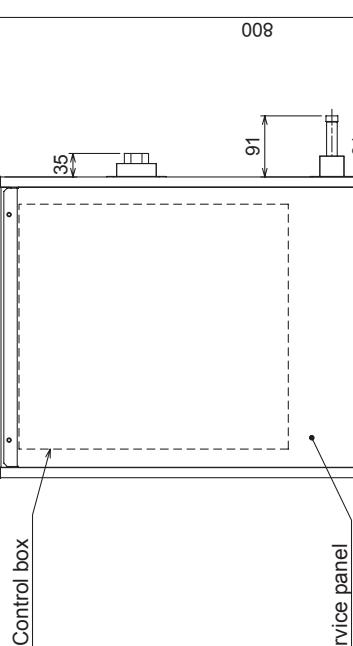
9. Connect the strainer which is put as accessory to water inlet pipe.



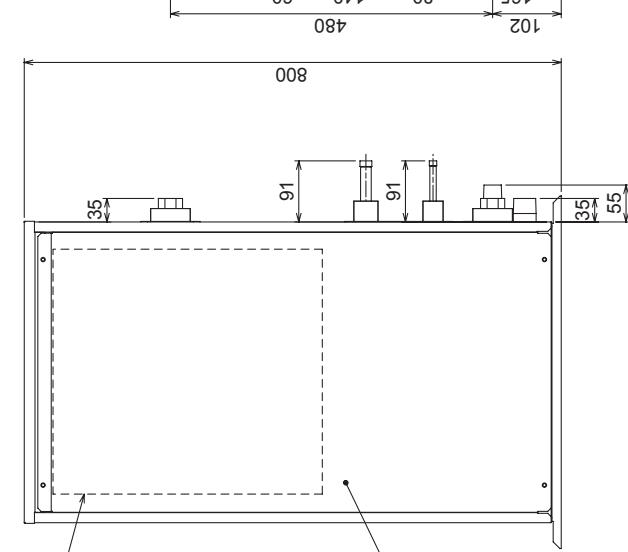
(2) PWFY-P100, 200VM-E-AU



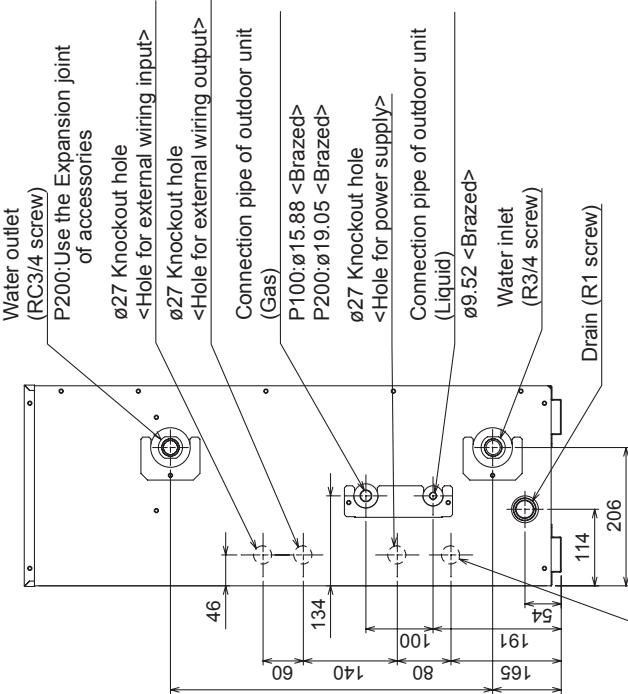
Top view



Front view



Right side view



<Unit:mm>

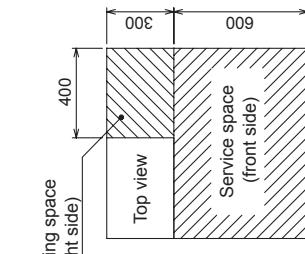


Fig. A

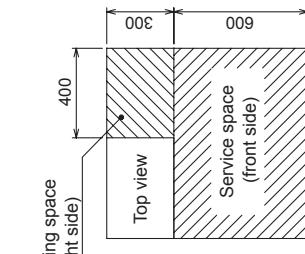
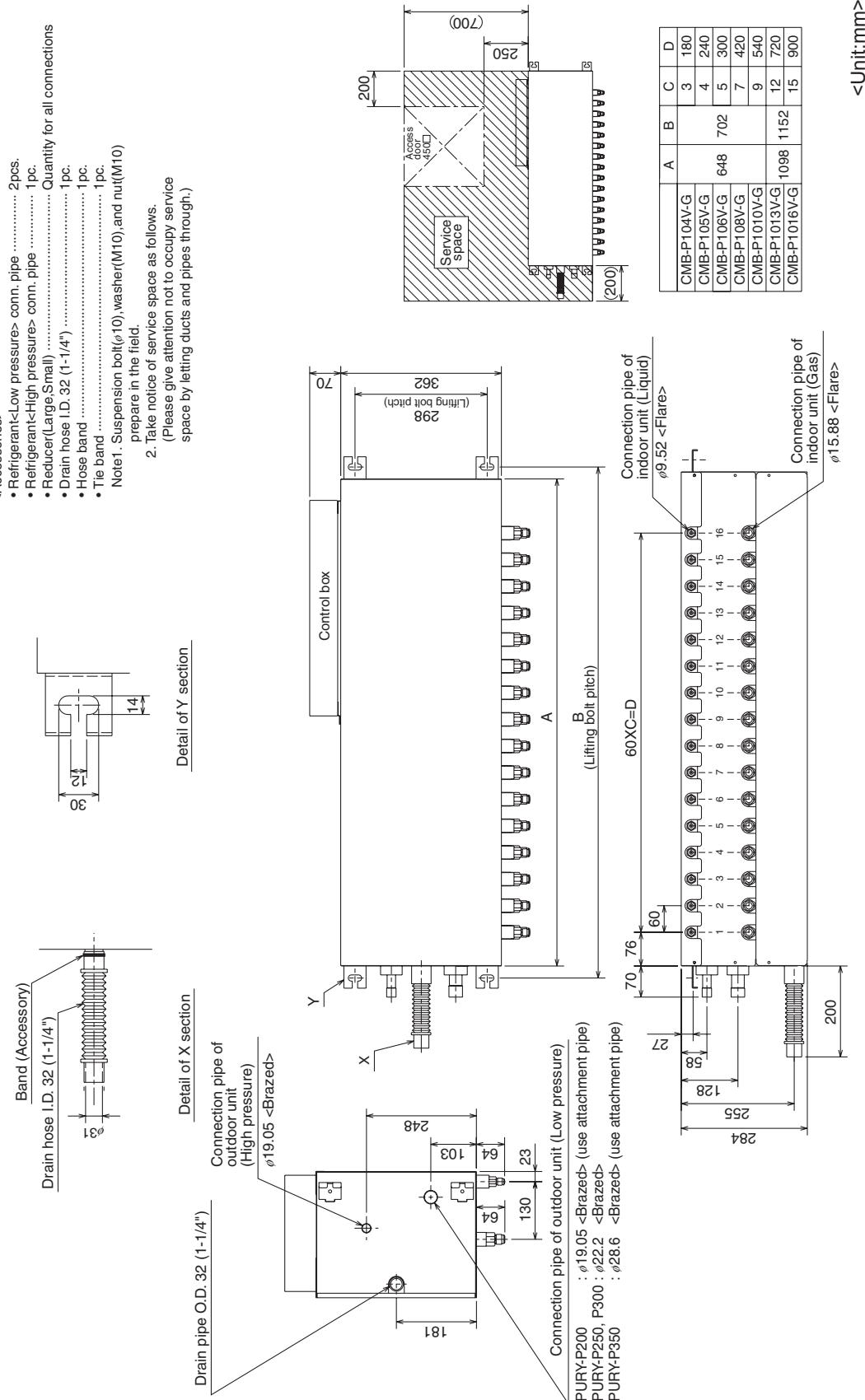


Fig. A

(3) CMB-P104,105,106,108,1010,1013,1016V-G



(4) CMB-PW202V-J

3. Electrical Wiring Diagrams

(1) PWFY-P100VM-E-BU

<HIGH VOLTAGE WARNING>
 - Control box houses high-voltage parts.
 Before inspecting the inside of the control box, turn off the power, keep the unit off for at least 10 minutes and confirm that the voltage CNG31 on Control Board has dropped to DC20V or less.
 <CAUTION FOR INSTALLATION>
 - Prior to installation, read the Installation Manual carefully.
 *1 Single-dotted lines indicate wiring not supplied with the unit.
 *2 Dot-dash lines indicate the control box boundaries.
 *3 Faston terminals have a locking function.
 Make sure the terminals are securely locked in place after insertion.
 Press the tab on the terminals to removed them.

*4 TB141A(Output)

Symbol	Function
OUT1	Operation ON/OFF
OUT2	Debris
OUT3	Compressor
OUT4	Error signal

*5 TB142A(Input)

Symbol	Function
INT1	Function
INT2	Pump interlock
INT3	Connection demand
INT4	Operation ON/OFF

*6 TB142B(Input)

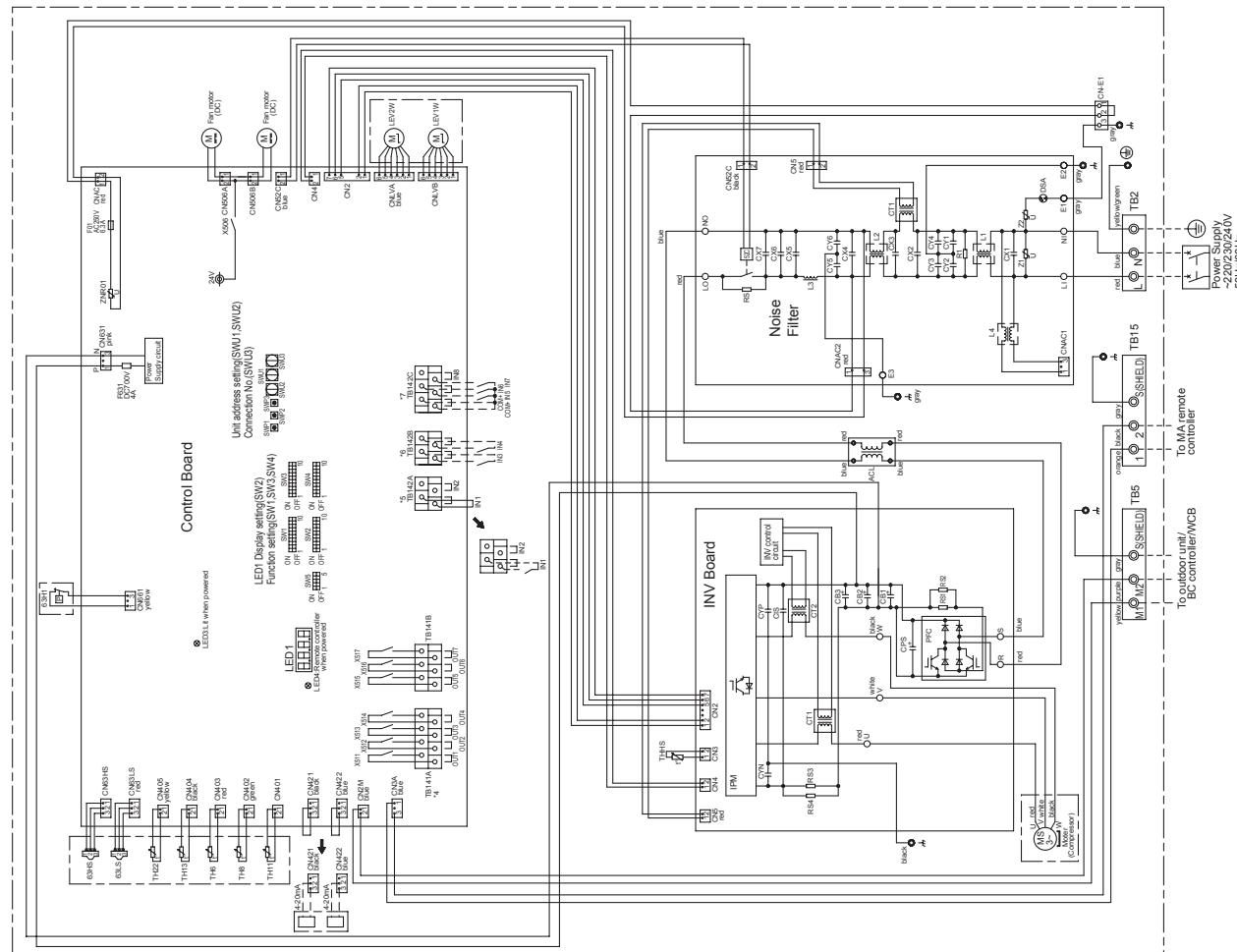
Symbol	Function
IN1	Common
IN5	Hot water
IN6	Heating ECO
IN7	Anti-freeze

*7 TB142C(Input)

Symbol	Function
IN1	Connection demand
IN4	Operation ON/OFF

<Symbol explanation>

Symbol	Explanation
63H1	High pressure switch
	Discharge pressure
63HS	Pressure sensor
52C	Magnetic relay/main circuit
ACL	AC reactor
C11,C12	Current sensor(AC)
LEY1W	EC controller/WCB/outdoor unit
LEY2W	Booster unit
TB2	Expansion valve
TB5	Terminal block
TB15	Power supply
TH11	Outdoor unit/BC controller/WCB
TH13	MA remote controller
TH22	Compressor discharge temp
TH6	Thermistor
TH8	Evaporator outlet temp
THHS	Liquid pipe temp
	water inlet temp
	water outlet temp
	GBT temp

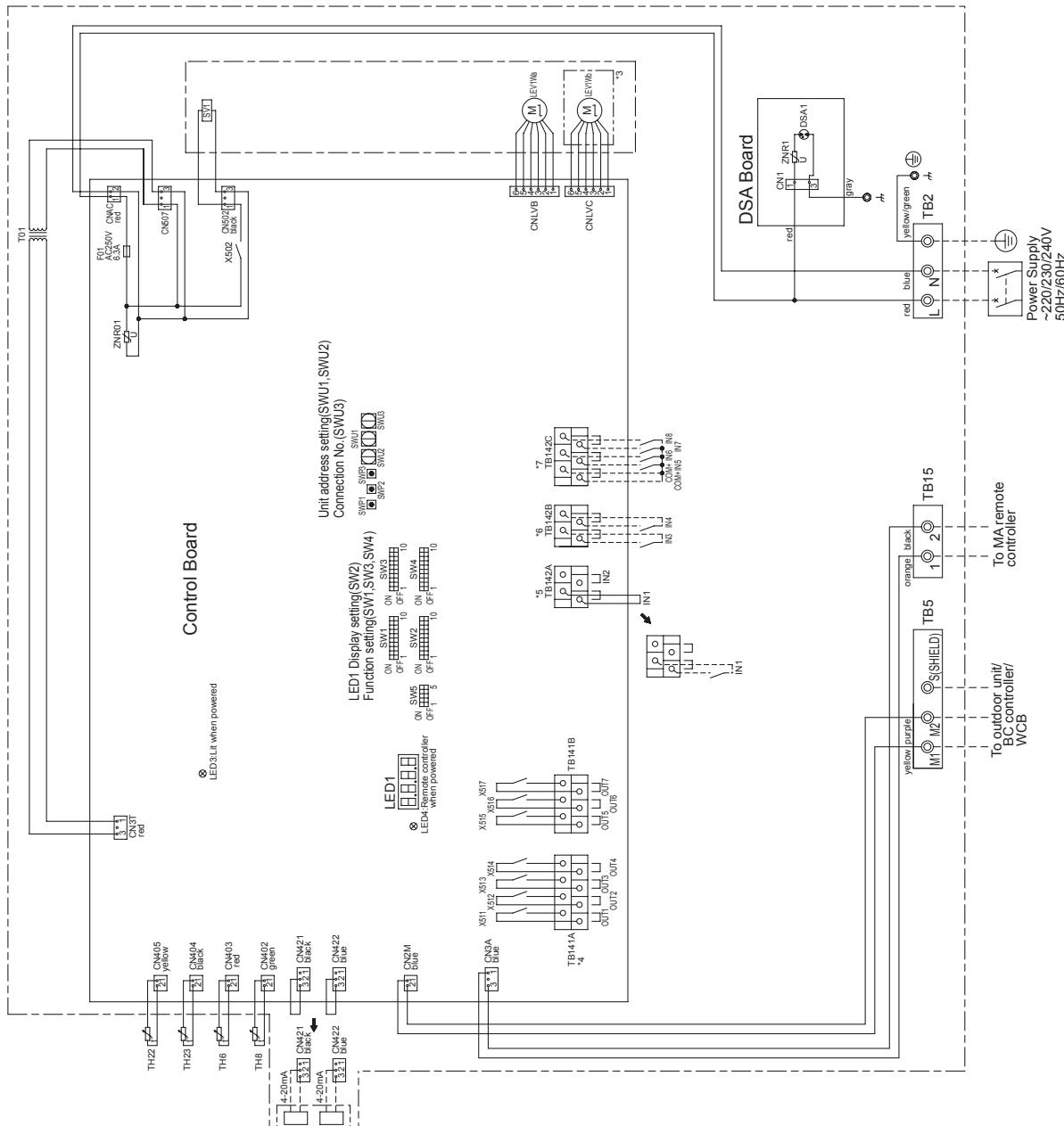


(2) PWFY-P100, 200VM-E-AU

<CAUTION FOR INSTALLATION>
•Prior to installation, read the Installation Manual carefully.
 *1 Single-dotted lines indicate wiring not supplied with the unit.
 *2 Dot-dash lines indicate the control box boundaries.

*3 Difference of amplitude

3. DELIVERY OF APPLIANCE



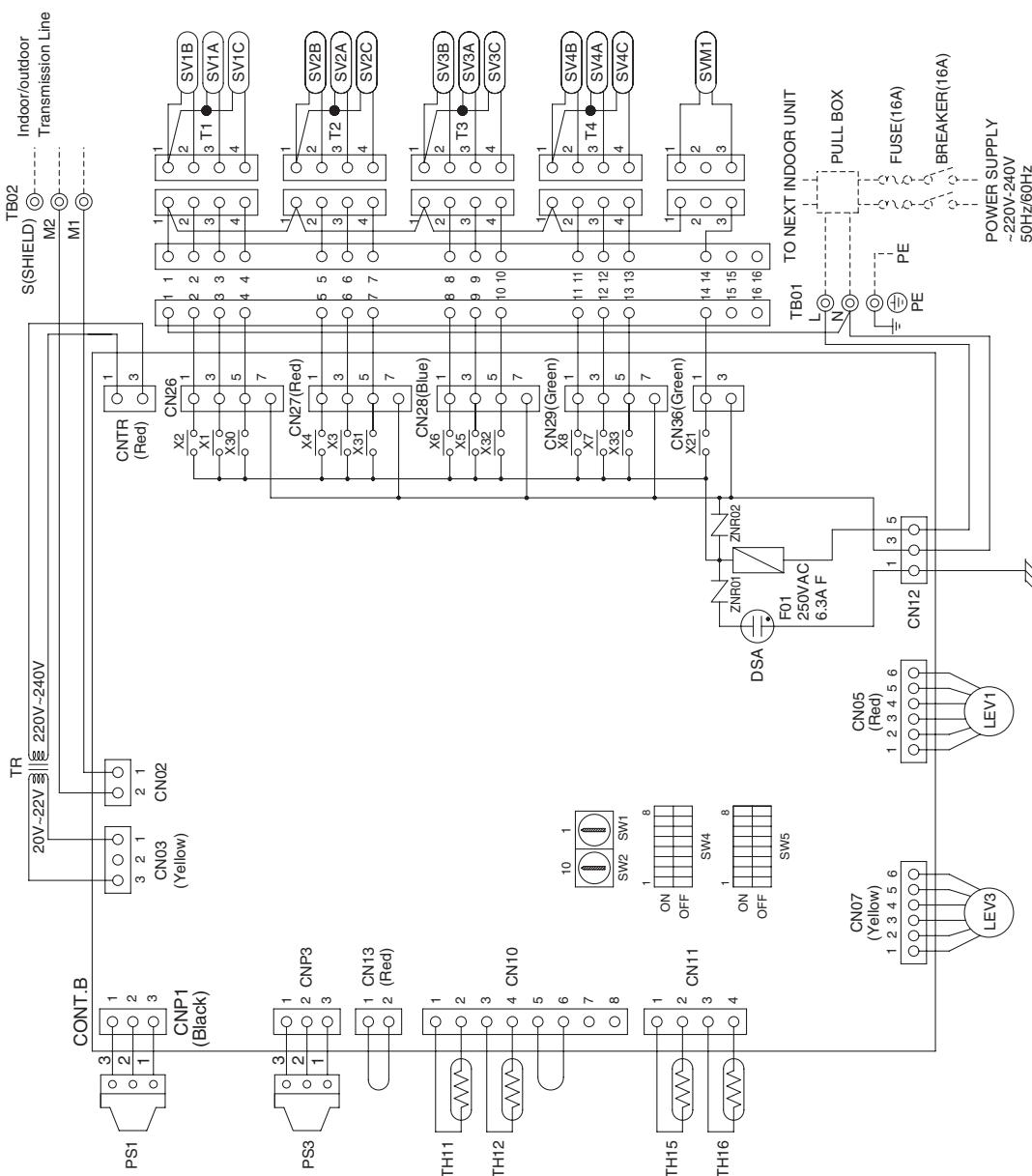
(3) CMB-P104V-G

*Other models of BC controller are available. For unit information, refer to the Data Book.

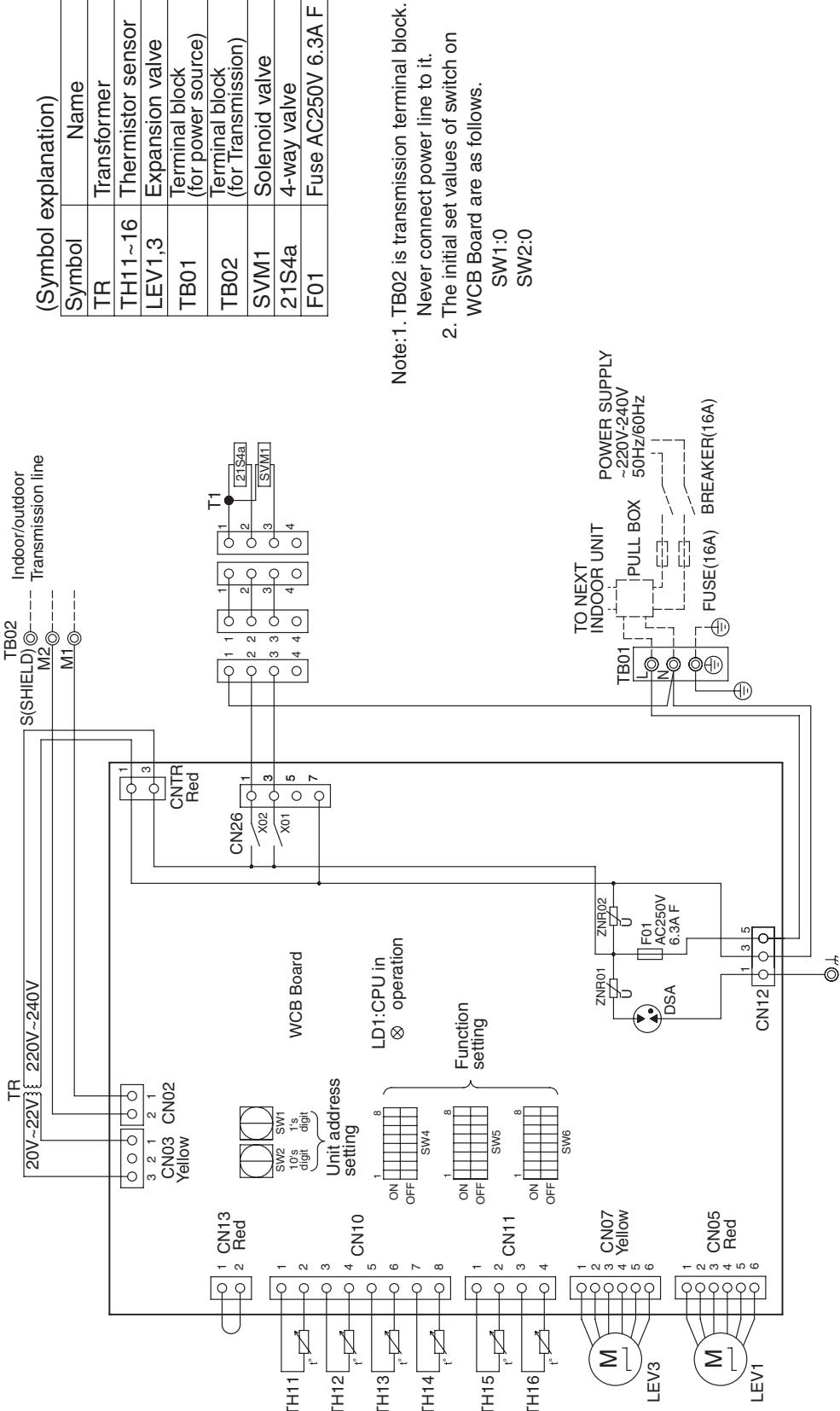
Symbol explanation

Symbol	Name
TR	Transformer
TH11,12,15,16	Thermistor sensor
LEV1,3	Expansion valve
PS1,3	Pressure sensor
CONT.B	Circuit board
TB01	Terminal block (for power source)
TB02	Terminal block (for Transmission)
SV1~4A,B,C	Solenoid valve
SVM1	Solenoid valve
T1~4	Terminal
F01	Fuse AC250V/6.3A F

- Note: 1.TB02 is transmission terminal block.
Never connect power line to it.
2.The initial set values of switch on
CONT.B are as follows.
SW1:0
SW2:0



(4) CMB-PW202V-J



4. Accessories

(1) PWFY

(A) Strainer	(B) Heat insulation material	(C) Connector sets × 2	(D) Expansion joint × 2

*1. PWFY-P200VM-E-AU only

- (A) Install the strainer at the water pipe inlet.
- (B) This insulation is for exclusive use with the strainer. Wrap the strainer with the insulation after water pipes are installed.
- (C) These are analog input connectors. Cut the wire before using.
- (D) Supplied only with the PWFY-P200VM-E-AU. Install them at the strainer inlet. Refer to P53 for details.

(2) CMB-P104V-G

SIZE	Unit
ø15.88 flare - IDø12.8	4
ø9.52 flare - IDø6.45	4
ODø19.05 - IDø15.88	1
ODø22.2 - IDø19.05	1
ODø22.2 - IDø28.6	1
Drain hose set	1set
Installation Manual	1

(3) CMB-PW202V-J

SIZE	Unit
ODø19.05 - IDø15.88	2
ODø22.2 - IDø19.05	1
ODø15.88 - IDø9.52	1
ODø15.88 - IDø12.7	1
ODø25.4 - IDø19.05	1
ODø25.4 - IDø22.2	1
ODø19.05 - IDø22.2	1
ODø25.4 - IDø28.6	1
ODø22.2 - IDø28.6	1
ODø25.4 - IDø15.88	1
Drain hose set	1 set
Installation Manual	1

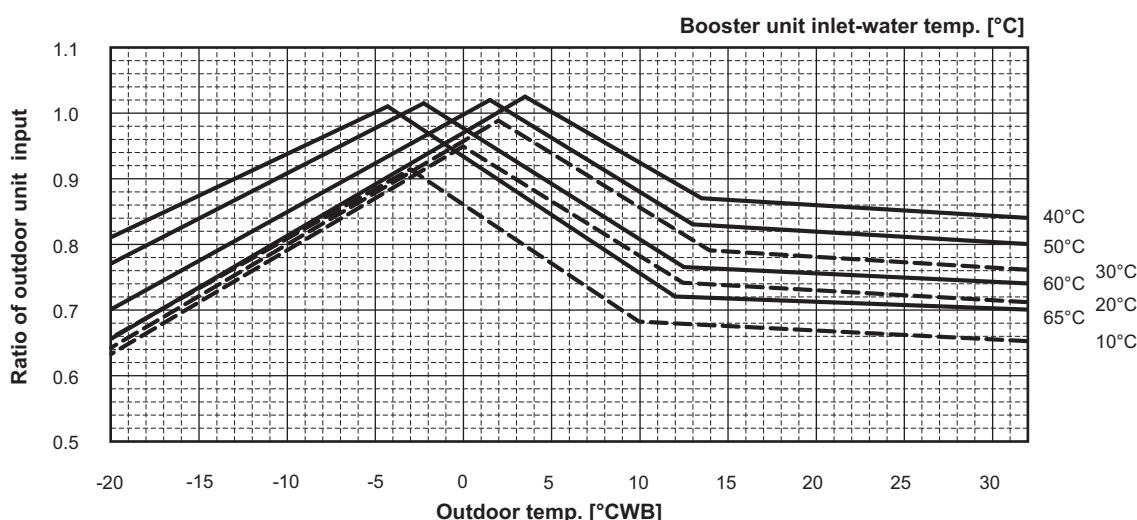
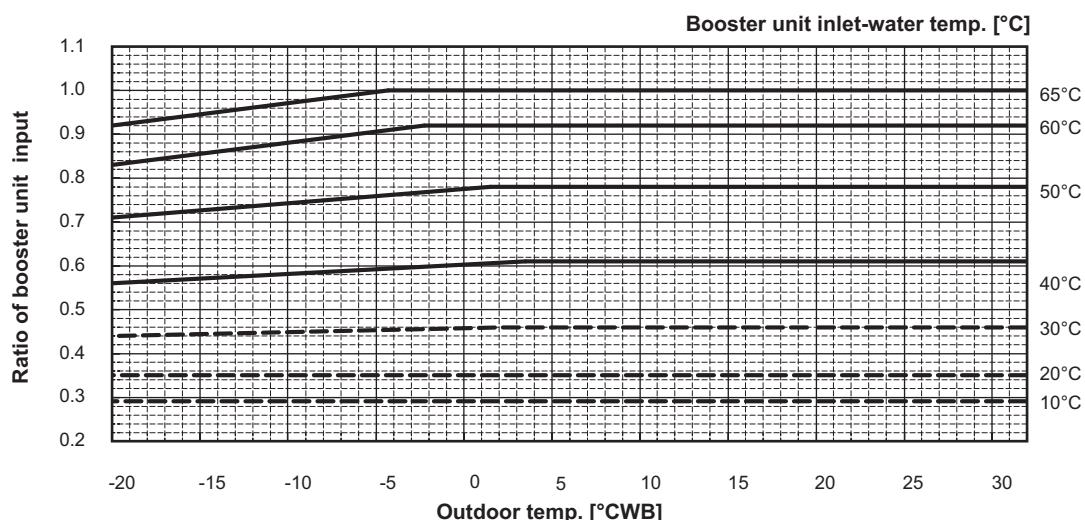
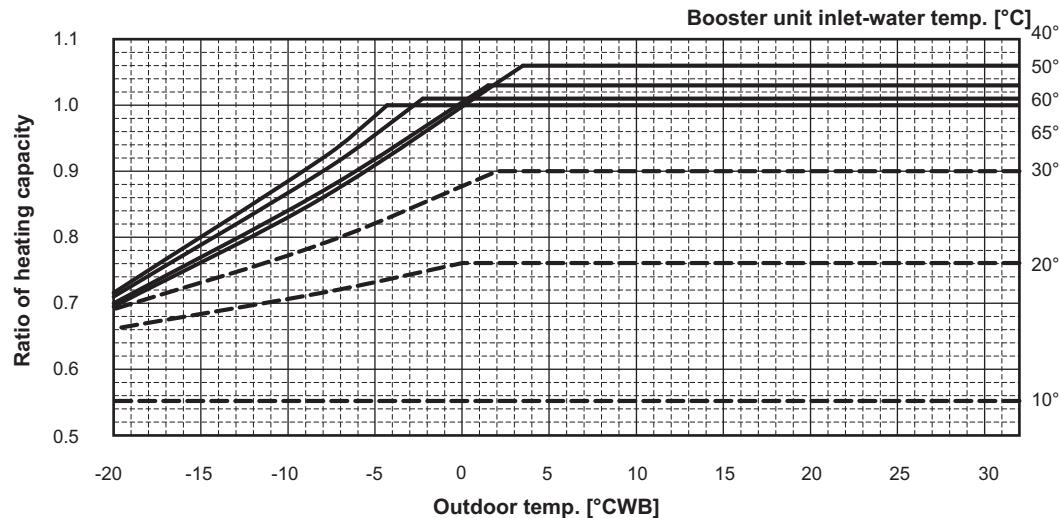
III | Product Data

