OUTDOOR UNITS

1. SPECIFICATIONS

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Model				PUMY-P112VKM2(-BS)	PUMY-P125VKM2(-BS)
Power source				1-phase 220-240V 50Hz, 1-phase 220V 60Hz	1-phase 220-240V 50Hz, 1-phase 220V 60Hz
Cooling capacity		*1	kW	12.5	14.0
(Nominal)		*1	kcal/h	10,800	12,000
		*1	BTU/h	42,700	47,800
	Power input		kW	2.79	3.46
	Current input		A	12.87-12.32-11.80, 12.87	15.97-15.27-14.64, 15.97
	EER		kW/kW	4.48	4.05
Temp. range of	Indoor		W.B.	15.0~24.0°C(59~75°F)	15.0~24.0°C(59~75°F)
cooling	Outdoor	*2	D.B.	-5.0~46.0°C(23~115°F)	-5.0~46.0°C(23~115°F)
Heating capacity		*3	kW	14.0	16.0
(Nominal)		*3	kcal/h	12,000	13,800
		*3	BTU/h	47,800	54,600
	Power input		kW	3.04	3.74
	Current input		A	14.03-13.42-12.86, 14.03	17.26-16.51-15.82, 17.26
	COP		kW/kW	4.61	4.28
Temp. range of	Indoor		D.B.	15.0~27.0°C(59~81°F)	15.0~27.0°C(59~81°F)
heating	Outdoor		W.B.	-20.0~15.5°C(-4~60°F)	-20.0~15.5°C(-4~60°F)
Indoor unit	Total capacity			50~130% of outdoor unit capacity (kW)	50~130% of outdoor unit capacity (kW)
connectable	Model/Quantity		CITY MULTI	P15-P140/9	P15-P140/10
			Branch box	P15-P100/8	P15-P100/8
			Mixed system	P15-P140(*4)/10	P15-P140(*4)/10(*5)
Sound pressure level (measured in anechoic room)			dB <A>	49/51	50/52
Refrigerant	Liquid pipe		mm(in.)	9.52(3/8) Flare	9.52(3/8) Flare
piping diameter	Gas pipe		mm(in.)	15.88(5/8) Flare	15.88(5/8) Flare
FAN	Type x Quantity			Propeller fan x 2	Propeller fan x 2
	Air flow rate		m^3/min	110	110
			L/s	1,833	1,833
			cfm	3,884	3,884
	Control, Driving mechanism			DC control	DC control
	Motor output		kW	0.06 + 0.06	0.06 + 0.06
	External static press.			0 Pa (0 mmH_2O)	0 Pa (0 mmH_2O)
Compressor	Type x Quantity			Scroll hermetic compressor x 1	Scroll hermetic compressor x 1
	Manufacture			MITSUBISHI ELECTRIC CORPORATION	MITSUBISHI ELECTRIC CORPORATION
	Starting method			Inverter	Inverter
	Motor output		kW	2.9	3.5
	Case heater		kW	0	0
	Lubricant			FV50S (2.3litter)	FV50S (2.3litter)
External finish				Galvanized Steel Sheets Munsell No. 3Y 7.8/1.1	Galvanized Steel Sheets Munsell No. 3Y 7.8/1.1
External dimension HxWxD			mm	1,338 x 1,050 x 330 (+25)	1,338 x 1,050 x 330 (+25)
			in.	52-11/16 x 41-11/32 x 13 (+1)	52-11/16 x 41-11/32 x 13 (+1)
Protection devices	High pressure protection			High pressure switch	High pressure switch
	Inverter circuit (COMP./FAN)			Overcurrent detection, Overheat detection (Heatsink thermistor)	Overcurrent detection, Overheat detection (Heatsink thermistor)
	Compressor			Compressor thermistor, Over current detection	Compressor thermistor, Over current detection
	Fan motor			Overheating, Voltage protection	Overheating, Voltage protection
Refrigerant	Type x original charge			R410A x 4.8kg	R410A x 4.8kg
	Control			Electronic Expansion Valve	Electronic Expansion Valve
Net weight			kg(lbs)	122(269)	122(269)
Heat exchanger				Cross Fin and Copper tube	Cross Fin and Copper tube
HIC circuit (HIC: Heat Inter-Changer)				HIC circuit	HIC circuit
Defrosting method				Reversed refrigerant circuit	Reversed refrigerant circuit
Drawing	External			BK01N346	BK01N346
	Wiring			BH78B813	BH78B813
Standard attachment	Document			Installation Manual	Installation Manual
	Accessory			Grounded lead wire x 2	Grounded lead wire x 2
Optional parts				Joint: CMY-Y62-G-E Header: CMY-Y64/68-G-E Branch box: PAC-MK31/51BC(B)	Joint: CMY-Y62-G-E Header: CMY-Y64/68-G-E Branch box: PAC-MK31/51BC(B)
Remarks				* In case of connecting Fresh air intake type indoor unit PEFY-P-VHM-E-F, only one indoor unit can be connected with one PUMY. * Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. * Due to continuing improvement, above specifications may be subject to change without notice.	

Notes:

*1.Nominal cooling conditions (subject to ISO 15042)
Indoor: 27degCDB/19degCWB (81degFDB/66degFWB), Outdoor: 35degCDB (95degFDB)
Pipe length: 7.5m (24-9/16ft.), Level difference: 0m (0ft.)

*2.10 to 46 ºC D.B. (50 to 115 ºF D.B.): in case of connecting PKFY-P15/P20/P25VBM, PFFY-P20/P25/P32VKM, PFFY-P20/P25/P32VLE(R)M type indoor unit and M series indoor unit.

*3.Nominal heating conditions (subject to ISO 15042)
Indoor: 20degCDB (68degFDB), Outdoor: 7degCDB/6degCWB (45degFDB/43degFWB)
Pipe length: 7.5m (24-9/16ft.), Level difference: 0m (0ft.)

*4.Up to P100 when connecting via branch box

*5.Up to 11 units when connecting via 2 branch boxes

Unit converter

kcal/h	=kW x 860
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Model				PUMY-P140VKM2(-BS)	
Power source				1-phase 220-240V 50Hz, 1-phase 220V 60Hz	
Cooling capacity (Nominal)		*1	kW	15.5	
		*1	kcal/h	13,300	
		*1	BTU/h	52,900	
	Power input		kW	4.52	
	Current input		A	20.86-19.95-19.12, 20.86	
	EER		kW/kW	3.43	
Temp. range of cooling	Indoor		W.B.	15.0~24.0°C(59~75°F)	
	Outdoor	*2	D.B.	-5.0~46.0°C(23~115°F)	
Heating capacity (Nominal)		*3	kW	18.0	
		*3	kcal/h	15,500	
		*3	BTU/h	61,400	
	Power input		kW	4.47	
	Current input		A	20.63-19.73-18.91, 20.63	
	COP		kW/kW	4.03	
Temp. range of heating	Indoor		D.B.	15.0~27.0°C(59~81°F)	
	Outdoor		W.B.	-20.0~15.5°C(-4~60°F)	
Indoor unit connectable	Total capacity			50~130% of outdoor unit capacity (kW)	
	Model/Quantity		CITY MULTI	P15-P140/12	
			Branch box	P15-P100/8	
			Mixed system	P15-P140(*4)/10(*5)	
Sound pressure level (measured in anechoic room)			dB <A>	51/53	
Refrigerant piping diameter	Liquid pipe		mm(in.)	9.52(3/8) Flare	
	Gas pipe		mm(in.)	15.88(5/8) Flare	
FAN	Type x Quantity			Propeller fan x 2	
	Air flow rate		m^3/min	110	
			L/s	1,833	
			cfm	3,884	
	Control, Driving mechanism			DC control	
	Motor output		kW	0.06 + 0.06	
	External static press.			0 Pa (0 mmH_2O)	
Compressor	Type x Quantity			Scroll hermetic compressor x 1	
	Manufacture			MITSUBISHI ELECTRIC CORPORATION	
	Starting method			Inverter	
	Motor output		kW	3.9	
	Case heater		kW	0	
	Lubricant			FV50S (2.3litter)	
External finish				Galvanized Steel Sheets Munsell No. 3Y 7.8/1.1	
External dimension HxWxD			mm	1,338 x 1,050 x 330 (+25)	
			in.	52-11/16 x 41-11/32 x 13 (+1)	
Protection devices	High pressure protection			High pressure switch	
	Inverter circuit (COMP./FAN)			Overcurrent detection, Overheat detection (Heatsink thermistor)	
	Compressor			Compressor thermistor, Over current detection	
	Fan motor			Overheating, Voltage protection	
Refrigerant	Type x original charge			R410A x 4.8kg	
	Control			Electronic Expansion Valve	
Net weight			kg(lbs)	122(269)	
Heat exchanger				Cross Fin and Copper tube	
HIC circuit (HIC: Heat Inter-Changer)				HIC circuit	
Defrosting method				Reversed refrigerant circuit	
Drawing	External			BK01N346	
	Wiring			BH78B813	
Standard attachment	Document			Installation Manual	
	Accessory			Grounded lead wire x 2	
Optional parts				Joint: CMY-Y62-G-E Header: CMY-Y64/68-G-E Branch box: PAC-MK31/51BC(B)	
Remarks				* In case of connecting Fresh air intake type indoor unit PEFY-P-VHM-E-F, only one indoor unit can be connected with one PUMY. * Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. * Due to continuing improvement, above specifications may be subject to change without notice.	

Notes:

*1.Nominal cooling conditions (subject to ISO 15042)
Indoor: 27degCDB/19degCWB (81degFDB/66degFWB), Outdoor: 35degCDB (95degFDB)
Pipe length: 7.5m (24-9/16ft.), Level difference: 0m (0ft.)

*2.10 to 46 ºC D.B. (50 to 115 ºF D.B.): in case of connecting PKFY-P15/P20/P25VBM, PFFY-P20/P25/P32VKM, PFFY-P20/P25/P32VLE(R)M type indoor unit and M series indoor unit.

*3.Nominal heating conditions (subject to ISO 15042)
Indoor: 20degCDB (68degFDB), Outdoor: 7degCDB/6degCWB (45degFDB/43degFWB)
Pipe length: 7.5m (24-9/16ft.), Level difference: 0m (0ft.)

*4.Up to P100 when connecting via branch box

*5.Up to 11 units when connecting via 2 branch boxes

Unit converter

kcal/h	=kW x 860
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.

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Model				PUMY-P112YKM2(-BS)	PUMY-P125YKM2(-BS)
Power source				3-phase 380-415V 50Hz	3-phase 380-415V 50Hz
Cooling capacity (Nominal)		*1	kW	12.5	14.0
		*1	kcal/h	10,800	12,000
		*1	BTU/h	42,700	47,800
	Power input		kW	2.79	3.46
	Current input		A	4.46-4.24-4.09	5.53-5.26-5.07
	EER		kW/kW	4.48	4.05
Temp. range of cooling	Indoor		W.B.	15.0~24.0°C(59~75°F)	15.0~24.0°C(59~75°F)
	Outdoor	*2	D.B.	-5.0~46.0°C(23~115°F)	-5.0~46.0°C(23~115°F)
Heating capacity (Nominal)		*3	kW	14.0	16.0
		*3	kcal/h	12,000	13,800
		*3	BTU/h	47,800	54,600
	Power input		kW	3.04	3.74
	Current input		A	4.86-4.62-4.45	5.98-5.68-5.48
	COP		kW/kW	4.61	4.28
Temp. range of heating	Indoor		D.B.	15.0~27.0°C(59~81°F)	15.0~27.0°C(59~81°F)
	Outdoor		W.B.	-20.0~15.5°C(-4~60°F)	-20.0~15.5°C(-4~60°F)
Indoor unit connectable	Total capacity			50~130% of outdoor unit capacity (kW)	50~130% of outdoor unit capacity (kW)
	Model/Quantity		CITY MULTI	P15-P140/9	P15-P140/10
			Branch box	P15-P100/8	P15-P100/8
			Mixed system	P15-P140(*4)/10	P15-P140(*4)/10(*5)
Sound pressure level (measured in anechoic room)			dB <A>	49/51	50/52
Refrigerant piping diameter	Liquid pipe		mm(in.)	9.52(3/8) Flare	9.52(3/8) Flare
	Gas pipe		mm(in.)	15.88(5/8) Flare	15.88(5/8) Flare
FAN	Type x Quantity			Propeller fan x 2	Propeller fan x 2
	Air flow rate		m^3/min	110	110
			L/s	1,833	1,833
			cfm	3,884	3,884
	Control, Driving mechanism			DC control	DC control
	Motor output		kW	0.06 + 0.06	0.06 + 0.06
	External static press.			0 Pa (0 mmH_2O)	0 Pa (0 mmH_2O)
Compressor	Type x Quantity			Scroll hermetic compressor x 1	Scroll hermetic compressor x 1
	Manufacture			MITSUBISHI ELECTRIC CORPORATION	MITSUBISHI ELECTRIC CORPORATION
	Starting method			Inverter	Inverter
	Motor output		kW	2.9	3.5
	Case heater		kW	0	0
	Lubricant			FV50S (2.3litter)	FV50S (2.3litter)
External finish				Galvanized Steel Sheets Munsell No. 3Y 7.8/1.1	Galvanized Steel Sheets Munsell No. 3Y 7.8/1.1
External dimension HxWxD			mm	1,338 x 1,050 x 330 (+25)	1,338 x 1,050 x 330 (+25)
			in.	52-11/16 x 41-11/32 x 13 (+1)	52-11/16 x 41-11/32 x 13 (+1)
Protection devices	High pressure protection			High pressure switch	High pressure switch
	Inverter circuit (COMP./FAN)			Overcurrent detection, Overheat detection (Heatsink thermistor)	Overcurrent detection, Overheat detection (Heatsink thermistor)
	Compressor			Compressor thermistor, Over current detection	Compressor thermistor, Over current detection
	Fan motor			Overheating, Voltage protection	Overheating, Voltage protection
Refrigerant	Type x original charge			R410A x 4.8kg	R410A x 4.8kg
	Control			Electronic Expansion Valve	Electronic Expansion Valve
Net weight			kg(lbs)	125(276)	125(276)
Heat exchanger				Cross Fin and Copper tube	Cross Fin and Copper tube
HIC circuit (HIC: Heat Inter-Changer)				HIC circuit	HIC circuit
Defrosting method				Reversed refrigerant circuit	Reversed refrigerant circuit
Drawing	External			BK01N339	BK01N339
	Wiring			BH78B814	BH78B814
Standard attachment	Document			Installation Manual	Installation Manual
	Accessory			Grounded lead wire x 2	Grounded lead wire x 2
Optional parts				Joint: CMY-Y62-G-E Header: CMY-Y64/68-G-E Branch box: PAC-MK31/51BC(B)	Joint: CMY-Y62-G-E Header: CMY-Y64/68-G-E Branch box: PAC-MK31/51BC(B)
Remarks				* Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. * Due to continuing improvement, above specifications may be subject to change without notice.	

Notes:

*1.Nominal cooling conditions (subject to ISO 15042)
Indoor: 27degCDB/19degCWB (81degFDB/66degFWB), Outdoor: 35degCDB (95degFDB)
Pipe length: 7.5m (24-9/16ft.), Level difference: 0m (0ft.)

*2.10 to 46 ºC D.B. (50 to 115 ºF D.B.): in case of connecting PKFY-P15/P20/P25VBM, PFFY-P20/P25/P32VKM, PFFY-P20/P25/P32VLE(R)M type indoor unit and M series indoor unit.

*3.Nominal heating conditions (subject to ISO 15042)
Indoor: 20degCDB (68degFDB), Outdoor: 7degCDB/6degCWB (45degFDB/43degFWB)
Pipe length: 7.5m (24-9/16ft.), Level difference: 0m (0ft.)

*4.Up to P100 when connecting via branch box

*5.Up to 11 units when connecting via 2 branch boxes

Unit converter

kcal/h	=kW x 860
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.

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Model				PUMY-P140YKM2(-BS)	
Power source				3-phase 380-415V 50Hz	
Cooling capacity (Nominal)		*1	kW	15.5	
		*1	kcal/h	13,300	
		*1	BTU/h	52,900	
	Power input		kW	4.52	
	Current input		A	7.23-6.87-6.62	
	EER		kW/kW	3.43	
Temp. range of cooling	Indoor		W.B.	15.0~24.0°C(59~75°F)	
	Outdoor	*2	D.B.	-5.0~46.0°C(23~115°F)	
Heating capacity (Nominal)		*3	kW	18.0	
		*3	kcal/h	15,500	
		*3	BTU/h	61,400	
	Power input		kW	4.47	
	Current input		A	7.15-6.79-6.55	
	COP		kW/kW	4.03	
Temp. range of heating	Indoor		D.B.	15.0~27.0°C(59~81°F)	
	Outdoor		W.B.	-20.0~15.5°C(-4~60°F)	
Indoor unit connectable	Total capacity			50~130% of outdoor unit capacity (kW)	
	Model/Quantity		CITY MULTI	P15-P140/12	
			Branch box	P15-P100/8	
			Mixed system	P15-P140(*4)/10(*5)	
Sound pressure level (measured in anechoic room)			dB <A>	51/53	
Refrigerant piping diameter	Liquid pipe		mm(in.)	9.52(3/8) Flare	
	Gas pipe		mm(in.)	15.88(5/8) Flare	
FAN	Type x Quantity			Propeller fan x 2	
	Air flow rate		m^3/min	110	
			L/s	1,833	
			cfm	3,884	
	Control, Driving mechanism			DC control	
	Motor output		kW	0.06 + 0.06	
	External static press.			0 Pa (0 mmH_2O)	
Compressor	Type x Quantity			Scroll hermetic compressor x 1	
	Manufacture			MITSUBISHI ELECTRIC CORPORATION	
	Starting method			Inverter	
	Motor output		kW	3.9	
	Case heater		kW	0	
	Lubricant			FV50S (2.3litter)	
External finish				Galvanized Steel Sheets Munsell No. 3Y 7.8/1.1	
External dimension HxWxD			mm	1,338 x 1,050 x 330 (+25)	
			in.	52-11/16 x 41-11/32 x 13 (+1)	
Protection devices	High pressure protection			High pressure switch	
	Inverter circuit (COMP./FAN)			Overcurrent detection, Overheat detection (Heatsink thermistor)	
	Compressor			Compressor thermistor, Over current detection	
	Fan motor			Overheating, Voltage protection	
Refrigerant	Type x original charge			R410A x 4.8kg	
	Control			Electronic Expansion Valve	
Net weight			kg(lbs)	125(276)	
Heat exchanger				Cross Fin and Copper tube	
HIC circuit (HIC: Heat Inter-Changer)				HIC circuit	
Defrosting method				Reversed refrigerant circuit	
Drawing	External			BK01N339	
	Wiring			BH78B814	
Standard attachment	Document			Installation Manual	
	Accessory			Grounded lead wire x 2	
Optional parts				Joint: CMY-Y62-G-E Header: CMY-Y64/68-G-E Branch box: PAC-MK31/51BC(B)	
Remarks				* Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. * Due to continuing improvement, above specifications may be subject to change without notice.	

