MITSUBISHI ELECTRIC

Changes for the Better

AIR CONDITIONING SYSTEMS

CITY MULTI

DATA BOOK

MODEL

PUHY-HM72-240T(S)XU-A

PUHY-HM72-240Y(S)XU-A

Preface

R32 refrigerant is mildly flammable, and certain restrictions apply to the installation of units.
When installing new units, moving the existing units, or changing the layout of the room, ensure that installation restrictions are observed.
For details, refer to R32 City Multi Technical Manual (System Design and General Safety Considerations) and Installation Manual.

Hyper Heating Inverter Y-Series-208-230V

Type(BTU/h)	72K
Model Name	PUHY-HM72TXU-A

Type(BTU/h)	96K	120K
Model Name	PUHY-HM96TXU-A	PUHY-HM120TXU-A

Type(BTU/h)	144K
Model Name	PUHY-HM144TSXU-A

Type(BTU/h)	192K	240K
Model Name	PUHY-HM192TSXU-A	PUHY-HM240TSXU-A

Note: Fin guards are optional parts sold separately.

Hyper Heating Inverter Y-Series-460V

Type(BTU/h)	72K
Model Name	PUHY-HM72YXU-A

Type(BTU/h)	96K	120K
Model Name	PUHY-HM96YXU-A	PUHY-HM120YXU-A

Type(BTU/h)	144K
Model Name	PUHY-HM144YSXU-A

Type(BTU/h)	192K	240K
Model Name	PUHY-HM192YSXU-A	PUHY-HM240YSXU-A

Note: Fin guards are optional parts sold separately.

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Outdoor Model			PUHY-HM72TXU-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	
	Power input	kW	4.42	
(208-230)	Current input	A	13.6-12.3	
(Rated)		BTU/h	69,000	
		kW	20.2	
	Power input	kW	4.32	4.52
(208-230)	Current input	A	13.3-12.0	13.9-12.6
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	80,000	
		kW	23.4	
	Power input	kW	5.10	
(208-230)	Current input	A	15.7-14.2	
(Rated)		BTU/h	76,000	
		kW	22.3	
	Power input	kW	4.51	5.01
(208-230)	Current input	A	13.9-12.5	15.4-13.9
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M72/14	
Sound power level (measured in anechoic room) *3		dB <A>	76.5 / 78.5	
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 Brazed (9.52 Brazed)	
	Gas pipe	in. (mm)	7/8 Brazed (22.2 Brazed)	
Minimum Circuit Ampacity (208/230)		A	51/51	
Maximum Overcurrent Protection (208/230)		A	80/80	
FAN *4	Type x Quantity		Propeller fan×1	
	Airflow rate	cfm	6,356	
		m^3/min	180	
		L/s	3,000	
	Control, Driving mechanism		Inverter-control , Brushless DC motor	
	Motor output	kW	0.92	
	External static press.		0 in WG (0Pa)	
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	
	Starting method		Inverter	
	Motor output	kW	3.5	
	Case heater	kW	0.045	
	Lubricant		MEL46EH	
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resinColor:MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	70-13/16 x 35-7/8 x 29-3/16	
		mm	1,798 x 910 x 740	
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	
	Inverter circuit (COMP./FAN)		Over-current protection	
	Compressor		-	
	Fan motor		-	
Refrigerant	Type x original charge		R32 x 11lbs 11oz (5.3kg)	
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	591 (268)	
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7Q	
	Wiring		KE94L586	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG04B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)

2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)

3.Cooling mode / Heating mode

4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM96TXU-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	
	Power input	kW	6.29	
(208-230)	Current input	A	19.3-17.5	
(Rated)		BTU/h	92,000	
		kW	27.0	
	Power input	kW	6.17	6.42
(208-230)	Current input	A	19.0-17.2	19.8-17.9
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	108,000	
		kW	31.7	
	Power input	kW	7.19	
(208-230)	Current input	A	22.1-20.0	
(Rated)		BTU/h	103,000	
		kW	30.2	
	Power input	kW	6.47	7.06
(208-230)	Current input	A	19.9-18.0	21.7-19.6
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/19	
Sound power level (measured in anechoic room) *3		dB <A>	82.0 / 82.0	
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 Brazed (1/2 Brazed , the farthest pipe length ≧3-9/16) (9.52 Brazed (12.7 Brazed , the farthest pipe length ≧90))	
	Gas pipe	in. (mm)	7/8 Brazed (22.2 Brazed)	
Minimum Circuit Ampacity (208/230)		A	60/60	
Maximum Overcurrent Protection (208/230)		A	100/100	
FAN *4	Type x Quantity		Propeller fan×2	
	Airflow rate	cfm	9,181	
		m^3/min	260	
		L/s	4,333	
	Control, Driving mechanism		Inverter-control , Brushless DC motor	
	Motor output	kW	0.46	
	External static press.		0 in WG (0Pa)	
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	
	Starting method		Inverter	
	Motor output	kW	5.2	
	Case heater	kW	0.048	
	Lubricant		MEL46EH	
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resinColor:MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	70-13/16 x 47-9/16 x 29-3/16	
		mm	1,798 x 1,207 x 740	
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	
	Inverter circuit (COMP./FAN)		Over-current protection	
	Compressor		-	
	Fan motor		-	
Refrigerant	Type x original charge		R32 x 13lbs 15oz (6.3kg)	
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	697 (316)	
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7R	
	Wiring		KE94L591	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG05B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM120TXU-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	
	Power input	kW	8.04	
(208-230)	Current input	A	24.7-22.4	
(Rated)		BTU/h	115,000	
		kW	33.7	
	Power input	kW	7.98	8.01
(208-230)	Current input	A	24.6-22.2	24.7-22.3
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	135,000	
		kW	39.6	
	Power input	kW	9.23	
(208-230)	Current input	A	28.4-25.7	
(Rated)		BTU/h	129,000	
		kW	37.8	
	Power input	kW	8.37	9.36
(208-230)	Current input	A	25.8-23.3	28.8-26.1
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/23	
Sound power level (measured in anechoic room) *3		dB <A>	82.0 / 83.5	
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 Brazed (1/2 Brazed , the farthest pipe length ≧1-5/8) (9.52 Brazed (12.7 Brazed , the farthest pipe length ≧40))	
	Gas pipe	in. (mm)	1-1/8 Brazed (28.58 Brazed)	
Minimum Circuit Ampacity (208/230)		A	60/60	
Maximum Overcurrent Protection (208/230)		A	100/100	
FAN *4	Type x Quantity		Propeller fan×2	
	Airflow rate	cfm	9,181	
		m^3/min	260	
		L/s	4,333	
	Control, Driving mechanism		Inverter-control , Brushless DC motor	
	Motor output	kW	0.46	
	External static press.		0 in WG (0Pa)	
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	
	Starting method		Inverter	
	Motor output	kW	6.9	
	Case heater	kW	0.048	
	Lubricant		MEL46EH	
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resinColor:MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	70-13/16 x 47-9/16 x 29-3/16	
		mm	1,798 x 1,207 x 740	
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	
	Inverter circuit (COMP./FAN)		Over-current protection	
	Compressor		-	
	Fan motor		-	
Refrigerant	Type x original charge		R32 x 13lbs 15oz (6.3kg)	
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	701 (318)	
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7R	
	Wiring		KE94L591	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG05B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:

1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)

2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)

3.Cooling mode / Heating mode

4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM144TSXU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 208-230V±10% 60Hz	
Cooling capacity (Nominal) *1		BTU/h	144,000	
		kW	42.2	
	Power input	kW	9.32	
(208-230)	Current input	A	28.7-25.9	
(Rated)		BTU/h	138,000	
		kW	40.4	
	Power input	kW	9.45	9.68
(208-230)	Current input	A	29.1-26.3	29.8-26.9
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	160,000	
		kW	46.9	
	Power input	kW	10.24	
(208-230)	Current input	A	31.5-28.5	
(Rated)		BTU/h	152,000	
		kW	44.5	
	Power input	kW	9.68	10.43
(208-230)	Current input	A	29.8-26.9	32.1-29.0
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/28	
Sound power level (measured in anechoic room) *3		dB <A>	80.0 / 82.0	
Refrigerant piping diameter	Liquid pipe	in. (mm)	1/2 Brazed (12.7 Brazed)	
	Gas pipe	in. (mm)	1-1/8 Brazed (28.58 Brazed)	

Set Model

Model			PUHY-HM72TXU-A	PUHY-HM72TXU-A
Minimum Circuit Ampacity (208/230)		A	51/51	51/51
Maximum Overcurrent Protection (208/230)		A	80/80	80/80
FAN *4	Type x Quantity		Propeller fan×1	Propeller fan×1
	Airflow rate	cfm	6,356	6,356
		m^3/min	180	180
		L/s	3,000	3,000
	Control, Driving mechanism		Inverter-control , Brushless DC motor	Inverter-control , Brushless DC motor
	Motor output	kW	0.92	0.92
	External static press.		0 in WG (0Pa)	0 in WG (0Pa)
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	Inverter scroll hermetic compressor ×1
	Starting method		Inverter	Inverter
	Motor output	kW	3.5	3.5
	Case heater	kW	0.045	0.045
	Lubricant		MEL46EH	MEL46EH
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>	Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>
External dimension H x W x D		in.	70-13/16 x 35-7/8 x 29-3/16	70-13/16 x 35-7/8 x 29-3/16
		mm	1,798 x 910 x 740	1,798 x 910 x 740
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	High pressure switch , Pressure sensor at 4.15MPa (601Psi)
	Inverter circuit (COMP./FAN)		Over-current protection	Over-current protection
	Compressor		-	-
	Fan motor		-	-
Refrigerant	Type x original charge		R32 x 11lbs 11oz (5.3kg)	R32 x 11lbs 11oz (5.3kg)
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	591 (268)	591 (268)
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	Copper pipe , tube in tube
Pipe between unit and distributor	Liquid pipe	in. (mm)	3/8 (9.52) Brazed	3/8 (9.52) Brazed
	Gas pipe	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7Y	
	Wiring		KE94L586	KE94L586
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Twinning kit		CMY-Y100CBK3	
	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG04B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM192TSXU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 208-230V±10% 60Hz	
Cooling capacity (Nominal) *1		BTU/h	192,000	
		kW	56.3	
	Power input	kW	12.71	
(208-230)	Current input	A	39.1-35.4	
(Rated)		BTU/h	184,000	
		kW	53.9	
	Power input	kW	12.68	13.19
(208-230)	Current input	A	39.1-35.3	40.6-36.7
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	215,000	
		kW	63.0	
	Power input	kW	14.31	
(208-230)	Current input	A	44.1-39.9	
(Rated)		BTU/h	204,000	
		kW	59.8	
	Power input	kW	13.57	14.28
(208-230)	Current input	A	41.8-37.8	44.0-39.8
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/38	
Sound power level (measured in anechoic room) *3		dB <A>	85.5 / 85.5	
Refrigerant piping diameter	Liquid pipe	in. (mm)	5/8 Brazed (15.88 Brazed)	
	Gas pipe	in. (mm)	1-1/8 Brazed (28.58 Brazed)	

Set Model

Model			PUHY-HM96TXU-A	PUHY-HM96TXU-A
Minimum Circuit Ampacity (208/230)		A	60/60	60/60
Maximum Overcurrent Protection (208/230)		A	100/100	100/100
FAN *4	Type x Quantity		Propeller fan×2	Propeller fan×2
	Airflow rate	cfm	9,181	9,181
		m^3/min	260	260
		L/s	4,333	4,333
	Control, Driving mechanism		Inverter-control , Brushless DC motor	Inverter-control , Brushless DC motor
	Motor output	kW	0.46	0.46
	External static press.		0 in WG (0Pa)	0 in WG (0Pa)
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	Inverter scroll hermetic compressor ×1
	Starting method		Inverter	Inverter
	Motor output	kW	5.2	5.2
	Case heater	kW	0.048	0.048
	Lubricant		MEL46EH	MEL46EH
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>	Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>
External dimension H x W x D		in.	70-13/16 x 47-9/16 x 29-3/16	70-13/16 x 47-9/16 x 29-3/16
		mm	1,798 x 1,207 x 740	1,798 x 1,207 x 740
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	High pressure switch , Pressure sensor at 4.15MPa (601Psi)
	Inverter circuit (COMP./FAN)		Over-current protection	Over-current protection
	Compressor		-	-
	Fan motor		-	-
Refrigerant	Type x original charge		R32 x 13lbs 15oz (6.3kg)	R32 x 13lbs 15oz (6.3kg)
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	697 (316)	697 (316)
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	Copper pipe , tube in tube
Pipe between unit and distributor	Liquid pipe	in. (mm)	3/8 (9.52) Brazed	3/8 (9.52) Brazed
	Gas pipe	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7Z	
	Wiring		KE94L591	KE94L591
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Twinning kit		CMY-Y100CBK3	
	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG05B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM240TSXU-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	
	Power input	kW	16.31	
(208-230)	Current input	A	50.3-45.4	
(Rated)		BTU/h	230,000	
		kW	67.4	
	Power input	kW	16.41	16.47
(208-230)	Current input	A	50.6-45.7	50.7-45.9
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	270,000	
		kW	79.1	
	Power input	kW	18.50	
(208-230)	Current input	A	57.0-51.5	
(Rated)		BTU/h	258,000	
		kW	75.6	
	Power input	kW	18.14	19.19
(208-230)	Current input	A	55.9-50.5	59.1-53.5
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/47	
Sound power level (measured in anechoic room) *3		dB <A>	85.5 / 87.0	
Refrigerant piping diameter	Liquid pipe	in. (mm)	5/8 Brazed (15.88 Brazed)	
	Gas pipe	in. (mm)	1-1/8 Brazed (28.58 Brazed)	

Set Model

Model			PUHY-HM120TXU-A	PUHY-HM120TXU-A
Minimum Circuit Ampacity (208/230)		A	60/60	60/60
Maximum Overcurrent Protection (208/230)		A	100/100	100/100
FAN *4	Type x Quantity		Propeller fan×2	Propeller fan×2
	Airflow rate	cfm	9,181	9,181
		m^3/min	260	260
		L/s	4,333	4,333
	Control, Driving mechanism		Inverter-control , Brushless DC motor	Inverter-control , Brushless DC motor
	Motor output	kW	0.46	0.46
	External static press.		0 in WG (0Pa)	0 in WG (0Pa)
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	Inverter scroll hermetic compressor ×1
	Starting method		Inverter	Inverter
	Motor output	kW	6.9	6.9
	Case heater	kW	0.048	0.048
	Lubricant		MEL46EH	MEL46EH
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>	Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>
External dimension H x W x D		in.	70-13/16 x 47-9/16 x 29-3/16	70-13/16 x 47-9/16 x 29-3/16
		mm	1,798 x 1,207 x 740	1,798 x 1,207 x 740
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	High pressure switch , Pressure sensor at 4.15MPa (601Psi)
	Inverter circuit (COMP./FAN)		Over-current protection	Over-current protection
	Compressor		-	-
	Fan motor		-	-
Refrigerant	Type x original charge		R32 x 13lbs 15oz (6.3kg)	R32 x 13lbs 15oz (6.3kg)
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	701 (318)	701 (318)
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	Copper pipe , tube in tube
Pipe between unit and distributor	Liquid pipe	in. (mm)	1/2 (12.7) Brazed	1/2 (12.7) Brazed
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed	1-1/8 (28.58) Brazed
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7Z	
	Wiring		KE94L591	KE94L591
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Twinning kit		CMY-Y100CBK3	
	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG05B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM72YXU-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	
	Power input	kW	4.42	
(460)	Current input	A	6.1	
(Rated)		BTU/h	69,000	
		kW	20.2	
	Power input	kW	4.32	4.52
(460)	Current input	A	6.0	6.3
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	80,000	
		kW	23.4	
	Power input	kW	5.10	
(460)	Current input	A	7.1	
(Rated)		BTU/h	76,000	
		kW	22.3	
	Power input	kW	4.51	5.01
(460)	Current input	A	6.2	6.9
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M72/14	
Sound power level (measured in anechoic room) *3		dB <A>	76.5 / 78.5	
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 Brazed (9.52 Brazed)	
	Gas pipe	in. (mm)	7/8 Brazed (22.2 Brazed)	
Minimum Circuit Ampacity		A	27	
Maximum Overcurrent Protection		A	45	
FAN *4	Type x Quantity		Propeller fan×1	
	Airflow rate	cfm	6,356	
		m^3/min	180	
		L/s	3,000	
	Control, Driving mechanism		Inverter-control , Brushless DC motor	
	Motor output	kW	0.92	
	External static press.		0 in WG (0Pa)	
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	
	Starting method		Inverter	
	Motor output	kW	3.5	
	Case heater	kW	0.045	
	Lubricant		MEL46EH	
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resinColor:MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	70-13/16 x 35-7/8 x 29-3/16	
		mm	1,798 x 910 x 740	
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	
	Inverter circuit (COMP./FAN)		Over-current protection	
	Compressor		-	
	Fan motor		-	
Refrigerant	Type x original charge		R32 x 11lbs 11oz (5.3kg)	
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	622 (282)	
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7Q	
	Wiring		KE94L592	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG04B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM96YXU-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	
	Power input	kW	6.29	
(460)	Current input	A	8.7	
(Rated)		BTU/h	92,000	
		kW	27.0	
	Power input	kW	6.17	6.42
(460)	Current input	A	8.6	8.9
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	108,000	
		kW	31.7	
	Power input	kW	7.19	
(460)	Current input	A	10.0	
(Rated)		BTU/h	103,000	
		kW	30.2	
	Power input	kW	6.47	7.06
(460)	Current input	A	9.0	9.8
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/19	
Sound power level (measured in anechoic room) *3		dB <A>	82.0 / 82.0	
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 Brazed (1/2 Brazed , the farthest pipe length ≧3-9/16) (9.52 Brazed (12.7 Brazed , the farthest pipe length ≧90))	
	Gas pipe	in. (mm)	7/8 Brazed (22.2 Brazed)	
Minimum Circuit Ampacity		A	31	
Maximum Overcurrent Protection		A	50	
FAN *4	Type x Quantity		Propeller fan×2	
	Airflow rate	cfm	9,181	
		m^3/min	260	
		L/s	4,333	
	Control, Driving mechanism		Inverter-control , Brushless DC motor	
	Motor output	kW	0.46	
	External static press.		0 in WG (0Pa)	
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	
	Starting method		Inverter	
	Motor output	kW	5.2	
	Case heater	kW	0.048	
	Lubricant		MEL46EH	
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resinColor:MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	70-13/16 x 47-9/16 x 29-3/16	
		mm	1,798 x 1,207 x 740	
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	
	Inverter circuit (COMP./FAN)		Over-current protection	
	Compressor		-	
	Fan motor		-	
Refrigerant	Type x original charge		R32 x 13lbs 15oz (6.3kg)	
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	732 (332)	
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7R	
	Wiring		KE94L593	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG05B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM120YXU-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	kW	8.04	
(460)	Current input	A	11.2	
(Rated)		BTU/h	115,000	
		kW	33.7	
	Power input	kW	7.98	8.01
(460)	Current input	A	11.1	11.1
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	135,000	
		kW	39.6	
	Power input	kW	9.23	
(460)	Current input	A	12.8	
(Rated)		BTU/h	129,000	
		kW	37.8	
	Power input	kW	8.37	9.36
(460)	Current input	A	11.6	13.0
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/23	
Sound power level (measured in anechoic room) *3		dB <A>	82.0 / 83.5	
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 Brazed (1/2 Brazed , the farthest pipe length ≧1-5/8) (9.52 Brazed (12.7 Brazed , the farthest pipe length ≧40))	
	Gas pipe	in. (mm)	1-1/8 Brazed (28.58 Brazed)	
Minimum Circuit Ampacity		A	31	
Maximum Overcurrent Protection		A	50	
FAN *4	Type x Quantity		Propeller fan×2	
	Airflow rate	cfm	9,181	
		m^3/min	260	
		L/s	4,333	
	Control, Driving mechanism		Inverter-control , Brushless DC motor	
	Motor output	kW	0.46	
	External static press.		0 in WG (0Pa)	
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	
	Starting method		Inverter	
	Motor output	kW	6.9	
	Case heater	kW	0.048	
	Lubricant		MEL46EH	
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resinColor:MUNSELL 5Y 8/1>	
External dimension H x W x D		in.	70-13/16 x 47-9/16 x 29-3/16	
		mm	1,798 x 1,207 x 740	
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	
	Inverter circuit (COMP./FAN)		Over-current protection	
	Compressor		-	
	Fan motor		-	
Refrigerant	Type x original charge		R32 x 13lbs 15oz (6.3kg)	
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	732 (332)	
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7R	
	Wiring		KE94L593	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG05B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM144YSXU-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	
	Power input	kW	9.32	
(460)	Current input	A	12.9	
(Rated)		BTU/h	138,000	
		kW	40.4	
	Power input	kW	9.45	9.68
(460)	Current input	A	13.1	13.4
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	160,000	
		kW	46.9	
	Power input	kW	10.24	
(460)	Current input	A	14.2	
(Rated)		BTU/h	152,000	
		kW	44.5	
	Power input	kW	9.68	10.43
(460)	Current input	A	13.4	14.5
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/28	
Sound power level (measured in anechoic room) *3		dB <A>	80.0 / 82.0	
Refrigerant piping diameter	Liquid pipe	in. (mm)	1/2 Brazed (12.7 Brazed)	
	Gas pipe	in. (mm)	1-1/8 Brazed (28.58 Brazed)	

Set Model

Model			PUHY-HM72YXU-A	PUHY-HM72YXU-A
Minimum Circuit Ampacity		A	27	27
Maximum Overcurrent Protection		A	45	45
FAN *4	Type x Quantity		Propeller fan×1	Propeller fan×1
	Airflow rate	cfm	6,356	6,356
		m^3/min	180	180
		L/s	3,000	3,000
	Control, Driving mechanism		Inverter-control , Brushless DC motor	Inverter-control , Brushless DC motor
	Motor output	kW	0.92	0.92
	External static press.		0 in WG (0Pa)	0 in WG (0Pa)
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	Inverter scroll hermetic compressor ×1
	Starting method		Inverter	Inverter
	Motor output	kW	3.5	3.5
	Case heater	kW	0.045	0.045
	Lubricant		MEL46EH	MEL46EH
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>	Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>
External dimension H x W x D		in.	70-13/16 x 35-7/8 x 29-3/16	70-13/16 x 35-7/8 x 29-3/16
		mm	1,798 x 910 x 740	1,798 x 910 x 740
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	High pressure switch , Pressure sensor at 4.15MPa (601Psi)
	Inverter circuit (COMP./FAN)		Over-current protection	Over-current protection
	Compressor		-	-
	Fan motor		-	-
Refrigerant	Type x original charge		R32 x 11lbs 11oz (5.3kg)	R32 x 11lbs 11oz (5.3kg)
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	622 (282)	622 (282)
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	Copper pipe , tube in tube
Pipe between unit and distributor	Liquid pipe	in. (mm)	3/8 (9.52) Brazed	3/8 (9.52) Brazed
	Gas pipe	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7Y	
	Wiring		KE94L592	KE94L592
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Twinning kit		CMY-Y100CBK3	
	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG04B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM192YSXU-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	kW	12.71	
(460)	Current input	A	17.7	
(Rated)		BTU/h	184,000	
		kW	53.9	
	Power input	kW	12.68	13.19
(460)	Current input	A	17.6	18.3
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	215,000	
		kW	63.0	
	Power input	kW	14.31	
(460)	Current input	A	19.9	
(Rated)		BTU/h	204,000	
		kW	59.8	
	Power input	kW	13.57	14.28
(460)	Current input	A	18.9	19.9
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/38	
Sound power level (measured in anechoic room) *3		dB <A>	85.5 / 85.5	
Refrigerant piping diameter	Liquid pipe	in. (mm)	5/8 Brazed (15.88 Brazed)	
	Gas pipe	in. (mm)	1-1/8 Brazed (28.58 Brazed)	

Set Model

Model			PUHY-HM96YXU-A	PUHY-HM96YXU-A
Minimum Circuit Ampacity		A	31	31
Maximum Overcurrent Protection		A	50	50
FAN *4	Type x Quantity		Propeller fan×2	Propeller fan×2
	Airflow rate	cfm	9,181	9,181
		m^3/min	260	260
		L/s	4,333	4,333
	Control, Driving mechanism		Inverter-control , Brushless DC motor	Inverter-control , Brushless DC motor
	Motor output	kW	0.46	0.46
	External static press.		0 in WG (0Pa)	0 in WG (0Pa)
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	Inverter scroll hermetic compressor ×1
	Starting method		Inverter	Inverter
	Motor output	kW	5.2	5.2
	Case heater	kW	0.048	0.048
	Lubricant		MEL46EH	MEL46EH
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>	Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>
External dimension H x W x D		in.	70-13/16 x 47-9/16 x 29-3/16	70-13/16 x 47-9/16 x 29-3/16
		mm	1,798 x 1,207 x 740	1,798 x 1,207 x 740
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	High pressure switch , Pressure sensor at 4.15MPa (601Psi)
	Inverter circuit (COMP./FAN)		Over-current protection	Over-current protection
	Compressor		-	-
	Fan motor		-	-
Refrigerant	Type x original charge		R32 x 13lbs 15oz (6.3kg)	R32 x 13lbs 15oz (6.3kg)
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	732 (332)	732 (332)
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	Copper pipe , tube in tube
Pipe between unit and distributor	Liquid pipe	in. (mm)	3/8 (9.52) Brazed	3/8 (9.52) Brazed
	Gas pipe	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7Z	
	Wiring		KE94L593	KE94L593
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Twinning kit		CMY-Y100CBK3	
	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG05B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

Outdoor Model			PUHY-HM240YSXU-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	
	Power input	kW	16.31	
(460)	Current input	A	22.7	
(Rated)		BTU/h	230,000	
		kW	67.4	
	Power input	kW	16.41	16.47
(460)	Current input	A	22.8	22.9
Temp. range of cooling	Indoor	W.B.	59.0～75.0˚ FWB (15.0～24.0℃WB)	
	Outdoor	D.B.	23.0～126.0˚ FDB (-5.0～52.0℃DB)	
Heating capacity (Nominal) *2		BTU/h	270,000	
		kW	79.1	
	Power input	kW	18.50	
(460)	Current input	A	25.7	
(Rated)		BTU/h	258,000	
		kW	75.6	
	Power input	kW	18.14	19.19
(460)	Current input	A	25.2	26.7
Temp. range of heating	Indoor	D.B.	59.0～81.0˚ FDB (15.0～27.0℃DB)	
	Outdoor	W.B.	-22.0～60.0˚ FWB (-30.0～15.5℃WB)	
Indoor unit connectable	Total capacity		50%~130% of outdoor unit capacity	
	Model/Maximum quantity		M04~M96/47	
Sound power level (measured in anechoic room) *3		dB <A>	85.5 / 87.0	
Refrigerant piping diameter	Liquid pipe	in. (mm)	5/8 Brazed (15.88 Brazed)	
	Gas pipe	in. (mm)	1-1/8 Brazed (28.58 Brazed)	

Set Model

Model			PUHY-HM120YXU-A	PUHY-HM120YXU-A
Minimum Circuit Ampacity		A	31	31
Maximum Overcurrent Protection		A	50	50
FAN *4	Type x Quantity		Propeller fan×2	Propeller fan×2
	Airflow rate	cfm	9,181	9,181
		m^3/min	260	260
		L/s	4,333	4,333
	Control, Driving mechanism		Inverter-control , Brushless DC motor	Inverter-control , Brushless DC motor
	Motor output	kW	0.46	0.46
	External static press.		0 in WG (0Pa)	0 in WG (0Pa)
Compressor	Type x Quantity		Inverter scroll hermetic compressor ×1	Inverter scroll hermetic compressor ×1
	Starting method		Inverter	Inverter
	Motor output	kW	6.9	6.9
	Case heater	kW	0.048	0.048
	Lubricant		MEL46EH	MEL46EH
External finish			Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>	Pre-coated galvanized steel sheet <Surface treatment : polyester resin Color:MUNSELL 5Y 8/1>
External dimension H x W x D		in.	70-13/16 x 47-9/16 x 29-3/16	70-13/16 x 47-9/16 x 29-3/16
		mm	1,798 x 1,207 x 740	1,798 x 1,207 x 740
Protection devices	High pressure protection		High pressure switch , Pressure sensor at 4.15MPa (601Psi)	High pressure switch , Pressure sensor at 4.15MPa (601Psi)
	Inverter circuit (COMP./FAN)		Over-current protection	Over-current protection
	Compressor		-	-
	Fan motor		-	-
Refrigerant	Type x original charge		R32 x 13lbs 15oz (6.3kg)	R32 x 13lbs 15oz (6.3kg)
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	732 (332)	732 (332)
Heat exchanger			Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes	Corrugated fin & Zinc-Sprayed Aluminum Multi-Port Extruded tubes
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe , tube in tube	Copper pipe , tube in tube
Pipe between unit and distributor	Liquid pipe	in. (mm)	1/2 (12.7) Brazed	1/2 (12.7) Brazed
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed	1-1/8 (28.58) Brazed
Defrosting method			Reverse defrost	
Drawing	External		KB94CA7Z	
	Wiring		KE94L593	KE94L593
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts	Twinning kit		CMY-Y100CBK3	
	Joint		CMY-Y102SS-G2 , CMY-Y102LS-G2 , CMY-Y202S-G2 , CMY-Y302S-G2	
	Header		CMY-Y104C-G , CMY-Y108C-G , CMY-Y1010C-G	
	Fin guard		PAC-FG05B-E , PAC-FG03S-E	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.	

Notes:
1.Nominal cooling conditions (Test conditions are based on AHRI 1230)
Indoor: 80 °FD.B./67 °FW.B. (26.7 ℃D.B./19.4 ℃W.B.), Outdoor: 95 °FD.B. (35 ℃D.B.)
2.Nominal heating conditions (Test conditions are based on AHRI 1230)
Indoor: 70 °FD.B. (21.1 ℃D.B.), Outdoor: 47 °FD.B./43 °FW.B. (8.3 ℃D.B./6.1 ℃W.B.)
3.Cooling mode / Heating mode
4.External static pressure option is available (0.12 in.WG, 0.24 in.WG, 0.32 in.WG/30 Pa, 60 Pa, 80 Pa).
Consult your dealer about the specification when setting External static pressure option.(Cooling and heating in models HM96 to HM120, and HM192 to HM240 is only avaiable for 0.12 in.WG, 0.24 in.WG/30 Pa, 60 Pa.)

Due to continuing improvement, above specifications may be subject to change without notice.

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.

PUHY-HM72T/YXU-A

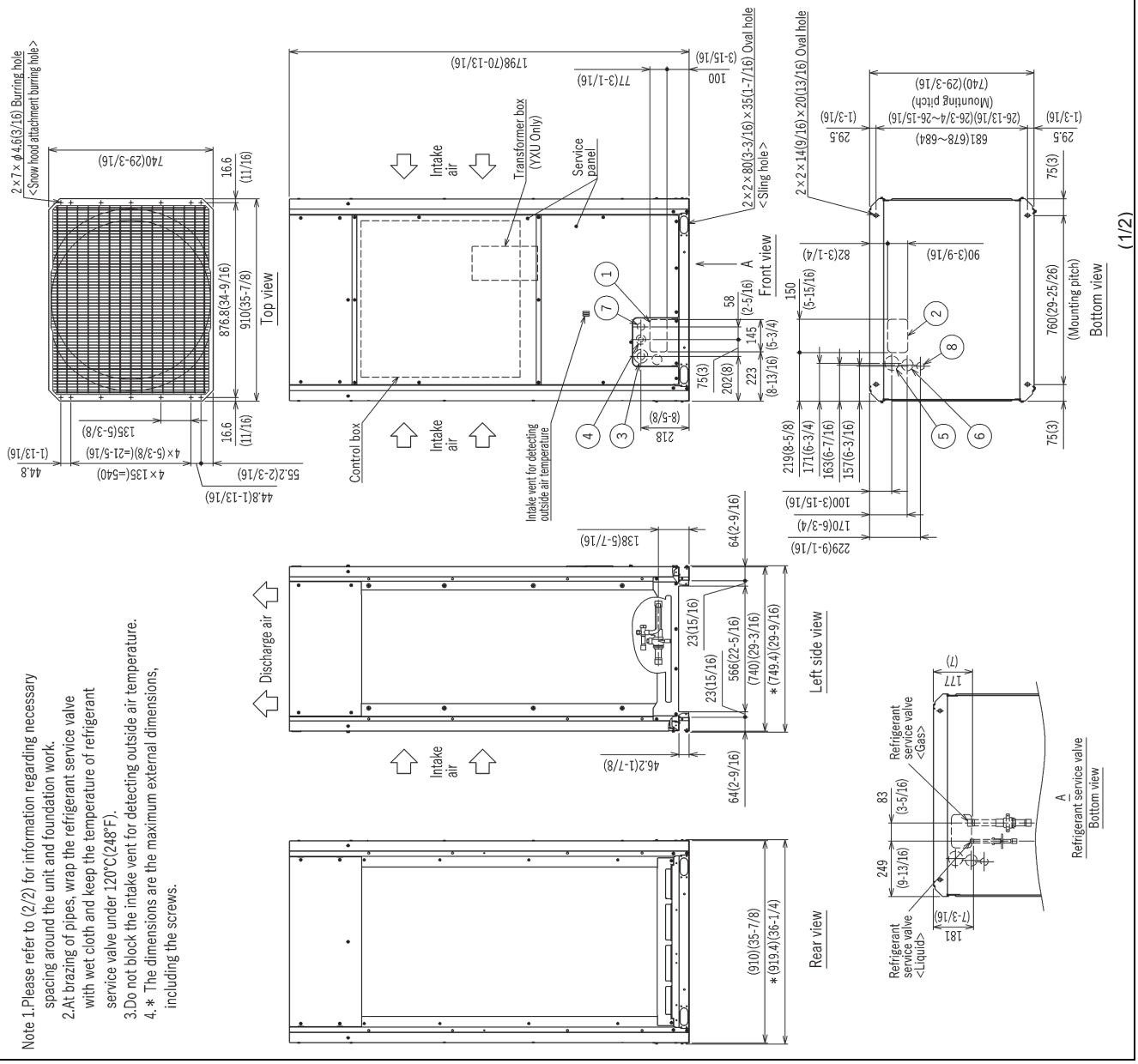
Unit: mm (in.)

Connecting pipe specifications

Model	Diameter					
	Refrigerant pipe *1				Service valve	
	L liquid		Gas		L liquid	Gas
HM72	φ9.52(3/8)	Brazed	φ22.2(7/8)	Brazed	φ15.88(5/8)	φ28.58(1-1/8)

*1 Connect the refrigerant pipe to the service valve according to the Installation Manual.

NO.	Usage		Specifications
①	For pipes	Front through hole	145(5-3/4) × 77(3-1/16) Knockout hole
②		Bottom through hole	150(5-15/16) × 90(3-9/16) Knockout hole
③	For wires	Front through hole	φ62.7(2-1/2) or φ34.5(1-3/8) Knockout hole
④		Front through hole	φ43.7(1-3/4) or φ22.2(7/8) Knockout hole
⑤		Bottom through hole	φ65(2-9/16) Knockout hole
⑥		Bottom through hole	φ52(2-1/16) Knockout hole
⑦	For transmission cables	Front through hole	φ34(1-3/8) Knockout hole
⑧		Bottom through hole	φ34(1-3/8) Knockout hole



Note 1.Please refer to (2/2) for information regarding necessary spacing around the unit and foundation work.
2.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).
3.Do not block the intake vent for detecting outside air temperature.
4.＊The dimensions are the maximum external dimensions, including the screws.

(1/2)

PUHY-HM72T/YXU-A

Unit: mm (in.)

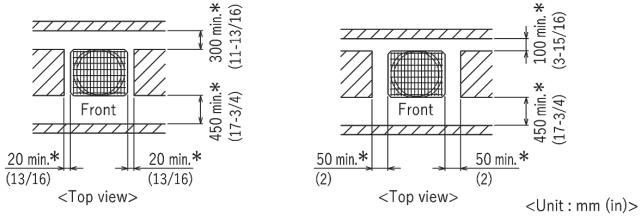
1. Required space around the unit

●In case of single installation

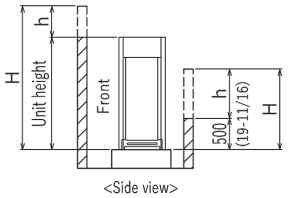
① Secure enough space around the unit as shown in the figure below.

・With a space of at least 300mm(11-13/16) to the wall on the back of the unit

・With a space of at least 100mm(3-15/16) to the wall on the back of the unit



② When the height of the walls on the front, back or on the sides <H> exceeds the wall height limit as defined below
add half of the height that exceeds the height limit <h/2> to the figures that are marked with an asterisk(*).
When adjacent to a building wall, ensure that at least two directions are open, with a rear space of at least 300mm(11-13/16) and a side space of at least 200mm(7-7/8) from the wall.



<Wall height limit>
Front : Up to the unit height
Back : 500mm(19-11/16) or less from the bottom of the unit
Side : Up to the unit height

2. Foundation work

① Take into consideration the surface strength, water drainage route, piping route, and wiring route when preparing the installation site.
<Note that the drain water comes out of the unit during operation.>

② Build the foundation in such way that the corner of the installation leg is securely supported as shown in the right figure.(Fig.A)
When using a rubber isolating cushion, please ensure it is large enough to cover the entire width of each of the unit's legs.

③ The protrusion length of the anchor bolt must not exceed 30mm(1-3/16).(Fig.A)

④ Use four fixing plates as shown in the right figure <field supply required> when using M12 hole-in anchor bolts <field supply required>.(Fig.B)

⑤ To prevent small animals and water and snow from entering the unit and damaging its parts, close the gap around the edges of through holes for pipes and wires with filler plates <field supply required>.

⑥ When the pipes or cables are routed at the bottom of the unit, make sure that the through hole at the base of the unit does not get blocked with the installation base.

⑦ Refer to the Installation Manual when installing units on an installation base.

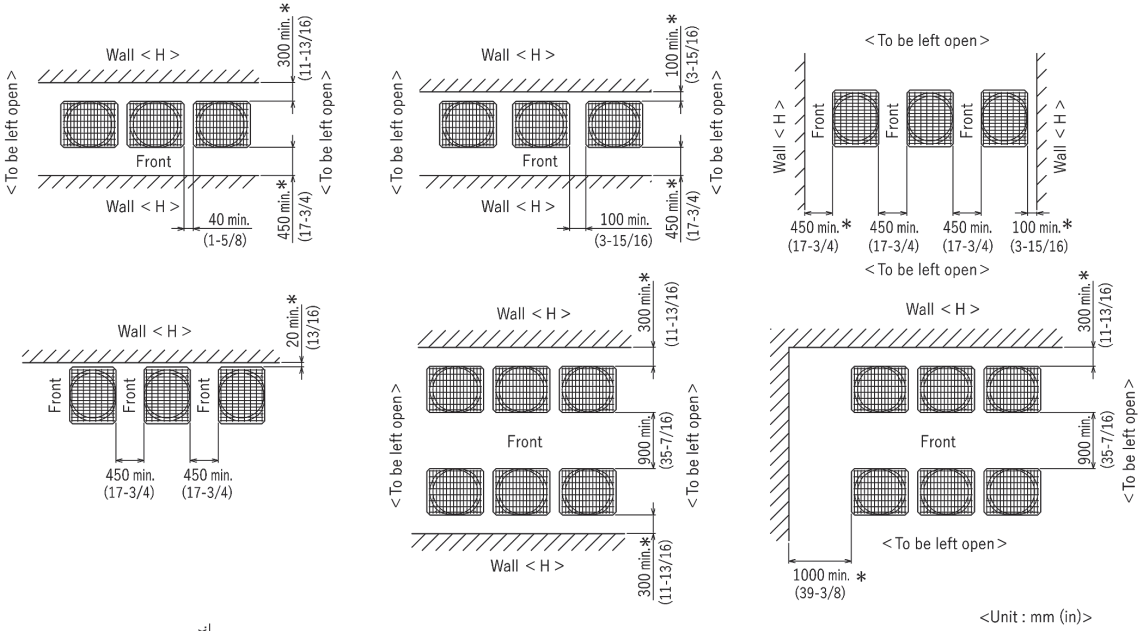
●In case of collective installation

① When multiple units are installed adjacent to each other, secure enough space to allow for air circulation and walkway between groups of units as shown in the figures below.

② At least two sides must be left open.

③ As with the single installation, add half of the height that exceeds the height limit <h/2> to the figures that are marked with an asterisk(*).

④ If there is a wall at both the front and the rear of the unit, install up to six units consecutively in the side direction and provide a space of 1000mm(39-3/8) or more as inlet space / passage space for each six units.
When adjacent to a building wall, ensure that at least two directions are open, with a rear space of at least 300mm(11-13/16) and a side space of at least 200mm(7-7/8) from the wall.
When installing units side by side, ensure a space of at least 400mm(15-3/4) between the units.



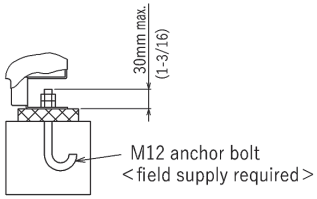


Fig. A

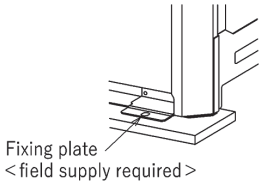


Fig. B

PUHY-HM96, 120T/YXU-A

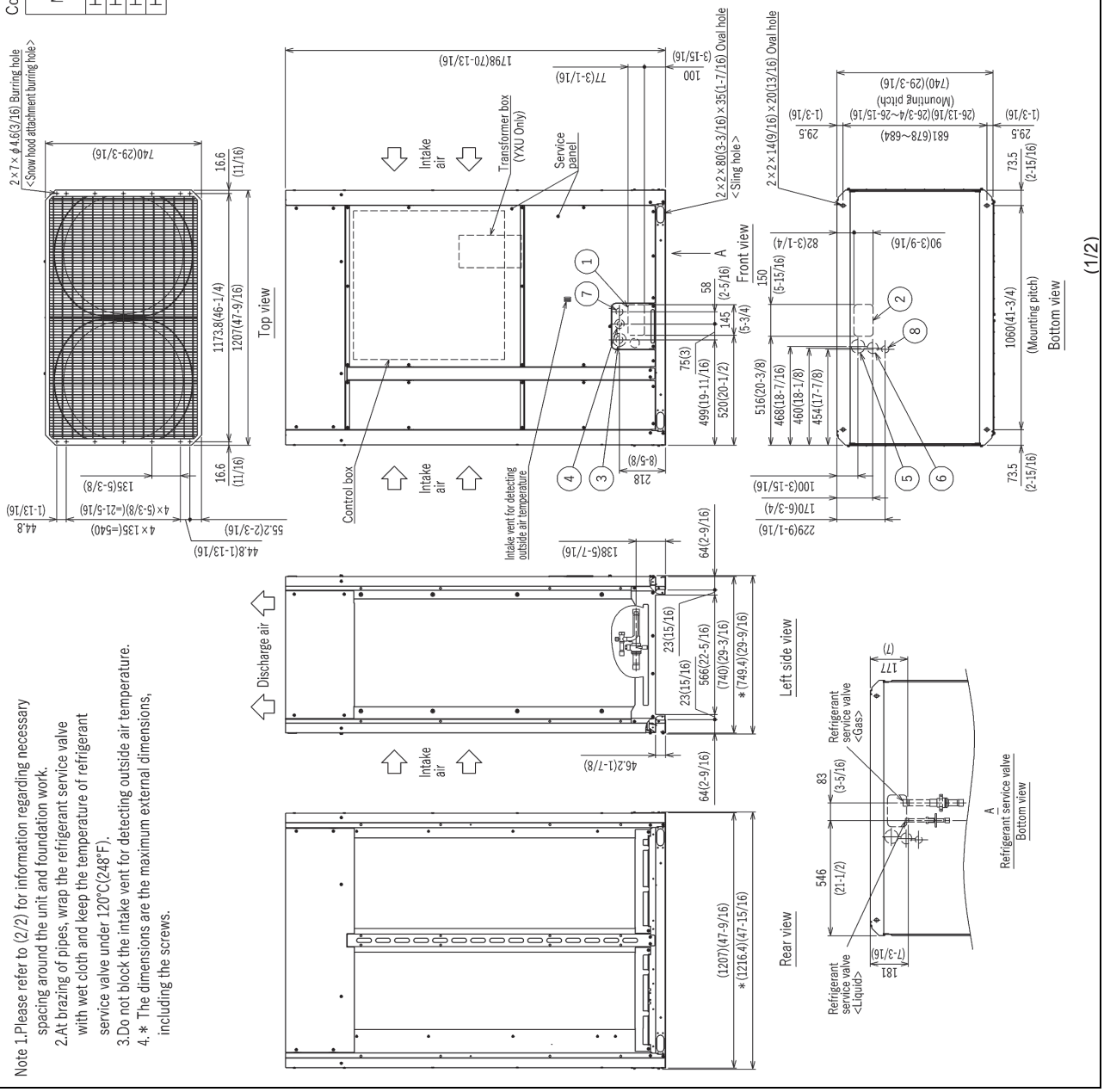
Unit: mm (in.)

Connecting pipe specifications

Model	Diameter					
	Refrigerant pipe *1				Service valve	
	Liquid		Gas		Liquid	Gas
HM96	φ9.52(3/8)	Brazed	φ22.2(7/8)	Brazed	φ15.88(5/8)	φ28.58(1-1/8)
HM96	φ12.7(1/2)	Brazed *2	φ22.2(7/8)	Brazed	φ15.88(5/8)	φ28.58(1-1/8)
HM120	φ9.52(3/8)	Brazed	φ28.58(1-1/8)	Brazed	φ15.88(5/8)	φ28.58(1-1/8)
HM120	φ12.7(1/2)	Brazed *3	φ28.58(1-1/8)	Brazed	φ15.88(5/8)	φ28.58(1-1/8)

*1 Connect the refrigerant pipe to the service valve according to the Installation Manual.
*2 Furthest piping length (OU from IU) ≧90m (295ft)
*3 Furthest piping length (OU from IU) ≧40m (131ft)

NO.	Usage		Specifications
①	For pipes	Front through hole	145(5-3/4) × 77(3-1/16) Knockout hole
②		Bottom through hole	150(5-15/16) × 90(3-9/16) Knockout hole
③	For wires	Front through hole	φ62.7(2-1/2) or φ34.5(1-3/8) Knockout hole
④		Front through hole	φ43.7(1-3/4) or φ22.2(7/8) Knockout hole
⑤		Bottom through hole	φ65(2-9/16) Knockout hole
⑥		Bottom through hole	φ52(2-1/16) Knockout hole
⑦	For transmission cables	Front through hole	φ34(1-3/8) Knockout hole
⑧		Bottom through hole	φ34(1-3/8) Knockout hole



Note 1.Please refer to (2/2) for information regarding necessary spacing around the unit and foundation work.
2.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).
3.Do not block the intake vent for detecting outside air temperature.
4.＊The dimensions are the maximum external dimensions, including the screws.

(1/2)

PUHY-HM96, 120T/YXU-A

Unit: mm (in.)

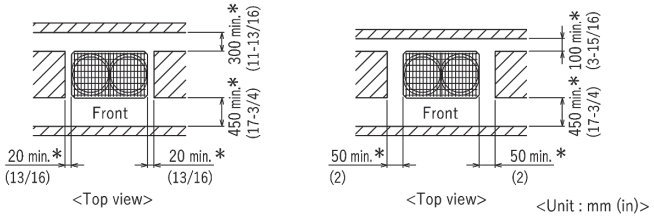
1. Required space around the unit

●In case of single installation

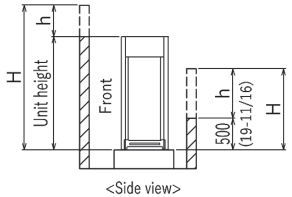
① Secure enough space around the unit as shown in the figure below.

・With a space of at least 300mm(11-13/16) to the wall on the back of the unit

・With a space of at least 100mm(3-15/16) to the wall on the back of the unit



② When the height of the walls on the front, back or on the sides <H> exceeds the wall height limit as defined below add half of the height that exceeds the height limit <h/2> to the figures that are marked with an asterisk(*).
When adjacent to a building wall, ensure that at least two directions are open, with a rear space of at least 300mm(11-13/16) and a side space of at least 200mm(7-7/8) from the wall.



<Wall height limit>
Front : Up to the unit height
Back : 500mm(19-11/16) or less from the bottom of the unit
Side : Up to the unit height

2. Foundation work

① Take into consideration the surface strength, water drainage route, piping route, and wiring route when preparing the installation site.
<Note that the drain water comes out of the unit during operation.>

② Build the foundation in such way that the corner of the installation leg is securely supported as shown in the right figure.(Fig.A)
When using a rubber isolating cushion, please ensure it is large enough to cover the entire width of each of the unit's legs.

③ The protrusion length of the anchor bolt must not exceed 30mm(1-3/16).(Fig.A)

④ Use four fixing plates as shown in the right figure <field supply required> when using M12 hole-in anchor bolts <field supply required>.(Fig.B)

⑤ To prevent small animals and water and snow from entering the unit and damaging its parts, close the gap around the edges of through holes for pipes and wires with filler plates <field supply required>.

⑥ When the pipes or cables are routed at the bottom of the unit, make sure that the through hole at the base of the unit does not get blocked with the installation base.

⑦ Refer to the Installation Manual when installing units on an installation base.

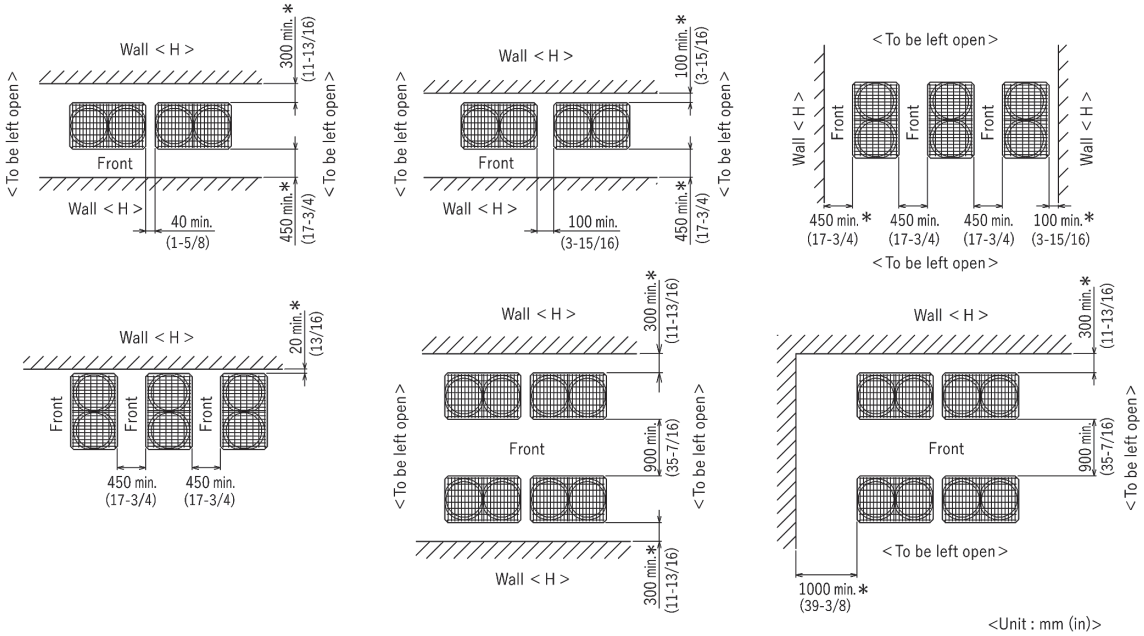
●In case of collective installation

① When multiple units are installed adjacent to each other, secure enough space to allow for air circulation and walkway between groups of units as shown in the figures below.