1. Capacity tables

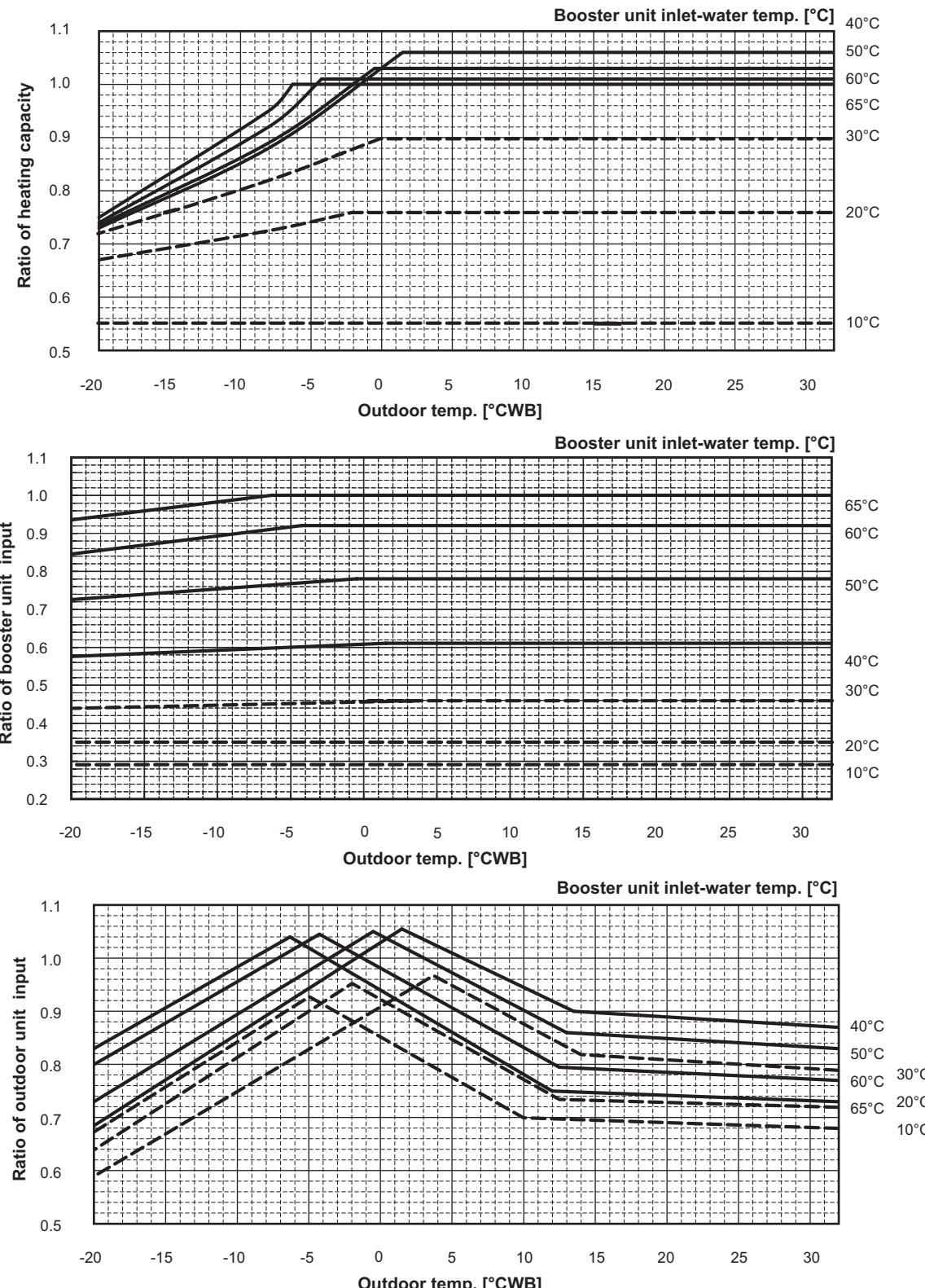
(1) Correction by temperature

(1)-1 R2 series + PWFY-P100VM-E-BU

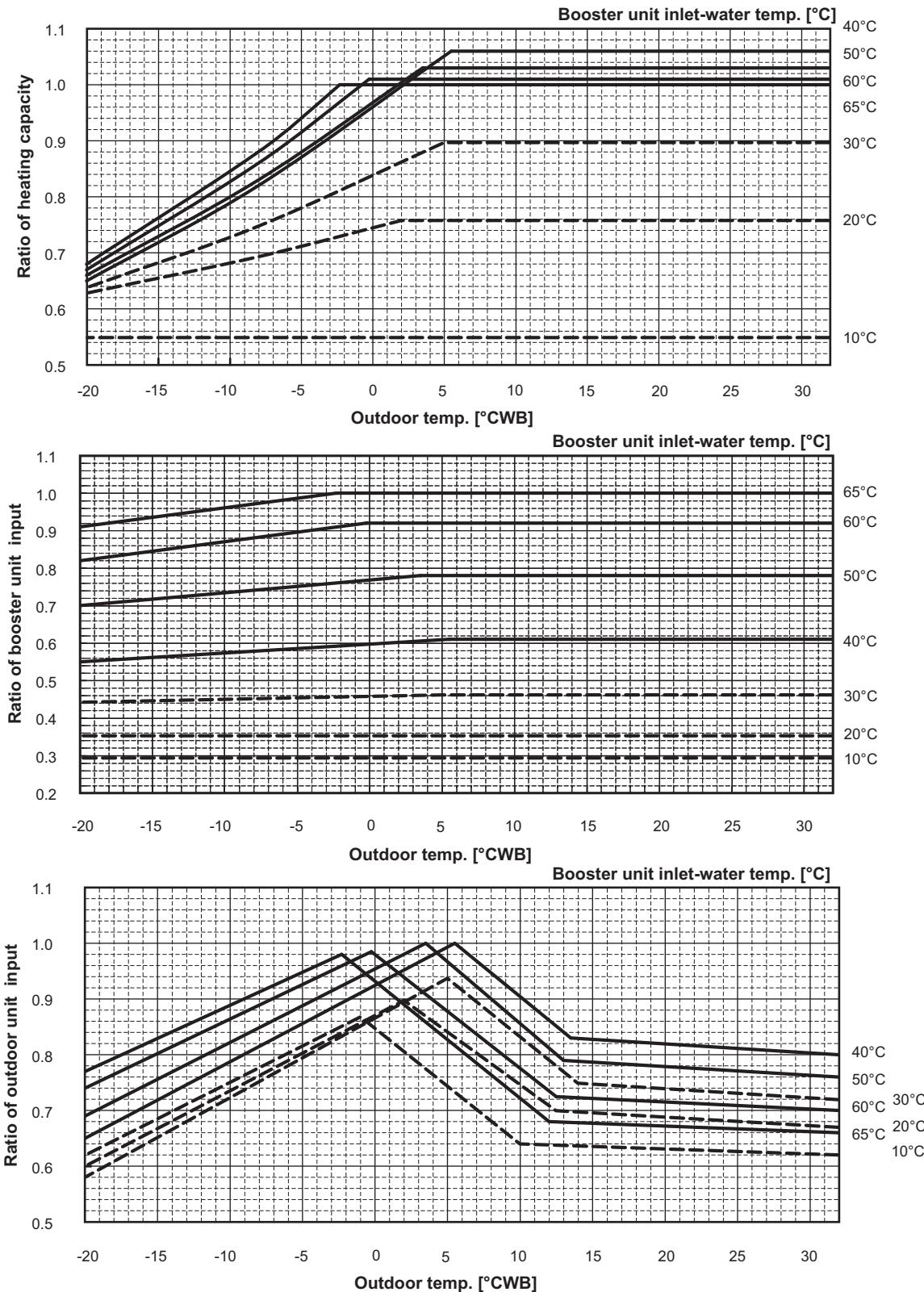
PURY-	P200,250YHM-A(-BS)	EP200,250YHM-A(-BS)
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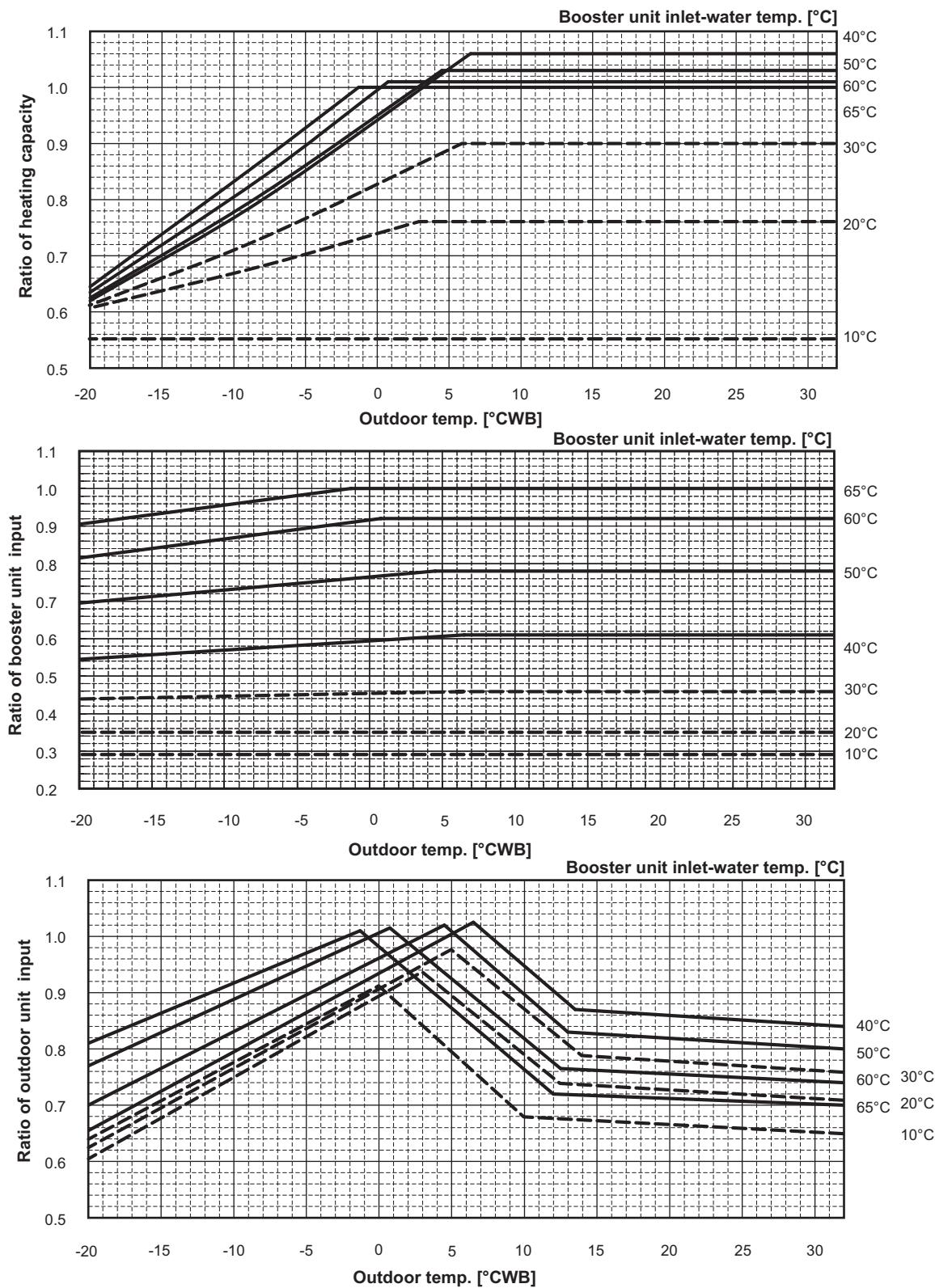
PURY-	P300,350,400YHM-A(-BS)	EP300,400Y(S)HM-A(-BS)
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PURY-	P450,500,550,600,650YSHM-A(-BS)	EP450,500,550,600YSHM-A(1)(-BS)
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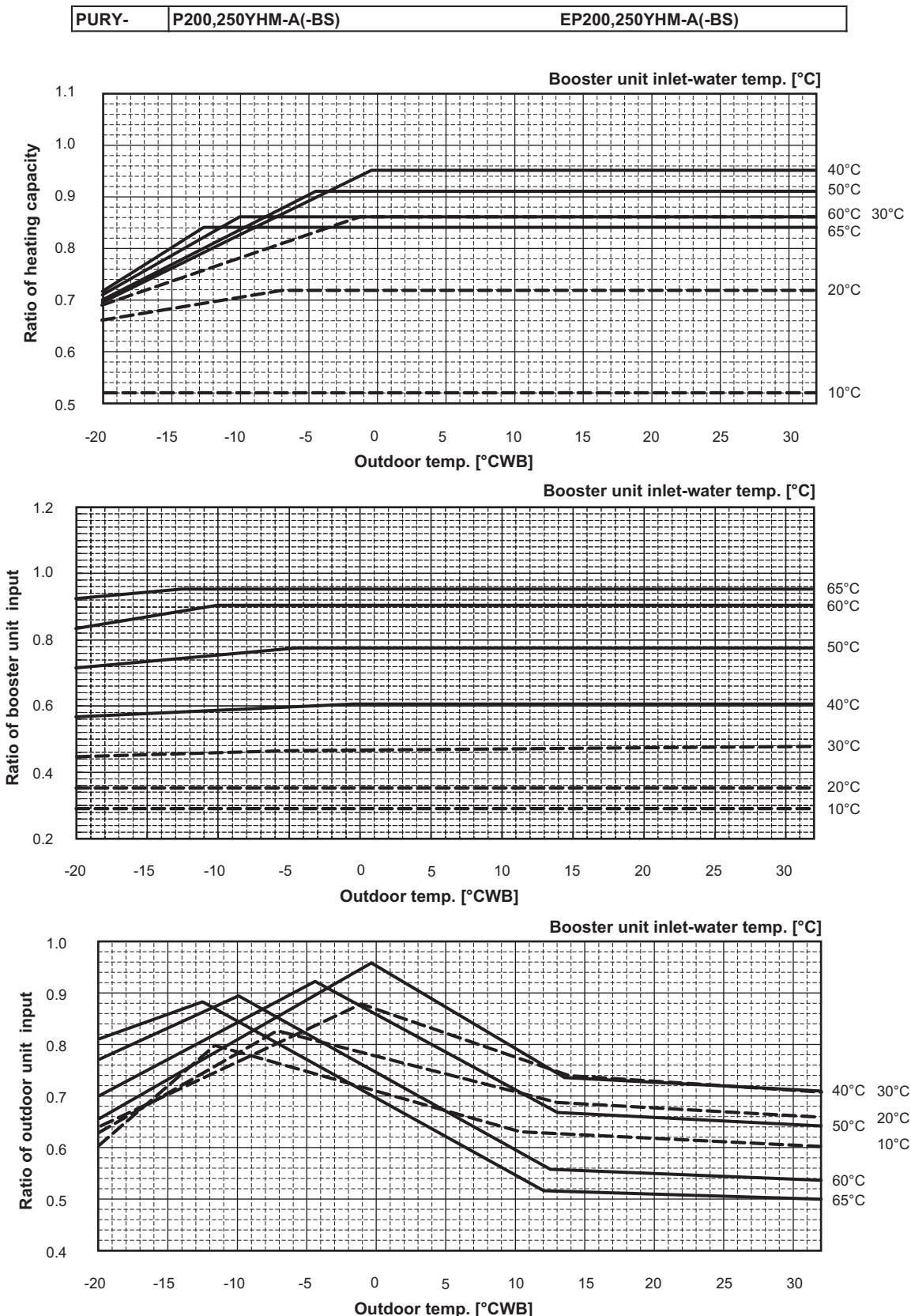


PURY- P700,750,800YSHM-A(-BS)



(1)-2 R2 series + PWFY-P100VM-E-BU + WCB Energy saving mode*

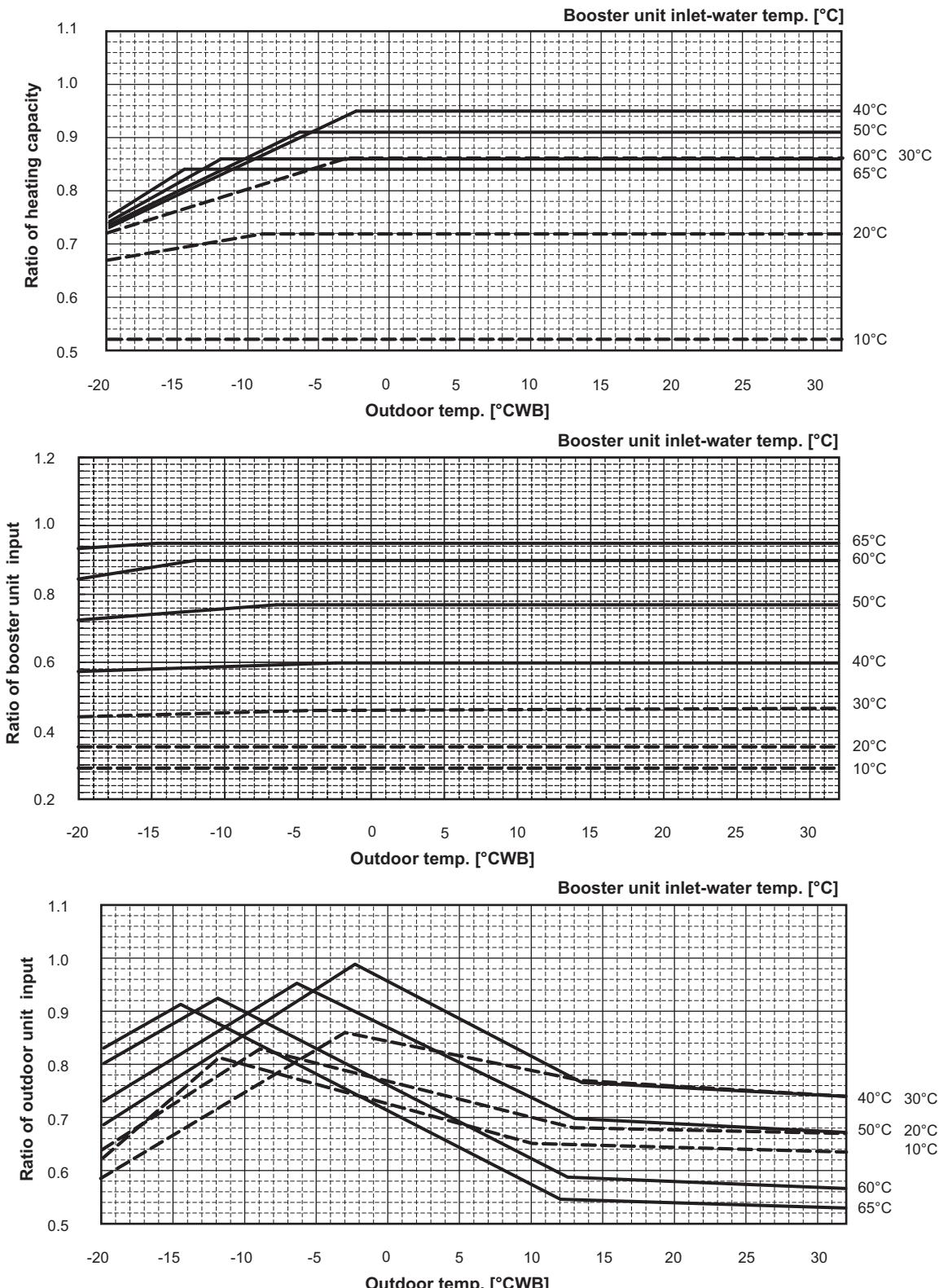
*For energy saving mode, set WCB DIP SW 6-5 ON.



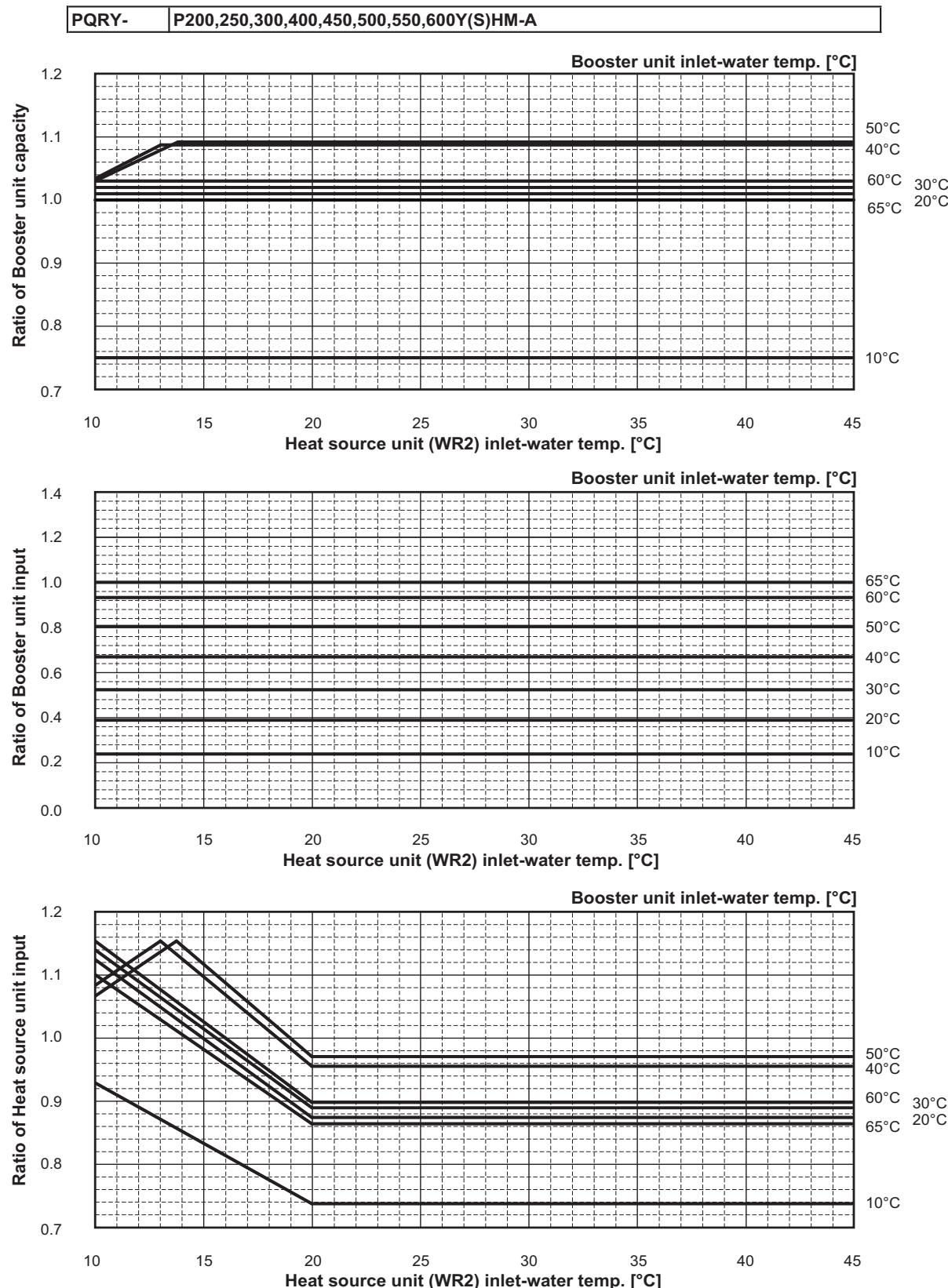
PURY-

P300,350YHM-A(-BS)

EP300YHM-A(-BS)



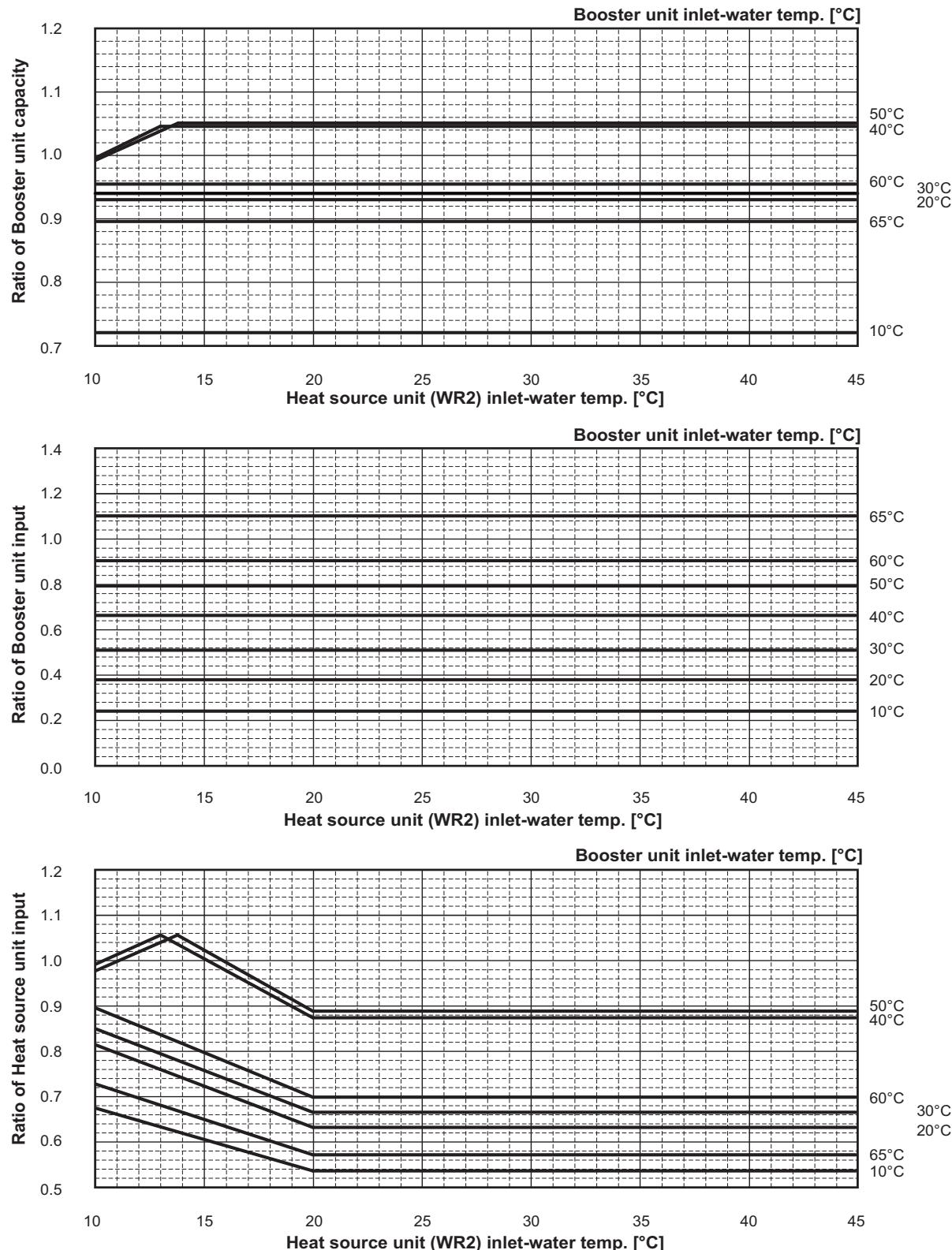
(1)-3 WR2 series + PWFY-P100VM-E-BU



(1)-4 WR2 series + PWFY-P100VM-E-BU + WCB Energy saving mode*

*For energy saving mode, set WCB DIP SW 6-5 ON.

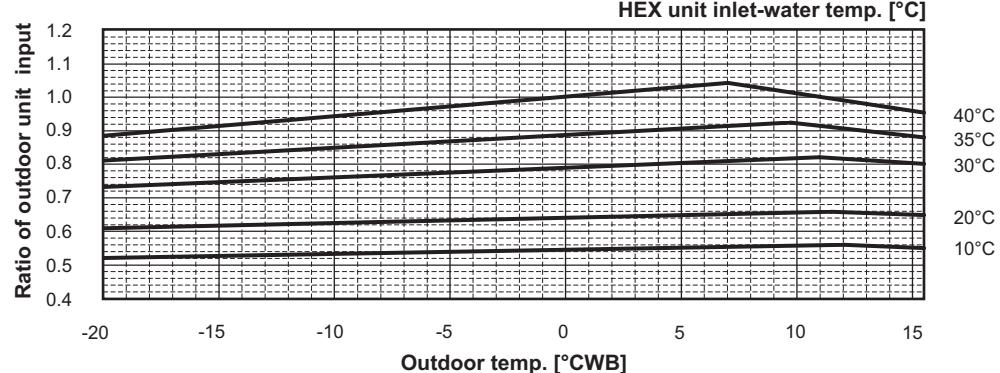
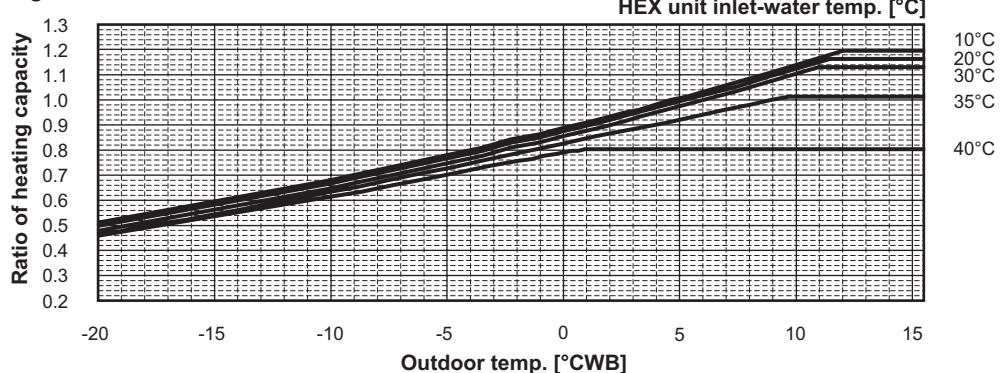
PQRY-	P200,250,300,400,450,500,550,600Y(S)HM-A
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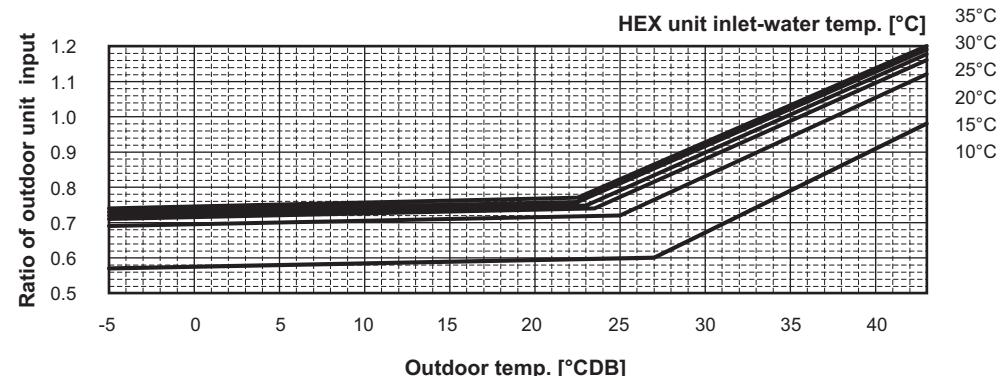
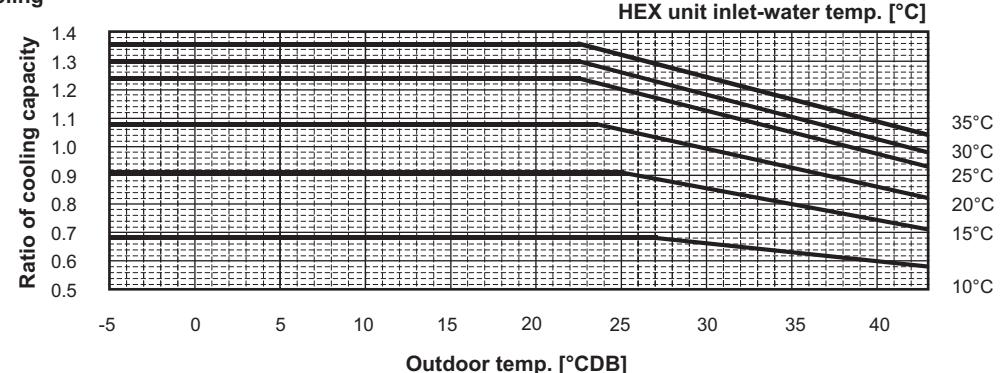
(1)-5 Y series + PWFY-P100,200VM-E-AU

PUHY-	P200,250YHM-A(-BS)	EP200,250YHM-A(-BS)
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Heating

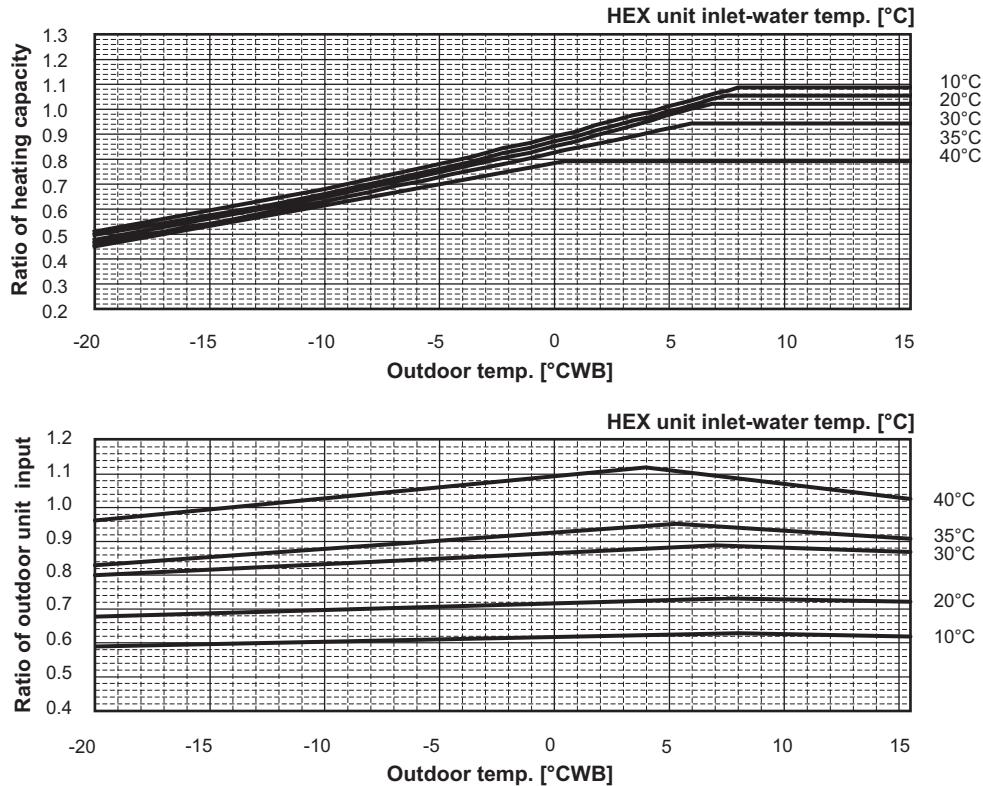


Cooling

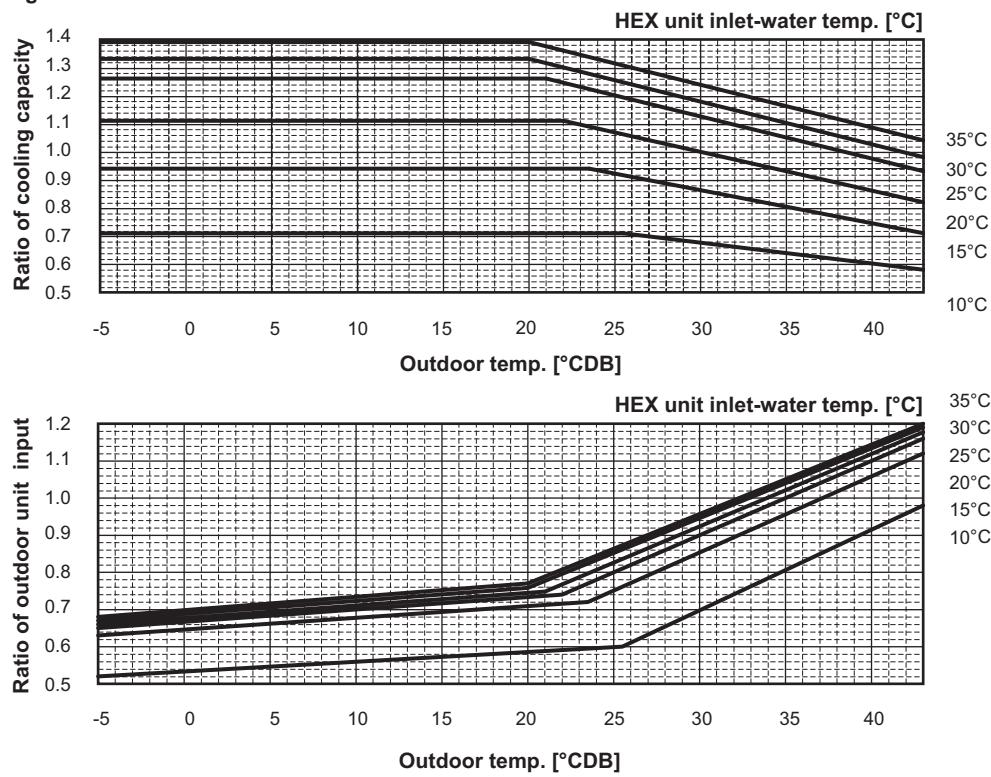


PUHY- P300,350,400YHM-A(-BS) EP300,400Y(S)HM-A(-BS)

Heating

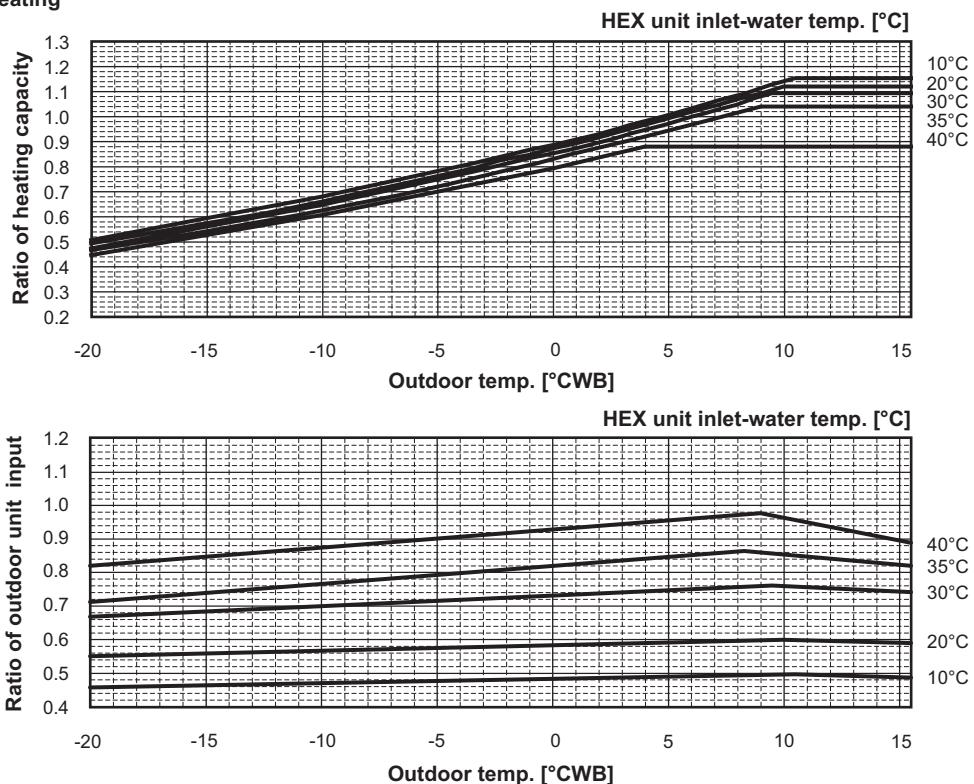


Cooling

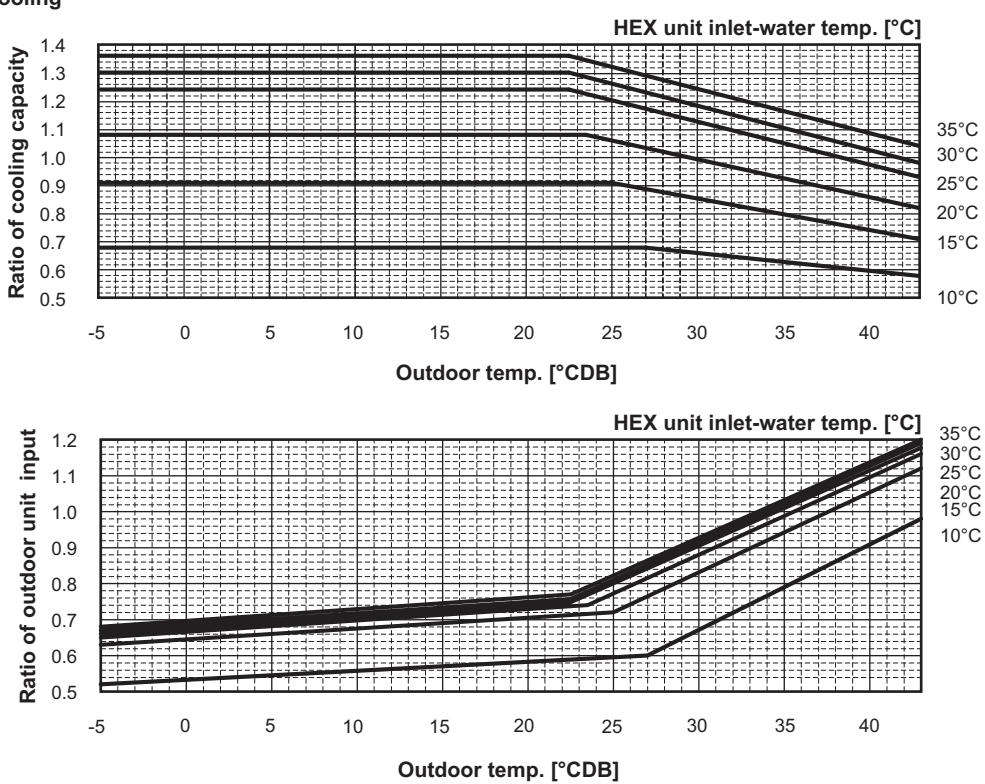


PUHY- P450,500,550,600,650Y(S)HM-A(-BS) EP450,500,550,600,650YSHM-A(1)(-BS)

Heating

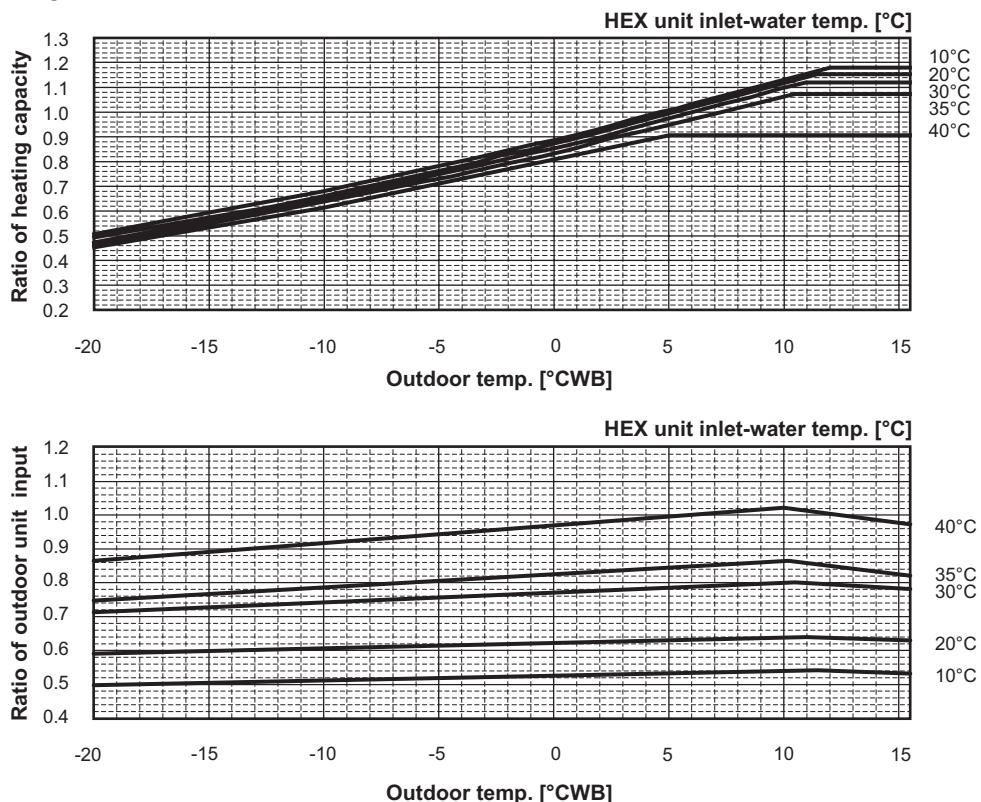


Cooling

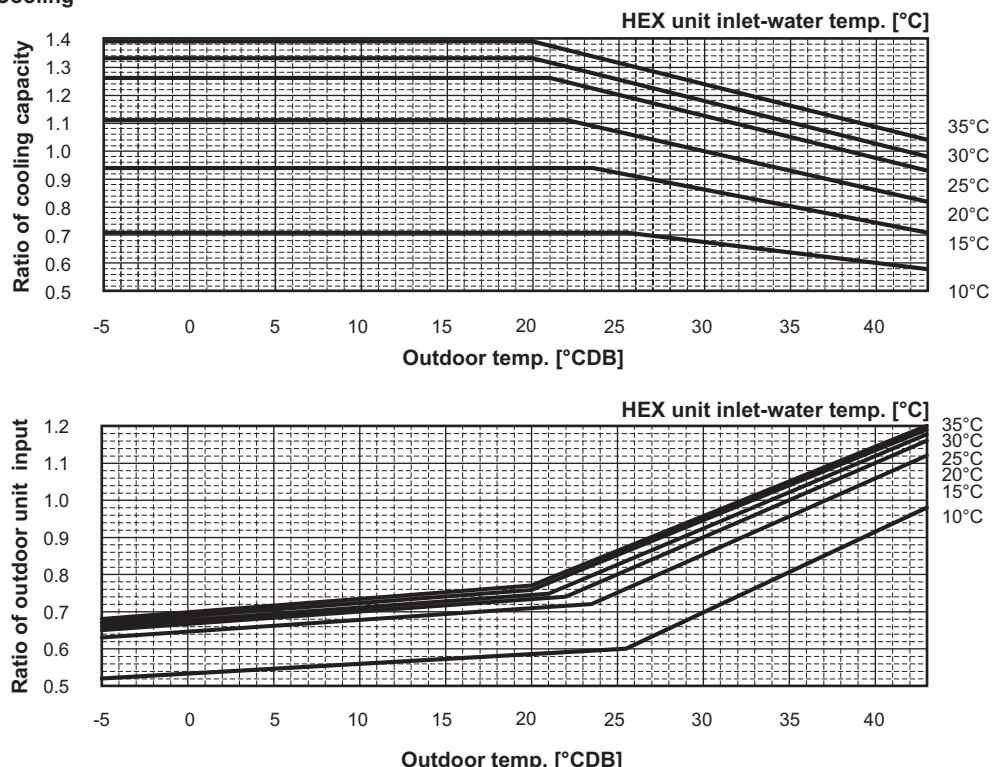


PUHY- P700,750,800YSHM-A(-BS) EP700,750,800YSHM-A(1)(-BS)