Notes:

*1.Nominal cooling conditions (subject to ISO 15042)
Indoor: 27degCDB/19degCWB (81degFDB/66degFWB), Outdoor: 35degCDB (95degFDB)
Pipe length: 7.5m (24-9/16ft.), Level difference: 0m (0ft.)

*2.10 to 46 ºC D.B. (50 to 115 ºF D.B.): in case of connecting PKFY-P15/P20/P25VBM, PFFY-P20/P25/P32VKM, PFFY-P20/P25/P32VLE(R)M type indoor unit and M series indoor unit.

*3.Nominal heating conditions (subject to ISO 15042)
Indoor: 20degCDB (68degFDB), Outdoor: 7degCDB/6degCWB (45degFDB/43degFWB)
Pipe length: 7.5m (24-9/16ft.), Level difference: 0m (0ft.)

*4.Up to P100 when connecting via branch box

*5.Up to 11 units when connecting via 2 branch boxes

Unit converter

kcal/h	=kW x 860
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.

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Model			PUMY-P200YKM(-BS)	
Power source			3-phase 380-400-415V 50Hz	
Cooling capacity *1		kW	22.4	
(Nominal) *1		kcal/h	19,300	
*1		BTU/h	76,400	
	Power input	kW	6.05	
	Current input	A	9.88-9.39-9.05	
	EER	kW/kW	3.70	
Temp. range of	Indoor	W.B.	15.0~24.0°C(59~75°F)	
cooling	Outdoor *2	D.B.	-5.0~46.0°C(23~115°F)	
Heating capacity *3		kW	25.0	
(Nominal) *3		kcal/h	21,500	
*3		BTU/h	85,300	
	Power input	kW	5.84	
	Current input	A	9.54-9.06-8.74	
	COP	kW/kW	4.28	
Temp. range of	Indoor	D.B.	15.0~27.0°C(59~81°F)	
heating	Outdoor	W.B.	-20.0~15.0°C(-4~59°F)	
Indoor unit	Total capacity		50~130% of outdoor unit capacity (kW)	
connectable	Model/Quantity		P15~P250/12	
Sound pressure level (measured in anechoic room)		dB <A>	56/61	
Refrigerant	Liquid pipe *4	mm(in.)	9.52(3/8) Flare	
piping diameter	Gas pipe	mm(in.)	19.05(3/4) Flare	
FAN	Type x Quantity		Propeller fan x 2	
	Air flow rate	m^3/min	139.0	
		L/s	2,316	
		cfm	4,908	
	Control, Driving mechanism		DC control	
	Motor output	kW	0.20 + 0.20	
	External static press.		0 Pa (0 mmH_2O)	
Compressor	Type x Quantity		Scroll hermetic compressor x 1	
	Manufacture		Siam Compressor Industry Co.,Ltd.	
	Starting method		Inverter	
	Motor output	kW	5.3	
	Case heater	kW	0	
	Lubricant		FV50S (2.3litter)	
External finish			Galvanized Steel Sheets Munsell No. 3Y 7.8/1.1	
External dimension HxWxD		mm	1,338 x 1,050 x 330 (+25)	
		in.	52-11/16 x 41-11/32 x 13 (+1)	
Protection devices	High pressure protection		High pressure switch	
	Inverter circuit (COMP./FAN)		Overcurrent detection, Overheat detection (Heatsink thermistor)	
	Compressor		Compressor thermistor, Over current detection	
	Fan motor		Overheating, Voltage protection	
Refrigerant	Type x original charge		R410A x 7.3kg	
	Control		Electronic Expansion Valve	
Net weight		kg(lbs)	138(305)	
Heat exchanger			Cross Fin and Copper tube	
HIC circuit (HIC: Heat Inter-Changer)			HIC circuit	
Defrosting method			Reversed refrigerant circuit	
Drawing	External		BK01N339	
	Wiring		BH79J199	
Standard attachment	Document		Installation Manual	
	Accessory		Grounded lead wire x 2	
Optional parts			Joint: CMY-Y62-G-E Header: CMY-Y64/68-G-E	
Remarks			* In case of connecting Fresh air intake type indoor unit PEFY-P-VHM-E-F, only one indoor unit can be connected with one PUMY. * Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. * Due to continuing improvement, above specifications may be subject to change without notice.	

Notes:

*1.Nominal cooling conditions (subject to ISO 15042)
Indoor: 27 °CD.B./19 °CW.B. (81 °FD.B./66 °FW.B.), Outdoor: 35 °CD.B. (95 °FD.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)

*2.10 to 46 ºC D.B. (50 to 115 ºF D.B.): in case of connecting PKFY-P15/P20/P25VBM, PFFY-P20/P25/P32VKM, PFFY-P20/P25/P32VLE(R)M type indoor unit and M series indoor unit.

*3.Nominal heating conditions (subject to ISO 15042)
Indoor: 20 °CD.B. (68°FD.B.), Outdoor: 7 °CD.B./6 °CW.B. (45 °FD.B./43 °FW.B.)
Pipe length: 7.5 m (24-9/16 ft.), Level difference: 0 m (0 ft.)

*4.Liquid pipe diameter: 12.7mm in case of farthest piping length is longer than 60m

Unit converter

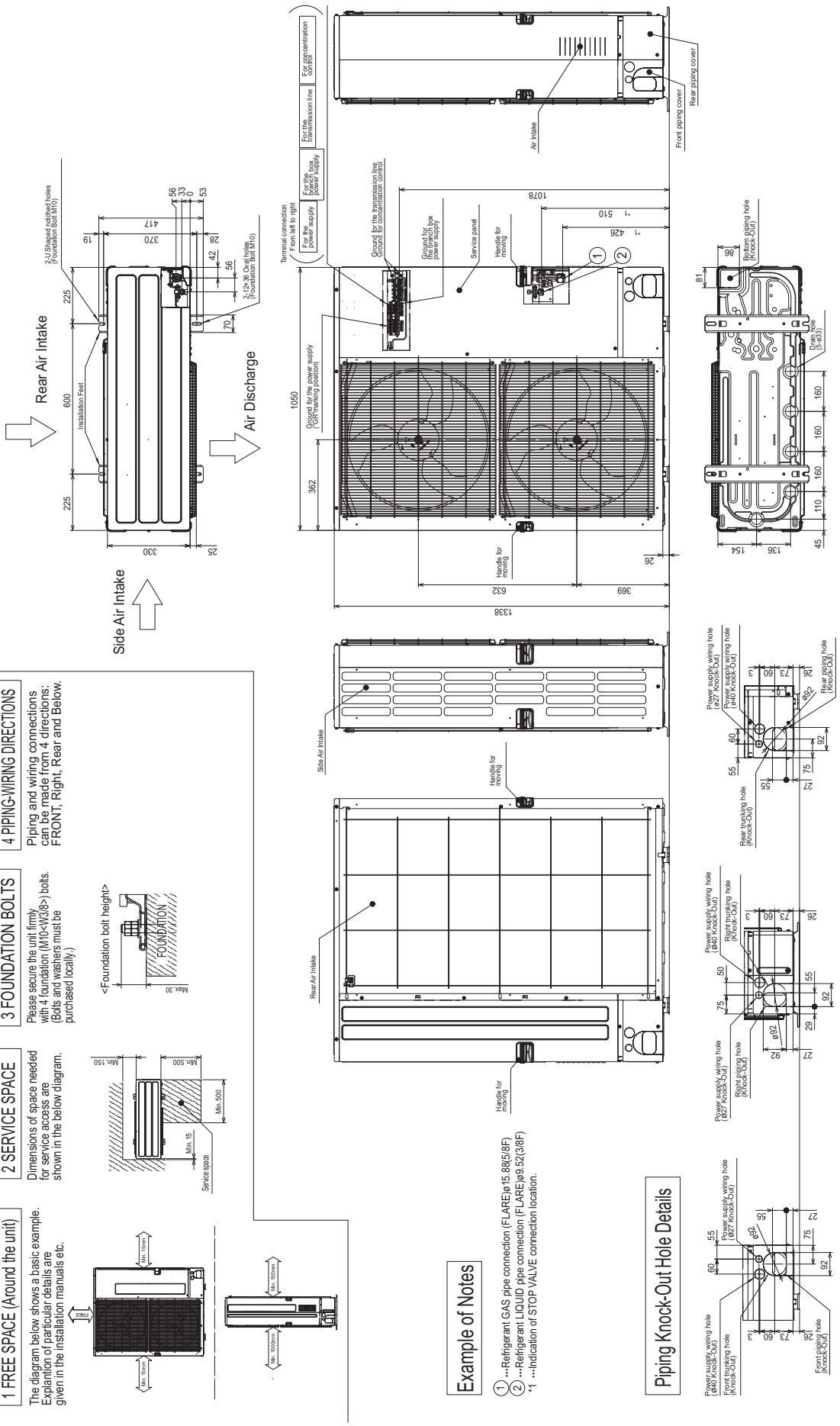
kcal/h	=kW x 860
BTU/h	=kW x 3,412
cfm	=m^3/min x 35.31
lbs	=kg/0.4536

*Above specification data is subject to rounding variation.

S

PUMY-P112,125,140VKM2(-BS)

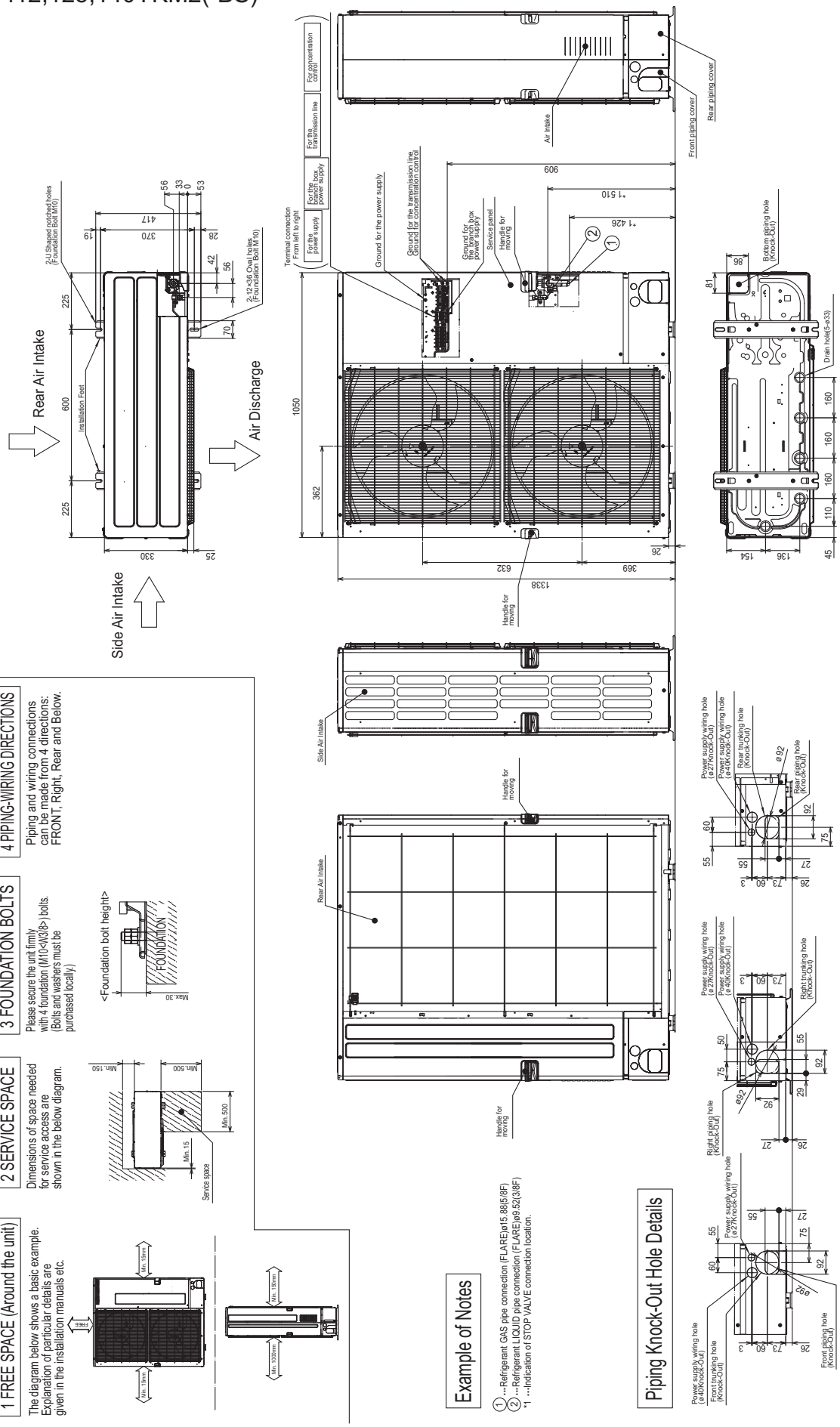
Unit: mm



S

PUMY-P112,125,140YKM2(-BS)

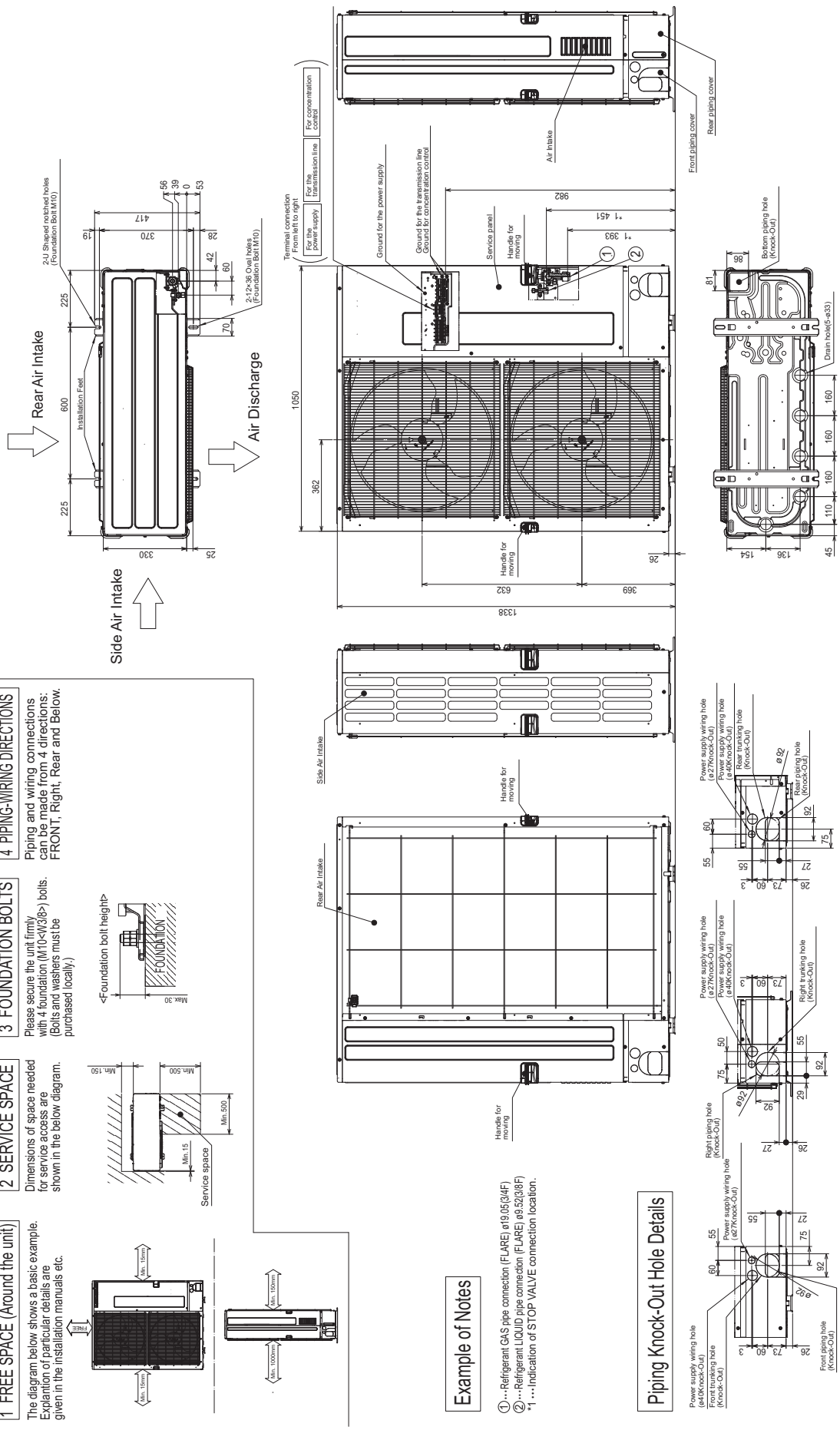
Unit: mm



S

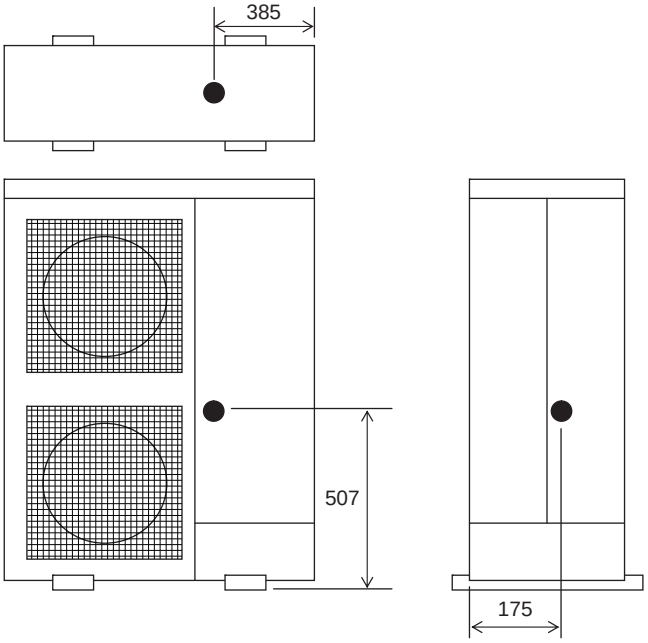
PUMY-P200YKM(-BS)

