

AIR CONDITIONING SYSTEMS

CITY MULTI

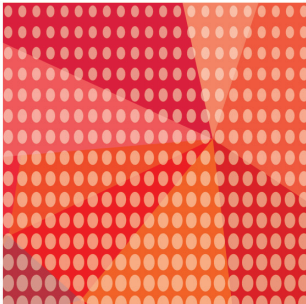


DATA BOOK

MODEL

PQRY-M72-336T(S)XU-A

PQRY-M72-336Y(S)XU-A



Water Cooled WR2-Series - 208-230V



Type(BTU/h)	72K	96K	120K
Model Name	PQR-M72TXU-A	PQR-M96TXU-A	PQR-M120TXU-A
Type(BTU/h)	144K	168K	192K
Model Name	PQR-M144TXU-A	PQR-M168TXU-A	PQR-M192TXU-A
Type(BTU/h)	216K	240K	
Model Name	PQR-M216TXU-A	PQR-M240TXU-A	

Water Cooled WR2-Series - 460V



Type(BTU/h)	72K	96K	120K
Model Name	PQR-M72YXU-A	PQR-M96YXU-A	PQR-M120YXU-A
Type(BTU/h)	144K	168K	192K
Model Name	PQR-M144YXU-A	PQR-M168YXU-A	PQR-M192YXU-A
Type(BTU/h)	216K	240K	
Model Name	PQR-M216YXU-A	PQR-M240YXU-A	



Type(BTU/h)	144K	168K	192K
Model Name	PQR-M144TSXU-A	PQR-M168TSXU-A	PQR-M192TSXU-A
Type(BTU/h)	216K	240K	288K
Model Name	PQR-M216TSXU-A	PQR-M240TSXU-A	PQR-M288TSXU-A
Type(BTU/h)	312K	336K	
Model Name	PQR-M312TSXU-A	PQR-M336TSXU-A	



Type(BTU/h)	144K	168K	192K
Model Name	PQR-M144YSXU-A	PQR-M168YSXU-A	PQR-M192YSXU-A
Type(BTU/h)	216K	240K	288K
Model Name	PQR-M216YSXU-A	PQR-M240YSXU-A	PQR-M288YSXU-A
Type(BTU/h)	312K	336K	
Model Name	PQR-M312YSXU-A	PQR-M336YSXU-A	

PQRY-M-T(S)XU-A, PQRY-M-Y(S)XU-A

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PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M72TXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 208-230V ±10% 60Hz			
Cooling capacity (Nominal)		*1	BTU/h	72,000		
			kW	21.1		
(208-230)	Power input		kW	3.43		
	Current input		A	10.5-9.5		
	(Rated)		BTU/h	69,000		
			kW	20.2		
		Power input		kW	3.48	3.65
		Current input		A	10.7-9.7	11.2-10.1
Temp. range of cooling	Indoor		W.B.	59~75°F (15~24°C)		
	Inlet water		F	50~113°F (10~45°C)		
Heating capacity (Nominal)		*2	BTU/h	80,000		
			kW	23.4		
(208-230)	Power input		kW	3.38		
	Current input		A	10.4-9.4		
	(Rated)		BTU/h	76,000		
			kW	22.3		
		Power input		kW	3.01	3.12
		Current input		A	9.2-8.3	9.6-8.7
Temp. range of heating	Indoor		D.B.	59~81°F (15~27°C)		
	Inlet water		F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity		50%~150% of heat source unit capacity			
	Model/Maximum quantity		M04~M96/14			
Sound power level (measured in anechoic room)			*3	dB(A)	60.5	
Refrigerant piping diameter	High pressure		in. (mm)	5/8 (15.88) Brazed		
	Low pressure		in. (mm)	3/4 (19.05) Brazed		
Minimum Circuit Ampacity			A	16-14		
Maximum Overcurrent Protection			A	25-25		
Circulating water	Water flow rate		G/h	1,440		
			G/min	24		
			m³/h	5.45		
			L/min	91		
			cfm	3.2		
			psi	3.48		
	Pressure drop		kPa	24		
		Operating volume range		G/h	793 ~ 1,902	
			G/min	13.2 ~ 31.7		
			m³/h	3.0 ~ 7.2		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1			
	Starting method		Inverter			
	Motor output		kW	3.0		
	Case heater		kW	0.045		
	Lubricant			MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>			
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16			
		mm	1,450 x 880 x 550			
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
	Inverter circuit		Over-heat protection, Over-current protection			
	Compressor		Over-heat protection			
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)			
	Control		Indoor LEV and BC controller			
Net weight		lbs (kg)	492 (223)			
Heat exchanger			plate type			
	Water volume in plate	G	1.22			
		l	4.6			
	Water pressure Max.	psi	290			
		MPa	2.0			
HIC circuit (HIC: Heat Inter-Changer)			-			
Drawing	External		KB94CAJP			
	Wiring		KE94L602			
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts			joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV			
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

Heat Source Model			PQRY-M96TXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz		
Cooling capacity (Nominal)	*1	BTU/h	96,000		
		kW	28.1		
			5.18		
	(208-230)	Power input	15.9-14.4		
		Current input	A		
			15.9-14.4		
	(Rated)	BTU/h	92,000		
		kW	27.0		
			5.19		
	(208-230)	Power input	4.82		
Current input		14.8-13.4			
		16.0-14.4			
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	108,000		
		kW	31.7		
			4.81		
	(208-230)	Power input	14.8-13.4		
		Current input	A		
			14.8-13.4		
	(Rated)	BTU/h	103,000		
		kW	30.2		
			4.28		
	(208-230)	Power input	4.25		
Current input		13.1-11.8			
		13.2-11.9			
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity	50%~150% of heat source unit capacity			
	Model/Maximum quantity	M04~M96/19			
Sound power level (measured in anechoic room)		*3 dB(A)	65.0		
Refrigerant piping diameter	High pressure	in. (mm)	3/4 (19.05) Braze		
	Low pressure	in. (mm)	7/8 (22.2) Braze		
Minimum Circuit Ampacity		A	24-22		
Maximum Overcurrent Protection		A	40-35		
Circulating water	Water flow rate	G/h	1,522		
		G/min	25.4		
		m ³ /h	5.76		
		L/min	96		
		cfm	3.4		
	Pressure drop	psi	3.48		
		kPa	24		
	Operating volume range	G/h	793 ~ 1,902		
		G/min	13.2 ~ 31.7		
		m ³ /h	3.0 ~ 7.2		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		
	Starting method		Inverter		
	Motor output	kW	4.5		
	Case heater	kW	0.045		
	Lubricant		MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
	Inverter circuit		Over-heat protection, Over-current protection		
	Compressor		Over-heat protection		
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		
	Control		Indoor LEV and BC controller		
Net weight		lbs (kg)	490 (222)		
Heat exchanger			plate type		
	Water volume in plate	G	1.22		
		l	4.6		
	Water pressure Max.	psi	290		
		MPa	2.0		
HIC circuit (HIC: Heat Inter-Changer)			-		
Drawing	External		KB94CAJP		
	Wiring		KE94L602		
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			Joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R170M-E, PAC-KA01PS-E, CMY-R201, 202, 306S-G, CMY-R303, 304S-G1 Main BC controller: CMB-M104, 106, 108, 1012NU-MA-SV Sub BC controller: CMB-M104, 108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		
			Unit converter BTU/h =kW x 3.412 cfm =m ³ /min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.		

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M120TXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz		
Cooling capacity (Nominal)		*1	BTU/h	120,000	
			kW	35.2	
(208-230)	Power input		kW	7.21	
	Current input		A	22.2-20.1	
(Rated)			BTU/h	115,000	
			kW	33.7	
(208-230)	Power input		kW	7.16	7.54
	Current input		A	22.0-19.9	23.2-21.0
Temp. range of cooling		Indoor	W.B.	59~75°F (15~24°C)	
		Inlet water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal)		*2	BTU/h	135,000	
			kW	39.6	
(208-230)	Power input		kW	6.12	
	Current input		A	18.8-17.0	
(Rated)			BTU/h	129,000	
			kW	37.8	
(208-230)	Power input		kW	5.48	5.79
	Current input		A	16.9-15.2	17.8-16.1
Temp. range of heating		Indoor	D.B.	59~81°F (15~27°C)	
		Inlet water	°F	50~113°F (10~45°C)	
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity		
		Model/Maximum quantity	M04~M96/24		
Sound power level (measured in anechoic room)		*3	dB(A)	71.0	
Refrigerant piping diameter	High pressure		in. (mm)	3/4 (19.05) Brazed	
	Low pressure		in. (mm)	7/8 (22.2) Brazed	
Minimum Circuit Ampacity			A	33-30	
Maximum Overcurrent Protection			A	50-50	
Circulating water	Water flow rate		G/h	1,522	
			G/min	25.4	
			m³/h	5.76	
			L/min	96	
			cfm	3.4	
	Pressure drop		psi	3.48	
			kPa	24	
	Operating volume range		G/h	793 ~ 1,902	
			G/min	13.2 ~ 31.7	
			m³/h	3.0 ~ 7.2	
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1			
	Starting method	Inverter			
	Motor output		kW	6.2	
	Case heater		kW	0.045	
Lubricant		MEL46			
External finish			Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
	Inverter circuit	Over-heat protection, Over-current protection			
Compressor	Over-heat protection				
	Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)			
Refrigerant	Control	Indoor LEV and BC controller			
	Net weight		lbs (kg)	490 (222)	
Heat exchanger		Water volume in plate		plate type	
			G	1.22	
		l	4.6		
		Water pressure Max.		psi	290
	MPa		2.0		
HIC circuit (HIC: Heat Inter-Changer)			-		
Drawing	External	KB94CAJP			
	Wiring	KE94L602			
Standard attachment	Document	Installation Manual			
	Accessory	Details refer to External Drw			
Optional parts			joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.		

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(s)XU-A, Y(s)XU-A

Heat Source Model			PQRY-M144TXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz		
Cooling capacity		*1	BTU/h		
(Nominal)			144,000		
			kW		
			42.2		
			9.30		
(208-230)		Current input	A		
			28.6-25.9		
(Rated)			BTU/h		
			138,000		
			kW		
			40.4		
(208-230)		Power input	kW		
			9.15		
		Current input	A		
			28.2-25.5		
			9.71		
			29.9-27.0		
Temp. range of cooling		Indoor	W.B.		
			59~75°F (15~24°C)		
		Inlet water	F		
			50~113°F (10~45°C)		
Heating capacity		*2	BTU/h		
(Nominal)			160,000		
			kW		
			46.9		
			7.44		
(208-230)		Current input	A		
			22.9-20.7		
(Rated)			BTU/h		
			152,000		
			kW		
			44.5		
(208-230)		Power input	kW		
			6.38		
		Current input	A		
			19.6-17.7		
			6.96		
			21.4-19.4		
Temp. range of heating		Indoor	D.B.		
			59~81°F (15~27°C)		
		Inlet water	F		
			50~113°F (10~45°C)		
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity		
		Model/Maximum quantity	M04~M96/29		
Sound power level (measured in anechoic room)		*3	dB(A)		
			68.0		
Refrigerant		High pressure	in. (mm)		
			7/8 (22.2) Brazed		
piping diameter		Low pressure	in. (mm)		
			1-1/8 (28.58) Brazed		
Minimum Circuit Ampacity		A	42-38		
Maximum Overcurrent Protection		A	70-60		
Circulating water		Water flow rate	G/h		
			1,902		
			G/min		
			31.7		
			m³/h		
			7.20		
			L/min		
			120		
			cfm		
			4.2		
		Pressure drop	psi		
			6.38		
			kPa		
			44		
		Operating volume range	G/h		
			1,189 ~ 3,054		
			G/min		
			19.8 ~ 50.9		
			m³/h		
			4.5 ~ 11.6		
Compressor		Type x Quantity	Inverter scroll hermetic compressor x 1		
		Starting method	Inverter		
		Motor output	kW		
			8.0		
		Case heater	kW		
			0.045		
		Lubricant	MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices		High pressure protection	High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
		Inverter circuit	Over-heat protection, Over-current protection		
		Compressor	Over-heat protection		
Refrigerant		Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)		
		Control	Indoor LEV and BC controller		
Net weight		lbs (kg)	499 (226)		
Heat exchanger			plate type		
		Water volume in plate	G		
			1.22		
			l		
			4.6		
		Water pressure Max.	psi		
			290		
			MPa		
			2.0		
HIC circuit (HIC: Heat Inter-Changer)			-		
Drawing		External	KB94CAJP		
		Wiring	KE94L602		
Standard attachment		Document	Installation Manual		
		Accessory	Details refer to External Drw		
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R170M-E, PAC-KA01PS-E, CMY-R201, 202, 306S-G, CMY-R303, 304S-G1 Main BC controller: CMB-M104, 106, 108, 1012NU-MA-SV Sub BC controller: CMB-M104, 108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.		

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M168TXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 208-230V ±10% 60Hz			
Cooling capacity (Nominal)		*1	BTU/h	168,000		
			kW	49.2		
(208-230)		Power input	kW	11.87		
		Current input	A	36.6-33.1		
(Rated)			BTU/h	160,000		
			kW	46.9		
(208-230)		Power input	kW	11.58	12.12	
		Current input	A	35.7-32.2	37.3-33.8	
Temp. range of cooling		Indoor	W.B.	59~75°F (15~24°C)		
		Inlet water	°F	50~113°F (10~45°C)		
Heating capacity (Nominal)		*2	BTU/h	188,000		
			kW	55.1		
(208-230)		Power input	kW	9.85		
		Current input	A	30.3-27.4		
(Rated)			BTU/h	178,000		
			kW	52.2		
(208-230)		Power input	kW	8.38	9.11	
		Current input	A	25.8-23.3	28.0-25.4	
Temp. range of heating		Indoor	D.B.	59~81°F (15~27°C)		
		Inlet water	°F	50~113°F (10~45°C)		
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity			
		Model/Maximum quantity	M04~M96/34			
Sound power level (measured in anechoic room)		*3	dB(A)	72.0		
Refrigerant piping diameter		High pressure	in. (mm)	7/8 (22.2) Brazed		
		Low pressure	in. (mm)	1-1/8 (28.58) Brazed		
Minimum Circuit Ampacity		A	48-48			
Maximum Overcurrent Protection		A	80-80			
Circulating water		Water flow rate	G/h	1,902		
			G/min	31.7		
			m³/h	7.20		
			L/min	120		
			cfm	4.2		
		Pressure drop	psi	6.38		
			kPa	44		
		Operating volume range	G/h	1,189 ~ 3,054		
			G/min	19.8 ~ 50.9		
			m³/h	4.5 ~ 11.6		
Compressor		Type x Quantity	Inverter scroll hermetic compressor x 1			
		Starting method	Inverter			
		Motor output	kW	10.3		
		Case heater	kW	0.045		
Lubricant		MEL46				
External finish			Powder coating <MUNSELL 5Y 8/1>			
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16			
		mm	1,450 x 880 x 550			
Protection devices		High pressure protection	High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
		Inverter circuit	Over-heat protection, Over-current protection			
Compressor		Over-heat protection				
Refrigerant		Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)			
		Control	Indoor LEV and BC controller			
Net weight		lbs (kg)	499 (226)			
Heat exchanger		plate type				
		Water volume in plate	G	1.22		
			l	4.6		
		Water pressure Max.	psi	290		
MPa	2.0					
HIC circuit (HIC: Heat Inter-Changer)			-			
Drawing		External	KB94CAJP			
		Wiring	KE94L602			
Standard attachment		Document	Installation Manual			
		Accessory	Details refer to External Drw			
Optional parts		joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1				
		Main BC controller: CMB-M104,106,108,1012NU-MA-SV				
		Sub BC controller: CMB-M104,108NU-MB-SV				
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).				
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)			Unit converter	
					BTU/h	=kW x 3.412
					cfm	=m³/min x 35.31
		lbs	=kg/0.4536			
		*Above specification data is subject to rounding variation.				

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(s)XU-A, Y(s)XU-A

Heat Source Model			PQRY-M192TXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz		
Cooling capacity		*1	BTU/h		
(Nominal)			192,000		
			kW		
			56.3		
		Power input	kW		
			14.66		
(208-230)		Current input	A		
			45.2-40.8		
(Rated)			BTU/h		
			184,000		
			kW		
			53.9		
		Power input	kW		
			14.73		
(208-230)		Current input	A		
			45.4-41.0		
			14.47		
			44.6-40.3		
Temp. range of cooling		Indoor	W.B.		
			59~75°F (15~24°C)		
		Inlet water	F		
			50~113°F (10~45°C)		
Heating capacity		*2	BTU/h		
(Nominal)			215,000		
			kW		
			63.0		
		Power input	kW		
			12.10		
(208-230)		Current input	A		
			37.3-33.7		
(Rated)			BTU/h		
			204,000		
			kW		
			59.8		
		Power input	kW		
			10.38		
(208-230)		Current input	A		
			32.0-28.9		
			10.79		
			33.2-30.0		
Temp. range of heating		Indoor	D.B.		
			59~81°F (15~27°C)		
		Inlet water	F		
			50~113°F (10~45°C)		
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity		
		Model/Maximum quantity	M04-M96/39		
Sound power level (measured in anechoic room)		*3	dB(A)		
			73.0		
Refrigerant piping diameter		High pressure	in. (mm)		
			7/8 (22.2) Brazed		
		Low pressure	in. (mm)		
			1-1/8 (28.58) Brazed		
Minimum Circuit Ampacity		A	52-52		
Maximum Overcurrent Protection		A	90-90		
Circulating water		Water flow rate	G/h		
			1,902		
			G/min		
			31.7		
			m³/h		
			7.20		
			L/min		
			120		
			cfm		
			4.2		
		Pressure drop	psi		
			6.38		
			kPa		
			44		
		Operating volume range	G/h		
			1,189 ~ 3,054		
			G/min		
			19.8 ~ 50.9		
			m³/h		
			4.5 ~ 11.6		
Compressor		Type x Quantity	Inverter scroll hermetic compressor x 1		
		Starting method	Inverter		
		Motor output	kW		
			12.7		
		Case heater	kW		
			0.045		
		Lubricant	MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices		High pressure protection	High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
		Inverter circuit	Over-heat protection, Over-current protection		
		Compressor	Over-heat protection		
Refrigerant		Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)		
		Control	Indoor LEV and BC controller		
Net weight		lbs (kg)	497 (225)		
Heat exchanger			plate type		
		Water volume in plate	G		
			1.22		
			l		
			4.6		
		Water pressure Max.	psi		
			290		
			MPa		
			2.0		
HIC circuit (HIC: Heat Inter-Changer)			-		
Drawing		External	KB94CAJP		
		Wiring	KE94L602		
Standard attachment		Document	Installation Manual		
		Accessory	Details refer to External Drw		
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R170M-E, PAC-KA01PS-E, CMY-R201, 202, 203, 204, 306S-G, CMY-R303, 304S-G1 Main BC controller: CMB-M104, 106, 108, 1012NU-MA-SV Sub BC controller: CMB-M104, 108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.		

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M216TXU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz	
Cooling capacity (Nominal)	(208-230)	*1 BTU/h	216,000	
		kW	63.3	
		Power input kW	15.23	
		Current input A	46.9-42.4	
		(Rated)		
	(208-230)	BTU/h	206,000	
		kW	60.4	
		Power input kW	17.55	16.74
		Current input A	54.1-48.9	51.6-46.6
		(Rated)		
Temp. range of cooling	Indoor	W.B.		
	Inlet water	F		
Heating capacity (Nominal)	(208-230)	*2 BTU/h	243,000	
		kW	71.2	
		Power input kW	12.66	
		Current input A	39.0-35.3	
		(Rated)		
	(208-230)	BTU/h	232,000	
		kW	68.0	
		Power input kW	11.61	12.43
		Current input A	35.8-32.3	38.3-34.6
		(Rated)		
Temp. range of heating	Indoor	D.B.		
	Inlet water	F		
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity	
Model/Maximum quantity		M04-M96/44		
Sound power level (measured in anechoic room)			*3 dB(A)	72.5
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed	
Minimum Circuit Ampacity		A	61-61	
Maximum Overcurrent Protection		A	100-100	
Circulating water	Water flow rate	G/h	3,044	
		G/min	50.7	
		m³/h	11.52	
		L/min	192	
		cfm	6.8	
	Pressure drop	psi	6.53	
		kPa	45	
	Operating volume range	G/h	1,585 ~ 3,804	
		G/min	26.4 ~ 63.4	
		m³/h	6.0 ~ 14.4	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	
	Starting method		Inverter	
	Motor output	kW	13.2	
	Case heater	kW	0.048	
	Lubricant	MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	
Refrigerant	Type x original charge		R32 x 16 lbs + 9 oz (7.5 kg)	
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	563 (255)	
Heat exchanger			plate type	
			2.43	
			9.2	
			290	
			2.0	
HIC circuit (HIC: Heat Inter-Changer)			-	
Drawing	External		KB94CAJP	
	Wiring		KE94L602	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV	
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).	
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)	
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(s)XU-A, Y(s)XU-A

Heat Source Model			PQRY-M240TXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 208-230V ±10% 60Hz			
Cooling capacity (Nominal)	*1		BTU/h			
			240,000			
			kW			
			70.3			
	(208-230)	Power input	kW			
			18.27			
	(208-230)	Current input	A			
			56.3-50.9			
	(Rated)			BTU/h		
				230,000		
(208-230)			kW			
			67.4			
	Power input	kW				
		20.20			20.18	
	Current input	A				
		62.2-56.3			62.2-56.2	
	Temp. range of cooling	Indoor	W.B.			
		Inlet water	F			
				59~75°F (15~24°C)		
				50~113°F (10~45°C)		
Heating capacity (Nominal)	*2		BTU/h			
			270,000			
			kW			
			79.1			
	(208-230)	Power input	kW			
			15.24			
	(208-230)	Current input	A			
			47.0-42.5			
	(Rated)			BTU/h		
				258,000		
(208-230)			kW			
			75.6			
	Power input	kW				
		13.54			14.40	
	Current input	A				
		41.7-37.7			44.4-40.1	
	Temp. range of heating	Indoor	D.B.			
		Inlet water	F			
				59~81°F (15~27°C)		
				50~113°F (10~45°C)		
Indoor unit connectable	Total capacity		50%~150% of heat source unit capacity			
	Model/Maximum quantity		M04~M96/49			
Sound power level (measured in anechoic room) *3			dB(A)			
			74.0			
Refrigerant piping diameter	High pressure	in. (mm)		7/8 (22.2) Brazed		
	Low pressure	in. (mm)		1-3/8 (34.93) Brazed		
Minimum Circuit Ampacity			A			
			61-61			
Maximum Overcurrent Protection			A			
			100-100			
Circulating water	Water flow rate	G/h		3,044		
		G/min		50.7		
		m³/h		11.52		
		L/min		192		
		cfm		6.8		
	Pressure drop	psi		6.53		
		kPa		45		
	Operating volume range	G/h		1,585 ~ 3,804		
		G/min		26.4 ~ 63.4		
		m³/h		6.0 ~ 14.4		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1			
	Starting method		Inverter			
	Motor output		kW			
	Case heater		kW			
	Lubricant		MEL46			
External finish			Powder coating <MUNSELL 5Y 8/1>			
External dimension H x W x D			in.			
			mm			
			57-1/8 x 34-11/16 x 21-11/16			
			1,450 x 880 x 550			
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
	Inverter circuit		Over-heat protection, Over-current protection			
	Compressor		Over-heat protection			
Refrigerant	Type x original charge		R32 x 16 lbs + 9 oz (7.5 kg)			
	Control		Indoor LEV and BC controller			
Net weight			lbs (kg)			
			563 (255)			
Heat exchanger			plate type			
	Water volume in plate	G	2.43			
		l	9.2			
	Water pressure Max.	psi	290			
		MPa	2.0			
HIC circuit (HIC: Heat Inter-Changer)			-			
Drawing	External		KB94CAJP			
	Wiring		KE94L602			
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R170M-E, PAC-KA01PS-E, CMY-R201, 202, 203, 204, 306S-G, CMY-R303, 304S-G1 Main BC controller: CMB-M104, 106, 108, 1012NU-MA-SV Sub BC controller: CMB-M104, 108NU-MB-SV			
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)			
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.			

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M144TSXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz		
Cooling capacity (Nominal)	(208-230)	*1	BTU/h	144,000	
			kW	42.2	
		Power input	kW	7.40	
		Current input	A	22.8-20.6	
	(Rated)		BTU/h	138,000	
			kW	40.4	
		Power input	kW	7.19	
		Current input	A	22.1-20.0	
				24.3-22.0	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	(208-230)	*2	BTU/h	160,000	
			kW	46.9	
		Power input	kW	7.76	
		Current input	A	23.9-21.6	
	(Rated)		BTU/h	152,000	
			kW	44.5	
		Power input	kW	6.41	
		Current input	A	19.7-17.8	
				22.5-20.3	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable			50%~150% of heat source unit capacity		
Set Model			M04~M96/29		
Sound power level (measured in anechoic room)			63.5		
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed		
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed		
Model			PQRY-M72TXU-A		
Minimum Circuit Ampacity			16-14		16-14
Maximum Overcurrent Protection			25-25		25-25
Circulating water	Water flow rate	G/h	1,522 + 1,522		
		G/min	25.4 + 25.4		
		m³/h	5.76 + 5.76		
		L/min	96 + 96		
		cfm	3.4 + 3.4		
		Pressure drop	psi	3.48	
	Operating volume range		kPa	24	
		G/h	793 + 793 ~ 1,902 + 1,902		
		G/min	13.2 + 13.2 ~ 31.7 + 31.7		
		m³/h	3.0 + 3.0 ~ 7.2 + 7.2		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1
	Starting method		Inverter		Inverter
	Motor output	kW	3.0		3.0
	Case heater	kW	0.045		0.045
	Lubricant		MEL46		MEL46
External finish			Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16
		mm	1,450 x 880 x 550		1,450 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
	Inverter circuit		Over-heat protection, Over-current protection		
	Compressor		Over-heat protection		
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		
	Control		Indoor LEV and BC controller		
Net weight		lbs (kg)	492 (223)		492 (223)
Heat exchanger	Water volume in plate	G	plate type		plate type
		l	1.22		1.22
	Water pressure Max.	psi	4.6		4.6
		MPa	290		290
HIC circuit (HIC: Heat Inter-Changer)			2.0		
Pipe between unit and distributor	High pressure		in. (mm)		5/8 (15.88) Brazed
	Low pressure		in. (mm)		3/4 (19.05) Brazed
Drawing	External		KB94CAMA		
	Wiring		KE94L602		
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			Heat Source Twinning kit: CMY-R100NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.		

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M168TSXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 208-230V ±10% 60Hz			
Cooling capacity (Nominal)		*1 BTU/h	168,000			
		kW	49.2			
	(208-230)	Power input	kW	9.28		
		Current input	A	28.6-25.8		
	(Rated)	BTU/h	160,000			
		kW	46.9			
	(208-230)	Power input	kW	8.68	9.40	
		Current input	A	26.7-24.2	28.9-26.2	
	Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
		Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)		*2 BTU/h	188,000			
		kW	55.1			
	(208-230)	Power input	kW	8.93		
		Current input	A	27.5-24.9		
	(Rated)	BTU/h	178,000			
		kW	52.2			
	(208-230)	Power input	kW	7.71	7.95	
		Current input	A	23.7-21.5	24.5-22.1	
	Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
		Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity			
Model/Maximum quantity		M04-M96/34				
Sound power level (measured in anechoic room)		*3 dB(A)	66.5			
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed			
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed			
Set Model						
Model		PQRY-M96TXU-A		PQRY-M72TXU-A		
Minimum Circuit Ampacity		A	24-22		16-14	
Maximum Overcurrent Protection		A	40-35		25-25	
Circulating water	Water flow rate	G/h	1,522 + 1,522			
		G/min	25.4 + 25.4			
		m³/h	5.76 + 5.76			
		L/min	96 + 96			
		cfm	3.4 + 3.4			
		Pressure drop	psi	3.48	3.48	
		kPa	24	24		
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902			
		G/min	13.2 + 13.2 ~ 31.7 + 31.7			
		m³/h	3.0 + 3.0 ~ 7.2 + 7.2			
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Starting method		Inverter		Inverter	
	Motor output	kW	4.5		3.0	
	Case heater	kW	0.045		0.045	
	Lubricant		MEL46		MEL46	
External finish		Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16	
	mm	1,450 x 880 x 550		1,450 x 880 x 550		
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		R32 x 9 lbs + 15 oz (4.5 kg)	
	Control		Indoor LEV and BC controller			
Net weight		lbs (kg)	490 (222)		492 (223)	
Heat exchanger			plate type		plate type	
	Water volume in plate	G	1.22		1.22	
		l	4.6		4.6	
	Water pressure Max.	psi	290		290	
		MPa	2.0		2.0	
HIC circuit (HIC: Heat Inter-Changer)		-		-		
Pipe between unit and distributor	High pressure	in. (mm)	3/4 (19.05) Brazed		3/4 (19.05) Brazed	
	Low pressure	in. (mm)	7/8 (22.2) Brazed		7/8 (22.2) Brazed	
Drawing	External	KB94CAMA		KB94CAMA		
	Wiring	KE94L602		KE94L602		
Standard attachment	Document	Installation Manual				
	Accessory	Details refer to External Drw				
Optional parts		Heat Source Twinning kit: CMY-R200NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV				
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).				
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M192TSXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz		
Cooling capacity (Nominal)	(208-230)	*1	BTU/h	192,000	
			kW	56.3	
		Power input	kW	10.98	
		Current input	A	33.8-30.6	
			A		
	(Rated)		BTU/h	184,000	
			kW	53.9	
		Power input	kW	10.33	
		Current input	A	11.15	
			A	34.3-31.0	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	(208-230)	*2	BTU/h	215,000	
			kW	63.0	
		Power input	kW	9.91	
		Current input	A	30.5-27.6	
			A		
	(Rated)		BTU/h	204,000	
			kW	59.8	
		Power input	kW	9.04	
		Current input	A	8.51	
			A	26.2-23.7	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable			50%~150% of heat source unit capacity		
Total capacity			M04-M96/39		
Sound power level (measured in anechoic room)			68.0		
Refrigerant piping diameter			7/8 (22.2) Brazed		
Set Model			1-1/8 (28.58) Brazed		
Model			PQRY-M96TXU-A		PQRY-M96TXU-A
Minimum Circuit Ampacity			24-22		24-22
Maximum Overcurrent Protection			40-35		40-35
Circulating water	Water flow rate	G/h	1,522 + 1,522		
		G/min	25.4 + 25.4		
		m ³ /h	5.76 + 5.76		
		L/min	96 + 96		
		cfm	3.4 + 3.4		
	Pressure drop	psi	3.48		
		kPa	24		
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902		
		G/min	13.2 + 13.2 ~ 31.7 + 31.7		
		m ³ /h	3.0 + 3.0 ~ 7.2 + 7.2		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1
	Starting method		Inverter		Inverter
	Motor output		4.5		4.5
	Case heater		0.045		0.045
	Lubricant		MEL46		MEL46
External finish			Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>
External dimension H x W x D			57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16
Protection devices	High pressure protection	in. (mm)	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16
	Inverter circuit	mm	1,450 x 880 x 550		1,450 x 880 x 550
	Compressor		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)
	Control		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		R32 x 9 lbs + 15 oz (4.5 kg)
	Indoor LEV and BC controller				
Net weight			490 (222)		490 (222)
Heat exchanger	Water volume in plate	plate type	plate type		plate type
		G	1.22		1.22
		l	4.6		4.6
	Water pressure Max.	psi	290		290
		MPa	2.0		2.0
HIC circuit (HIC: Heat Inter-Changer)			-		-
Pipe between unit and distributor	High pressure	in. (mm)	3/4 (19.05) Brazed		3/4 (19.05) Brazed
	Low pressure	in. (mm)	7/8 (22.2) Brazed		7/8 (22.2) Brazed
Drawing	External		KB94CAMA		
	Wiring		KE94L602		KE94L602
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			Heat Source Twinning kit: CMY-R200NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m ³ /min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.

1. SPECIFICATIONS

WR2-Series

Heat Source Model			PQRY-M216TSXU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz	
Cooling capacity (Nominal)	(208-230)	*1 BTU/h	216,000	
		kW	63.3	
		Power input	12.89	
		Current input	39.7-35.9	
	(Rated)	BTU/h	206,000	
		kW	60.4	
		Power input	12.84	
		Current input	39.6-35.8	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Inlet water	F	50~113°F (10~45°C)	
Heating capacity (Nominal)	(208-230)	*2 BTU/h	243,000	
		kW	71.2	
		Power input	11.27	
		Current input	34.7-31.4	
	(Rated)	BTU/h	232,000	
		kW	68.0	
		Power input	10.55	
		Current input	32.5-29.4	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Inlet water	F	50~113°F (10~45°C)	
Indoor unit connectable		Total capacity		
Model/Maximum quantity		50%~150% of heat source unit capacity		
Sound power level (measured in anechoic room)		*3 dB(A)	M04-M96/44	
Refrigerant piping diameter		High pressure	in. (mm)	
		Low pressure	in. (mm)	
Set Model				
Model			PQRY-M120TXU-A	
Minimum Circuit Ampacity			A	
Maximum Overcurrent Protection			A	
Circulating water	Water flow rate	G/h	1,522 + 1,522	
		G/min	25.4 + 25.4	
		m³/h	5.76 + 5.76	
		L/min	96 + 96	
		cfm	3.4 + 3.4	
		Pressure drop	psi	3.48
	Operating volume range	kPa	24	
		G/h	793 + 793 ~ 1,902 + 1,902	
G/min		13.2 + 13.2 ~ 31.7 + 31.7		
m³/h		3.0 + 3.0 ~ 7.2 + 7.2		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	
	Starting method		Inverter	
	Motor output	kW	6.2	
	Case heater	kW	0.045	
	Lubricant		MEL46	
External finish		Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)	
	Control		Indoor LEV and BC controller	
Net weight		lbs (kg)	490 (222)	
Heat exchanger	Water volume in plate	G	plate type	
		l	1.22	
		psi	4.6	
	Water pressure Max.	psi	290	
		MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)			-	
Pipe between unit and distributor	High pressure	in. (mm)	3/4 (19.05) Brazed	
	Low pressure	in. (mm)	7/8 (22.2) Brazed	
Drawing	External	KB94CAMA		
	Wiring	KE94L602		
Standard attachment	Document	Installation Manual		
	Accessory	Details refer to External Drw		
Optional parts			Heat Source Twinning kit: CMY-R200NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV	
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).	
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)	
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M240TSXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 208-230V ±10% 60Hz			
Cooling capacity (Nominal)			*1	BTU/h	240,000	
				kW	70.3	
			(208-230)	Power input	kW	15.19
				Current input	A	46.8-42.3
			(Rated)		BTU/h	230,000
					kW	67.4
			(208-230)	Power input	kW	15.38
				Current input	A	47.4-42.8
						16.27
						50.1-45.3
Temp. range of cooling			Indoor	W.B.		
			Inlet water	F		
				59~75°F (15~24°C)		
				50~113°F (10~45°C)		
Heating capacity (Nominal)			*2	BTU/h	270,000	
				kW	79.1	
			(208-230)	Power input	kW	12.83
				Current input	A	39.5-35.7
			(Rated)		BTU/h	258,000
					kW	75.6
			(208-230)	Power input	kW	12.21
				Current input	A	37.6-34.0
						11.75
						36.2-32.7
Temp. range of heating			Indoor	D.B.		
			Inlet water	F		
				59~81°F (15~27°C)		
				50~113°F (10~45°C)		
Indoor unit connectable			Total capacity			
			50%~150% of heat source unit capacity			
Sound power level (measured in anechoic room)			M04-M96/49			
			74.0			
Refrigerant			High pressure	in. (mm)		
piping diameter			Low pressure	in. (mm)		
				7/8 (22.2) Brazed		
				1-3/8 (34.93) Brazed		
Set Model						
Model			PQRY-M120TXU-A		PQRY-M120TXU-A	
Minimum Circuit Ampacity			A		33-30	
Maximum Overcurrent Protection			A		50-50	
Circulating water			Water flow rate	G/h	1,522 + 1,522	
				G/min	25.4 + 25.4	
				m³/h	5.76 + 5.76	
				L/min	96 + 96	
				cfm	3.4 + 3.4	
			Pressure drop	psi	3.48	3.48
				kPa	24	24
			Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902	
				G/min	13.2 + 13.2 ~ 31.7 + 31.7	
				m³/h	3.0 + 3.0 ~ 7.2 + 7.2	
Compressor			Type x Quantity		Inverter scroll hermetic compressor x 1	
			Starting method		Inverter	
			Motor output	kW	6.2	
			Case heater	kW	0.045	
			Lubricant		MEL46	
External finish			Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D			in.	57-1/8 x 34-11/16 x 21-11/16		
			mm	1,450 x 880 x 550		
Protection devices			High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
			Inverter circuit		Over-heat protection, Over-current protection	
			Compressor		Over-heat protection	
Refrigerant			Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)	
			Control		R32 x 9 lbs + 15 oz (4.5 kg)	
Net weight			lbs (kg)		490 (222)	
Heat exchanger			plate type		plate type	
			Water volume in plate	G	1.22	
				l	4.6	
			Water pressure Max.	psi	290	
				MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)			-		-	
Pipe between unit and distributor			High pressure	in. (mm)	3/4 (19.05) Brazed	
			Low pressure	in. (mm)	7/8 (22.2) Brazed	
Drawing			External		KB94CAMA	
			Wiring		KE94L602	
Standard attachment			Document		Installation Manual	
			Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-R200NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV			
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

Heat Source Model			PQRY-M288TSXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 208-230V ±10% 60Hz			
Cooling capacity (Nominal)	(208-230)	*1 BTU/h	288,000			
		kW	84.4			
		Power input	21.07			
	(Rated)	Current input	A			
		BTU/h	64.9-58.7			
		kW	276,000			
	(208-230)	Power input	kW			
		Current input	A			
		BTU/h	80.9			
	(208-230)	Power input	19.59		21.96	
Current input		60.4-54.6		67.7-61.2		
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Inlet water	F	50~113°F (10~45°C)			
Heating capacity (Nominal)	(208-230)	*2 BTU/h	323,000			
		kW	94.7			
		Power input	16.03			
	(Rated)	Current input	A			
		BTU/h	49.4-44.7			
		kW	304,000			
	(208-230)	Power input	kW			
		Current input	A			
		BTU/h	89.1			
	(208-230)	Power input	14.30		14.45	
Current input		44.1-39.8		44.5-40.3		
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Inlet water	F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity	50%~150% of heat source unit capacity				
Model/Maximum quantity	M04~M96/50					
Sound power level (measured in anechoic room)	*3 dB(A)	71.0				
Refrigerant piping diameter	High pressure	in. (mm)	1-1/8 (28.58) Brazed			
	Low pressure	in. (mm)	1-3/8 (34.93) Brazed			
Set Model						
Model		PQRY-M144TXU-A		PQRY-M144TXU-A		
Minimum Circuit Ampacity		A	42-38		42-38	
Maximum Overcurrent Protection		A	70-60		70-60	
Circulating water	Water flow rate	G/h	1,902 + 1,902			
		G/min	31.7 + 31.7			
		m³/h	7.20 + 7.20			
		L/min	120 + 120			
		cfm	4.2 + 4.2			
		Pressure drop	psi	6.38		6.38
	Operating volume range	kPa	44		44	
		G/h	1,189 + 1,189 ~ 3,054 + 3,054			
		G/min	19.8 + 19.8 ~ 50.9 + 50.9			
		m³/h	4.5 + 4.5 ~ 11.6 + 11.6			
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1		
	Starting method	Inverter		Inverter		
	Motor output	kW		8.0		
	Case heater	kW		0.045		
	Lubricant	MEL46		MEL46		
External finish		Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16	
Protection devices	High pressure protection	mm	1,450 x 880 x 550		1,450 x 880 x 550	
		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
	Inverter circuit	Over-heat protection, Over-current protection		Over-heat protection, Over-current protection		
	Compressor	Over-heat protection		Over-heat protection		
Refrigerant	Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)		R32 x 9 lbs + 15 oz (4.5 kg)		
	Control	Indoor LEV and BC controller				
Net weight		lbs (kg)	499 (226)		499 (226)	
Heat exchanger	Water volume in plate	plate type	plate type		plate type	
		G	1.22		1.22	
		l	4.6		4.6	
	Water pressure Max.	psi	290		290	
		MPa	2.0		2.0	
HIC circuit (HIC: Heat Inter-Changer)		-		-		
Pipe between unit and distributor	High pressure	in. (mm)	7/8 (22.2) Brazed		7/8 (22.2) Brazed	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed		1-1/8 (28.58) Brazed	
Drawing	External	KB94CAMA		KB94CAMA		
	Wiring	KE94L602		KE94L602		
Standard attachment	Document	Installation Manual				
	Accessory	Details refer to External Drw				
Optional parts		Heat Source Twinning kit: CMY-R300NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV				
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).				
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M312TSXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz		
Cooling capacity (Nominal)	(208-230)	*1	BTU/h	312,000	
			kW	91.4	
		Power input	kW	23.44	
		Current input	A	72.2-65.3	
			A		
	(Rated)		BTU/h	298,000	
			kW	87.3	
		Power input	kW	21.83	
		Current input	A	67.3-60.8	
			A	74.5-67.3	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	(208-230)	*2	BTU/h	350,000	
			kW	102.6	
		Power input	kW	18.13	
		Current input	A	55.9-50.5	
			A		
	(Rated)		BTU/h	334,000	
			kW	97.9	
		Power input	kW	15.82	
		Current input	A	48.7-44.1	
			A	50.0-45.2	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable		50%~150% of heat source unit capacity			
Total capacity		Model/Maximum quantity			
Sound power level (measured in anechoic room)		M04~M96/50			
		73.5			
Refrigerant piping diameter	High pressure	in. (mm)	1-1/8 (28.58) Brazed		
	Low pressure	in. (mm)	1-3/8 (34.93) Brazed		
Set Model					
Model			PQRY-M168TXU-A		PQRY-M144TXU-A
Minimum Circuit Ampacity		A	48-48		42-38
Maximum Overcurrent Protection		A	80-80		70-60
Circulating water	Water flow rate	G/h	1,902 + 1,902		
		G/min	31.7 + 31.7		
		m ³ /h	7.20 + 7.20		
		L/min	120 + 120		
		cfm	4.2 + 4.2		
		Pressure drop	psi	6.38	
		kPa	44		
	Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054		
		G/min	19.8 + 19.8 ~ 50.9 + 50.9		
		m ³ /h	4.5 + 4.5 ~ 11.6 + 11.6		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1
	Starting method		Inverter		Inverter
	Motor output	kW	10.3		8.0
	Case heater	kW	0.045		0.045
	Lubricant		MEL46		MEL46
External finish			Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16
		mm	1,450 x 880 x 550		1,450 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection
	Compressor		Over-heat protection		Over-heat protection
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		R32 x 9 lbs + 15 oz (4.5 kg)
	Control		Indoor LEV and BC controller		
Net weight		lbs (kg)	499 (226)		499 (226)
Heat exchanger	Water volume in plate	plate type			plate type
		G	1.22		1.22
		l	4.6		4.6
	Water pressure Max.	psi	290		290
		MPa	2.0		2.0
HIC circuit (HIC: Heat Inter-Changer)			-		
Pipe between unit and distributor	High pressure		7/8 (22.2) Brazed		7/8 (22.2) Brazed
	Low pressure		1-1/8 (28.58) Brazed		1-1/8 (28.58) Brazed
Drawing	External		KB94CAMA		
	Wiring		KE94L602		KE94L602
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			Heat Source Twinning kit: CMY-R300NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m ³ /min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.

1. SPECIFICATIONS

WR2-Series

Heat Source Model			PQRY-M336TSXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 208-230V ±10% 60Hz		
Cooling capacity (Nominal)	(208-230)	*1 BTU/h	336,000		
		kW	98.5		
		Power input kW	25.69		
		Current input A	79.2-71.6		
	(Rated)	BTU/h	320,000		
		kW	93.8		
		Power input kW	24.62	26.69	
		Current input A	75.9-68.6	82.3-74.4	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	(208-230)	*2 BTU/h	378,000		
		kW	110.8		
		Power input kW	20.20		
		Current input A	62.2-56.3		
	(Rated)	BTU/h	360,000		
		kW	105.5		
		Power input kW	17.14	17.83	
		Current input A	52.8-47.8	54.9-49.7	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity		
		Model/Maximum quantity	M04-M96/50		
Sound power level (measured in anechoic room)		*3 dB(A)	75.0		
Refrigerant piping diameter	High pressure	in. (mm)	1-1/8 (28.58) Brazed		
	Low pressure	in. (mm)	1-5/8 (41.28) Brazed		
Set Model					
Model		PQRY-M168TXU-A		PQRY-M168TXU-A	
Minimum Circuit Ampacity		A	48-48	48-48	
Maximum Overcurrent Protection		A	80-80	80-80	
Circulating water	Water flow rate	G/h	1,902 + 1,902		
		G/min	31.7 + 31.7		
		m³/h	7.20 + 7.20		
		L/min	120 + 120		
		cfm	4.2 + 4.2		
		Pressure drop	psi	6.38	6.38
		kPa	44	44	
	Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054		
G/min		19.8 + 19.8 ~ 50.9 + 50.9			
m³/h		4.5 + 4.5 ~ 11.6 + 11.6			
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Starting method	Inverter		Inverter	
	Motor output	kW	10.3	10.3	
	Case heater	kW	0.045	0.045	
	Lubricant	MEL46		MEL46	
External finish		Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16	57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550	1,450 x 880 x 550	
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
	Inverter circuit	Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor	Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)		R32 x 9 lbs + 15 oz (4.5 kg)	
	Control	Indoor LEV and BC controller			
Net weight		lbs (kg)	499 (226)	499 (226)	
Heat exchanger			plate type	plate type	
	Water volume in plate	G	1.22	1.22	
		l	4.6	4.6	
	Water pressure Max.	psi	290	290	
		MPa	2.0	2.0	
HIC circuit (HIC: Heat Inter-Changer)		-		-	
Pipe between unit and distributor	High pressure	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed	1-1/8 (28.58) Brazed	
Drawing	External	KB94CAMA			
	Wiring	KE94L602		KE94L602	
Standard attachment	Document	Installation Manual			
	Accessory	Details refer to External Drw			
Optional parts		Heat Source Twinning kit: CMY-R300NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV			
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M72YXU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz	
Cooling capacity (Nominal)			*1	BTU/h
				72,000
				kW
				21.1
			(460)	Power input
				kW
				3.43
			(460)	Current input
				A
				4.7
			(Rated)	BTU/h
				69,000
				kW
				20.2
			(460)	Power input
				kW
				3.48
			(460)	Current input
				A
				4.8
				5.0
Temp. range of cooling			Indoor	W.B.
			Inlet water	F
				59~75°F (15~24°C)
				50~113°F (10~45°C)
Heating capacity (Nominal)			*2	BTU/h
				80,000
				kW
				23.4
			(460)	Power input
				kW
				3.38
			(460)	Current input
				A
				4.7
			(Rated)	BTU/h
				76,000
				kW
				22.3
			(460)	Power input
				kW
				3.01
			(460)	Current input
				A
				4.1
				4.3
Temp. range of heating			Indoor	D.B.
			Inlet water	F
				59~81°F (15~27°C)
				50~113°F (10~45°C)
Indoor unit			Total capacity	50%~150% of heat source unit capacity
connectable			Model/Maximum quantity	M04-M96/14
Sound power level (measured in anechoic room)			*3	dB(A)
				60.5
Refrigerant piping diameter			High pressure	in. (mm)
			Low pressure	in. (mm)
				5/8 (15.88) Brazed
				3/4 (19.05) Brazed
Minimum Circuit Ampacity			A	8
Maximum Overcurrent Protection			A	15
Circulating water			Water flow rate	G/h
				1,440
				G/min
				24
				m³/h
				5.45
				L/min
				91
				cfm
				3.2
			Pressure drop	psi
				3.48
			Operating volume range	kPa
				24
				G/h
				793 ~ 1,902
				G/min
				13.2 ~ 31.7
				m³/h
				3.0 ~ 7.2
Compressor			Type x Quantity	Inverter scroll hermetic compressor x 1
			Starting method	Inverter
			Motor output	kW
			Case heater	kW
			Lubricant	0.045
External finish				MEL46
External dimension H x W x D				Powder coating <MUNSELL 5Y 8/1>
			in.	57-1/8 x 34-11/16 x 21-11/16
			mm	1,450 x 880 x 550
Protection devices			High pressure protection	High pressure sensor, High pressure switch at 4.15MPa (601 psi)
			Inverter circuit	Over-heat protection, Over-current protection
			Compressor	Over-heat protection
Refrigerant			Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)
			Control	Indoor LEV and BC controller
Net weight			lbs (kg)	525 (238)
Heat exchanger				plate type
			Water volume in plate	G
				1.22
			Water pressure Max.	l
				4.6
				psi
				290
				MPa
				2.0
HIC circuit (HIC: Heat Inter-Changer)				-
Drawing			External	KB94CAJQ
			Wiring	KE94L603
Standard attachment			Document	Installation Manual
			Accessory	Details refer to External Drw
Optional parts			joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV	
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).	
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)	
			2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C)	
			3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)	
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M96YXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz		
Cooling capacity (Nominal)	*1	BTU/h	96,000		
		kW	28.1		
		(460) Power input	5.18		
	(Rated)	(460) Current input	7.2		
		BTU/h	92,000		
		kW	27.0		
	(460)	Power input	4.82		5.19
		(460) Current input	6.7		7.2
		A			
	Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
Inlet water		F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	108,000		
		kW	31.7		
		(460) Power input	4.81		
	(Rated)	(460) Current input	6.7		
		BTU/h	103,000		
		kW	30.2		
	(460)	Power input	4.25		4.28
		(460) Current input	5.9		5.9
		A			
	Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
Inlet water		F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity	50%~150% of heat source unit capacity			
	Model/Maximum quantity	M04~M96/19			
Sound power level (measured in anechoic room)		*3 dB(A)	65.0		
Refrigerant	High pressure	in. (mm)	3/4 (19.05) Brazed		
piping diameter	Low pressure	in. (mm)	7/8 (22.2) Brazed		
Minimum Circuit Ampacity		A	11		
Maximum Overcurrent Protection		A	15		
Circulating water	Water flow rate	G/h	1,522		
		G/min	25.4		
		m³/h	5.76		
		L/min	96		
		cfm	3.4		
		Pressure drop	3.48		
	Operating volume range	psi	24		
		kPa	793 ~ 1,902		
		G/h	13.2 ~ 31.7		
		G/min	3.0 ~ 7.2		
		m³/h			
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1			
	Starting method	Inverter			
	Motor output	kW	4.5		
	Case heater	kW	0.045		
	Lubricant	MEL46			
External finish		Powder coating <MUNSELL 5Y 8/1>			
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
	Inverter circuit	Over-heat protection, Over-current protection			
	Compressor	Over-heat protection			
Refrigerant	Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)			
	Control	Indoor LEV and BC controller			
Net weight		lbs (kg)	525 (238)		
Heat exchanger		Water volume in plate	G	plate type	
			l	1.22	
				4.6	
		Water pressure Max.	psi	290	
			MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)		-			
Drawing	External	KB94CAJQ			
	Wiring	KE94L603			
Standard attachment	Document	Installation Manual			
	Accessory	Details refer to External Drw			
Optional parts		joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R170M-E, PAC-KA01PS-E, CMY-R201, 202, 306S-G, CMY-R303, 304S-G1 Main BC controller: CMB-M104, 106, 108, 1012NU-MA-SV Sub BC controller: CMB-M104, 108NU-MB-SV			
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M120YXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz		
Cooling capacity (Nominal)		*1 BTU/h	120,000		
		kW	35.2		
		Power input	7.21		
		(460) Current input	10.0		
			115,000		
	(Rated)	BTU/h	33.7		
		kW			
		Power input	7.16	7.54	
		(460) Current input	9.9	10.5	
Temp. range of cooling	Indoor	W.B.			
	Inlet water	F			
Heating capacity			59~75°F (15~24°C)		
(Nominal)		*2 BTU/h	135,000		
		kW	39.6		
		Power input	6.12		
		(460) Current input	8.5		
			129,000		
	(Rated)	BTU/h	37.8		
		kW			
		Power input	5.48	5.79	
		(460) Current input	7.6	8.0	
Temp. range of heating	Indoor	D.B.			
	Inlet water	F			
Indoor unit			59~81°F (15~27°C)		
connectable			50%~150% of heat source unit capacity		
Model/Maximum quantity			M04-M96/24		
Sound power level (measured in anechoic room)			71.0		
Refrigerant piping diameter	High pressure	in. (mm)	3/4 (19.05) Braze		
	Low pressure	in. (mm)	7/8 (22.2) Braze		
Minimum Circuit Ampacity			A		
Maximum Overcurrent Protection			A		
Circulating water	Water flow rate	G/h	1,522		
		G/min	25.4		
		m³/h	5.76		
		L/min	96		
		cfm	3.4		
	Pressure drop	psi	3.48		
		kPa	24		
	Operating volume range	G/h	793 ~ 1,902		
		G/min	13.2 ~ 31.7		
		m³/h	3.0 ~ 7.2		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		
	Starting method		Inverter		
	Motor output	kW	6.2		
	Case heater	kW	0.045		
	Lubricant		MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
	Inverter circuit		Over-heat protection, Over-current protection		
	Compressor		Over-heat protection		
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		
	Control		Indoor LEV and BC controller		
Net weight		lbs (kg)	523 (237)		
Heat exchanger			plate type		
	Water volume in plate	G	1.22		
		l	4.6		
	Water pressure Max.	psi	290		
		MPa	2.0		
		HIC circuit (HIC: Heat Inter-Changer)			-
Drawing	External		KB94CAJQ		
	Wiring		KE94L603		
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(s)XU-A, Y(s)XU-A

Heat Source Model			PQRY-M144YXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz		
Cooling capacity (Nominal)	*1		BTU/h		
			144,000		
			kW		
			42.2		
	(460)	Power input	kW		
		Current input	A		
	(Rated)		BTU/h		
			138,000		
	(460)	Power input	kW		
		Current input	A		
Heating capacity (Nominal)	*2		BTU/h		
			160,000		
			kW		
			46.9		
	(460)	Power input	kW		
		Current input	A		
	(Rated)		BTU/h		
			152,000		
	(460)	Power input	kW		
		Current input	A		
Temp. range of cooling	Indoor	W.B.			
	Inlet water	F			
Indoor unit connectable			59~75°F (15~24°C)		
			50~113°F (10~45°C)		
			50%~150% of heat source unit capacity		
			M04~M96/29		
			68.0		
			7/8 (22.2) Brazed		
			1-1/8 (28.58) Brazed		
			19		
			30		
			1,902		
Circulating water	Water flow rate		G/h		
			G/min		
			m³/h		
			L/min		
			cfm		
	Pressure drop		psi		
			kPa		
	Operating volume range		G/h		
			G/min		
			m³/h		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		
	Starting method		Inverter		
	Motor output		kW		
	Case heater		kW		
	Lubricant		MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D			in.		
			mm		
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
	Inverter circuit		Over-heat protection, Over-current protection		
	Compressor		Over-heat protection		
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		
	Control		Indoor LEV and BC controller		
Net weight			lbs (kg)		
			525 (238)		
Heat exchanger			plate type		
			G		
			l		
			psi		
			MPa		
HIC circuit (HIC: Heat Inter-Changer)			-		
Drawing	External		KB94CAJQ		
	Wiring		KE94L603		
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R170M-E, PAC-KA01PS-E, CMY-R201, 202, 306S-G, CMY-R303, 304S-G1 Main BC controller: CMB-M104, 106, 108, 1012NU-MA-SV Sub BC controller: CMB-M104, 108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.		

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M168YXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz		
Cooling capacity (Nominal)	*1	BTU/h	168,000		
		kW	49.2		
		Power input	11.87		
		(460) Current input	16.5		
		A	16.5		
	(Rated)	BTU/h	160,000		
		kW	46.9		
		Power input	11.58		12.12
		(460) Current input	16.1		16.9
		A			
Temp. range of cooling	Indoor	59~75°F (15~24°C)			
	Inlet water	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	188,000		
		kW	55.1		
		Power input	9.85		
		(460) Current input	13.7		
		A	13.7		
	(Rated)	BTU/h	178,000		
		kW	52.2		
		Power input	8.38		9.11
		(460) Current input	11.6		12.7
		A			
Temp. range of heating	Indoor	59~81°F (15~27°C)			
	Inlet water	50~113°F (10~45°C)			
Indoor unit connectable		Total capacity			
		Model/Maximum quantity			
		50%~150% of heat source unit capacity			
		M04~M96/34			
Sound power level (measured in anechoic room)		*3	dB (A)		
		72.0			
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed		
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed		
Minimum Circuit Ampacity		A	25		
Maximum Overcurrent Protection		A	40		
Circulating water	Water flow rate	G/h	1,902		
		G/min	31.7		
		m³/h	7.20		
		L/min	120		
		cfm	4.2		
	Pressure drop	psi	6.38		
		kPa	44		
	Operating volume range	G/h	1,189 ~ 3,054		
		G/min	19.8 ~ 50.9		
		m³/h	4.5 ~ 11.6		
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1			
	Starting method	Inverter			
	Motor output	kW	10.3		
	Case heater	kW	0.045		
	Lubricant	MEL46			
External finish		Powder coating <MUNSELL 5Y 8/1>			
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
	Inverter circuit	Over-heat protection, Over-current protection			
	Compressor	Over-heat protection			
Refrigerant	Type x original charge	R32 x 9 lbs + 15 oz (4.5 kg)			
	Control	Indoor LEV and BC controller			
Net weight		lbs (kg)	525 (238)		
Heat exchanger		plate type			
	Water volume in plate	G	1.22		
		l	4.6		
	Water pressure Max.	psi	290		
			2.0		
		MPa			
HIC circuit (HIC: Heat Inter-Changer)		-			
Drawing	External	KB94CAJQ			
	Wiring	KE94L603			
Standard attachment	Document	Installation Manual			
	Accessory	Details refer to External Drw			
Optional parts		joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV			
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(s)XU-A, Y(s)XU-A

Heat Source Model			PQRY-M192YXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz		
Cooling capacity (Nominal)	*1		BTU/h		
			192,000		
			kW		
			56.3		
			kW		
			14.66		
	(460)	Current input	A		20.4
	(Rated)			BTU/h	
		184,000			
		kW			
		53.9			
		kW			
		14.73	14.47		
(460)		Current input	A		20.1
		20.5			
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2		BTU/h		
			215,000		
			kW		
			63.0		
			kW		
			12.10		
	(460)	Current input	A		16.8
	(Rated)			BTU/h	
		204,000			
		kW			
		59.8			
		kW			
		10.38	10.79		
(460)		Current input	A		15.0
		14.4			
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity	50%~150% of heat source unit capacity			
	Model/Maximum quantity	M04~M96/39			
Sound power level (measured in anechoic room)			*3 dB(A)		
			73.0		
Refrigerant	High pressure	in. (mm)	7/8 (22.2) Brazed		
piping diameter	Low pressure	in. (mm)	1-1/8 (28.58) Brazed		
Minimum Circuit Ampacity			A		
			28		
Maximum Overcurrent Protection			A		
			50		
Circulating water	Water flow rate	G/h	1,902		
		G/min	31.7		
		m³/h	7.20		
		L/min	120		
		cfm	4.2		
	Pressure drop	psi	6.38		
		kPa	44		
	Operating volume range	G/h	1,189 ~ 3,054		
		G/min	19.8 ~ 50.9		
		m³/h	4.5 ~ 11.6		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		
	Starting method		Inverter		
	Motor output	kW	12.7		
	Case heater	kW	0.045		
	Lubricant	MEL46			
External finish			Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
	Inverter circuit		Over-heat protection, Over-current protection		
	Compressor		Over-heat protection		
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		
	Control		Indoor LEV and BC controller		
Net weight		lbs (kg)	527 (239)		
Heat exchanger			plate type		
	Water volume in plate	G	1.22		
		l	4.6		
	Water pressure Max.	psi	290		
		MPa	2.0		
HIC circuit (HIC: Heat Inter-Changer)			-		
Drawing	External		KB94CAJQ		
	Wiring		KE94L603		
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R170M-E, PAC-KA01PS-E, CMY-R201,202,203,204,306S-G, CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.		

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M216YXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz		
Cooling capacity (Nominal)	(460)	*1	BTU/h	216,000	
			kW	63.3	
		Power input	kW	15.23	
		Current input	A	21.2	
			A		
	(Rated)		BTU/h	206,000	
			kW	60.4	
		Power input	kW	17.55	16.74
		Current input	A	24.4	23.3
			A		
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	(460)	*2	BTU/h	243,000	
			kW	71.2	
		Power input	kW	12.66	
		Current input	A	17.6	
			A		
	(Rated)		BTU/h	232,000	
			kW	68.0	
		Power input	kW	11.61	12.43
		Current input	A	16.1	17.3
			A		
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity		50%~150% of heat source unit capacity		
	Model/Maximum quantity		M04-M96/44		
Sound power level (measured in anechoic room)			*3	dB (A)	72.5
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed		
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed		
Minimum Circuit Ampacity			A		
Maximum Overcurrent Protection			A		
Circulating water	Water flow rate	G/h	3,044		
		G/min	50.7		
		m³/h	11.52		
		L/min	192		
		cfm	6.8		
		psi	6.53		
	Pressure drop	kPa	45		
		Operating volume range	G/h	1,585 ~ 3,804	
	G/min		26.4 ~ 63.4		
	m³/h		6.0 ~ 14.4		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		
	Starting method		Inverter		
	Motor output	kW	13.2		
	Case heater	kW	0.048		
	Lubricant	MEL46			
External finish			Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		
		mm	1,450 x 880 x 550		
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		
	Inverter circuit		Over-heat protection, Over-current protection		
	Compressor		Over-heat protection		
Refrigerant	Type x original charge		R32 x 16 lbs + 9 oz (7.5 kg)		
	Control		Indoor LEV and BC controller		
Net weight		lbs (kg)	594 (269)		
Heat exchanger			plate type		
	Water volume in plate	G	2.43		
		l	9.2		
		psi	290		
	Water pressure Max.	MPa	2.0		
		HIC circuit (HIC: Heat Inter-Changer)			-
Drawing	External		KB94CAJQ		
	Wiring		KE94L603		
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M240YXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 460V ±10% 60Hz			
Cooling capacity (Nominal)	*1		BTU/h	240,000		
			kW	70.3		
	(460)	Power input	kW	18.27		
		Current input	A	25.4		
	(Rated)		BTU/h	230,000		
			kW	67.4		
	(460)	Power input	kW	20.20	20.18	
		Current input	A	28.1	28.1	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Inlet water	F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2		BTU/h	270,000		
			kW	79.1		
	(460)	Power input	kW	15.24		
		Current input	A	21.2		
	(Rated)		BTU/h	258,000		
			kW	75.6		
	(460)	Power input	kW	13.54	14.40	
		Current input	A	18.8	20.0	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Inlet water	F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity		50%~150% of heat source unit capacity			
		Model/Maximum quantity	M04~M96/49			
Sound power level (measured in anechoic room)			*3	dB(A)		
			74.0			
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed			
	Low pressure	in. (mm)	1-3/8 (34.93) Brazed			
Minimum Circuit Ampacity			A			
			31			
Maximum Overcurrent Protection			A			
			50			
Circulating water	Water flow rate	G/h	3,044			
		G/min	50.7			
		m³/h	11.52			
		L/min	192			
		cfm	6.8			
	Pressure drop	psi	6.53			
		kPa	45			
	Operating volume range	G/h	1,585 ~ 3,804			
		G/min	26.4 ~ 63.4			
		m³/h	6.0 ~ 14.4			
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1			
	Starting method		Inverter			
	Motor output	kW	15.8			
	Case heater	kW	0.048			
	Lubricant		MEL46			
External finish			Powder coating <MUNSELL 5Y 8/1>			
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16			
		mm	1,450 x 880 x 550			
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
	Inverter circuit		Over-heat protection, Over-current protection			
	Compressor		Over-heat protection			
Refrigerant	Type x original charge		R32 x 16 lbs + 9 oz (7.5 kg)			
	Control		Indoor LEV and BC controller			
Net weight		lbs (kg)	594 (269)			
Heat exchanger			plate type			
	Water volume in plate	G	2.43			
		l	9.2			
	Water pressure Max.	psi	290			
		MPa	2.0			
HIC circuit (HIC: Heat Inter-Changer)			-			
Drawing	External	KB94CAJQ				
	Wiring	KE94L603				
Standard attachment	Document	Installation Manual				
	Accessory	Details refer to External Drw				
Optional parts			joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV			
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)			
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.			

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M144YSXU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz		
Cooling capacity (Nominal)	(460)	*1	BTU/h	144,000	
			kW	42.2	
		Power input	kW	7.40	
		Current input	A	10.3	
	(Rated)		BTU/h	138,000	
			kW	40.4	
		Power input	kW	7.19	7.89
		Current input	A	10.0	11.0
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	(460)	*2	BTU/h	160,000	
			kW	46.9	
		Power input	kW	7.76	
		Current input	A	10.8	
	(Rated)		BTU/h	152,000	
			kW	44.5	
		Power input	kW	6.41	7.30
		Current input	A	8.9	10.1
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable			50%~150% of heat source unit capacity		
Set Model			Total capacity		
			Model/Maximum quantity		
Sound power level (measured in anechoic room)			*3		
			dB(A)		
			63.5		
Refrigerant			High pressure		
piping diameter			in. (mm)		
			7/8 (22.2) Brazed		
			Low pressure		
			in. (mm)		
			1-1/8 (28.58) Brazed		
Model			PQRY-M72YXU-A		PQRY-M72YXU-A
Minimum Circuit Ampacity			A		8
Maximum Overcurrent Protection			A		15
Circulating water	Water flow rate	G/h	1,522 + 1,522		
		G/min	25.4 + 25.4		
		m³/h	5.76 + 5.76		
		L/min	96 + 96		
		cfm	3.4 + 3.4		
	Pressure drop	psi	3.48		
		kPa	24		
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902		
		G/min	13.2 + 13.2 ~ 31.7 + 31.7		
m³/h		3.0 + 3.0 ~ 7.2 + 7.2			
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1
	Starting method		Inverter		Inverter
	Motor output		kW		3.0
	Case heater		kW		0.045
	Lubricant		MEL46		MEL46
External finish			Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>
External dimension H x W x D			in.		57-1/8 x 34-11/16 x 21-11/16
			mm		1,450 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection
	Compressor		Over-heat protection		Over-heat protection
	Control				
Refrigerant			Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)
			Control		Indoor LEV and BC controller
Net weight			lbs (kg)		525 (238)
Heat exchanger	Water volume in plate	G	plate type		plate type
		l	1.22		1.22
		psi	4.6		4.6
	Water pressure Max.	psi	290		290
		MPa	2.0		2.0
HIC circuit (HIC: Heat Inter-Changer)			-		-
Pipe between unit and distributor	High pressure		in. (mm)		5/8 (15.88) Brazed
	Low pressure		in. (mm)		3/4 (19.05) Brazed
Drawing	External		KB94CAMA		
	Wiring		KE94L603		KE94L603
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			Heat Source Twinning kit: CMY-R100NCBK joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-R170M-E, PAC-KA01PS-E, CMY-R201, 202, 306S-G, CMY-R303, 304S-G1 Main BC controller: CMB-M104, 106, 108, 1012NU-MA-SV Sub BC controller: CMB-M104, 108NU-MB-SV		
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).		
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.

1. SPECIFICATIONS

WR2-Series

Heat Source Model			PQRY-M168YSXU-A			
Indoor Model			Non-Ducted	Ducted		
Power source			3-phase 3-wire 460V ±10% 60Hz			
Cooling capacity (Nominal)	*1	BTU/h	168,000			
		kW	49.2			
		Power input	9.28			
		Current input	12.9			
	(460)	BTU/h	160,000			
		kW	46.9			
		Power input	8.68	9.40		
		Current input	12.1	13.1		
Temp. range of cooling		Indoor	W.B.	59~75°F (15~24°C)		
		Inlet water	F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	188,000			
		kW	55.1			
		Power input	8.93			
		Current input	12.4			
	(460)	BTU/h	178,000			
		kW	52.2			
		Power input	7.71	7.95		
		Current input	10.7	11.0		
Temp. range of heating		Indoor	D.B.	59~81°F (15~27°C)		
		Inlet water	F	50~113°F (10~45°C)		
Indoor unit connectable		Total capacity			50%~150% of heat source unit capacity	
		Model/Maximum quantity			M04-M96/34	
Sound power level (measured in anechoic room)		*3	dB(A)			66.5
Refrigerant		High pressure	in. (mm)			7/8 (22.2) Brazed
piping diameter		Low pressure	in. (mm)			1-1/8 (28.58) Brazed
Set Model						
Model			PQRY-M96YXU-A		PQRY-M72YXU-A	
Minimum Circuit Ampacity			A		11	8
Maximum Overcurrent Protection			A		15	15
Circulating water	Water flow rate	G/h	1,522 + 1,522			
		G/min	25.4 + 25.4			
		m³/h	5.76 + 5.76			
		L/min	96 + 96			
		cfm	3.4 + 3.4			
		Pressure drop	psi	3.48	3.48	
		kPa	24	24		
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902			
G/min		13.2 + 13.2 ~ 31.7 + 31.7				
m³/h		3.0 + 3.0 ~ 7.2 + 7.2				
Compressor		Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1
	Starting method		Inverter		Inverter	
	Motor output	kW	4.5		3.0	
	Case heater	kW	0.045		0.045	
	Lubricant		MEL46		MEL46	
External finish		Powder coating <MUNSELL 5Y 8/1>			Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550		1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)			High pressure sensor, High pressure switch at 4.15MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection			Over-heat protection, Over-current protection
	Compressor		Over-heat protection			Over-heat protection
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)			R32 x 9 lbs + 15 oz (4.5 kg)
	Control		Indoor LEV and BC controller			
Net weight		lbs (kg)	525 (238)		525 (238)	
Heat exchanger	Water volume in plate	G	plate type		plate type	
		l	1.22		1.22	
	Water pressure Max.	psi	4.6		4.6	
		MPa	290		290	
HIC circuit (HIC: Heat Inter-Changer)				2.0		
Pipe between unit and distributor	High pressure		in. (mm)		3/4 (19.05) Brazed	3/4 (19.05) Brazed
	Low pressure		in. (mm)		7/8 (22.2) Brazed	7/8 (22.2) Brazed
Drawing	External		KB94CAMA			
	Wiring		KE94L603			KE94L603
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts		Heat Source Twinning kit: CMY-R200NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV				
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).				
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F.W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Inlet water temperature: 86°F (30°C)			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M192YSXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 460V ±10% 60Hz			
Cooling capacity (Nominal)	*1	BTU/h	192,000			
		kW	56.3			
		Power input	10.98			
		Current input	15.3			
	(460)	BTU/h	184,000			
		kW	53.9			
		Power input	10.33	11.15		
		Current input	14.4	15.5		
	Temp. range of cooling	Indoor	W.B. 59~75°F (15~24°C)			
		Inlet water	F 50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	215,000			
		kW	63.0			
		Power input	9.91			
		Current input	13.8			
	(460)	BTU/h	204,000			
		kW	59.8			
		Power input	9.04	8.51		
		Current input	12.6	11.8		
	Temp. range of heating	Indoor	D.B. 59~81°F (15~27°C)			
		Inlet water	F 50~113°F (10~45°C)			
Indoor unit connectable		Total capacity 50%~150% of heat source unit capacity				
		Model/Maximum quantity M04-M96/39				
Sound power level (measured in anechoic room)		*3	dB(A) 68.0			
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed			
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed			
Set Model						
Model			PQRY-M96YXU-A		PQRY-M96YXU-A	
Minimum Circuit Ampacity		A	11		11	
Maximum Overcurrent Protection		A	15		15	
Circulating water	Water flow rate	G/h	1,522 + 1,522			
		G/min	25.4 + 25.4			
		m³/h	5.76 + 5.76			
		L/min	96 + 96			
		cfm	3.4 + 3.4			
	Pressure drop	psi	3.48	3.48		
		kPa	24	24		
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902			
		G/min	13.2 + 13.2 ~ 31.7 + 31.7			
		m³/h	3.0 + 3.0 ~ 7.2 + 7.2			
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Starting method		Inverter		Inverter	
	Motor output	kW	4.5		4.5	
	Case heater	kW	0.045		0.045	
	Lubricant		MEL46		MEL46	
External finish		Powder coating <MUNSELL 5Y 8/1>			Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550		1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		R32 x 9 lbs + 15 oz (4.5 kg)	
	Control		Indoor LEV and BC controller			
Net weight		lbs (kg)	525 (238)		525 (238)	
Heat exchanger	Water volume in plate	plate type			plate type	
		G	1.22		1.22	
		l	4.6		4.6	
	Water pressure Max.	psi	290		290	
		MPa	2.0		2.0	
HIC circuit (HIC: Heat Inter-Changer)		-			-	
Pipe between unit and distributor	High pressure		3/4 (19.05) Brazed		3/4 (19.05) Brazed	
	Low pressure		7/8 (22.2) Brazed		7/8 (22.2) Brazed	
Drawing	External		KB94CAMA			
	Wiring		KE94L603		KE94L603	
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts		Heat Source Twinning kit: CMY-R200NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV				
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).				
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M216YSXU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 460V ±10% 60Hz	
Cooling capacity (Nominal)	(460)	*1	BTU/h	216,000
			kW	63.3
		Power input	kW	12.89
		Current input	A	17.9
			BTU/h	206,000
	(Rated)		kW	60.4
		Power input	kW	12.84
		Current input	A	17.9
			BTU/h	206,000
			kW	60.4
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Inlet water	F	50~113°F (10~45°C)	
Heating capacity (Nominal)	(460)	*2	BTU/h	243,000
			kW	71.2
		Power input	kW	11.27
		Current input	A	15.7
			BTU/h	232,000
	(Rated)		kW	68.0
		Power input	kW	10.55
		Current input	A	14.7
			BTU/h	232,000
			kW	68.0
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Inlet water	F	50~113°F (10~45°C)	
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity	
		Model/Maximum quantity	M04~M96/44	
Sound power level (measured in anechoic room)		*3	dB(A)	72.0
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed	
Set Model				
Model			PQRY-M120YXU-A	PQRY-M96YXU-A
Minimum Circuit Ampacity			A	15
Maximum Overcurrent Protection			A	25
Circulating water	Water flow rate	G/h	1,522 + 1,522	
		G/min	25.4 + 25.4	
		m³/h	5.76 + 5.76	
		L/min	96 + 96	
		cfm	3.4 + 3.4	
		Pressure drop	psi	3.48
	Operating volume range	kPa	24	24
		G/h	793 + 793 ~ 1,902 + 1,902	
		G/min	13.2 + 13.2 ~ 31.7 + 31.7	
		m³/h	3.0 + 3.0 ~ 7.2 + 7.2	
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	
	Starting method		Inverter	
	Motor output	kW	6.2	4.5
	Case heater	kW	0.045	0.045
	Lubricant		MEL46	MEL46
External finish			Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D			57-1/8 x 34-11/16 x 21-11/16	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)	
	Control		Indoor LEV and BC controller	
Net weight			lbs (kg)	523 (237)
Heat exchanger	Water volume in plate	G	plate type	
		l	1.22	
		psi	4.6	
	Water pressure Max.	psi	290	
		MPa	2.0	
HIC circuit (HIC: Heat Inter-Changer)			-	
Pipe between unit and distributor	High pressure	in. (mm)	3/4 (19.05) Brazed	
	Low pressure	in. (mm)	7/8 (22.2) Brazed	
Drawing	External	KB94CAMA		
	Wiring	KE94L603		
Standard attachment	Document	Installation Manual		
	Accessory	Details refer to External Drw		
Optional parts			Heat Source Twinning kit: CMY-R200NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV	
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).	
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F.W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Inlet water temperature: 86°F (30°C)	
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

PQRY-M-T(S)XU-A, Y(S)XU-A

Heat Source Model			PQRY-M240YSXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 460V ±10% 60Hz			
Cooling capacity (Nominal)	(460)	*1	BTU/h	240,000		
			kW	70.3		
		Power input	kW	15.19		
		Current input	A	21.1		
			A	21.1		
	(Rated)		BTU/h	230,000		
			kW	67.4		
		Power input	kW	15.38	16.27	
		Current input	A	21.4	22.6	
			A	22.6		
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Inlet water	F	50~113°F (10~45°C)			
Heating capacity (Nominal)	(460)	*2	BTU/h	270,000		
			kW	79.1		
		Power input	kW	12.83		
		Current input	A	17.8		
			A	17.8		
	(Rated)		BTU/h	258,000		
			kW	75.6		
		Power input	kW	12.21	11.75	
		Current input	A	17.0	16.3	
			A	16.3		
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Inlet water	F	50~113°F (10~45°C)			
Indoor unit connectable			50%~150% of heat source unit capacity			
Total capacity			M04~M96/49			
Sound power level (measured in anechoic room)			74.0			
Refrigerant piping diameter	High pressure	in. (mm)	7/8 (22.2) Brazed			
	Low pressure	in. (mm)	1-3/8 (34.93) Brazed			
Set Model						
Model			PQRY-M120YXU-A		PQRY-M120YXU-A	
Minimum Circuit Ampacity			15		15	
Maximum Overcurrent Protection			25		25	
Circulating water	Water flow rate	G/h	1,522 + 1,522			
		G/min	25.4 + 25.4			
		m³/h	5.76 + 5.76			
		L/min	96 + 96			
		cfm	3.4 + 3.4			
	Pressure drop	psi	3.48		3.48	
		kPa	24		24	
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902			
		G/min	13.2 + 13.2 ~ 31.7 + 31.7			
		m³/h	3.0 + 3.0 ~ 7.2 + 7.2			
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Starting method		Inverter		Inverter	
	Motor output	kW	6.2		6.2	
	Case heater	kW	0.045		0.045	
	Lubricant	MEL46		MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D			in.		57-1/8 x 34-11/16 x 21-11/16	
			mm		1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		R32 x 9 lbs + 15 oz (4.5 kg)	
	Control		Indoor LEV and BC controller			
Net weight			lbs (kg)		523 (237)	
Heat exchanger			plate type		plate type	
	Water volume in plate	G	1.22		1.22	
		l	4.6		4.6	
		psi	290		290	
	Water pressure Max.	MPa	2.0		2.0	
HIC circuit (HIC: Heat Inter-Changer)			-		-	
Pipe between unit and distributor	High pressure		3/4 (19.05) Brazed		3/4 (19.05) Brazed	
	Low pressure		7/8 (22.2) Brazed		7/8 (22.2) Brazed	
Drawing	External		KB94CAMA			
	Wiring		KE94L603		KE94L603	
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts			Heat Source Twinning kit: CMY-R200NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV			
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.	

