Manual No. '19 • KX-DB-317
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MITSUBISHI HEAVY INDUSTRIES

DATA BOOK

VRF INVERTER MULTI-SYSTEM AIR-CONDITIONERS

(OUTDOOR UNIT)

KXZ series (Heat pump type)

FDC121KXZEN1, 140KXZEN1, 155KXZEN1
FDC121KXZES1, 140KXZES1, 155KXZES1

• Note:
(1) Regarding the indoor unit series, refer to the No.'17 • KX-T-266 and '18 • KX-T-281.

MITSUBISHI HEAVY INDUSTRIES THERMAL SYSTEMS, LTD.

PREFACE

Combination table for KX4 series and KX6 series

( ) Date of launching in the market

Category	Outdoor unit	Indoor unit: Connectable remote control		Same series	Same series	Same series	Mixed series	Mixed series	Mixed series	Same or Mixed series	Mixed series	Same series
		3-wire type	RC-E1	KXE4	KXE4(A)	KXE4A	KXE4A	KXE4A	KXE4A			
		3-wire type	RC-E1R				KXE4R KXE4BR KXE5R	KXE4R KXE4BR KXE5R	KXE4R KXE4BR KXE5R	KXE4R KXE4BR KXE5R	KXE4R KXE4BR KXE5R	
		2-wire type	RC-E3 RC-E4 RC-E5 RC-EX1A RC-EX3					KXE6 KXE6A KXE6B KXE6D KXE6F KXZE1	KXE6 KXE6A KXE6B KXE6D KXE6F KXZE1		KXE6 KXE6A KXE6B KXE6D KXE6F KXZE1	KXE6 KXE6A KXE6B KXE6D KXE6F KXZE1
Heat pump (2-pipe) systems	FDCA-HKXE4 5HP	(2004.4-)		YES [C]	YES [C]	YES [C]	NO	NO	NO	NO	NO	NO
	FDCA-HKXE4 8-48HP	(2004.4-)		NO	YES [C]	YES [C]	NO	NO	NO	NO	NO	NO
	FDCA-HKXE4A 5HP FDCA-HKXE4R 5,6HP	(2006.2-) (2006.5-)		NO	YES [C]	YES [C]	YES [C]*1	NO	NO	YES [C]*1	NO	NO
	FDCA-HKXE4A 8-48HP FDCA-HKXE4R 8-48HP FDCA-HKXE4BR 8-48HP FDCA-HKXE4D 8-48HP	(2006.2-) (2006.5-) (2007.4-) (2008.7-)		NO	YES [C]	YES [C]	YES [C]	YES [C]	YES [C]	YES [C]	YES [C]	YES [C]
	FDC-KXE6 4,5,6HP	(2008.3-)		NO	NO	NO	NO	NO	NO	NO	NO	YES [A]*6
	FDC-KXE6 8-12HP	(2009.2-)		NO	NO	NO	NO	NO	NO	YES [B]	YES [B]	YES [A]
	FDC-KXE6 14-48HP	(2009.1-)		NO	NO	NO	NO	NO	NO	YES [B]	YES [B]	YES [A]
	FDC-KXZE1 4,5,6HP	(2018.2-)		NO	NO	NO	NO	NO	NO	NO	NO	YES [A]*6
	FDC-KXZE1 10-60HP	(2017.4-)		NO	NO	NO	NO	NO	NO	NO	NO	YES [A]
	FDC-KXZME1 8-12HP	(2019.1-)		NO	NO	NO	NO	NO	NO	NO	NO	YES [A]
	FDC-KXZEN/S1 4HP	(2019.4-)		NO	NO	NO	NO	NO	NO	NO	NO	YES [A]
Heat recovery (3-pipe) systems [Note(3)]	FDCA-HKXRE4 8-48HP	(2004.11-)		NO	NO	YES [C]	NO	NO	NO	NO	NO	NO
	FDCA-HKXRE4A 8-48HP FDCA-HKXRE4R 8-48HP FDCA-HKXRE4BR 8-48HP FDCA-HKXRE4D 8-48HP	(2006.2-) (2006.6-) (2007.4-) (2008.7-)		NO	NO	YES [C]	YES [C]	YES [C]	YES [C]	YES [C]	YES [C]	YES [C]
	FDC-KXRE6 8-48HP	(2009.5-)		NO	NO	NO	NO	NO	NO	YES [B]	YES [B]	YES [A]
	FDC-KXZRE1 8-60HP	(2017.4-)		NO	NO	NO	NO	NO	NO	NO	NO	YES [A]

Notes (1) YES: Connectable (See following table in detail), NO: Not connectable

*1 except FDKA71KXE5R

	Outdoor unit	Connected Indoor unit: Same series	Connected Indoor unit: Mixed series	DIP switch setting of outdoor unit KXE6	Superlink protocol	Limitation
YES [A]*2	KXE6&KXZ	KXE6&KXZ		Ⅱ(New)	New (for KX6)	New (for KX6)
YES [B]	KXE6&KXZ	KXE4 series	KXE6 & KXE4 series	Ⅰ(Previous)	Previous (for KX4)	Previous (for KX4)
YES [C]	KXE4 series	KXE4 series	KXE4 series		Previous (for KX4)	Previous (for KX4)

*2 If Outdoor unit system (YES [A]) is connected to other outdoor unit systems (YES [B] and/or YES [C]) in one Superlink network, the dip switch of outdoor unit KXE6 of (YES [A]) should be set from Ⅱ(New) to (Previous). In this case the Superlink protocol and limitation of outdoor unit system (YES [A]) are switched to Previous (for KX4).

(2) Combination with new central control, PC windows central control and BMS interface unit

		Central control, PC windows central control and BMS interface unit: SC-SL1N-E	SC-SL2NA-E	SC-SL4N-AE/BE	SC-WGWN-A/B	SC-LGWN-A	SC-BGWN-A/B
YES [A]	Connectable I/U	16	64	128 (128x1)	128 (64x2)*3	96 (48x2)	128 (64x2)*3
	Superlink protocol	New	New	New	New	New	New
	Connectable network	1	1	1	2	2	2
YES[B] & YES[C]	Connectable I/U	16	48	144 (48x3)	96 (48x2)*4	96 (48x2)*4	96 (48x2)*4
	Superlink*5 protocol	Previous	Previous	Previous	Previous	Previous	Previous
	Connectable network	1	1	3	2	2	2

*3 Maximum number of AC cell is limited up to 96.
In case the number of connected indoor units are more than 96, some AC cells should hold 2 or more indoor units.
*4 In case of other central control like SC-SLxN-E is connected in the same network, the connectable indoor unit is limited up to 64 (32x2).
*5 In case of previous Superlink protocol, the Superlink mode of new central control should be set "Previous".
*6 In case of YES[A], previous central control is available to use. But the limitation of connectable indoor unit and so on is complied with the rule of previous Superlink.

(3) The compatibility of PFD (refrigerant flow branching control) is mentioned in following table.

Connectable PFD control		Indoor unit: KXE4 & KXE5 series	KXE6 & KXZE1 series
Outdoor unit	KXRE4 series	PFD-E PFD-ER	PFD-E PFD∗∗∗3-E PFD-ER PFD∗∗∗4-E
Outdoor unit	KXRE6 series	PFD-E PFD-ER	PFD∗∗∗3-E PFD∗∗∗4-E
Outdoor unit	KXZRE1 series		PFD∗∗∗3-E PFD∗∗∗4-E

Note:
All indoor unit downstream PFD box must be same series, KXZR,KX6 series or KX4/5 series

(4) Compatibility of the PFD control extension cables is as per the following table.

	PFD-control series: PFD ∗∗∗ 3-E	PFD ∗∗∗ 4-E
PFD-15WR-E	Yes	No
PFD4-15WR-E	No	Yes

CONTENTS

1. GENERAL INFORMATION

1.1 Increased indoor unit connection capacity

Micro KXZ series can connect indoor unit capacity up to 150%.
• Capacity from 80% to 150% is possible

Item / Model	Number of connectable	Connectable capacity
FDC121KXZEN1	1 to 8 units	97 - 181
FDC121KXZES1		
FDC140KXZEN1	1 to 10 units*	112 - 210
FDC140KXZES1		
FDC155KXZEN1		124 - 233
FDC155KXZES1		

*When connecting 9 units or more, set the connectable capacity as follows :
140 : 110% or less
155 : 100% or less

1.2 How to read the model name

(1) Outdoor unit

Example: FDC 140 KXZ EN 1

- 1 — Series No.
- EN — Application power source...See the specifications
- KXZ — Multi KX
- 140 — Nominal capacity (nominal cooling capacity : 14.0kW)
- FDC — Model name (Outdoor unit)

(2) Indoor unit

Example: FDT 28 KXZ E 1

- 1 — Series No.
- E — Application power source...See the specifications
- KXZ — Multi series
- 28 — Nominal capacity (nominal cooling capacity : 2.8 kW)
- FDT — Model name (Indoor unit : FDTC, FDT, FDTW, FDTQ, FDTS, FDU, FDUM, FDUT, FDE, FDK, FDFL, FDFU)

Note

For outdoor unit, EN60552-2 and EN60555-3 are not applicable as consent by the utility company or notification to the utility company is given before usage.

1.3 Table of models

Model \ Capacity	15	22	28	36	45	56	71	90	112	140	160
Ceiling cassette-4 way type (FDT)			○	○	○	○	○	○	○	○	○
Ceiling cassette-4 way compact type (FDTC)	○	○	○	○	○	○					
Ceiling cassette-2 way type (FDTW)			○		○	○	○	○	○	○	
Ceiling cassette-1 way type (FDTS)					○		○				
Ceiling cassette-1 way compact type (FDTQ)		○	○	○							
Duct connected-High static pressure type (FDU)							○	○	○	○	
Duct connected-Low/Middle static pressure type (FDUM)		○	○	○	○	○	○	○	○	○	
Duct connected (thin)-Low static pressure type (FDUT)	○	○	○	○	○	○	○				
Wall mounted type (FDK)	○	○	○	○	○	○	○				
Ceiling suspended type (FDE)				○	○	○	○		○	○	
Floor standing (with casing) type (FDFL)							○				
Floor standing (without casing) type (FDFU)			○		○	○	○				
Outdoor units to be combined FDC	FDC121KXZEN1, 140KXZEN1, 155KXZEN1 FDC121KXZES1, 140KXZES1, 155KXZES1										

1.4 Branch pipe set and Header pipe set

(a) Branch pipe set (Option)

Total capacity downstream	Branching pipe set
Less than 180	DIS-22-1G
180 or more but less than 371	DIS-180-1G

(b) Header pipe set (Option)

Total capacity downstream	Header set model type	Number of branches
Less than 180	HEAD4-22-1G	4 branches at the most
180 or more but less than 371	HEAD6-180-1G	6 branches at the most

2. OUTDOOR UNIT

2.1 Specifications

Models FDC121KXZEN1, FDC140KXZEN1, 155KXZEN1, FDC121KXZES1, 140KXZES1, 155KXZES1

Models			FDC121KXZEN1	FDC140KXZEN1	FDC155KXZEN1	FDC121KXZES1	FDC140KXZES1	FDC155KXZES1
Nominal cooling capacity*1		kW	12.1	14.0	15.5	12.1	14.0	15.5
Nominal heating capacity*2		kW	12.1	14.0	15.5	12.1	14.0	15.5
Maximum heating capacity		kW	12.5	16.0	16.3	12.5	16.0	16.3
Power source			1 Phase 220–240V 50Hz , 220V 60Hz			3 Phase 380–415V 50Hz , 380V 60Hz		
Power consumption	Cooling	kW	3.16	3.96	5.20	3.16	3.96	5.20
	Heating		3.09	3.66	4.28	3.09	3.66	4.28
Running current	Cooling	A	15.3/14.0	19.6/17.9	25.7/23.6	5.2/4.7	6.5/6.0	8.6/7.9
	Heating		15.2/13.9	18.3/16.8	21.4/19.6	5.1/4.7	6.1/5.6	7.1/6.5
Power factor	Cooling	%	94/94	92/92	92/92	94/94	92/92	92/92
	Heating		93/93	91/91	91/91	93/93	91/91	91/91
EER			3.82	3.54	2.98	3.82	3.54	2.98
COP			3.91	3.83	3.62	3.91	3.83	3.62
Sound Pressure Level	(Cooling/Heating)	dB (A)	53/56	53/57	54/57	53/56	53/57	54/57
Sound Power Level	(Cooling/Heating)	dB (A)	70/72	71/72	71/74	70/72	71/72	71/74
Starting current		A	5					
Maximum current		A	28	28	28	13.5	13.5	13.5
Exterior dimensions Height × Width × Depth		mm	845×970×370					
Exterior appearance (Munsell color)			Stucco white (4.2Y7.5/1.1) near equivalent					
Net weight		kg	85			87		
Refrigerant equipment compressor type & Q'ty			RMT5126MDE21 X 1			RMT5126MDE31 X 1		
Motor		kW	2.3	2.9	3.2	2.3	2.9	3.2
Starting method			Direct line start					
Capacity control		%	26–100	21–100	21–100	26–100	21–100	21–100
Crankcase heater		W	20					
Refrigerant equipment Heat exchanger			Straight fin & inner grooved tubing					
Refrigerant control			Electronic expansion valve					
Refrigerant type			R410A					
Refrigerant amount		kg	5.0					
Refrigerant oil		ℓ	1.0 (M–MA68)					
Defrost control			Microcomputer controlled De–Icer					
Air handling equipment fan type & Q'ty			Propeller fan × 1					
Motor		W	86					
Starting method			Direct line start					
Air flow (Standard)		m^3/min	75/75	75/82	75/82	75/75	75/82	75/82
Shock & vibration absorber			Rubber mount (for compressor & fan motor)					
Safety equipment			Compressor over current protection /abnormal high pressure protection abnormal low pressure protection / abnormal discharge temperature protection / over current protection					
Installation data Refrigerant piping size		mm (in)	Liquid line: ϕ9.52 (3/8")					
			Gas line: ϕ15.88 (5/8")					
Connecting method			Flare (both Liquid & Gas lines)					
MAX. Pressure		MPa	High 4.15 Low 2.21					
Drain			Hole for drain (ϕ20 × 3pcs)					
Insullation for piping			Necessary (both Liquid & Gas line)					
IP number			IP24					
Accessories			–	–	–	–	–	–
Exterior dimensions			PCA001Z848					
Electrical wiring			PCA001Z849			PCA001Z850		

Notes (1) The data are measured at the following conditions.