Unit: mm

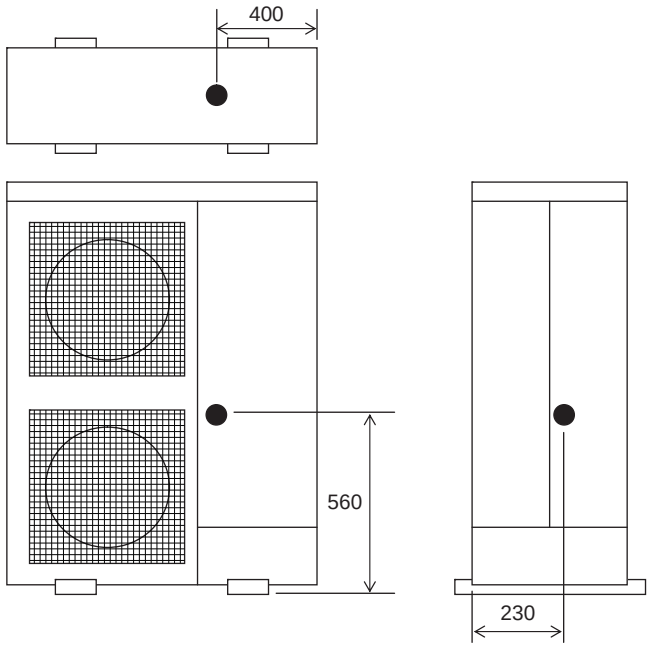


S

PUMY-P112,125,140VKM2(-BS)
PUMY-P112,125,140YKM2(-BS)



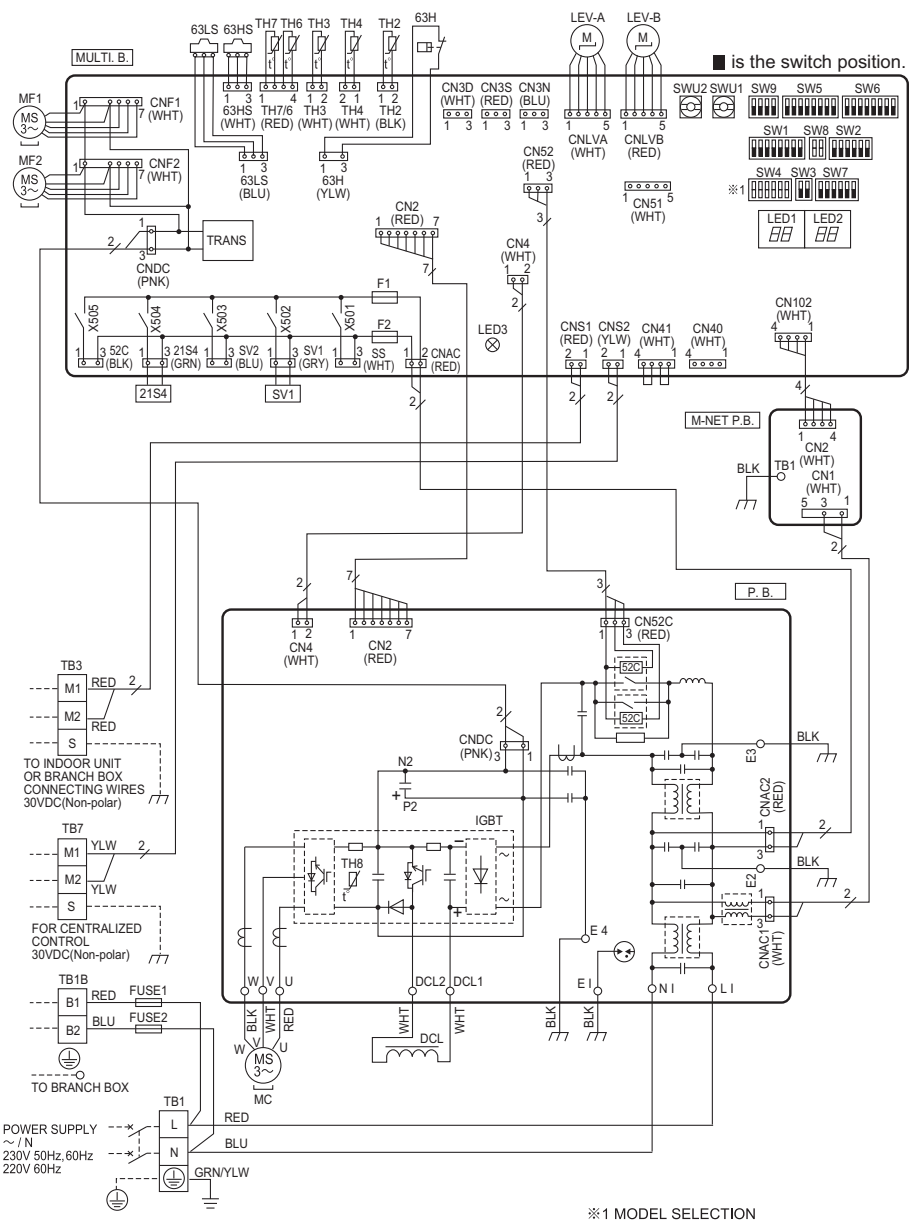
PUMY-P200YKM(-BS)



S

PUMY-P112, 125, 140VKM2(-BS)

SYMBOL	NAME
TB1	Terminal Block <Power Supply>
TB1B	Terminal Block <Branch Box>
TB3	Terminal Block <Indoor/Outdoor, Branch Box/Outdoor Transmission Line>
TB7	Terminal Block <Centralized Control Transmission Line>
FUSE1,FUSE2	Fuse <T20AL250V>
MC	Motor for Compressor
MF1,MF2	Fan Motor
21S4	Solenoid Valve Coil<Four-Way Valve>
63H	High Pressure Switch
63HS	High Pressure Sensor
63LS	Low Pressure Sensor
SV1	Solenoid Valve Coil<Bypass Valve>
TH2	Thermistor<Hic Pipe>
TH3	Thermistor<Outdoor Liquid Pipe>
TH4	Thermistor<Compressor>
TH6	Thermistor<Suction Pipe>
TH7	Thermistor<Ambient>
TH8	Thermistor<Heat Sink>
LEV-A,LEV-B	Linear Expansion Valve
DCL	Reactor
P.B.	Power Circuit Board
U/V/W	Connection Terminal<U/V/W-Phase>
LI	Connection Terminal<L-Phase>
NI	Connection Terminal<N-Phase>
DCL1,DCL2	Connection Terminal<Reactor>
IGBT	Power Module
EI,E2,E3,E4	ConnectionTerminal<Electrical Parts Box>
MULTI.B.	Multi Controller Circuit Board
SW1	Switch<Display Selection>
SW2	Switch<Function Selection>
SW3	Switch<Test Run>
SW4	Switch<Model Selection>
SW5	Switch<Function Selection>
SW6	Switch<Function Selection>
SW7	Switch<Function Selection>
SW8	Switch<Model Selection>
SW9	Switch<Function Selection>
SWU1	Switch<Unit Address Selection, ones digit>
SWU2	Switch<Unit Address Selection, tens digit>
CNS1	Connector<Indoor/Outdoor, Branch Box/ Outdoor Transmission Line>
CNS2	Connector<Centralized Control Transmission Line>
SS	Connector<Connection for Option>
CN3D	Connector<Connection for Option>
CN3S	Connector<Connection for Option>
CN3N	Connector<Connection for Option>
CN51	Connector<Connection for Option>
LED1,LED2	LED<Operation Inspection Display>
LED3	LED<Power Supply to Main Microcomputer>
F1,F2	Fuse<T6.3AL250V>
X501～505	Relay
M-NET P.B.	M-NET Power Circuit Board
TB1	ConnectionTerminal<Electrical Parts Box>



Cautions when Servicing

- ⚠ WARNING: When the main supply is turned off, the voltage [340 V] in the main capacitor will drop to 20 V in approx. 2 minutes (input voltage: 230 V). When servicing, make sure that LED1, LED2 on the outdoor multi controller circuit board goes out, and then wait for at least 1 minute.
- Components other than the outdoor circuit boards may be faulty: Check and take corrective action, referring to the service manual. Do not replace the outdoor circuit boards without checking.

※1 MODEL SELECTION
The black square(■)indicates a switch position.

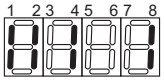
MODELS	SW4	SW8
PUMY-P112VKM2	ON OFF 1 2 3 4 5 6	ON OFF 1 2
PUMY-P125VKM2	ON OFF 1 2 3 4 5 6	ON OFF 1 2
PUMY-P140VKM2	ON OFF 1 2 3 4 5 6	ON OFF 1 2

NOTES:
1.Refer to the wiring diagrams of the indoor units for details on wiring of each indoor unit.
2.Self-diagnosis function
The indoor and outdoor units can be diagnosed automatically using the self-diagnosis switch (SW1) and LED indication (LED1, LED2) found on the outdoor multi controller circuit board.
LED indication : Set all contacts of SW1 to OFF.

- During normal operation
The LED indicates the drive state of outdoor unit.

Bit	1	2	3	4	5	6	7	8
Indication	Compressor operated	52C	21S4	SV1	(SV2)	—	—	Always lit

[Example]
When the compressor and SV1 are on during cooling operation.

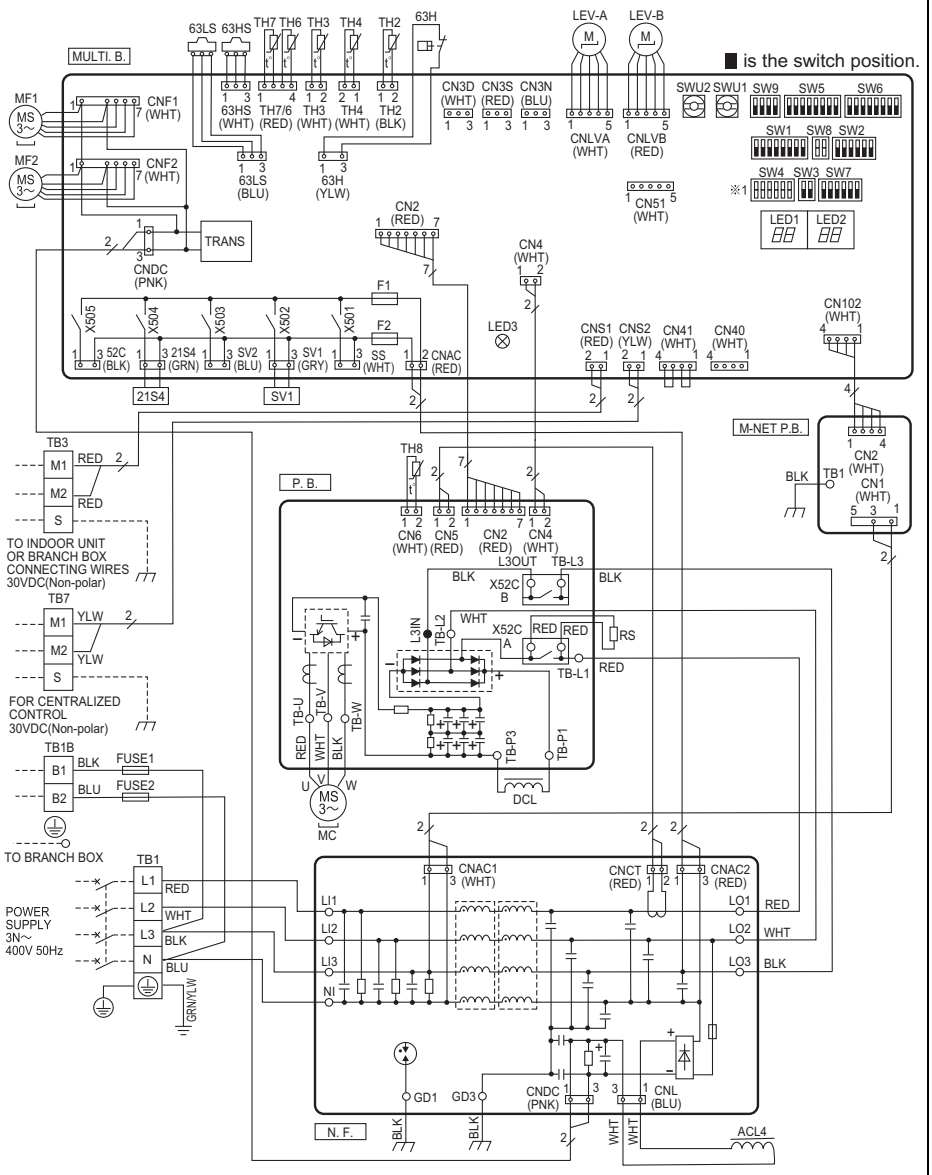


- When fault requiring inspection has occurred
The LED alternately indicates the inspection code and the address of the unit in which the fault has occurred.

S

PUMY-P112, 125, 140YKM2(-BS)

SYMBOL	NAME
TB1	Terminal Block<Power Supply>
TB1B	Terminal Block<Branch Box>
TB3	Terminal Block<Indoor/Outdoor, Branch Box/Outdoor Transmission Line>
TB7	Terminal Block <Centralized Control Transmission Line>
FUSE1,FUSE2	Fuse<T20AL250V>
MC	Motor for Compressor
MF1,MF2	Fan Motor
21S4	Solenoid Valve Coil<Four-Way Valve>
63H	High Pressure Switch
63HS	High Pressure Sensor
63LS	Low Pressure Sensor
SV1	Solenoid Valve Coil<Bypass Valve>
TH2	Thermistor<Hic Pipe>
TH3	Thermistor<Outdoor Liquid Pipe>
TH4	Thermistor<Compressor>
TH6	Thermistor<Suction Pipe>
TH7	Thermistor<Ambient>
TH8	Thermistor<Heat Sink>
RS	Rush Current Protect Resistor
LEV-A,LEV-B	Linear Expansion Valve
ACL4	Reactor
DCL	Reactor
P.B.	Power Circuit Board
TB-U/V/W	Connection Terminal<U/V/W-Phase>
TB-L1/L2/L3	Connection Terminal<L1/L2/L3-Power Supply>
TB-P1/P3	Connection Terminal
X52CA/B	52C Relay
N.F.	Noise Filter Circuit Board
LO1/LO2/LO3	Connection Terminal<L1/L2/L3-Power Supply>
LI1/LI2/LI3/NI	Connection Terminal<L1/L2/L3-Power Supply>
GD1,GD3	ConnectionTerminal<Electrical Parts Box>
MULTI.B.	Multi Controller Circuit Board
SW1	Switch<Display Selection>
SW2	Switch<Function Selection>
SW3	Switch<Test Run>
SW4	Switch<Model Selection>
SW5	Switch<Function Selection>
SW6	Switch<Function Selection>
SW7	Switch<Function Selection>
SW8	Switch<Model Selection>
SW9	Switch<Function Selection>
SWU1	Switch<Unit Address Selection, ones digit>
SWU2	Switch<Unit Address Selection, tens digit>
CNS1	Connector<Indoor/Outdoor, Branch Box/ Outdoor Transmission Line>
CNS2	Connector<Centralized Control Transmission Line>
SS	Connector<Connection for Option>
CN3D	Connector<Connection for Option>
CN3S	Connector<Connection for Option>
CN3N	Connector<Connection for Option>
CN51	Connector<Connection for Option>
LED1,LED2	LED<Operation Inspection Display>
LED3	LED<Power Supply to Main Microcomputer>
F1,F2	Fuse<T6.3AL250V>
X501～505	Relay
M-NET P.B.	M-NET Power Circuit Board
TB1	ConnectionTerminal<Electrical Parts Box>



Cautions when Servicing

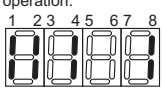
- ⚠ WARNING: When the main supply is turned off, the voltage [570 V] in the main capacitor will drop to 20 V in approx. 5 minutes (input voltage: 400 V). When servicing, make sure that LED1, LED2 on the outdoor multi controller circuit board goes out, and then wait for at least 5 minutes.
- Components other than the outdoor circuit boards may be faulty: Check and take corrective action, referring to the service manual. Do not replace the outdoor circuit boards without checking.

NOTES:
1.Refer to the wiring diagrams of the indoor units for details on wiring of each indoor unit.
2.Self-diagnosis function
The indoor and outdoor units can be diagnosed automatically using the self-diagnosis switch (SW1) and LED indication (LED1, LED2) found on the outdoor multi controller circuit board.
LED indication : Set all contacts of SW1 to OFF.
- During normal operation
The LED indicates the drive state of outdoor unit.

Bit	1	2	3	4	5	6	7	8
Indication	Compressor operated	52C	21S4	SV1	(SV2)	—	—	Always lit

- When fault requiring inspection has occurred
The LED alternately indicates the inspection code and the address of the unit in which the fault has occurred.

[Example]
When the compressor and SV1 are on during cooling operation.



※1 MODEL SELECTION
The black square(■)indicates a switch position.