1. SPECIFICATIONS

WR2-Series

Heat Source Model			PQRY-M288YSXU-A			
Indoor Model			Non-Ducted	Ducted		
Power source			3-phase 3-wire 460V ±10% 60Hz			
Cooling capacity (Nominal)	*1	BTU/h	288,000			
		kW	84.4			
		Power input	kW	21.07		
		(460) Current input	A	29.3		
		(Rated)	BTU/h	276,000		
	(460)	kW	80.9			
		Power input	kW	19.59	21.96	
		Current input	A	27.3	30.6	
		Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
			Inlet water	F	50~113°F (10~45°C)	
Heating capacity (Nominal)	*2	BTU/h	323,000			
		kW	94.7			
		Power input	kW	16.03		
		(460) Current input	A	22.3		
		(Rated)	BTU/h	304,000		
	(460)	kW	89.1			
		Power input	kW	14.30	14.45	
		Current input	A	19.9	20.1	
		Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
			Inlet water	F	50~113°F (10~45°C)	
Indoor unit connectable		Total capacity	50%~150% of heat source unit capacity			
		Model/Maximum quantity	M04~M96/50			
Sound power level (measured in anechoic room)		*3 dB(A)	71.0			
Refrigerant piping diameter	High pressure	in. (mm)	1-1/8 (28.58) Brazed			
	Low pressure	in. (mm)	1-3/8 (34.93) Brazed			
Set Model						
Model			PQRY-M144YXU-A	PQRY-M144YXU-A		
Minimum Circuit Ampacity			A	19		
Maximum Overcurrent Protection			A	30		
Circulating water	Water flow rate	G/h	1,902 + 1,902			
		G/min	31.7 + 31.7			
		m³/h	7.20 + 7.20			
		L/min	120 + 120			
		cfm	4.2 + 4.2			
		Pressure drop	psi	6.38	6.38	
	Operating volume range	kPa	44	44		
		G/h	1,189 + 1,189 ~ 3,054 + 3,054			
		G/min	19.8 + 19.8 ~ 50.9 + 50.9			
		m³/h	4.5 + 4.5 ~ 11.6 + 11.6			
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1		
	Starting method		Inverter	Inverter		
	Motor output	kW	8.0	8.0		
	Case heater	kW	0.045	0.045		
	Lubricant		MEL46	MEL46		
External finish		Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16			
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
	Inverter circuit		Over-heat protection, Over-current protection			
	Compressor		Over-heat protection			
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)			
	Control		Indoor LEV and BC controller			
Net weight		lbs (kg)	525 (238)	525 (238)		
Heat exchanger	Water volume in plate	G	plate type	plate type		
		l	1.22	1.22		
		l	4.6	4.6		
	Water pressure Max.	psi	290	290		
		MPa	2.0	2.0		
HIC circuit (HIC: Heat Inter-Changer)		-		-		
Pipe between unit and distributor	High pressure	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed		
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed	1-1/8 (28.58) Brazed		
Drawing	External	KB94CAMA				
	Wiring	KE94L603		KE94L603		
Standard attachment	Document	Installation Manual				
	Accessory	Details refer to External Drw				
Optional parts		Heat Source Twinning kit: CMY-R300NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV				
Remarks		1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).				
Notes:		1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)		Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.		

PQRY-M-T(S)XU-A, Y(S)XU-A

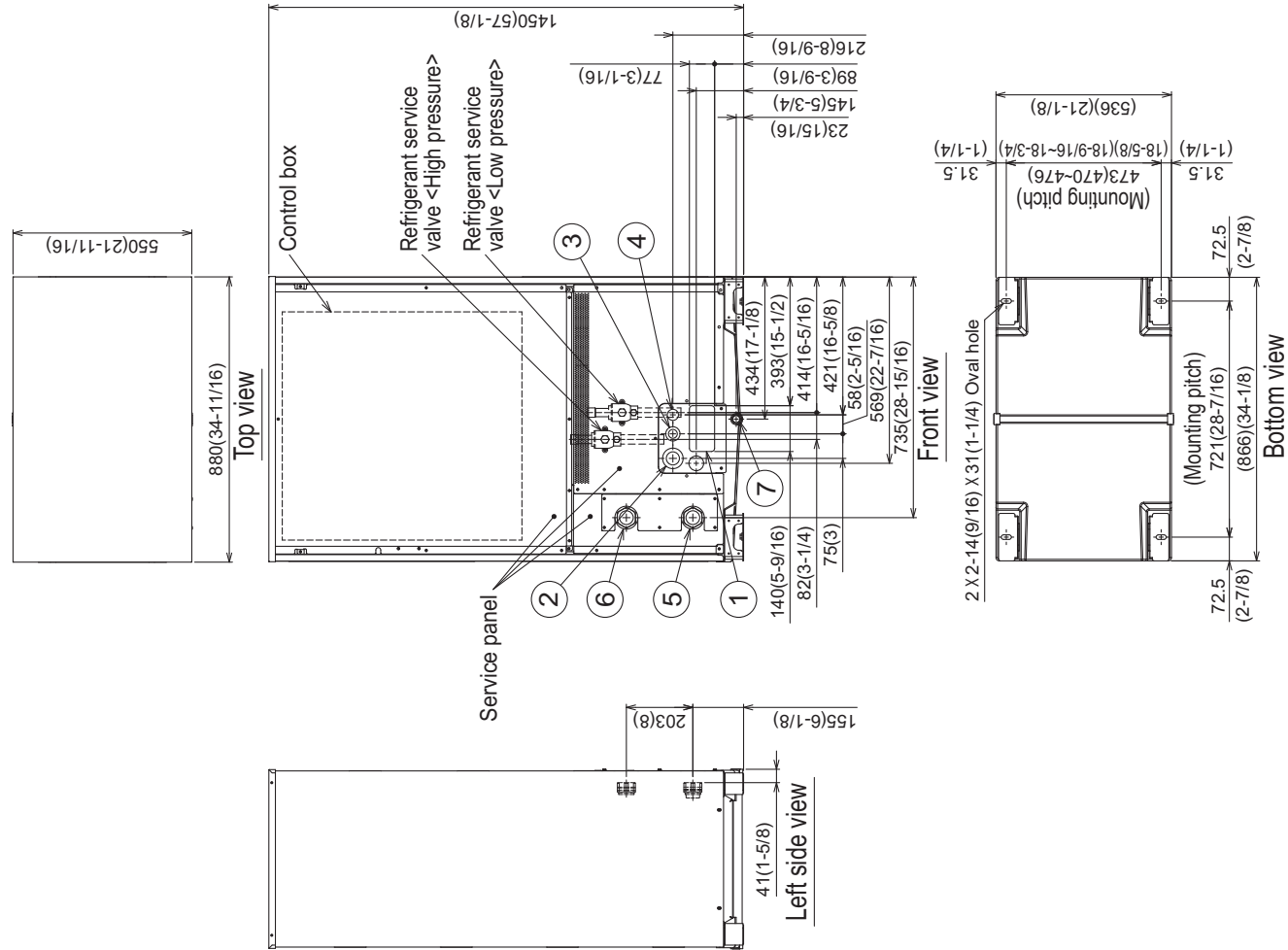
Heat Source Model			PQRY-M312YSXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 460V ±10% 60Hz			
Cooling capacity (Nominal)	(460)	*1	312,000			
			91.4			
		Power input	23.44			
		Current input	32.6			
			298,000			
	(Rated)		87.3			
		Power input	21.83			
		Current input	30.4			
			33.6			
Temp. range of cooling	Indoor	W.B. 59~75°F (15~24°C)				
	Inlet water	F 50~113°F (10~45°C)				
Heating capacity (Nominal)	(460)	*2	350,000			
			102.6			
		Power input	18.13			
		Current input	25.2			
			334,000			
	(Rated)		97.9			
		Power input	15.82			
		Current input	22.0			
			22.6			
Temp. range of heating	Indoor	D.B. 59~81°F (15~27°C)				
	Inlet water	F 50~113°F (10~45°C)				
Indoor unit connectable		Total capacity 50%~150% of heat source unit capacity				
Set Model		Model/Maximum quantity				
Sound power level (measured in anechoic room)		M04~M96/50				
		73.5				
Refrigerant piping diameter	High pressure	in. (mm) 1-1/8 (28.58) Brazed				
	Low pressure	in. (mm) 1-3/8 (34.93) Brazed				
Model			PQRY-M168YXU-A			
Minimum Circuit Ampacity			A 25		PQRY-M144YXU-A	
Maximum Overcurrent Protection			A 40		19	
Circulating water	Water flow rate	30				
		G/h	1,902 + 1,902			
		G/min	31.7 + 31.7			
		m³/h	7.20 + 7.20			
		L/min	120 + 120			
	Pressure drop	cfm	4.2 + 4.2			
		psi	6.38			
		kPa	44			
		Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054		
			G/min	19.8 + 19.8 ~ 50.9 + 50.9		
m³/h	4.5 + 4.5 ~ 11.6 + 11.6					
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Starting method		Inverter		Inverter	
	Motor output	kW	10.3		8.0	
	Case heater	kW	0.045		0.045	
	Lubricant	MEL46		MEL46		
External finish			Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D			in. 57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16	
			mm 1,450 x 880 x 550		1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)			
	Inverter circuit		Over-heat protection, Over-current protection			
	Compressor		Over-heat protection			
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)			
	Control		Indoor LEV and BC controller			
Net weight			lbs (kg) 525 (238)		525 (238)	
Heat exchanger	Water volume in plate	plate type				
		G	1.22			
		l	4.6			
	Water pressure Max.	psi	290			
		MPa	2.0			
HIC circuit (HIC: Heat Inter-Changer)			-			
Pipe between unit and distributor	High pressure		in. (mm) 7/8 (22.2) Brazed			
	Low pressure		in. (mm) 1-1/8 (28.58) Brazed			
Drawing	External		KB94CAMA			
	Wiring		KE94L603			
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts			Heat Source Twinning kit: CMY-R300NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV			
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)			
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.			

1. SPECIFICATIONS

WR2-Series

Heat Source Model			PQRY-M336YSXU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 460V ±10% 60Hz			
Cooling capacity (Nominal)	*1	BTU/h	336,000			
		kW	98.5			
		Power input	kW	25.69		
		(460) Current input	A	35.8		
	(Rated)	BTU/h	320,000			
		kW	93.8			
		Power input	kW	24.62	26.69	
		(460) Current input	A	34.3	37.2	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Inlet water	F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	378,000			
		kW	110.8			
		Power input	kW	20.20		
		(460) Current input	A	28.1		
	(Rated)	BTU/h	360,000			
		kW	105.5			
		Power input	kW	17.14	17.83	
		(460) Current input	A	23.9	24.8	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Inlet water	F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity		50%~150% of heat source unit capacity			
Model/Maximum quantity	M04-M96/50					
Sound power level (measured in anechoic room)	*3	dB(A)	75.0			
Refrigerant piping diameter	High pressure	in. (mm)	1-1/8 (28.58) Brazed			
	Low pressure	in. (mm)	1-5/8 (41.28) Brazed			
Set Model						
Model			PQRY-M168YXU-A		PQRY-M168YXU-A	
Minimum Circuit Ampacity			25		25	
Maximum Overcurrent Protection			40		40	
Circulating water	Water flow rate	G/h	1,902 + 1,902			
		G/min	31.7 + 31.7			
		m³/h	7.20 + 7.20			
		L/min	120 + 120			
		cfm	4.2 + 4.2			
		Pressure drop	psi	6.38	6.38	
	Operating volume range	kPa	44	44		
		G/h	1,189 + 1,189 ~ 3,054 + 3,054			
G/min		19.8 + 19.8 ~ 50.9 + 50.9				
m³/h		4.5 + 4.5 ~ 11.6 + 11.6				
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Starting method		Inverter		Inverter	
	Motor output	kW	10.3		10.3	
	Case heater	kW	0.045		0.045	
	Lubricant		MEL46		MEL46	
External finish			Powder coating <MUNSELL 5Y 8/1>		Powder coating <MUNSELL 5Y 8/1>	
External dimension H x W x D			57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15MPa (601 psi)		High pressure sensor, High pressure switch at 4.15MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge		R32 x 9 lbs + 15 oz (4.5 kg)		R32 x 9 lbs + 15 oz (4.5 kg)	
	Control		Indoor LEV and BC controller			
Net weight			525 (238)		525 (238)	
Heat exchanger	Water volume in plate	G	plate type		plate type	
		l	1.22		1.22	
		4.6	4.6		4.6	
	Water pressure Max.	psi	290		290	
		MPa	2.0		2.0	
HIC circuit (HIC: Heat Inter-Changer)			-		-	
Pipe between unit and distributor	High pressure	in. (mm)	7/8 (22.2) Brazed		7/8 (22.2) Brazed	
	Low pressure	in. (mm)	1-1/8 (28.58) Brazed		1-1/8 (28.58) Brazed	
Drawing	External	KB94CAMA		KB94CAMA		
	Wiring	KE94L603		KE94L603		
Standard attachment	Document	Installation Manual				
	Accessory	Details refer to External Drw				
Optional parts			Heat Source Twinning kit: CMY-R300NCBK joint: CMY-Y102SS-G2,CMY-Y102LS-G2,CMY-R170M-E,PAC-KA01PS-E,CMY-R201,202,203,204,306S-G,CMY-R303,304S-G1 Main BC controller: CMB-M104,106,108,1012NU-MA-SV Sub BC controller: CMB-M104,108NU-MB-SV			
Remarks			1.Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. 2.Due to continuing improvement, above specifications may be subject to change without notice. 3.The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.) 4.The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. 5.The Heat Source Unit should not be installed at outdoor. 6.Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. 7.Be sure to provide interlocking for the unit operation and water circuit. 8.Install the supplied insulation material to the unused drain-socket. 9.When installing insulation material around both water and refrigerant piping, follow the installation manual. 10.The cooling tower and the water circuit must be a closed circuit (water is not exposed to the atmosphere).			
Notes:			1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F.W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Inlet water temperature: 68°F (20°C) 3.The sound values are sound power level (PWL) based on ISO 3744:2010 (r=3.5m). Test conditions: Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Inlet water temperature: 86°F (30°C)			
			Unit converter BTU/h =kW x 3.412 cfm =m³/min x 35.31 lbs =kg/0.4536 *Above specification data is subject to rounding variation.			

- <Accessories (Packaged in the accessory kit)>
- Refrigerant (high pressure) conn. pipe 1pc.
 - Refrigerant (low pressure) conn. pipe 1pc.
 - Refrigerant (low pressure) conn. elbow 1pc.
 - Water stopper 1pc.
 - Sealing material for water stopper 1pc.
 - Sealing material for field piping (high pressure, low pressure) 1pc. each



No.	Usage	Specifications
①	For pipes	140 x 77 Knockout hole (5-9/16) (3-1/16)
②	For wires	ø62.7 or ø34.5 Knockout hole (2-1/2) (1-3/8)
③	For transmission cables	ø43.7 or ø22.2 Knockout hole (1-3/4) (7/8)
④	Water pipe inlet	ø34 Knockout hole (1-3/8)
⑤	Water pipe outlet	NPT1-1/2 Screw
⑥	Drain pipe	NPT1-1/2 Screw
⑦		Rc3/4 Screw

Unit: mm(in)

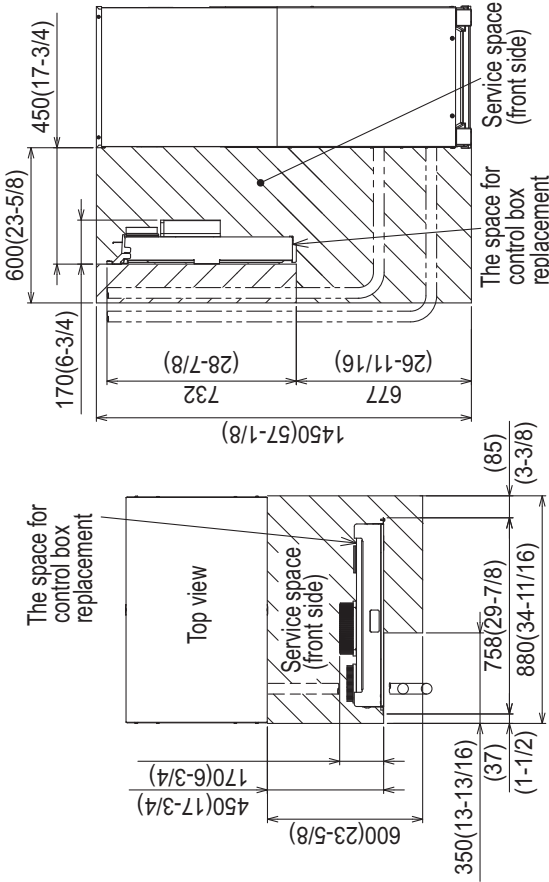
PQRY-M72, 96, 120, 144, 168, 192, 216, 240TXU-A

Unit: mm(in)

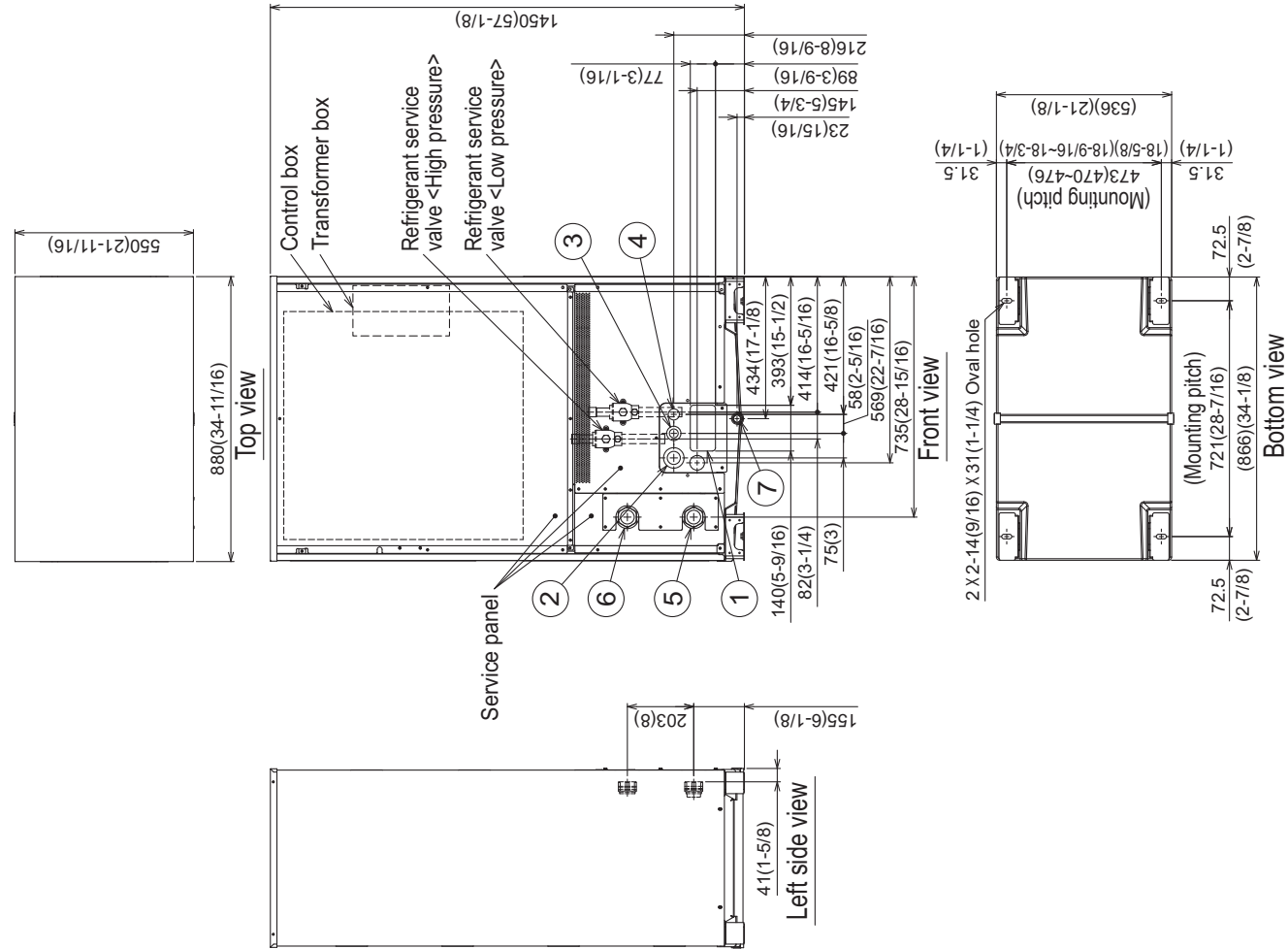
Connecting pipe specifications			Refrigerant piping *1		Service valve piping	
	High-pressure	Low-pressure	High-pressure	Low-pressure	High-pressure	Low-pressure
PQRY-M72TXU-A	ø15.88(ø5/8)	ø19.05(ø3/4)	ø15.88(ø5/8)	ø19.05(ø3/4)	ø28.58(ø1-1/8)	ø28.58(ø1-1/8)
PQRY-M96TXU-A	ø19.05(ø3/4)	ø22.2(ø7/8)	ø19.05(ø3/4)	ø22.2(ø7/8)	ø28.58(ø1-1/8)	ø28.58(ø1-1/8)
PQRY-M120TXU-A	ø22.2(ø7/8)	ø28.58(ø1-1/8)	ø22.2(ø7/8)	ø28.58(ø1-1/8)	ø28.58(ø1-1/8)	ø28.58(ø1-1/8)
PQRY-M144TXU-A	ø28.58(ø1-1/8)	ø34.93(ø1-3/8)	ø28.58(ø1-1/8)	ø34.93(ø1-3/8)	ø28.58(ø1-1/8)	ø28.58(ø1-1/8)
PQRY-M168TXU-A	ø34.93(ø1-3/8)		ø34.93(ø1-3/8)		ø28.58(ø1-1/8)	ø28.58(ø1-1/8)
PQRY-M192TXU-A					ø28.58(ø1-1/8)	ø28.58(ø1-1/8)
PQRY-M216TXU-A					ø28.58(ø1-1/8)	ø28.58(ø1-1/8)
PQRY-M240TXU-A					ø28.58(ø1-1/8)	ø28.58(ø1-1/8)

*1 Connect by using the connecting pipes that are supplied.

- Note 1. Close a hole of the water piping, the refrigerant piping, the power supply, and the control wiring and unused knockout holes with the putty etc. so as not to infiltrate rain water etc.(field erection work)
- Note 2. At the time of product shipment, the front side piping specification serves as the local drainage connection. When connecting on the rear side, please remove the rear side plug sealing corks, and attach a front side. Ensure there is no leak after the attachment has been fitted.
- Note 3. Take notice of service space as Fig.A. (In case of single installation, 600mm(23-5/8) or more of back space as front space makes easier access when servicing the unit from rear side.)
- Note 4. If water pipes or refrigerant pipes stretch upward, required space for service and maintenance due to replacement of control box is shown in Fig.B.
- Note 5. When replacing the water heat exchanger, the water pipe at the front of the unit must be removed. Ensure that the water pipe joint is accessible so the pipe can be removed easily.
- Note 6. Environmental condition for installation: -20~40°C (DB)(-4~104°F) as indoor installation.
- Note 7. In case the temperature around the heat source unit has possibility to drop under 0°C(32°F), be careful for the following point to prevent the pipe burst by the water pipe freeze-up.
- Circulate the water all the time even if the heat source unit is not in operation.
 - Drain the water from inside of the heat source unit when the heat source unit will not operate for a long term.
- Note 8. Ensure that the drain piping is downward with a pitch of more than 1/100.
- Note 9. At brazing of pipes, wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C(248°F).
- Note10. Install a strainer (with 50 mesh or more) in the circulation water inlet pipe within 1.5 m from the heat source unit.
- Note11. The water pipe joint material on the heat source unit side is C1220T, which may corrode from contact with other types of metals. To prevent corrosion,insulate the pipes if necessary.
- Note12. When installing the field water piping, torque the screws to 150 N·m (15.3 kgf·m). Excessive torque may damage the water piping.



- <Accessories (Packaged in the accessory kit)>
- Refrigerant (high pressure) conn. pipe 1pc.
 - Refrigerant (low pressure) conn. pipe 1pc.
 - Refrigerant (low pressure) conn. elbow 1pc.
 - Water stopper 1pc.
 - Sealing material for water stopper 1pc.
 - Sealing material for field piping (high pressure, low pressure) 1pc. each



No.	Usage	Specifications
①	For pipes	140 x 77 Knockout hole (5-9/16) (3-1/16)
②	For wires	ø62.7 or ø34.5 Knockout hole (2-1/2) (1-3/8)
③	For transmission cables	ø43.7 or ø22.2 Knockout hole (1-3/4) (7/8)
④	Water pipe inlet	ø34 Knockout hole (1-3/8)
⑤	Water pipe outlet	NPT1-1/2 Screw
⑥	Drain pipe	NPT1-1/2 Screw
⑦		Rc3/4 Screw

Unit: mm(in)

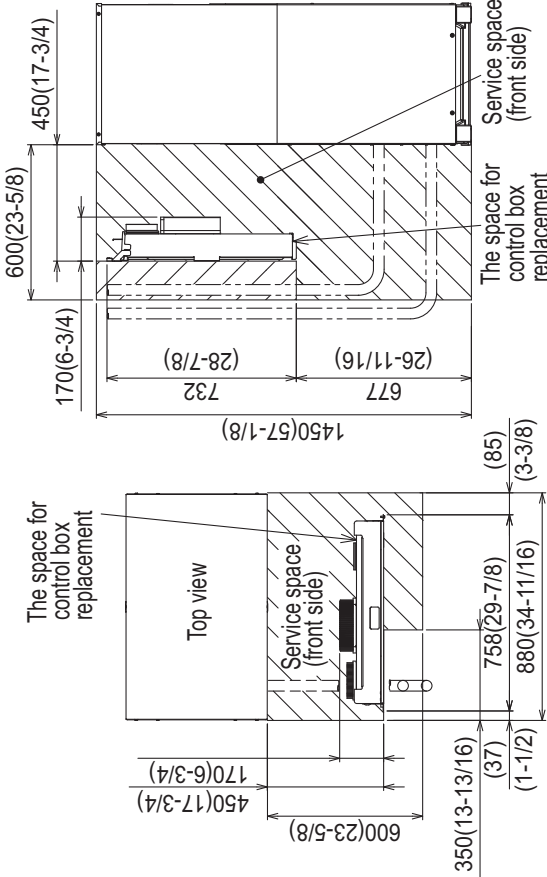
PQRY-M72, 96, 120, 144, 168, 192, 216, 240YXU-A

Unit: mm(in)

Connecting pipe specifications			Refrigerant piping *1		Service valve piping	
			High-pressure	Low-pressure	High-pressure	Low-pressure
PQRY-M72YXU-A			ø15.88(ø5/8)	ø19.05(ø3/4)		
PQRY-M96YXU-A			ø19.05(ø3/4)	ø22.2(ø7/8)		
PQRY-M120YXU-A						
PQRY-M144YXU-A						
PQRY-M168YXU-A						
PQRY-M192YXU-A			ø22.2(ø7/8)	ø28.58(ø1-1/8)	ø28.58(ø1-1/8)	ø28.58(ø1-1/8)
PQRY-M216YXU-A						
PQRY-M240YXU-A				ø34.93(ø1-3/8)		

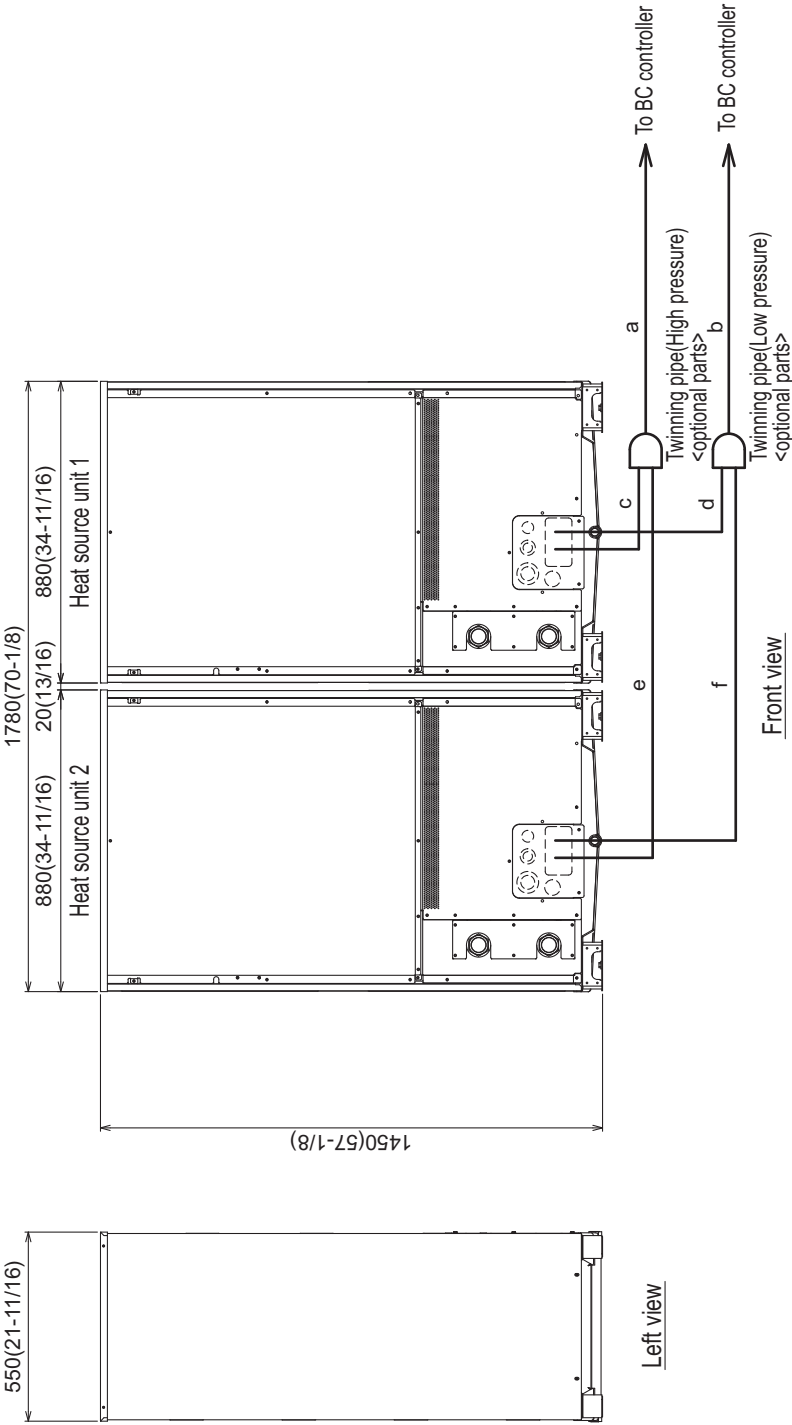
*1 Connect by using the connecting pipes that are supplied.

- Note 1. Close a hole of the water piping, the refrigerant piping, the power supply, and the control wiring and unused knockout holes with the putty etc. so as not to infiltrate rain water etc.(field erection work)
- Note 2. At the time of product shipment, the front side piping specification serves as the local drainage connection. When connecting on the rear side, please remove the rear side plug sealing corks, and attach a front side. Ensure there is no leak after the attachment has been fitted.
- Note 3. Take notice of service space as Fig.A. (In case of single installation, 600mm(23-5/8) or more of back space as front space makes easier access when servicing the unit from rear side.)
- Note 4. If water pipes or refrigerant pipes stretch upward, required space for service and maintenance due to replacement of control box is shown in Fig.B.
- Note 5. When replacing the water heat exchanger, the water pipe at the front of the unit must be removed. Ensure that the water pipe joint is accessible so the pipe can be removed easily.
- Note 6. Environmental condition for installation: -20~40°C (DB)(-4~104°F) as indoor installation.
- Note 7. In case the temperature around the heat source unit has possibility to drop under 0°C(32°F), be careful for the following point to prevent the pipe burst by the water pipe freeze-up.
- Circulate the water all the time even if the heat source unit is not in operation.
 - Drain the water from inside of the heat source unit when the heat source unit will not operate for a long term.
- Note 8. Ensure that the drain piping is downward with a pitch of more than 1/100.
- Note 9. At brazing of pipes, wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C(248°F).
- Note10. Install a strainer (with 50 mesh or more) in the circulation water inlet pipe within 1.5 m from the heat source unit.
- Note11. The water pipe joint material on the heat source unit side is C1220T, which may corrode from contact with other types of metals. To prevent corrosion,insulate the pipes if necessary.
- Note12. When installing the field water piping, torque the screws to 150 N·m (15.3 kgf·m). Excessive torque may damage the water piping.



PQRY-M144, 168, 192, 216, 240, 288, 312, 336TSXU-A/YSXU-A

Unit: mm(in)



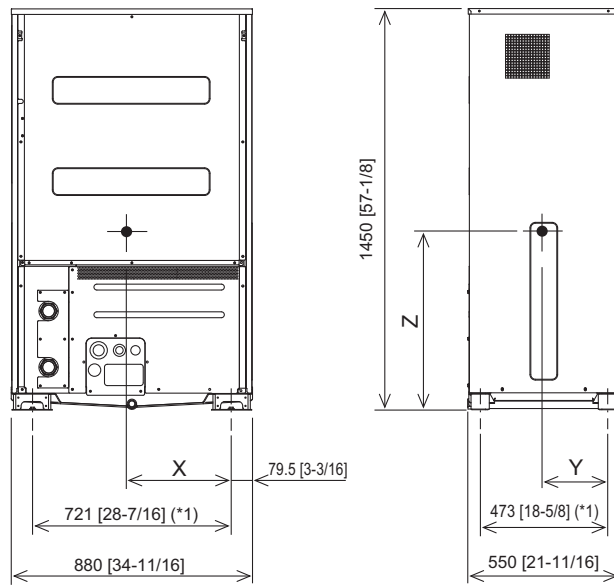
Twinning pipe connection size

Package unit name	M144TYSXU-A	M168TYSXU-A	M192TYSXU-A	M216TYSXU-A	M240TYSXU-A	M288TYSXU-A	M312TYSXU-A	M336TYSXU-A
Component unit name	M72TYSXU-A	M96TYSXU-A	M120TYSXU-A	M144TYSXU-A	M168TYSXU-A	M192TYSXU-A	M216TYSXU-A	M240TYSXU-A
Heat source unit 1	M72TYSXU-A	M96TYSXU-A	M120TYSXU-A	M144TYSXU-A	M168TYSXU-A	M192TYSXU-A	M216TYSXU-A	M240TYSXU-A
Heat source unit 2	M72TYSXU-A	M96TYSXU-A	M120TYSXU-A	M144TYSXU-A	M168TYSXU-A	M192TYSXU-A	M216TYSXU-A	M240TYSXU-A
Twinning Kit(optional parts)	CMY-R100NCBK	CMY-R200NCBK	CMY-R200NCBK	CMY-R200NCBK	CMY-R200NCBK	CMY-R200NCBK	CMY-R300NCBK	CMY-R300NCBK
BC controller	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure
~Twinning pipe	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure
Twinning pipe	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure
-Heat source unit 1	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure
Twinning pipe	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure	High pressure
-Heat source unit 2	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure	Low pressure

- Note 1. Connect the pipes as shown in the figure above. Refer to the table above for the pipe size.
2. Twinning pipes must be installed horizontally using a level vessel.
3. Be sure to see the Installation Manual for details of Twinning pipe installation.
4. The pipe section before the Twinning pipe (section "a" and "b" in the figure) must have at least 500mm(19-11/16) of straight section ("including the straight pipe that is supplied with the Twinning pipe).
5. Only use the Twinning pipe by Mitsubishi (optional parts).

PQRY-M72, 96, 120, 144, 168, 192, 216, 240TXU-A/YXU-A

Unit: mm [in.]

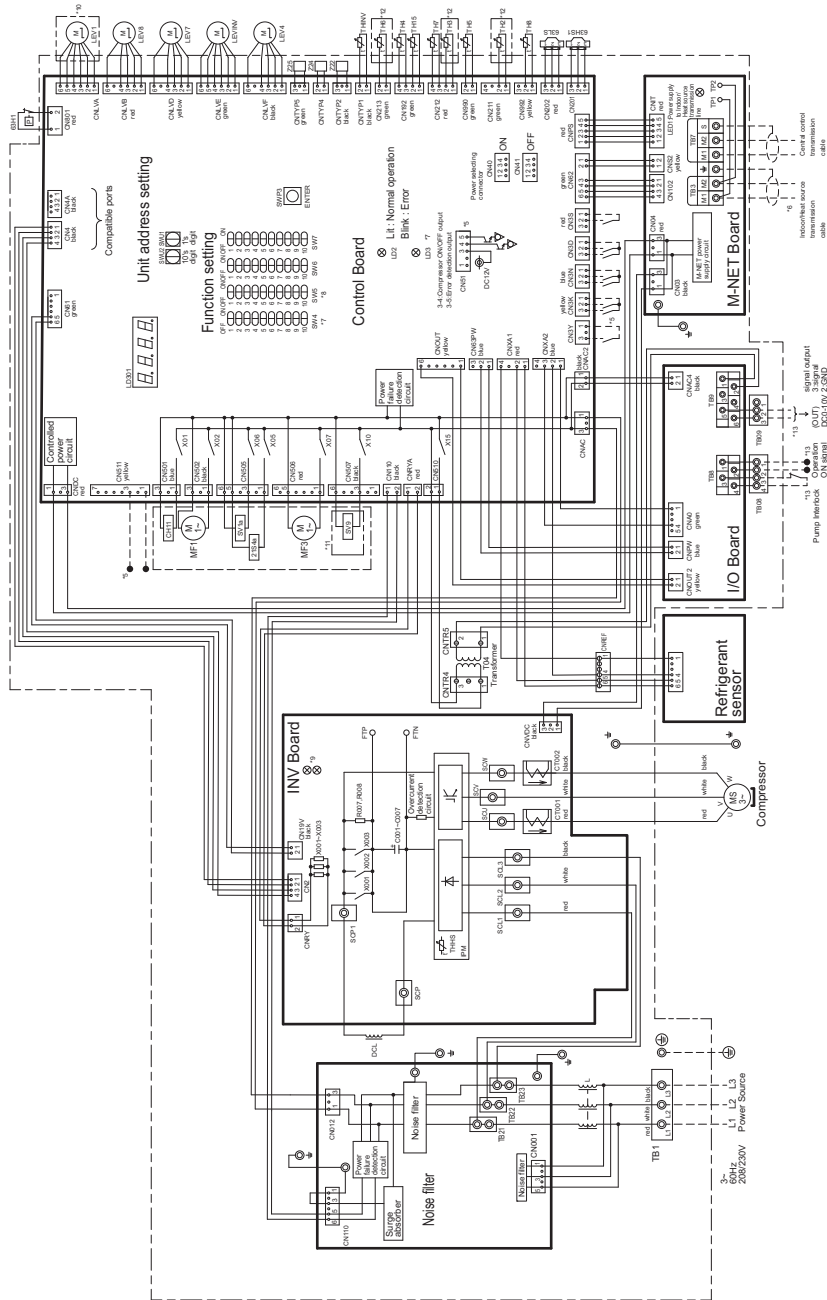


Model	X	Y	Z
PQRY-M72TXU-A	345 [13-5/8]	243 [9-5/8]	596 [23-1/2]
PQRY-M96TXU-A	345 [13-5/8]	243 [9-5/8]	596 [23-1/2]
PQRY-M120TXU-A	345 [13-5/8]	243 [9-5/8]	596 [23-1/2]
PQRY-M144TXU-A	347 [13-11/16]	245 [9-11/16]	603 [23-3/4]
PQRY-M168TXU-A	347 [13-11/16]	245 [9-11/16]	603 [23-3/4]
PQRY-M192TXU-A	346 [13-5/8]	244 [9-5/8]	600 [23-5/8]
PQRY-M216TXU-A	356 [14-1/16]	235 [9-5/16]	577 [22-3/4]
PQRY-M240TXU-A	356 [14-1/16]	235 [9-5/16]	577 [22-3/4]
PQRY-M72YXU-A	327 [12-7/8]	234 [9-1/4]	623 [24-9/16]
PQRY-M96YXU-A	327 [12-7/8]	234 [9-1/4]	623 [24-9/16]
PQRY-M120YXU-A	327 [12-7/8]	233 [9-3/16]	621 [24-1/2]
PQRY-M144YXU-A	327 [12-7/8]	234 [9-1/4]	623 [24-9/16]
PQRY-M168YXU-A	328 [12-15/16]	234 [9-1/4]	625 [24-5/8]
PQRY-M192YXU-A	328 [12-15/16]	234 [9-1/4]	625 [24-5/8]
PQRY-M216YXU-A	339 [13-3/8]	227 [8-15/16]	600 [23-5/8]
PQRY-M240YXU-A	339 [13-3/8]	227 [8-15/16]	600 [23-5/8]

*1 Mounting Pitch

PQRY-M-T(S)XU-A, Y(S)XU-A

PQRY-M72, 96, 120, 144, 168, 192, 216, 240TXU-A



1. Dot-dash lines indicate wiring not supplied with unit.
2. Single-dotted lines indicate the control box boundaries.
3. 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 between the FTP and FTM terminals on the INV board has dropped to DC20V or less.
4. There are many high-temperature parts inside and on the back of the control box, so exercise caution even after turning off the power.
5. Refer to the Data book for connecting input/output signal connectors.
6. Refer to the Data book for Heat source units in the same refrigerant system.

•LD3 Lit:Operation
Blink:Turning on
Unlit:Turn off

Refer to the Data book and Service Handbook for other switch setting and monitoring items.

*8. Setting the Central control switch(SW5-1).

System configuration	SW5-1
No connection system with the system controller	OFF
Connection system with the system controller	ON

Connection system with the system controller	ON
*9. Refer to the following for the LED on the INV board.	

LED4: Microcomputer operation

LED1: Normal operation (Lit)

Model name	Appliance
*10. Difference of appliance	

Model name	Appliance
PQHY	*10 exist
PORY	*10 do not exist

FOR	TO DO NOT EXIST
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*11. Difference of appliance

Model name	Appliance
POHY	*11 do not exist

PORY	*11 exist
*12. Difference of appliance	

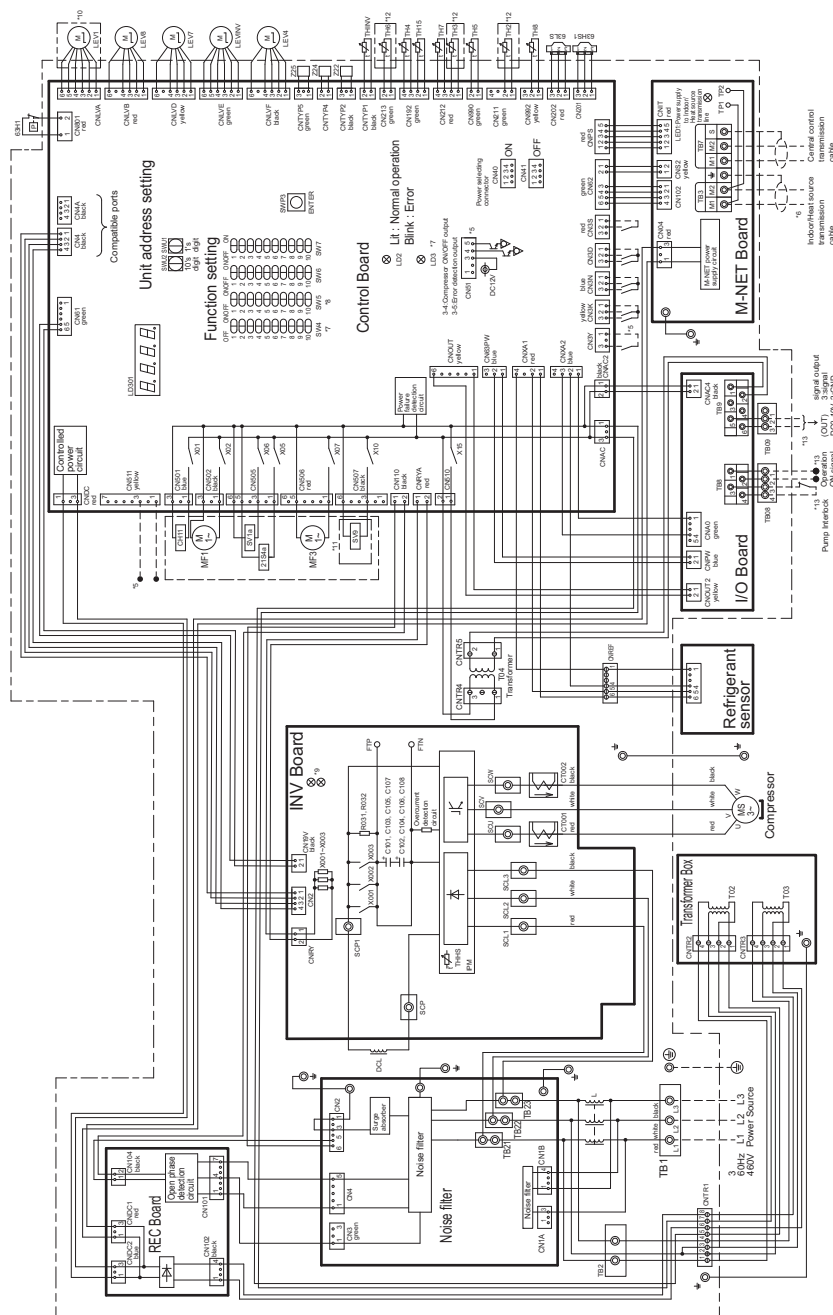
Model name	Appliance
POHY	*12 exist

PQRY	*12 exist
PQRY	*12 do not exist

*13. Refer to the Data book for wiring terminal block for Pump Interlock, Operation ON signal and DC 0-10V signal output.

<S	Symbol	Explanation	Symbol	Explanation
	21SA4	4-way valve	SV1A	Solenoid valve
	63HI	Cooling/Heating switching	SV9	For opening/closing the bypass circuit
	63HI1	Pressure switch (High pressure protection)	SV9	For opening/closing the bypass circuit
	63HS1	Pressure	TB1	Terminal block
	63LS	Low pressure	TB3	Terminal block
	X001~X003	Magnetic relay (inverter main circuit)/2C	TB7	Terminal block
	C001~C007	Capacitor (inverter main circuit)	TB8	Terminal block
	CM001~CM007	Compressor (inverter main circuit)	TB9	Terminal block
	CT001, 002	Compressor (inverter main circuit)	TB10	Terminal block
	DC1	DC motor (For power factor enhancement)	TB13	Terminal block
	DC2	DC motor (For power factor enhancement)	TB4	Terminal block
	LE1	Linear	TB5	Terminal block
	LEV1	HIC bypass Controls refrigerant flow in HIC circuit	TB6	Terminal block
	LEV4	For opening/closing the injection circuit.	TB6	Terminal block
	LEV7	expansion valve	TB7	Terminal block
	LEV8	Heat exchanger capacity control.	TB8	Terminal block
	LEVINV	Heat exchanger capacity control.	TB15	Terminal block
	FE	Heat exchanger for inverter.	TB15	Terminal block
	FEV	FEV motor (Radial fan)	TB15	Terminal block
	MF-3	FEV motor (Radial fan)	TB15	Terminal block
	R007, 008	Resistor	222, 224, 225	Function setting connector
		Inrush current prevention		

PQRY-M72, 96, 120, 144, 168, 192, 216, 240YXU-A



1. Dot-dash lines indicate wiring not supplied with unit.
2. Single-dotted lines indicate the control box boundaries.
3. 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 between the FTP and FTT terminals on the INV board has dropped to DC200V or less.
4. There are many high-temperature parts inside and on the back of the control box, so exercise caution even after turning off the power.
5. Refer to the Data book for connecting input/output signal connectors.
6. Refer to the Data book for Heat source units in the same refrigerant

*7. SW4: In the case of All OFF

- LD3 Lit:Operation

Blink:Turning on

Unlit : Turn off

Refer to the Data book and Service Handbook

for other switch setting and monitoring items.

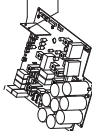
ing the Central control switch(SW5-1).

m configuration	SW5-1
-----------------	-------

connection system with the system controller	OFF
connection system with the system controller	ON

section system with the system controller	ON
---	----

er to the following for the LED on the INV board.



***10.Difference of appliance**

Model name	Appliance
PQHY	*10 exist
PQRY	*10 do not exist

*11. Difference of appliance

Model name	Appliance
PQHY	*11 do not exist
PQRY	*11 exist

*12. Difference of appliance

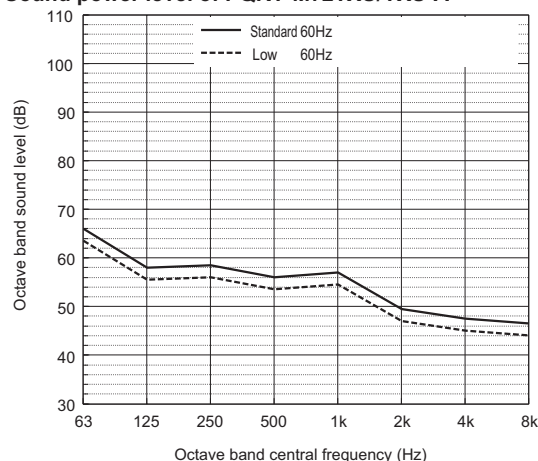
Model name	Appliance
PQHY	*12 exist
PQRY	*12 do not exist

*13. Refer to the Data book for wiring terminal block for Pump Interlock, Operation ON signal and DC 0-10V signal output.

Symbol explanation>			
Symbol	Explanation	Symbol	Explanation
21S54	4-way valve	SV1a	For opening/closing the bypass circuit under the O/S
63H1	Pressure switch(high pressure protection)	SV9	For opening/closing the bypass circuit
63HS1	Pressure sensor	TB1	Terminal block
63LS	Low pressure sensor	TB3	Terminal block
X001~X003	Magnetic relay(inverter main circuit)/2C	TB7	Terminal block
G101~C108	Capacitor(inverter main circuit)	TB08	Terminal block
CH11	Crankcase heater(for heating the compressor)	TB29	Terminal block
U001, 002	Current sensor	TB32	Terminal block
DC	Direct current power supply	TH0	Thermistor
DC	Direct current power supply (power factor enhancement)	TH4	Thermistor
EV1	Linear expansion valve	TH5	Thermistor
EV4	HFC bypass controls refrigerant flow in H/C circuit	TH6	Thermistor
EV7	For opening/closing the injection circuit.	TH7	Thermistor
EV8	Heat exchanger capacity control.	TH8	Thermistor
EV9V	Heat exchanger capacity control.	TH9	Thermistor
EV10V	Heat exchanger capacity control.	TH15	Thermistor
MF1	Fan motor(Radiator panel)	THS	Thermistor
MF2	Fan motor(Radiator panel)	THS	Thermistor
MF3	Fan motor(Radiator panel)	THS	Thermistor
MF4	Fan motor(Radiator panel)	THS	Thermistor
MF5	Fan motor(Radiator panel)	THS	Thermistor
MF6	Fan motor(Radiator panel)	THS	Thermistor
MF7	Fan motor(Radiator panel)	THS	Thermistor
MF8	Fan motor(Radiator panel)	THS	Thermistor
MF9	Fan motor(Radiator panel)	THS	Thermistor
MF10	Fan motor(Radiator panel)	THS	Thermistor
MF11	Fan motor(Radiator panel)	THS	Thermistor
MF12	Fan motor(Radiator panel)	THS	Thermistor
MF13	Fan motor(Radiator panel)	THS	Thermistor
MF14	Fan motor(Radiator panel)	THS	Thermistor
MF15	Fan motor(Radiator panel)	THS	Thermistor
MF16	Fan motor(Radiator panel)	THS	Thermistor
MF17	Fan motor(Radiator panel)	THS	Thermistor
MF18	Fan motor(Radiator panel)	THS	Thermistor
MF19	Fan motor(Radiator panel)	THS	Thermistor
MF20	Fan motor(Radiator panel)	THS	Thermistor
MF21	Fan motor(Radiator panel)	THS	Thermistor
MF22	Fan motor(Radiator panel)	THS	Thermistor
MF23	Fan motor(Radiator panel)	THS	Thermistor
MF24	Fan motor(Radiator panel)	THS	Thermistor
MF25	Fan motor(Radiator panel)	THS	Thermistor
MF26	Fan motor(Radiator panel)	THS	Thermistor
MF27	Fan motor(Radiator panel)	THS	Thermistor
MF28	Fan motor(Radiator panel)	THS	Thermistor
MF29	Fan motor(Radiator panel)	THS	Thermistor
MF30	Fan motor(Radiator panel)	THS	Thermistor
MF31	Fan motor(Radiator panel)	THS	Thermistor
MF32	Fan motor(Radiator panel)	THS	Thermistor
MF33	Fan motor(Radiator panel)	THS	Thermistor
MF34	Fan motor(Radiator panel)	THS	Thermistor
MF35	Fan motor(Radiator panel)	THS	Thermistor
MF36	Fan motor(Radiator panel)	THS	Thermistor
MF37	Fan motor(Radiator panel)	THS	Thermistor
MF38	Fan motor(Radiator panel)	THS	Thermistor
MF39	Fan motor(Radiator panel)	THS	Thermistor
MF40	Fan motor(Radiator panel)	THS	Thermistor
MF41	Fan motor(Radiator panel)	THS	Thermistor
MF42	Fan motor(Radiator panel)	THS	Thermistor
MF43	Fan motor(Radiator panel)	THS	Thermistor
MF44	Fan motor(Radiator panel)	THS	Thermistor
MF45	Fan motor(Radiator panel)	THS	Thermistor
MF46	Fan motor(Radiator panel)	THS	Thermistor
MF47	Fan motor(Radiator panel)	THS	Thermistor
MF48	Fan motor(Radiator panel)	THS	Thermistor
MF49	Fan motor(Radiator panel)	THS	Thermistor
MF50	Fan motor(Radiator panel)	THS	Thermistor
MF51	Fan motor(Radiator panel)	THS	Thermistor
MF52	Fan motor(Radiator panel)	THS	Thermistor
MF53	Fan motor(Radiator panel)	THS	Thermistor
MF54	Fan motor(Radiator panel)	THS	Thermistor
MF55	Fan motor(Radiator panel)	THS	Thermistor
MF56	Fan motor(Radiator panel)	THS	Thermistor
MF57	Fan motor(Radiator panel)	THS	Thermistor
MF58	Fan motor(Radiator panel)	THS	Thermistor
MF59	Fan motor(Radiator panel)	THS	Thermistor
MF60	Fan motor(Radiator panel)	THS	Thermistor
MF61	Fan motor(Radiator panel)	THS	Thermistor
MF62	Fan motor(Radiator panel)	THS	Thermistor
MF63	Fan motor(Radiator panel)	THS	Thermistor
MF64	Fan motor(Radiator panel)	THS	Thermistor
MF65	Fan motor(Radiator panel)	THS	Thermistor
MF66	Fan motor(Radiator panel)	THS	Thermistor
MF67	Fan motor(Radiator panel)	THS	Thermistor
MF68	Fan motor(Radiator panel)	THS	Thermistor
MF69	Fan motor(Radiator panel)	THS	Thermistor
MF70	Fan motor(Radiator panel)	THS	Thermistor
MF71	Fan motor(Radiator panel)	THS	Thermistor
MF72	Fan motor(Radiator panel)	THS	Thermistor
MF73	Fan motor(Radiator panel)	THS	Thermistor
MF74	Fan motor(Radiator panel)	THS	Thermistor
MF75	Fan motor(Radiator panel)	THS	Thermistor
MF76	Fan motor(Radiator panel)	THS	Thermistor
MF77	Fan motor(Radiator panel)	THS	Thermistor
MF78	Fan motor(Radiator panel)	THS	Thermistor
MF79	Fan motor(Radiator panel)	THS	Thermistor
MF80	Fan motor(Radiator panel)	THS	Thermistor
MF81	Fan motor(Radiator panel)	THS	Thermistor
MF82	Fan motor(Radiator panel)	THS	Thermistor
MF83	Fan motor(Radiator panel)	THS	Thermistor
MF84	Fan motor(Radiator panel)	THS	Thermistor
MF85	Fan motor(Radiator panel)	THS	Thermistor
MF86	Fan motor(Radiator panel)	THS	Thermistor
MF87	Fan motor(Radiator panel)	THS	Thermistor

PARRY-M-T(S)XU-A, Y(S)XU-A

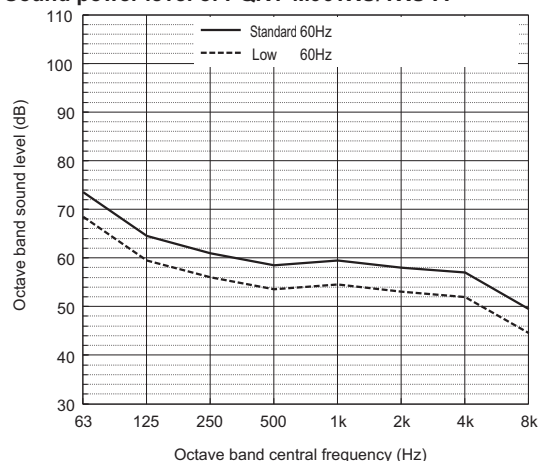
Sound power level of PQRY-M72TXU/YXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	66.0	58.0	58.5	56.0	57.0	49.5	47.5	46.5	60.5
Low noise mode	60Hz	63.5	55.5	56.0	53.5	54.5	47.0	45.0	44.0	58.0

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.

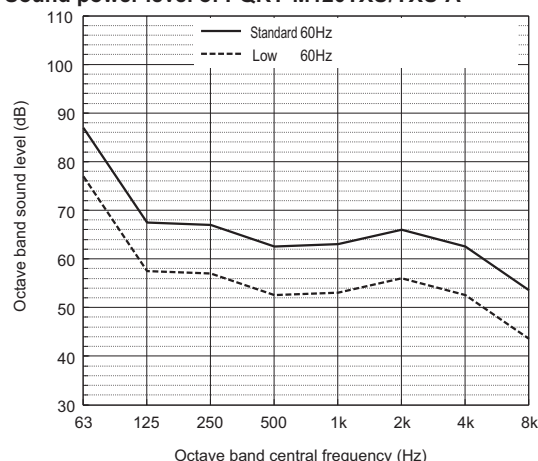
Sound power level of PQRY-M96TXU/YXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	73.5	64.5	61.0	58.5	59.5	58.0	57.0	49.5	65.0
Low noise mode	60Hz	68.5	59.5	56.0	53.5	54.5	53.0	52.0	44.5	60.0

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.

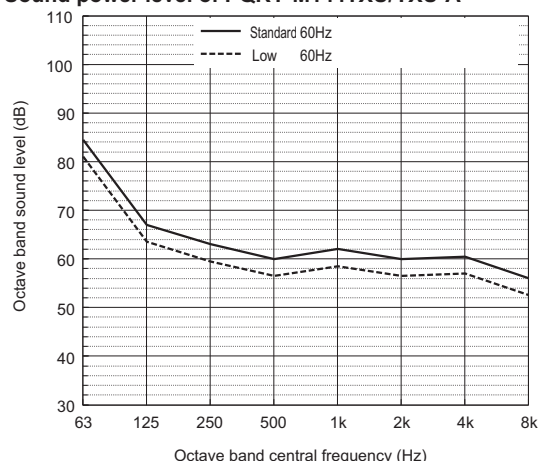
Sound power level of PQRY-M120TXU/YXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	87.0	67.5	67.0	62.5	63.0	66.0	62.5	53.5	71.0
Low noise mode	60Hz	77.0	57.5	57.0	52.5	53.0	56.0	52.5	43.5	61.0

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.

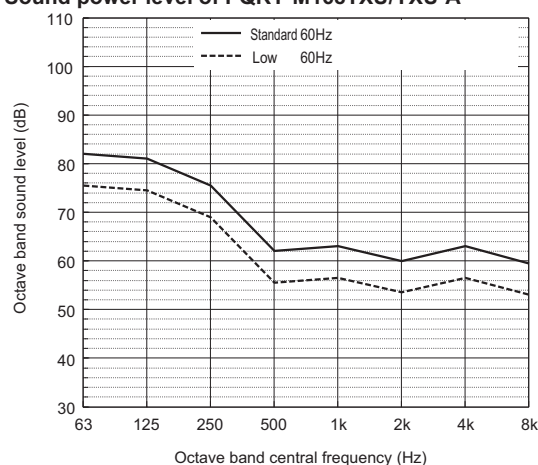
Sound power level of PQRY-M144TXU/YXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	84.5	67.0	63.0	60.0	62.0	60.0	60.5	56.0	68.0
Low noise mode	60Hz	81.0	63.5	59.5	56.5	58.5	56.5	57.0	52.5	64.5

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.

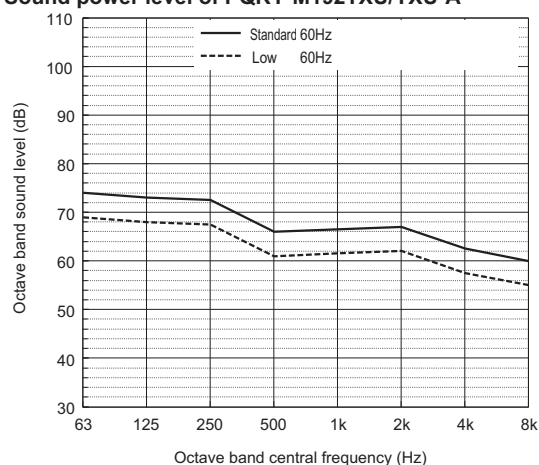
Sound power level of PQRY-M168TXU/YXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	82.0	81.0	75.5	62.0	63.0	60.0	63.0	59.5	72.0
Low noise mode	60Hz	75.5	74.5	69.0	55.5	56.5	53.5	56.5	53.0	65.5

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.

Sound power level of PQRY-M192TXU/YXU-A

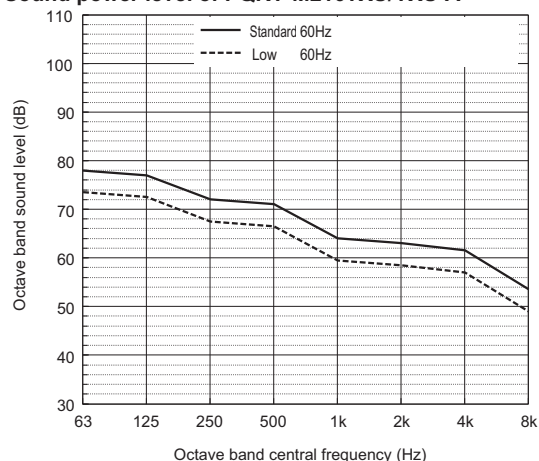


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	74.0	73.0	72.5	66.0	66.5	67.0	62.5	60.0	73.0
Low noise mode	60Hz	69.0	68.0	67.5	61.0	61.5	62.0	57.5	55.0	68.0

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.

- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.
For BC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.
- The sound values are sound power level (PWL) based on ISO 3744:2010 ($r = 3.5$ m).
Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)

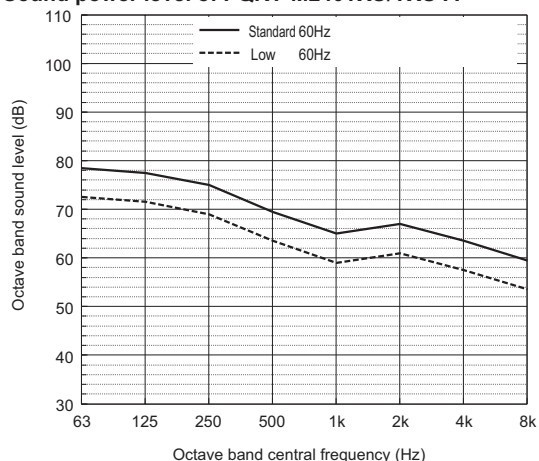
Sound power level of PQRY-M216TXU/YXU-A



	63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	78.0	77.0	72.0	71.0	64.0	63.0	61.5	53.5
Low noise mode	60Hz	73.5	72.5	67.5	66.5	59.5	58.5	57.0	49.0

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.

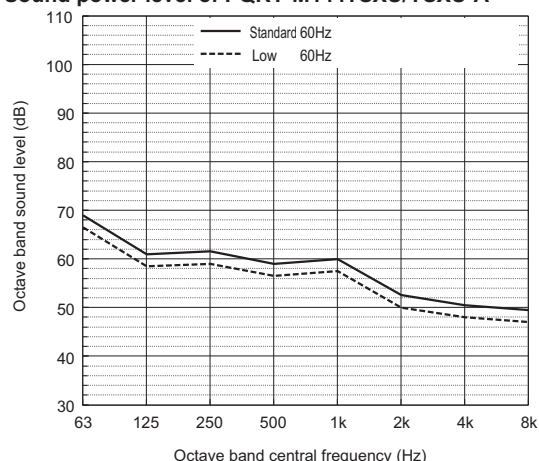
Sound power level of PQRY-M240TXU/YXU-A



	63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	78.5	77.5	75.0	69.5	65.0	67.0	63.5	59.5
Low noise mode	60Hz	72.5	71.5	69.0	63.5	59.0	61.0	57.5	53.5

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.

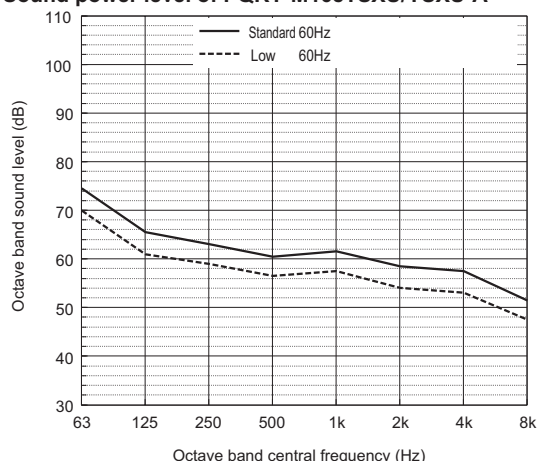
Sound power level of PQRY-M144TSXU/YSXU-A



	63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	69.0	61.0	61.5	59.0	60.0	52.5	50.5	49.5
Low noise mode	60Hz	66.5	58.5	59.0	56.5	57.5	50.0	48.0	47.0

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.

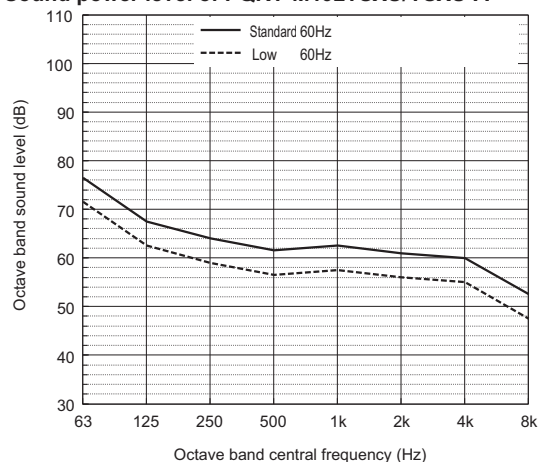
Sound power level of PQRY-M168TSXU/YSXU-A



	63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	74.5	65.5	63.0	60.5	61.5	58.5	57.5	51.5
Low noise mode	60Hz	70.0	61.0	59.0	56.5	57.5	54.0	53.0	47.5

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.

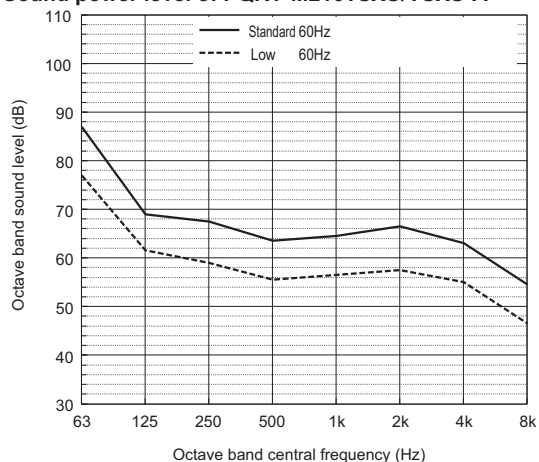
Sound power level of PQRY-M192TSXU/YSXU-A



	63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	76.5	67.5	64.0	61.5	62.5	61.0	60.0	52.5
Low noise mode	60Hz	71.5	62.5	59.0	56.5	57.5	56.0	55.0	47.5

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.

Sound power level of PQRY-M216TSXU/YSXU-A



	63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	87.0	69.0	67.5	63.5	64.5	66.5	63.0	54.5
Low noise mode	60Hz	77.0	61.5	59.0	55.5	56.5	57.5	55.0	46.5

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.

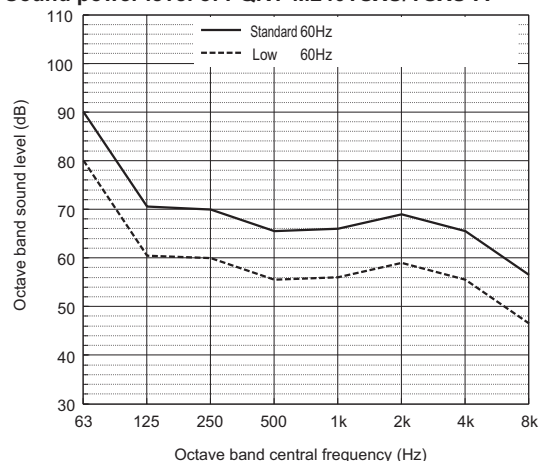
• Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.

For BC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.

• The sound values are sound power level (PWL) based on ISO 3744:2010 ($r = 3.5$ m).

Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)

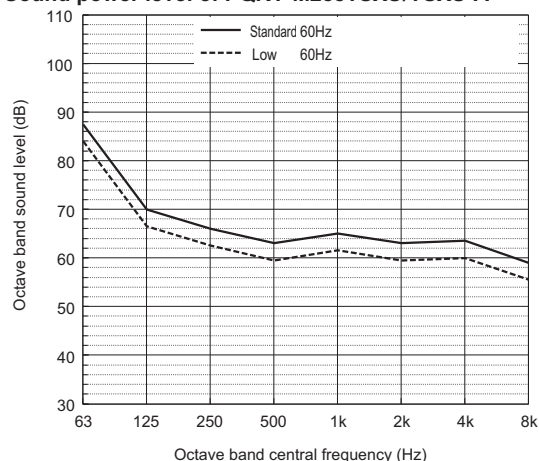
Sound power level of PQRY-M240TSXU/YSXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	90.0	70.5	70.0	65.5	66.0	69.0	65.5	56.5	74.0
Low noise mode	60Hz	80.0	60.5	60.0	55.5	56.0	59.0	55.5	46.5	64.0

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.

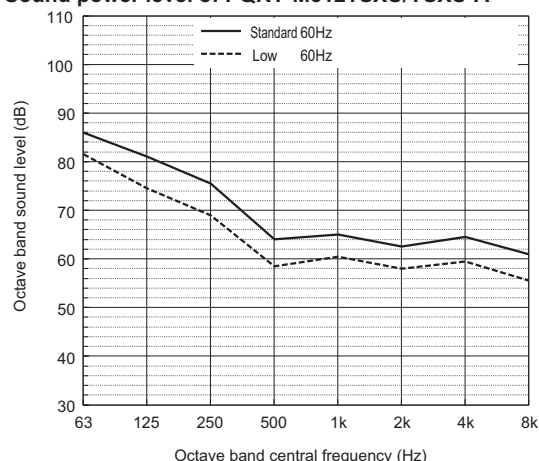
Sound power level of PQRY-M288TSXU/YSXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	87.5	70.0	66.0	63.0	65.0	63.0	63.5	59.0	71.0
Low noise mode	60Hz	84.0	66.5	62.5	59.5	61.5	59.5	60.0	55.5	67.5

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.

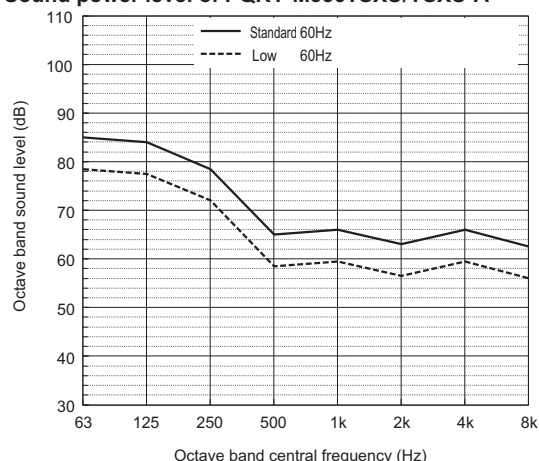
Sound power level of PQRY-M312TSXU/YSXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	86.0	81.0	75.5	64.0	65.0	62.5	64.5	61.0	73.5
Low noise mode	60Hz	81.5	74.5	69.0	58.5	60.5	58.0	59.5	55.5	68.0

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.

Sound power level of PQRY-M336TSXU/YSXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	85.0	84.0	78.5	65.0	66.0	63.0	66.0	62.5	75.0
Low noise mode	60Hz	78.5	77.5	72.0	58.5	59.5	56.5	59.5	56.0	68.5

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.

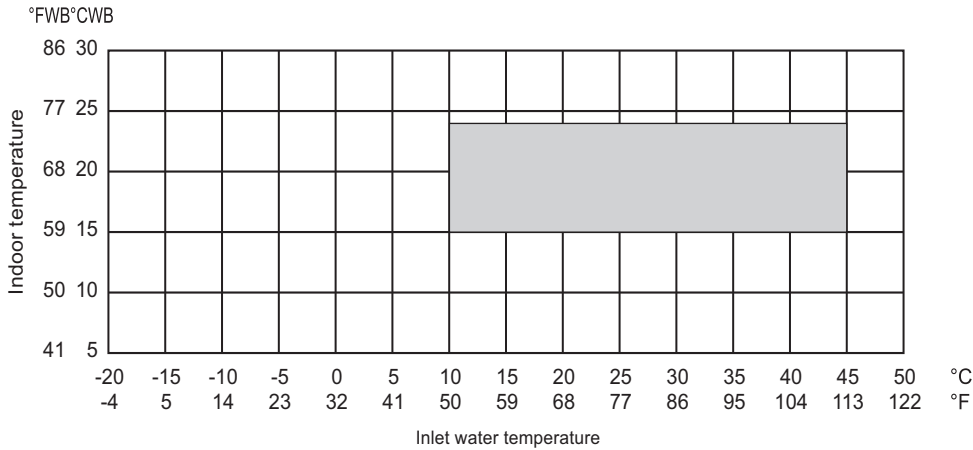
- Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.

For BC controller, it is recommended to be installed in places such as ceilings of corridor, rest rooms and plant rooms.

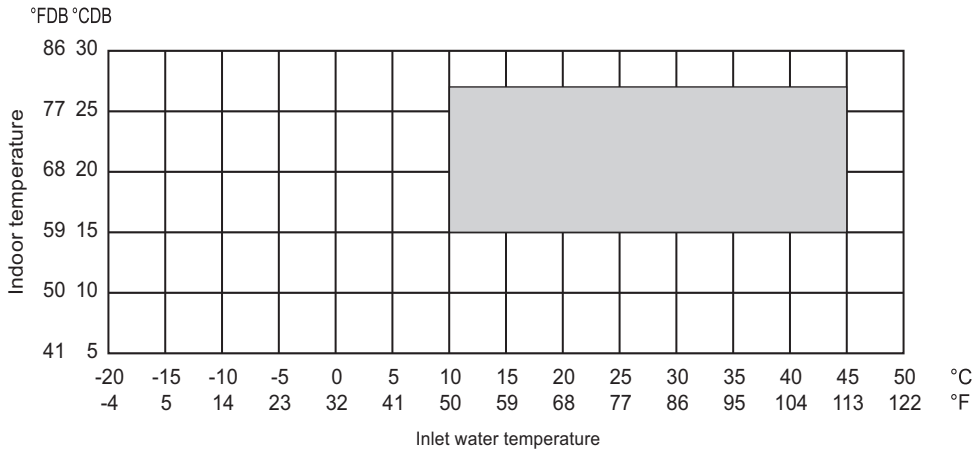
- The sound values are sound power level (PWL) based on ISO 3744:2010 ($r = 3.5$ m).

Test conditions: Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Inlet water temperature: 86°F (30°C)

• Cooling



• Heating



• Combination of cooling/heating operation (Cooling main or Heating main)

Inlet water temperature	Indoor temperature	
	Cooling	Heating
10 to 45°C (50 to 113°F)	15 to 24°CWB (59 to 75°FWB)	15 to 27°CDB (59 to 81°FDB)

* The upper limit of the outlet water temperature is approximately 70°C (158°F) when the circulating-water flow rate is within the normal range.

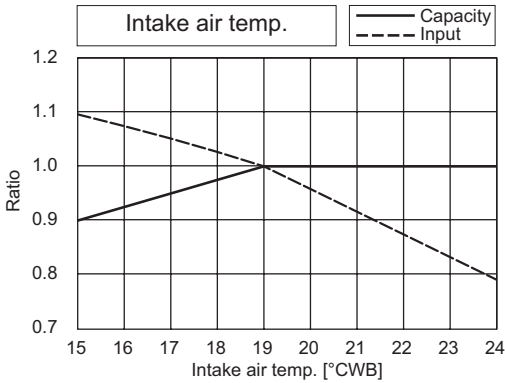
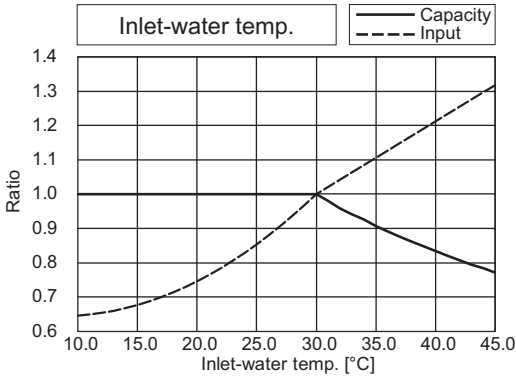
If the circulating-water flow rate goes outside the normal range, the outlet water temperature may exceed the above limit.

7-1. Correction by temperature

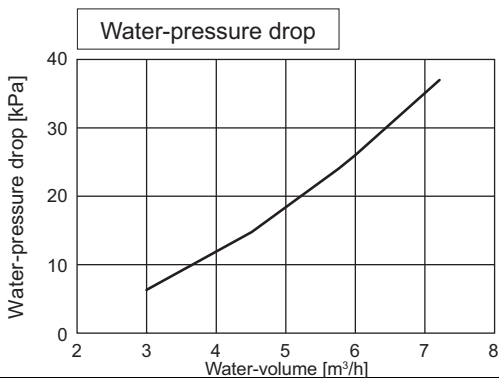
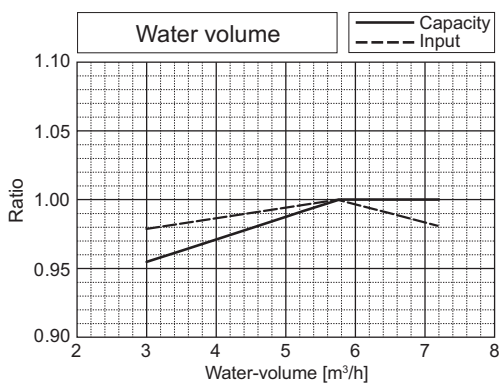
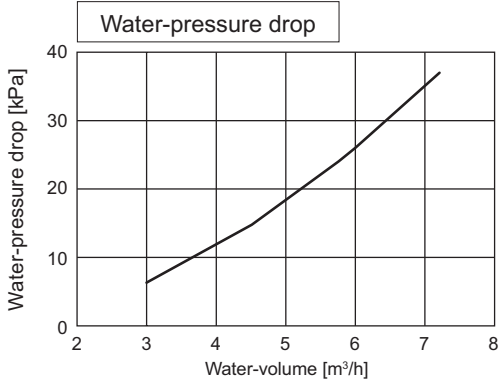
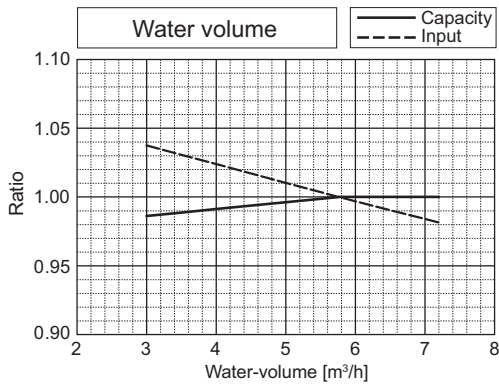
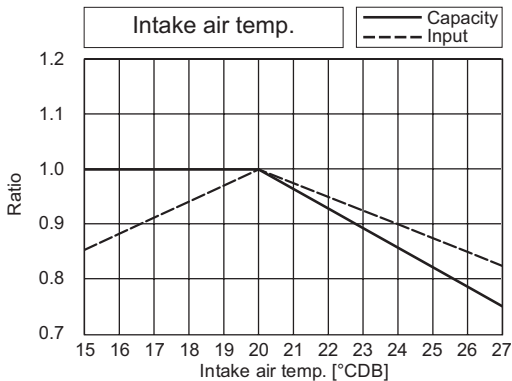
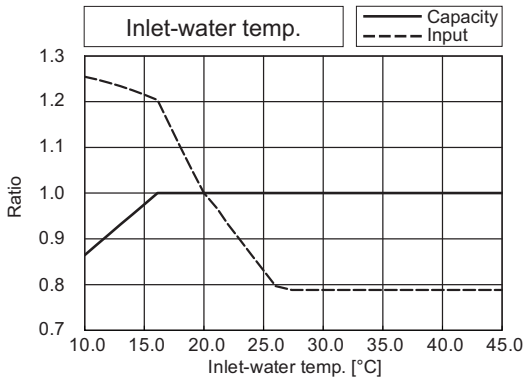
CITY MULTI could have various capacities at different designing temperatures. Using the nominal cooling/heating capacity values and the ratios below, the capacity can be observed at various temperatures. When both water temperature and room temperature are low, the actual performance may differ from the capacity and power input calculated using the correction charts, depending on the piping length conditions.

PQRY-M-T(S)XU-A, Y(S)XU-A

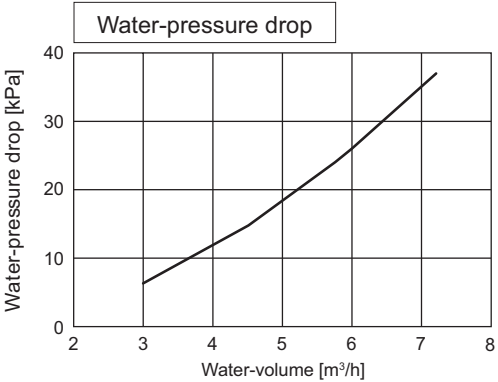
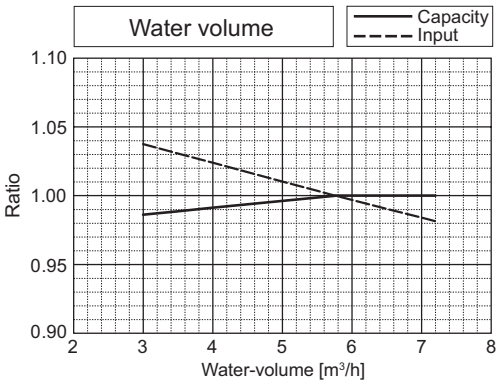
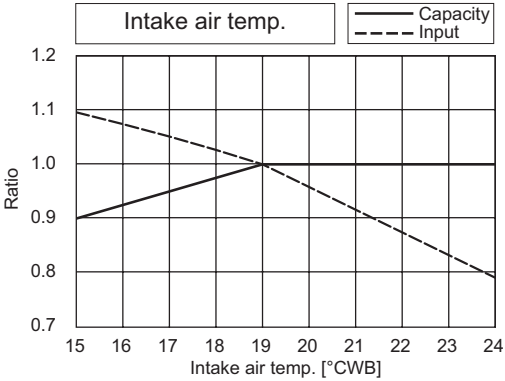
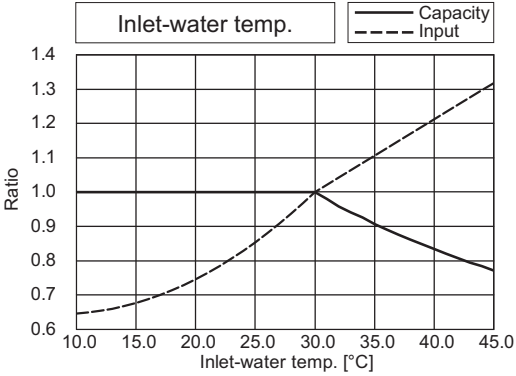
PQRY-		M72TXU/YXU
Nominal Cooling Capacity	kW	21.1
	BTU/h	72,000
Input	kW	3.43



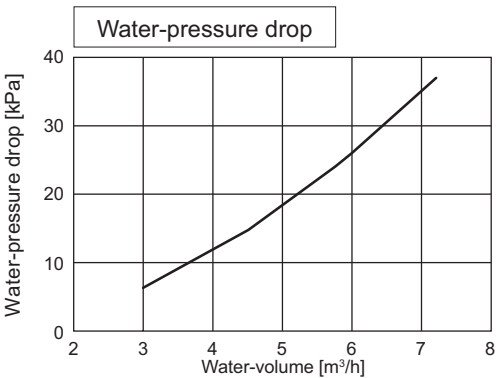
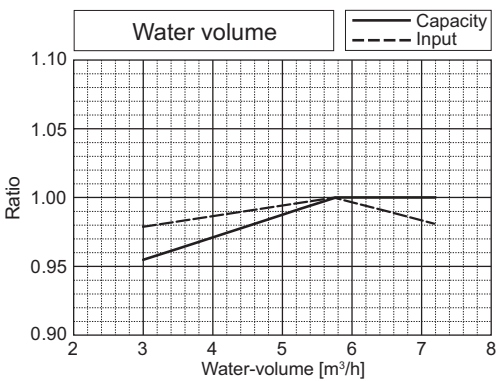
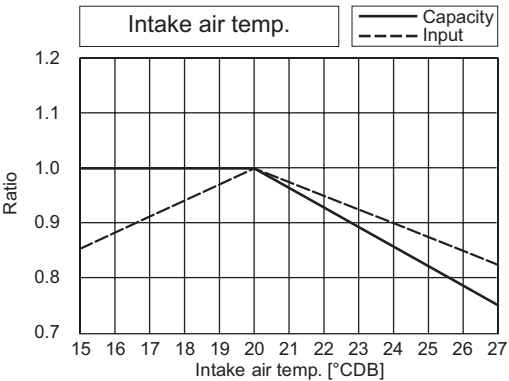
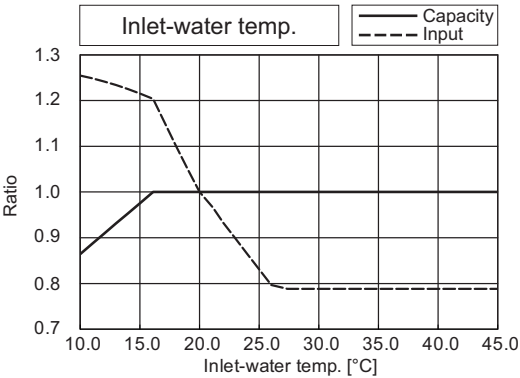
PQRY-		M72TXU/YXU
Nominal Heating Capacity	kW	23.4
	BTU/h	80,000
Input	kW	3.38



PQRY-		M96TXU/YXU
Nominal Cooling Capacity	kW	28.1
	BTU/h	96,000
Input	kW	5.18

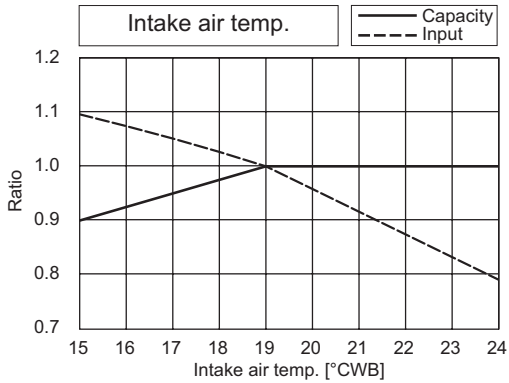
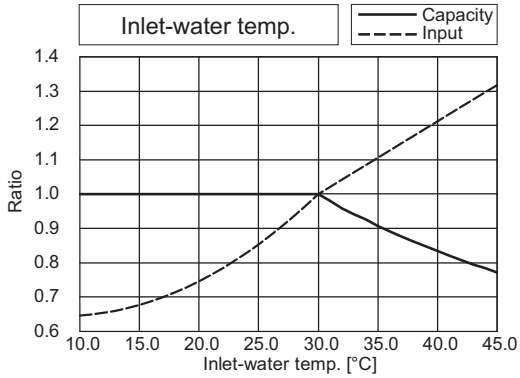


PQRY-		M96TXU/YXU
Nominal Heating Capacity	kW	31.7
	BTU/h	108,000
Input	kW	4.81

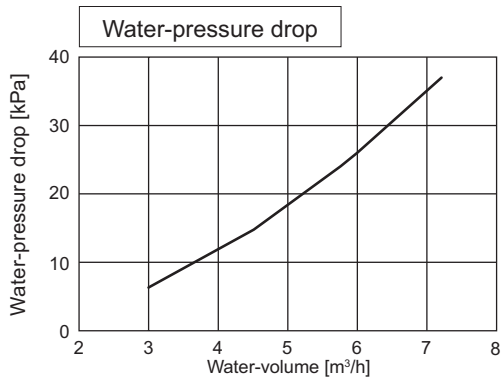
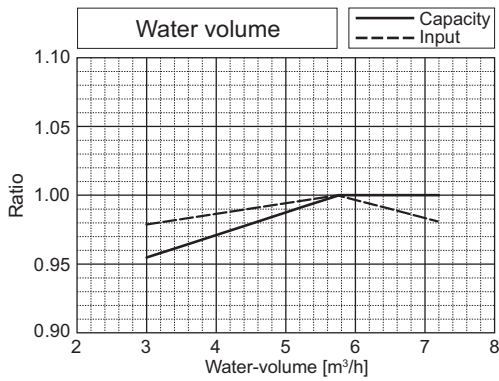
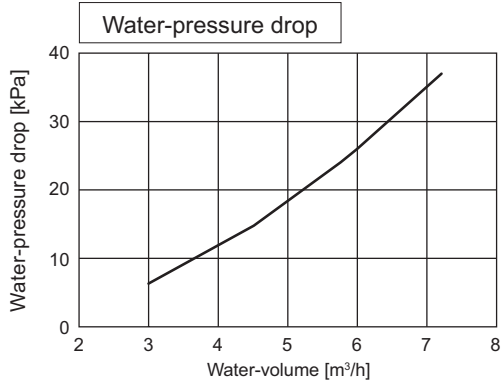
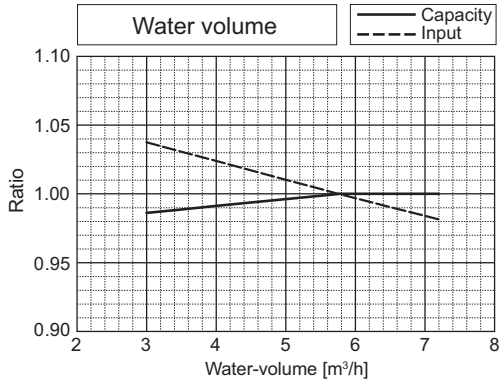
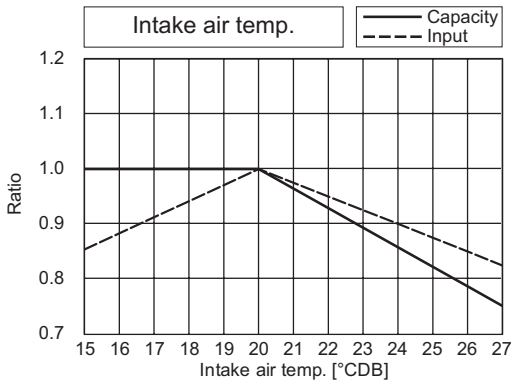
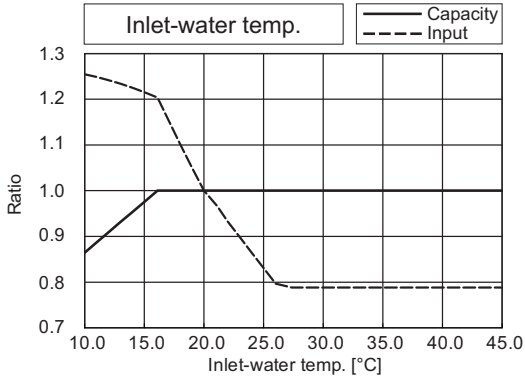


PQRY-M-T(S)XU-A, Y(S)XU-A

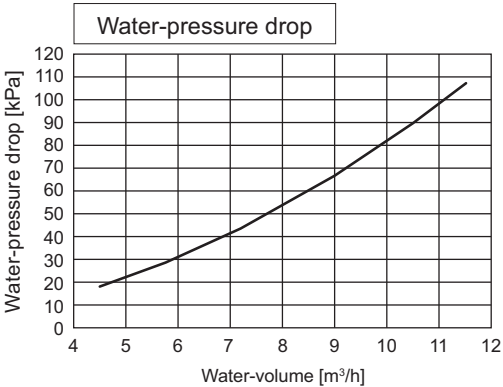
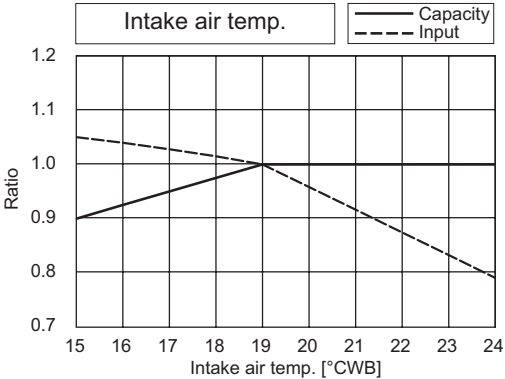
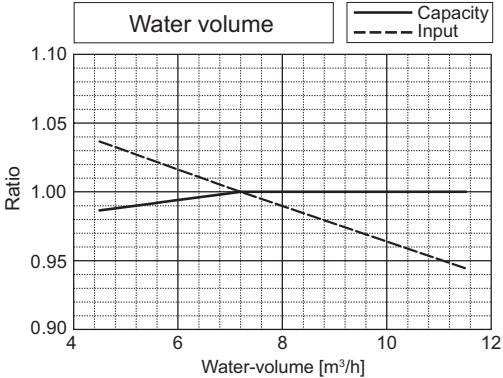
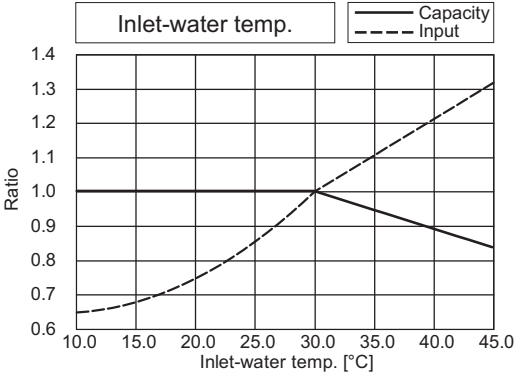
PQRY-		M120TXU/YXU
Nominal Cooling Capacity	kW	35.2
	BTU/h	120,000
Input	kW	7.21



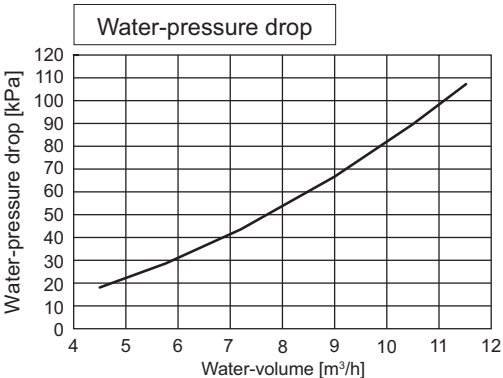
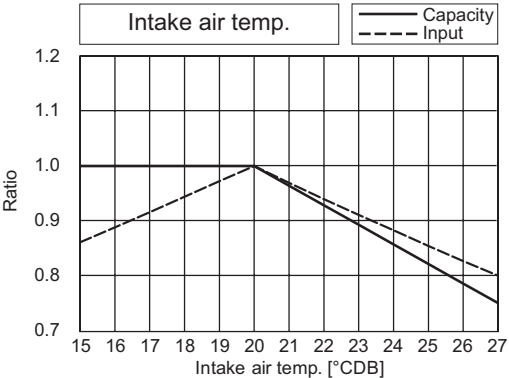
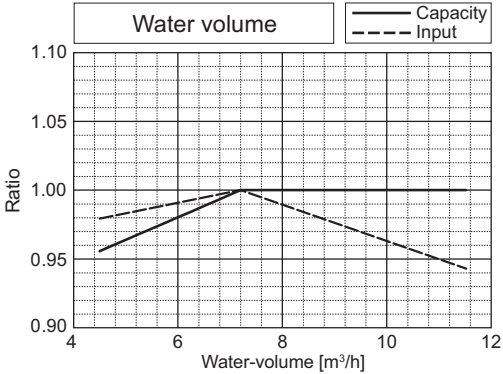
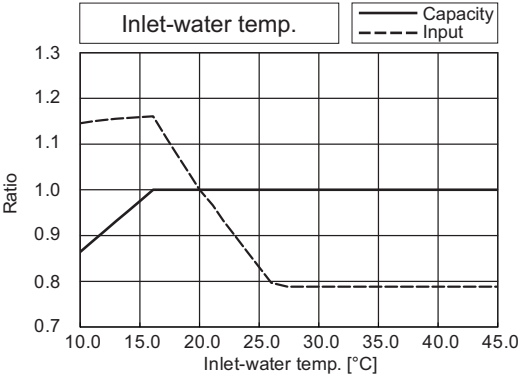
PQRY-		M120TXU/YXU
Nominal Heating Capacity	kW	39.6
	BTU/h	135,000
Input	kW	6.12



PQR-Y-		M144TXU/YXU
Nominal Cooling Capacity	kW	42.2
	BTU/h	144,000
Input	kW	9.30

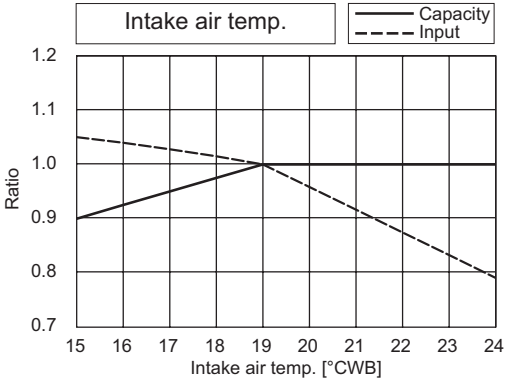
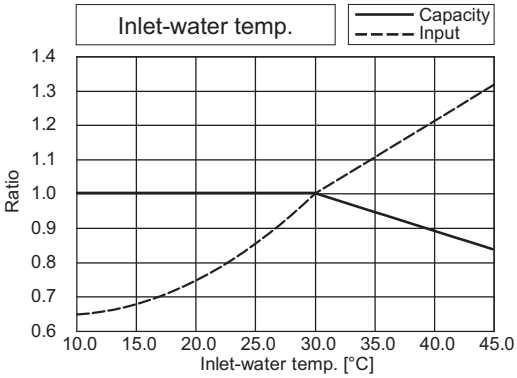


PQR-Y-		M144TXU/YXU
Nominal Heating Capacity	kW	46.9
	BTU/h	160,000
Input	kW	7.44

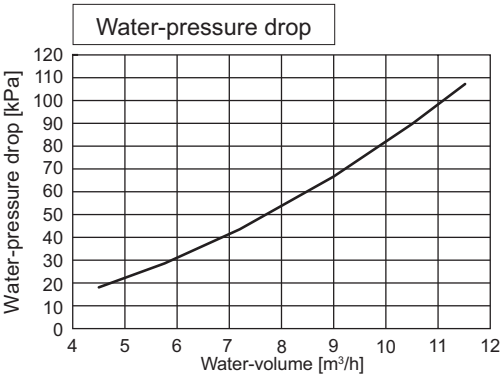
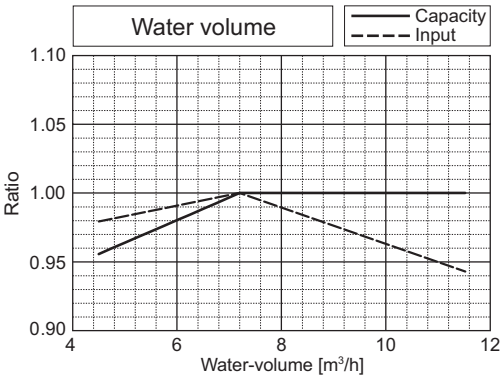
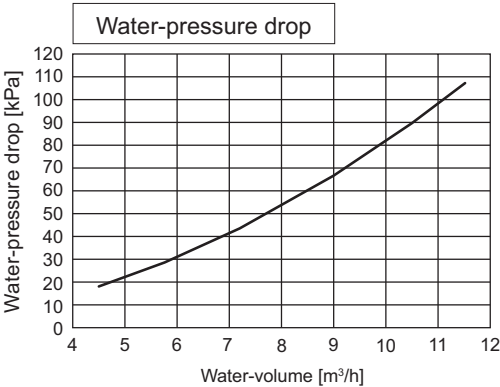
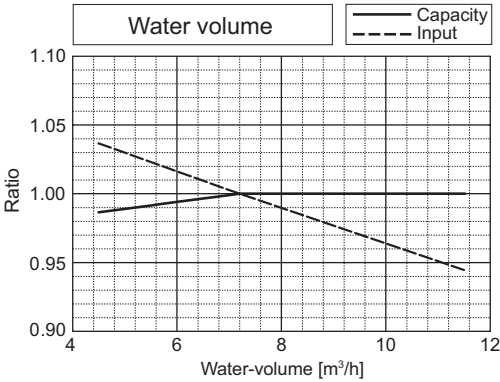
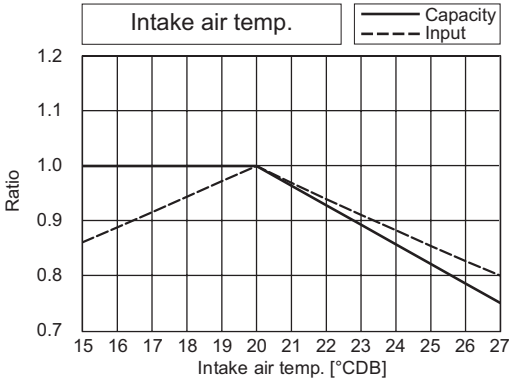
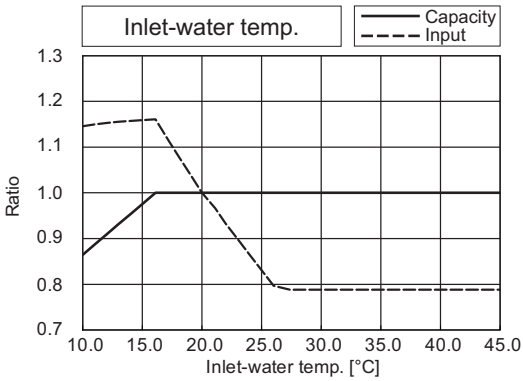


PQRY-M-T(S)XU-A, Y(S)XU-A

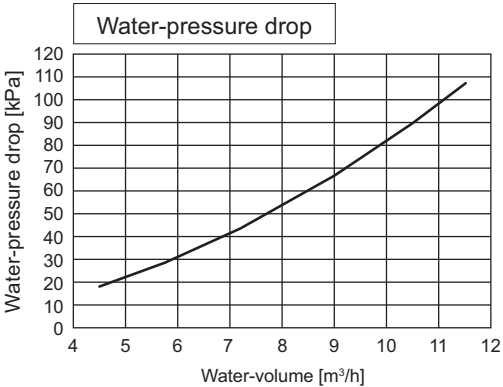
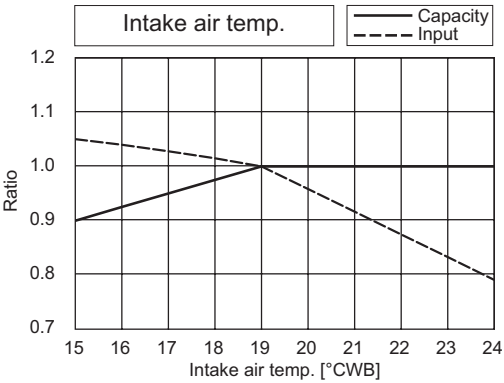
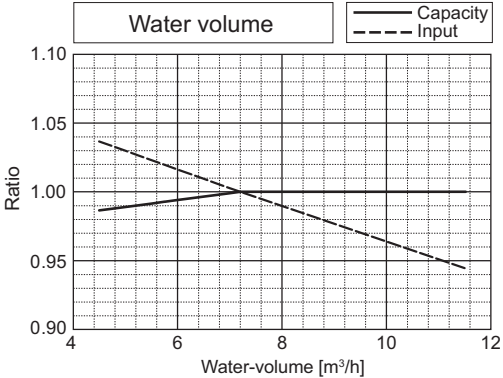
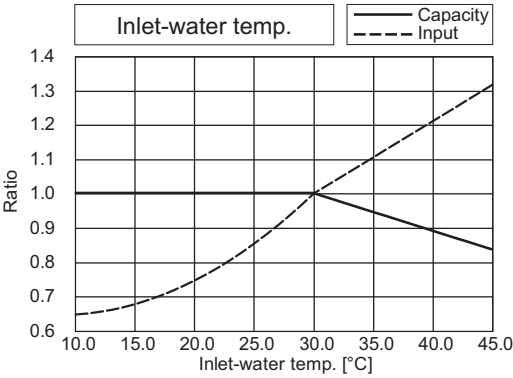
PQRY-		M168TXU/YXU
Nominal Cooling Capacity	kW	49.2
	BTU/h	168,000
Input	kW	11.87



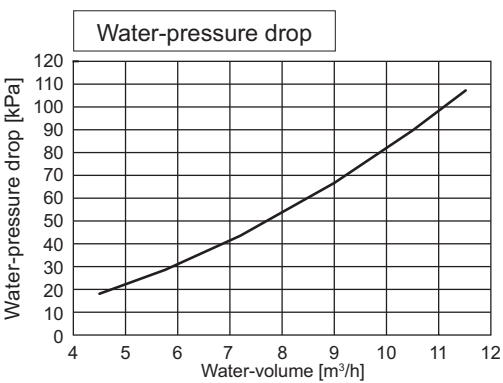
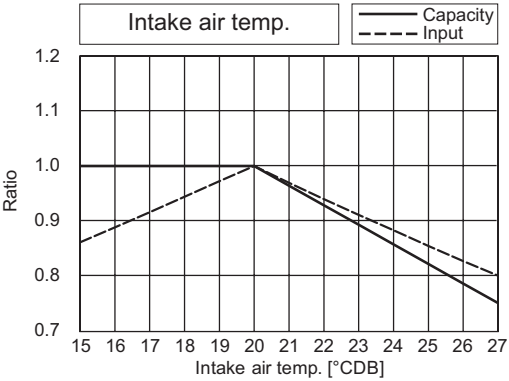
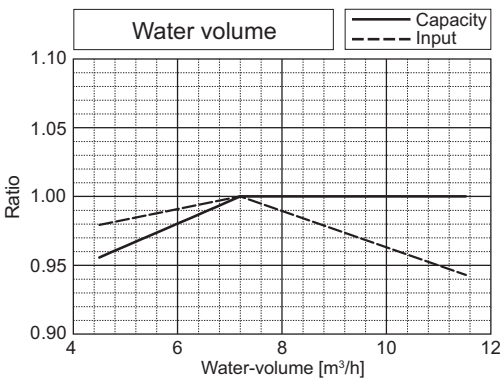
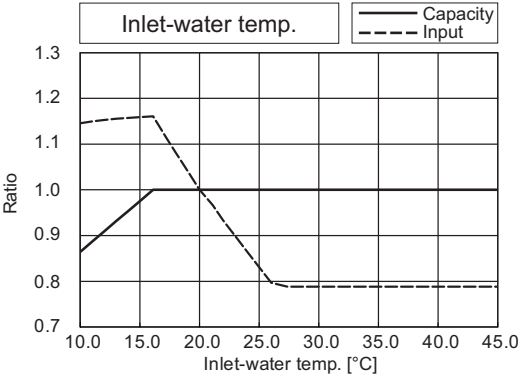
PQRY-		M168TXU/YXU
Nominal Heating Capacity	kW	55.1
	BTU/h	188,000
Input	kW	9.85



PQRY-	M192TXU/YXU	
Nominal Cooling Capacity	kW	56.3
	BTU/h	192,000
Input	kW	14.66

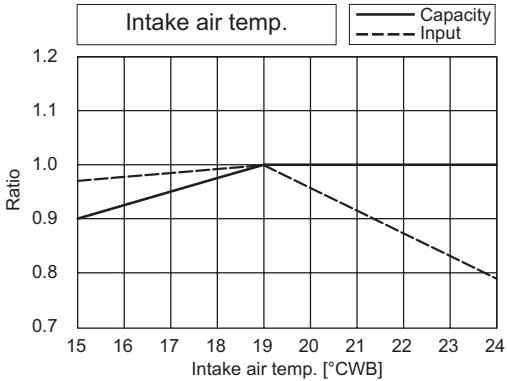
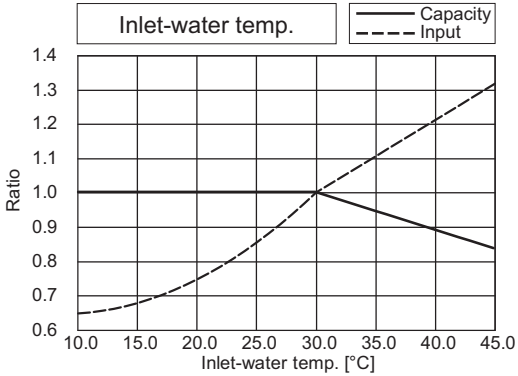


PQRY-	M192TXU/YXU	
Nominal Heating Capacity	kW	63.0
	BTU/h	215,000
Input	kW	12.10

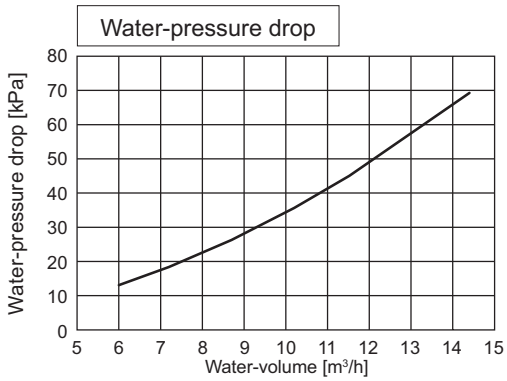
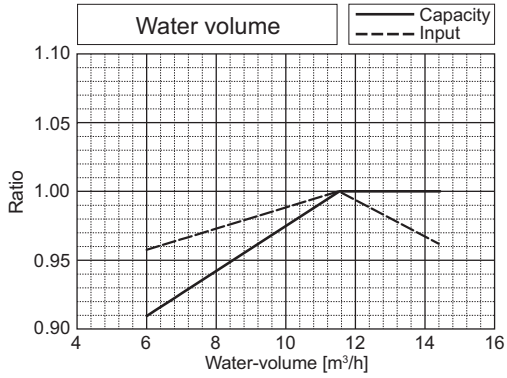
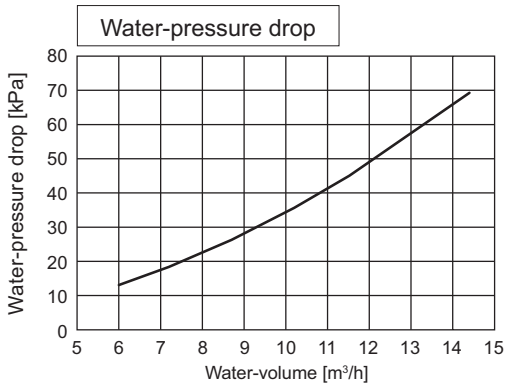
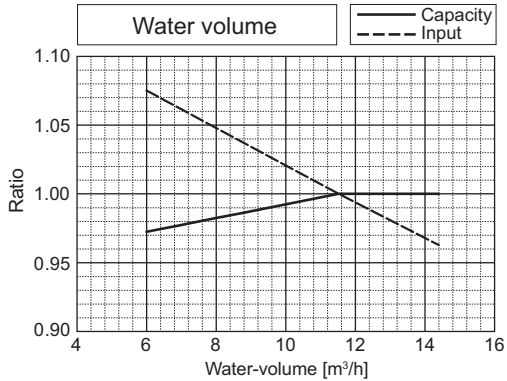
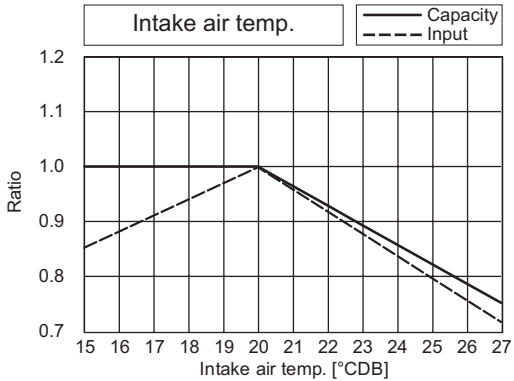
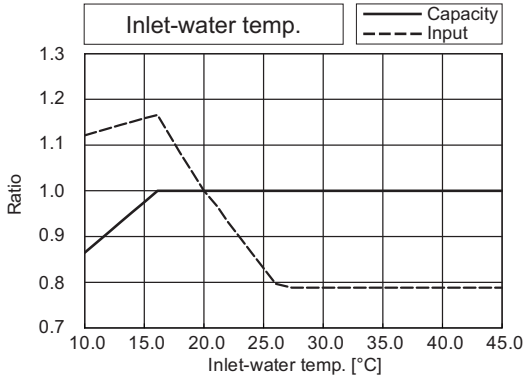


PQRY-M-T(S)XU-A, Y(S)XU-A

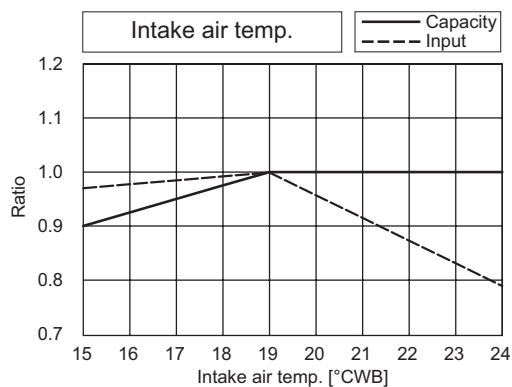
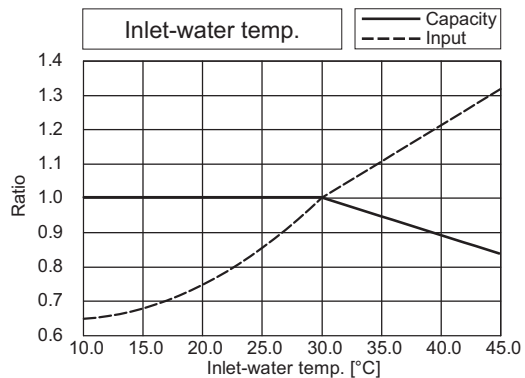
PQRY-		M216TXU/YXU
Nominal Cooling Capacity	kW	63.3
	BTU/h	216,000
Input	kW	15.23



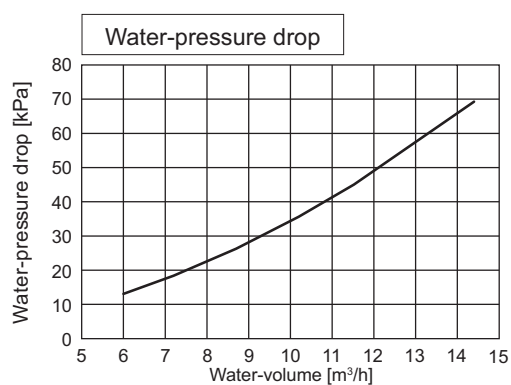
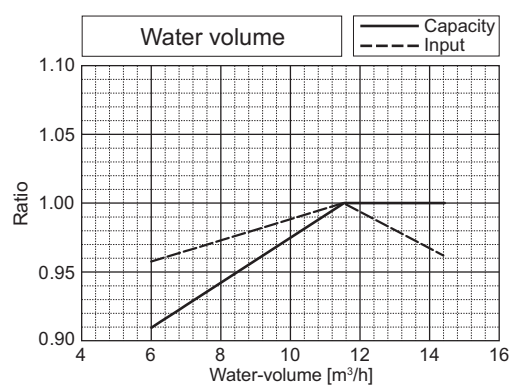
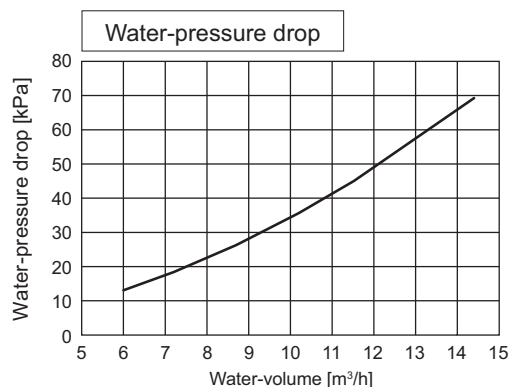
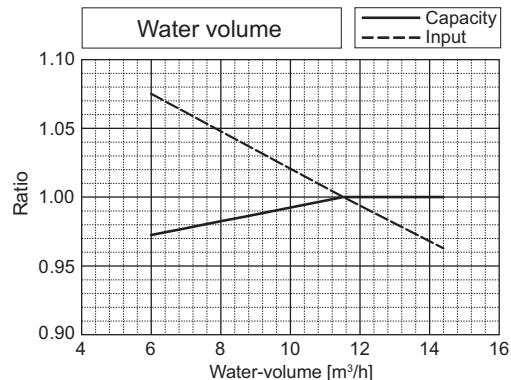
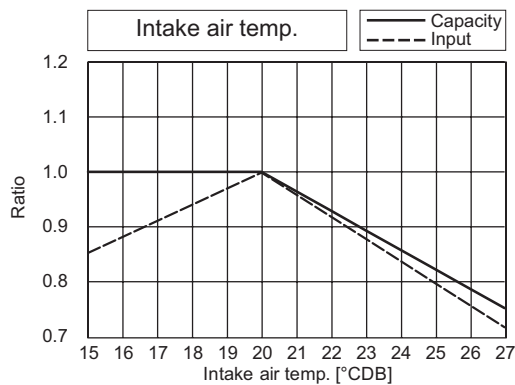
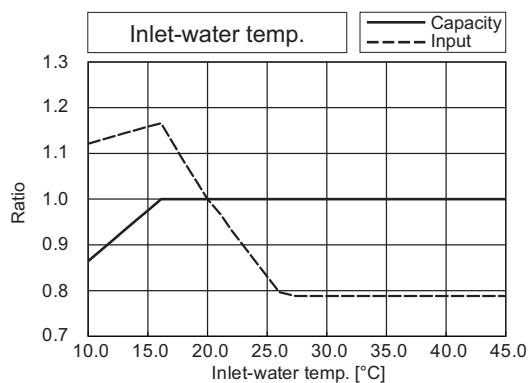
PQRY-		M216TXU/YXU
Nominal Heating Capacity	kW	71.2
	BTU/h	243,000
Input	kW	12.66



PQRY-		M240TXU/YXU
Nominal Cooling Capacity	kW	70.3
	BTU/h	240,000
Input	kW	18.27

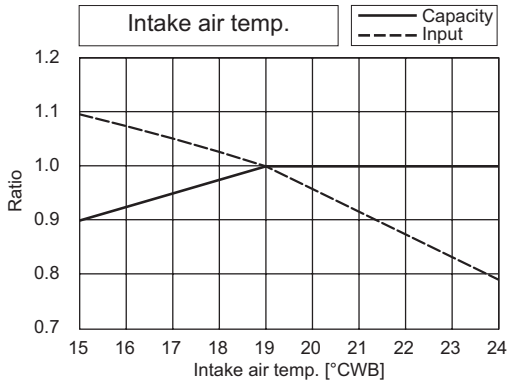
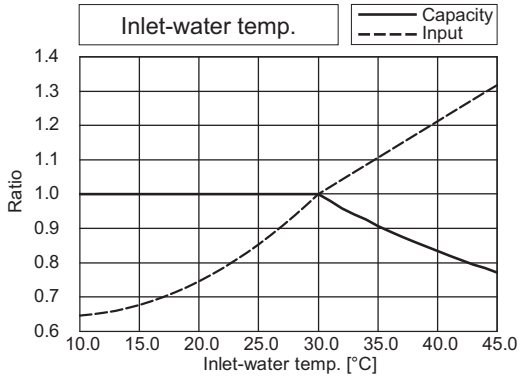


PQRY-		M240TXU/YXU
Nominal Heating Capacity	kW	79.1
	BTU/h	270,000
Input	kW	15.24

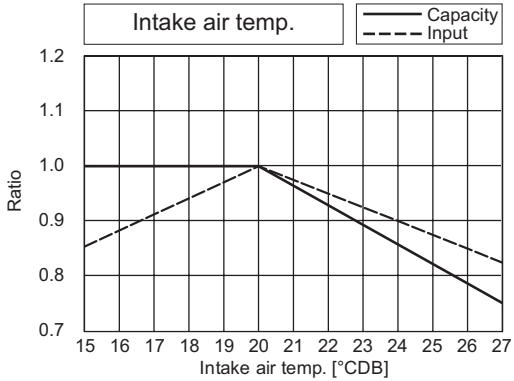
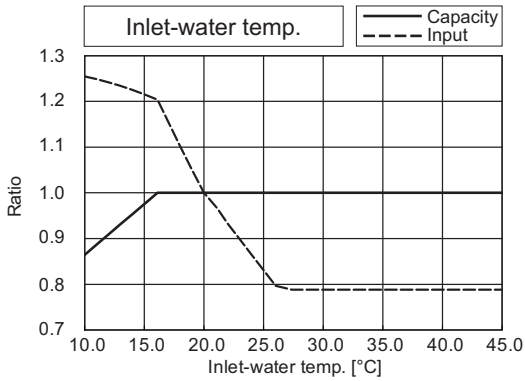


PQRY-M-T(S)XU-A, Y(S)XU-A

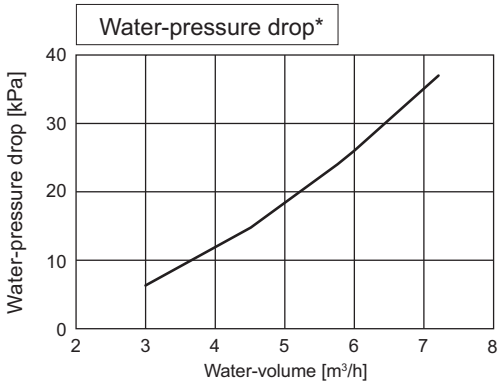
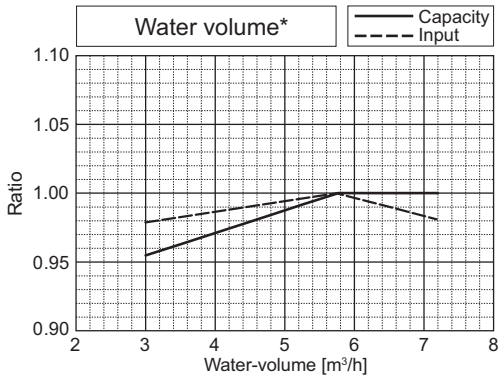
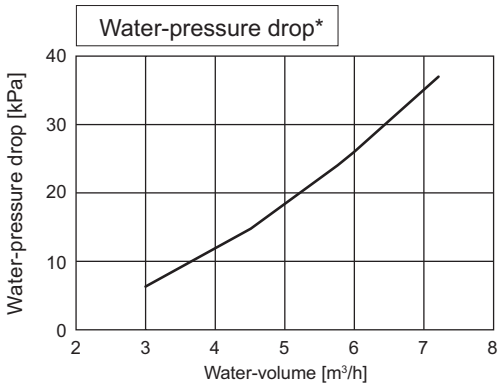
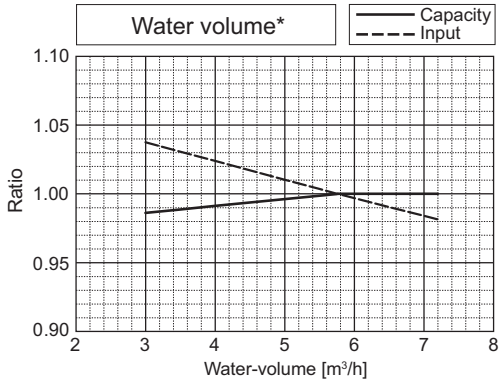
PQRY-		M144TSXU/YSXU
Nominal Cooling Capacity	kW	42.2
	BTU/h	144,000
Input	kW	7.40



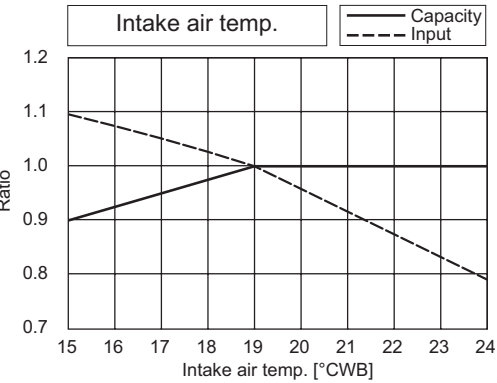
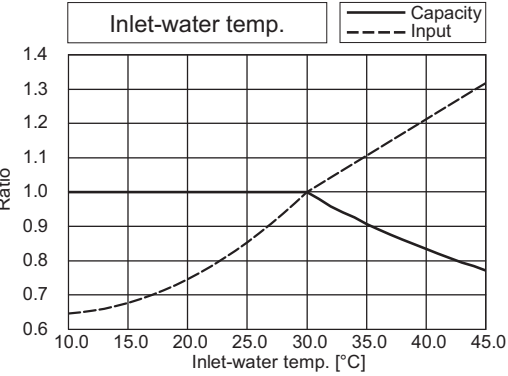
PQRY-		M144TSXU/YSXU
Nominal Heating Capacity	kW	46.9
	BTU/h	160,000
Input	kW	7.76



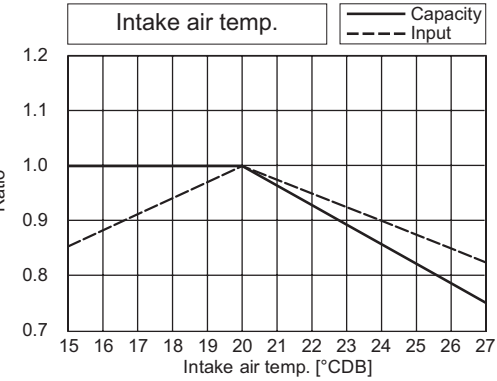
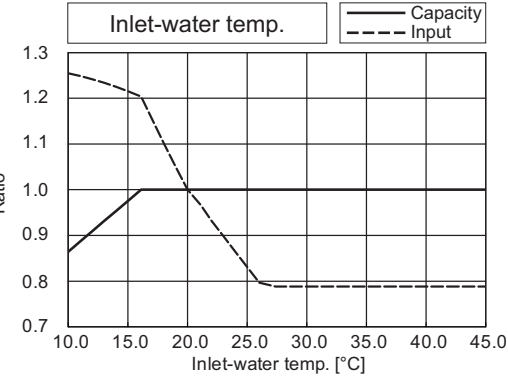
*The drawing indicates characteristic per unit.



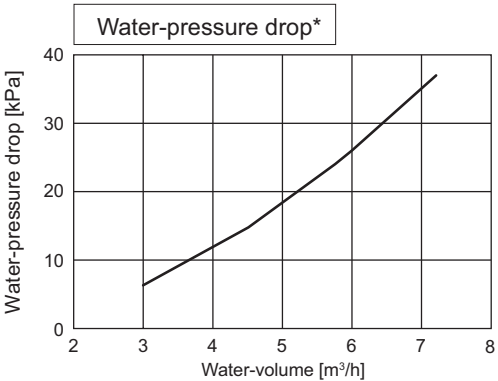
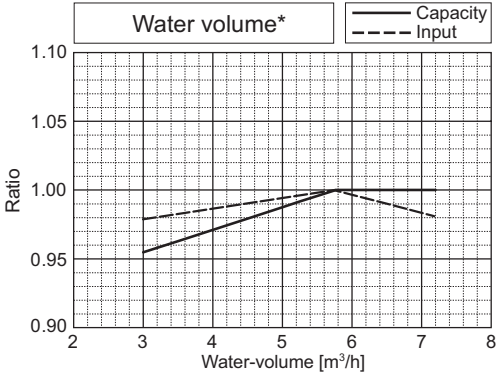
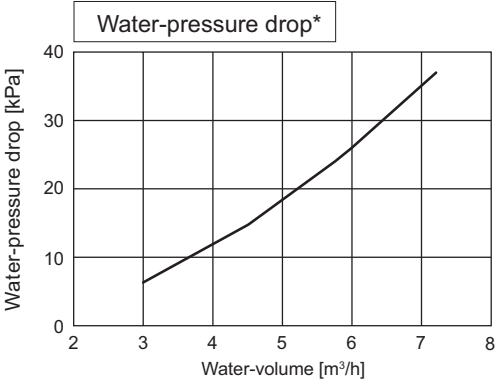
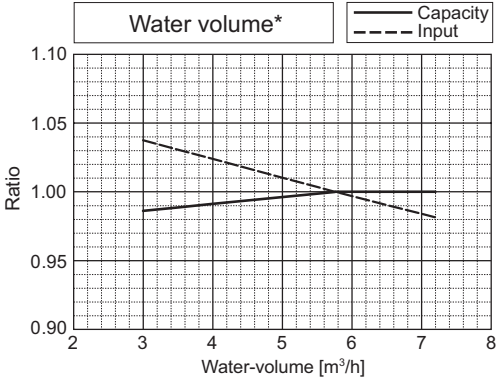
PQRY-		M168TSXU/YSXU
Nominal Cooling Capacity	kW	49.2
	BTU/h	168,000
Input	kW	9.28



PQRY-		M168TSXU/YSXU
Nominal Heating Capacity	kW	55.1
	BTU/h	188,000
Input	kW	8.93



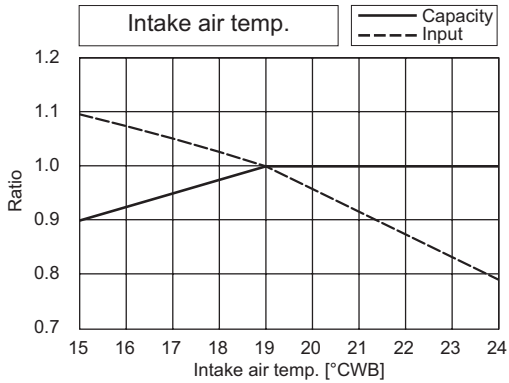
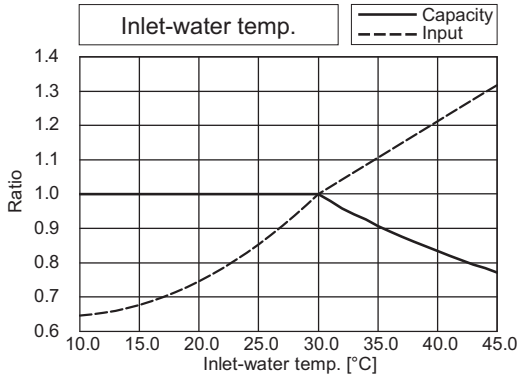
*The drawing indicates characteristic per unit.



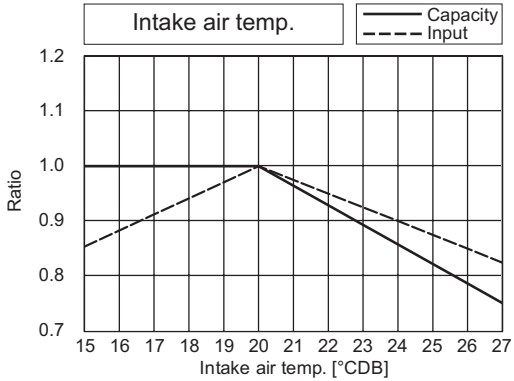
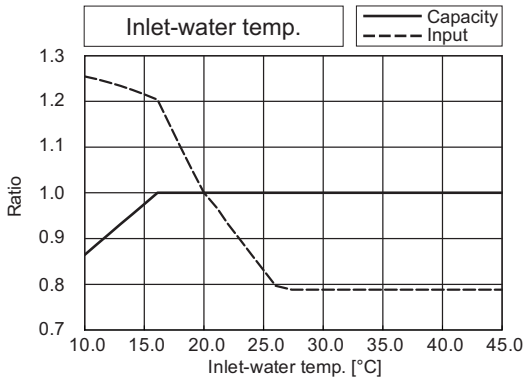
PQRY-M-T(S)XU-A, Y(S)XU-A

PQRY-M-T(S)XU-A, Y(S)XU-A

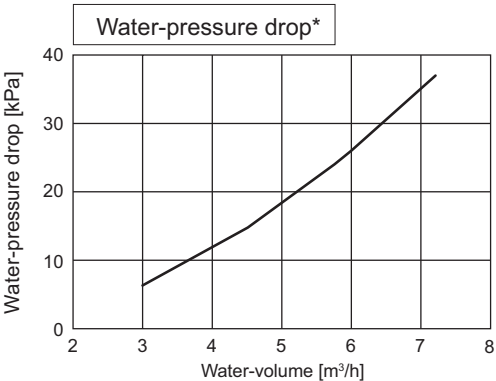
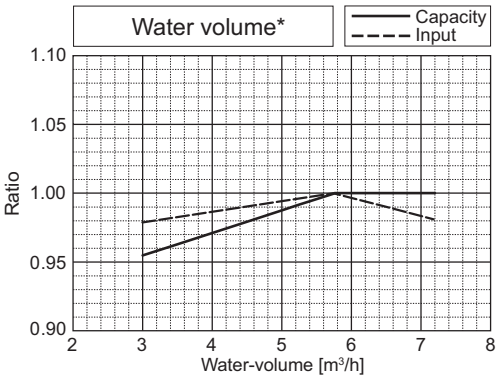
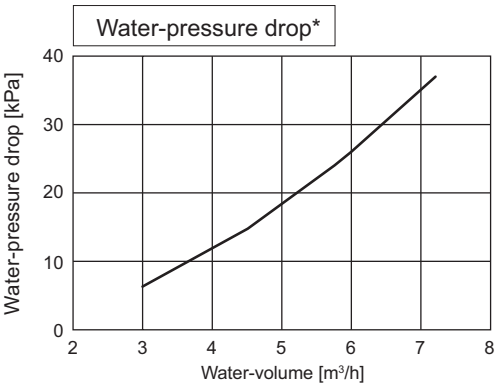
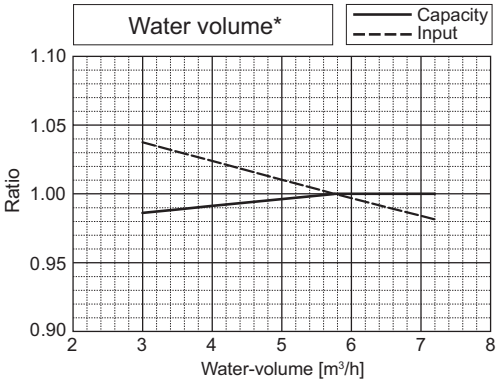
PQRY-		M192TSXU/YSXU
Nominal Cooling Capacity	kW	56.3
	BTU/h	192,000
Input	kW	10.98



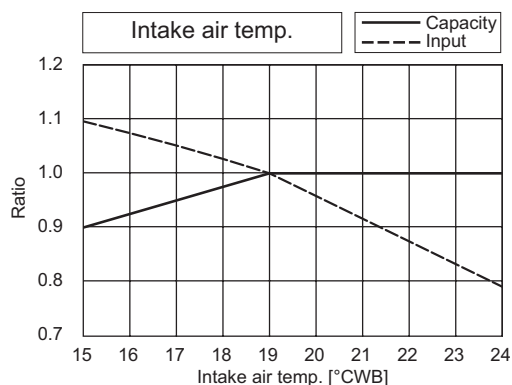
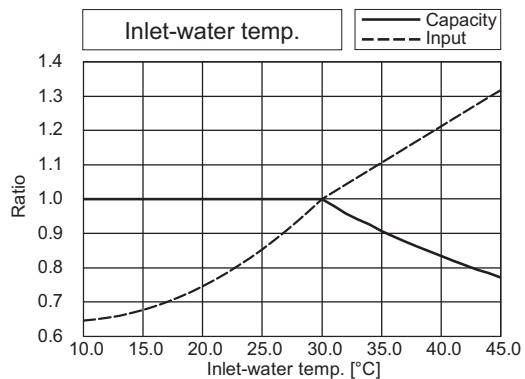
PQRY-		M192TSXU/YSXU
Nominal Heating Capacity	kW	63.0
	BTU/h	215,000
Input	kW	9.91



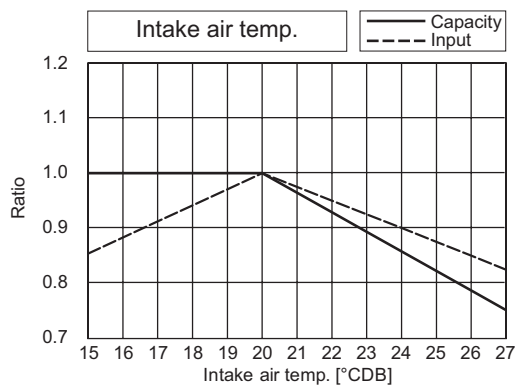
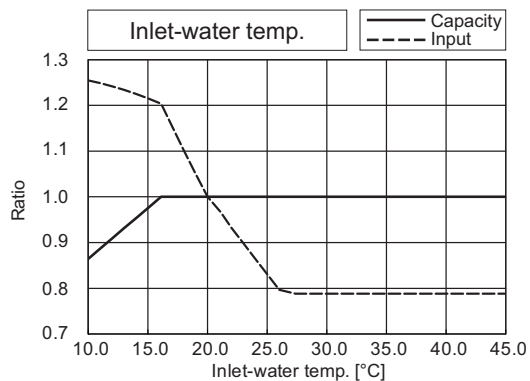
*The drawing indicates characteristic per unit.



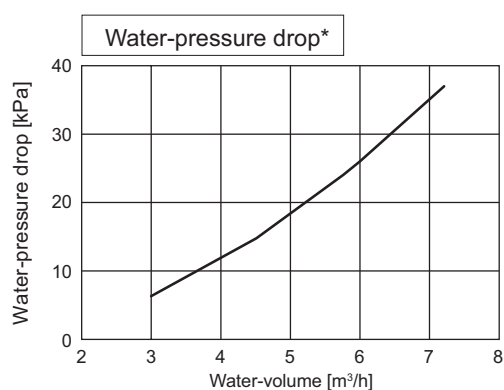
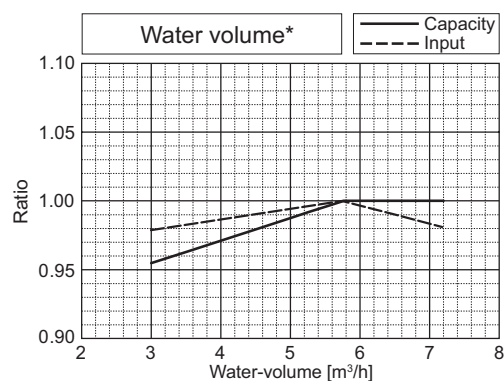
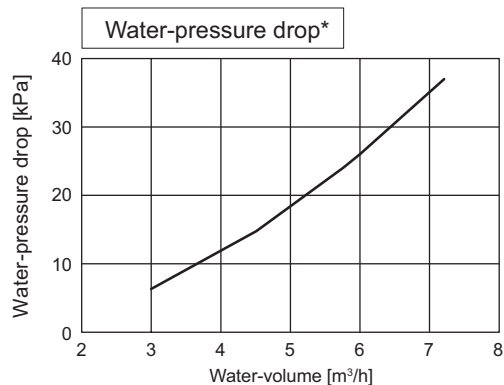
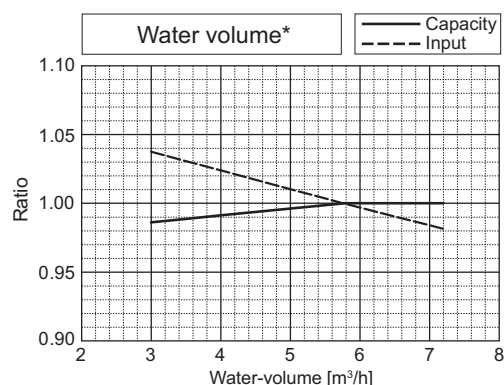
PQRY-		M216TSXU/YSXU
Nominal Cooling Capacity	kW	63.3
	BTU/h	216,000
Input	kW	12.89



PQRY-		M216TSXU/YSXU
Nominal Heating Capacity	kW	71.2
	BTU/h	243,000
Input	kW	11.27

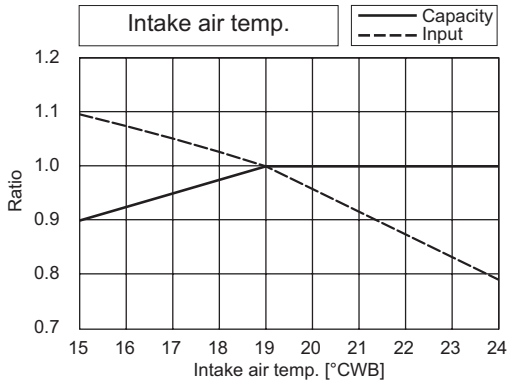
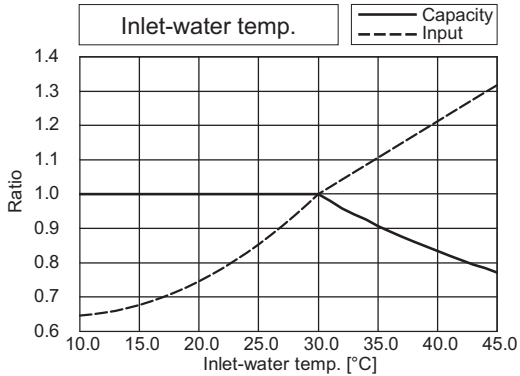


*The drawing indicates characteristic per unit.