Heating

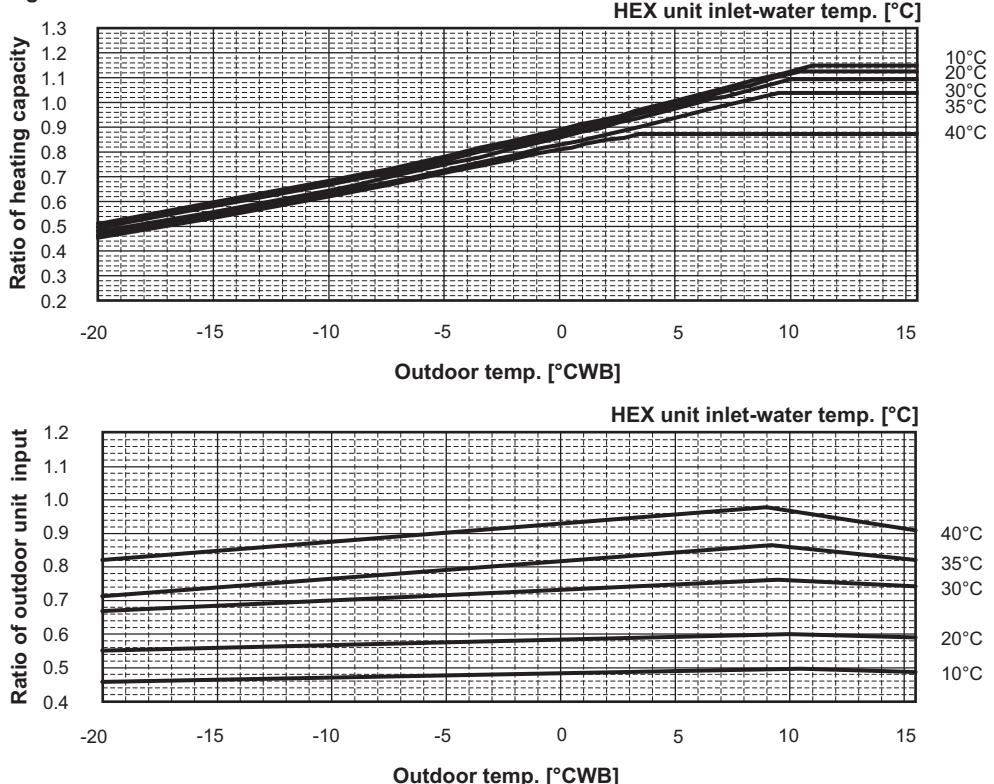


Cooling

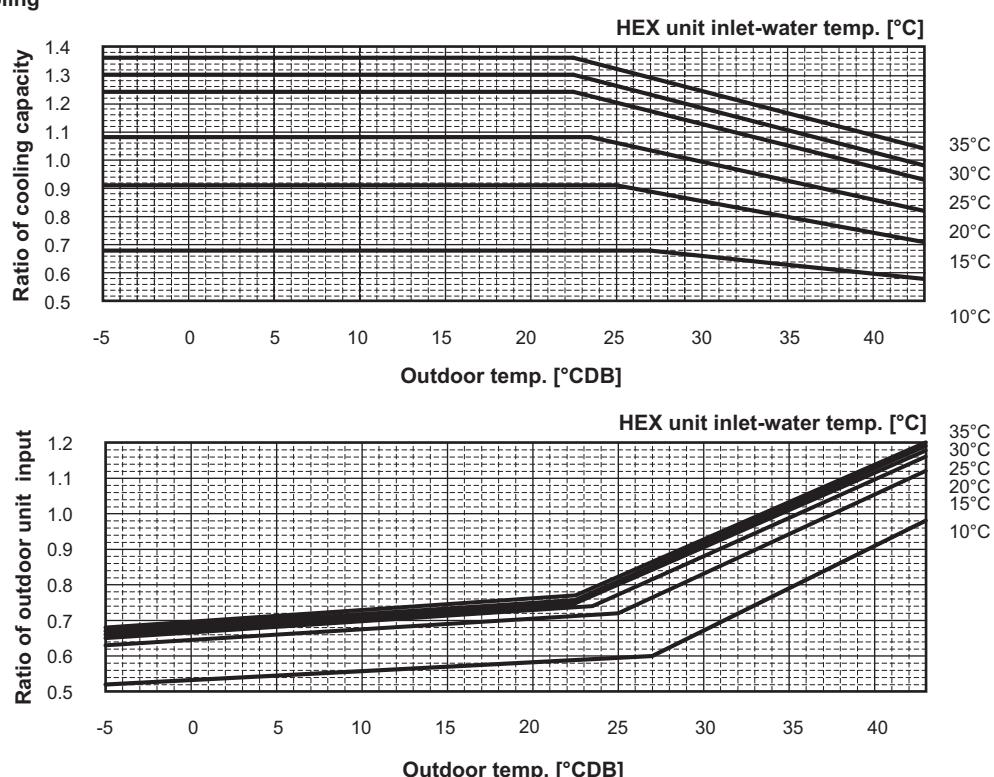


PUHY- P850,900,950,1000,1050,1100,1150,1200,1250YSHM-A(-BS) EP850,900YSHM-A(1)(-BS)

Heating



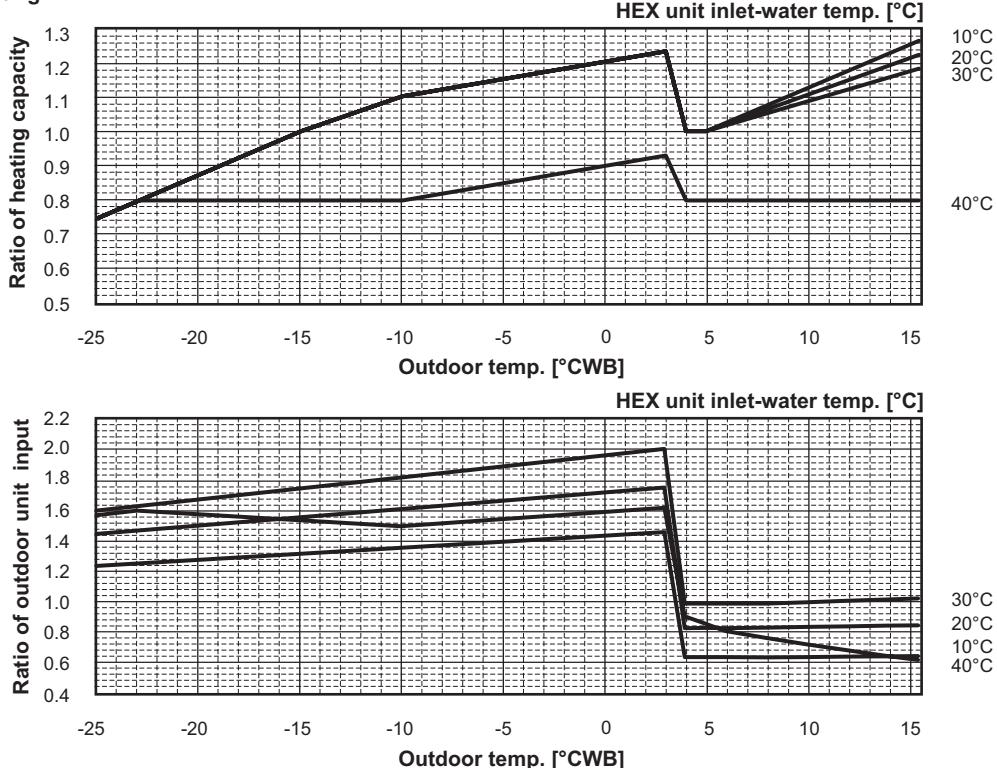
Cooling



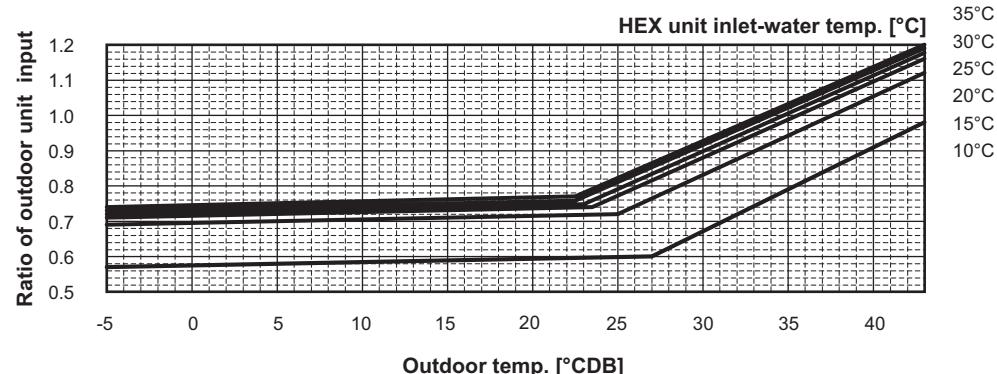
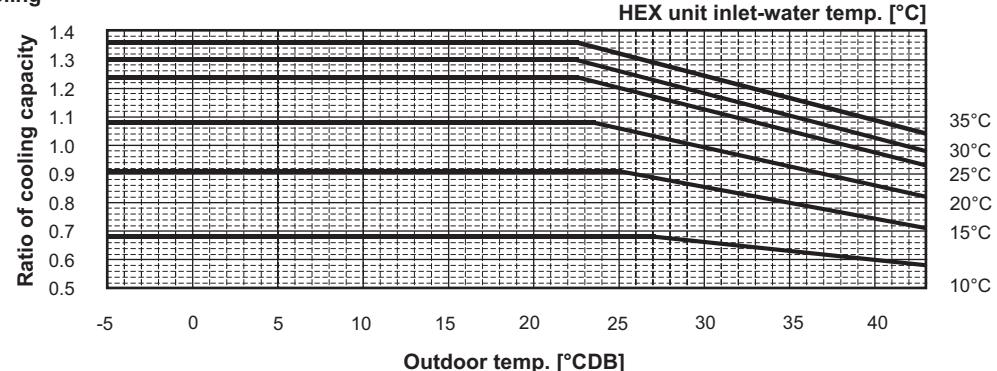
(1)-6 HP (ZUBADAN) series + PWFY-P100,200VM-E-AU

PUHY-	HP200,250,400,500Y(S)HM-A(-BS)
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Heating



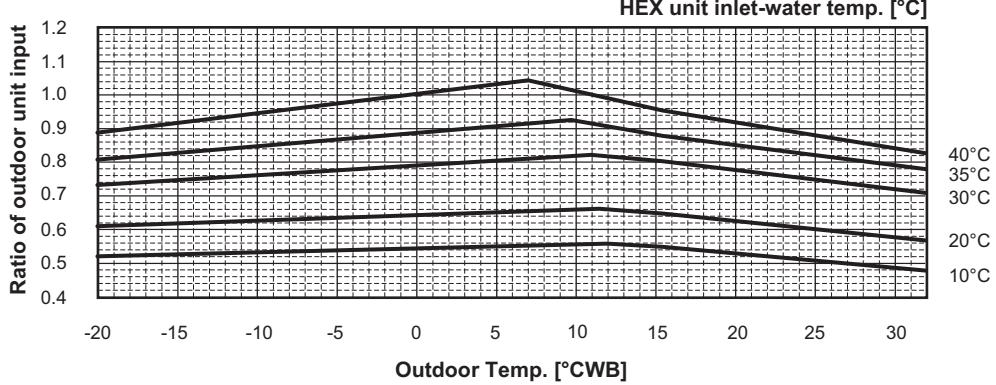
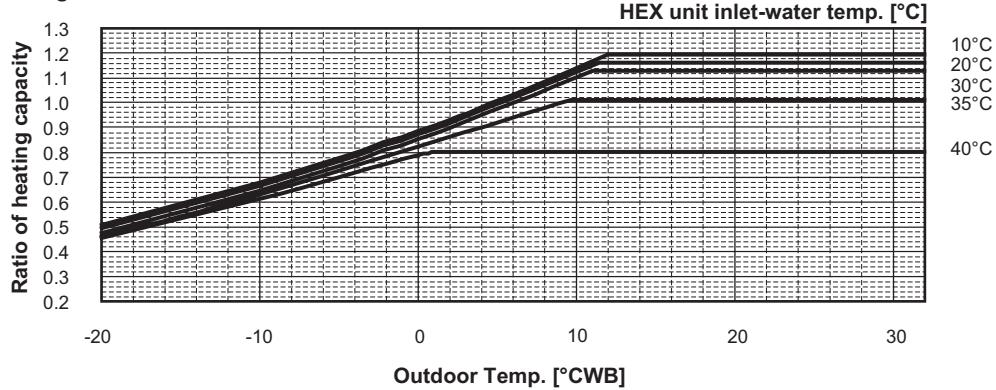
Cooling



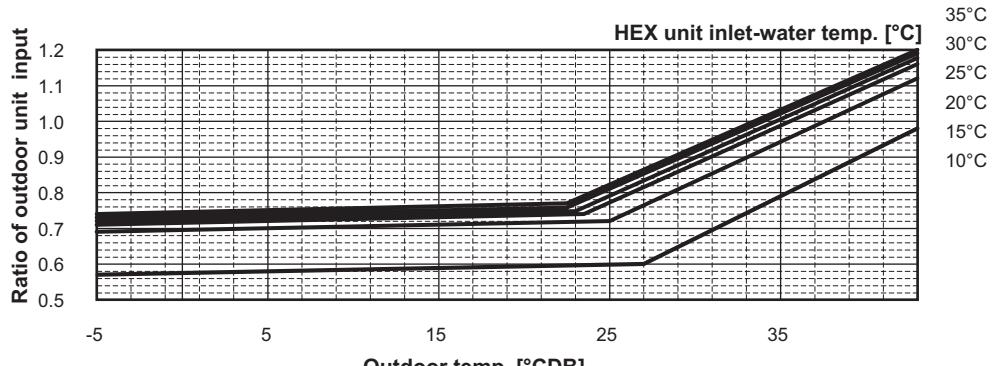
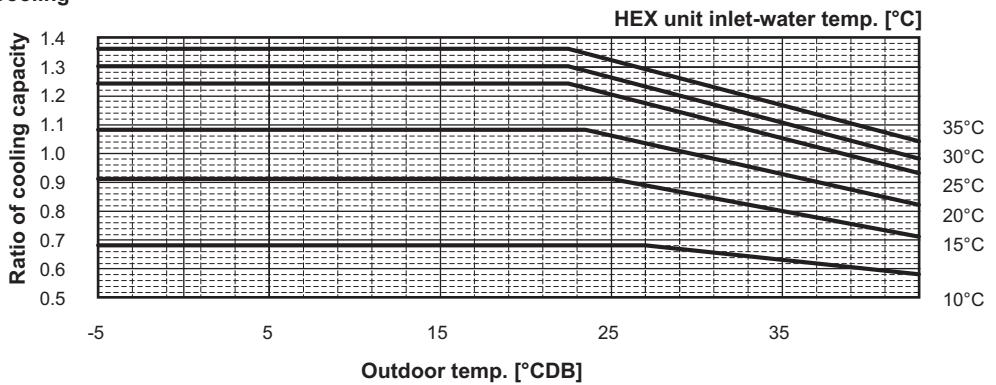
(1)-7 R2 series + PWFY-P100,200VM-E-AU

PURY-	P200,250YHM-A(-BS)	EP200,250YHM-A(-BS)
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Heating

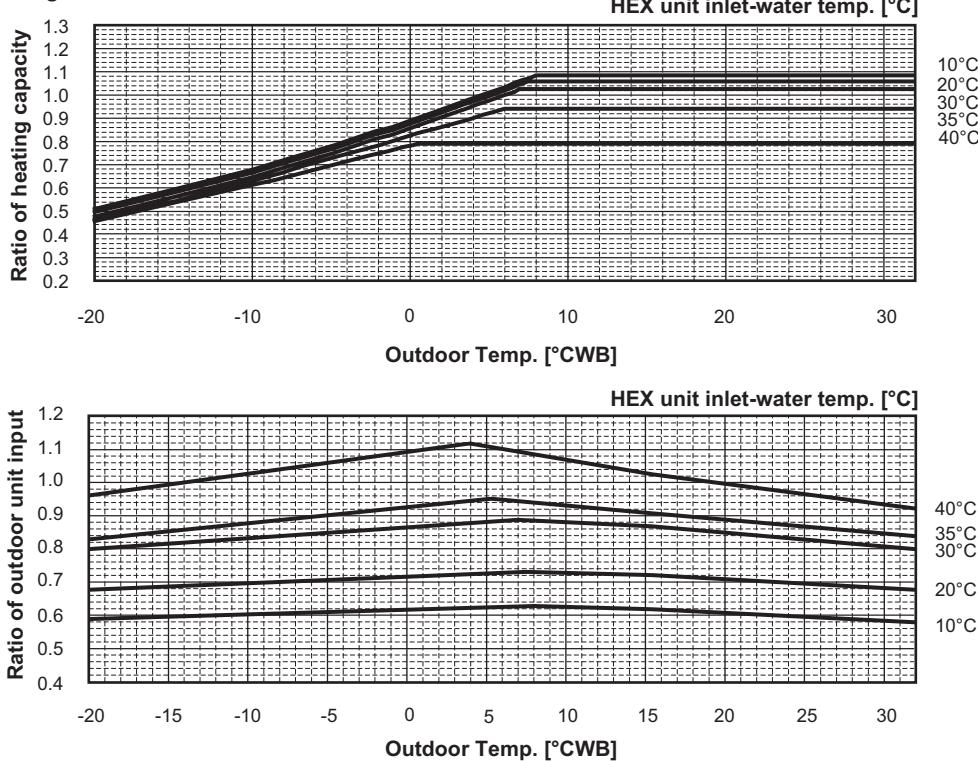


Cooling

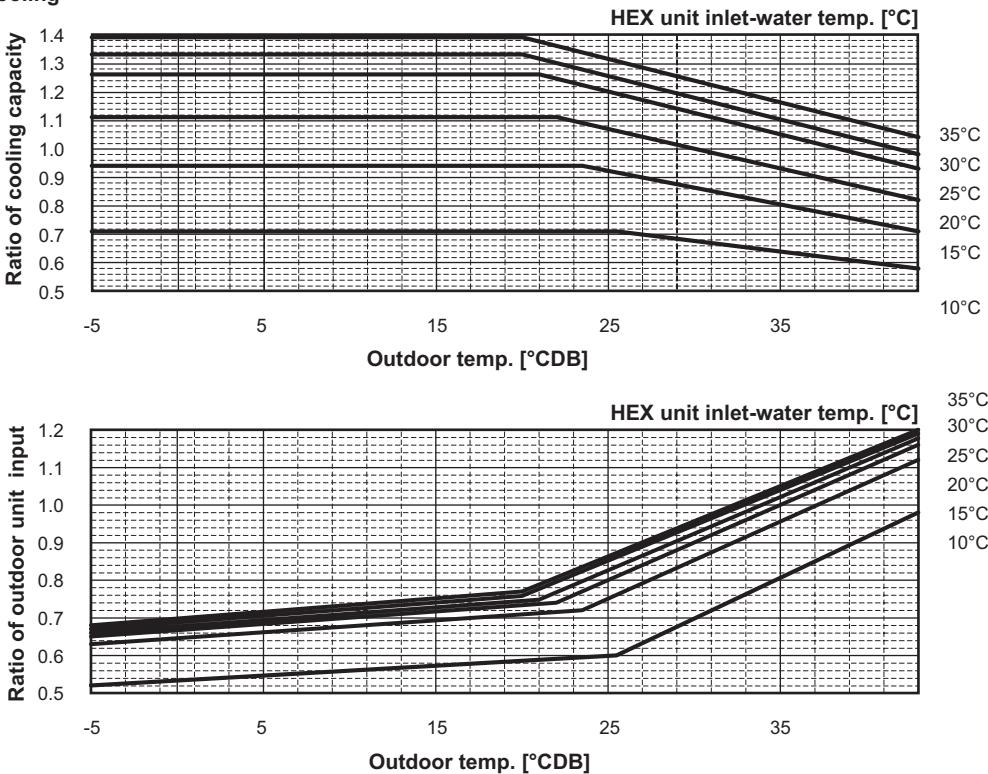


PURY- P300,350,400YHM-A(-BS) EP300,400Y(S)HM-A(-BS)

Heating

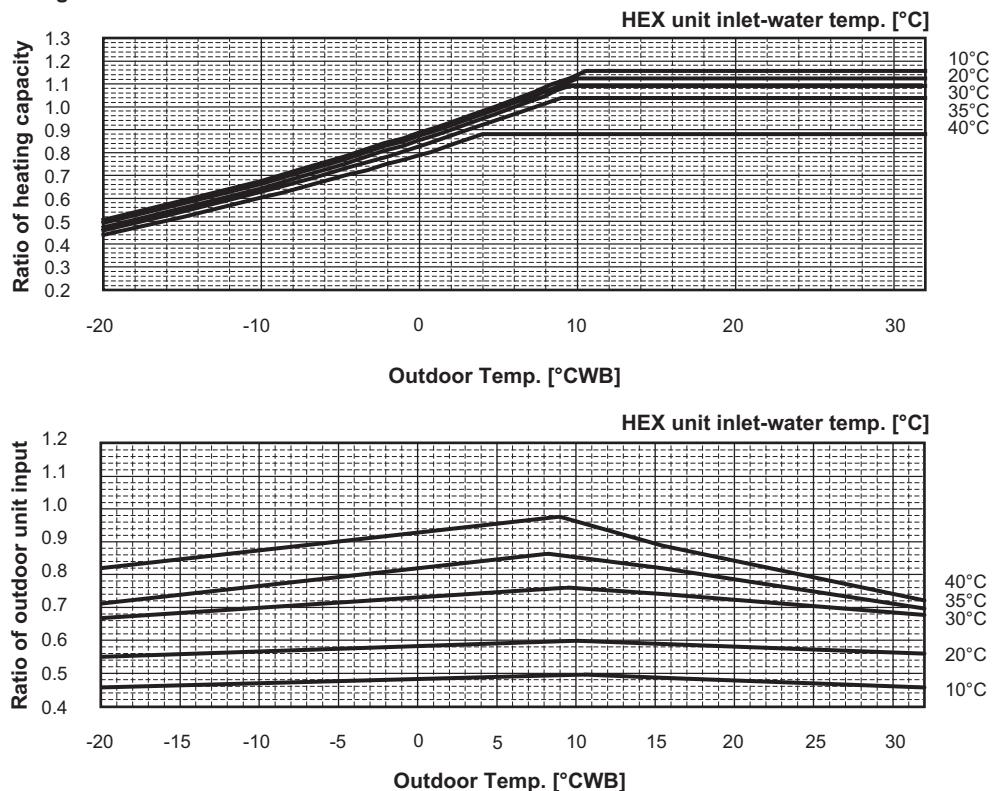


Cooling

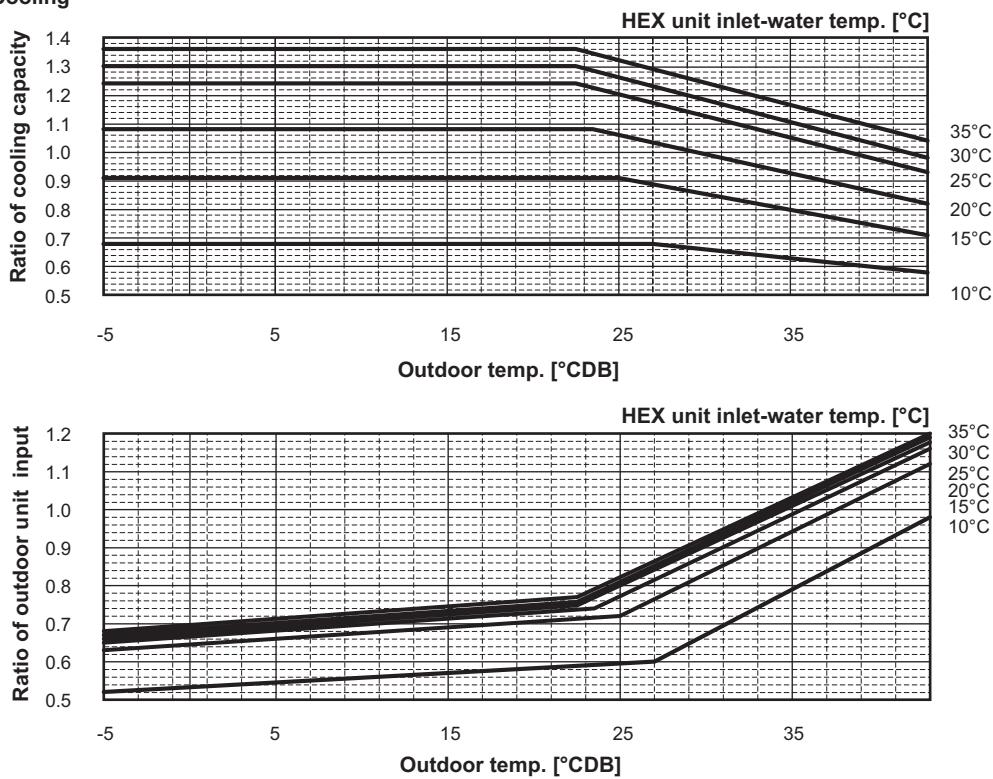


PURY- P450,500,550,600,650YSHM-A(-BS) EP450,500,550,600YSHM-A(1)(-BS)

Heating

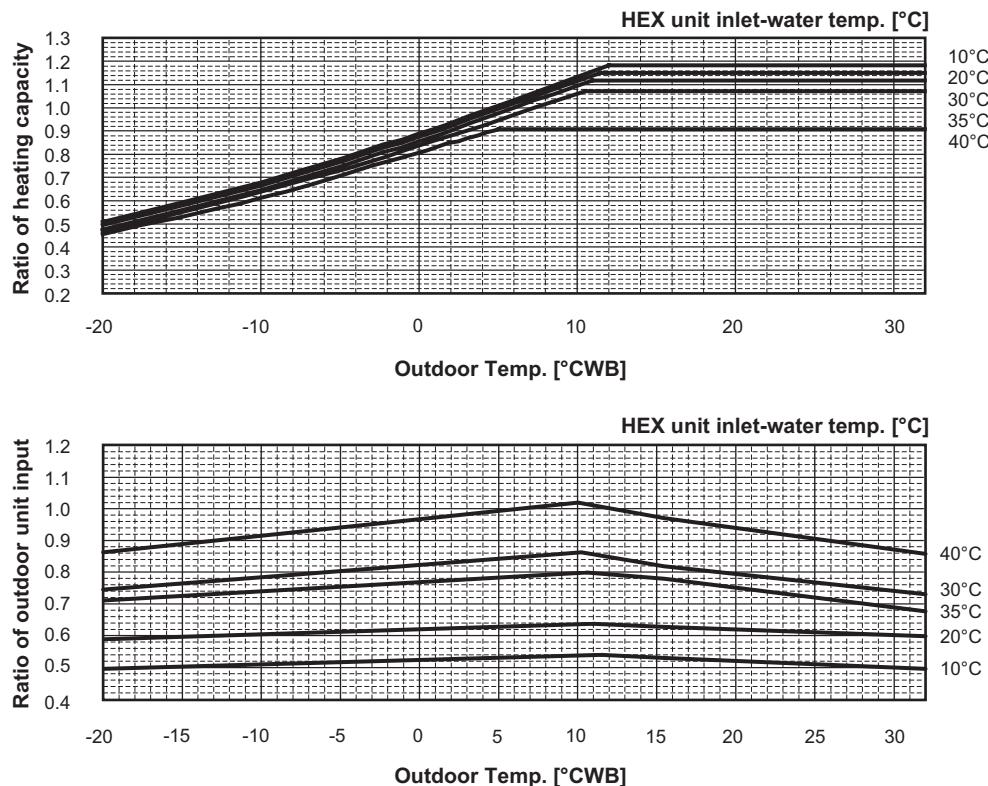


Cooling

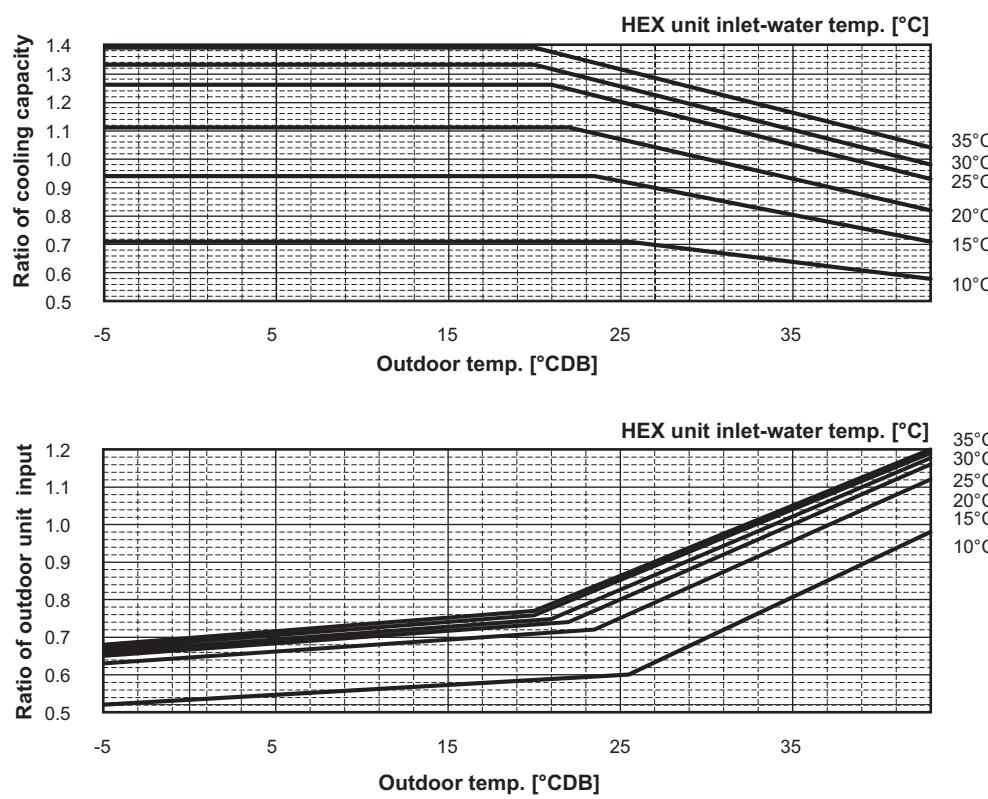


PURY- P700,750,800YSHM-A(-BS)

Heating



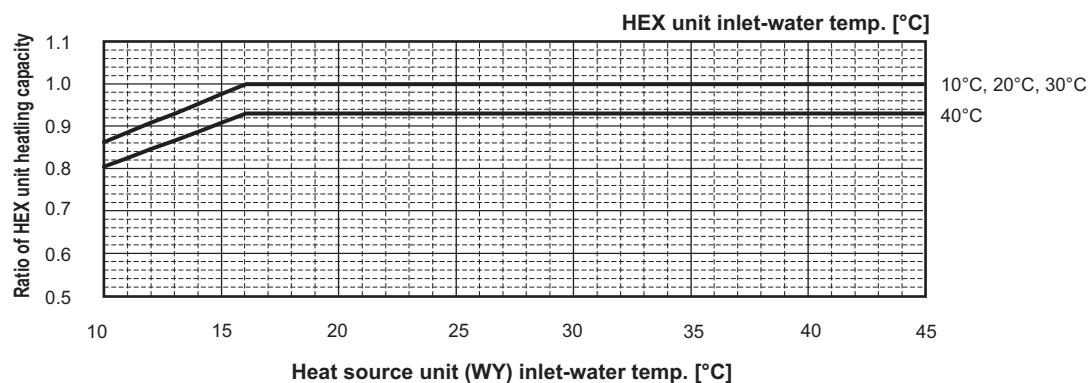
Cooling



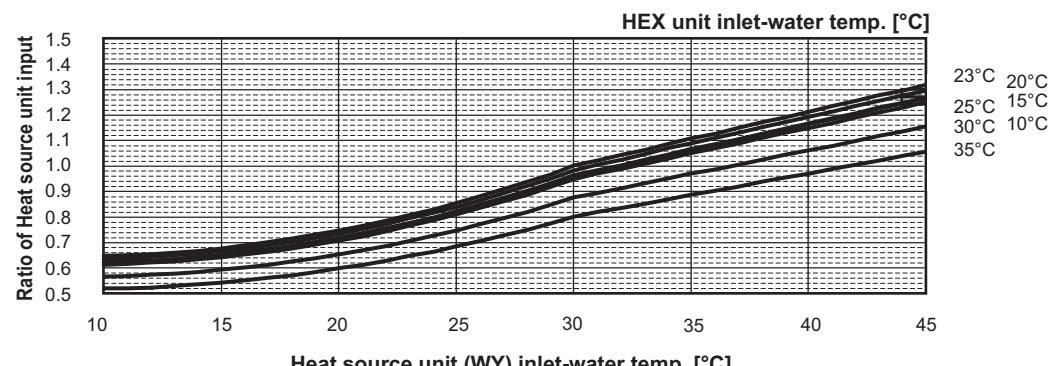
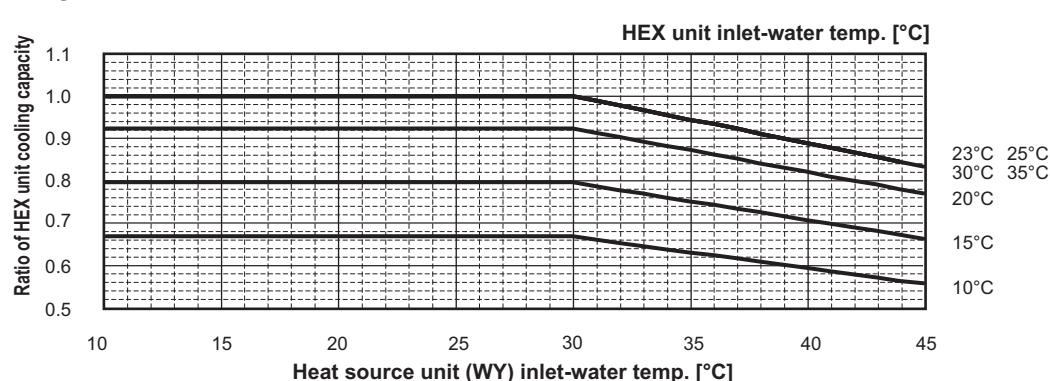
(1)-8 WY + PWFY-P100,200VM-E-AU

PQHY-	P200,250,300,400,450,500,550,600,650,700,750,800,850,900Y(S)HM-A
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Heating



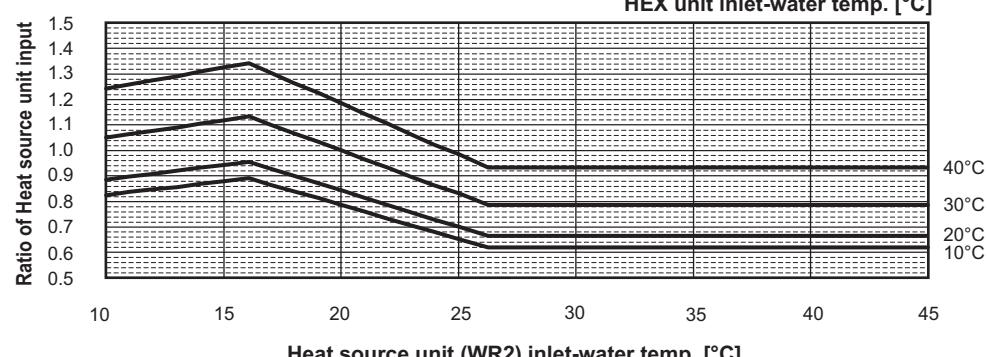
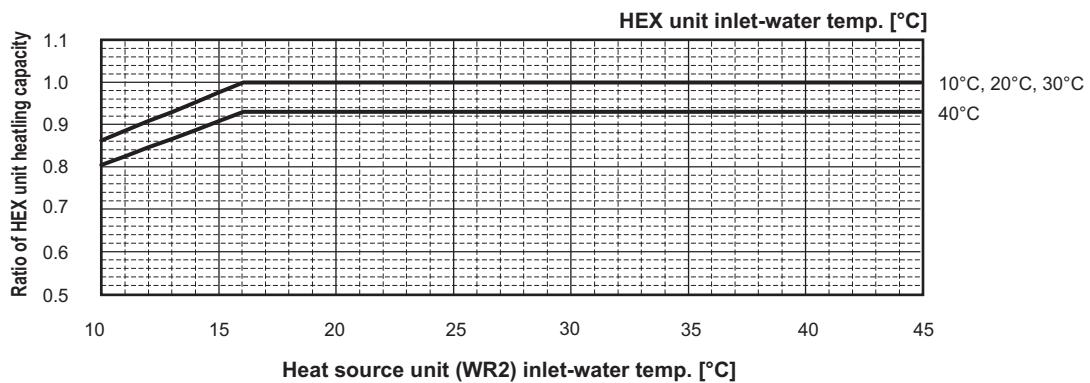
Cooling



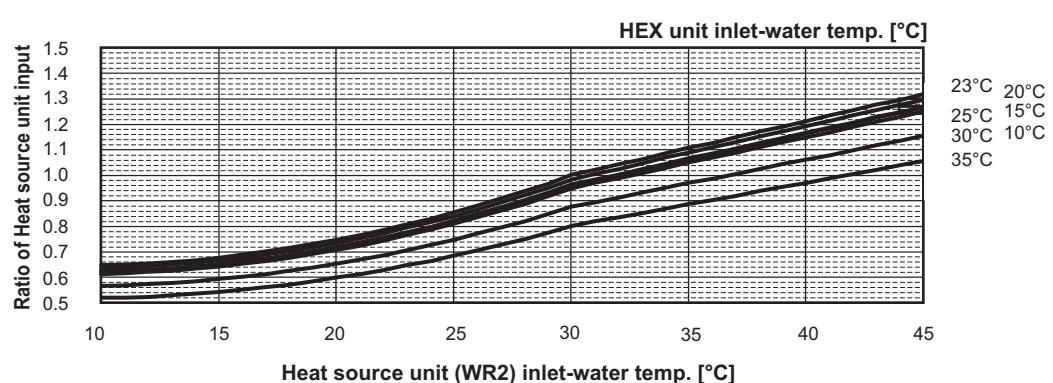
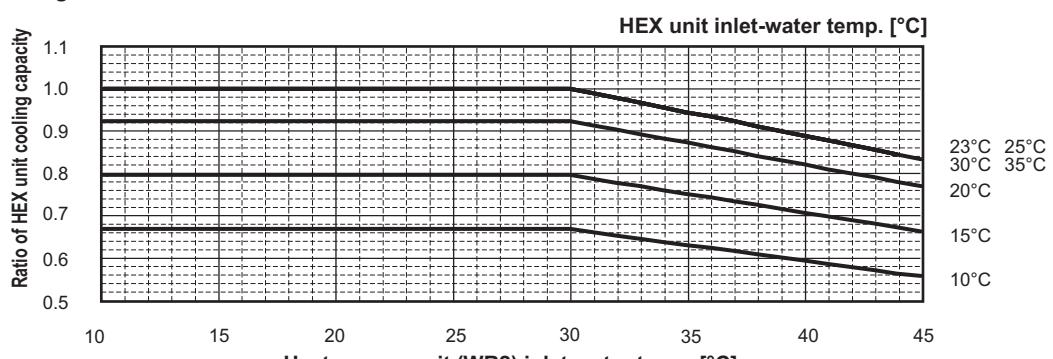
(1)-9 WR2 + PWFY-P100,200VM-E-AU

PQRY-	P200,250,300,400,450,500,550,600Y(S)HM-A
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Heating

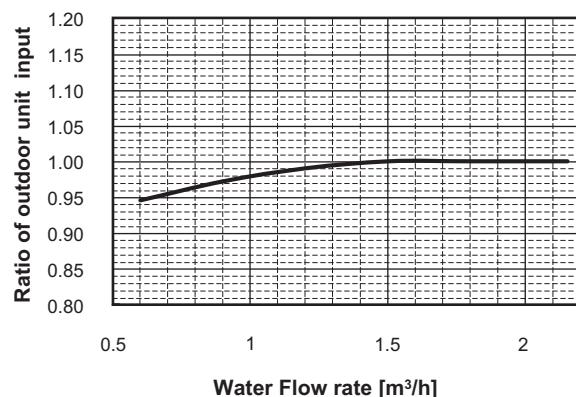
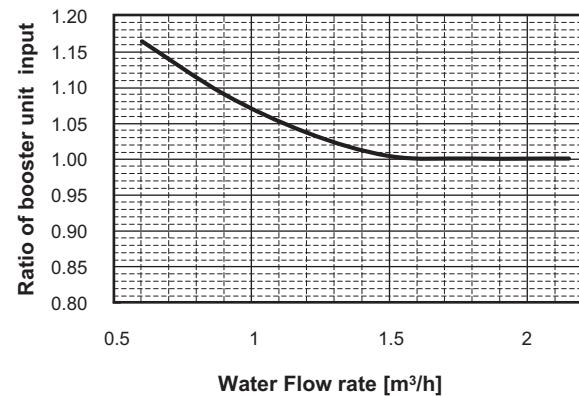
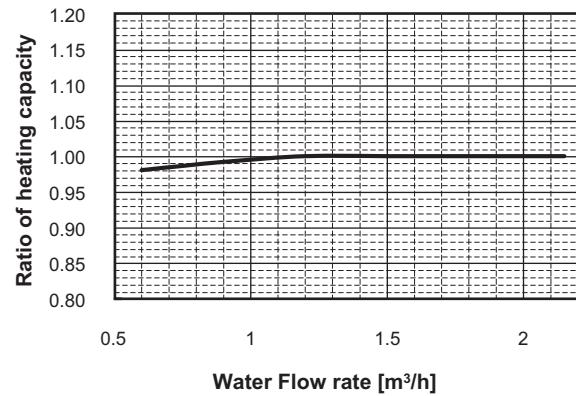


Cooling



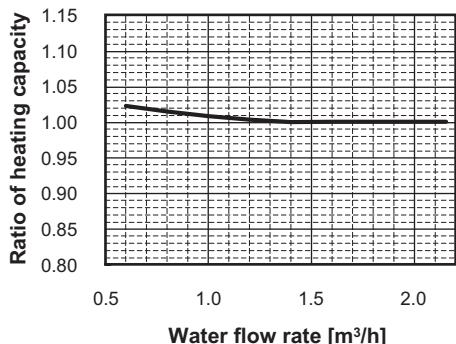
(2) Correction by water flow rate

(2)-1 PWFY-P100VM-E-BU

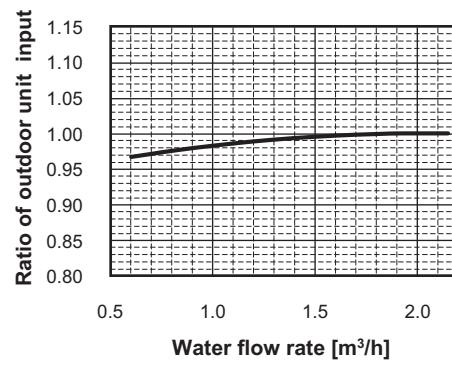
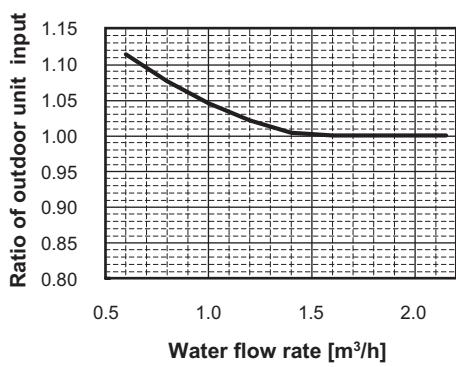
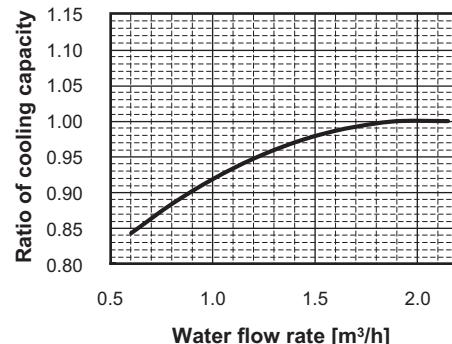


(2)-2 PWFY-P100VM-E-AU

Heating

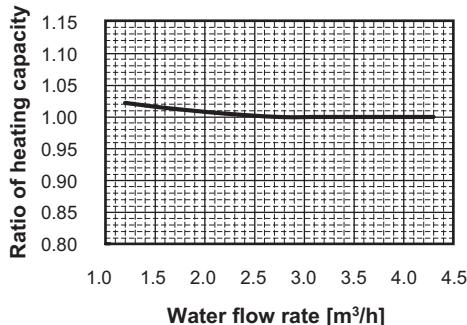


Cooling

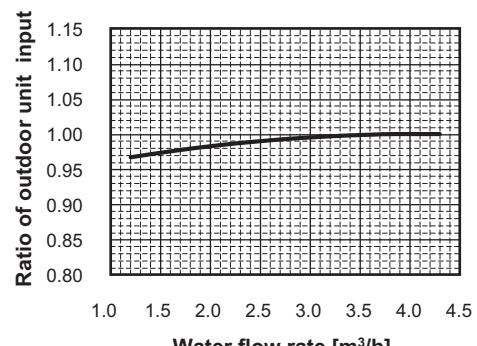
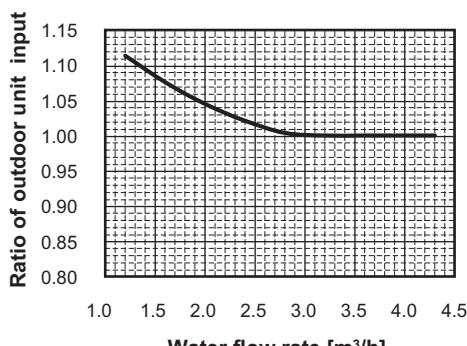
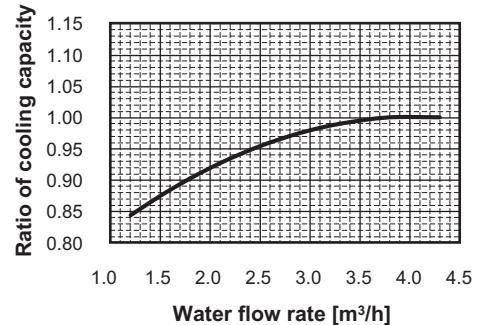


(2)-3 PWFY-P200VM-E-AU

Heating



Cooling



(3) Correction by total indoor

Refer to Chapter VIII.