MODELS	SW4	SW8
PUMY-P112YKM2	ON OFF 1 2 3 4 5 6	ON OFF 1 2
PUMY-P125YKM2	ON OFF 1 2 3 4 5 6	ON OFF 1 2
PUMY-P140YKM2	ON OFF 1 2 3 4 5 6	ON OFF 1 2

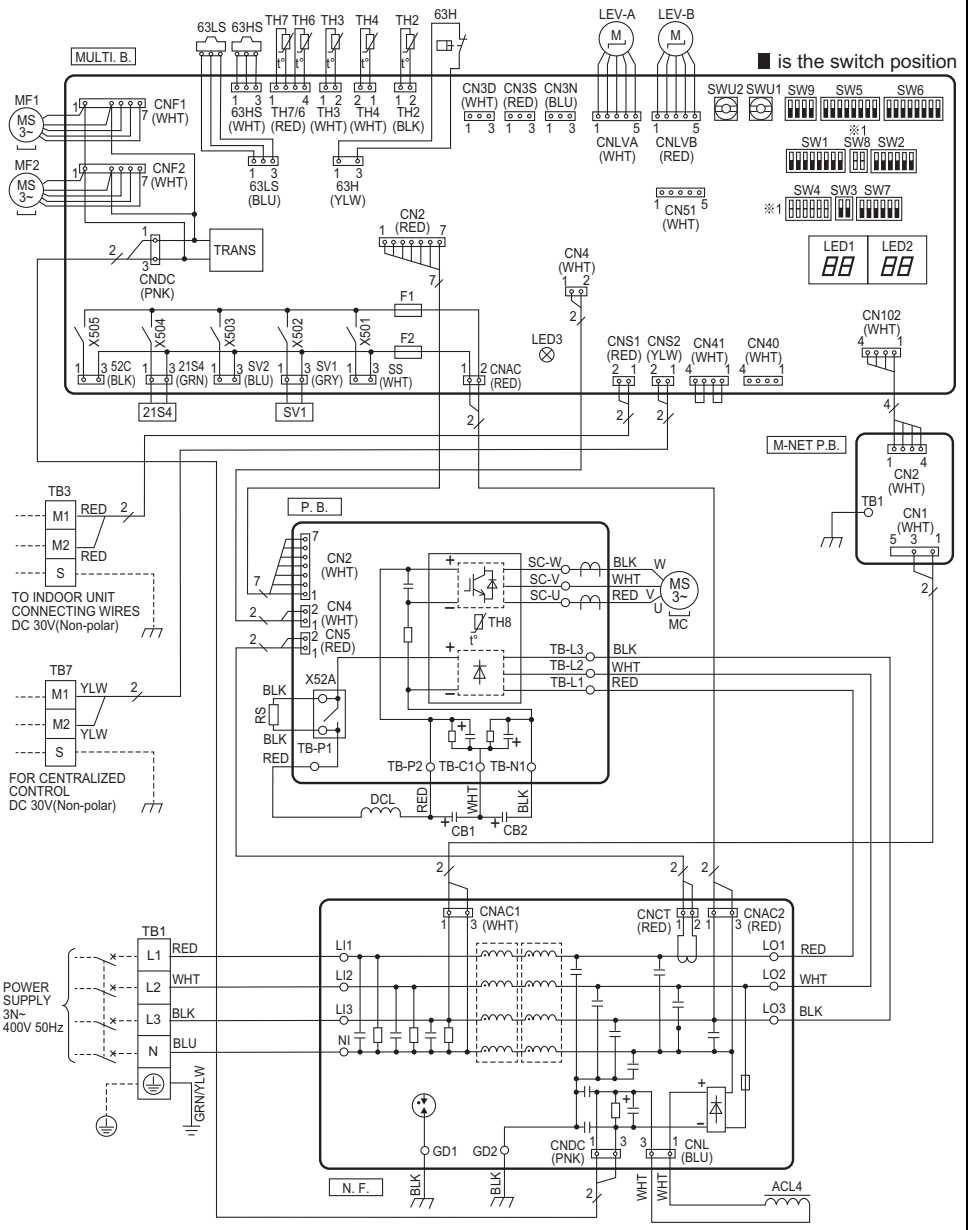
S

PUMY-P200YKM(-BS)

SYMBOL	NAME
TB1	Terminal Block <Power Supply>
TB3	Terminal Block <Indoor/Outdoor Transmission Line>
TB7	Terminal Block <Centralized Control Transmission Line>
MC	Motor For Compressor
MF1,MF2	Fan Motor
21S4	Solenoid Valve<Four-Way Valve>
63H	High Pressure Switch
63HS	High Pressure Sensor
63LS	Low Pressure Sensor
SV1	Solenoid Valve<Bypass valve>
TH2	Thermistor<Hic Pipe>
TH3	Thermistor<Outdoor Liquid Pipe>
TH4	Thermistor<Compressor>
TH6	Thermistor<Suction Pipe>
TH7	Thermistor<Ambient>
TH8	Thermistor<Heat Sink>
CB1,CB2	Main Smoothing Capacitor
RS	Rush Current Protect Resistor
LEV-A,LEV-B	Electronic Expansion Valve
ACL4	Reactor
DCL	Reactor
P.B.	Power Circuit Board
TB-U/V/W	Connection Terminal<U/V/W-Phase>
TB-L1/L2/L3	Connection Terminal<L1/L2/L3-Power Supply>
TB-P1/P2/C1/N1	Connection Terminal
SC-W/V/U	Connection Terminal
X52A	52C Relay
N.F.	Noise Filter Circuit Board
LO1/LO2/LO3	Connection Terminal<L1/L2/L3-Power Supply>
LI1/LI2/LI3/NI	Connection Terminal<L1/L2/L3-Power Supply>
GD1,GD2	ConnectionTerminal<Electrical Parts Box>
MULTI.B.	Multi Controller Circuit Board
SW1	Switch<Display Selection>
SW2	Switch<Function Selection>
SW3	Switch<Test Run>
SW4	Switch<Model Selection>
SW5	Switch<Function Selection>
SW6	Switch<Function Selection>
SW7	Switch<Function Selection>
SW8	Switch<Model Selection>
SW9	Switch<Function Selection>
SWU1	Switch<Unit Address Selection, unit digit>
SWU2	Switch<Unit Address Selection, tens digit>
CNS1	Connector<Indoor/Outdoor Transmission Line>
CNS2	Connector<Centralized Control Transmission Line>
SS	Connector<Connection For Option>
CN3D	Connector<Connection For Option>
CN3S	Connector<Connection For Option>
CN3N	Connector<Connection For Option>
CN51	Connector<Connection For Option>
LED1,LED2	LED<Operation Inspection Display>
LED3	LED<Power Supply to Main Microcomputer>
F1,F2	Fuse<T6,3AL250V>
X501~505	Relay
M-NET P.B.	M-NET Power Circuit Board
TB1	ConnectionTerminal<Electrical Parts Box>

*1 MODEL SELECTION
The black square (■) indicates a switch position.

MODELS	SW4	SW8
PUMY-P200YKM	ON OFF 1 2 3 4 5 6	ON OFF 1 2



Cautions when Servicing

- ⚠ WARNING: When the main supply is turned off, the voltage [570 V] in the main capacitor will drop to 20 V in approx. 5 minutes (input voltage: 400 V). When servicing, make sure that LED1, LED2 on the outdoor circuit board goes out, and then wait for at least 5 minute.
- Components other than the outdoor board may be faulty: Check and take corrective action, referring to the service manual. Do not replace the outdoor board without checking.

NOTES:

1.Refer to the wiring diagrams of the indoor units for details on wiring of each indoor unit.

Self-diagnosis function

The indoor and outdoor units can be diagnosed automatically using the self-diagnosis switch (SW1) and LED1, LED2 (LED indication) found on the multi-controller of the outdoor unit.

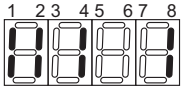
LED indication : Set all contacts of SW1 to OFF.

● During normal operation

The LED indicates the drive state of the controller in the outdoor unit.

Bit	1	2	3	4	5	6	7	8
Indication	Compressor operated	52C	21S4	SV1	(SV2)	–	–	Always lit

[Example]
When the compressor and SV1 are turned during cooling operation.

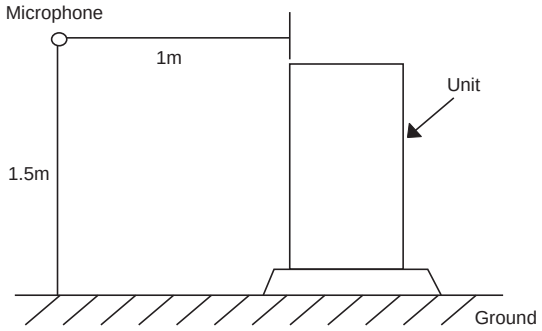


● When fault requiring inspection has occurred

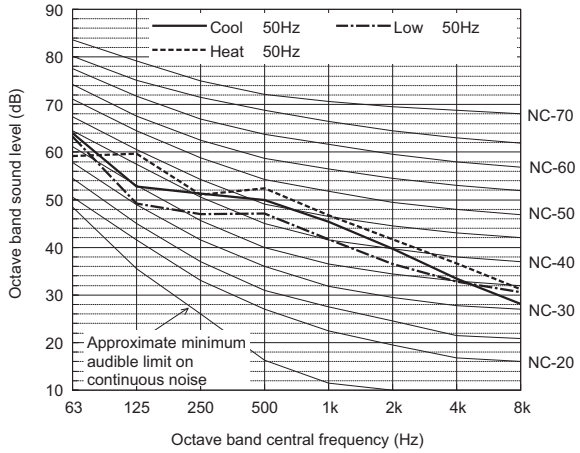
The LED alternately indicates the inspection code and the location of the unit in which the fault has occurred.

S

Measurement condition
PUMY-P112, 125, 140VKM2
PUMY-P112, 125, 140YKM2



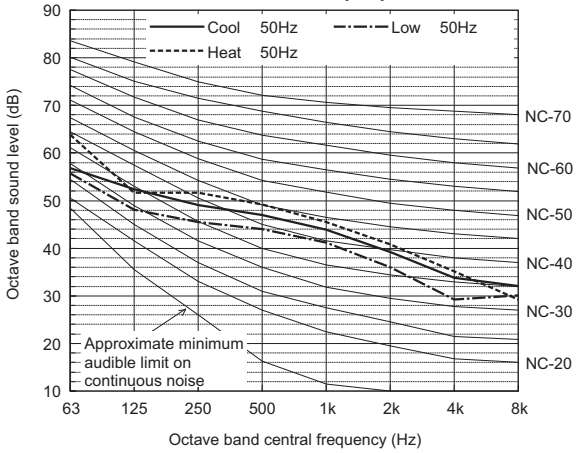
Sound level of PUMY-P140VKM2,YKM2(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	50Hz	64.0	52.8	51.3	50.0	45.4	39.7	33.5	28.2	51.0
Standard Heating	50Hz	59.2	59.7	51.1	52.4	46.8	41.7	36.7	31.2	53.0
Low noise mode	50Hz	63.2	49.2	47.0	47.1	41.6	36.5	32.8	30.6	48.0

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.

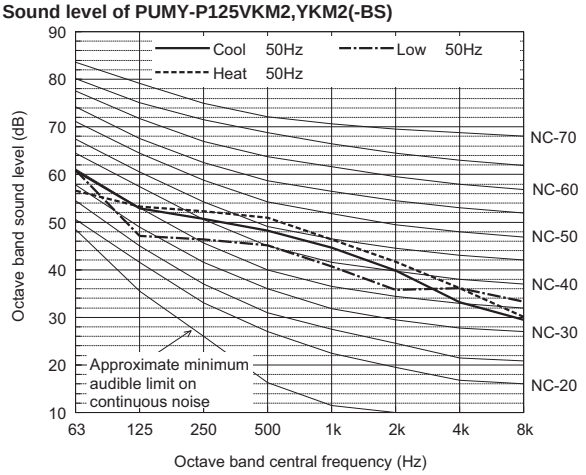
Sound level of PUMY-P112VKM2,YKM2(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	50Hz	56.9	52.4	49.0	46.9	44.0	39.2	33.7	32.1	49.0
Standard Heating	50Hz	63.9	51.6	51.6	49.2	45.5	40.8	35.1	29.3	51.0
Low noise mode	50Hz	55.8	48.1	45.5	44.0	41.2	36.0	29.2	30.0	46.0

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 level of PUMY-P125VKM2,YKM2(-BS)

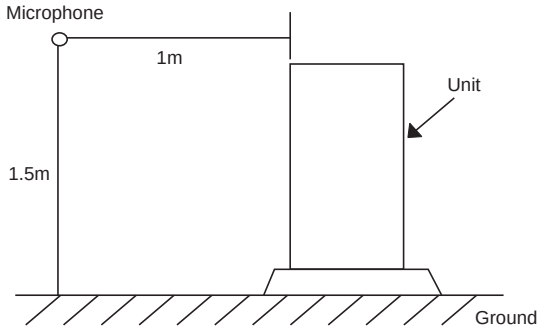


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	50Hz	60.8	52.8	50.6	48.2	44.7	39.9	33.2	29.5	50.0
Standard Heating	50Hz	56.6	53.3	52.2	50.9	46.4	41.7	36.2	30.1	52.0
Low noise mode	50Hz	60.9	47.1	46.3	45.2	40.7	35.7	36.1	33.4	47.0

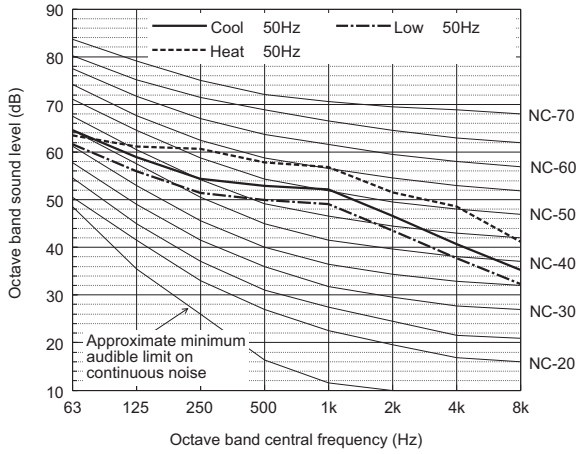
When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

S

Measurement condition
PUMY-P200YKM



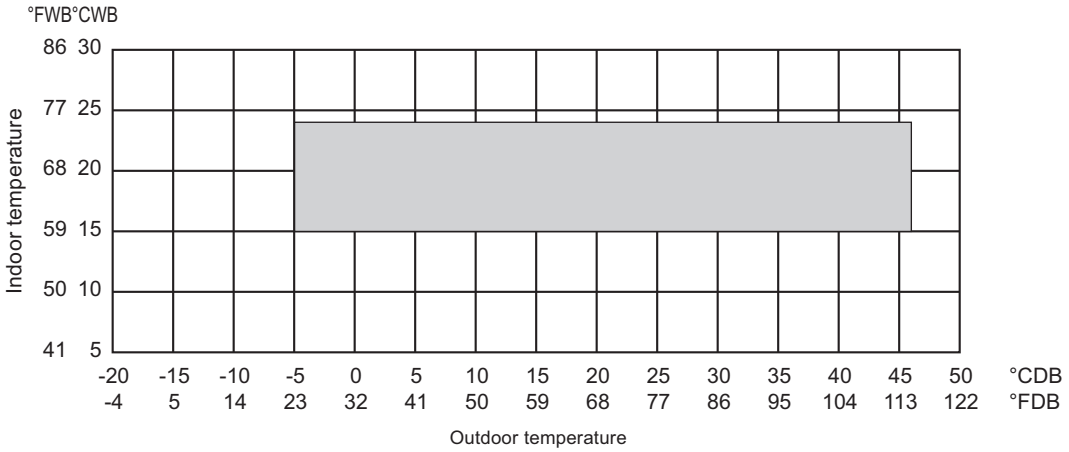
Sound level of PUMY-P200YKM(-BS)



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard Cooling	50Hz	64.6	58.9	54.4	53.0	52.1	46.6	40.7	35.3	56.0
Standard Heating	50Hz	63.4	61.2	60.7	57.8	56.9	51.6	48.6	41.1	61.0
Low noise mode (Cooling)	50Hz	61.6	55.9	51.4	50.0	49.1	43.6	37.7	32.3	53.0

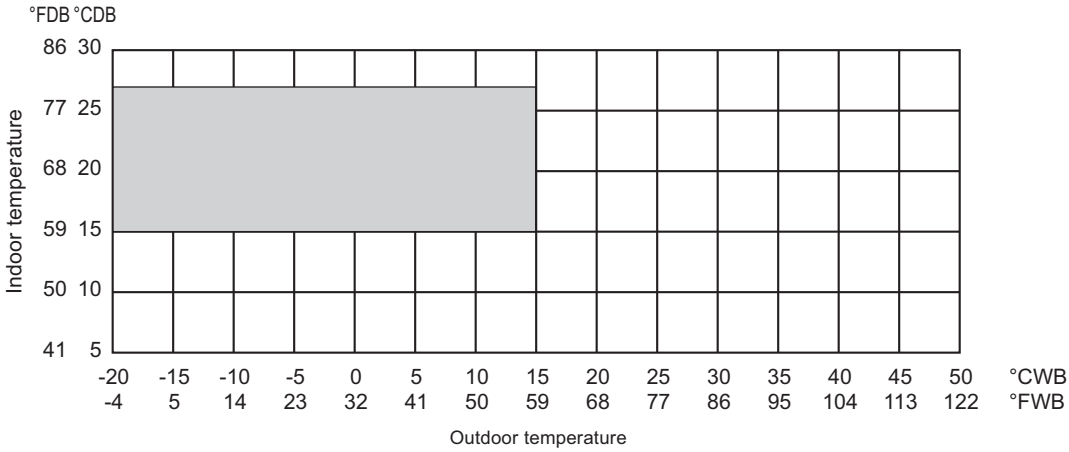
When Low noise mode is set,the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

• **Cooling**



* 10 to 46°CDB (50 to 115°FDB): in case of connecting PKFY-P15/P20/P25VBM, PFFY-P20/P25/P32VKM, PFFY-P20/P25/P32VLE(R)M type indoor unit and M series indoor unit.

• **Heating**

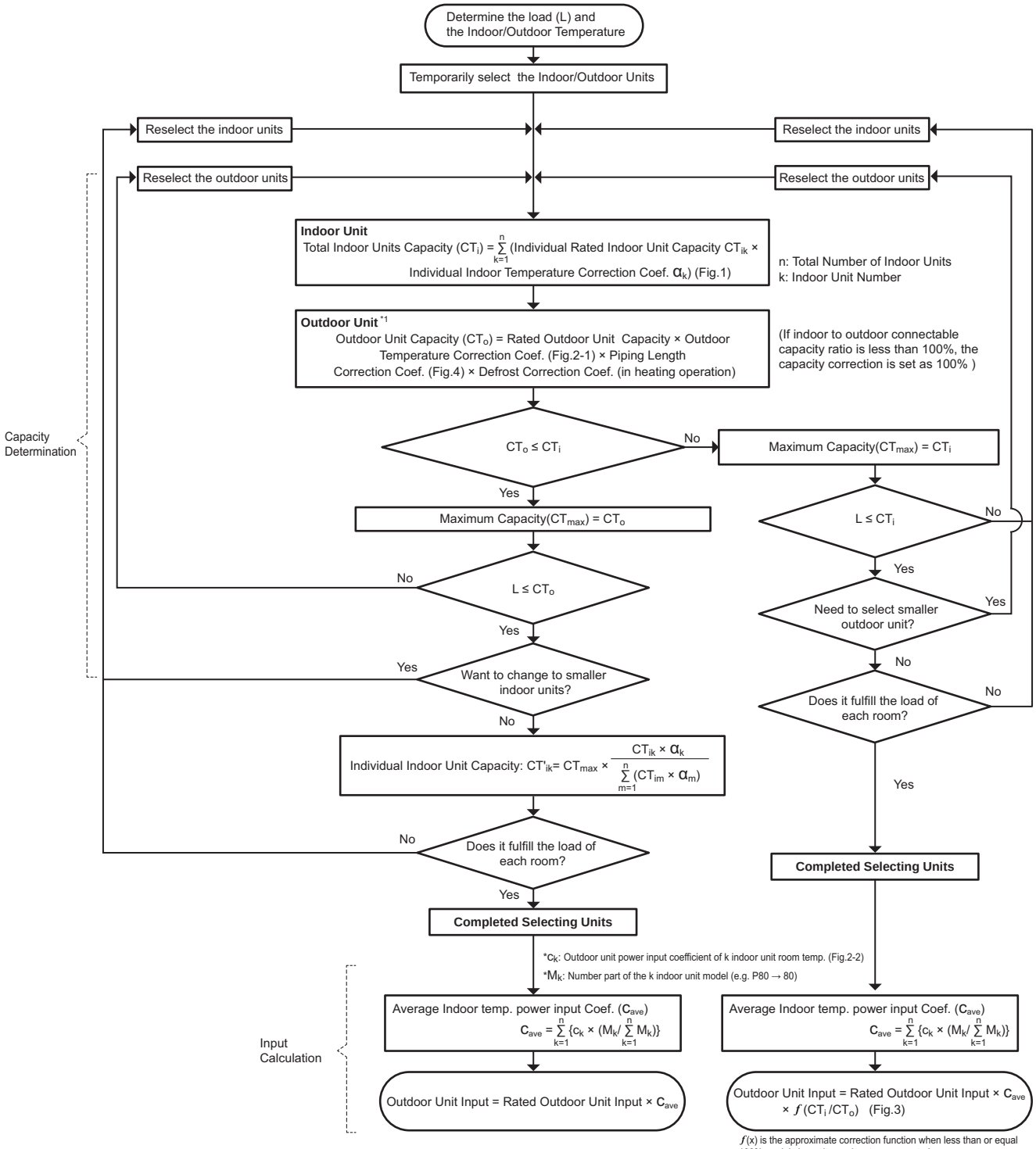


7-1. Selection of Cooling/Heating Units

S

How to determine the capacity when less than or equal 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.