② At least two sides must be left open.

③ As with the single installation, add half of the height that exceeds the height limit <h/2> to the figures that are marked with an asterisk(*).

④ If there is a wall at both the front and the rear of the unit, install up to six units consecutively in the side direction and provide a space of 1000mm(39-3/8) or more as inlet space / passage space for each six units.
When adjacent to a building wall, ensure that at least two directions are open, with a rear space of at least 300mm(11-13/16) and a side space of at least 200mm(7-7/8) from the wall.
When installing units side by side, ensure a space of at least 400mm(15-3/4) between the units.



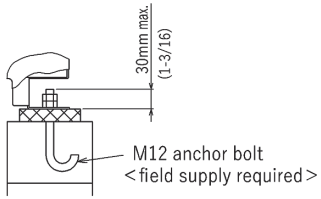


Fig. A

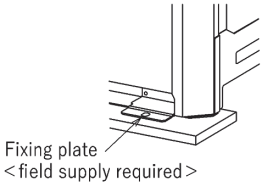
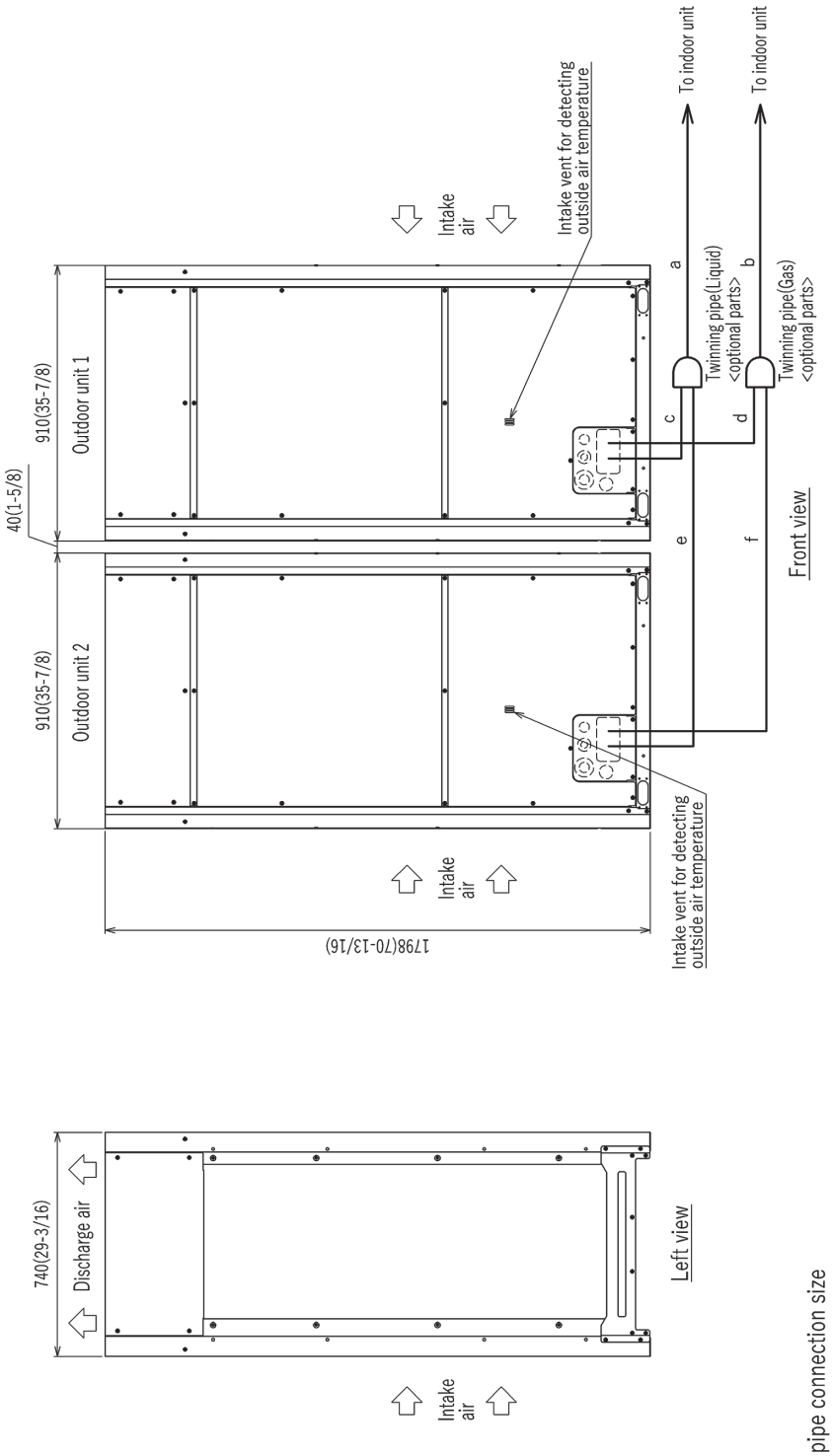


Fig. B

PUHY-HM144T/YSXU-A

Unit: mm (in.)



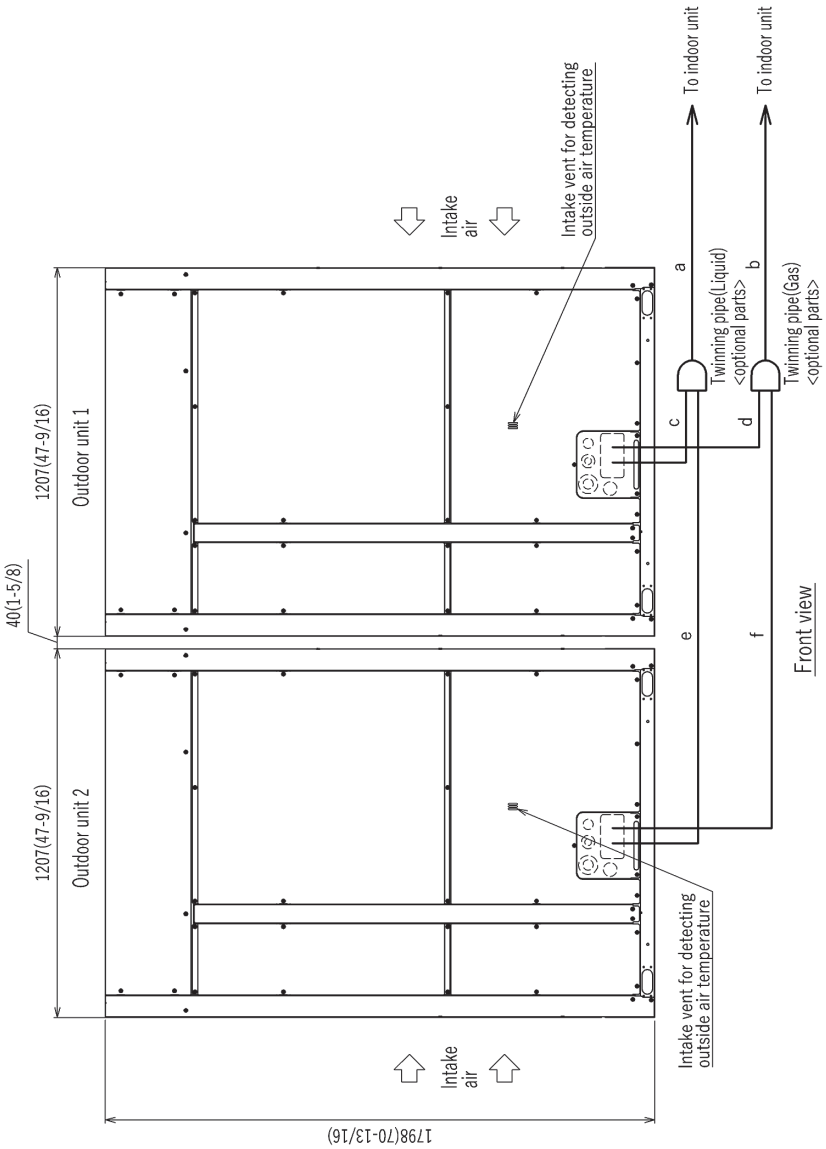
Twinning pipe connection size

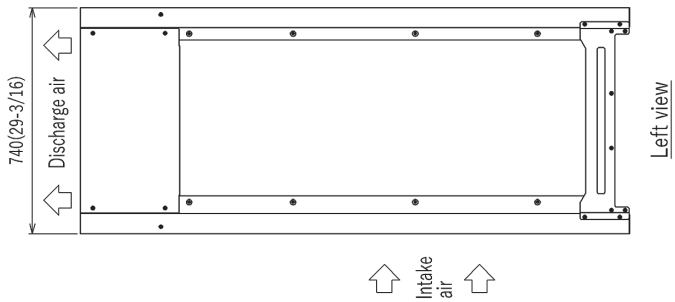
Package unit name			HM144T/YSXU-A
Component unit name	Outdoor unit 1		HM72T/YXU-A
	Outdoor unit 2		HM72T/YXU-A
Outdoor Twinning Kit(optional parts)			CMY-Y100CBK3
Indoor unit ~Twinning pipe	Liquid	a	ϕ12.7(1/2)
	Gas	b	ϕ28.58(1-1/8)
Twinning pipe ~Outdoor unit 1	Liquid	c	ϕ9.52(3/8)
	Gas	d	ϕ22.2(7/8)
Twinning pipe ~Outdoor unit 2	Liquid	e	ϕ9.52(3/8)
	Gas	f	ϕ22.2(7/8)

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.
Be sure to see the Installation Manual for details of Twinning pipe installation.
3. 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).
4. Only use the Twinning pipe by Mitsubishi (optional parts).
5. Do not block the intake vent for detecting outside air temperature.

PUHY-HM192, 240T/YSXU-A

Unit: mm (in.)



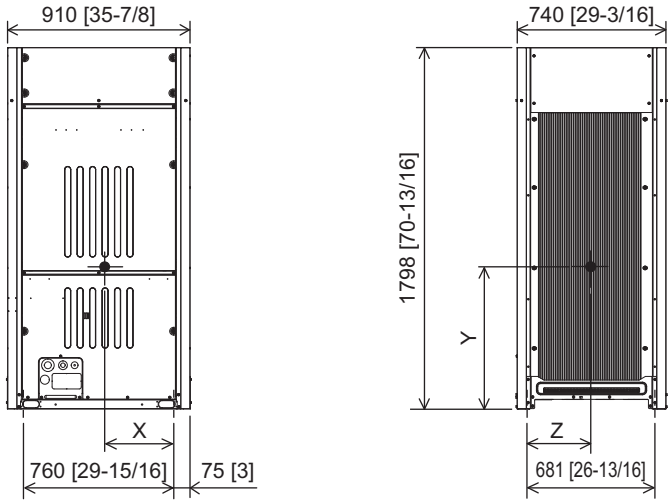


Twinning pipe connection size

Package unit name			HM192T/YSXU-A	HM240T/YSXU-A
Component unit name	Outdoor unit 1		HM96T/YXU-A	HM120T/YXU-A
	Outdoor unit 2		HM96T/YXU-A	HM120T/YXU-A
Outdoor Twinning Kit(optional parts)			CMY-Y100CBK3	CMY-Y100CBK3
Indoor unit ~Twinning pipe	Liquid	a	ϕ15.88(5/8)	ϕ15.88(5/8)
	Gas	b	ϕ28.58(1-1/8)	ϕ28.58(1-1/8)
Twinning pipe ~Outdoor unit 1	Liquid	c	ϕ9.52(3/8)	ϕ12.7(1/2)
	Gas	d	ϕ22.2(7/8)	ϕ28.58(1-1/8)
Twinning pipe ~Outdoor unit 2	Liquid	e	ϕ9.52(3/8)	ϕ12.7(1/2)
	Gas	f	ϕ22.2(7/8)	ϕ28.58(1-1/8)

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.
Be sure to see the Installation Manual for details of Twinning pipe installation.
3. 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).
4. Only use the Twinning pipe by Mitsubishi (optional parts).
5. Do not block the intake vent for detecting outside air temperature.

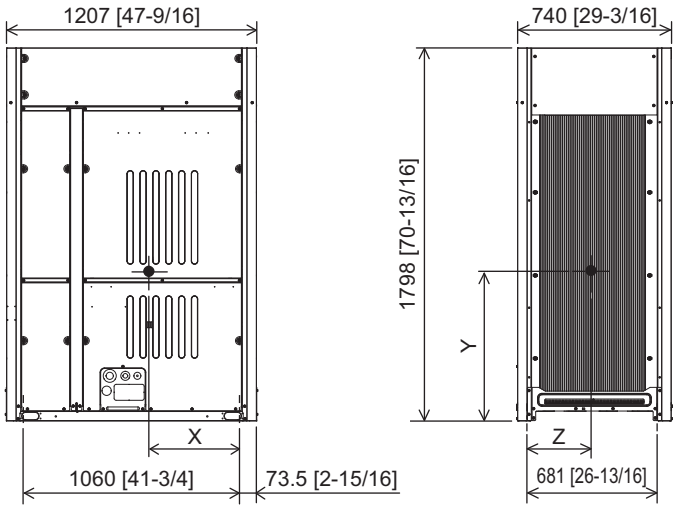
PUHY-HM72TXU-A
PUHY-HM72YXU-A



Unit: mm [in.]

Model	X	Y	Z
PUHY-HM72TXU-A	343 [13-9/16]	746 [29-3/8]	299 [11-13/16]
PUHY-HM72YXU-A	337 [13-5/16]	751 [29-9/16]	293 [11-9/16]

PUHY-HM96, 120TXU-A
PUHY-HM96, 120YXU-A



Unit: mm [in.]

Model	X	Y	Z
PUHY-HM96TXU-A	427 [16-13/16]	775 [30-9/16]	304 [12]
PUHY-HM120TXU-A	427 [16-13/16]	778 [30-5/8]	302 [11-15/16]
PUHY-HM96YXU-A	419 [16-9/16]	783 [30-13/16]	298 [11-3/4]
PUHY-HM120YXU-A	419 [16-9/16]	783 [30-13/16]	298 [11-3/4]

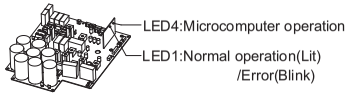
4. ELECTRICAL WIRING DIAGRAMS

PUHY-HM72TXU-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 FTN 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 outdoor units in the same refrigerant system.
*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.
*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

*9.Refer to the following for the LED on the INV board.



*10.Difference of appliance

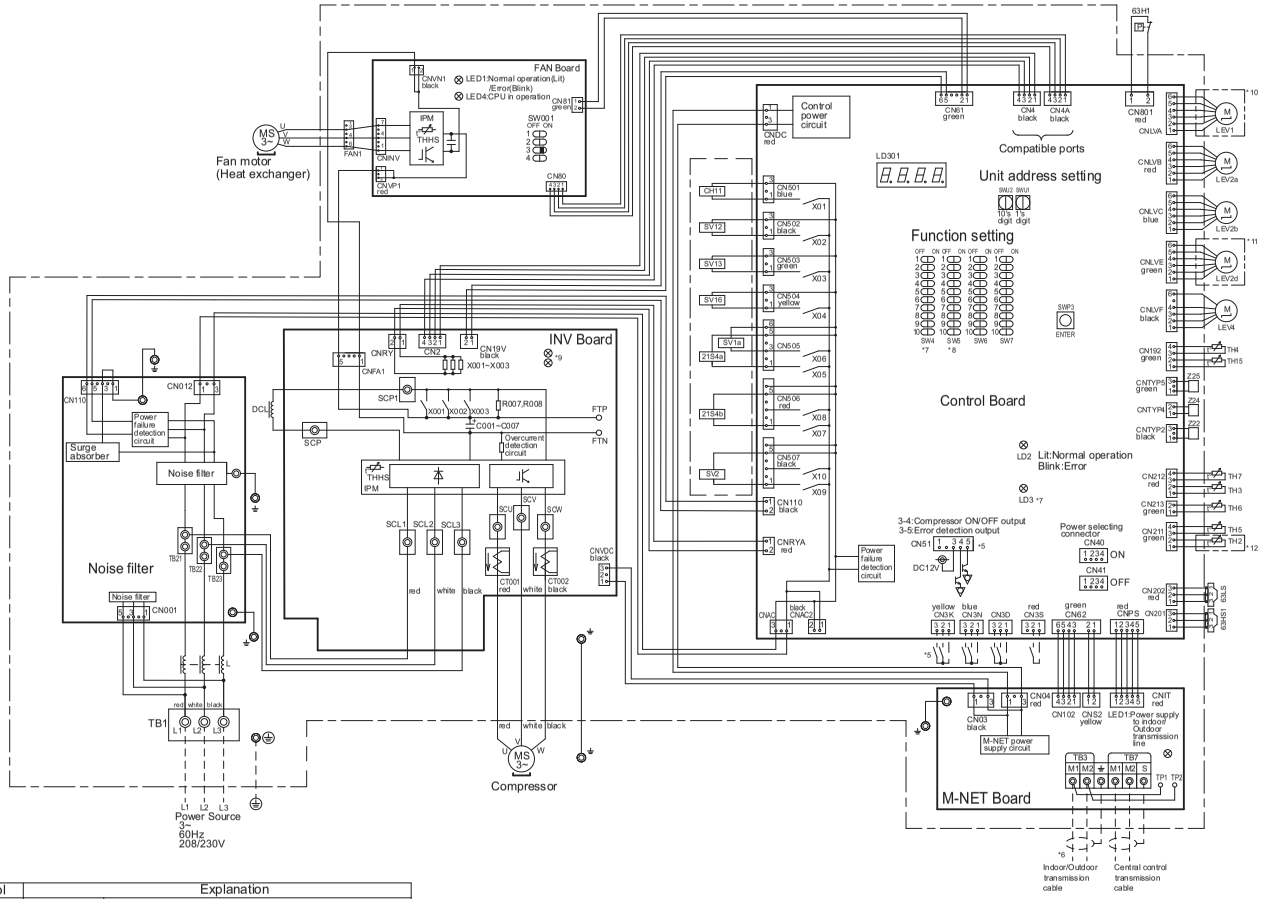
Model name	Appliance
PUHY/TUHY	*10 exist
PURY/TURY	*10 do not exist

*11.Difference of appliance

Model name	Appliance
PUHY/TUHY	*11 do not exist
PURY/TURY	*11 exist

*12.Difference of appliance

Model name	Appliance
PUHY/TUHY	*12 exist
PURY/TURY	*12 do not exist



<Symbol explanation>

Symbol	Explanation		Symbol	Explanation	
21S4a	4-way valve	Cooling/Heating switching	SV1a	Solenoid valve	For opening/closing the bypass circuit under the O/S
21S4b		HEX capacity switching			
63H1	Pressure switch(High pressure protection)		SV2		For opening/closing the high and low pressure the bypass circuit
63HS1	Pressure sensor	Discharge pressure			
63LS		Low pressure			
X001~X003	Magnetic relay(inverter main circuit)72C		SV12		For on defrost switching
C001~C007	Capacitor(inverter main circuit)		SV13		For on defrost switching
CH11	Crankcase heater (for heating the compressor)		SV16		For opening/closing the variable pass circuit
CT001,002	Current sensor				
DCL	DC reactor(For power factor enhancement)		TB1	Terminal block	Power supply
L	Choke coil(For high-frequency noise reduction)		TB3		Indoor/Outdoor transmission cable
LEV1	Linear expansion valve	Pressure control, Refrigerant flow late control.	TB7		Central control transmission cable
			TH2	Thermistor	Subcool bypass outlet temperature
LEV2a		Pressure control, Refrigerant flow late control.	TH3		Pipe temperature
			TH4		Discharge pipe temperature
LEV2b		Pressure control,Refrigerant flow late control.	TH5		ACC inlet pipe temperature
			TH6		Subcooled liquid refrigerant temperature
LEV2d		Pressure control,Refrigerant flow late control.	TH7		OA temperature
			TH15		Detection of compressor lower shell temperature
LEV4		For opening/closing the injection circuit	THHS		IPM temperature
R007,008	Resistor	Inrush current prevention	Z22,Z24,Z25	Function setting connector	

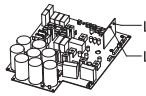
4. ELECTRICAL WIRING DIAGRAMS

PUHY-HM96, 120TXU-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 FTN 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 outdoor units in the same refrigerant system.
*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.
*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

*9.Refer to the following for the LED on the INV board.



*10.Difference of appliance

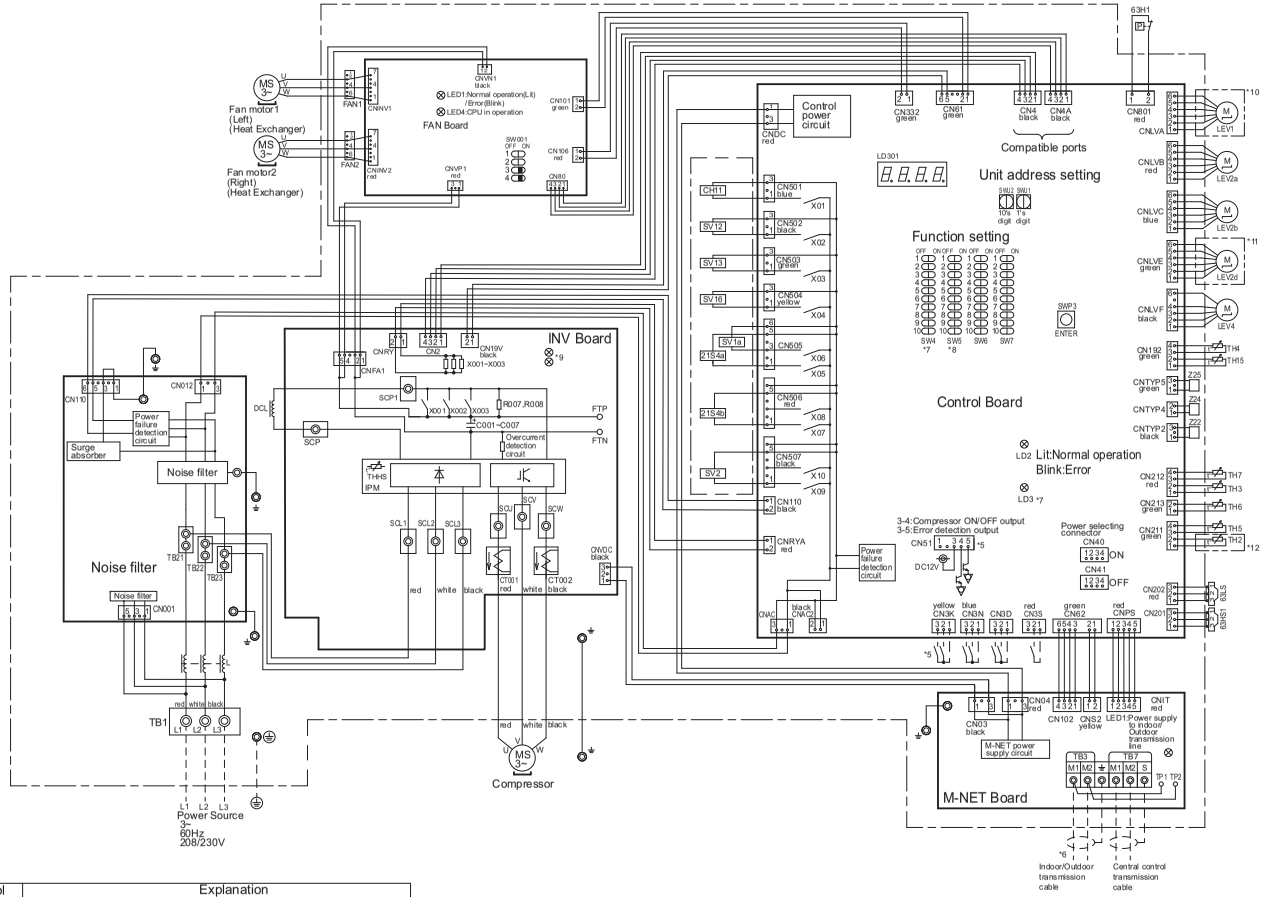
Model name	Appliance
PUHY/TUHY	*10 exist
PURY/TURY	*10 do not exist

*11.Difference of appliance

Model name	Appliance
PUHY/TUHY	*11 do not exist
PURY/TURY	*11 exist

*12.Difference of appliance

Model name	Appliance
PUHY/TUHY	*12 exist
PURY/TURY	*12 do not exist



<Symbol explanation>

Symbol	Explanation		Symbol	Explanation	
21S4a	4-way valve	Cooling/Heating switching	SV1a	Solenoid valve	For opening/closing the bypass circuit under the O/S
21S4b		HEX capacity switching			
63H1	Pressure switch(High pressure protection)		SV2		For opening/closing the high and low pressure the bypass circuit
63HS1	Pressure sensor	Discharge pressure			
63LS		Low pressure			
X001~X003	Magnetic relay(inverter main circuit)72C		SV12		For on defrost switching
C001~C007	Capacitor(inverter main circuit)		SV13		For on defrost switching
CH11	Crankcase heater (for heating the compressor)		SV16		For opening/closing the variable pass circuit
CT001,002	Current sensor				
DCL	DC reactor(For power factor enhancement)		TB1	Terminal block	Power supply
L	Choke coil(For high-frequency noise reduction)		TB3		Indoor/Outdoor transmission cable
LEV1	Linear expansion valve	Pressure control, Refrigerant flow late control.	TB7		Central control transmission cable
			TH2	Thermistor	Subcool bypass outlet temperature
LEV2a		Pressure control, Refrigerant flow late control.	TH3		Pipe temperature
			TH4		Discharge pipe temperature
LEV2b		Pressure control,Refrigerant flow late control.	TH5		ACC inlet pipe temperature
			TH6		Subcooled liquid refrigerant temperature
LEV2d		Pressure control,Refrigerant flow late control.	TH7		OA temperature
			TH15		Detection of compressor lower shell temperature
LEV4		For opening/closing the injection circuit	THHS		IPM temperature
R007,008	Resistor	Inrush current prevention	Z22,Z24,Z25	Function setting connector	

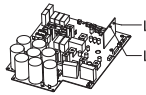
4. ELECTRICAL WIRING DIAGRAMS

PUHY-HM72YXU-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 FTN 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 outdoor units in the same refrigerant system.
*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.
*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

*9.Refer to the following for the LED on the INV board.



*10.Difference of appliance

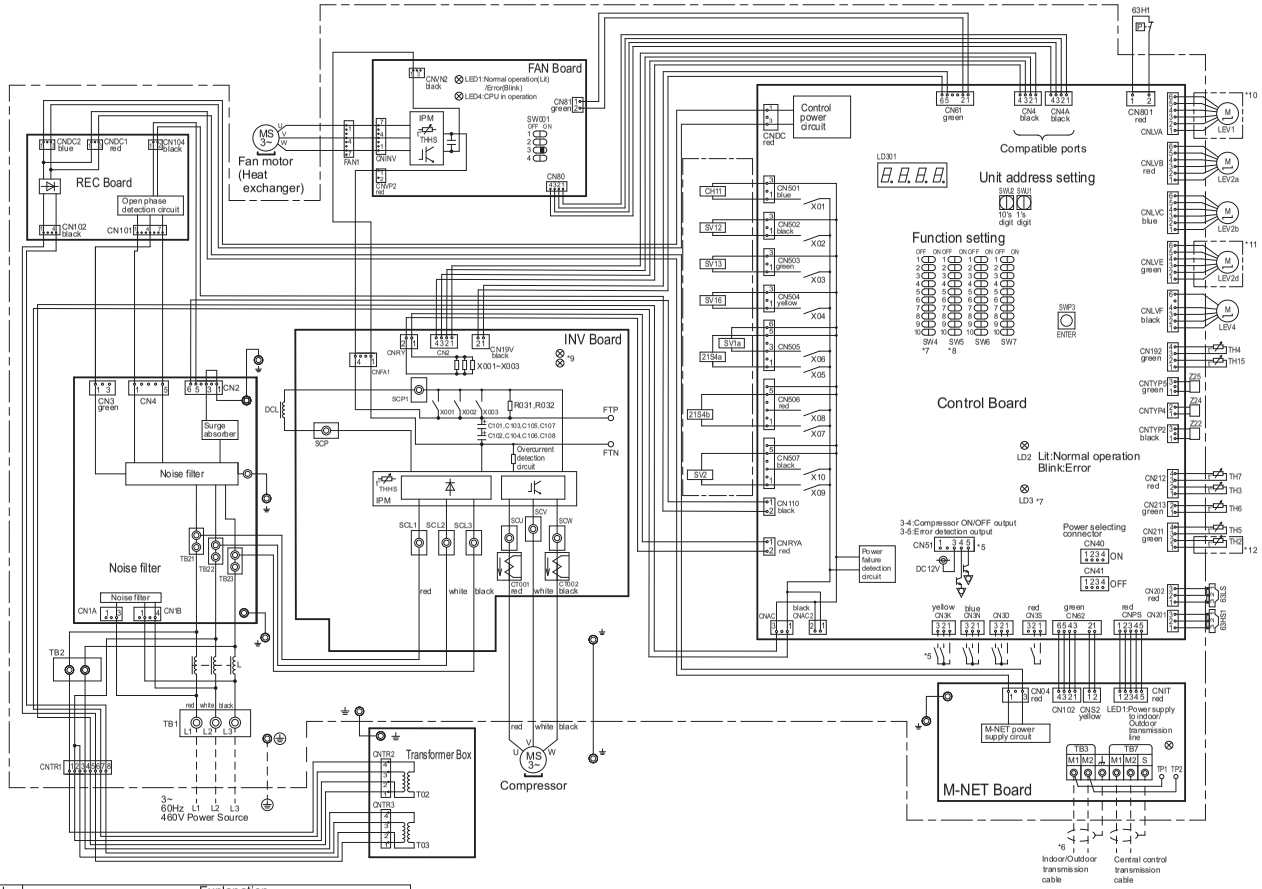
Model name	Appliance
PUHY/TUHY	*10 exist
PURY/TURY	*10 do not exist

*11.Difference of appliance

Model name	Appliance
PUHY/TUHY	*11 do not exist
PURY/TURY	*11 exist

*12.Difference of appliance

Model name	Appliance
PUHY/TUHY	*12 exist
PURY/TURY	*12 do not exist



<Symbol explanation>

Symbol	Explanation		Symbol	Explanation	
21S4a	4-way valve	Cooling/Heating switching	SV1a	Solenoid valve	For opening/closing the bypass circuit under the O/S
21S4b		HEX capacity switching			
63H1	Pressure switch(High pressure protection)		SV2		For opening/closing the high and low pressure the bypass circuit
63HS1	Pressure sensor	Discharge pressure			
63LS		Low pressure			
X001~X003	Magnetic relay(inverter main circuit)72C		SV12		For on defrost switching
C001~C007	Capacitor(inverter main circuit)		SV13		For on defrost switching
CH11	Crankcase heater (for heating the compressor)		SV16		For opening/closing the variable pass circuit
CT001,002	Current sensor				
DCL	DC reactor(For power factor enhancement)		TB1	Terminal block	Power supply
L	Choke coil(For high-frequency noise reduction)		TB3		Indoor/Outdoor transmission cable
LEV1	Linear expansion valve	Pressure control, Refrigerant flow late control.	TB7		Central control transmission cable
			TH2	Thermistor	Subcool bypass outlet temperature
LEV2a		Pressure control, Refrigerant flow late control.	TH3		Pipe temperature
			TH4		Discharge pipe temperature
LEV2b		Pressure control,Refrigerant flow late control.	TH5		ACC inlet pipe temperature
			TH6		Subcooled liquid refrigerant temperature
LEV2d		Pressure control,Refrigerant flow late control.	TH7		OA temperature
			TH15		Detection of compressor lower shell temperature
LEV4		For opening/closing the injection circuit	THHS		IPM temperature
R007,008	Resistor	Inrush current prevention	Z22,Z24,Z25	Function setting connector	

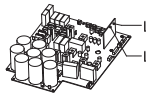
4. ELECTRICAL WIRING DIAGRAMS

PUHY-HM96, 120YXU-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 FTN 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 outdoor units in the same refrigerant system.
*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.
*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

*9.Refer to the following for the LED on the INV board.



LED4:Microcomputer operation
LED1:Normal operation(Lit)
/Error(Blink)

*10.Difference of appliance

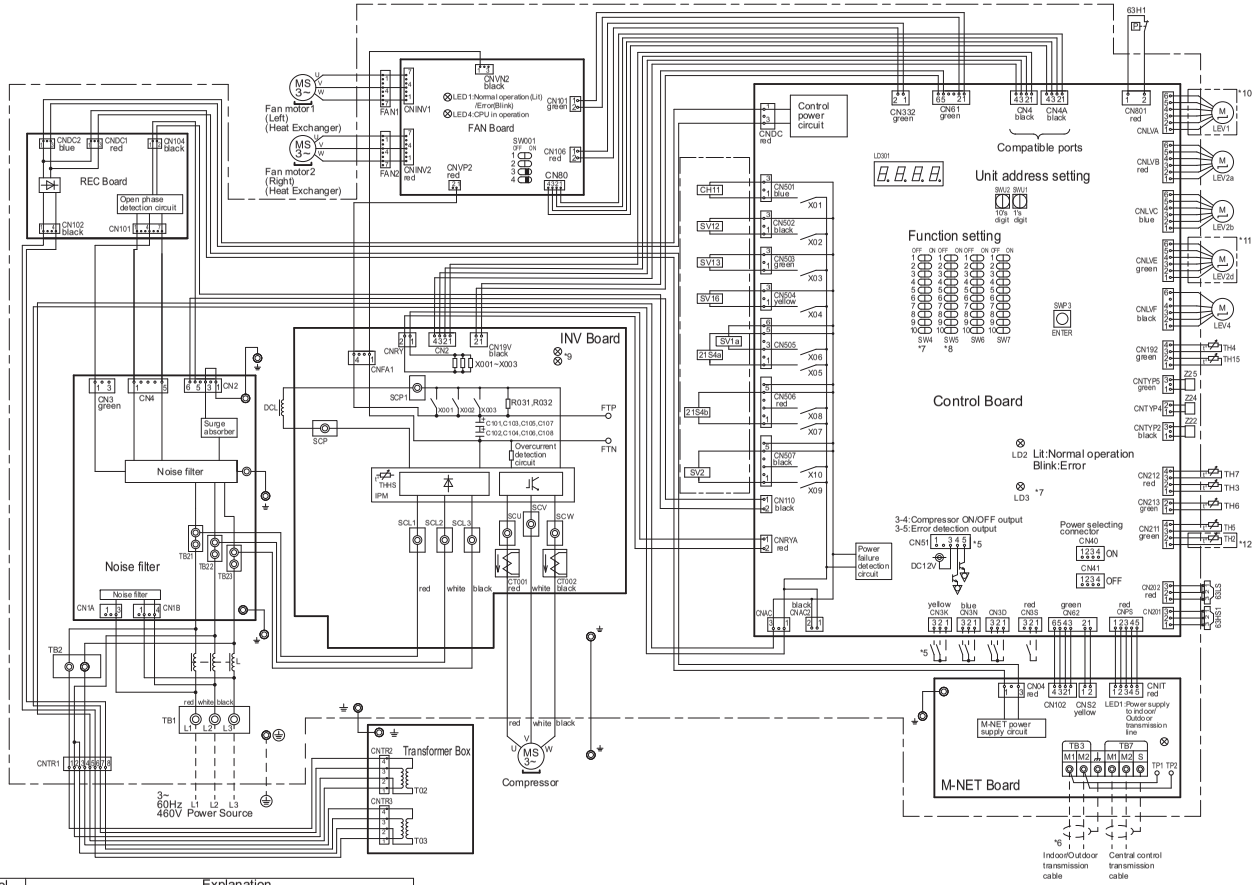
Model name	Appliance
PUHY/TUHY	*10 exist
PURY/TURY	*10 do not exist

*11.Difference of appliance

Model name	Appliance
PUHY/TUHY	*11 do not exist
PURY/TURY	*11 exist

*12.Difference of appliance

Model name	Appliance
PUHY/TUHY	*12 exist
PURY/TURY	*12 do not exist

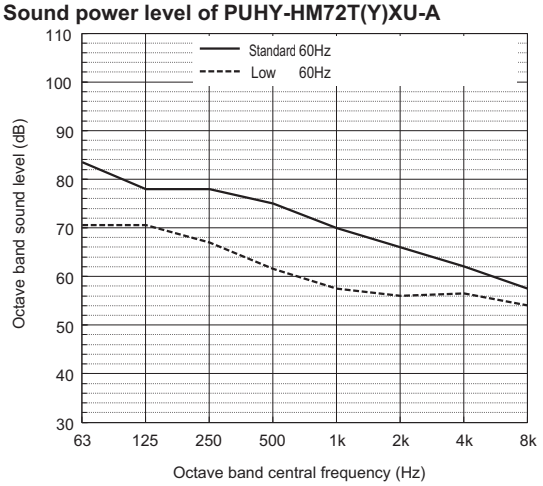


<Symbol explanation>

Symbol	Explanation		Symbol	Explanation	
21S4a	4-way valve	Cooling/Heating switching	SV1a	Solenoid valve	For opening/closing the bypass circuit under the O/S
21S4b		HEX capacity switching			
63H1	Pressure switch(High pressure protection)		SV2		For opening/closing the high and low pressure the bypass circuit
63HS1	Pressure sensor	Discharge pressure			
63LS		Low pressure			
X001~X003	Magnetic relay(inverter main circuit)72C		SV12		For on defrost switching
C001~C007	Capacitor(inverter main circuit)		SV13		For on defrost switching
CH11	Crankcase heater (for heating the compressor)		SV16		For opening/closing the variable pass circuit
CT001,002	Current sensor				
DCL	DC reactor(For power factor enhancement)		TB1	Terminal block	Power supply
L	Choke coil(For high-frequency noise reduction)		TB3		Indoor/Outdoor transmission cable
LEV1	Linear expansion valve	Pressure control, Refrigerant flow late control.	TB7		Central control transmission cable
			TH2	Thermistor	Subcool bypass outlet temperature
LEV2a		Pressure control, Refrigerant flow late control.	TH3		Pipe temperature
			TH4		Discharge pipe temperature
LEV2b		Pressure control,Refrigerant flow late control.	TH5		ACC inlet pipe temperature
			TH6		Subcooled liquid refrigerant temperature
LEV2d		Pressure control,Refrigerant flow late control.	TH7		OA temperature
			TH15		Detection of compressor lower shell temperature
LEV4		For opening/closing the injection circuit	THHS		IPM temperature
R007,008	Resistor	Inrush current prevention	Z22,Z24,Z25	Function setting connector	

5-1. Sound levels in cooling mode

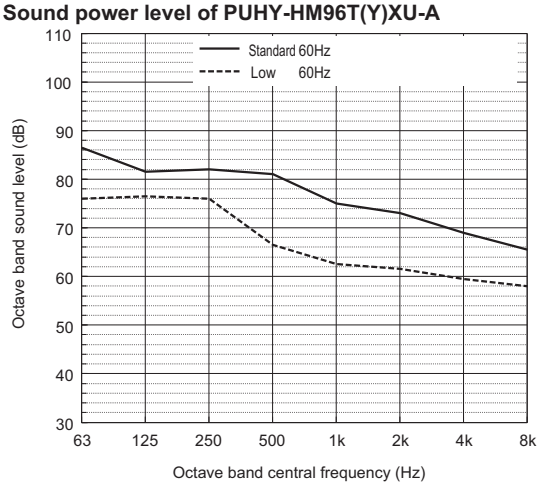
Sound power level of PUHY-HM72T(Y)XU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	60Hz	83.5	78.0	78.0	75.0	70.0	66.0	62.0	57.5	76.5
Low noise mode	60Hz	70.5	70.5	67.0	61.5	57.5	56.0	56.5	54.0	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.

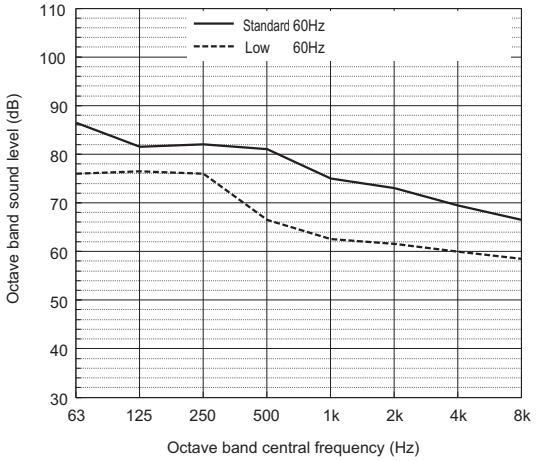
Sound power level of PUHY-HM96T(Y)XU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	60Hz	86.5	81.5	82.0	81.0	75.0	73.0	69.0	65.5	82.0
Low noise mode	60Hz	76.0	76.5	76.0	66.5	62.5	61.5	59.5	58.0	71.5

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.

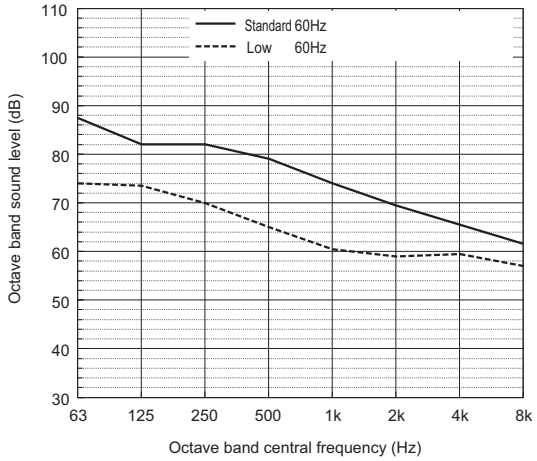
Sound power level of PUHY-HM120T(Y)XU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	60Hz	86.5	81.5	82.0	81.0	75.0	73.0	69.5	66.5	82.0
Low noise mode	60Hz	76.0	76.5	76.0	66.5	62.5	61.5	60.0	58.5	71.5

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.

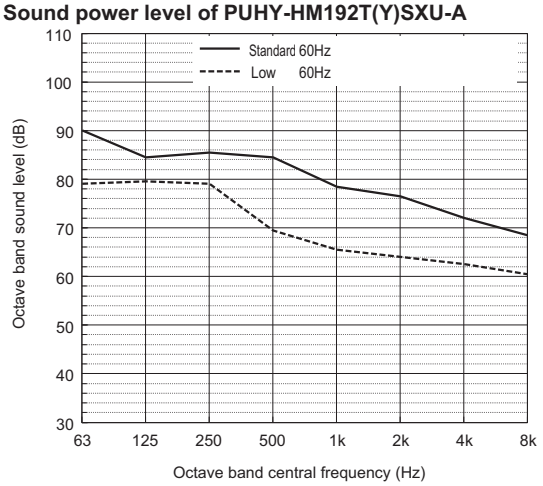
Sound power level of PUHY-HM144T(Y)SXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	60Hz	87.5	82.0	82.0	79.0	74.0	69.5	65.5	61.5	80.0
Low noise mode	60Hz	74.0	73.5	70.0	65.0	60.5	59.0	59.5	57.0	69.0

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.

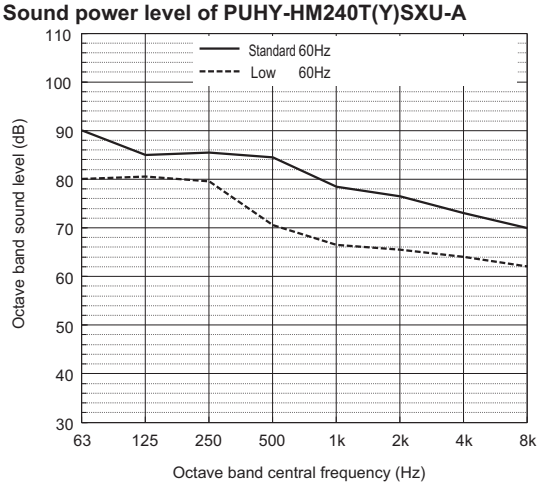
Sound power level of PUHY-HM192T(Y)SXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	60Hz	90.0	84.5	85.5	84.5	78.5	76.5	72.0	68.5	85.5
Low noise mode	60Hz	79.0	79.5	79.0	69.5	65.5	64.0	62.5	60.5	74.5

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 PUHY-HM240T(Y)SXU-A



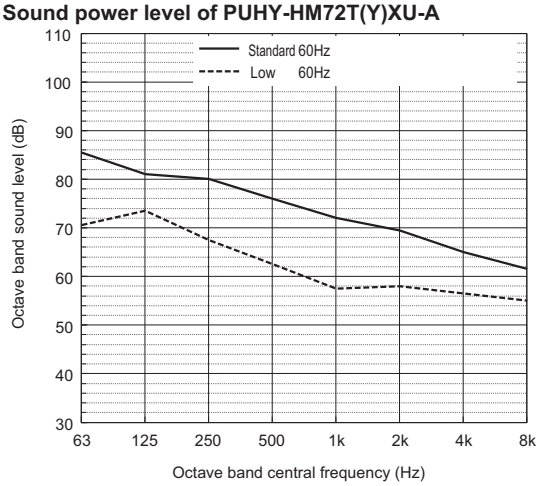
		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	60Hz	90.0	85.0	85.5	84.5	78.5	76.5	73.0	70.0	85.5
Low noise mode	60Hz	80.0	80.5	79.5	70.5	66.5	65.5	64.0	62.0	75.0

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

5-2. Sound levels in heating mode

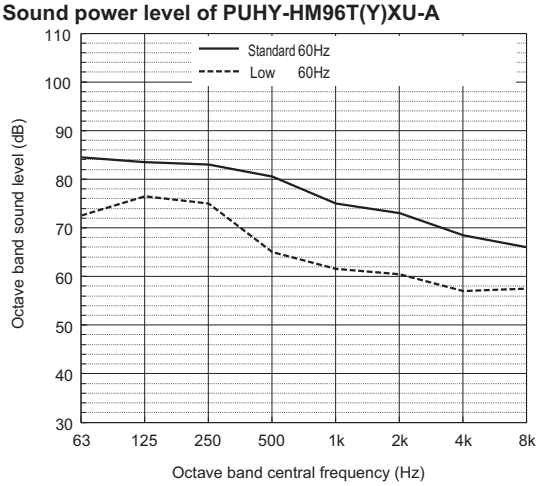
Sound power level of PUHY-HM72T(Y)XU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Heating	60Hz	85.5	81.0	80.0	76.0	72.0	69.5	65.0	61.5	78.5
Low noise mode	60Hz	70.5	73.5	67.5	62.5	57.5	58.0	56.5	55.0	66.5

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.

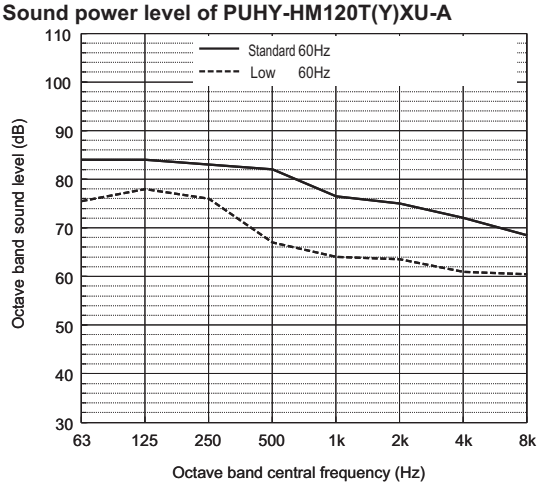
Sound power level of PUHY-HM96T(Y)XU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Heating	60Hz	84.5	83.5	83.0	80.5	75.0	73.0	68.5	66.0	82.0
Low noise mode	60Hz	72.5	76.5	75.0	65.0	61.5	60.5	57.0	57.5	70.5

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.

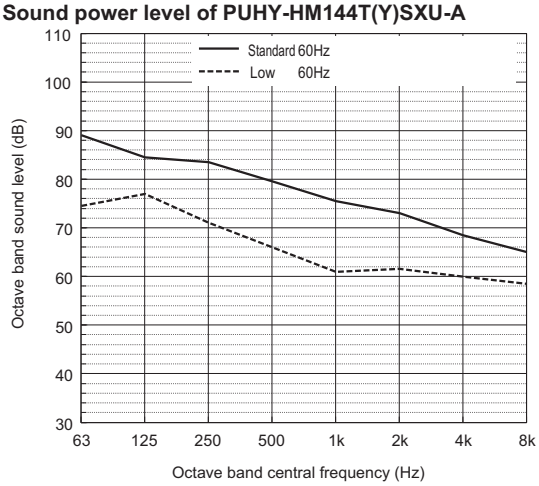
Sound power level of PUHY-HM120T(Y)XU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Heating	60Hz	84.0	84.0	83.0	82.0	76.5	75.0	72.0	68.5	83.5
Low noise mode	60Hz	75.5	78.0	76.0	67.0	64.0	63.5	61.0	60.5	72.5

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.

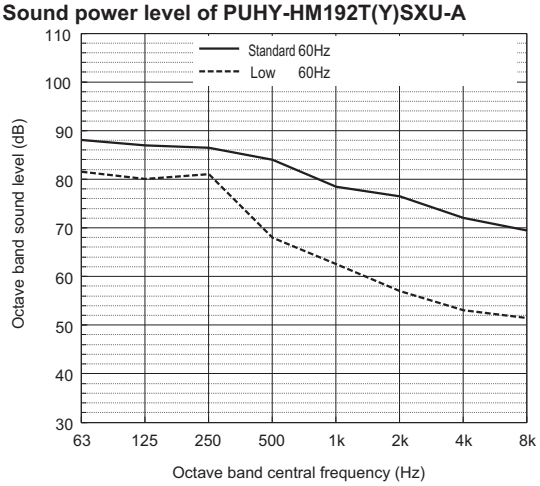
Sound power level of PUHY-HM144T(Y)SXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Heating	60Hz	89.0	84.5	83.5	79.5	75.5	73.0	68.5	65.0	82.0
Low noise mode	60Hz	74.5	77.0	71.0	66.0	61.0	61.5	60.0	58.5	70.0

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.