Item / Operation	Indoor air temperature DB	Indoor air temperature WB	Outdoor air temperature DB	Outdoor air temperature WB	Standards
Cooling*1	27 ℃	19 ℃	35 ℃	24 ℃	ISO5151–T1,H1
Heating*2	20 ℃	-	7 ℃	6 ℃	

(2) This air–conditioner is manufactured and tested in conformity with the ISO.

(3) Sound level indicates the value in an anechoic chamber.
During operation these value are somewhat higher due to ambient conditions.

(4) Refrigerant piping size applicable to European installations are shown parentheses.

(5) This air–conditioner is adapted RoHS directive.

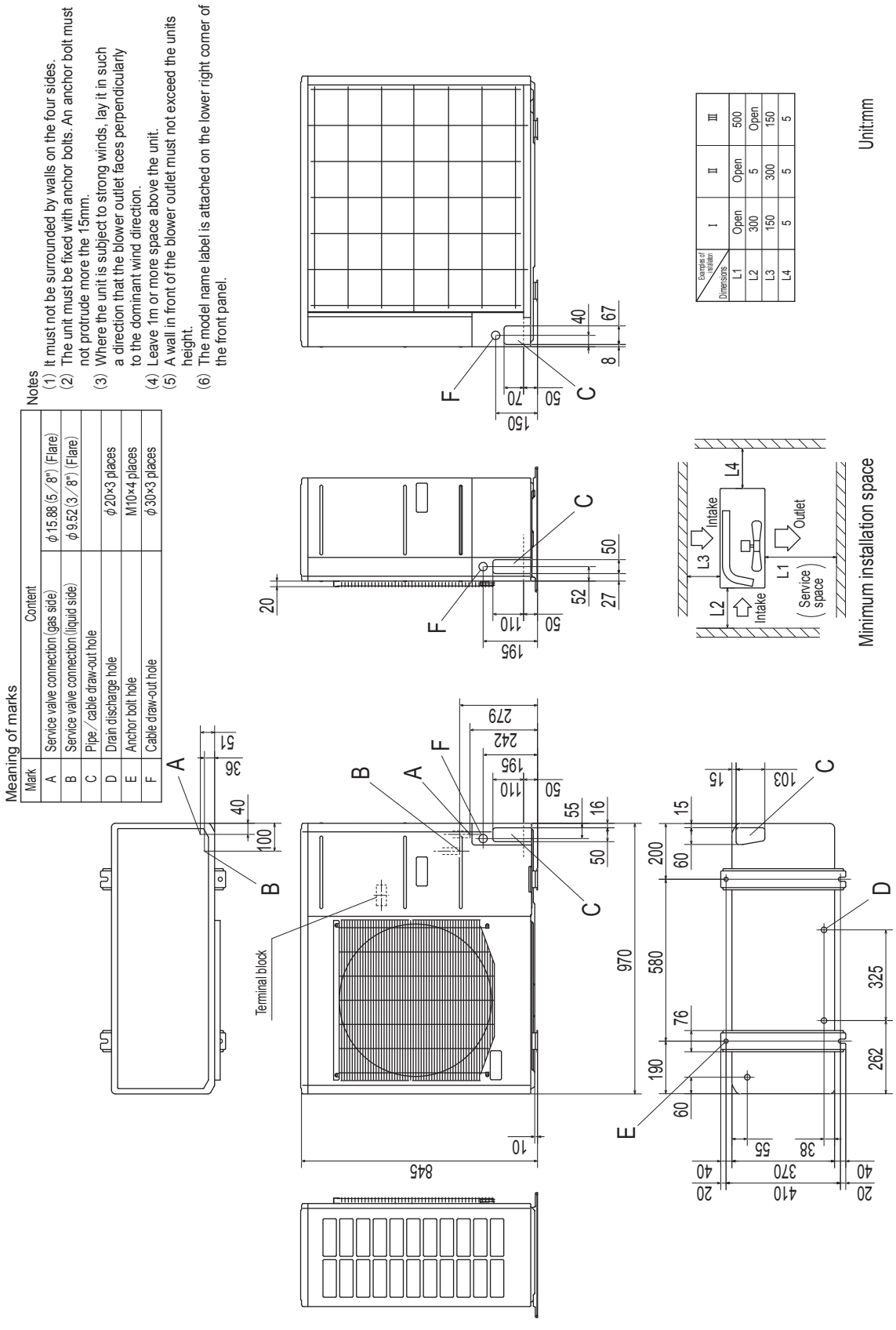
Weights of packing parts

Unit :kg

		Gross Weight	Packing Parts weight (Total)	Paper	Foam Polystyrene	Plastic	Metal		Wood	Glass	Other
							Aluminium	Steel			
Outdoor unit	FDC121KXZEN1	93.00	8.00	3.63	-	0.14	-	0.07	4.13	-	0.03
	FDC140KXZEN1	93.00	8.00	3.63	-	0.14	-	0.07	4.13	-	0.03
	FDC155KXZEN1	93.00	8.00	3.63	-	0.14	-	0.07	4.13	-	0.03
	FDC121KXZES1	95.00	8.00	3.63	-	0.14	-	0.07	4.13	-	0.03
	FDC140KXZES1	95.00	8.00	3.63	-	0.14	-	0.07	4.13	-	0.03
	FDC155KXZES1	95.00	8.00	3.63	-	0.14	-	0.07	4.13	-	0.03

2.2 Exterior dimensions

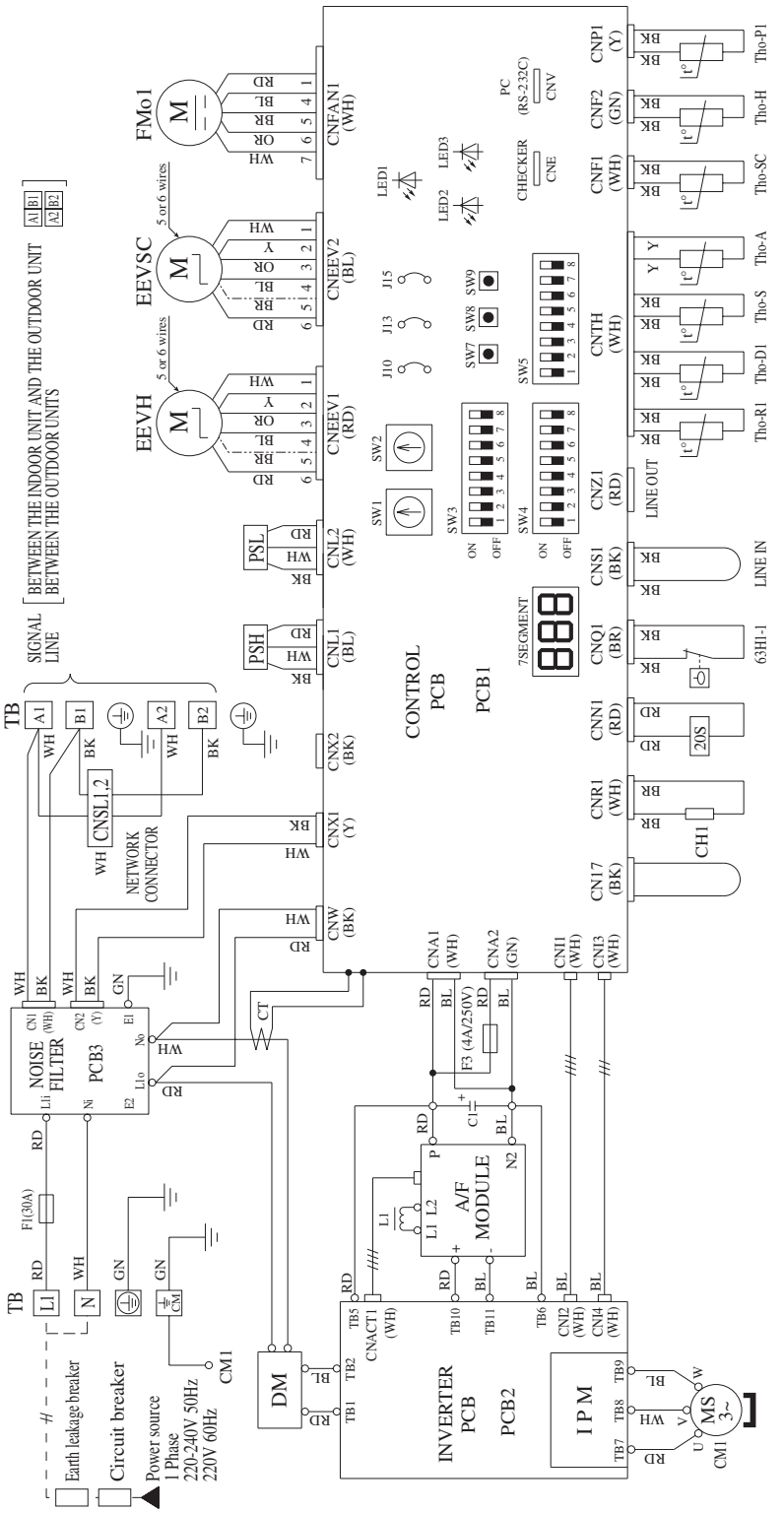
All models



Dimensions \ Samples of installation	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

2.3 Electrical wiring

Models FDC121KXZEN1, 140KXZEN1, 155KXZEN1



Compressor terminal arrangement

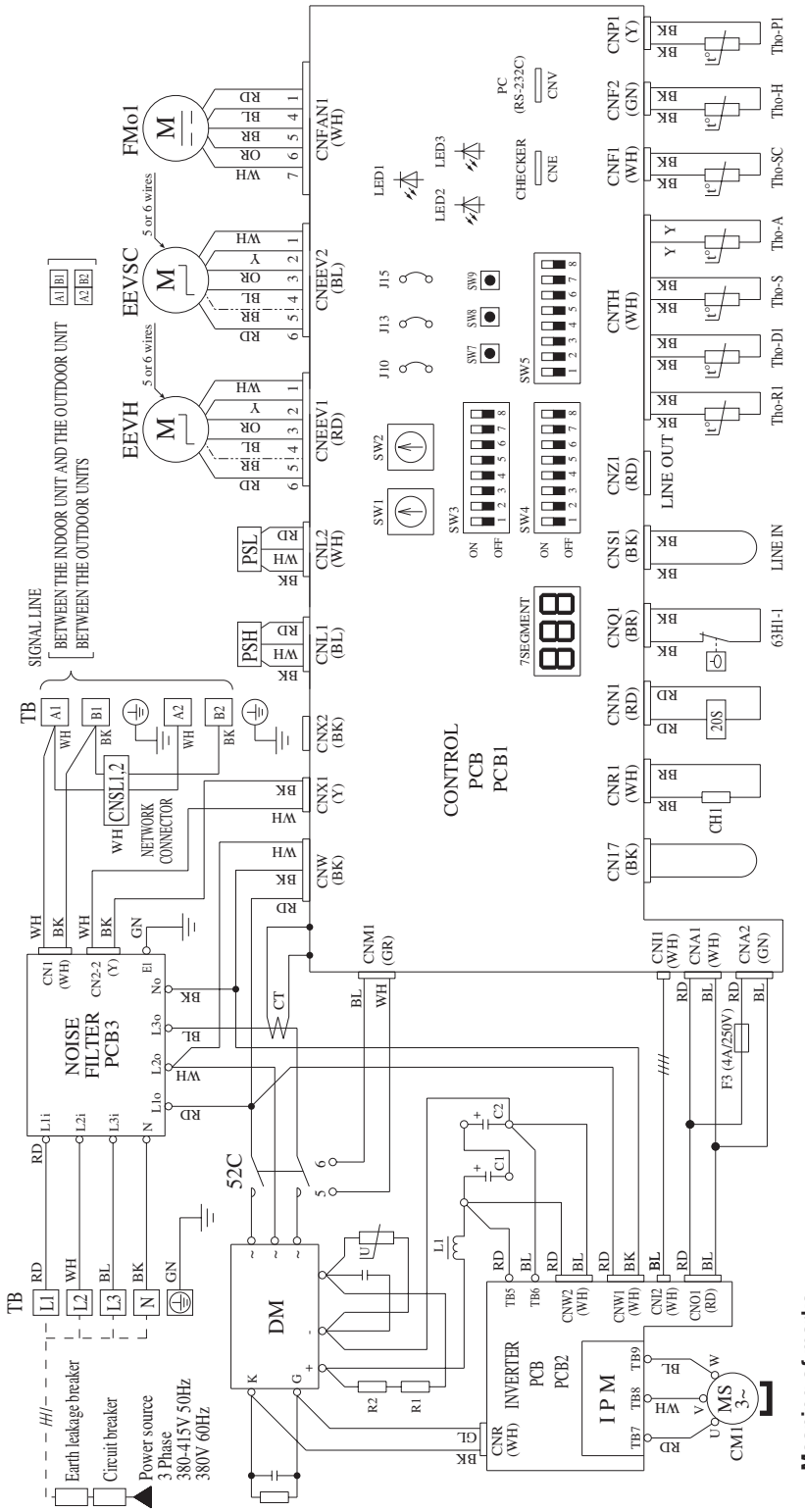
Color marks

Mark	Color
BR	Brown
RD	Red
WH	White
BL	Blue
BK	Black
OR	Orange
Y	Yellow
Y/GN	Yellow/Green