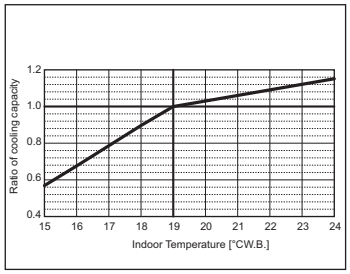


Fig.1 Indoor unit temperature correction

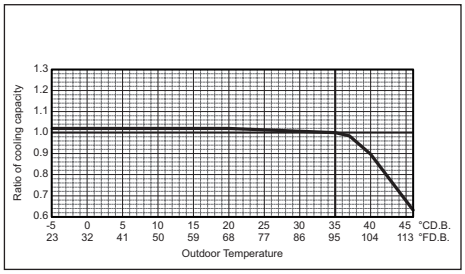


Fig.2-1 Outdoor unit temperature correction (capacity)

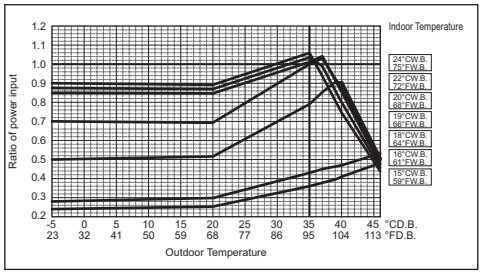


Fig.2-2 Outdoor unit temperature correction (power input)

*1 When the indoor unit sizes from P100 to P140 or total capacity indoor units from P81 to P140 are connected to only 1 port on the BC controller in the R2 system, the cooling capacity of the indoor unit should be multiplied by a correction factor of 0.97.

S

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.

Determine the load (L) and the Indoor/Outdoor Temperature

Temporarily select the indoor/outdoor units

Reselect the indoor units / Reselect the outdoor units

Indoor Unit
Total Indoor Units Capacity (CT_i) = $\sum_{k=1}^{n}$ (Individual Rated Indoor Unit Capacity CT_{ik} × Individual Indoor Temperature Correction Coef. α_k) (Fig.1)

n: Total Number of Indoor Units
k: Indoor Unit Number

Outdoor Unit *1
Outdoor Unit Capacity (CT_o) = Rated Outdoor Unit Capacity × G (Model Size Ratio) × Outdoor Temperature Correction Coef. (Fig.2-1) × Piping Length Correction Coef. (Fig.4) × Defrost Correction Coef. (in heating)

G (x) is the approximate correction function when greater than 100% model size units are connected (Fig.3)

$CT_o \le CT_i$?
- No → Maximum Capacity(CT_{max}) = CT_i
- Yes → Maximum Capacity(CT_{max}) = CT_o

$L \le CT_o$?
- No → Reselect the outdoor units
- Yes → Want to change to smaller indoor units?
  - Yes → Reselect the outdoor units
  - No → Individual Indoor Unit Capacity: $CT'_{ik} = CT_{max} \times \frac{CT_{ik} \times \alpha_k}{\sum_{m=1}^{n} (CT_{im} \times \alpha_m)}$

Does it fulfill the load of each room?
- No → Reselect the outdoor units
- Yes → **Completed Selecting Units**

$L \le CT_i$?
- No → Reselect the indoor units
- Yes → Need to select smaller outdoor unit?
  - Yes → Reselect the indoor units
  - No → Does it fulfill the load of each room?
    - No → Reselect the indoor units
    - Yes → **Completed Selecting Units**

Rated Outdoor Unit Capacity < Total Indoor Units Capacity ?
- No → Outdoor Unit Input = Rated Outdoor Unit Input × Outdoor Temperature Correction Coef. (Fig.2-2) × f(CT_i / Rated Outdoor Capacity) (Fig.3)

f(x) is the approximate correction function when less than or equal 100% model size units are input as connected.

- Yes → Average Indoor temp. power input Coef. (C_{ave}) $= \sum_{k=1}^{n} \{c_k \times (M_k / \sum_{k=1}^{n} M_k)\}$
  → Outdoor Unit Input = Rated Outdoor Unit Input × C_{ave} × F (CT_i /Rated Outdoor Capacity) (Fig.3)

*c_k: Outdoor unit power input coefficient of k indoor unit room temp. (Fig.2-2)
*M_k: Number part of the k indoor unit model (e.g. P80 → 80)

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

Outdoor Unit Input = Rated Outdoor Unit Input × C_{ave} × F (Model Size Ratio) (Fig.3)

F(x) is the approximate correction function when greater than 100% model size units are input as connected.

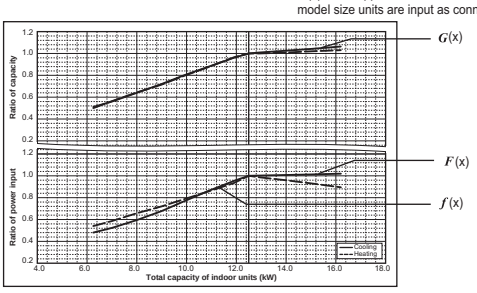


Fig.3 Correction by total indoor

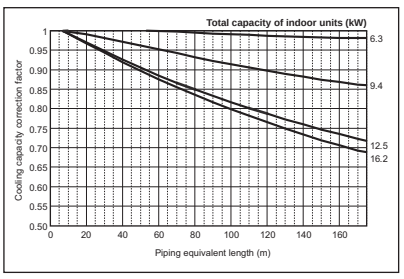


Fig.4 Correction of refrigerant piping length

*1 When the indoor unit sizes from P100 to P140 or total capacity indoor units from P81 to P140 are connected to only 1 port on the BC controller in the R2 system, the cooling capacity of the indoor unit should be multiplied by a correction factor of 0.97.

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<Cooling>

Design Condition	
Outdoor Design Dry Bulb Temperature	**37 ºC**
Total Cooling Load	**11.5 kW**
Room1	
Indoor Design Dry Bulb Temperature	**27 ºC**
Indoor Design Wet Bulb Temperature	**20 ºC**
Cooling Load	**2.0 kW**
Room2	
Indoor Design Dry Bulb Temperature	**24 ºC**
Indoor Design Wet Bulb Temperature	**18 ºC**
Cooling Load	**9.5 kW**
<Other>	
Indoor/Outdoor Equivalent Piping Length	**50 m**

1. Cooling Calculation

(1) Temporary Selection of Indoor Units

Room1

PLFY-P25 **2.8 kW (Rated)**

Room2

PEFY-P100 **11.2 kW (Rated)**

(2) Total Indoor Units Capacity

2.8 + 11.2 = 14.0 kW

(3) Selection of Outdoor Unit

The P125 outdoor unit is selected as total indoor units capacity is 14.0 kW

PUMY-P125 **14.0 kW**

(4) Total Indoor Units Capacity Correction Calculation

Room1

Indoor Design Wet Bulb Temperature Correction (20ºC) 1.03 (Refer to Fig.1)

Room2

Indoor Design Wet Bulb Temperature Correction (18ºC) 0.90 (Refer to Fig.1)

Total Indoor Units Capacity (CTi)

CTi = Σ (Indoor Unit Rating × Indoor Design Temperature Correction)

= 2.8 × 1.03 + 11.2 × 0.90

= 12.9 kW

(5) Outdoor Unit Correction Calculation

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

Piping Length Correction (50 m) 0.89 (Refer to Fig.3)

Total Outdoor Unit Capacity (CTo)

CTo = Outdoor Rating × Outdoor Design Temperature Correction × Piping Length Correction

= 14.0 × 0.99 × 0.89

= 12.3 kW

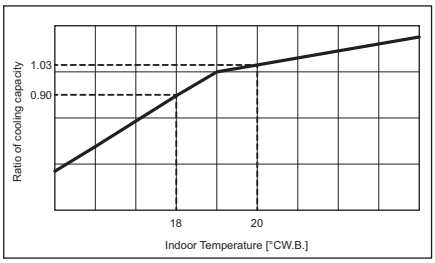

Fig.1 **Indoor unit temperature correction**
To be used to correct indoor unit only

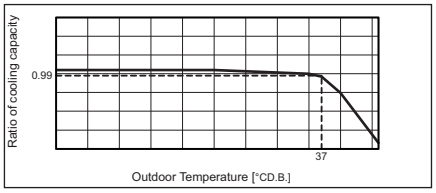

Fig.2 **Outdoor unit temperature correction**
To be used to correct outdoor unit only

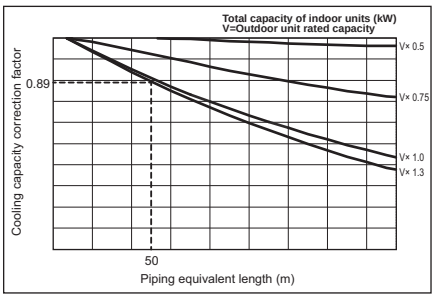

Fig.3 **Correction of refrigerant piping length**

(6) Determination of Maximum System Capacity

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

CTi = 12.9 > CTo = 12.3, thus, select CTo.

CTx = CTo = 12.3 kW

(7) Comparison with Essential Load

Against the essential load 11.5kW, the maximum system capacity is 12.3kW: 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

= 12.3 × (2.8 × 1.03)/(2.8 × 1.03 + 11.2 × 0.90)

= 2.7 kW **OK: fulfills the load 2.0kW**

Room2

Maximum Capacity × Room2 Capacity after the Temperature Correction/(Room1,2Total Capacity after the Temperature Correction)

= 12.3 × (11.2 × 0.90)/(2.8 × 1.03 + 11.2 × 0.90)

= 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	**-3 ºC**
Total Heating Load	**13.0 kW**
Room1	
Indoor Design Dry Bulb Temperature	**20 ºC**
Heating Load	**3.0 kW**
Room2	
Indoor Design Dry Bulb Temperature	**25 ºC**
Heating Load	**10.0 kW**
<Other>	
Indoor/Outdoor Equivalent Piping Length	**50 m**

2. Heating Calculation

(1) Temporary Selection of Indoor Units

Room1

PLFY-P25 **3.2 kW (Rated)**

Room2

PEFY-P100 **12.5 kW (Rated)**

(2) Total Indoor Units Capacity

3.2 + 12.5 = 15.7 kW

(3) Selection of Outdoor Unit

The P125 outdoor unit is selected as total indoor units capacity is 15.7 kW

PUMY-P125 **16.0 kW**

(4) Total Indoor Units Capacity Correction Calculation

Room1

Indoor Design Dry Bulb Temperature Correction (20ºC) 1.0 (Refer to Fig.4)

Room2

Indoor Design Dry Bulb Temperature Correction (25ºC) 0.81 (Refer to Fig.4)

Total Indoor Units Capacity (CTi)

CTi = Σ (Indoor Unit Rating × Indoor Design Temperature Correction)

= 3.2 × 1.0 + 12.5 × 0.81

= 13.3 kW

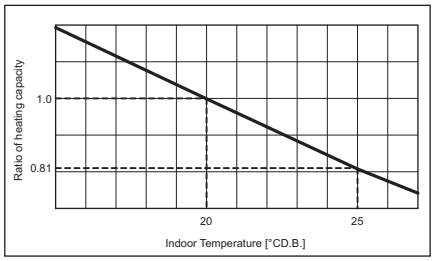

Fig.4 **Indoor unit temperature correction**
To be used to correct indoor unit only

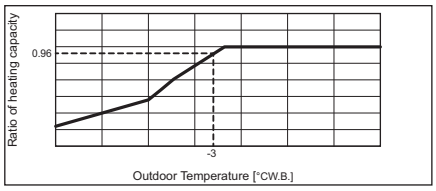

Fig.5 **Outdoor unit temperature correction**
To be used to correct outdoor unit only

(5) Outdoor Unit Correction Calculation

Outdoor Design Wet Bulb Temperature Correction (-3ºC) 0.96 (Refer to Fig.5)

Piping Length Correction (50 m) 0.97 (Refer to Fig.6)

Defrost Correction 0.93 (Refer to Tbl.1)

Total Outdoor Unit Capacity (CTo)

CTo = Outdoor Unit Rating × Outdoor Design Temperature Correction × Piping Length Correction × Defrost Correction

= 16.0 × 0.96 × 0.97 × 0.93

= 13.8 kW

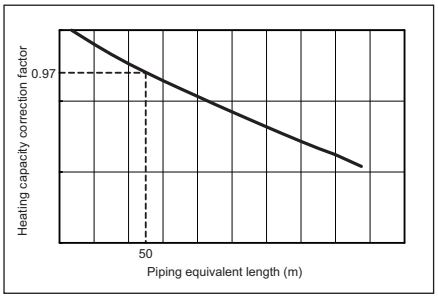

Fig.6 **Correction of refrigerant piping length**

(6) Determination of Maximum System Capacity

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

CTi = 13.3 < CTo = 13.8, thus, select CTi.

CTx = CTi = 13.3 kW

(7) Comparison with Essential Load

Against the essential load 13.0kW, the maximum system capacity is 13.3kW: 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

= 3.2 × 1.0

= 3.2 kW **OK: fulfills the load 3.0kW**

Room2

Indoor Unit Rating × Indoor Design Temperature Correction

= 12.5 × 0.81

= 10.1 kW **OK: fulfills the load 10.0kW**

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

Tbl.1 Table of correction factor at frost and defrost

Outdoor inlet air temp. °C	6	4	2	0	-2	-4	-6	-8	-10	-15	-20
Outdoor inlet air temp. °F	43	39	36	32	28	25	21	18	14	-5	-4
PUMY-P112, 125, 140VKM	1.0	0.98	0.89	0.88	0.89	0.90	0.95	0.95	0.95	0.95	0.95
PUMY-P112, 125, 140YKM	1.0	0.98	0.89	0.88	0.89	0.90	0.95	0.95	0.95	0.95	0.95

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3. Power input of outdoor unit

<Cooling>

(1) Rated power input of outdoor unit **3.46 kW**

(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.)

1.04

Coefficient of the outdoor unit for indoor unit 2 (Outdoor temp. 37 °CD.B., Indoor temp. 18 °CW.B.)

0.85

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. P80 → 80)

= 1.04 × 25/(25 + 100) + 0.85 × 100/(25 + 100)
= 0.89

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

(4) Outdoor power input (PIo)

Maximum System Capacity (CTx) = Total Outdoor unit Capacity (CTo), so use the following formula
PIo = Outdoor unit Cooling Rated Power Input × Correction Coefficient of Indoor temperature
=3.46 × 0.89
= 3.1 kW

<Heating>

(1) Rated power input of outdoor unit **3.74 kW**

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

Coefficient of the outdoor unit for indoor unit 1 (Outdoor temp. -3 °CW.B., Indoor temp. 20 °CD.B.)
1.34

Coefficient of the outdoor unit for indoor unit 2 (Outdoor temp. -3 °CW.B., Indoor temp. 25 °CD.B.)
1.09

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. P80 → 80)

= 1.34 × 25/(25 + 100) + 1.09 × 100/(25 + 100)
= 1.14

(3) Coefficient of the partial load f(CTi/CTo) **0.91**

(4) Outdoor power input (Plo)

Maximum System Capacity (CTx) = Total Indoor unit Capacity (CTi), so use the following formula
Plo = Outdoor unit Heating Rated Power Input × Correction Coefficient of Indoor temperature × f(CTi/CTo)
= 3.74 × 1.14 × 0.91
= 3.89 kW

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7-2. Correction by temperature

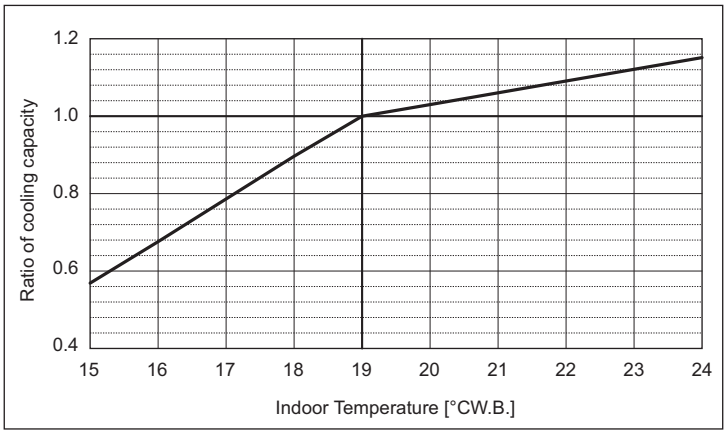
CITY MULTI could have varied capacity at different designing temperature. Using the nominal cooling/heating capacity value and the ratio below, the capacity can be observed at various temperature.