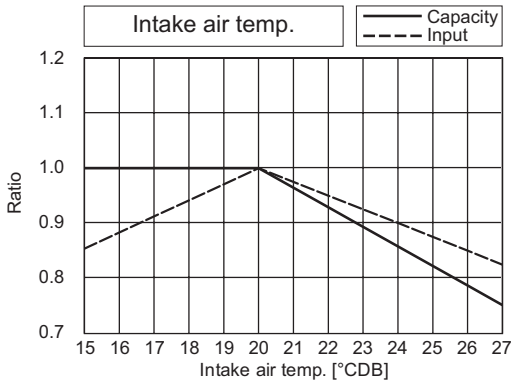
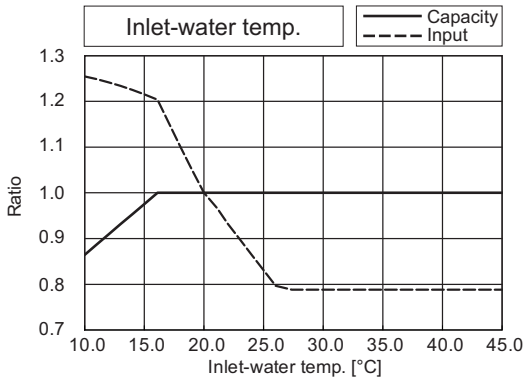


PQRY-M-T(S)XU-A, Y(S)XU-A

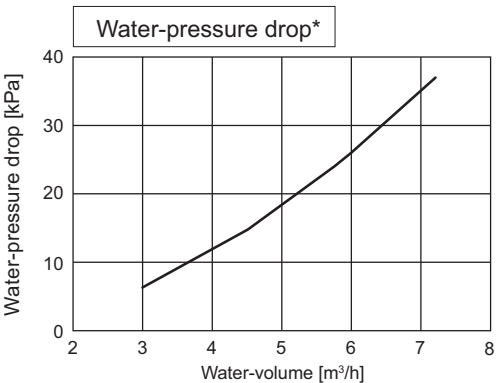
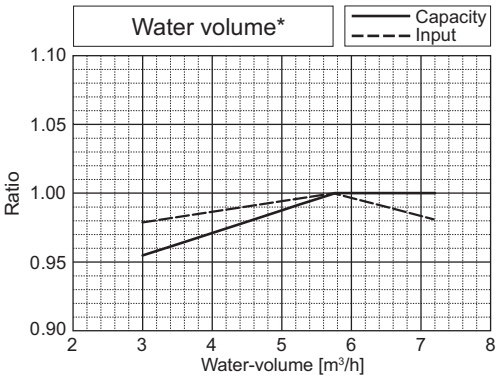
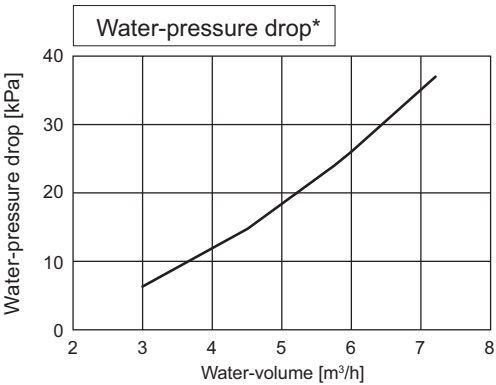
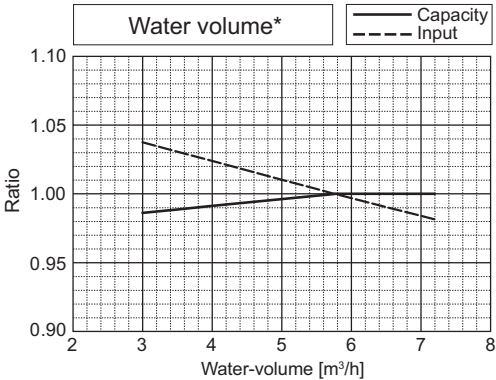
PQRY-		M240TSXU/YSXU
Nominal Cooling Capacity	kW	70.3
	BTU/h	240,000
Input	kW	15.19



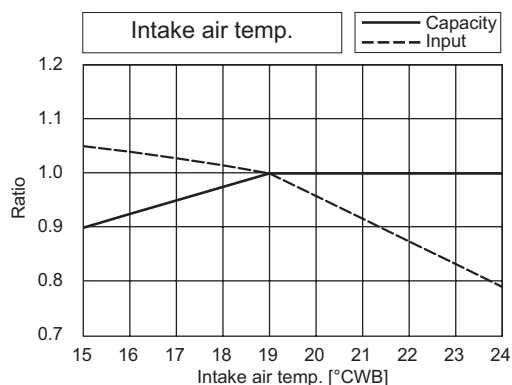
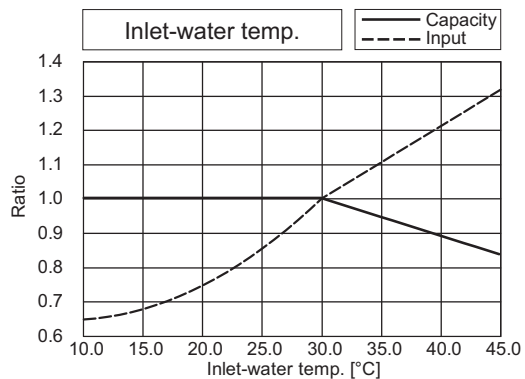
PQRY-		M240TSXU/YSXU
Nominal Heating Capacity	kW	79.1
	BTU/h	270,000
Input	kW	12.83



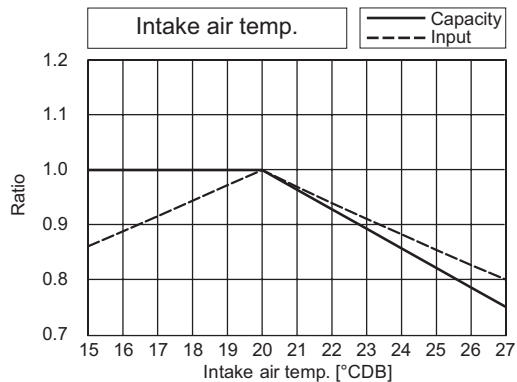
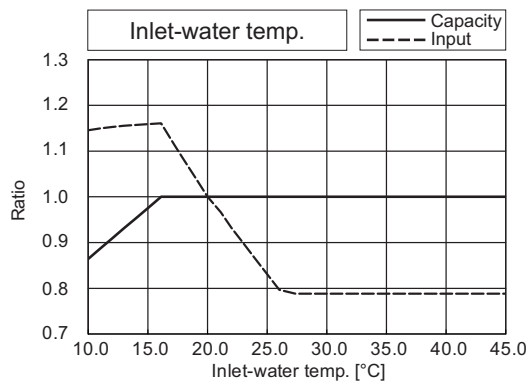
*The drawing indicates characteristic per unit.



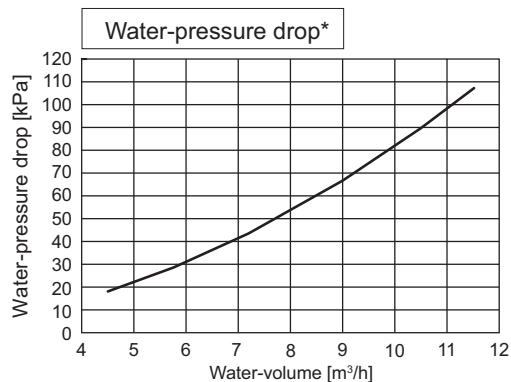
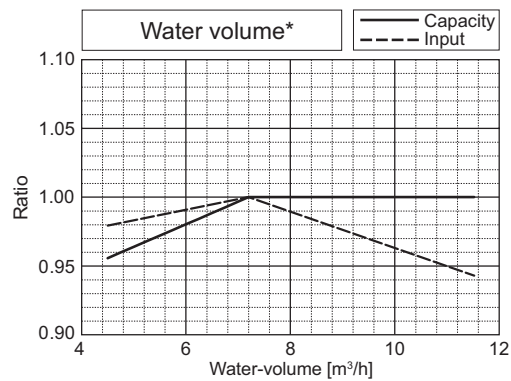
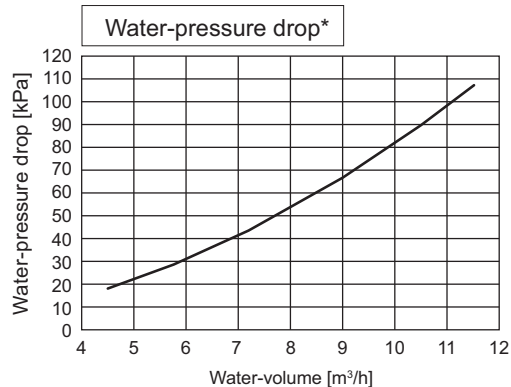
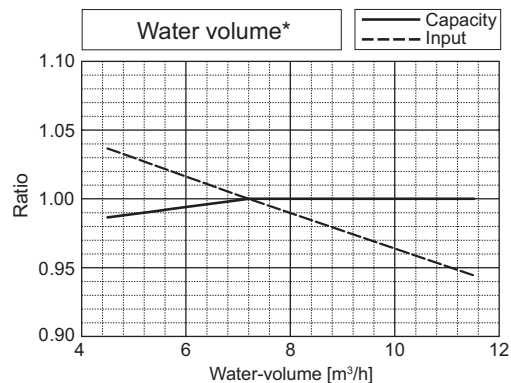
PQRY-		M288TSXU/YSXU
Nominal Cooling Capacity	kW	84.4
	BTU/h	288,000
Input	kW	21.07



PQRY-		M288TSXU/YSXU
Nominal Heating Capacity	kW	94.7
	BTU/h	323,000
Input	kW	16.03

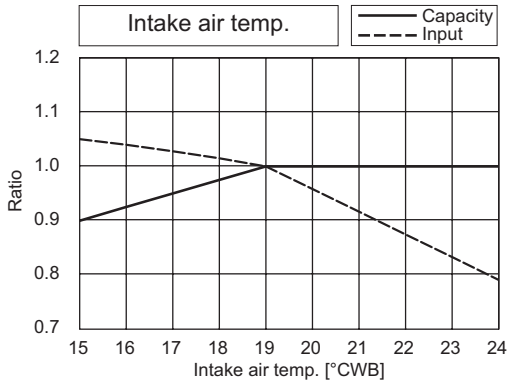
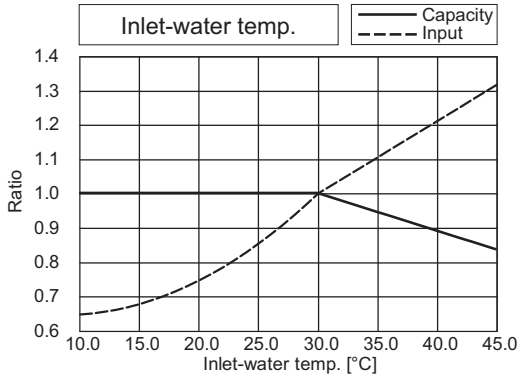


*The drawing indicates characteristic per unit.

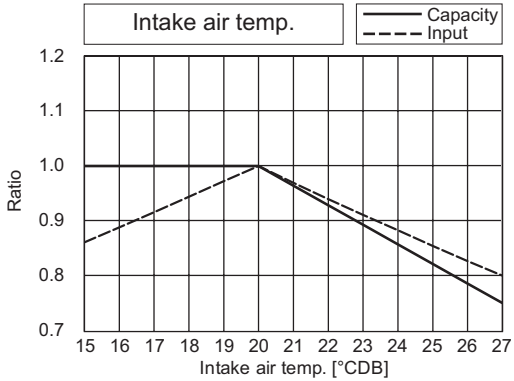
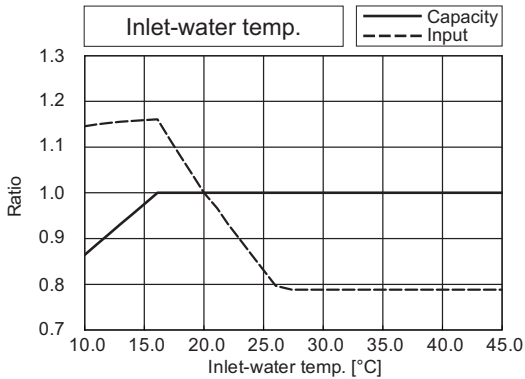


PQRY-M-T(S)XU-A, Y(S)XU-A

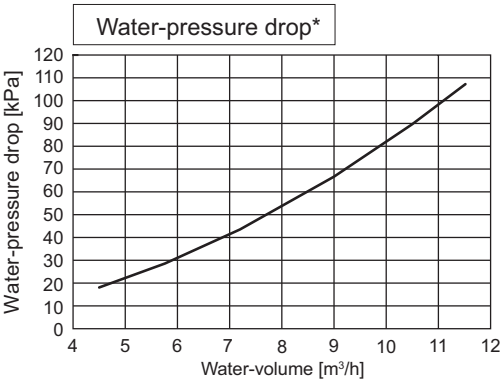
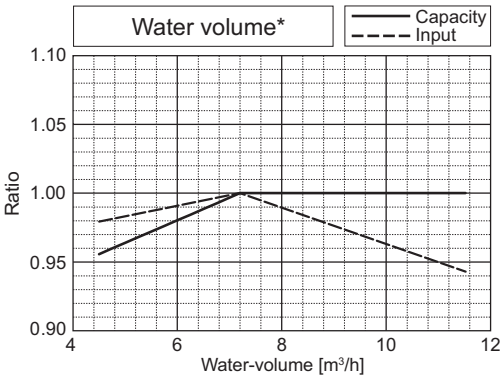
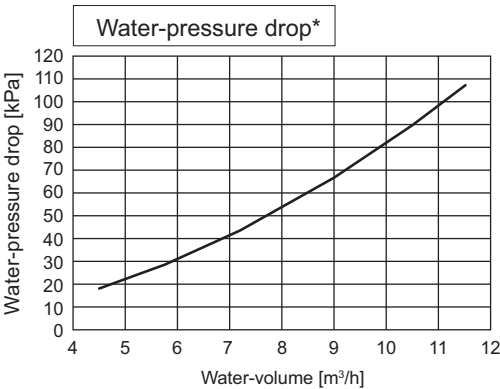
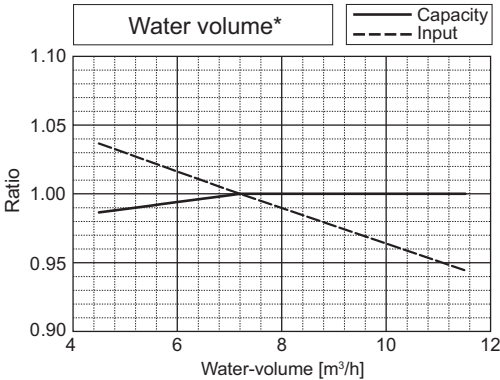
PQRY-		M312TSXU/YSXU
Nominal Cooling Capacity	kW	91.4
	BTU/h	312,000
Input	kW	23.44



PQRY-		M312TSXU/YSXU
Nominal Heating Capacity	kW	102.6
	BTU/h	350,000
Input	kW	18.13

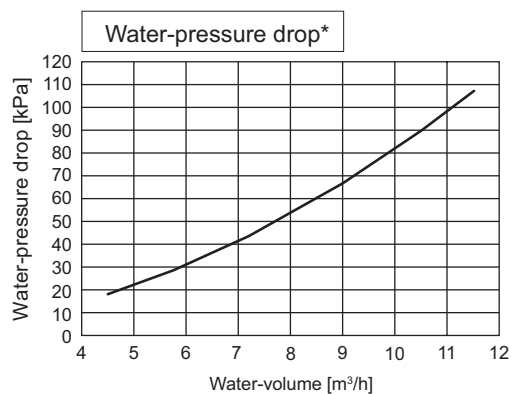
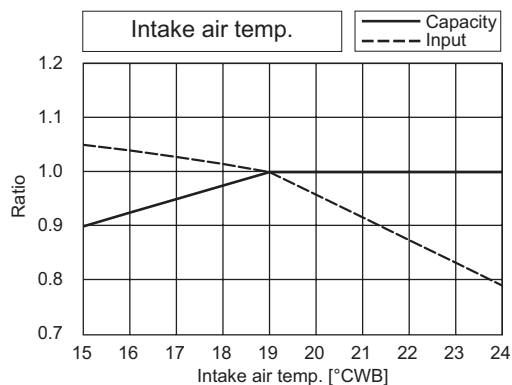
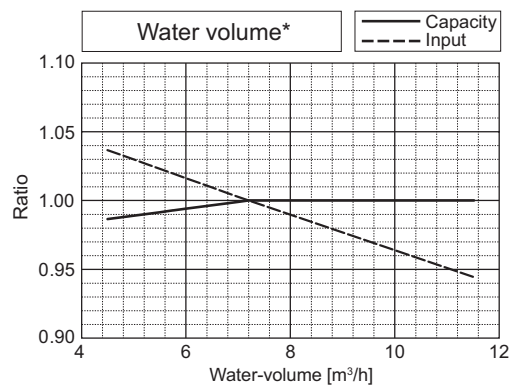
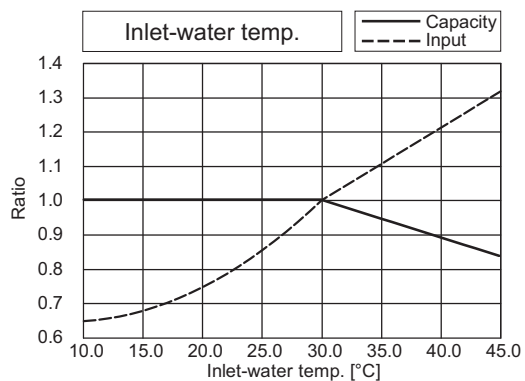


*The drawing indicates characteristic per unit.

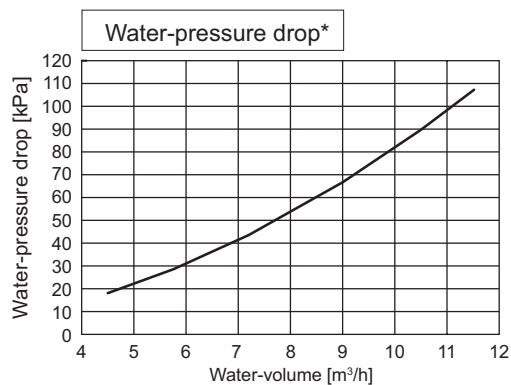
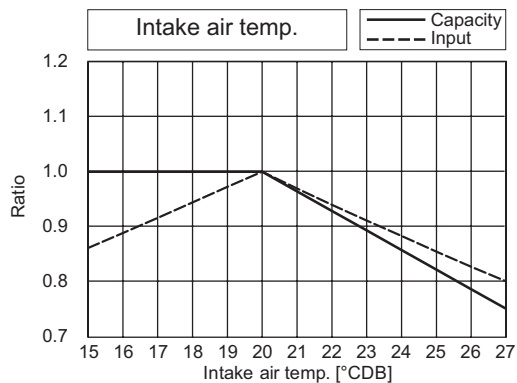
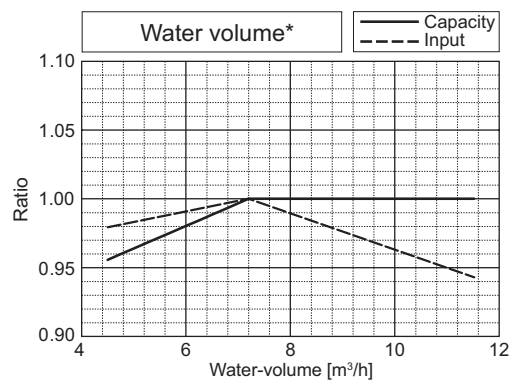
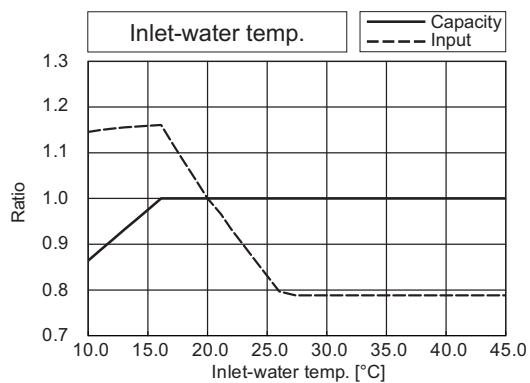


PQRY-		M336TSXU/YSXU
Nominal Cooling Capacity	kW	98.5
	BTU/h	336,000
Input	kW	25.69

*The drawing indicates characteristic per unit.

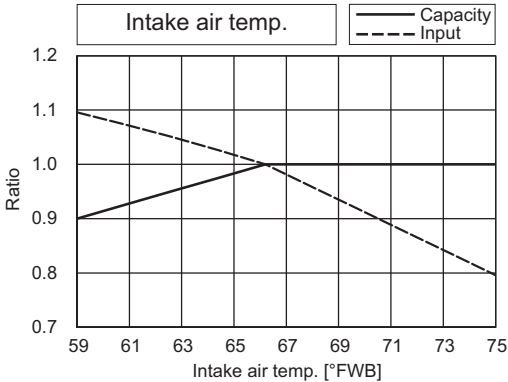
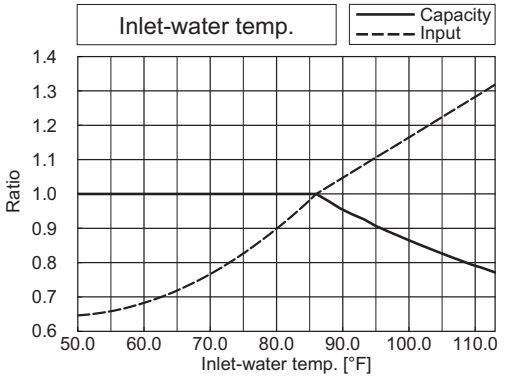


PQRY-		M336TSXU/YSXU
Nominal Heating Capacity	kW	110.8
	BTU/h	378,000
Input	kW	20.20

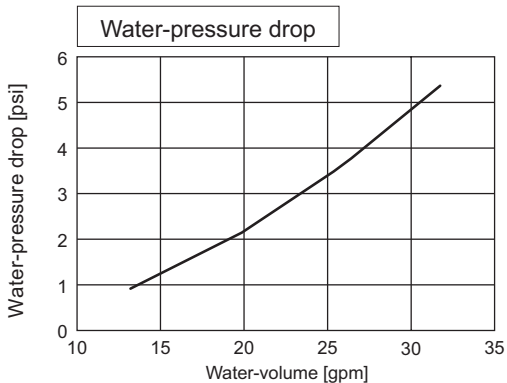
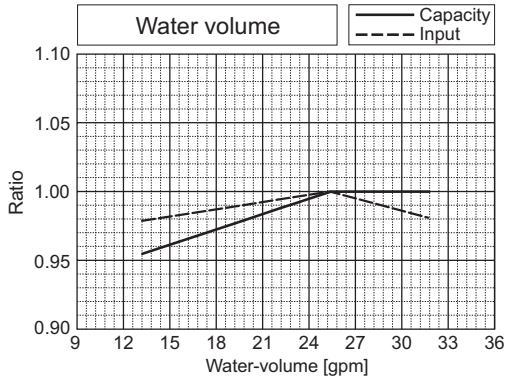
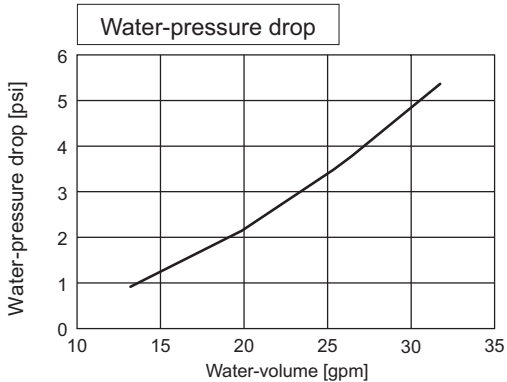
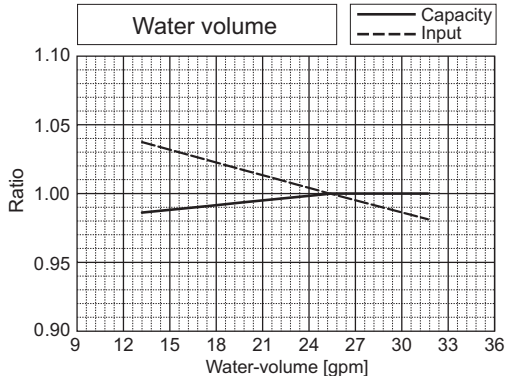
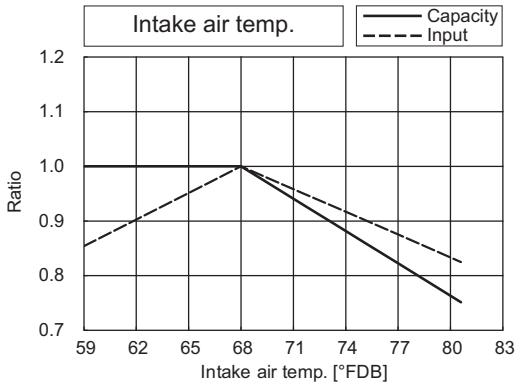
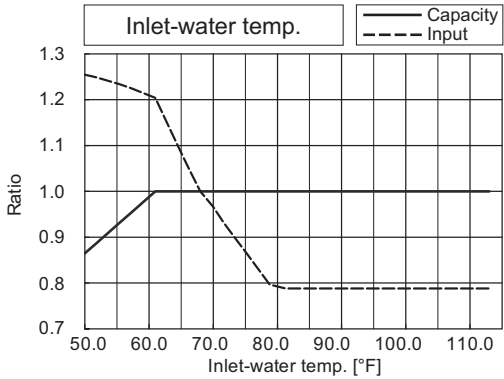


PQRY-M-T(S)XU-A, Y(S)XU-A

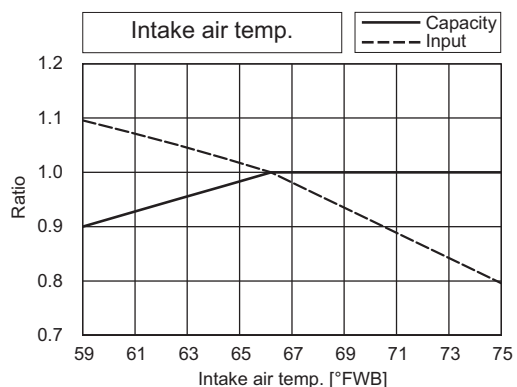
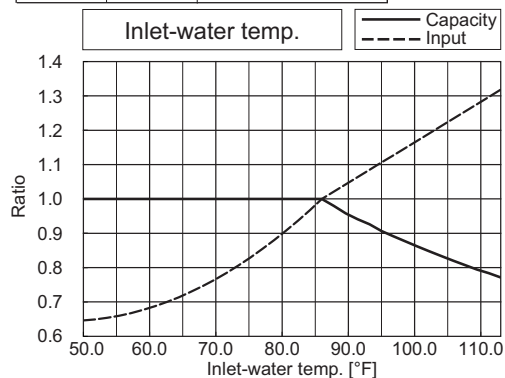
PQRY-		M72TXU/YXU
Nominal Cooling Capacity	kW	21.1
	BTU/h	72,000
Input	kW	3.43



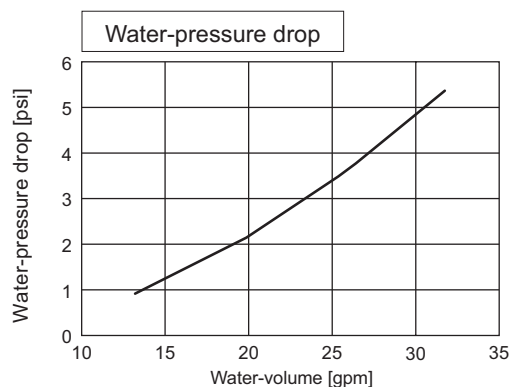
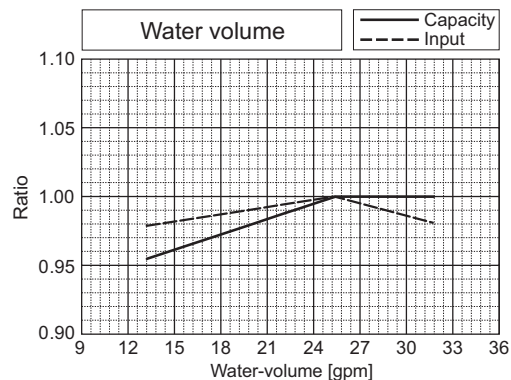
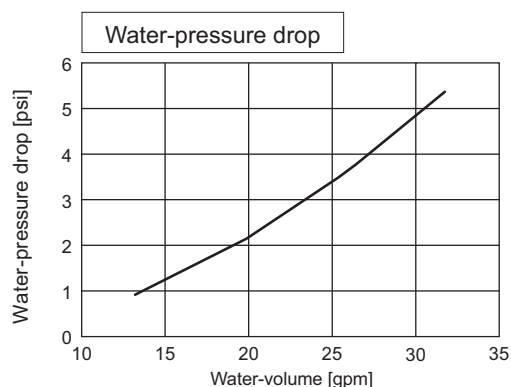
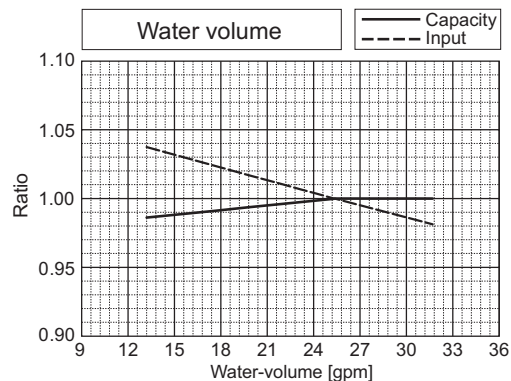
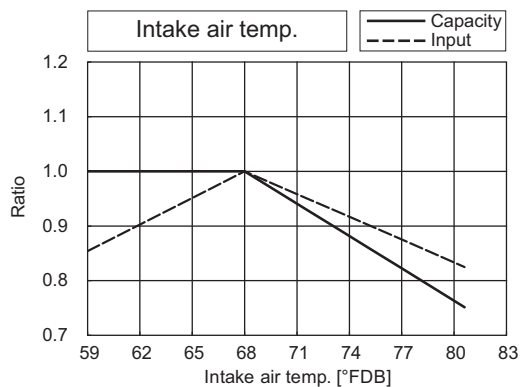
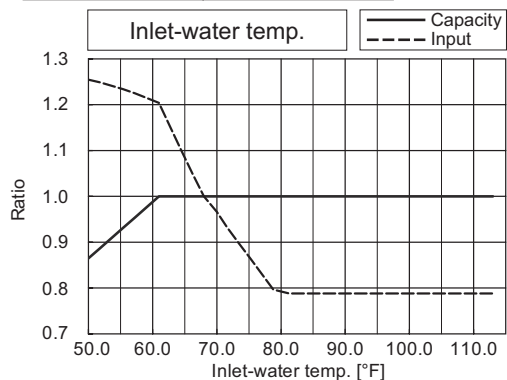
PQRY-		M72TXU/YXU
Nominal Heating Capacity	kW	23.4
	BTU/h	80,000
Input	kW	3.38



PQRY-		M96TXU/YXU
Nominal Cooling Capacity	kW	28.1
	BTU/h	96,000
Input	kW	5.18

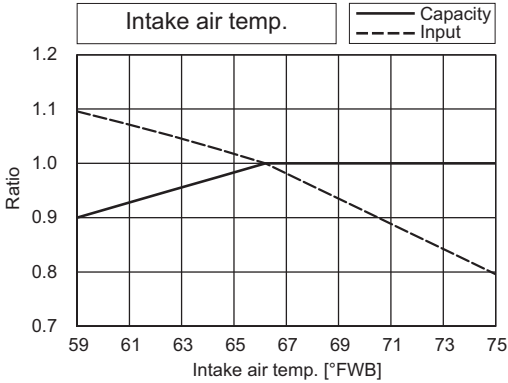
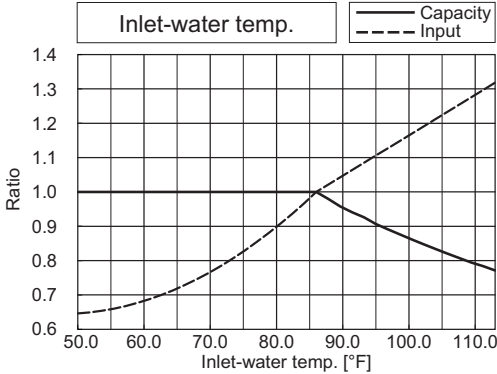


PQRY-		M96TXU/YXU
Nominal Heating Capacity	kW	31.7
	BTU/h	108,000
Input	kW	4.81

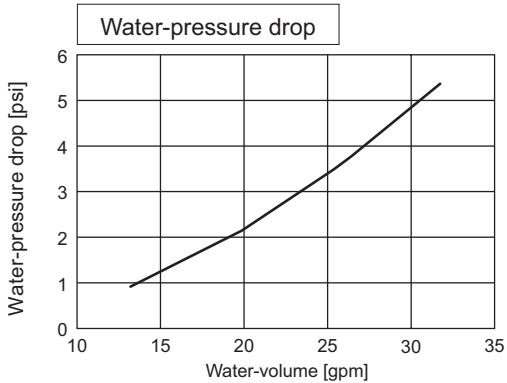
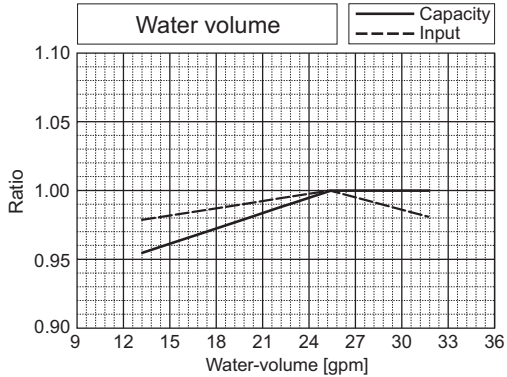
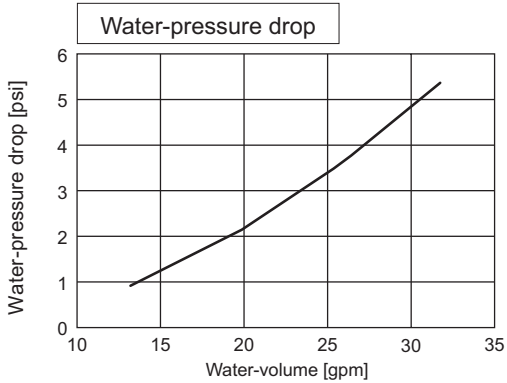
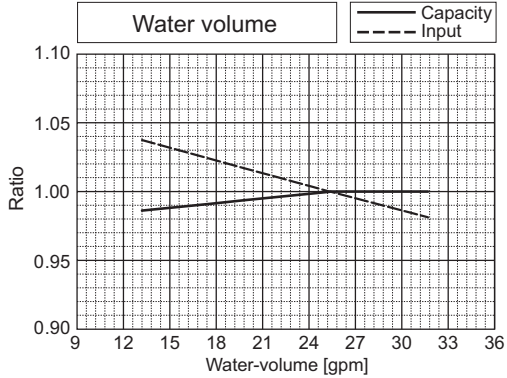
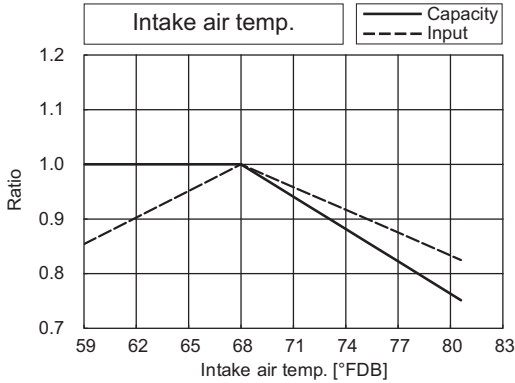
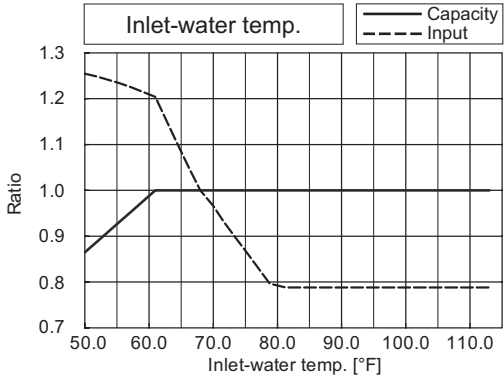


PQRY-M-T(S)XU-A, Y(S)XU-A

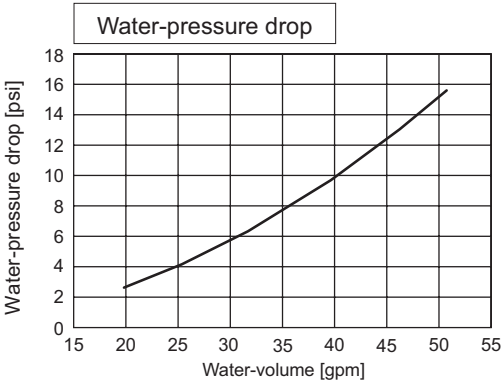
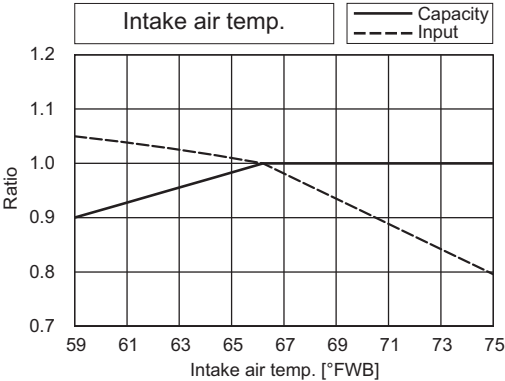
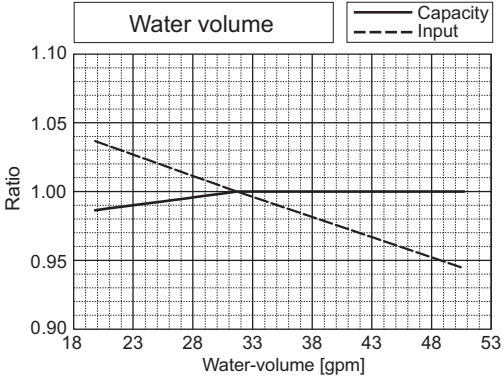
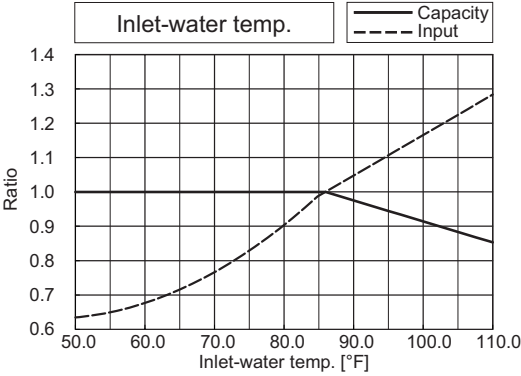
PQRY-		M120TXU/YXU
Nominal Cooling Capacity	kW	35.2
	BTU/h	120,000
Input	kW	7.21



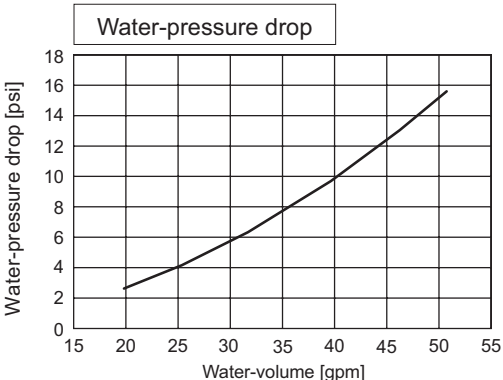
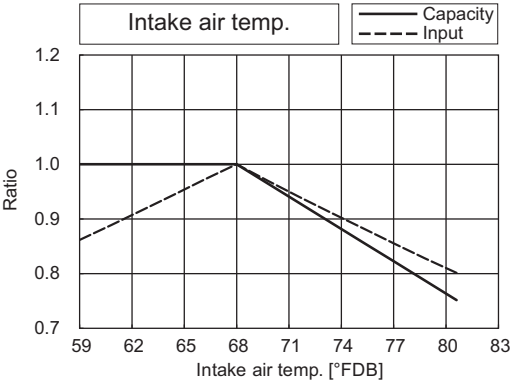
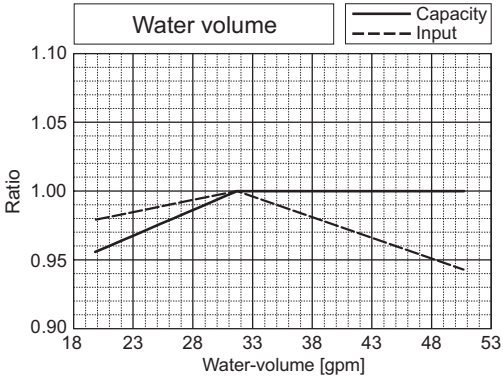
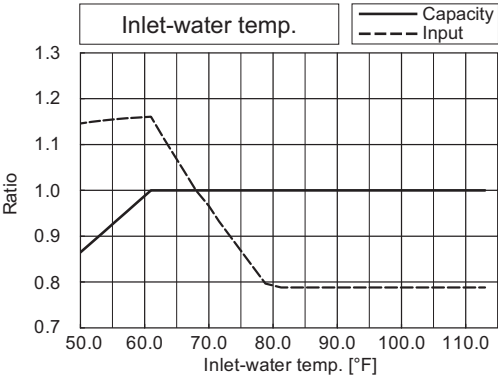
PQRY-		M120TXU/YXU
Nominal Heating Capacity	kW	39.6
	BTU/h	135,000
Input	kW	6.12



PQRY-		M144TXU/YXU
Nominal Cooling Capacity	kW	42.2
	BTU/h	144,000
Input	kW	9.30

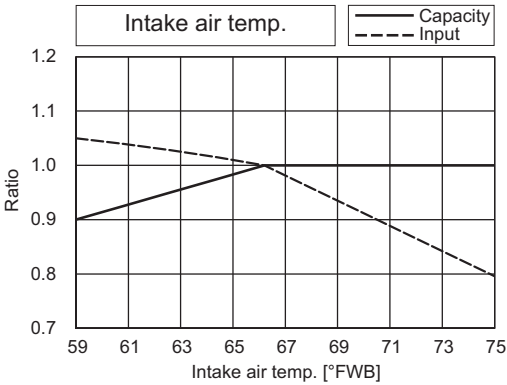
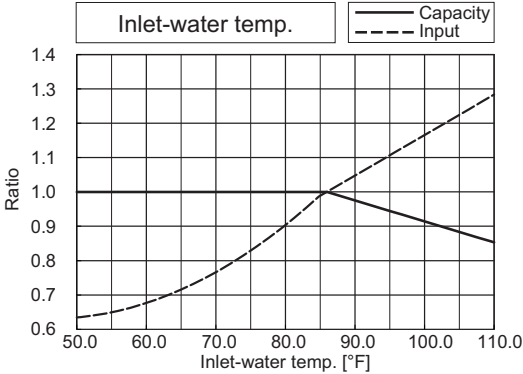


PQRY-		M144TXU/YXU
Nominal Heating Capacity	kW	46.9
	BTU/h	160,000
Input	kW	7.44

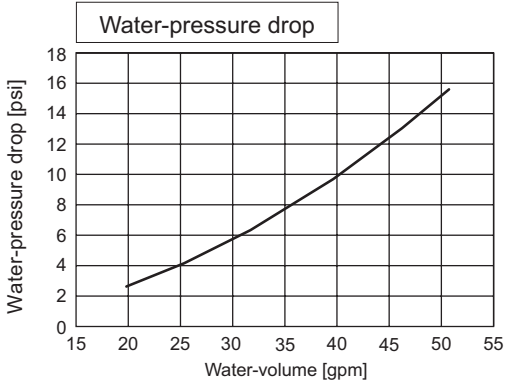
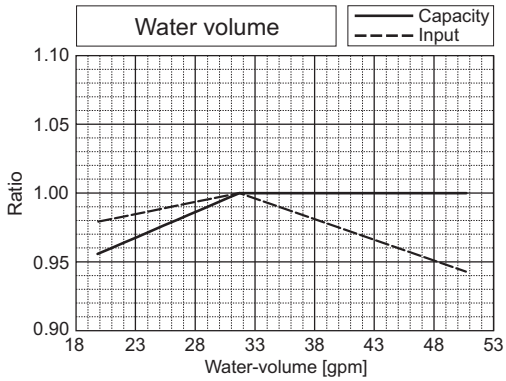
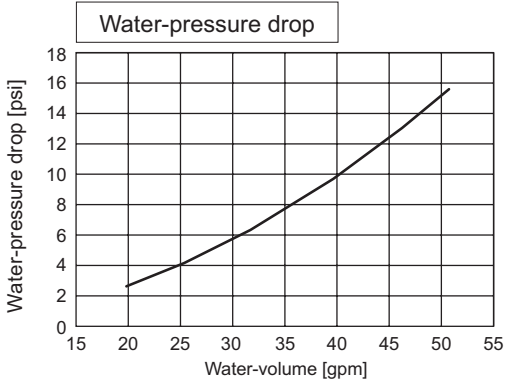
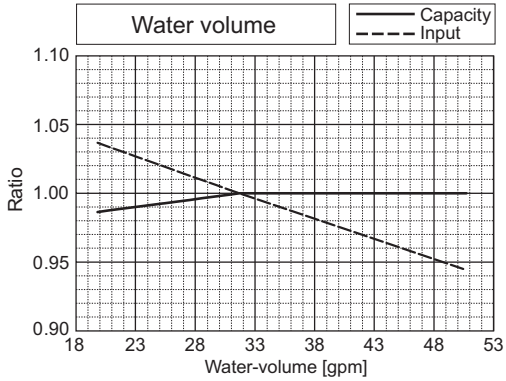
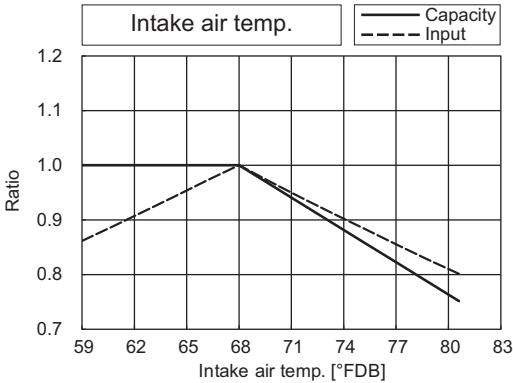
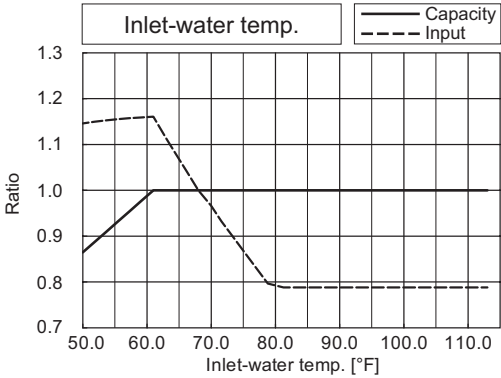


PQRY-M-T(S)XU-A, Y(S)XU-A

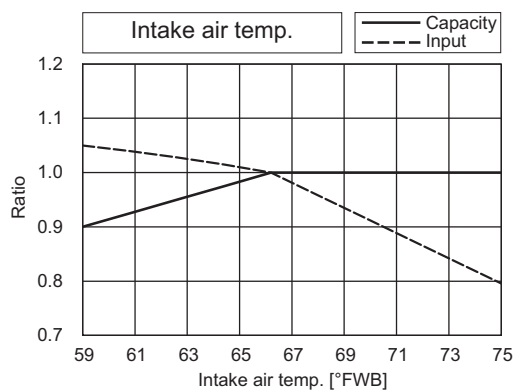
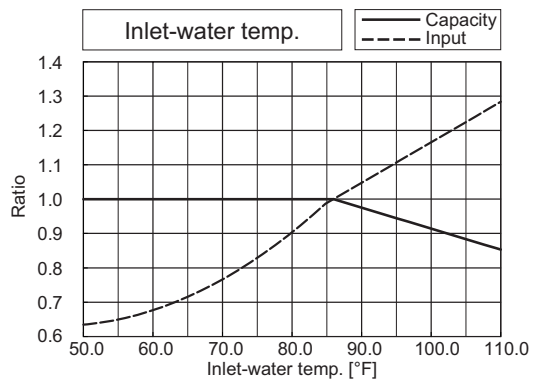
PQRY-		M168TXU/YXU
Nominal Cooling Capacity	kW	49.2
	BTU/h	168,000
Input	kW	11.87



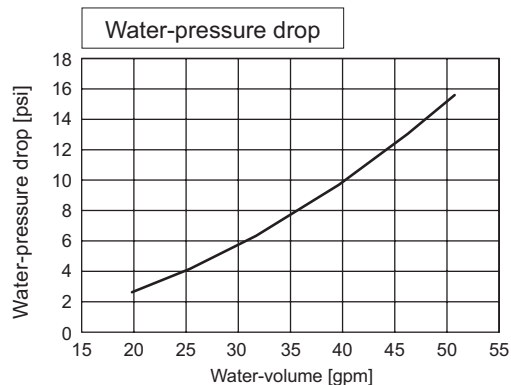
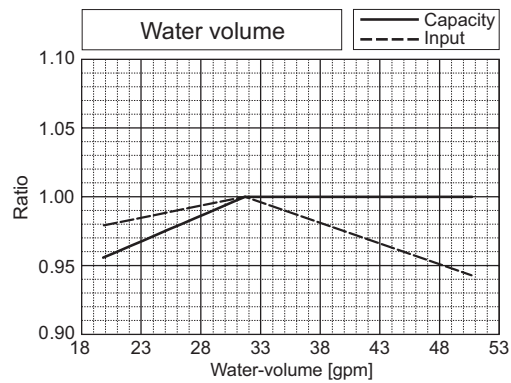
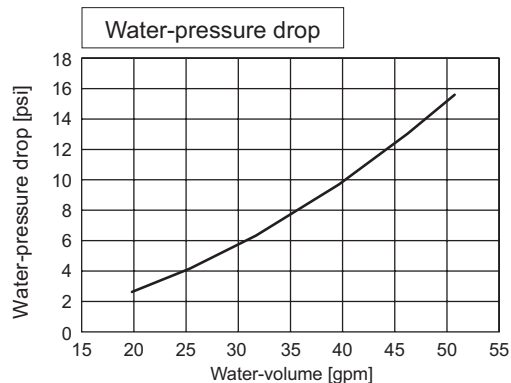
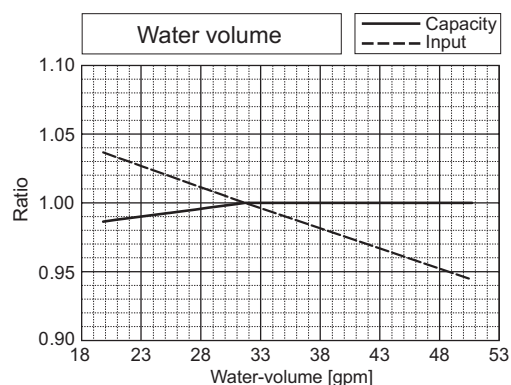
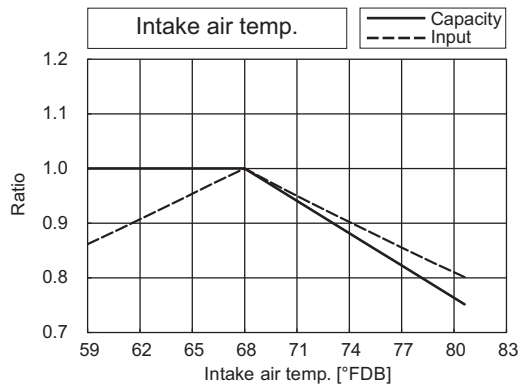
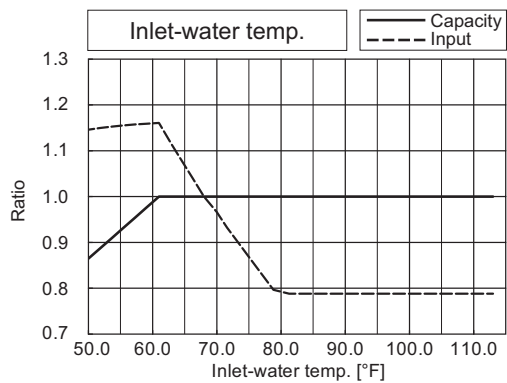
PQRY-		M168TXU/YXU
Nominal Heating Capacity	kW	55.1
	BTU/h	188,000
Input	kW	9.85



PQRY-		M192TXU/YXU
Nominal Cooling Capacity	kW	56.3
	BTU/h	192,000
Input	kW	14.66

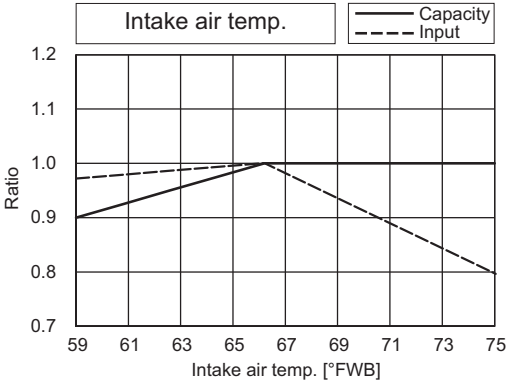
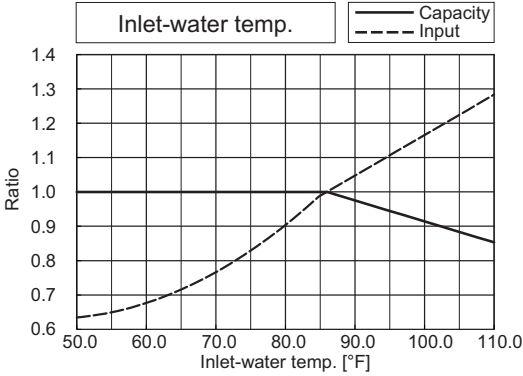


PQRY-		M192TXU/YXU
Nominal Heating Capacity	kW	63.0
	BTU/h	215,000
Input	kW	12.10

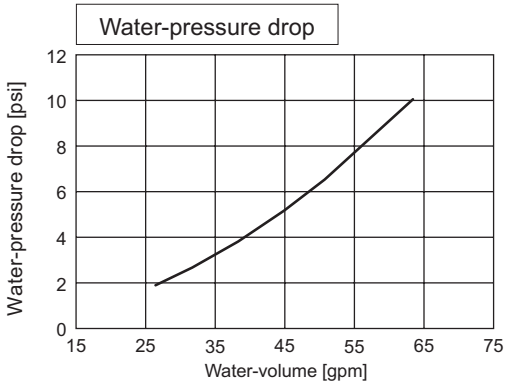
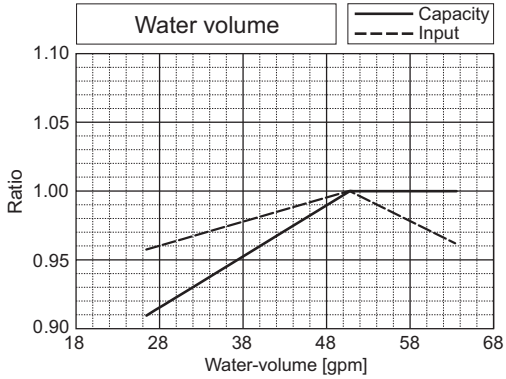
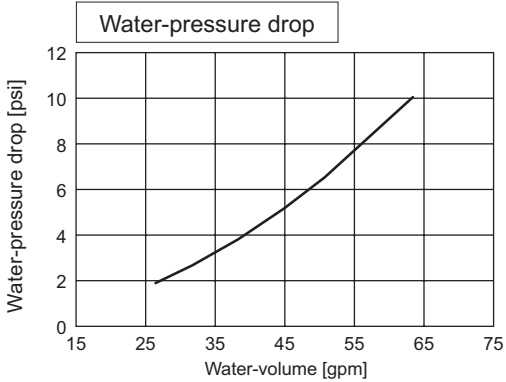
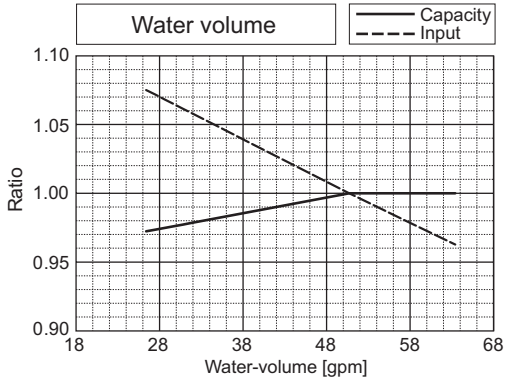
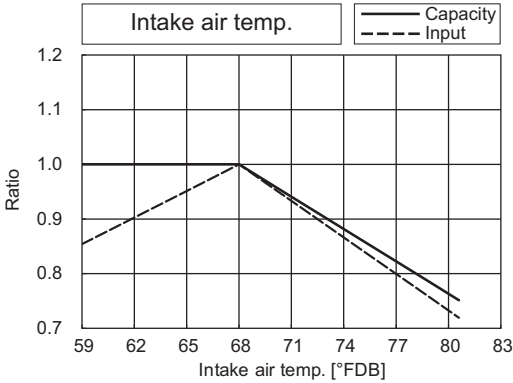
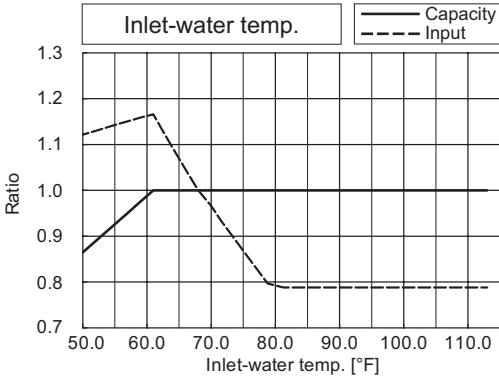


PQRY-M-T(S)XU-A, Y(S)XU-A

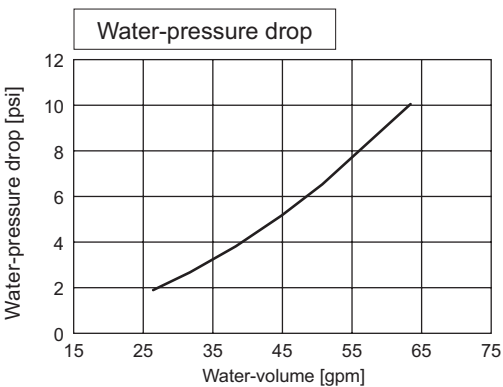
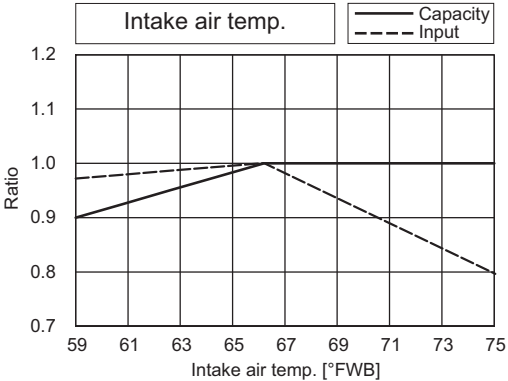
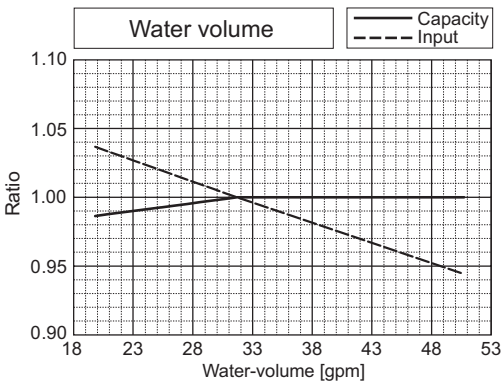
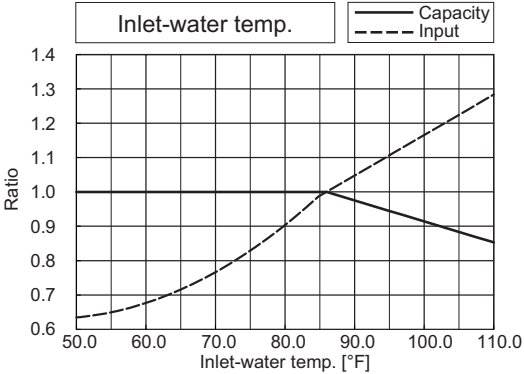
PQRY-		M216TXU/YXU
Nominal Cooling Capacity	kW	63.3
	BTU/h	216,000
Input	kW	15.23



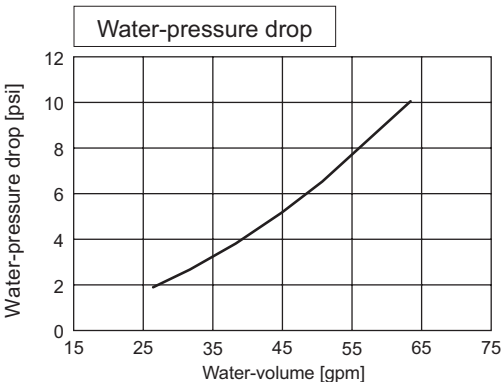
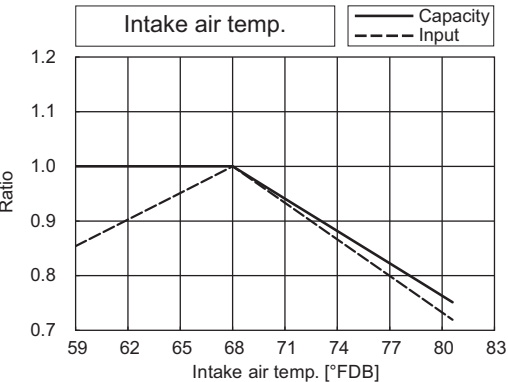
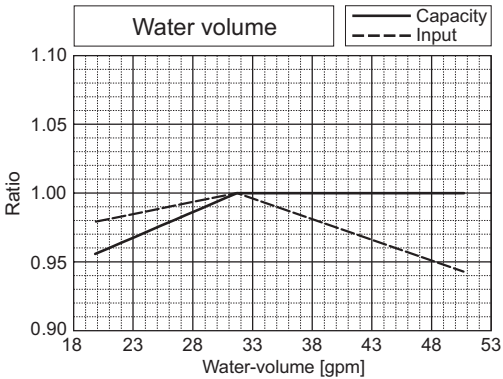
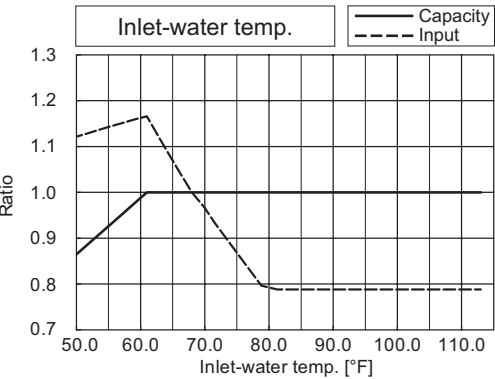
PQRY-		M216TXU/YXU
Nominal Heating Capacity	kW	71.2
	BTU/h	243,000
Input	kW	12.66



PQRY-		M240TXU/YXU
Nominal Cooling Capacity	kW	70.3
	BTU/h	240,000
Input	kW	18.27

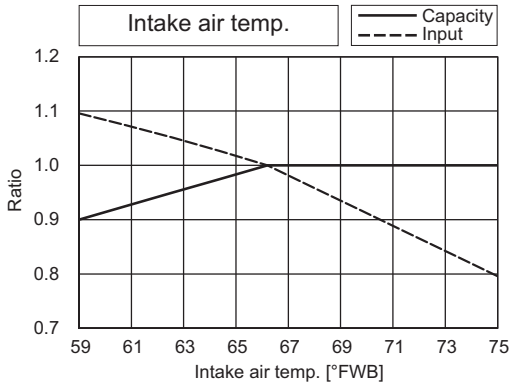
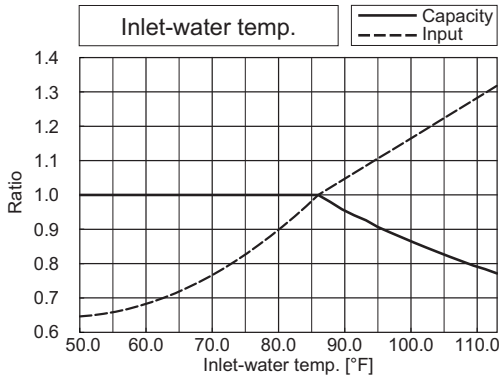


PQRY-		M240TXU/YXU
Nominal Heating Capacity	kW	79.1
	BTU/h	270,000
Input	kW	15.24

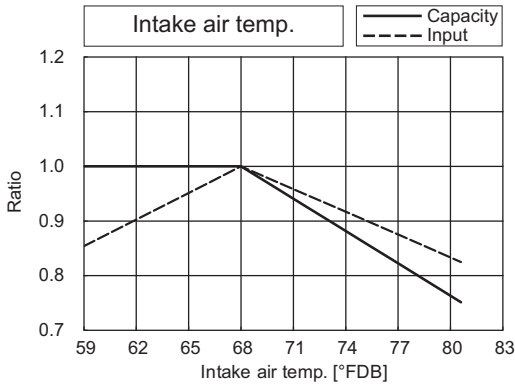
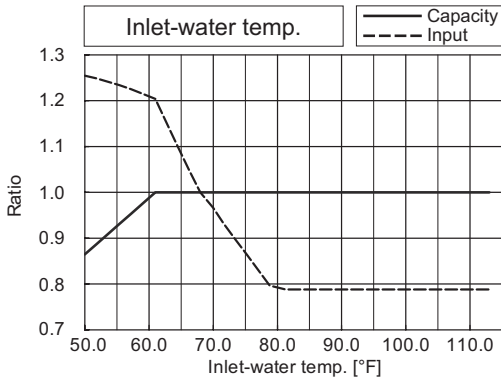


PQRY-M-T(S)XU-A, Y(S)XU-A

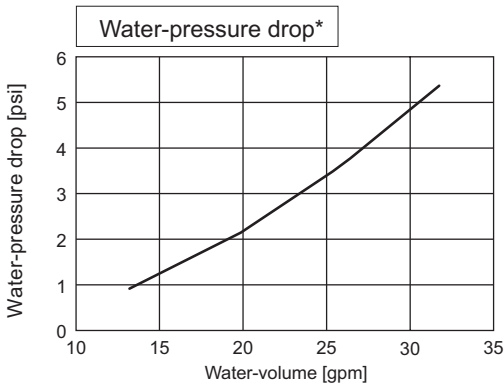
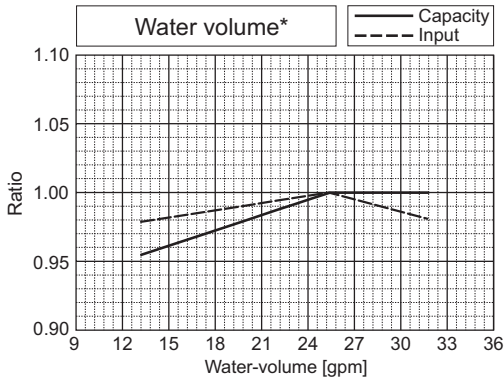
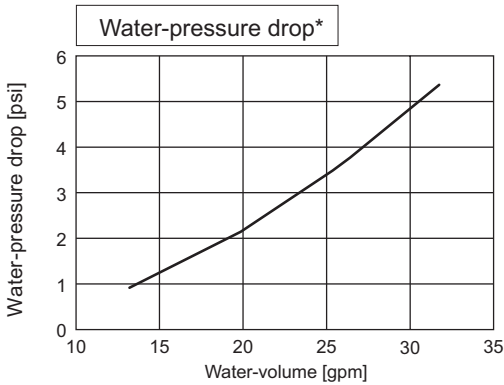
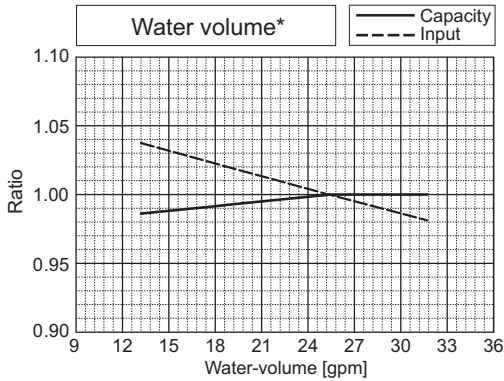
PQRY-		M144TSXU/YSXU
Nominal Cooling Capacity	kW	42.2
	BTU/h	144,000
Input	kW	7.40



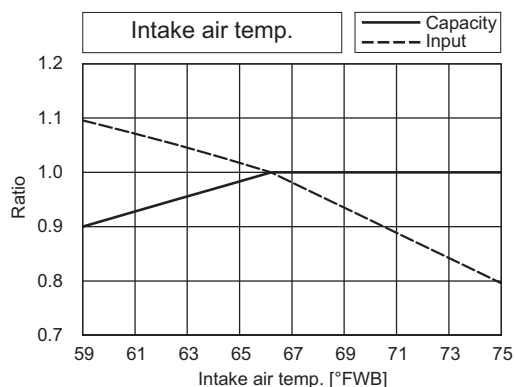
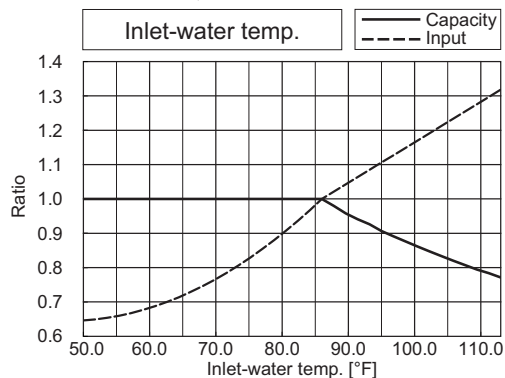
PQRY-		M144TSXU/YSXU
Nominal Heating Capacity	kW	46.9
	BTU/h	160,000
Input	kW	7.76



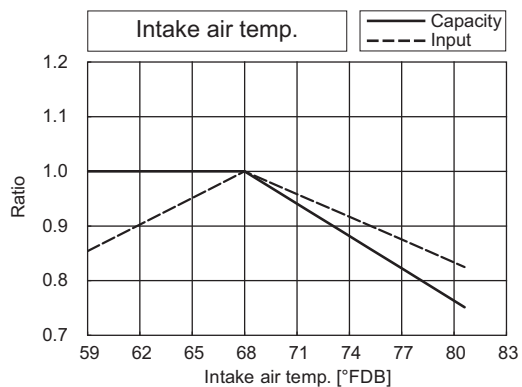
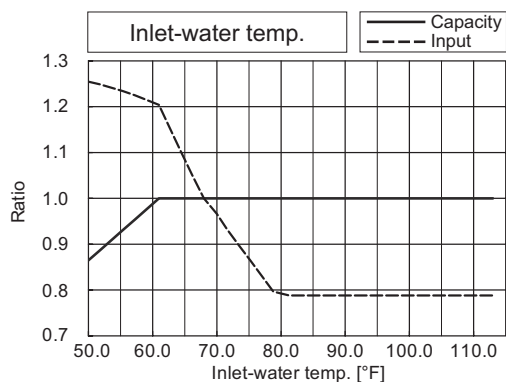
*The drawing indicates characteristic per unit.



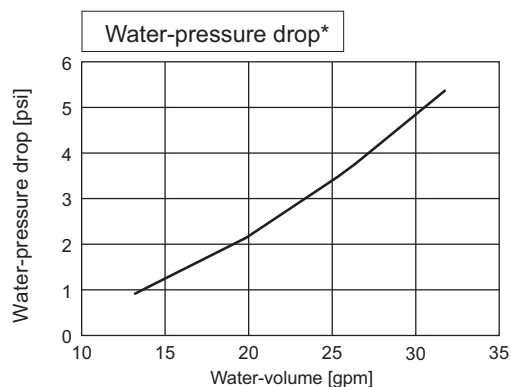
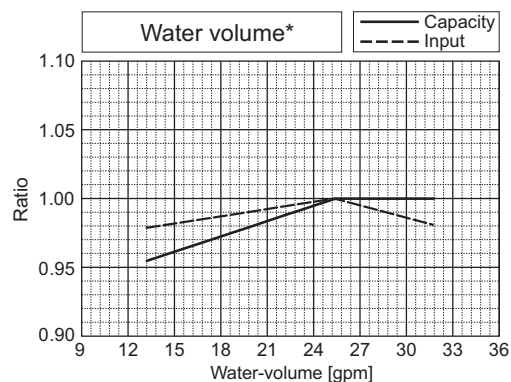
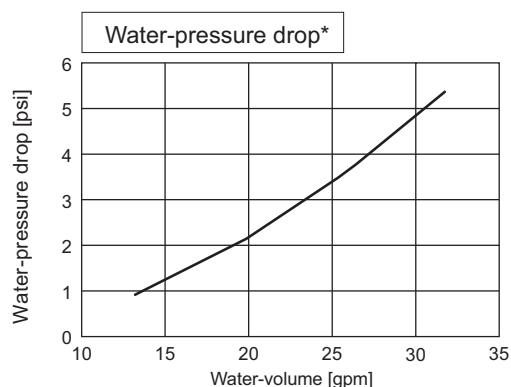
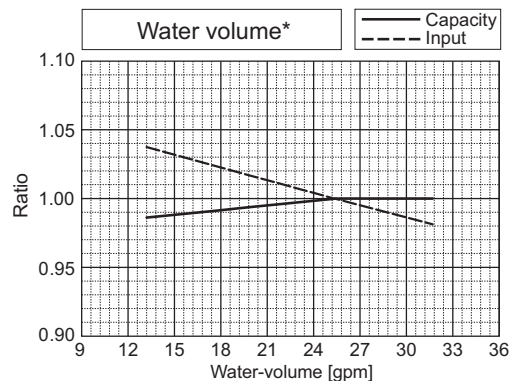
PQRY-		M168TSXU/YSXU
Nominal Cooling Capacity	kW	49.2
	BTU/h	168,000
Input	kW	9.28



PQRY-		M168TSXU/YSXU
Nominal Heating Capacity	kW	55.1
	BTU/h	188,000
Input	kW	8.93

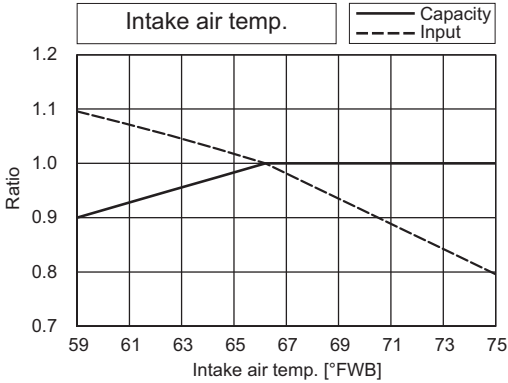
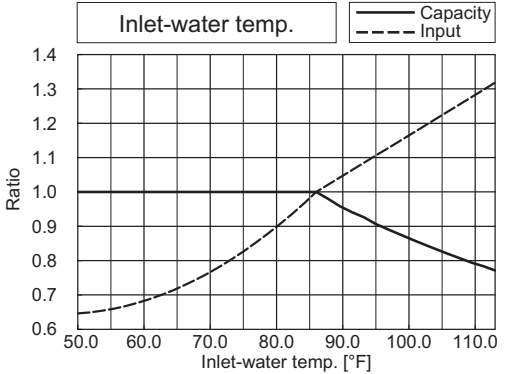


*The drawing indicates characteristic per unit.