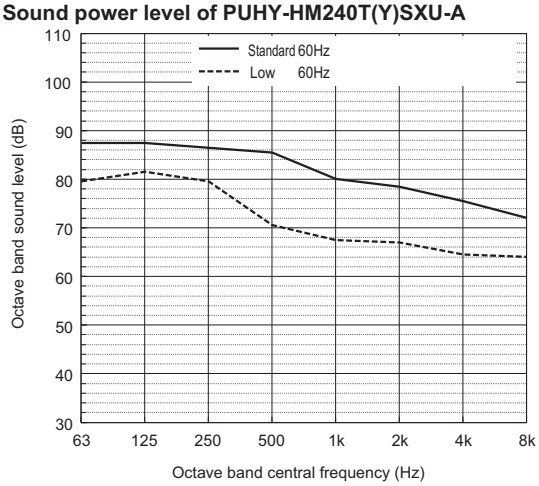
Sound power level of PUHY-HM192T(Y)SXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Heating	60Hz	88.0	87.0	86.5	84.0	78.5	76.5	72.0	69.5	85.5
Low noise mode	60Hz	81.5	80.0	81.0	68.0	62.5	57.0	53.0	51.5	74.0

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 PUHY-HM240T(Y)SXU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Heating	60Hz	87.5	87.5	86.5	85.5	80.0	78.5	75.5	72.0	87.0
Low noise mode	60Hz	79.5	81.5	79.5	70.5	67.5	67.0	64.5	64.0	76.0

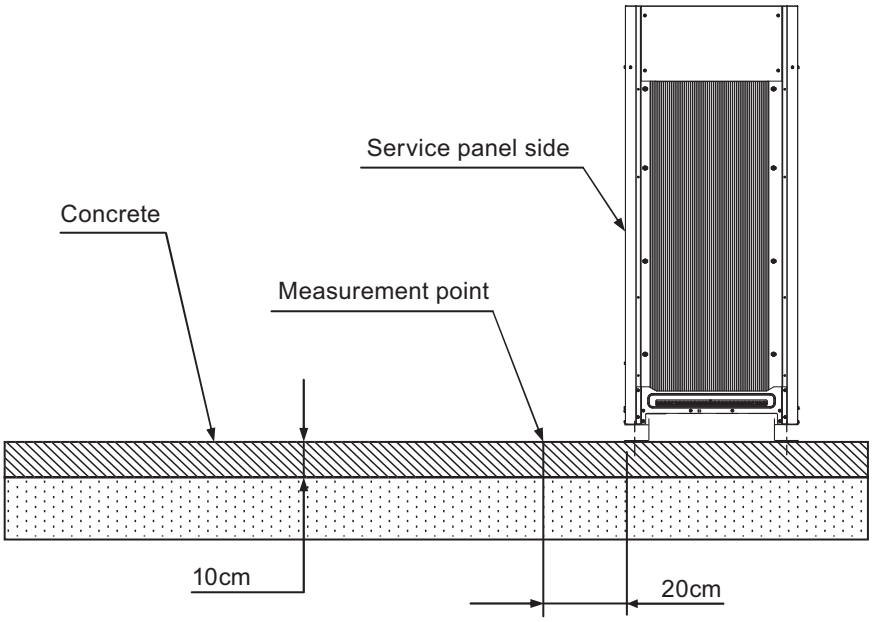
When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

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

[PUHY-HM72-120T/YXU, PUHY-HM144-240T/YSXU]

Measurement condition

Measurement frequency: 1 Hz-80 Hz
Measurement point: Ground surface 20 cm away from the unit leg
Installation condition: Direct installation on the concrete floor
Power source: 3-phase 3-wire 208 V-230 V 60 Hz: For TXU-Series
3-phase 3-wire 460 V 60 Hz: For YXU-Series
Operation condition: AHRI condition (cooling, heating)
Measurement device: Vibration level meter for vibration pollution VM-1220C (JIS-compliant product)

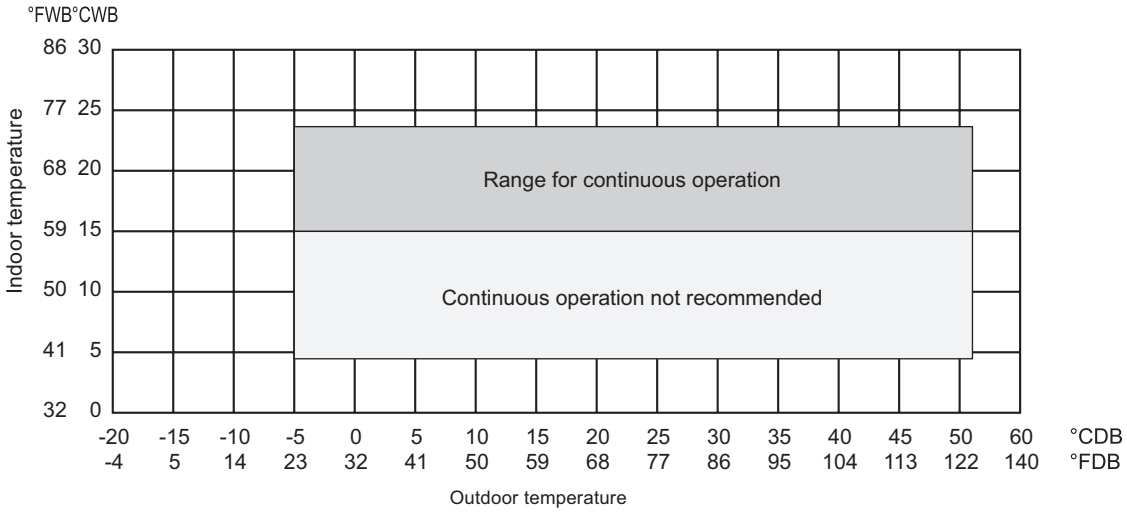


Vibration level

Model	Vibration level (dB)
PUHY-HM72T(Y)XU-A	36.5
PUHY-HM96T(Y)XU-A	50.5
PUHY-HM120T(Y)XU-A	51.5
PUHY-HM144T(Y)SXU-A	40.0
PUHY-HM192T(Y)SXU-A	54.0
PUHY-HM240T(Y)SXU-A	55.0

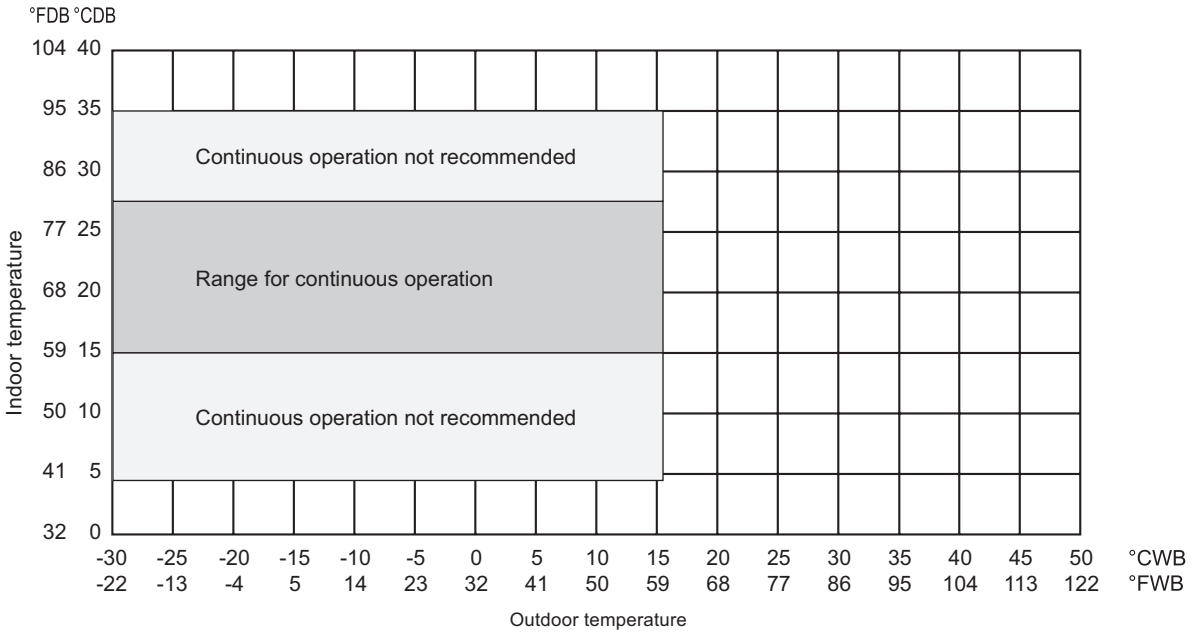
* Vibration level varies depending on the conditions of actual installation site.

• **Cooling**



* The operation temperature of outdoor unit is limited into 32~109°FDB (0~43°CDB) when the outdoor unit is installed in a location that is positioned lower than the indoor units.

• **Heating**



Installation of the low ambient kit is recommended to operate in cooling mode in conditions under 50°F [10°C].

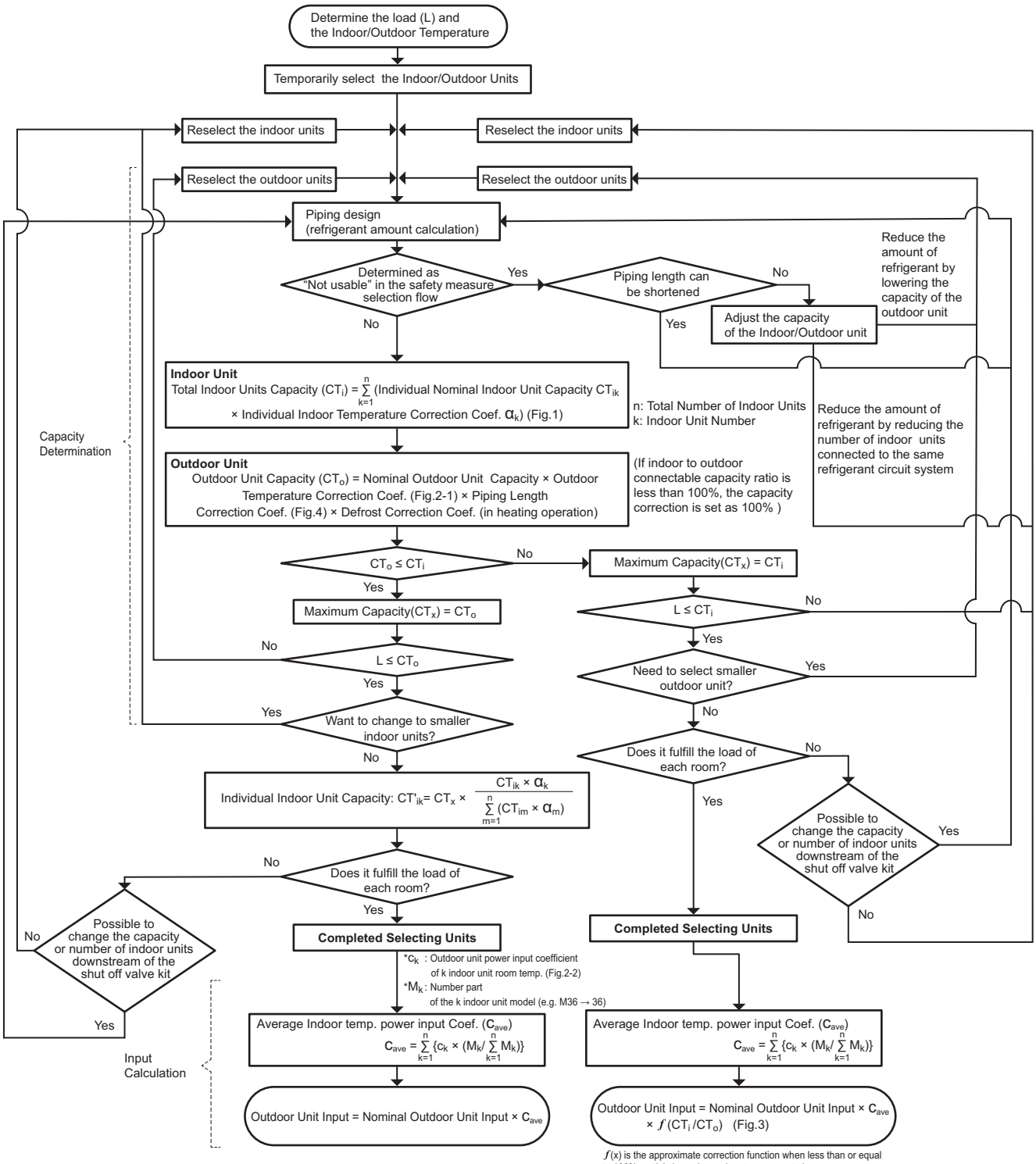
Section 8-1.
Shows an example of how to select the indoor and outdoor units according to the required heating/cooling load.

Section 8-2. through 8-6.
Show the actual correction data of indoor and outdoor units.

8-1. Selection of Cooling/Heating Units

How to determine the capacity when less than or equal to 100% indoor model size units are connected in total:

The purpose of this flow chart is to select the indoor and outdoor units. For other purposes, this flow chart is intended only for reference.



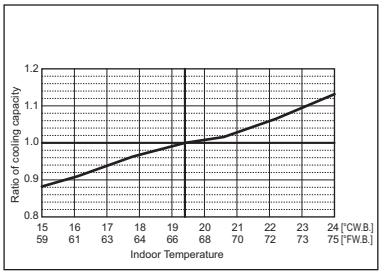


Fig.1 Indoor unit temperature correction

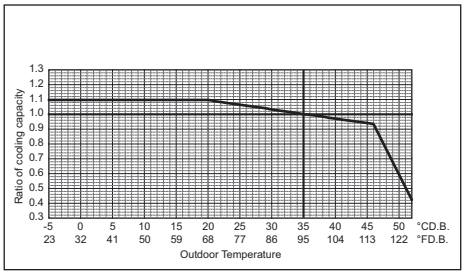


Fig.2-1 Outdoor unit temperature correction (capacity)

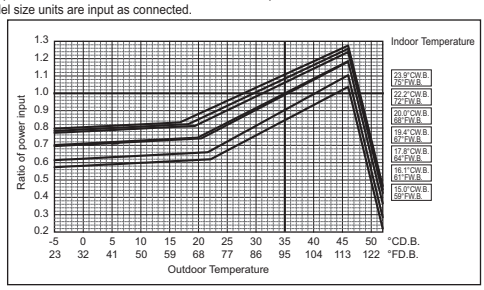
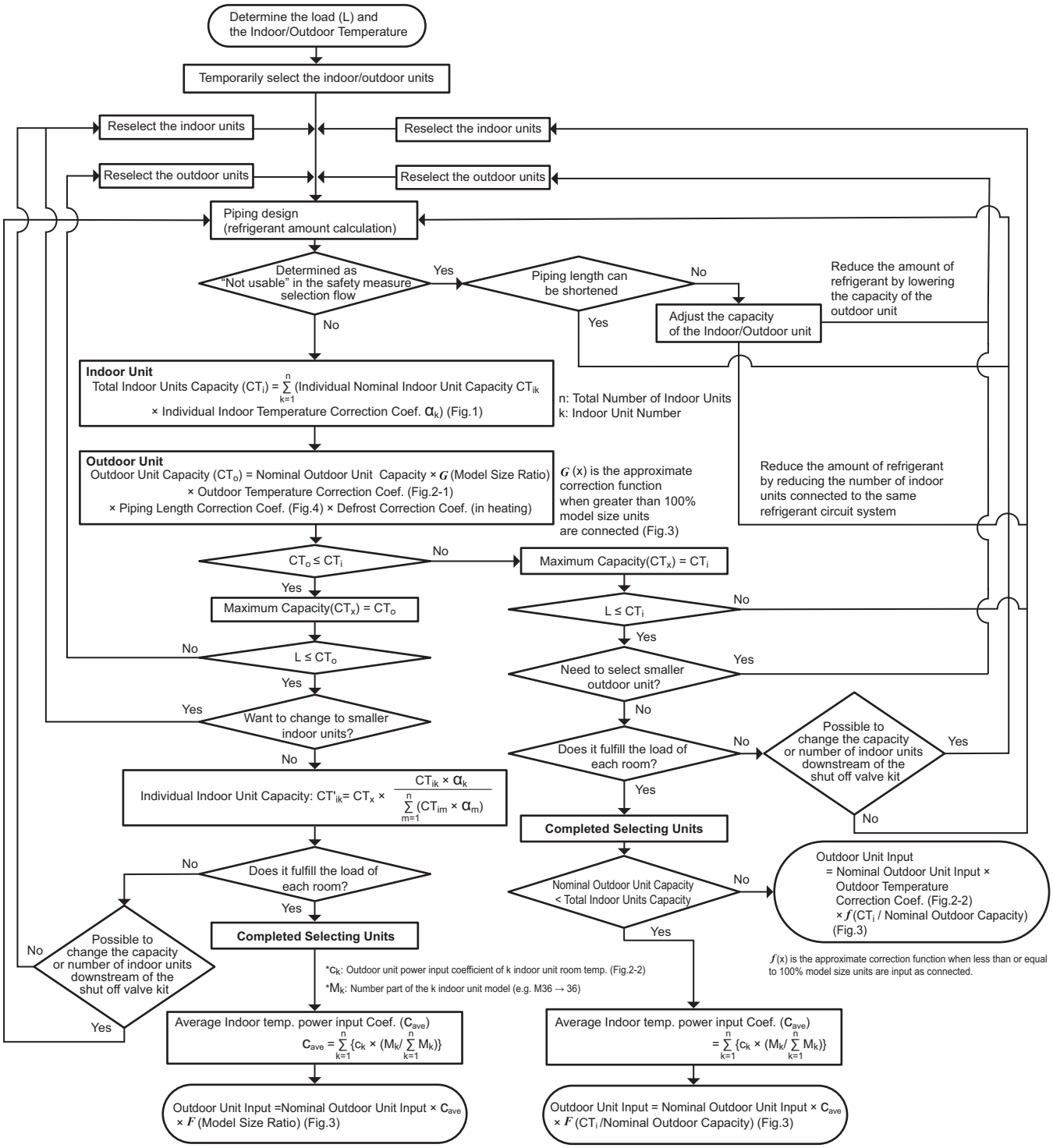


Fig.2-2 Outdoor unit temperature correction (power input)

How to determine the capacity when greater than 100% indoor model size units are connected in total:

The purpose of this flow chart is to select the indoor and outdoor units. For other purposes, this flow chart is intended only for reference.



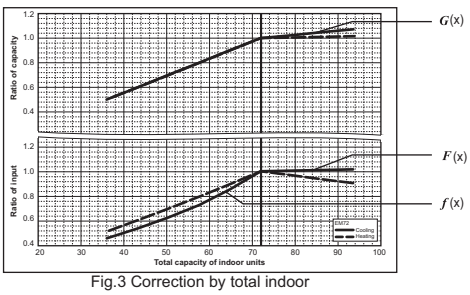


Fig.3 Correction by total indoor

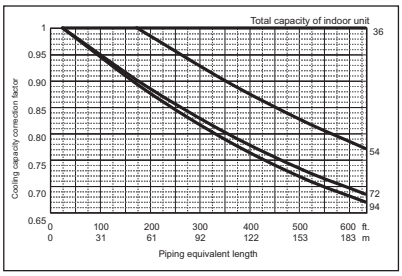


Fig.4 Correction of refrigerant piping length

<Cooling>

Design Condition	
Outdoor Design Dry Bulb Temperature	**37 ºC**
Total Cooling Load	**18.5 kW**
Room1	
Indoor Design Dry Bulb Temperature	**27 ºC**
Indoor Design Wet Bulb Temperature	**20 ºC**
Cooling Load	**9.0 kW**
Room2	
Indoor Design Dry Bulb Temperature	**24 ºC**
Indoor Design Wet Bulb Temperature	**17.8 ºC**
Cooling Load	**9.5 kW**
<Other>	
Indoor/Outdoor Equivalent Piping Length	**30 m**

1. Cooling Calculation

(1) Temporary Selection of Indoor Units

Room1

PEFY-M36 **10.6 kW (Nominal)**

Room2

PEFY-M36 **10.6 kW (Nominal)**

(2) Total Indoor Units Capacity

M36 + M36 = M72

(3) Selection of Outdoor Unit

The EM72 outdoor unit is selected as total indoor units capacity is M72

PUHY-EM72 **21.1 kW**

(4) Total Indoor Units Capacity Correction Calculation

Room1

Indoor Design Wet Bulb Temperature Correction (20ºC) 1.02 (Refer to Fig.1)

Room2

Indoor Design Wet Bulb Temperature Correction (18ºC) 0.96 (Refer to Fig.1)

Total Indoor Units Capacity (CTi)

CTi = Σ (Indoor Unit Rating × Indoor Design Temperature Correction)
= 10.6 × 1.02 + 10.6 × 0.96
= 20.9 kW

(5) Outdoor Unit Correction Calculation

Outdoor Design Dry Bulb Temperature Correction (37ºC) 0.99 (Refer to Fig.2)

Piping Length Correction (30 m) *1 0.95 (Refer to Fig.3)

*1 When shut off valve kit is used in a system, the equivalent piping length of the shut off valve kit should be added to the equivalent piping length calculation.

Total Outdoor Unit Capacity (CTo)

CTo = Outdoor Rating × Outdoor Design Temperature Correction × Piping Length Correction
= 21.1 × 0.99 × 0.95
= 19.8 kW

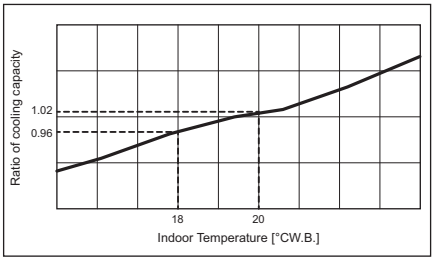


Fig.1 **Indoor unit temperature correction**
To be used to correct indoor unit only

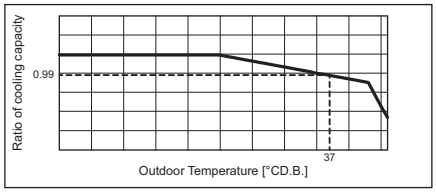


Fig.2 **Outdoor unit temperature correction**
To be used to correct outdoor unit only

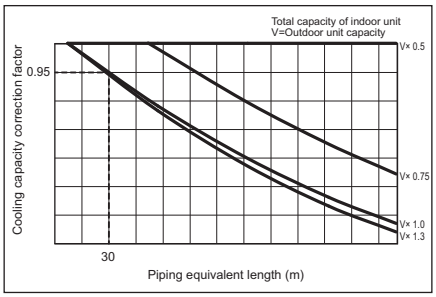


Fig.3 **Correction of refrigerant piping length**

(6) Determination of Maximum System Capacity (CTx)

Comparison of Capacity between Total Indoor Units Capacity (CTi) and Total Outdoor Unit Capacity (CTo)

CTi = 20.9 > CTo = 19.8, thus, select CTo.

CTx = CTo = 19.8 kW

(7) Comparison with Essential Load

Against the essential load 18.5kW, the maximum system capacity is 19.8kW: Proper outdoor units have been selected.

(8) Calculation of Maximum Indoor Unit Capacity of Each Room

CTx = CTo, thus, calculate by the calculation below

Room1

Maximum Capacity × Room1 Capacity after the Temperature Correction/(Room1,2 Total Capacity after the Temperature Correction)
= 19.8 × (10.6 × 1.02)/(10.6 × 1.02 + 10.6 × 0.96)
= 10.2 kW **OK: fulfills the load 9.0kW**

Room2

Maximum Capacity × Room2 Capacity after the Temperature Correction/(Room1,2Total Capacity after the Temperature Correction)
= 19.8 × (10.6 × 0.96)/(10.6 × 1.02 + 10.6 × 0.96)
= 9.6 kW **OK: fulfills the load 9.5kW**

Go on to the heating trial calculation since the selected units fulfill the cooling loads of Room 1, 2.

<Heating>

Design Condition	
Outdoor Design Wet Bulb Temperature	**2 ºC**
Total Heating Load	**18.2 kW**
Room1	
Indoor Design Dry Bulb Temperature	**25 ºC**
Heating Load	**9.2 kW**
Room2	
Indoor Design Dry Bulb Temperature	**25 ºC**
Heating Load	**9.0 kW**
<Other>	
Indoor/Outdoor Equivalent Piping Length	**30 m**

2. Heating Calculation

(1) Temporary Selection of Indoor Units

Room1

PEFY-M36 **11.7 kW (Nominal)**

Room2

PEFY-M36 **11.7 kW (Nominal)**

(2) Total Indoor Units Capacity

M36 + M36 = M72

(3) Selection of Outdoor Unit

The EM72 outdoor unit is selected as total indoor units capacity is M72

PUHY-EM72 **23.4 kW**

(4) Total Indoor Units Capacity Correction Calculation

Room1

Indoor Design Dry Bulb Temperature Correction (25ºC) 0.80 (Refer to Fig.4)

Room2

Indoor Design Dry Bulb Temperature Correction (25ºC) 0.80 (Refer to Fig.4)

Total Indoor Units Capacity (CTi)

CTi = Σ (Indoor Unit Rating × Indoor Design Temperature Correction)
= 11.7 × 0.80 + 11.7 × 0.80
= 18.7 kW

(5) Outdoor Unit Correction Calculation

Outdoor Design Wet Bulb Temperature Correction (2ºC) 0.98 (Refer to Fig.5)

Piping Length Correction (30 m) *1 0.98 (Refer to Fig.6)

*1 When shut off valve kit is used in a system, the equivalent piping length of the shut off valve kit should be added to the equivalent piping length calculation.

Defrost Correction 0.84 (Refer to Tbl.1)

Total Outdoor Unit Capacity (CTo)

CTo = Outdoor Unit Rating × Outdoor Design Temperature Correction × Piping Length Correction × Defrost Correction
= 23.4 × 0.98 × 0.98 × 0.84
= 18.8 kW

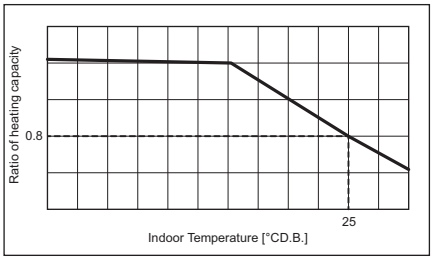


Fig.4 **Indoor unit temperature correction**
To be used to correct indoor unit only

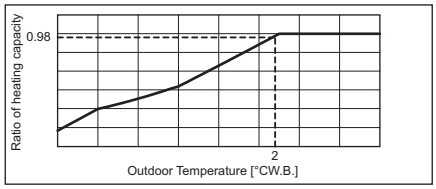


Fig.5 **Outdoor unit temperature correction**
To be used to correct outdoor unit only

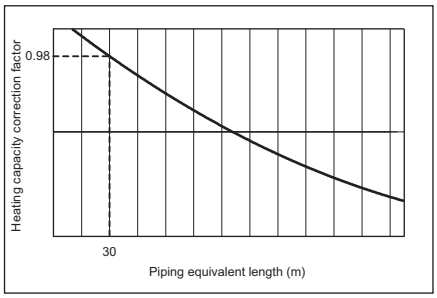


Fig.6 **Correction of refrigerant piping length**

(6) Determination of Maximum System Capacity (CTx)

Comparison of Capacity between Total Indoor Units Capacity (CTi) and Total Outdoor Unit Capacity (CTo)

CTi = 18.7 < CTo = 18.8, thus, select CTi.

CTx = CTi = 18.7 kW

(7) Comparison with Essential Load

Against the essential load 18.2kW, the maximum system capacity is 18.7kW: Proper outdoor units have been selected.

(8) Calculation of Maximum Indoor Unit Capacity of Each Room

CTx = CTi, thus, calculate by the calculation below

Room1

Indoor Unit Rating × Indoor Design Temperature Correction
= 11.7 × 0.80
= 9.4 kW **OK: fulfills the load 9.2kW**

Room2

Indoor Unit Rating × Indoor Design Temperature Correction
= 11.7 × 0.80
= 9.4 kW **OK: fulfills the load 9.0kW**

Tbl.1 Table of correction factor at frost and defrost

Outdoor inlet air temp. °CWB	6	4	2	1	0	-2	-4	-6	-8	-10	-20	-30
Outdoor inlet air temp. °FWB	43	39	36	34	32	28	25	21	18	14	-4	-22
PUHY-EM72	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-EM96	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-EM120	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-EM144	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90
PUHY-EM168	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90
PUHY-EM192	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90

Completed selecting units since the selected units fulfill the heating loads of Room 1, 2.

3. Power input of outdoor unit

<Cooling>

(1) Nominal power input of outdoor unit **4.55 kW (Nominal)**

(2) Calculation of the average indoor temperature power input coefficient

Coefficient of the outdoor unit for indoor unit 1 (Outdoor temp. 37 °CD.B., Indoor temp. 20 °CW.B.)
1.09

Coefficient of the outdoor unit for indoor unit 2 (Outdoor temp. 37 °CD.B., Indoor temp. 17.8 °CW.B.)
1.03

Average indoor temp. power input coefficient (C_{ave}) = $\sum_{k=1}^{n}\{c_k \times (M_k/\sum_{k=1}^{n} M_k)\}$

n: Total number of the indoor units
k: Number of the indoor unit
c_k: Outdoor unit power input coefficient of k indoor unit room temp.
M_k: Number part of the k indoor unit model (e.g. M36 → 36)

= 1.09 × 36/(36 + 36) + 1.03 × 36/(36 + 36)
= 1.06

(3) No need to consider Coefficient of the partial load *f* (CTi/CTo) -

(4) Outdoor power input (Plo)

Maximum System Capacity (CTx) = Total Outdoor unit Capacity (CTo), so use the following formula
Plo = Outdoor unit Cooling Nominal Power Input × Correction Coefficient of Indoor temperature
= 4.55 × 1.06
= 4.82 kW

<Heating>

(1) Nominal power input of outdoor unit **5.48 kW (Nominal)**

(2) Calculation of the average indoor temperature power input coefficient

Coefficient of the outdoor unit for indoor unit 1 (Outdoor temp. 2 °CW.B., Indoor temp. 25 °CD.B.)
0.80

Coefficient of the outdoor unit for indoor unit 2 (Outdoor temp. 2 °CW.B., Indoor temp. 25 °CD.B.)
0.80

Average indoor temp. power input coefficient (C_{ave}) = $\sum_{k=1}^{n} \{c_k \times (M_k / \sum_{k=1}^{n} M_k)\}$

n: Total number of the indoor units
k: Number of the indoor unit
c_k: Outdoor unit power input coefficient of k indoor unit room temp.
M_k: Number part of the k indoor unit model (e.g. M36 → 36)

= 0.8 × 36/(36 + 36) + 0.8 × 36/(36 + 36)
= 0.80

(3) Coefficient of the partial load f (CTi/CTo) **0.94**

(4) Outdoor power input (PIo)

Maximum System Capacity (CTx) = Total Indoor unit Capacity (CTi), so use the following formula
PIo = Outdoor unit Heating Nominal Power Input × Correction Coefficient of Indoor temperature × f (CTi/CTo)
= 5.48 × 0.8 × 0.94
= 4.12 kW

<Cooling>

Design Condition	
Outdoor Design Dry Bulb Temperature	**99 ºF**
Total Cooling Load	**63,000 BTU/h**
Room1	
Indoor Design Dry Bulb Temperature	**81 ºF**
Indoor Design Wet Bulb Temperature	**68 ºF**
Cooling Load	**31,000 BTU/h**
Room2	
Indoor Design Dry Bulb Temperature	**75 ºF**
Indoor Design Wet Bulb Temperature	**64 ºF**
Cooling Load	**32,000 BTU/h**
<Other>	
Indoor/Outdoor Equivalent Piping Length	**100 ft.**

1. Cooling Calculation

(1) Temporary Selection of Indoor Units

Room1

PEFY-M36 **36,000 BTU/h (Nominal)**

Room2

PEFY-M36 **36,000 BTU/h (Nominal)**

(2) Total Indoor Units Capacity

M36 + M36 = M72

(3) Selection of Outdoor Unit

The EM72 outdoor unit is selected as total indoor units capacity is M72

PUHY-EM72 **72,000 BTU/h**

(4) Total Indoor Units Capacity Correction Calculation

Room1

Indoor Design Wet Bulb Temperature Correction (68ºF) 1.02 (Refer to Fig.1)

Room2

Indoor Design Wet Bulb Temperature Correction (64ºF) 0.96 (Refer to Fig.1)

Total Indoor Units Capacity (CTi)

CTi = Σ (Indoor Unit Rating × Indoor Design Temperature Correction)
= 36,000 × 1.02 + 36,000 × 0.96
= 71,200 BTU/h

(5) Outdoor Unit Correction Calculation

Outdoor Design Dry Bulb Temperature Correction (99ºF) 0.99 (Refer to Fig.2)

Piping Length Correction (100 ft.) *1 0.95 (Refer to Fig.3)

*1 When shut off valve kit is used in a system, the equivalent piping length of the shut off valve kit should be added to the equivalent piping length calculation.

Total Outdoor Unit Capacity (CTo)

CTo = Outdoor Rating × Outdoor Design Temperature Correction × Piping Length Correction
= 72,000 × 0.99 × 0.95
= 67,700 BTU/h

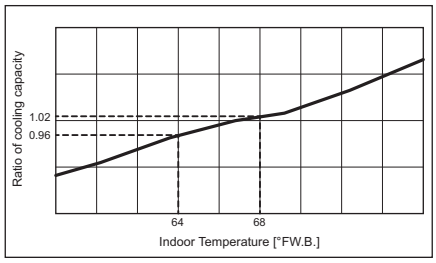


Fig.1 **Indoor unit temperature correction**
To be used to correct indoor unit only

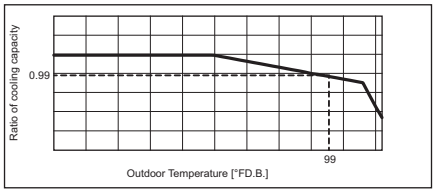


Fig.2 **Outdoor unit temperature correction**
To be used to correct outdoor unit only

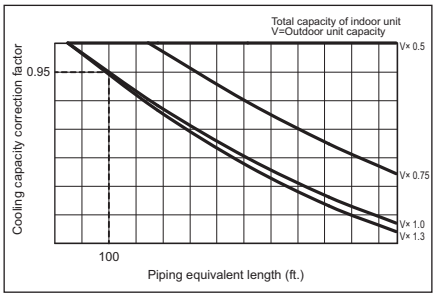


Fig.3 **Correction of refrigerant piping length**

(6) Determination of Maximum System Capacity (CTx)

Comparison of Capacity between Total Indoor Units Capacity (CTi) and Total Outdoor Unit Capacity (CTo)

CTi = 71,200 > CTo = 67,700, thus, select CTo.

CTx = CTo = 67,700 BTU/h

(7) Comparison with Essential Load

Against the essential load 63,000BTU/h, the maximum system capacity is 67,700BTU/h: Proper outdoor units have been selected.

(8) Calculation of Maximum Indoor Unit Capacity of Each Room

CTx = CTo, thus, calculate by the calculation below

Room1

Maximum Capacity × Room1 Capacity after the Temperature Correction/(Room1,2 Total Capacity after the Temperature Correction
= 67,700 × (36,000 × 1.02)/(36,000 × 1.02 + 36,000 × 0.96)
= 34,800 BTU/h **OK: fulfills the load 31,000BTU/h**

Room2

Maximum Capacity × Room2 Capacity after the Temperature Correction/(Room1,2Total Capacity after the Temperature Correction)
= 67,700 × (36,000 × 0.96)/(36,000 × 1.02 + 36,000 × 0.96)
= 32,800 BTU/h **OK: fulfills the load 32,000BTU/h**

Go on to the heating trial calculation since the selected units fulfill the cooling loads of Room 1, 2.

<Heating>

Design Condition	
Outdoor Design Wet Bulb Temperature	**37 ºF**
Total Heating Load	**62,000 BTU/h**
Room1	
Indoor Design Dry Bulb Temperature	**77 ºF**
Heating Load	**31,000 BTU/h**
Room2	
Indoor Design Dry Bulb Temperature	**77 ºF**
Heating Load	**31,000 BTU/h**
<Other>	
Indoor/Outdoor Equivalent Piping Length	**100 ft.**

2. Heating Calculation

(1) Temporary Selection of Indoor Units

Room1

PEFY-M36 **40,000 BTU/h (Nominal)**

Room2

PEFY-M36 **40,000 BTU/h (Nominal)**

(2) Total Indoor Units Capacity

M36 + M36 = M72

(3) Selection of Outdoor Unit

The EM72 outdoor unit is selected as total indoor units capacity is M72

PUHY-EM72 **80,000 BTU/h**

(4) Total Indoor Units Capacity Correction Calculation

Room1

Indoor Design Dry Bulb Temperature Correction (77ºF) 0.80 (Refer to Fig.4)

Room2

Indoor Design Dry Bulb Temperature Correction (77ºF) 0.80 (Refer to Fig.4)

Total Indoor Units Capacity (CTi)

CTi = Σ (Indoor Unit Rating × Indoor Design Temperature Correction)
= 40,000 × 0.80 + 40,000 × 0.80
= 64,000 BTU/h

(5) Outdoor Unit Correction Calculation

Outdoor Design Wet Bulb Temperature Correction (37ºF) 0.99 (Refer to Fig.5)

Piping Length Correction (100 ft.) *1 0.98 (Refer to Fig.6)

*1 When shut off valve kit is used in a system, the equivalent piping length of the shut off valve kit should be added to the equivalent piping length calculation.

Defrost Correction 0.87 (Refer to Tbl.1)

Total Outdoor Unit Capacity (CTo)

CTo = Outdoor Unit Rating × Outdoor Design Temperature Correction × Piping Length Correction × Defrost Correction
= 80,000 × 0.99 × 0.98 × 0.87
= 67,000 BTU/h

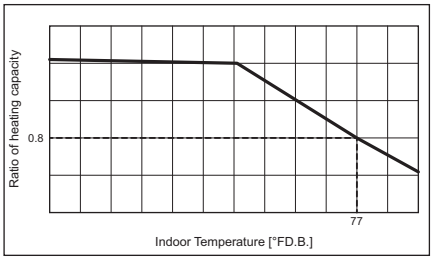


Fig.4 **Indoor unit temperature correction**
To be used to correct indoor unit only

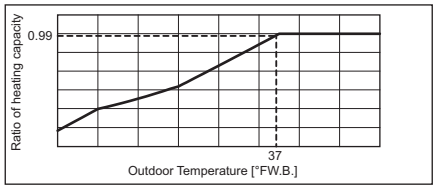


Fig.5 **Outdoor unit temperature correction**
To be used to correct outdoor unit only

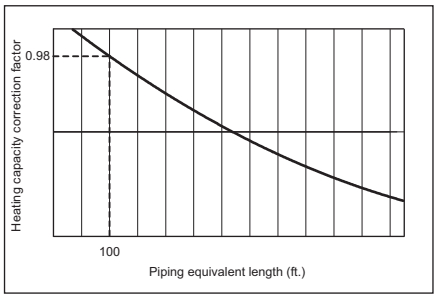


Fig.6 **Correction of refrigerant piping length**

(6) Determination of Maximum System Capacity (CTx)

Comparison of Capacity between Total Indoor Units Capacity (CTi) and Total Outdoor Unit Capacity (CTo)

CTi = 64,000 < CTo = 67,000, thus, select CTi.

CTx = CTi = 64,000 BTU/h

(7) Comparison with Essential Load

Against the essential load 62,000BTU/h, the maximum system capacity is 64,000BTU/h: Proper outdoor units have been selected.

(8) Calculation of Maximum Indoor Unit Capacity of Each Room

CTx = CTi, thus, calculate by the calculation below

Room1

Indoor Unit Rating × Indoor Design Temperature Correction
= 40,000 × 0.80
= 32,000 BTU/h **OK: fulfills the load 31,000BTU/h**

Room2

Indoor Unit Rating × Indoor Design Temperature Correction
= 40,000 × 0.80
= 32,000 BTU/h **OK: fulfills the load 31,000BTU/h**

Tbl.1 Table of correction factor at frost and defrost

Outdoor inlet air temp. °CWB	6	4	2	1	0	-2	-4	-6	-8	-10	-20	-30
Outdoor inlet air temp. °FWB	43	39	36	34	32	28	25	21	18	14	-4	-22
PUHY-EM72	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-EM96	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-EM120	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-EM144	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90
PUHY-EM168	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90
PUHY-EM192	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90

Completed selecting units since the selected units fulfill the heating loads of Room 1, 2.

3. Power input of outdoor unit

<Cooling>

(1) Nominal power input of outdoor unit **4.55 kW (Nominal)**

(2) Calculation of the average indoor temperature power input coefficient

Coefficient of the outdoor unit for indoor unit 1 (Outdoor temp. 99 °FD.B., Indoor temp. 68 °FW.B.)
1.09

Coefficient of the outdoor unit for indoor unit 2 (Outdoor temp. 99 °FD.B., Indoor temp. 64 °FW.B.)
1.03

Average indoor temp. power input coefficient (C_{ave}) = $\sum_{k=1}^{n}\{c_k \times (M_k/\sum_{k=1}^{n} M_k)\}$

n: Total number of the indoor units
k: Number of the indoor unit
c_k: Outdoor unit power input coefficient of k indoor unit room temp.
M_k: Number part of the k indoor unit model (e.g. M36 → 36)

= 1.09 × 36/(36 + 36) + 1.03 × 36/(36 + 36)
= 1.06

(3) No need to consider Coefficient of the partial load *f*(CTi/CTo) -

(4) Outdoor power input (Plo)

Maximum System Capacity (CTx) = Total Outdoor unit Capacity (CTo), so use the following formula
Plo = Outdoor unit Cooling Nominal Power Input × Correction Coefficient of Indoor temperature
=4.55 × 1.06
= 4.82 kW

<Heating>

(1) Nominal power input of outdoor unit **5.48 kW (Nominal)**

(2) Calculation of the average indoor temperature power input coefficient

Coefficient of the outdoor unit for indoor unit 1 (Outdoor temp. 35.6 °FW.B., Indoor temp. 77 °FD.B.)
0.80

Coefficient of the outdoor unit for indoor unit 2 (Outdoor temp. 35.6 °FW.B., Indoor temp. 77 °FD.B.)
0.80

Average indoor temp. power input coefficient (C_{ave}) = $\sum_{k=1}^{n} \{c_k \times (M_k / \sum_{k=1}^{n} M_k)\}$

n: Total number of the indoor units
k: Number of the indoor unit
c_k: Outdoor unit power input coefficient of k indoor unit room temp.
M_k: Number part of the k indoor unit model (e.g. M36 → 36)

= 0.8 × 36/(36 + 36) + 0.8 × 36/(36 + 36)
= 0.80

(3) Coefficient of the partial load f (CTi/CTo) **0.92**

(4) Outdoor power input (PIo)

Maximum System Capacity (CTx) = Total Indoor unit Capacity (CTi), so use the following formula
PIo = Outdoor unit Heating Nominal Power Input × Correction Coefficient of Indoor temperature × f (CTi/CTo)
= 5.48 × 0.8 × 0.92
= 4.03 kW

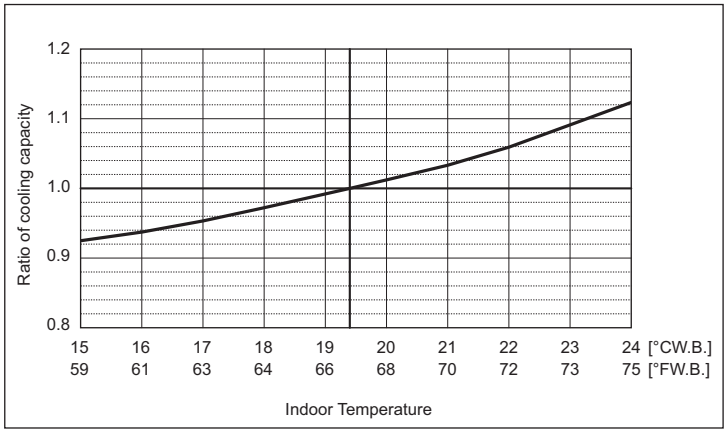
8-2. Correction by temperature

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.

PUHY-			HM72TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	72,000	
		kW	21.1	
	Input	kW	4.42	

Indoor unit temperature correction

To be used to correct indoor unit capacity only

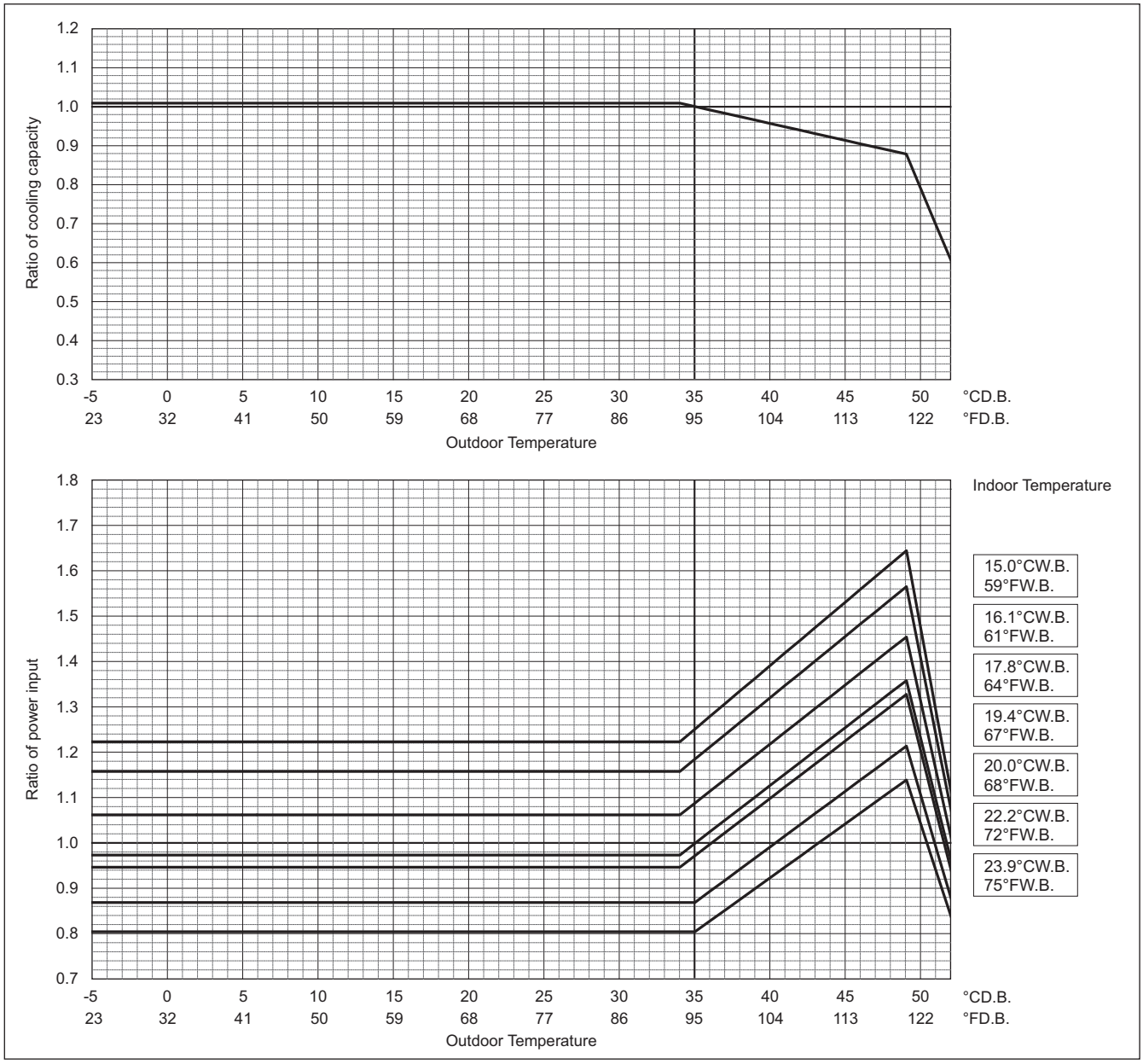


Outdoor unit temperature correction

To be used to correct outdoor unit only

Outdoor unit capacity is NOT affected by the indoor temperature.