PUMY-		P112VKM2	P125VKM2	P140VKM2
Nominal Cooling Capacity	kW	12.5	14.0	15.5
	BTU/h	42,700	47,800	52,900
Input	kW	2.79	3.46	4.52

PUMY-		P112YKM2	P125YKM2	P140YKM2
Nominal Cooling Capacity	kW	12.5	14.0	15.5
	BTU/h	42,700	47,800	52,900
Input	kW	2.79	3.46	4.52

Indoor unit temperature correction

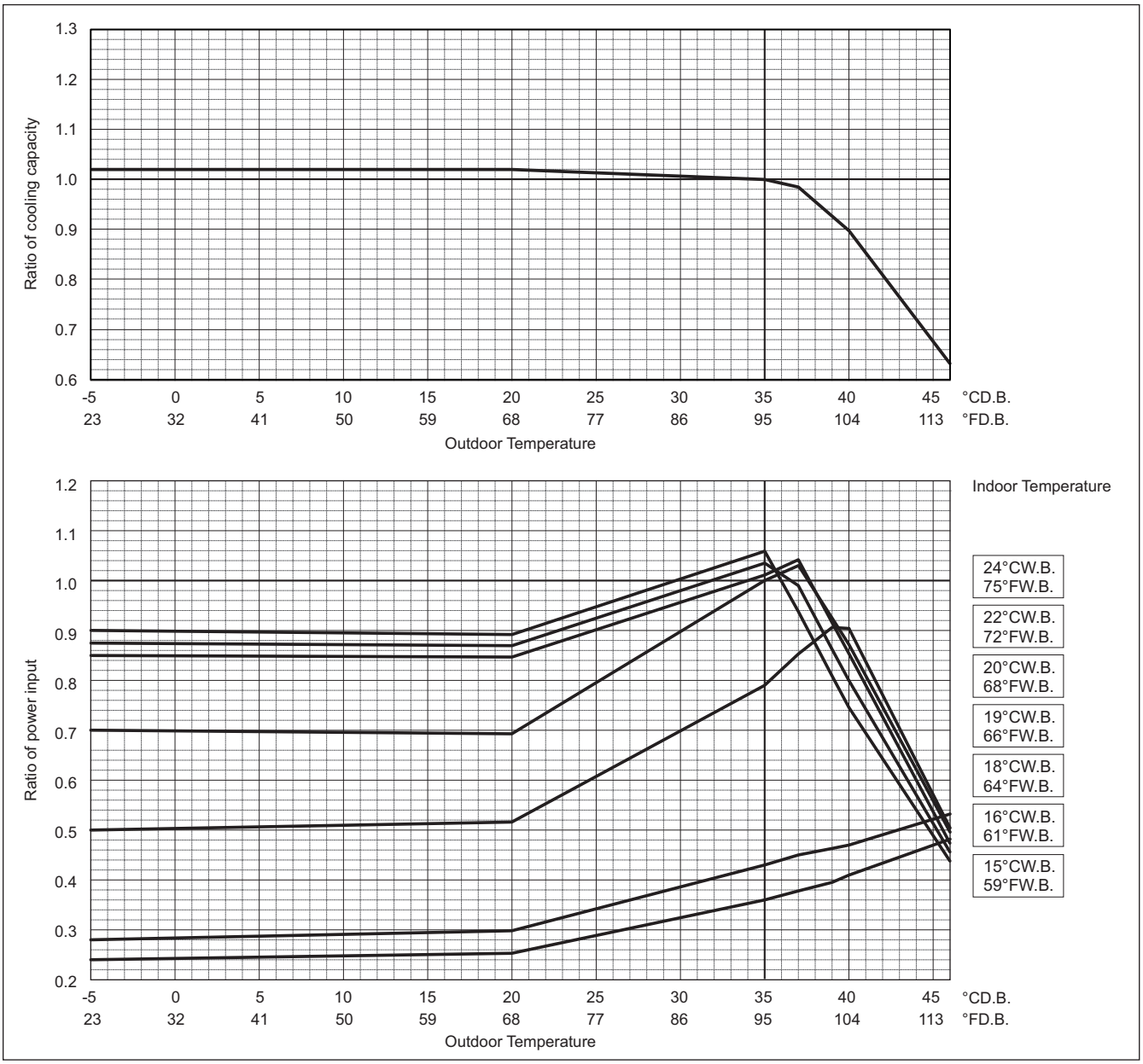
To be used to correct indoor unit capacity only



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.

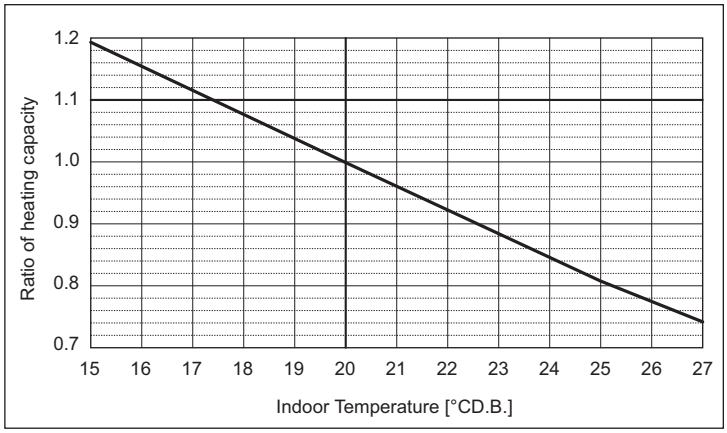


PUMY-		P112VKM2	P125VKM2	P140VKM2
Nominal Heating Capacity	kW	14.0	16.0	18.0
	BTU/h	47,800	54,600	61,400
Input	kW	3.04	3.74	4.47

PUMY-		P112YKM2	P125YKM2	P140YKM2
Nominal Heating Capacity	kW	14.0	16.0	18.0
	BTU/h	47,800	54,600	61,400
Input	kW	3.04	3.74	4.47

Indoor unit temperature correction

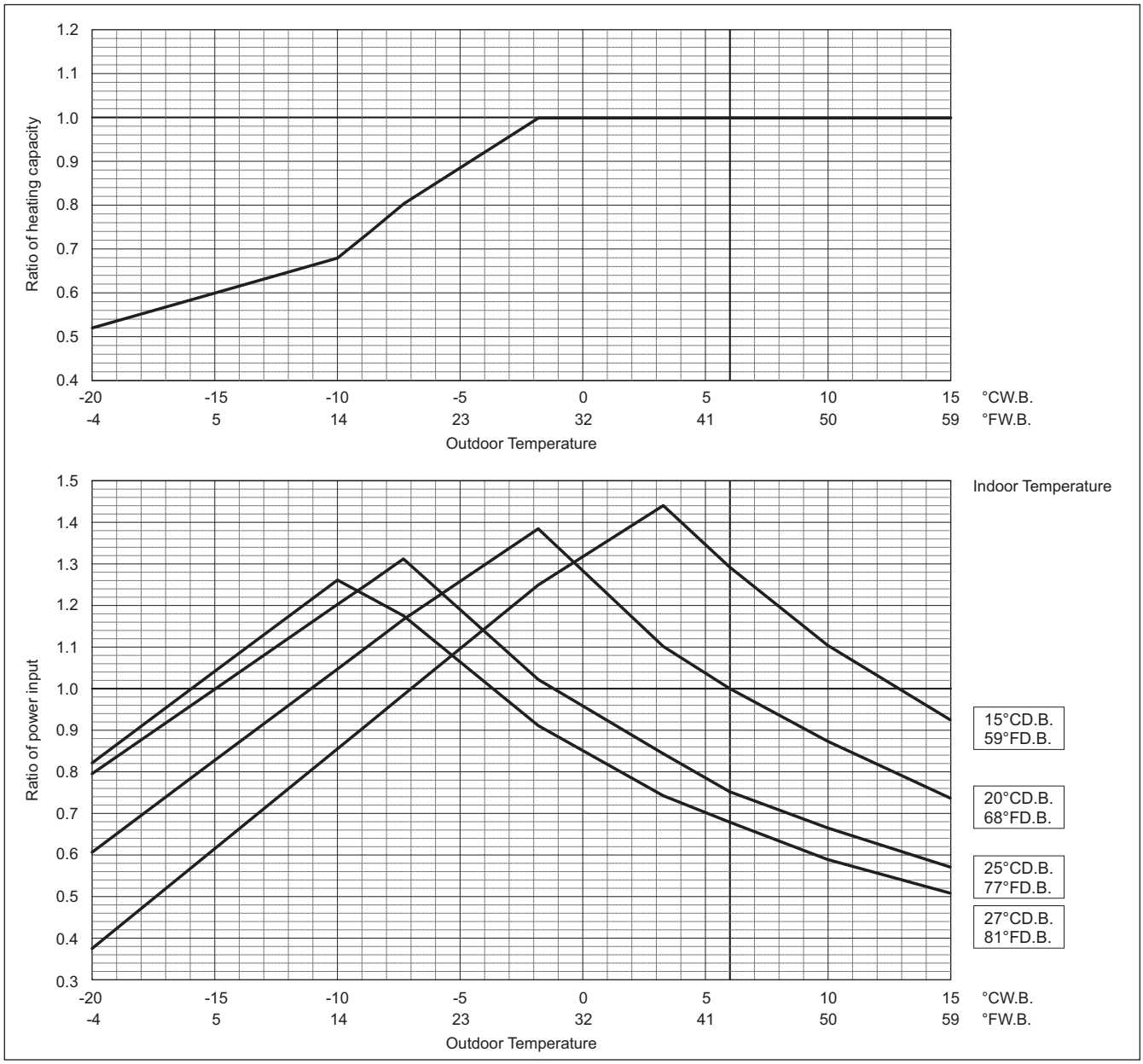
To be used to correct indoor unit capacity only



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.



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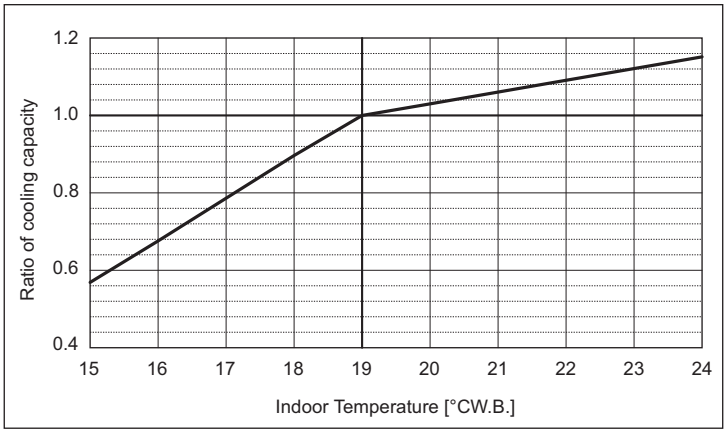
PUMY-		P200YKM
Nominal Cooling Capacity	kW	22.4
	BTU/h	76,400
Input	kW	6.05

Indoor unit temperature correction

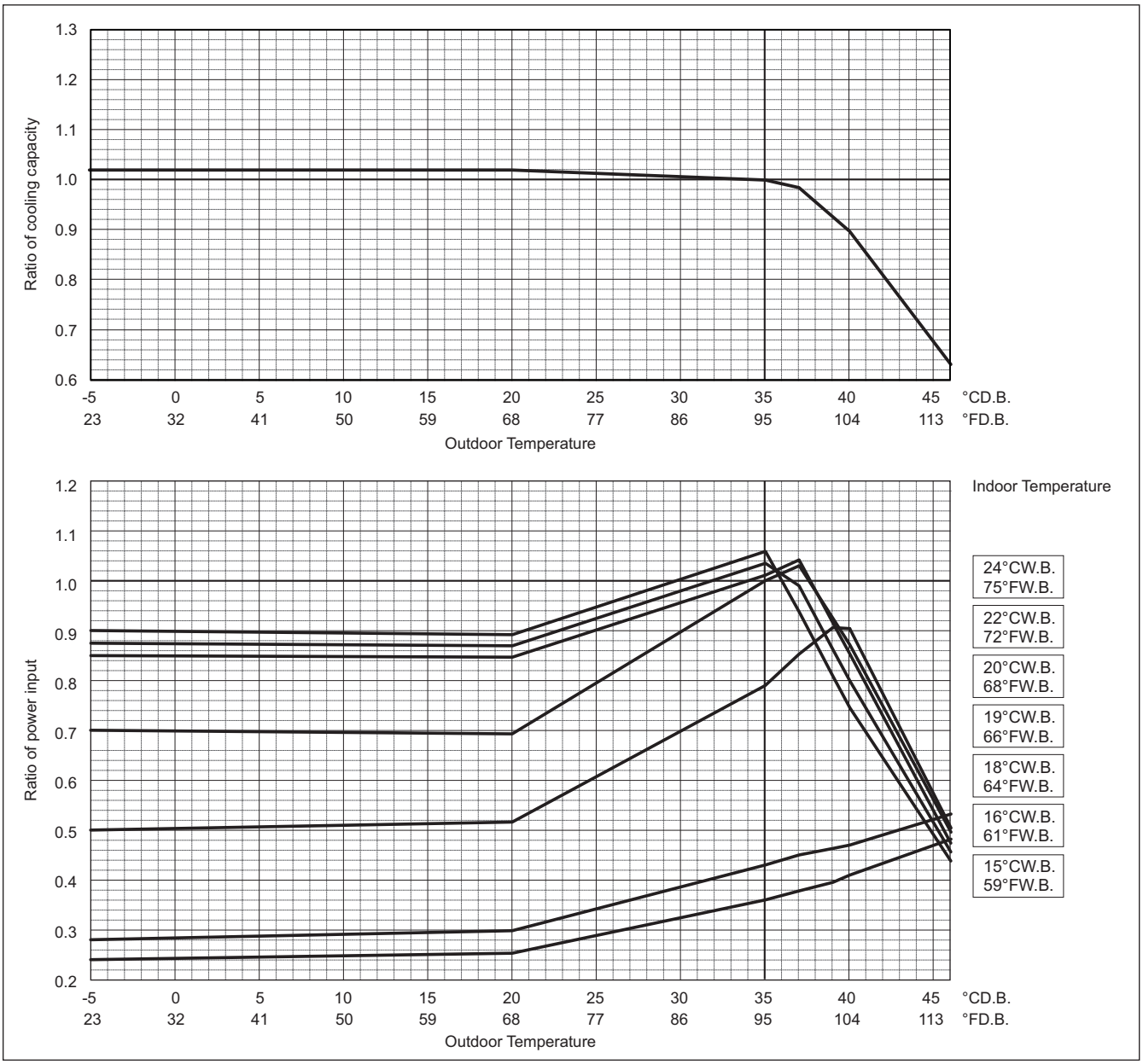
To be used to correct indoor unit capacity only



Outdoor unit temperature correction

To be used to correct outdoor unit only

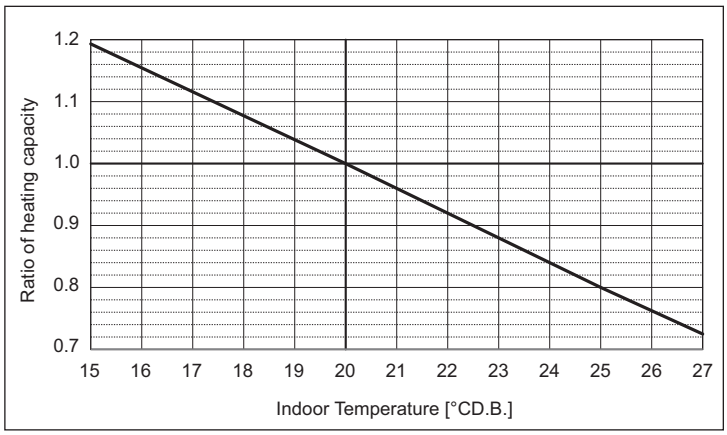
Outdoor unit capacity is NOT affected by the indoor temperature.
Outdoor unit power input is affected by the indoor and outdoor temperatures. Please consult the sales office for details.



PUMY-		P200YKM
Nominal Heating Capacity	kW	25.0
	BTU/h	85,300
Input	kW	5.84

Indoor unit temperature correction

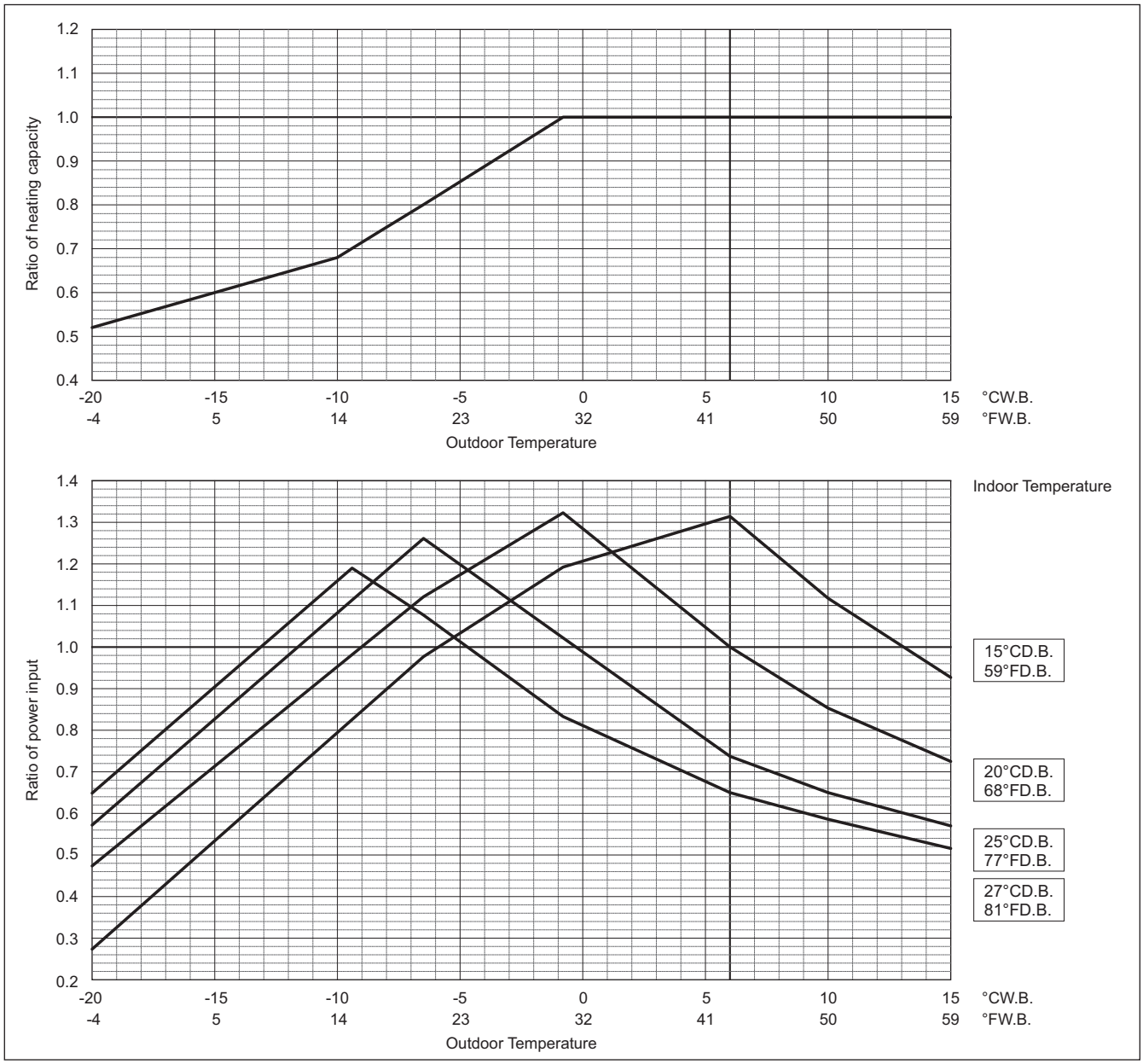
To be used to correct indoor unit capacity only



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.