Meaning of marks

Mark	Name	Mark	Name
C	Electrolytic capacitor	SW3-1	Inspection LED reset
CH	Crankcase heater	SW3-5	Check operation start
CM	Compressor motor	SW3-7	Forced cooling/heating switching
CNA-Z	Connector	SW4-7	Demand switching
CT	Current sensor	SW4-8	Demand switching
DM	Diode module	SW5-1	Test run start (normal/start)
EEVSC	Electronic expansion valve (For overcooling)	SW5-2	Test run cooling setting (heating/cooling)
EEVH	Electronic expansion valve (For heating)	SW5-3	Pump down (normal/valid)
FMo1	Fan motor	SW5-5	Superlink protocol setting (new/previous)
F	Fuse	SW7 (Button)	Data erasing/writing
PSH	High pressure sensor	SW8 (Button)	7-segment display UP, one's place number
IPM	Intelligent power module	SW9 (Button)	7-segment display UP, ten's place number
J10	Superlink terminal setting (spare/normal)	TB	Terminal board
J13	External input switch (pulse/level)	Tho-A	Temperature sensor (outdoor air temperature)
J15	Defrost start temperature (cold weather distinct/normal)	Tho-D	Temperature sensor (discharge pipe)
L	Reactor	Tho-P1	Temperature sensor (power transistor)
LED1	Indicator lamp (Red-Inspection indicator)	Tho-R1	Temperature sensor (heat exchanger)
LED2	Indicator lamp (Green-Microcomputer nomality indication)	Tho-S	Temperature sensor (suction pipe)
LED3	Indicator lamp (Green-For service)	Tho-SC	Temperature sensor (sub-cooling coil, liquid)
PSL	Low pressure sensor	Tho-H	Temperature sensor (sub-cooling coil, gas)
SW1	Outdoor unit No. (ten's place number)	20S	4-way valve coil
SW2	Outdoor unit No. (one's place number)	63H1-1	High pressure switch (Protection)

Models FDC121KXZES1, 140KXZES1, 155KXZES1



Meaning of marks

Mark	Name	Mark	Name
C	Electrolytic capacitor	SW3-1	Inspection LED reset
CH	Crankcase heater	SW3-5	Check operation start
CM	Compressor motor	SW3-7	Forced cooling/heating switching
CNA-Z	Connector	SW4-7	Demand switching
CT	Current sensor	SW4-8	Demand switching
DM	Diode module	SW5-1	Test run start (normal/start)
EEVSC	Electronic expansion valve (For overcooling)	SW5-2	Test run cooling setting (heating/cooling)
EEVH	Electronic expansion valve (For heating)	SW5-3	Pump down (normal/valid)
FMo1	Fan motor	SW5-5	Superlink protocol setting (new/previous)
F	Fuse	SW7 (Button)	Data erasing/writing
PSH	High pressure sensor	SW8 (Button)	7-segment display UP, one's place number
IPM	Intelligent power module	SW9 (Button)	7-segment display UP, ten's place number
J10	Superlink terminal setting (spare/normal)	TB	Terminal board
J13	External input switch (pulse/level)	Tho-A	Temperature sensor (outdoor air temperature)
J15	Defrost start temperature (cold weather district/normal)	Tho-D	Temperature sensor (discharge pipe)
L	Reactor	Tho-P1	Temperature sensor (power transistor)
LED1	Indicator lamp (Red-Inspection indicator)	Tho-R1	Temperature sensor (heat exchanger)
LED2	Indicator lamp (Green-Microcomputer normality indication)	Tho-S	Temperature sensor (suction pipe)
LED3	Indicator lamp (Green-For service)	Tho-SC	Temperature sensor (sub-cooling coil, liquid)
PSL	Low pressure sensor	Tho-H	Temperature sensor (sub-cooling coil, gas)
SW1	Outdoor unit No. (ten's place number)	20S	4-way valve coil
SW2	Outdoor unit No. (one's place number)	63H1-1	High pressure switch (Protection)

Compressor terminal arrangement

Color marks

Mark	Color
BR	Brown
RD	Red
WH	White
BL	Blue
BK	Black
OR	Orange
Y	Yellow
Y/GN	Yellow/Green

2.4 Noise level

Measured based on JIS B 8616

Mike position as highest noise level in position as below

Distance from front side 1m

Height 1m

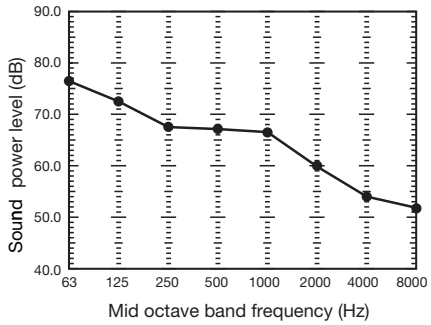
(a) Sound power level

Models FDC121KXZEN1

121KXZES1

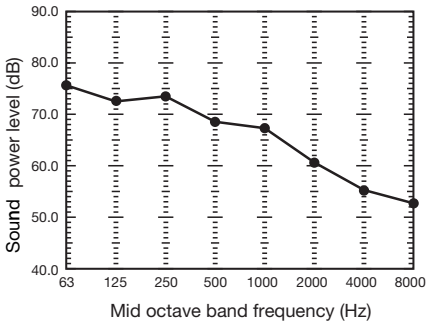
Cooling

Noise level 70 dB (A)



Heating

Noise level 72 dB (A)

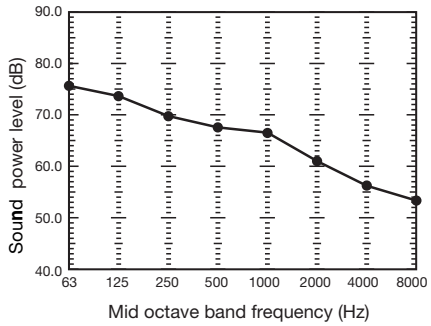


Models FDC140KXZEN1

140KXZES1

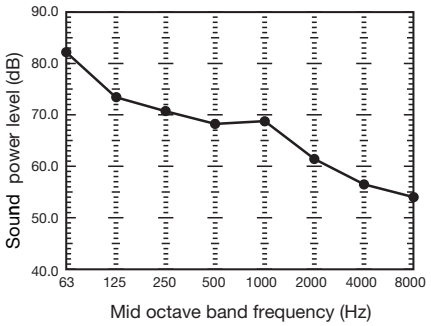
Cooling

Noise level 71 dB (A)



Heating

Noise level 72 dB (A)

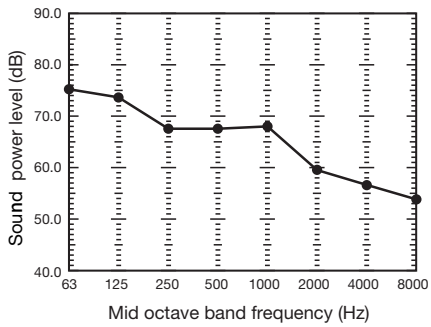


Models FDC155KXZEN1

155KXZES1

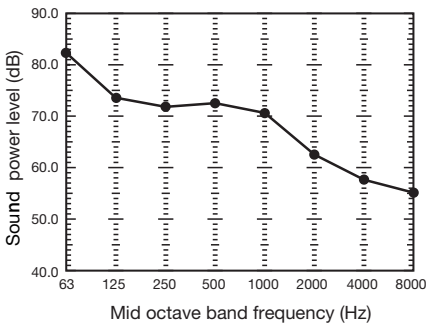
Cooling

Noise level 71 dB (A)



Heating

Noise level 74 dB (A)



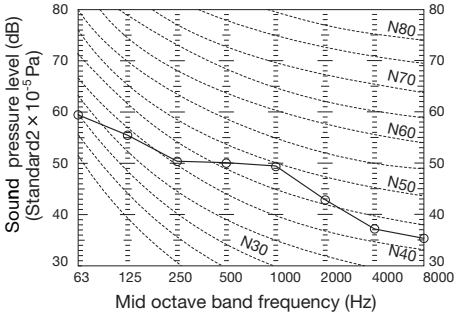
(b) Sound pressure level

Models FDC121KXZEN1

121KXZES1

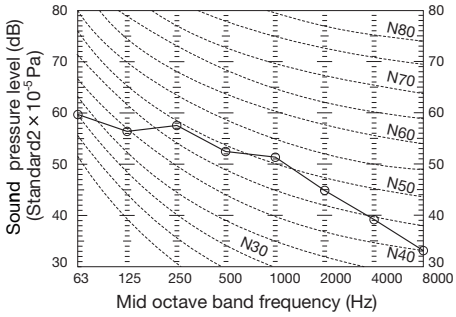
Cooling

Noise level 53 dB (A)



Heating

Noise level 56 dB (A)

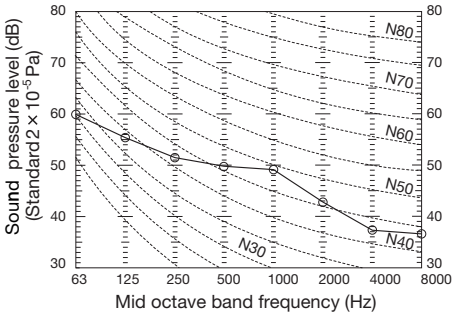


Models FDC140KXZEN1

140KXZES1

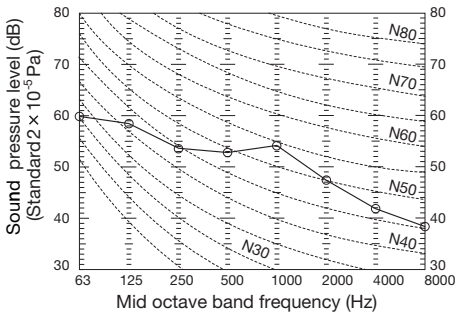
Cooling

Noise level 53 dB (A)



Heating

Noise level 57 dB (A)

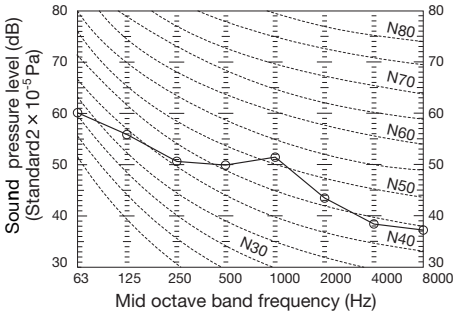


Models FDC155KXZEN1

155KXZES1

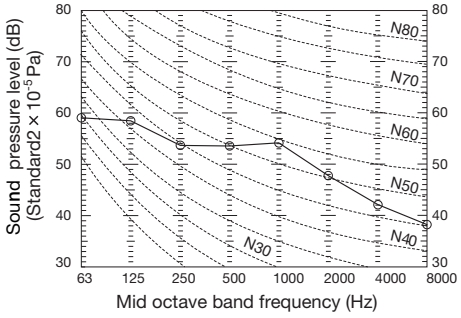
Cooling

Noise level 54 dB (A)



Heating

Noise level 57 dB (A)



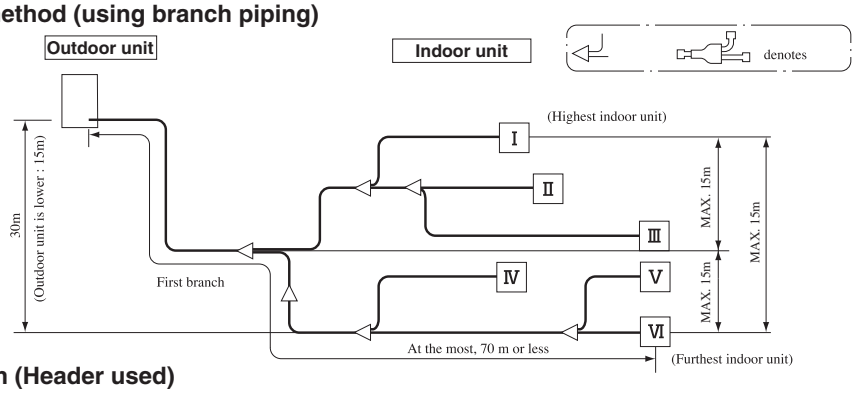
3. RANGE OF USAGE & LIMITATIONS

Item \ System		FDC121KXZEN1 121KXZES1	FDC140KXZEN1 140KXZES1	FDC155KXZEN1 155KXZES1
Indoor intake air temperature (Upper, lower limits)		Please see the next page.		
Outdoor air temperature (Upper, lower limits)				
Indoor units that can be used in combination	Number of connected units	1 to 8 units	1 to 10 units*	1 to 10 units*
	Total capacity	97 - 181	112 - 210	124 - 233
Total Piping Length (Total of the lengths of all piping)		MAX. 100m		
Maximum Piping Distance (From outdoor unit to farthest indoor unit)		Indoor unit MAX. 70m		
Total length of ø9.52 liquid pipe		Within 50 m		
Difference in height between indoor and outdoor units	Outdoor unit is higher	MAX. 30m		
	Outdoor unit is lower	MAX. 15m		
Difference in height between indoor units		MAX. 15m		
Permissible height difference between the first branch and the indoor unit				
Indoor unit atmosphere (behind ceiling) temperature and humidity		Dew point temperature 28 ℃ or less, relative humidity 80% or less		
Compressor stop/start frequency	1 cycle time	5 min or more (2 minutes or more from start to stop or 3 minutes or more from stop to start)		
	Stop time	3 min or more		
Power source voltage	Voltage fluctuation	Within ±10% of rated voltage		
	Voltage drop during start	Within ±15% of rated voltage		
	Phase unbalance	Within ± 3% of rated voltage		