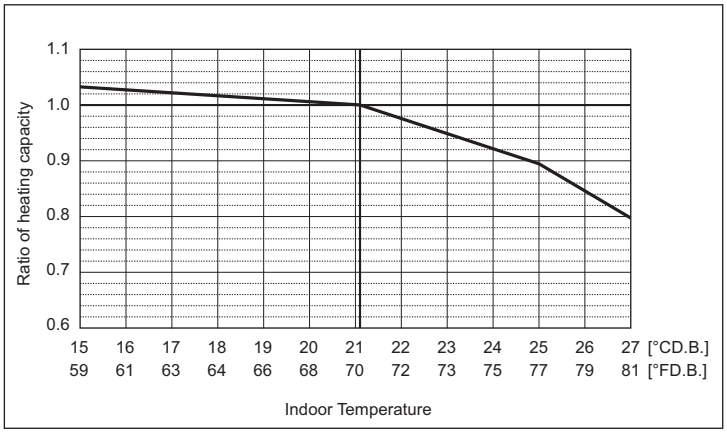
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



PUHY-			HM72TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	80,000	
		kW	23.4	
	Input	kW	5.10	

Indoor unit temperature correction

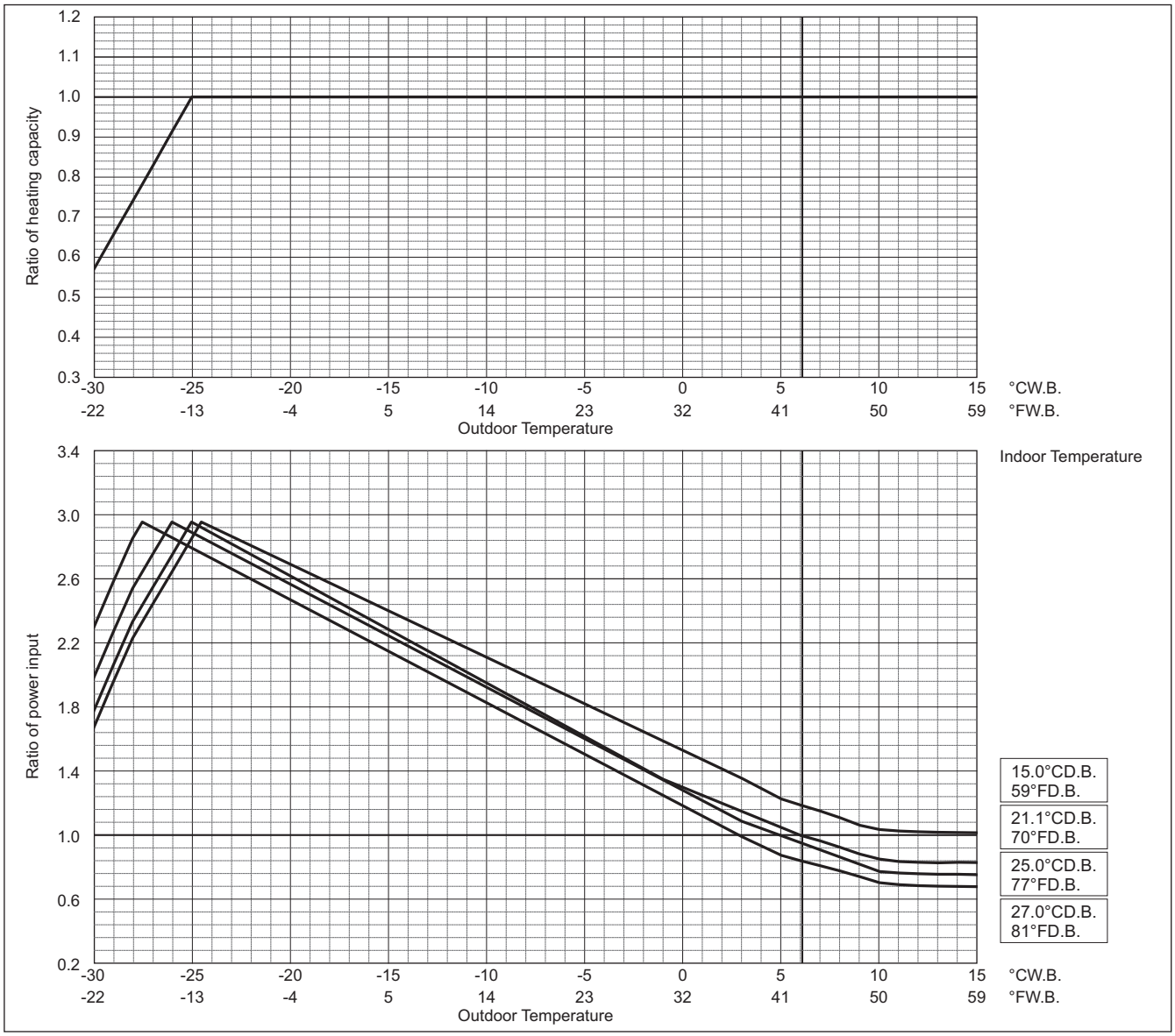
To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

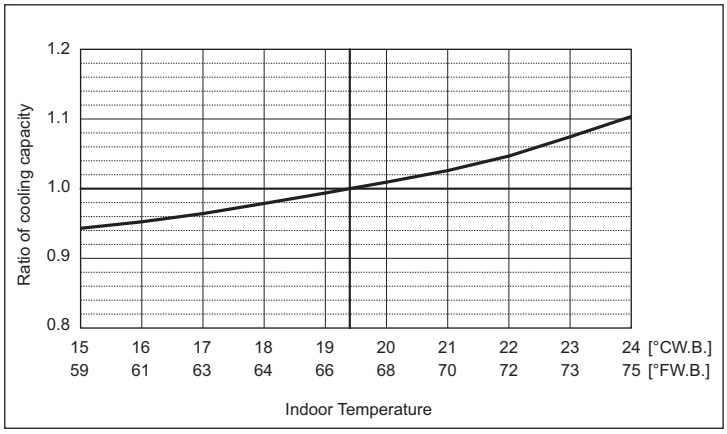
Outdoor unit capacity is NOT affected by the indoor temperature.
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



PUHY-			HM96TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	96,000	
		kW	28.1	
	Input	kW	6.29	

Indoor unit temperature correction

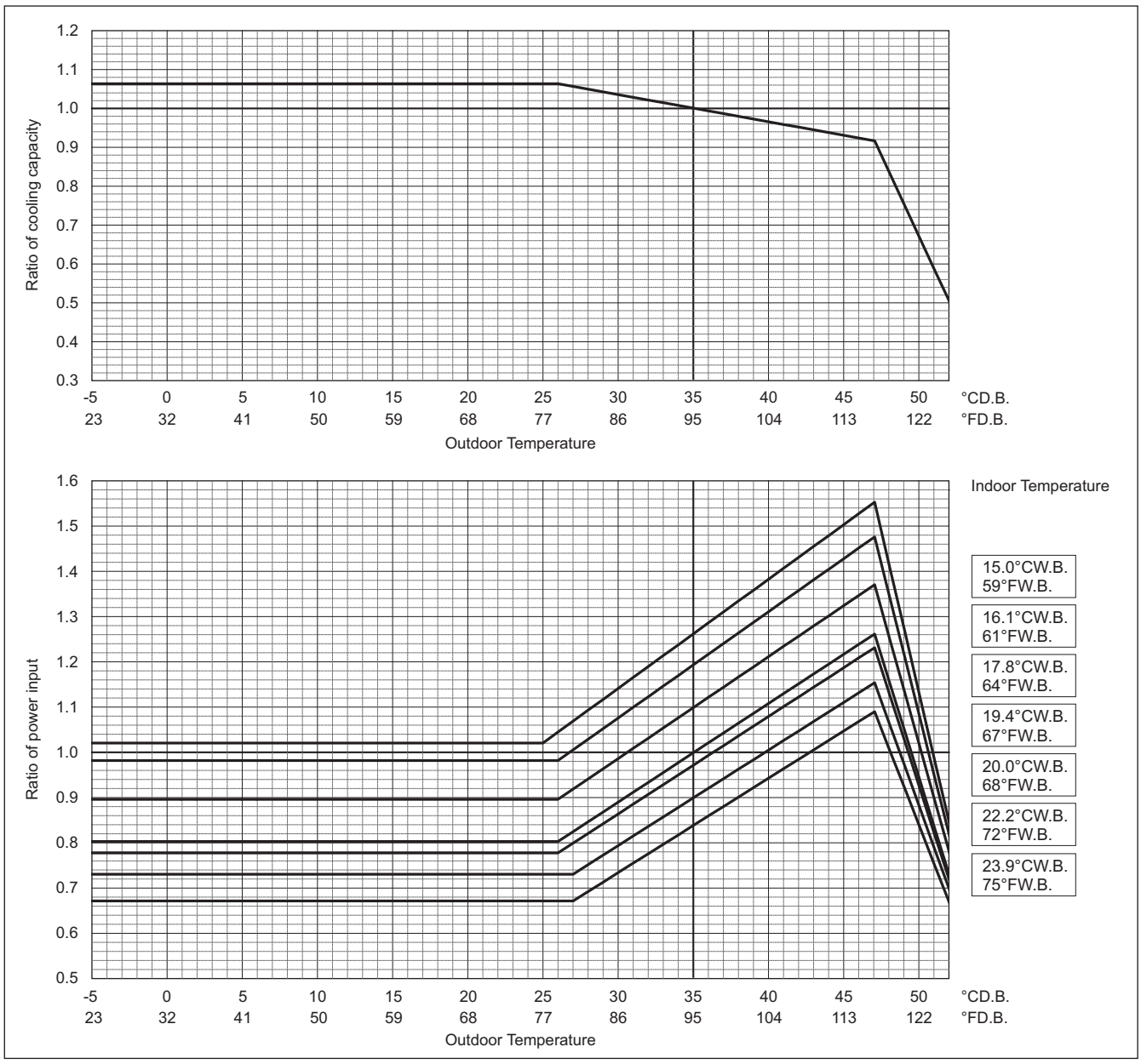
To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

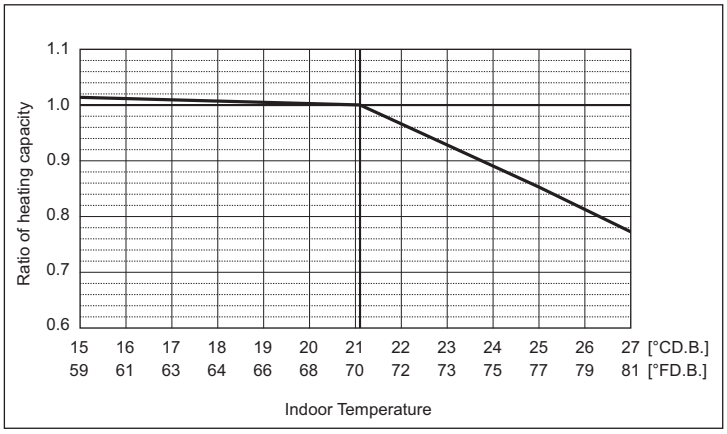
Outdoor unit capacity is NOT affected by the indoor temperature.
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



PUHY-			HM96TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	108,000	
		kW	31.7	
	Input	kW	7.19	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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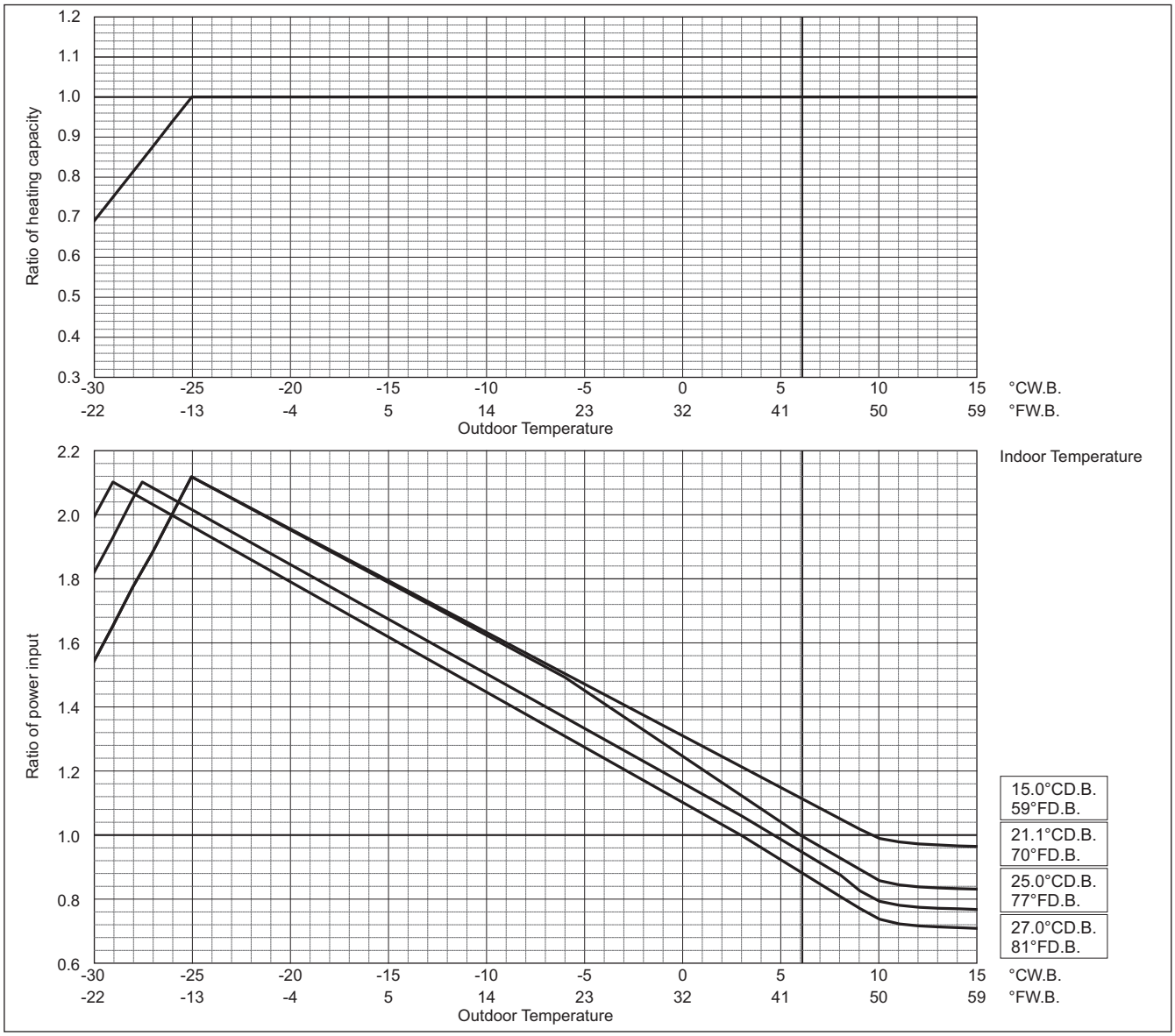
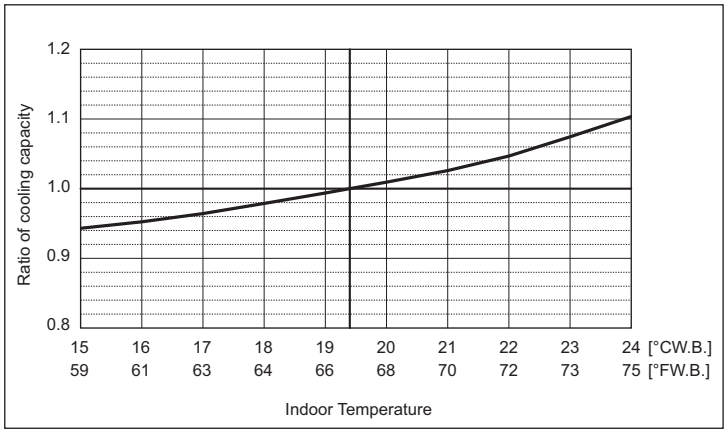


PUHY-			HM120TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	120,000	
		kW	35.2	
	Input	kW	8.04	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



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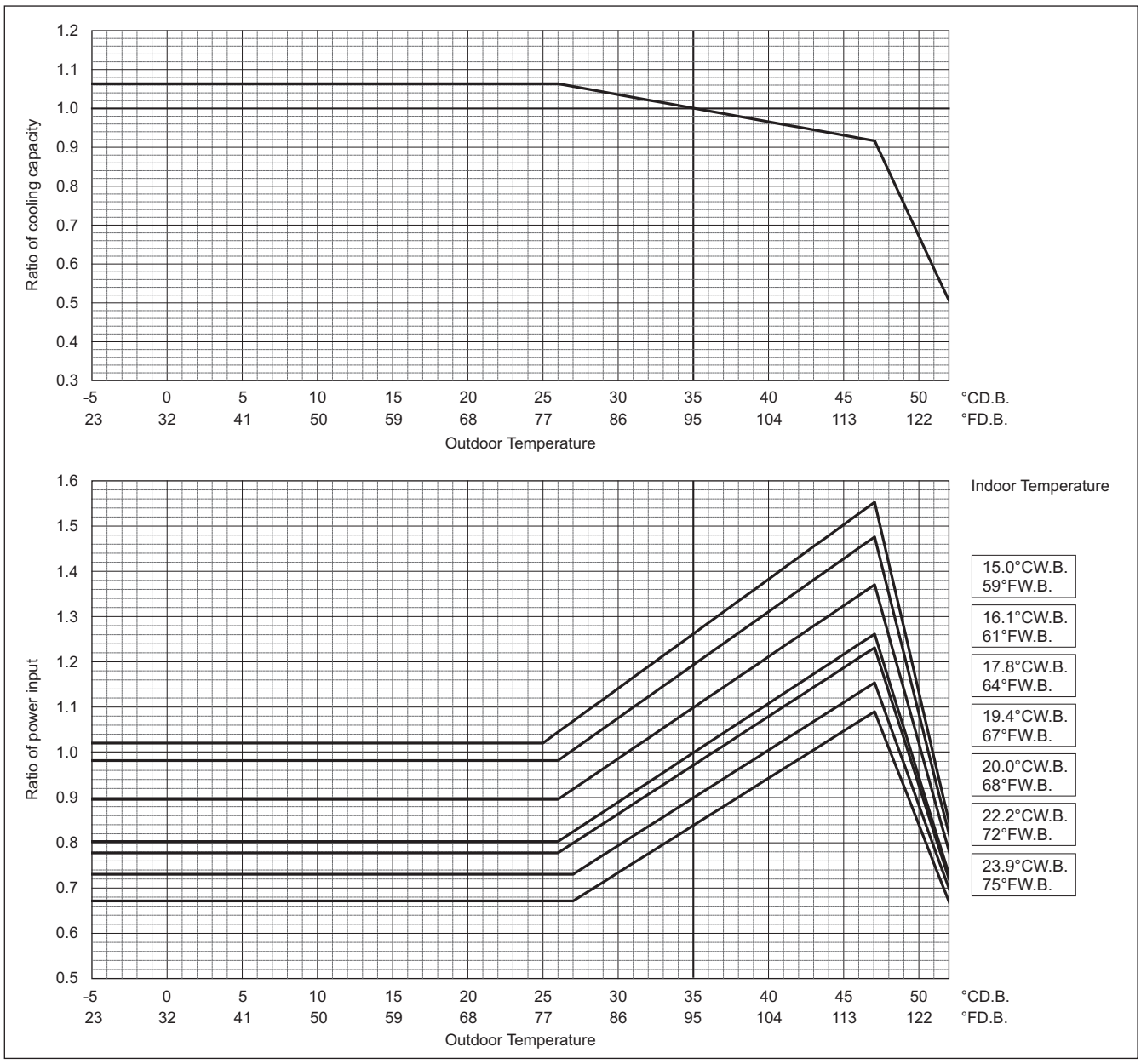
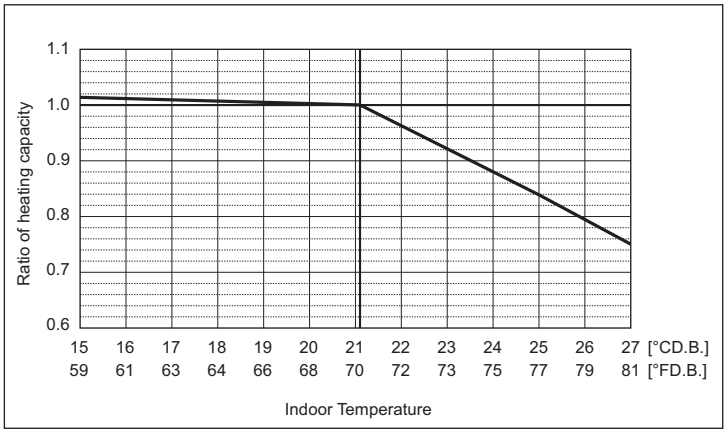


PUHY-			HM120TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	135,000	
		kW	39.6	
	Input	kW	9.23	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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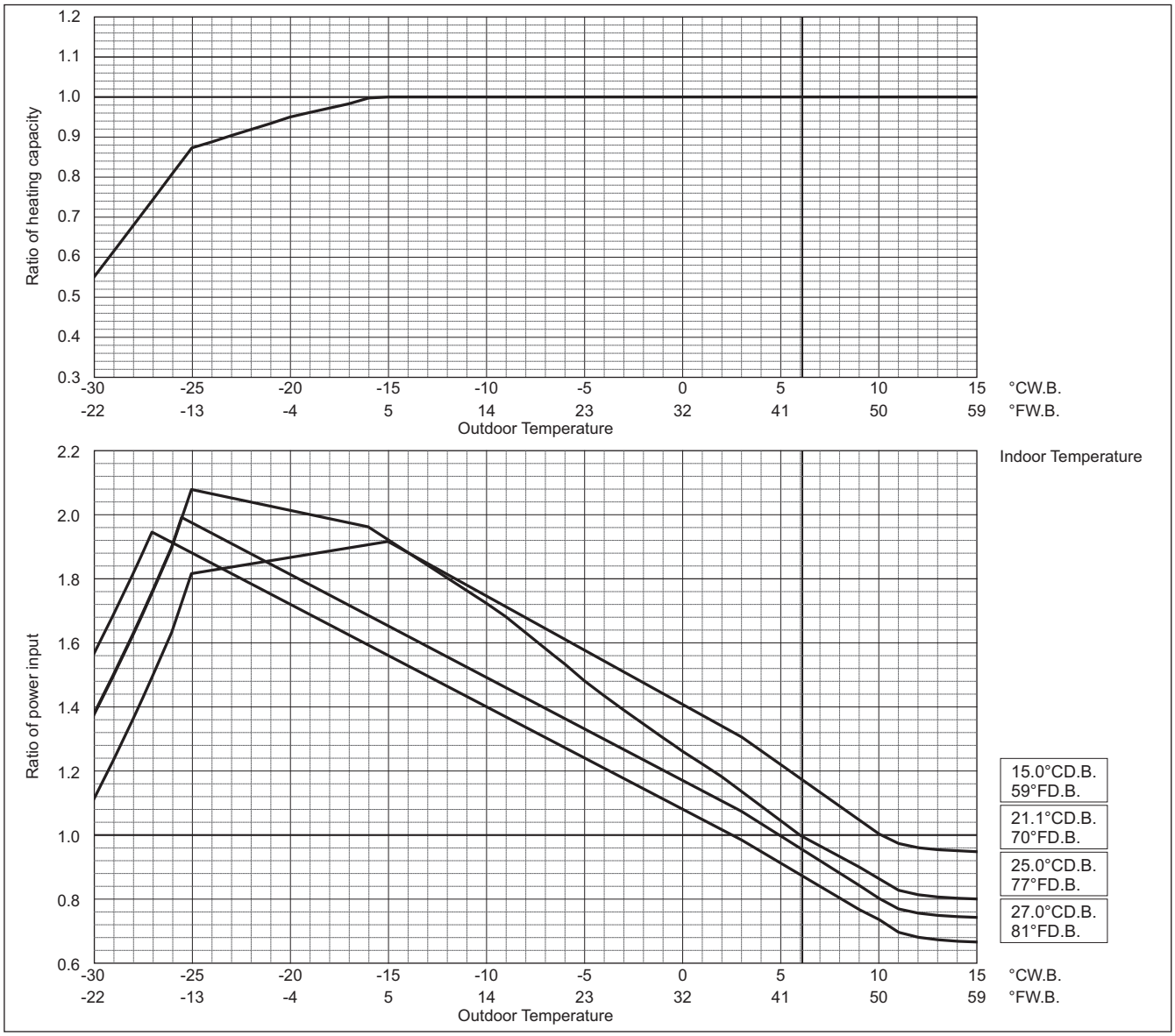
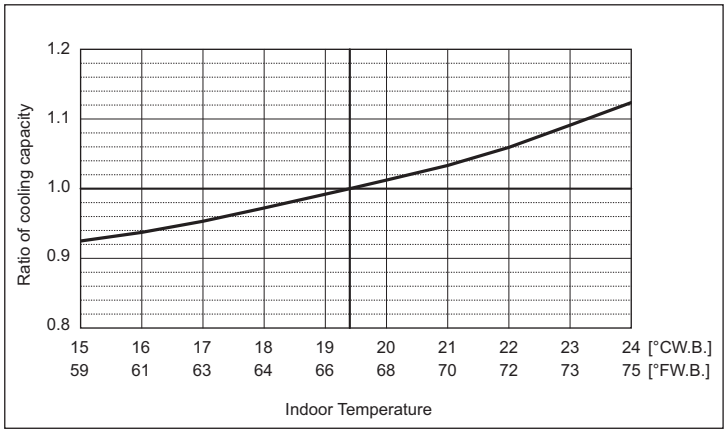


PUHY-			HM144TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	144,000	
		kW	42.2	
	Input	kW	9.32	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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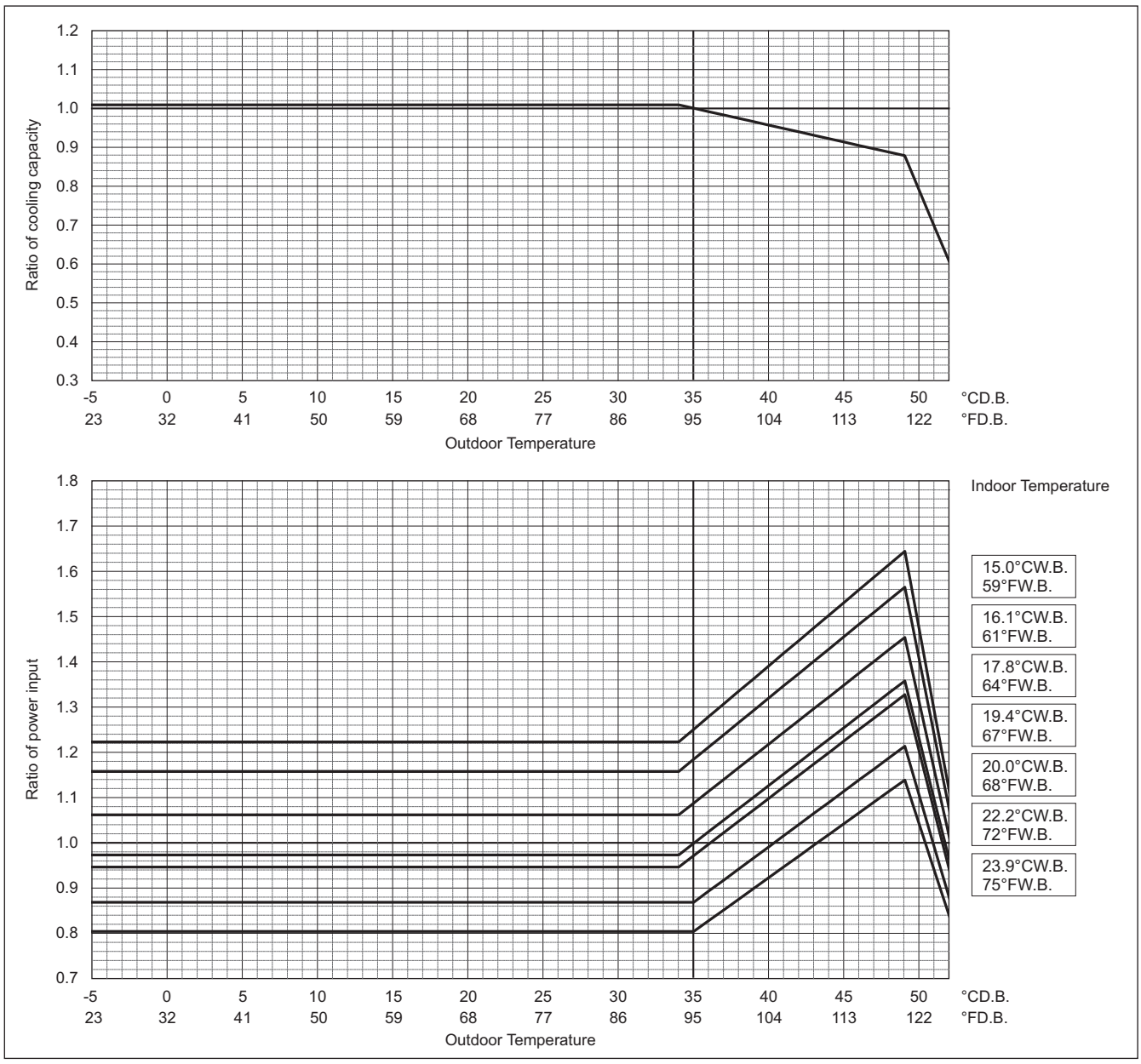
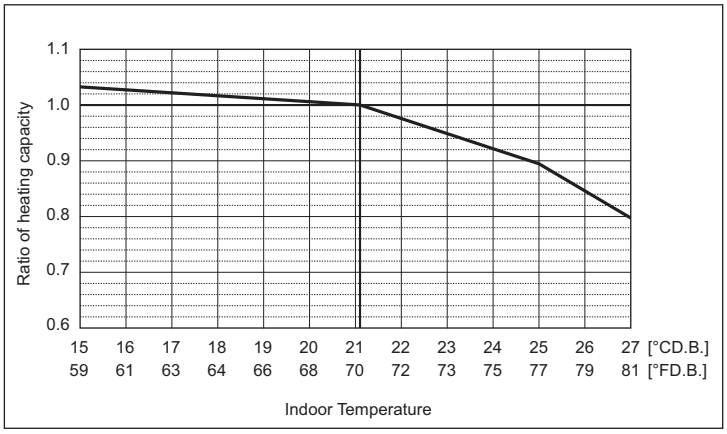


PUHY-			HM144TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	160,000	
		kW	46.9	
	Input	kW	10.24	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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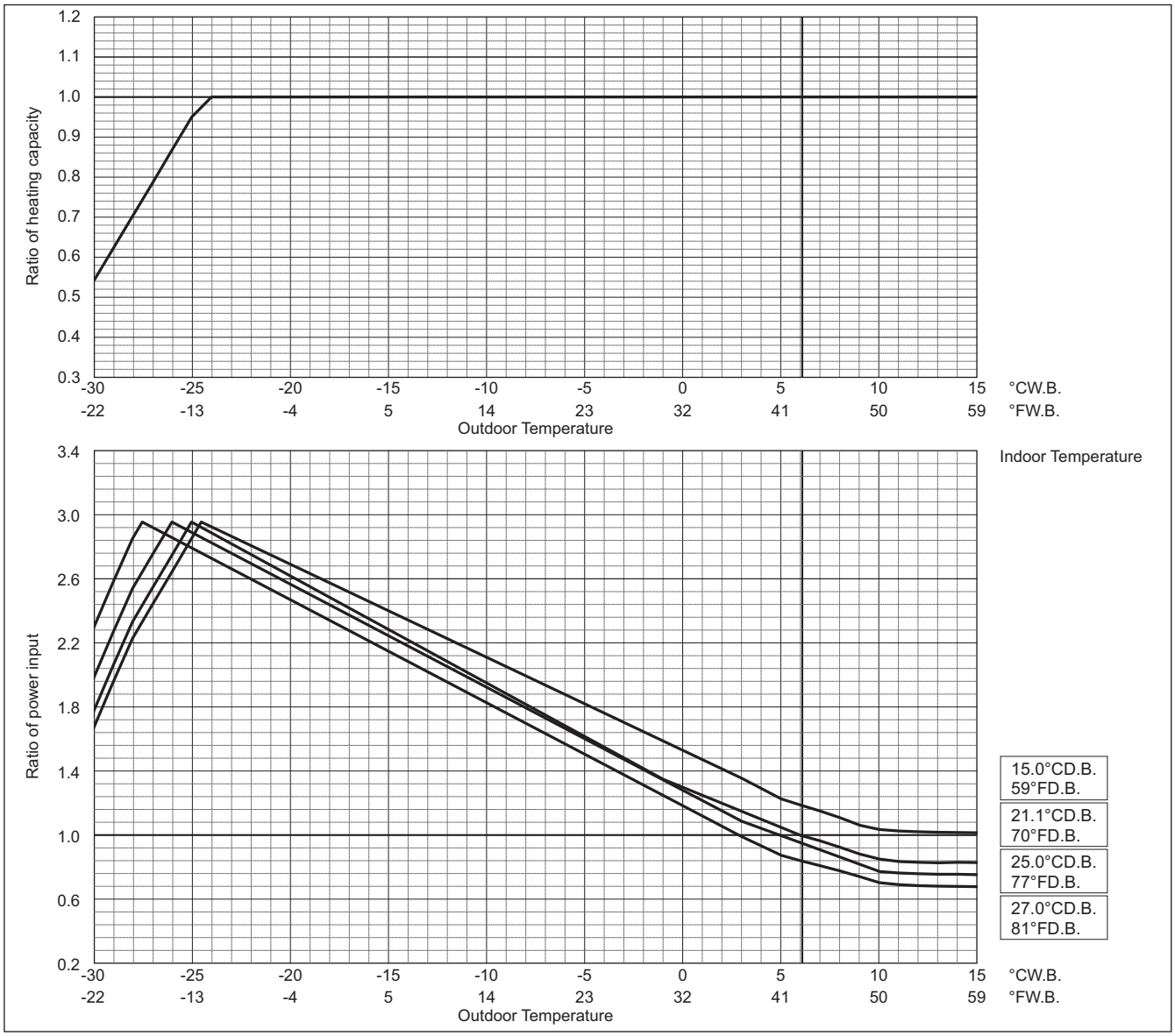
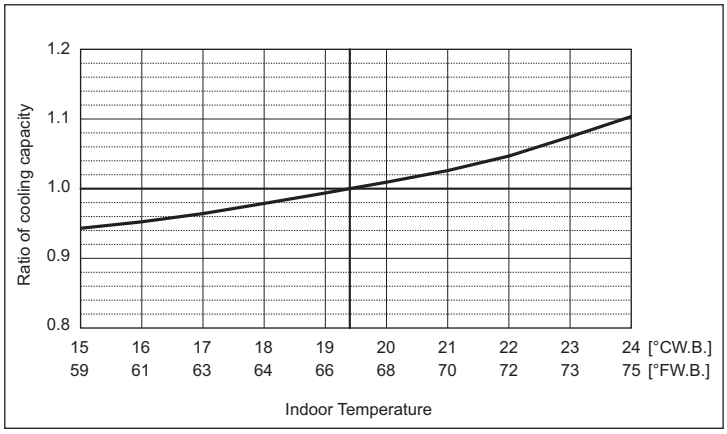


PUHY-			HM192TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	192,000	
		kW	56.3	
	Input	kW	12.71	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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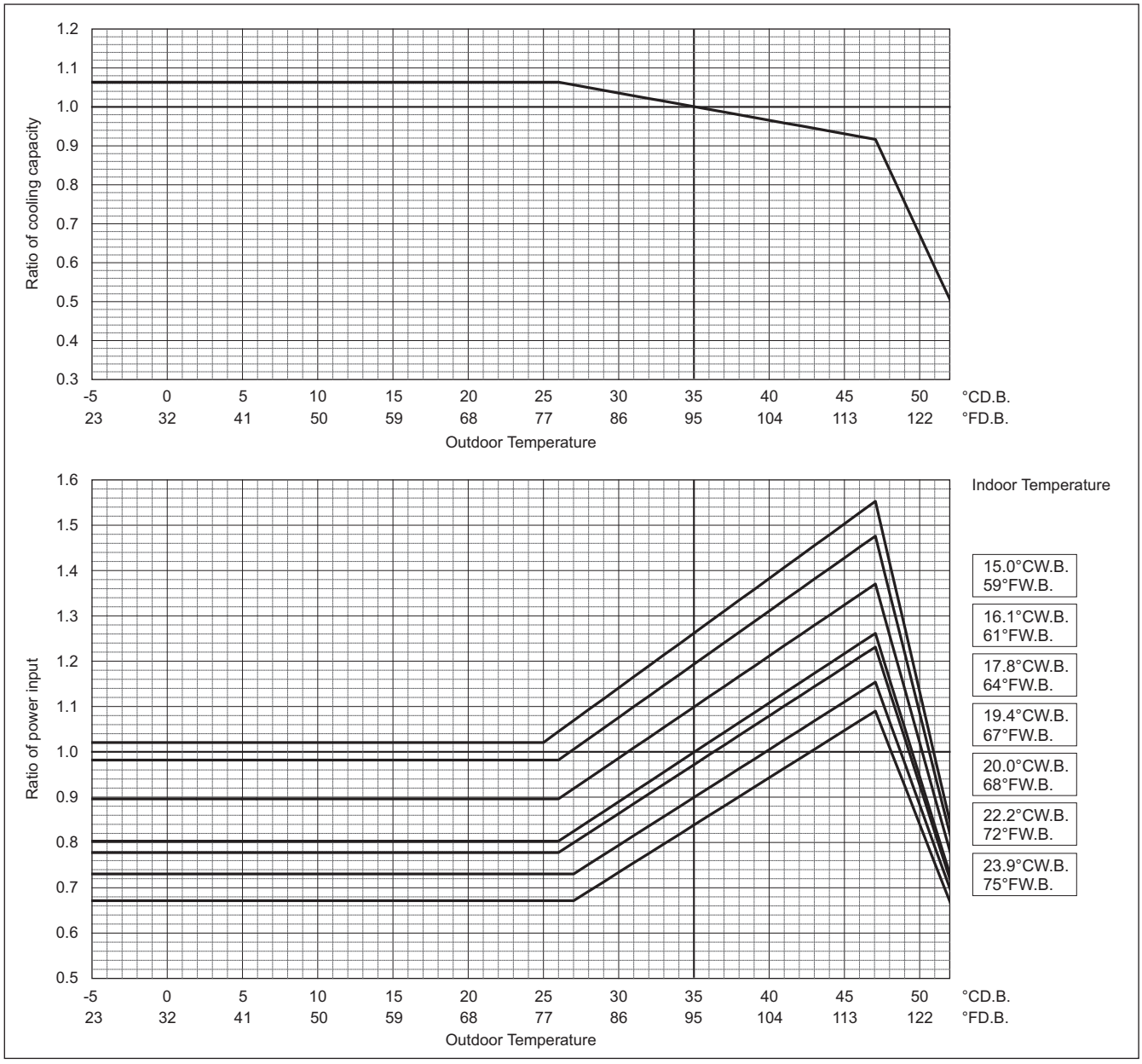
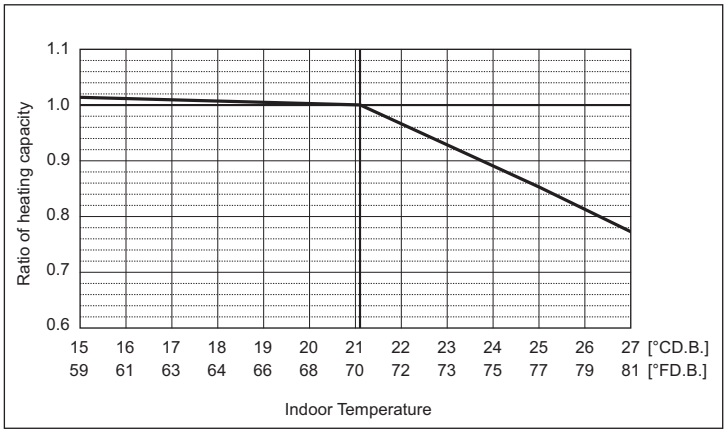


PUHY-			HM192TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	215,000	
		kW	63.0	
	Input	kW	14.31	

Indoor unit temperature correction

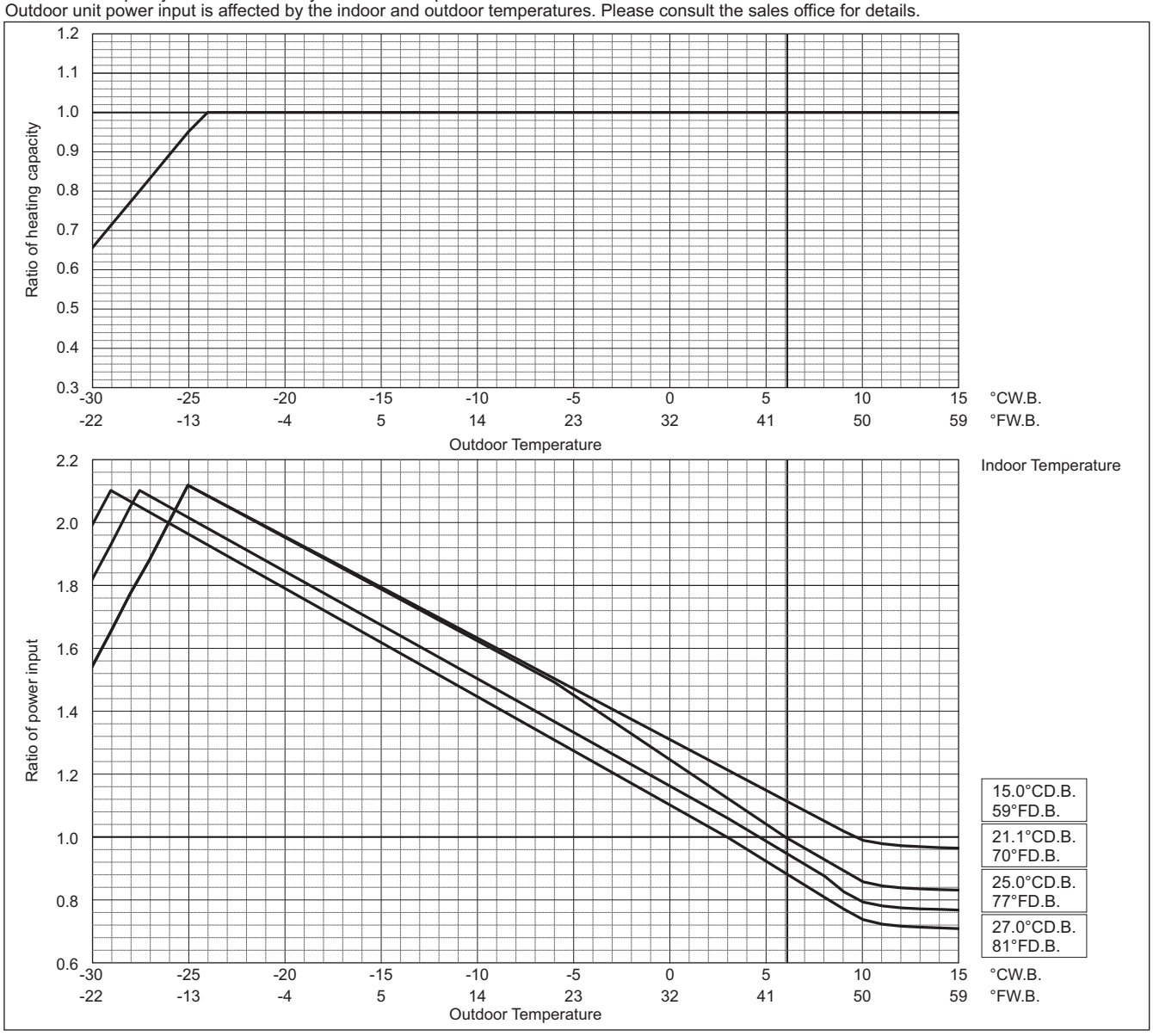
To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

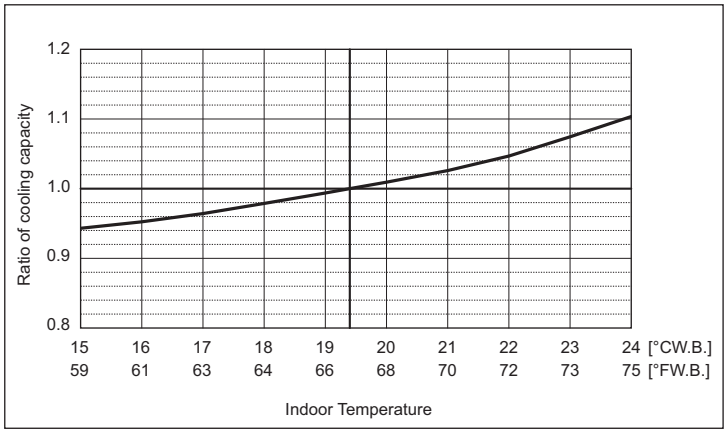
Outdoor unit capacity is NOT affected by the indoor temperature.
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



PUHY-			HM240TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	240,000	
		kW	70.3	
	Input	kW	16.31	

Indoor unit temperature correction

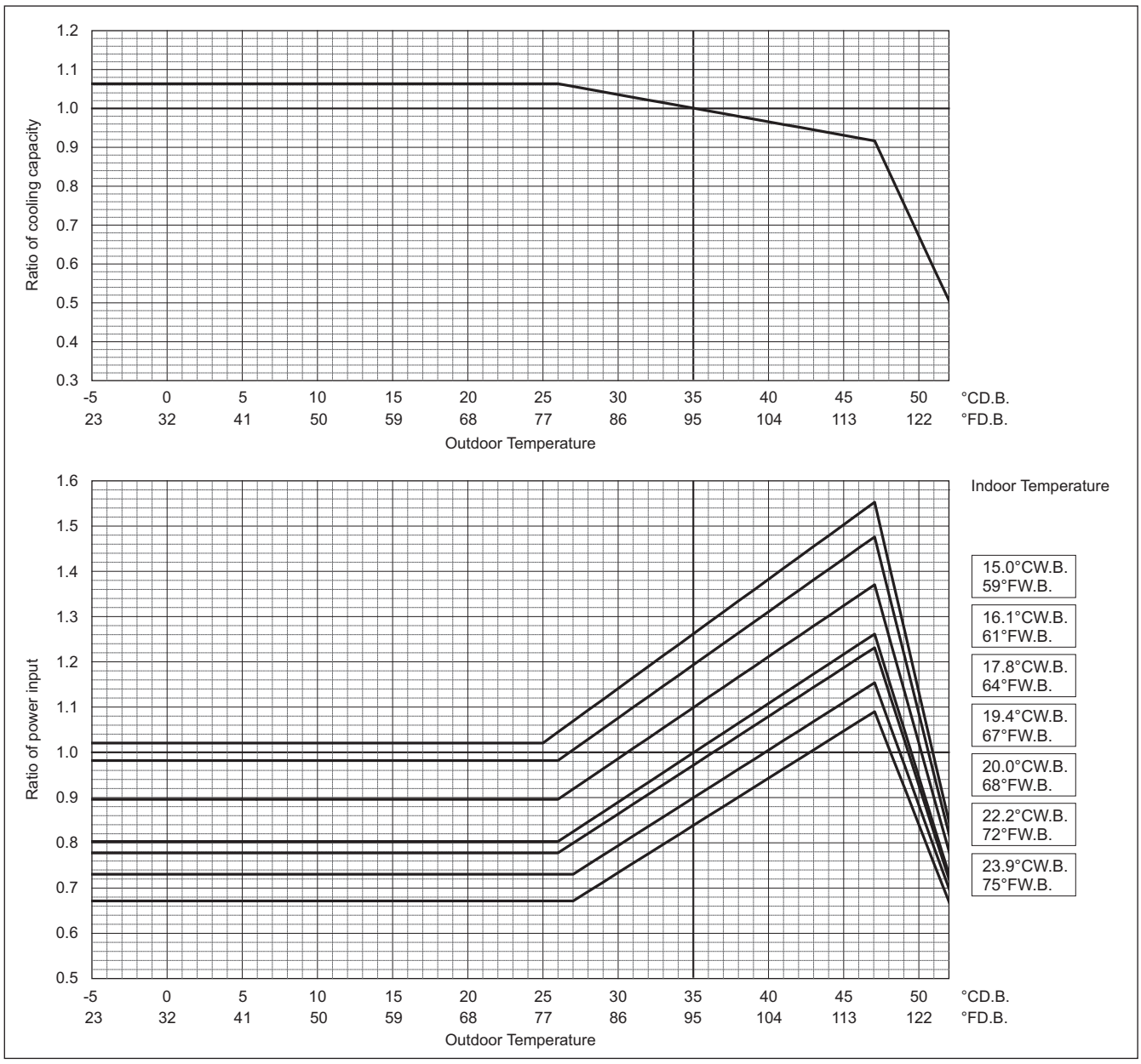
To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

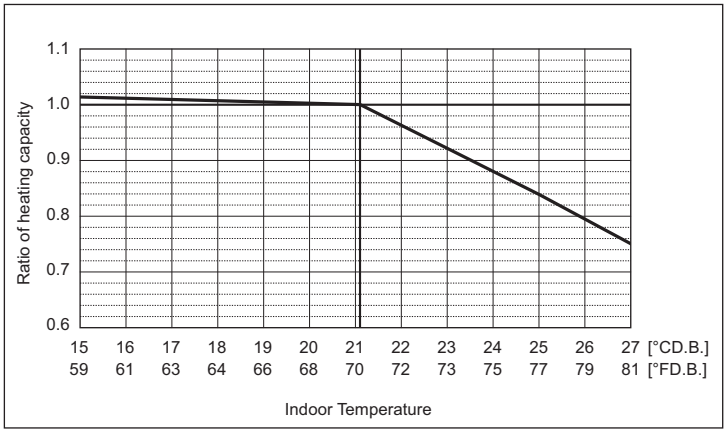
Outdoor unit capacity is NOT affected by the indoor temperature.
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



PUHY-			HM240TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	270,000	
		kW	79.1	
	Input	kW	18.50	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

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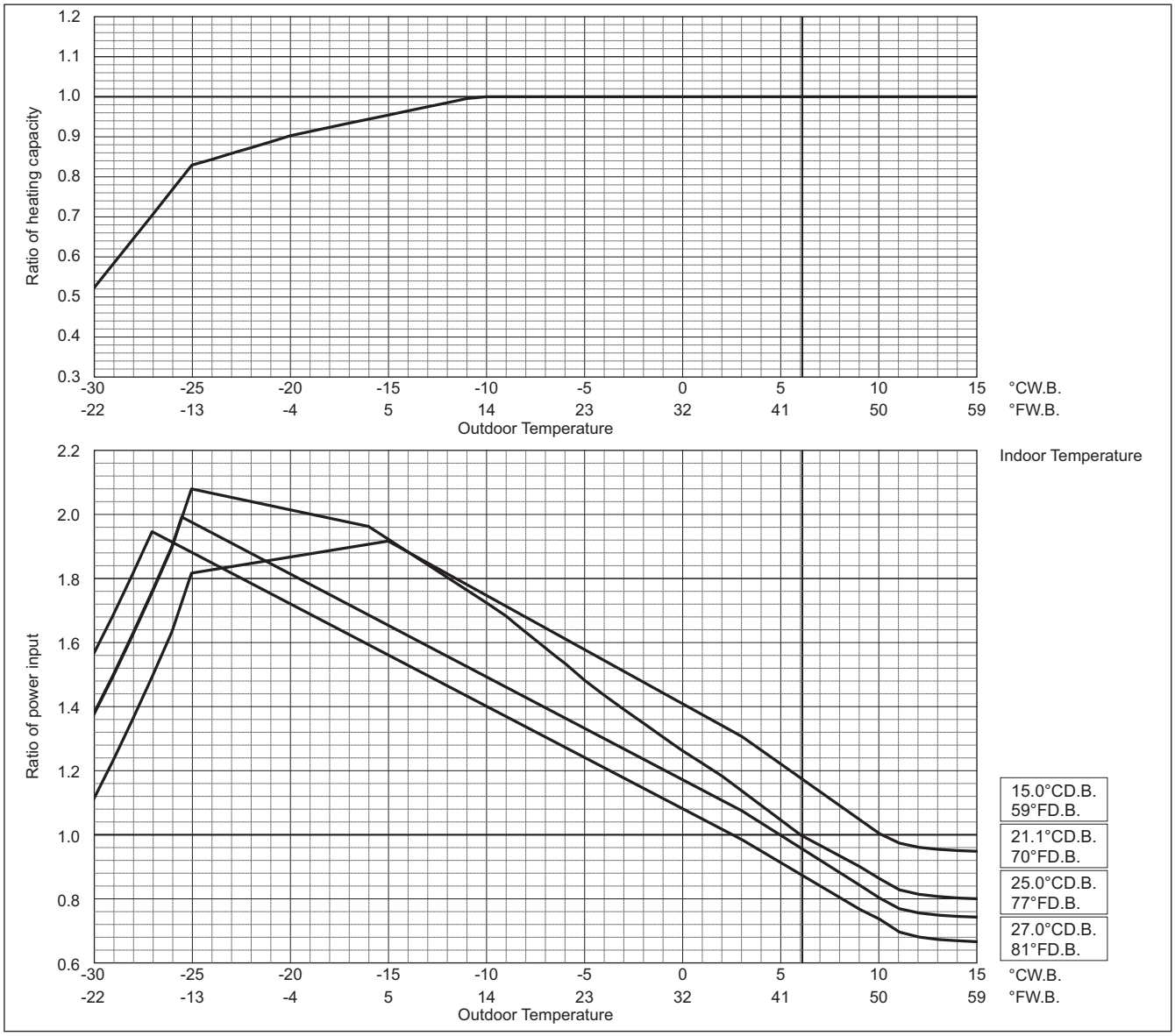
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



Correction by temperature (Cool toughness mode)

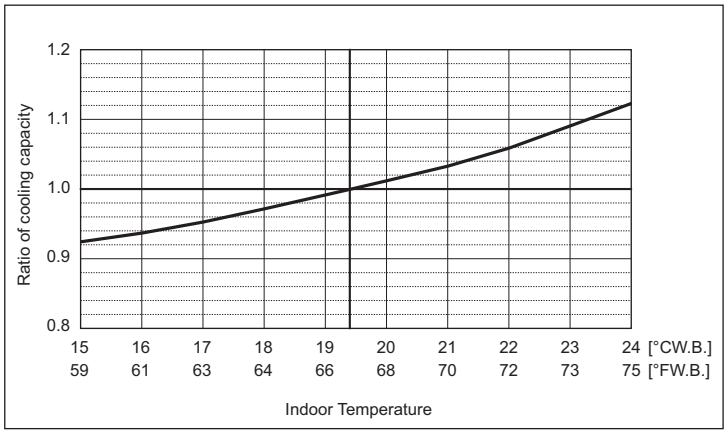
CITY MULTI could have various capacities at different designing temperatures. Using the nominal cooling/heating capacity values and the ratios below, the capacity can be found for various temperatures. To select cool toughness mode, SW4 (959) must be set to ON.