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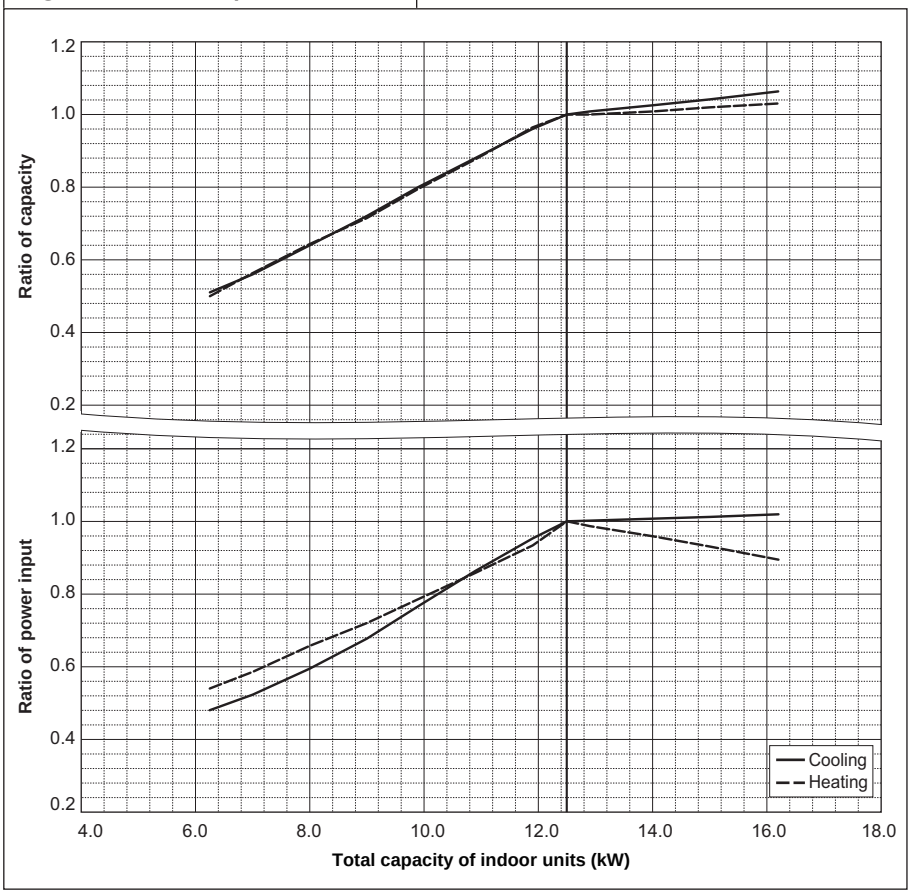
7-3. Correction by total indoor

CITY MULTI system have 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.

PUMY-P112VKM2/P112YKM2		
Nominal Cooling Capacity	kW	12.5
	BTU/h	42,700
Input	kW	2.79

PUMY-P112VKM2/P112YKM2		
Nominal Heating Capacity	kW	14.0
	BTU/h	47,800
Input	kW	3.04

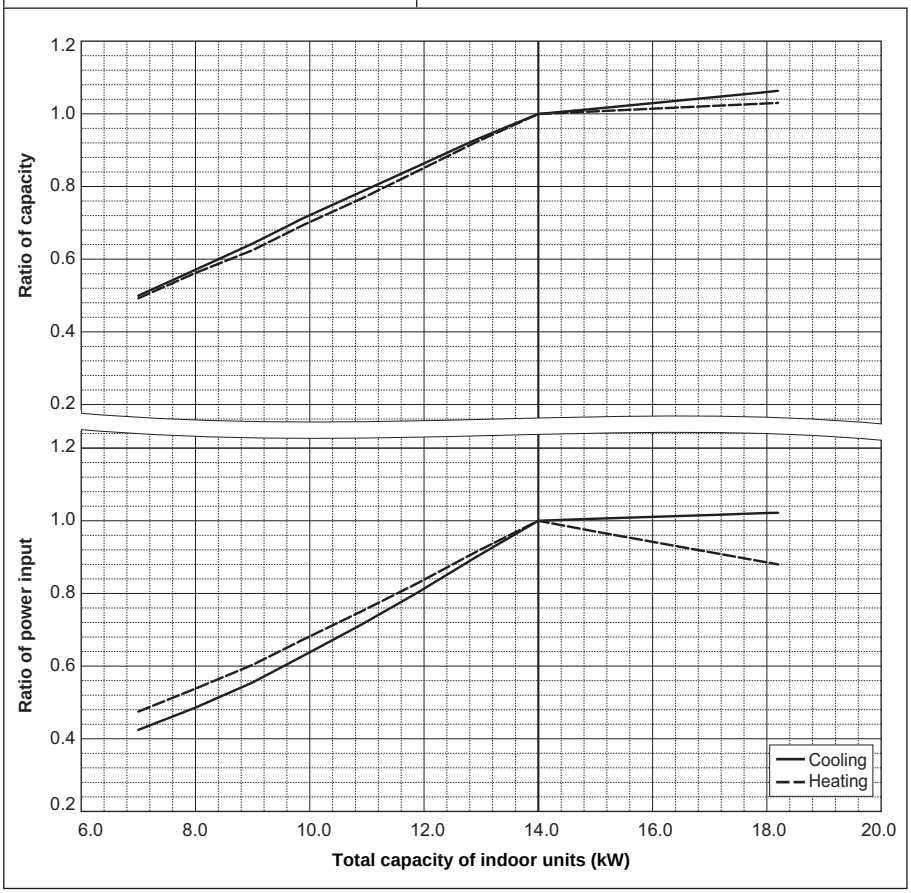
PUMY-P112VKM2/P112YKM2



PUMY-P125VKM2/P125YKM2		
Nominal Cooling Capacity	kW	14.0
	BTU/h	47,800
Input	kW	3.46

PUMY-P125VKM2/P125YKM2		
Nominal Heating Capacity	kW	16.0
	BTU/h	54,600
Input	kW	3.74

PUMY-P125VKM2/P125YKM2



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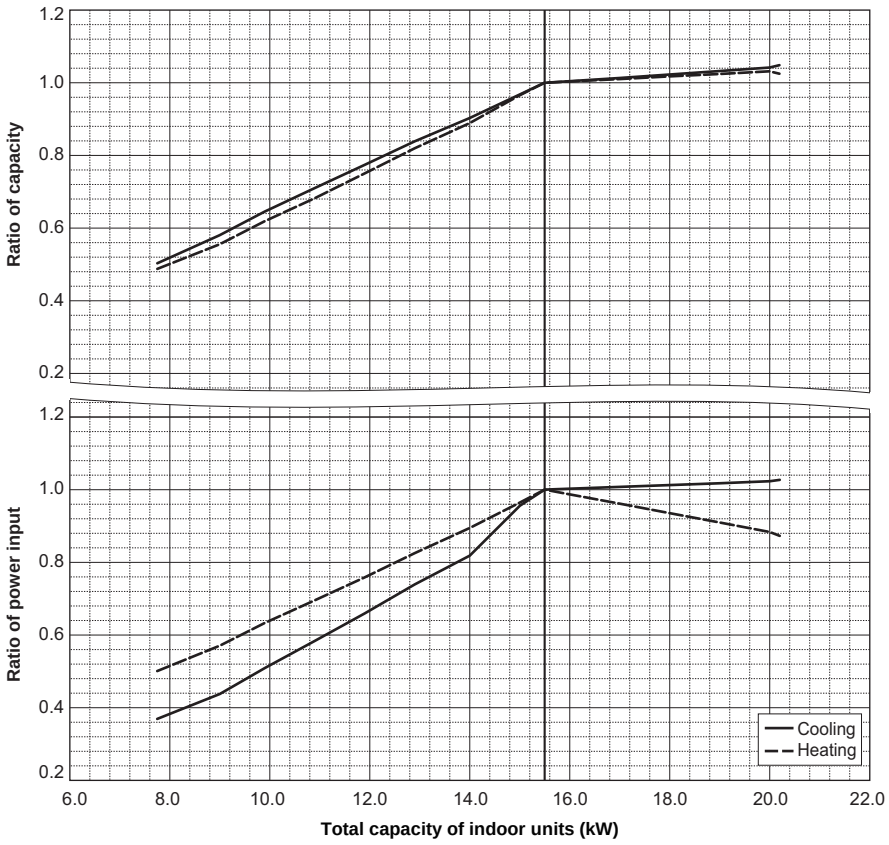
PUMY-P140VKM2/P140YKM2		
Nominal Cooling Capacity	kW	15.5
	BTU/h	52,900
Input	kW	4.52

PUMY-P140VKM2/P140YKM2		
Nominal Heating Capacity	kW	18.0
	BTU/h	61,400
Input	kW	4.47

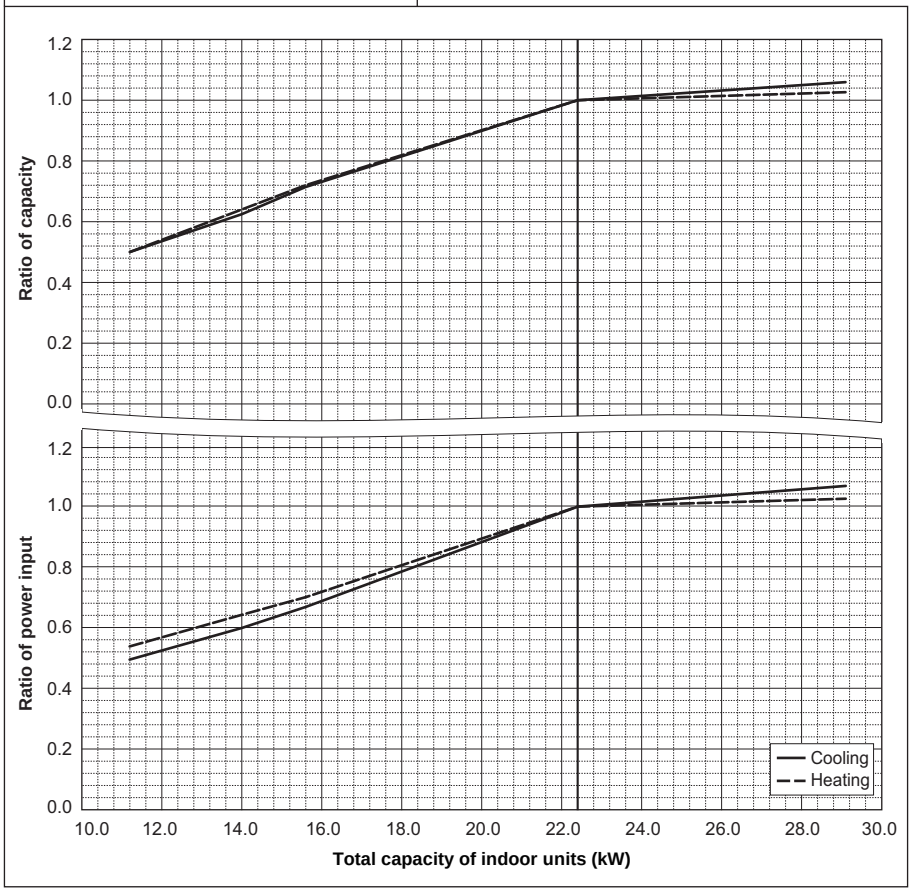
PUMY-P140VKM2/P140YKM2



PUMY-P200YKM		
Nominal Cooling Capacity	kW	22.4
	BTU/h	76,400
Input	kW	6.05

PUMY-P200YKM		
Nominal Heating Capacity	kW	25.0
	BTU/h	85,300
Input	kW	5.84

PUMY-P200YKM



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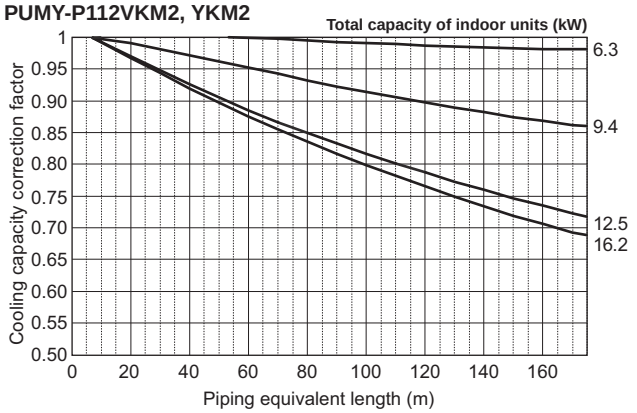
7-4. Correction by refrigerant piping length

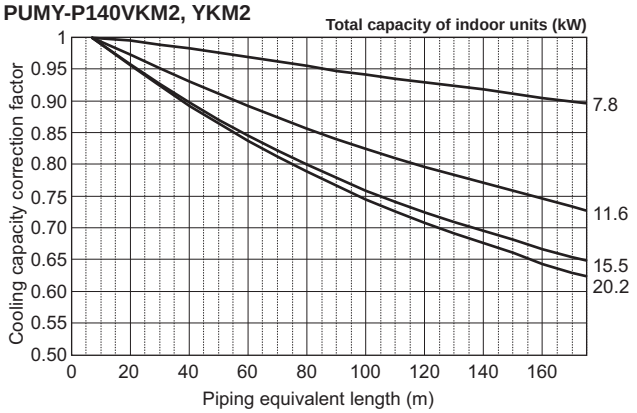
CITY MULTI systems can have extended piping lengths if certain limitations are followed, but cooling/heating capacity could be reduced. Using following correction factor by equivalent piping length shown at 7-4-1 and 7-4-2, capacity can be found.
7-4-3 shows how to obtain the equivalent piping length.

7-4-1. Cooling capacity correction

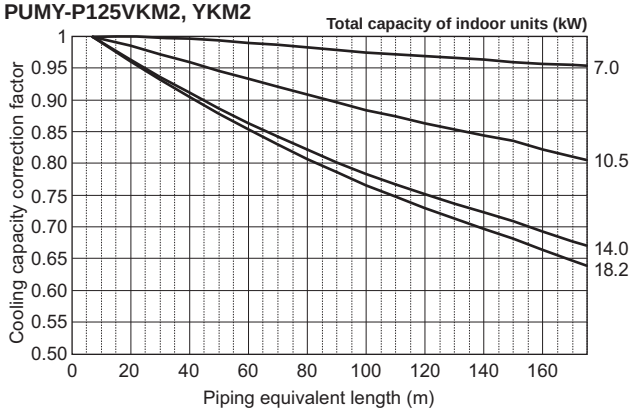
PUMY-P112VKM2, YKM2



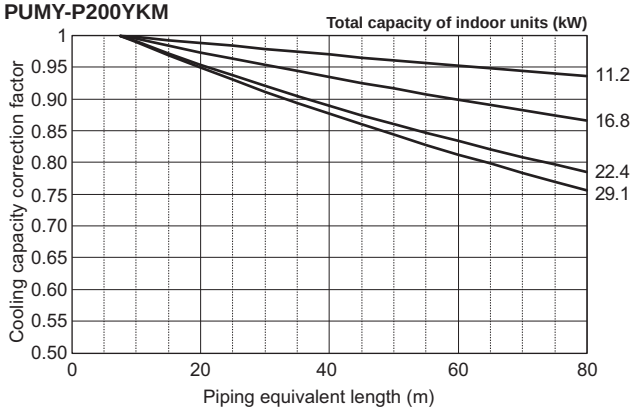
PUMY-P140VKM2, YKM2



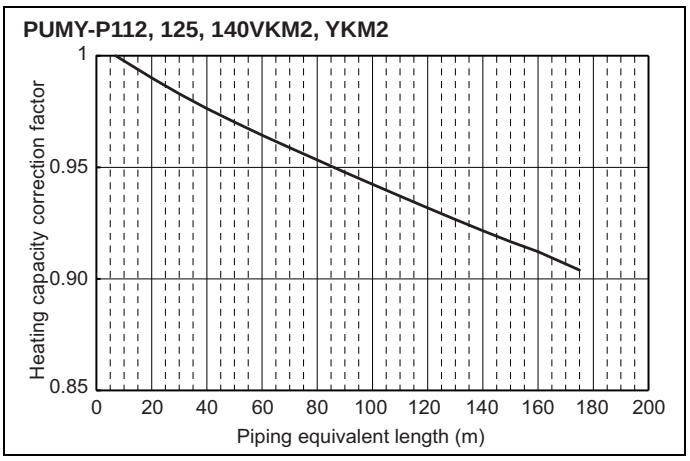
PUMY-P125VKM2, YKM2

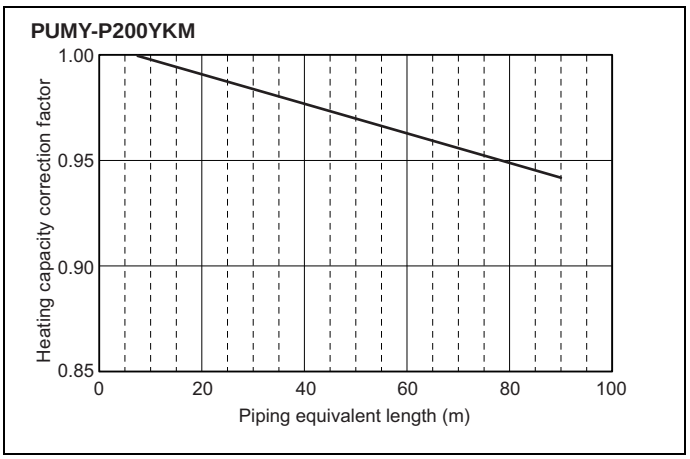


PUMY-P200YKM



7-4-2. Heating capacity correction





7-4-3. How to obtain the equivalent piping length

1. PUMY-P112, 125, 140VKM2, YKM2

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.30 x number of bends on the piping) m

2. PUMY-P200YKM

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.30 x number of bends on the piping) m

7-5. Correction at frost and defrost

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

Table of correction factor at frosting and defrosting

Outdoor inlet air temp. °C	6	4	2	0	-2	-4	-6	-8	-10	-15	-20
Outdoor inlet air temp. °F	43	39	36	32	28	25	21	18	14	-5	-4
PUMY-P112, 125, 140VKM2	1.0	0.98	0.89	0.88	0.89	0.90	0.95	0.95	0.95	0.95	0.95
PUMY-P112, 125, 140YKM2	1.0	0.98	0.89	0.88	0.89	0.90	0.95	0.95	0.95	0.95	0.95
PUMY-P200YKM	1.0	0.98	0.89	0.88	0.89	0.90	0.95	0.95	0.95	0.95	0.95

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8-1. JOINT

CITY MULTI units can be easily connected by using Joint sets and Header sets provided by Mitsubishi Electric. One kind of Joint sets are available for use. Refer to section 3 in "System Design" or the Installation Manual that comes with the Joint set for how to install the Joint set.

CMY-Y62-G-E

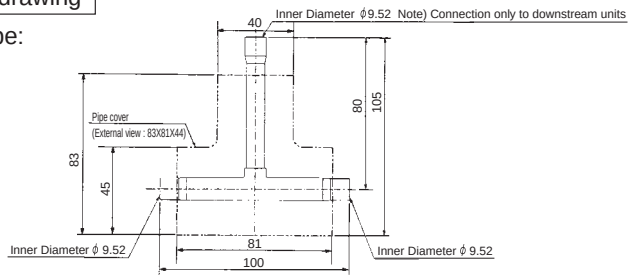
mm

1. Specification

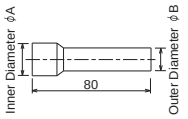
Items		Details
Main	Number of ports	2 ports
	Number of branch joints	One for each liquid and gas pipe
	Pipe material	Phosphorus deoxidized copper C1220T-OL (JIS H3300)
Accessory	Insulation material	Foamed polyethylene (one for each liquid and gas pipe)
	Reducer	10 reducers of 7 types (Refer to the external drawing for details.)