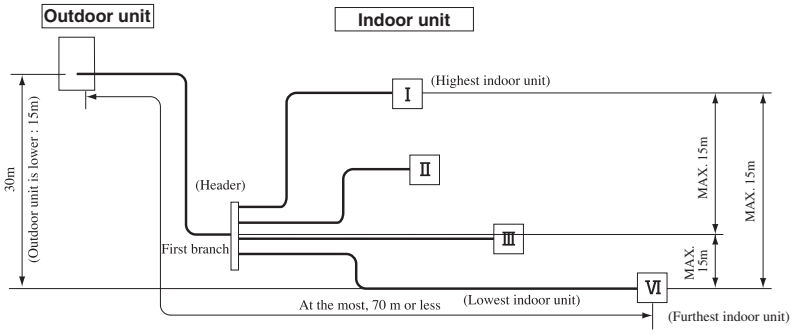
*When connecting 9 units or more, set the connectable capacity as follows :
140 : 110% or less
155 : 100% or less

Allowable length of refrigerant piping, height difference between indoor and outdoor unit

(1) Branch pipe method (using branch piping)

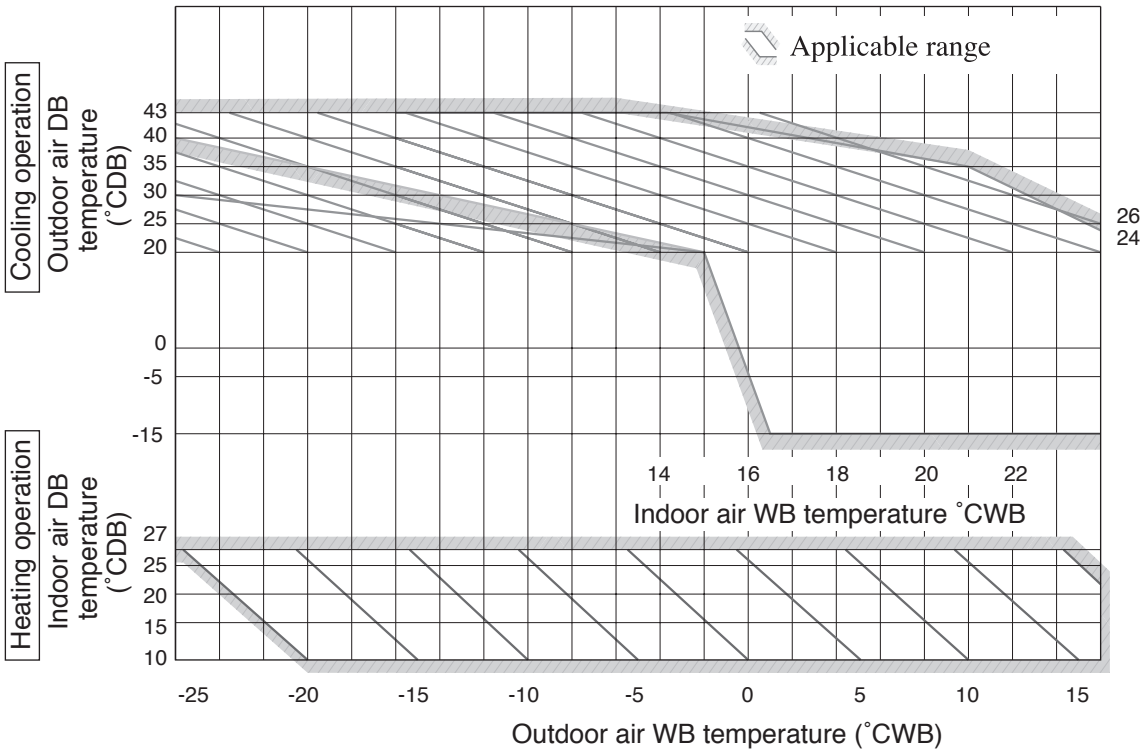


(2) Header System (Header used)



Notes (1) There is no limit to the permissible piping lengths for the main pipes or other piping, but keep furthest indoor unit piping to 50m with a diameter of ø9.52.
(2) A branch piping system cannot be connected after a header system.

Range of usage & limitations



"CAUTION" Cooling operation under low ambient air temperature conditions

Micro KXZ models can be operated in cooling mode at low ambient air temperature condition within above temperature range. However in case of severely low temperature conditions if the following precaution is not observed, it may not be operated in spite of operable temperature range mentioned above and cooling capacity may not be established under certain conditions.

[Precaution]

In case of severely low temperature condition

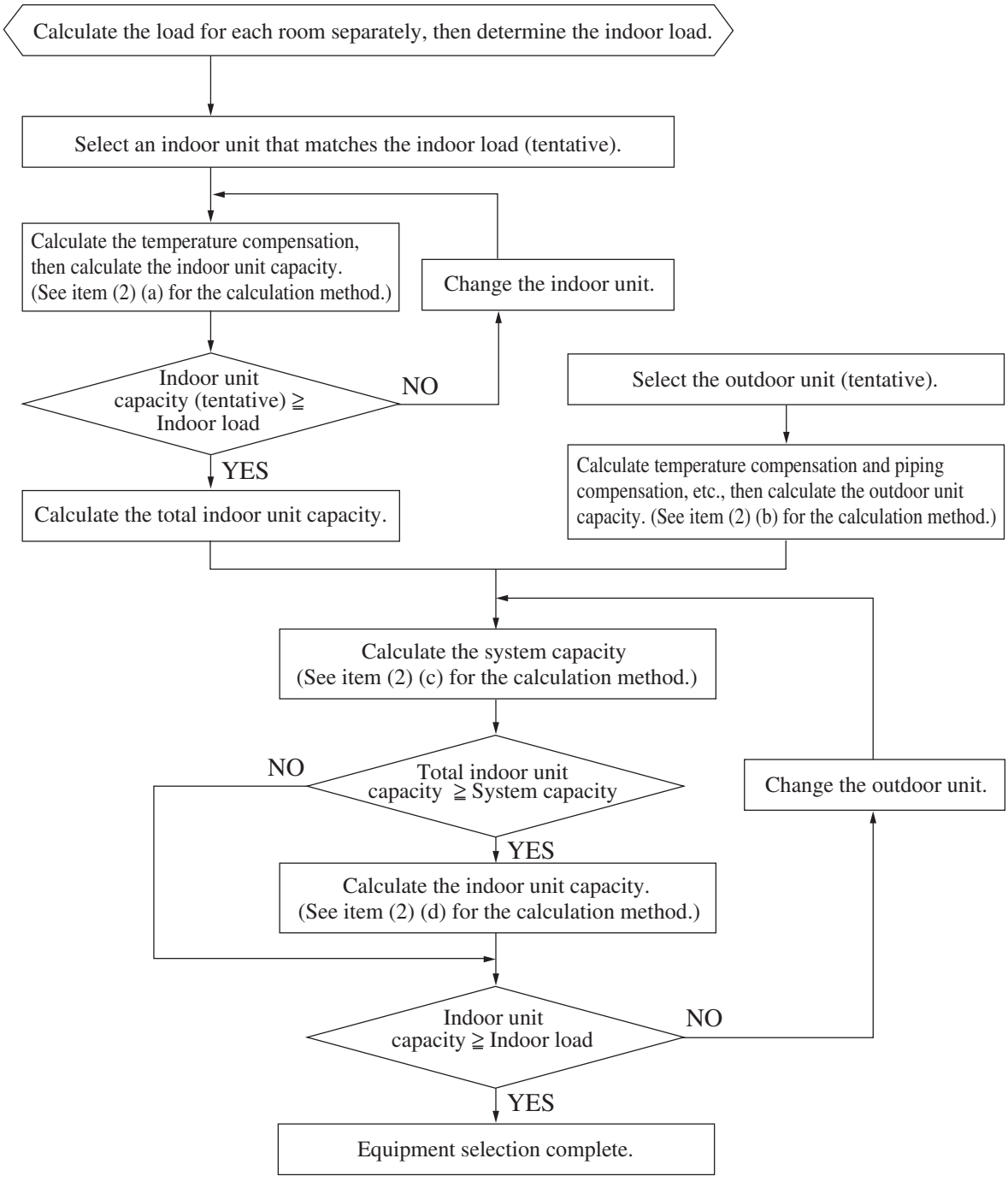
1) Install the outdoor unit at the place where strong wind cannot blow directly into the outdoor unit.
2) If there is no installation place where can prevent strong wind from directly blowing into the outdoor unit, mount the flex flow adaptor (prepared as option part) or like such devices onto the outdoor unit in order to divert the strong wind.

[Reason]

Under the low ambient air temperature conditions of -5˚C or lower, if strong wind directly blow into the outdoor unit, the outdoor heat exchanger temperature will drop, even though the outdoor fan is stopped by outdoor fan control. This makes high and low pressures to drop as well. This low pressure drop makes the indoor heat exchanger temperature to drop and will activate anti-frost control at indoor heat exchanger at frequent intervals, that cooling operation may not be established for any given time.

4. SELECTION CHART

(1) Equipment selection flow



(2) Capacity calculation method

(a) Calculating the indoor unit capacity compensation

Indoor unit capacity (cooling, heating) = Indoor unit total rated capacity
× Capacity compensation coefficient according to temperature conditions

See item (3) (a) concerning the capacity compensation coefficient according to temperature conditions.

(b) Calculating the outdoor unit capacity compensation

Outdoor Unit Capacity (Cooling, Heating) = Outdoor unit rated capacity (rated capacity when 100% connected)
× Capacity compensation coefficient according to temperature conditions
× Capacity compensation coefficient according to piping length
× Capacity compensation coefficient according to height difference
× Correction of heating capacity in relation to the frost on the outdoor unit heat exchanger
× Capacity compensation coefficient according to indoor unit connection capacity

① See item (3) (a) concerning the capacity compensation coefficient according to temperature conditions.
② See item (3) (c) concerning the capacity compensation coefficient according to piping length.
③ See item (3) (d) concerning the capacity compensation coefficient according to height difference. This compensation should be carried out only in cases where the outdoor unit is lower during cooling and higher during heating.
④ See item (3) (e) correction of heating capacity in relation to the frost on the outdoor unit heat exchanger. This compensation should be carried out only when calculating the heating capacity.
⑤ See item (3) (f) concerning the capacity compensation coefficient according to indoor unit connected capacity. This compensation should be carried out only in cases where the indoor unit total capacity is 100% or higher.

(c) Calculating system capacity

Compare the capacities determined in items (a) and (b) above and let the smaller value be the system capacity (cooling, heating).

① In cases where indoor unit total capacity (cooling, heating) > outdoor unit capacity (cooling, heating)
System capacity (cooling, heating) = Outdoor unit capacity (cooling, heating)
② In cases where indoor unit total capacity (cooling, heating) < outdoor unit capacity (cooling, heating)
System capacity (cooling, heating) = Indoor unit capacity (cooling, heating)

(d) Calculating indoor unit capacity [item (c) ①only]

Indoor unit capacity (cooling, heating) = System capacity (cooling, heating)
× [(Indoor unit capacity) / (Indoor unit total capacity)]

Capacity calculation examples

Example 1

Cooling (when the indoor unit connected total capacity is less than 100%)

- Outdoor unit FDC140KXZES1 ..... 1 Unit
- Indoor unit FDT56KXZE1 ..... 2 Units
- Piping length ..... 60 m (Equivalent length)
- Indoor, outdoor unit height difference ..... 15 m (Outdoor unit is lower)
- Temperature conditions ..... Outdoor temperature: 33°C DB
- Temperature conditions ..... Indoor temperature: 19°C WB

<Indoor unit total cooling capacity>: Item (2) (a) calculation.

- Indoor unit rated cooling capacity: 5.6 kW
- Capacity compensation coefficient according to temperature conditions:
  1.02 (Calculated according to Indoor 19˚C WB / Outdoor 33˚C DB); (See page 16)
  Indoor unit cooling capacity: 5.6 kW × 1.02 ≒ 5.7 kW
- Indoor unit total cooling capacity calculation;
  indoor unit total cooling capacity: 5.7 kW × 2 units = <u>11.4 kW</u>

<Outdoor unit maximum cooling capacity> : Item (2) (b) calculation

- Outdoor unit rated cooling capacity: 14.0 kW
- Capacity compensation coefficient according to temperature conditions:
  1.02 (Calculated according to Indoor 19˚C WB / Outdoor 33˚C DB); (See page 16)
  Outdoor unit cooling capacity: 14.0 kW × 1.02 ≒ 14.3 kW
- Capacity compensation coefficient according to piping length: 0.87 (calculated according to 60 m length); (See page 18)
  14.3 kW × 0.87 = 12.4 kW

• Capacity compensation coefficient according to height difference: 0.97 (calculated according to 15 m difference); (See page 19)
12.4 kW × 0.97 ≒ 12.0 kW
• Capacity compensation coefficient according to indoor unit connected total capacity: 1.0 ← (56 × 2) / 140 < 100%)
No compensation

<System cooling capacity>: Item (2) (c) calculation

Compare the indoor unit total cooling capacity and the outdoor unit maximum cooling capacity. The smaller value is the actual system cooling capacity.
• Indoor unit total cooling capacity: 11.4 kW ⇨ System cooling capacity: 11.4 kW
• Outdoor unit maximum cooling capacity: 12.0 kW

<Indoor unit capacity compensation> No compensation (5.7 kW)

Example 2

Cooling (when the indoor unit connected total capacity is 100% or higher)

• Outdoor unit FDC140KXZES1 ..... 1 Unit
• Indoor unit FDT56KXZE1 ..... 3 Units
• Piping length ..... 60 m (Equivalent length)
• Indoor, outdoor unit height difference ..... 15 m (Outdoor unit is higher)
• Temperature conditions ..... Outdoor temperature: 35°C DB
• Temperature conditions ..... Indoor temperature: 18°C WB

<Indoor unit total cooling capacity>: Item (2) (a) calculation.