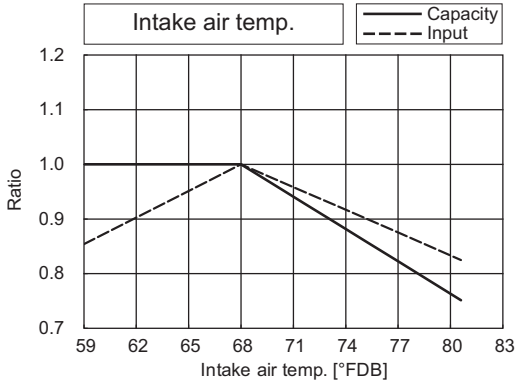
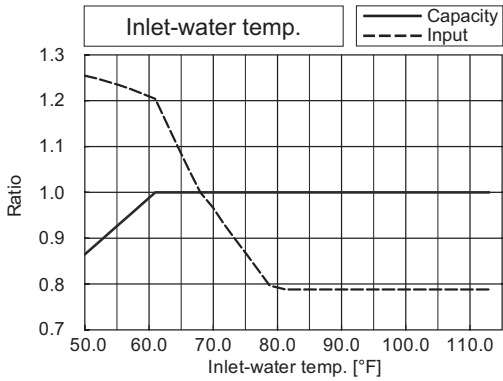


PQRY-M-T(S)XU-A, Y(S)XU-A

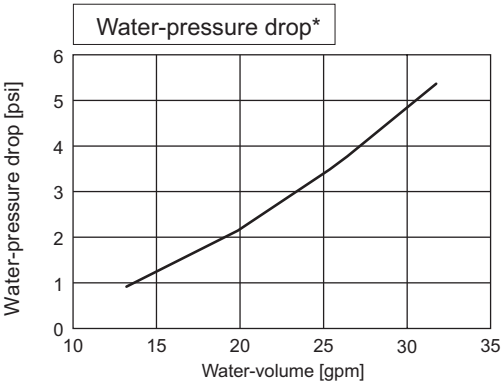
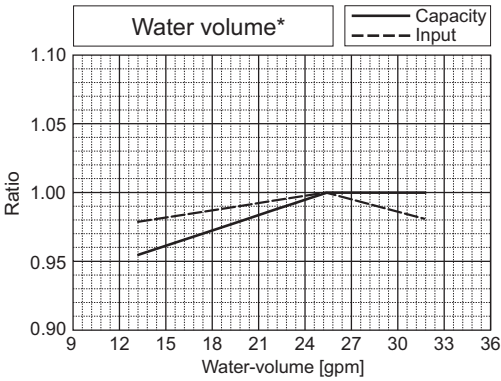
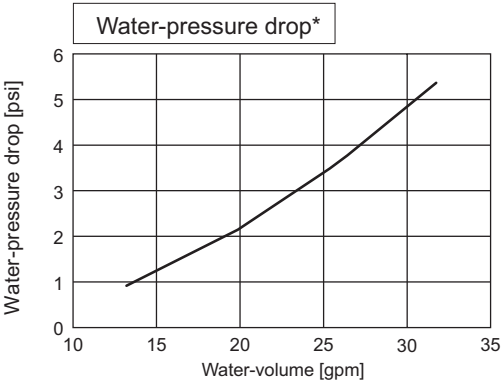
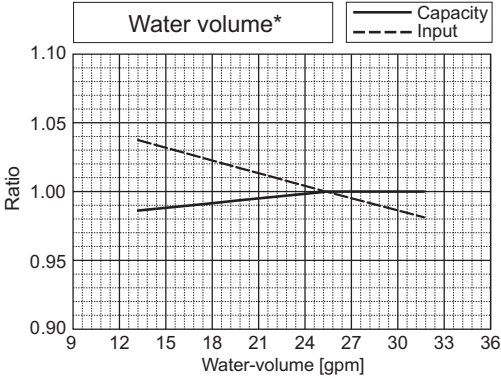
PQRY-		M192TSXU/YSXU
Nominal Cooling Capacity	kW	56.3
	BTU/h	192,000
Input	kW	10.98



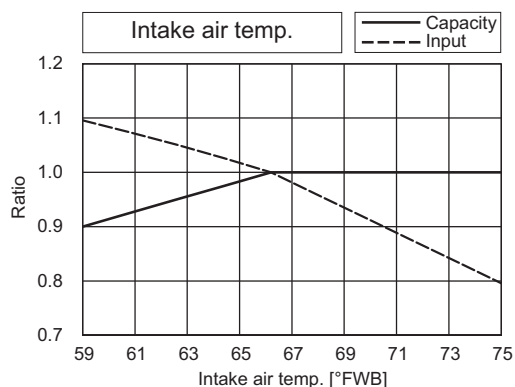
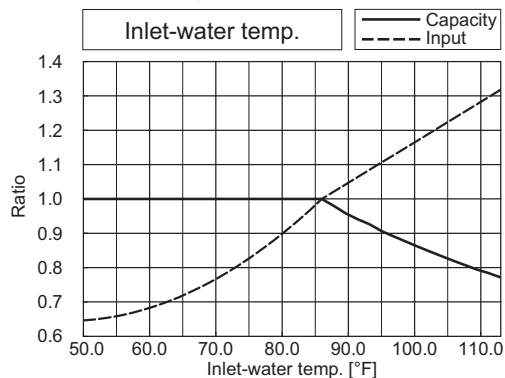
PQRY-		M192TSXU/YSXU
Nominal Heating Capacity	kW	63.0
	BTU/h	215,000
Input	kW	9.91



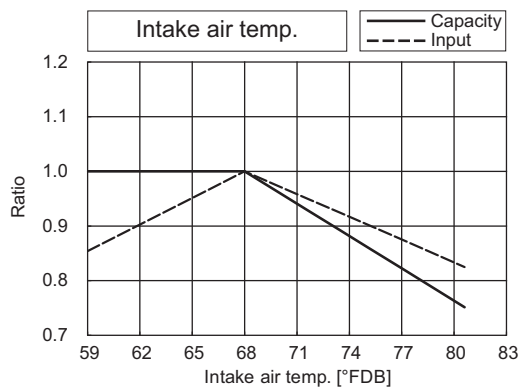
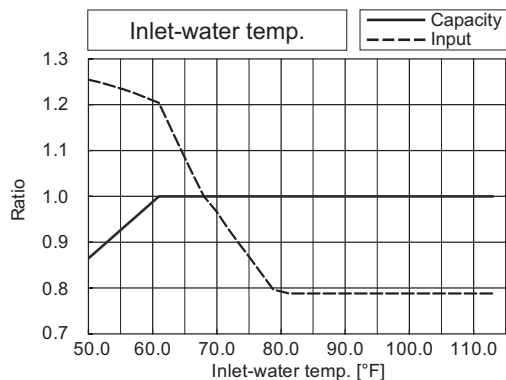
*The drawing indicates characteristic per unit.



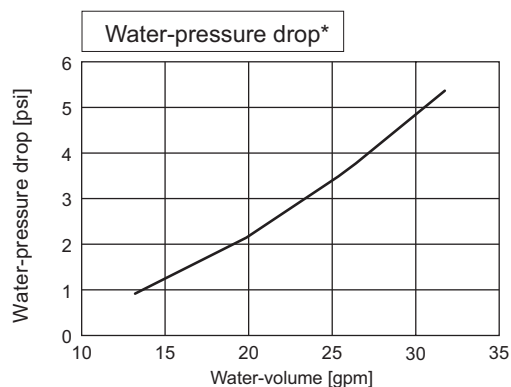
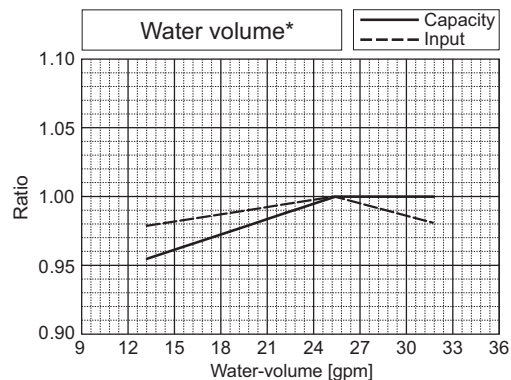
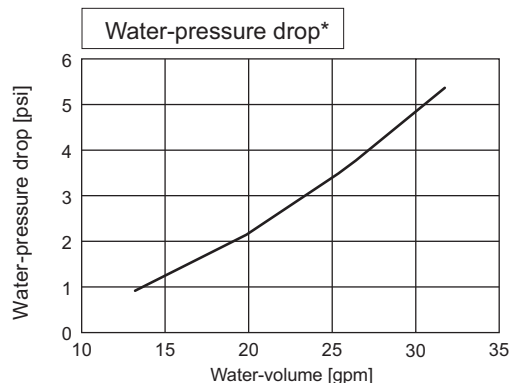
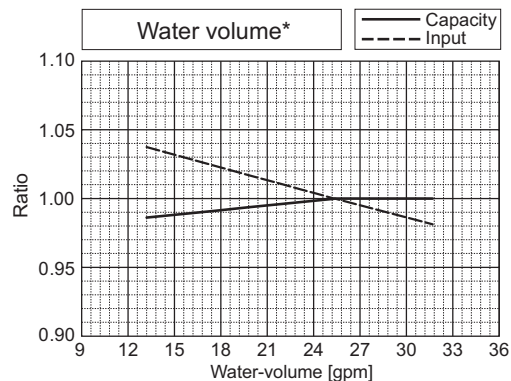
PQRY-		M216TSXU/YSXU
Nominal Cooling Capacity	kW	63.3
	BTU/h	216,000
Input	kW	12.89



PQRY-		M216TSXU/YSXU
Nominal Heating Capacity	kW	71.2
	BTU/h	243,000
Input	kW	11.27

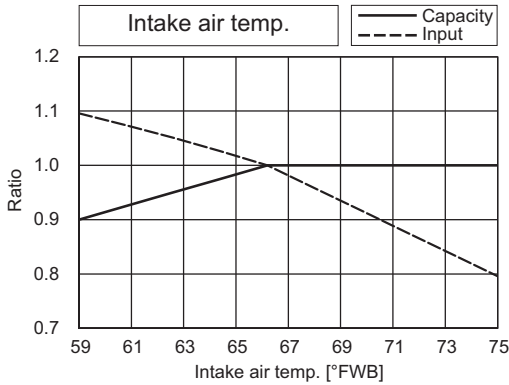
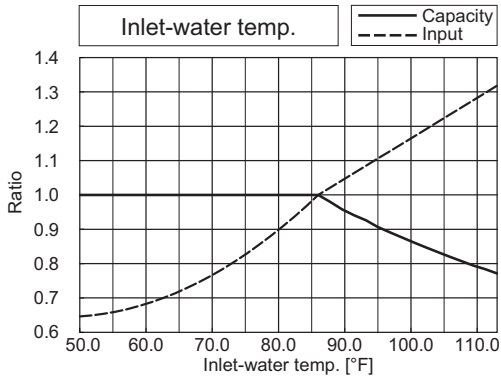


*The drawing indicates characteristic per unit.

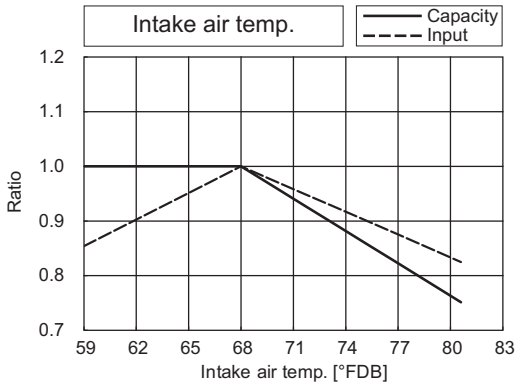
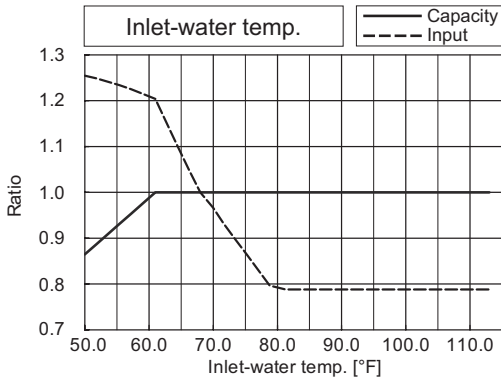


PQRY-M-T(S)XU-A, Y(S)XU-A

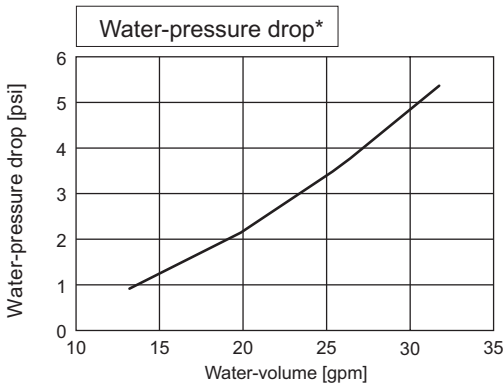
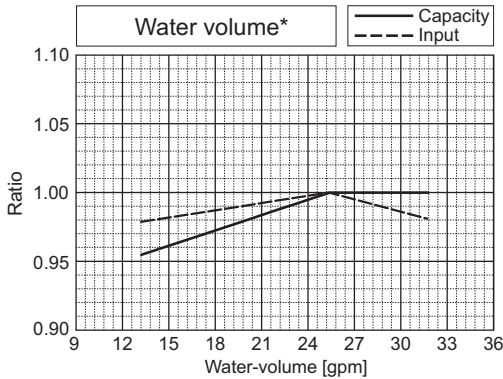
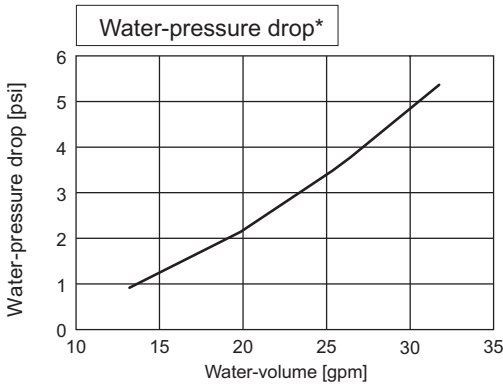
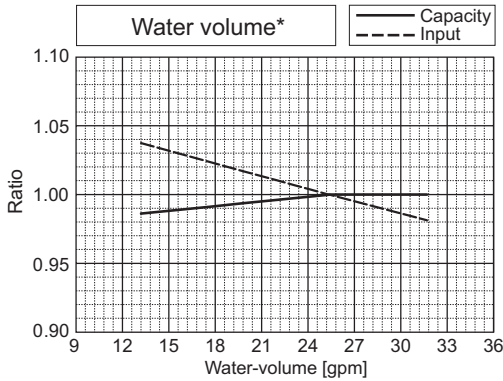
PQRY-		M240TSXU/YSXU
Nominal Cooling Capacity	kW	70.3
	BTU/h	240,000
Input	kW	15.19



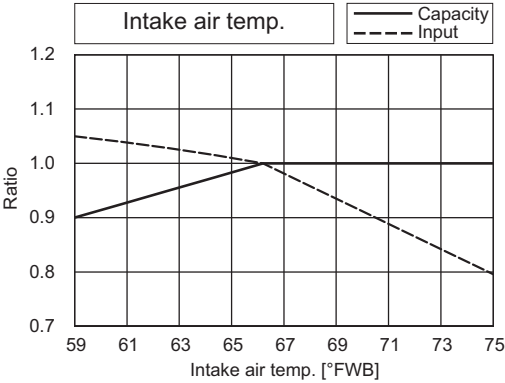
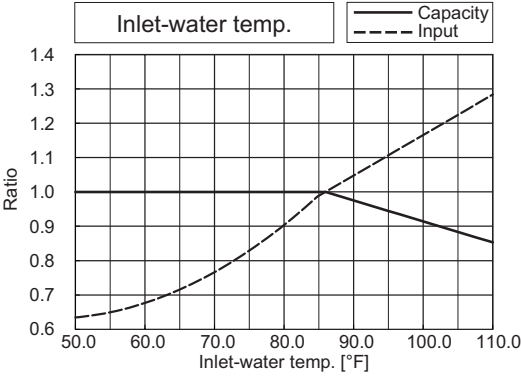
PQRY-		M240TSXU/YSXU
Nominal Heating Capacity	kW	79.1
	BTU/h	270,000
Input	kW	12.83



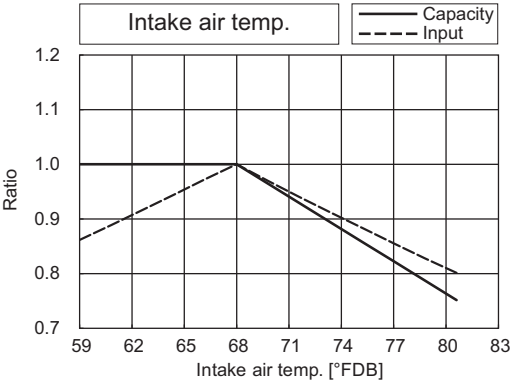
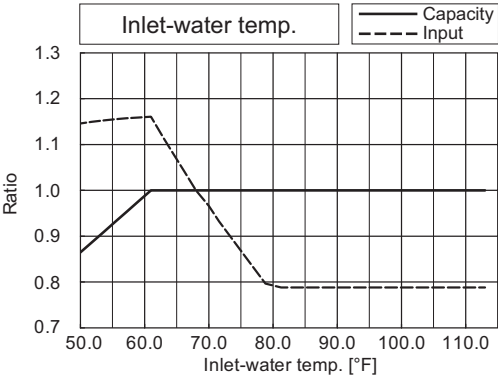
*The drawing indicates characteristic per unit.



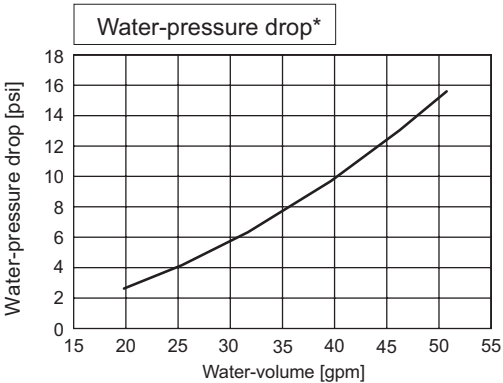
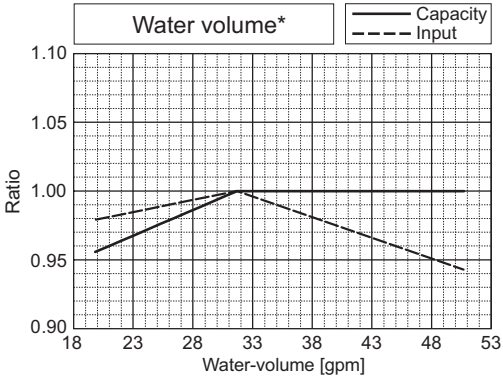
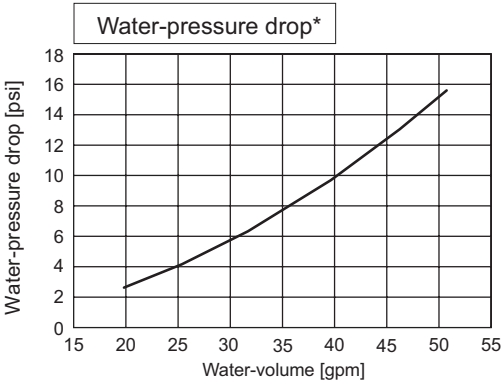
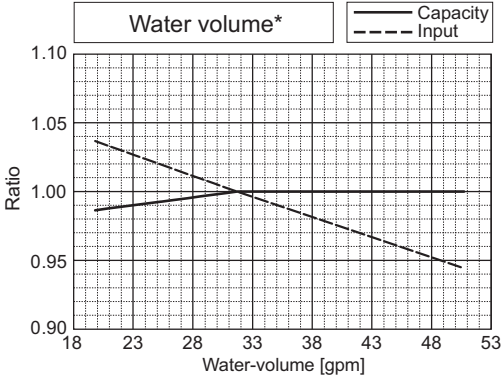
PQRY-		M288TSXU/YSXU
Nominal Cooling Capacity	kW	84.4
	BTU/h	288,000
Input	kW	21.07



PQRY-		M288TSXU/YSXU
Nominal Heating Capacity	kW	94.7
	BTU/h	323,000
Input	kW	16.03

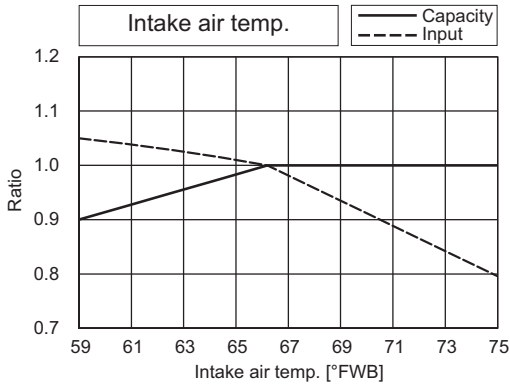
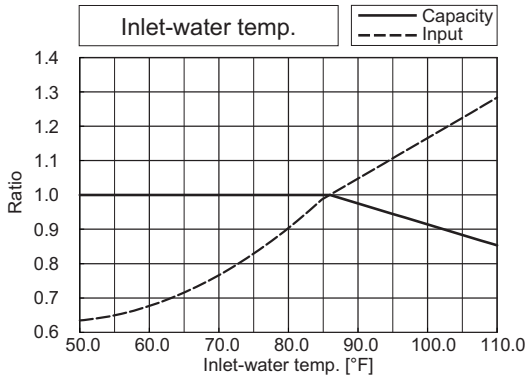


*The drawing indicates characteristic per unit.

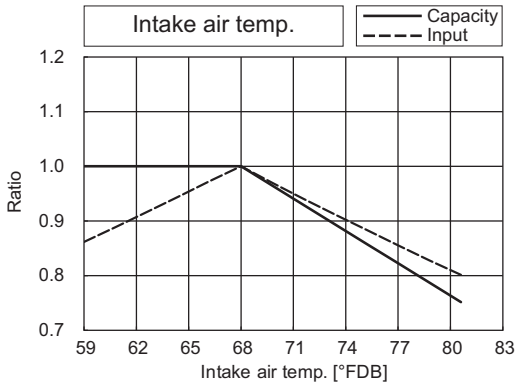
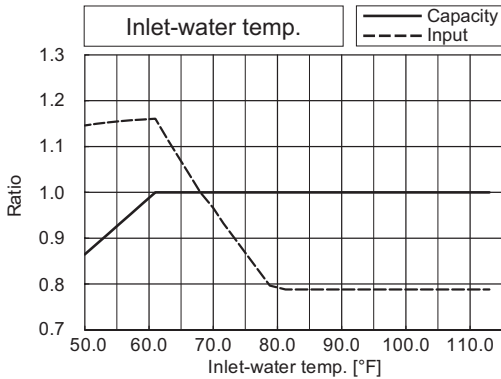


PQRY-M-T(S)XU-A, Y(S)XU-A

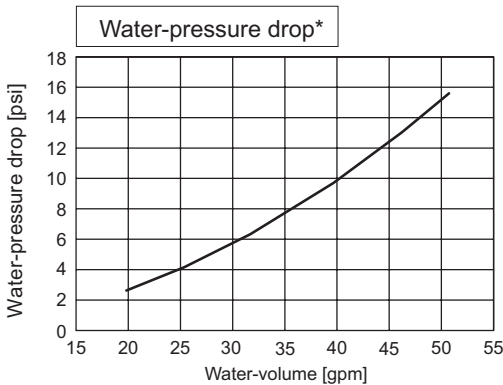
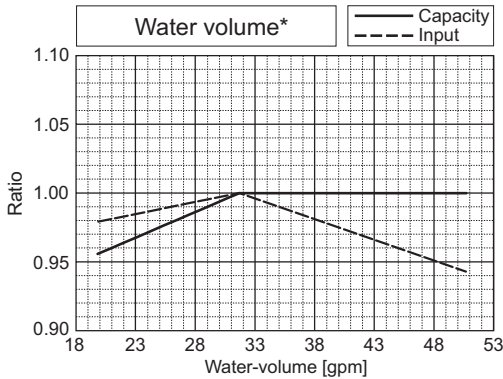
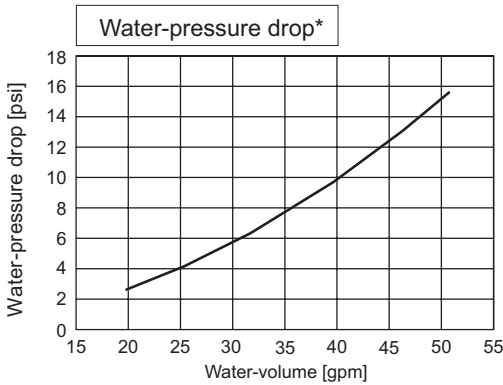
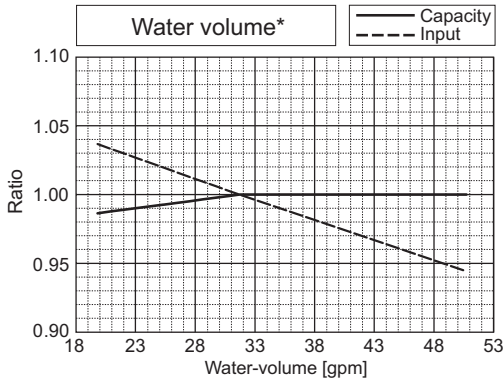
PQRY-		M312TSXU/YSXU
Nominal Cooling Capacity	kW	91.4
	BTU/h	312,000
Input	kW	23.44



PQRY-		M312TSXU/YSXU
Nominal Heating Capacity	kW	102.6
	BTU/h	350,000
Input	kW	18.13

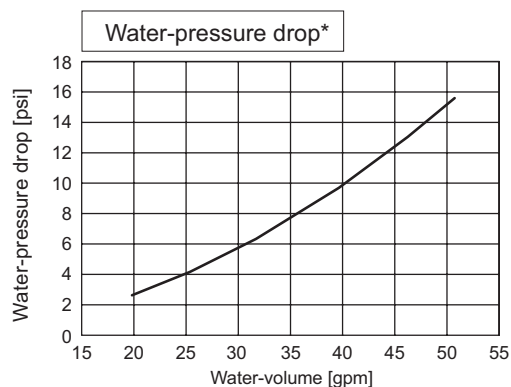
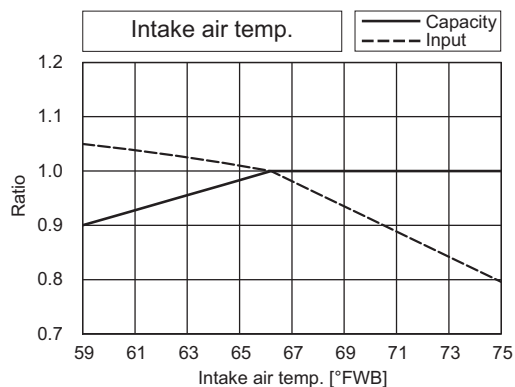
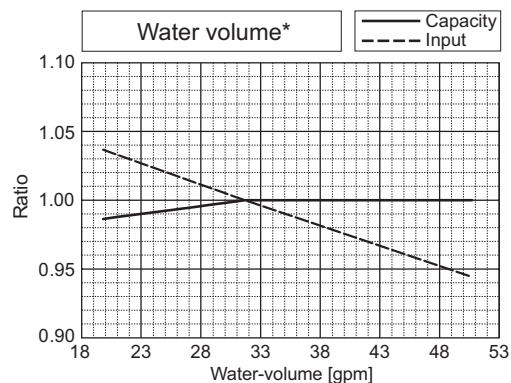
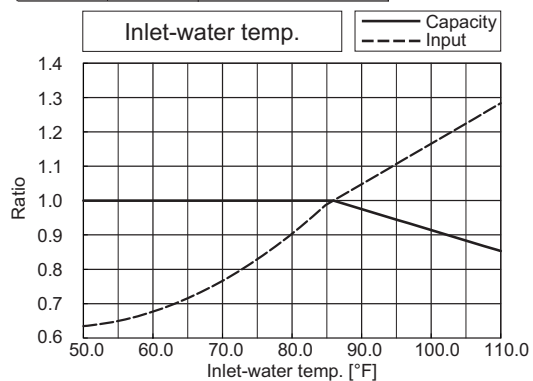


*The drawing indicates characteristic per unit.

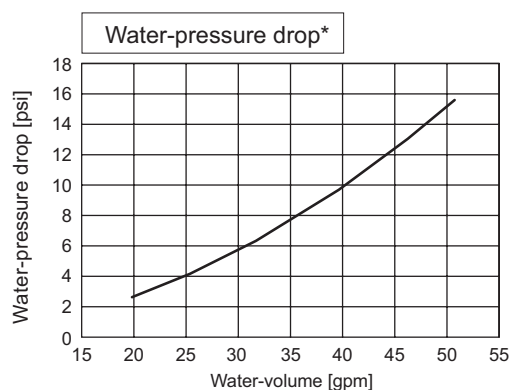
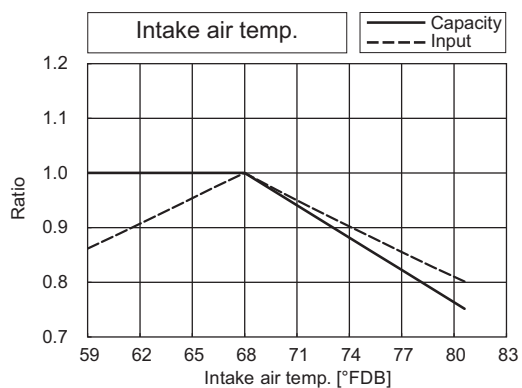
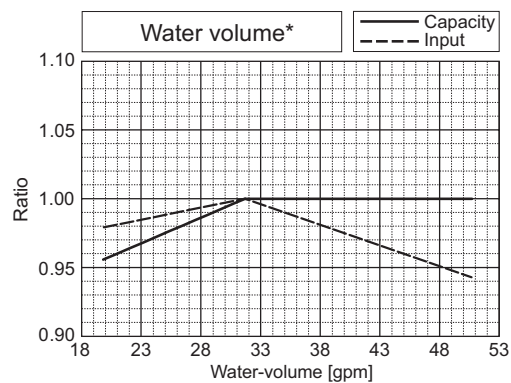
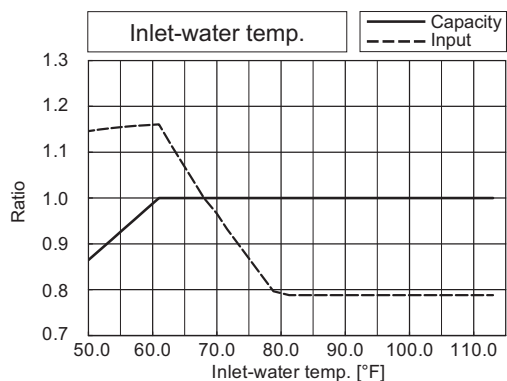


PQRY-		M336TSXU/YSXU
Nominal Cooling Capacity	kW	98.5
	BTU/h	336,000
Input	kW	25.69

*The drawing indicates characteristic per unit.



PQRY-		M336TSXU/YSXU
Nominal Heating Capacity	kW	110.8
	BTU/h	378,000
Input	kW	20.20



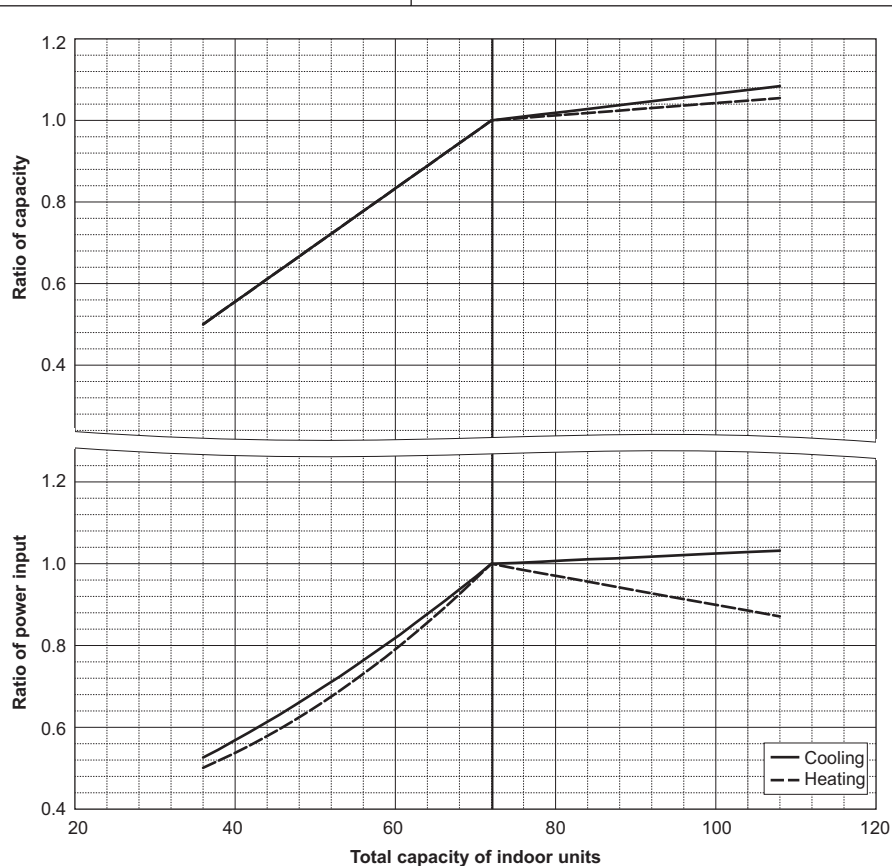
7-2. Correction by total indoor

CITY MULTI system has different capacities and inputs when many combinations of indoor units with different total capacities are connected. Using following tables, the maximum capacity can be found to ensure the system is installed with enough capacity for a particular application. When both water temperature and room temperature are low, the actual performance may differ from the capacity and power input calculated using the correction charts, depending on the piping length conditions.

PQRY-		M72TXU/YXU
Nominal cooling capacity	BTU/h	72,000
	kW	21.1
	Input kW	3.43

PQRY-		M72TXU/YXU
Nominal Heating capacity	BTU/h	80,000
	kW	23.4
	Input kW	3.38

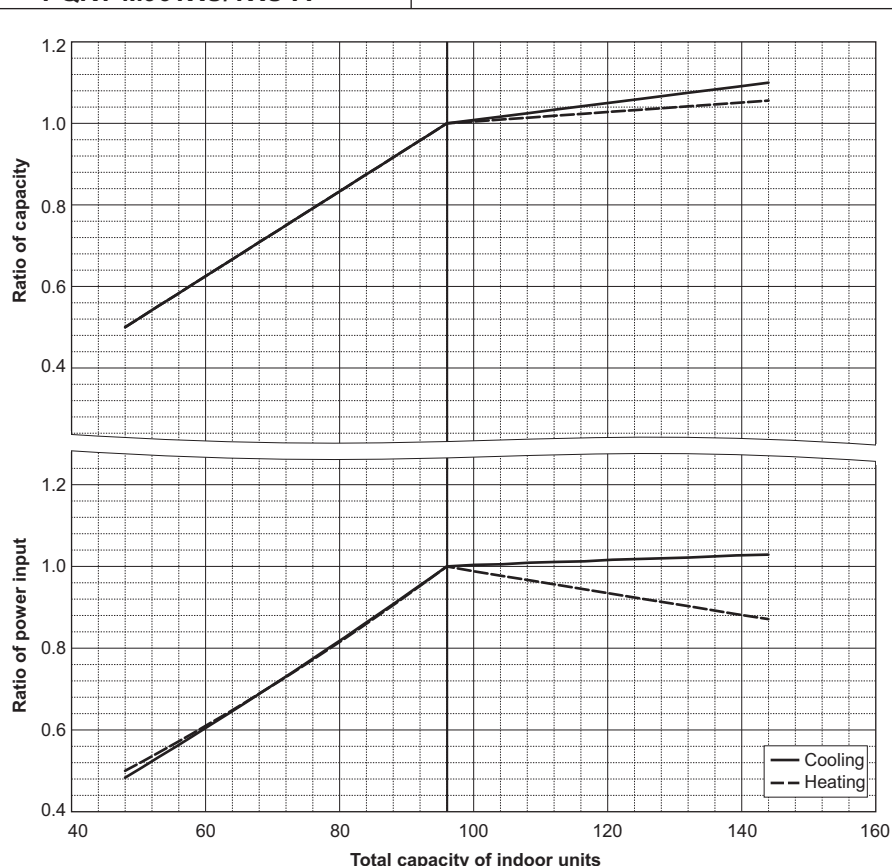
PQRY-M72TXU/YXU-A



PQRY-		M96TXU/YXU
Nominal cooling capacity	BTU/h	96,000
	kW	28.1
	Input kW	5.18

PQRY-		M96TXU/YXU
Nominal Heating capacity	BTU/h	108,000
	kW	31.7
	Input kW	4.81

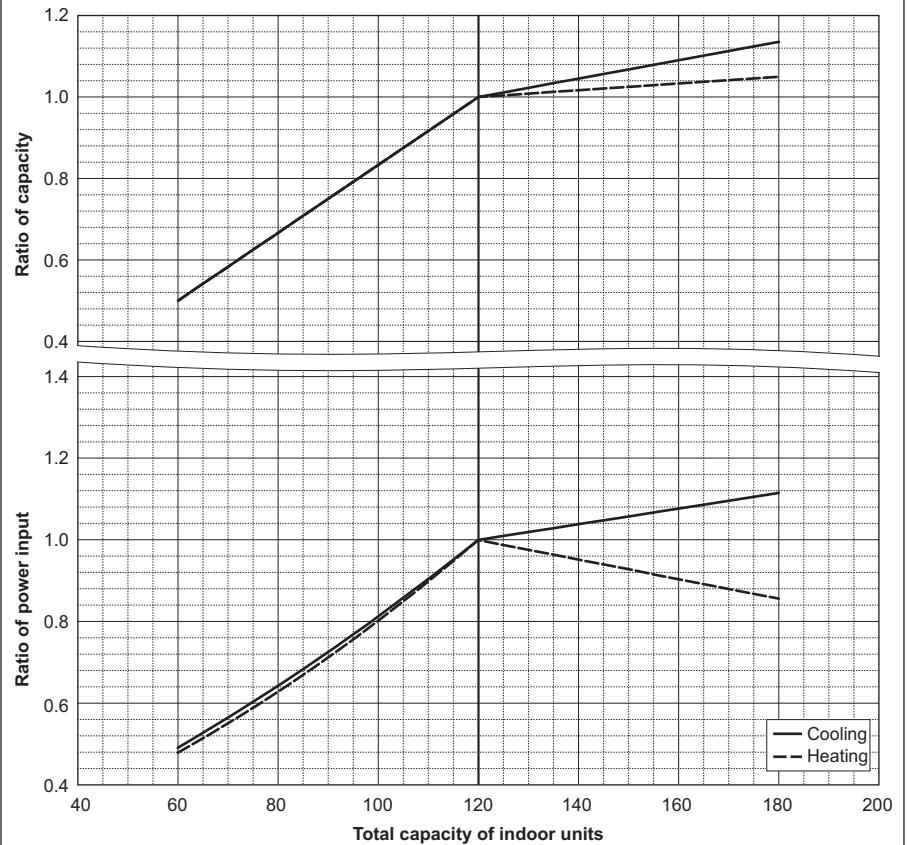
PQRY-M96TXU/YXU-A



PQRY-		M120TXU/YXU
Nominal cooling capacity	BTU/h	120,000
	kW	35.2
	Input kW	7.21

PQRY-		M120TXU/YXU
Nominal Heating capacity	BTU/h	135,000
	kW	39.6
	Input kW	6.12

PQRY-M120TXU/YXU-A



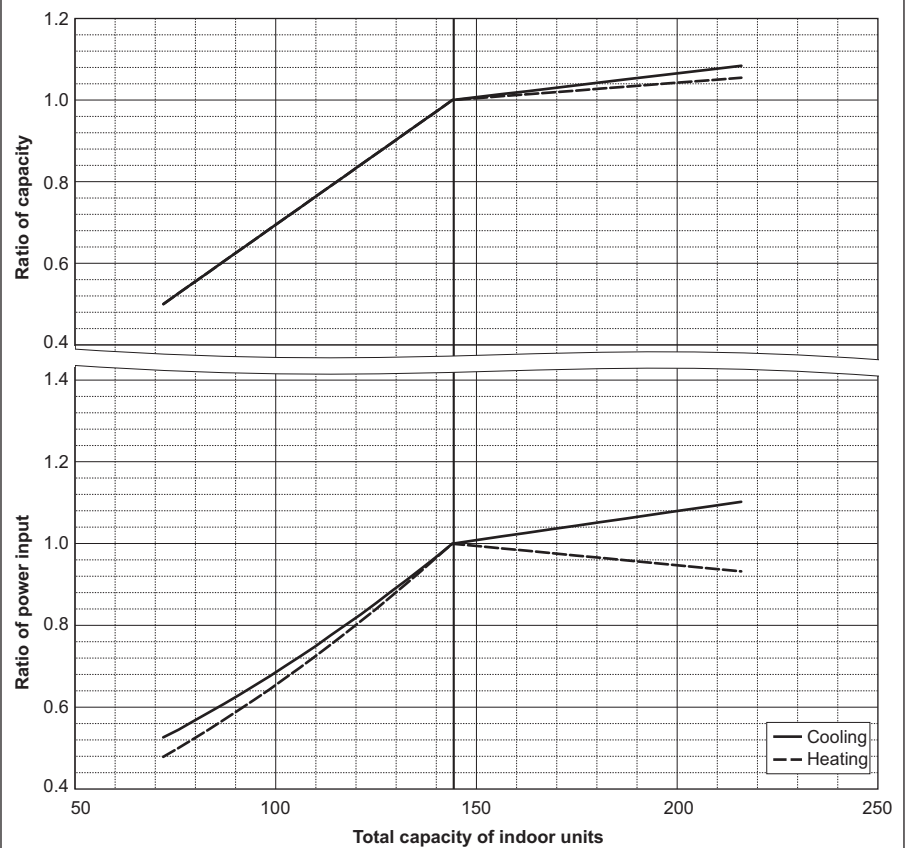
PQRY-		M144TXU/YXU
Nominal cooling capacity	BTU/h	144,000
	kW	42.2
	Input kW	9.30

PQRY-		M144TXU/YXU
Nominal Heating capacity	BTU/h	160,000
	kW	46.9
	Input kW	7.44

PQRY-		M144TSXU/YSXU
Nominal cooling capacity	BTU/h	144,000
	kW	42.2
	Input kW	7.40

PQRY-		M144TSXU/YSXU
Nominal Heating capacity	BTU/h	160,000
	kW	46.9
	Input kW	7.76

PQRY-M144T(S)XU/Y(S)XU-A



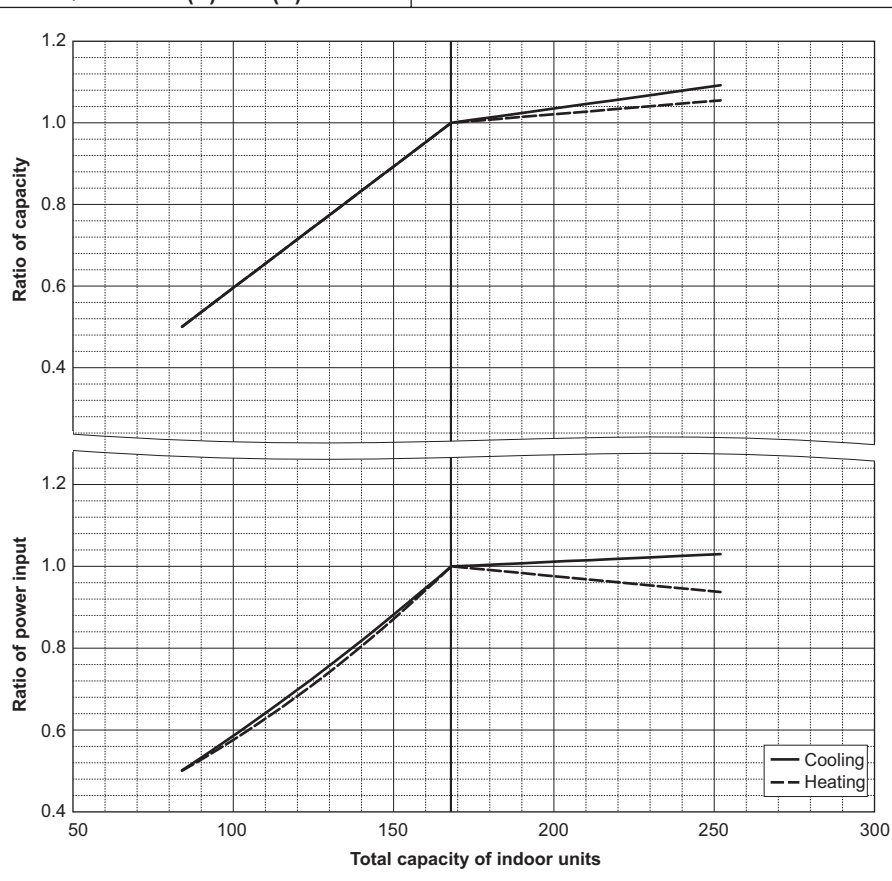
PQRY-		M168TXU/YXU
Nominal cooling capacity	BTU/h	168,000
	kW	49.2
	Input kW	11.87

PQRY-		M168TXU/YXU
Nominal Heating capacity	BTU/h	188,000
	kW	55.1
	Input kW	9.85

PQRY-		M168TSXU/YSXU
Nominal cooling capacity	BTU/h	168,000
	kW	49.2
	Input kW	9.28

PQRY-		M168TSXU/YSXU
Nominal Heating capacity	BTU/h	188,000
	kW	55.1
	Input kW	8.93

PQRY-M168T(S)XU/Y(S)XU-A



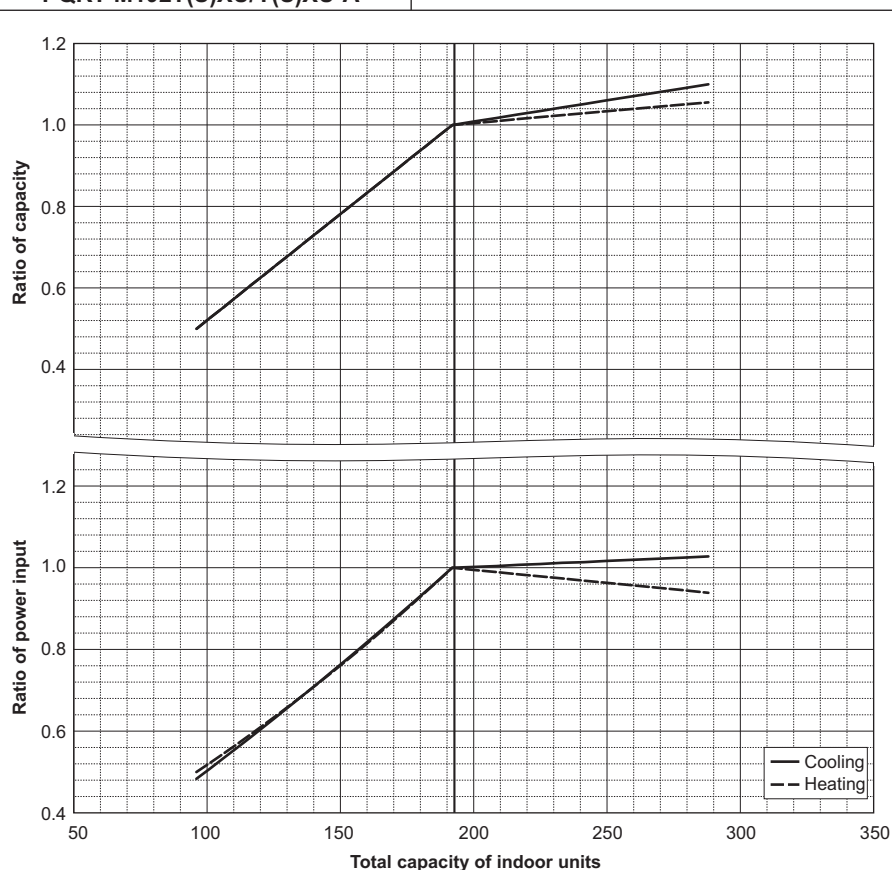
PQRY-		M192TXU/YXU
Nominal cooling capacity	BTU/h	192,000
	kW	56.3
	Input kW	14.66

PQRY-		M192TXU/YXU
Nominal Heating capacity	BTU/h	215,000
	kW	63.0
	Input kW	12.10

PQRY-		M192TSXU/YSXU
Nominal cooling capacity	BTU/h	192,000
	kW	56.3
	Input kW	10.98

PQRY-		M192TSXU/YSXU
Nominal Heating capacity	BTU/h	215,000
	kW	63.0
	Input kW	9.91

PQRY-M192T(S)XU/Y(S)XU-A



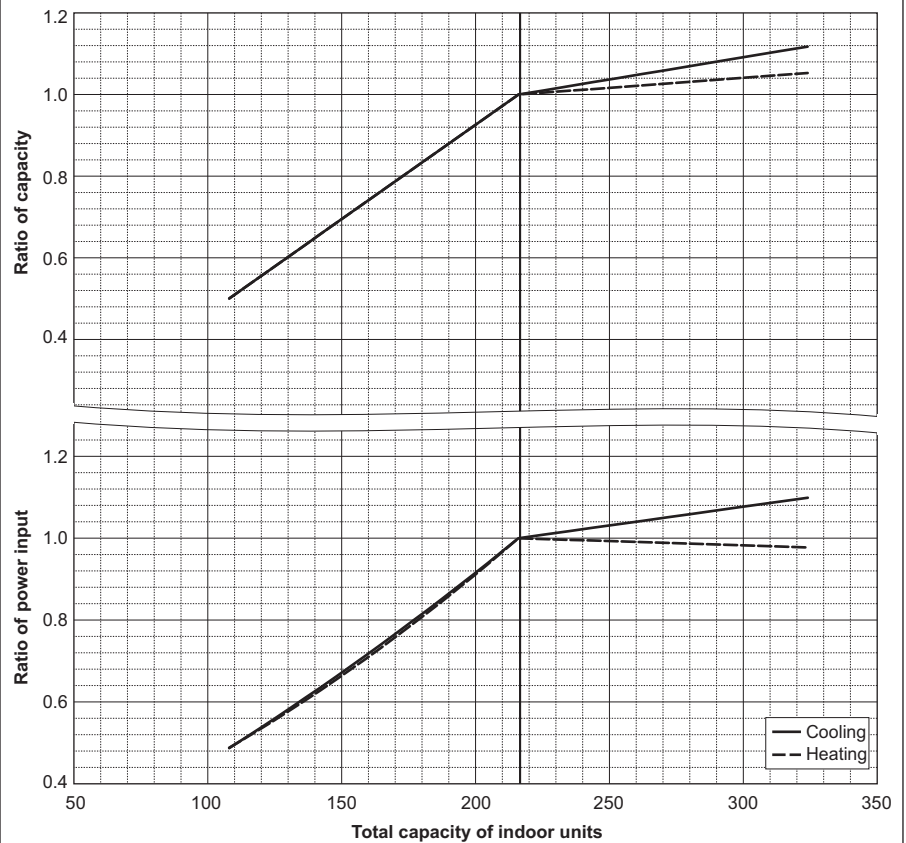
PQRY-		M216TXU/YXU
Nominal cooling capacity	BTU/h	216,000
	kW	63.3
Input	kW	15.23

PQRY-		M216TXU/YXU
Nominal Heating capacity	BTU/h	243,000
	kW	71.2
Input	kW	12.66

PQRY-		M216TSXU/YSXU
Nominal cooling capacity	BTU/h	216,000
	kW	63.3
Input	kW	12.89

PQRY-		M216TSXU/YSXU
Nominal Heating capacity	BTU/h	243,000
	kW	71.2
Input	kW	11.27

PQRY-M216T(S)XU/Y(S)XU-A



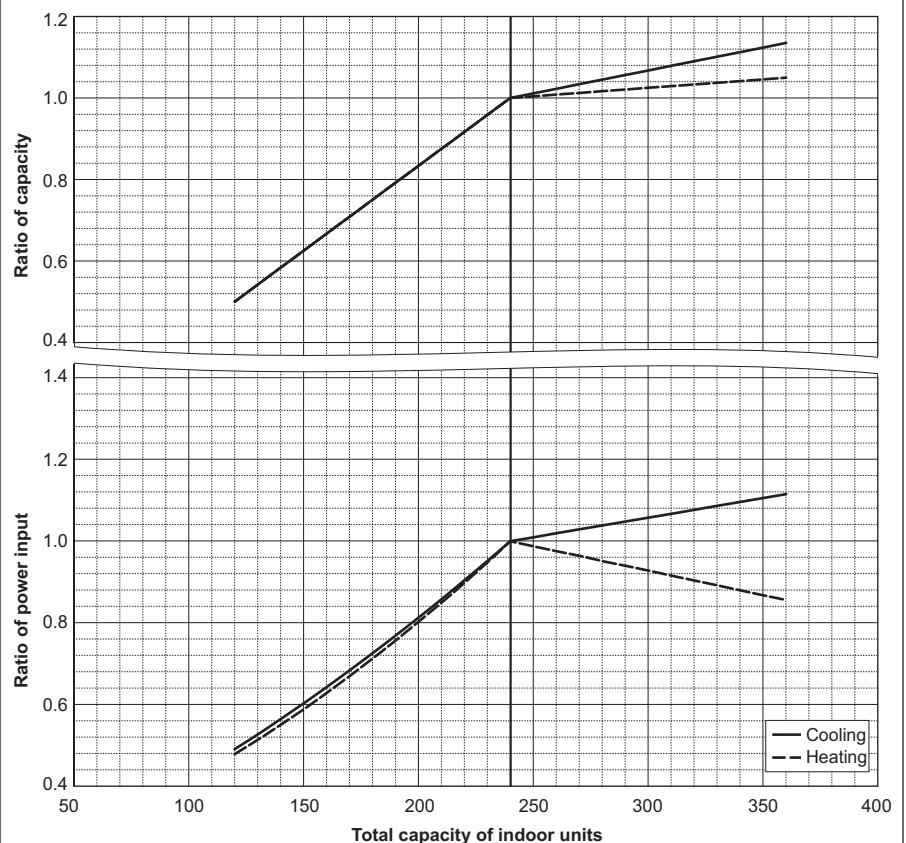
PQRY-		M240TXU/YXU
Nominal cooling capacity	BTU/h	240,000
	kW	70.3
Input	kW	18.27

PQRY-		M240TXU/YXU
Nominal Heating capacity	BTU/h	270,000
	kW	79.1
Input	kW	15.24

PQRY-		M240TSXU/YSXU
Nominal cooling capacity	BTU/h	240,000
	kW	70.3
Input	kW	15.19

PQRY-		M240TSXU/YSXU
Nominal Heating capacity	BTU/h	270,000
	kW	79.1
Input	kW	12.83

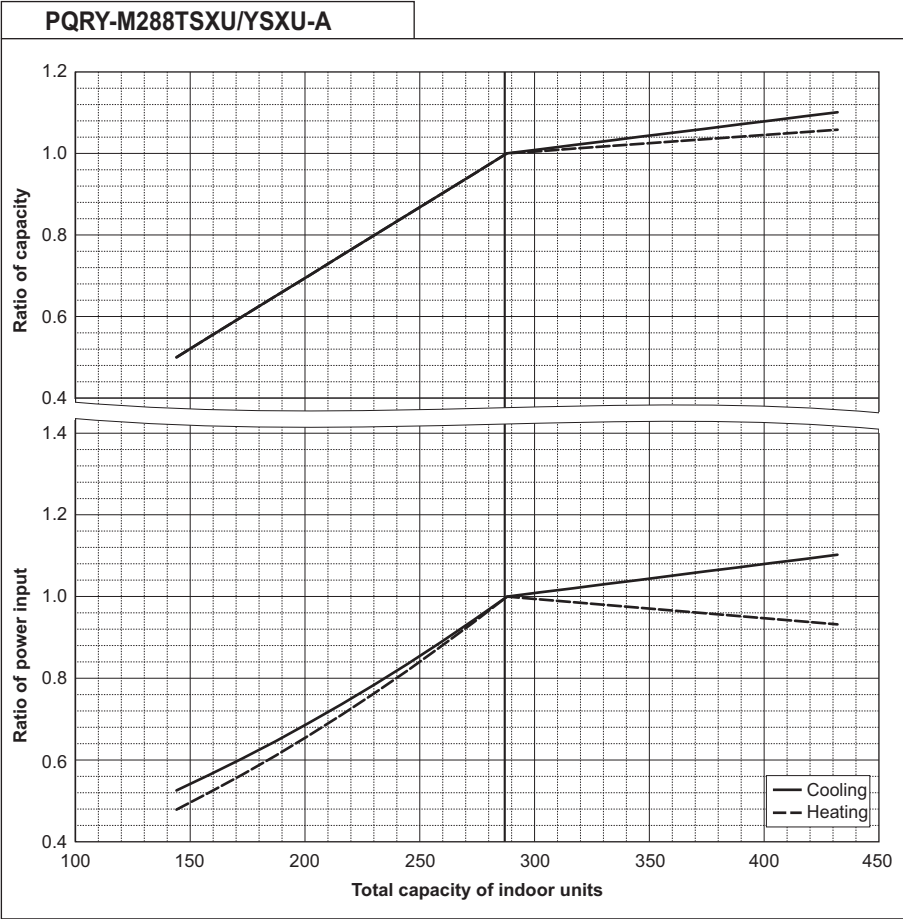
PQRY-M240T(S)XU/Y(S)XU-A



PQRY-M-T(S)XU-A, Y(S)XU-A

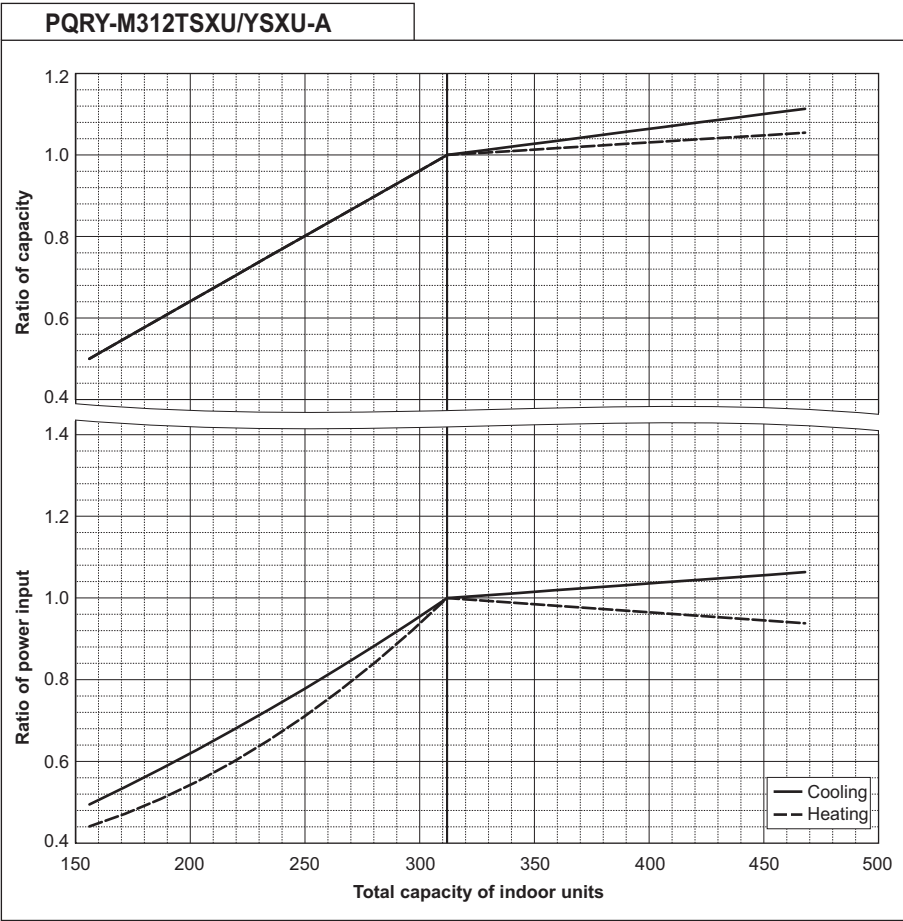
PQRY-		M288TSXU/YSXU
Nominal cooling capacity	BTU/h	288,000
	kW	84.4
	Input kW	21.07

PQRY-		M288TSXU/YSXU
Nominal Heating capacity	BTU/h	323,000
	kW	94.7
	Input kW	16.03



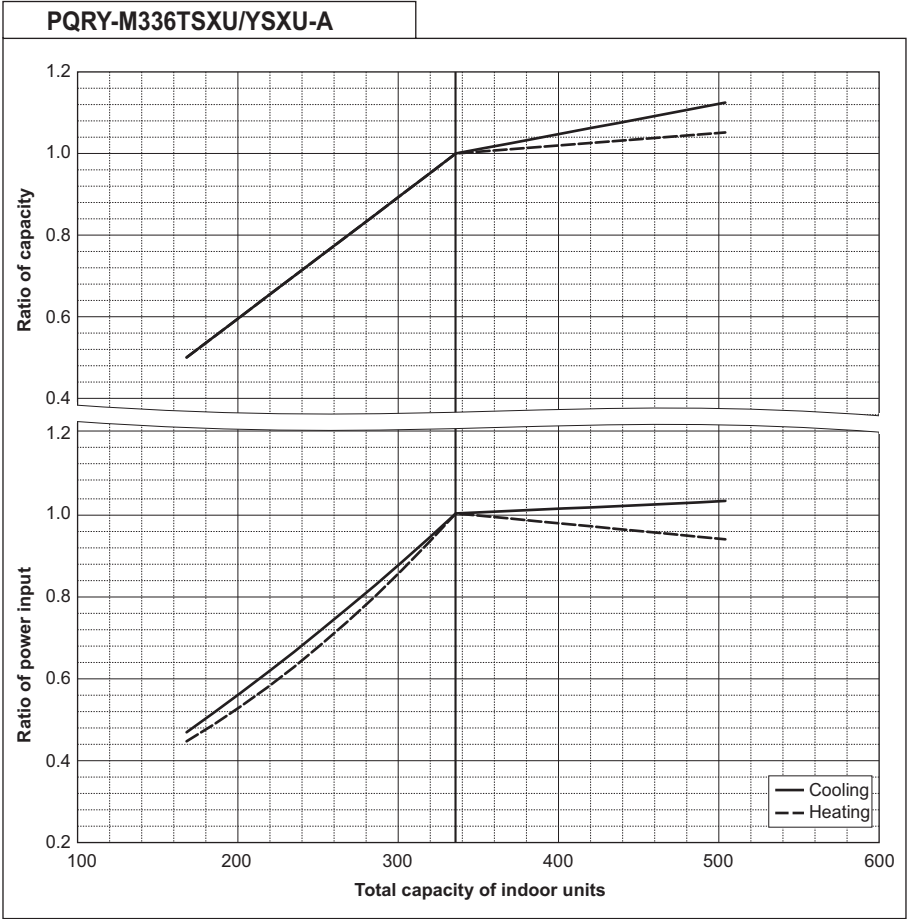
PQRY-		M312TSXU/YSXU
Nominal cooling capacity	BTU/h	312,000
	kW	91.4
	Input kW	23.44

PQRY-		M312TSXU/YSXU
Nominal Heating capacity	BTU/h	350,000
	kW	102.6
	Input kW	18.13



PQRY-		M336TSXU/YSXU
Nominal cooling capacity	BTU/h	336,000
	kW	98.5
Input	kW	25.69

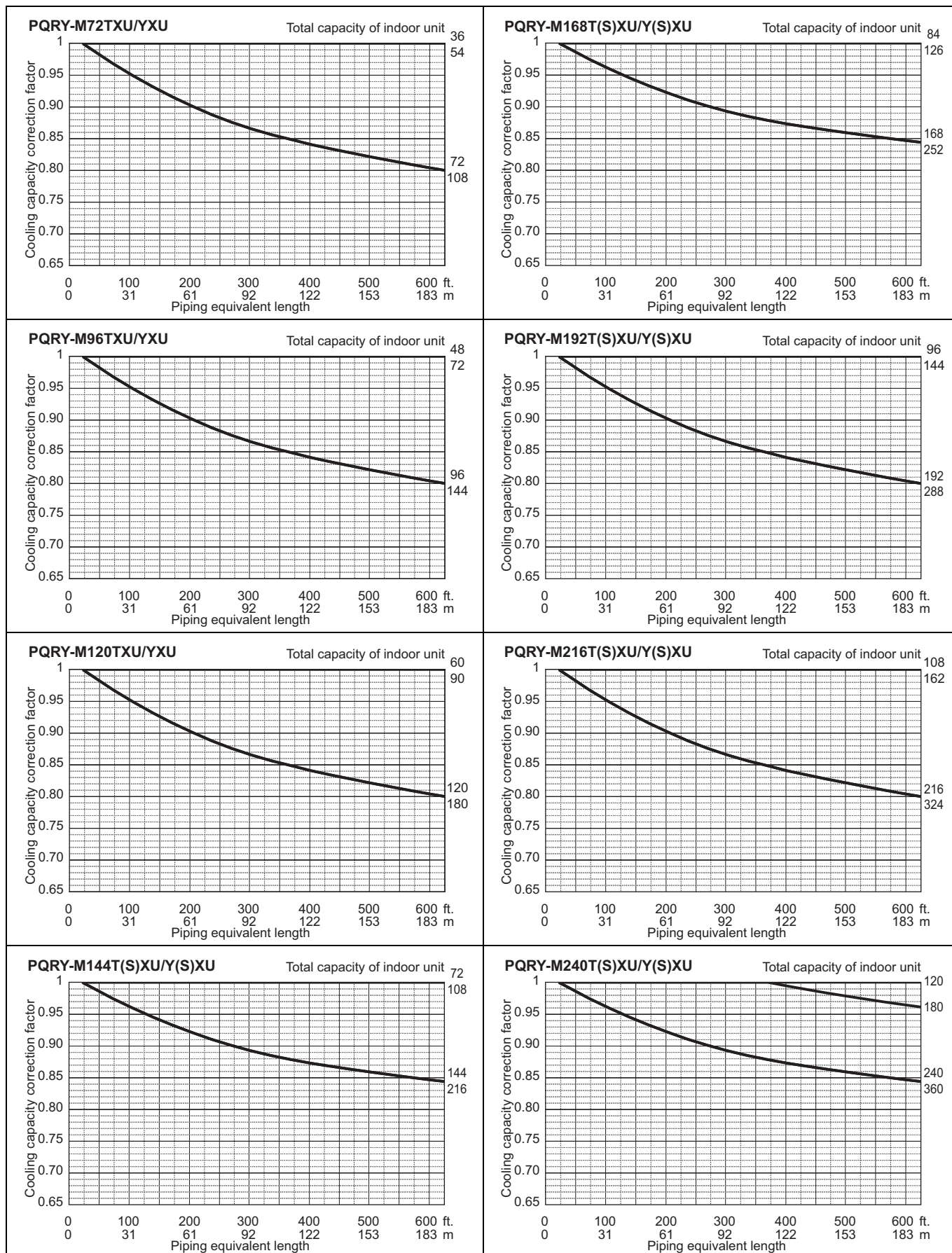
PQRY-		M336TSXU/YSXU
Nominal Heating capacity	BTU/h	378,000
	kW	110.8
Input	kW	20.20

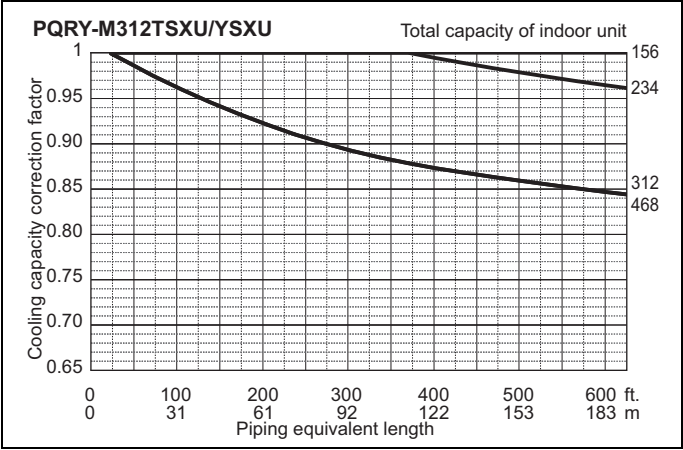
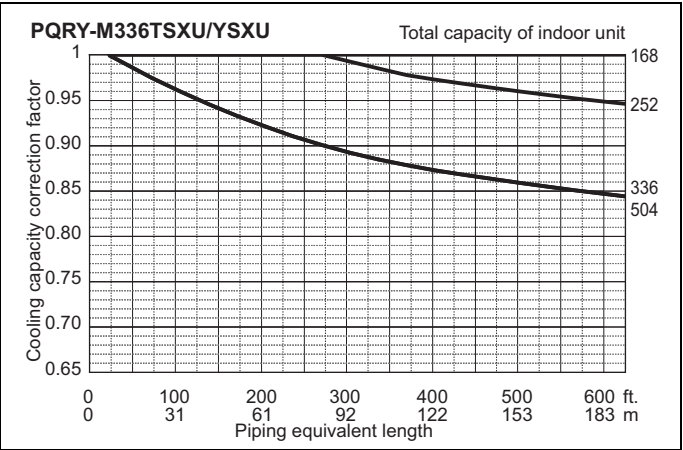
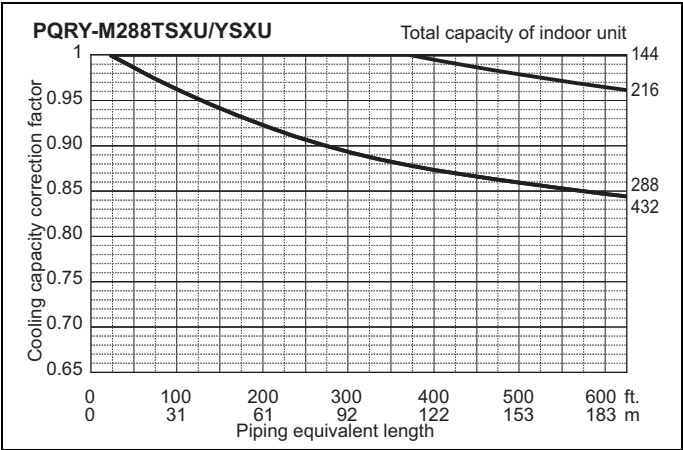


7-3. Correction by refrigerant piping length

CITY MULTI system can extend the piping flexibly within its limitation for the actual situation. However, a decrease of cooling/heating capacity could happen correspondently. Using following correction factor according to the equivalent length of the piping shown at 7-3-1 and 7-3-2, the capacity can be observed. 7-3-3 shows how to obtain the equivalent length of piping.