(4) Correction by refrigerant piping length

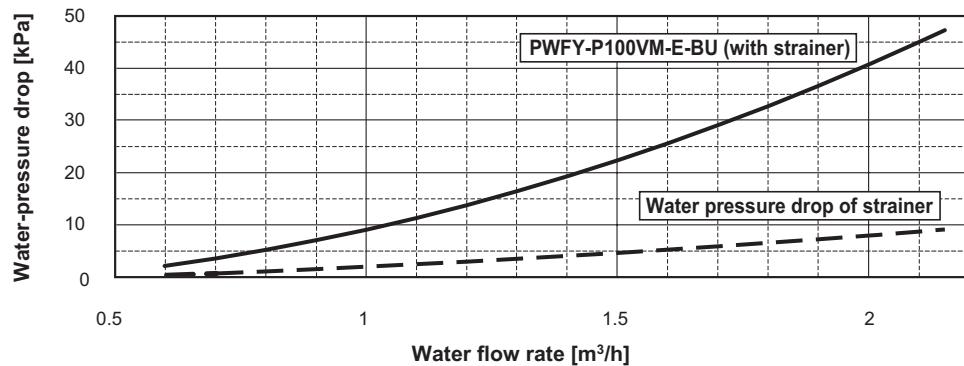
Refer to Chapter VIII.

(5) Correction at frosting and defrosting

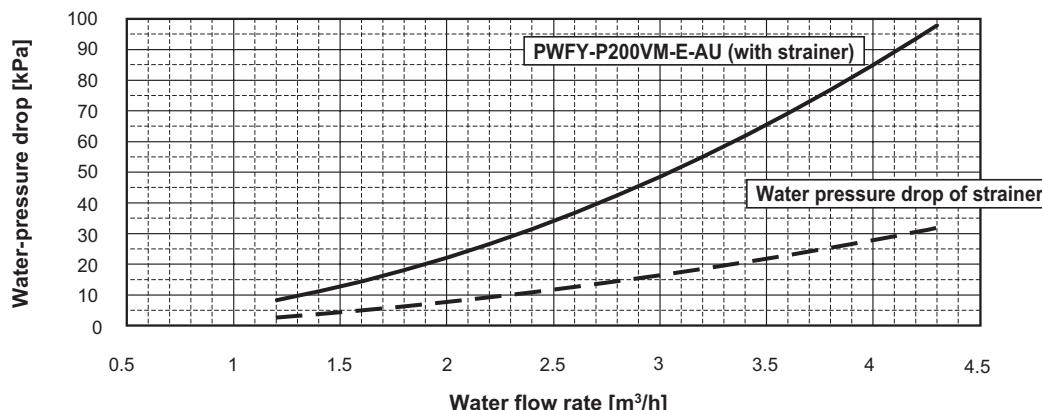
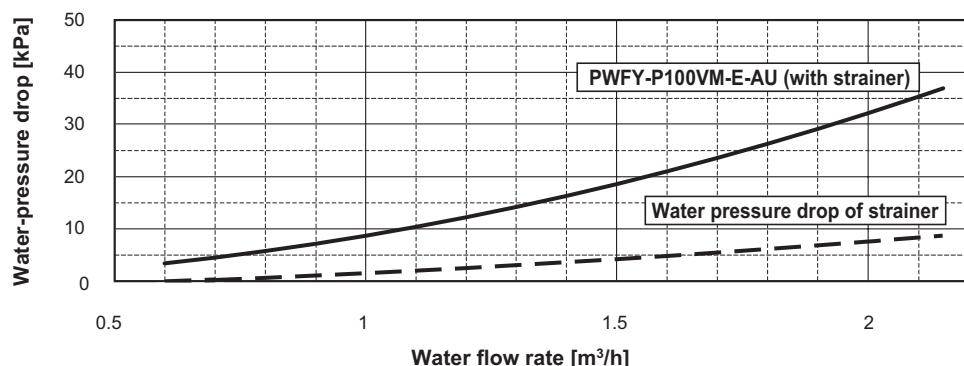
Refer to Chapter VIII.

(6) Water pressure drop

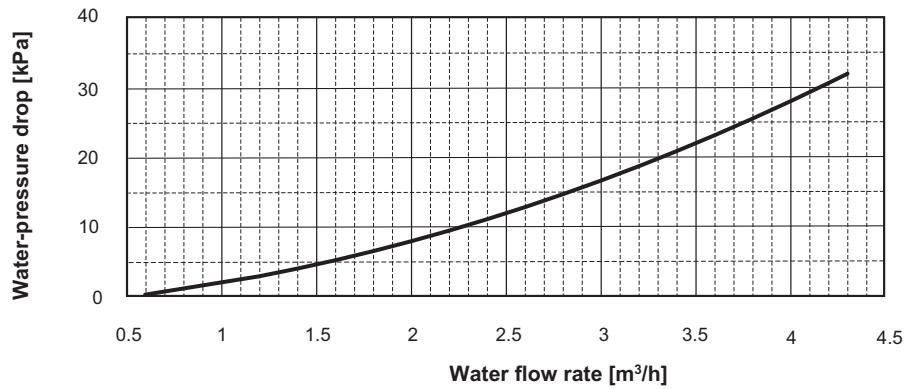
(6)-1 PWFY-P100VM-E-BU (with strainer)



(6)-2 PWFY-P100, 200VM-E-AU (with strainer)



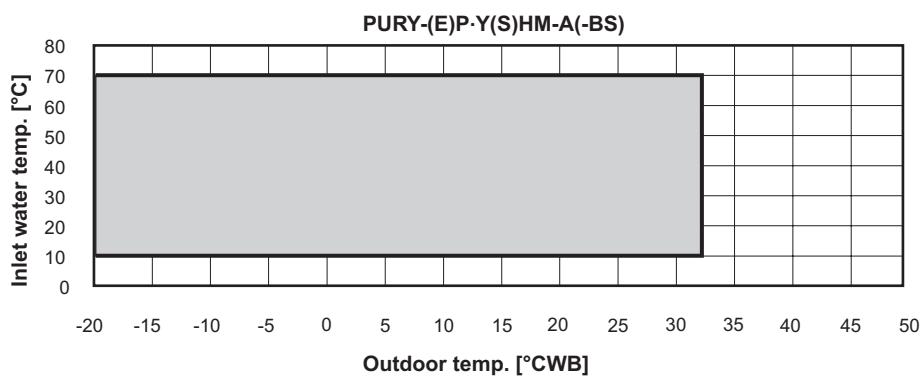
(6)-3 Water pressure drop of Strainer only
(accessory for PWFY-P100VM-E-BU and PWFY-P100, 200VM-E-AU)



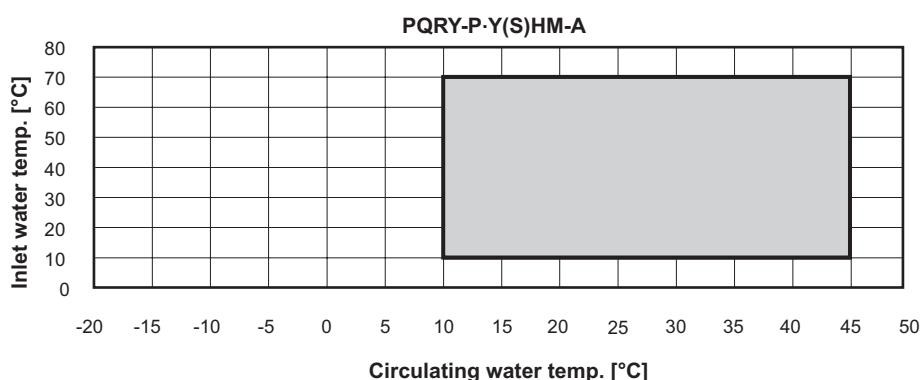
(7) Operation temperature range

(7)-1 PWFY-P100VM-E-BU

Heating

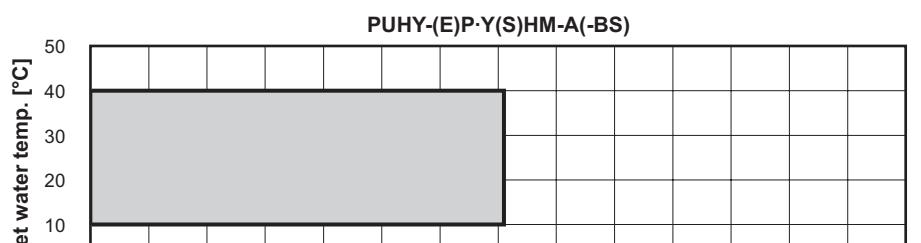


Heating

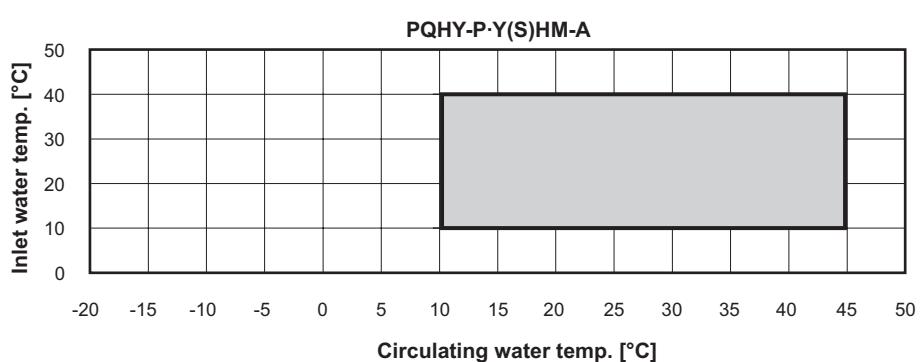


(7)-2 PWFY-P100, 200VM-E-AU

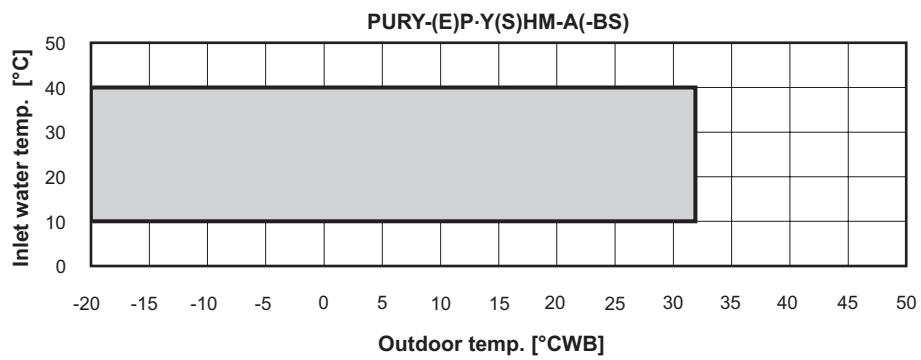
Heating



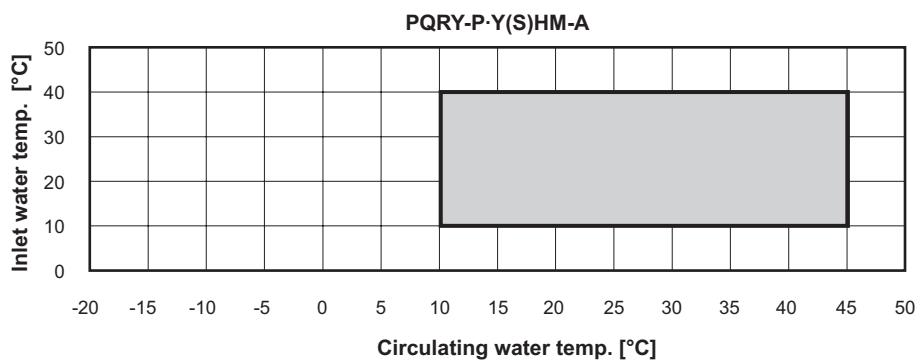
Heating

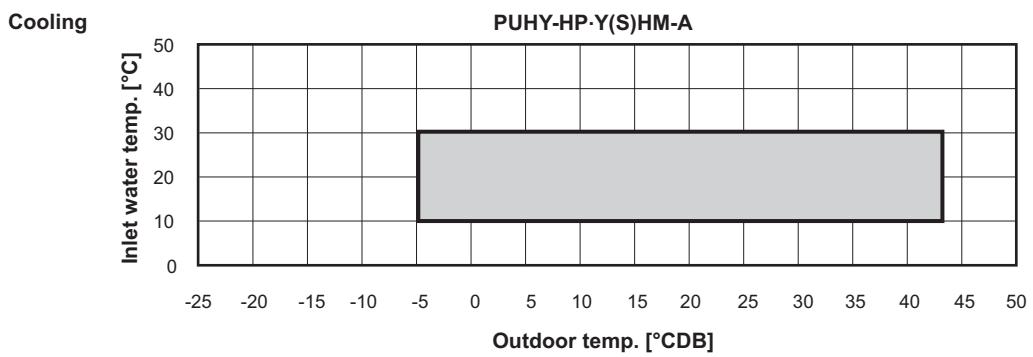
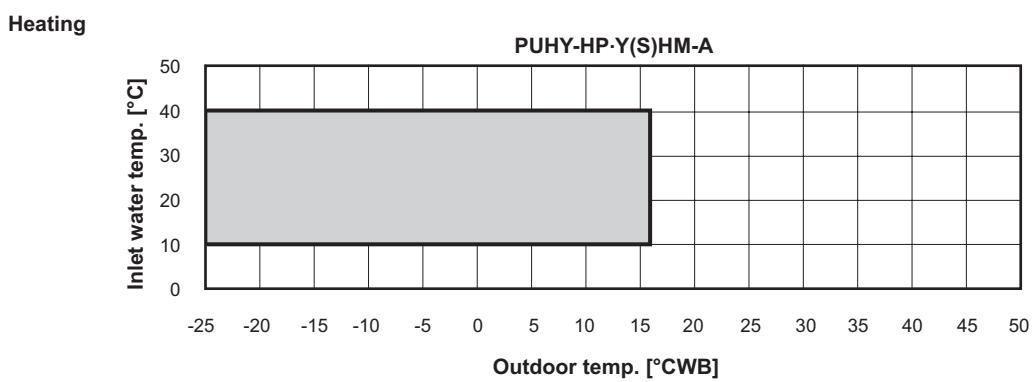
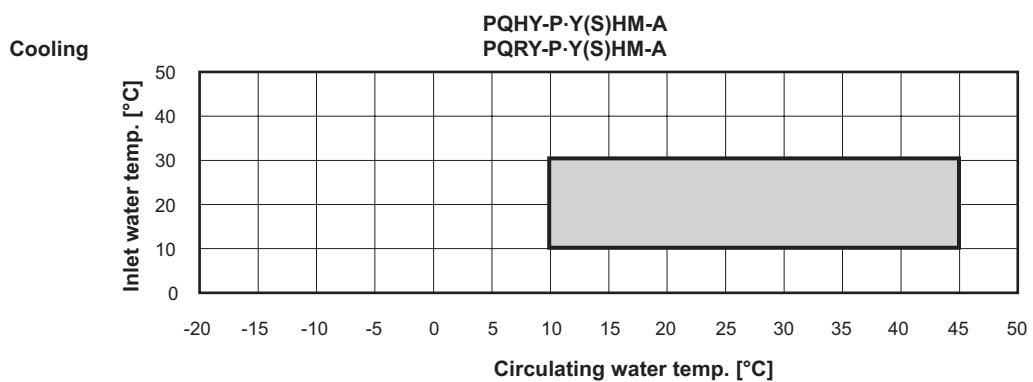
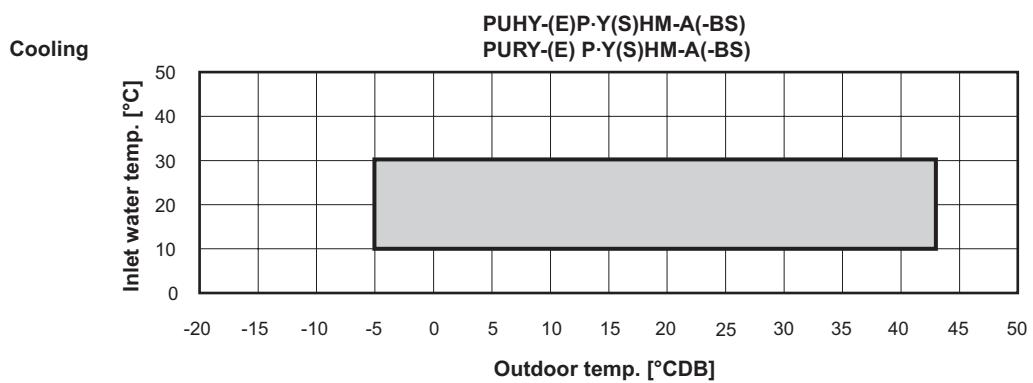


Heating



Heating

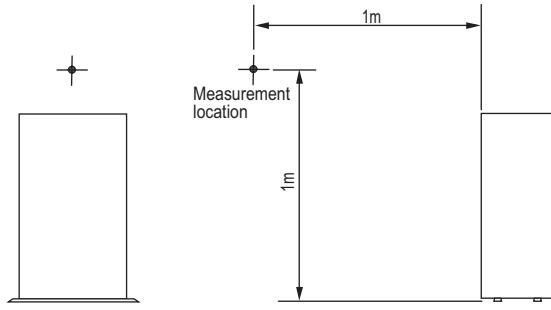




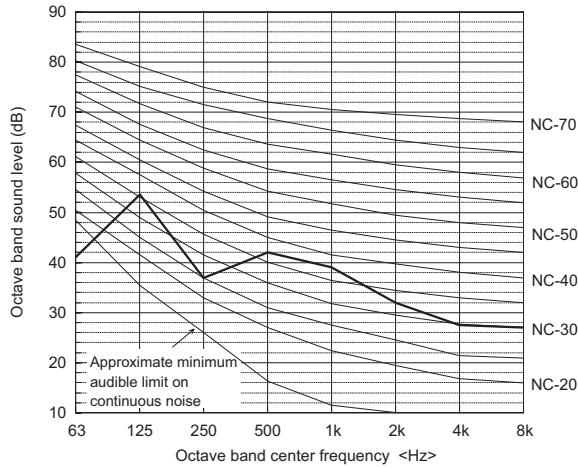
2. Sound pressure levels

(1) PWFY-P100VM-E-BU

Measurement condition
PWFY-P100VM-E-BU



Sound level of PWFY-P100VM-E-BU

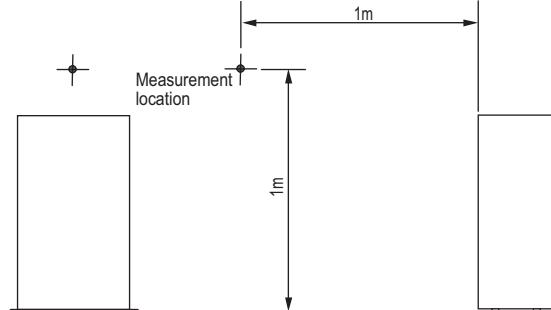


	63	125	250	500k	1k	2k	4k	8k	dB(A)
50/60Hz	41.0	53.5	37.0	42.0	39.0	32.0	27.5	27.0	44.0

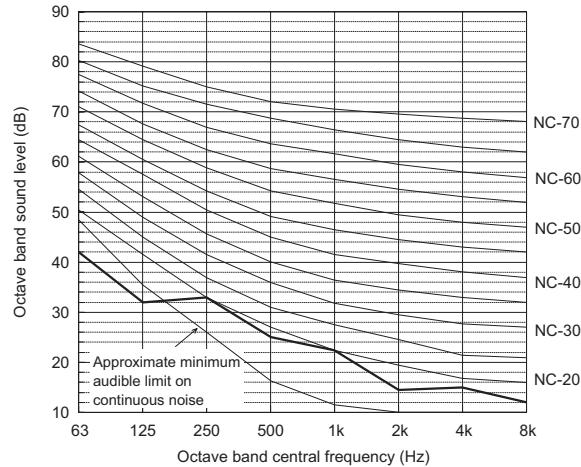
When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

(2) PWFY-P100, 200VM-E-AU

Measurement condition
PWFY-P100, 200VM-E-AU



Sound level of PWFY-P100, 200VM-E-AU

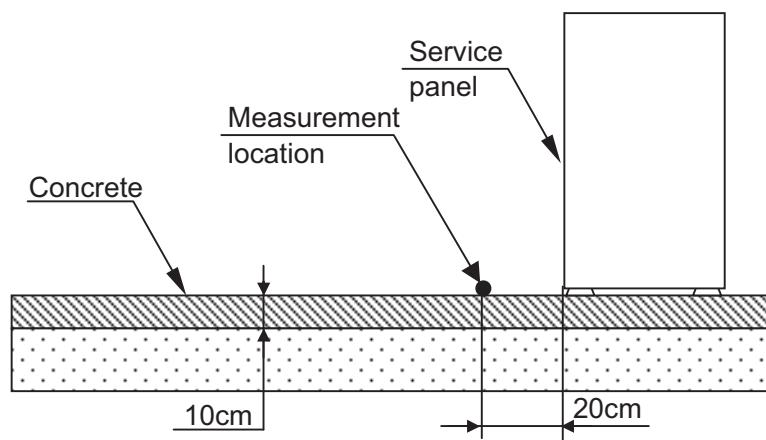


	63	125	250	500k	1k	2k	4k	8k	dB(A)
50/60Hz	42.0	32.0	33.0	25.0	22.5	14.5	15.0	12.0	29.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

3. Vibration levels

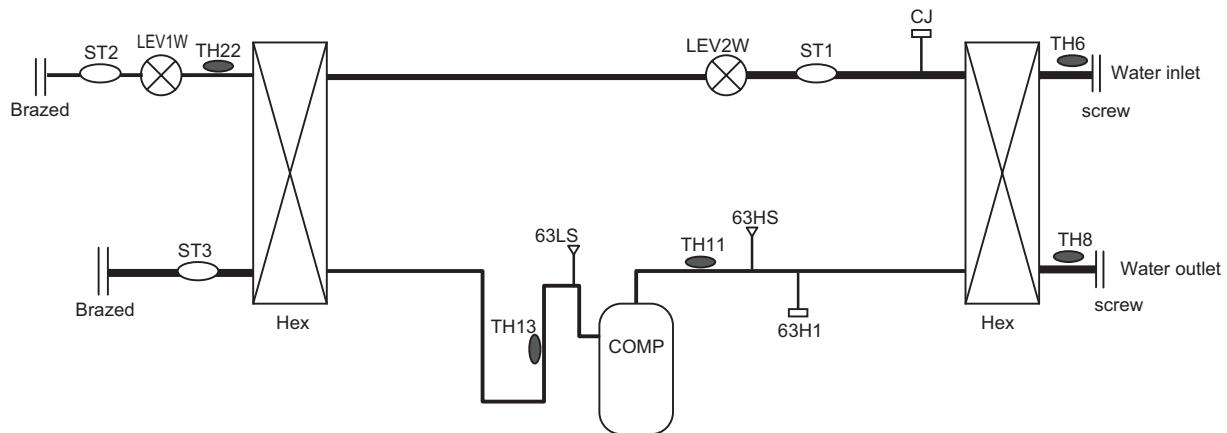
(1) PWFY-P100VM-E-BU



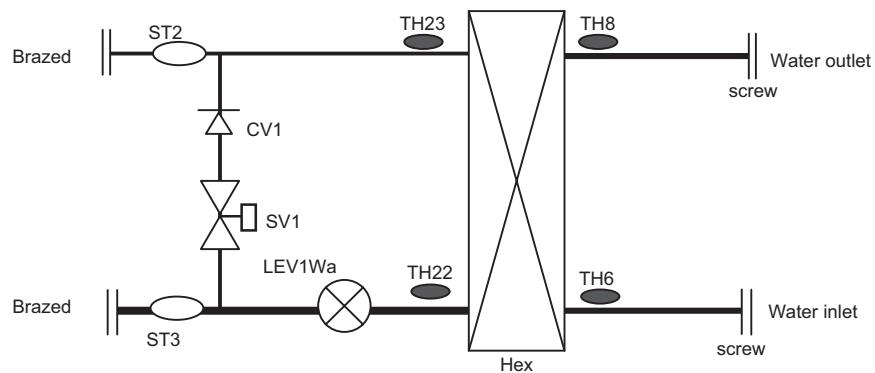
Model	Vibration Levels[dBA]
PWFY-P100VM-E-BU	34

4. Refrigerant circuit diagrams and thermal sensors

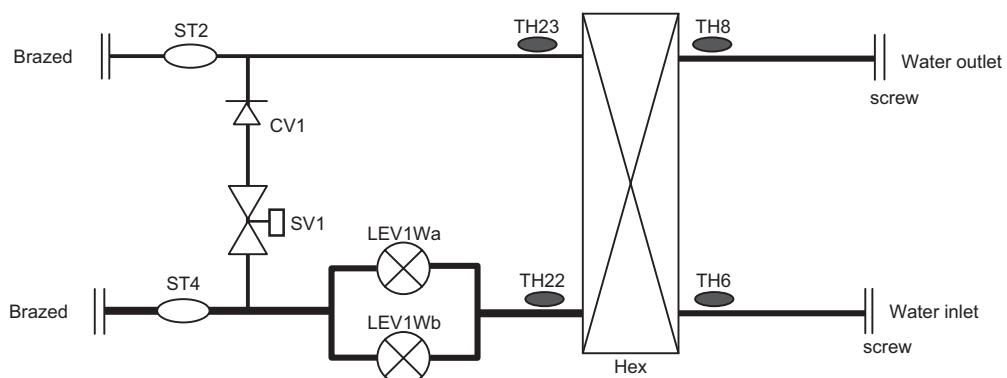
(1) PWFY-P100VM-E-BU



(2) PWFY-P100VM-E-AU



(3) PWFY-P200VM-E-AU



IV Installation

1. How to calculate the necessary heating capacity

(1) Heating capacity calculation

- A. For Air conditioning using such as Panel Heaters, Floor Heating and Fan coil units

Required total heating capacity kW
Safety factor; %

- B. For Sanitary use such as Shower and Bathrooms

Conditions

Tank inlet water Temp.; °C

Tank outlet water Temp.; °C

(Set Temp -5 °C)

Safety factor for Heat Loss; %

Operating time; Hours

For Shower; l/person x Person = l (Water Temp. Condition °C)

For Bathrooms; l/Person x Person = l (Water Temp. Condition °C)

The conversion of water volume to °C

$$\begin{aligned} & \left(\frac{\text{⑨}}{\text{⑩}} \right) \times \left(\frac{\text{④}}{\text{③}} \right) - \left(\frac{\text{③}}{\text{④}} \right) / \left(\frac{\text{④}}{\text{③}} \right) - \left(\frac{\text{③}}{\text{④}} \right) \\ & + \left(\frac{\text{⑬}}{\text{⑭}} \right) \times \left(\frac{\text{④}}{\text{③}} \right) - \left(\frac{\text{③}}{\text{④}} \right) / \left(\frac{\text{④}}{\text{③}} \right) - \left(\frac{\text{③}}{\text{④}} \right) \\ & = \text{⑯} \text{ l/day} \end{aligned}$$

Heating Capacity Calculation for sanitary usage

$$\text{⑯} / 1,000 \times \left(\frac{\text{④}}{\text{③}} \right) - \left(\frac{\text{③}}{\text{④}} \right) = \text{⑰} \text{ M cal / day}$$

The conversion of M cal to kW

$$\text{⑰} / 860 \times 1,000 / \text{⑥} = \text{⑱} \text{ kW}$$

- C. Total (A+B)

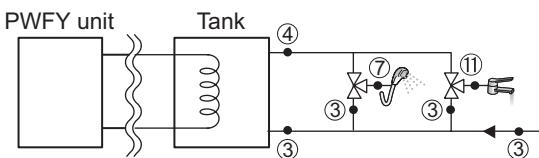
Total Heating Capacity

$$\text{①} \times (100\% + \text{②}\%) + \text{⑱} \times (100\% + \text{⑤}\%) = \text{⑲} \text{ kW}$$

- D. No. of units required

Safety factor; %

$$\text{⑲} \times (100\% + \text{⑯}\%) / 12.5 \text{ kW} = \text{⑳} \text{ units}$$



(2) Calculation example

- A. For Air conditioning using such as Panel Heaters, Floor Heating and Fan coil units

Required total heating capacity kW
Safety factor; %

- B. For Sanitary use such as Shower and Bathrooms

Conditions

Tank inlet water Temp.; °C

Tank outlet water Temp.; °C

(Set Temp -5 °C)

Safety factor for Heat Loss; %

Operating time; Hours

For Shower; l/person x Person = l (Water Temp. Condition °C)

For Bathrooms; l/Person x Person = l (Water Temp. Condition °C)

The conversion of water volume to °C

$$\begin{aligned} & \left(\frac{1,200}{40} \right) \times \left(\frac{60}{10} \right) - \left(\frac{10}{60} \right) / \left(\frac{60}{10} \right) - \left(\frac{10}{60} \right) \\ & + \left(\frac{240}{45} \right) \times \left(\frac{60}{10} \right) - \left(\frac{10}{60} \right) / \left(\frac{60}{10} \right) - \left(\frac{10}{60} \right) \\ & = \text{⑯} \text{ l/day} \end{aligned}$$

Heating Capacity Calculation for sanitary usage

$$\text{⑯} / 1,000 \times \left(\frac{60}{10} \right) - \left(\frac{10}{60} \right) = \text{⑰} \text{ M cal / day}$$

The conversion of M cal to kW

$$\text{⑰} / 860 \times 1,000 / \text{⑧} = \text{⑱} \text{ kW}$$

- C. Total (A+B)

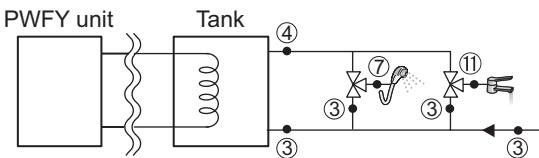
Total Heating Capacity

$$\text{①} \times (100\% + \text{②}\%) + \text{⑱} \times (100\% + \text{⑤}\%) = \text{⑲} \text{ kW}$$

- D. No. of units required

Safety factor; %

$$\text{⑲} \times (100\% + \text{⑯}\%) / 12.5 \text{ kW} = \text{⑳} \text{ units}$$



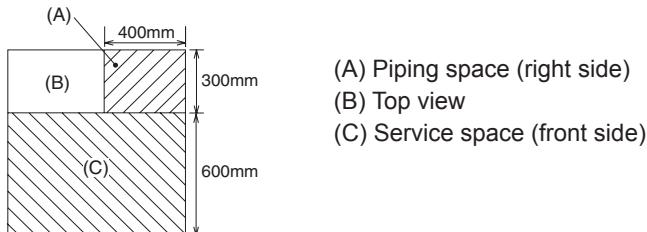
2. Installation

(1) Selecting an installation site

- **Do not install outdoors.** The unit is not waterproof.
- **Back up system is recommended in case of PWFY unit breakdown.**
- **The unit will get hot.** Do not install in a location where heat gets trapped inside.
- **Be sure to install unit in a place strong enough to withstand its weight.**
Any lack of strength may cause unit to fall down, resulting in a personal injury.
- **Do not install the unit where corrosive gas is generated.**
- **Have installation work in order to protect against earthquake.**
Any installation deficiency may cause unit to fall down, resulting in a personal injury.
- **Pay a special attention to the place, such as a basement, etc. where refrigeration gas can stay, since refrigeration is heavier than the air.**
- **Do not install the unit where combustible gas may leak.**
 - If the gas leaks and accumulates around the unit, an explosion may result.
- **When installing the unit in a hospital, communication station, or similar place, provide sufficient protection against noise.**
 - The inverter equipment, private power generator, high-frequency medical equipment, or radio communication equipment may cause the air conditioner to operate erroneously, or fail to operate. On the other hand, the air conditioner may affect such equipment by creating noise that disturbs medical treatment or image broadcasting.
- **Do not install the unit on a structure that may cause leakage.**
 - When the room humidity exceeds 80 % or when the drain pipe is clogged, condensation may drip from the indoor unit. Perform collective drainage work together with the unit, as required.
- **It is recommended that a water pump is connected to each PWFY unit.**

(1)-1 Securing installation and service space

- Please secure the following service spaces after installation.
(All servicing can be performed from the front of the unit)
[Fig. IV. 2. (1). 1]



⚠ Warning:

- **Be sure to install the unit in a location which can adequately support its weight.**
 - If there is insufficient strength to support the unit's weight, it could fall and cause injuries.

(1)-2 Combining indoor units with BC controllers/WCB and outdoor units

For combining indoor units with BC controllers and outdoor units, refer to section BC controllers and outdoor units installation manual.

(2) Installing the unit

(2)-1 Lifting method

⚠ Caution:

Be very careful when carrying the product.

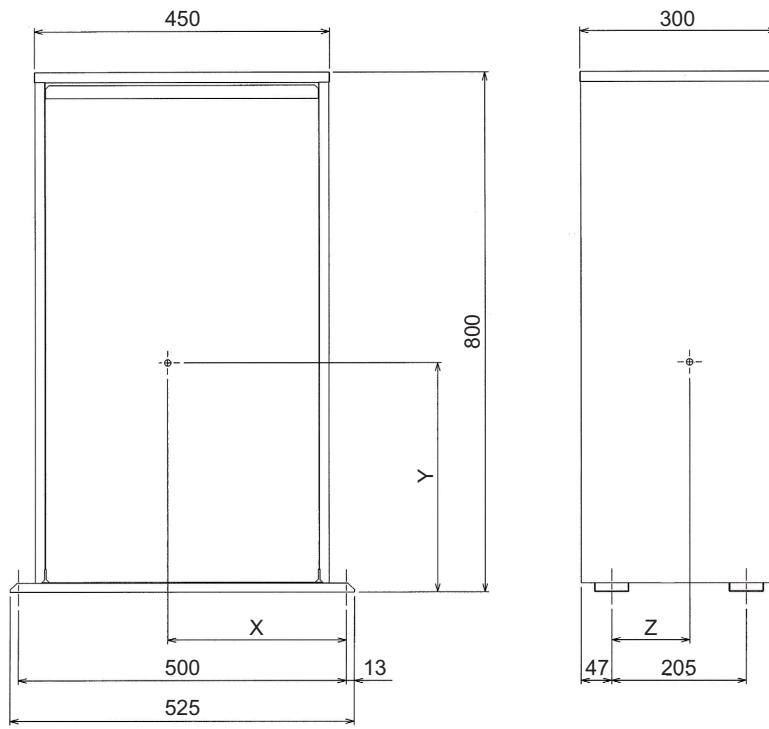
- Do not have only one person to carry product if it is more than 20 kg.
- Do not tilt the unit while transporting.
- PP bands are used to pack some products. Do not use them as a mean for transportation because they are dangerous.
- Tear plastic packaging bag and scrap it so that children cannot play with it. Otherwise plastic packaging bag may suffocate children to death.

(2)-2 Product net weight

Model	PWFY-P100VM-E-BU	PWFY-P100VM-E-AU	PWFY-P200VM-E-AU
Net weight	60 kg	35 kg	38 kg

(2)-3 Center of gravity

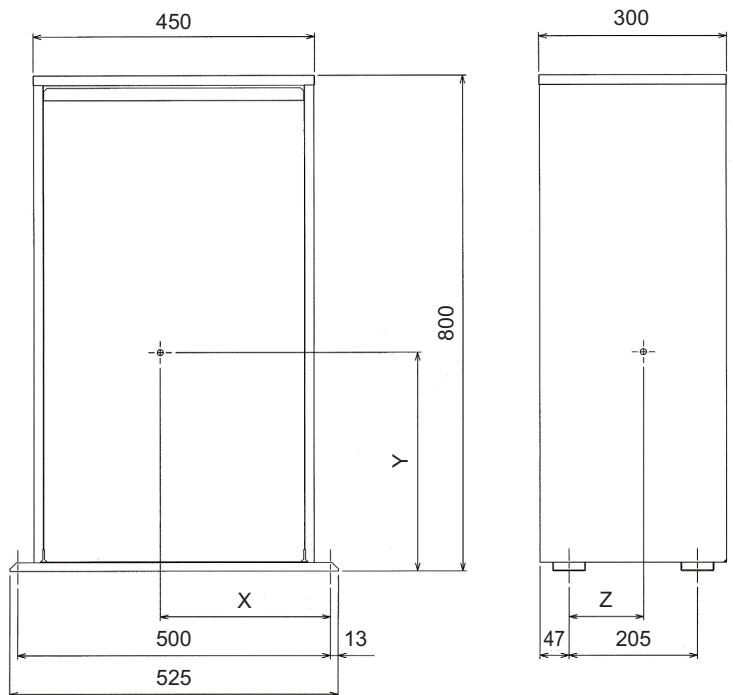
(2)-3-1 PWFY-P100VM-E-BU



Unit : mm

Model	X	Y	Z
PWFY-P100VM-E-BU	272	355	119

(2)-3-2 PWFY-P100, 200VM-E-AU

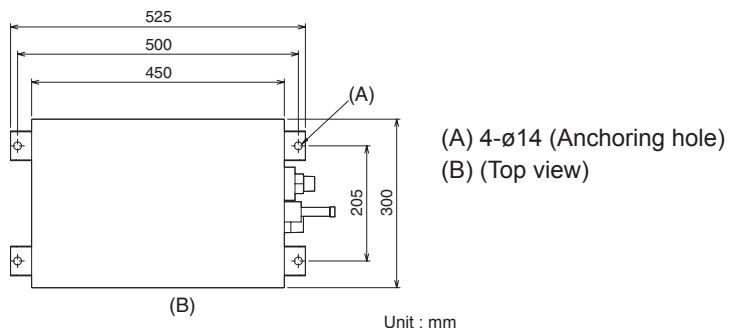


Unit : mm

Model	X	Y	Z
PWFY-P100VM-E-AU	289	346	103
PWFY-P200VM-E-AU	277	347	99

(2)-4 Installation method

- Using the anchoring holes shown below, firmly bolt the unit to the base.
[Fig. IV. 2. (2). 1]



Bases

- Be sure to install unit in a place strong enough to withstand its weight. If the base is unstable, reinforce with a concrete base.
- The unit must be anchored on a level surface. Use a level to check after installation.
- If the unit is installed near a room where noise is a problem, using an anti-vibration stand on the base of the unit is recommended.