2. External drawing

For liquid pipe:

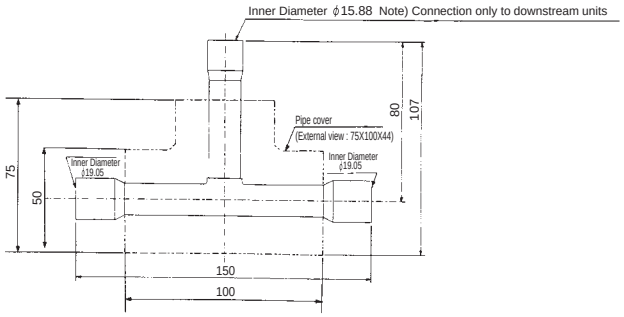


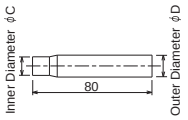
Reducer (Accessory):



A (Inner Diameter)	B (Outer Diameter)	Number of reducers
ϕ 12.7	ϕ 9.52	2
ϕ 19.05	ϕ 15.88	1
ϕ 22.22	ϕ 19.05	1

For gas pipe:





C (Inner Diameter)	D (Outer Diameter)	Number of reducers
ϕ 6.35	ϕ 9.52	2
ϕ 12.7	ϕ 15.88	1
ϕ 12.7	ϕ 19.05	1
ϕ 15.88	ϕ 19.05	2

8-2. HEADER

CITY MULTI units can be easily connected by using Joint sets and Header sets provided by Mitsubishi Electric. Two kinds of Header sets are available for use. Refer to section 3 in "System Design" or the Installation Manual that comes with the Header set for how to install the Header set.

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CMY-Y64-G-E

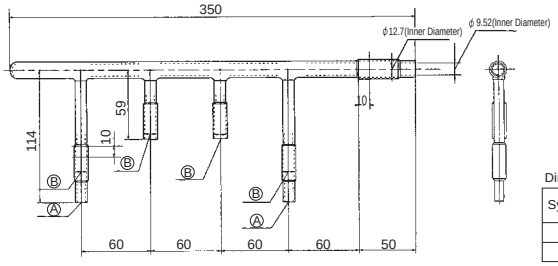
mm

1. Specification

Items		Details
Main	Number of ports	3 ~ 4 ports
	Number of branch joints	One for each liquid and gas pipe
	Pipe material	Phosphorus deoxidized copper C1220T-OL (JIS H3300)
Accessory	Insulation material	Foamed polyethylene
	Reducer	7 reducers of 5 types
	Cap	2 caps of 2 different types for each liquid and gas pipe 4 caps in total

2. External drawing

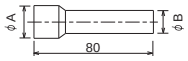
For liquid pipe:



Dimension table

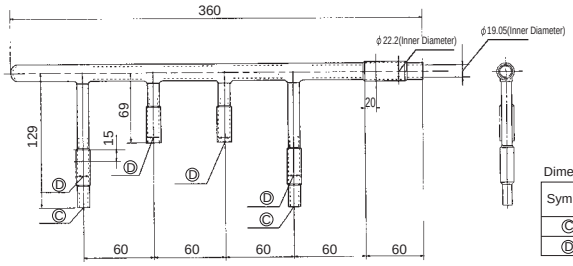
Symbol	Inner Diameter (mm)
Ⓐ	ϕ 6.35
Ⓑ	ϕ 9.52

Reducer (Accessory):



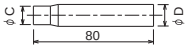
A (Inner Diameter)	B (Outer Diameter)	Number of reducers
ϕ 19.05	ϕ 15.88	1
ϕ 15.88	ϕ 12.7	2
ϕ 9.52	ϕ 6.35	2

For gas pipe:



Dimension table

Symbol	Inner Diameter (mm)
Ⓒ	ϕ 12.7
Ⓓ	ϕ 15.88



C (Inner Diameter)	D (Outer Diameter)	Number of reducers
ϕ 15.88	ϕ 19.05	1
ϕ 9.52	ϕ 12.7	1

CMY-Y68-G-E

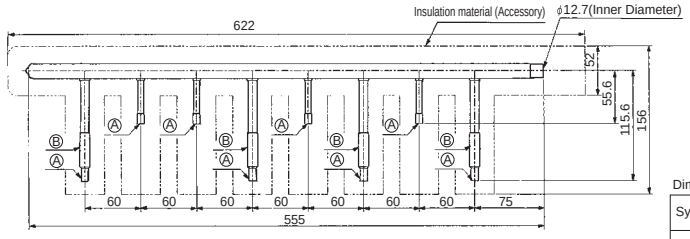
mm

1. Specification

Items		Details
Main	Number of ports	5 ~ 8 ports
	Number of branch joints	One for each liquid and gas pipe
	Pipe material	Phosphorus deoxidized copper C1220T-OL (JIS H3300)
Accessory	Insulation material	Foamed polyethylene
	Reducer	3 reducers of 3 types
	Cap	3 caps for each liquid and gas pipe 6 in total

2. External drawing

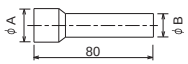
For liquid pipe:



Dimension table

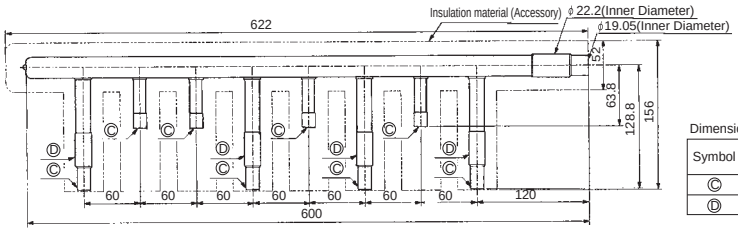
Symbol	Inner Diameter (mm)
Ⓐ	ϕ 6.35
Ⓑ	ϕ 9.52

Reducer (Accessory):



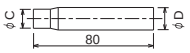
A (Inner Diameter)	B (Outer Diameter)	Number of reducers
ϕ 19.05	ϕ 15.88	1
ϕ 12.7	ϕ 9.52	1

For gas pipe:



Dimension table

Symbol	Inner Diameter (mm)
Ⓒ	ϕ 12.7
Ⓓ	ϕ 15.88



C (Inner Diameter)	D (Outer Diameter)	Number of reducers
ϕ 15.88	ϕ 19.05	1

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8-3. BRANCH BOX

PUMY-P112/125/140V(Y)KM2 units can be easily connected to M/S/P series indoor units by using Branch box provided by Mitsubishi Electric. Refer to section 3 in "System Design" or the Installation Manual that comes with the Branch box for how to install the Branch box.

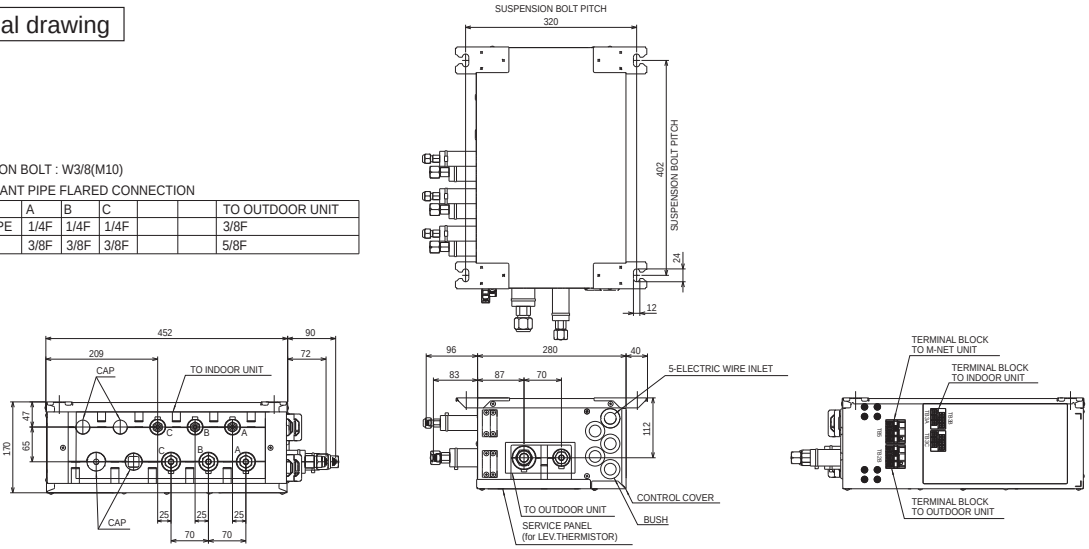
PAC-MK31BC

mm

1. Specification

Model Name				PAC-MK31BC
Connectable number of indoor units				Maximum 3
Power supply (from outdoor unit)				Single phase, 220/230/240V, 50Hz, Single phase, 220V, 60Hz
Input			kW	0.003
Running current			A	0.05 (Max. 6)
External finish				Galvanized sheets
Dimensions	Width		mm	450
	Depth		mm	280
	Height		mm	170
Weight			kg	6.7
Piping connection (Flare)	Branch (indoor side)*	Liquid	mm	ø6.35 × 3 {A,B,C}
		Gas	mm	ø9.52 × 3 {A,B,C}
	Main (outdoor side)	Liquid	mm	ø9.52
		Gas	mm	ø15.88

2. External drawing



SUSPENSION BOLT : W3/8(M10)

REFRIGERANT PIPE FLARED CONNECTION

	A	B	C			TO OUTDOOR UNIT
LIQUID PIPE	1/4F	1/4F	1/4F			3/8F
GAS PIPE	3/8F	3/8F	3/8F			5/8F

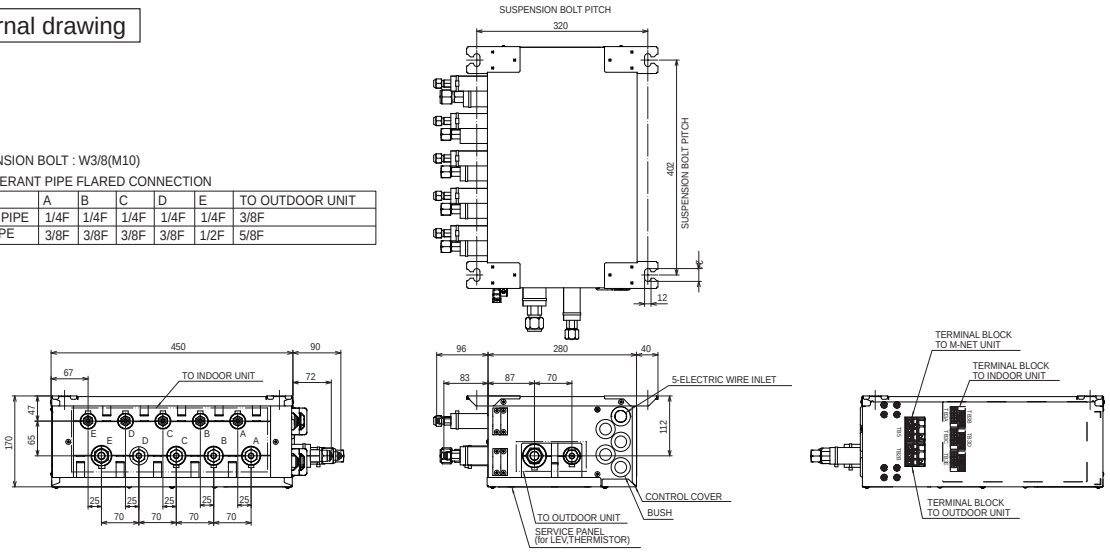
PAC-MK51BC

mm

1. Specification

Model Name				PAC-MK51BC
Connectable number of indoor units				Maximum 5
Power supply (from outdoor unit)				Single phase, 220/230/240V, 50Hz, Single phase, 220V, 60Hz
Input			kW	0.003
Running current			A	0.05 (Max. 6)
External finish				Galvanized sheets
Dimensions	Width		mm	450
	Depth		mm	280
	Height		mm	170
Weight			kg	7.4
Piping connection (Flare)	Branch (indoor side)*	Liquid	mm	ø6.35 × 5 {A,B,C,D,E}
		Gas	mm	ø9.52 × 4 {A,B,C,D}, ø12.7 × 1 {E}
	Main (outdoor side)	Liquid	mm	ø9.52
		Gas	mm	ø15.88

2. External drawing



SUSPENSION BOLT : W3/8(M10)

REFRIGERANT PIPE FLARED CONNECTION

	A	B	C	D	E	TO OUTDOOR UNIT
LIQUID PIPE	1/4F	1/4F	1/4F	1/4F	1/4F	3/8F
GAS PIPE	3/8F	3/8F	3/8F	3/8F	1/2F	5/8F

S

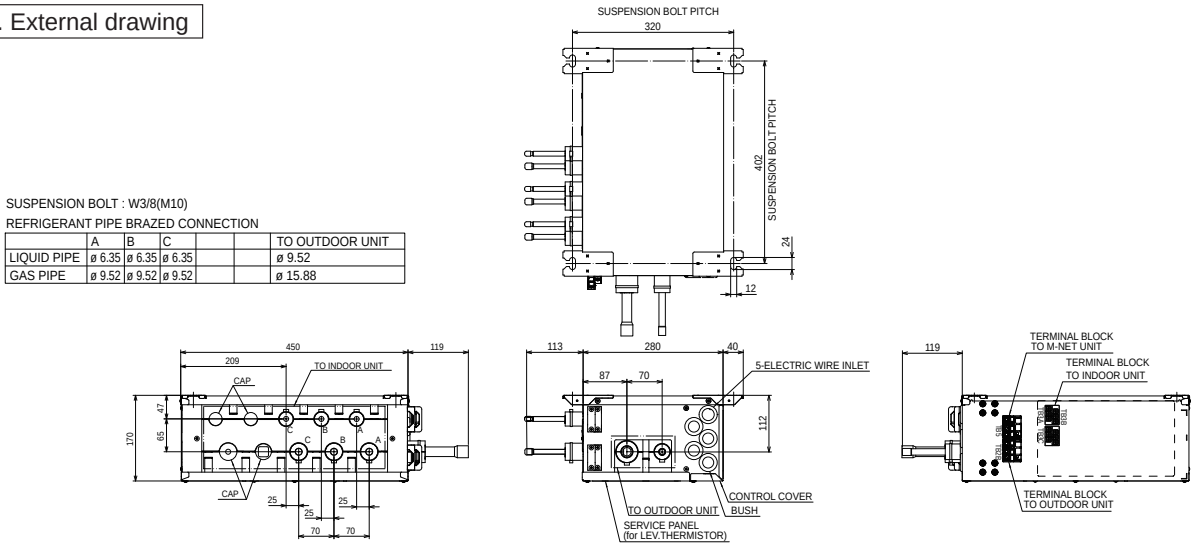
mm

PAC-MK31BCB

1. Specification

Model Name				PAC-MK31BCB
Connectable number of indoor units				Maximum 3
Power supply (from outdoor unit)				Single phase, 220/230/240V, 50Hz, Single phase, 220V, 60Hz
Input			kW	0.003
Running current			A	0.05 (Max. 6)
External finish				Galvanized sheets
Dimensions	Width		mm	450
	Depth		mm	280
	Height		mm	170
Weight			kg	6.5
Piping connection (Flare)	Branch (indoor side)*	Liquid	mm	ø6.35 × 3 {A,B,C}
		Gas	mm	ø9.52 × 3 {A,B,C}
	Main (outdoor side)	Liquid	mm	ø9.52
		Gas	mm	ø15.88

2. External drawing



SUSPENSION BOLT : W3/8(M10)

REFRIGERANT PIPE BRAZED CONNECTION

	A	B	C			TO OUTDOOR UNIT
LIQUID PIPE	ø 6.35	ø 6.35	ø 6.35			ø 9.52
GAS PIPE	ø 9.52	ø 9.52	ø 9.52			ø 15.88

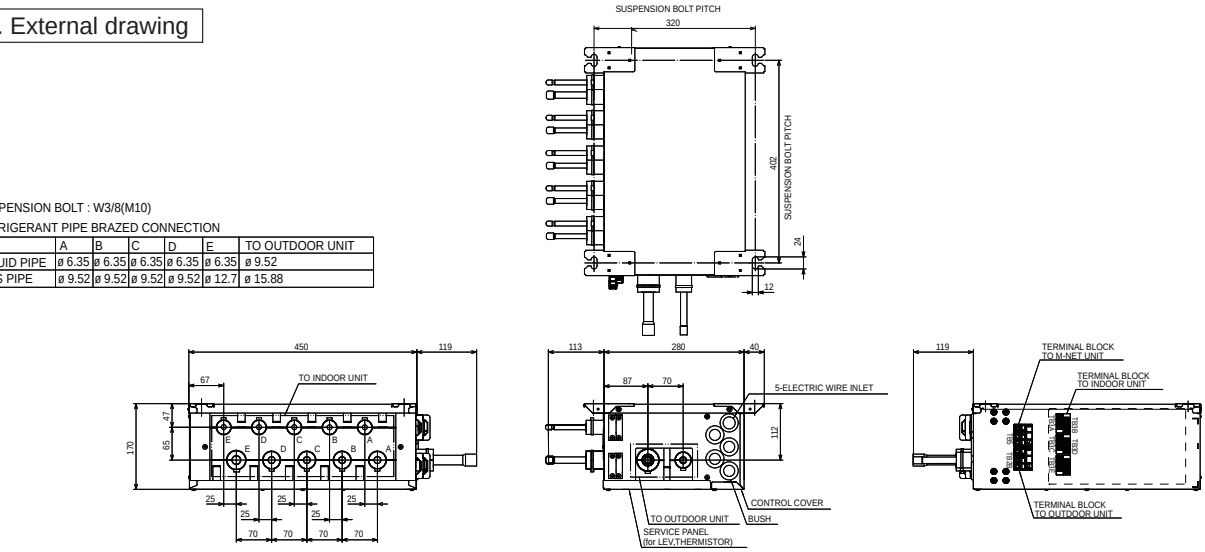
mm

PAC-MK51BCB

1. Specification

Model Name				PAC-MK51BCB
Connectable number of indoor units				Maximum 5
Power supply (from outdoor unit)				Single phase, 220/230/240V, 50Hz, Single phase, 220V, 60Hz
Input			kW	0.003
Running current			A	0.05 (Max. 6)
External finish				Galvanized sheets
Dimensions	Width		mm	450
	Depth		mm	280
	Height		mm	170
Weight			kg	7.0
Piping connection (Flare)	Branch (indoor side)*	Liquid	mm	ø6.35 × 5 {A,B,C,D,E}
		Gas	mm	ø9.52 × 4 {A,B,C,D}, ø12.7 × 1 {E}
	Main (outdoor side)	Liquid	mm	ø9.52
		Gas	mm	ø15.88

2. External drawing



SUSPENSION BOLT : W3/8(M10)

REFRIGERANT PIPE BRAZED CONNECTION

	A	B	C	D	E	TO OUTDOOR UNIT
LIQUID PIPE	ø 6.35	ø 6.35	ø 6.35	ø 6.35	ø 6.35	ø 9.52
GAS PIPE	ø 9.52	ø 9.52	ø 9.52	ø 9.52	ø 12.7	ø 15.88