• Indoor unit rated cooling capacity: 5.6 kW
• Capacity compensation coefficient according to temperature conditions:
0.95 (Calculated according to Indoor 18˚C WB / Outdoor 35˚C DB); (See page 16)
Indoor unit cooling capacity: 5.6 kW × 0.95 ≒ 5.3 kW
• Indoor unit total cooling capacity calculation;
indoor unit total cooling capacity: 5.3 kW × 3 units ≒ 15.9 kW

<Outdoor unit maximum cooling capacity> : Item (2) (b) calculation

• Outdoor unit rated cooling capacity: 14.0 kW
• Capacity compensation coefficient according to temperature conditions:
0.95 (Calculated according to Indoor 18˚C WB / Outdoor 35˚C DB); (See page 16)
Outdoor unit cooling capacity: 14.0 kW × 0.95 ≒ 13.3 kW
• Capacity compensation coefficient according to piping length: 0.87 (calculated according to 60 m length); (See page 18)
13.3 kW × 0.87 ≒ 11.6 kW
• Capacity compensation coefficient according to height difference: 1.0 (the outdoor unit is higher during cooling)
No compensation
• Capacity compensation coefficient according to indoor unit connected total capacity: 1.02 ← (56 × 3) / 140 = 120%) (See page 19)
11.6 kW × 1.02 ≒ 11.8 kW

<System cooling capacity>: Item (2) (c) calculation

Compare the indoor unit total cooling capacity and the outdoor unit maximum cooling capacity. The smaller value is the actual system cooling capacity.
• Indoor unit total cooling capacity : 15.9 kW ⇨ System cooling capacity: 11.8 kW
• Outdoor unit maximum cooling capacity : 11.8 kW

<Indoor unit cooling capacity Compensation>: Item (2) (d) calculation.

$$\frac{11.8\ \text{kW} \times 5.3\ \text{kW}}{15.9\ \text{kW}} \fallingdotseq 3.9\ \text{kW}$$

Example 3

Heating (when the indoor unit connected total capacity is 100% or higher)

• Outdoor unit FDC140KXZES1 ..... 1 Unit
• Indoor unit FDT56KXZE1 ..... 3 Units
• Piping length ..... 60 m (Equivalent length)
• Indoor, outdoor unit height difference ..... 20 m (Outdoor unit is higher)
• Temperature conditions ..... Outdoor temperature: 6˚C WB
• Temperature conditions ..... Indoor temperature: 19˚C DB

<Indoor unit total heating capacity>: Item (2) (a) calculation.

• Indoor unit rated heating capacity:6.3 kW
• Capacity compensation coefficient according to temprature conditions:
1.04 (Calculated according to Outdoor 6˚C WB / Indoor 19˚C DB); (See page 17)
Indoor unit heating capacity: 6.3 kW × 1.04 ≒ 6.6 kW
• Indoor unit total heating capacity calculation;
indoor unit total heating capacity: 6.6 kW × 3 units ≒ 19.8 kW

<Outdoor unit maximum heating capacity> : Item (2) (b) calculation

- Outdoor unit rated heating capacity: 16.0 kW
- Capacity compensation coefficient according to temperature conditions:
  1.04 (Calculated according to Outdoor 6˚C WB / Indoor 19˚C DB); (See page 17)
  Outdoor unit heating capacity: 16.0 kW × 1.04 = 16.6 kW
- Capacity compensation coefficient according to piping length: 0.98 (calculated according to 60 m length); (See page 18)
  16.6 kW × 0.98 ≒ 16.3 kW
- Capacity compensation coefficient according to height difference: 0.96 (calculated according to 20 m difference); (See page 19)
  16.3 kW × 0.96 ≒ 15.6 kW
- Correction of heating capacity in relation to the frost on the outdoor unit heat exchanger: 1.0;
  15.6 kW × 1.0 ≒ 15.6 kW.
- Capacity compensation coefficient according to indoor unit connected total capacity: 1.02← (56 × 3) / 140 = 120%) (See page 19)
  15.6 kW × 1.02 ≒ 15.9 kW.

<System heating capacity>: Item (2) (c) calculation

Compare the indoor unit total heating capacity and the outdoor unit maximum heating capacity. The smaller value is the actual system heating capacity.

- Indoor unit total heating capacity : 19.8 kW ⇨ System heating capacity: 15.9 kW
- Outdoor unit maximum heating capacity : 15.9 kW

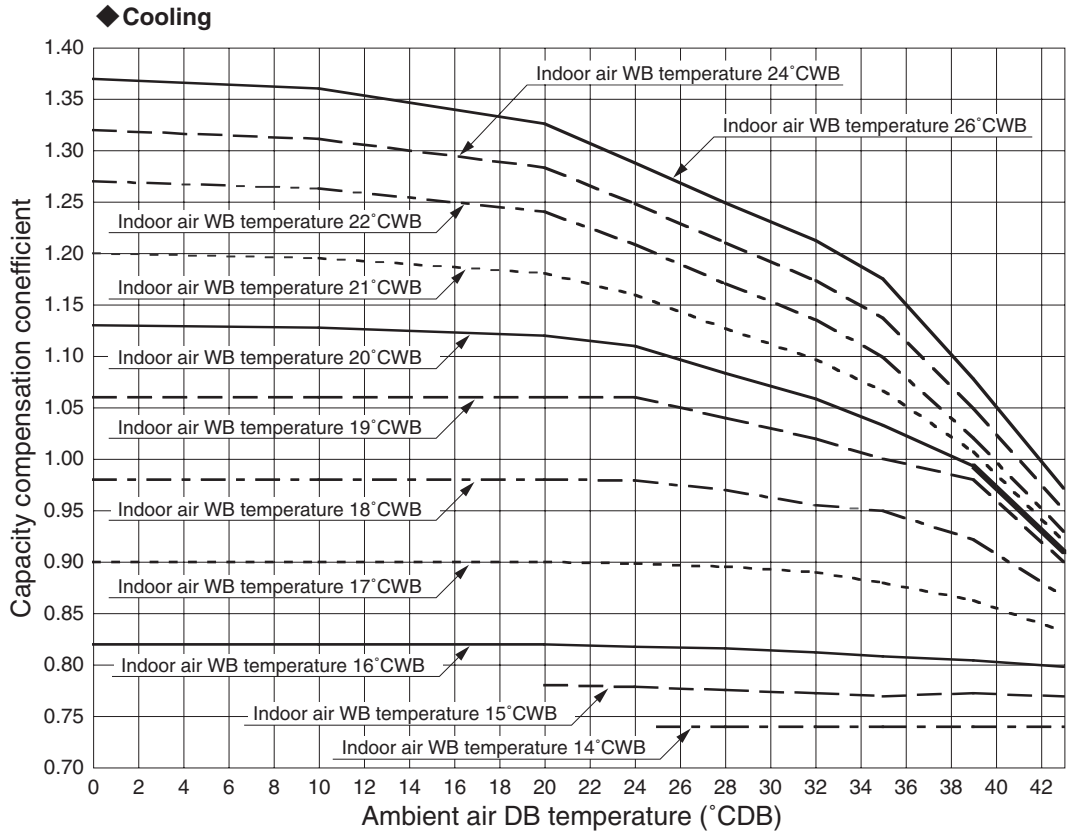
<Indoor unit heating capacity compensation> (Item (2) (d) calculation

$$\frac{15.9\ \text{kW} \times 6.6\ \text{kW}}{19.8\ \text{kW}} \fallingdotseq 5.3\ \text{kW}$$

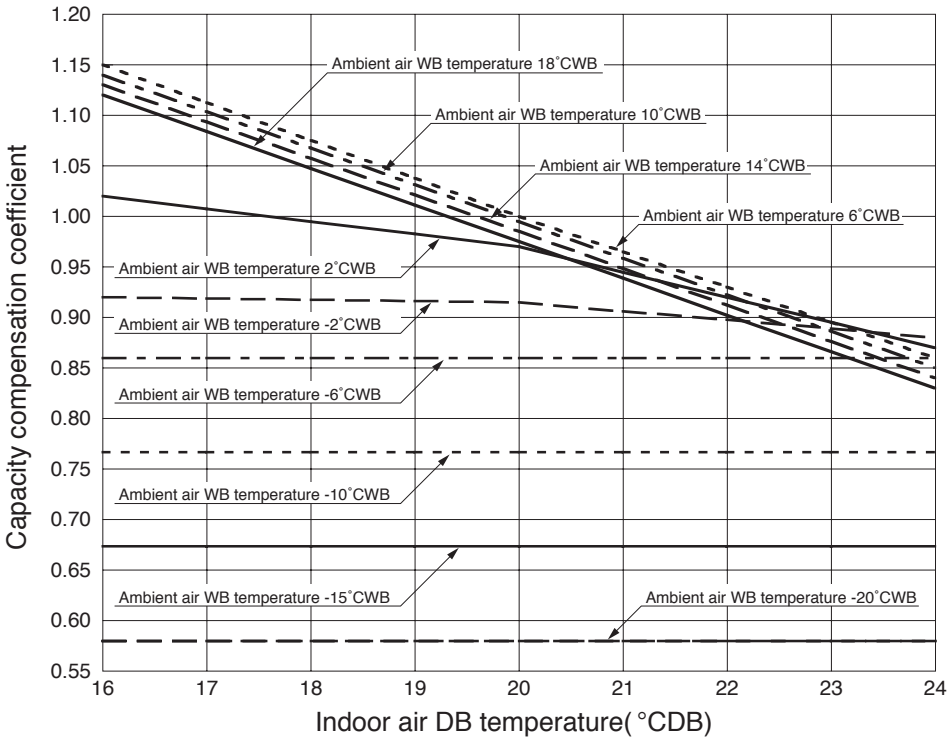
(3) Capacity compensation coefficient

(a) Capacity compensation coefficient and power consumption compensation coefficient according to indoor and outdoor temperature conditions.