7-3-1. Cooling capacity correction

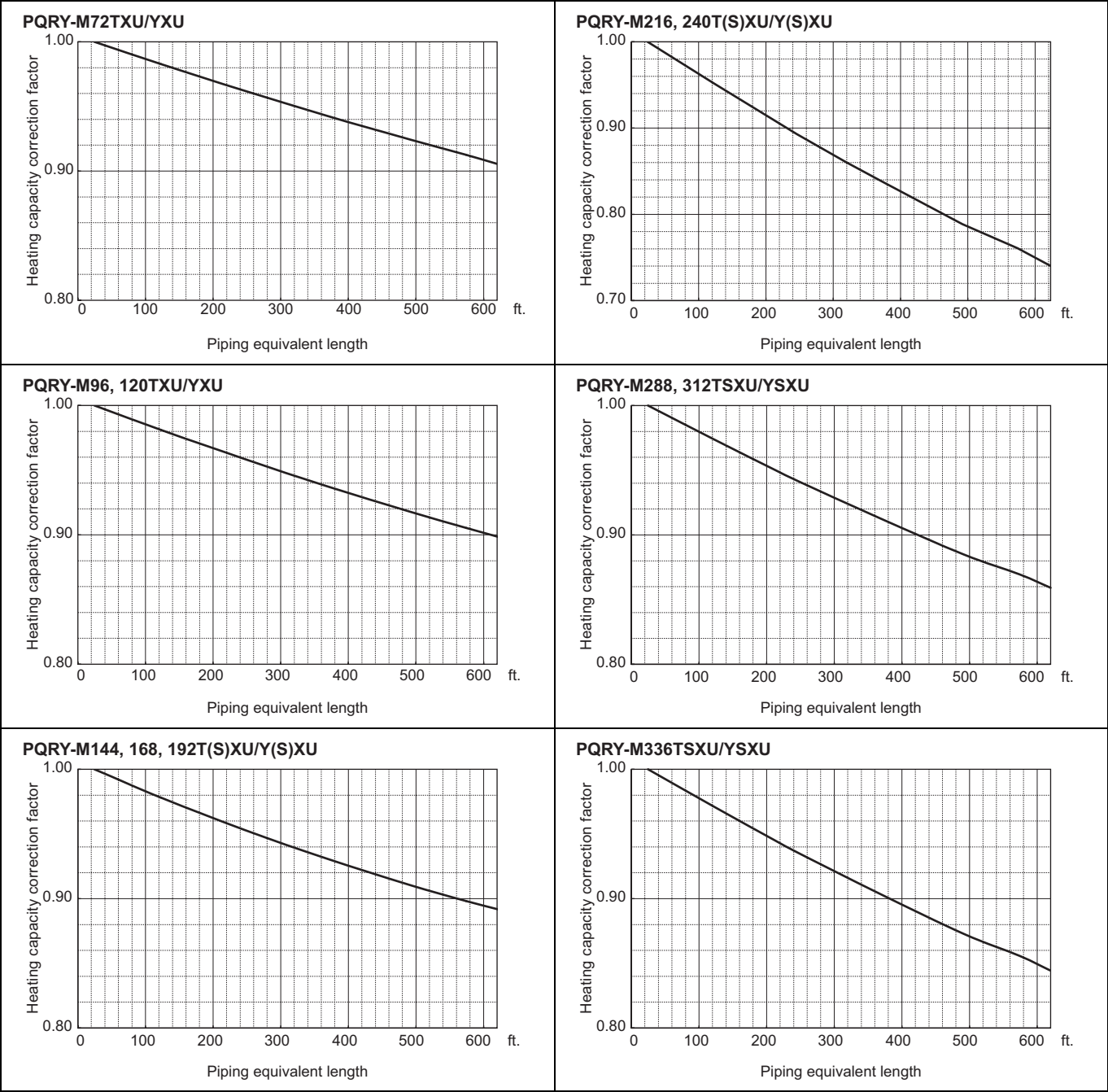




PQRY-M-T(S)XU-A, Y(S)XU-A

PQRY-M-T(S)XU-A, Y(S)XU-A

7-3-2. Heating capacity correction



7-3-3. How to obtain the equivalent piping length**1. PQRY-M72TXU/YXU**

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.15 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.35 x number of bent on the piping) [m]

2. PQRY-M96TXU/YXU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.38 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.42 x number of bent on the piping) [m]

3. PQRY-M120TXU/YXU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.55 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.47 x number of bent on the piping) [m]

4. PQRY-M144, 168, 192, 216, 240T(S)XU/Y(S)XU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.65 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.50 x number of bent on the piping) [m]

5. PQRY-M288, 312TSXU/YSXU

Equivalent length = (Actual piping length to the farthest indoor unit) + (2.30 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.70 x number of bent on the piping) [m]

6. PQRY-M336TSXU/YSXU

Equivalent length = (Actual piping length to the farthest indoor unit) + (2.63 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.80 x number of bent on the piping) [m]

8-1. Designing of water circuit system

1) Example of basic water circuit

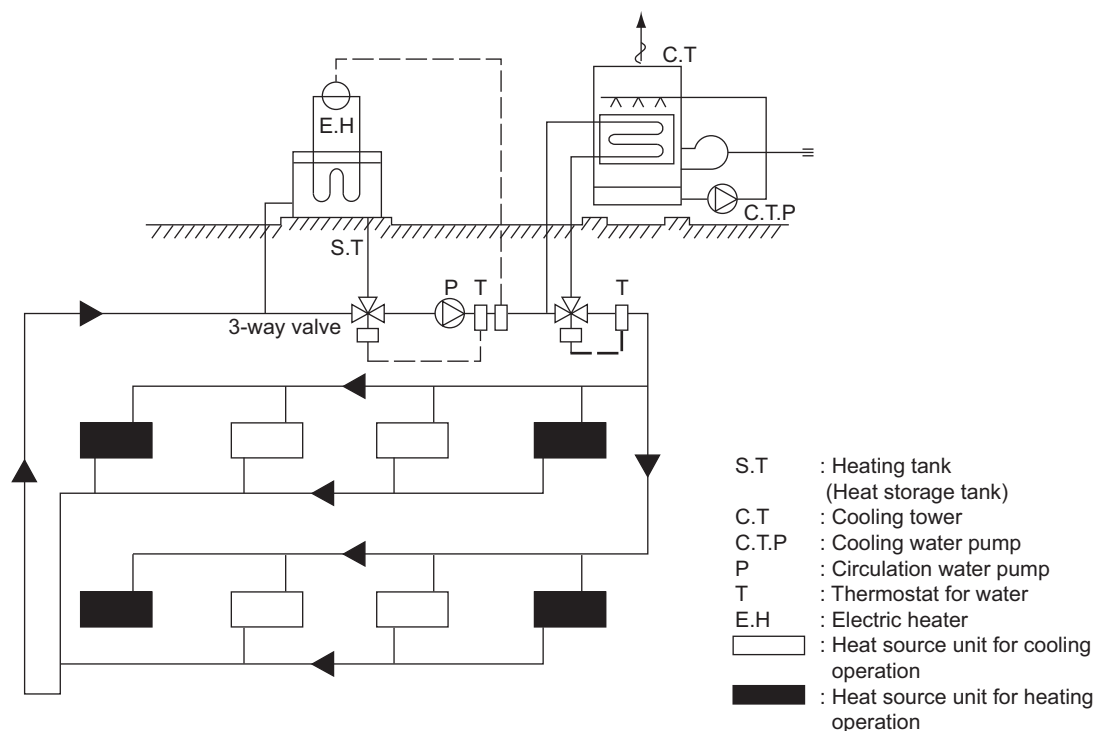
The water circuit of the water heat source CITY MULTI connects the heat source unit with the cooling tower/auxiliary heat source/heat storage tank/circulation pump with a single system water piping as shown in the figure below. The selector valve automatically controls to circulate water toward the cooling tower in the cooling season, while toward the heat storage tank in the heating season. If the inlet water temperature is kept in a range of 10~45°C [50~113°F]* regardless of the building load, the water heat source CITY MULTI can be operated for either cooling or heating. Therefore in the summer when only cooling load exists, the temperature rise of circulation water will be suppressed by operating the cooling tower. While in the winter when heating load increases, the inlet temperature of circulation water may be dropped below 10°C [50°F]. Under such situation, the circulation water will be heated with the auxiliary heat source if it drops below a certain temperature.

When the thermal balance between cooling and heating operation is in a correct proportion, the operation of the auxiliary heat source and cooling tower is not required.

In order to control the above thermal balance properly and use thermal energy effectively, utilizing of heat storage tanks, and night-time discounted electric power as a auxiliary heat source will be economical.

Meantime as this system uses plural sets of heat source unit equipped with water heat exchangers, water quality control is important. Therefore, a cooling tower should be a closed type that water is not exposed to the atmosphere.

Example of basic water circuit for water heat source CITY MULTI



The indoor unit and refrigerant piping system are excluded in this figure.

2) Cooling tower

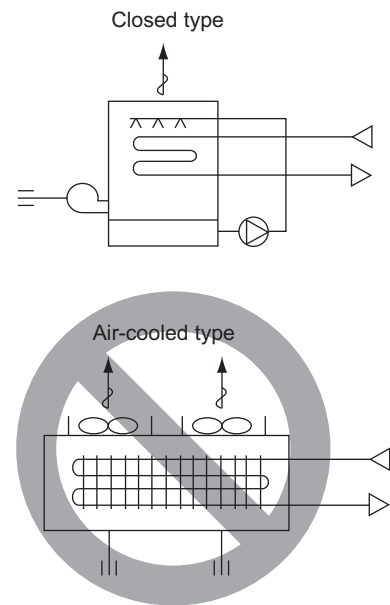
a) Types of cooling tower

The cooling towers presently used include the open type cooling tower, open type cooling tower + heat exchanger, closed type cooling tower, and air-cooled type cooling tower. However, as the quality control of circulation water is essential, to preserve water quality, use the closed type of cooling tower for WY/WR2.

Although the circulation water will not be contaminated by atmospheric air, it is recommended to periodically blow water inside the system and replenish fresh water instead.

In a district where the coil may be frozen in the winter, it is necessary to apply antifreeze solution to the circulation water, or take freeze protection measures such as to automatically discharge water inside the cooling coil at the stopping of the pump.

Types of cooling towers



3) Auxiliary heat source and heat storage tank

When the heating load is larger than the cooling load, the circulation water temperature lowers in accordance with the heat balance of the system. It should be heated by the auxiliary heat source in order to keep the inlet water temperature within the operating range of the water heat source CITY MULTI.

Further in order to operate the water heat source CITY MULTI effectively, it is recommended to utilize the heat storage tank to cover the warming up load in the morning and the insufficient heat amount.

Effective heat utilization can be expected to cover insufficient heat at the warming up in the next morning or peak load time by storing heat by installing a heat storage tank or operating a low load auxiliary heat source at the stopping of the water heat source CITY MULTI. As it can also be possible to reduce the running cost through the heat storage by using the discounted night-time electric power, using both auxiliary heat source and heat storage tank together is recommended. The effective temperature difference of an ordinary heat storage tank shows about 5°C [41°F] even with the storing temperature at 45°C [113°F].

However with the water heat source CITY MULTI, it can be utilized as heating heat source up to 15°C [59°F] with an effective temperature of a high 30°C [54°F] approximately, thus the capacity of the heat storage tank can be minimized.

a) Auxiliary heat source

The following can be used as the auxiliary heat source.

- Boiler (Heavy oil, kerosine, gas, electricity)
- Electric heat (Insertion of electric heater into heat storage tank)
- Outdoor air (Air-heat source heat pump chiller)
- Warm discharge water (Exhaust water heat from machines inside building and hot water supply)
- Utilization of night-time lighting
- Solar heat

Please note that the auxiliary heat source should be selected after studying your operating environment and economical feasibility.

For the CITY MULTI water heat source system, a heat storage tank is recommended to use. When employment of the heat storage tank is difficult, the warming up operation should be arranged to cover the starting up heating load.

b) Heat storage tank

Heat storage tank can be classified by types into the open type heat storage tank exposed to atmosphere, and the closed type heat storage tank with structure separated from atmosphere. Although the size of the tank and its installation place should be taken into account, the closed type tank should be used by considering corrosion problems.

4) Piping system

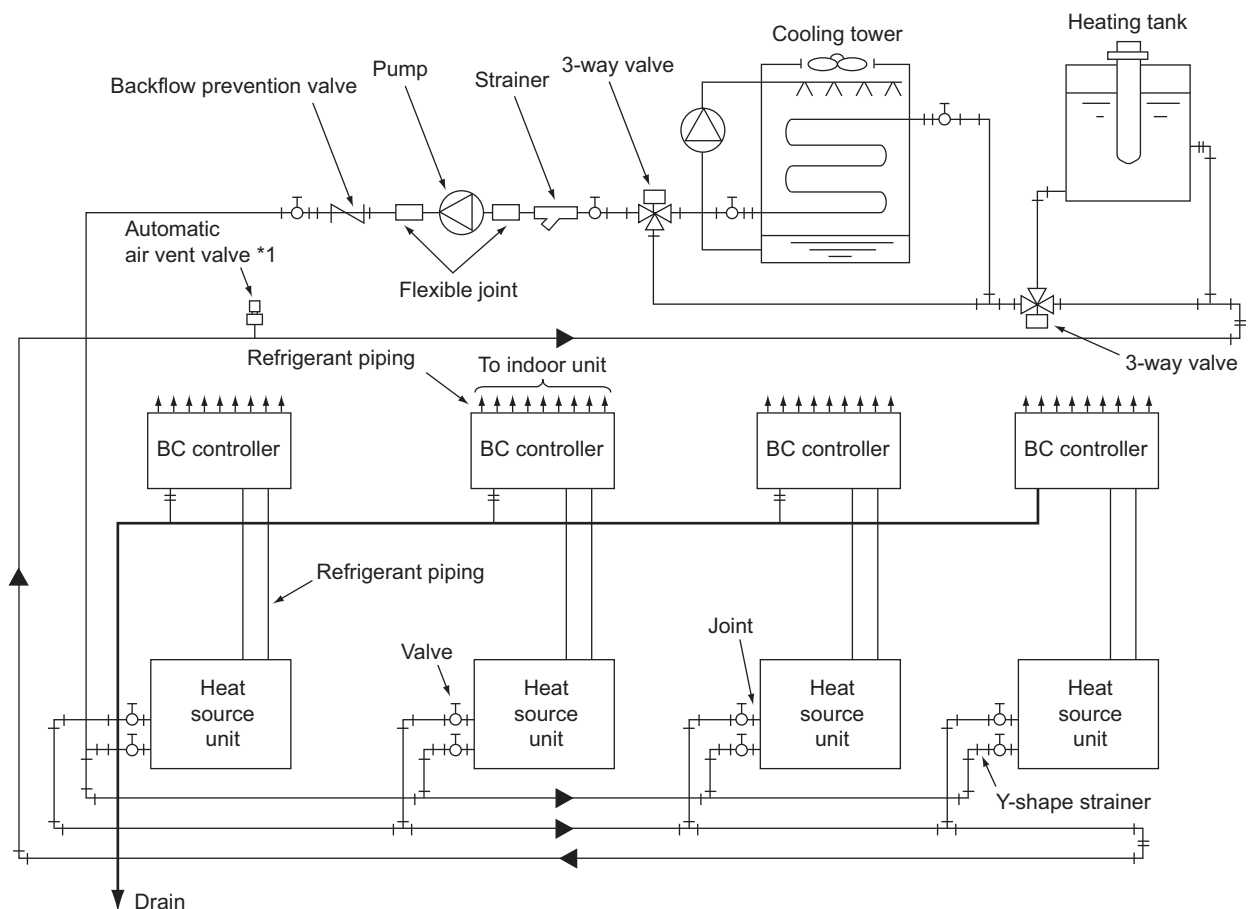
The following items should be kept in your mind in planning / designing water circuits.

- All units should be constituted in a single circuit in principle.
- When plural numbers of the water heat source CITY MULTI unit are installed, the rated circulating water flow rate should be kept by making the piping resistance to each unit almost same value. As an example, the reverse return system as shown below may be employed.
- Depending on the structure of a building, the water circuit may be prefabricated by making the layout uniform.
- When a closed type piping circuit is constructed, install an expansion tank usable commonly for a make-up water tank to absorb the expansion/contraction of water caused by temperature fluctuation.
- If the operating temperature range of circulation water stays within the temperature near the normal temperature (summer :30°C [86°F], winter :20°C [68°F]), thermal insulation or anti-sweating work is not required for the piping inside buildings.

In case of the conditions below, however, thermal insulation is required.

- When well water is used for heat source water.
- When piped to outdoor or a place where freezing may be caused.
- When vapor condensation may be generated on piping due to an increase in dry bulb temperature caused by the entry of fresh outdoor air.

System example of water circuit



*1 Install automatic air vent valves where air accumulates.

Even in the case of a failure of the water-side heat exchanger in the unit, the refrigerant may leak from the automatic air vent valve. To prevent accidents resulted from refrigerant leakage, install the automatic air vent valve where leaked refrigerant will not accumulate, such as outdoors.

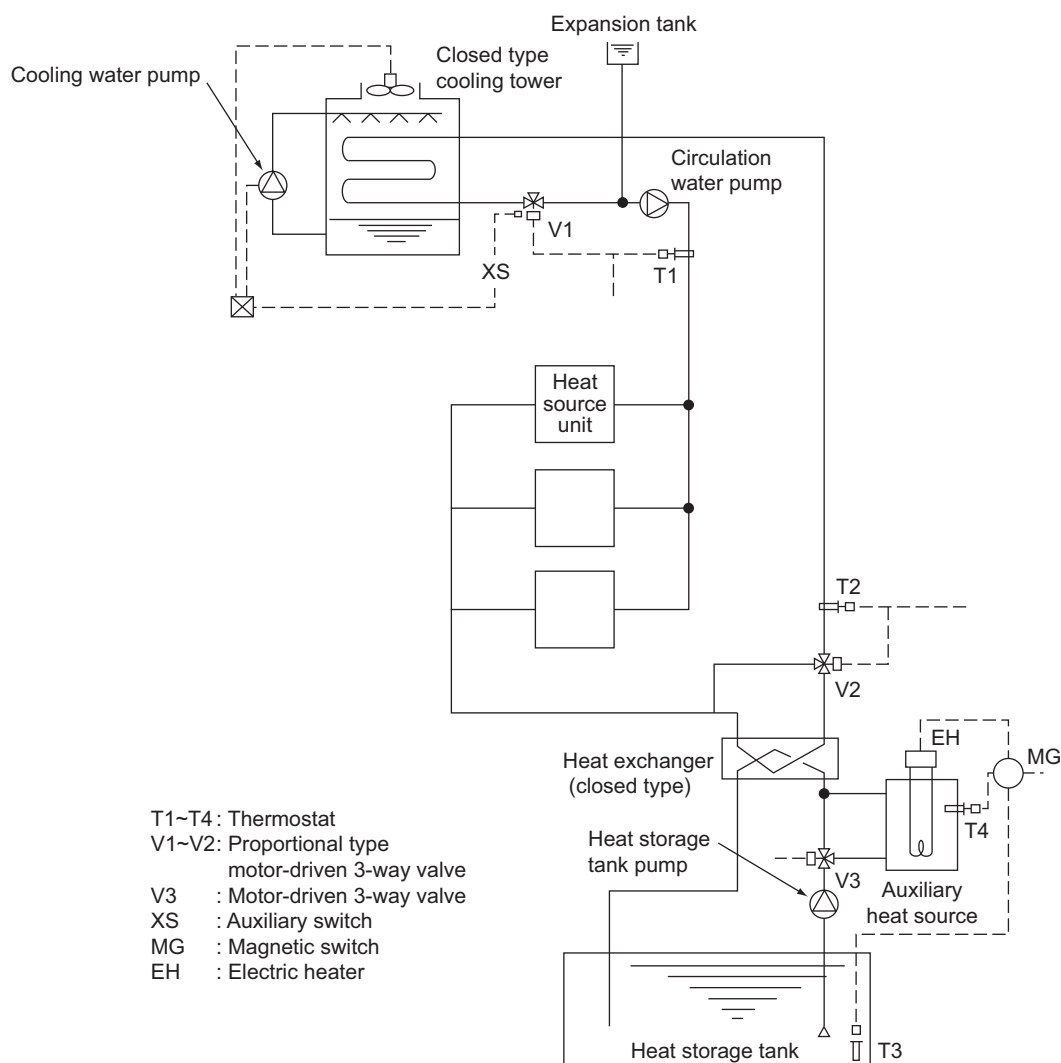
5) Practical System Examples and Circulation Water Control

Since the water heat source CITY MULTI is of water heat source system, versatile systems can be constituted by combining it with various heat sources.

The practical system examples are given below.

Either cooling or heating operation can be performed if the inlet water temperature of the water heat source CITY MULTI stays within a range of 10~45°C [50~113°F]. However, the inlet water temperature near 30°C [86°F] for cooling and 20°C [68°F] for heating is recommended by taking the life, power consumption and capacity of the air conditioning units into consideration. The detail of the control is also shown below.

Example-1 Combination of closed type cooling tower and hot water heat storage tank (using underground hollow slab)



By detecting the inlet water temperature of the water heat source CITY MULTI system with T1 (around 30°C [86°F]) and T2 (around 20°C [68°F]), the temperature will be controlled by opening/closing V1 in the summer and V2 in the winter.

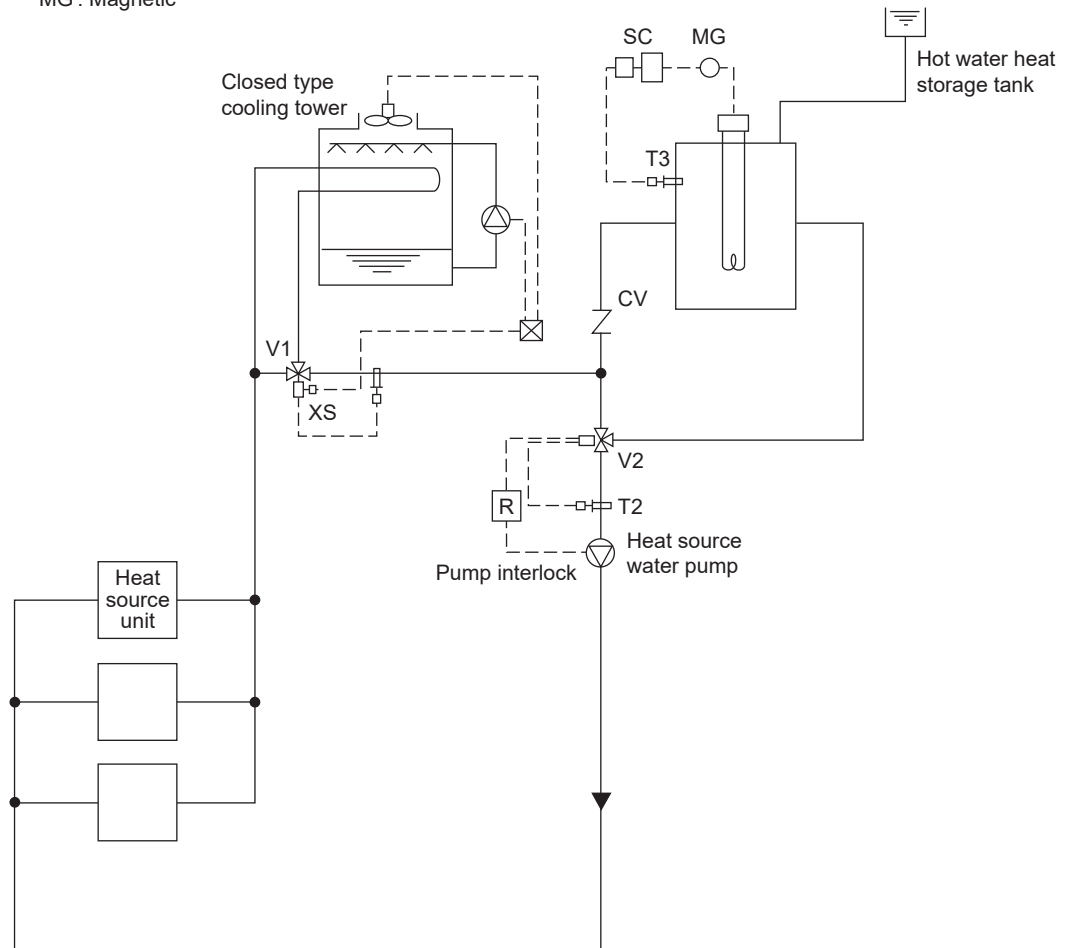
In the summer, as the inlet water temperature rises exceeding the set temperature of T1, the bypass port of V1 will open to lower the inlet water temperature. While in the winter, as the inlet water temperature drops, V2 will open following the command of T2 to rise the inlet water temperature.

The water inside the heat storage tank will be heated by the auxiliary heat source by V3 being opened with timer operation in the night-time. The electric heater of the auxiliary heat source will be controlled by T3 and the timer.

The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control of the fan and pump following the command of the auxiliary switch XS of V1, that operates only the fan at the light load while the fan and pump at the maximum load thus controlling water temperature and saving motor power.

Example-2 Combination of closed type cooling tower and hot water heat storage tank

- T1 : Proportional type, insertion system thermostat
 T2 : Proportional type, insertion system thermostat
 T3 : Proportional type, insertion system thermostat
 V1 : Proportional type, motor-driven 3-way valve
 V2 : Proportional type, motor-driven 3-way valve
 XS : Auxiliary switch (Duplex switch type)
 SC : Step controller
 R : Relay
 MG : Magnetic



In the summer, as the inlet water temperature rises exceeding the set temperature of T1, the bypass port of V1 will open to lower the inlet water temperature. In the winter, if the inlet water temperature stays below 25°C [77°F], V2 will open/close by the command of T2 to keep the inlet water temperature constant.

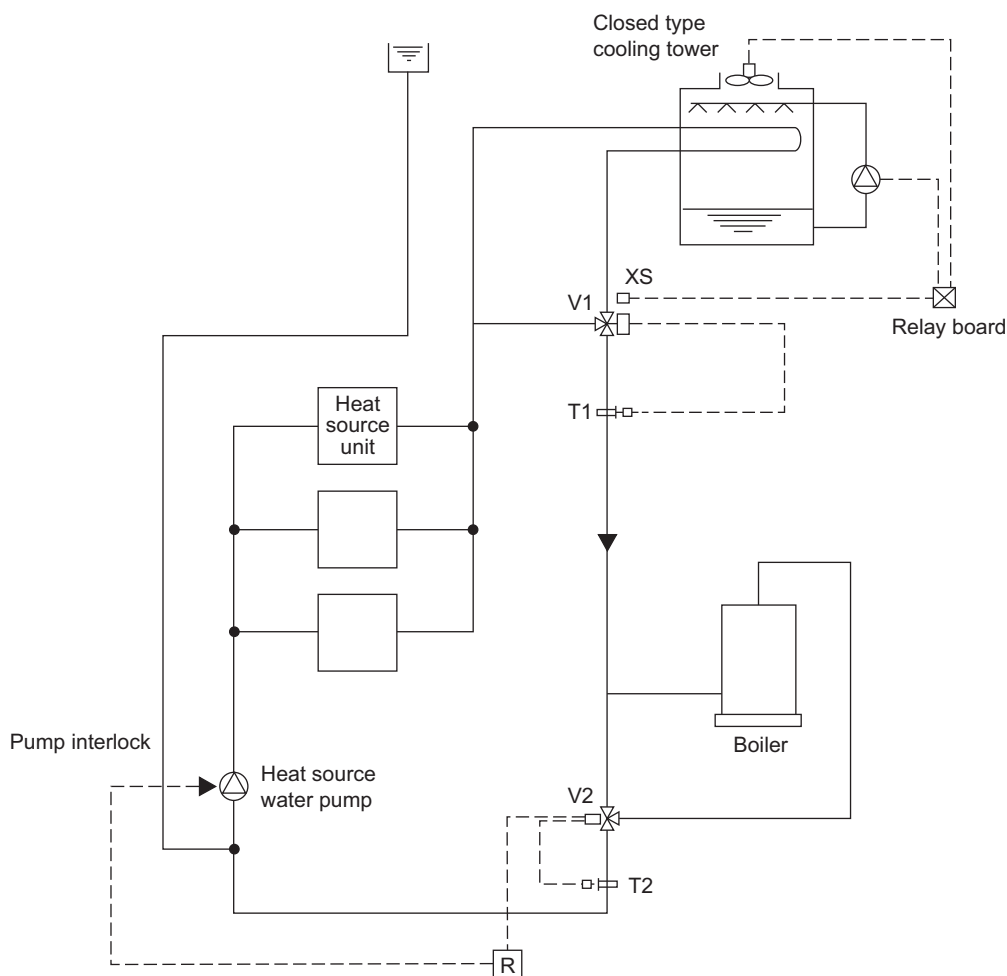
The temperature of the hot water inside the heat storage tank will be controlled through the step control of the electric heater by step controller operation following the command of T3.

During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking thus preventing the high temperature water from entering into the system at the starting of the pump.

The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control of the fan and pump following the command of the auxiliary switch XS of V1, that operates only the fan at the light load while the fan and pump at the maximum load thus controlling water temperature and saving motor power.

Example-3 Combination of closed type cooling tower and boiler

- T1 : Proportional type, insertion system thermostat
 T2 : Proportional type, insertion system thermostat
 T3 : Proportional type, insertion system thermostat
 V1 : Proportional type, motor-driven 3-way valve
 S : Selector switch
 R : Relay
 XS : Auxiliary switch (Duplex switch type)



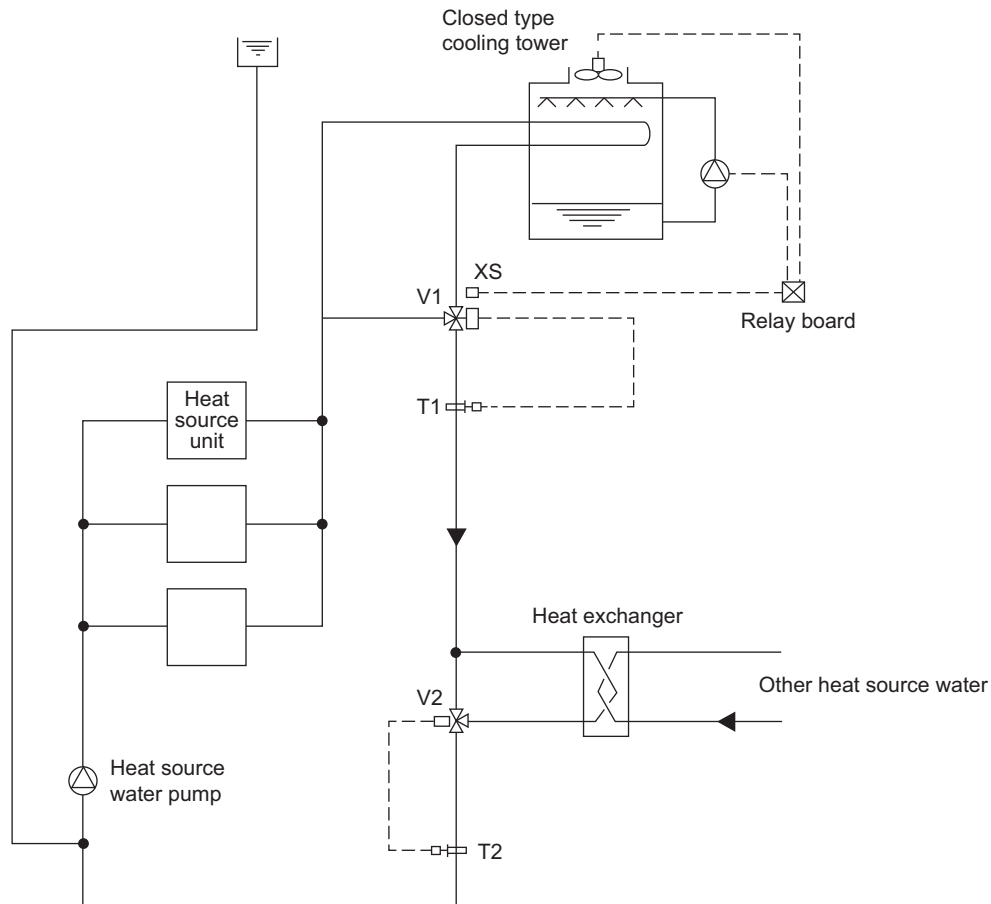
In the summer, as the inlet water temperature rises exceeding the set temperature of T1, the bypass port of V1 will close to lower the inlet water temperature. In the winter, if the inlet water temperature drops below 25°C [77°F], V2 will conduct water temperature control to keep the inlet water temperature constant.

During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking.

The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control following the command of the auxiliary switch XS of V1, thus controlling water temperature and saving motor power.

Example-4 Combination of closed type cooling tower and heat exchanger (of other heat source)

- T1 : Proportional type, insertion system thermostat
 T2 : Proportional type, insertion system thermostat
 V1 : Proportional type, motor-driven 3-way valve
 V2 : Proportional type, motor-driven 3-way valve
 S : Selector switch
 R : Relay
 XS : Auxiliary switch (Duplex switch type)

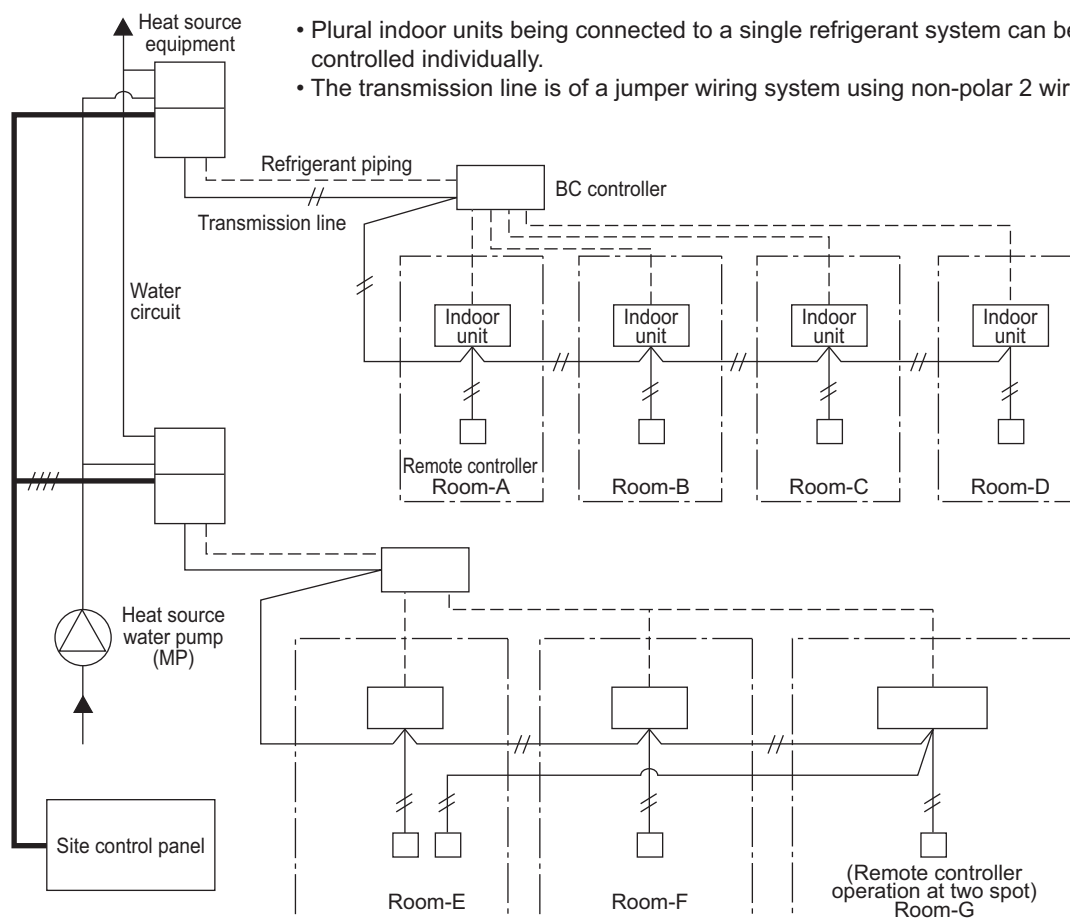


In the summer, as the inlet water temperature rises exceeding the set temperature of T1, the bypass port of V1 will close to lower the inlet water temperature. In the winter, if the inlet water temperature drops below 26°C [79°F], V2 will conduct water temperature control to keep the inlet water temperature constant.

During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking.

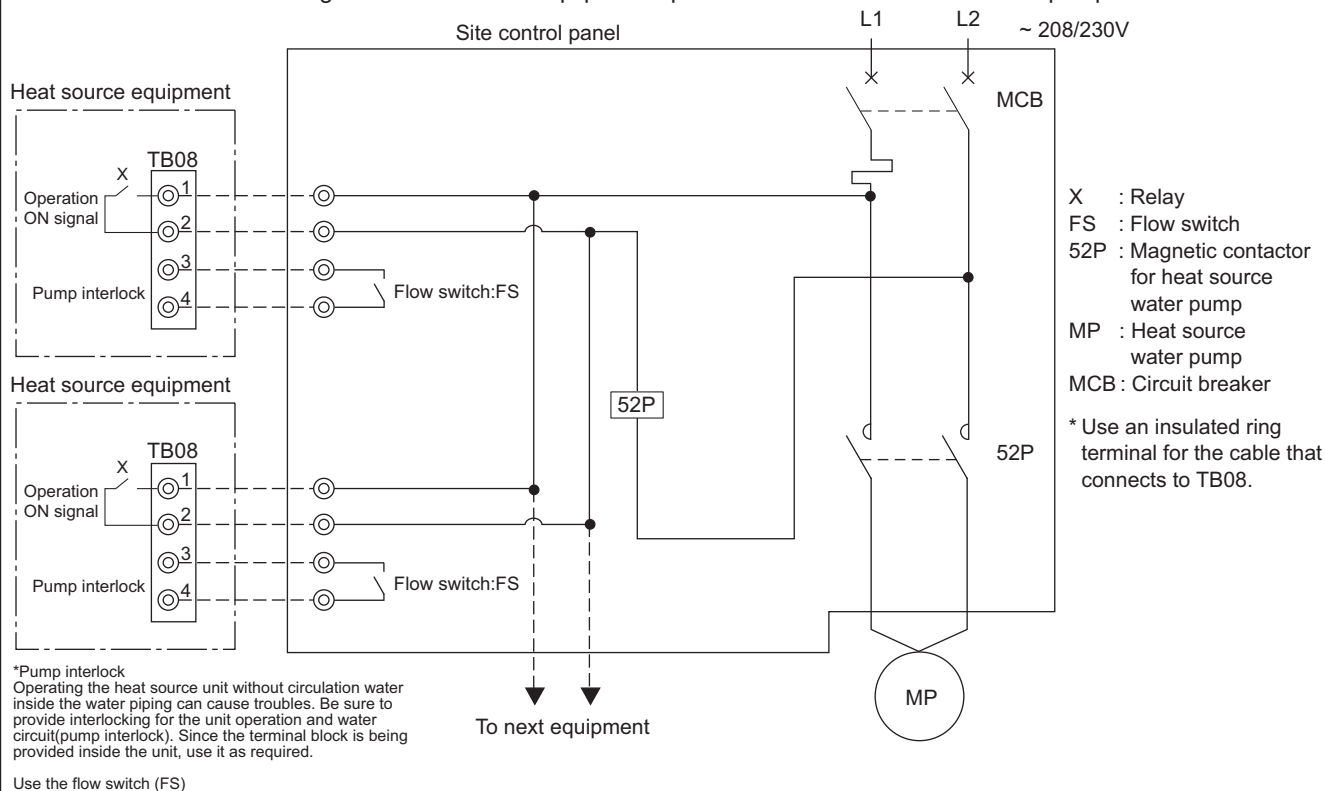
The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control following the command of the auxiliary switch XS of V1, thus controlling water temperature and saving motor power.

6) Pump interlock circuit



Wiring diagram

This circuit uses the "Terminal block for pump interlock (TB08)" inside the electrical parts box of the heat source equipment. This circuit is for interlocking the heat source equipment operation and the heat source water pump.



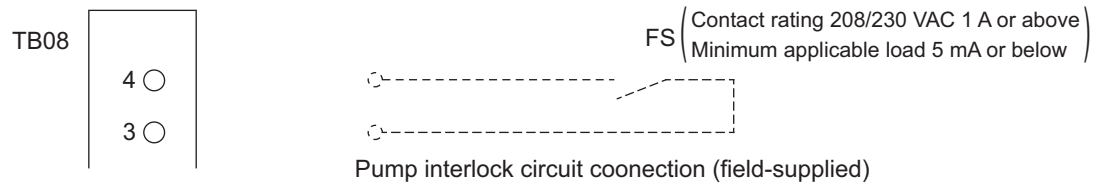
Operation ON signal

Terminal No.	TB08-1, 2																																							
Output	Relay contacts output					Rated voltage: 3~: 208/230V Rated load: 1 A																																		
Operation	• When setting No.917 for Dip switch 4 (Dip switch 6-10 is ON) is OFF. The relay closes during compressor operation.																																							
	<table><tr><td colspan="10">SW4 0: OFF, 1: ON</td></tr><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td></tr></table>										SW4 0: OFF, 1: ON										1	2	3	4	5	6	7	8	9	10	1	0	1	0	1	0	0	1	1	1
	SW4 0: OFF, 1: ON																																							
1	2	3	4	5	6	7	8	9	10																															
1	0	1	0	1	0	0	1	1	1																															
	• When setting No.917 for Dip switch 4 (Dip switch 6-10 is ON) is ON. The relay closes during reception of cooling or the heating operation signal from the controller. (Note: It outputs even if the thermostat is OFF (when the compressor is stopped).)																																							

Pump Interlock

Terminal No.	TB08-3, 4	
Input	Level signal	
Operation	If the circuit between TB08-3 and TB08-4 is open, compressor operation is prohibited.	

To prevent a false detection of error resulting from contact failure, use a flow switch with a minimum guaranteed current of 5 mA or below for FS.



7) Water flow rate control

The function described here calculates the amount of circulating water required for the heat-exchanger unit based on the operation status of the heat-exchanger, and then outputs signals that adjust the water control valve. Signals requesting to decrease the water control valve opening are output when the heat-source unit is in partial-load operation, which decreases the amount of circulating water supplied to the heat-source unit and helps reduce the power required to operate the circulating water pump in the water circuit system.

a) Specifications

1. Circuit board: Signals can be output from the I/O board that is standard-equipped in heat-source units.

2. Variable flow rate control signal output: 0V-10 VDC

♦ Signal output settings can be changed with the Dip SW on the heat-source unit.

(Settings need to be changed to suit given specifications of the water control valve.)

Switch			Function	Operation according to the switch setting		Switch setting timing	Unit (Note 2)
				OFF (LD3: Unlit)	ON (LD3: Lit)		
SW4 1-10 [0: OFF; 1: ON] (Note 1) SW6-10: ON	No. 810	0101010011	Outputs circulating water flow rate control signal	0 V: Fully open 10 V: Fully closed [Default]	0 V: Fully closed 10 V: Fully open	After power on and while the compressor is stopped	C

(Note 1) To switch between the ON/OFF settings, first set SW6-10 to ON, then set SW4, and finally press and hold SWP3 for two seconds or longer to reflect the change.

LD3 will be lit when the switch is set to ON, and LD3 will be unlit when the switch is set to OFF.

Check the LD3 indicator status to make sure the setting is set as intended.

The switch needs to be re-set at the replacement of the control board.

Note the settings on the electrical wiring diagram label on the control box.

(Note 2) A: Requires the switch on OC to be set.

B: Requires the switches on both OC and OS to be set to the same setting.

C: Requires the switches on both OC and OS to be set.

D: Requires the switches on either OC or OS to be set.

♦ The amount of circulating water required for the heat-exchanger unit is calculated based on the operation status of the heat-exchanger, and signals are output in the range between 0 and 10 VDC. (See b)-1. for details.)

3. Power supply: 3~ 208/230/460 V ... for heat-source unit

24 VAC or 24 VDC ... for (motor-powered) water flow rate control valve

♦ See Figure c)-1 and Table c)-1 for information on supplying power to water flow rate control system.

4. Inlet water temperature range: 10 to 45°C (-5 to 45°C when using brine)

♦ The same temperature range applies regardless of the Enable/Disable setting status of the circulating water flow rate control function.

5. Water flow rate range: The table below summarizes the water flow rate ranges for heat-source units.

Model		Water flow rate range
M72-M120	7.5-12.5HP	3.0-7.2 m ³ /h (50-120 L/min)
M144-M192	15-20HP	4.5-11.6 m ³ /h (75-192 L/min)
M216-M240	22.5-25HP	6.0-14.4 m ³ /h (100-240 L/min)

♦ The same water flow rate range applies regardless of the Enable/Disable setting status of the circulating water flow rate control function.

6. Water-circuit components: To be procured on site

♦ Water-circuit components that are necessary to control circulating water include such components as (motor-powered) water flow rate control valve, control valve, and shut-off valve. Valves that meet the water-flow-rate specification of the heat-source unit must be used.

♦ See Figure c)-1 and Table c)-1 for information on the components in the circuit that is subject to circulating water flow rate control.

♦ When a system includes multiple heat-source units, each unit requires a water flow rate control valve.

7. Electrical wiring: To be procured on site

♦ See Figure c)-1 and Table c)-2 for information on supplying power to water flow rate control system.

b) Circulating water flow rate control signal output

1. Water flow rate control signal output

Signal to control the water flow rate control valve is calculated by using the circulating water flow rate required, which is calculated based on the operating status of the unit.

Table below shows the three signal output conditions.

Status	A	B-1	B-2	C
Condition	Unit at stoppage	All heat-source units (OC/OS) in Thermo-OFF		During compressor operation
		Dip SW4 (901) = ON	Dip SW4 (901) = OFF	
Dip SW4 (810) = OFF	10 V	10 V	5 V (Min. water flow rate)	5-0 V
Dip SW4 (810) = ON	0 V	0 V	7.6 V (Min. water flow rate)	7.6-9.1 V

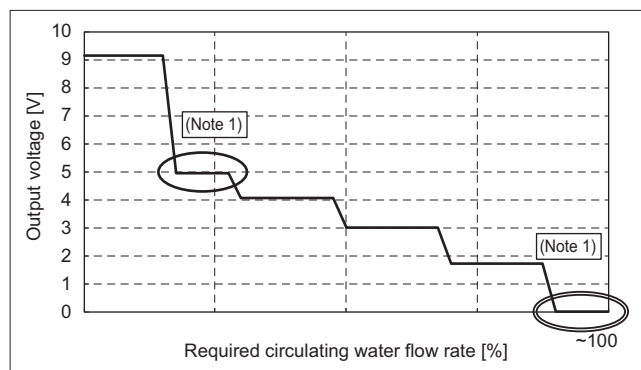


Figure b)-1 Analog signal output (when Dip SW4 (810) is set to OFF)

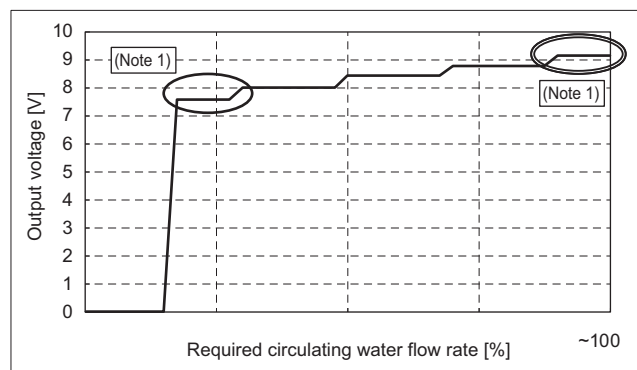


Figure b)-2 Analog signal output (when Dip SW4 (810) is set to ON)

(Note 1) Output signals may deviate from the values shown in the tables by up to 10%.

During the test run, check that the flow rate of the circulating water supplied to the heat-source units falls within the operating range, even with the variations in output signals.

(Output voltage as indicated by a single circle: Greater than the minimum water flow rate; output voltage as indicated by double circles: Less than the maximum water flow rate)

(Note 2) To stabilize the heat-source unit operation, valve opening signal may temporarily exceeds the operating range.

(Note 3) It is recommended to use the type of water flow rate control valve that fully opens at 0 V and to set the Dip SW so that sufficient amount of circulating water will be supplied to the heat-source units even if the valve opening signal to the variable water flow control valve is lost.

(Note 4) When a system includes multiple heat-source units, each unit requires a water flow rate control valve that controls the circulating water flow rate.

2. Specifications of (motor-powered) water flow rate control valve

Note the following regarding (motor-powered) water flow rate control valve.

- 1) Select the valve capacity based on the range of circulating water supply to heat-source units and on the analog signal output range.
- 2) The types of valves with an inverting function (fully opens at 0 V) are recommended to ensure that sufficient amount of circulating water is supplied to the heat-source unit, even if the valve opening signal to the water flow rate control valve is lost.
- 3) It is recommended to use valves that allow for manual operation and for confirmation of present opening angle for easy test run and maintenance.

c) Schematic system diagram including heat-source units, water circuits, power supplies, and signals

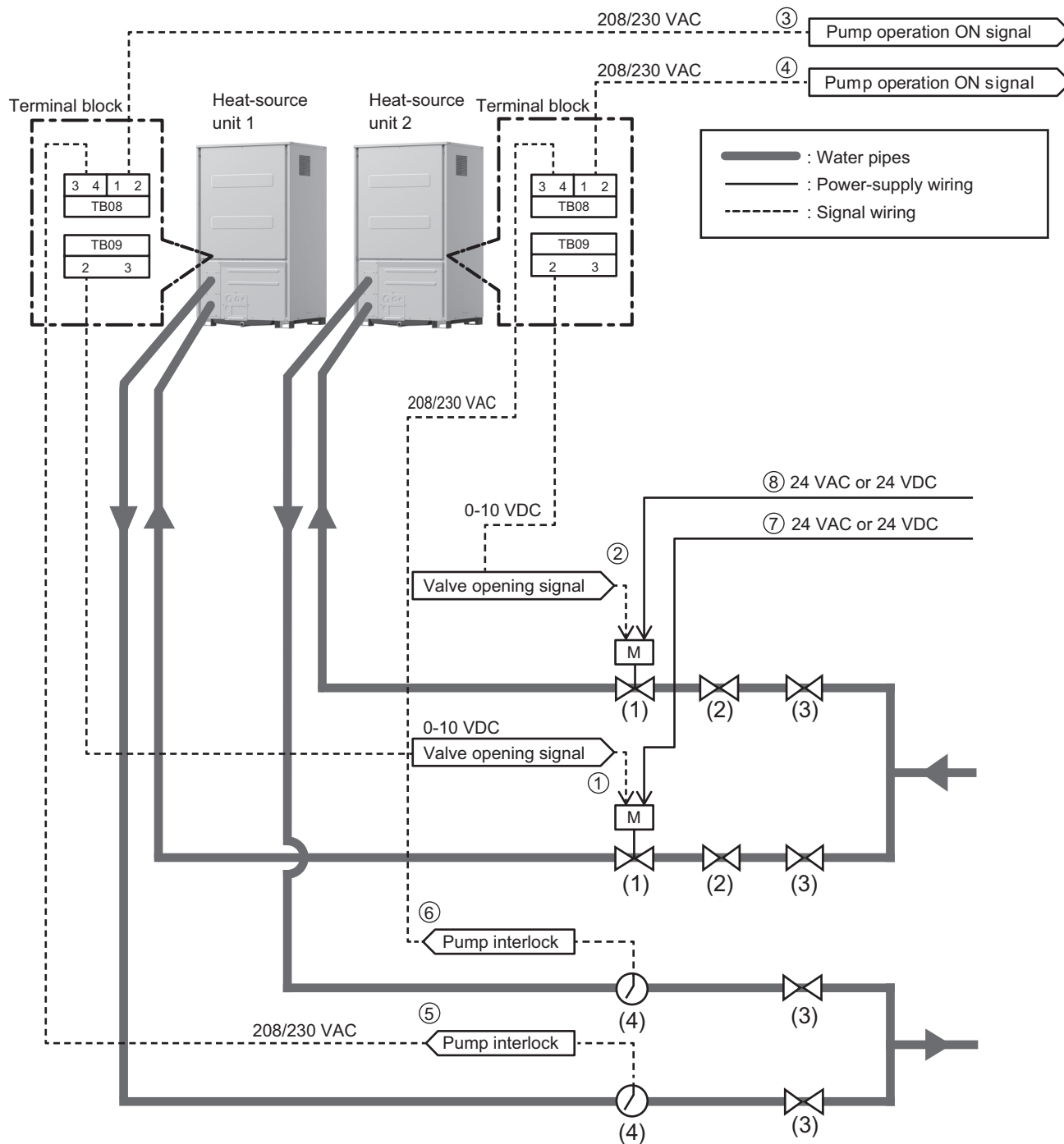


Table c)-1 Water-circuit system

Symbol	Component	Usage	Note
(1)	(Motor-powered) water flow rate control valve	For controlling water flow rate	To be procured on site (See b)-2.)
(2)	Control valve	For keeping the circulating water flow rate within the operating range	To be procured on site
(3)	Shut-off valve	For the maintenance of devices	To be procured on site
(4)	Flow switch	For detecting the lower limit of circulating water flow rate	To be procured on site

Table c)-2 Electrical wiring specification

Symbol	Component	Specification	Connection example	Note
①	Command to adjust valve opening (Unit 1)	0 to10 VDC	Unit 1 (TB09-2, 3) -Water flow rate control valve 1	Analog output
②	Command to adjust valve opening (Unit 2)	0 to10 VDC	Unit 2 (TB09-2, 3) -Water flow rate control valve 2	Analog output
③	Pump operation ON signal (Unit 1)	208/230 VAC	Unit 1 (TB08-1, 2) - Control panel	Digital output
④	Pump operation ON signal (Unit 2)	208/230 VAC	Unit 2 (TB08-1, 2) - Control panel	Digital output
⑤	Pump interlock (Unit 1)	208/230 VAC	Flow switch - Unit 1 (TB08-3, 4)	Digital input
⑥	Pump interlock (Unit 2)	208/230 VAC	Flow switch - Unit 2 (TB08-3, 4)	Digital input
⑦	Power supply for water flow rate control valve (Unit 1)	24 VAC or 24 VDC	Control panel - Water flow rate control valve 1	Power supply
⑧	Power supply for water flow rate control valve (Unit 2)	24 VAC or 24 VDC	Control panel - Water flow rate control valve 2	Power supply

d) Electrical wiring diagram of heat-source unit

Terminal blocks TB08 and TB09 for controlling water flow rate are located at the bottom of the control box. Wiring connections need to be made for each heat-source unit.

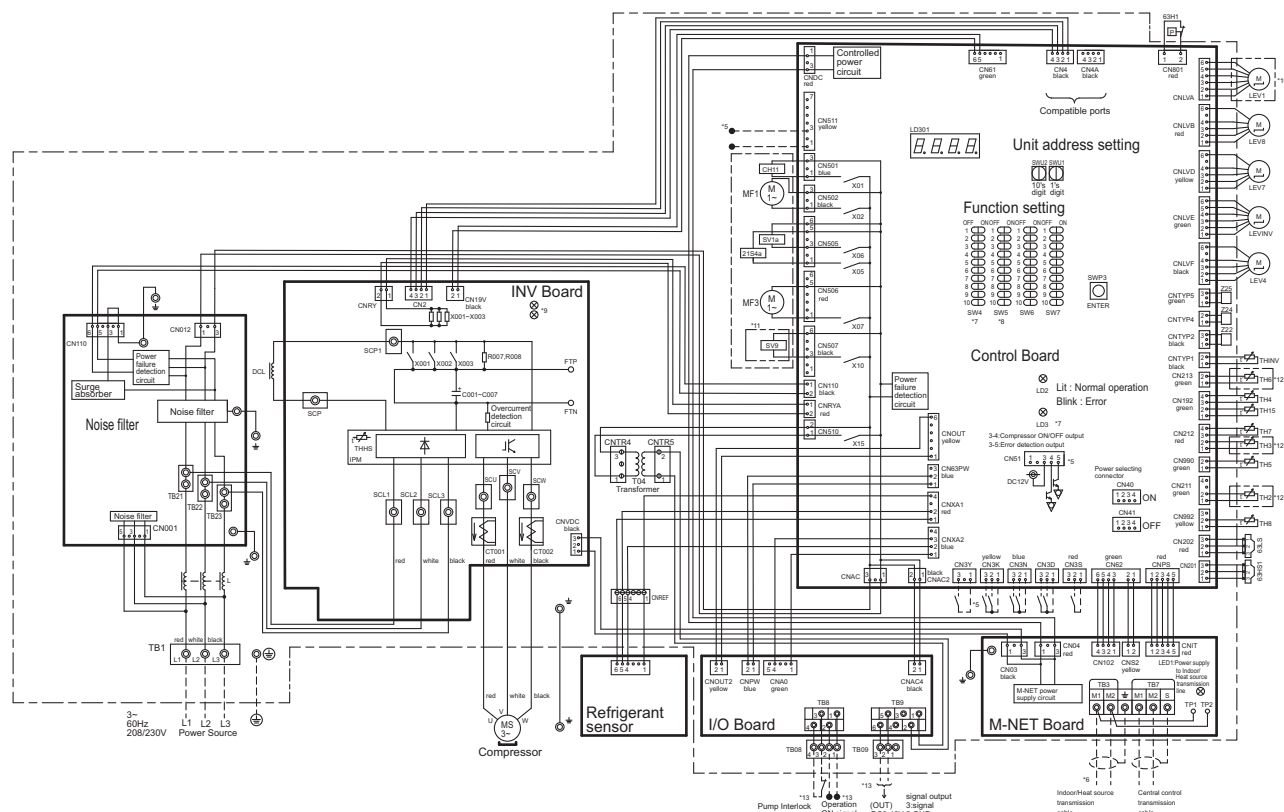


Figure d)-1 Electrical wiring diagram of heat-source unit

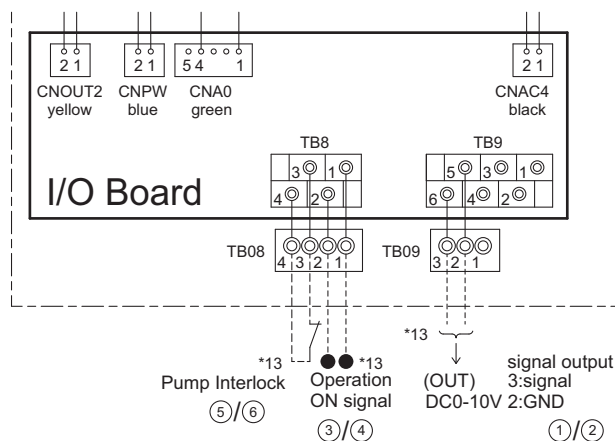


Figure d)-2 I/O board wiring diagram

(Note 1) Use insulated terminals for connection to TB08 and TB09.

e) Installation

Note the following for installing the circulating water flow rate control system.

1. Make sure that water circuit components necessary to build a circulating water flow rate control system are in place.
 - ♦ See Figure c)-1 and Table c)-1.
 - ♦ When a system includes multiple heat-source units, each unit requires a water flow rate control valve.
2. Connect all wirings (power-supply, signal, etc.) required by the circulating water flow rate control system.
 - ♦ See Figure c)-1 and Table c)-2.
3. Check the circulating water flow rate control system (including the heat-source unit) for proper operation.
4. Check that the circulating water supplied to the heat-source unit is within the operating range.
 - ♦ Make sure the inlet water temperature is within the operating range.
 - ♦ Make sure the water strainer is not clogged.
 - ♦ Make sure the circulating water flow rate is within the operating range in both the single-heat-source-unit systems or in the multiple-heat-source-unit systems and both during Thermo-OFF and in operation.
 - ♦ When using a single pump for multiple heat-source units in multiple systems, make sure that the flow rate of the circulating water supplied to each unit is within the operating range regardless of the ON/OFF status of the heat-source units in the system.
 - ♦ To check for proper operation of water flow rate control valve and to check that the circulating water flow rate is within the operating range, the use of device that outputs a voltage between 0 VDC and 10 VDC is recommended.
5. Check the system for the following items to use the circulating water control system in the normal operating range.
 - ♦ Management of supply water flow rate that takes strainer clogging and other possible problems that can occur during operation into consideration.
 - ♦ Adjustment of water-quality during operation
 - ♦ Measures against possible problems with the water-circuit system

(Examples: Water outage, circulating water flow rate outside the specification range, clogged strainer, air in the circulation system, water pump failure, water flow rate control valve problem, pump interlock failure, etc.)

f) Expansion function for the management of circulating water flow rate

Making the following settings can reduce the power required to operate the circulating water pump in the water circuit system. (Note that doing so may delay the start of heat-source units by a few minutes.)

Switch			Function	Operation according to the switch setting		Switch setting timing	Unit (Note 2)
				OFF (LD3: Unlit)	ON (LD3: Lit)		
SW4 1-10 [0: OFF; 1: ON] (Note 1) SW6-10: ON	No. 901	1010000111	Changes signal output when all heat-source units (OC/OS) go into Thermo-OFF	Water flow rate control valve remains open when all heat-source units (OC/OS) go into Thermo-OFF. (Minimum water flow rate) [Default]	Water flow rate control valves will close when all heat-source units (OC/OS) go into Thermo-OFF.	After power on and while the compressor is stopped	C
SW4 1-10 [0: OFF; 1: ON] (Note 1) SW6-10: ON	No. 917	1010100111	Pump operation ON signal	Signals are output when heat-source units go into Ther- mo-OFF. [Default]	Signals are output when Cooling/Heat- ing operation signals are received from the controller.	After power on and while the compressor is stopped	C

(Note 1) To switch between the ON/OFF settings, first set SW6-10 to ON, then set SW4, and finally press and hold SWP3 for two seconds or longer to reflect the change.

LD3 will be lit when the switch is set to ON, and LD3 will be unlit when the switch is set to OFF.

Check the LD3 indicator status to make sure the setting is set as intended.

The switch needs to be re-set at the replacement of the control board.

Note the settings on the electrical wiring diagram label on the control box.

(Note 2) A: Requires the switch on OC to be set.

B: Requires the switches on both OC and OS to be set to the same setting.

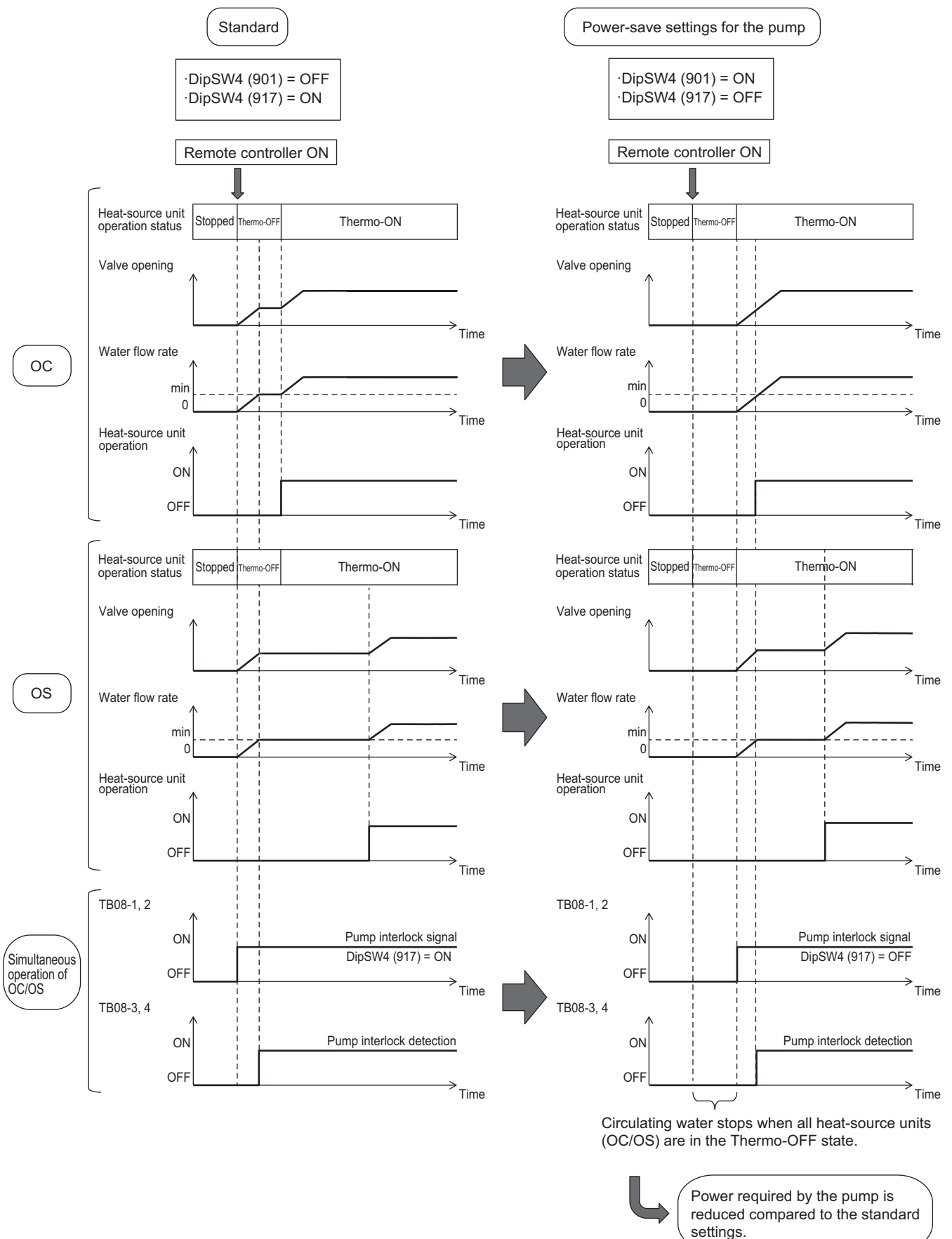
C: Requires the switches on both OC and OS to be set.

D: Requires the switches on either OC or OS to be set.

(Note 3) To use the functions above, be sure to set the switches in the following combinations.

• Set SW4 (901) to OFF and SW4 (917) to ON to keep the pumps on all heat-source units (OC/OS) to operate during Thermo-OFF and to keep the water flow rate control valve open.

• Set SW4 (901) to ON and SW4 (917) to OFF to stop the pumps on all heat-source units (OC/OS) during Thermo-OFF and to close the water flow rate control valve.



8-2. Water piping work

Although the water piping for the CITY MULTI WR2 system does not differ from that for ordinary air conditioning systems, pay special attention to the items below in conducting the piping work.

1) Items to be observed on installation work

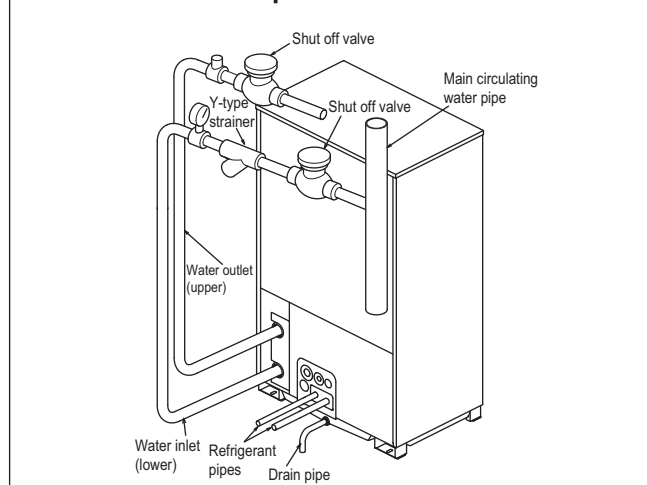
- The water pressure resistance of the water pipes in the heat source unit is 2.0MPa [290psi].
- In order to equalize piping resistance for each unit, adapt the reverse return system.
- Mount a joint and a valve onto the water outlet/inlet of the unit to allow for maintenance, inspection and replacement work. Be sure to mount a strainer at the water inlet piping of the unit. (The strainer is required at the circulation water inlet to protect the heat source unit.)
- The installation example of the heat source unit is shown right.
- Be sure to provide an air relief opening on the water piping properly, and purge air after feeding water to the piping system.
- Condensate will generate at the low temperature part inside the heat source equipment. Connect drain piping to the drain piping connection located at the bottom of the heat source equipment to discharge it outside the equipment.
- Mount a backflow prevention valve and a flexible joint for vibration control onto the pump.
- Provide a sleeve to the penetrating parts of the wall to prevent the piping.
- Fasten the piping with metal fitting, arrange the piping not to expose to cutting or bending force, and pay sufficient care for possible vibration.
- Be careful not to erroneously judge the position of the inlet and outlet of water.
(Lower position : Inlet, Upper position : Outlet)
- When connecting heat source unit water piping and water piping on site, apply liquid sealing material for water piping over the sealing tape before connection.
- This unit doesn't include a heater to prevent freezing within tubes. If the water flow is stopped on low ambient, drain the water out.
- The unused knockout holes should be closed and the refrigerant pipes, water pipes, power source and transmission wires access holes should be filled with putty.
- The drain plug is installed on the back of the unit at factory for field-connection of the drain pipes on the front of the unit. Move the plug to the front to connect the drain pipes on the back. Verify that there are no leaks from pipe connections.
- For installing two units, install water pipes in parallel to each other so that the water flow rate through both units will be equal.
- Wrap the sealing tape as follows.
 - Wrap the joint with sealing tape in the direction of the threads (clockwise), and do not let the tape run over the edge.
 - 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.
 - Leave the 1.5th through 2nd farthest threads away from the pipe end 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 150N·m.
- Consider the circulating-water temperature and the water pressure range when deciding on the piping specifications.

2) Thermal insulation work

Thermal insulation or anti sweating work is not required for the piping inside buildings in the case of the CITY MULTI WR2 system if the operating temperature range of inlet water stays within the temperature near the normal (summer : 30°C[86°F], winter : 20°C[68°F]).

- In case of the conditions below, however, thermal insulation is required.
- Use of well water for heat source water
- Outdoor piping portions
- Indoor piping portions where freezing may be caused in winter
- A place where vapor condensation may be generated on piping due to an increase in dry bulb temperature inside the ceiling

Installation example of heat source unit



- caused by the entry of fresh outdoor air
- Drain piping portions

3) Water treatment and water quality control

To preserve water quality, use the closed type of cooling tower for WY/WR2. In the case that an open type cooling tower is employed or the circulating water quality is inferior, scale will adhere onto the water heat exchanger leading to the decreased heat exchange capacity or the corrosion of the heat exchanger. Be sufficiently careful for water quality control and water treatment at the installation of the circulation water system

- Removal of impurities inside piping
Be careful not to allow impurities such as welding fragment, remaining sealing material and rust from mixing into the piping during installation work.
- Water treatment
The water quality standards have been established by the industry (Japan Refrigeration, Air Conditioning Industry Association, in case of Japan) for water treatment to be applied.

Items		Lower mid-range temperature water system		Tendency	
		Recirculating water [20<T<60°C] [68<T<140°F]	Make-up water	Corrosive	Scale-forming
Standard items	pH (25°C[77°F])	7.0 ~ 8.0	7.0 ~ 8.0	○	○
	Electric conductivity (mS/m) (25°C[77°F])	30 or less	30 or less	○	○
	(μS/cm) (25°C[77°F])	[300 or less]	[300 or less]		
	Chloride ion (mg Cl/ℓ)	50 or less	50 or less	○	
	Sulfate ion (mg SO ₄ ²⁻ /ℓ)	50 or less	50 or less	○	
	Acid consumption (pH4.8) (mg CaCO ₃ /ℓ)	50 or less	50 or less		○
	Total hardness (mg CaCO ₃ /ℓ)	70 or less	70 or less		○
	Calcium hardness (mg CaCO ₃ /ℓ)	50 or less	50 or less		○
Reference items	Ionic silica (mg SiO ₂ /ℓ)	30 or less	30 or less		○
	Iron (mg Fe/ℓ)	1.0 or less	0.3 or less	○	○
	Copper (mg Cu/ℓ)	1.0 or less	0.1 or less	○	
	Sulfide ion (mg S ²⁻ /ℓ)	not to be detected	not to be detected	○	
	Ammonium ion (mg NH ₄ ⁺ /ℓ)	0.3 or less	0.1 or less	○	
	Residual chlorine (mg Cl ₂ /ℓ)	0.25 or less	0.3 or less	○	
	Free carbon dioxide (mg CO ₂ /ℓ)	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)

In order to keep the water quality within such standards, you are kindly requested to conduct bleeding-off by overflow and periodical water quality tests, and use inhibitors to suppress condensation or corrosion. Since piping may be corroded by some kinds of inhibitor, consult an appropriate water treatment expert for proper water treatment.

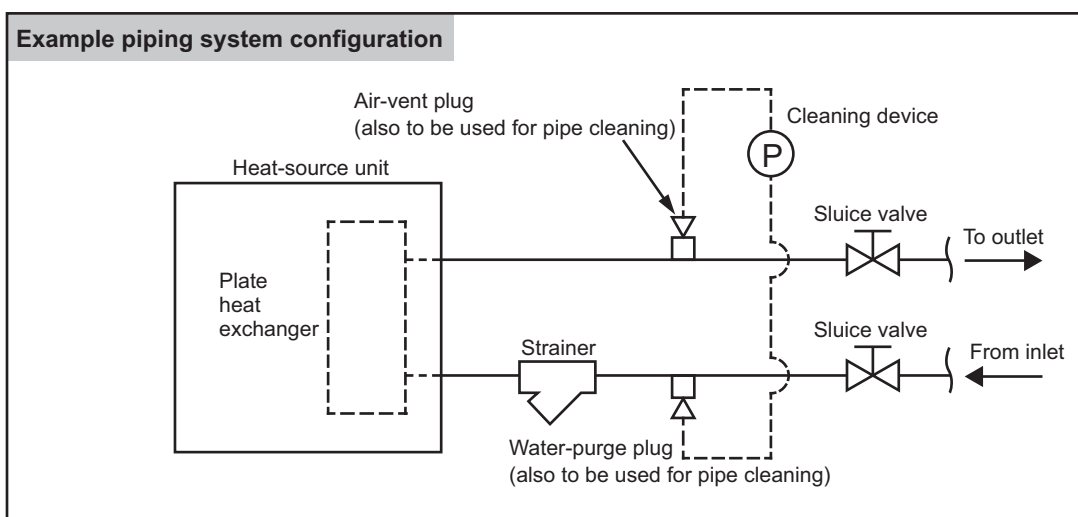
4) Pump interlock

Operating the heat source unit without circulation water inside the water piping can cause a trouble. Be sure to provide interlocking for the unit operation and water circuit. Since the terminal block is being provided inside the unit, use it as required.

5) Handling plate heat exchangers for heat-source units

<Designing the piping system>

- Install a strainer (50 mesh or finer recommended) near the heat-source unit on the inlet side of the hot/cold water pipe and cooling-water pipe (hereafter referred to as water pipes) to prevent an infiltration of foreign materials of solid nature, such as dirt and sand, into the plate heat exchanger.
- Depending on the water quality, scale may form inside plate heat exchangers. Plate heat exchangers must be chemically cleaned regularly to remove scale formation. Install sluice valves on the water pipes, and provide ports for connecting a pipe between the sluice valves and the heat-source unit for chemical cleaning.
- On both the inlet and outlet sides of water pipes, provide a plug to remove trapped air and water (also to be used for cleaning heat-source units and for purging water before a period of nonuse in winter or at the end of an air conditioning season). Also, provide automatic air-vent valves where air is likely to be trapped (such as a pipe that runs vertically). Even in the case of a failure of the water-side heat exchanger in the unit, the refrigerant may leak from the automatic air vent valve. To prevent accidents resulted from refrigerant leakage, install the automatic air vent valve where leaked refrigerant will not accumulate, such as outdoors.
- In addition to installing the above-mentioned strainers, install a cleanable strainer near the pump pipe inlet.
- Keep the pipes properly insulated and take an appropriate measure against humidity to minimize heat loss and prevent freeze damage in severe cold climate.
- If the system is stopped during winter or at night in subfreezing temperatures, take appropriate measures to protect pipes from freezing (i.e., pipe purging and use of water-circulation pump or heater) and prevent resultant damage to the plate heat exchanger.



<Test run>

- Before performing a test run, check that the piping system is properly installed, especially the strainers, air-vents, automatic water-supply valves, expansion tanks, and systems.
- After the pipe system is filled with water, first, operate the pump alone to check the system for trapped air and adjust the water flow rate to prevent the plate heat exchanger from freezing. Take into consideration the water pressure loss before and after each heat-source unit, and make sure the water flow rate falls within the design water flow rate range. Stop the test run and correct any problems found, if any.
- At the completion of a test run, check the strainer at the inlet pipe of the heat-source unit and clean it as necessary.

<Daily maintenance>

- ♦ Controlling the water quality
Plate heat exchangers cannot be disassembled for cleaning and have no replaceable parts. Watch the water quality to prevent corrosion and scale formation. The quality of the water to be used for plate heat exchangers must meet the water quality guidelines JRA GL-02-1994 specified by Japan Refrigeration and Air conditioning Industry Association (JRAIA). (Refer to 3) Water treatment and water quality control.)
- ♦ Controlling the circulation water flow rate
Insufficient water rate will cause freeze damage to plate heat exchangers. Check for insufficient water flow caused by clogged strainer, trapped air in the system, or malfunction of the circulation water pump. Flow rate can also be checked by measuring the temperature or pressure difference between the inlet and outlet of plate heat exchangers. If the temperature or pressure difference goes outside of the specified range, stop the operation, remove the cause of the problem, and resume operation.
- ♦ What to do when the freeze protection trips
If the freeze protection trips during operation, be sure to remove its cause before resuming operation. Tripped freeze protection indicates that the system is partially frozen, and resuming operation without removing the cause of the problem will result in freeze damage to plate heat exchangers and/or pipes as well as resultant refrigerant leaks and infiltration of water into the refrigerant circuit.