Cool toughness mode

PUHY-			HM72TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	72,000	
		kW	21.1	
	Input	kW	4.42	

Indoor unit temperature correction

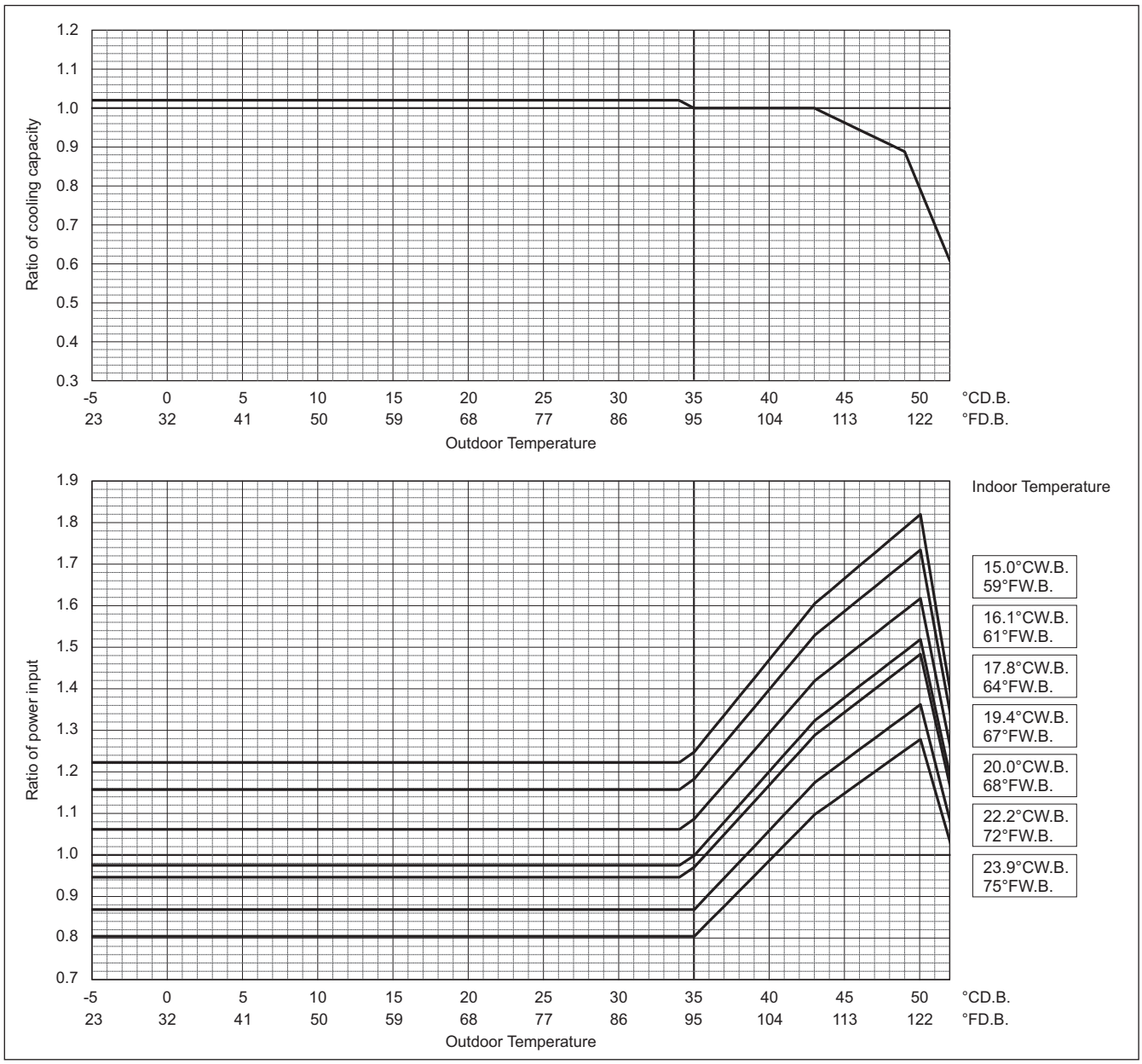
To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

Outdoor unit capacity is NOT affected by the indoor temperature.
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.

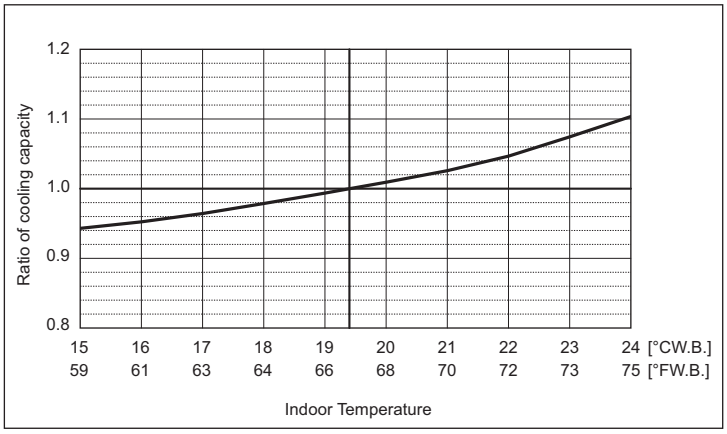


Cool toughness mode

PUHY-			HM96TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	96,000	
		kW	28.1	
	Input	kW	6.29	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

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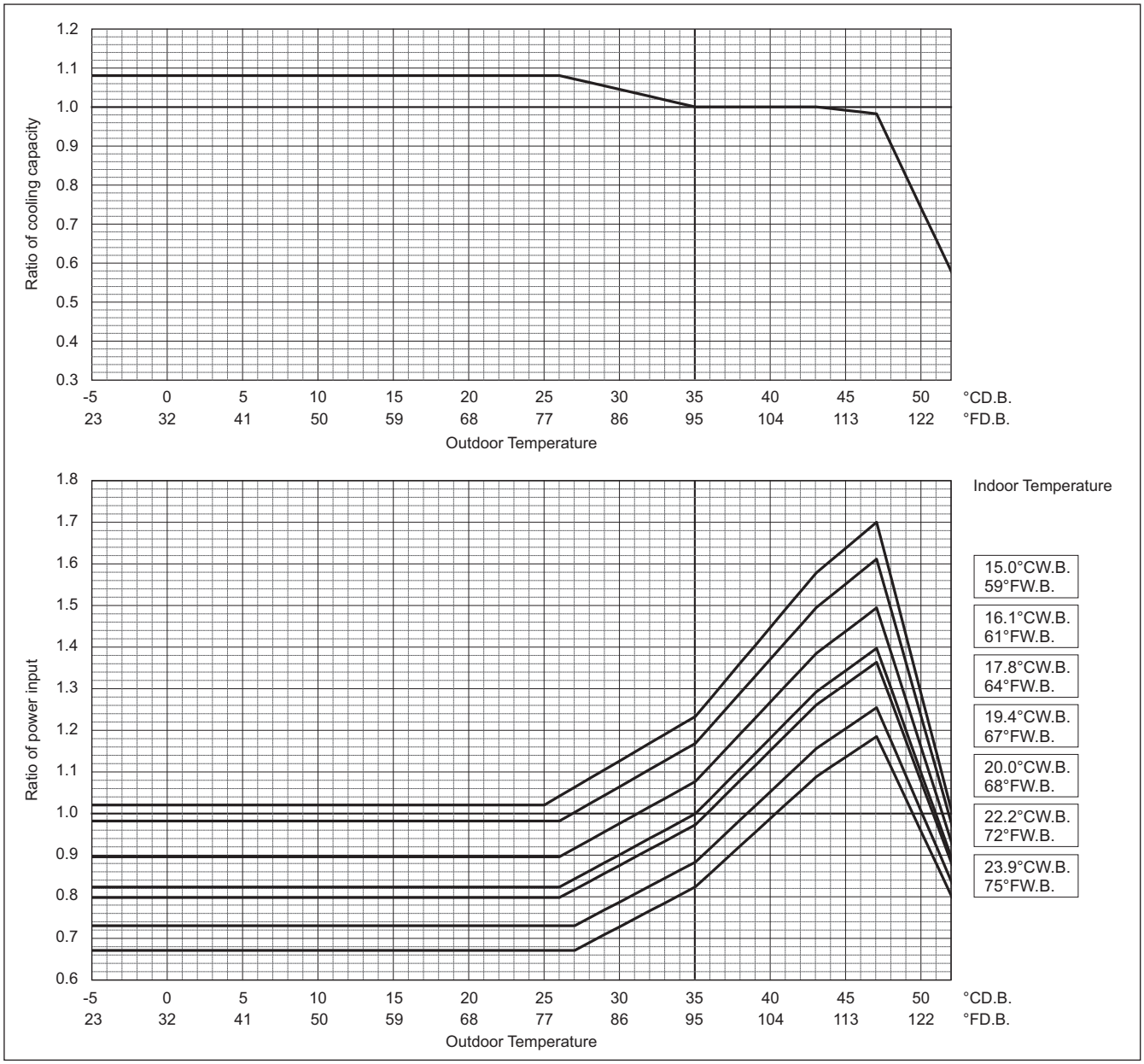
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.

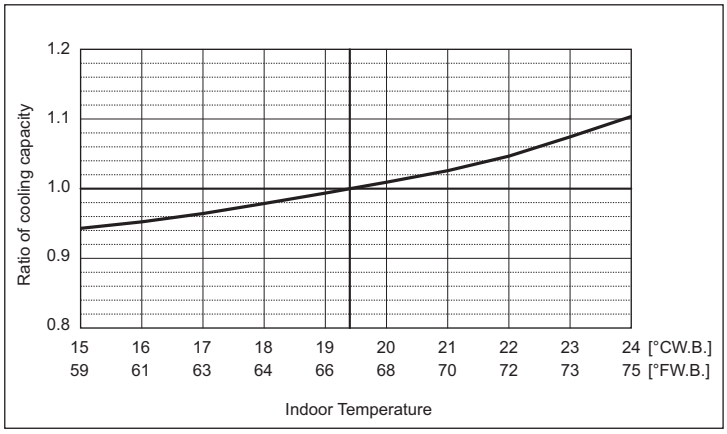


Cool toughness mode

PUHY-			HM120TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	120,000	
		kW	35.2	
	Input	kW	8.04	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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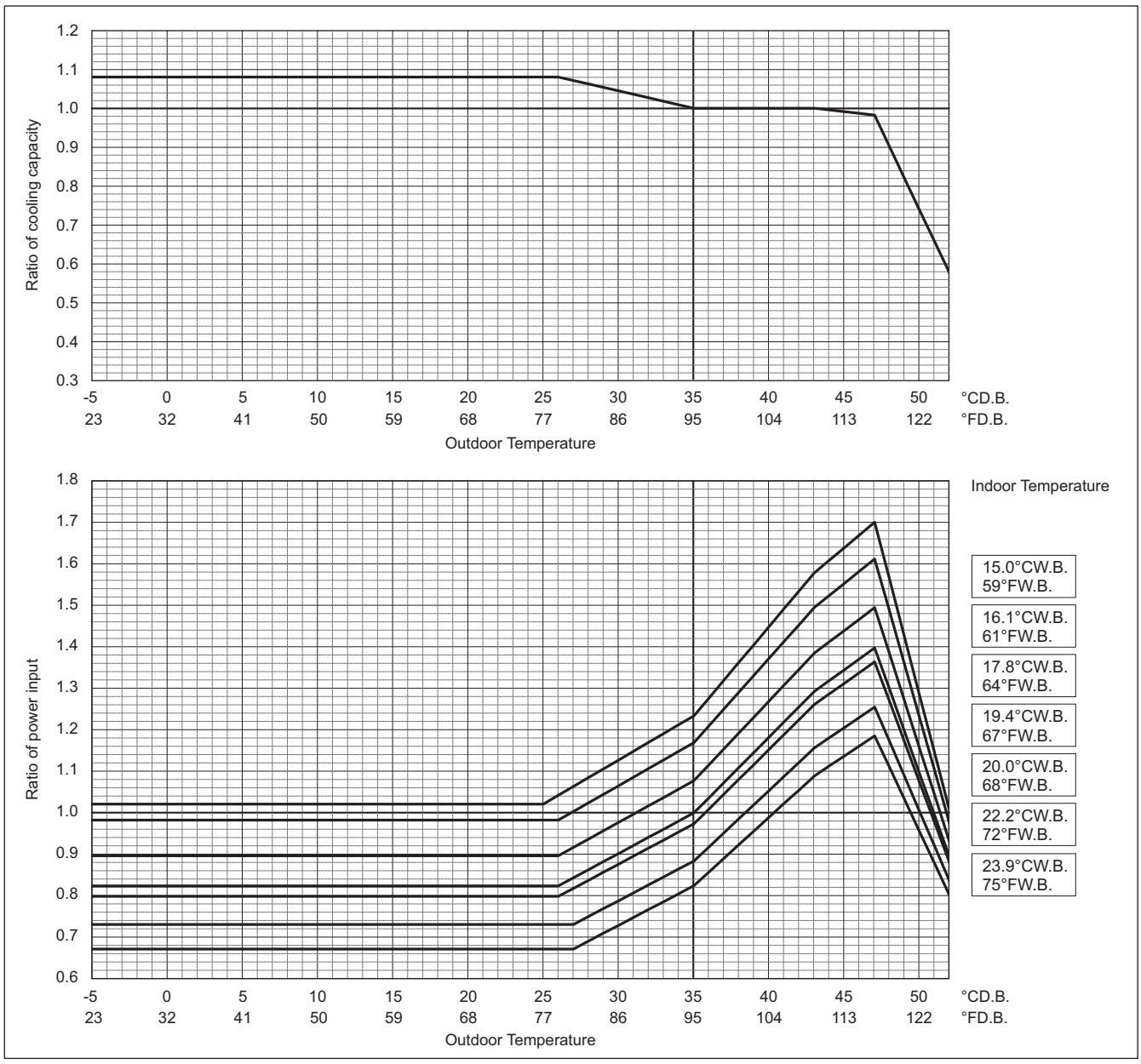
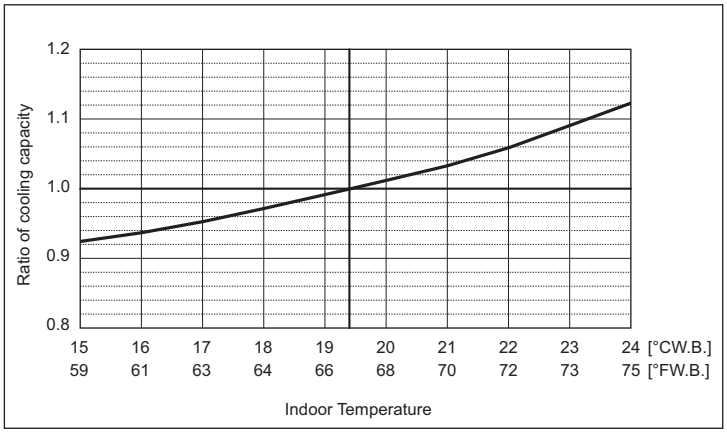


Cool toughness mode

PUHY-			HM144TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	144,000	
		kW	42.2	
	Input	kW	9.32	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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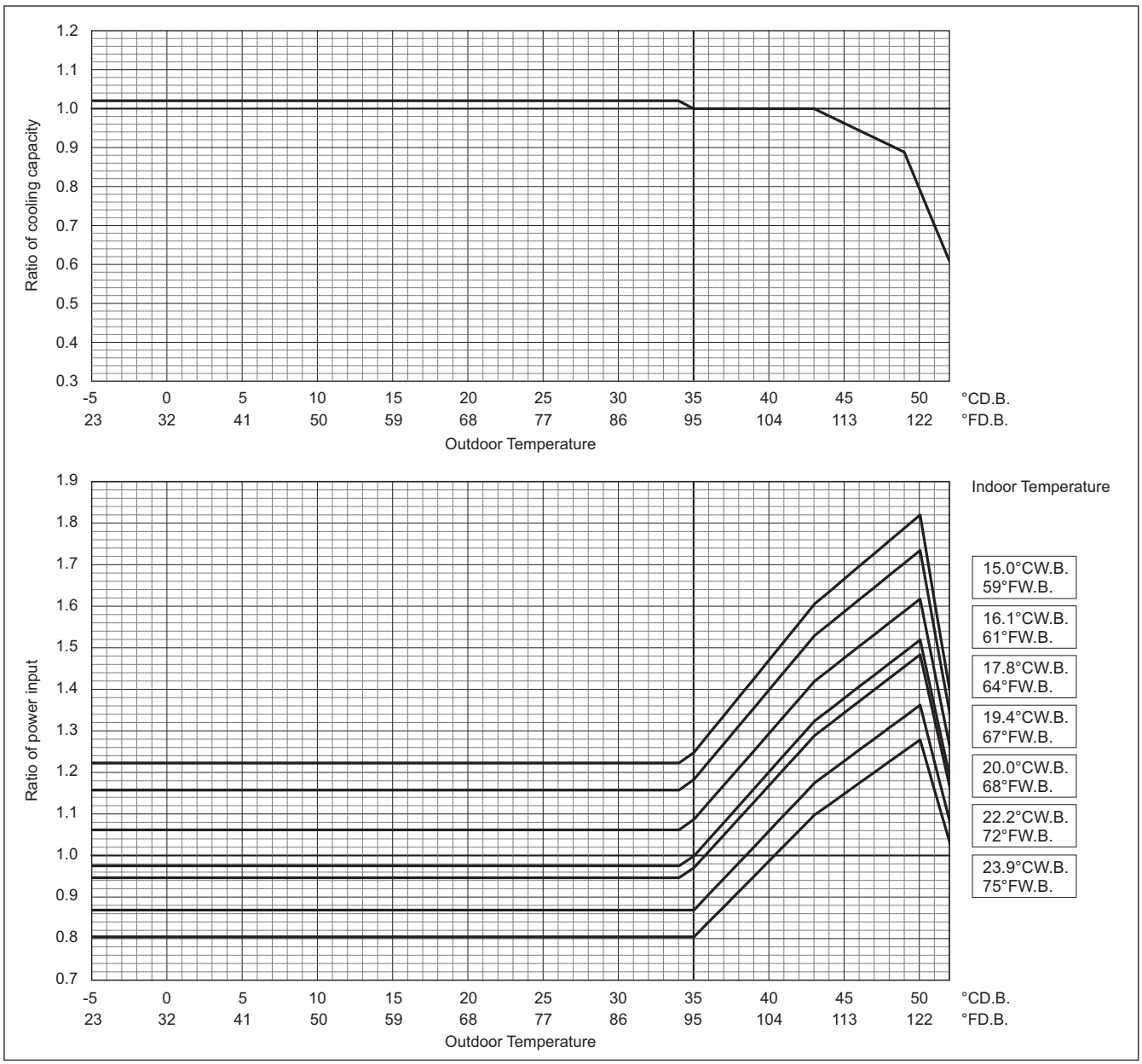
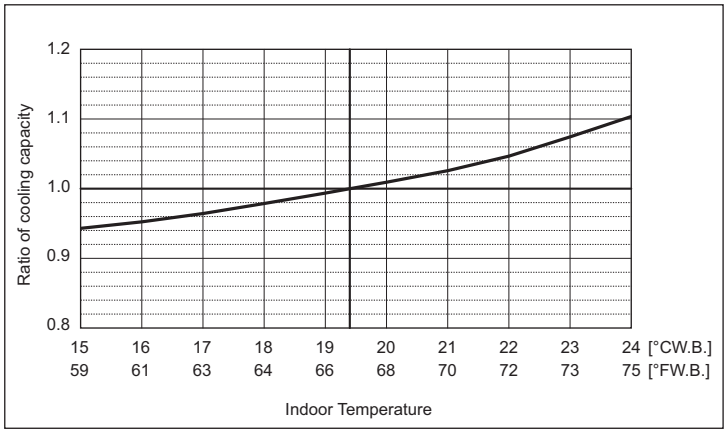


Cool toughness mode

PUHY-			HM192TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	192,000	
		kW	56.3	
	Input	kW	12.71	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



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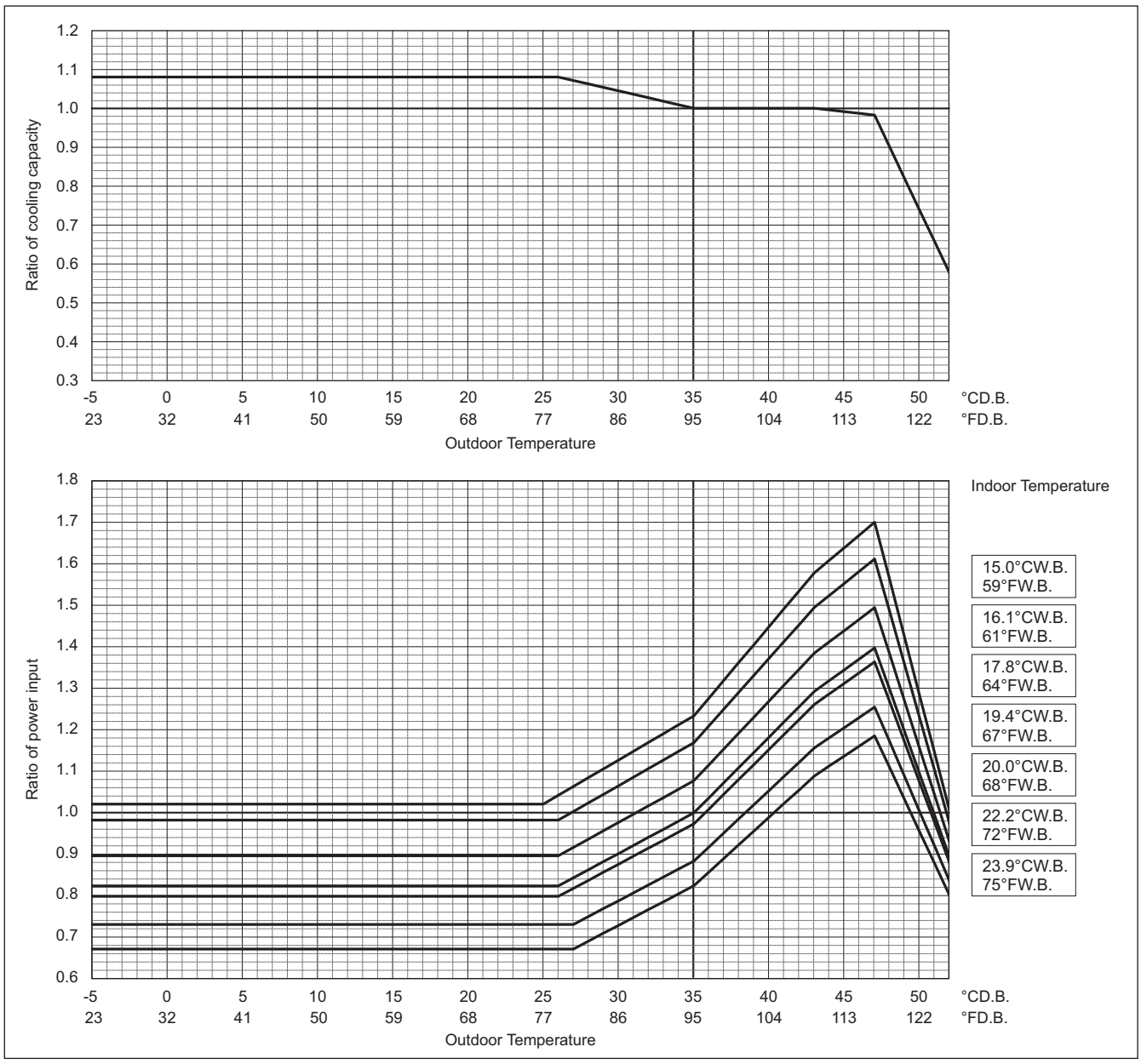
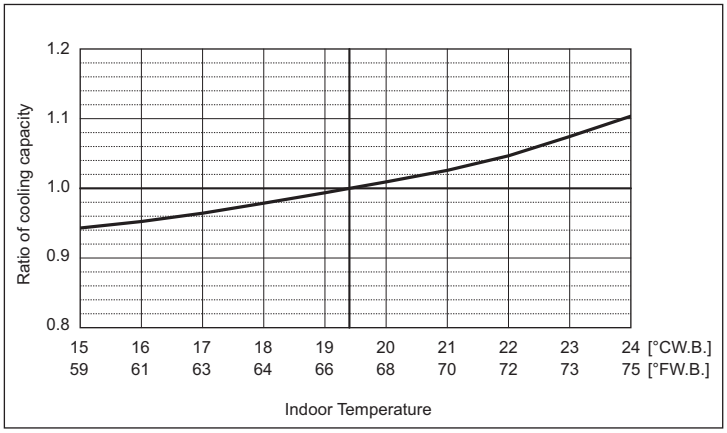


Cool toughness mode

PUHY-			HM240TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	240,000	
		kW	70.3	
	Input	kW	16.31	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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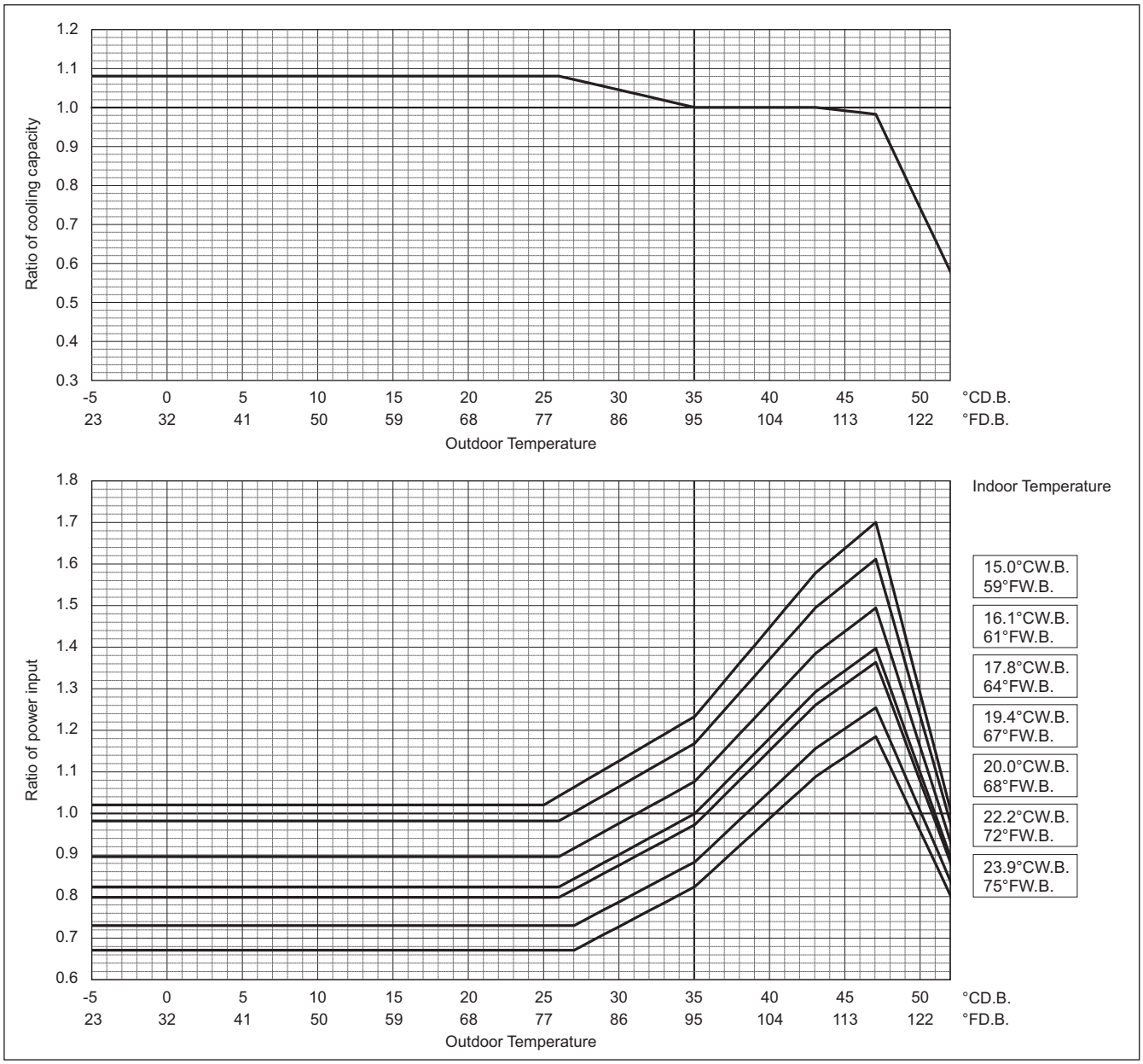


Correction by temperature (Heating COP priority mode)

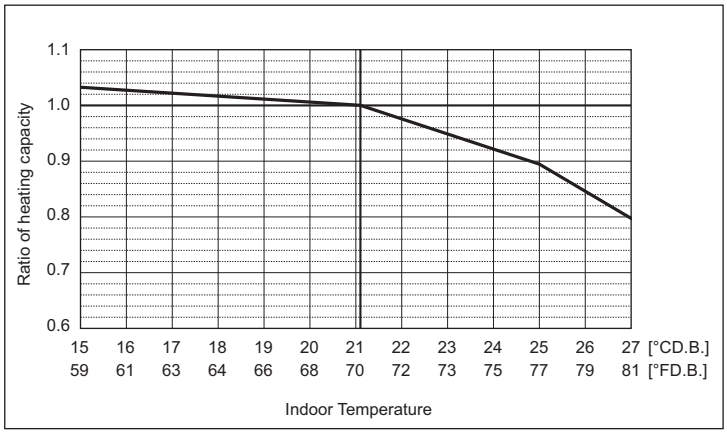
CITY MULTI could have various capacities at different designing temperatures. Using the nominal cooling/heating capacity values and the ratios below, the capacity can be found for various temperatures. To select heating COP priority mode, SW4 (935) must be set to OFF.

Heating COP priority mode

PUHY-			HM72TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	80,000	
		kW	23.4	
	Input	kW	5.10	

Indoor unit temperature correction

To be used to correct indoor unit capacity only

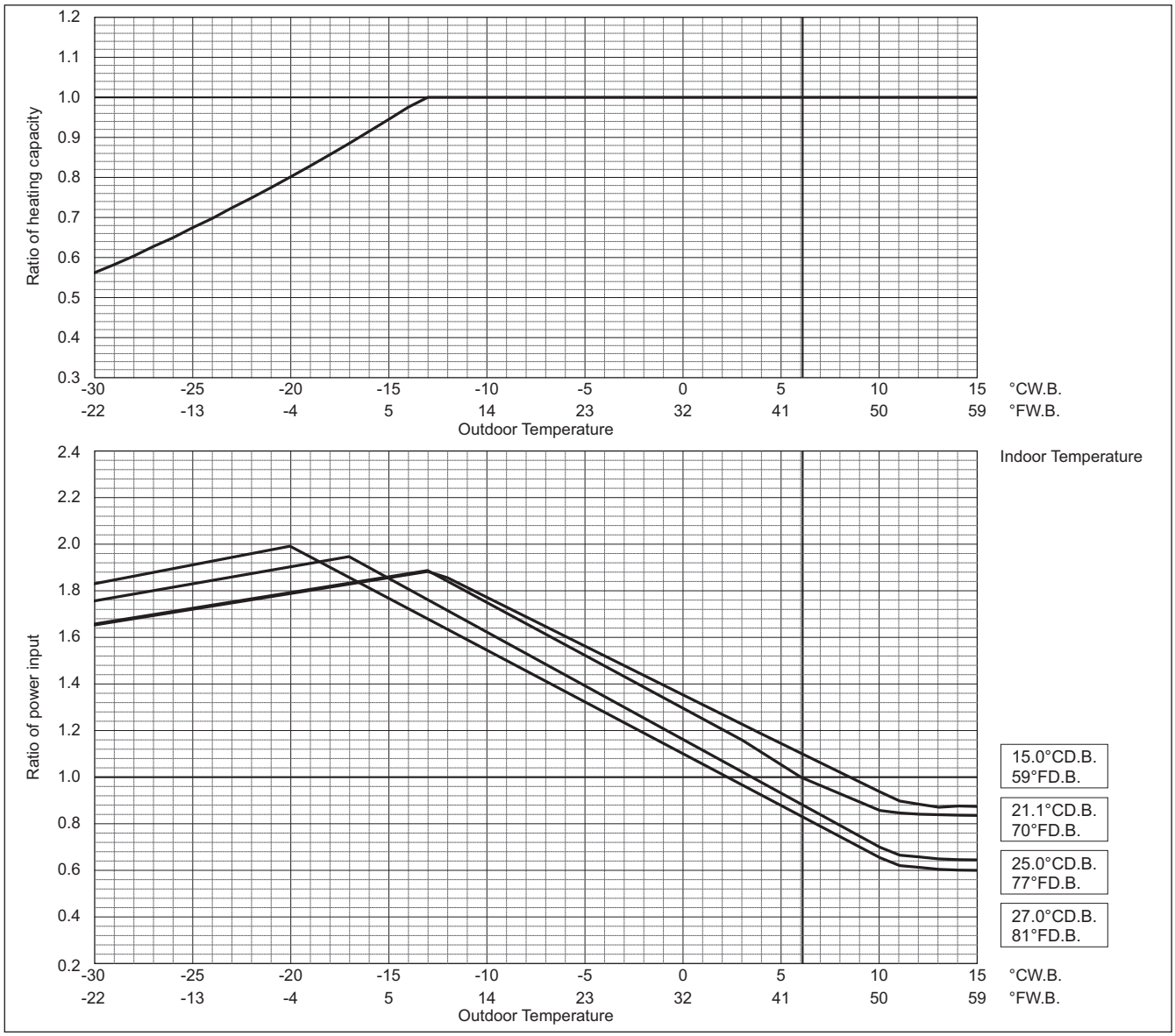


Outdoor unit temperature correction

To be used to correct outdoor unit only

Outdoor unit capacity is NOT affected by the indoor temperature.

Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.

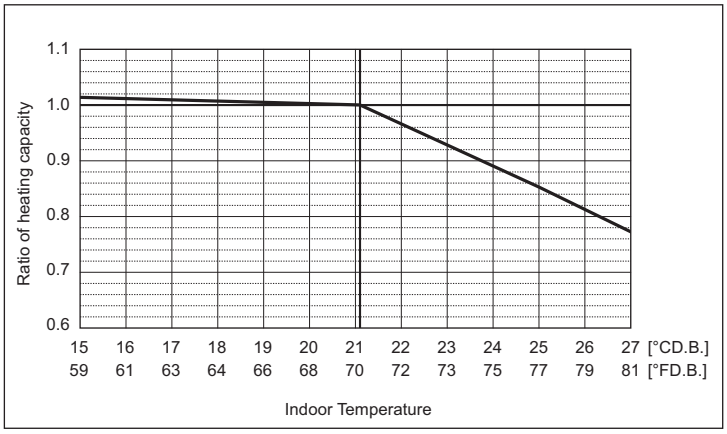


Heating COP priority mode

PUHY-			HM96TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	108,000	
		kW	31.7	
	Input	kW	7.19	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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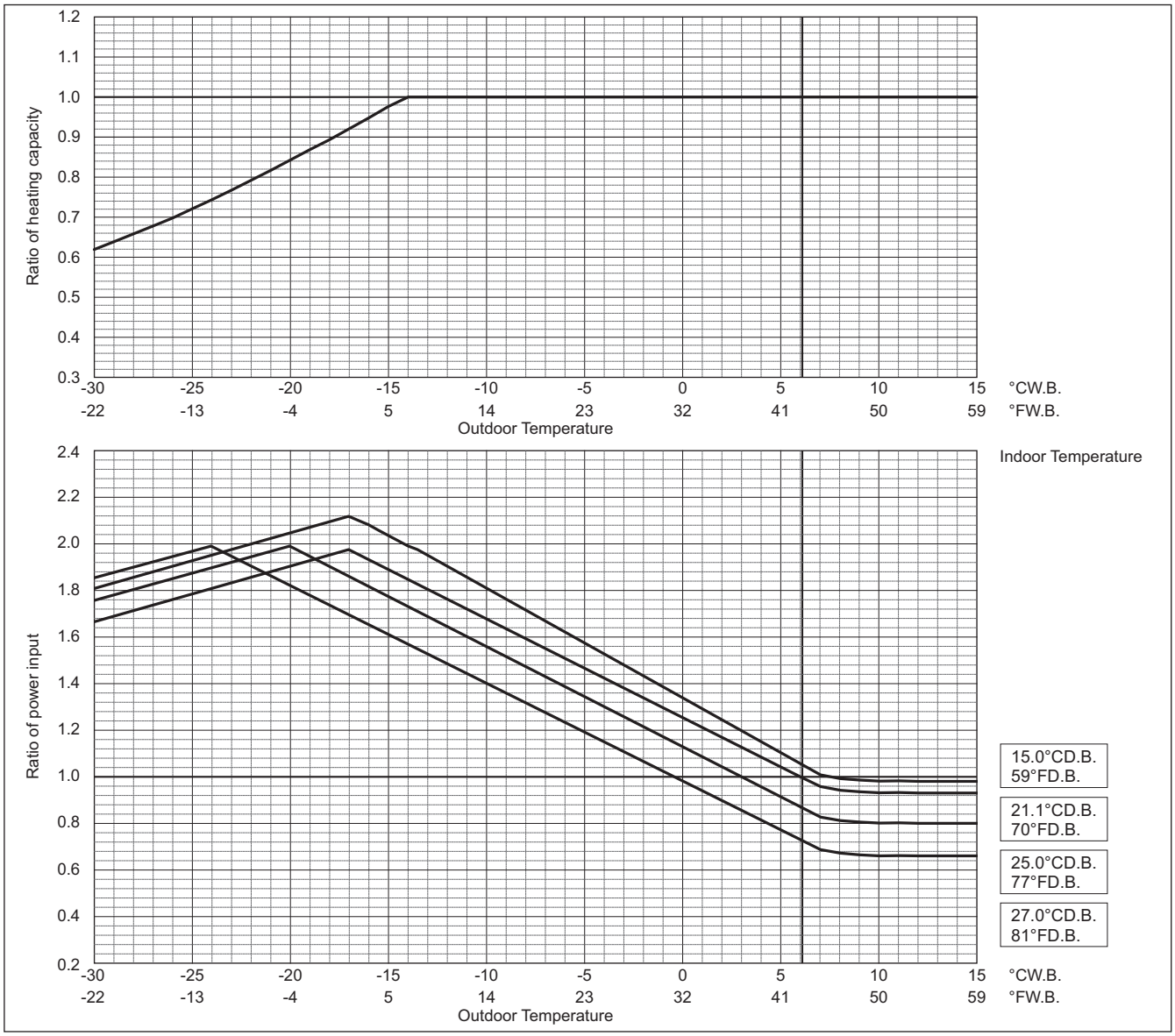
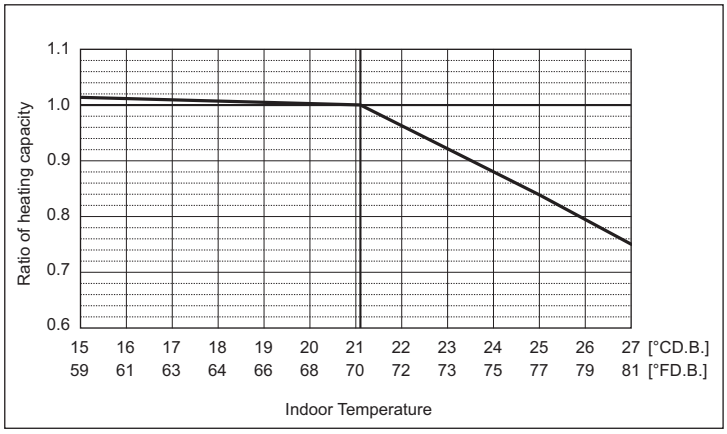


Heating COP priority mode

PUHY-			HM120TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	135,000	
		kW	39.6	
	Input	kW	9.23	

Indoor unit temperature correction

To be used to correct indoor unit capacity only



Outdoor unit temperature correction

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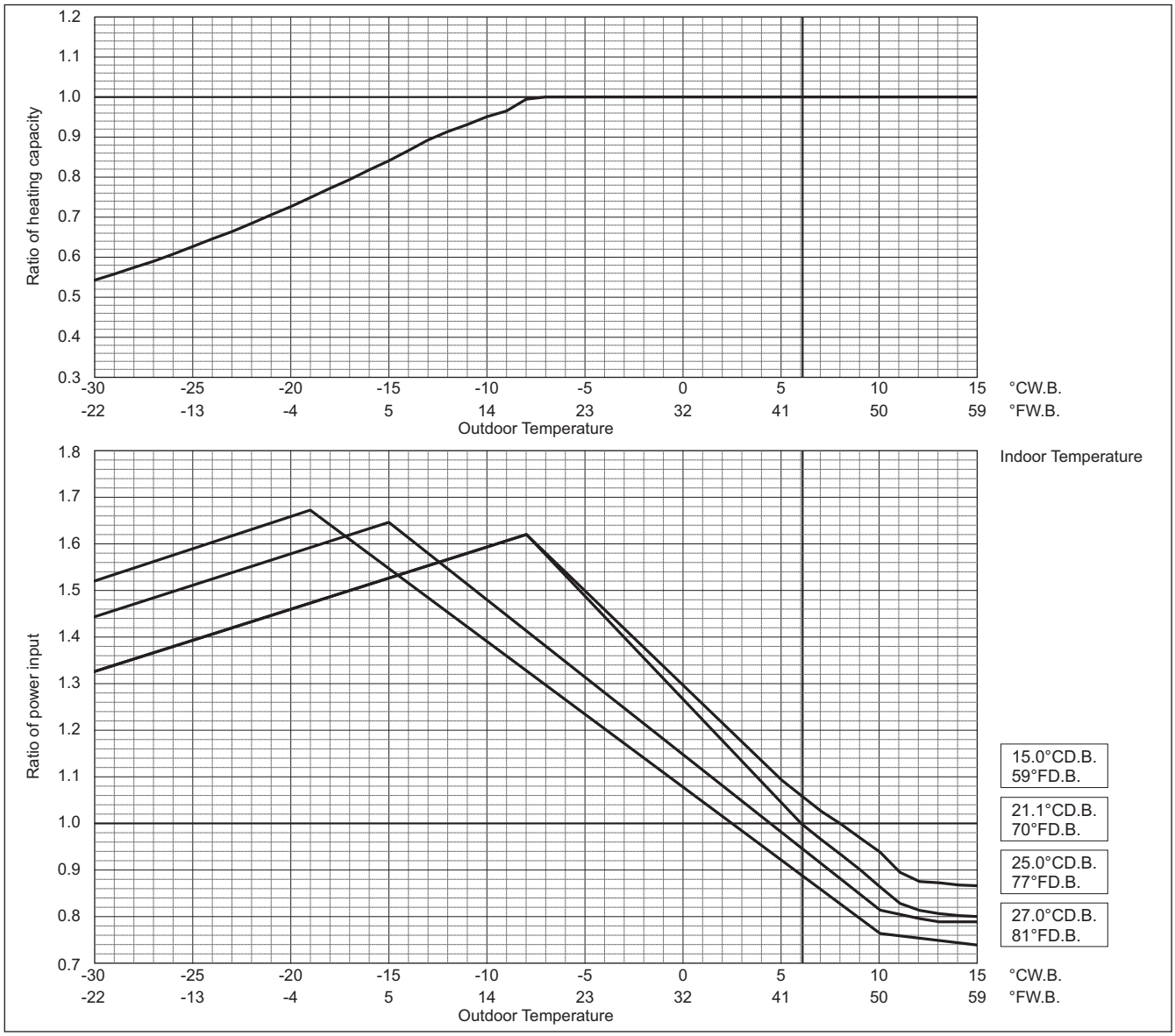
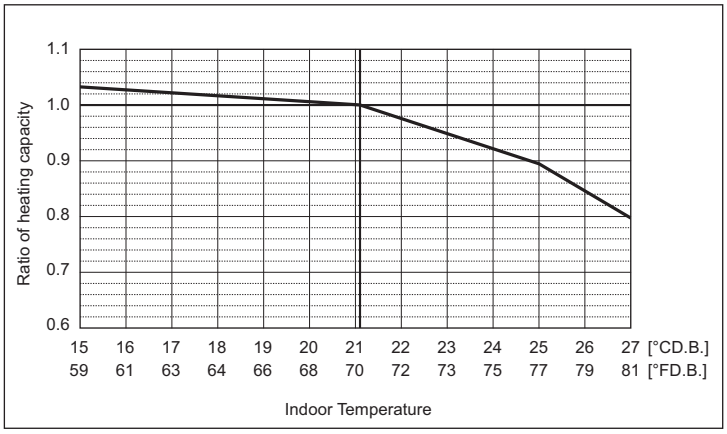
Outdoor unit capacity is NOT affected by the indoor temperature.
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



Heating COP priority mode

PUHY-			HM144TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	160,000	
		kW	46.9	
	Input	kW	10.24	

Indoor unit temperature correction

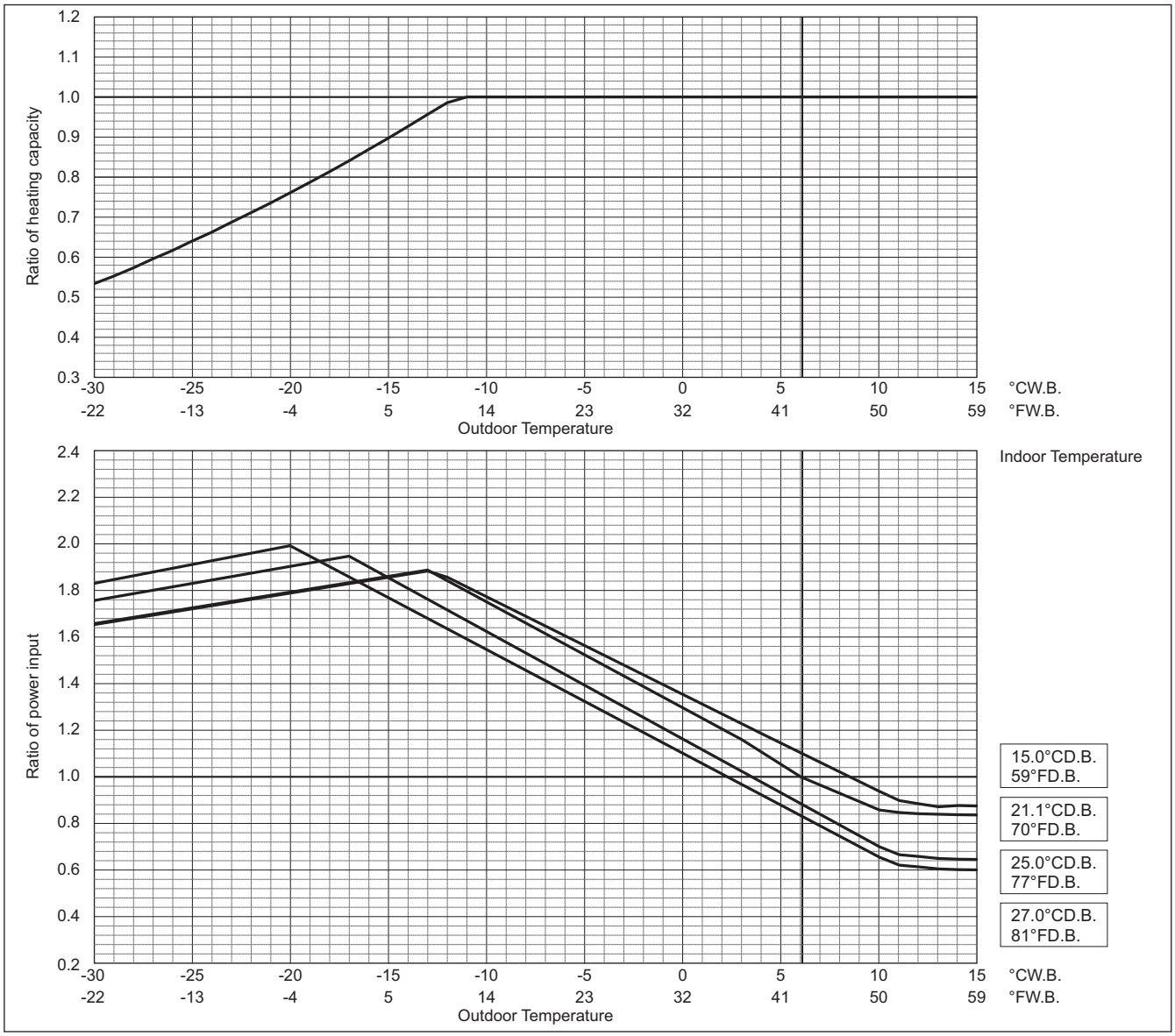


Outdoor unit temperature correction

To be used to correct outdoor unit only

Outdoor unit capacity is NOT affected by the indoor temperature.

Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.