1) Capacity compensation coefficient

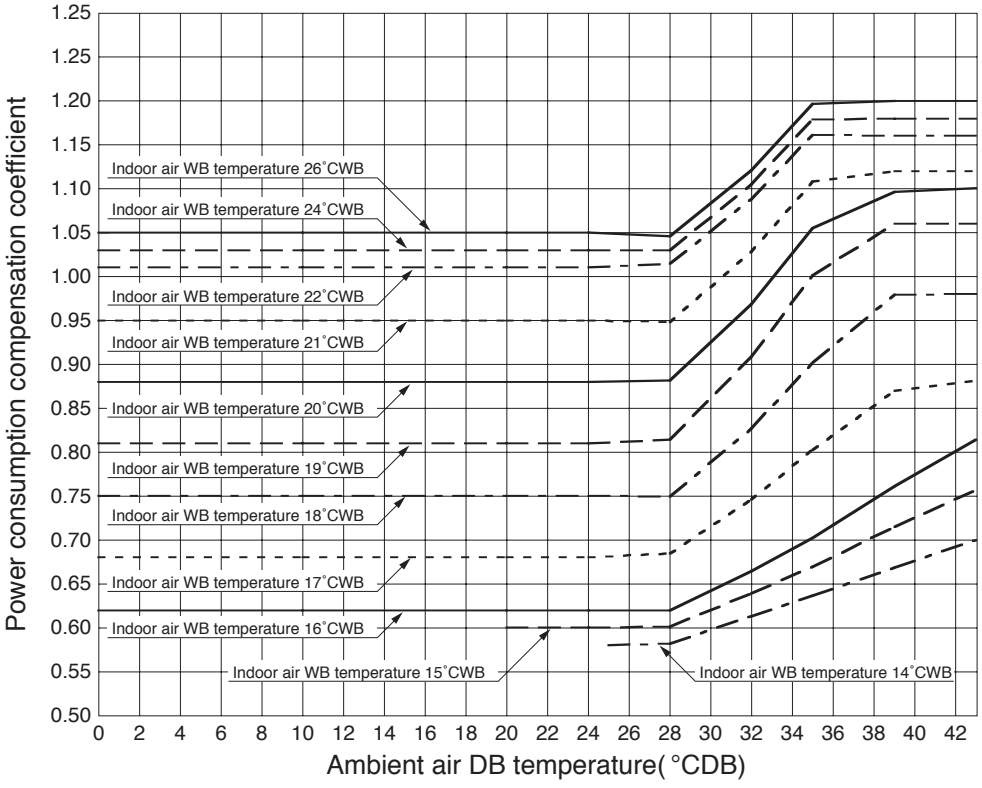


◆**Heating**

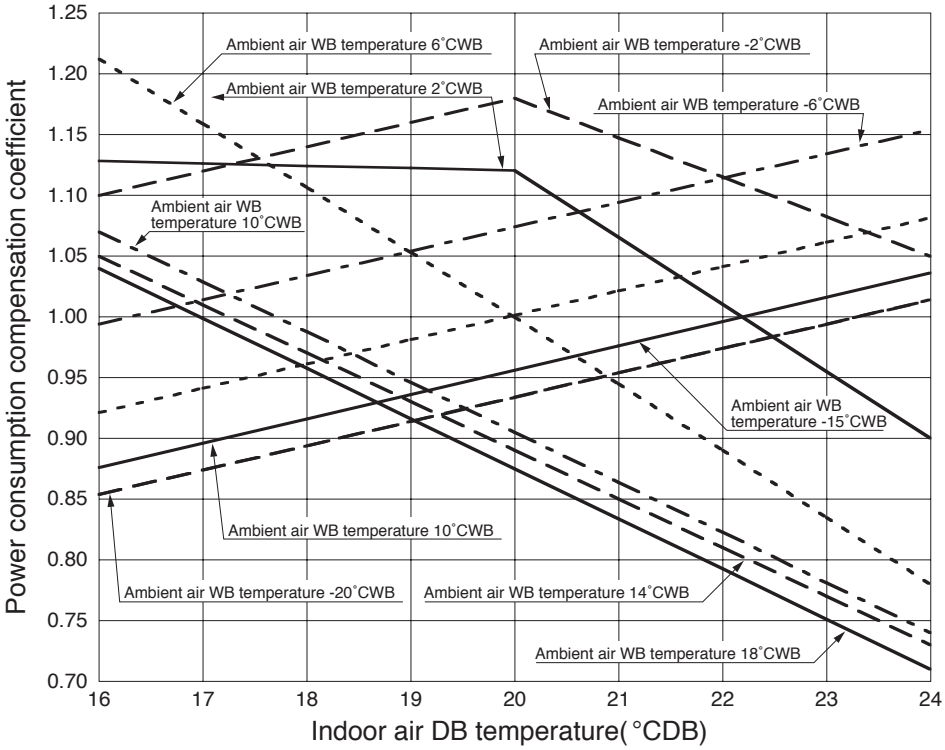


2) Power consumption correction factor

◆**Cooling**

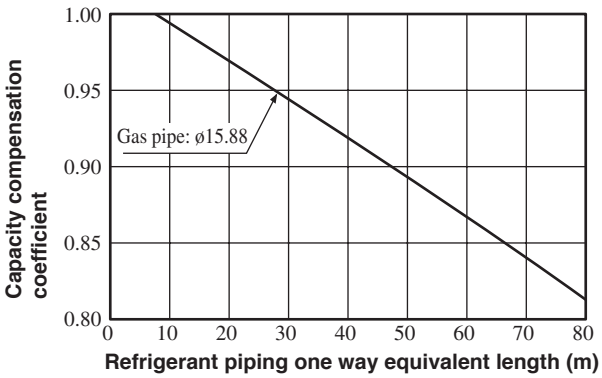


◆**Heating**

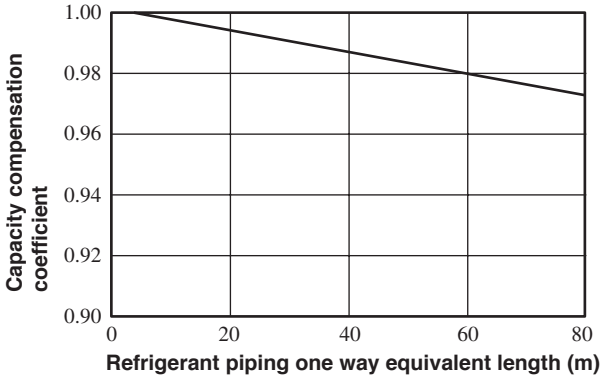


(c) Correction of cooling and heating capacity in relation to one way length of refrigerant piping.

1) Cooling



2) Heating



Note (1) Equivalent piping length can be obtained by calculating as follows.

Equivalent piping length = Real gas piping length + Number of bends in gas piping × Equivalent piping length of bends.

Equivalent length of each joint

Unit : m/one part

Gas piping size	ϕ9.52	ϕ12.7	ϕ15.88	ϕ19.05	ϕ25.4	ϕ28.58	ϕ31.8
Joint (90˚elbow)	0.15	0.20	0.25	0.30	0.40	0.45	0.55

(d) When the outdoor unit is located at a lower height than the indoor unit in cooling operation and when the outdoor unit is located at a higher height than the indoor unit in heating operation, the following values should be subtracted from the values in the above table.

Height difference between the indoor unit and outdoor unit in the vertical height difference	5 m	10 m	15 m	20 m	25 m	30 m
Adjustment coefficient	0.99	0.98	0.97	0.96	0.95	0.94

Height difference between the indoor unit and outdoor unit in the vertical height difference	35 m	40 m	45 m	50 m
Adjustment coefficient	0.93	0.92	0.91	0.90

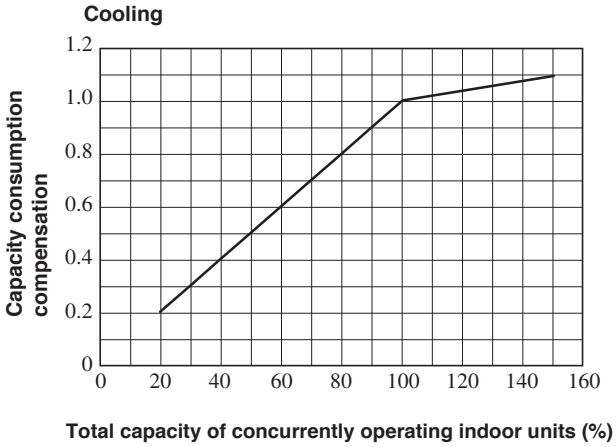
(e) Correction of heating capacity in relation to the frost on the outdoor unit heat exchanger

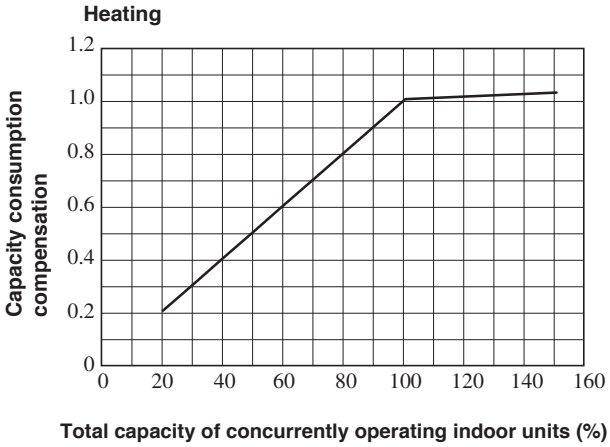
Air inlet temperature of outdoor unit in ˚C WB	-20	-15	-13	-11	-9	-7	-5	-3	-1	1	3	5 or more
Adjustment coefficient	0.96	0.96	0.96	0.95	0.94	0.93	0.91	0.88	0.86	0.87	0.92	1

The correction factors will change drastically according to weather conditions. So necessary adjustment should be made empirically according to the weather data of the particular area.

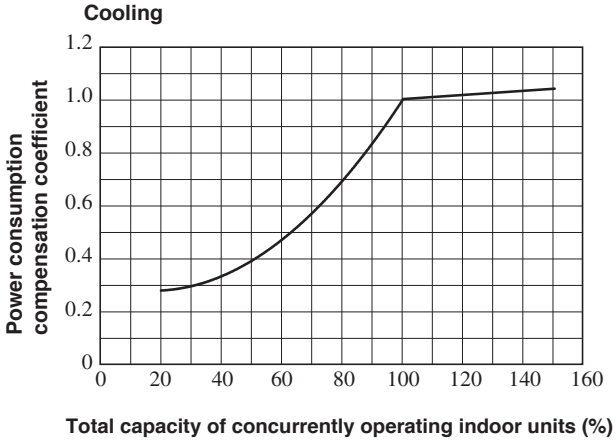
(f) The capacity compensation coefficient and power consumption compensation coefficient vary according to the total capacity of concurrently operating indoor units, as shown below.

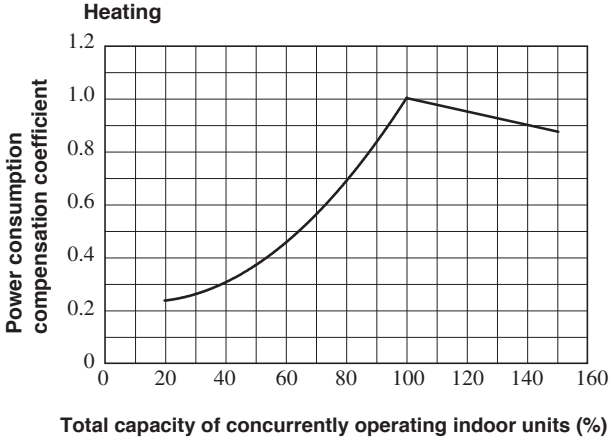
◆ **Capacity compensation coefficient**





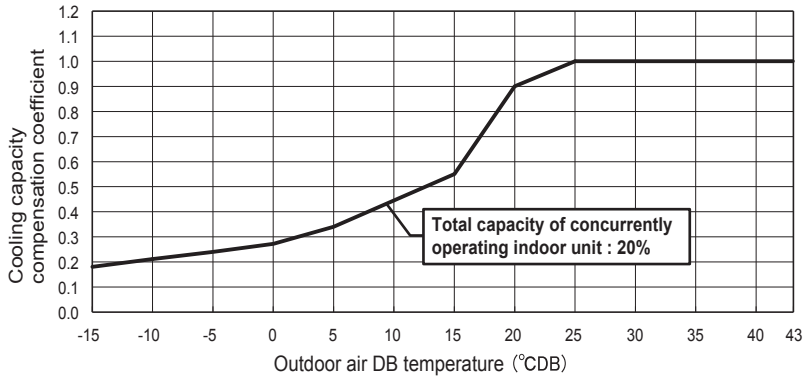
◆ **Power consumption compensation coeffcient**

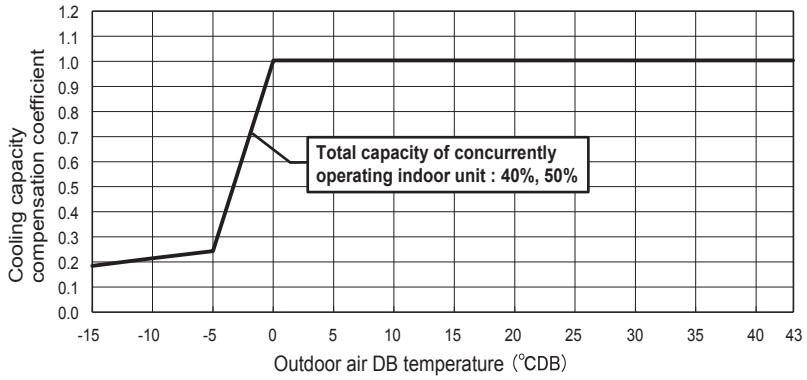


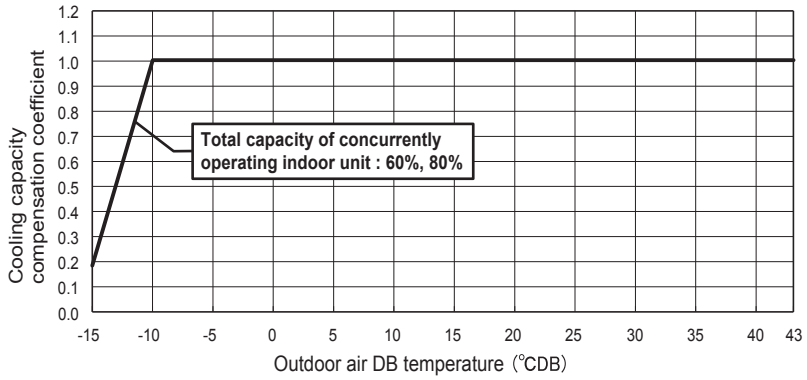


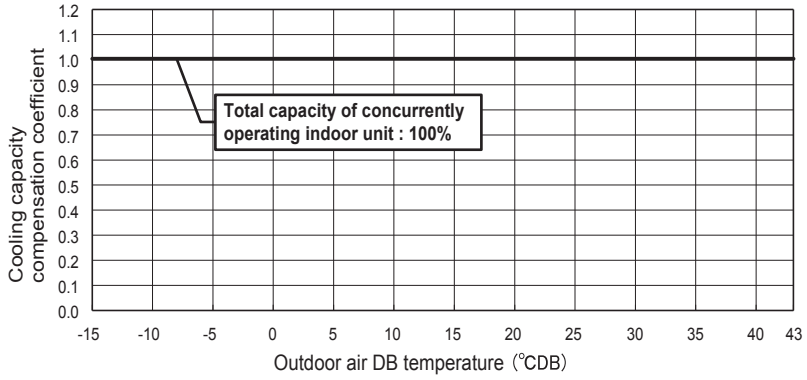
(g) The capacity compensation coefficient:
Cooling capacity in low temperature under operation of Anti-frost control.

(i) Indoor fan tap: P-Hi



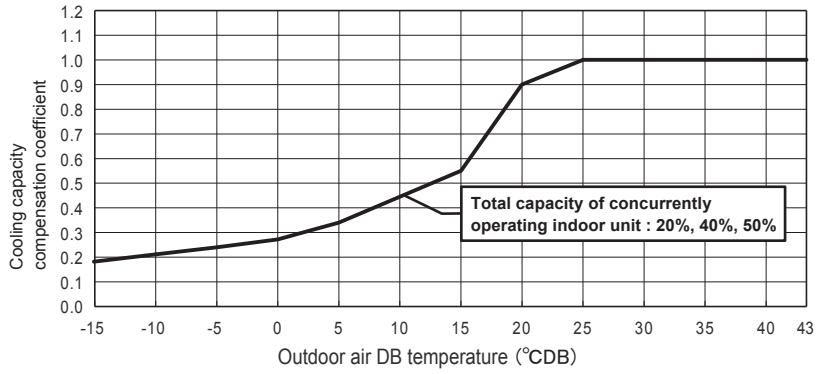


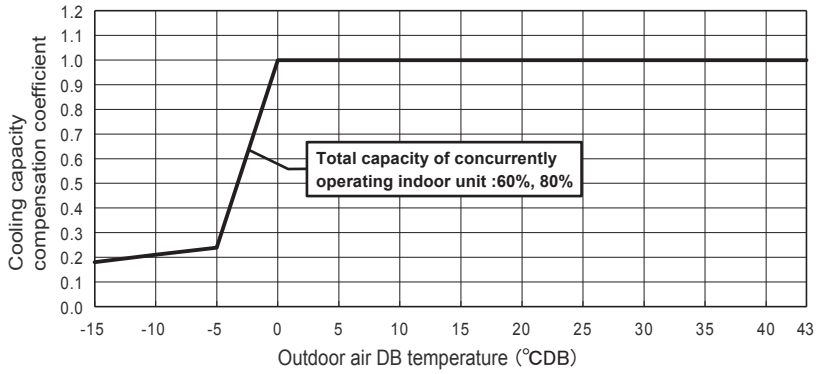


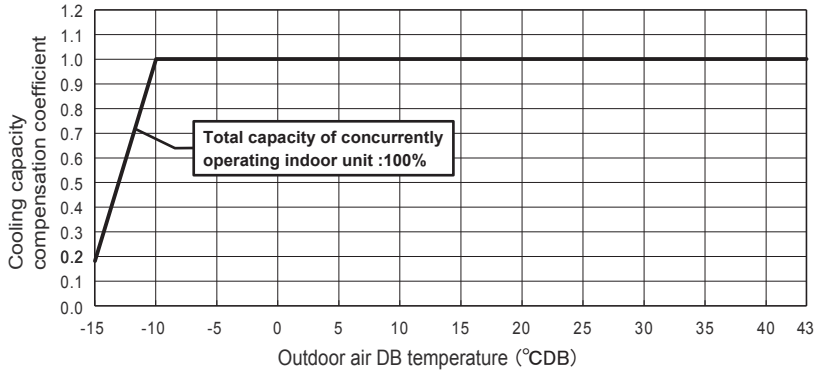


Capacity compensation coefficient is that of cooling capacity at each fan-tap.
(Condition) Room temp: 27 ℃DB/19℃WB
(*) If room temp. is lower than 27℃DB/19℃WB, cooling capacity ratio tends to be smaller than values shown in graph.
The lowest fan tap in the operating indoor units should be selected on above graph.