<Maintaining plate heat exchangers>

Plate heat exchangers must be maintained in a planned and periodical manner to prevent scale formation, which may cause performance loss or decrease water flow rate that result in freeze damage to the plate heat exchanger.

- ♦ Check the following items before the operating season.
 1. Check that the water quality meets the specified water quality.
 2. Clean the strainers.
 3. Check that the water flow rate is adequate.
 4. Check for proper operation (e.g., pressure, flow rate, inlet/outlet temperatures).
- ♦ Plate heat exchangers cannot be disassembled for cleaning. Clean them in the following way.
 1. Make sure that there is a pipe connection port on the water inlet pipe.
Use formic acid, citric acid, oxalic acid, acetic acid, or phosphoric acid diluted to 5% to clean plate heat exchangers. Do not use highly corrosive acids, such as hydrochloric acid, sulfuric acid, or nitric acid.
 2. Make sure that valves are installed before the inlet connection port and after the outlet connection port.
 3. Connect a pipe for circulating cleaning solution to the inlet/outlet pipes of the plate heat exchanger, fill the plate heat exchanger with cleaning solution at a temperature between 50 and 60°C, and circulate the cleaning solution with a pump for 2 to 5 hours. The cleaning time will depend on the temperature of the cleaning solution and the degree of scale formation. Use the color of the cleaning solution as a guide to determine how long the system needs to be cleaned.
 4. When done, discharge the cleaning solution out of the plate heat exchanger, fill it with sodium hydrate (NaOH) or sodium bicarbonate (NaHCO₃) diluted with water to 1 to 2%, and let the solution be circulated for 15 to 20 minutes until the cleaning solution is neutralized.
 5. After neutralizing the cleaning solution, thoroughly rinse the plate heat exchanger with clean water.
 6. When using a commercially available cleaning solution, make sure to use a solution not corrosive to stainless steel or copper.
 7. Consult the cleaning solution manufacture for details.
- ♦ At the completion of cleaning, check the system for proper operation.

PQRY-M-T(S)XU-A, Y(S)XU-A

9-1. JOINT and REDUCER

CITY MULTI units can be easily connected by using Joint sets and Reducer sets provided by Mitsubishi Electric. Refer to section "Piping Design" or the Installation Manual that comes with the Joint set or Reducer set for how to install the Joint set or Reducer set.

CMY-Y102SS-G2

For Gas pipe:

For Liquid pipe:

in.

*Pipe diameter is indicated by inside diameter.

CMY-Y102LS-G2

For Gas pipe:

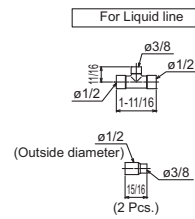
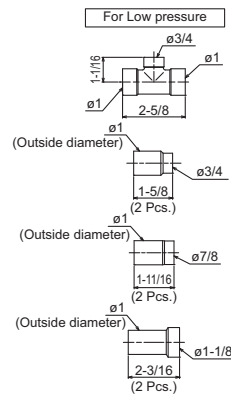
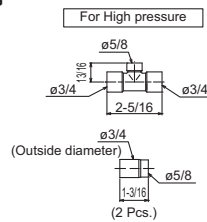
For Liquid pipe:

in.

*Pipe diameter is indicated by inside diameter.

in.

CMY-R201S-G



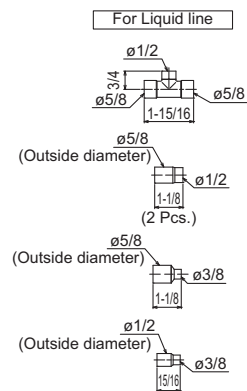
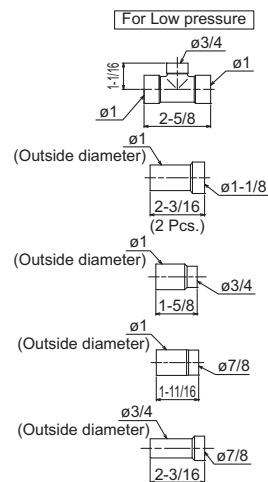
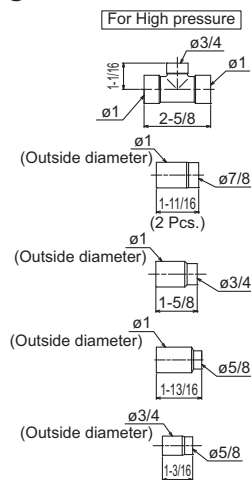
<Accessory>

• Cover 3 Pcs.

Note. Pipe diameter is indicated by inside diameter.

in.

CMY-R202S-G



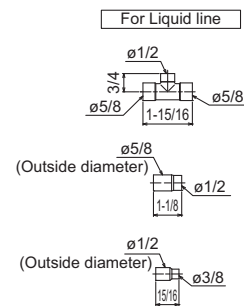
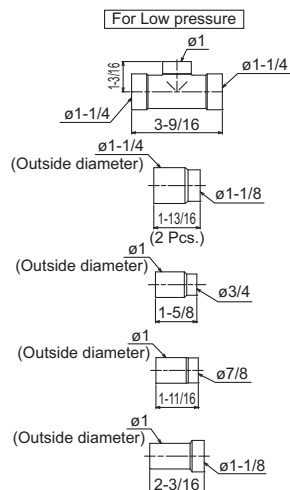
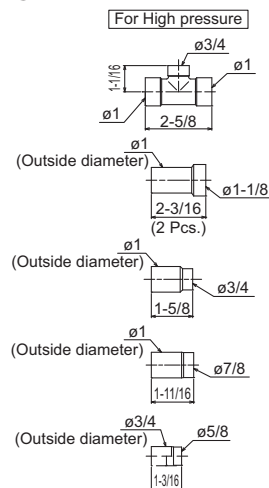
<Accessory>

• Cover 3 Pcs.

Note. Pipe diameter is indicated by inside diameter.

in.

CMY-R203S-G



<Accessory>

• Cover 3 Pcs.

Note. Pipe diameter is indicated by inside diameter.

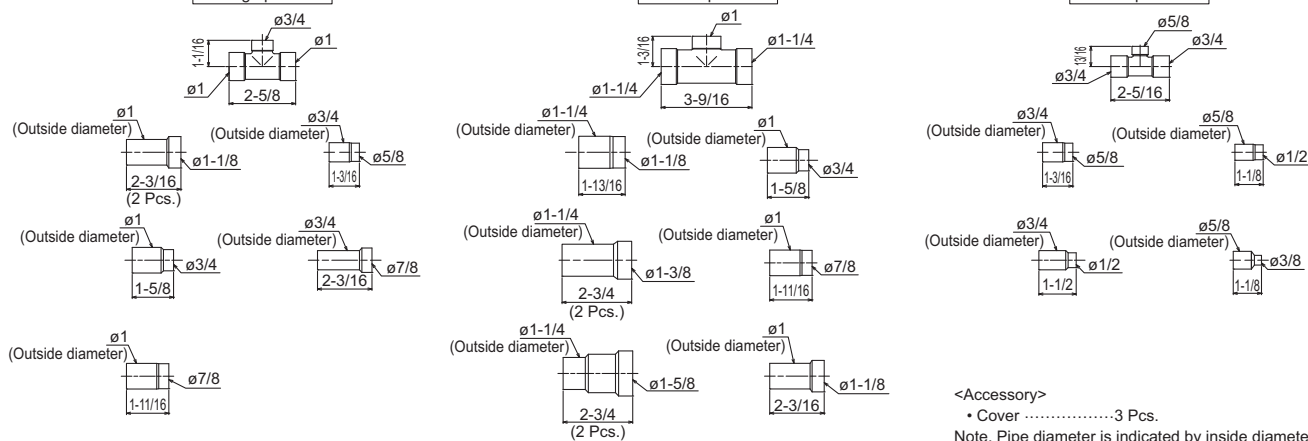
CMY-R204S-G

For High pressure

For Low pressure

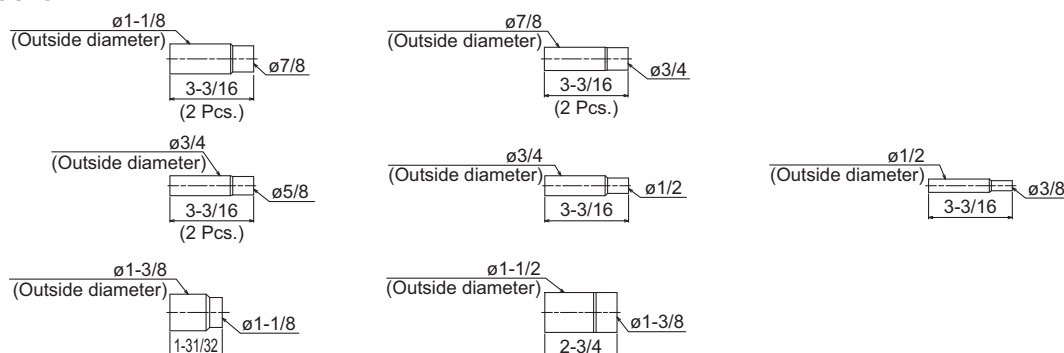
For Liquid line

in.



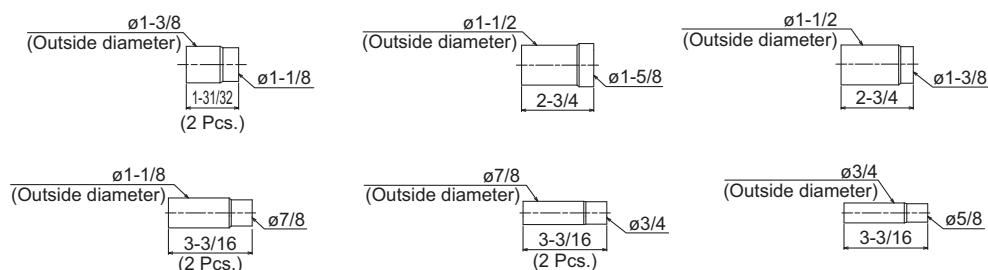
CMY-R303S-G1

in.



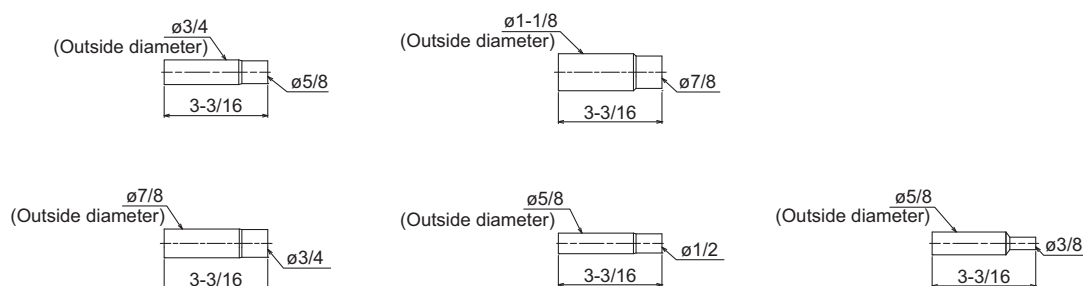
CMY-R304S-G1

in.



CMY-R306S-G

in.



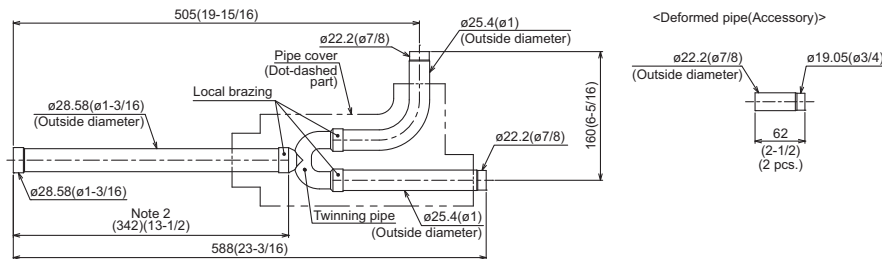
9-2. HEAT SOURCE TWINNING KIT

The following optional Heat Source Twinning Kit is needed to use to combine multiple refrigerant pipes. Refer to section "Piping Design" for the details of selecting a proper twinning kit.

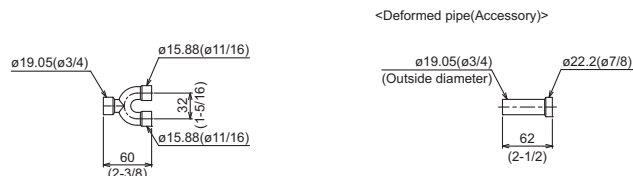
CMY-R100NCBK

Unit: mm (in.)

Low-pressure twinning pipe



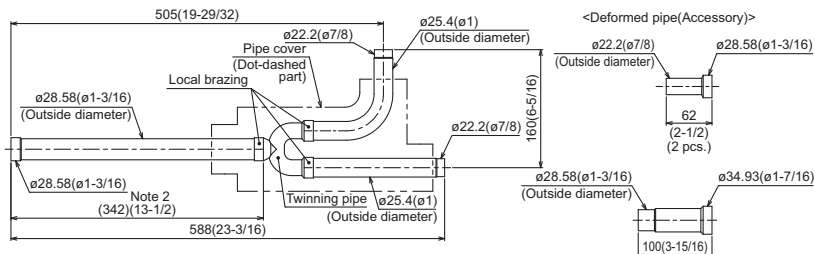
High-pressure twinning pipe



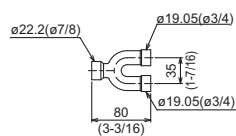
CMY-R200NCBK

Unit: mm (in.)

Low-pressure twinning pipe



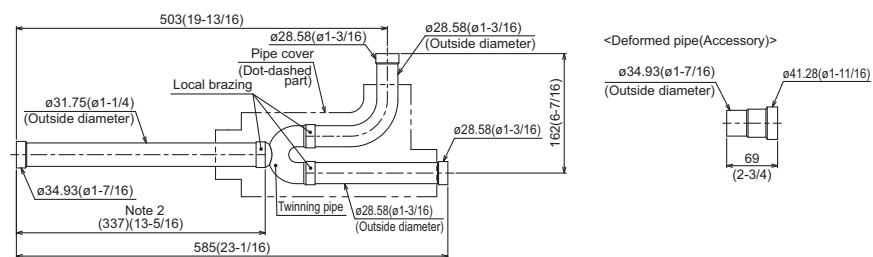
High-pressure twinning pipe



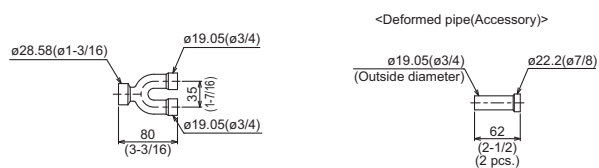
CMY-R300NCBK

Unit: mm (in.)

Low-pressure twinning pipe

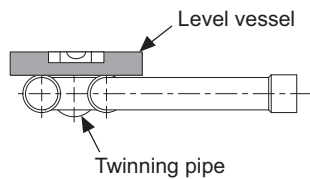


High-pressure twinning pipe



Note 1. Refer to the figure below for the installation position of the twinning pipe.

The Twining pipe must be installed horizontally using a level vessel to avoid unit damage.



2. Use the attached pipe to braze the port-opening of the twinning pipe.
3. Pipe diameter is indicated by inside diameter.
4. Only use the twinning pipe by Mitsubishi (optional parts).

9-3. JOINT KIT "CMY-R170M-E" FOR BC CONTROLLER

Joint kit "CMY-R170M-E" for BC controller is used to combine 2 ports of the BC controller at a PURY/PQRY system so as to enable down-stream Indoor capacity above 54 as shown in Fig. 1.

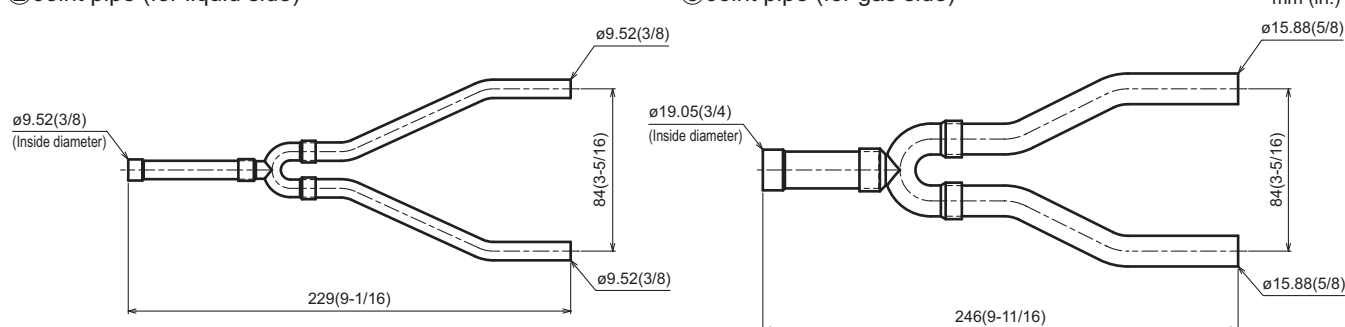
The Joint kit include following items:

①Instruction	②Joint pipe(Small)	③Joint pipe(Large)	④Cover 1	⑤Cover 2	⑥Cover 3	⑦Band	⑧Reducer 1	⑨Reducer 2
 This sheet 1pc	 1pc	 1pc	 2pcs	 1pc for gas side	 1pc for liquid side	 8pcs	 1pc	 1pc

Please prepare the following items in the field. ①Tape for insulation material sealing ②Extension pipe for refrigerant circuit

② Joint pipe (for liquid side)

③Joint pipe (for gas side)



1. Designing CMY-R170M-E to a PURY/PQRY system

1-1. When connecting one indoor unit to the BC controller port

- The maximum capacity index of an indoor unit that can be connected to one port is 54.
- When connecting an indoor unit having the capacity index larger than 54, use the joint pipe kit to merge two ports.

1-2. When connecting multiple indoor units to the BC controller port

- Up to three indoor units can be connected to one port. Use the branch pipes (CMY-Y102SS-G2 or CMY-Y102LS-G2) to connect the indoor units to the BC controller.
- If the total downstream capacity index is 54 or less, all the units can be connected to one port.
- If the total downstream capacity index is between 55 and 96, use the joint pipe kit to merge two ports. However, the maximum capacity index per unit is 54.

*All the indoor units connected to the same port must be operated in the same mode.

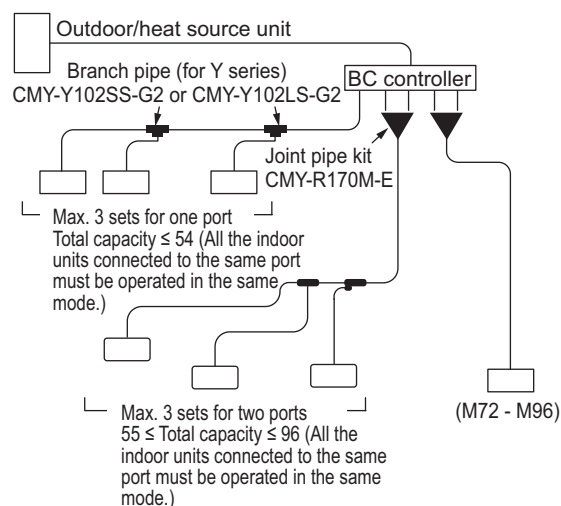
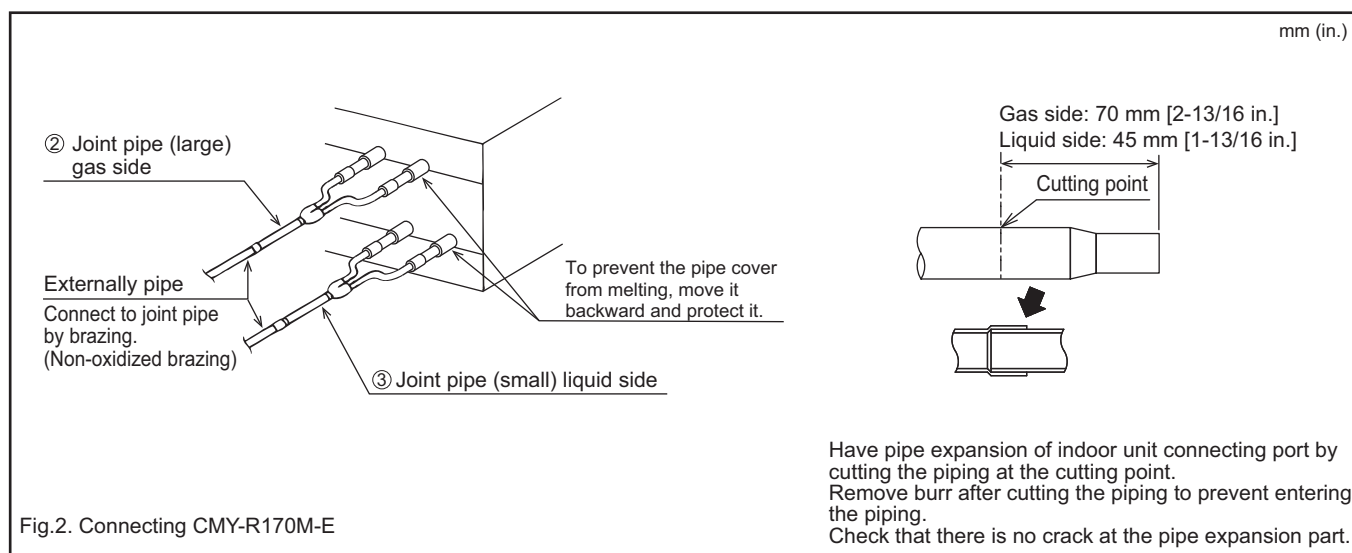


Fig.1. CMY-R170M-E applying scheme

2. Piping at the installation site

The connection of CMY-R170M-E to BC controller and pipe leading to Indoor units is referable to Fig. 2. Non-oxidized brazing is necessary. All piping must be careful to avoid foreign material getting inside.

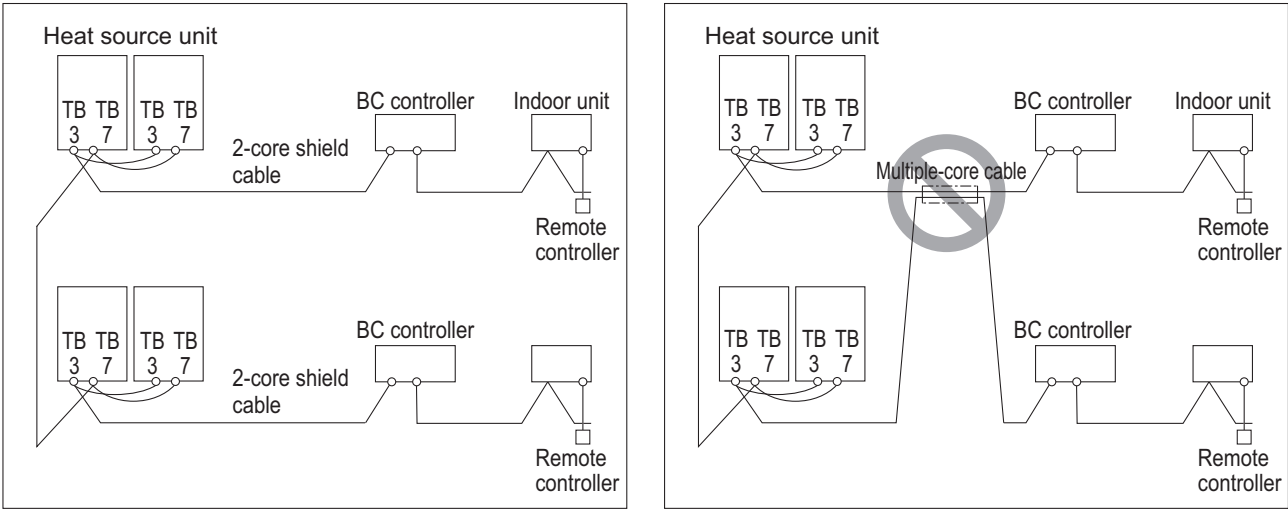
After piping and air-tight testing, insulation work to the Joint and pipe should be done. Details is available at the Installation Manual.



PQRY-M-T(S)XU-A, Y(S)XU-A

10-1. General cautions

- ① Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations, and guidance of each electric power company.
- ② Wiring for control (hereinafter referred to as transmission cable) shall be (50mm[1-5/8in] or more) apart from power source wiring so that it is not influenced by electric noise from power source wiring. (Do not insert transmission cable and power source wire in the same conduit.)
- ③ Be sure to provide designated grounding work to heat source unit.
- ④ Give some allowance to wiring for electrical part box of indoor and heat source unit, because the box is sometimes removed at the time of service work.
- ⑤ Never connect 100V, 208~230V, 460V power source to terminal block of transmission cable. If connected, electrical parts will be damaged.
- ⑥ Use 2-core shield cable for transmission cable. If transmission cables of different systems are wired with the same multiple-core cable, the resultant poor transmitting and receiving will cause erroneous operations.
- ⑦ When extending the transmission line, make sure to extend the shield cable as well.



TB3:Terminal block for Indoor/Heat source transmission cable
TB7:Terminal block for central control transmission cable

10-2. Power supply for Heat source unit

10-2-1. Electrical characteristics for Heat source unit

Symbols: MCA: Minimum Circuit Ampacity
MOP: Maximum Overcurrent Protection

PQRY-M-T(S)XU-A

Model	Unit Combination	Heat source unit					Compressor
		Hz	Volts	Voltage range	MCA (A)	MOP (A)	Output (kW)
PQRY-M72TXU-A	-	60Hz	208/230V	188 to 253V	16/14	25/25	3.0
PQRY-M96TXU-A	-				24/22	40/35	4.5
PQRY-M120TXU-A	-				33/30	50/50	6.2
PQRY-M144TXU-A	-				42/38	70/60	8.0
PQRY-M168TXU-A	-				48/48	80/80	10.3
PQRY-M192TXU-A	-				52/52	90/90	12.7
PQRY-M216TXU-A	-				61/61	100/100	13.2
PQRY-M240TXU-A	-				61/61	100/100	15.8
PQRY-M144TSXU-A	PQRY-M72TXU-A				16/14	25/25	3.0
	PQRY-M72TXU-A				16/14	25/25	3.0
PQRY-M168TSXU-A	PQRY-M72TXU-A				16/14	25/25	3.0
	PQRY-M96TXU-A				24/22	40/35	4.5
PQRY-M192TSXU-A	PQRY-M96TXU-A				24/22	40/35	4.5
	PQRY-M96TXU-A				24/22	40/35	4.5
PQRY-M216TSXU-A	PQRY-M96TXU-A				24/22	40/35	4.5
	PQRY-M120TXU-A				33/30	50/50	6.2
PQRY-M240TSXU-A	PQRY-M120TXU-A				33/30	50/50	6.2
	PQRY-M120TXU-A				33/30	50/50	6.2
PQRY-M288TSXU-A	PQRY-M144TXU-A				42/38	70/60	8.0
	PQRY-M144TXU-A				42/38	70/60	8.0
PQRY-M312TSXU-A	PQRY-M144TXU-A				42/38	70/60	8.0
	PQRY-M168TXU-A				48/48	80/80	10.3
PQRY-M336TSXU-A	PQRY-M168TXU-A				48/48	80/80	10.3
	PQRY-M168TXU-A				48/48	80/80	10.3

PQRY-M-Y(S)XU-A

Model	Unit Combination	Heat source unit					Compressor
		Hz	Volts	Voltage range	MCA (A)	MOP (A)	Output (kW)
PQRY-M72YXU-A	-	60Hz	460V	414 to 506V	8	15	3.0
PQRY-M96YXU-A	-				11	15	4.5
PQRY-M120YXU-A	-				15	25	6.2
PQRY-M144YXU-A	-				19	30	8.0
PQRY-M168YXU-A	-				25	40	10.3
PQRY-M192YXU-A	-				28	50	12.7
PQRY-M216YXU-A	-				31	50	13.2
PQRY-M240YXU-A	-				31	50	15.8
PQRY-M144YSXU-A	PQRY-M72YXU-A				8	15	3.0
	PQRY-M72YXU-A				8	15	3.0
PQRY-M168YSXU-A	PQRY-M72YXU-A				8	15	3.0
	PQRY-M96YXU-A				11	15	4.5
PQRY-M192YSXU-A	PQRY-M96YXU-A				11	15	4.5
	PQRY-M96YXU-A				11	15	4.5
PQRY-M216YSXU-A	PQRY-M96YXU-A				11	15	4.5
	PQRY-M120YXU-A				15	25	6.2
PQRY-M240YSXU-A	PQRY-M120YXU-A				15	25	6.2
	PQRY-M120YXU-A				15	25	6.2
PQRY-M288YSXU-A	PQRY-M144YXU-A				19	30	8.0
	PQRY-M144YXU-A				19	30	8.0
PQRY-M312YSXU-A	PQRY-M144YXU-A				19	30	8.0
	PQRY-M168YXU-A				25	40	10.3
PQRY-M336YSXU-A	PQRY-M168YXU-A				25	40	10.3
	PQRY-M168YXU-A				25	40	10.3

10-3. Power cable specifications

Thickness of wire for main power supply, capacities of the switch and system impedance

	Model	Minimum wire thickness [mm ² (AWG)]				Breaker for current leakage	
		Main cable		Ground			
		208V	230V	208V	230V	208V	230V
Heat source unit	M72	3.3 (12)	2.1 (14)	3.3 (12)	2.1 (14)	20 A 30 mA or 100 mA 0.1 sec. or less	15 A 30 mA or 100 mA 0.1 sec. or less
	M96	5.3 (10)	5.3 (10)	5.3 (10)	5.3 (10)	25 A 30 mA or 100 mA 0.1 sec. or less	25 A 30 mA or 100 mA 0.1 sec. or less
	M120	8.4 (8)	8.4 (8)	8.4 (8)	8.4 (8)	35 A 30 mA or 100 mA 0.1 sec. or less	35 A 30 mA or 100 mA 0.1 sec. or less
	M144	13.3 (6)	8.4 (8)	13.3 (6)	8.4 (8)	45 A 100 mA 0.1 sec. or less	40 A 100 mA 0.1 sec. or less
	M168	13.3 (6)	13.3 (6)	13.3 (6)	13.3 (6)	50 A 100 mA 0.1 sec. or less	50 A 100 mA 0.1 sec. or less
	M192	21.2 (4)	21.2 (4)	21.2 (4)	21.2 (4)	60 A 100 mA 0.1 sec. or less	60 A 100 mA 0.1 sec. or less
	M216	21.2 (4)	21.2 (4)	21.2 (4)	21.2 (4)	70 A 100 mA 0.1 sec. or less	70 A 100 mA 0.1 sec. or less
	M240	21.2 (4)	21.2 (4)	21.2 (4)	21.2 (4)	70 A 100 mA 0.1 sec. or less	70 A 100 mA 0.1 sec. or less

	Model	Minimum wire thickness [mm ² (AWG)]		Breaker for current leakage
		Main cable	Ground	
		460V	460V	460V
Heat source unit	M72	2.1 (14)	2.1 (14)	15 A 30 mA or 100 mA 0.1 sec. or less
	M96	2.1 (14)	2.1 (14)	15 A 30 mA or 100 mA 0.1 sec. or less
	M120	3.3 (12)	3.3 (12)	20 A 30 mA or 100 mA 0.1 sec. or less
	M144	3.3 (12)	3.3 (12)	20 A 30 mA or 100 mA 0.1 sec. or less
	M168	5.3 (10)	5.3 (10)	30 A 30 mA or 100 mA 0.1 sec. or less
	M192	5.3 (10)	5.3 (10)	30 A 30 mA or 100 mA 0.1 sec. or less
	M216	8.4 (8)	8.4 (8)	35 A 30 mA or 100 mA 0.1 sec. or less
	M240	8.4 (8)	8.4 (8)	35 A 30 mA or 100 mA 0.1 sec. or less

1. Use dedicated power supplies for the heat source unit and indoor unit. Ensure OC and OS are wired individually.
2. Bear in mind ambient conditions (ambient temperature, direct sunlight, rain water, etc.) when proceeding with the wiring and connections.
3. The wire size is the minimum value for metal conduit wiring. If the voltage drops, use a wire that is one rank thicker in diameter. Make sure the power-supply voltage does not drop more than 10%. Make sure that the voltage imbalance between the phases is 2% or less.
4. Specific wiring requirements should adhere to the wiring regulations of the region.
5. Power supply cords of parts of appliances for heat source use shall not be lighter than polychloroprene sheathed flexible cord (design 60245 IEC57). For example, use wiring such as YZW.
6. A switch with at least 3 mm [1/8 in.] contact separation in each pole shall be provided by the Air Conditioner installer.
7. For details on indoor unit wiring and breaker for current leakage, refer to the indoor unit Instruction Book and Installation Manual.

⚠ WARNING

- ◆ Be sure to use specified wires for connections and ensure no external force is imparted to terminal connections. If connections are not fixed firmly, heating or fire may result.
- ◆ Be sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.

⚠ CAUTION

- ◆ The breakers for current leakage should support Inverter circuit. (e.g. Mitsubishi Electric's NV-C series or equivalent). If no earth leakage breaker is installed, it may cause an electric shock.
- ◆ Breakers for current leakage should combine using of switch.
- ◆ Do not use anything other than a breaker with the correct capacity. Using a breaker of too large capacity may cause malfunction or fire.
- ◆ If a large electric current flows due to malfunction or faulty wiring, earth-leakage breakers on the unit side and on the upstream side of the power supply system may both operate.
Depending on the importance of the system, separate the power supply system or take protective coordination of breakers.

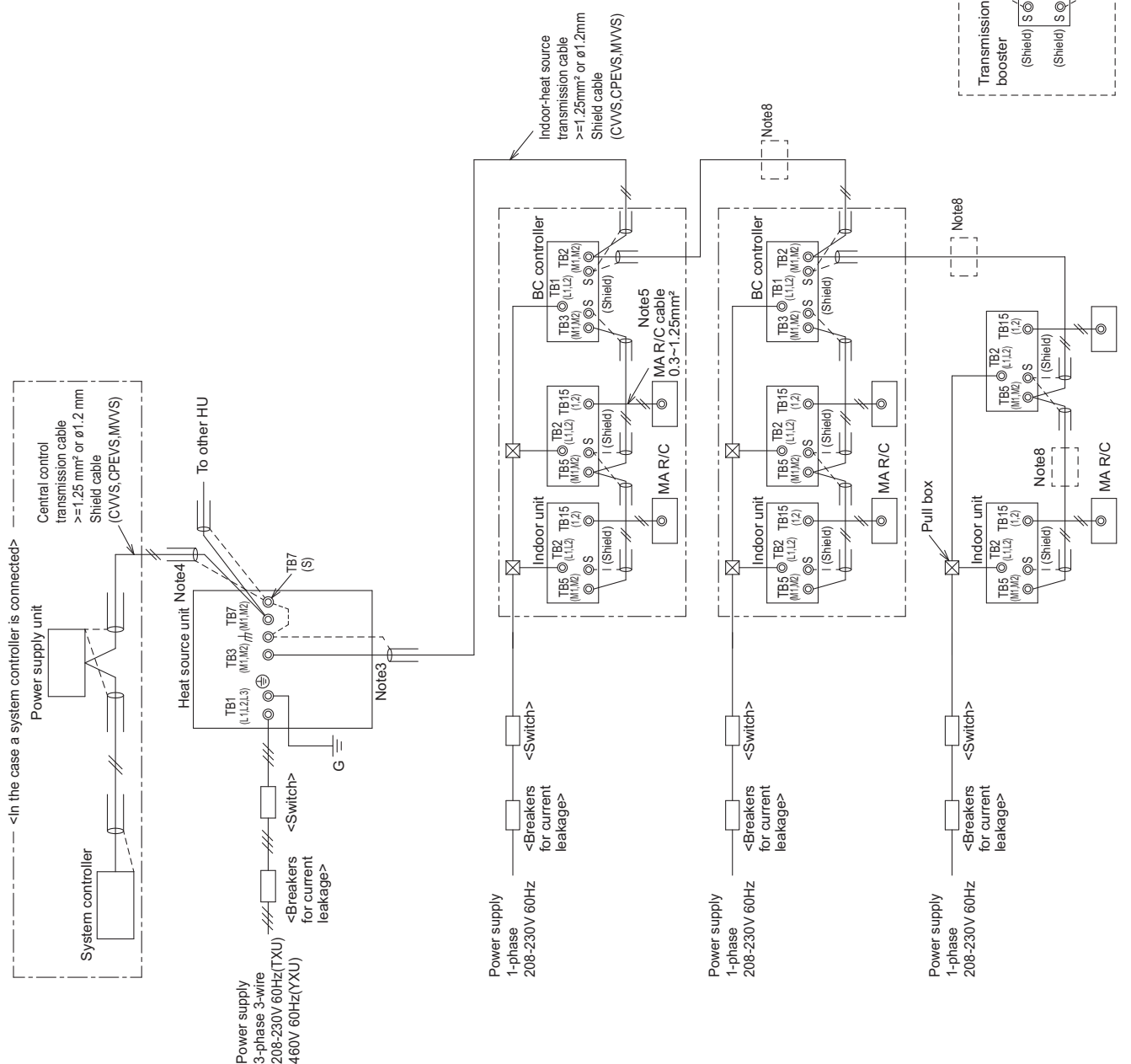
10-4. Power supply examples

10-4-1. PQRY-M72, 96, 120, 144, 168, 192, 216, 240TXU/YXU

The local standards and/or regulations is applicable at a higher priority.

Note:

- 1 The transmission cable is not-polarity double-wire.
- 2 Symbol © means a screw terminal for wiring.
- 3 The shield wire of transmission cable should be connected to the grounding terminal at Heat source unit. All shield wire of M-Net transmission cable among Indoor unit or all shield wire should be connected to the S terminal at Indoor unit or all shield wire should be connected together.
The broken line at the scheme means shield wire.
- 4 When connecting a system controller to a central control transmission cable, connect a power supply unit or supply power from a system controller with a power supply function.
- 5 MA remote controller transmission cable must be be less than 200 m in length (100 m when connecting two MA remote controllers in a group).
- 6 If using 1 or 2 (main/sub) MA remote controller to control more than 1 Indoor unit, use MA transmission cable to connect all the TB15 terminals of the Indoor units. It is called "Grouping".
- 7 Indoor board consumes power from TB3. The power balance should be considered according to "System configuration restrictions" section.
- 8 If a transmission booster is needed, be sure to connect it to the location specified in this diagram.
Also, when connecting, be sure to connect the shielded transmission cable to the S terminals (shield) of the booster.
- 9 The critical current for choosing power source equipment is approximate 1.4 times of total rated current of the Heat source unit(s) or Indoor unit(s).
- 10 When System controller (SC) is connected to the system, turn the SW5-1 on.



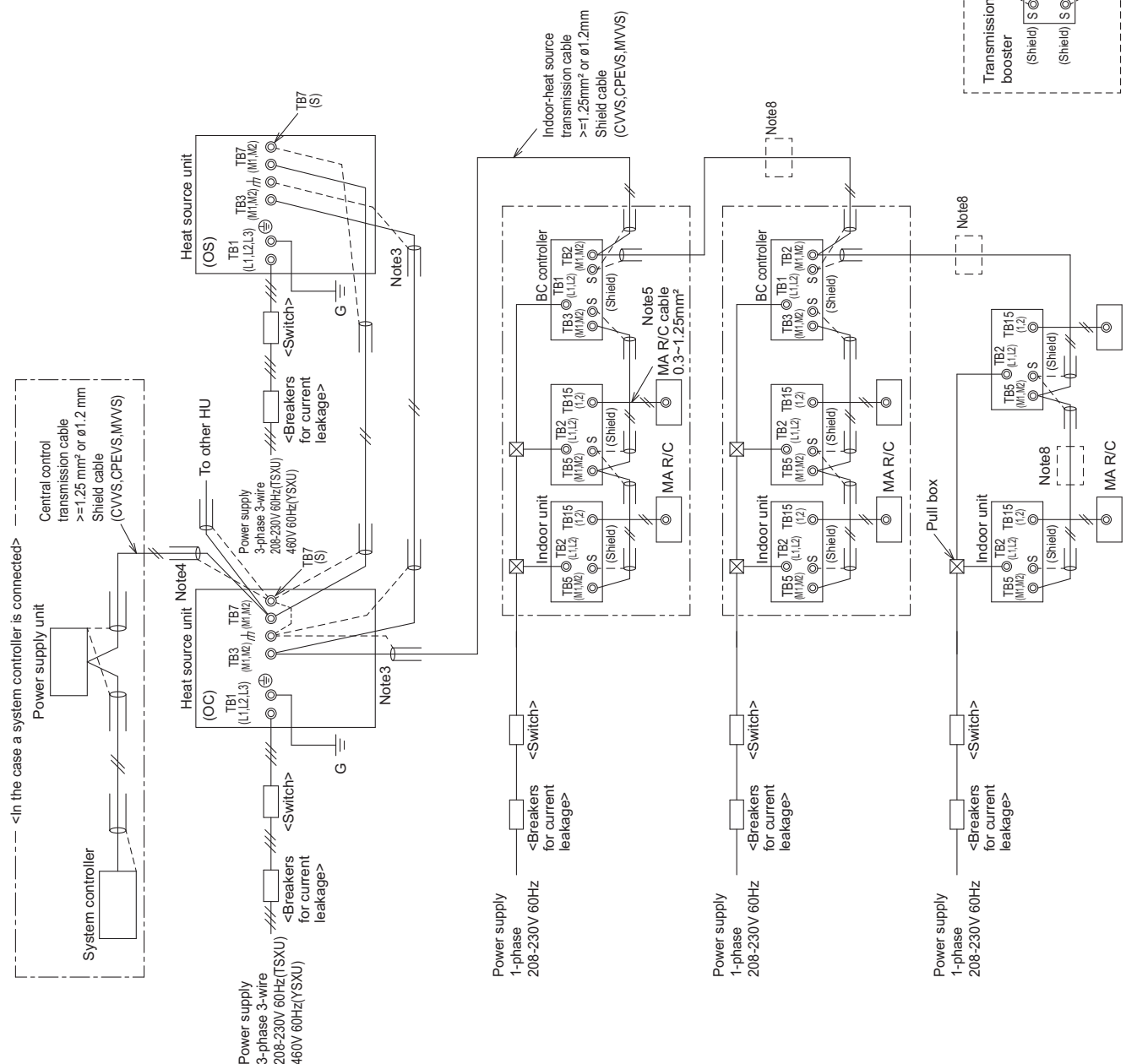
The local standards and/or regulations is applicable at a higher priority.

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PQRY-M-T(S)XU-A, Y(S)XU-A

Note:

- 1 The transmission cable is non-polarity double-wire.
- 2 Symbol © means a screw terminal for wiring.
- 3 The shield wire of transmission cable should be connected to the grounding terminal at Heat source unit. All shield wire of M-Net transmission cable among Indoor units should be connected to the S terminal at Indoor unit or all shield wire should be connected together.
- 4 The broken line at the scheme means shield wire.
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- 9 The critical current for choosing power source equipment is approximate 1.4 times of total rated current of the Heat source unit(s) or Indoor unit(s).
- 10 When System controller (SC) is connected to the system, turn the SW5-1 on.



11-1. Transmission cable specifications

	Transmission cables (Li)	MA Remote controller cables
Type of cable	Shielded cables (2-core) CVVS, CPEVS, and MVVS	2-core cable VCTF, VCTFK, CVV, VVR, VVF, or VCT
Cable size	Larger than 1.25 mm ² [AWG16], or ø1.2 mm or above	0.3 to 1.25 mm ² [AWG22 to 16] *1
Maximum overall line length	Refer to 11-3-3.	200 m [656 ft]

*1 The use of cables that are smaller than 0.75 mm² (AWG18) is recommended for easy handling.

CVVS, MVVS: PVC insulated PVC sheathed shielded control cable

CPEVS: PE insulated PVC sheathed shielded communication cable

CVV: PVC insulated PVC sheathed control cable

11-2. System configuration restrictions

11-2-1. Common restrictions for the CITY MULTI system

For each Outdoor/Heat source unit, the maximum connectable quantity of Indoor unit is specified at its Specifications table.

- A) 1 Group of Indoor units can have 1-16 Indoor units;
- B) Maximum 2 remote controllers for 1 group;
- C) 1 LOSSNAY unit can interlock maximum 16 Indoor units; 1 Indoor unit can interlock only 1 LOSSNAY unit.
- D) Maximum 3 System controllers are connectable when connecting to TB3 of the Outdoor/Heat source unit.
- E) A maximum of 6 system controller are connectable to TB3 and TB7 of Outdoor/Heat source unit.
- F) 4 System controllers or more are connectable when connecting to TB7 of the Outdoor/Heat source unit, if the transmission power is supplied by the power supply unit PAC-SC51KUA.

*System controller connected as described in D) would have a risk that the failure of connected Outdoor/Heat source unit would stop power supply to the System controller.

11-2-2. Ensuring proper communication power and the number of connected units for M-NET

In order to ensure proper communication among Outdoor/Heat source unit, Indoor unit, LOSSNAY, and Controllers, the transmission power situation for the M-NET should be observed. In some cases, Transmission booster should be used. Taking the power consumption of Indoor unit as 1, the equivalent power consumption or supply of others are listed at Table 1 and Table 2.

Both the transmission line for centralized controller and indoor-outdoor transmission line must meet the conditions listed below. (Both conditions a) and b) must be met.)

a) [Total equivalent power consumption] ≤ [The equivalent power supply]

b) [Total equivalent number of units (Table1)] ≤ [40] *1*2

*1 [40-2] when one or more BC controllers are connected.

*2 [40-1] when one or more shut off valve kits are connected.

Table 1 The equivalent power consumption and the equivalent number of units

Category	Model	The equivalent power consumption	The equivalent number of units
Indoor unit	Sized M04-M96	1	1
BC controller	CMB-M104, 106, 108, 1012NU-MA-SV CMB-M104, 108NU-MB-SV	0.75	1
Shut off valve kit	CMR-M100KT-NA	0.75	1
MA remote controller/LOSSNAY	PAR-CT01MAU PAR-42MAAUB PAR-41MAAU PAR-40MAAU PAC-YT53CRAU PAR-FA32MA LGH-F-RX ₅ -E1 LGH-F-RVX-E LGH-FRVX2-E LGH-FRVXT2-E PZ-60DR-E PZ-61DR-E PZ-62DR-EA PZ-43SMF-E	0	0
System controller	AE-C400A/EW-C50A	0	0
	PAC-YG60MCA PAC-YG66DCA PAC-YG63MCA	0.25	1
ON/OFF controller	PAC-YT40ANRA	1	1
MN converter	CMS-MNG-E	2	1
Outdoor/Heat source unit	TB7 power consumption	0	0
A-M converter	PAC-IF01MNT-E	1	2

Table 2 The equivalent power supply

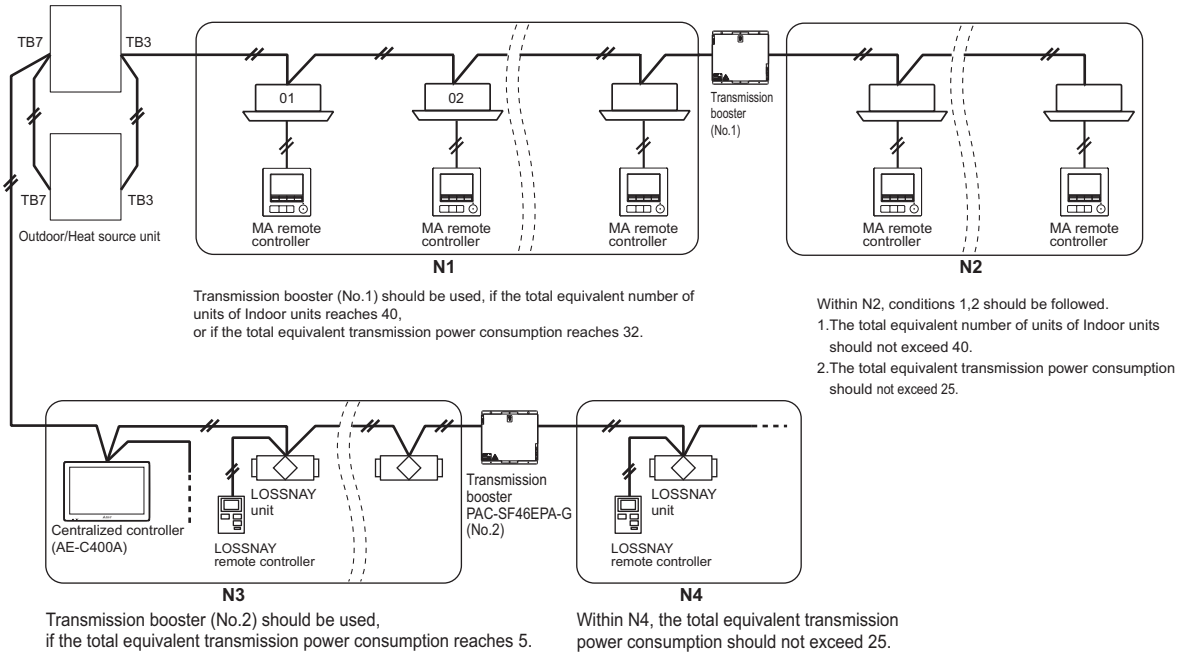
Category	Model	The equivalent power supply		
Transmission Booster	PAC-SF46EPA-G	25		
Power supply unit	PAC-SC51KUA	5		
BM ADAPTER	BACS-AP50E	0.75		
System controller	AE-C400A/EW-C50A	0.75		
Outdoor/Heat source unit		TB3 and TB7 total	TB7 only	TB3 only
	Outdoor unit other than the following units *1	32	6	32 - equivalent power supplied to TB7
	S-Series outdoor unit	12	0	12
	TLMU/TKMU outdoor unit	32	-	32

*1 If PAC-SC51KUA is used to supply power at TB7 side, no power supply need from Outdoor/Heat source unit at TB7, Connector TB3 itself will therefore have 32.

With the equivalent power consumption values and the equivalent number of units in Table 1 and Table 2, PAC-SF46EPA-G can be designed into the air-conditioner system to ensure proper system communication according to (A), (B), (C).

- (A) Firstly, count from TB3 at TB3 side the total equivalent number of units of Indoor units and System controllers. If the total equivalent number of units reaches 40, a PAC-SF46EPA-G should be set.
- (B) Secondly, count from TB7 side to TB3 side the total transmission power consumption. If the total equivalent power supply reaches 32, a PAC-SF46EPA-G should be set. Yet, if a PAC-SC51KUA or another controller with a built-in power supply, such as AE-C400A/EW-C50A, is used to supply power at TB7 side, count from TB3 side only.
- (C) Thirdly, count from TB7 at TB7 side the total transmission power consumption. If the total equivalent power supply for only TB7 reaches 6, a PAC-SF46EPA-G should be set. Also, count from TB7 at TB7 side the total equivalent number of units of System controllers, and so on. If the total equivalent number of units reaches 40, a PAC-SF46EPA-G should be set.

■ System example



11-2-3. Power supply to BM ADAPTER

1-phase 100-240VAC power supply is needed.

The power supply unit PAC-SC51KUA is not necessary when only BM ADAPTER is connected.

Yet, make sure not to remove the connector CN21 from the BM ADAPTER. (BM ADAPTER is shipped with connector CN21 attached.)

11-2-4. Power supply to AE-C400A/EW-C50A

1-phase 100-240VAC power supply is needed.

The power supply unit PAC-SC51KUA is not necessary when connecting only the AE-C400A/EW-C50A.

11-3. Address setting

11-3-1. Switch operation

In order to constitute CITY MULTI in a complete system, switch operation for setting the unit address No. and connection No. is required.

① Address No. of outdoor/heat source unit and indoor unit.

The address No. is set at the address setting board.

In the case of R2 system, it is necessary to set the same No. at the branch No. switch of indoor unit as that of the BC controller connected. (When connecting two or more branches, use the lowest branch No.)

② Caution for switch operations

- Be sure to shut off power source before switch setting. If operated with power source on, switch can not operate properly.
- No units with identical unit address shall exist in one whole air conditioner system. If set erroneously, the system can not operate.

③ MA remote controller

- When connecting only one remote controller to one group, it is always the main remote controller. When connecting two remote controllers to one group, set one remote controller as the main remote controller and the other as the sub remote controller.
- The factory setting is "Main".

PAR-4"x"MAA ("x" represents 0 or later), PAR-CT01MA

The MA remote controller does not have the switches shown above.

Refer to the installation manual for the function setting.

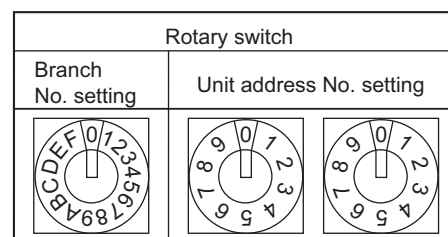
PAC-YT53CRAU

Setting the dip switches

There are switches on the back of the top case. Remote controller Main/Sub and other function settings are performed using these switches. Ordinarily, only change the Main/Sub setting of SW1.

(The factory settings are ON for SW1, 3, and 4 and OFF for SW2.)

SW No	SW contents Main	ON	OFF	Comment
1	Remote controller Main/Sub setting	Main	Sub	Set one of the two remote controllers at one group to "ON".
2	Temperature display units setting	Celsius	Fahrenheit	When the temperature is displayed in [Fahrenheit], set to "OFF".
3	Cooling/heating display in AUTO mode	Yes	No	When you do not want to display "Cooling" and "Heating" in the AUTO mode, set to "OFF".
4	Indoor temperature display	Yes	No	When you do not want to display the indoor temperature, set to "OFF".



11-3-2. Rule of setting address

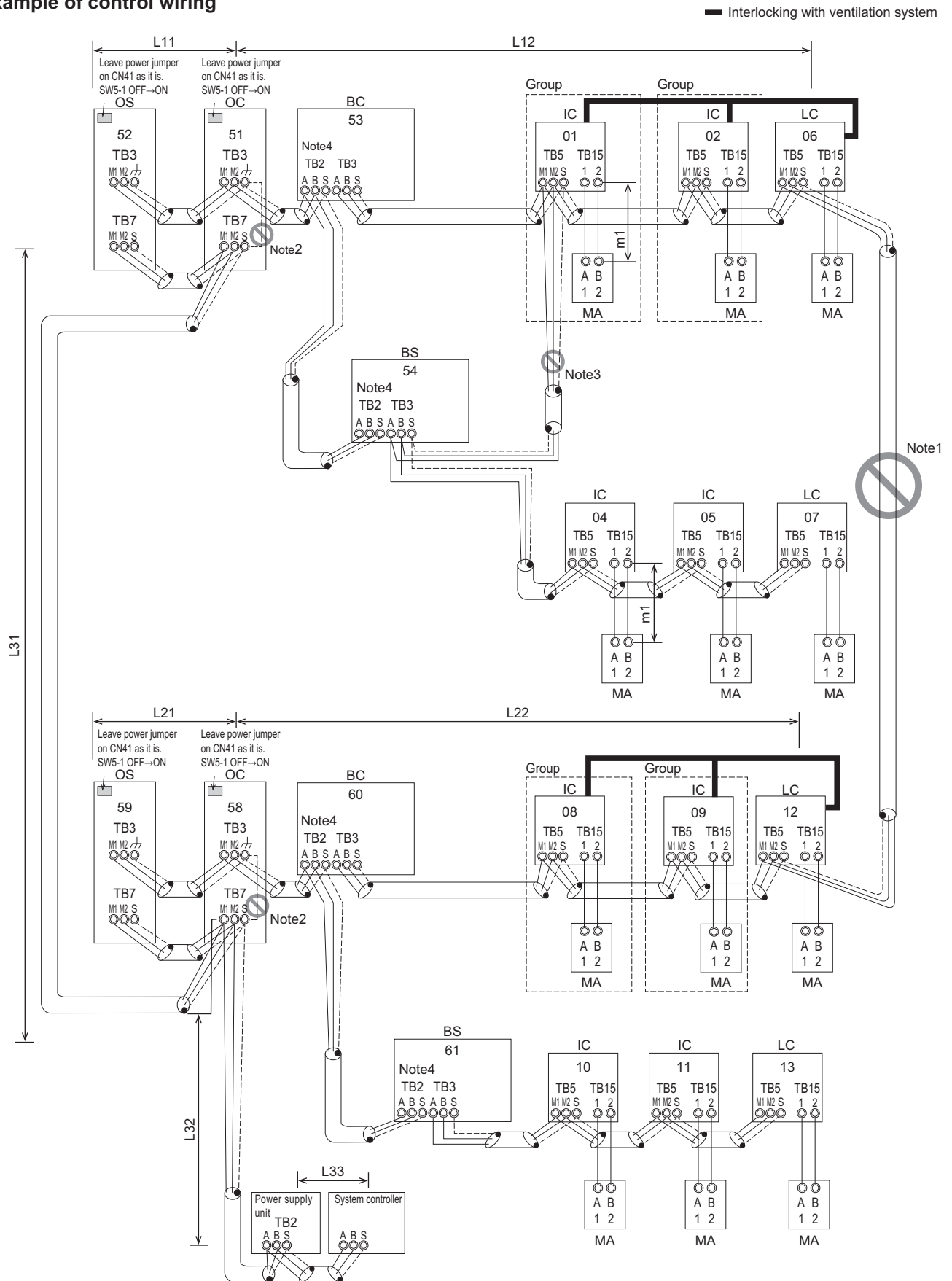
Unit		Address setting	Example	Note
Indoor unit		01 ~ 50	 	Use the most recent address within the same group of indoor units. Assign the smallest address in the group to the main unit. If indoor units with different functions operate in the same group, set the unit with the most functions as the main unit.
Outdoor/Heat source unit		51 ~ 99, 100 (Note1)	 	The smallest address of indoor unit in same refrigerant system + 50 Assign sequential address numbers to the outdoor/heat source units in one refrigerant circuit system. OC and OS are automatically detected. (Note 2) * Please reset one of them to an address between 51 and 99 when two addresses overlap. * The address automatically becomes "100" if it is set as "01~ 50"
BC controller (Main)		51 ~ 99, 100	 	The BC controller address should generally be set to 1 + the address of the outdoor unit and Heat source unit. However, if this would result in it having the same address as another outdoor unit and Heat source unit, set the address between 51 and 100, making sure that it is different from the address of other controllers. * The address automatically becomes "100" if it is set as "01~ 50".
BC controller (Sub)		51 ~ 99, 100	 	
Shut off valve kit		151 ~ 200	 	The smallest address of outdoor/heat source unit in same refrigerant system + 100 * The address automatically becomes "200" if it is set as "01~ 50"
Local remote controller	LOSSNAY Remote controller (Main)	101 ~ 150	1 Fixed  	The smallest address of indoor unit in the group + 100 * The place of "100" is fixed to "1"
	LOSSNAY Remote controller (Sub)	151 ~ 199, 200	1 Fixed  	The address of main remote controller + 50 * The address automatically becomes "200" if it is set as "00"
System controller	ON/OFF remote controller	201 ~ 250	  	The smallest group No. to be managed + 200 * The smallest group No. to be managed is changeable.
	AE-C400A/EW-C50A	000, 201 ~ 250	  	
	BACS-AP50E	000, 201 ~ 250	  	* Settings are made with setting tool of BM ADAPTER.
PI, AI, DIDO	PAC-YG60MCA	01 ~ 50	 	
	PAC-YG63MCA	01 ~ 50	 	
	PAC-YG66DCA	01 ~ 50	 	
LOSSNAY		01 ~ 50	 	After setting the addresses of all the indoor units, assign an arbitrary address.

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

Note2: Outdoor/Heat source 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.

11-3-3. System examples

Example of control wiring



Cautions

- Note1. Do not connect the terminal blocks TB5 on the indoor units that are connected to different heat source units with each other.
- Note2. If a power supply unit is connected, do not connect the ground terminal (⏏) to the shield terminal S on the TB7 terminal block for the centralized control transmission cable.
- Note3. Do not connect the transmission cable terminal block TB3 (indoor unit) of the BC controller to any indoor unit other than the unit connected to the BC controller.
- Note4. Up to two cables can be connected to the transmission cable terminal block TB2 (heat source unit/indoor unit/BC controller) of the BC controller, and one cable can be connected to the transmission cable terminal block TB3 (indoor unit).
- Note5. When a power supply unit is connected to the centralized control transmission cable, leave the power jumper connector on CN41 as it is (factory setting).
- Note6. For information on the maximum number of indoor units or other devices that can be connected, connection requirements, or the need for a transmission booster, refer to the MELANS Centralized Controller Technical Manual.
- Note7. Grouping is not possible between different refrigerant systems or between main BC controller and sub BC controller.

Wiring and address setting

<a. Indoor-heat source transmission cable>

Use shielded cables.

Daisy-chain the following terminals: the M1 and M2 terminals of the indoor-heat source transmission cable terminal block TB3 on the heat source units (OC and OS), the M1 and M2 terminals of the indoor-heat source transmission cable terminal block TB5 on each indoor unit IC that does not require safety measures, and the A and B terminals of the transmission cable terminal block TB2 (heat source unit/indoor unit/BC controller) on each BC controller. (Non-polarized double-wire)

*1 The heat source units (OC and OS) in the same refrigerant circuit system are automatically designated in the order of capacity from large to small. If the OC and OS have the same capacity, the one with the smaller address number is designated as OC, while the one with the larger address number is designated as OS.

[Shielded cable connection]

To ground the shielded cable, daisy-chain the following terminals: the ground terminals of OC and OS, the S terminal of the terminal block on each indoor unit (IC), and the S terminal of the transmission cable terminal block TB2 (heat source unit/indoor unit/BC controller) on each BC controller.

<b. Indoor unit transmission cable>

Use shielded cables.

Daisy-chain the following terminals: the M1 and M2 terminals of the indoor-heat source transmission cable terminal block TB5 on each indoor unit (IC), and the A and B terminals of the transmission cable terminal block TB3 (indoor unit) on the BC controller. (Non-polarized double-wire)

[Shielded cable connection]

To ground the shielded cable, daisy-chain the following terminals: the S terminal of the indoor-heat source transmission cable terminal block TB5 on each indoor unit (IC), and the S terminal of the transmission cable terminal block TB3 (indoor unit) on the BC controller.

<c. Centralized control transmission cable> * Ensure shielded cables are used.

Daisy-chain the following terminals: the A and B terminals of the system controller, the A and B terminals of the terminal block TB2 on the power supply unit, the M1 and M2 terminals of the centralized control transmission cable terminal block TB7 on the heat source unit OC in a different refrigerant circuit system, the M1 and M2 terminals of the centralized control transmission cable terminal block TB7 on the heat source units (OC and OS) *1 in the same refrigerant circuit system.

If a power supply unit is not connected to the centralized control transmission cable, replace the power jumper connector from CN41 to CN40 on the control board of only one of the heat source units.

To connect the system controller, set the central control switch SW5-1 on the control board of all heat source units to "ON".

*1 The heat source units OC and OS in the same refrigerant circuit system are automatically designated in the order of capacity from large to small. If the OC and OS have the same capacity, the one with the smaller address number is designated as OC, while the one with the larger address number is designated as OS.

*2 If TB7 of the heat source units in the same refrigerant circuit system is not daisy-chained, connect the centralized control transmission cable to TB7 of the OC *1.

To maintain centralized control even during an OC failure or a power failure, daisy-chain terminal blocks TB7 of the OC and OS.

*3 When connecting TB7, only commence after checking that the voltage is below 20 VDC.

[Shielded cable connection]

To ground the shielded cable, daisy-chain the following: the system controller, the terminal block TB2 of the power supply unit, and the S terminals of the terminal blocks TB7 on the OC and OS.

Connect the ground terminal (⏏) to the S terminal of terminal block TB7 on the heat source unit whose power jumper connector has been replaced to CN40.

Allowable cable length

<a. Indoor-heat source transmission cable>

Farthest length (1.25 mm² or more)

$L11+L12 \leq 200 \text{ m}$

$L21+L22 \leq 200 \text{ m}$

<b. Centralized control transmission cable>

$L31 + L32 (L21) \leq 200 \text{ m}$

$L33 \leq 200 \text{ m}$

<c. MA remote controller wiring>

Total length (0.3 to 1.25 mm²)

$m1 \leq 200 \text{ m}$

If the MA remote controller PAR-43MAAUB is connected, use a sheathed cable with a cross-sectional area of 0.3 mm².

<d. Farthest length via heat source unit (1.25 mm² or more)>

$L33 + L32 + L31 + L12 (L11) \leq 1000 \text{ m}$

$L33 + L32 + L22 (L21) \leq 1000 \text{ m}$

$L12 (L11) + L31 + L22 (L21) \leq 1000 \text{ m}$

<d. MA remote controller wiring>

Connect the terminals 1 and 2 of the MA remote controller cable terminal block TB15 on the IC to the MA remote controller terminal box (MA).
(Non-polarized double-wire)

[When pairing the remote controllers]

When pairing the remote controllers, connect the terminals 1 and 2 of terminal block TB15 on the IC to the terminal blocks of two MA remote controllers.

For requirements for pairing the remote controllers, refer to "Precautions for installing alarm device (MA remote controller, model name: PAR-43MAAUB or later)" section in the R32 City Multi Technical Manual.

<e. LOSSNAY connection>

Daisy-chain the M1 and M2 terminals of terminal block TB5 on the IC to the indoor-heat source transmission cable terminal block TB5 on the LOSSNAY unit (LC). (Non-polarized double-wire)

*Indoor units must be interlocked with the LOSSNAY unit using the system controller. (Refer to the operation manual for the system controller for the setting method.)

Interlock setting from the remote controller is required if the ON/OFF remote controller alone is connected.

<f. Switch setting>

For address setting, refer to the "Rule of setting address" section.

12-1. R32 Piping material

Refrigerant pipe for CITY MULTI shall be made of phosphorus deoxidized copper.

The maximum operation pressure of R32 air conditioners is 4.30 MPa [623psi]. The refrigerant piping should ensure the safety under the maximum operation pressure. MITSUBISHI ELECTRIC recommends the pipe size in Table1, however, please follow the local industrial standard. Pipes with a radial thickness of 0.7mm or less shall not be used.

Table 1. Copper pipe size and radial thickness for R32 CITY MULTI.

Size [mm (in)]	Minimum wall thickness [mm (in)]
ø6.35 (ø1/4)	0.67 (0.0265)
ø9.52 (ø3/8)	0.72 (0.0285)
ø12.7 (ø1/2)	0.72 (0.0285)
ø15.88 (ø5/8)	0.8 (0.0315)
ø19.05 (ø3/4)	0.98 (0.0385)
ø22.2 (ø7/8)	1.04 (0.0410)
ø25.4 (ø1)	1.17 (0.0460)
ø28.58 (ø1-1/8)	1.17 (0.0460)
ø31.75 (ø1-1/4)	1.28 (0.0505)
ø34.93 (ø1-3/8)	1.28 (0.0505)
ø41.28 (ø1-5/8)	1.41 (0.0555)

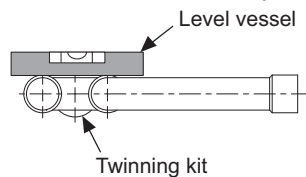
Procedures for installing the branched pipes

Refer to the instructions that came with the branched pipe kit (separately sold) for details.

[1] Branches on the outdoor/heat source-unit side

Note. Refer to the figure below for the installation position of the twinning kit.

The Twinning kit must be installed horizontally using a level vessel to avoid unit damage.



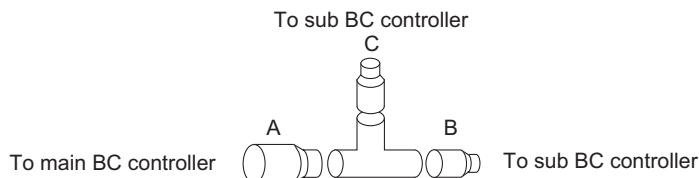
•Minimum length of the straight section of the pipe before the branched pipes

Always use the pipes supplied in the branched kit, and make sure the straight section of the pipe immediately before it connects to the branched pipe is at least 500 mm (19-11/16 in.). Failure to do so may damage the unit.

[2] Branches on the indoor-unit side

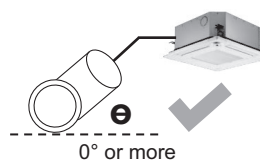
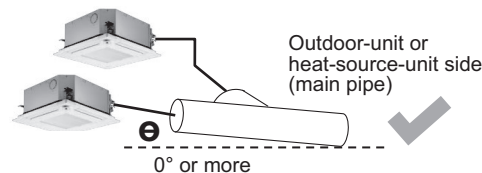
•Restriction on installing the 2-Branch Joint Pipe between main BC and sub BC on the high-pressure piping, low-pressure piping, and liquid piping.

- When using indoor unit of total capacity of 72 or 96, use the joint piping kit (model name: CMY-R170M-E) to connect the units.

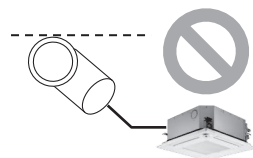


- Regarding the 2-Branch Joint Pipe between main BC and sub BC on the high-pressure/low-pressure/liquid piping, A and B must be installed horizontally, and C must be installed upward higher than the horizontal plane of A and B.

Horizontal installation

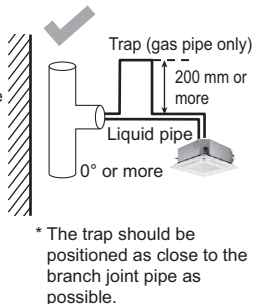
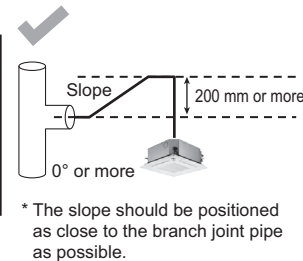
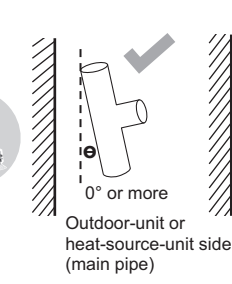
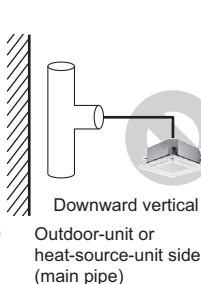
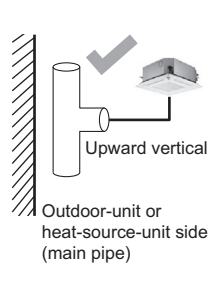


Be careful on return oil.



When installing the branched pipe, do not tilt it with the indoor unit side facing down.

Vertical installation



- When installing outdoor units above indoor units, provide a trap to keep the oil from stagnating in the stopped indoor units. The trap should be positioned as close to the branch joint pipe as possible.

12-2. Piping Design

"BC controller," "BC controller (Main)," and "BC controller (Sub)" that appear in this section refer to the MA type and MB type.

12-2-1. If 12 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 PQRY system.

Note2. Indoor unit sized M72-M96 should be connected to BC controller via Y shape joint CMY-R170M-E.

Note3. Indoor unit sized M72-M96 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" × Number of bent.

Note5. Set DIP-SW 1-1 to ON of BC controller, in case of connected Indoor unit sized M31-M54 with 2 ports.

Note6. Do not connect multiple indoor units to the same port when operating each of them in different mode (cooling, heating, stop, and thermo-off). In case of connecting multiple indoor units to the same port, connecting all indoor units to one remote controller and switching SW1-1 ON in the all connected indoor units (switch to thermostat built in the remote controller) are recommended.

Note7. Indoor capacity is described as its model size. For example, PEFY-M24NMAU, its capacity is M24.

Note8. Total down-stream Indoor capacity is the summary of the model size of Indoors down-stream. For example, PEFY-M24NMAU + PEFY-M06NMAU: Total Indoor capacity = M24 + M06 = M30.

Note9. To connect the BC controller to the main pipe, use the reducer (CMY-R304S-G1).

Note10. Install the pipes correctly referring to the section titled "Procedures for installing the branched pipes."

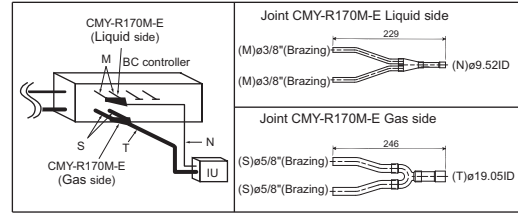


Fig. A

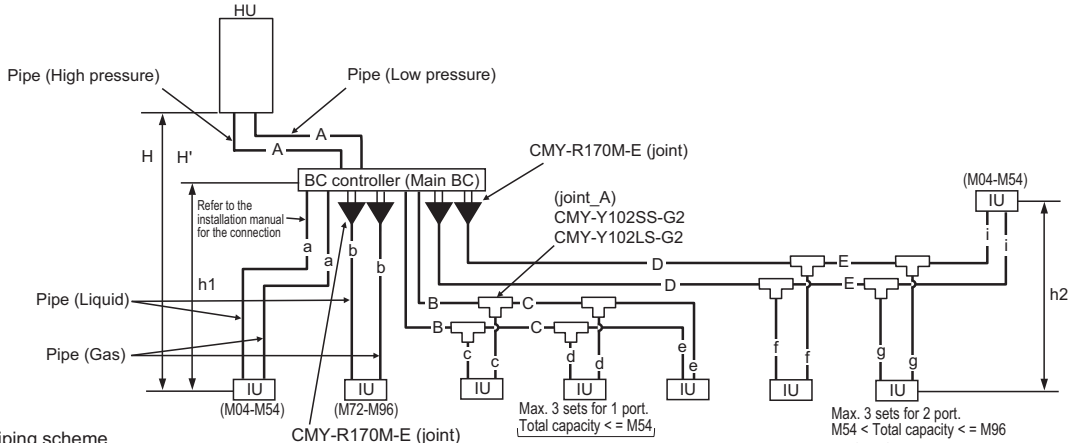


Fig. Piping scheme

Piping length limitation *6

Item	Piping in the figure	Max. length	Max. equivalent length
Total piping length (Total length of high pressure and liquid pipes)	A+B+C+D+E+a+b+c+d+e+f+g+i	*1	-
Farthest IU from HU	A+D+E+i	165 [541]	190 [623]
Distance between HU and BC	A	110 [360] *1	110 [360] *1
Farthest IU from BC controller	D+E+i	60 [196] *2*3	60 [196] *2*3
Height between HU and IU (HU above IU)	H	50 [164]	-
Height between HU and IU (HU under IU)	H'	40 [131] *6	-
Height between IU and BC	h1	15 [49] (10 [32]) *4	-
Height between IU and IU	h2	30 [98] (20 [65]) *5	-

HU: Heat source unit; IU: Indoor Unit; BC: BC controller

*1. Refer to "Total piping length restrictions (m)" / "Total piping length restrictions (ft.)" section.