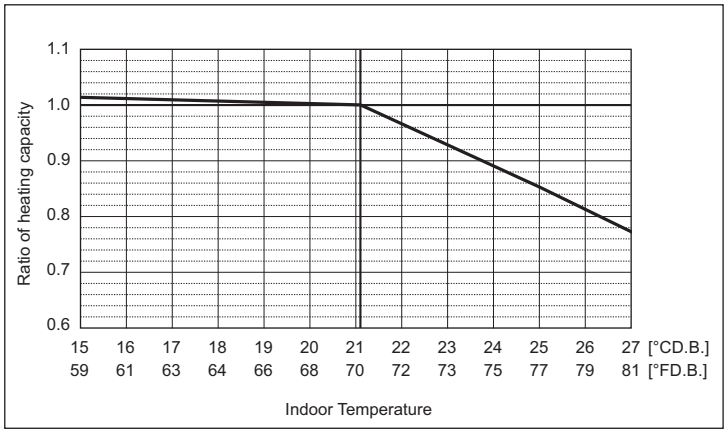


Heating COP priority mode

PUHY-			HM192TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	215,000	
		kW	63.0	
	Input	kW	14.31	

Indoor unit temperature correction

To be used to correct indoor unit capacity only

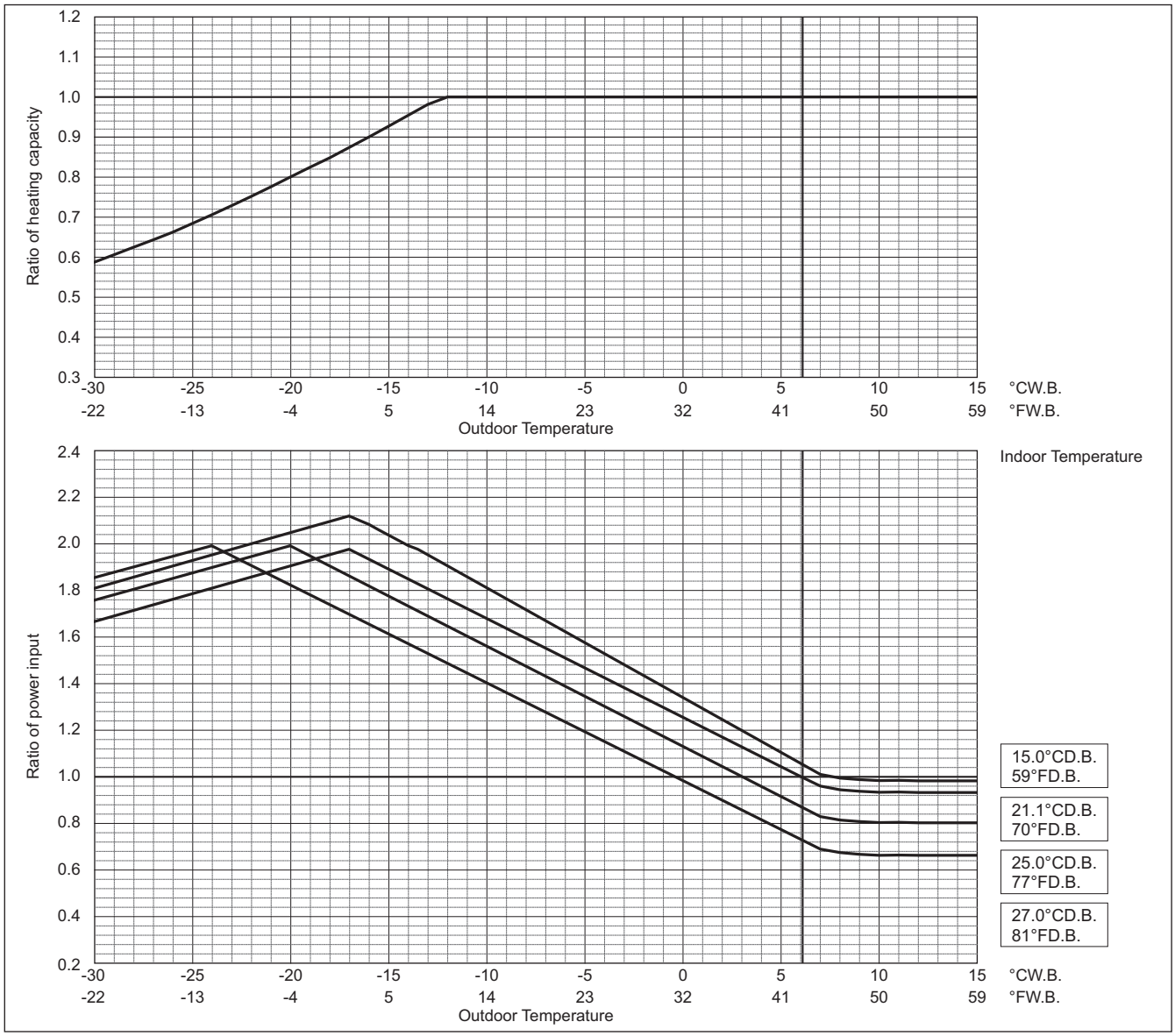


Outdoor unit temperature correction

To be used to correct outdoor unit only

Outdoor unit capacity is NOT affected by the indoor temperature.

Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.

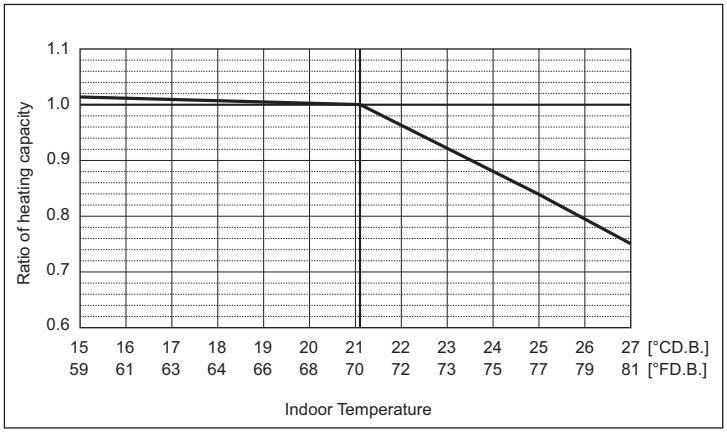


Heating COP priority mode

PUHY-			HM240TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	270,000	
		kW	79.1	
	Input	kW	18.50	

Indoor unit temperature correction

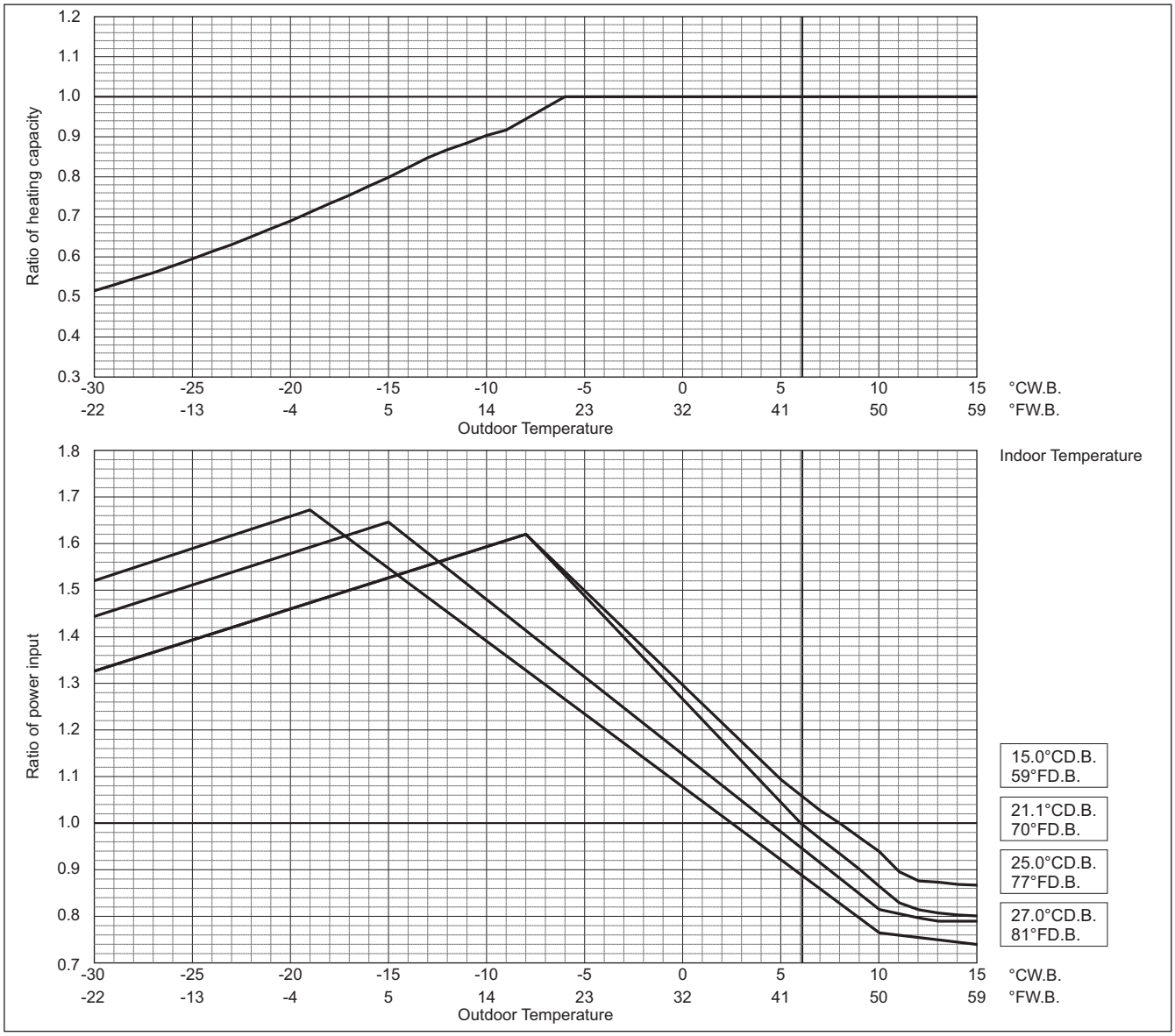
To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

Outdoor unit capacity is NOT affected by the indoor temperature.
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



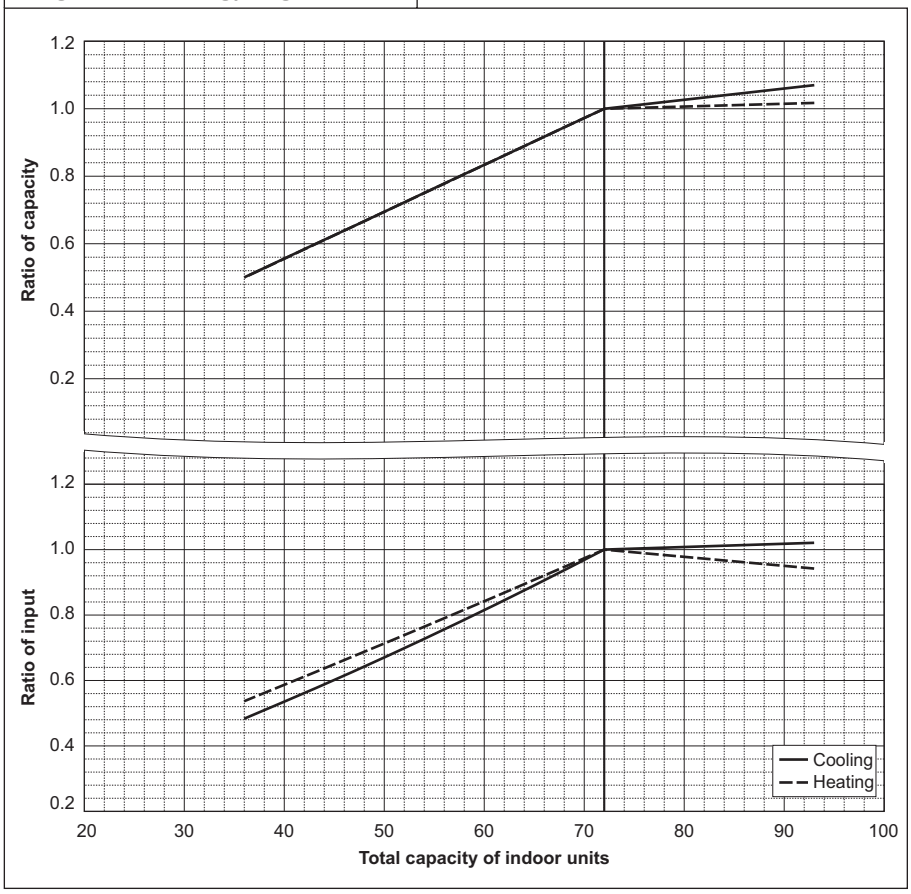
8-3. Correction by total indoor

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. In conditions of extremely low ambient temperature, operating the system with a low total indoor unit capacity may result in unstable performance. To ensure reliable operation, the installation of a snow hood is recommended.

PUHY-			HM72TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	72,000	
		kW	21.1	
	Input	kW	4.42	

PUHY-			HM72TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	80,000	
		kW	23.4	
	Input	kW	5.10	

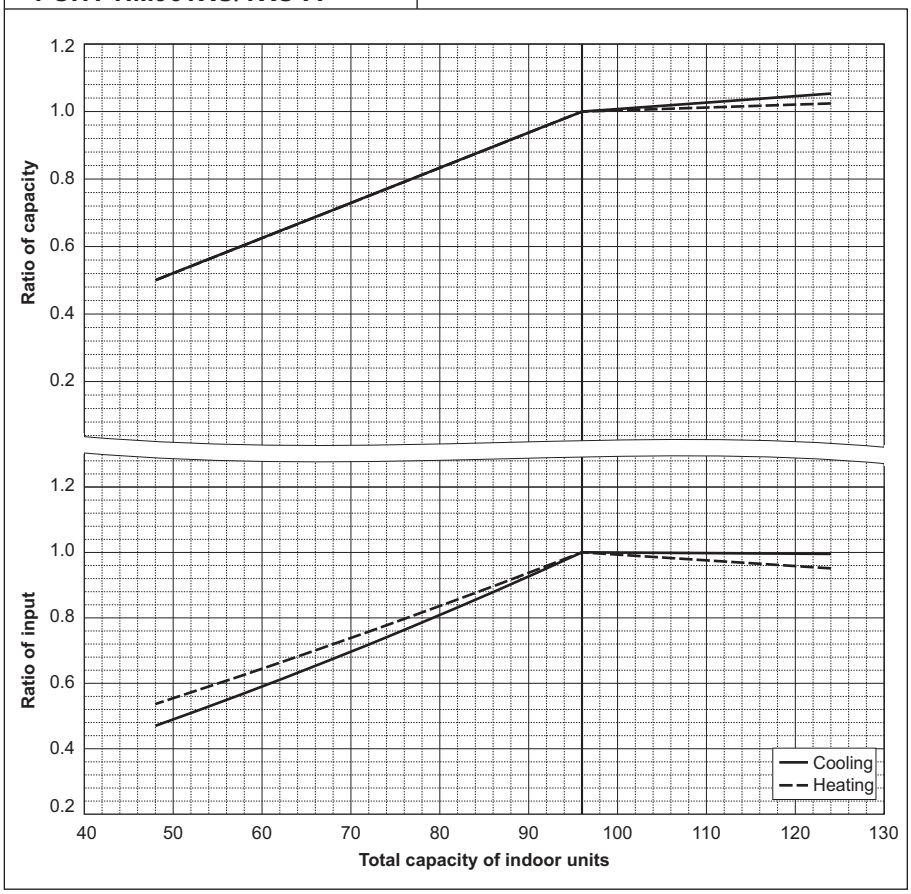
PUHY-HM72TXU/YXU-A



PUHY-			HM96TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	96,000	
		kW	28.1	
	Input	kW	6.29	

PUHY-			HM96TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	108,000	
		kW	31.7	
	Input	kW	7.19	

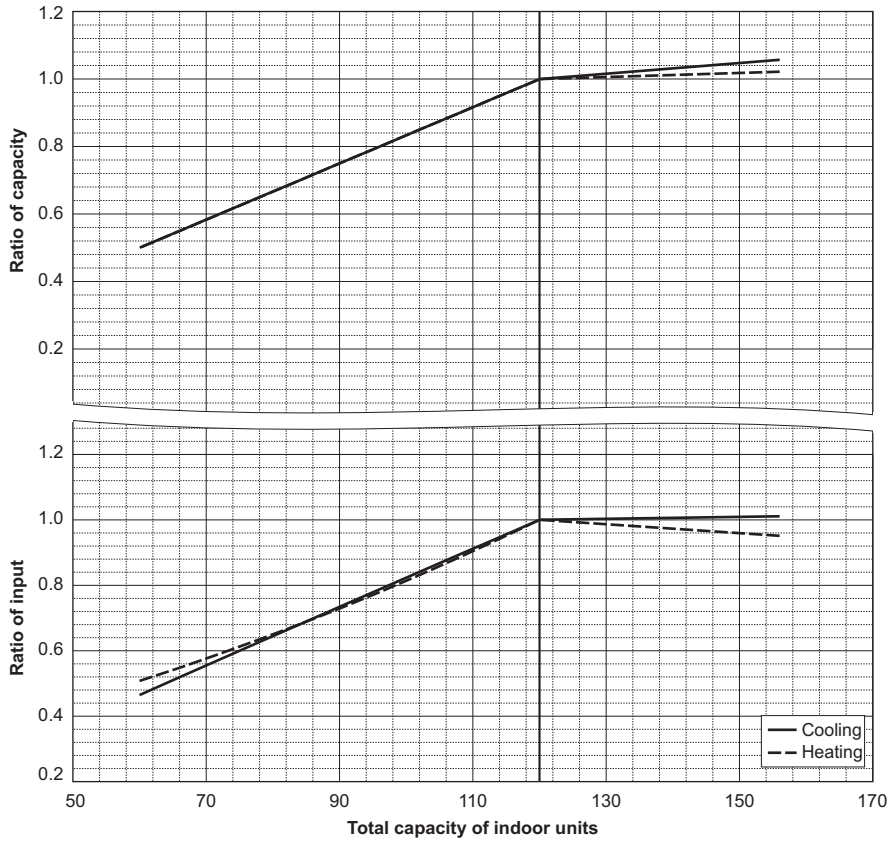
PUHY-HM96TXU/YXU-A



PUHY-			HM120TXU/YXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	120,000	
		kW	35.2	
	Input	kW	8.04	

PUHY-			HM120TXU/YXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	135,000	
		kW	39.6	
	Input	kW	9.23	

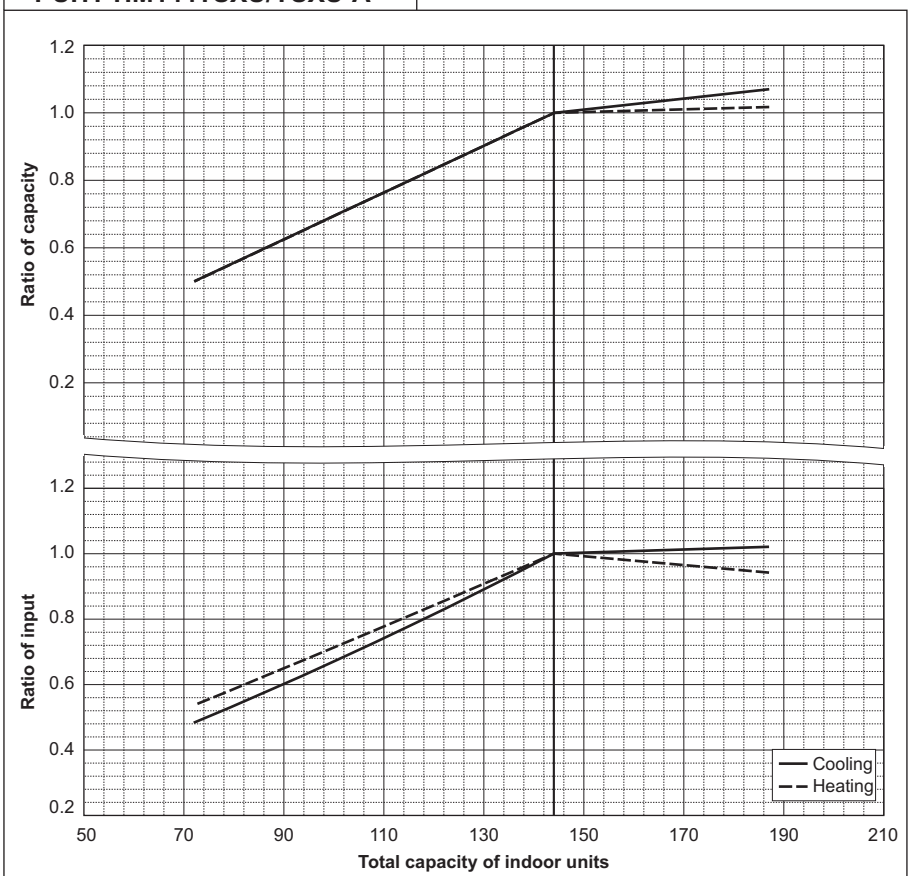
PUHY-HM120TXU/YXU-A



PUHY-			HM144TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	144,000	
		kW	42.2	
	Input	kW	9.32	

PUHY-			HM144TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	160,000	
		kW	46.9	
	Input	kW	10.24	

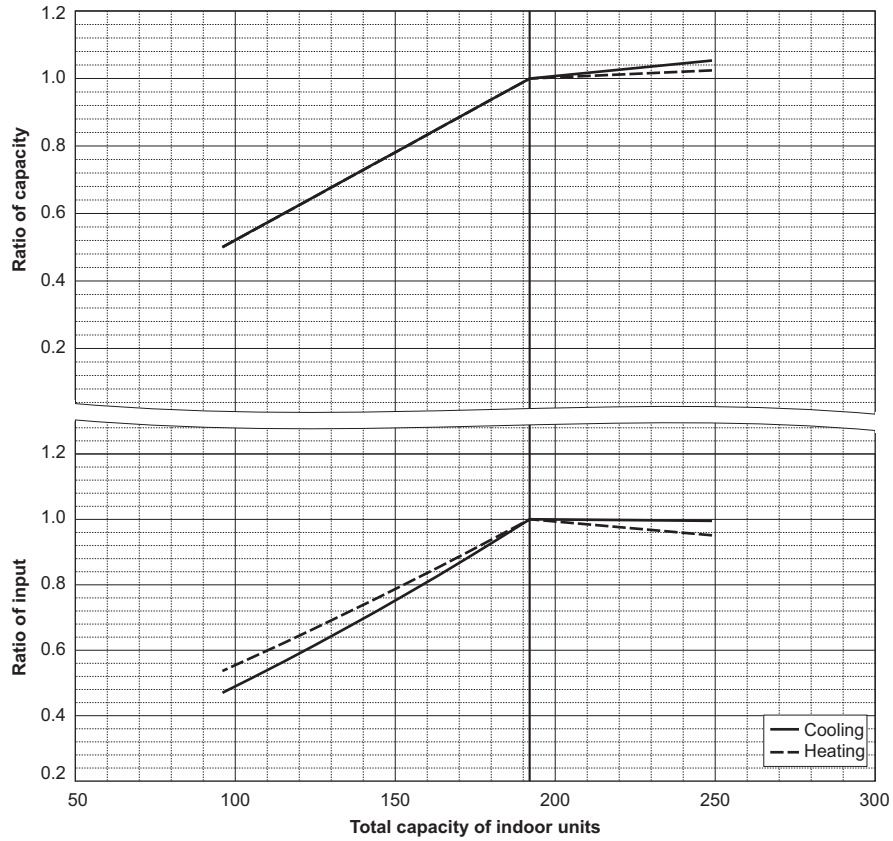
PUHY-HM144TSXU/YSXU-A



PUHY-			HM192TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	192,000	
		kW	56.3	
	Input	kW	12.71	

PUHY-			HM192TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	215,000	
		kW	63.0	
	Input	kW	14.31	

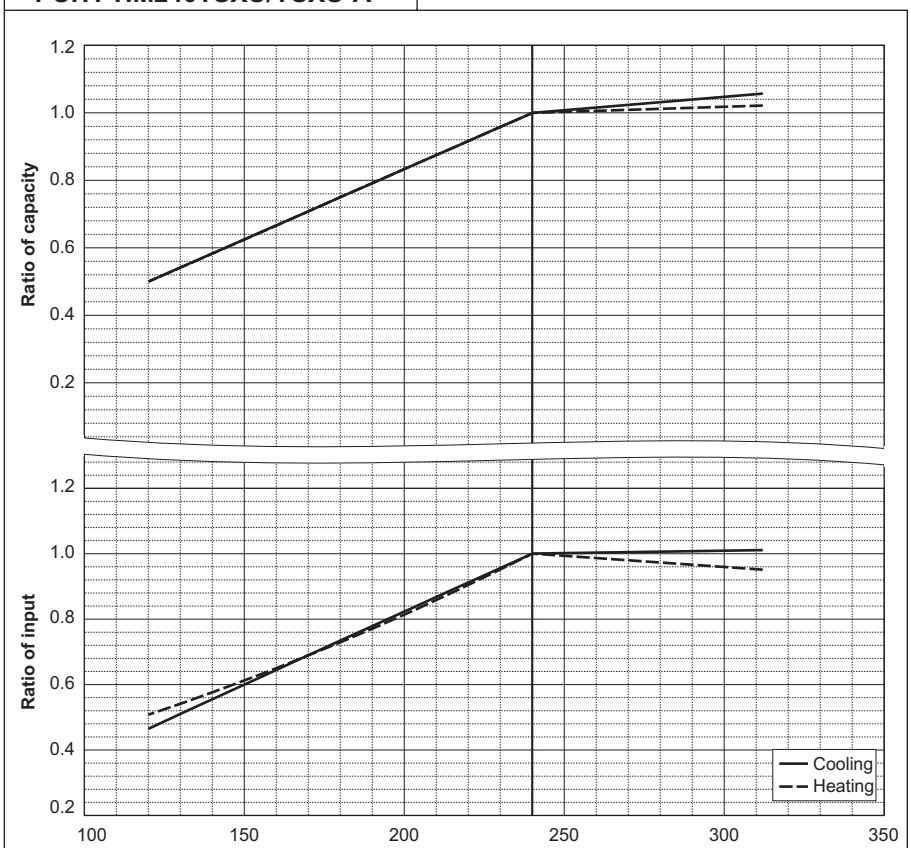
PUHY-HM192TSXU/YSXU-A



PUHY-			HM240TSXU/YSXU	
			Non-Ducted	Ducted
Nominal cooling capacity		BTU/h	240,000	
		kW	70.3	
	Input	kW	16.31	

PUHY-			HM240TSXU/YSXU	
			Non-Ducted	Ducted
Nominal Heating capacity		BTU/h	270,000	
		kW	79.1	
	Input	kW	18.50	

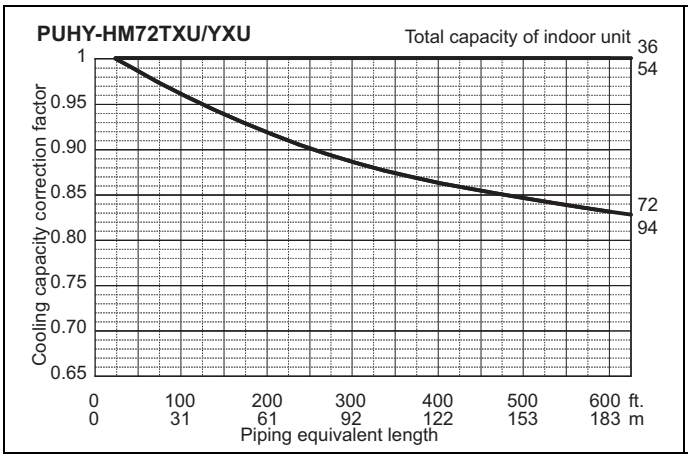
PUHY-HM240TSXU/YSXU-A

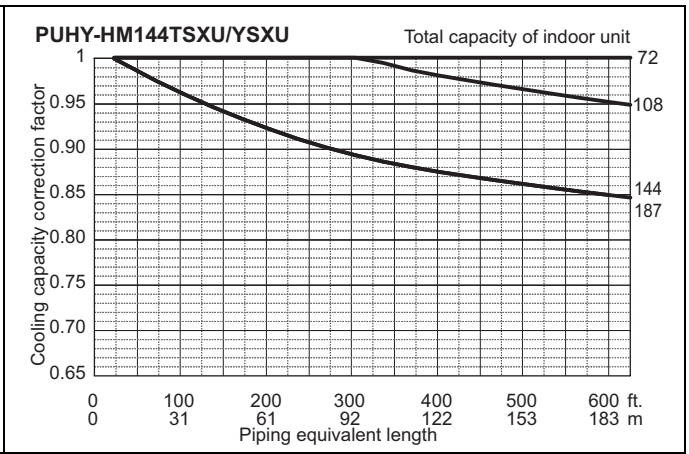


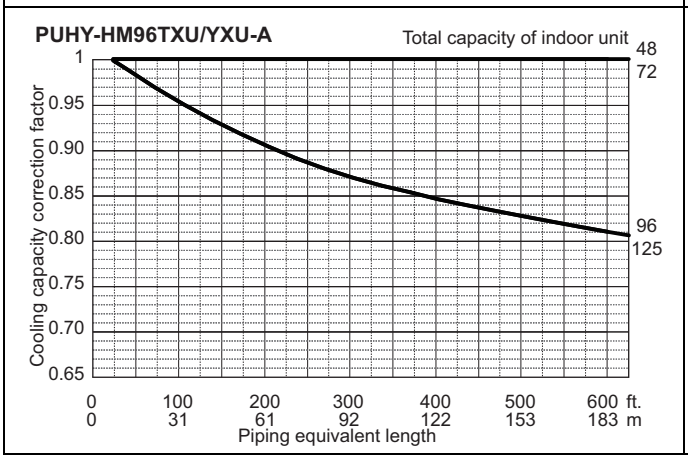
8-4. Correction by refrigerant piping length

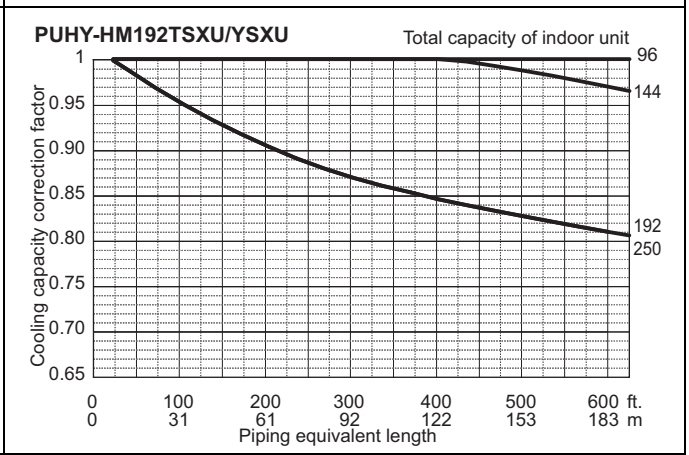
CITY MULTI system can extend the piping flexibly within its limitation for the actual situation. However, a decrease of cooling/heating capacity could happen correspondently. Using following correction factor according to the equivalent length of the piping shown at 8-4-1 and 8-4-2, the capacity can be observed. 8-4-3 shows how to obtain the equivalent length of piping.

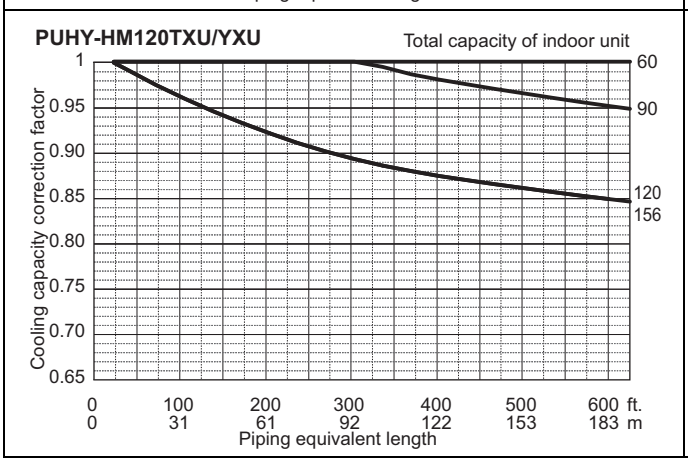
8-4-1. Cooling capacity correction

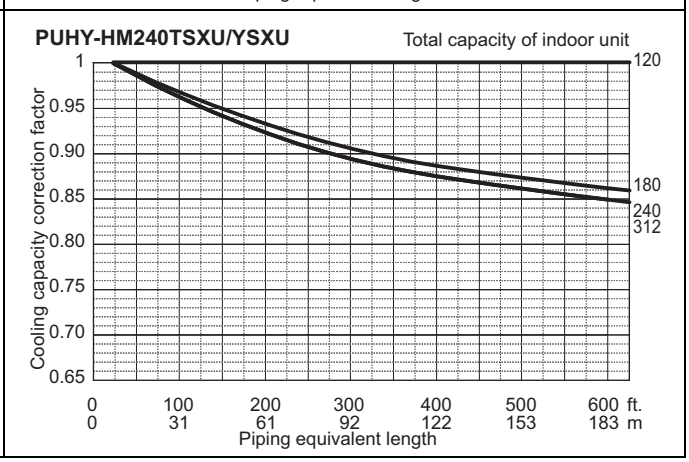




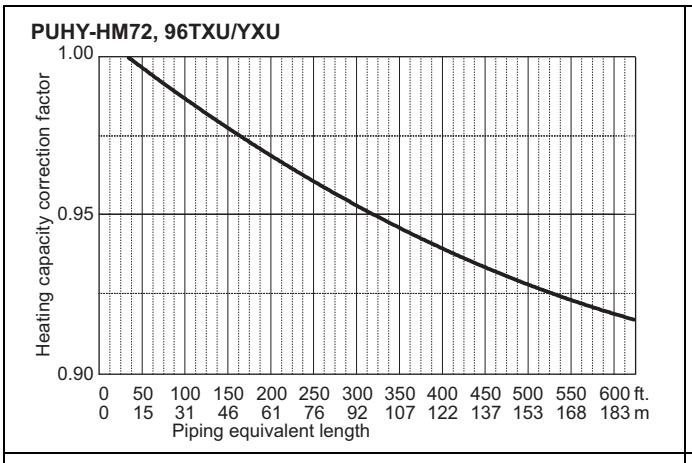


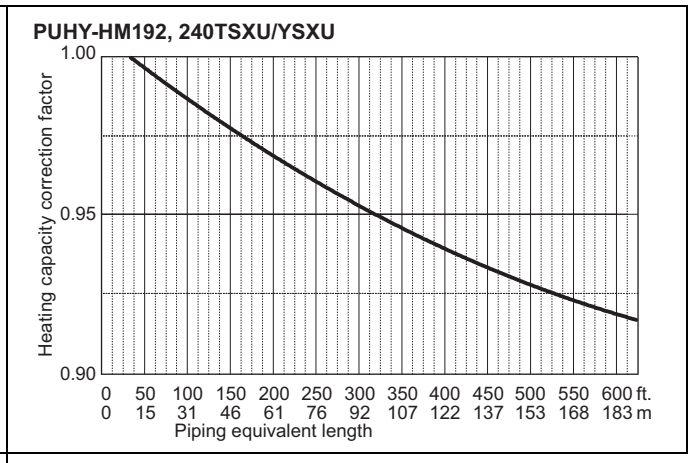


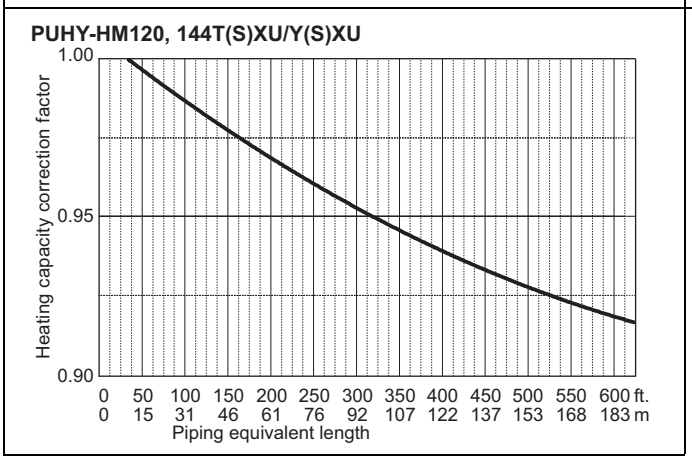




8-4-2. Heating capacity correction







8-4-3. How to obtain the equivalent piping length

1. PUHY-HM72TXU/YXU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.15 × number of bent on the piping) + (the equivalent piping length of the shut off valve kit *1) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.35 × number of bent on the piping) + (the equivalent piping length of the shut off valve kit *1) [m]

2. PUHY-HM96TXU/YXU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.38 × number of bent on the piping) + (the equivalent piping length of the shut off valve kit *1) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.42 × number of bent on the piping) + (the equivalent piping length of the shut off valve kit *1) [m]

3. PUHY-HM120, 144, 192T(S)XU/Y(S)XU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.65 × number of bent on the piping) + (the equivalent piping length of the shut off valve kit *1) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.50 × number of bent on the piping) + (the equivalent piping length of the shut off valve kit *1) [m]

4. PUHY-HM240TSXU/YSXU

Equivalent length = (Actual piping length to the farthest indoor unit) + (2.30 × number of bent on the piping) + (the equivalent piping length of the shut off valve kit *1) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.70 × number of bent on the piping) + (the equivalent piping length of the shut off valve kit *1) [m]

*1 When the shut off valve kit is used in a system, the equivalent piping length of the shut off valve kit should be selected from Tables 1 or 2 below according to the total capacity of the indoor unit(s) connected to the kit and added to the equivalent piping length calculation.

Table 1.
Equivalent piping length of shut off valve kit
(one indoor unit connected)

Capacity of indoor unit	Equivalent piping length (m [ft.])
04~18	1.6 [5.2]
24~54	5.3 [17.4]
72	15.0 [49.2]
96	35.4 [116.1]

Table 2.
Equivalent piping length of shut off valve kit
(multiple indoor units connected)

Total capacity of indoor units	Equivalent piping length (m [ft.])
08～54	5.3 [17.4]
55～72	15.0 [49.2]
73～96	35.4 [116.1]

8-5. Correction at frost and defrost

Due to frost at the outdoor heat exchanger and the automatic defrost operation, the heating capacity of the outdoor unit can be calculated by multiplying the correction factor shown in the table below.

Table of correction factor at frost and defrost

Outdoor inlet air temp. °CWB	6	4	2	1	0	-2	-4	-6	-8	-10	-20	-30
Outdoor inlet air temp. °FWB	43	39	36	34	32	28	25	21	18	14	-4	-22
PUHY-HM72T(Y)XU-A	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-HM96T(Y)XU-A	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-HM120T(Y)XU-A	1.00	0.89	0.78	0.72	0.74	0.79	0.83	0.88	0.88	0.90	0.90	0.90
PUHY-HM144T(Y)SXU-A	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90
PUHY-HM192T(Y)SXU-A	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90
PUHY-HM240T(Y)SXU-A	1.00	0.86	0.73	0.66	0.69	0.75	0.82	0.88	0.88	0.90	0.90	0.90

Note

- The high humidity condition (e.g., a foggy atmosphere) which causes frost forming on the heat exchanger will worsen the heating performance of the unit.
- The snow blowing to the heat exchanger will worsen the heating performance of the unit. Install a snow hood as a preventive measure.
- The correction factors in the table above are used for a full-load and above.
  Use the formula below to calculate the correction factor to use for a partial load.

  Correction factor for partial load: K
  Correction factor for a full load and above: K_0
  Partial load factor: A
  $K = 1 - (1 - K_0) \times A$

8-6. Correction at evaporation-temperature (ET) control

When the target evaporation temperature is changed, the capacity or the power input can be calculated by multiplying the correction factor shown in the table below.

ET *1	°C	6	9	14
	°F	43	48	57
Correction factor	Capacity	0.92	0.75	0.43
	Power Input	0.87	0.63	0.32

*1 The evaporation temperature in operation may be different from the preset target evaporation temperature because it depends on such factors as the unit protection control.
The capacity and power input could also fluctuate.

*2 Use the table above which indicates the unit properties as a reference.

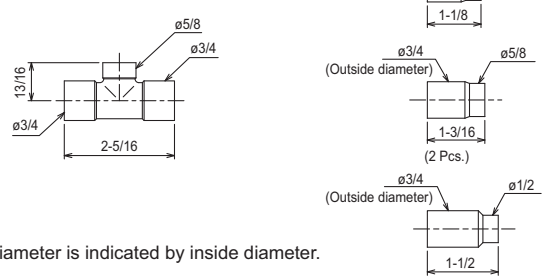
9-1. JOINT

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

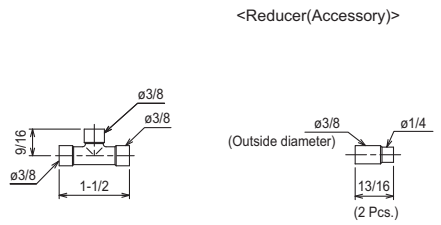
CMY-Y102SS-G2

in.

For Gas pipe:



For Liquid pipe:

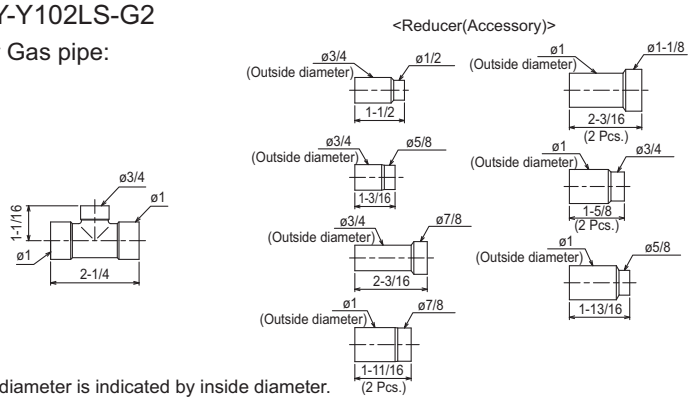


*Pipe diameter is indicated by inside diameter.

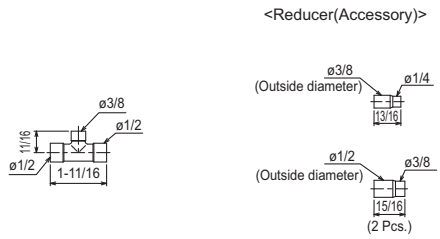
CMY-Y102LS-G2

in.

For Gas pipe:



For Liquid pipe:

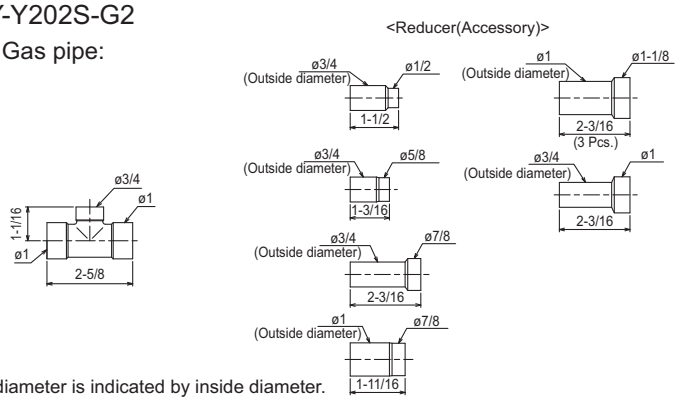


*Pipe diameter is indicated by inside diameter.

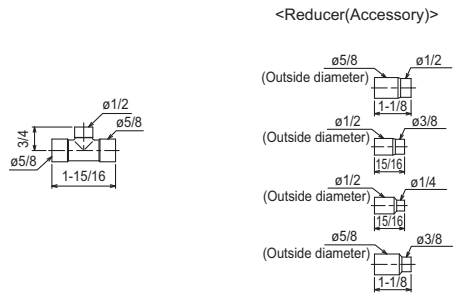
CMY-Y202S-G2

in.

For Gas pipe:



For Liquid pipe:

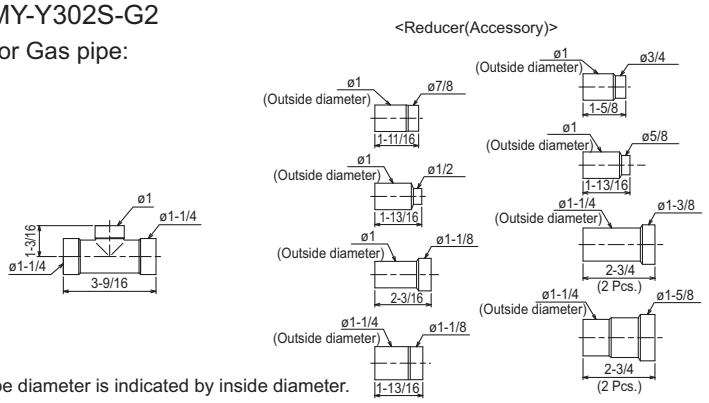


*Pipe diameter is indicated by inside diameter.

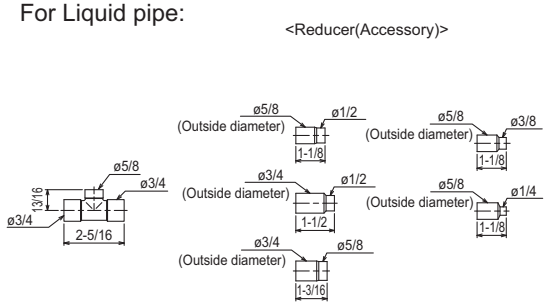
CMY-Y302S-G2

in.

For Gas pipe:



For Liquid pipe:



*Pipe diameter is indicated by inside diameter.

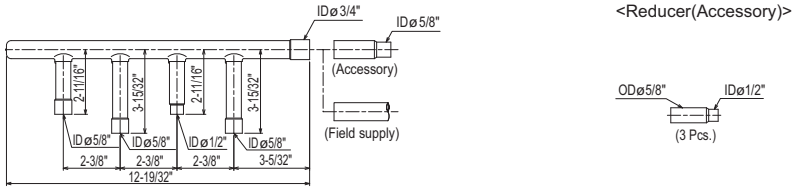
9-2. HEADER

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

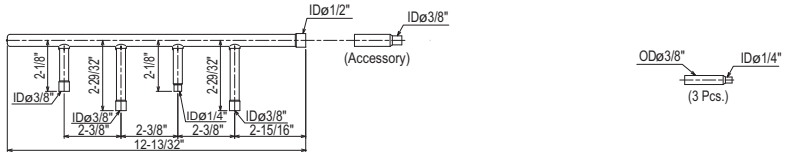
CMY-Y104C-G

in.

For gas pipe:



For liquid pipe:

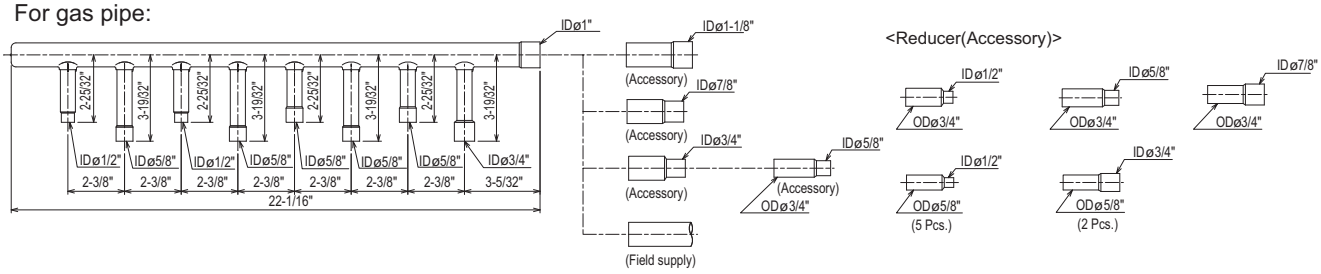


ID: Inner Diameter OD: Outer Diameter
NOTE: Besides above mentioned accessories, caps for ø1/4", ø3/8", ø1/2", ø5/8" pipes (each diameter 1 piece) are included in the Header set.

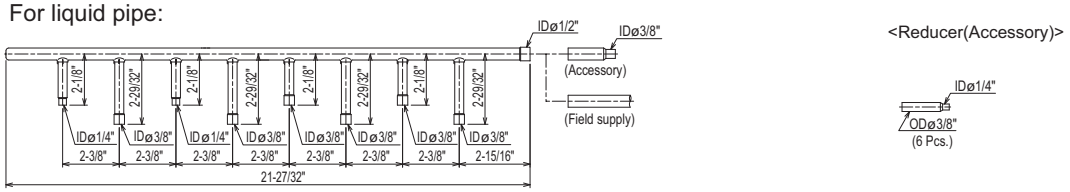
CMY-Y108C-G

in.

For gas pipe:



For liquid pipe:

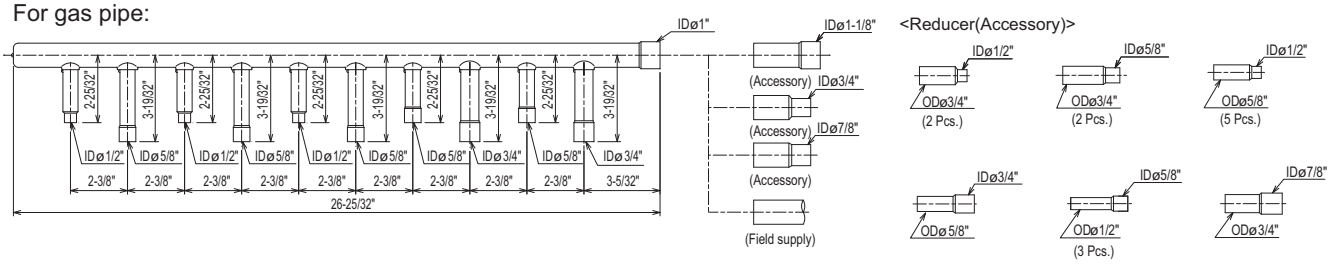


ID: Inner Diameter OD: Outer Diameter
NOTE: Besides above mentioned accessories, caps for ø1/4", ø3/8", ø1/2", ø5/8" pipes (each diameter 2 pieces) and 1 cap for ø3/4" pipe are included in the Header set.

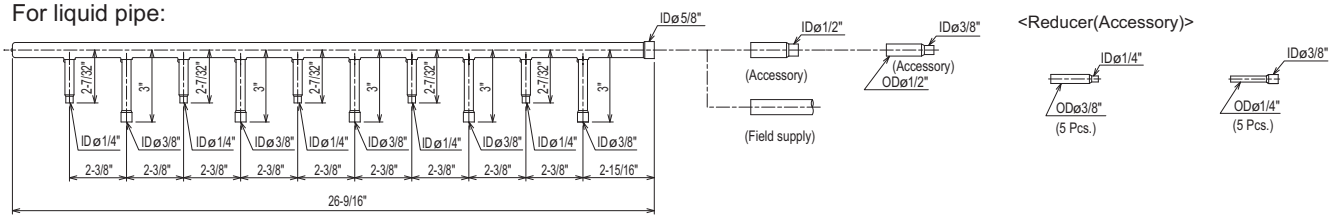
CMY-Y1010C-G

in.

For gas pipe:



For liquid pipe:



ID: Inner Diameter OD: Outer Diameter
NOTE: Besides above mentioned accessories, caps for ø1/4", ø3/8", ø1/2", ø5/8" pipes (each diameter 2 pieces) and 1 cap for ø3/4" pipe are included in the Header set.