(ii) Indoor fan tap: Lo



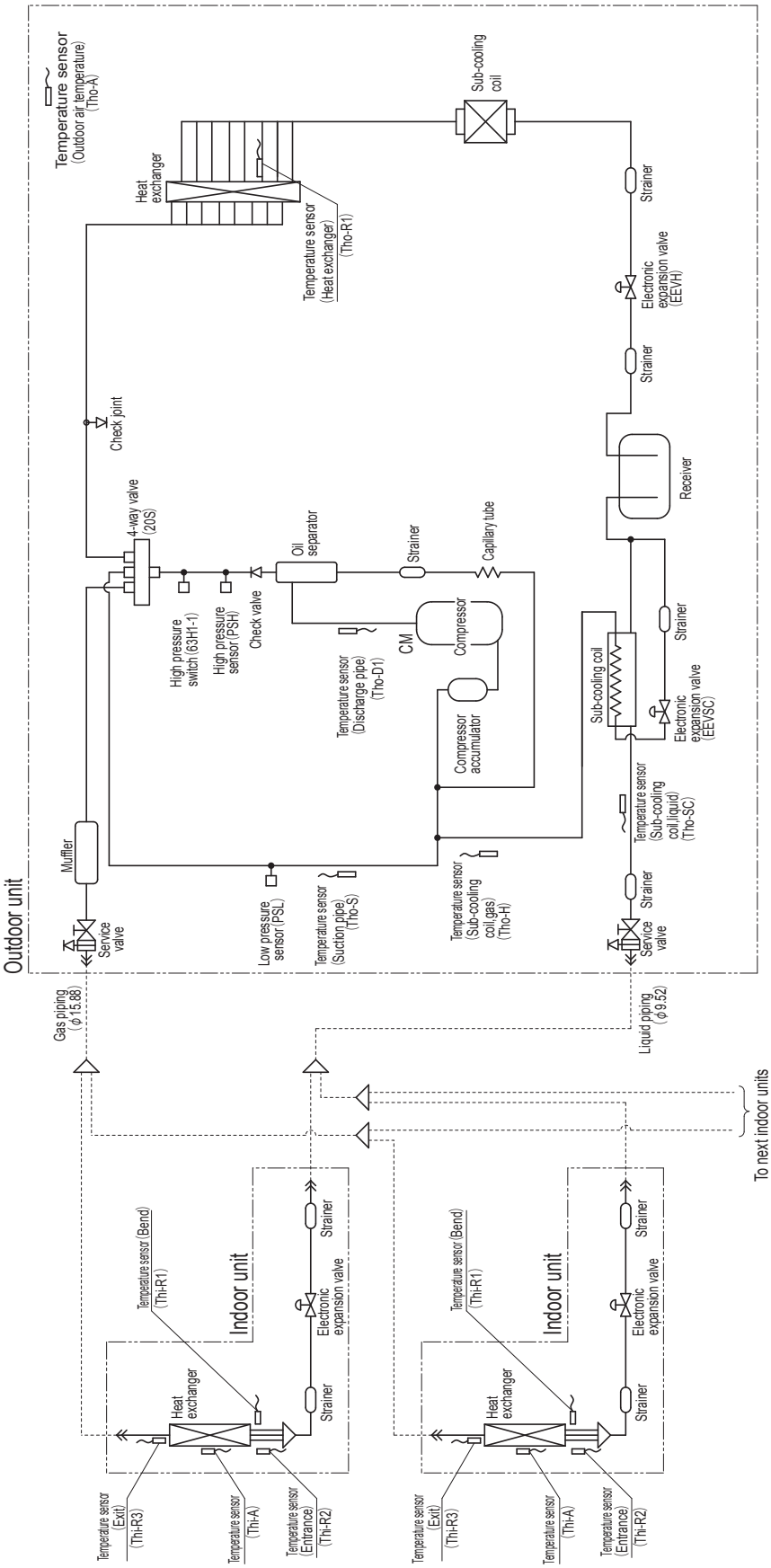




Capacity compensation coefficient is that of cooling capacity at each fan-tap.
(Condition) Room temp: 27 ℃DB/19℃WB
(*) If room temp. is lower than 27℃DB/19℃WB, cooling capacity ratio tends to be smaller than values shown in graph.
The lowest fan tap in the operating indoor units should be selected on above graph.

5. PIPING SYSTEM

All models



Notes (1) Pressure switch setting value

Name	Setting value
High pressure switch ($63H_{1-1}$) [For protection]	4.15 open/3.15 close (MPa)

(2) Function of temperature sensor

Low pressure sensor (PSL) : Compressor control
Protection
0.18 ON/0.236 OFF (MPa)
Error:
0.134 ON/0.18 OFF (MPa)

High pressure sensor (PSH) : Compressor control
Protection
Cooling: 3.70 ON (MPa)
Heating: 3.00 ON (MPa)

Thi-R1,2:Heating operation:Indoor fan control
Cooling operation:Frost prevention control
Superheat control

Thi-R3:Superheat control

Tho-R1 : For control of defrost operation

Tho-A : For heating and cooling to low outdoor air temperature, for control of defrost operation

Tho-D1: For control of discharge pipe temperature

Tho-S : For control of suction pipe temperature

Sub-cooling coil temperature sensor 1 (Tho-SC) : Sub-cooling coil control during cooling

Sub-cooling coil temperature sensor 2 (Tho-H) : Sub-cooling coil control during cooling

6. APPLICATION DATA

◎This manual describes outdoor unit installation work.
◎For indoor unit installation and electrical cabling, please refer to the indoor unit installation manual and the installation guide.
◎When install the unit, be sure to check whether the selection of installation place, power source specifications, usage limitation (piping length, height differences between indoor and outdoor units, power source voltage and etc.) and installation spaces

Designed for R410A refrigerant

Outdoor unit capacity
FDC121－155

PSB012D926W

Precautions for safety

●We recommend you to read this "SAFETY PRECAUTIONS" carefully before the installation work in order to gain full advantage of the functions of the unit and to avoid malfunction due to mishandling.
●The precautions described below are divided into ⚠WARNINGS and ⚠CAUTIONS . The matters with possibilities leading to serious consequences such as death or serious personal injury due to erroneous handling are listed in the ⚠WARNINGS and the matters with possibilities leading to personal injury or damage of the unit due to erroneous handling including probability leading to serious consequences in some cases are listed in ⚠CAUTIONS . **These are very important precautions for safety. Be sure to observe all of them without fail.**
●The meaning of "Marks" used here are as shown on the right.

⃠	**Never do it under any circumstance.**	❗	**Always do it according to the instruction.**

●Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
●Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user
●For 3phase outdoor unit, EN61000-3-2 is not applicable as consent by the utility company or notification to the utility company is given before usage.
●5 and 6HP units of single phase power source are equipment complying with IEC61000-3-12.

⚠WARNING

❗
●Installation must be carried out by the qualified installer.
If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury , as a result of a system malfunction.
●Install the system in full accordance with the instruction manual.
Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
●Use the original accessories and the specified components for installation.
If parts other than those prescribed by us are used, It may cause fall of the unit, water leaks, electric shocks, fire, refrigerant leak, substanard performance, contrl failure and personal injury.
●When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage accordance with ISO5149.
Consult the expert about prevention measures. If the density of refrigerant exceeds the limit in the event of leakage, lack of oxygen can occur, which can cause serious accidents.
●Ventilate the working area well in the event of refrigerant leakage during installation.
If the refrigerant comes into contact with naked flames, poisonous gas is produced.
●After completed installation, check that no refrigerant leaks from the system.
If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
●Hang up the unit at the specified points with ropes which can support the weight in lifting for portage. And to avoid jolting out of alignment, be sure to hang up the unit at 4-point support.
An improper manner of portage such as 3-point support can cause death or serious personal injury due to falling of the unit.
●Install the unit in a location with good support.
Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
●Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.
Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
●The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.
Power source with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
●Be sure to shut off the power before starting electrical work.
Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
●Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.
Unconformable cables can cause electric leak, anomalous heat production or fire.
●Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.
Loose connections or cable mountings can cause anomalous heat production or fire.
●Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.
Incorrect installation may result in overheating and fire.
●In connecting the power cable, make sure that no anomakies such as dust deposits, socket clogging or wobble are found and insert the plug securely.
Accumulation of dust, clogging on the socket, or looseness of plugging can cause electric shocks and fire.
●Be sure not to reuse existing refrigerant pipes
Conventional refrigerant oil or chlorine contained in the conventional refrigerant which is remaining in the existing refrigerant pipes can cause deterioration of refrigerant oil of new unit. And 1.6 times higher pressure of R410A refrigerant than conventional one can cause burst of existing pipe, personal injury or serious accident.
●Do not perform brazing work in the airtight room.
It can cause lack of oxygen.
●Use the prescribed pipes, flare nuts and tools for R410A.
Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
●Tighten the flare nut by using double spanners and torque wrench according to prescribed method. Be sure not to tighten the flare nut too much.
Loose flare connection or damage on the flare part by tightening with excess torque can cause burst or refrigerant leaks which may result in lack of oxygen.
●Do not open the service valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.
If the compressor is operated in state of opening service valves before completed connection of refrigerant piping work, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked into refrigerant circuit, which can cause burst or personal injury due to anomalously high pressure in the refrigerant.
●Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.
Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. It can also cause the corrosion of the indoor unit and resultant unit failure or refrigerant leak.
●Only use prescribed optional parts. The installation must be carried out by the qualified installer.
If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
●Do not perform any change of protective device itself or its setup condition
The forced operation by short-circuiting protective device of pressure switch and temperature control or the use of non specified component can cause fire or burst.
●Be sure to switch off the power source in the event of installation, inspection or servicing.
If the power source is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
●Consult the dealer or an expert regarding removal of the unit.
Incorrect installation can cause water leaks, electric shocks or fire.
●Stop the compressor before closing valve and disconnecting refrigerant pipes in case of pump down operation.
If disconnecting refrigerant pipes in state of opening service valves before compressor stopping, you may incur frost bite or injury from an abrupt refrigerant outflow and air can be sucked, which can cause burst or personal injury due to anomalously high pressure in the refrigerant circuit.

⃠
●Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.
If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
●Do not run the unit with removed panels or protections.
Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
●Be sure to fix up the service panels.
Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
●Do not perform any repairs or modifications by yourself. Consult the dealer if the unit requires repair.
If you repair or modify the unit, it can cause water leaks, electric shocks or fire.

⚠CAUTION

❗
●Use the circuit breaker for all pole with correct capacity.
Using the incorrect circuit breaker, it can cause the unit malfunction and fire.
●Take care when carrying the unit by hand.
If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
●Dispose of any packing materials correctly.
Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
●Pay attention not to damage the drain pan by weld spatter when welding work is done near the indoor unit.
If weld spatter entered into the indoor unit during welding work, it can cause pin-hole in drain pan and result in water leakage. To prevent such damage, keep the indoor unit in its packing or cover it.
●Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.
Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
●Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.
If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
●Perform installation work properly according to this installation manual.
Improper installation can cause abnormal vibrations or increased noise generation.
●Earth leakage breaker must be installed
If the earth leakage breaker is not installed, it can cause fire or electric shocks.

⏚
●Carry out the electrical work for ground lead with care.
Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks or fire due to short-circuiting. Never connect the grounding wire to a gas pipe because if gas leaks, it could cause explosion or ignition.