(3) Refrigerant pipe and drain pipe specifications

(3)-1 Refrigerant pipe and drain pipe specifications

To avoid dew drops, provide sufficient antisweating and insulating work to the refrigerant and drain pipes.

When using commercially available refrigerant pipes, be sure to wind commercially available insulating material (with a heat-resisting temperature of more than 100 °C and thickness given below) onto both liquid and gas pipes.

Be also sure to wind commercially available insulating material (with a form polyethylene's specific gravity of 0.03 and thickness given below) onto all pipes which pass through rooms.

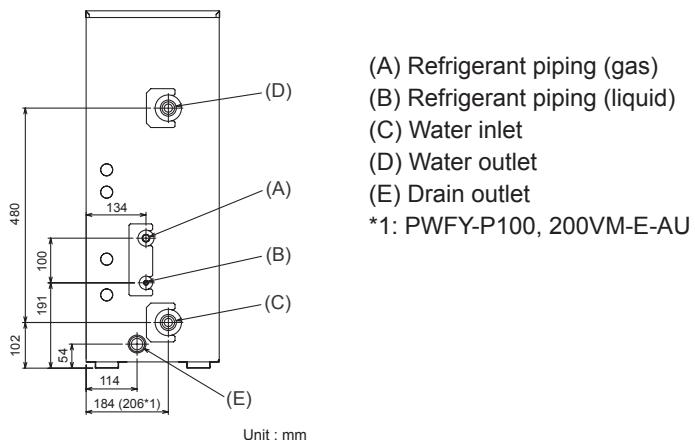
- 1) Select the thickness of insulating material by pipe size.

Unit : mm

Model	PWFY-P100VM-E-BU	PWFY-P100VM-E-AU	PWFY-P200VM-E-AU
Gas	ø15.88	ø15.88	ø19.05
Liquid	ø9.52	ø9.52	ø9.52
Drain		ø32	
Insulating material's thickness	More than 10 mm		

- 2) If the unit is used on the highest story of a building and under conditions of high temperature and humidity, it is necessary to use pipe size and insulating material's thickness more than those given in the table above.
- 3) If there are customer's specifications, simply follow them.

(3)-2 Refrigerant pipe, drain pipe and filling port



(4) Connecting refrigerant pipes and drain pipes

(4)-1 Refrigerant piping work

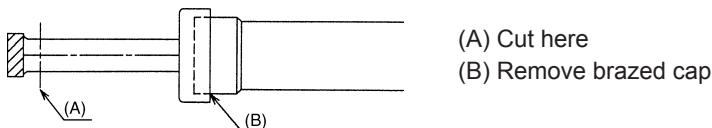
This piping work must be done in accordance with the installation manuals for both outdoor unit and BC controller/WCB (simultaneous cooling and heating R2 series).

- R2 series is designed to operate in a system that the refrigerant pipe from an outdoor unit is received by BC controller/WCB and branches at the BC controller/WCB to connect between indoor units.
- The PWFY unit should be connected to 2 ports on the BC controller. (Set BC controller DIP SW 4-6 to ON)
- For constraints on pipe length and allowable difference of elevation, refer to the outdoor unit manual.
- The method of pipe connection is brazing connection.

Caution:

- **Install the refrigerant piping for the indoor unit in accordance with the following.**

1. Cut the tip of the indoor unit piping, remove the gas, and then remove the brazed cap.
[Fig. IV. 2. (4). 1]



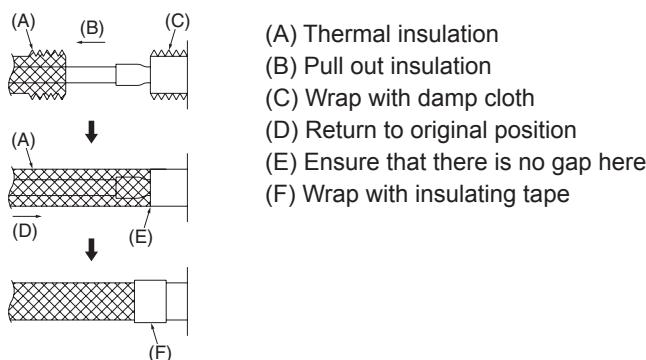
2. Pull out the thermal insulation on the site refrigerant piping, braze the unit piping, and replace the insulation in its original position.

Wrap the piping with insulating tape.

Note:

- Pay strict attention when wrapping the copper piping since wrapping the piping may cause condensation instead of preventing it.
- * Before brazing the refrigerant piping, always wrap the piping on the main body, and the thermal insulation piping, with damp cloths to prevent heat shrinkage and burning the thermal insulation tubing. Take care to ensure that the flame does not come into contact with the main body itself.

[Fig. IV. 2. (4). 2]



Cautions On Refrigerant Piping

- Be sure to use non-oxidative brazing for brazing to ensure that no foreign matter or moisture enter into the pipe.
- Be sure to apply refrigerating machine oil over the flare connection seating surface and tighten the connection using a double spanner.
- Provide a metal brace to support the refrigerant pipe so that no load is imparted to the indoor unit end pipe. This metal brace should be provided 500 mm away from the indoor unit's flare connection.

⚠ Warning:

When installing and moving the unit, do not charge it with refrigerant other than the refrigerant (R407C or R22) specified on the unit.

- Mixing of a different refrigerant, air, etc. may cause the refrigerant cycle to malfunction and result in severe damage.

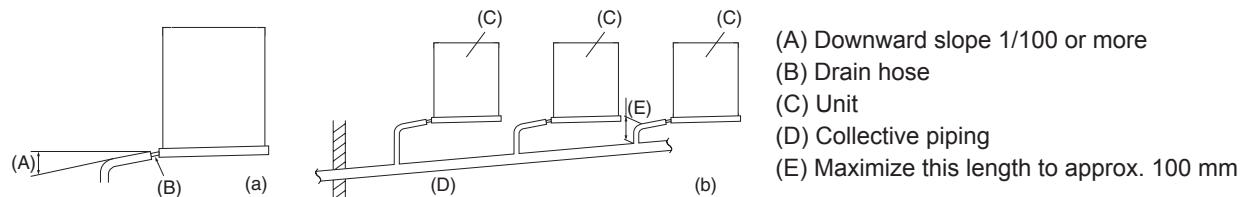
⚠ Caution:

- Use refrigerant piping made of C1220 (CU-DHP) phosphorus deoxidized copper as specified in the JIS H3300 "Copper and copper alloy seamless pipes and tubes". In addition, be sure that the inner and outer surfaces of the pipes are clean and free of hazardous sulphur, oxides, dust/dirt, shaving particles, oils, moisture, or any other contaminant.
- Never use existing refrigerant piping.
- The large amount of chlorine in conventional refrigerant and refrigerator oil in the existing piping will cause the new refrigerant to deteriorate.
- Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing.
- If dust, dirt, or water gets into the refrigerant cycle, the oil will deteriorate and the compressor may fail.

(4)-2 Drain piping work

1. Ensure that the drain piping is downward (pitch of more than 1/100) to the outdoor (discharge) side. Do not provide any trap or irregularity on the way. (a)
2. Ensure that any cross-wise drain piping is less than 20 m (excluding the difference of elevation). If the drain piping is long, provide metal braces to prevent it from waving. Never provide any air vent pipe. Otherwise drain may be ejected.
3. Use a hard vinyl chloride pipe VP-25 (with an external diameter of 32 mm) for drain piping.
4. Ensure that collected pipes are 100 mm lower than the unit body's drain port as shown in (b).
5. Do not provide any odor trap at the drain discharge port.
6. Put the end of the drain piping in a position where no odor is generated.
7. Do not put the end of the drain piping in any drain where ionic gases are generated.

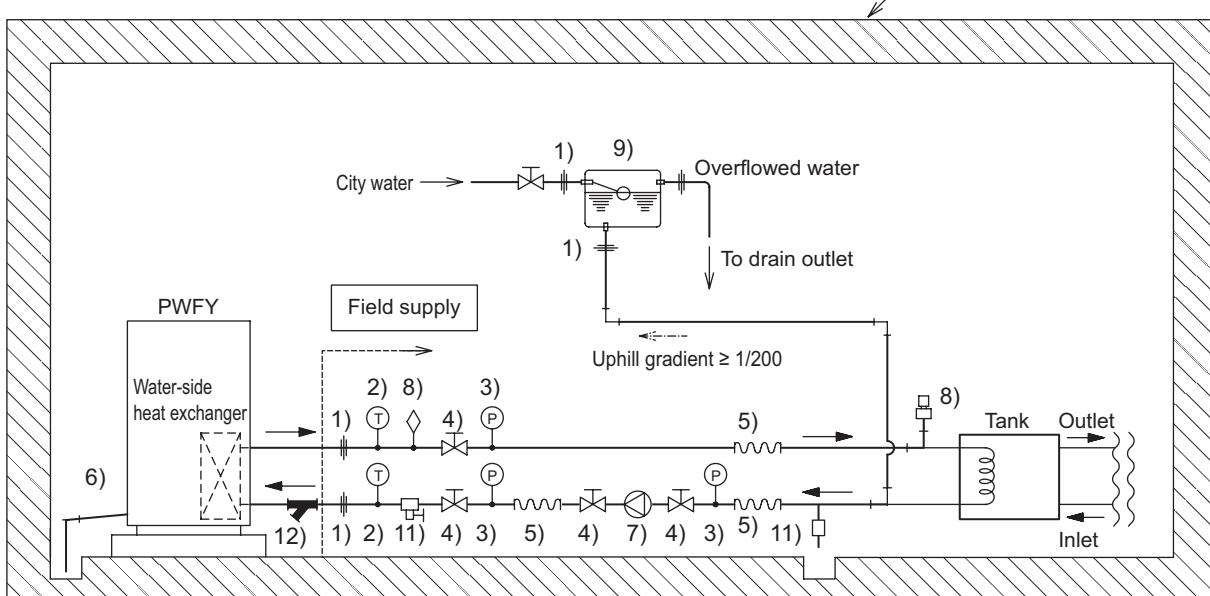
[Fig. IV. 2. (4).3]



3. Water pipe installation

(1) Water circuit sample

→ Solid arrows in the figure indicate the direction of water flow.



Sample of water circuit for PWFY

Consider the following when designing and installing a water piping system. (Items (1)-(12) in the figure are explained below.)

- 1) Union joints/flange joints etc.
Install a flange etc. to allow for easy replacement of connected equipment.
- 2) Thermometer
For checking unit performance and operation monitoring
- 3) Water pressure gauge
For operation status monitoring
- 4) Valve
Install a valve for easy replacement and cleaning of the refrigerant flow control device.
Install a refrigerant flow control valve on the fan coil outlet side.
- 5) Flexible joint
Recommended to prevent the noise and vibration from the pump from being transmitted.
- 6) Drain pipe
Install the drain pipe with an inclination of between 1/100 and 1/200 to provide a downward flow of drain water.
For cold climate installation, take an appropriate measure (e.g., drain heater) to prevent the drain water from freezing.
- 7) Pump
Use a pump that is large enough to compensate for the total water pressure loss and to supply sufficient water to the unit.
- 8) Air vent valve
Provide air vent valves on the pipes.
- 9) Expansion tank
Install an expansion tank to accommodate expanded water and to supply water.
- 10) Cold/Hot water pipe
Use pipes that allow for easy air purging, and provide sufficient insulation.
- 11) Drain valve
Install drain valves so that water can be drained for servicing.
- 12) Strainer
Install a strainer near the PWFY unit to keep foreign materials from entering the water-side heat exchanger.

(1)-1 Caution for water pipe installation

Consider the following when designing and installing a water piping system.

- Do not use steel pipes as water pipes.
- Copper pipes or stainless steel pipes are recommended. If iron pipes are used in the existing system, do not connect a new circuit to the old one. Keep the existing and new circuits separate.
- Light pipes are similar to other air-conditioning pipes, however, please observe the following precautions during installation.
- Before a long period of non use, purge the water out of the pipes and thoroughly let them dry.
- Use a closed water circuit.
- When using the unit for cooling, add brine to the circulating water to prevent it from freezing.
- When installed in a low-ambient temperature environment, keep the water circulating at all times. If that is not possible, purge the water out of the pipes completely.
- Do not use the water used for this unit for drinking or food manufacturing.
- When the ambient temperature is 0 °C or lower during stop operation, keep the water circulating at all times, or purge the water out of the pipes completely.

Model	Water inlet	Water outlet
PWFY-P100VM-E-BU	PT 3/4 Screw	PT 3/4 Screw
PWFY-P100VM-E-AU	PT 3/4 Screw	PT 3/4 Screw
PWFY-P200VM-E-AU *1 When the attached expansion joints are installed.	PT 1 Screw*1	PT 1 Screw*1

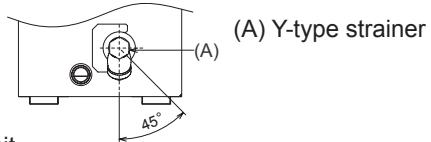
(2) Selecting a water pump

Use a pump that is large enough to compensate for the total water pressure loss and to supply sufficient water to the unit.

(3) Installing the strainer

- Install the strainer at the angle of 45° or less as shown in [Fig. IV 3.(3).1].
- Install the supplied strainer at the water inlet.

[Fig. IV 3.(3).1]

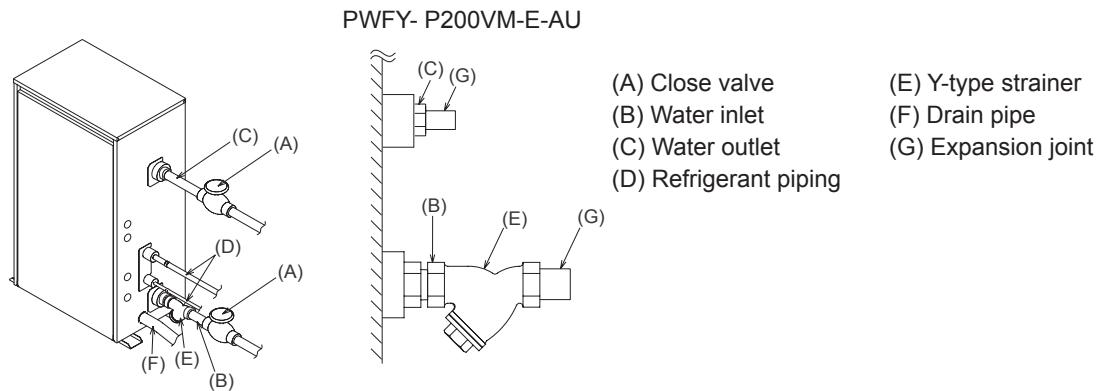


(4) Precautions during installation

- Use the reverse-return method to insure proper pipe resistance to each unit.
- To insure easy maintenance, inspection, and replacement of the unit, use a proper joint, valve, etc. on the water intake and outlet port. In addition, be sure to install a strainer on the water intake pipe. (In order to maintain the heat source unit, a strainer on the circulating water inlet is necessary.)
- * An example of the heat source unit installation is shown in the diagram below.
- Install a suitable air vent on the water pipe. After sending water through the pipe, be sure to vent the excess air.
- Compressed water may form in the low-temperature sections of heat source unit. Use a drainage pipe connected to the drain valve at the base of the unit to drain the water.
- Install a back flow-prevention valve on the pump and a flexible joint to prevent excess vibration.
- Use a sleeve to protect the pipes where they go through a wall.
- Use metal fittings to secure the pipes, and install them so that they have maximum protection against breakage and bending.
- Do not confuse the water intake and outlet valves.
- This unit doesn't have any heater to prevent freezing within tubes. When the water flow is stopped on low ambient, take out the water from tubes.
- The unused knockout holes should be closed and the opening of refrigerant pipes, water pipes, power source and transmission wires should be filled with putty and so on to prevent from rain. (field construction)
- Wrap some sealing tape around the screw part to prevent water leakage.
- Wrap the sealing tape as follows.
 1. Wrap the joint with sealing tape in the direction of the threads (clockwise), and do not let the tape run over the edge.
 2. Overlap the sealing tape by two-thirds to three-fourths of its width on each turn. Press the tape with your fingers so that it is pressed firmly against each thread.
 3. Leave the 1.5th through 2nd farthest threads away from the pipe and unwrapped.
- Hold the pipe on the unit side in place with a spanner when installing the pipes or strainer. Tighten screws to a torque of 50 N·m.
- Water pipes can get very hot, depending on the preset temperature. Wrap the water pipes with insulating materials to prevent burns.
- On the PWFY-P200VM-E-AU model, install the expansion joint (accessory) at the inlet after installing the strainer, and outlet.

(5) Example of unit installation

[Fig. IV. 3.(5).1]



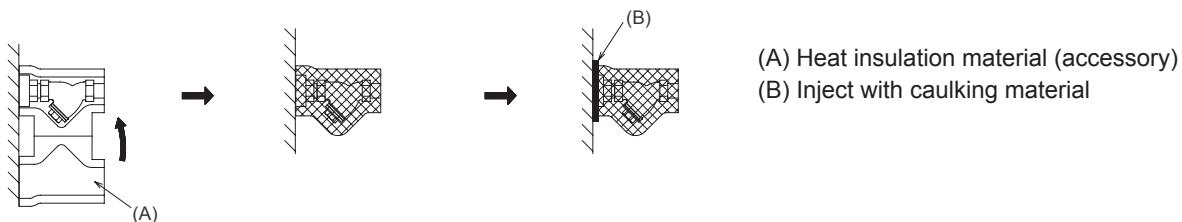
(6) Insulation installation

The surface temperature of the water pipe would be very high, depending on the set temperature. Insulate the pipe to prevent burns. When operating PWFY-P100, P200VM-E-AU with cold water, insulate the water pipe to prevent condensation.

Wrap insulation material around water pipes as shown in [Fig. IV. 3.(6).1].

- Any heat source piping.
- Indoor piping in cold-weather regions where frozen pipes are a problem.
- When air coming from the outside causes condensation to form on piping.
- Any drainage piping.

[Fig. IV. 3.(6).1]



(7) Water processing and water quality control

To preserve water quality, use the closed type of cooling tower for unit. When the circulating water quality is poor, the water heat exchanger can develop scales, leading to a reduction in heat-exchange power and possible corrosion of the heat exchanger. Please pay careful attention to water processing and water quality control when installing the water circulation system.

- Removal of foreign objects or impurities within the pipes.

During installation, be careful that foreign objects, such as welding fragments, sealant particles, or rust, do not enter the pipes.

- Water Quality Processing

- Depending on the quality of the cold-temperature water used in the air-conditioner, the copper piping of the heat exchanger may become corroded. We recommend regular water quality processing.

Cold water circulation systems using open heat storage tanks are particularly prone to corrosion.

When using an open-type heat storage tank, install a water-to-water heat exchanger, and use a closed-loop circuit on the air conditioner side. If a water supply tank is installed, keep contact with air to a minimum, and keep the level of dissolved oxygen in the water no higher than 1mg/liter.

- Water quality standard

Items	Lower mid-range temperature water system Water Temp. <= 60 °C		Higher mid-range temperature water system Water Temp. > 60 °C		Tendency	
	Recirculating water	Make-up water	Recirculating water	Make-up water	Corrosive	Scale-forming
Standard items	pH (25 °C)	7.0 ~ 8.0	7.0 ~ 8.0	7.0 ~ 8.0	7.0 ~ 8.0	○ ○
	Electric conductivity(mS/m) (25 °C) (μ s/cm) (25 °C)	30 or less [300 or less]	30 or less [300 or less]	30 or less [300 or less]	30 or less [300 or less]	○ ○
	Chloride ion (mg Cl/liter)	50 or less	50 or less	30 or less	30 or less	○
	Sulfate ion (mg SO ₄ ²⁻ /liter)	50 or less	50 or less	30 or less	30 or less	○
	Acid consumption (pH4.8) (mg CaCO ₃ /liter)	50 or less	50 or less	50 or less	50 or less	○
	Total hardness (mg CaCO ₃ /liter)	70 or less	70 or less	70 or less	70 or less	○
	Calcium hardness (mg CaCO ₃ /liter)	50 or less	50 or less	50 or less	50 or less	○
	Ionic silica (mg SiO ₂ /liter)	30 or less	30 or less	30 or less	30 or less	○
Reference items	Iron (mg Fe/liter)	1.0 or less	0.3 or less	1.0 or less	0.3 or less	○ ○
	Copper (mg Cu/liter)	1.0 or less	1.0 or less	1.0 or less	1.0 or less	○
	Sulfide ion (mg S ²⁻ /liter)	not to be detected	not to be detected	not to be detected	detected	○
	Ammonium ion (mg NH ₄ ⁺ /liter)	0.3 or less	0.1 or less	0.1 or less	0.1 or less	○
	Residual chlorine (mg Cl/liter)	0.25 or less	0.3 or less	0.1 or less	0.3 or less	○
	Free carbon dioxide (mg CO ₂ /liter)	0.4 or less	4.0 or less	0.4 or less	4.0 or less	○
	Ryzner stability index	-	-	-	-	○ ○

Reference : Guideline of Water Quality for Refrigeration and Air Conditioning Equipment. (JRA GL02E-1994)

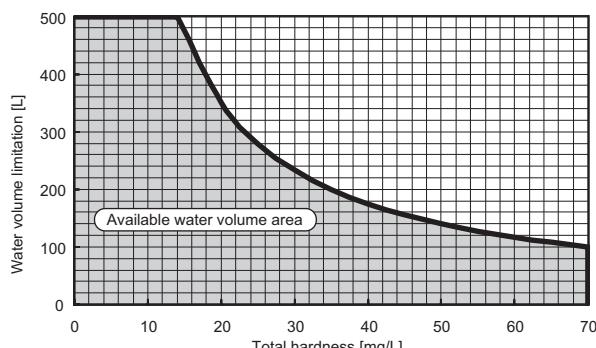
- Please consult with a water quality control specialist about water quality control methods and water quality calculations before using anti-corrosive solutions for water quality management.
- When replacing a previously installed air conditioning device (even when only the heat exchanger is being replaced), first conduct a water quality analysis and check for possible corrosion.

Corrosion can occur in cold-water systems even if there has been no prior signs of corrosion.

If the water quality level has dropped, please adjust water quality sufficiently before replacing the unit. Refer to the below graph for the maximum amount of circulating water in the water pipe. Make sure that this amount does not exceed.

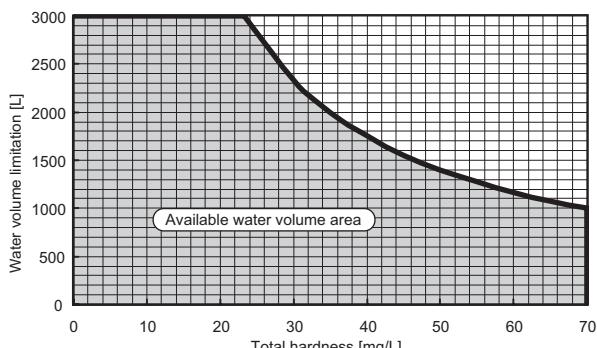
[Fig. IV. 3. (7).1] Maximum circulating water

PWFY-P100VM-E-BU



Condition: Water outlet temp. 70°C

PWFY-P100/200VM-E-AU



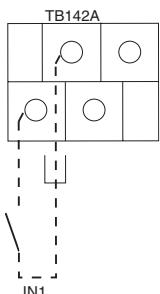
Condition: Water outlet temp. 45°C

(8) Pump interlock

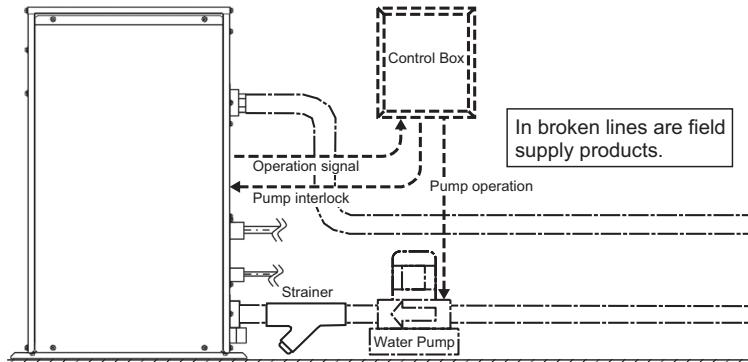
The unit may be damaged if it is operated with no water circulating through the pipes.

Be sure to interlock unit operation and the water-circuit pump. Use the terminal blocks for interlocking TB142A (IN1) on the unit.

[Fig. IV. 3. (8).1]

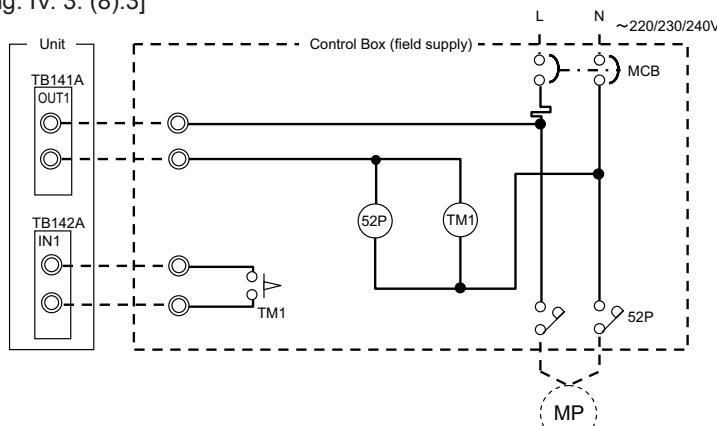


[Fig. IV. 3. (8).2]



Example drawing for pump interlock

[Fig. IV. 3. (8).3]



X : Relay
 TM1 : Timer relay (closes after elapsing the set time when it is powered, while opens promptly when it is not powered.)
 52P : Magnetic contactor for water pump
 MP : Water pump
 MCB : Circuit breaker

*Remove the short circuit wire of IN1 when wiring to TB142A.

*Decide TM1 time lag considering circuit water volume and pump specification so that the PWFY unit starts its operation when the water is fully circulated.

Operation ON signal

Terminal No.	TB141A OUT1
Output	Relay contacts output Rated voltage : L-N : 220 ~ 240V Rated load : 0.6A
Operation	<ul style="list-style-type: none"> When Dip switch 3-6 is OFF The relay closes during reception of cooling or heating operation signal from the remote controller. (Note : it is output even if the thermostat is OFF (when the compressor is stopped).) When Dip switch 3-6 is ON The relay closes during compressor operation.

Use of PWFY unit with the water pump can cause a heat exchanger freeze depending on the ambient air temperature or the operation status of other indoor units in the same refrigerant system. This problem has become preventable by connecting the water pump to the external output (TB141A : OUT1) contact so that when thermistors detect low water temperature, the water pump is actuated to prevent heat exchanger from freezing.

The freeze prevention control is not associated with DipSW3-6.

Set DipSW1-10 to ON to invalidate the control for cases where there is no risk of freeze.

Pump interlock

Terminal No.	TB142A IN1
Input	Level signal
Operation	If the circuit of TB142A IN1 is open, compressor operation is prohibited.

(9) Anti freeze mode (Dip SW4-4 ON)

Anti freeze mode is to prevent water pipe from freezing.

The Anti freeze mode can set the heating temperature range between 10°C~45°C enabling the unit to maintain low water temperature to prevent water pipes from freezing.

V | System Design

1. Electrical work

(1) General cautions

⚠ Warning:

Electrical work should be done by qualified electrical engineers in accordance with “Engineering Standards For Electrical Installation” and supplied installation manuals. Special circuits should also be used. If the power circuit lacks capacity or has an installation failure, it may cause a risk of electric shock or fire.

1. Be sure to take power from the special branch circuit.
2. Be sure to install an earth leakage breaker to the power.
3. Install the unit to prevent that any of the control circuit cables (remote controller, transmission cables, or external input/output line) is brought in direct contact with the power cable outside the unit.
4. Ensure that there is no slack on all wire connections.
5. Some cables (power, remote controller, transmission cables external input/output line) above the ceiling may be bitten by mouses. Use as many metal pipes as possible to insert the cables into them for protection.
6. Never connect the power cable to leads for the transmission cables. Otherwise the cables would be broken.
7. Be sure to connect control cables to the indoor unit, remote controller, and the outdoor unit.
8. Be sure to ground the unit.
9. Select control cables from the conditions given in page 56.

⚠ Caution:

Be sure to put the unit to the ground on the outdoor unit side. Do not connect the earth cable to any gas pipe, water pipe, lightening rod, or telephone earth cable. Incomplete grounding may cause a risk of electric shock.

(2) Power supply for PWFY unit

(2)-1 Electrical characteristics of PWFY unit

- Power supply cords of appliances shall not be lighter than design 245 IEC 57 or 227 IEC 57.
- A switch with at least 3 mm contact separation in each pole shall be provided by the Air conditioner installation.

Model	Power supply				Compressor		RLA (A)
	Hz	Volts	Voltage range	MCA (A)	Output (kW)	SC (A)	Heating
PWFY-P100VM-E-BU	50/60	220-230-240 V	Max. 264 V Min. 198 V	15.71	1.0	1.25	11.63-11.12-10.66

Model	Power supply				RLA (A)	
	Hz	Volts	Voltage range	MCA (A)	Cooling	Heating
PWFY-P100VM-E-AU	50/60	220-230-240 V	Max. 264 V Min. 198 V	0.085	0.068-0.065-0.063	
PWFY-P200VM-E-AU						

(2)-2 Power cable specifications

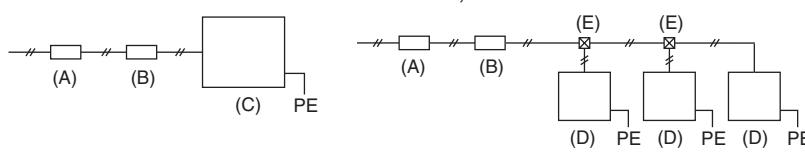
Model	Minimum wire thickness (mm ²)			Breaker for current leakage	Local switch (A) capacity	Breaker for wiring (NFB) (A)
	Main cable	branch	Ground			
PWFY-P100VM-E-BU	2.5	-	2.5	30 A 30 mA 0.1 sec or less	25	25
						30

Model	Minimum wire thickness (mm ²)			Breaker for current leakage	Local switch (A) capacity	Breaker for wiring (NFB) (A)
	Main cable	branch	Ground			
PWFY-P100VM-E-AU	16 A or less	1.5	1.5	20 A 30 mA 0.1 sec. or less	16	16
PWFY-P200VM-E-AU	25 A or less	2.5	2.5	30 A 30 mA 0.1 sec. or less	25	30
	32 A or less	4.0	4.0	40 A 30 mA 0.1 sec. or less	32	40

[Fig. V. 1.(2).1]

PWFY-P100VM-E-BU

PWFY-P100,200VM-E-AU



(A) Breaker for current leakage

(B) Local switch or breakers for wiring

(C) PWFY-P100VM-E-BU

(D) PWFY-P100, 200VM-E-AU

(E) Pull box

⚠ Caution:

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

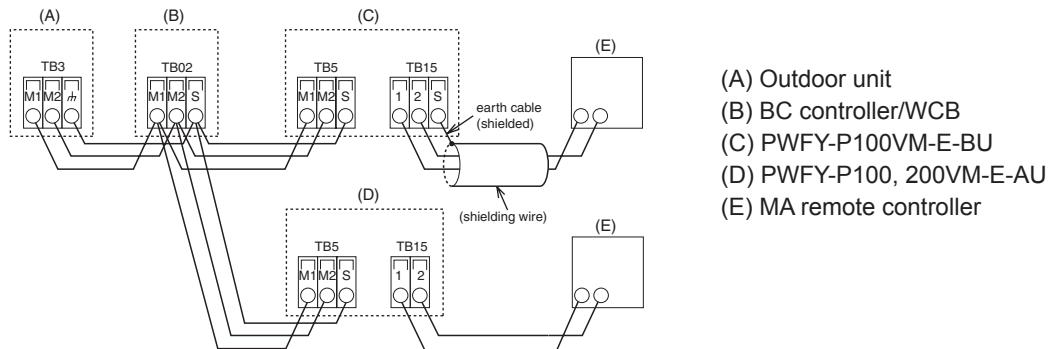
(3) Connecting remote controller, indoor and outdoor transmission cables

- Connect unit TB5 and outdoor unit TB3. (Non-polarized 2-wire (shield))
The "S" on unit TB5 is a shielding wire connection. For specifications about the connecting cables, refer to the outdoor unit installation manual.
- Install a remote controller following the manual supplied with the remote controller.

(3)-1 Power supply examples

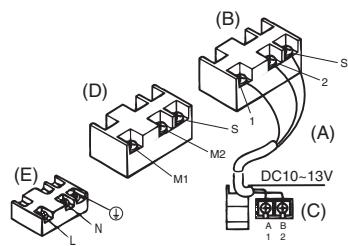
(3)-1-1 Using MA Remote controller (Remote controller is optionally available)

- Connect the "1" and "2" on unit TB15 to a MA remote controller. (Non-polarized 2-wire)
[Fig. V. 1. (3). 1] MA Remote controller

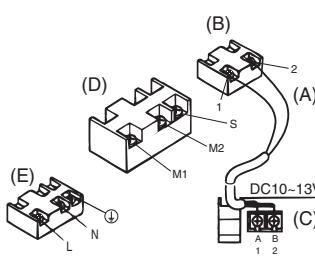


- DC 10 to 13 V between 1 and 2 (MA remote controller)
[Fig. V. 1. (3). 2] MA Remote controller

PWFY- P100VM-E-BU



PWFY- P100, 200VM-E-AU



- The MA remote controller cannot be used at the same time or interchangeably.

Note:

Ensure that the wiring is not pinched when fitting the terminal box cover. Pinching the wiring may cut it.

⚠ Caution:

- Use wire with supplemental insulation.
- Input to TB142A, TB142B, and TB142C should not carry voltage.
- Cables from equipment connected to external input/output should have supplemental insulation.
- Use a single multiple-core cable for external input/output to allow for connection to the PG screw.

⚠ Caution:

Wire the power supply so that no tension is imparted. Otherwise disconnection, heating or fire result.

(4) Transmission cable specifications

(4)-1 Transmission cables

PWFY-P100VM-E-BU

	Transmission cables	MA Remote controller cables	External input	External output
Type of cable	Shielding wire (2-core) CVVS, CPEVS or MVVS	Sheathed 2-core cable (shielded) CVVS	Sheathed multi-core cable (shielded) CVVS or MVVS	Sheathed multi-core cable (unshielded) CVV or MVV
Cable diameter	More than 1.25 mm ²	0.3 ~ 1.25 mm ² (0.75 ~ 1.25 mm ²) [*] 1	0.3 ~ 0.5 mm ²	0.3 ~ 1.25 mm ²
Remarks	-	Max.length: 200 m	Max.length: 100 m	Rated voltage: L1-N: 220 ~ 240 V Rated load: 0.6 A

PWFY-P100, 200VM-E-AU

	Transmission cables	MA Remote controller cables	External input	External output
Type of cable	Shielding wire (2-core) CVVS, CPEVS or MVVS	Sheathed 2-core cable CVV (unshielded)	Sheathed multi-core cable CVV or MVV (unshielded)	Sheathed multi-core cable (unshielded) CVV or MVV
Cable diameter	More than 1.25 mm ²	0.3 ~ 1.25 mm ² (0.75 ~ 1.25 mm ²) [*] 1	0.3 ~ 0.5 mm ²	0.3 ~ 1.25 mm ²
Remarks	-	Max.length: 200 m	Max.length: 100 m	Rated voltage: L1-N: 220 ~ 240 V Rated load: 0.6 A

*1 Connected with simple remote controller. CVVS, MVVS: PVC insulated PVC jacketed shielded control cable

CVV, MVV : PVC insulated PVC sheathed control cable

CPEVS : PE insulated PVC jacketed shielded communication cable

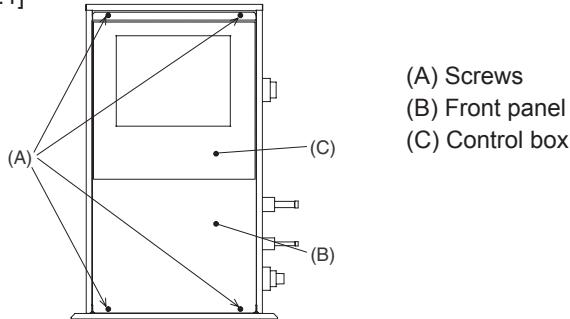
(5) Connecting electrical connections

Verify that the model name on the operating instructions on the cover of the control box is the same as the model name on the nameplate.

Step 1

Remove the screws holding the terminal box cover in place.

[Fig. V.1.(5).1]



Note:

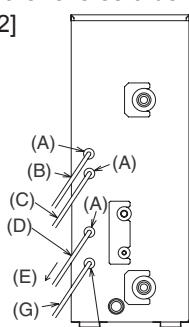
Ensure that the wiring is not pinched when fitting the terminal box cover. Pinching the wiring may cut it.

⚠ Caution:

Install wiring so that it is not tight and under tension. Wiring under tension may break, or overheat and burn.

- Fix power source external input/output line wiring to control box by using buffer bushing for tensile force to prevent electric shock. (PG connection or the like.) Connect transmission wiring to transmission terminal block through the knockout hole of control box using ordinary bushing.
- After wiring is complete, make sure again that there is no slack on the connections, and attach the cover onto the control box in the reverse order removal.

[Fig. IV. 1.(5).2]



- To prevent external tensile force from applying to the wiring connection section of power source terminal block use buffer bushing like PG connection or the like.
- External signal input cable
- External signal output cable
- Power source wiring
- Tensile force
- Use ordinary bushing
- Transmission cable and MA remote controller cable

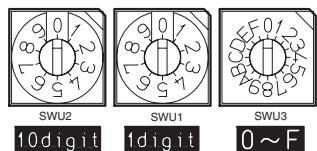
⚠ Caution:

Wire the power supply so that no tension is imparted. Otherwise disconnection, heating or fire result.

(6) Indoor unit address setting

(Be sure to operate with the main power turned OFF.)

[Fig. V. 1.(6).1]
<Address board>

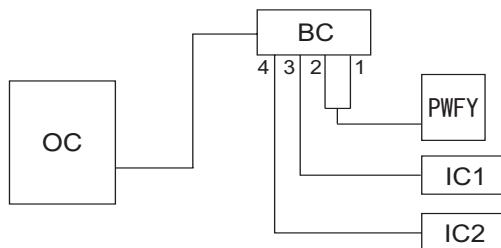


(6)-1 Switch operation (BC controller)

- There are two types of rotary switch setting available: setting addresses 1 to 9 and over 10, and setting branch numbers.
- a) How to set addresses
Example: If Address is "3", SWU2 (for over 10) remains at "0", and match SWU1 (for 1 to 9) to "3".
- b) How to set branch numbers SWU3 (only for R2 series)
Branch number matches the BC controller branch number. If two branches are used, SWU3 should be set to a smaller branch number. For other than R2 series, remain SWU3 as "0".

- example -

<BC controller>



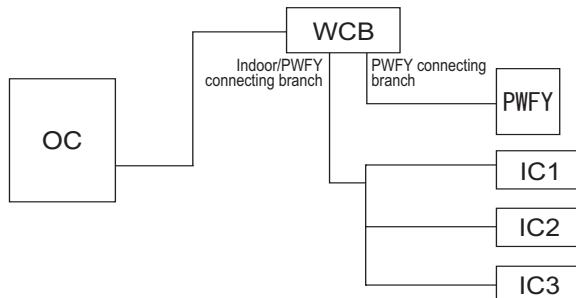
	SWU2	SWU1	SWU3
PWFY	0	1	1
IC1	0	2	3
IC2	0	3	4

(6)-2 Switch operation (WCB)

- a) How to set addresses
Example: If Address is "3", SWU2 (for over 10) remains at "0", and match SWU1 (for 1 to 9) to "3".
- b) How to set branch numbers SWU3 (only for R2 series)
There are two branches for WCB. Indoor unit/PWFY connecting branch should be set as "0" and PWFY connecting branch as "1".