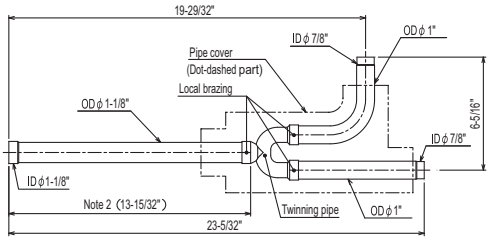
9-3. OUTDOOR TWINNING KIT

The following optional Outdoor 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.

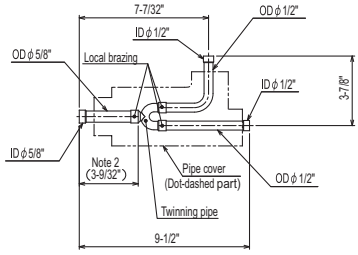
CMY-Y100CBK3

in.

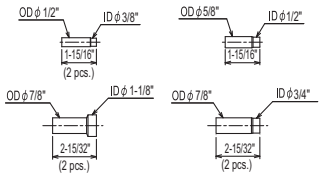
For Gas pipe:



For Liquid pipe:

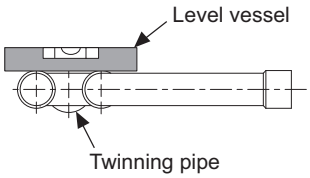


<Reducer(Accessory)>



ID: Inner Diameter OD: Outer Diameter

Note 1. Refer to the figure below for the installation position of the twinning pipe.
The Twinning pipe must be installed horizontally using a level vessel to avoid unit damage.



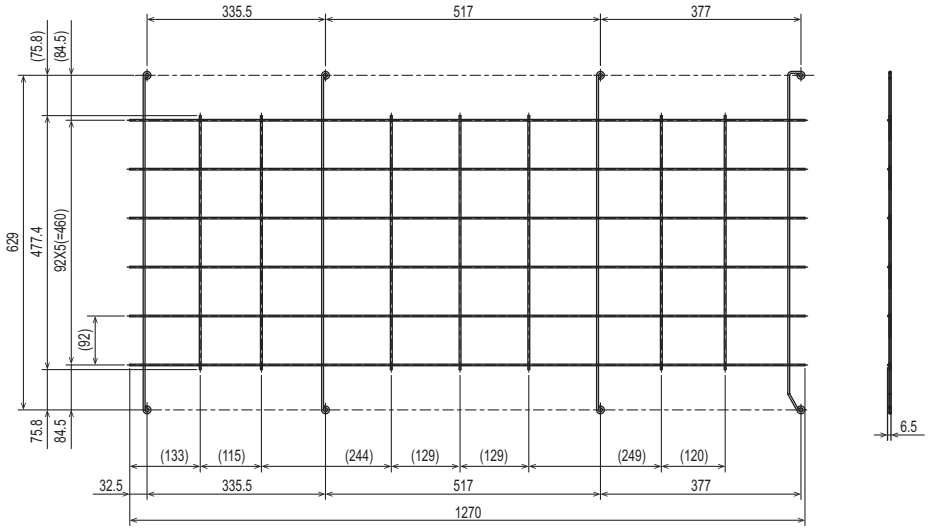
2. Use the attached pipe to braze the port-opening of the twinning pipe.
3. Pipe diameter is indicated by inside diameter.
4. Only use the twinning pipe by Mitsubishi (optional parts).

9-4. FIN GUARD

PAC-FG03S-E

For side surfaces (a set of two pieces)

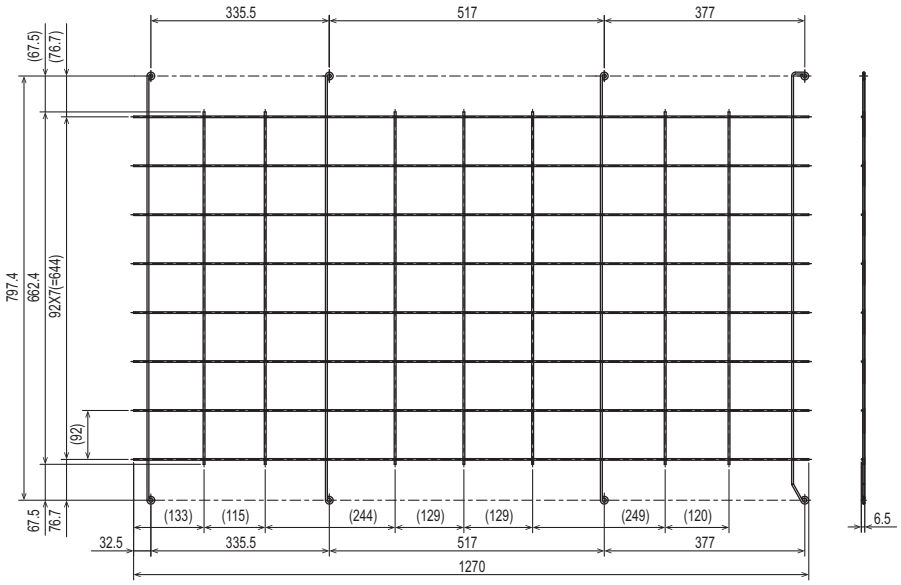
mm



PAC-FG04B-E

For rear surface of S module

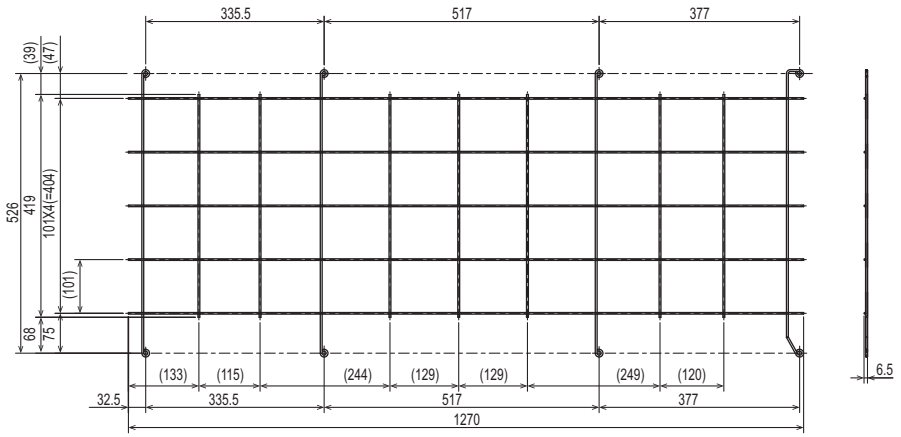
mm



PAC-FG05B-E

For rear surface of L module (a set of two pieces)

mm



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.)

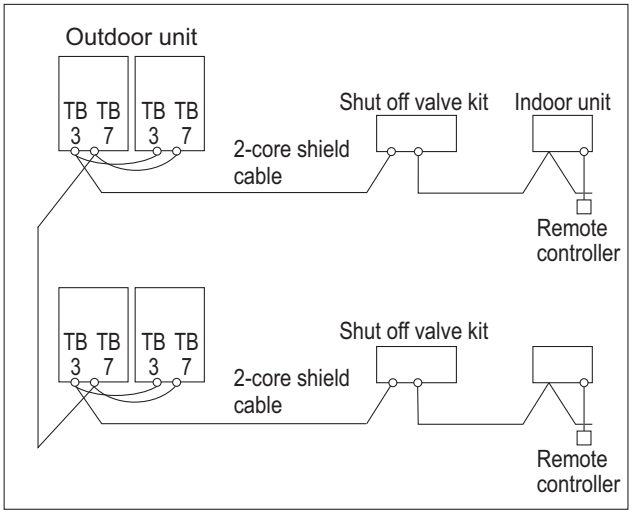
③ Be sure to provide designated grounding work to outdoor unit.

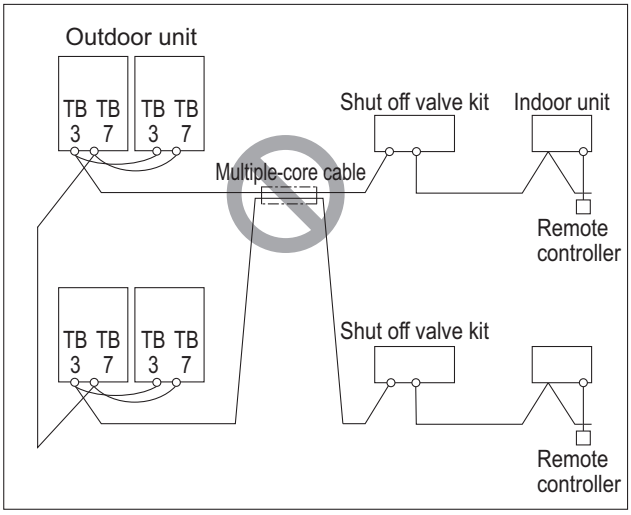
④ Give some allowance to wiring for electrical part box of indoor and outdoor units, because the box is sometimes removed at the time of service work.

⑤ Never connect 100V, 208~230, 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/Outdoor transmission cable
TB7:Terminal block for central control transmission cable

10-2. Power supply for Outdoor unit

10-2-1. Electrical characteristics for Outdoor unit in cooling mode

MOP is used to select the fuse, switch, or breaker for current leakage.

PUHY-HM-T(S)XU

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

Model	Unit combination	Outdoor Units					Compressor	Fan
		Hz	Volts	Voltage range	MCA (A)	MOP (A)	Output (kW)	Output (kW)
PUHY-HM72TXU-A	-	60Hz	208/230V	188 to 253V	51/51	80/80	3.5	0.92
PUHY-HM96TXU-A	-				60/60	100/100	5.2	0.46+0.46
PUHY-HM120TXU-A	-				60/60	100/100	6.9	0.46+0.46
PUHY-HM144TSXU-A	PUHY-HM72TXU-A				51/51	80/80	3.5	0.92
	PUHY-HM72TXU-A				51/51	80/80	3.5	0.92
PUHY-HM192TSXU-A	PUHY-HM96TXU-A				60/60	100/100	5.2	0.46+0.46
	PUHY-HM96TXU-A				60/60	100/100	5.2	0.46+0.46
PUHY-HM240TSXU-A	PUHY-HM120TXU-A				60/60	100/100	6.9	0.46+0.46
	PUHY-HM120TXU-A				66/60	100/100	6.9	0.46+0.46

PUHY-HM-Y(S)XU

Model	Unit combination	Outdoor Units					Compressor	Fan
		Hz	Volts	Voltage range	MCA (A)	MOP (A)	Output (kW)	Output (kW)
PUHY-HM72YXU-A	-	60Hz	460V	414 to 506V	27	45	3.5	0.92
PUHY-HM96YXU-A	-				31	50	5.2	0.46+0.46
PUHY-HM120YXU-A	-				31	50	6.9	0.46+0.46
PUHY-HM144YSXU-A	PUHY-HM72YXU-A				27	45	3.5	0.92
	PUHY-HM72YXU-A				27	45	3.5	0.92
PUHY-HM192YSXU-A	PUHY-HM96YXU-A				31	50	5.2	0.46+0.46
	PUHY-HM96YXU-A				31	50	5.2	0.46+0.46
PUHY-HM240YSXU-A	PUHY-HM120YXU-A				31	50	6.9	0.46+0.46
	PUHY-HM120YXU-A				31	50	6.9	0.46+0.46

10-3. Power cable specifications

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

3-phase 3-wire, 208/230V, 60Hz		Minimum cable size [mm^2 (AWG)]				Breaker for current leakage	
		Main cable		Ground			
		208V	230V	208V	230V	208V	230V
PUHY-HM-TXU-A	HM72	21.2 (4)	21.2 (4)	21.2 (4)	21.2 (4)	60A 100mA 0.1sec. or less	60A 100mA 0.1sec. or less
	HM96	21.2 (4)	21.2 (4)	21.2 (4)	21.2 (4)	70A 100mA 0.1sec. or less	70A 100mA 0.1sec. or less
	HM120	21.2 (4)	21.2 (4)	21.2 (4)	21.2 (4)	70A 100mA 0.1sec. or less	70A 100mA 0.1sec. or less

3-phase 3-wire, 460V, 60Hz		Minimum cable size [mm^2 (AWG)]		Breaker for current leakage
		Main cable	Ground	
PUHY-HM-YXU-A	HM72	5.3 (10)	5.3 (10)	30A 30mA or 100mA 0.1sec. or less
	HM96	8.4 (8)	8.4 (8)	35A 30mA or 100mA 0.1sec. or less
	HM120	8.4 (8)	8.4 (8)	35A 30mA or 100mA 0.1sec. or less

1. Use dedicated power supplies for the outdoor 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 outdoor 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.

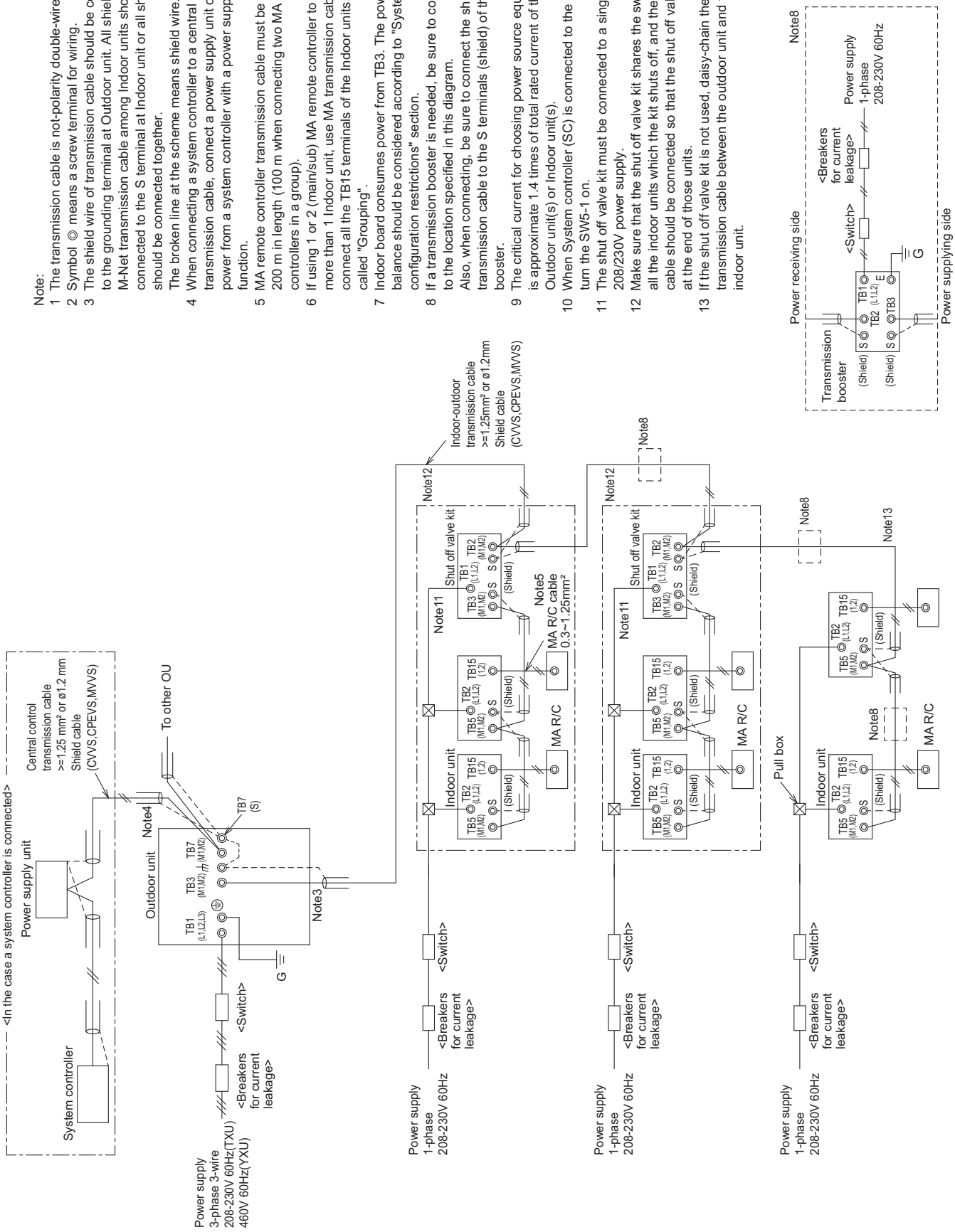
⚠CAUTION

- 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. PUHY-HM72, 96, 120TXU/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 Outdoor 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.
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 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 Outdoor unit(s) or Indoor unit(s).
10 When System controller (SC) is connected to the system, turn the SW5-1 on.
11 The shut off valve kit must be connected to a single-phase 208/230V power supply.
12 Make sure that the shut off valve kit shares the switch with all the indoor units which the kit shuts off, and the power cable should be connected so that the shut off valve kit is at the end of those units.
13 If the shut off valve kit is not used, daisy-chain the transmission cable between the outdoor unit and the indoor unit.

10-4-2. PUHY-HM144, 192, 240TSXU/YSXU

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 Outdoor 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.
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 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 Outdoor unit(s) or Indoor unit(s).
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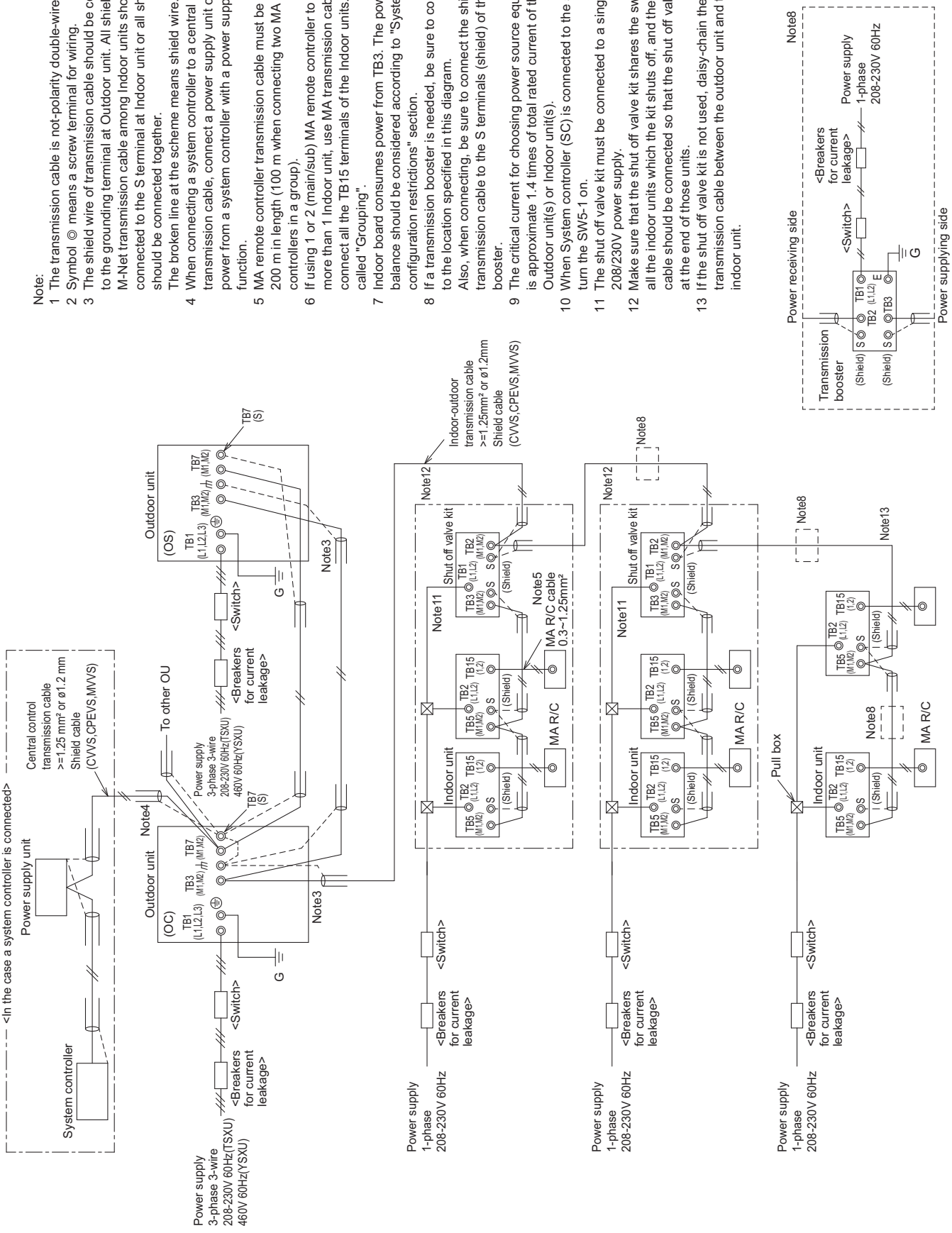
12 Make sure that the shut off valve kit shares the switch with all the indoor units which the kit shuts off, and the power cable should be connected so that the shut off valve kit is at the end of those units.
13 If the shut off valve kit is not used, daisy-chain the transmission cable between the outdoor unit and the indoor unit.



11-1. Transmission cable specifications

	Transmission cables (Li)	MA Remote controller cables
Type of cable	Shielded cables (2-core) CVVS, CPEVS, and MVVS	VCTF, VCTFK, CVV, VVR, VVF, 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 mm^2 (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.

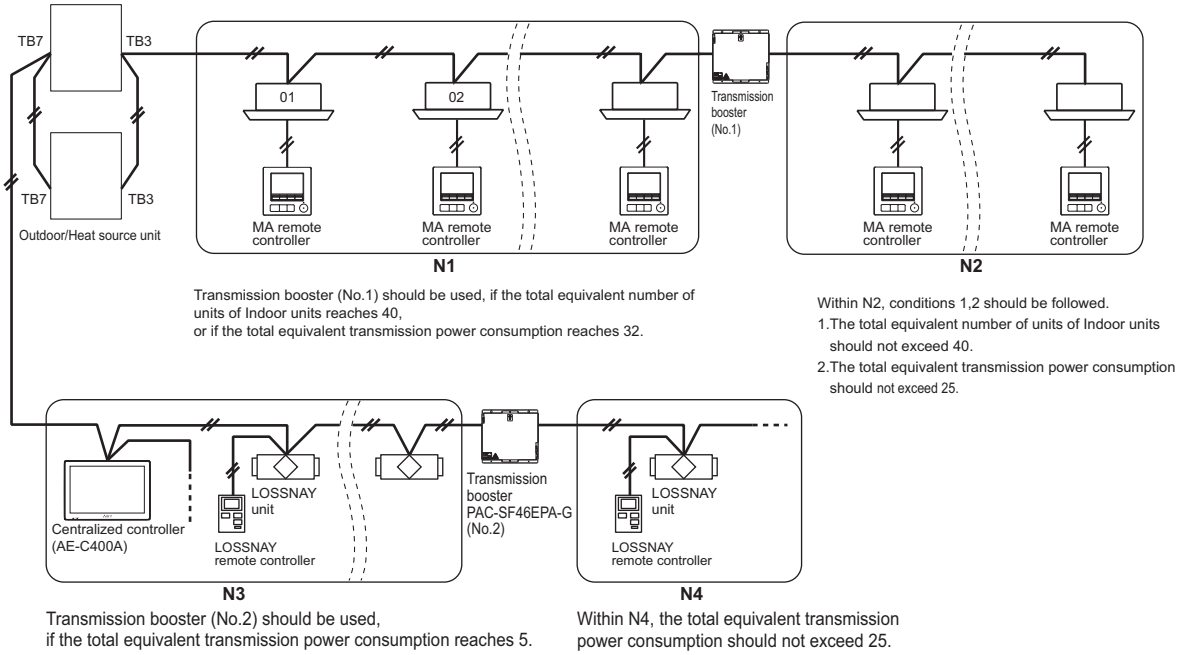
With the equivalent power consumption values and the equivalent number of units in Table 1 and Table 2, PAC-SF46EPA-G can be designed into the air-conditioner system to ensure proper system communication according to (A), (B), (C).

(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.)

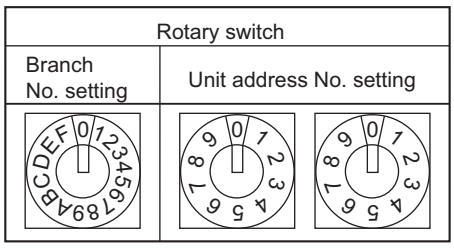
11-2-4. Power supply to AE-C400A/EW-C50A

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 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".

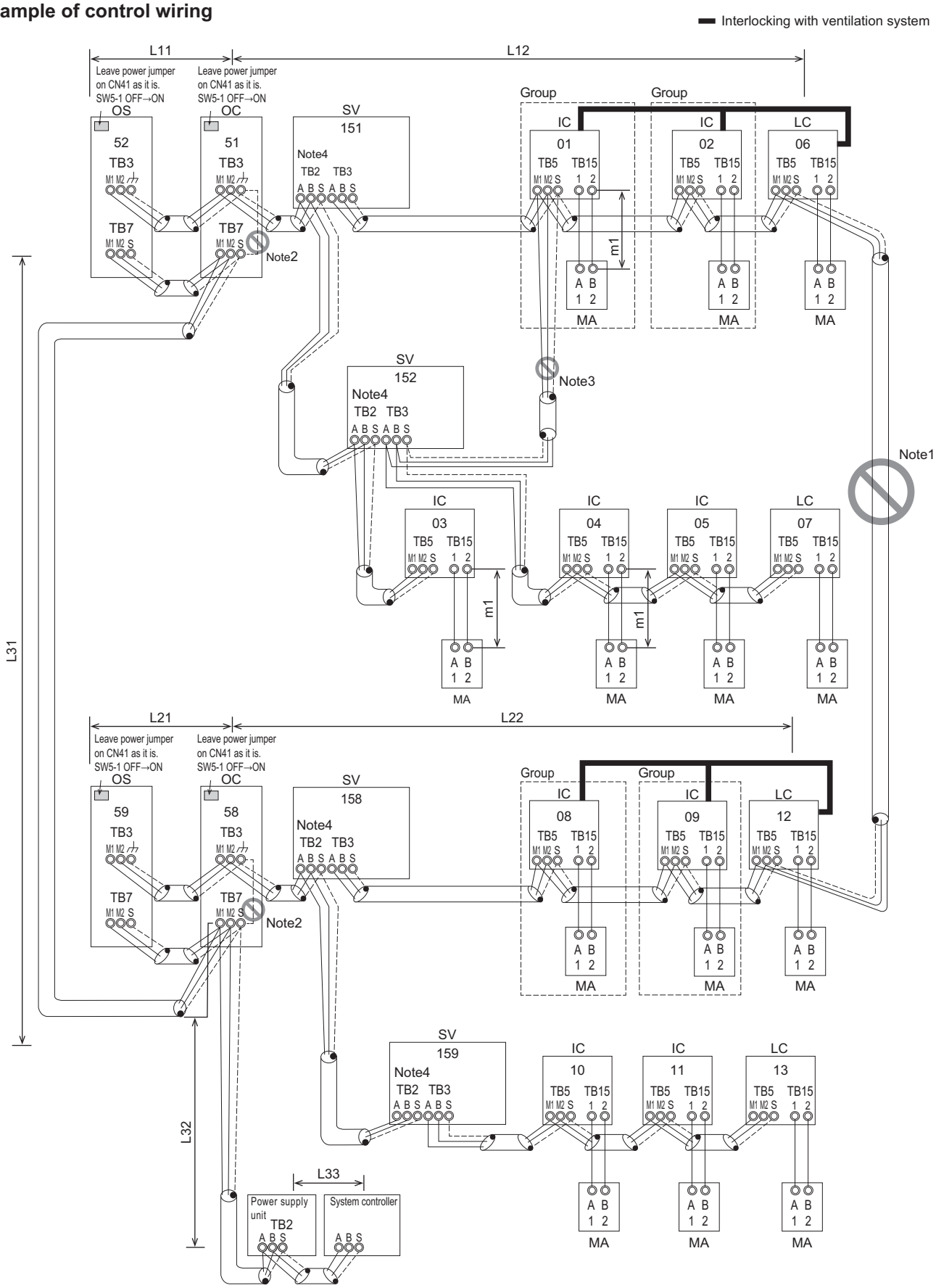
11-3-2. Rule of setting address

Unit		Address setting	Example	Note
Indoor unit		01 ~ 50	10 1	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 unit		51 ~ 99, 100 (Note1)	10 1	The smallest address of indoor unit in same refrigerant system + 50 Assign sequential address numbers to the outdoor 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	10 1	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	10 1	
Shut off valve kit		151 ~ 200	10 1	The smallest address of outdoor 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 10 1	The smallest address of indoor unit in the group + 100 ∗The place of "100" is fixed to "1"
Local remote controller	LOSSNAY Remote controller (Sub)	151 ~ 199, 200	1 Fixed 10 1	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	100 10 1	The smallest group No. to be managed + 200 ∗The smallest group No. to be managed is changeable.
System controller	AE-C400A/EW-C50A	000, 201 ~ 250	0, 2 (100) 0-5 (10) 0-9 (1)	
System controller	BACS-AP50E	000, 201 ~ 250	0 (100) 0 (10) 0 (1)	∗Settings are made with setting tool of BM ADAPTER.
PI, AI, DIDO	PAC-YG60MCA	01 ~ 50	10 1	
PI, AI, DIDO	PAC-YG63MCA	01 ~ 50	10 1	
PI, AI, DIDO	PAC-YG66DCA	01 ~ 50	10 1	
LOSSNAY		01 ~ 50	10 1	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 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 outdoor 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 shut off valve kit to any indoor unit other than the unit which the kit shuts off.
Note4. Up to two cables can be connected to the transmission cable terminal block TB2 (outdoor unit/indoor unit/shut off valve kit) of the shut off valve kit, 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.

Allowable cable length

<a. Indoor-outdoor transmission cable>

Farthest length (1.25 mm² or more)
L11+L12 ≤ 200 m
L21+L22 ≤ 200 m

<b. Centralized control transmission cable>

L31 + L32 (L21) ≤ 200 m
L33 ≤ 200 m

<c. MA remote controller wiring>

Total length (0.3 to 1.25 mm²)
m1 ≤ 200 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 outdoor unit (1.25 mm² or more)>

L33 + L32 + L31 + L12 (L11) ≤ 1000 m
L33 + L32 + L22 (L21) ≤ 1000 m
L12 (L11) + L31 + L22 (L21) ≤ 1000 m

Wiring and address setting

<a. Indoor-outdoor transmission cable>

Use shielded cables.
Daisy-chain the following terminals: the M1 and M2 terminals of the indoor-outdoor transmission cable terminal block TB3 on the outdoor units (OC and OS), the M1 and M2 terminals of the indoor-outdoor 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 (outdoor unit/indoor unit/shut off valve kit) on each shut off valve kit (SV). (Non-polarized double-wire)

*1 The outdoor 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) that does not require safety measures, and the S terminal of the transmission cable terminal block TB2 (outdoor unit/indoor unit/shut off valve kit) on each shut off valve kit (SV).

<b. Indoor unit transmission cable>

Use shielded cables.
Daisy-chain the following terminals: the M1 and M2 terminals of the indoor-outdoor transmission cable terminal block TB5 on each indoor unit (IC) in which the refrigerant flow is to be shut off, and the A and B terminals of the transmission cable terminal block TB3 (indoor unit) on the shut off valve kit (SV) that shuts off these indoor units. (Non-polarized double-wire)

[Shielded cable connection]

To ground the shielded cable, daisy-chain the following terminals: the S terminal of the indoor-outdoor transmission cable terminal block TB5 on each indoor unit (IC) in which the refrigerant flow is to be shut off, and the S terminal of the transmission cable terminal block TB3 (indoor unit) on the shut off valve kit (SV) that shuts off these indoor units.

<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 outdoor unit OC in a different refrigerant circuit system, the M1 and M2 terminals of the centralized control transmission cable terminal block TB7 on the outdoor 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 outdoor units.
To connect the system controller, set the central control switch SW5-1 on the control board of all outdoor units to "ON".

*1 The outdoor 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 outdoor 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 outdoor unit whose power jumper connector has been replaced to CN40.

<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 paring 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-outdoor 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 radical thickness of 0.7mm or less shall not be used.

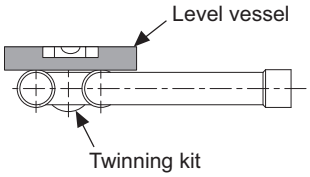
Table 1. Copper pipe size and radial thickness for R32 CITY MULTI.

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.

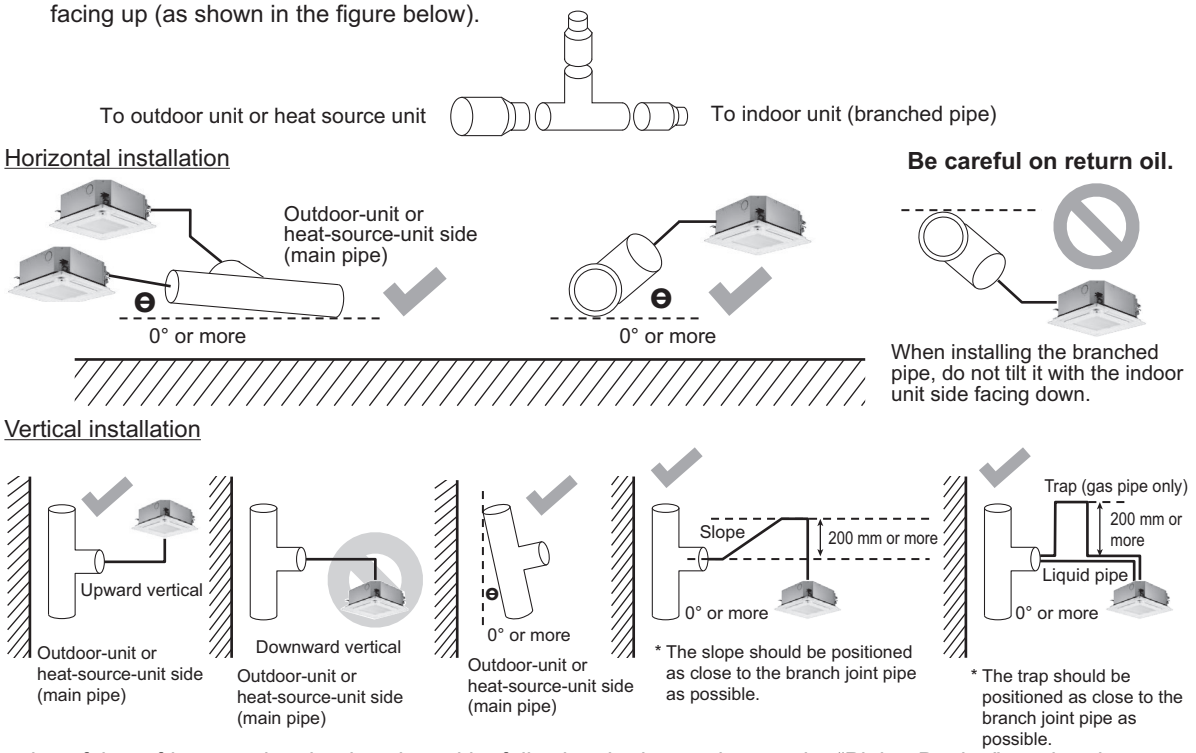


- Minimum length of the straight section of the pipe before the twinning pipes
  Always use the pipes supplied in the twinning kit, and make sure the straight section of the pipe immediately before it connects to the twinning pipe is at least 500 mm (19-11/16 in.). Failure to do so may damage the unit.

[2] Branches on the indoor-unit side

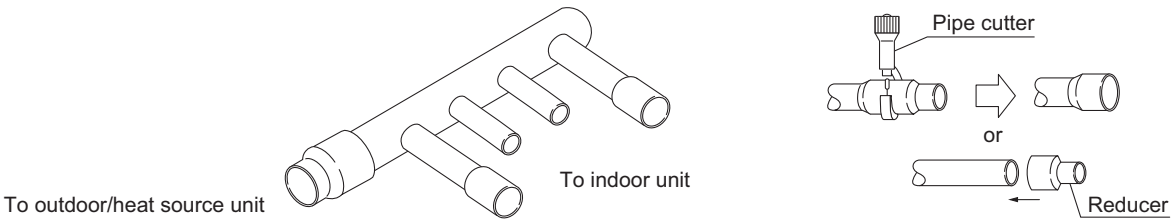
■**Joint**

When installing the branch joint on the gas piping, it must be installed horizontally or with the branched pipes facing up (as shown in the figure below).



- If the size of the refrigerant pipe that is selected by following the instructions under “Piping Design” section does not match the size of the joint, use a reducer to connect them. A reducer is included in the kit.
- 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.

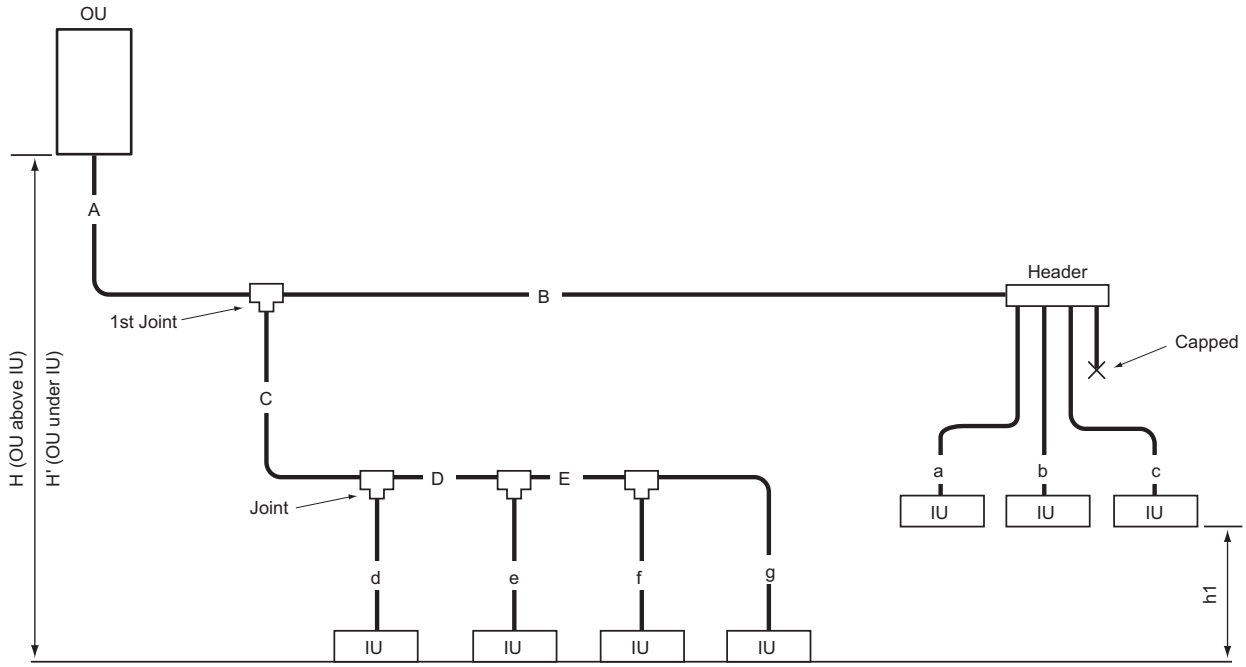
■**Header**



- Restrictions described here apply to the header in the gas line. Refer to the installation manual of the header for details on how to install the header.
- If the size of the refrigerant pipe that is selected by following the instructions under “Piping Design” section does not match the size of the header, cut the pipe to an appropriate size using a pipe cutter, or use a reducer to connect them.
- If the number of header branches exceeds the number of pipes to be connected, cap the unused header branches. Caps are included in the kit.

12-2. Piping Design

Rule for piping size selection



IU: Indoor unit , OU: Outdoor unit

1. Selecting joints
   Select joints from Table 4-1 [Selection criteria for joints] based on the total capacity of indoor units on the downstream side.
   When selecting the first joint for the system to which the outdoor unit listed in Table 4-2 [See the table below for the first joint of the outdoor unit described below.] is connected, select the first joint from Table 4-2.

2. Selecting headers
   Select headers from Table 5 [Header selection rule] based on the number of indoor units to be connected.
   Refer to Table 5, which shows the total capacity limits, for the indoor units to be connected on the downstream side.
   When connecting a header directly to the outdoor unit, select the header by referring to the notes in Table 5.
   *The piping cannot be branched on the downstream of the header.

3. Selecting refrigerant pipe sizes
   (1) Between outdoor unit and the 1st joint [A]
   Select the appropriate size pipes for the selected outdoor unit from Table 1 [Piping "A" size selection rule].
   (2) Between joints [B, C, D, and E]
   Select the appropriate size pipes from Table 2 [Piping "B", "C", "D", … size selection rule] based on the total capacity of indoor units on the downstream side.
   (3) Between joints and indoor units [a, b, c, d, e, f, and g]
   Select the appropriate size pipes from Table 3 [Piping "a", "b", "c", "d", … size selection rule] based on the capacity of indoor units.
   (4) After selecting the pipe sizes in accordance with steps (1) through (3) above, if the size of the pipes on the downstream is larger than that on the upstream, it is not necessary to be bigger than the upstream one.
   (5) If any of the following applies to the selection made in Item 3-(1)-(4) above, reselect the pipe size.
   (Not applicable to some models)
   (a) If the length of the pipe to any indoor unit from the first joint exceeds 40 m [131 ft.], use one size larger liquid pipe after the joint that is located before the point where the pipe length exceeds 40 m [131 ft.].
   (b) Set indoor unit(s) which is vertically closer to the outdoor unit as “base unit(s)”.
   Only the indoor units that have a height difference of more than 15 m [49 ft.] from base unit will be termed “Target units”.
   Use one size larger liquid pipe from the target units to the joint prior to which 15 m [49 ft.] height difference has exceeded.
   (Not applicable to the liquid pipes whose sizes were increased under item (5)-(a)).

   (6) Calculate the amount of refrigerant to be added based on the pipe sizes selected in Items 1 through 3-(5) above, and make sure that the total amount of the initial charge and the additional charge combined will not exceed the maximum allowable refrigerant charge amount.
   If this amount exceeds the maximum allowable amount, redesign the system (i.e., piping length) so that the total refrigerant charge will not exceed the maximum allowable amount.

12-2-1. PUHY-HM72-120TXU/YXU Piping

Note1. No joint after Header; Piping direct to Indoor Unit from Header;
Note2. As bents cause pressure loss on transportation of refrigerant, fewer bents design is better;
Piping length needs to consider the actual length and equivalent length which bents are counted.
Equivalent piping length (m)=Actual piping length+"M" x Quantity of bent.
Note3. When shut off valve kit is used in a system, the equivalent piping length of the shut off valve kit should be selected from "N1" or "N2" according to the total capacity of the indoor unit(s) connected downstream of the kit and added to the equivalent piping length calculation.
Equivalent piping length (m)=Actual piping length+("M" x Quantity of bent)+("N1" or "N2").
The installation location of the shut off valve kit is subject to piping length restrictions. For details, refer to the New Design Tool software of Mitsubishi Electric Corporation/the Diamond System Builder software of Mitsubishi Electric Trane HVAC US.

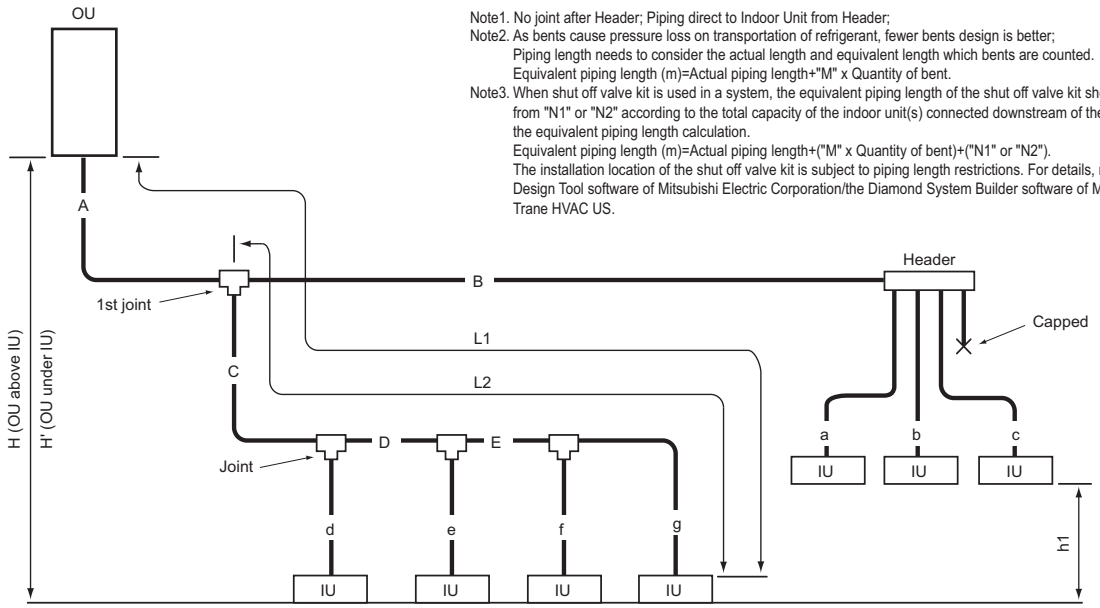


Fig. Piping scheme

IU : Indoor unit , OU : Outdoor unit

Piping length **(m [ft.])**

Item	Piping in the figure	Max. length	Max. equivalent length
Total piping length	A+B+C+D+E+a+b+c+d+e+f+g	1000 [3280]	-
Farthest IU from OU (L1)	A+C+D+E+g / A+B+c	165 [541]	190 [623]
Farthest IU from the first joint (L2)	C+D+E+g / B+c	40 [131] *3	40 [131]
Height between OU and IU (OU above IU)	H	50 [164] *1	-
Height between OU and IU (OU under IU)	H'	40 [131] *2	-
Height between IU and IU	h1	15 [49] *4	-

OU: Outdoor Unit, IU: Indoor Unit
*1 113 m [370 ft.] is available depending on the model and installation conditions. For more detailed information, contact your local distributor.
*2 60 m [197 ft.] is available depending on the model and installation conditions. For more detailed information, contact your local distributor.
*3 90 m [295 ft.] is available. When the piping length exceeds 40 m [131 ft.], use one size larger liquid pipe starting with the section of piping where 40 m [131 ft.] is exceeded and all piping after that point.
In the figure above, if the piping labeled "E" exceeds 40 m [131 ft.] (but does not exceed 90 m [295 ft.]), increase the size of the liquid piping labeled E, f, and g by one size.
*4 30 m [98 ft.] is available. If the height difference between indoor units exceeds 15 m [49 ft.] (but does not exceed 30 m [98 ft.]), use one-size larger pipes for indoor unit liquid pipes.
In the figure above, if "h1" exceeds 15 m [49 ft.], increase the size of the liquid piping labeled d, e, f, and g by one size.

Bent equivalent length "M"

Outdoor Model	M (m/bent [ft./bent])
PUHY-HM72T/YXU	0.35 [1.15]
PUHY-HM96T/YXU	0.42 [1.38]
PUHY-HM120T/YXU	0.50 [1.65]

Equivalent length "N1" for SV with one indoor unit connected

Indoor Unit size	N1 (m [ft.])
M04 ~ M18	1.6 [5.2]
M24 ~ M54	5.3 [17.4]
M72	15.0 [49.2]
M96	35.4 [116.1]

Equivalent length "N2" for SV with multiple indoor units connected

Total down-stream Indoor capacity	N2 (m [ft.])
M08 ~ M54	5.3 [5.2]
M55 ~ M72	15.0 [49.2]
M73 ~ M96	35.4 [116.1]

Table1. Piping "A" size selection rule (mm [in.])

Outdoor unit	Pipe(Liquid)	Pipe(Gas)
PUHY-HM72T/YXU	ø9.52 [3/8]	ø22.2 [7/8]
PUHY-HM96T/YXU	ø9.52 [3/8] *1	ø22.2 [7/8]
PUHY-HM120T/YXU	ø9.52 [3/8] *2	ø28.58 [1-1/8]

*1. L1>=90 m [295 ft.], ø12.70 mm [1/2 in.] ; L1<90m [295ft.], ø9.52mm [3/8in.]
*2. L1>=40 m [131 ft.], ø12.70 mm [1/2 in.] ; L1<40m [131ft.], ø9.52mm [3/8in.]

Table4-1. Selection criteria for joints

Total down-stream Indoor capacity	Joint
~ M72	CMY-Y102SS-G2
M73 ~ M144	CMY-Y102LS-G2
M145 ~ M240	CMY-Y202S-G2
M241 ~	CMY-Y302S-G2

*Concerning detailed usage of joint parts, refer to its Installation Manual.

Table4-2.
See the table below for the first joint of the outdoor unit described below.

Outdoor unit model	Joint model
HM72 to HM120	CMY-Y102LS-G2

Table2. Piping"B","C","D","E"size selection rule (mm [in.])

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(Gas)
~ M54	ø9.52 [3/8]	ø15.88 [5/8]
M55 ~ M72	ø9.52 [3/8]	ø19.05 [3/4]
M73 ~ M108	ø9.52 [3/8]	ø22.20 [7/8]
M109 ~ M144	ø12.70 [1/2]	ø28.58 [1-1/8]
M145 ~ M240	ø15.88 [5/8]	ø28.58 [1-1/8]
M241 ~ M308	ø19.05 [3/4]	ø34.93 [1-3/8]
M309 ~	ø19.05 [3/4]	ø41.28 [1-5/8]

Table5. Header selection rule

	4-branch Header	8-branch Header	10-branch Header
	CMY-Y104C-G	CMY-Y108C-G	CMY-Y1010C-G
Total down-stream Indoor capacity	<=M72	<=M144	<=M240

* CMY-Y104C-G can directly connect PUHY-HM72T/YXU, but can NOT directly connect PUHY-HM96T/YXU or above;
* CMY-Y108C-G can directly connect PUHY-HM72~144T/Y(S)XU, but can NOT directly connect PUHY-HM192T/Y(S)XU or above;
* CMY-Y1010C-G can directly connect PUHY-HM72~240T/Y(S)XU;
* CMY-Y104C-G can NOT connect M72~M96 Indoor, but CMY-Y108,Y1010C-G can do;
* Concerning detailed usage of Header parts, refer to its Installation Manual.

Table3. Piping "a","b","c","d","e","f","g" size selection rule (mm [in.])