*2. Details refer to Fig. 1.

*3. When the M72 or M96 model of indoor units are connected to the system, the maximum distance from the BC controller to the farthest indoor unit (indicated as "D + E + i" in the figure) is 40 m [131 ft].

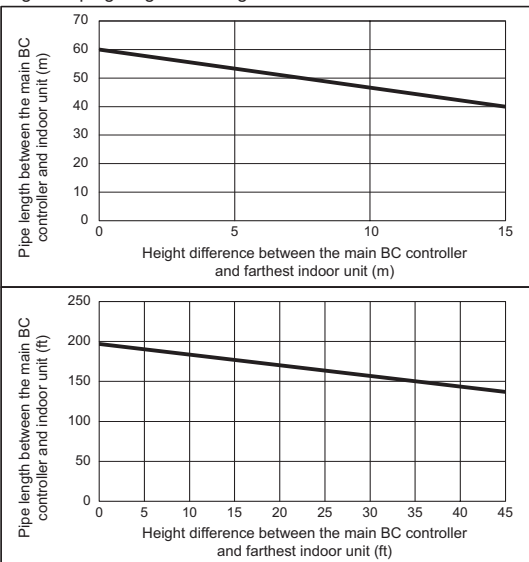
*4. Distance of Indoor sized M72, M96 from BC must be less than 10 m [32 ft], if any.

*5. Distance of Indoor sized M72, M96 from IU must be less than 20 m [65 ft], if any.

Bent equivalent length

Outdoor Model	M (m/bent [ft./bent])
M72T/YXU	0.35 [1.15]
M96T/YXU	0.42 [1.38]
M120T/YXU	0.47 [1.55]
M144T/YXU	0.50 [1.65]
M168T/YXU	0.50 [1.65]
M192T/YXU	0.50 [1.65]
M216T/YXU	0.50 [1.65]
M240T/YXU	0.50 [1.65]

Fig. 1 Piping length and height between IU and BC controller



Piping "A" size selection rule

Heat source Model	Pipe(High pressure)	Pipe(Low pressure)
M72T/YXU	ø15.88 [5/8]	ø19.05 [3/4]
M96-120T/YXU	ø19.05 [3/4]	ø22.20 [7/8]
M144-192T/YXU	ø22.20 [7/8]	ø28.58 [1-1/8]
M216T/YXU	ø22.20 [7/8]	ø28.58 [1-1/8]
M240T/YXU	ø22.20 [7/8]	ø34.93 [1-3/8]

Piping "B", "C", "D", "E" size selection rule

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(Gas)
M54 or less	ø9.52 [3/8]	ø15.88 [5/8]
M55-M72	ø9.52 [3/8]	ø19.05 [3/4]
M73-M96	ø9.52 [3/8]	ø22.20 [7/8]

Piping "a", "b", "c", "d", "e", "f", "g", "i" size selection rule

Indoor Unit size	Pipe(Liquid)	Pipe(Gas)
M04-M18	ø6.35 [1/4]	ø12.70 [1/2]
M24-M54	ø9.52 [3/8]	ø15.88 [5/8]
M72	ø9.52 [3/8]	ø19.05 [3/4]
M96	ø9.52 [3/8]	ø22.20 [7/8]

Selection criteria for joints_A

Total down-stream Indoor capacity	Joint
-M72	CMY-Y102SS-G2
M73-M96	CMY-Y102LS-G2

12-2-2. If more than 12 ports are in use, or if there is more than one BC controller in use for one Heat source unit

Note1. No Header usable on PQRY system.

Note2. Indoor unit sized M72-M96 should be connected to BC controller via Y shape joint CMY-R170M-E.

Note3. Indoor unit sized M72-M96 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" × Number of bent.

Note5. Set DIP-SW 1-1 to ON of BC controller, in case of connected Indoor unit sized M31-M54 with 2 ports.

Note6. Do not connect multiple indoor units to the same port when operating each of them in different mode (cooling, heating, stop, and thermo-off). In case of connecting multiple indoor units to the same port, connecting all indoor units to one remote controller and switching SW1-1 ON in the all connected indoor units (switch to thermostat built in the remote controller) are recommended.

Note7. The maximum total capacity of indoor units that can be connected to each sub BC controller CMB-M•NU-MB-SV is 126.

Note8. Indoor capacity is described as its model size. For example, PEFY-M24NMAU, its capacity is M24.

Note9. Total down-stream Indoor capacity is the summary of the model size of Indoors down-stream. For example, PEFY-M24NMAU + PEFY-M06NMAU: Total Indoor capacity = M24 + M06 = M30.

Note10. To connect the BC controller to the main pipe, use the reducer (CMY-R304S-G1).

Note11. To connect the sub BC controller to the main BC controller, use the reducer (CMY-R303S-G1 or CMY-R306S-G).

Note12. Install the pipes correctly referring to the section titled "Procedures for installing the branched pipes."

Note13. Up to 11 sub BC controllers can be connected.

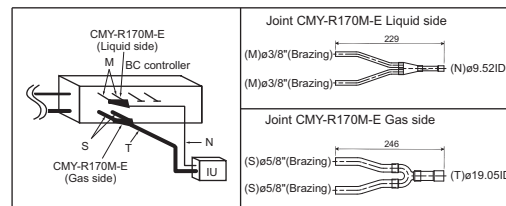


Fig. A

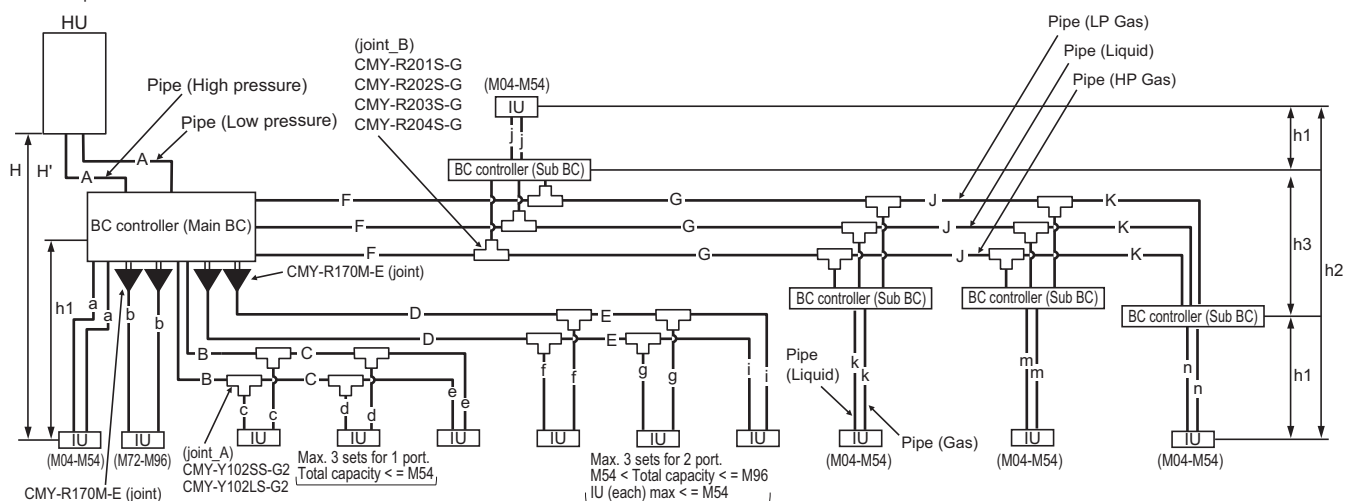


Fig. Piping scheme

HU: Heat source unit, IU: Indoor unit

Piping length limitation *8

(m [ft.])

Item	Piping in the figure	Max. length	Max. equivalent length
Total piping length (Total length of high pressure and liquid pipes)	A+B+C+D+E+F+G+J+K+a+b+c+d+e+f+g+i+j+k+m+n	*1	-
Farthest IU from HU	A+F+G+J+K+n	165 [541]	190 [623]
Distance between HU and BC	A	110 [360] *1	110 [360] *1
Farthest IU from BC controller	D+E+i	60 [196] *2*3	60 [196] *2*3
Farthest IU from BC controller via Sub BC controller	F+G+J+K+n	90 [295] *7	90 [295] *7
Height between HU and IU (HU above IU)	H	50 [164]	-
Height between HU and IU (HU under IU)	H'	40 [131]	-
Height between IU and BC	h1	15 [49] (10 [32]) *4	-
Height between IU and IU	h2	30 [98] (20 [65]) *5	-
Height between BC(Main or Sub) and BC(Sub)	h3	15 [49] (10 [32]) *6	-

HU: Heat source Unit; IU: Indoor Unit; BC: BC controller

*1. Refer to "Total piping length restrictions (m)" / "Total piping length restrictions (ft.)" section.

*2. Details refer to Fig. 2.

*3. When the M72 or M96 model of indoor units are connected to the system, the maximum distance from the BC controller to the farthest indoor unit (indicated as "D + E + i" in the figure) is 40 m [131 ft].

*4. Distance of Indoor sized M72, M96 from BC must be less than 10 m [32 ft], if any.

*5. Distance of Indoor sized M72, M96 from IU must be less than 20 m [65 ft], if any.

*6. When using 2 or more Sub BC controllers, max. height "h3" should be considered.

*7. When the piping length or the vertical separation exceeds the limit specified in Fig. 2, connect a sub BC to the system. The restriction for a system with a sub BC connection is shown in Fig. 3. When a given system configuration falls within the shaded area in Fig. 3, increase the size of the high-pressure pipe and the liquid pipe between the main BC and sub BC by one size. When using M12, M15, M18, M36, or M48 model of indoor units, increase the size of the liquid branch pipe between the sub BC and indoor unit by one size. When using indoor models M54 or larger, the restrictions shown in Fig. 2 cannot be exceeded.

*8. Total length of high-pressure pipes and liquid pipes

*9. The piping length between the BC controller and the indoor unit is subject to restrictions depending on the installation location and the capacity of the indoor unit. For details, refer to the New Design Tool software of Mitsubishi Electric Corporation/the Diamond System Builder software of Mitsubishi Electric Trane HVAC US.

Bent equivalent length

Heat source Model	M(m/bent [ft./bent])
M72T/YXU	0.35 [1.15]
M96T/YXU	0.42 [1.38]
M120T/YXU	0.47 [1.55]
M144T/YXU	0.50 [1.65]
M168T/YXU	0.50 [1.65]
M192T/YXU	0.50 [1.65]
M216T/YXU	0.50 [1.65]
M240T/YXU	0.50 [1.65]

Piping length and height between IU and BC controller

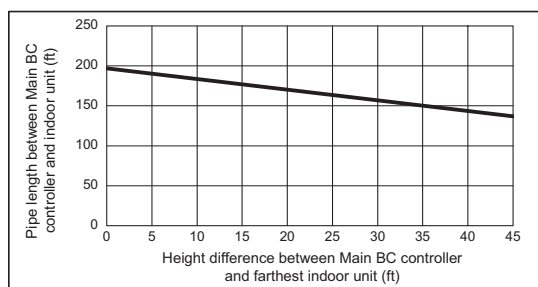


Fig. 2

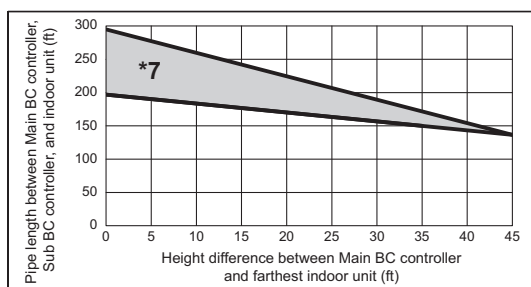
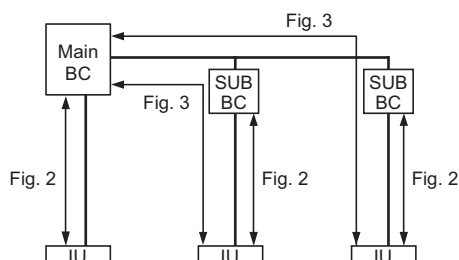


Fig. 3



*7. When the piping length or the vertical separation exceeds the limit specified in Fig. 2, connect a sub BC to the system.

The restriction for a system with a sub BC connection is shown in Fig. 3.

When a given system configuration falls within the shaded area in Fig. 3, increase the size of the high-pressure pipe and the liquid pipe between the main BC and sub BC by one size.

The maximum liquid branch pipe diameter is $\phi 19.05$. If a given system already has a $\phi 19.05$ -pipe between the main BC and sub BC, there is no need to increase the pipe size.

When using M12, M15, M18, M36, or M48 model of indoor units, increase the size of the liquid branch pipe between the sub BC and indoor unit by one size.

When using indoor models M54 or larger, the restrictions shown in Fig. 2 cannot be exceeded.

Piping "A" size selection rule

(mm [in.])

Heat source Model	Pipe(High pressure)	Pipe(Low pressure)
M72T/YXU	$\phi 15.88$ [5/8]	$\phi 19.05$ [3/4]
M96-120T/YXU	$\phi 19.05$ [3/4]	$\phi 22.20$ [7/8]
M144-192T/YXU	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M216T/YXU	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M240T/YXU	$\phi 22.20$ [7/8]	$\phi 34.93$ [1-3/8]

Selection criteria for joints_A

Total down-stream Indoor capacity	Joint
-M72	CMY-Y102SS-G2
M73-M96	CMY-Y102LS-G2

Selection criteria for joints_B

Total down-stream Indoor capacity	Joint
-M126	CMY-R201S-G
M127-M216	CMY-R202S-G
M217-M234	CMY-R203S-G
M235-	CMY-R204S-G

Piping "B", "C", "D", "E" size selection rule

(mm [in.])

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(Gas)
M54 or less	$\phi 9.52$ [3/8]	$\phi 15.88$ [5/8]
M55-M72	$\phi 9.52$ [3/8]	$\phi 19.05$ [3/4]
M73-M96	$\phi 9.52$ [3/8]	$\phi 22.20$ [7/8]

Piping "a", "b", "c", "d", "e", "f", "g", "i", "j", "k", "m", "n" size selection rule (mm [in.])

Indoor Unit size	Pipe(Liquid)	Pipe(Gas)
M04-M18	$\phi 6.35$ [1/4]	$\phi 12.70$ [1/2]
M24-M54	$\phi 9.52$ [3/8]	$\phi 15.88$ [5/8]
M72	$\phi 9.52$ [3/8]	$\phi 19.05$ [3/4]
M96	$\phi 9.52$ [3/8]	$\phi 22.20$ [7/8]

Piping "F", "G", "J", "K" size selection rule

(mm [in.])

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(HP Gas)	Pipe(LP Gas)
M72 or less	$\phi 9.52$ [3/8]	$\phi 15.88$ [5/8]	$\phi 19.05$ [3/4]
M73 to M108	$\phi 9.52$ [3/8]	$\phi 19.05$ [3/4]	$\phi 22.20$ [7/8]
M109 to M126	$\phi 12.70$ [1/2]	$\phi 19.05$ [3/4]	$\phi 28.58$ [1-1/8]
M127 to M144	$\phi 12.70$ [1/2]	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M145 to M216	$\phi 15.88$ [5/8]	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M217 to M234	$\phi 15.88$ [5/8]	$\phi 28.58$ [1-1/8]	$\phi 28.58$ [1-1/8]
M235 to M288	$\phi 19.05$ [3/4]	$\phi 28.58$ [1-1/8]	$\phi 34.93$ [1-3/8]
M289 or above	$\phi 19.05$ [3/4]	$\phi 28.58$ [1-1/8]	$\phi 41.28$ [1-5/8]

HP: High pressure, LP: Low pressure

12-2-3. If more than 12 ports are in use, or if there is more than one BC controller in use for two Heat source units

Note1. No Header usable on PQRY system.

Note2. Indoor unit sized M72-M96 should be connected to BC controller via Y shape joint CMY-R170M-E.

Note3. Indoor unit sized M72-M96 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" × Number of bent.

Note5. Set DIP-SW 1-1 to ON of BC controller, in case of connected Indoor unit sized M31-M54 with 2 ports.

Note6. Do not connect multiple indoor units to the same port when operating each of them in different mode (cooling, heating, stop, and thermo-off). In case of connecting multiple indoor units to the same port, connecting all indoor units to one remote controller and switching SW1-1 ON in the all connected indoor units (switch to thermostat built in the remote controller) are recommended.

Note7. The maximum total capacity of indoor units that can be connected to each sub BC controller CMB-M-NU-MB-SV is 126.

Note8. Indoor capacity is described as its model size. For example, PEFY-M24NMAU, its capacity is M24.

Note9. Total down-stream Indoor capacity is the summary of the model size of Indoors down-stream. For example, PEFY-M24NMAU + PEFY-M06NMAU: Total Indoor capacity = M24 + M06 = M30.

Note10. To connect the BC controller to the main pipe, use the reducer (CMY-R304S-G1).

Note11. To connect the sub BC controller to the main BC controller, use the reducer (CMY-R303S-G1 or CMY-R306S-G).

Note12. Install the pipes correctly referring to the section titled "Procedures for installing the branched pipes."

Note13. Up to 11 sub BC controllers can be connected.

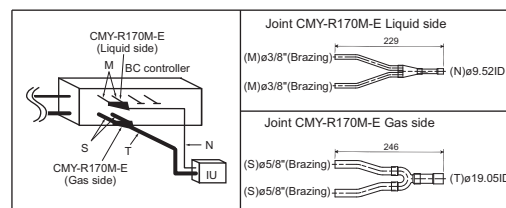


Fig. A

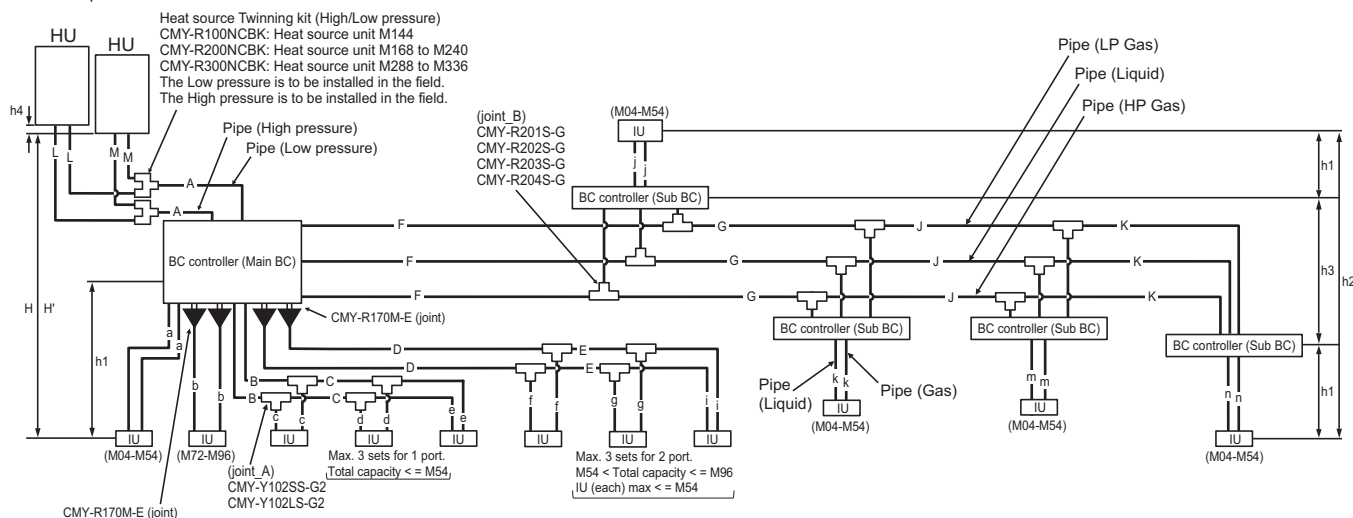


Fig. Piping scheme

HU: Heat source unit, IU: Indoor unit

Piping length limitation *8

Item	Piping in the figure	Max. length	Max. equivalent length (m [ft.])
Total piping length (Total length of high pressure and liquid pipes)	$L+M+A+B+C+D+E+F+G+J+K+A+b+c+d+e+f+g+i+j+k+m+n$	*1	-
Farthest IU from HU	$L(M)+A+F+G+J+K+n$	165 [541]	190 [623]
Distance between HU and BC	$L(M)+A$	110 [360] *1	110 [360] *1
Farthest IU from BC controller	$D+E+i$	60 [196] *2 *3	60 [196] *2*3
Farthest IU from BC controller via Sub BC controller	$F+G+J+K+n$	90 [295] *7	90 [295] *7
Height between HU and IU (HU above IU)	H	50 [164]	-
Height between HU and IU (HU under IU)	H'	40 [131]	-
Height between IU and BC	h1	15 [49] (10 [32]) *4	-
Height between IU and IU	h2	30 [98] (20 [65]) *5	-
Height between BC(Main or Sub) and BC(Sub)	h3	15 [49] (10 [32]) *6	-
Distance between Main unit and Sub unit	L+M	5 [16]	-
Height between Main unit and Sub unit	h4	0.1 [0.3]	-

HU: Heat source Unit; IU: Indoor Unit; BC: BC controller

*1. Refer to "Total piping length restrictions (m)" / "Total piping length restrictions (ft.)" section.

*2. Details refer to Fig. 2.

*3. When the M72 or M96 model of indoor units are connected to the system, the maximum distance from the BC controller to the farthest indoor unit (indicated as "D + E + i" in the figure) is 40 m [131 ft].

*4. Distance of Indoor sized M72, M96 from BC must be less than 10 m [32 ft], if any.

*5. Distance of Indoor sized M72, M96 from IU must be less than 20 m [65 ft], if any.

*6. When using 2 or more Sub BC controllers, max. height "h3" should be considered.

*7. When the piping length or the vertical separation exceeds the limit specified in Fig. 2, connect a sub BC to the system.

The restriction for a system with a sub BC connection is shown in Fig. 3.

When a given system configuration falls within the shaded area in Fig. 3, increase the size of the high-pressure pipe and the liquid pipe between the main BC and sub BC by one size.

When using M12, M15, M18, M36, or M48 model of indoor units, increase the size of the liquid branch pipe between the sub BC and indoor unit by one size.

When using indoor models M54 or larger, the restrictions shown in Fig. 2 cannot be exceeded.

*8. Total length of high-pressure pipes and liquid pipes

*9. The piping length between the BC controller and the indoor unit is subject to restrictions depending on the installation location and the capacity of the indoor unit.

For details, refer to the New Design Tool software of Mitsubishi Electric Corporation/the Diamond System Builder software of Mitsubishi Electric Trane HVAC US.

Bent equivalent length

Heat source Model	M(m/bent [ft./bent])
M144T/YSXU	0.50 [1.65]
M168T/YSXU	0.50 [1.65]
M192T/YSXU	0.50 [1.65]
M216T/YSXU	0.50 [1.65]
M240T/YSXU	0.50 [1.65]
M288T/YSXU	0.70 [2.30]
M312T/YSXU	0.70 [2.30]
M336T/YSXU	0.80 [2.63]

Piping length and height between IU and BC controller

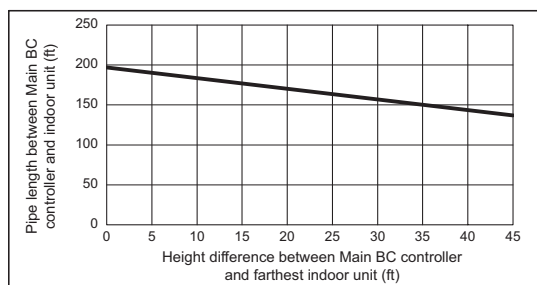


Fig. 2

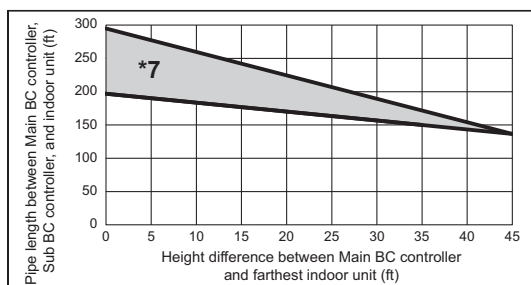
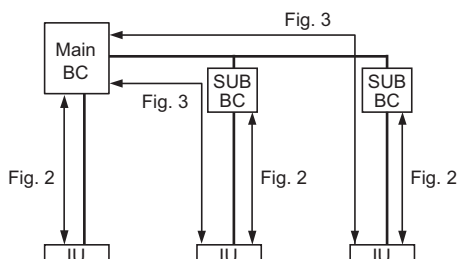


Fig. 3



*7. When the piping length or the vertical separation exceeds the limit specified in Fig. 2, connect a sub BC to the system.

The restriction for a system with a sub BC connection is shown in Fig. 3.

When a given system configuration falls within the shaded area in Fig. 3, increase the size of the high-pressure pipe and the liquid pipe between the main BC and sub BC by one size.

The maximum liquid branch pipe diameter is $\phi 19.05$. If a given system already has a $\phi 19.05$ -pipe between the main BC and sub BC, there is no need to increase the pipe size.

When using M12, M15, M18, M36, or M48 model of indoor units, increase the size of the liquid branch pipe between the sub BC and indoor unit by one size.

When using indoor models M54 or larger, the restrictions shown in Fig. 2 cannot be exceeded.

Piping "A" size selection rule

(mm [in.])

Heat source Model	Pipe(High pressure)	Pipe(Low pressure)
M144-192T/YSXU	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M216T/YSXU	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M240T/YSXU	$\phi 22.20$ [7/8]	$\phi 34.93$ [1-3/8]
M288-312T/YSXU	$\phi 28.58$ [1-1/8]	$\phi 34.93$ [1-3/8]
M336T/YSXU	$\phi 28.58$ [1-1/8]	$\phi 41.28$ [1-5/8]

Piping "L", "M" size selection rule

(mm [in.])

Heat source Model	Pipe(High pressure)	Pipe(Low pressure)
M72T/YXU	$\phi 15.88$ [5/8]	$\phi 19.05$ [3/4]
M96T/YXU	$\phi 19.05$ [3/4]	$\phi 22.20$ [7/8]
M120T/YXU	$\phi 19.05$ [3/4]	$\phi 22.20$ [7/8]
M144T/YXU	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M168T/YXU	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]

Piping "B", "C", "D", "E" size selection rule

(mm [in.])

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(Gas)
M54 or less	$\phi 9.52$ [3/8]	$\phi 15.88$ [5/8]
M55-M72	$\phi 9.52$ [3/8]	$\phi 19.05$ [3/4]
M73-M96	$\phi 9.52$ [3/8]	$\phi 22.20$ [7/8]

Selection criteria for joints_A

Total down-stream Indoor capacity	Joint
-M72	CMY-Y102SS-G2
M73-M96	CMY-Y102LS-G2

Piping "a", "b", "c", "d", "e", "f", "g", "i", "j", "k", "m", "n" size selection rule (mm [in.])

Indoor Unit size	Pipe(Liquid)	Pipe(Gas)
M04-M18	$\phi 6.35$ [1/4]	$\phi 12.70$ [1/2]
M24-M54	$\phi 9.52$ [3/8]	$\phi 15.88$ [5/8]
M72	$\phi 9.52$ [3/8]	$\phi 19.05$ [3/4]
M96	$\phi 9.52$ [3/8]	$\phi 22.20$ [7/8]

Selection criteria for joints_B

Total down-stream Indoor capacity	Joint
-M126	CMY-R201S-G
M127-M216	CMY-R202S-G
M217-M234	CMY-R203S-G
M235-	CMY-R204S-G

Piping "F", "G", "J", "K" size selection rule

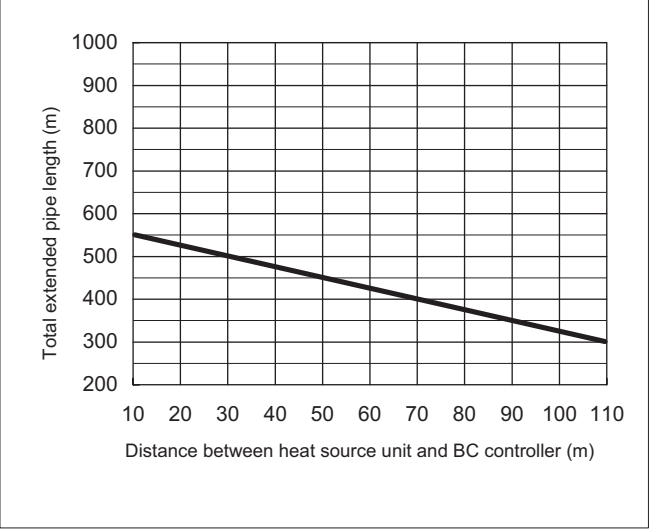
(mm [in.])

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(HP Gas)	Pipe(LP Gas)
M72 or less	$\phi 9.52$ [3/8]	$\phi 15.88$ [5/8]	$\phi 19.05$ [3/4]
M73 to M108	$\phi 9.52$ [3/8]	$\phi 19.05$ [3/4]	$\phi 22.20$ [7/8]
M109 to M126	$\phi 12.70$ [1/2]	$\phi 19.05$ [3/4]	$\phi 28.58$ [1-1/8]
M127 to M144	$\phi 12.70$ [1/2]	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M145 to M216	$\phi 15.88$ [5/8]	$\phi 22.20$ [7/8]	$\phi 28.58$ [1-1/8]
M217 to M234	$\phi 15.88$ [5/8]	$\phi 28.58$ [1-1/8]	$\phi 28.58$ [1-1/8]
M235 to M288	$\phi 19.05$ [3/4]	$\phi 28.58$ [1-1/8]	$\phi 34.93$ [1-3/8]
M289 or above	$\phi 19.05$ [3/4]	$\phi 28.58$ [1-1/8]	$\phi 41.28$ [1-5/8]

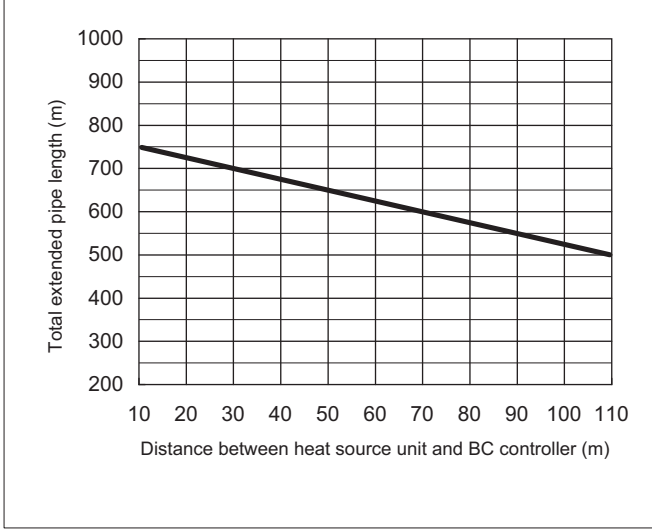
HP: High pressure, LP: Low pressure

12-2-4. Total piping length restrictions (m)

[PQRY-M72, 96, 120TXU/YXU]



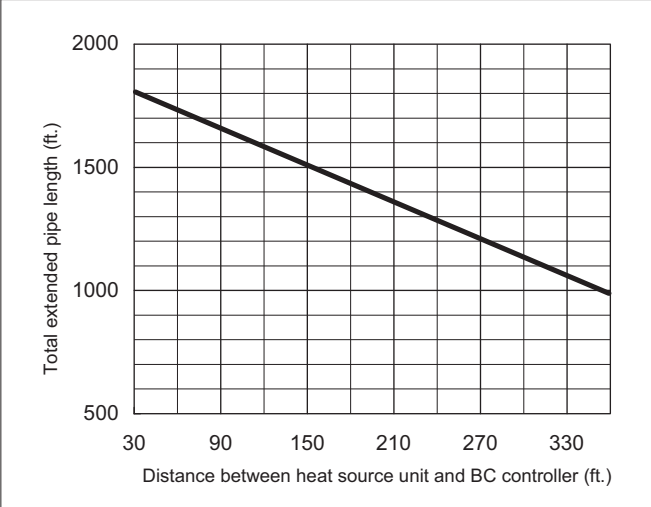
[PQRY-M144, 168, 192, 216, 240TXU/YXU]
[PQRY-M144, 168, 192, 216, 240, 288, 312, 336TSXU/YSXU]



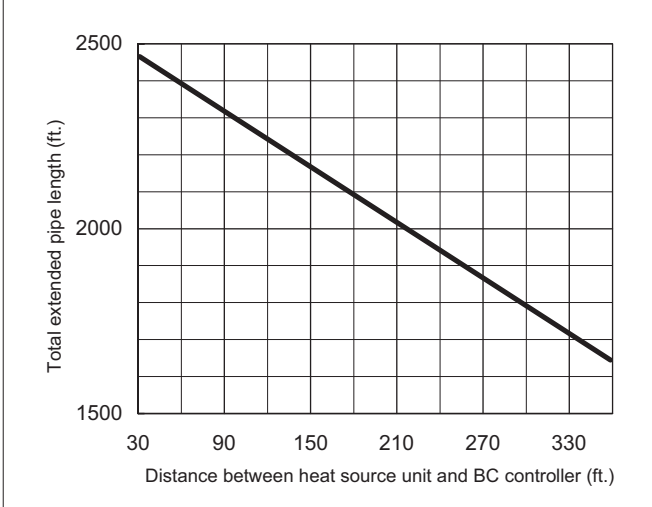
PQRY-M-T(s)XU-A, Y(s)XU-A

Total piping length restrictions (ft.)

[PQRY-M72, 96, 120TXU/YXU]



[PQRY-M144, 168, 192, 216, 240TXU/YXU]
[PQRY-M144, 168, 192, 216, 240, 288, 312, 336TSXU/YSXU]



12-3. Refrigerant charging calculation

At the time of shipping, the heat source unit is charged with the refrigerant. As this charge does not include the amount needed for extended piping, additional charging for each refrigerant line will be required on site. In order that future servicing may be properly provided, always keep a record of the size and length of each refrigerant line and the amount of additional charge by writing it in the space provided on the heat source unit.

■ Calculation of additional refrigerant charge

- The amount of refrigerant to be added depends on the size and the total length of the high-pressure piping and liquid piping.
- Calculate the amount of refrigerant to be charged according to the formula below.
- Round up the calculation result to the nearest 0.1 kg (0.1 oz).
- The refrigerant amount in the high-pressure piping between the main and sub BC is not included in the calculation of the total additional refrigerant amount.

<Additional Charge>

(1) Units "m" and "kg" (In an WR2 system)

<Formula>

- When the piping length from the heat source unit to the farthest indoor unit is 30.5 m (100 ft) or shorter

Amount of additional charge (kg)	=	High-pressure pipe ø28.58 total length × 0.32 (kg/m)	+	High-pressure pipe ø22.2 total length × 0.20 (kg/m)	+	High-pressure pipe ø19.05 total length × 0.14 (kg/m)	+	High-pressure pipe ø15.88 total length × 0.099 (kg/m)																																	
	+	Liquid pipe ø19.05 total length × 0.26 (kg/m)	+	Liquid pipe ø15.88 total length × 0.17 (kg/m)	+	Liquid pipe ø12.7 total length × 0.11 (kg/m)	+	Liquid pipe ø9.52 total length × 0.054 (kg/m)	Liquid pipe ø6.35 total length × 0.020 (kg/m)																																
	+	<table><tr><td>Main or sub BC controller</td><td>Amount (kg/unit)</td></tr><tr><td>MA-type</td><td>3.1</td></tr><tr><td>MB-type</td><td>0.8</td></tr></table>		Main or sub BC controller	Amount (kg/unit)	MA-type	3.1	MB-type	0.8	<table><tr><td>Total capacity of connected indoor units</td><td>All amount (kg) (to be added for indoor unit)</td></tr><tr><td>27 or below</td><td>1.8</td></tr><tr><td>28 to 54</td><td>2.3</td></tr><tr><td>55 to 126</td><td>2.7</td></tr><tr><td>127 to 144</td><td>3.2</td></tr><tr><td>145 to 180</td><td>4.1</td></tr><tr><td>181 to 234</td><td>4.5</td></tr><tr><td>235 to 273</td><td>5.4</td></tr><tr><td>274 to 307</td><td>7.2</td></tr><tr><td>308 to 342</td><td>8.1</td></tr><tr><td>343 to 411</td><td>9.0</td></tr><tr><td>412 to 450</td><td>10.8</td></tr><tr><td>451 or above</td><td>12.6</td></tr></table>						Total capacity of connected indoor units	All amount (kg) (to be added for indoor unit)	27 or below	1.8	28 to 54	2.3	55 to 126	2.7	127 to 144	3.2	145 to 180	4.1	181 to 234	4.5	235 to 273	5.4	274 to 307	7.2	308 to 342	8.1	343 to 411	9.0	412 to 450	10.8	451 or above	12.6
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*If the following (1) and (2) are met, add 0.46 kg (17 oz) of refrigerant per indoor unit.

(1) When only PEFY-M18/M24/M30NMAU-A are connected

(2) When the total number of connected indoor units is 6 or less

*When connecting PLFY-EM18/24/36NEMU-A, add 0.61 kg (22 oz) of refrigerant per indoor unit.

- When the piping length from the heat source unit to the farthest indoor unit is longer than 30.5 m (100 ft)

Amount of additional charge (kg)	=	High-pressure pipe ø28.58 total length × 0.30 (kg/m)	+	High-pressure pipe ø22.2 total length × 0.19 (kg/m)	+	High-pressure pipe ø19.05 total length × 0.13 (kg/m)	+	High-pressure pipe ø15.88 total length × 0.090 (kg/m)		
	+	Liquid pipe ø19.05 total length × 0.24 (kg/m)	+	Liquid pipe ø15.88 total length × 0.16 (kg/m)	+	Liquid pipe ø12.7 total length × 0.10 (kg/m)	+	Liquid pipe ø9.52 total length × 0.050 (kg/m)	+	Liquid pipe ø6.35 total length × 0.018 (kg/m)
	+	Main or sub BC controller		Amount (kg/unit)		Total capacity of connected indoor units		All amount (kg) (to be added for indoor unit)		
		MA-type		3.1		27 or below		1.8		
		MB-type		0.8		28 to 54		2.3		
						55 to 126		2.7		
						127 to 144		3.2		
						145 to 180		4.1		
						181 to 234		4.5		
						235 to 273		5.4		
						274 to 307		7.2		
						308 to 342		8.1		
						343 to 411		9.0		
						412 to 450		10.8		
						451 or above		12.6		

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- (2) When the total number of connected indoor units is 6 or less

* When connecting PLFY-EM18/24/36NEMU-A, add 0.61 kg (22 oz) of refrigerant per indoor unit.

(2) Units "ft" and "oz" (In an WR2 system)

<Formula>

- When the piping length from the heat source unit to the farthest indoor unit is 30.5 m (100 ft) or shorter

Amount of additional charge (oz)	=	High-pressure pipe ø1-1/8 total length × 3.45 (oz/ft)	+	High-pressure pipe ø7/8 total length × 2.16 (oz/ft)	+	High-pressure pipe ø3/4 total length × 1.51 (oz/ft)	+	High-pressure pipe ø5/8 total length × 1.07 (oz/ft)																																		
	+	Liquid pipe ø3/4 total length × 2.80 (oz/ft)	+	Liquid pipe ø5/8 total length × 1.83 (oz/ft)	+	Liquid pipe ø1/2 total length × 1.19 (oz/ft)	+	Liquid pipe ø3/8 total length × 0.59 (oz/ft)	+	Liquid pipe ø1/4 total length × 0.22 (oz/ft)																																
	+	<table><tr><td>Main or sub BC controller</td><td>Amount (oz/unit)</td></tr><tr><td>MA-type</td><td>110</td></tr><tr><td>MB-type</td><td>29</td></tr></table>		Main or sub BC controller	Amount (oz/unit)	MA-type	110	MB-type	29	<table><tr><td>Total capacity of connected indoor units</td><td>All amount (oz) (to be added for indoor unit)</td></tr><tr><td>27 or below</td><td>64</td></tr><tr><td>28 to 54</td><td>82</td></tr><tr><td>55 to 126</td><td>96</td></tr><tr><td>127 to 144</td><td>113</td></tr><tr><td>145 to 180</td><td>145</td></tr><tr><td>181 to 234</td><td>159</td></tr><tr><td>235 to 273</td><td>191</td></tr><tr><td>274 to 307</td><td>254</td></tr><tr><td>308 to 342</td><td>286</td></tr><tr><td>343 to 411</td><td>318</td></tr><tr><td>412 to 450</td><td>381</td></tr><tr><td>451 or above</td><td>445</td></tr></table>							Total capacity of connected indoor units	All amount (oz) (to be added for indoor unit)	27 or below	64	28 to 54	82	55 to 126	96	127 to 144	113	145 to 180	145	181 to 234	159	235 to 273	191	274 to 307	254	308 to 342	286	343 to 411	318	412 to 450	381	451 or above	445
Main or sub BC controller	Amount (oz/unit)																																									
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* If the following (1) and (2) are met, add 0.46 kg (17 oz) of refrigerant per indoor unit.

- (1) When only PEFY-M18/M24/M30NMAU-A are connected
- (2) When the total number of connected indoor units is 6 or less

* When connecting PLFY-EM18/24/36NEMU-A, add 0.61 kg (22 oz) of refrigerant per indoor unit.

- When the piping length from the heat source unit to the farthest indoor unit is longer than 30.5 m (100 ft)

Amount of additional charge (oz)	=	High-pressure pipe ø1-1/8 total length × 3.23 (oz/ft)	+	High-pressure pipe ø7/8 total length × 2.05 (oz/ft)	+	High-pressure pipe ø3/4 total length × 1.40 (oz/ft)	+	High-pressure pipe ø5/8 total length × 0.97 (oz/ft)	
	+	Liquid pipe ø3/4 total length × 2.59 (oz/ft)	+	Liquid pipe ø5/8 total length × 1.73 (oz/ft)	+	Liquid pipe ø1/2 total length × 1.08 (oz/ft)	+	Liquid pipe ø3/8 total length × 0.54 (oz/ft)	Liquid pipe ø1/4 total length × 0.20 (oz/ft)
	+	Main or sub BC controller		Amount (oz/unit)		Total capacity of connected indoor units		All amount (oz) (to be added for indoor unit)	
		MA-type		110		27 or below		64	
		MB-type		29		28 to 54		82	
						55 to 126		96	
						127 to 144		113	
						145 to 180		145	
						181 to 234		159	
						235 to 273		191	
						274 to 307		254	
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* If the following (1) and (2) are met, add 0.46 kg (17 oz) of refrigerant per indoor unit.

(1) When only PEFY-M18/M24/M30NMAU-A are connected

(2) When the total number of connected indoor units is 6 or less

* When connecting PLFY-EM18/24/36NEMU-A, add 0.61 kg (22 oz) of refrigerant per indoor unit.

■ Sample calculation

Units "m" and "kg"

Indoor	1: 18	A: ø28.58	40 m	a: ø6.35	10 m
	2: 96	B: ø9.52	10 m	b: ø9.52	10 m
	3: 06	C: ø12.7	20 m	c: ø6.35	5 m
	4: 06	D: ø9.52	5 m	d: ø6.35	5 m
	5: 48	E: ø9.52	5 m	e: ø9.52	5 m
	6: 36	F: ø9.52	5 m	f: ø9.52	5 m
	7: 30	G: ø22.2	3 m	g: ø9.52	5 m
	8: 18	H: ø22.2	1 m	h: ø6.35	10 m

Heat source M288

Main BC controller CMB-M108NU-MA-SV

Sub BC controller CMB-M104NU-MB-SV × 4

The total length of each liquid line as follows:

ø28.58: A = 40 m

ø22.2: G = 4 m

ø12.70: C = 20 m

ø9.52: B + D + E + F + b + e + f + g = 50 m

ø6.35: a + c + d + h = 30 m

<Calculation example>

Additional refrigerant charge

= $40 \times 0.30 + 4 \times 0.19 + 20 \times 0.10$ + $50 \times 0.050 + 30 \times 0.018 + 3.1 + 0.8 \times 4 + 5.4$

= 29.5 kg

Units "ft" and "oz"

Indoor	1: 18	A: ø1-1/8	131 ft	a: ø1/4	32 ft
	2: 96	B: ø3/8	32 ft	b: ø3/8	32 ft
	3: 06	C: ø1/2	65 ft	c: ø1/4	16 ft
	4: 06	D: ø3/8	16 ft	d: ø1/4	16 ft
	5: 48	E: ø3/8	16 ft	e: ø3/8	16 ft
	6: 36	F: ø3/8	16 ft	f: ø3/8	16 ft
	7: 30	G: ø7/8	9 ft	g: ø3/8	16 ft
	8: 18	H: ø7/8	3 ft	h: ø1/4	32 ft

Heat source M288

Main BC controller CMB-M108NU-MA-SV

Sub BC controller CMB-M104NU-MB-SV × 4

The total length of each liquid line as follows:

ø1-1/8: A = 131 ft

ø7/8: G = 12 ft

ø1/2: C = 65 ft

ø3/8: B + D + E + F + b + e + f + g = 160 ft

ø1/4: a + c + d + h = 96 ft

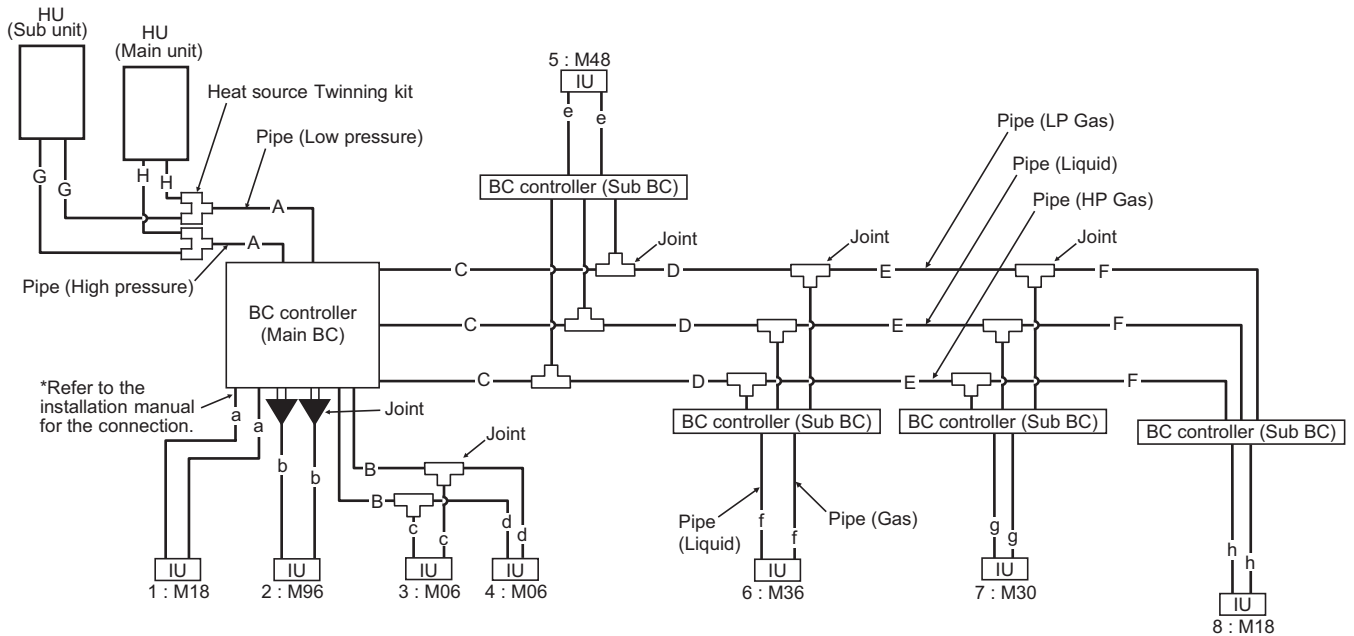
<Calculation example>

Additional refrigerant charge

= $131 \times 3.23 + 12 \times 2.05 + 65 \times 1.08$ + $160 \times 0.54 + 96 \times 0.20 + 110 + 29 \times 4 + 191$

= 1040.6 (1040.53) oz

Sample connection (with 5 BC controllers and 8 indoor units) (PQRY-M288YSXU)



■ Limitation of the amount of refrigerant to be charged

The above calculation result of the amount of refrigerant to be charged must become below the value in the table below.

Total index of the heat source units		M72 T/YXU	M96 T/YXU	M120 T/YXU	M144 T/YXU	M168 T/YXU	M192 T/YXU
Maximum refrigerant charge	Factory charged	4.5 kg	4.5 kg	4.5 kg	4.5 kg	4.5 kg	4.5 kg
	Charged on site	25.7 kg	30.5 kg	31.5 kg	41.8 kg	41.8 kg	41.8 kg
	Total for system	30.2 kg	35.0 kg	36.0 kg	46.3 kg	46.3 kg	46.3 kg
	Factory charged	9 lbs 15 oz	9 lbs 15 oz	9 lbs 15 oz	9 lbs 15 oz	9 lbs 15 oz	9 lbs 15 oz
	Charged on site	56 lbs 11 oz	67 lbs 4 oz	69 lbs 8 oz	92 lbs 3 oz	92 lbs 3 oz	92 lbs 3 oz
	Total for system	66 lbs 10 oz	77 lbs 3 oz	79 lbs 6 oz	102 lbs 2 oz	102 lbs 2 oz	102 lbs 2 oz

Total index of the heat source units		M216 T/YXU	M240 T/YXU	M144 T/YSXU	M168 T/YSXU	M192 T/YSXU	M216 T/YSXU
Maximum refrigerant charge	Factory charged	7.5 kg	7.5 kg	9.0 kg	9.0 kg	9.0 kg	9.0 kg
	Charged on site	38.8 kg	40.9 kg	50.0 kg	51.0 kg	52.0 kg	53.0 kg
	Total for system	46.3 kg	48.4 kg	59.0 kg	60.0 kg	61.0 kg	62.0 kg
	Factory charged	16 lbs 9 oz	16 lbs 9 oz	19 lbs 14 oz	19 lbs 14 oz	19 lbs 14 oz	19 lbs 14 oz
	Charged on site	85 lbs 9 oz	90 lbs 3 oz	110 lbs 4 oz	112 lbs 7 oz	114 lbs 11 oz	116 lbs 14 oz
	Total for system	102 lbs 2 oz	106 lbs 12 oz	130 lbs 2 oz	132 lbs 5 oz	134 lbs 8 oz	136 lbs 11 oz

Total index of the heat source units		M240 T/YSXU	M288 T/YSXU	M312 T/YSXU	M336 T/YSXU
Maximum refrigerant charge	Factory charged	9.0 kg	9.0 kg	9.0 kg	9.0 kg
	Charged on site	55.0 kg	69.0 kg	69.8 kg	69.8 kg
	Total for system	64.0 kg	78.0 kg	78.8 kg	78.8 kg
	Factory charged	19 lbs 14 oz	19 lbs 14 oz	19 lbs 14 oz	19 lbs 14 oz
	Charged on site	121 lbs 5 oz	152 lbs 2 oz	153 lbs 15 oz	153 lbs 15 oz
	Total for system	141 lbs 2 oz	171 lbs 16 oz	173 lbs 12 oz	173 lbs 12 oz

- Both refrigerant overcharge and undercharge will cause problems. Charge the system with the proper amount of refrigerant. Record the added refrigerant amount on the label attached to the control box panel and the spec label for future servicing.

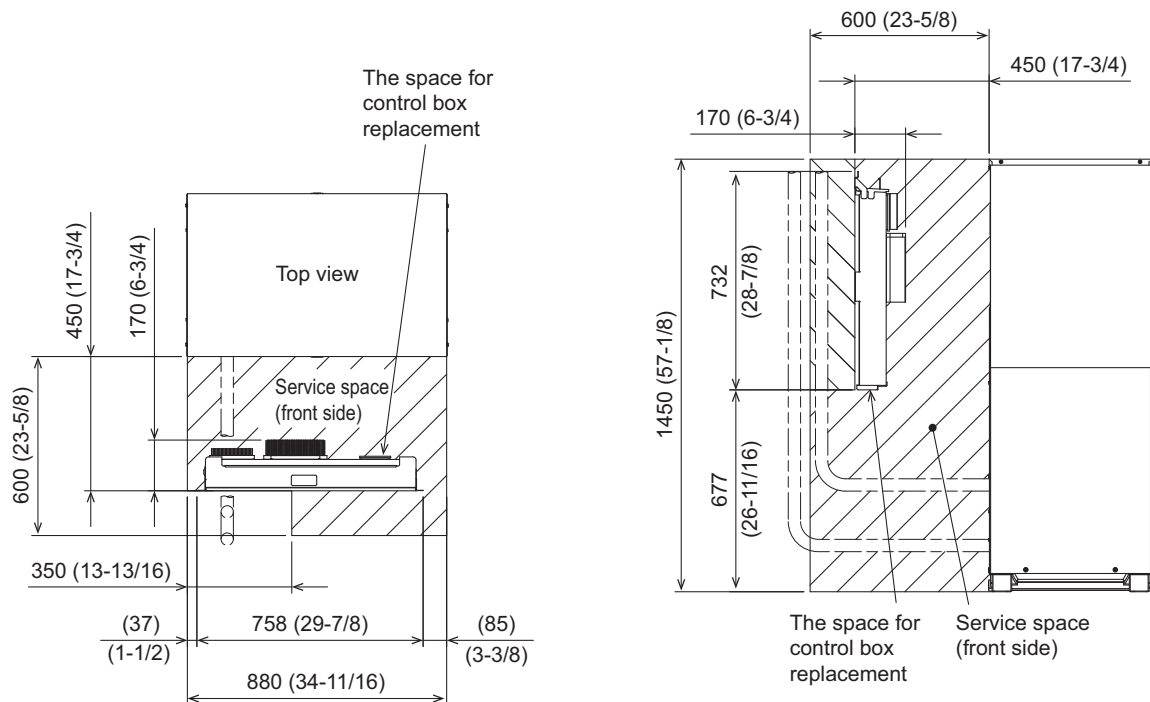
13-1. General requirements for installation

1. If possible, locate the unit to reduce the direct thermal radiation to the unit.
2. Consider the amount of noise the unit produces when choosing an installation location.
Valves and refrigerant flow on the outdoor/heat source unit may generate noise.
3. Avoid sites that may encounter strong winds.
4. Ensure the installation site can bear the weight of the unit.
5. Condensation should be moved away from the unit, particularly in heating mode.
6. Provide enough space for installation and service as shown in section 13-2. Spacing.
7. Avoid sites where acidic solutions or chemical sprays (such as sulfur sprays) are used frequently.
8. The unit should be provided from combustible gas, oil, steam, chemical gas like acidic solution, sulfur gas and so on.

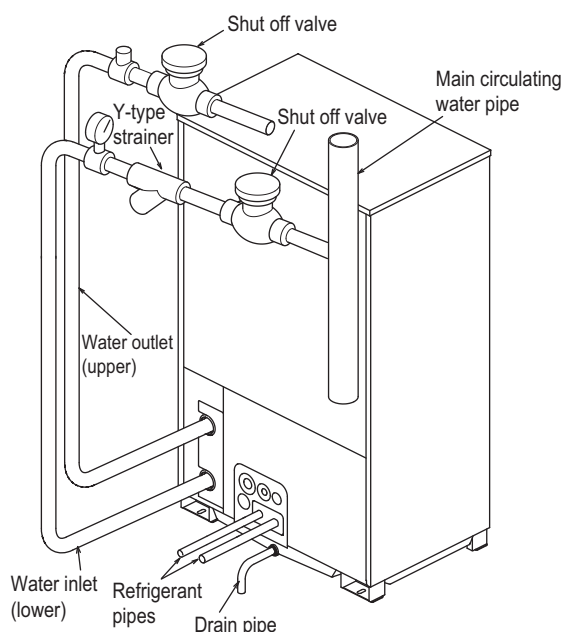
13-2. Spacing

In case of single installation, 600mm or more of back space as front space makes easier access when servicing the unit from rear side.

Unit: mm (in.)



13-3. Piping direction



1. Insulation installation

With City Multi WY/ WR2 Series piping, as long as the temperature range of the inlet water is kept to average temperatures year-round (30°C[86°F] in the summer, 20°C[68°F] in the winter), there is no need to insulate or otherwise protect indoor piping from exposure. You should use insulation in the following situations:

- 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.

2. Water processing and water quality control

To preserve water quality, use the closed type of cooling tower for WY/ WR2. 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

- ① 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/ℓ.

② Water quality standard

Items		Lower mid-range temperature water system		Tendency	
		Recirculating water [20<T<60°C] [68<T<140°F]	Make-up water	Corrosive	Scale-forming
Standard items	pH (25°C)[77°F]	7.0 ~ 8.0	7.0 ~ 8.0	○	○
	Electric conductivity (mS/m) (25°C)[77°F]	30 or less	30 or less	○	○
	(μS/cm) (25°C)[77°F]	[300 or less]	[300 or less]		
	Chloride ion (mg Cl/ℓ)	50 or less	50 or less	○	
	Sulfate ion (mg SO ₄ ²⁻ /ℓ)	50 or less	50 or less	○	
	Acid consumption (pH4.8) (mg CaCO ₃ /ℓ)	50 or less	50 or less		○
	Total hardness (mg CaCO ₃ /ℓ)	70 or less	70 or less		○
	Calcium hardness (mg CaCO ₃ /ℓ)	50 or less	50 or less		○
Reference items	Ionic silica (mg SiO ₂ /ℓ)	30 or less	30 or less		○
	Iron (mg Fe/ℓ)	1.0 or less	0.3 or less	○	○
	Copper (mg Cu/ℓ)	1.0 or less	0.1 or less	○	
	Sulfide ion (mg S ²⁻ /ℓ)	not to be detected	not to be detected	○	
	Ammonium ion (mg NH ₄ ⁺ /ℓ)	0.3 or less	0.1 or less	○	
	Residual chlorine (mg Cl/ℓ)	0.25 or less	0.3 or less	○	
	Free carbon dioxide (mg CO ₂ /ℓ)	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)

- ③ 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.
- ④ 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.

Installation information

1. Installation information 2

 1-1. General precautions 2

 1-2. Precautions for Indoor unit and BC controller 4

 1-3. Precautions for outdoor unit/heat source unit 5

 1-4. Precautions for control-related items 6

* Refer to the enclosed Installation Manual for details on installation. Arrange to have an expert install the system correctly.

1-1. General precautions

1-1-1. Usage

- The air-conditioning system described in this DATA BOOK is designed for human comfort.
- This product is not designed to assist in the preservation of food, provide conditions to maintain plants or animals, or stabilize environments for the preservation of precision equipment or art objects. To prevent loss of quality, do not use the product for purposes other than those it is designed for.
- To reduce the risk of water leakage and electric shock, do not use the product for air-conditioning vehicles or vessels.

1-1-2. Installation environment

- Do not install any unit other than the dedicated unit in an area where the voltage changes significantly, large amounts of mineral oil (e.g., cutting oil) are present, cooking oil may splash, or a large quantity of steam can be generated, such as a kitchen.
- Do not install the unit in acidic or alkaline environments.
- Installation should not be performed in locations exposed to chlorine or other corrosive gases. Avoid installation near sewers.
- To reduce the risk of fire, do not install the unit in an area where flammable gas may leak or flammable material is present.
- This air-conditioning unit has a built-in microcomputer. The effects of noise should be taken into consideration when deciding on the installation position. It is recommended that the air-conditioning unit be installed in a position away from antennas or electronic devices.
- Install the unit on a solid foundation in accordance with local safety measures against typhoons, wind gusts, and earthquakes to prevent the unit from being damaged, toppling over, or falling.

1-1-3. Backup system

- In regions in which the malfunctioning of the air conditioner may have a critical effect, it is recommended to have two or more systems made up of single outdoor/heat source units and multiple indoor units.

1-1-4. Unit characteristics

- The heat pump efficiency of the outdoor unit depends on the outdoor temperature. In heating mode, performance drops as the outside air temperature drops. In cold climates, performance can be poor. Warm air will continue to be trapped near the ceiling and the floor level will remain cold. In such cases, heat pumps require a supplemental heating system or air circulator. Before purchasing, consult your local distributor for assistance in selecting the unit and system.
- When the outdoor temperature is low and the humidity is high, the heat exchanger on the outdoor/heat source unit side tends to collect frost, which reduces its heating performance. The Auto-defrost function will be activated in order to remove the frost, and the heating mode will temporarily stop for 3-10 minutes. Heating mode will automatically resume upon completion of the defrost process.
- An air conditioner with a heat pump requires time to warm up the whole room after the heating operation begins, because the system circulates warm air in order to warm up the whole room.
- Sound levels were obtained in an anechoic room. Sound levels during actual operation are usually higher than the simulated values due to ambient noise and echoes. Refer to the section on "SOUND LEVELS" in the DATA BOOK for the measurement location.
- Depending on the operating conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes even when operating normally. Try to avoid positioning the air conditioner in locations where quietness is required. With regard to the BC/HBC controller, it is recommended that the unit be installed in areas such as corridor ceilings, restrooms and plant rooms.
- The total capacity of the connected indoor units can be greater than the capacity of the outdoor/heat source unit. However, when the connected indoor units operate simultaneously, each unit's capacity may become smaller than the rated capacity.
- When the unit is started up for the first time within 12 hours after the power comes on, i.e. after a power failure, it performs initial startup operation (capacity control operation) to prevent damage to the compressor. The initial startup operation requires a maximum of 90 minutes to complete, depending on the operating load.

1-1-5. Related equipment

- ♦Use an earth leakage breaker (ELB) with medium sensitivity, and an activation speed of 0.1 second or less.
- ♦Consult your local distributor or a qualified technician when installing an earth leakage breaker.
- ♦If the unit is an inverter type, select an earth leakage breaker able to respond to high harmonic waves and surges.
- ♦Leakage current is generated not only through the air-conditioning unit but also through the power wires. The leakage current of the main power supply is therefore greater than the total leakage current of each unit. Take the capacity of the earth leakage breaker or leakage alarm into consideration when installing one at the main power supply. To measure the leakage current simply on site, use a measurement tool equipped with a filter, and clamp all the four power wires together. The leakage current measured on the ground wire may not be accurate because the leakage current from other systems may be included in the measurement value.
- ♦Do not install a phase-advancing capacitor on a unit connected to the same power system as an inverter-type unit and its related equipment.
- ♦If a large current flows due to the malfunctioning of the product or faulty wiring, both the earth leakage breaker on the product side and the upstream overcurrent breaker may trip almost at the same time. Separate the power system or coordinate all the breakers depending on the system's priority level.

1-1-6. Unit installation

- ♦Your local distributor or a qualified technician must read the Installation Manual that is provided with each unit carefully before performing installation work.
- ♦Consult your local distributor or a qualified technician when installing the unit. Improper installation by an unqualified person may result in water leakage, electric shock, or fire.
- ♦Ensure that there is enough space around each unit.

1-1-7. Optional accessories

- ♦Only use accessories recommended by Mitsubishi Electric. Consult your local distributor or a qualified technician when installing them. Improper installation by an unqualified person may result in water leakage, power leakage, system breakdown, or fire.
- ♦Some optional accessories may not be compatible for use with the air-conditioning unit or may not be suitable for the installation conditions. Check the compatibility when considering any accessories.
- ♦Note that some optional accessories may affect the air conditioner's external form, appearance, weight, operating sound, and other characteristics.

1-1-8. Operation/Maintenance

- ♦Read the Instruction Book that is provided with each unit carefully prior to use.
- ♦Maintenance or cleaning of each unit may be risky and require expertise. Read the Instruction Book to ensure safety. Consult your local distributor or a qualified technician when special expertise is required, such as when the indoor unit needs to be cleaned.

1-2. Precautions for Indoor unit and BC controller

1-2-1. Operating environment

- The refrigerant (R410A) used in the air conditioner is non-toxic and nonflammable. However, if the refrigerant leaks, the oxygen level may drop to harmful levels. 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 leaks.
- If the units operate in cooling mode at a humidity above 80%, condensation may collect and drip from the indoor units.
- Regular checking and cleaning of the drain drainage paths, such as the drain pan or the drain pump, is recommended to prevent clogging. The neglect of a clogged drain pump may trigger the water-leakage protection function which stops operation of the entire system.

1-2-2. Unit characteristics

- The return air temperature display on the remote controller may differ from the displays on the other thermometers.
- The clock on the remote controller may be displayed with a time lag of approximately one minute every month.
- The temperature measured by the built-in temperature sensor on the remote controller may differ from the actual room temperature due to the effect of the wall temperature.
- Use the built-in thermostat on the remote controller or a separately-sold thermostat when indoor units installed on or in the ceiling operate the automatic cooling/heating switchover.
- The room temperature may rise drastically due to Thermo OFF in areas where the air-conditioning load is large, such as computer rooms.
- Be sure to use a regular filter. If an irregular filter is installed, the unit may not operate properly, and operating noise may increase.
- The room temperature may increase above the preset temperature in environments in which the heating or air-conditioning load is small.

1-2-3. Unit installation

- The insulation for the low-pressure pipe between the BC controller and the outdoor/heat source unit must be at least 20 mm (13/16 in.) thick. If the unit is installed on the top floor or in a high-temperature, high-humidity environment, thicker insulation may be necessary.
- Do not have any branching points on the downstream of the refrigerant pipe header.
- When a field-supplied external thermistor is installed or when a device for demand control is used, the unit may stop abnormally or damage may occur to the electromagnetic contactor. Consult your local distributor for details.
- When indoor units employ fresh air intake, install a filter in the duct (locally procured) to remove dust from the air.
- The 4-way Cassette Type units that have an outside air inlet can be connected to the duct, but need a booster fan to be installed at site. Refer to the chapter "Indoor Unit" for the available range for fresh air intake volume.
- Employing fresh air intake for the indoor unit may increase the sound pressure level.
- Do not install the unit above the cooking or food processing area.

1-2-4. Noise level (Sound pressure level)

- The sound pressure level is a value measured in an anechoic room in accordance with the conventional method in JIS standard. The sound pressure level actually measured at the installation site is usually higher than the value indicated in this DATA BOOK due to the influence of ambient noise and echoes.

1-3. Precautions for outdoor unit/heat source unit

1-3-1. Installation environment

- ♦The outdoor unit with the salt-resistant specification is recommended for use in an area in which it will be exposed to salt air.
 - ♦Even when the unit with the salt-resistant specification is used, it is not completely protected against corrosion. Be sure to follow the directions or precautions described in the Instruction Book and Installation Manual for installation and maintenance. The salt-resistant specification is referred to in the guidelines published by JRAIA (JRA9002).
 - ♦Install the unit in an area where the flow of discharge air is not obstructed. If the flow of discharge air is obstructed, short-cycling of discharge air may occur.
 - ♦Provide proper drainage around the base of the units; condensation may collect and drip from outdoor units. Provide water-proofing protection to the floor when installing the unit on the rooftop.
 - ♦In regions where snowfall can be expected, install the unit so that the outlet faces away from the direction of the wind, and install a snow guard to protect the unit from snow. Install the unit on a base approximately 50 cm (19-11/16 in.) higher than the expected snowfall. Close the openings for pipes and wiring, because the ingress of water and small animals may cause equipment damage. If a SUS snow guard is used, refer to the Installation Manual that comes with the snow guard and be careful with the installation to avoid the risk of corrosion.
 - ♦When the unit is expected to operate continuously for a long period of time at outside air temperatures of below 0°C (32°F), take appropriate measures, such as the use of a unit base heater, to prevent ice forming on the unit base. (Not applicable to the PUMY-Series)
 - ♦Install the snow guard so that the outlet/inlet faces away from the direction of the wind.
 - ♦When approximately 50 cm (19-11/16 in.) or more of snow accumulates on the snow guard, remove the snow from the guard. Install a roof that is strong enough to withstand loads caused by snow in areas where snow accumulates.
 - ♦Provide proper protection around the outdoor units in places such as schools to avoid the risk of injury.
 - ♦A cooling tower and heat source water circuit should be a closed circuit so that water is not exposed to the atmosphere. When a tank is installed to ensure that the circuit has enough water, minimize the contact with outside air to ensure that the oxygen dissolved in the water is 1 mg/L or less.
 - ♦Install a strainer (50 mesh or more recommended) on the water pipe inlet on the heat source unit.
 - ♦Interlock the heat source unit and water circuit pump.
 - ♦Note the following to prevent the freezing and bursting of pipes when the heat source unit is installed in an area where the ambient temperature can be 0°C (32°F) or below.
 - ♦Keep the water circulating to prevent it from freezing when the ambient temperature is 0°C (32°F) or below.
 - ♦Before a long period of non-use, be sure to purge the water from the unit.
 - ♦The salt-resistant unit is resistant to salt corrosion, but not salt-proof.
- Please note the following when installing and maintaining outdoor units in a marine environment.
1. Install the salt-resistant unit in an area in which it is not directly exposed to sea breezes, and minimize exposure to salt water mist.
 2. Avoid installing a sun shade over the outdoor unit, so that rain will wash away salt deposits off the unit.
 3. Install the unit horizontally to ensure proper water drainage from the base of the unit. Accumulation of water in the base of the outdoor unit will significantly accelerate corrosion.
 4. Periodically wash salt deposits off the unit, especially when the unit is installed in a coastal area.
 5. Repair all noticeable scratches after installation and during maintenance.
 6. Periodically check the unit, and apply an anti-rust agent and replace corroded parts as necessary.

1-3-2. Circulating water

- ♦Regularly check the quality of the water in the heat source unit, following the guidelines published by JRAIA (JRA-GL02-1994).
- ♦A cooling tower and heat source water circuit should be a closed circuit so that water is not exposed to the atmosphere. When a tank is installed to ensure that the circuit has enough water, minimize the contact with outside air to ensure that the oxygen dissolved in the water is 1 mg/L or less.

1-3-3. Unit characteristics

- ♦When the Thermo ON and OFF is frequently repeated on the indoor unit, the operating status of outdoor/heat source units may become unstable.

1-3-4. Related equipment

- ♦Provide grounding in accordance with the local regulations.

1-3-5. Noise level (Sound pressure level)

- ♦The sound pressure level is a value measured in an anechoic room in accordance with the conventional method in JIS standard. The sound pressure level actually measured at the installation site is usually higher than the value indicated in this DATA BOOK due to the influence of ambient noise and echoes.
- Valve operation noise and refrigerant flow noise may occur from inside the outdoor unit/heat-source unit.

1-4. Precautions for control-related items

1-4-1. Product specification

- ♦To introduce the MELANS system, a consultation with us is required in advance. Especially to introduce the electricity charge-apportioning function or energy save function, further detailed consultation is required. Consult your local distributor for details.
- ♦Billing calculation for AE-200A/AE-50A/EW-50A, or the billing calculation unit is unique and based on our original method. (Backup operation is included.) It is not based on the metering method, and do not use it for official business purposes. It is not the method that the amount of electric power consumption (input) by air conditioner is calculated. Note that the electric power consumption by air conditioner is apportioned by using the ratio corresponding to the operation status (output) for each air conditioner (indoor unit) in this method.
- ♦In the apportioned billing function for AE-200A/AE-50A and EW-50A, separate watt-hour meters should be used for A-control units, K-control units, and CITY MULTI packaged air conditioners. It is recommended that an individual watt-hour meter should be used for large-capacity indoor units (with two or more addresses).
- ♦When using the peak cut function on the AE-200A/AE-50A or EW-50A, note that the control is performed once every minute and it takes time to obtain the effect of the control. Take appropriate measures such as lowering the criterion value. Power consumption may exceed the limits if the AE-200A/AE-50A or EW-50A malfunctions or stops. Provide a back-up remedy as necessary.
- ♦The controllers cannot operate while the indoor unit is OFF. (No error)
Turn ON the power to the indoor unit when operating the controllers.
- ♦When using the interlocked control function on the AE-200A/AE-50A/EW-50A/PAC-YG66DCA or PAC-YG63MCA, do not use the control for fire prevention or security. (This function should never be used in a way that would put people's lives at risk.) Employ any methods or circuits that allow ON/OFF operation using an external switch in case of failure.

1-4-2. Installation environment

- ♦Surge protection may be required for the transmission line in areas where lightning strikes occur frequently.
- ♦The receiver for a wireless remote controller may not work properly due to the effect of general lighting. Leave a space of at least 1 m between the general lighting and the receiver.
- ♦When the auto-elevating panel is used and the system is operated using a wired remote controller, install the wired remote controller in a place where all the air conditioners being controlled (at least the bottom part of them) can be seen from the wired remote controller. If not, the descending panel may cause damage or injury; be sure to use a wireless remote controller designed for use with the elevating panel (sold separately).
- ♦Install the wired remote controller (switch box) in a place where the following conditions are met.
 - ♦Where the installation surface is flat
 - ♦Where the remote controller can detect an accurate room temperature
The temperature sensors that detect the room temperature are installed both in the remote controller and in the indoor unit.
When the room temperature is detected using the sensor in the remote controller, the main remote controller is used to detect the room temperature. In this case, follow the instructions below.
 - ♦ Install the controller in a place where it is not affected by a heat source.
(If the remote controller faces direct sunlight or the direction of the supply air flow, the remote controller cannot detect the accurate room temperature.)
 - ♦ Install the controller in a place where the average room temperature can be detected.
 - ♦ Install the controller in a place where no other wires are present around the temperature sensor.
(If other wires are present, the remote controller cannot detect an accurate room temperature.)
- ♦To prevent unauthorized access, always use a security device such as a VPN router when connecting the AE-200A/AE-50A or EW-50A to the Internet.

CAUTION FOR REFRIGERANT LEAKAGE

1. Caution for refrigerant leakage Ub-1-2

 1-1. Refrigerant property Ub-1-2

 1-2. Confirm the Critical concentration and take countermeasure Ub-1-2

CAUTION FOR REFRIGERANT LEAKAGE

Ub-1-2

⚠ Warning

- Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.
 - Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, repair, or at the time of disposal of the unit.
 - It may also be in violation of applicable laws.
 - MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.
- Our air conditioning equipment and heat pumps contain a fluorinated greenhouse gas, R32.

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