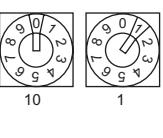
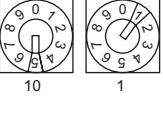
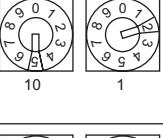
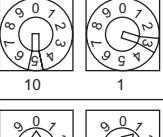
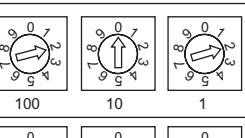
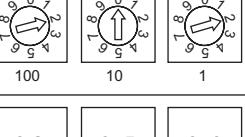
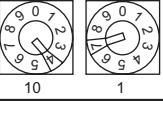
- example -

<WCB>



	SWU2	SWU1	SWU3
PWFY	0	1	1
IC1	0	2	0
IC2	0	3	0
IC3	0	4	0

(6)-2 Rule of setting address

Unit	Address setting	Example	Note
PWFY unit Standard indoor unit	01 ~ 50		<p>Use the most recent address within the same group of indoor units. Make the indoor units address connected to the BC controller (Sub) larger than the indoor units address connected to the BC controller (Main).</p> <p>If applicable, set the sub BC controllers in an PURY system in the following order:</p> <ol style="list-style-type: none"> (1) Indoor unit to be connected to the BC controller (Main) (2) Indoor unit to be connected to the BC controller (No.1 Sub) (3) Indoor unit to be connected to the BC controller (No.2 Sub) <p>Set the address so that (1)<(2)<(3)</p>
Outdoor unit	51 ~ 99, 100 (Note1)		<p>The smallest address of indoor unit in same refrigerant system + 50</p> <p>Assign sequential address numbers to the outdoor units in one refrigerant circuit system. OC and OS are automatically detected. (Note 2)</p> <p>* Please reset one of them to an address between 51 and 99 when two addresses overlap.</p> <p>* The address automatically becomes "100" if it is set as "01~ 50"</p>
BC controller (Main)/WCB	52 ~ 99, 100		<p>The address of outdoor unit + 1</p> <p>* Please reset one of them to an address between 52 and 99 when two addresses overlap.</p> <p>* The address automatically becomes "100" if it is set as "01~ 50"</p>
BC controller (Sub)	53 ~ 99, 100		<p>Lowest address within the indoor units connected to the BC controller (Sub) plus 50.</p>
Local remote controller	ME, LOSSNAY Remote controller (Main)	101 ~ 150 1 Fixed	<p>The smallest address of indoor unit in the group + 100</p> <p>* The place of "100" is fixed to "1"</p>
	ME, LOSSNAY Remote controller (Sub)	151 ~ 199, 200 1 Fixed	<p>The address of main remote controller + 50</p> <p>* The address automatically becomes "200" if it is set as "00"</p>
System controller	Group remote controller	201 ~ 250 2 Fixed	<p>The smallest group No. to be managed + 200</p>
	System remote controller	000, 201 ~ 250	
	ON/OFF remote controller	000, 201 ~ 250	
	G-50A GB-50A AG-150A	000, 201 ~ 250 0,2 0~5 0~9 100 10 1	
	LMAP02-E	201 ~ 250 2 Fixed	

Note1: To set the address to "100", set it to "50"

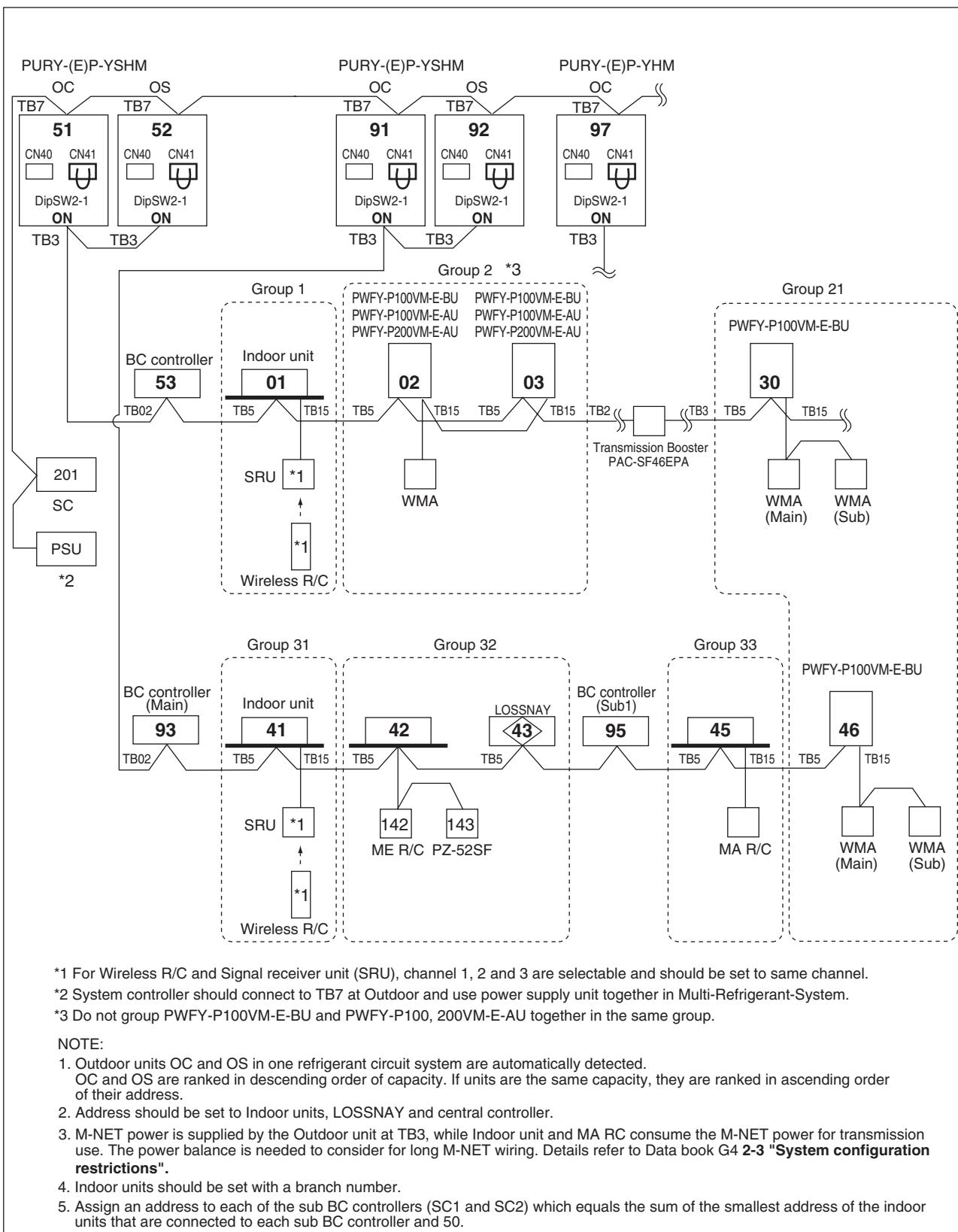
Note2: Outdoor units OC and OS in one refrigerant circuit system are automatically detected.

OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.

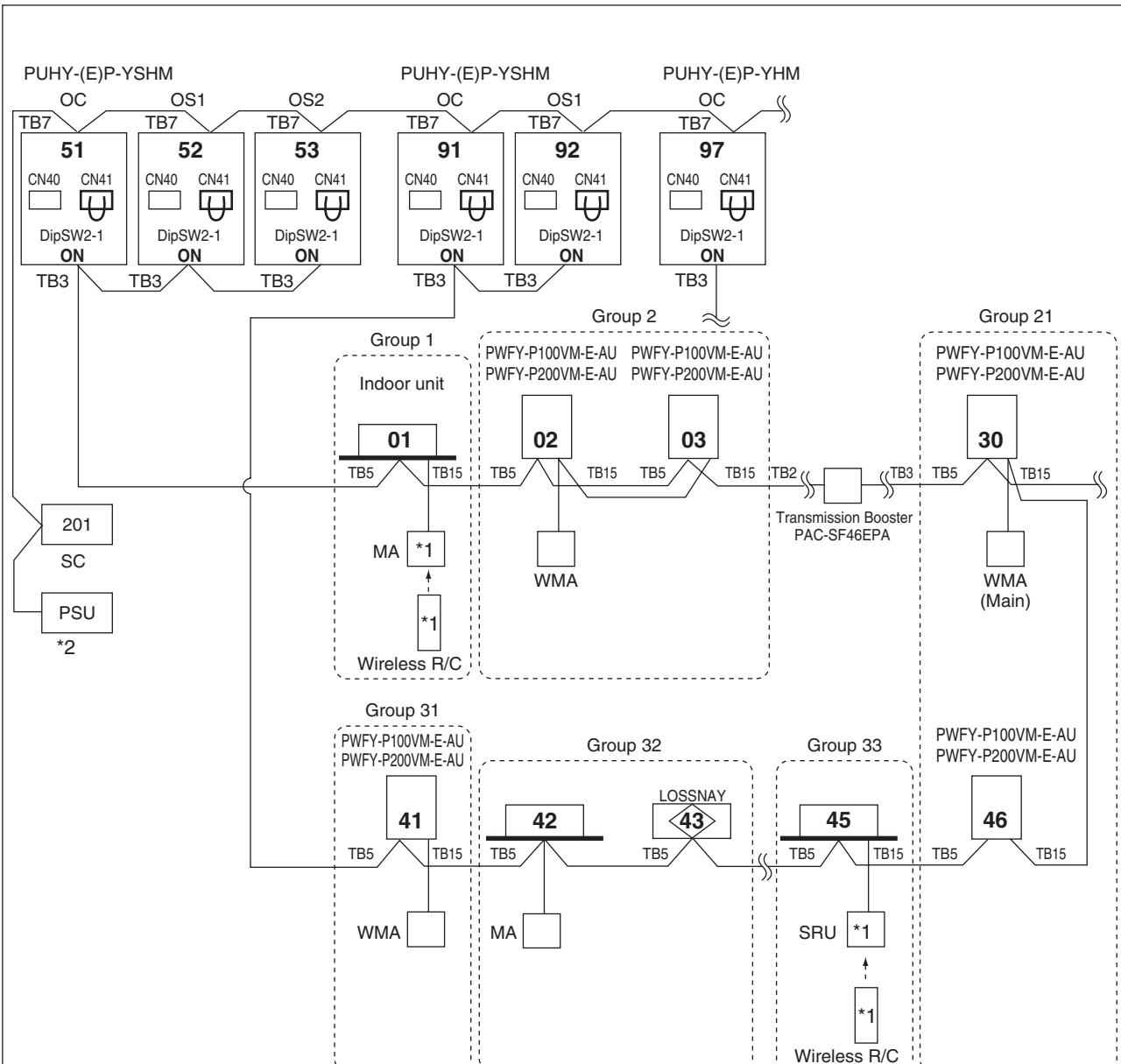
(6)-3 System examples

(6)-3-1 MA remote controller, Multi-refrigerant-system, System Controller at TB7 side, Booster for long M-NET wiring

PWFY-P100VM-E-BU/PWFY-P100, 200VM-E-AU with R2 series outdoor units



PWFY-P100, 200VM-E-AU with Y series outdoor units



*1 For Wireless R/C and Signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

*2 System controller should connect to TB7 at Outdoor and use power supply unit together in Multi-Refrigerant-System.

NOTE:

1. Outdoor units OC, OS1 and OS2 in one refrigerant circuit system are automatically detected. OC, OS1 and OS2 are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.
2. Address should be set to Indoor units, LOSSNAY and central controller.
3. M-NET power is supplied by the Outdoor unit at TB3, while Indoor unit and MA consume the M-NET power for transmission use. The power balance is needed to consider for long M-NET wiring. Details refer to Data book G4 2-3 "System configuration restrictions".

(7) External input/output function

Preset temperature input (external analog input: 4mA-20mA)

• External input

Input through CN421, CN422 on the circuit board. (Fig. V. 1.(7).1)

• External analog input

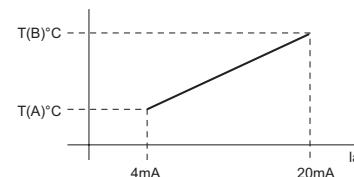
Use the supplied connector.

If no temperature settings are made via the MA remote controller, the temperature changes with the current of generator.

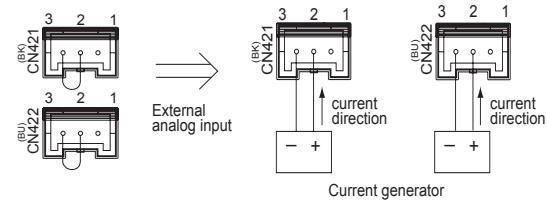
Method

Input T(A), T(B)
4mA : T(A)
20mA:T(B)

Changeable with
PAR-W21MAA



[Fig. V. 1.(7).1]



Current generator

S/W default
T(A)=10°C
T(B)=70°C.

*All setting with a controller.

Conversion equation: $To = [(T(B) - T(A))/16] \times Ia + [T(A) - (T(B) - T(A))/4]$

To: set temperature, Ia: analogue input value (mA)

Calculation example: T(A)=30°C, T(B)=70°C, Ia=10mA

Conversion equation: $To = 2.5 \times Ia + 20$ To=45°C

External output terminal

External output terminal (refer to Fig. V. 1.(7).2) is ineffective when the circuit is open.

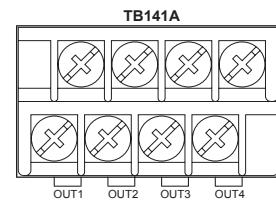
Refer to Table V. 1.(7).1 for information about each contact.

The current in the circuit to be connected to the external output terminal must be 0.6A or less.

Table V. 1.(7).1

OUT1	Operation ON/OFF
OUT2	Defrost
OUT3	Compressor
OUT4	Error signal

[Fig. V. 1.(7).2]



External input terminal

The piping length must be within 100 m.

External input terminal (refer to Fig. V. 1.(7).2) is ineffective when the circuit is open.

Refer to Table V. 1.(7).2 through Table V. 1.(7).4 for information about each contact.

Only the "pump interlock" function is ineffective when the circuit is short-circuited.

Connect a relay circuit to the external output terminal as shown in Fig. IV. 3.(8).1.

The specifications of the relay circuit to be connected must meet the following conditions.

Contact rating voltage >= DC15V

Contact rating current >= 0.1A

Minimum applicable load =< 1mA at DC

[Table V. 1.(7).2] TB142A

IN1	Pump interlock
IN2	Connection demand

[Table V. 1.(7).3] TB142B

IN3	Connection demand
IN4	Operation ON/OFF

*1 PWFY-P100VM-E-BU Hot Water
PWFY-P100, 200VM-E-AU Heating

*2 Effective when SW 4-3 is set to ON.

*3 Effective when SW 4-4 is set to ON.

*4 PWFY-P100, 200VM-E-AU only

*5 When Heating ECO mode is effective, the outlet water temp. will be changed based on ambient temp. automatically. (Except for PQHY/PQRY-series)

*6 When Anti-freeze mode is effective, the unit will set the heating temperature range between 10°C~45°C enabling the unit to maintain low water temperature to prevent water pipes from freezing.

Note: When setting Heating ECO or Anti-freeze mode, reset all power supply of all units (outdoor/indoor units).

Note: Dip S/W 1-1 OFF: Water Inlet Temp.

Dip S/W 1-1 ON : Water Outlet Temp.

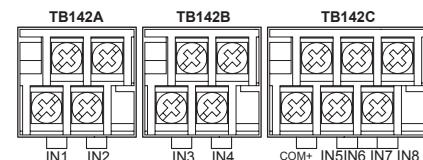
The factory setting for Dip SW 1-1 is OFF.

Signal priority = External input > centralized controller > remote controller

[Table V. 1.(7).4] TB142C

COM+	Common
IN5 *1	Hot Water/Heating
IN6 *2	Heating ECO *5
IN7 *3	Anti-freeze *6
IN8 *4	Cooling operation

[Fig. V. 1.(7).3]



(8) BC controller piping design

(8)-1 IF 16 ports or less are in use, i.e., if only one BC controller is in use with no sub BC controller

Note1. No Header usable on PURY system.

Note2. Indoor unit sized P100-P250 should be connected to BC controller via Y shape joint CMY-R160-J ;

Note3. Indoor unit sized P100-P250 does NOT share BC controller ports with other Indoor units ;

Note4. As bents cause pressure loss on transportation of refrigerant, fewer bents design is better ;

Piping length needs to consider the actual length and equivalent length which bents are counted.

Equivalent piping length (m)=Actual piping length "M" x Quantity of bent.

Note5. Set DIP-SW 4-6 to ON of BC controller, in case of connected Indoor unit sized P100-P140 with 2 ports.

Note6. It is also possible to connect Indoor unit sized P100-P140 with 1 port (set DIP-SW 4-6 to OFF).

However, the cooling capacity decreases a little (For details, refer to the chapter OUTDOOR UNITS, R2 SERIES, 6-4. Correction by port counts of the BC controller).

Note7. Individual indoor units grouped together to connect to the BC controller via one port cannot operate individually in heating and cooling modes at the same time. I.e., they must all function in either heating

Note8. Indoor capacity is described as its model size. For example, PEFY-P63VML-E, its capacity is P63. or cooling together.

Note9. Total down-stream Indoor capacity is the summary of the model size of Indoors down-stream.

For example, PEFY-P63VML-E + PEFY-P32VML-E : Total Indoor capacity = P63 + P32 = P95.

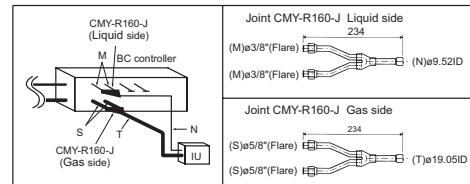


Fig. (8)-1AA

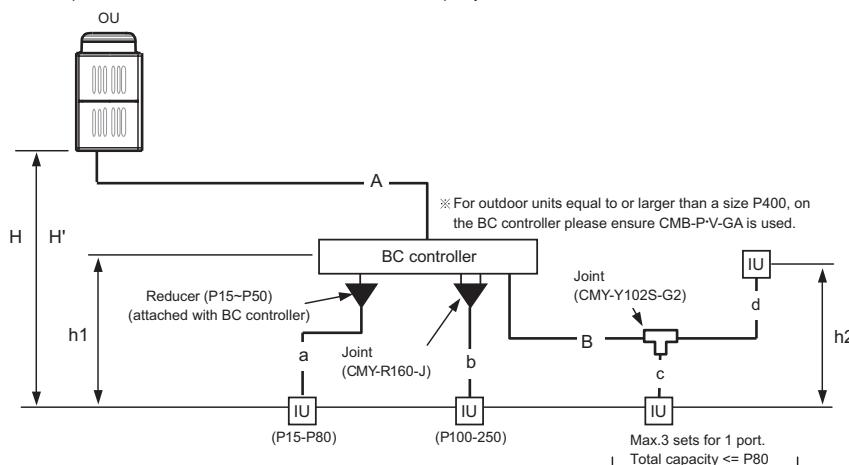


Fig. (8)-1A Piping scheme

Table (8)-1-1. Piping length limitation

Item	Piping in the figure	Max. length	Max. equivalent length (m [ft.])
Total piping length	A+B+a+b+c+d	*1	-
Farthest IU from OU	A+B+d	165 [541]	190 [623]
Distance between OU and BC	A	110 [360] *1	110 [360] *1
Farthest IU from BC controller	B+d	40 [131] *2*3	40 [131] *3
Height between OU and IU (OU above IU) H	50 [164] *5	-	
Height between OU and IU (OU under IU) H'	40 [131] *6	-	
Height between IU and BC	h1	15 [49] (10 [32]) *4	-
Height between IU and IU	h2	15 [49] (10 [32]) *4	-

OU : Outdoor Unit ; IU : Indoor Unit ; BC : BC controller

*1. Refer to the section (8)-2.

*2. Details refer to Fig.(8)-1-1

*3. Farthest Indoor from BC controller "B+d" can exceed 40m till 60m if no Indoor sized P200, P250 connected. Details refer to Fig.(8)-1-1

*4. Distance of Indoor sized P200, P250 from BC must be less than 10m, if any.

*5. 90m is available depending on the model and installation conditions. For more detailed information, contact your local distributor.

*6. 60m is available depending on the model and installation conditions. For more detailed information, contact your local distributor.

Fig. (8)-1-1 Piping length and height between IU and BC controller

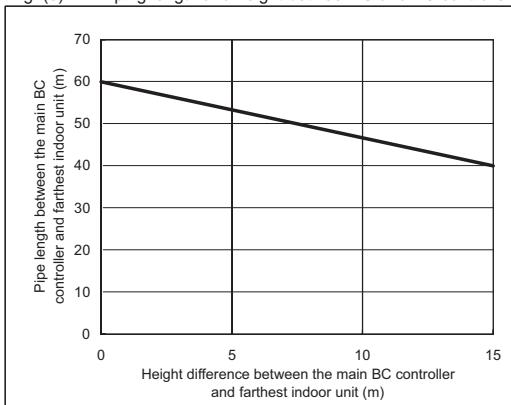


Table (8)-1-2. Bent equivalent length "M"

Outdoor Model	M (m/bent [ft./bent])
(E)P200YHM	0.35 [1.15]
(E)P250YHM	0.42 [1.38]
(E)P300YHM	0.42 [1.38]
P350YHM	0.47 [1.54]
P400YHM	0.50 [1.64]

Table (8)-1-3. Piping "A" size selection rule (mm [in.])

Outdoor Model	Pipe(High pressure)	Pipe(Low pressure)
(E)P200YHM	ø15.88 [5/8"]	ø19.05 [3/4"]
(E)P250YHM	ø19.05 [3/4"]	ø22.20 [7/8"]
(E)P300YHM	ø19.05 [3/4"]	ø22.20 [7/8"]
P350YHM	ø19.05 [3/4"]	ø28.58 [1-1/8"]
P400YHM	ø22.20 [7/8"]	ø28.58 [1-1/8"]

Table (8)-1-4. Piping "B" size selection rule (mm [in.])

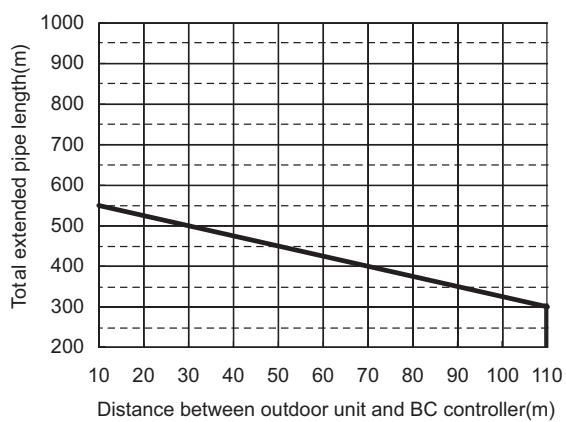
Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(Gas)
P140 or less	ø9.52 [3/8"]	ø15.88 [5/8"]

Table (8)-1-5. Piping "a", "b", "c", "d" size selection rule (mm [in.])

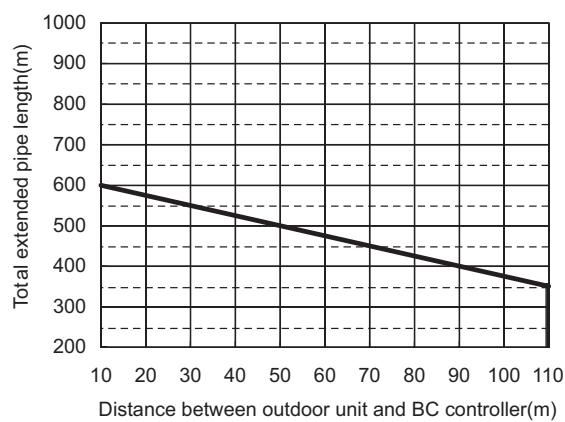
Indoor Unit size	Pipe(Liquid)	Pipe(Gas)
P15 to P50, GUF-50RD(H)	ø6.35 [1/4"]	ø12.70 [1/2"]
P63 to P140, GUF-100RD(H)	ø9.52 [3/8"]	ø15.88 [5/8"]
P200	ø9.52 [3/8"]	ø19.05 [3/4"]
P250	ø9.52 [3/8"]	ø22.20 [7/8"]

(8)-2 Total piping length restrictions

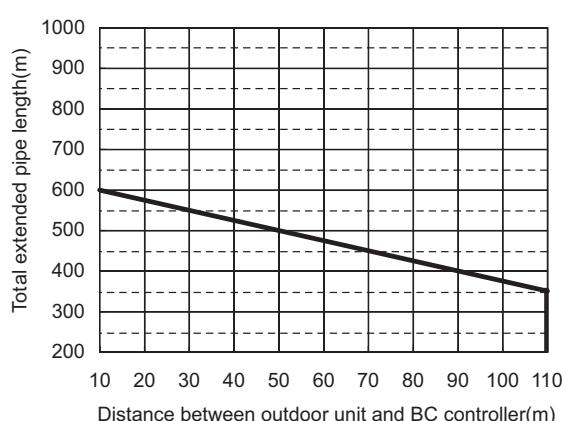
[PURY-(E)P200,250,300YHM-A / PQRY-P200,250,300YHM-A]



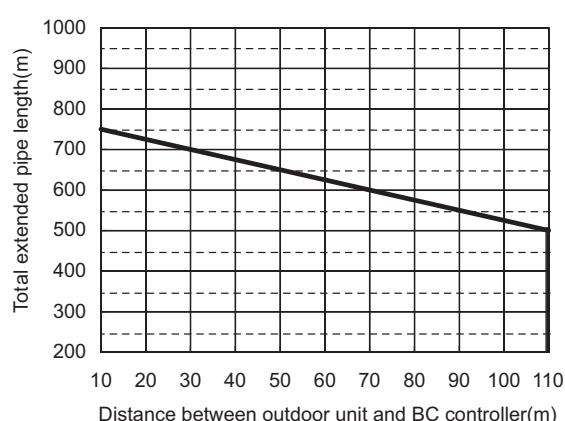
[PURY-P350, 400YHM-A, PURY-EP250,300YHM-A]



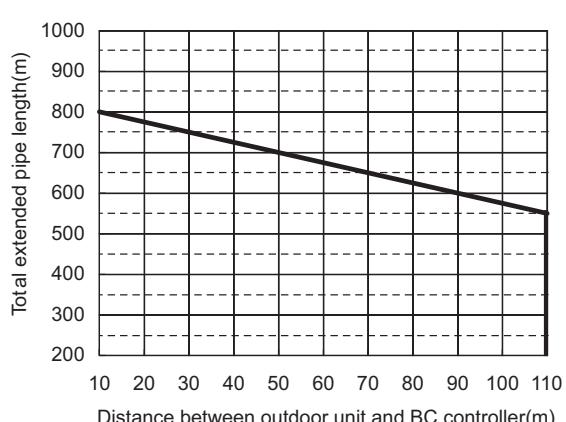
[PURY-P450YSHM-A]



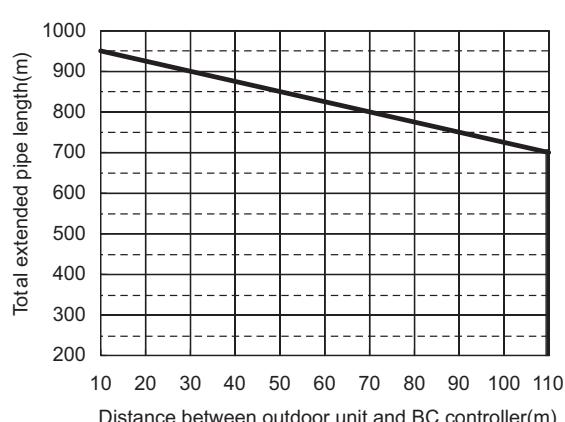
[PURY-(E)P400,450,500,550YSHM-A(1)
/ PQRY-P400,450,500,550,600YSHM-A]



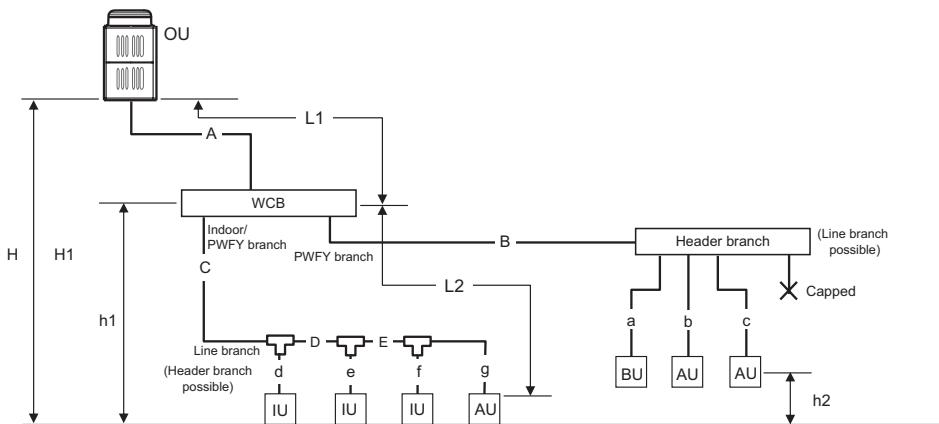
[PURY-P600, 650YSHM-A, PURY-EP600YSHM-A]



[PURY-P700, 750, 800YSHM-A]



(9) WCB piping design



Item	Piping in the figure	Maximum length
Total piping length	A+B+C+D+E+a+b+c+d+e+f+g	*1
Farthest IU from OU	A+C+D+E+g / A+B+c	165 m (Max. equivalent length of 190 m or less)
Distance between OU and WCB	A	110
Distance between IU and WCB	C+D+E+g / B+c	40 ²
Height between IU and OU	H	50
OU above IU	H1	40
OU below IU	h1	15 (10) ³
Height between IU and WCB	h2	15 (10) ³

*1. Refer to Fig. (2)-1 "Restrictions on piping length".

*2. Please refer to Fig. (2)-2 "Distance between WCB and farthest indoor unit" when the distance between WCB controller and farthest indoor unit exceeds 40 m.
(Not applicable to the P250 model indoor unit).

*3. The values in the parenthesis show the maximum piping length when the capacity of the connected indoor unit is 200 or more.

NOTE:

Joint branching is not possible after header branching.

Cover the unused branch using the optional cover cap (CMY-S202-J).

Top-bottom differential 90m(OU above IU) or 60m(OU below IU) is not available.

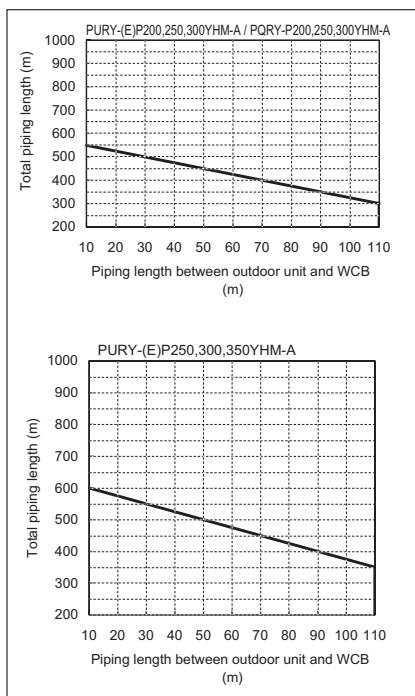


Fig.(2)-1 Restrictions on piping length

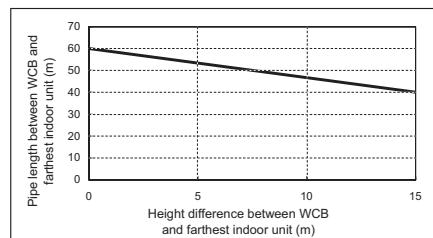


Fig.(2)-2 Distance between WCB and farthest indoor unit

Table (2)-1. Piping "B", "C", "D", "E" size selection rule (mm)

Total capacity of indoor units	Liquid pipe	Gas pipe
-140	ø9.52	ø15.88
14 - 200	ø9.52	ø19.05
201 - 300	ø9.52	ø22.2
301 - 400	ø12.7	ø28.58
401 -	ø15.88	ø28.58

Table (2)-2. Piping "a", "b", "c", "d", "e", "f", "g" size selection rule (mm)

Model number	Liquid pipe	Gas pipe
20,25,32,40,50	ø6.35	ø12.7
63,71,80,100,125,140	ø9.52	ø15.88
200	ø9.52	ø19.05
250	ø9.52	ø22.2

Table (2)-3. Selection rule for branch pipe (joint)

Downstream unit model total	Joint
-200	CMY-Y102S-G2
201 - 400	CMY-Y102L-G2
401 -	CMY-Y202-G2

Table (2)-4. Selection rule for branch pipe (header)

4-Branching header (Downstream unit model total \leq 200)	8-Branching header (Downstream unit model total \leq 400)	10-Branching header (Downstream unit model total \leq 650)
CMY-Y104-G	CMY-Y108-G	CMY-Y1010-G

VI Controller

1. PAR-W21MAA specifications

Item	Description	Operations	Display
ON/OFF	Runs and stops the operation of a group of units	○	○
Operation mode switching	Switches between Hot Water / Heating / Heating ECO / Anti-freeze / Cooling * Available operation modes vary depending on the unit to be connected. * Switching limit setting can be made via a remote controller.	○	○
Water temperature setting	Temperature can be set within the ranges below. (in increments of 1°C or 1°F) Hot Water 30°C ~ 70°C Heating 30°C ~ 45°C Heating ECO 30°C ~ 45°C Anti-freeze 10°C ~ 45°C Cooling 10°C ~ 30°C * The settable range varies depending on the unit to be connected.	○	○
Preset temperature range	Preset temperature range setting can be limited via a remote controller.	○	○
Water temperature display	10°C ~ 90°C (in increments of 1°C or 1°F) * The settable range varies depending on the unit to be connected.	×	○
Permit / Prohibit local operation	Individually prohibits operations of each local remote control function :ON/OFF, Operation modes, water temperature setting, Circulating water replacement warning reset. * Upper level controller may not be connected depending on the unit to be connected.	×	○
Weekly scheduler	ON / OFF / Water temperature setting can be done up to 6 times one day in the week. (in increments of a minute)	○	○
Error	When an error is currently occurring on a unit, the afflicted unit and the error code are displayed.	×	○
Self check (Error history)	Searches the latest error history by pressing the CHECK button twice.	○	○
Test run	Enables the Test run mode by pressing the TEST button twice. * Test run mode is not available depending on the unit to be connected.	○	○
Circulating water replacement warning	Displays the circulating water replacement warning via the unit message. Clears the display by pressing the CIR.WATER button twice. * Circulating water replacement warning is not available depending on the unit to be connected.	○	○
LANGUAGE setting	The language on the dot matrix LCD can be changed. (Seven languages) English/German/Spanish/Russian/Italian/French/Swedish	○	○
Operation locking function	Remote controller operation can be locked or unlocked. ·All-switch locking ·Locking except ON/OFF switch	○	○

2. Dip switch functions

Switch	Function	Function according to switch setting		Switch setting timing	
		OFF	ON		
SW1	1	TH0 thermistor selection	Water inlet thermistor TH6	Water outlet thermistor TH8	Before power on
	2	-	-	-	-
	3	Operation after power recovery *1	Remains stopped	Auto recovery (to the status before power failure)	Before power on
	4	Operation after power recovery	Depends on the SW1-3 setting	Forced to operate	Before power on
	5	-	-	-	-
	6	-	-	-	-
	7	Test-run mode	OFF	ON	Any time
	8	Error history deleted	Normal	Deleted	Any time
	9	Effective only when SW1-7 is set to ON and only on the HEX models.	Heating	Cooling	Any time
	10	Interlocked operation with the pump	Effective	Ineffective	Any time
SW2	1-10	For self-diagnosis/operation monitoring	-	-	Any time
SW3	1	Capacity setting (HEX unit only)	4HP	8HP (HEX unit only)	Before power on
	2	Service LED display selection	Display in Centigrade	Display in Fahrenheit	Any time
	3	-	-	-	-
	4	-	-	-	-
	5	Cumulative compressor operation time is deleted.	Normal	Deleted	Any time
	6	-	-	-	-
	7	-	-	-	-
	8	-	-	-	-
	9	-	-	-	-
	10	-	-	-	-
SW4	1	Do not change from factory setting.			
	2	Do not change from factory setting.			
	3	Use to change preset temperature range for the Heating ECO mode.	Booster : Ineffective HEX : Ineffective	Booster : 30°C to 45°C HEX : 30°C to 45°C	Before power on
	4	Use to change preset temperature range for the Anti-freeze mode.	BU : Ineffective WH : Ineffective	BU : 10°C to 45°C WH : 10°C to 45°C	Before power on
	5	-	-	-	-
	6	-	-	-	-
	7	-	-	-	-
	8	-	-	-	-
	9	-	-	-	-
	10	-	-	-	-
SW5	1	Enabling/disabling ACCT sensor error detection	Error detection enabled	Error detection disable (No load operation is possible)	Any time
	2	-	-	-	-
	3	-	-	-	-
	4	-	-	-	-

*1 Valid only when SW1-4 is set to OFF

VII | Maintenance Cycle

1. Routine maintenance checks

- Periodically and thoroughly check the circulating water circuit. (See table below.)
- Consult a maintenance technician.

2. Parts Replacement Cycle

Regular preventive maintenance and parts replacement help keep the unit running smoothly and minimize problems. The table below shows the maintenance schedule. Use the replacement timing in the table only as a guide. Some parts may need to be replaced sooner, depending on the usage.

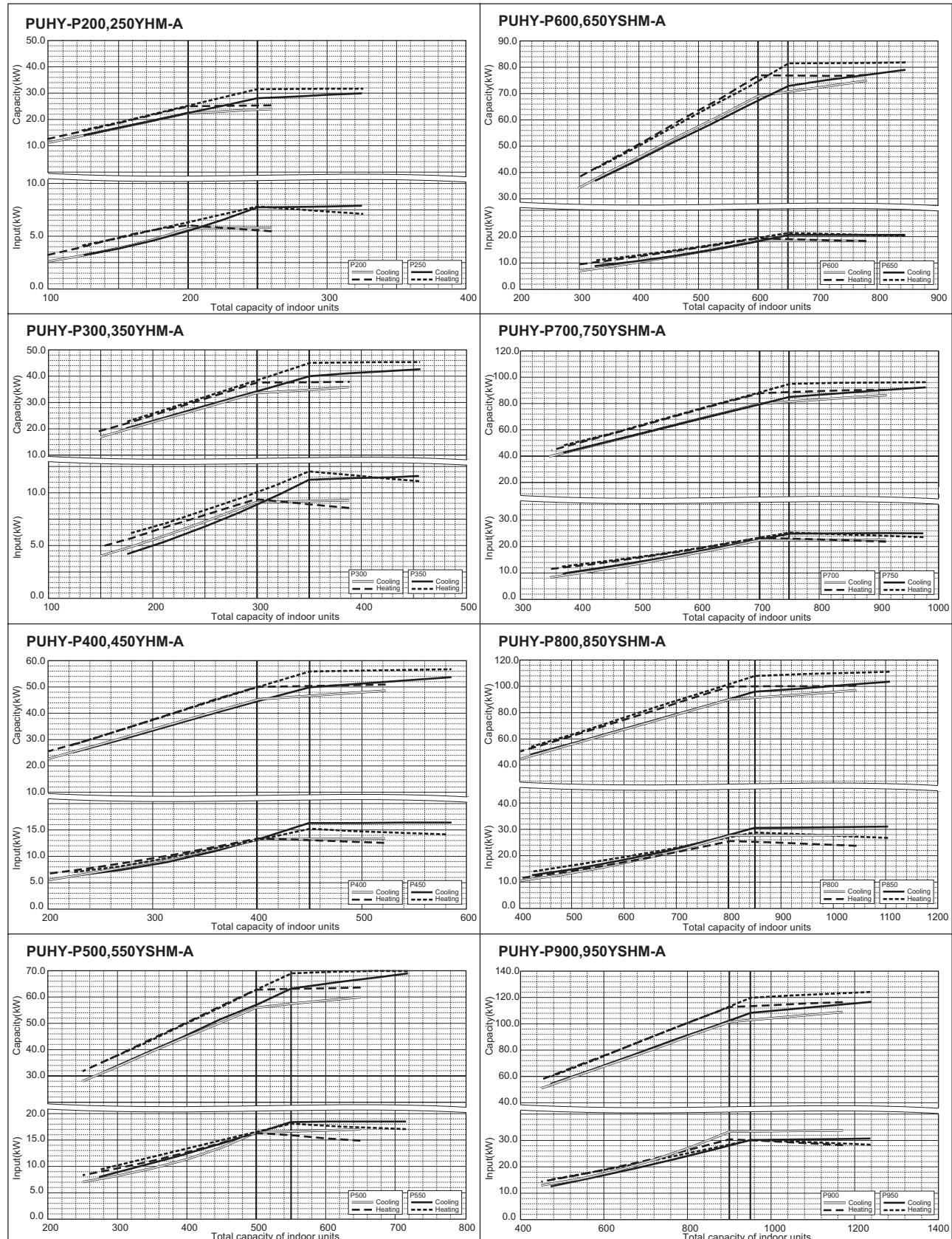
Components		What to look for	Maintenance cycle (times/year)	Replacement cycle
Refrigerant circuit components	Compressor	High/low pressure, vibration, noise Insulation resistance, loose terminals	2	20,000 hours
	Water-refrigerant heat exchanger	High/low pressure, water pressure loss	2	10 Years
	Solenoid valve (PWFY-P100, 200VM-E-AU)	Operation, leakage, clogging	2	7 Years
	Check valve (PWFY-P100, 200VM-E-AU)	Operation, leakage, clogging	1	10 Years
	Linear expansion valve	Operation	2	7 Years
	Strainer	Inlet/outlet temperature difference	1	While in heavy use
	Capillary tube	Contact wear, Vibration	1	10 Years
	Pipes	Contact wear, Vibration	1	10 Years
Electric circuit parts	Electromagnetic contactor	Corroded contact, loose terminals Insulation resistance	2	8 Years
	Overcurrent relay	loose terminals	2	7 to 10Years
	Relay	Operation, Contact resistance. Insulation resistance	2	6 Years
	Solenoid valve	Insulation resistance	2	7 Years
	Fuse	External appearance	2	8 Years
	Electronic board	External appearance	2	8 Years
	Switch	Operation, Contact resistance.	2	8 Years
	Pressure switch	Contact resistance.	2	7 to 10Years
	Terminal block	loose terminals	2	8 Years
	Cable/connector	Looseness, corrosion, and wearing	2	10 Years
	Fan	Balance	2	10 Years
	Motor	Insulation resistance, noise, vibration	2	6 to 10Years

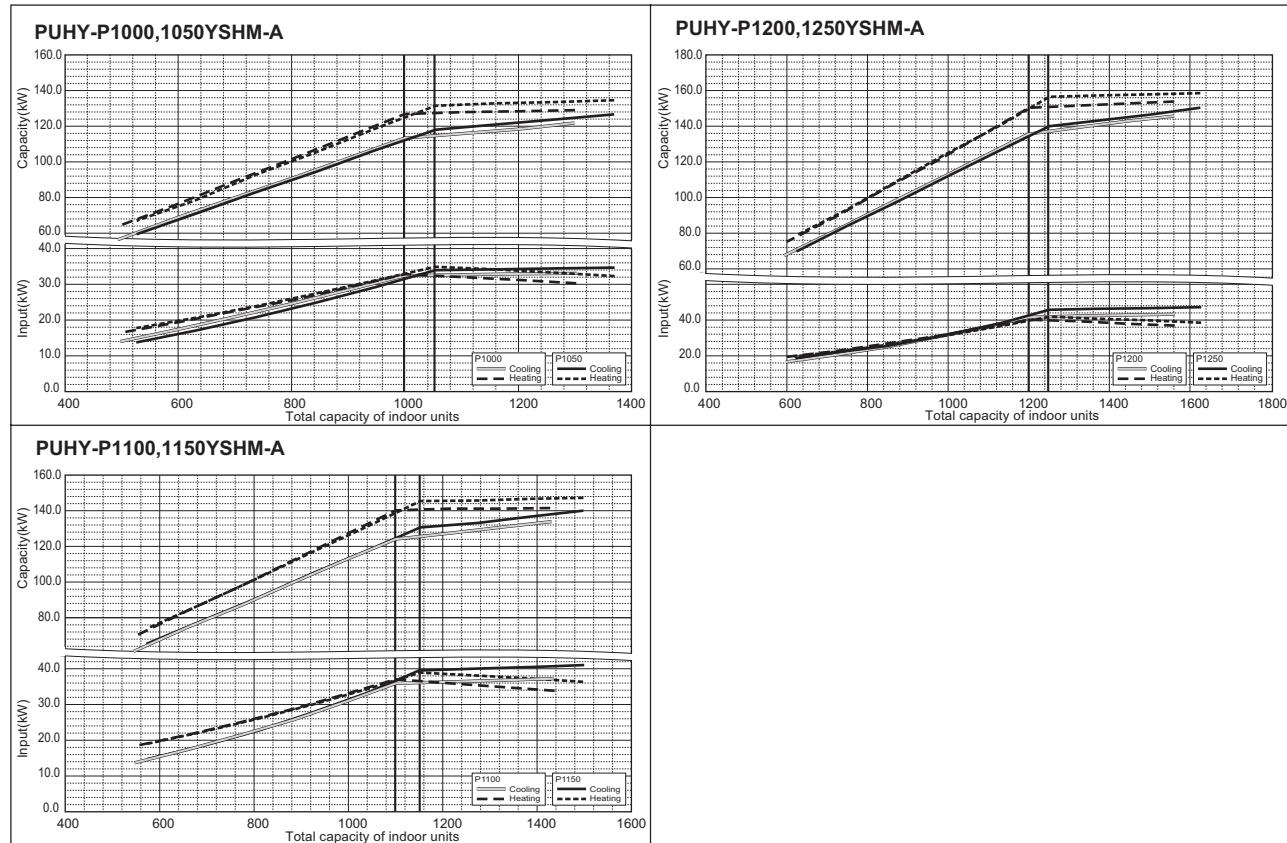
VIII | Product Data (additional information for chapter III.)