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]

Note4. Indoor capacity is described as its model size;
For example, PEFY-M06NMAU, its capacity is M06;
Note5. Total down-stream Indoor capacity is the summary of the model size of Indoors downstream.
For example, PEFY-M06NMAU + PEFY-M08NMAU-E**: Total Indoor capacity = M06 + M08 = M14
Note6. Piping size determined by the Total down-stream indoor capacity is NOT necessary to be bigger than the up-stream one.
i.e. A>=B; A>=C>=D

12-2-2. PUHY-HM144-240TSXU/YSXU Piping

Note1. No joint after Header; Piping direct to Indoor Unit from Header;
Note2. As bents cause pressure loss on transportation of refrigerant, fewer bents design is better;
Piping length needs to consider the actual length and equivalent length which bents are counted.
Equivalent piping length (m)=Actual piping length+"M" x Quantity of bent.
Note3. When shut off valve kit is used in a system, the equivalent piping length of the shut off valve kit should be selected from "N1" or "N2" according to the total capacity of the indoor unit(s) connected downstream of the kit and added to the equivalent piping length calculation.
Equivalent piping length (m)=Actual piping length+("M" x Quantity of bent)+("N1" or "N2").
The installation location of the shut off valve kit is subject to piping length restrictions. For details, refer to the New Design Tool software of Mitsubishi Electric Corporation/the Diamond System Builder software of Mitsubishi Electric Trane HVAC US.

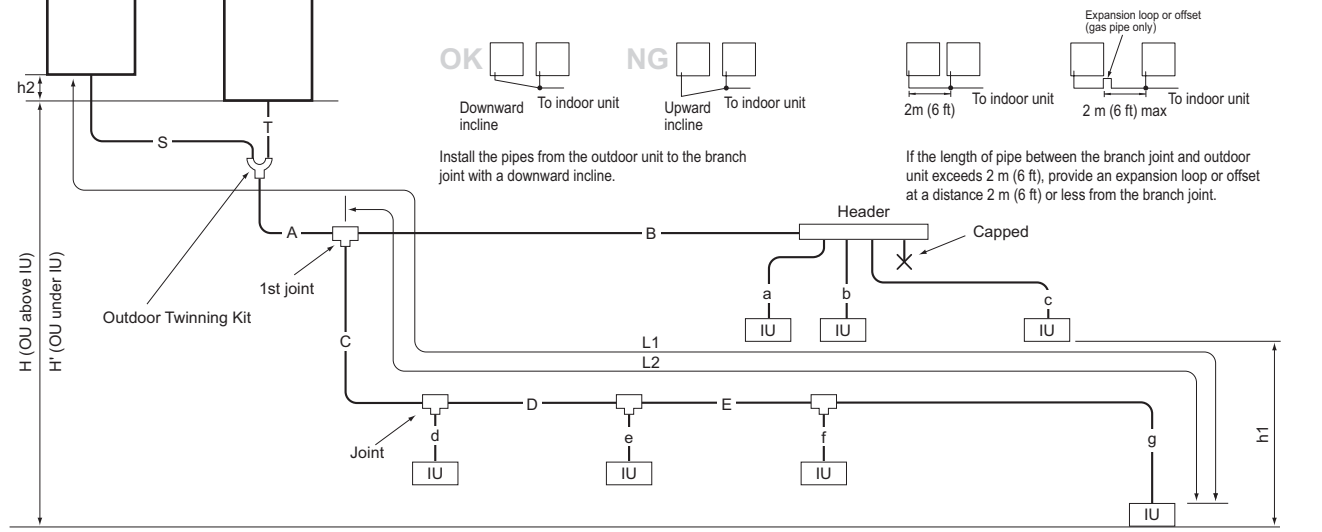


Fig. Piping scheme

IU: Indoor unit , OU: Outdoor unit

Piping length (m [ft.])

Item	Piping in the figure	Max. length	Max. equivalent length
Total piping length	S+T+A+B+C+D+E+a+b+c+d+e+f+g	1000 [3280]	-
Distance between OU and OU	S+T	10 [32]	-
Height between OU and OU	h2	0.1 [0.3]	-
Farthest IU from OU (L1)	S(T)+A+C+D+E+g / S(T)+A+B+c	165 [541]	190 [623]
Farthest IU from the first joint (L2)	C+D+E+g / B+c	40 [131] *3	40 [131]
Height between OU and IU (OU above IU)	H	50 [164] *1	-
Height between OU and IU (OU under IU)	H'	40 [131] *2	-
Height between IU and IU	h1	15 [49] *4	-

OU: Outdoor Unit, IU: Indoor Unit
*1 113 m [370 ft.] is available depending on the model and installation conditions. For more detailed information, contact your local distributor.
*2 60 m [196 ft.] is available depending on the model and installation conditions. For more detailed information, contact your local distributor.
*3 90 m [295 ft.] is available. When the piping length exceeds 40m [131ft], use one size larger liquid pipe starting with the section of piping where 40m [131ft] is exceeded and all piping after that point.
In the figure above, if the piping labeled "E" exceeds 40m [131ft] (but does not exceed 90 m [295 ft.]), increase the size of the liquid piping labeled E, f, and g by one size.
*4 30 m [98 ft.] is available. If the height difference between indoor units exceeds 15 m [49 ft.] (but does not exceed 30 m [98 ft.]), use one-size larger pipes for indoor unit liquid pipes.
In the figure above, if "h1" exceeds 15 m [49 ft.], increase the size of the liquid piping labeled g by one size.

Bent equivalent length "M"

Outdoor Model	M (m/bent [ft./bent])
PUHY-HM144T/YSXU	0.50 [1.65]
PUHY-HM192T/YSXU	0.50 [1.65]
PUHY-HM240T/YSXU	0.70 [2.30]

Equivalent length "N1" for SV with one indoor unit connected

Indoor Unit size	N1 (m [ft.])
M04 ~ M18	1.6 [5.2]
M24 ~ M54	5.3 [17.4]
M72	15.0 [49.2]
M96	35.4 [116.1]

Equivalent length "N2" for SV with multiple indoor units connected

Total down-stream Indoor capacity	N2 (m [ft.])
M08 ~ M54	5.3 [5.2]
M55 ~ M72	15.0 [49.2]
M73 ~ M96	35.4 [116.1]

Table1. Piping "A" size selection rule (mm [in.])

Outdoor unit	Twinning kit	Pipe(Liquid)	Pipe(Gas)
PUHY-HM144T/YSXU	CMY-Y100CBK3	ø12.70 [1/2]	ø28.58 [1-1/8]
PUHY-HM192-240T/YSXU	CMY-Y100CBK3	ø15.88 [5/8]	ø28.58 [1-1/8]

For Piping size "S", "T", please refer to specification of the Twinning kit CMY-Y100CBK3 at the Outdoor unit's external drawing.

Table2. Piping"B","C","D","E" size selection rule (mm [in.])

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(Gas)
~M54	ø9.52 [3/8]	ø15.88 [5/8]
M55 ~M72	ø9.52 [3/8]	ø19.05 [3/4]
M73 ~M108	ø9.52 [3/8]	ø22.20 [7/8]
M109~M144	ø12.70 [1/2]	ø28.58 [1-1/8]
M145~M240	ø15.88 [5/8]	ø28.58 [1-1/8]
M241~M308	ø19.05 [3/4]	ø34.93 [1-3/8]
M309~	ø19.05 [3/4]	ø41.28 [1-5/8]

Table3. Piping"a","b","c","d","e","f","g" size selection rule (mm [in.])

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]

Table4-1. Selection criteria for joints

Total down-stream Indoor capacity	Joint
~M72	CMY-Y102SS-G2
M73 ~M144	CMY-Y102LS-G2
M145~M240	CMY-Y202S-G2
M241~	CMY-Y302S-G2

*Concerning detailed usage of joint parts, refer to its Installation Manual.
*The total capacity of the units in the downstream of the branch joint on at least one of the piping lines that are connected to the branch joint should be 240 or below.
If the total capacity of the units in the downstream of the branch joints on both lines is above 240 use two branch joints (CMY-Y302S-G2).

Table4-2.
See the table below for the first joint of the outdoor unit described below.

Outdoor unit model	Joint model
HM144 to HM240	CMY-Y202S-G2

Table5. Header selection rule

	4-branch Header	8-branch Header	10-branch Header
	CMY-Y104C-G	CMY-Y108C-G	CMY-Y1010C-G
Total down-stream Indoor capacity	<=M72	<=M144	<=M240

* CMY-Y104C-G can directly connect PUHY-HM72T/YXU, but can NOT directly connect PUHY-HM96T/YXU or above;
* CMY-Y108C-G can directly connect PUHY-HM72~144T/Y(S)XU, but can NOT directly connect PUHY-HM192T/Y(S)XU or above;
* CMY-Y1010C-G can directly connect PUHY-HM72~240T/Y(S)XU;
* CMY-Y104C-G can NOT connect H72~M96 Indoor, but CMY-Y108,Y1010C-G can do;
* Concerning detailed usage of Header parts, refer to its Installation Manual.

Note4. Indoor capacity is described as its model size;
For example, PEFY-M06NMAU, its capacity is M06;
Note5. Total down-stream Indoor capacity is the summary of the model size of Indoors downstream.
For example, PEFY-M06NMAU + PEFY-M08NMAU-E**: Total Indoor capacity = M06 + M08 = M14
Note6. Piping size determined by the Total down-stream indoor capacity is NOT necessary to be bigger than the up-stream one.
i.e. A>=B; A>=C>=D

12-3. Refrigerant charging calculation

At the time of shipping, the outdoor 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 outdoor unit.

■ Calculation of additional refrigerant charge

- The amount of refrigerant to be added depends on the size and the total length of the 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).

<Additional Charge>

(1) Units "m" and "kg"

<Formula>

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

Amount of additional charge (kg)	=	ø19.05 total length × 0.26 (kg/m)	+	ø15.88 total length × 0.17 (kg/m)	+	ø12.7 total length × 0.11 (kg/m)	+	ø9.52 total length × 0.054 (kg/m)	+	ø6.35 total length × 0.020 (kg/m)

+

Total capacity of connected indoor units	All amount (kg) (to be added for indoor unit)
48 or below	2.7
49 to 72	5.6
73 to 96	6.0
97 to 120	6.3
121 to 144	6.6
145 to 168	7.0
169 to 192	7.3
193 to 216	7.7
217 to 240	8.3
241 to 264	8.9
265 to 288	9.5
289 to 312	10.1
313 to 336	10.7
337 to 360	11.4
361 to 384	11.8
385 to 408	12.2
409 to 432	12.6
433 to 456	13.0
457 to 480	13.4
481 or above	13.8

* If all the indoor units are the following models, add 0.2 kg of refrigerant to each unit.
  PLFY-EM06/18/24/30/36NEMU-A

• When the piping length from the outdoor unit to the farthest indoor unit is longer than 30.5 m (100 ft)

Amount of additional charge (kg) = ø22.2 total length × 0.32 (kg/m) + ø19.05 total length × 0.24 (kg/m) + ø15.88 total length × 0.16 (kg/m) + ø12.7 total length × 0.10 (kg/m) + ø9.52 total length × 0.050 (kg/m)

+ ø6.35 total length × 0.018 (kg/m)

+

Total capacity of connected indoor units	All amount (kg) (to be added for indoor unit)
48 or below	2.7
49 to 72	5.6
73 to 96	6.0
97 to 120	6.3
121 to 144	6.6
145 to 168	7.0
169 to 192	7.3
193 to 216	7.7
217 to 240	8.3
241 to 264	8.9
265 to 288	9.5
289 to 312	10.1
313 to 336	10.7
337 to 360	11.4
361 to 384	11.8
385 to 408	12.2
409 to 432	12.6
433 to 456	13.0
457 to 480	13.4
481 or above	13.8

* If all the indoor units are the following models, add 0.2 kg of refrigerant to each unit.
PLFY-EM06/18/24/30/36NEMU-A

(2) Units "ft" and "oz"

<Formula>

• When the piping length from the outdoor unit to the farthest indoor unit is 30.5 m (100 ft) or shorter

Amount of additional charge (oz) = ø3/4 total length × 2.80 (oz/ft) + ø5/8 total length × 1.83 (oz/ft) + ø1/2 total length × 1.19 (oz/ft) + ø3/8 total length × 0.59 (oz/ft) + ø1/4 total length × 0.22 (oz/ft)

+

Total capacity of connected indoor units	All amount (oz) (to be added for indoor unit)
48 or below	96
49 to 72	198
73 to 96	212
97 to 120	223
121 to 144	233
145 to 168	247
169 to 192	258
193 to 216	272
217 to 240	293
241 to 264	314
265 to 288	336
289 to 312	357
313 to 336	378
337 to 360	403
361 to 384	417
385 to 408	431
409 to 432	445
433 to 456	459
457 to 480	473
481 or above	487

* If all the indoor units are the following models, add 8 oz of refrigerant to each unit.
PLFY-EM06/18/24/30/36NEMU-A

• When the piping length from the outdoor unit to the farthest indoor unit is longer than 30.5 m (100 ft)

Amount of additional charge (oz) = ø7/8 total length × 3.45 (oz/ft) + ø3/4 total length × 2.59 (oz/ft) + ø5/8 total length × 1.73 (oz/ft) + ø1/2 total length × 1.08 (oz/ft) + ø3/8 total length × 0.54 (oz/ft)

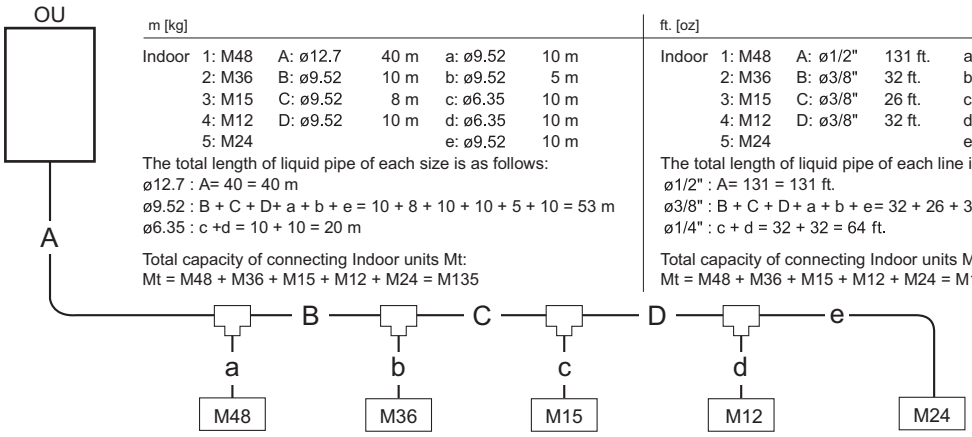
+ ø1/4 total length × 0.20 (oz/ft)

+

Total capacity of connected indoor units	All amount (oz) (to be added for indoor unit)
48 or below	96
49 to 72	198
73 to 96	212
97 to 120	223
121 to 144	233
145 to 168	247
169 to 192	258
193 to 216	272
217 to 240	293
241 to 264	314
265 to 288	336
289 to 312	357
313 to 336	378
337 to 360	403
361 to 384	417
385 to 408	431
409 to 432	445
433 to 456	459
457 to 480	473
481 or above	487

* If all the indoor units are the following models, add 8 oz of refrigerant to each unit.
PLFY-EM06/18/24/30/36NEMU-A

Example: PUHY-HM120TXU/YXU



m [kg]

Indoor	1: M48	A: ø12.7	40 m	a: ø9.52	10 m
	2: M36	B: ø9.52	10 m	b: ø9.52	5 m
	3: M15	C: ø9.52	8 m	c: ø6.35	10 m
	4: M12	D: ø9.52	10 m	d: ø6.35	10 m
	5: M24			e: ø9.52	10 m

The total length of liquid pipe of each size is as follows:
ø12.7 : A= 40 = 40 m
ø9.52 : B + C + D+ a + b + e = 10 + 8 + 10 + 10 + 5 + 10 = 53 m
ø6.35 : c +d = 10 + 10 = 20 m

Total capacity of connecting Indoor units Mt:
Mt = M48 + M36 + M15 + M12 + M24 = M135

ft. [oz]

Indoor	1: M48	A: ø1/2"	131 ft.	a: ø3/8"	32 ft.
	2: M36	B: ø3/8"	32 ft.	b: ø3/8"	16 ft.
	3: M15	C: ø3/8"	26 ft.	c: ø1/4"	32 ft.
	4: M12	D: ø3/8"	32 ft.	d: ø1/4"	32 ft.
	5: M24			e: ø3/8"	32 ft.

The total length of liquid pipe of each line is as follows:
ø1/2" : A= 131 = 131 ft.
ø3/8" : B + C + D + a + b + e= 32 + 26 + 32 + 32 + 16 + 32 = 170 ft.
ø1/4" : c + d = 32 + 32 = 64 ft.

Total capacity of connecting Indoor units Mt:
Mt = M48 + M36 + M15 + M12 + M24 = M135

m [kg]

Additional refrigerant charge	=	Total length of liquid pipe sized ø22.2 x 0.32 (kg/m)	+	Total length of liquid pipe sized ø19.05 x 0.24 (kg/m)	+	Total length of liquid pipe sized ø15.88 x 0.16 (kg/m)	+	Total length of liquid pipe sized ø12.7 x 0.10 (kg/m)	+	Total length of liquid pipe sized ø9.52 x 0.050 (kg/m)	+	Total length of liquid pipe sized ø6.35 x 0.018 (kg/m)	+ 6.6
(kg)		0 (m) x 0.32 (kg/m)		0 (m) x 0.24 (kg/m)		0 (m) x 0.16 (kg/m)		40 (m) x 0.10 (kg/m)		53 (m) x 0.050 (kg/m)		20 (m) x 0.018 (kg/m)	

= 0 + 0 + 0 + 40 x 0.10 + 53 x 0.050 + 20 x 0.018 + 6.6
= 13.7 (13.61) kg

or

ft. [oz]

Additional refrigerant charge	=	Total length of liquid pipe sized ø7/8" x 3.45 (oz/ft.)	+	Total length of liquid pipe sized ø3/4" x 2.59 (oz/ft.)	+	Total length of liquid pipe sized ø5/8" x 1.73 (oz/ft.)	+	Total length of liquid pipe sized ø1/2" x 1.08 (oz/ft.)	+	Total length of liquid pipe sized ø3/8" x 0.54 (oz/ft.)	+	Total length of liquid pipe sized ø1/4" x 0.20 (oz/ft.)	+ 233
(oz)		0 (ft.) x 3.45 (oz/ft.)		0 (ft.) x 2.59 (oz/ft.)		0 (ft.) x 1.73 (oz/ft.)		131 (ft.)x 1.08 (oz/ft.)		170 (ft.)x 0.54 (oz/ft.)		64 (ft.) x 0.20 (oz/ft.)	

= 0 + 0 + 0 + 131 x 1.08 + 170 x 0.54 + 64 x 0.20 + 233
= 479.1 (479.08) oz

■ 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.

Unit model		HM72 T/YXU	HM96 T/YXU	HM120 T/YXU	HM144 T/YSXU	HM192 T/YSXU	HM240 T/YSXU
Maximum refrigerant charge	Factory charged	5.3 kg	6.3 kg	6.3 kg	10.6 kg	12.6 kg	12.6 kg
	Charged on site	23.8 kg	28.0 kg	28.4 kg	49.7 kg	51.1 kg	51.2 kg
	Total for system	29.1 kg	34.3 kg	34.7 kg	60.3 kg	63.7 kg	63.8 kg
	Factory charged	187 oz	223 oz	223 oz	374 oz	445 oz	445 oz
	Charged on site	840 oz	988 oz	1002 oz	1754 oz	1803 oz	1807 oz
	Total for system	1027 oz	1210 oz	1225 oz	2128 oz	2247 oz	2251 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

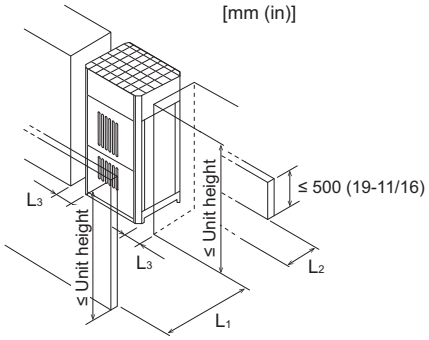
1. If possible, locate the unit to reduce the direct thermal radiation to the unit.
2. Consider the amount of noise the unit produces when choosing an installation location.
   Valves and refrigerant flow on the outdoor/heat source unit may generate noise.
3. Avoid sites that may encounter strong winds.
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

(1) When all walls are within their height limits*.

[mm (in)]



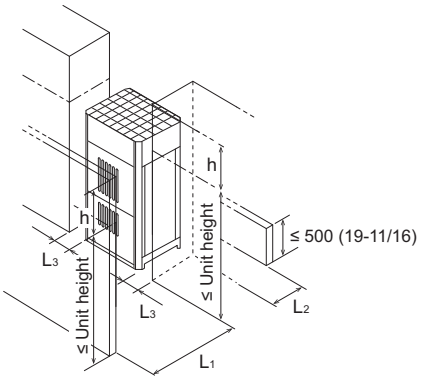
* Height limit

Front/Right/Left/Rear	Same height or lower than the overall height of the unit

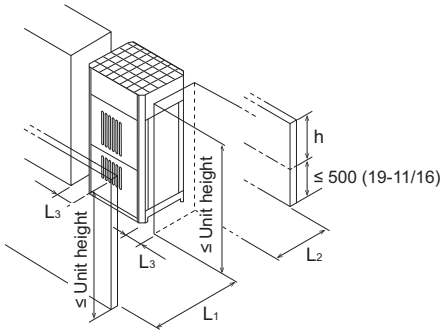
	Required minimum distance [mm (in)]		
	L_1 (Front)	L_2 (Rear)	L_3 (Right/Left)
When the distance behind the unit (L_2) needs to be small	450 (17-3/4)	100 (3-15/16)	50 (2)
When the distance to the right or left (L_3) needs to be small	450 (17-3/4)	300 (11-13/16)	20 (13/16)

(2) When one or more walls exceed their height limits*.

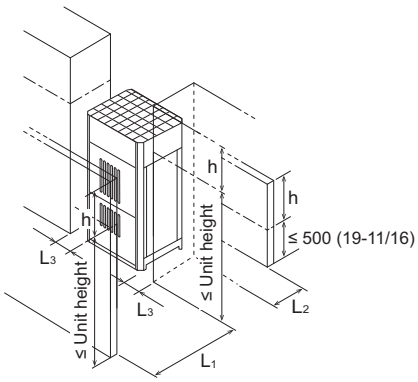
When the wall(s) at the front and/ or the right/left exceed(s) their height limits



When the wall at the rear exceeds its height limit



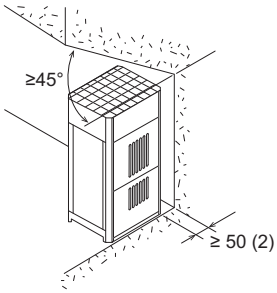
When all walls exceed their height limits

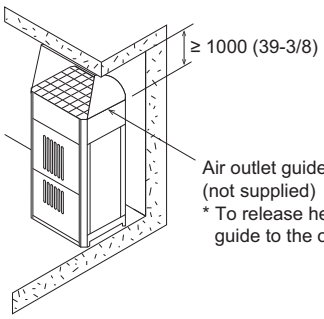


If the height of the walls around the unit exceeds the height limit, add half of the height that exceeds the limit (h/2) to L_1, L_2, and L_3 as shown in the table below.

	Required minimum distance [mm (in)]		
	L_1 (Front)	L_2 (Rear)	L_3 (Right/Left)
When the distance behind the unit (L_2) needs to be small	450 (17-3/4) + h/2	100 (3-15/16) + h/2	50 (2) + h/2
When the distance to the right or left (L_3) needs to be small	450 (17-3/4) + h/2	300 (11-13/16) + h/2	20 (13/16) + h/2

(3) When there are overhead obstacles





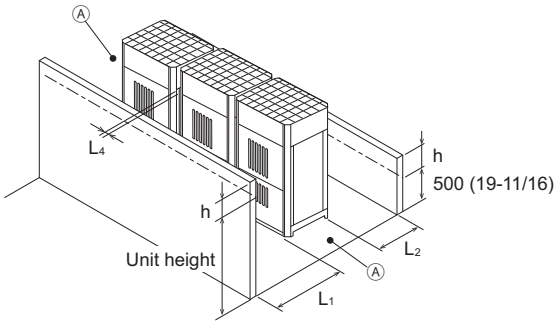
* To release heat through the air outlet guide, install the air outlet guide to the outdoor unit without gaps between them.

In case of collective installation and continuous installation

- When installing multiple units, make sure to take into consideration factors such as providing enough space for people to pass through, ample space between blocks of units, and sufficient space for airflow. (The areas marked with Ⓐ in the figures below must be left open.)
- In the same way as with the single unit installation, if the height of the walls around the unit exceeds the height limit, add half of the height that exceeds the limit (h/2) to L_1, L_2, and L_3 as shown in the table below.
- If there are walls in the front and rear of the block of units, up to six units can be installed consecutively side by side, and a space of 1000 mm (39-3/8 in) or more must be left between each block of six units.

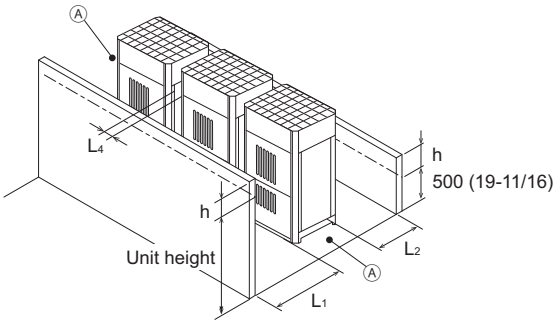
(1) Side-by-side installation [mm (in)]

When the distances between the units (L_4) need to be small



Required minimum distance [mm (in)]		
L_1 (Front)	L_2 (Rear)	L_4 (Between)
450 (17-3/4) + h/2	300 (11-13/16) + h/2	40 (1-10/16)

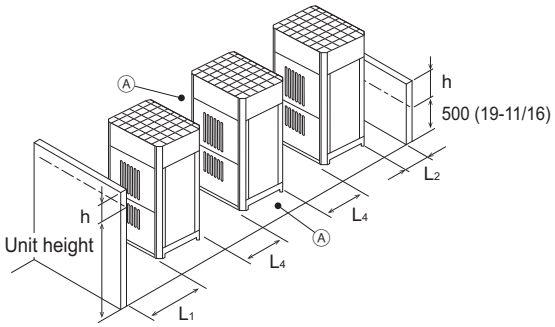
When the distance behind the block of units (L_2) needs to be small



Required minimum distance [mm (in)]		
L_1 (Front)	L_2 (Rear)	L_4 (Between)
450 (17-3/4) + h/2	100 (3-15/16) + h/2	100 (3-15/16)

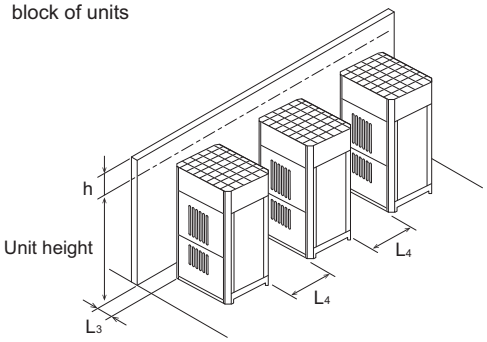
(2) Face-to-face installation

When there are walls in the front and rear of the block of units



Required minimum distance [mm (in)]		
L_1 (Front)	L_2 (Rear)	L_4 (Between)
450 (17-3/4) + h/2	100 (3-15/16) + h/2	450 (17-3/4)

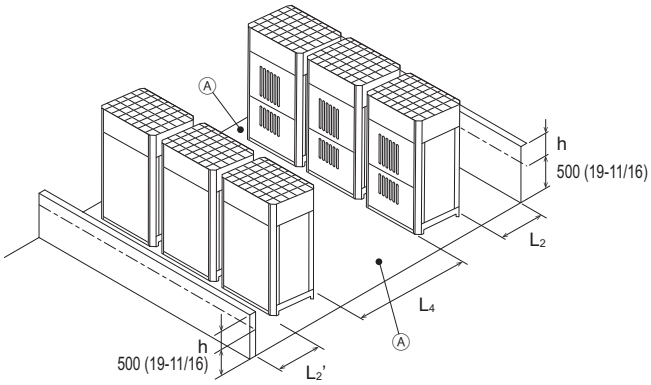
When there is a wall on either the right or left side of the block of units



Required minimum distance [mm (in)]	
L_3 (Right/Left)	L_4 (Between)
15 (5/8) + h/2	450 (17-3/4)

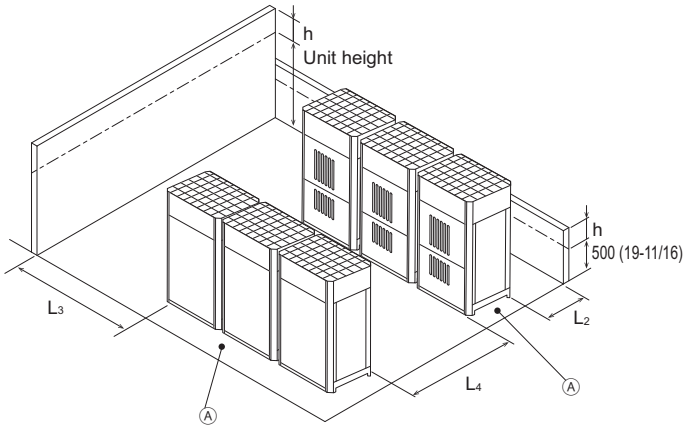
(3) Combination of face-to-face and side-by-side installations

When there are walls in the front and rear of the block of units



Required minimum distance [mm (in)]		
L_2 (Rear)	L_2' (Rear)	L_4 (Between)
300 (11-13/16) + h/2	300 (11-13/16) + h/2	900 (35-7/16)

When there are two walls in an L-shape



Required minimum distance [mm (in)]		
L_2 (Rear)	L_3 (Right/Left)	L_4 (Between)
300 (11-13/16) + h/2	1000 (39-3/8) + h/2	900 (35-7/16)

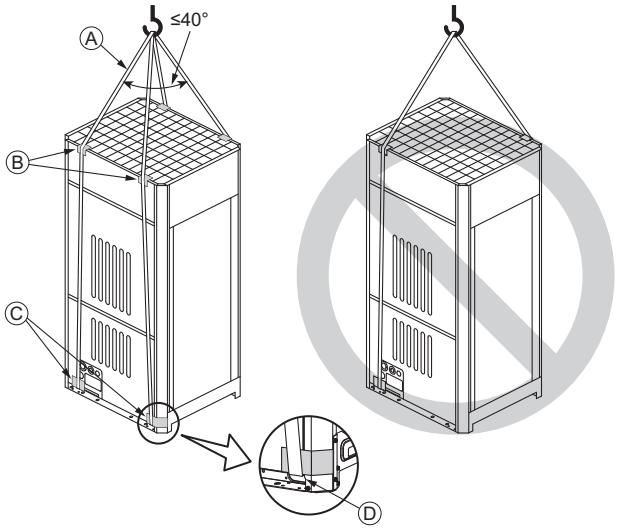
Ⓐ: Leave open in two directions.

13-3. Piping direction

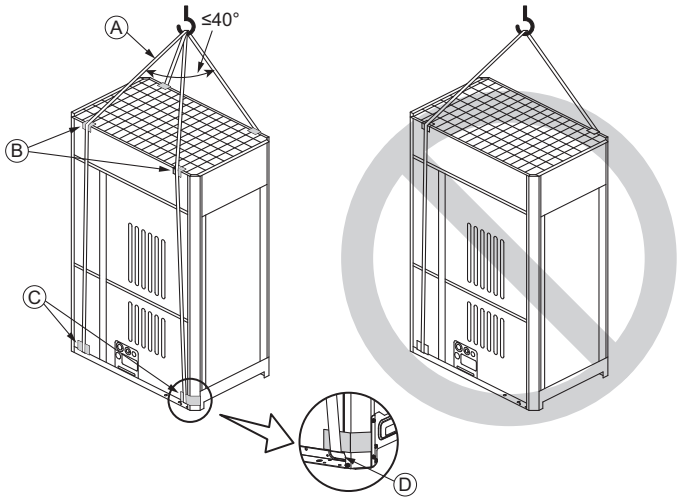
13-3-1. Lifting method

- Always use two slings to lift up the unit. Each sling must be at least 8 m (26 ft) long and must be able to support the weight of the unit.
- Put protective pads between slings and the unit where the slings touch the unit at the base to protect the unit from being scratched.
- Make sure that the angles between slings at the top are less than 40 degrees.

HM72



HM96, 120



Ⓐ Slings (Min. 8 m (26 ft) x 2)
Ⓑ Protective pads
(two each in the front and back)
Ⓒ Protective pads
(two each in the front and back)
Ⓓ Sling holes
(two each in the front and back)

⚠ CAUTION

Exercise caution when transporting products.

· Products weighing more than 20 kg [45 LBS] should not be carried alone.
· Do not carry the product by the PPbands.
· To avoid the risk of injury, do not touch the heat exchanger fins.
· Plastic bags may pose a risk of choking hazard to children. Tear plastic bags into pieces before disposing of them.
· When lifting and transporting outdoor units with ropes, run the ropes through lifting hole at the unit base. Securely fix the unit so that the ropes will not slide off, and always lift the unit at four points to prevent the unit from falling.

13-3-2. Installation

- Secure the unit with anchor bolts as shown in the figure below so that the unit will not topple over with strong wind or during an earthquake.
- Install the unit on a durable base made of such materials as concrete or angle steel.
- Take appropriate anti-vibration measures (e.g., vibration damper pad, vibration isolation base) to keep vibrations and noise from being transmitted from the unit through walls and floors.
  When installing a unit on a base, place an anti-vibration pad between the base and the unit.
- When using an anti-vibration rubber pad, install it so that the pad covers the entire width of the unit leg.
- All the bottom corners of the unit must still be supported by both the anti-vibration rubber pads and the base.
- Install the unit in such a way that the corner of the angle bracket at the base of the unit shown in the figure below is securely supported.
- Install the anchor bolt in such a way that the top end of the anchor bolt do not stick out more than 30 mm [1-3/16 in.].
- This unit is not designed to be anchored with post-installation-type anchor bolts, although by adding fixing brackets anchoring with such type of anchor bolts becomes possible.

Ⓐ M12 anchor bolt* procured at the site
*Required specification for M12 anchor bolt: Tensile load of 5.6 kN or more to withstand the short-term load caused by earthquakes or strong winds

Ⓑ (Incorrect installation) The corner section is not securely received.

Ⓒ Fixing bracket for M12 hole-in anchor bolt* procured at the site (3 locations to fix with M5 self-tapping screws)
*Required specification for M12 hole-in anchor bolt: Tensile load of 6.7 kN or more to withstand the short-term load caused by earthquakes or strong winds
Use the fixing bracket with sufficient strength.

Ⓓ Anti-vibration rubber pad
(The pad needs to be large enough to cover the entire width of each unit leg.)

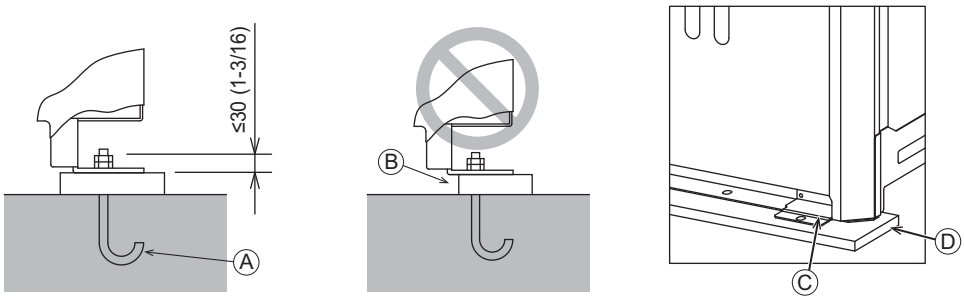
⚠ WARNING

Properly install the unit on a surface that can withstand the weight of the unit. Unit installed on an unstable surface may fall and cause injury.

⚠ WARNING

Take adequate measures against natural disasters including earthquakes and windstorms so that the unit will not fall or tip over. Consult your local specialist for safety measures to be taken.

(Unit: mm [in.])

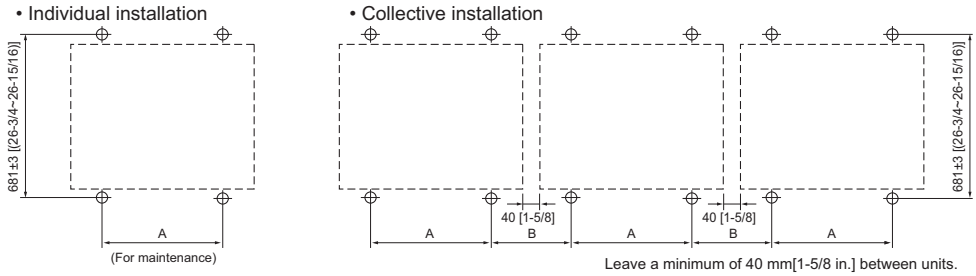


Take into consideration the durability of the base, water drainage route (Drain water is discharged from outdoor units during operation.), piping route, and wiring route when performing foundation work.

13-3-3. Anchor bolt positions

<HM72-120>

(Unit: mm [in.])



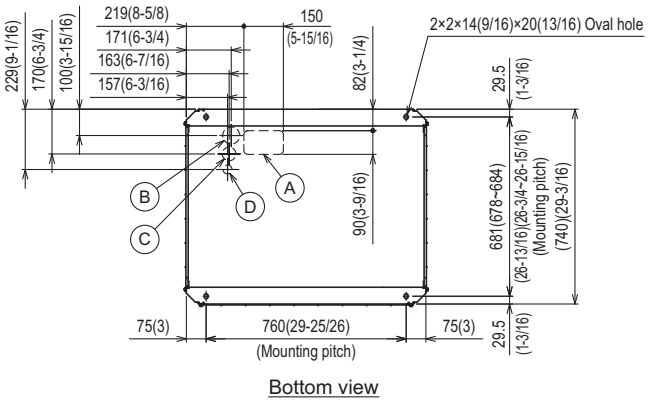
PUHY	HM72	HM96, 120
A	760±2 [29-15/16(29-7/8~30)]	1060±2 [41-3/4(41-11/16~41-13/16)]
B	190 [7-1/2]	187 [7-3/8]

13-3-4. Installation

When the pipes and/or cables are routed at the bottom of the unit, make sure that the through hole at the base of the unit does not get blocked with the installation base.
When the pipes are routed at the bottom of the unit, the base should be at least 100 mm [3-15/16 in.] in height.

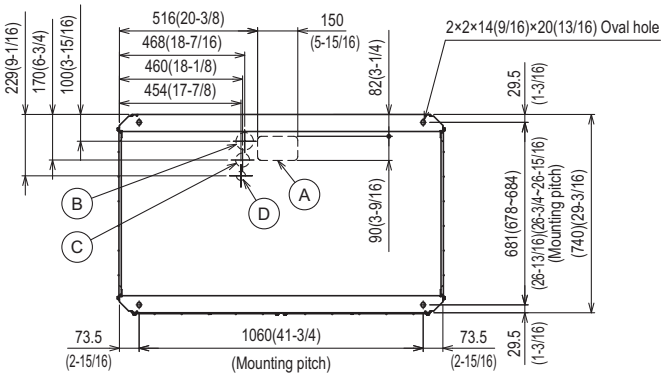
(Unit: mm[in.])

HM72



Bottom view

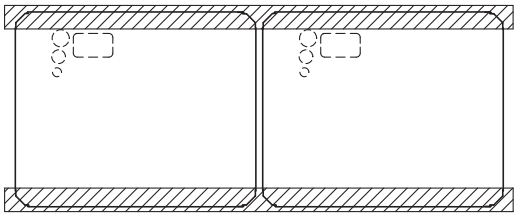
HM96, 120



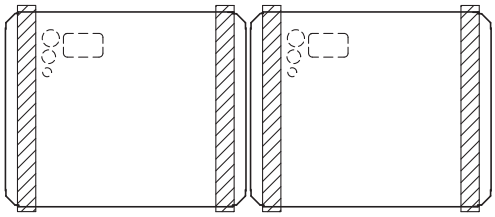
Bottom view

NO.	Usage		Specifications
Ⓐ	For pipes	Bottom through hole	150 (5-15/16) × 90(3-9/16) Knockout hole
Ⓑ	For wires	Bottom through hole	ø65 (2-9/16) Knockout hole
Ⓒ		Bottom through hole	ø52 (2-1/16) Knockout hole
Ⓓ	For transmission cables	Bottom through hole	ø34 (1-3/8) Knockout hole

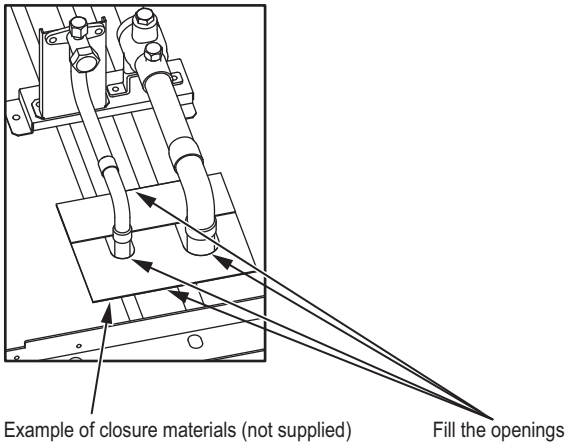
Installation base parallel to the unit's front panel



Installation base perpendicular to the unit's front panel



13-3-5. Refrigerant pipe routing



The gaps around the edges of through holes for pipes and wires on the unit allow water or mice to enter the unit and damage its parts. Close these gaps with filler plates.

This unit allows two types of pipe routing:
- Bottom piping
- Front piping

⚠ CAUTION

To prevent small animals, water and snow from entering the unit and damage its parts, close the gap around the edges of through holes for pipes and wires with filler plates.

13-3-6. Twinning on the outdoor unit side

- The pipe from multiple outdoor units must be installed so that oil will not accumulate in the pipe under certain conditions. Refer to the figures below for details.

  * Small dots in the figures indicate branching points.

  Ⓐ To indoor units

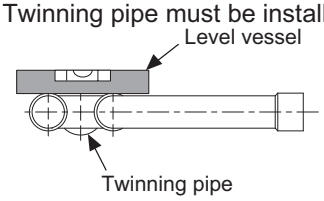
  (1) The pipe from the outdoor units must be inclined downward to the indoor unit side. In the figure on the right, because the pipe is inclined upward, the oil in the pipe accumulates when Unit 1 is in operation and Unit 2 is stopped.

  (2) The distance between the unit bottom and the pipe (H) must be 0.2 m (7-7/8 in) or below. In the figure on the right, because the distance is more than 0.2 m (7-7/8 in), the oil accumulates in Unit 1 when Unit 2 is in operation and Unit 1 is stopped.

  (3) The vertical separation between units (H) must be 0.1 m (3-15/16 in) or below. In the figure on the right, because the distance is more than 0.1 m (3-15/16 in), the oil accumulates in Unit 1 when Unit 2 is in operation and Unit 1 is stopped.

  (4) The vertical separation between units (H) must be 0.1 m (3-15/16 in) or below. In the figure on the right, because the distance is more than 0.1 m (3-15/16 in), the oil accumulates in Unit 2 when Unit 1 is in operation and Unit 2 is stopped.

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



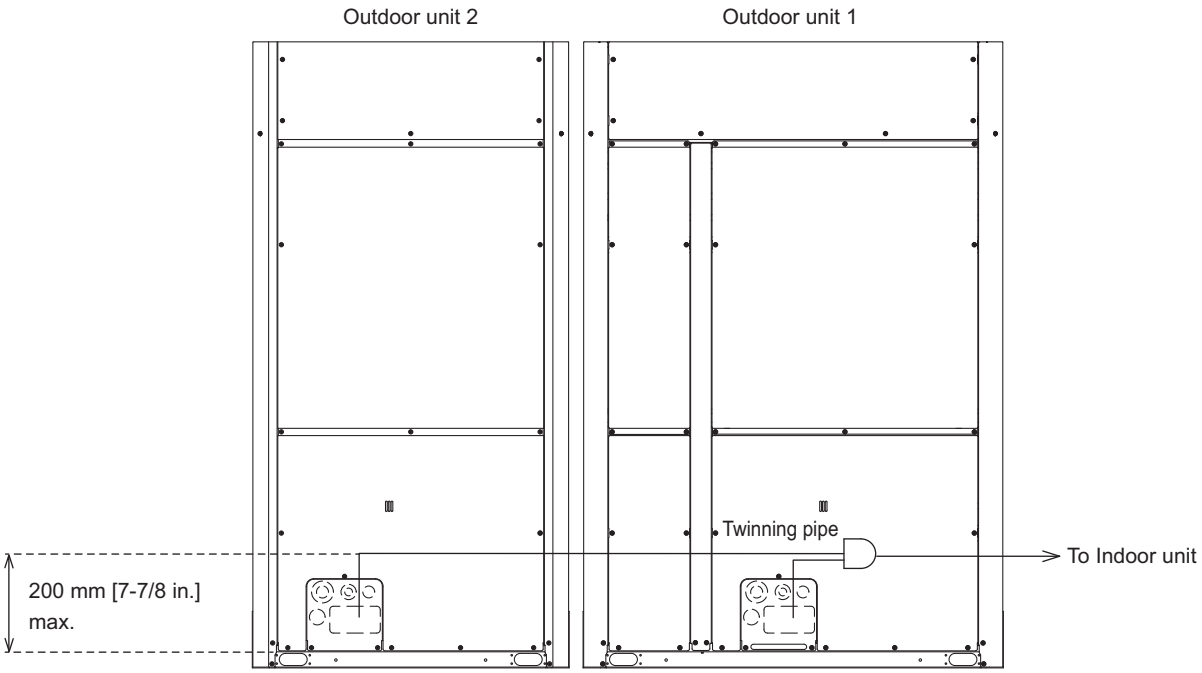
- If the length of the pipe between the branching point and the outdoor unit exceeds 2 m (6 ft), provide a trap within 2 m (6 ft) from the branching point.
  The trap must be at least 200 mm (7-7/8 in) in height. (gas pipe only) If there is no trap, oil can accumulate inside the pipe, causing a shortage of oil and may damage the compressor.

  * Small dots in the figures indicate branching points.

Ⓐ To indoor units
Ⓑ Trap (gas pipe only)
Ⓒ Gas pipe

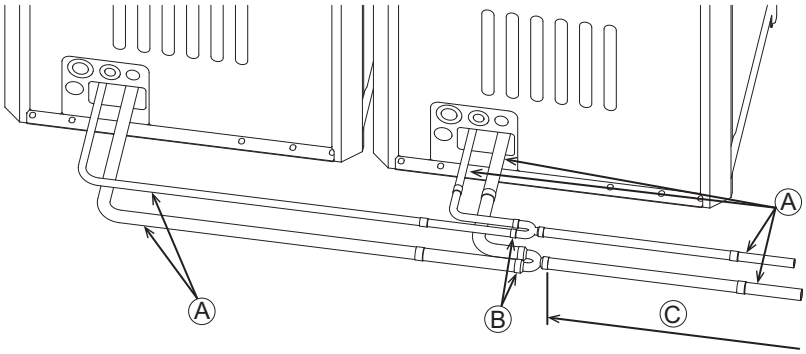
⚠ Caution:

- **Do not install expansion loops or offsets other than the ones between outdoor units described on a separate sheet to prevent oil backflow and compressor start-up failure.**
- **Do not install solenoid valves to prevent oil backflow and compressor start-up failure.**
- **Do not install a sight glass because it may show improper refrigerant flow.**
  If a sight glass is installed, inexperienced technicians that use the glass may overcharge the refrigerant.
- **Refrigerant pipes may expand or shrink due to temperature fluctuations of the refrigerant inside the pipes. When installing long straight pipes, provide expansion loops or offsets to absorb the thermal expansions of the pipes.**



13-3-7. Twinning on the outdoor unit side

See the following drawing for connecting the pipes between the outdoor units.



Ⓐ On-site piping
Ⓑ Twinning Kit
Ⓒ The pipe section before the twinning pipe must have at least 500 mm (19-11/16 in) of straight section.

13-4. Weather countermeasure

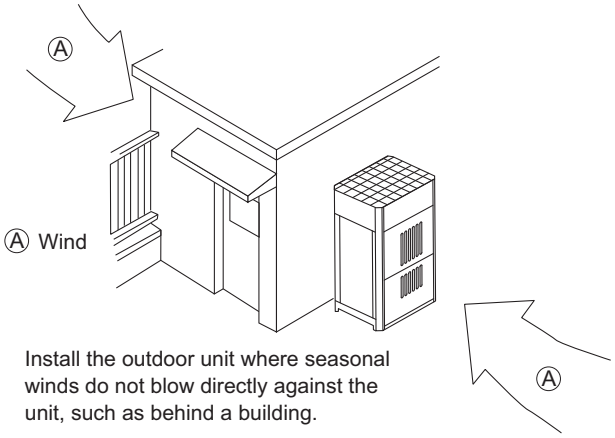
- In abnormally harsh environments such as cold and/or windy areas, sufficient countermeasures to guard against excessive wind and snow should be taken to ensure the unit's correct operation. When the unit is expected to operate in cooling mode in conditions under 10°C (50°F), in snowy areas, in environments subject to strong winds or rain, install snow hoods.
  Refer to the snow hood Installation Manual for details.
  *Do not use a snow hood made of stainless steel, which may cause the unit to rust. If the use of a stainless snow hood is the only option, contact the sales office before installing it.
- Install the unit so that the wind will not blow directly against the inlet and outlet.
- If necessary, install the unit on a raised base of the following specifications (not supplied) to prevent damage from snow.

  Material: Angle iron (Build a structure that snow and wind can pass through.)
  Height: Expected maximum snowfall plus 500 mm (19-11/16 in)
  Width: Within the unit width (If the raised base is too wide, snow will accumulate on the raised base.)

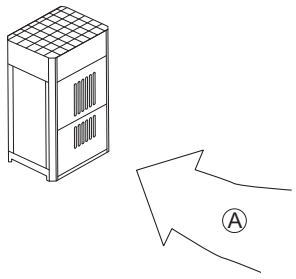
- When the unit is used in a cold region and the heating operation is continuously performed for a long time when the outside air temperature is below freezing, install a heater on the raised base or take other appropriate measures to prevent water from freezing on the raised base.
- If a drain pan for centralized drainage is used in cold regions, install the drain pan so that freezing does not damage the equipment.
- When installing a snow hood, take pressure loss into consideration to prevent airflow from decreasing.
- Avoid installing a trestle or other structure under the drainage hole in the bottom plate as much as possible.
- If icicles form on the bottom plate, regularly remove them to prevent them from reaching the trestle or ground and growing under the outdoor unit.

13-5. Countermeasure to wind

Referring to the figure shown below, take appropriate measures which will suit the actual situation of the place for installation.
A unit installed alone is vulnerable to strong winds. Select the installation site carefully to minimize the effect of winds.
To install a unit in a place where the wind always blows from the same direction, install the unit so that the outlet faces away from the direction of the wind.



Install the outdoor unit where seasonal winds do not blow directly against the unit, such as behind a building.



Install the outdoor unit to avoid having seasonal winds against the front of air outlet/inlet on the unit.

⚠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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