1. Outdoor unit capacity tables

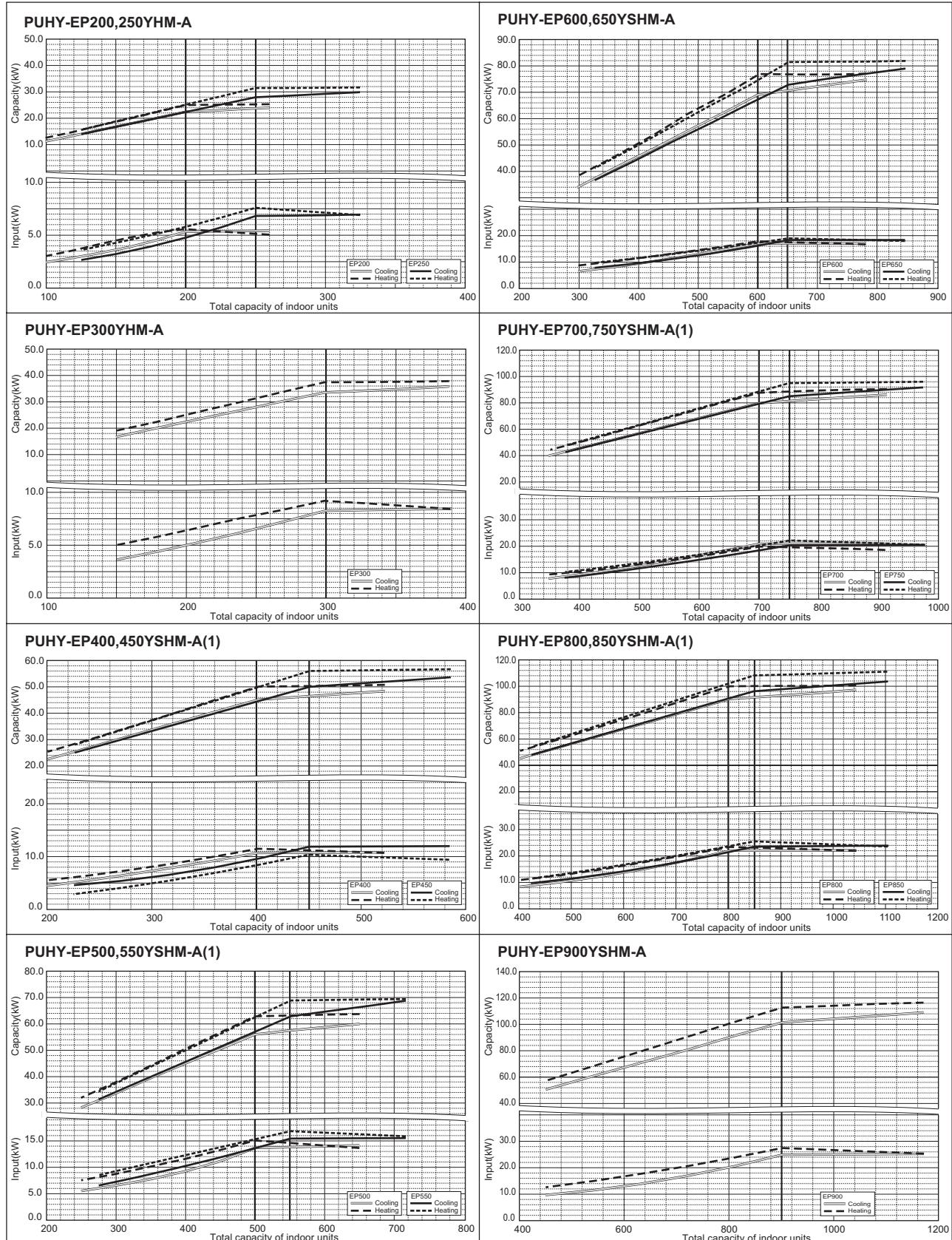
(1) Correction by total indoor

(1)-1 Y series

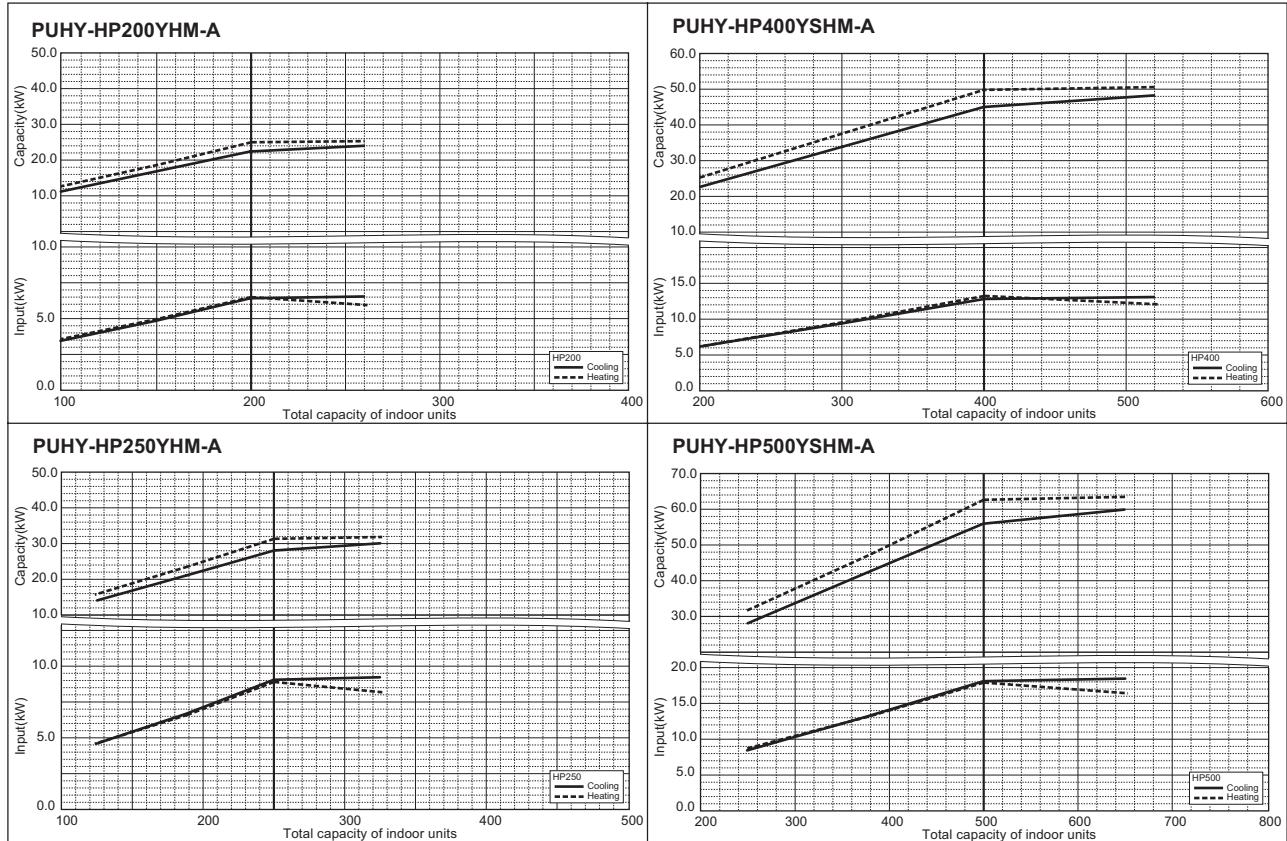




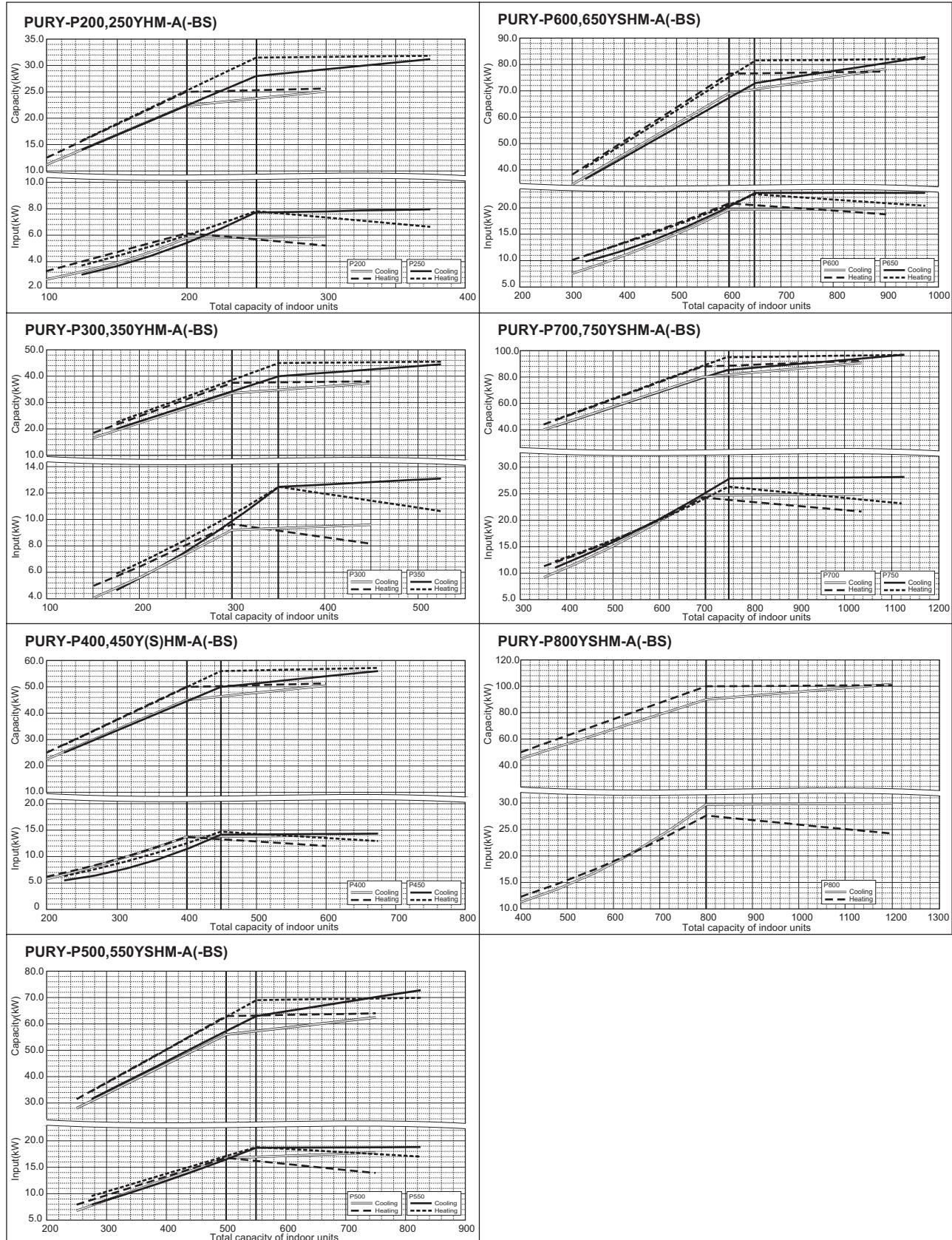
(1)-2 Y (High COP) series



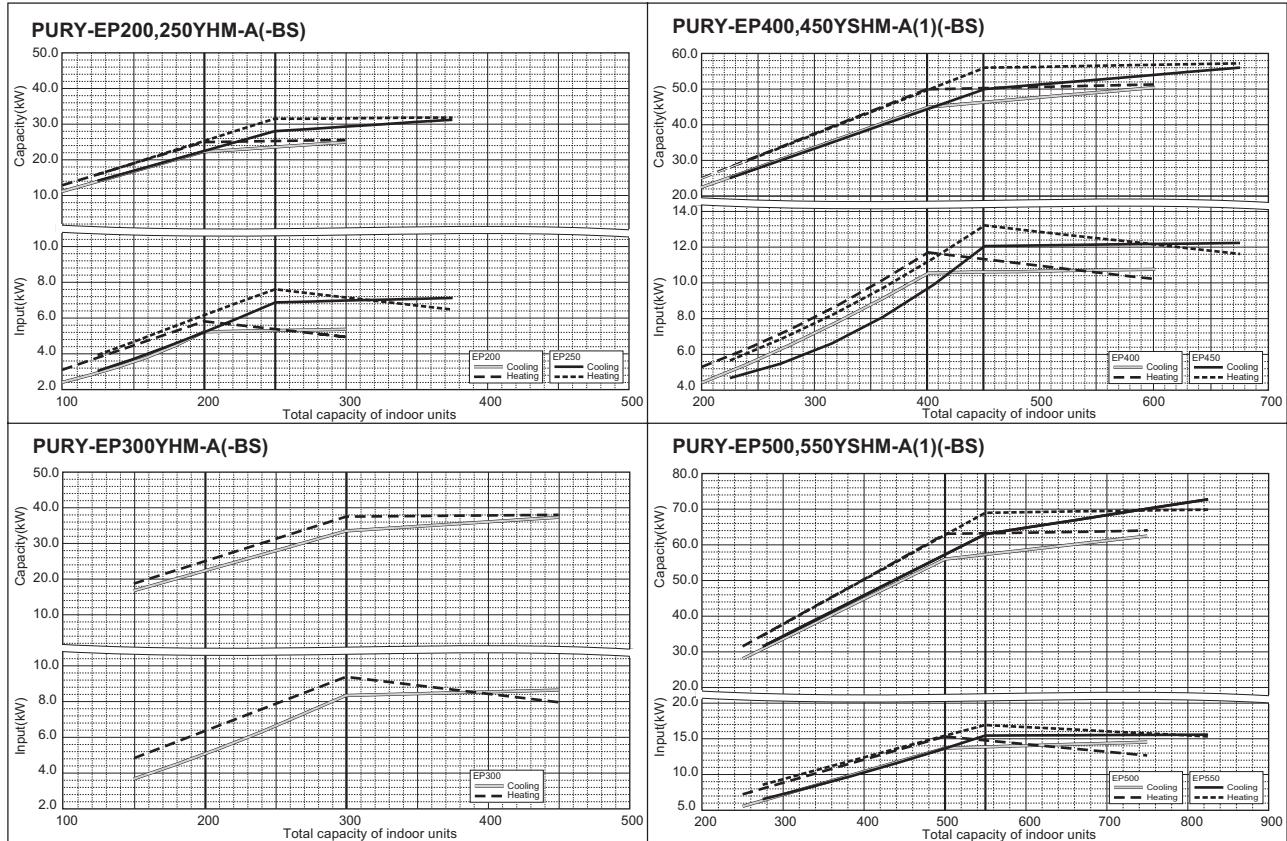
(1)-3 HP (ZUBADAN) series



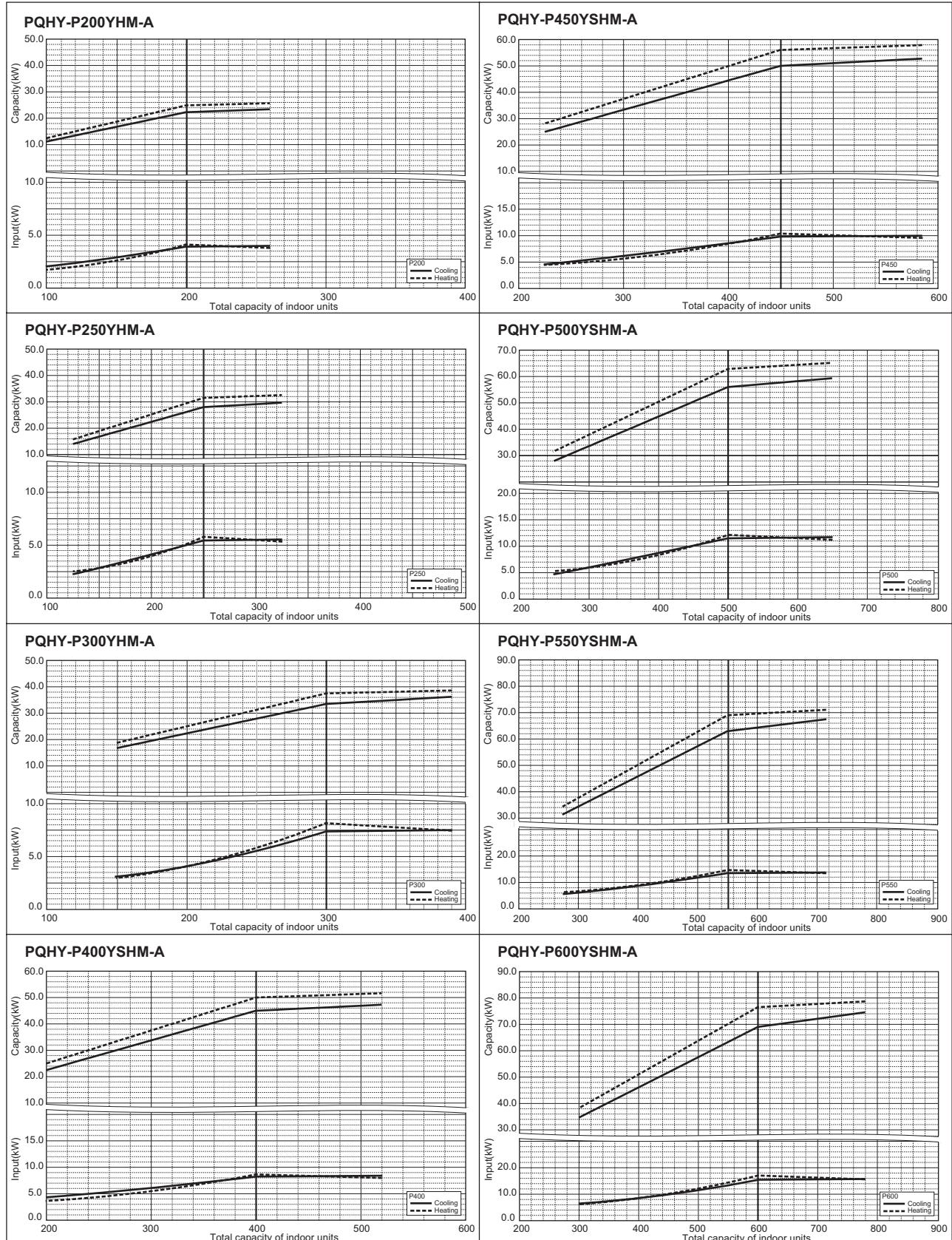
(1)-4 R2 series

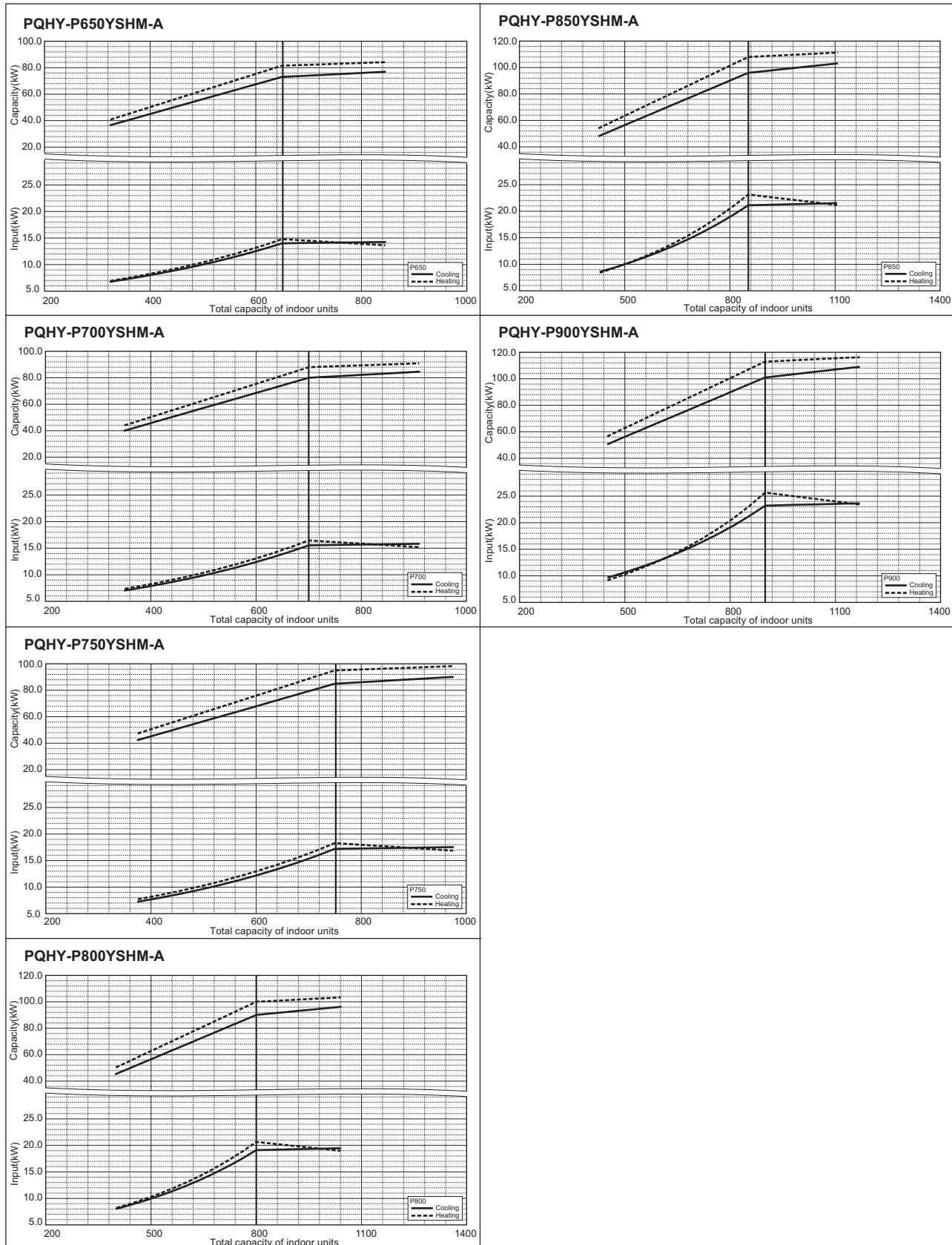


(1)-5 R2 (High COP) series

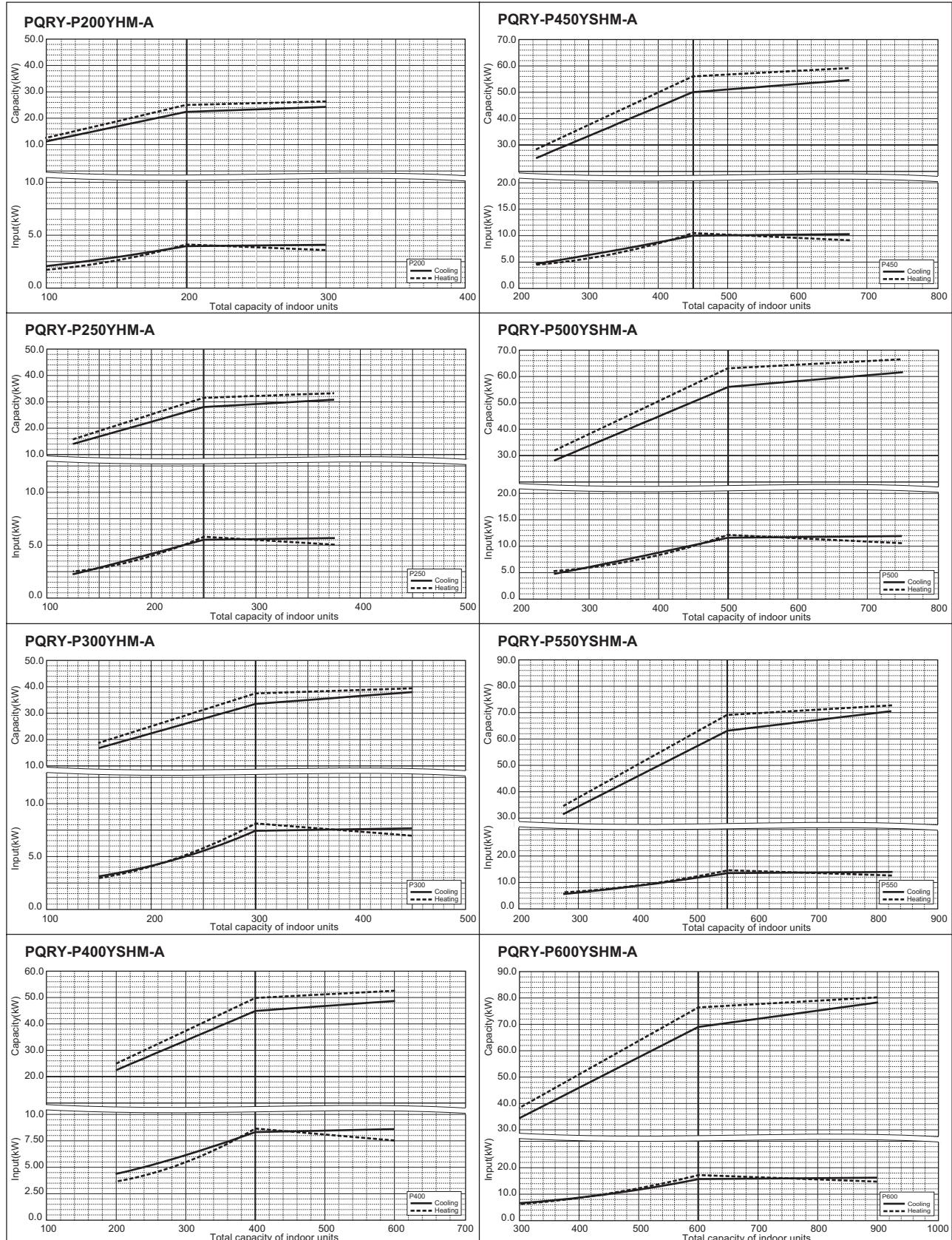


(1)-6 WY series





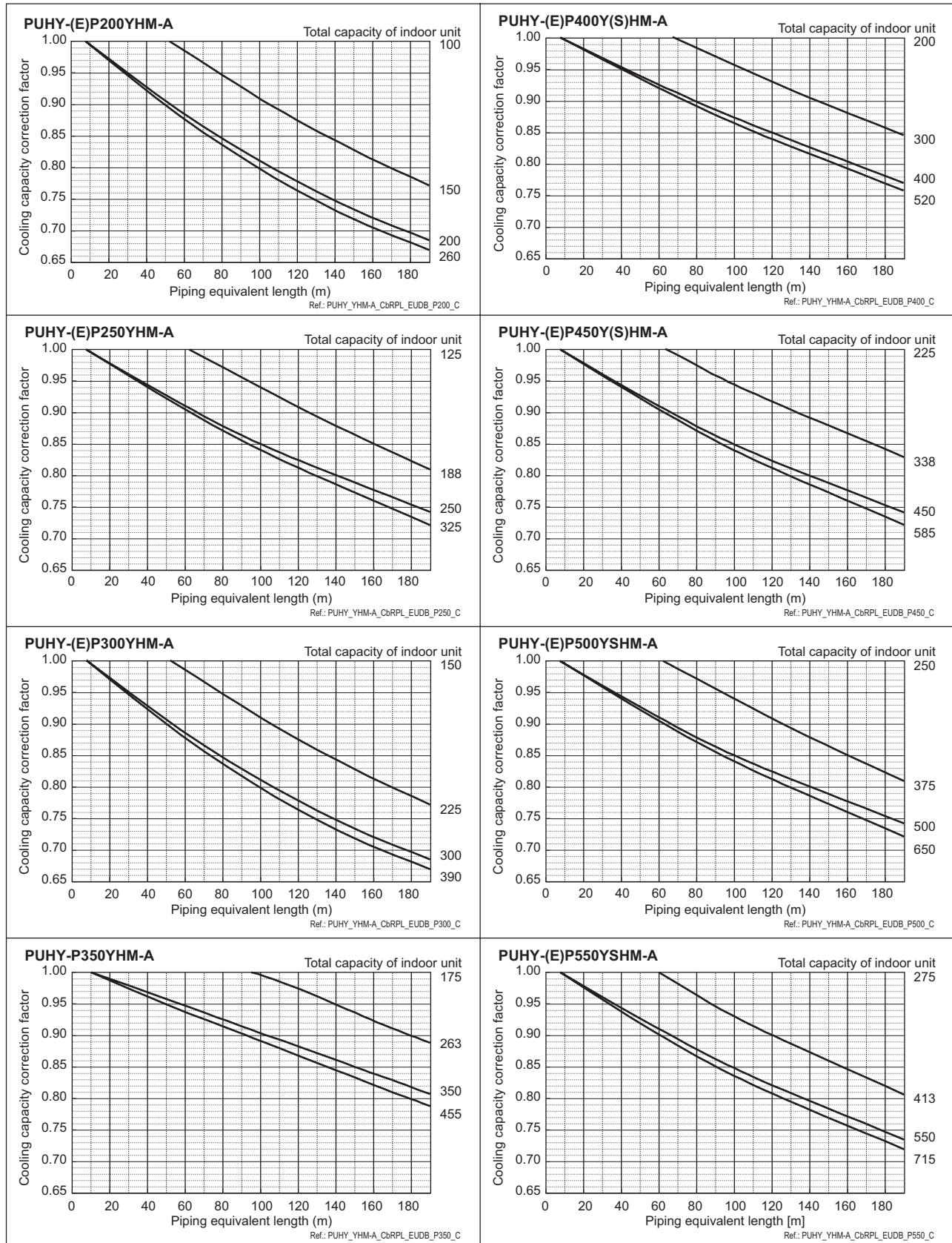
(1)-7 WR2 series

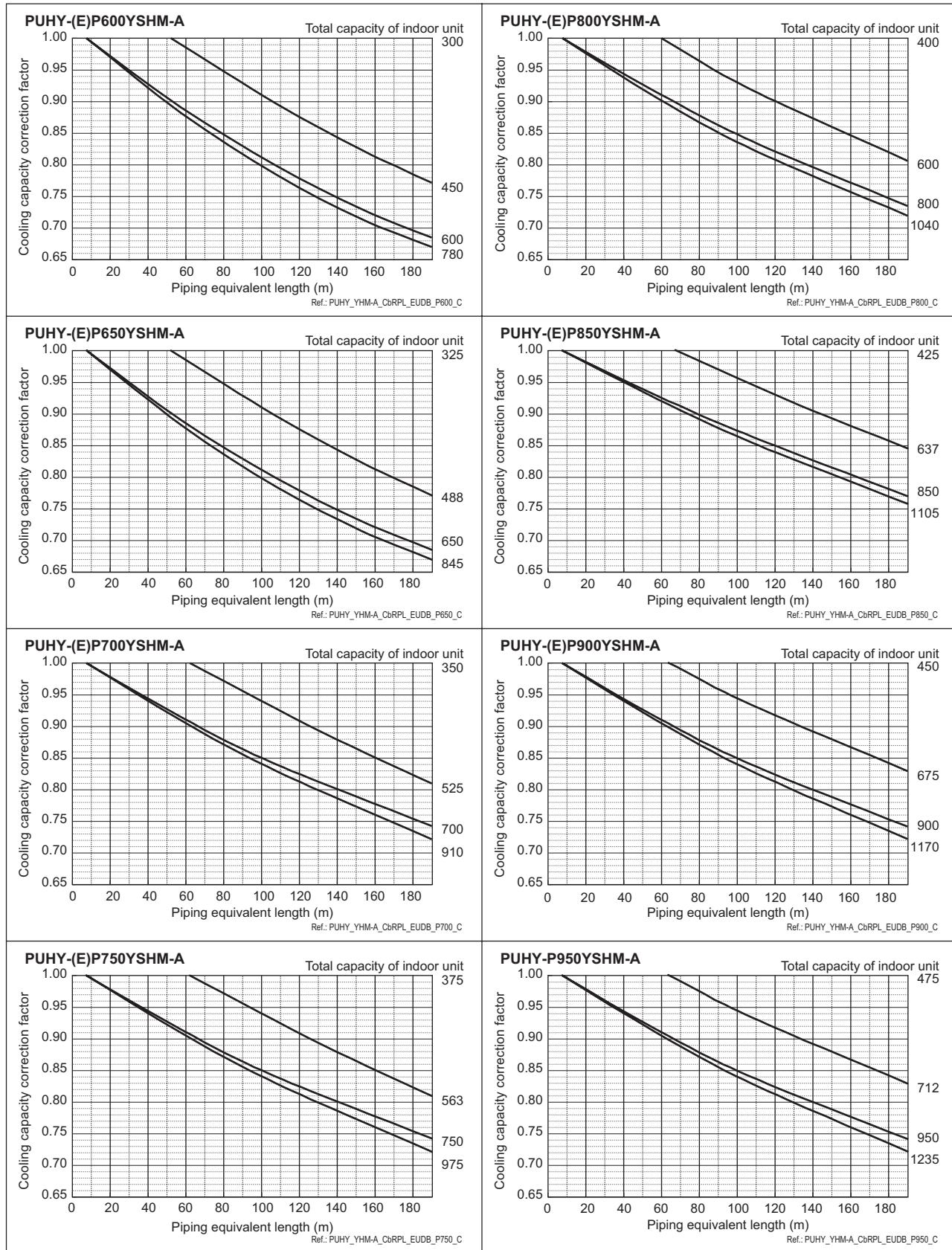


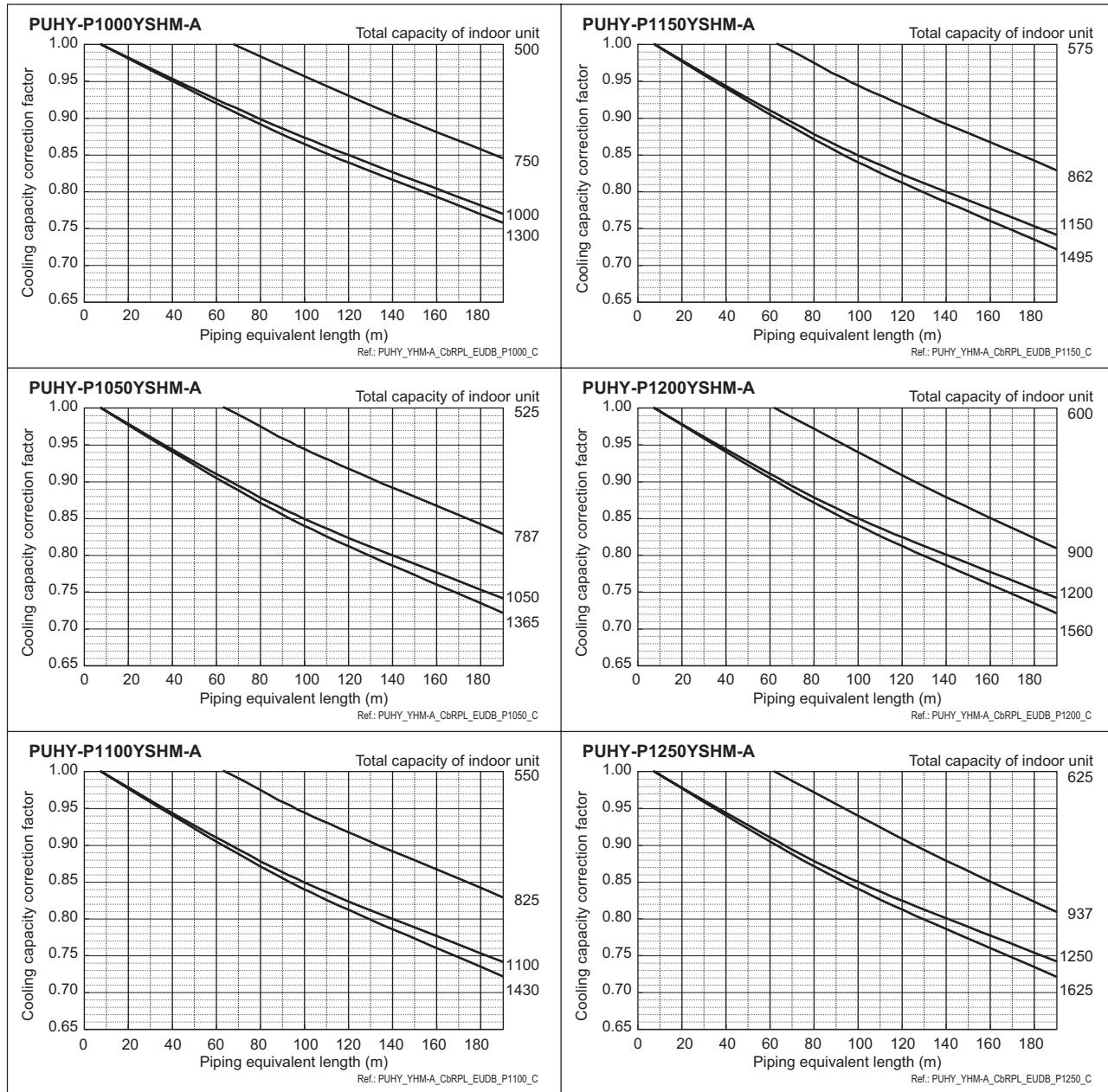
(2) Correction by refrigerant piping length

(2)-1 Y series

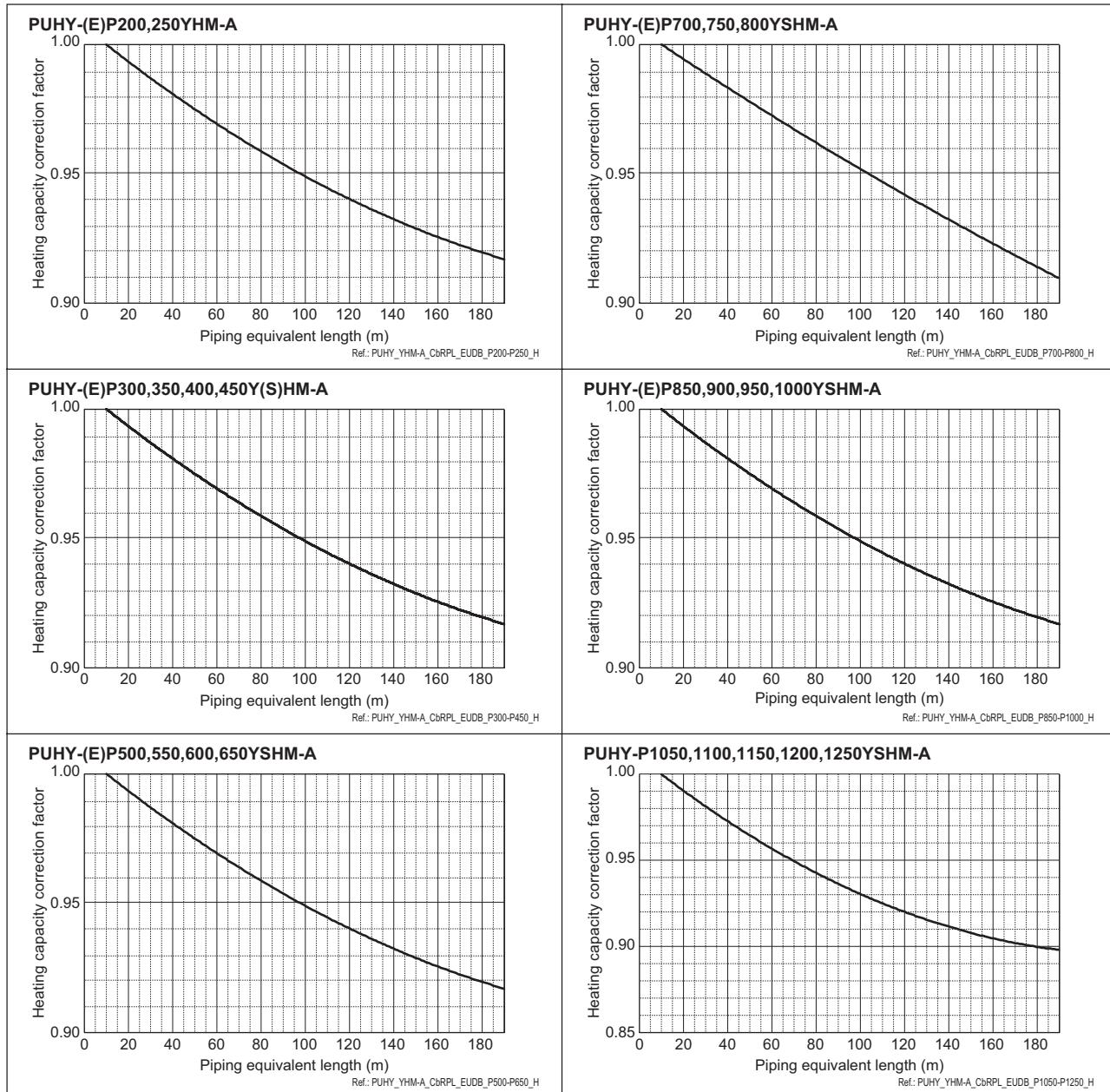
(2)-1-1 Cooling capacity correction





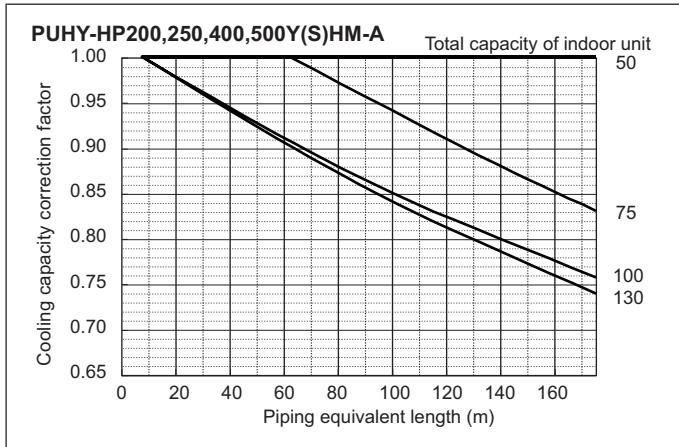


(2)-1-2 Heating capacity correction

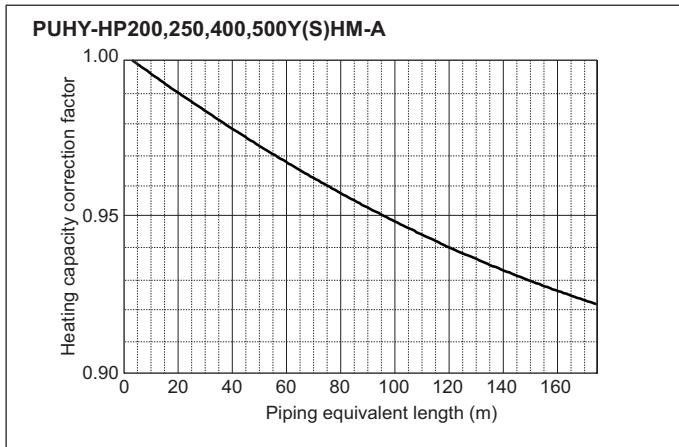


(2)-2 HP (ZUBADAN) series

(2)-2-1 Cooling capacity correction



(2)-2-2 Heating capacity correction



(2)-2-3 How to obtain the equivalent piping length

1 PUHY-HP200YHM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.35 x number of bends in the piping) m

2 PUHY-HP250YHM

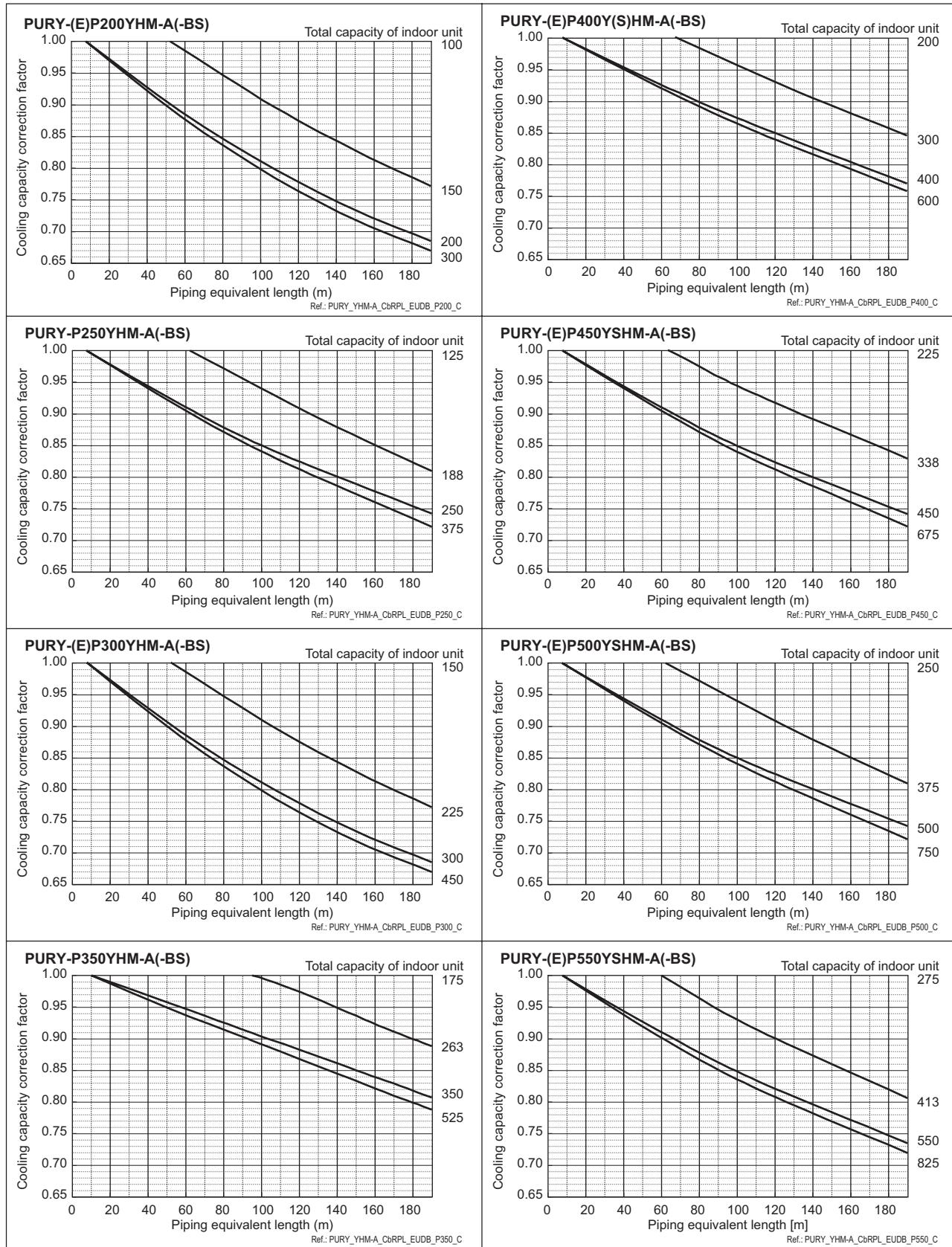
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.42 x number of bends in the piping) m

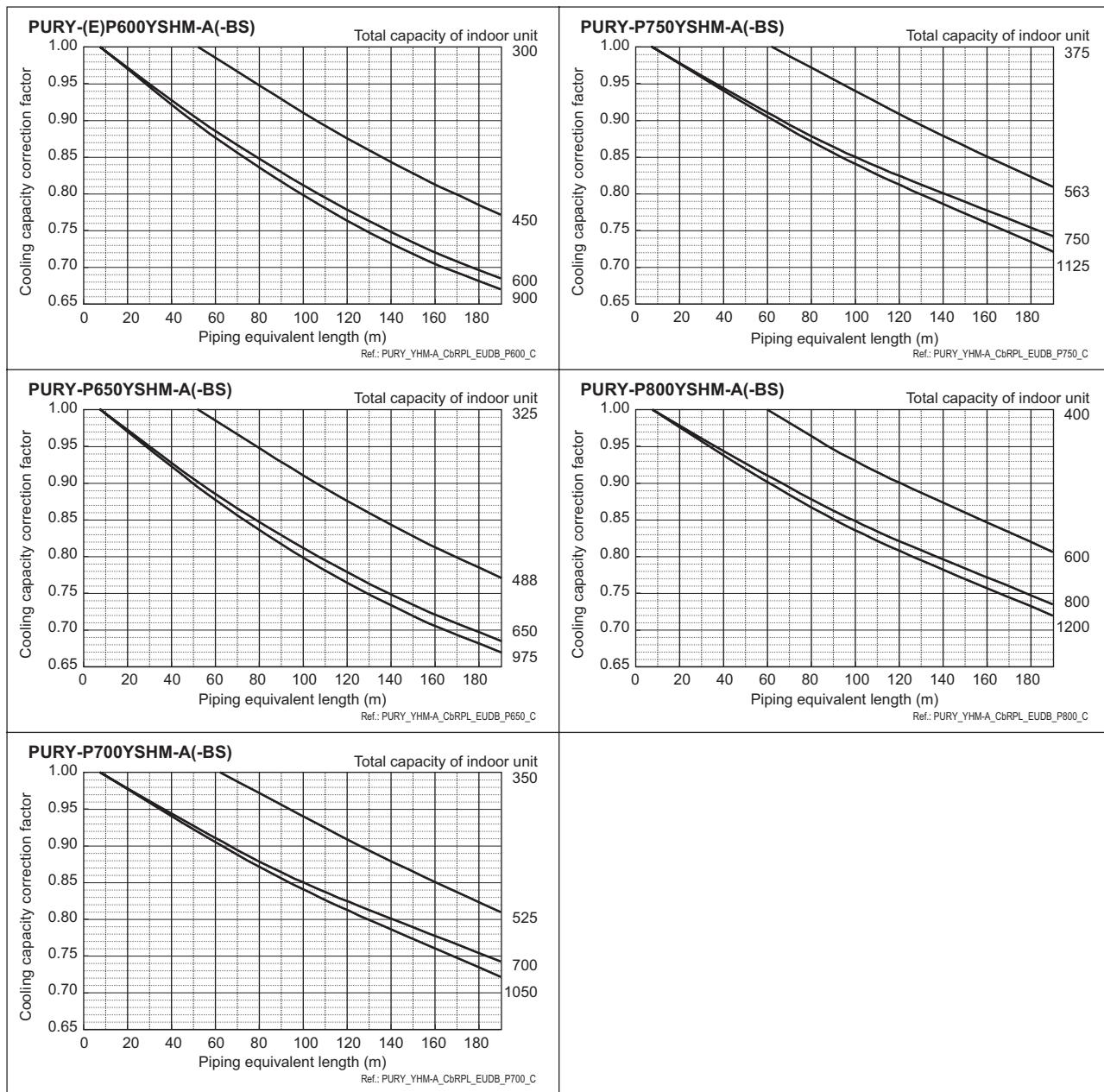
3 PUHY-HP400,500YSHM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.50 x number of bends in the piping) m

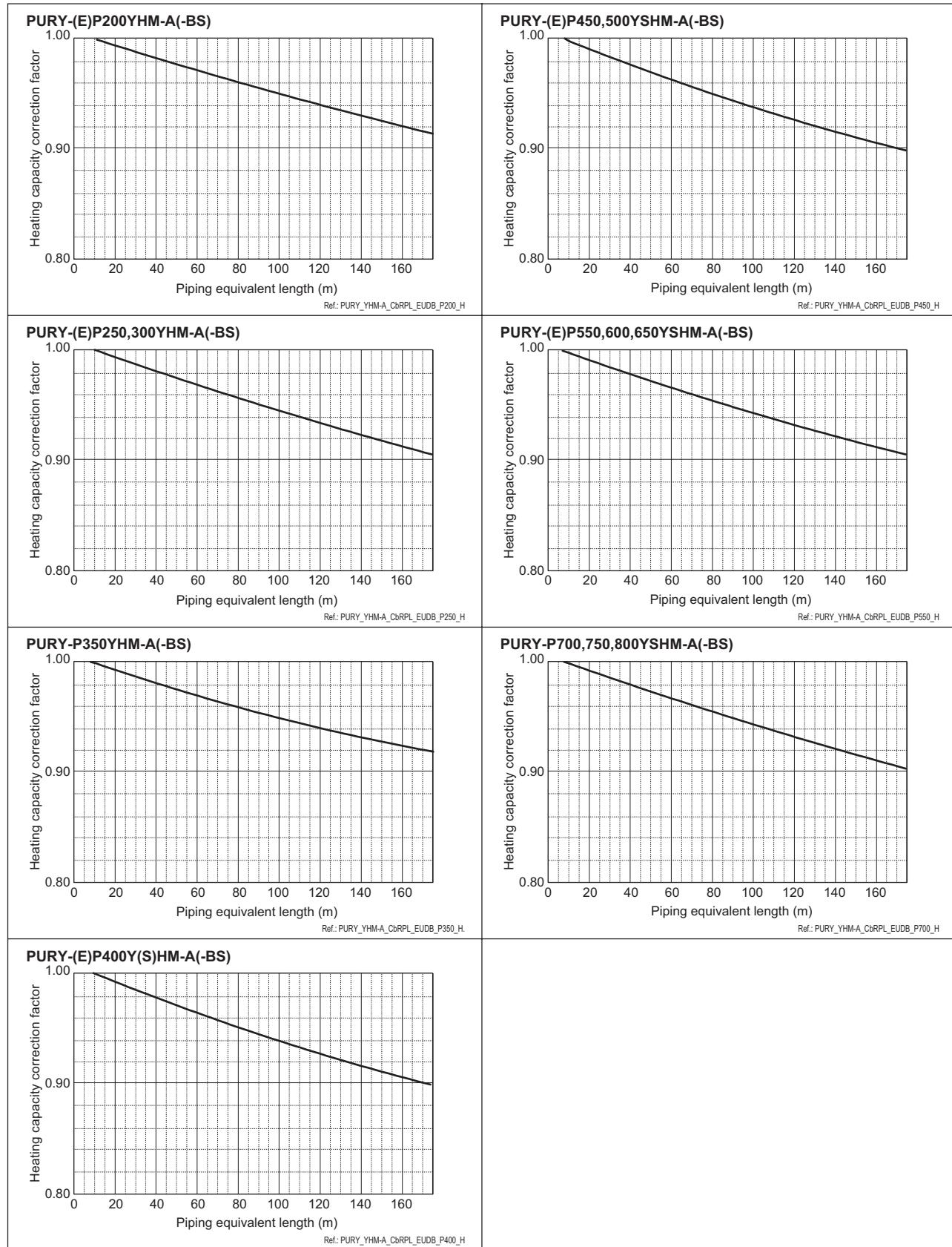
(2)-3 R2 series

(2)-3-1 Cooling capacity correction



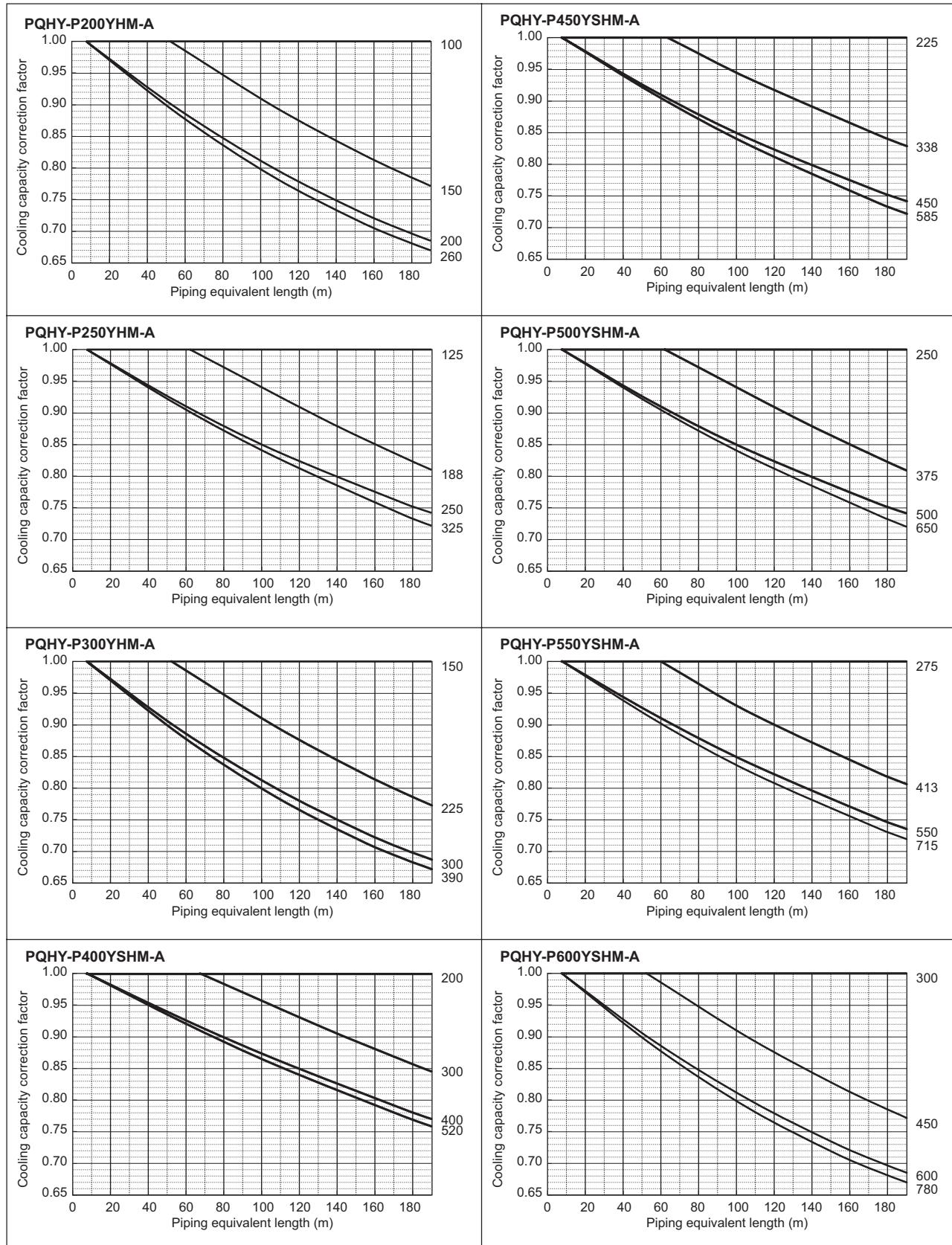


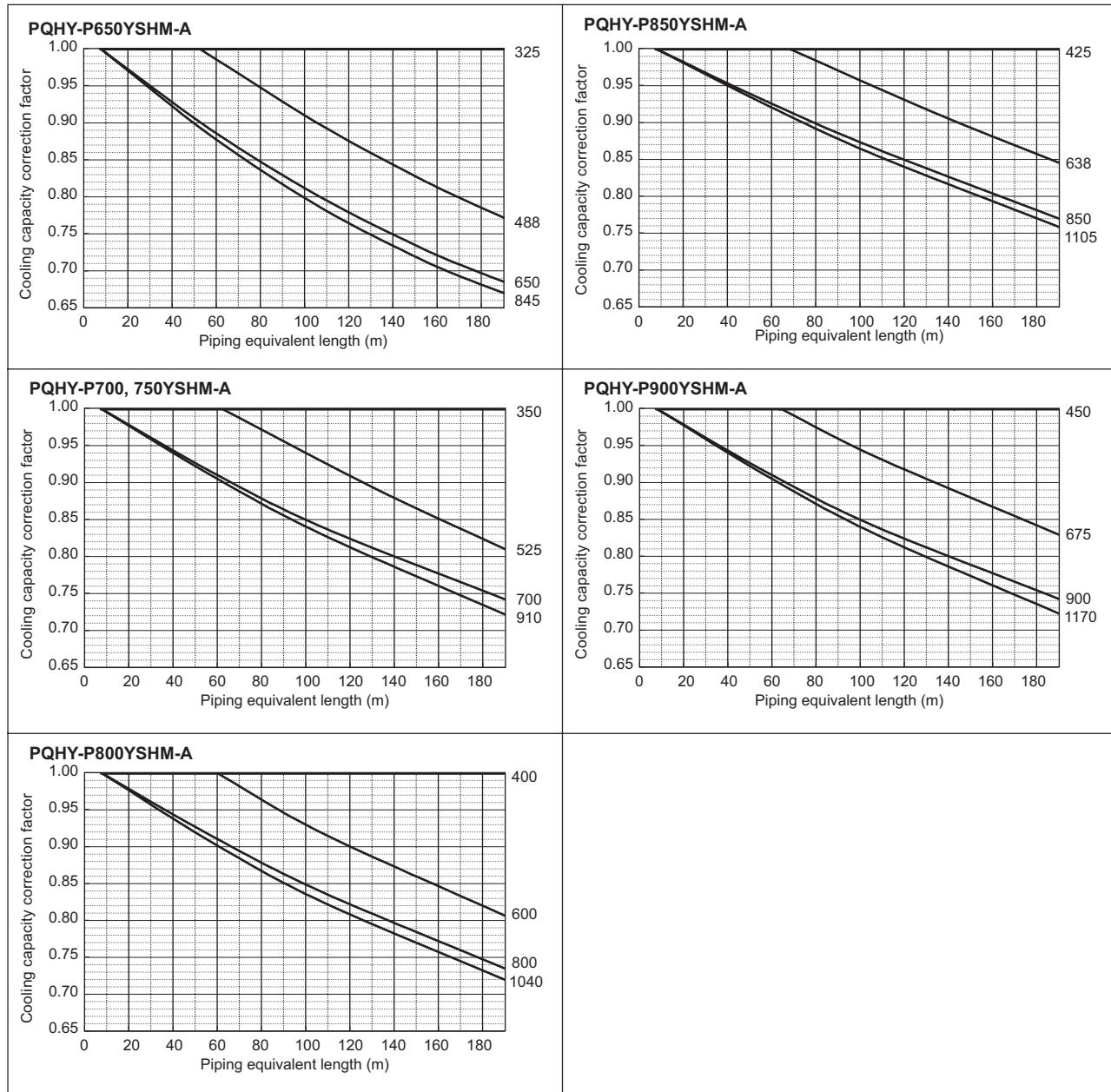
(2)-3-2 Heating capacity correction



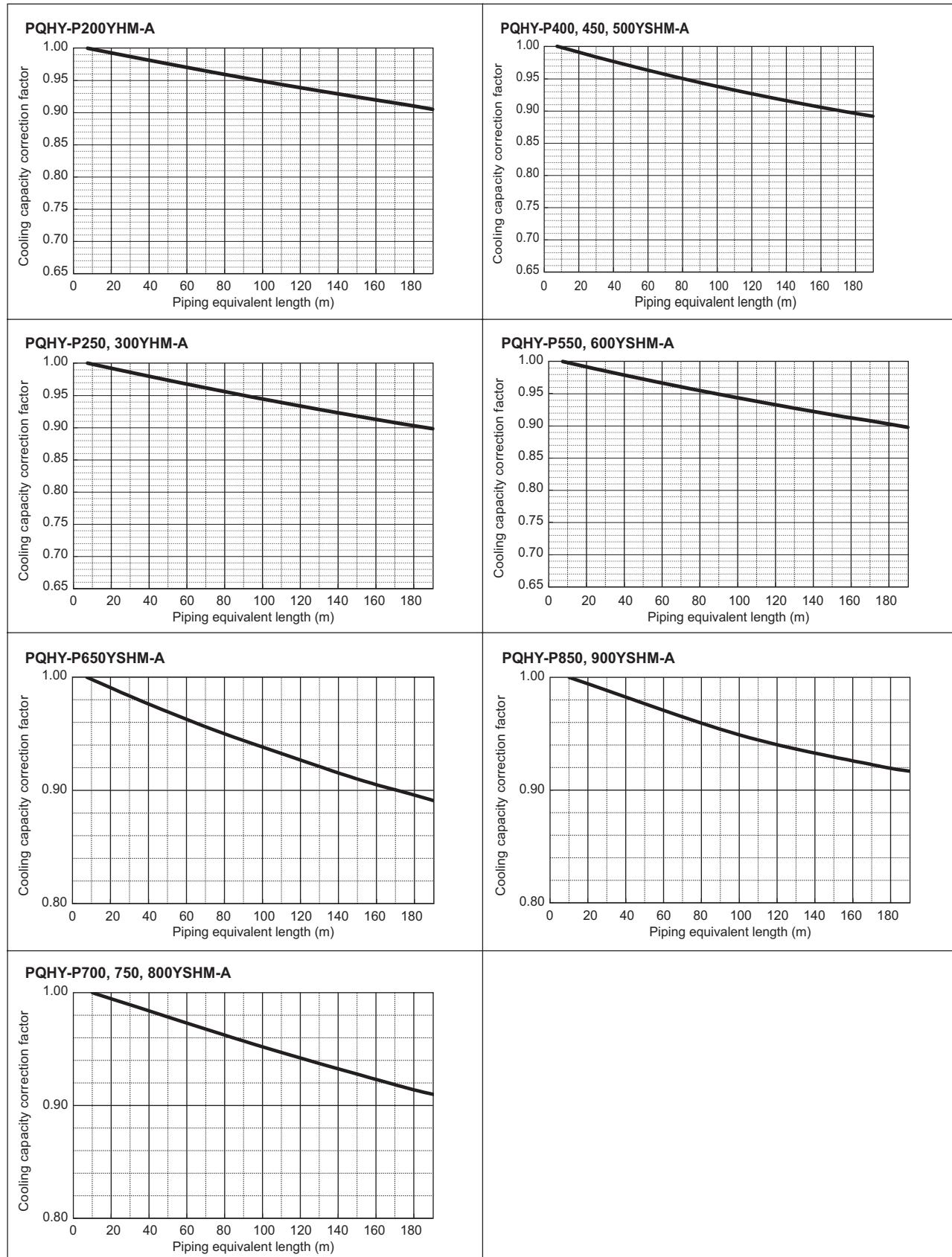
(2)-4 WY series

(2)-4-1 Cooling capacity correction





(2)-4-2 Heating capacity correction



(2)-4-3 How to obtain the equivalent piping length

1 PQHY-P200YHM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.35 x number of bends in the piping) m

2 PQHY-P250, 300YHM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.42 x number of bends in the piping) m

3 PQHY-P400, 450, 500, 550, 600, 650YSHM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.50 x number of bends in the piping) m

4 PQHY-P700, 750, 800YSHM

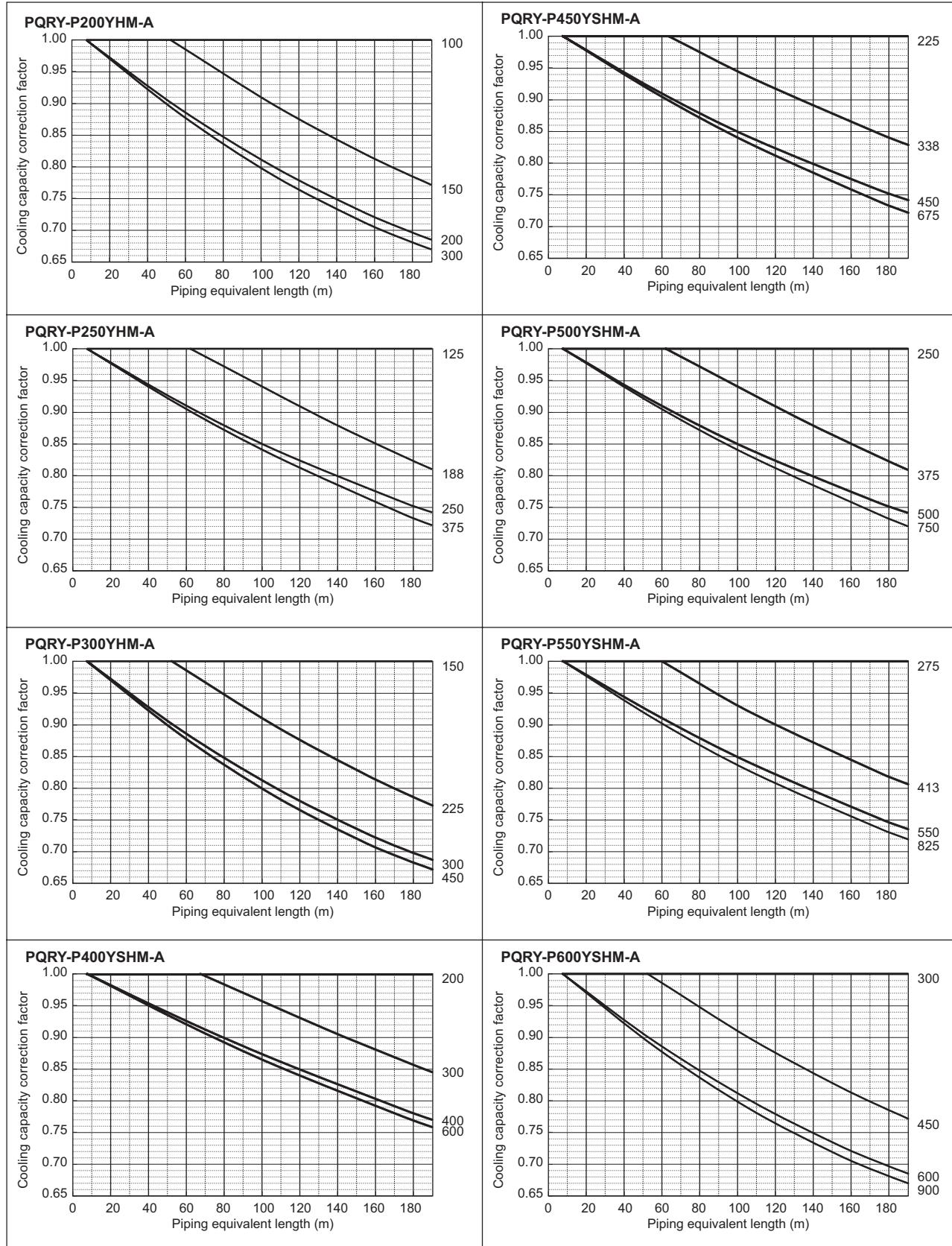
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.70 x number of bends in the piping) m

5 PQHY-P850, 900YSHM

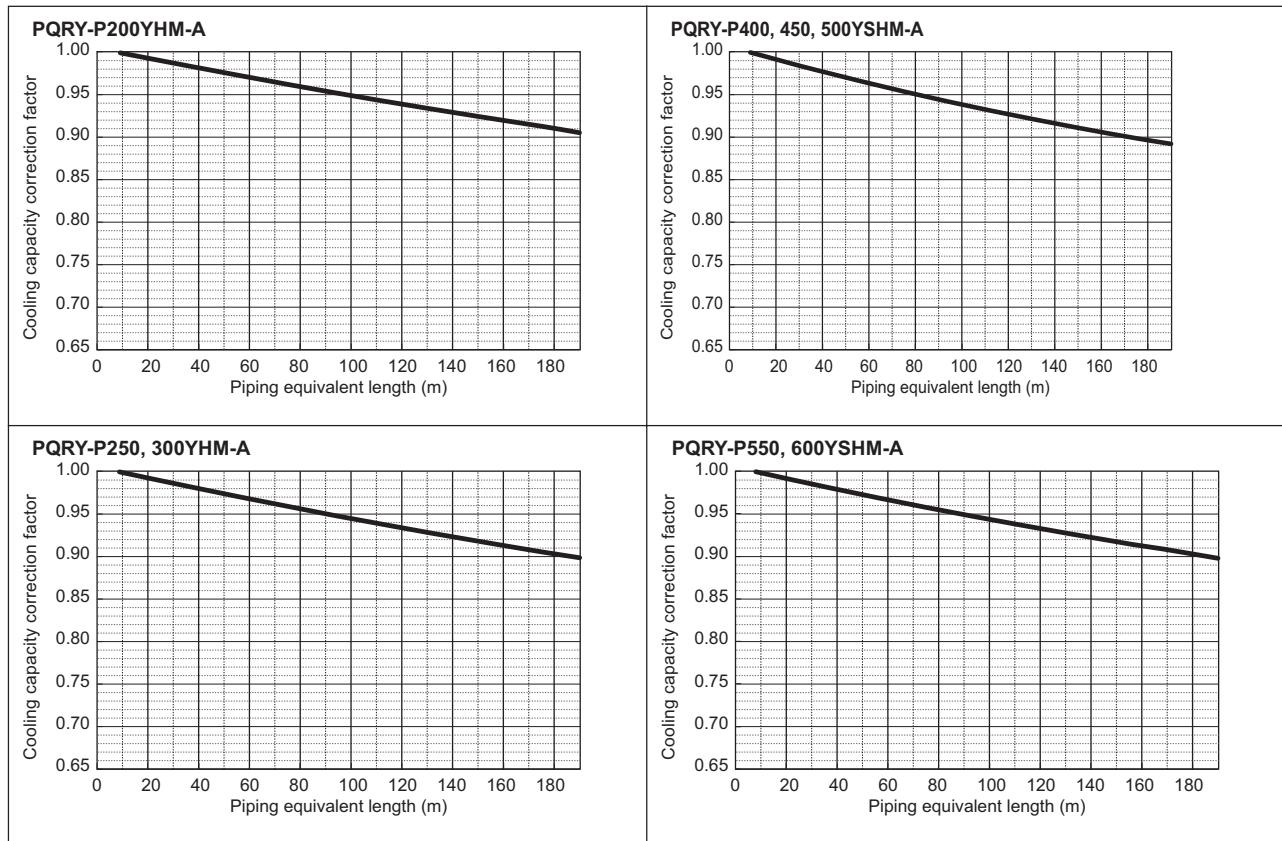
Equivalent length = (Actual piping length to the farthest indoor unit) + (0.80 x number of bends in the piping) m

(2)-5 WR2 series

(2)-5-1 Cooling capacity correction



(2)-5-2 Heating capacity correction



(2)-5-3 How to obtain the equivalent piping length

1 PQRY-P200YHM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.35 x number of bends in the piping) m

2 PQRY-P250, 300YHM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.42 x number of bends in the piping) m

3 PQRY-P400, 450, 500, 550, 600YSHM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.50 x number of bends in the piping) m

(2)-5-4 Correction by port counts of the BC controller

Indoor unit sizes P200 and P250 must be connected to 2 ports on the BC controller.

Indoor unit sizes from P100 to P140 should normally be connected to 2 ports on the BC controller (set BC controller DIP-SW 4-6 to its ON position).

In cases whereby indoor unit sizes from P100 to P140 are connected to only 1 port on the BC controller (set BC controller DIP-SW 4-6 to its OFF position), the cooling capacity of the indoor unit should be multiplied by a correction factor of **0.97**.

(3) Correction at frosting and defrosting

Due to frosting at the outdoor heat exchanger and the automatical defrosting operation, the heating capacity of the outdoor unit should be considered by multiplying the correction factor which shown in the table below.

(3)-1 Y series

Table of correction factor at frosting and defrosting

Outdoor inlet air temp. °C	6	4	2	1	0	-2	-4	-6	-8	-10	-20
Outdoor inlet air temp. °F	43	39	36	34	32	28	25	21	18	14	-4
PUHY-(E)P200YHM	1.00	0.95	0.84	0.83	0.83	0.87	0.90	0.95	0.95	0.95	0.95
PUHY-(E)P250YHM	1.00	0.95	0.84	0.83	0.83	0.87	0.90	0.95	0.95	0.95	0.95
PUHY-(E)P300YHM	1.00	0.93	0.82	0.80	0.82	0.86	0.90	0.90	0.95	0.95	0.95
PUHY-P350YHM	1.00	0.93	0.85	0.83	0.84	0.86	0.90	0.90	0.95	0.95	0.95
PUHY-(E)P400YHM	1.00	0.95	0.90	0.87	0.88	0.89	0.90	0.95	0.95	0.95	0.95
PUHY-(E)P450YHM	1.00	0.98	0.89	0.87	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PUHY-(E)P500YSHM	1.00	0.98	0.89	0.86	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PUHY-(E)P550YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-(E)P600YSHM	1.00	0.94	0.84	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-(E)P650YSHM	1.00	0.94	0.84	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-(E)P700YSHM	1.00	0.98	0.89	0.88	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PUHY-(E)P750YSHM	1.00	0.98	0.89	0.88	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PUHY-(E)P800YSHM	1.00	0.98	0.89	0.88	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PUHY-(E)P850YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-(E)P900YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-P950YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-P1000YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-P1050YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-P1100YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-P1150YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-P1200YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PUHY-P1250YSHM	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93

Ref: PUHY_YHM-A_CbFROST_EUDB_ALL

(3)-2 HP (ZUBADAN) series

Table of correction factor at frost and defrost

Outdoor inlet air temp. °C	6	4	2	1	0	-2	-4	-6	-8	-10	-25
Outdoor inlet air temp. °F	43	39	36	34	32	28	25	21	18	14	-13
PUHY-HP200,250,400,500Y(S)HM	1.00	0.95	0.85	0.85	0.85	0.87	0.87	0.87	0.87	0.92	0.95

(3)-3 R2 series

Table of correction factor at frosting and defrosting

Outdoor inlet air temp. °C	6	4	2	1	0	-2	-4	-6	-8	-10	-20
Outdoor inlet air temp. °F	43	39	36	34	32	28	25	21	18	14	-4
PURY-(E)P200YHM-A(-BS)	1.00	0.95	0.84	0.83	0.83	0.87	0.90	0.95	0.95	0.95	0.95
PURY-(E)P250YHM-A(-BS)	1.00	0.95	0.84	0.83	0.83	0.87	0.90	0.95	0.95	0.95	0.95
PURY-(E)P300YHM-A(-BS)	1.00	0.93	0.82	0.80	0.82	0.86	0.90	0.90	0.95	0.95	0.95
PURY-P350YHM-A(-BS)	1.00	0.93	0.85	0.83	0.84	0.86	0.90	0.90	0.95	0.95	0.95
PURY-(E)P400Y(S)HM-A(-BS)	1.00	0.95	0.90	0.87	0.88	0.89	0.90	0.95	0.95	0.95	0.95
PURY-(E)P450YSHM-A(-BS)	1.00	0.98	0.89	0.87	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PURY-(E)P500YSHM-A(-BS)	1.00	0.98	0.89	0.86	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PURY-(E)P550YSHM-A(-BS)	1.00	0.94	0.87	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PURY-(E)P600YSHM-A(-BS)	1.00	0.94	0.84	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PURY-P650YSHM-A(-BS)	1.00	0.94	0.84	0.86	0.87	0.88	0.90	0.90	0.93	0.93	0.93
PURY-P700YSHM-A(-BS)	1.00	0.98	0.89	0.88	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PURY-P750YSHM-A(-BS)	1.00	0.98	0.89	0.88	0.89	0.90	0.92	0.95	0.95	0.95	0.95
PURY-P800YSHM-A(-BS)	1.00	0.98	0.89	0.88	0.89	0.90	0.92	0.95	0.95	0.95	0.95

Ref.: PURY_YHM-A_CbFROST_EUDB_ALL

DATA BOOK **PWFY-P100VM-E-BU**
PWFY-P100VM-E-AU
PWFY-P200VM-E-AU

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<http://Global.MitsubishiElectric.com>