⃠
●Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.
Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
●Do not install the unit near the location where leakage of combustible gases can occur.
If leaked gases accumulate around the unit, it can cause fire.
●Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.
Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
●Secure a space for installation, inspection and maintenance specified in the manual.
Insufficient space can result in accident such as personal injury due to falling from the installation place.
●When the outdoor unit is installed on a roof or a high place, provide permanent ladders and handrails along the access route and fences and handrails around the outdoor unit.
If safety facilities are not provided, it can cause personal injury due to falling from the installation place.
●Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics
Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
●Do not install the outdoor unit in a location where insects and small animals can inhabit.
Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
●Do not use base flame for outdoor unit which is corroded or damaged due to long periods of operation.
Using an old and damage base flame can cause the unit falling down and cause personal injury.
●Do not install the unit in the locations listed below.
• Locations where carbon fiber, metal powder or any powder is floating.
• Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
• Vehicles and ships
• Locations where cosmetic or special sprays are often used.
• Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
• Locations where any machines which generate high frequency harmonics are used.
• Locations with salty atmospheres such as coastlines
• Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual)
• Locations where the unit is exposed to chimney smoke
• Locations at high altitude (more than 1000m high)
• Locations with ammonic atmospheres (e.g.organic fertilizer)
• Locations with calcium chloride (e.g.snow melting agent)
• Locations where heat radiation from other heat source can affect the unit
• Locations without good air circulation.
• Locations with any obstacles which can prevent inlet and outlet air of the unit
• Locations where short-circuit of air can occur (in case of multiple units installation)
• Locations where strong air blows against the air outlet of outdoor unit
It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
●Do not install the outdoor unit in the locations listed below.
• Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.
• Locations where outlet air of the outdoor unit blows directly to an animal or plants. The outlet air can affect adversely to the plant etc.
• Locations where vibration can be amplified and transmitted due to insufficient strength of structure.
• Locations where vibration and operation sound generated by the outdoor unit can affect seriously. (on the wall or at the place near bed room)
• Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
• Locations where drainage cannot run off safely.
It can affect surrounding environment and cause a claim
●Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.
It can cause the damage of the items.
●Do not touch any buttons with wet hands.
It can cause electric shocks.
●Do not shut off the power source immediately after stopping the operation.
Wait at least 5 minutes, otherwise there is a risk of water leakage or breakdown.
●Do not control the system with main power switch.
It can cause fire or water leakage. In addition, the fan can start unexpectedly, which can cause personal injury.
●Do not touch any refrigerant pipes with your hands when the system is in operation.
During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
●Do not operate the outdoor unit with any article placed on it.
You may incur property damage or personal injure from a fall of the article.
●Do not step onto the outdoor unit.
You may incur injury from a drop or fall.

Notabilia as a unit designed for R410A

- Do not use any refrigerant other than R410A. R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant.
- A unit designed for R410A has adopted a different size outdoor unit service valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake. The processed dimension of the flared part of a refrigerant pipe and a flare nut's parallel side measurement have also been altered to raise strength against pressure. Accordingly, you are required to arrange dedicated R410A tools listed in the table on the right before installing or servicing this unit.
- Do not use a charge cylinder. The use of a charge cylinder will cause the refrigerant composition to change, which results in performance degradation.
- In charging refrigerant, always take it out from a cylinder in the liquid phase.
- All indoor units must be models designed exclusively for R410A. Please check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

	Dedicated R410A tools
a)	Gauge manifold
b)	Charge hose
c)	Electronic scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protrusion control copper pipe gauge
g)	Vacuum pump adapter
h)	Gas leak detector

1. BEFORE BEGINNING INSTALLATION

(Check that the models, power source specifications, piping, wiring are correct.)

Indoor and outdoor unit combinations

(1) Combination can be arranged with the conditions (number of units, capacity) shown below.

Indoor unit	Remote control	Connectability
FD○△△KXE6 KXZ Series indoor unit	RC—EX1A(2 cores) RC—E5(2 cores) RC—E4(2 cores) RC—E3(2 cores)	OK
FD○A△△KXE4 Series indoor unit	RC—E1(3 cores)	×

* Only indoor units of the above-listed series can be connected in the refrigerant system.

(2) The combination is possible if in the table below condition (number of units,capacity).

Indoor unit	Outdoor unit		
	121	140	155
Number of connectable units	1—8	1—10※	1—10※
Total capacity of indoor units	97—181	112—210	124—232

※When connecting 9 units or more, set the total capacity as follows:
140 : 110% or less
150 : 100% or less

[Accessory]

Name	Quantity	Usage location	Attachment position
Edging	1	Use it for protection of a knock-out hole.	It is attached to the bracket with an adhesive tape in the proximity of the service valve.
User's manual	1	When the installation work is completed, give instructions to the customer and ask him/her to keep it.	It is attached to the front of a unit.
Installation kit	1	Use it to fix the wiring.	It is attached in the unit.

[Items sold separately]

Refrigerant pipe distribution parts, which are not contained in the package, will be required for installation.
As for refrigerant pipe distribution parts, we offer branching pipe sets (Model type: DIS) and header sets (Model type: HEAD) as parts used on the indoor side of piping.
Please select one suiting your application. In selecting distribution parts, please also refer to "4. REFRIGERANT PIPING."
If you are not sure which parts to select, please consult with your dealer or the manufacturer.
Use refrigerant branching pipe sets and header sets designed exclusively for R410A without fail.

2. INSTALLATION LOCATION

(Obtain approval from the customer when selecting the installation area.)

2-1 Selecting the installation location

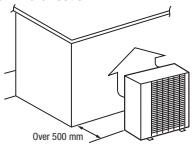
○ Where air is not trapped.
○ Where the installation fittings can be firmly installed.
○ Where any object does not prevent inlet or outlet air.
○ Out of the heat range of other heat sources.
○ Where strong winds will not blow against the outlet air.
○ A place where stringent regulation of electric noises is applicable.
○ Where it is safe for the drain water to be discharged.
○ Where noise and hot air will not bother neighboring residents.
○ Where snow will not accumulate.
○ A place where no TV set or radio receiver is placed within 5m.
(If electrical interference is caused, seek a place less likely to cause the problem)

Please note

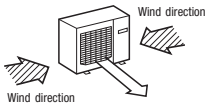
a) If there is a possibility of a short-circuit, then install a flex flow adapter.
b) When installing multiple units, provide sufficient intake space so that a short-circuit does not occur.
c) In areas where there is snowfall, install the unit in a frame or under a snow hood to prevent snow from accumulating on it.
(Inhibition of collective drain discharge in a snowy country)
d) Do not install the equipment in areas where there is a danger for potential explosive atmosphere.
e) Install the equipment in a location that can sufficiently support the weight of the equipment.
f) If a unit is installed into a special environment as shown below, there will be a danger that the corrosion of the outdoor unit or its malfunctioning is caused. If this is the case, please consult with the distributor from whom you have purchased the unit.
・Where corrosive gas is generated (such as a hot-spring resort area).
・Where the unit is subject to sea breezes (coastal area).
・Where the unit is subject to oil mists.
・Where equipment generating electromagnetic waves exists in the vicinity.
g) When strong winds occur
● Where it is likely that the unit is subjected to strong winds, provide wind guards according to the following guidelines.
Strong winds can cause performance degradation, an accidental stop due to a rise of high pressure and a broken fan.

CAUTION
Please leave sufficient clearance around the unit without fail.
Otherwise, a risk of compressor and/or electric component failure may arise.

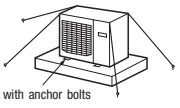
①Place the unit outlet pipe perpendicular to the wind direction.



②Please install so the direction of the air from the blowing outlet will be perpendicular to the direction of the wind.

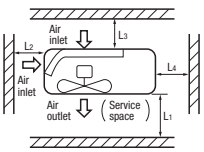


③When the foundation is not level, use wires to tie down the unit.



2-2 Installation space (Ex. servicing space)

a) Minimum installation space
(Please select an installation point with due attention to the direction of installation of the refrigerant pipe)
(If the installation conditions shown in this drawing are not satisfied, please consult with your dealer or the manufacturer.)
b) When units are installed side by side, leave a 10 mm or wider service space between the units.
c) Walls surrounding the unit in the four sides are not acceptable.
d) There must be a 1-meter or larger space in the above.
e) A barrier wall placed in front of the exhaust diffuser must not be higher than the unit.
* Please ask to the dealer regarding the options such as the flex flow adapter and the snow guard hood.



(Unit : mm)

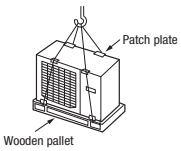
Size \ Sample	Ⅰ	Ⅱ	Ⅲ
L 1	Open	Open	500
L 2	300	5	Open
L 3	150	300	150
L 4	5	5	5

3. UNIT DELIVERY AND INSTALLATION (Take particular care in carrying in or moving the unit, and always perform such an operation with two or more persons.)

⚠ CAUTION When you sling the unit for portage, do not fail to take into consideration the deviation of the gravity center from its center. Improper slinging may cause the unit to lose balance and fall.

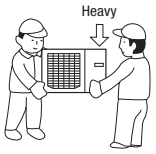
Delivery

- Deliver the unit as close as possible to the installation site before removing it from the packaging.
- If unpacked and deliver cannot be avoided, use a nylon sling or a rope with pads placed where the rope contacts the unit so it is not scratched.

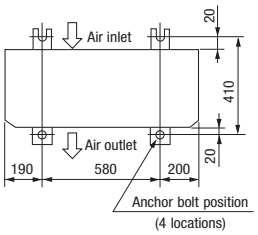


Portage

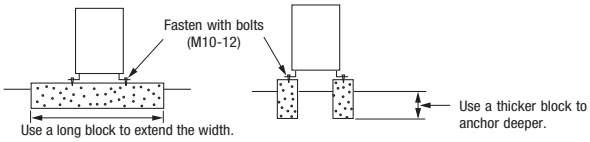
- The right hand side of the unit as viewed from the front (diffuser side) is heavier. A person carrying the right hand side must take heed of this fact. A person carrying the left hand side must hold with his right hand the handle provided on the front panel of the unit and with his left hand the corner column section.



Bolt fastening positions



- In installing the unit, fix the unit's legs with bolts specified below.



- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the above illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.)
  Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

⚠Important **In case that the unit operates in cooling mode, when the outdoor temperature is –5°C or lower, please equip a flex flow adapter and a snow guard hood (option) on the unit.**

4. REFRIGERANT PIPING

4-1 Determination of piping specifications (Please select from the following matrix according to indoor unit specifications and installation site conditions)

Refrigerant piping restrictions

Please do not fail to observe the following pipe sizes and limitations of use.
A failure to observe this instruction can result in a compressor failure or performance degradation.

- Please avoid forming any trap ( ) or bump ( ) in piping as they can cause fluid stagnation.

- Maximum length (To the farthest indoor unit) ····· Within 70m
- Equivalent length (To the farthest indoor unit) ····· Within 95m
- Total pipe length (Combined total length of pipes) ····· Within 100m
- φ9.52 pipe length ····· Within 50m

- Height difference
  (1) When the outdoor unit is above the indoor unit ····· Within 30m
  (2) When the outdoor unit is below the indoor unit ····· Within 15m
  (3) Height difference between indoor units in the same system ····· Within 15m
  (4) Height difference between indoor units and first branch ····· Within 15m

Refrigerant piping size selection

- Please use pipes clean on both the inside and outside and free from contaminants harmful to operation such as sulfur, oxides, dust, chips, oil, fat and water.
- Use the following material for refrigerant piping.
  Material: phosphorus deoxidized seamless copper pipe (C1120T-0, JIS H 3300)
- Thickness and size: Please select proper pipes according to the pipe size selection guideline.
  (Since this unit uses R410A, Select pipes having a wall thickness larger than the specified minimum pipe thickness.
- For branching pipes, use a genuine branching pipe set or header set at all times.
- Install a branching pipe set, paying attention to the direction of attachment, after you have perused through the installation manual supplied with it.
- The length of piping from outdoor unit to first branch is 1.5m or more.
- For the handling of service valves, please refer to 4-2. Piping work.

(1) Individual flow division method
- For determination of appropriate branching joint or different diameter pipe joint sizes, please refer to "Branching Pipe Set," (which can be purchased separately).

Item	Model	Gas pipe	Liquid pipe
Outdoor unit Main pipe	121, 140, 155	φ15.88	φ9.52
Total capacity of indoor units	less than 70	φ12.7	φ9.52
	70 or more	φ15.88	φ9.52

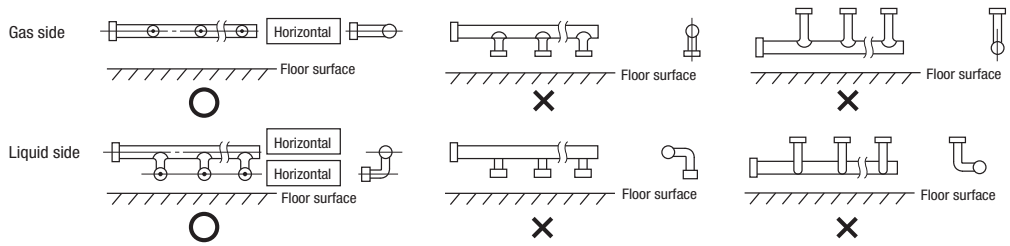
Attention

- Please use pipes of the pipe size specified for the outdoor unit for the section between the outdoor unit and the first branching joint.
- An appropriate pipe size between branching joints can vary depending on the connected indoor unit capacity (total capacity connected downstream), please select an appropriate pipe size from the table shown on the right.
- The pipe size between the branch pipe and the indoor unit should match that of the indoor unit.
- Always install branch pipes either horizontally or vertically.

(2) Header Method
- Depending on the number of units connected, connect blind pipes to header branching points (on the indoor unit connection side).
- For determination of appropriate header, different diameter pipe joint and blind pipe sizes, please refer to "Header Set," (which can be purchased separately).

Attention

- For the section between an indoor unit and the header, use a pipe of the diameter specified for the indoor unit.
- To couple with the header, use a different diameter pipe joint to adjust to the pipe diameter specified for the indoor unit.
- The header must be so installed that it branches horizontally. (for both gas and liquid)



Unit piping specifications The piping material should be phosphorus deoxidized copper seamless steel pipes. (C1220T, JIS H 3300)

Item	Model	Gas side			Liquid side		
		Pipe diameter (mm)	Minimum pipe wall thickness (mm)	Connection method	Pipe diameter (mm)	Minimum pipe wall thickness (mm)	Connection method
Outdoor unit	121, 140, 155	ϕ15.88	1.0	Flare	ϕ9.52	0.8	Flare
Indoor unit	15	ϕ 9.52	0.8		ϕ6.35	0.8	
	22	ϕ 9.52	0.8		ϕ6.35	0.8	
	28	ϕ 9.52	0.8		ϕ6.35	0.8	
	36	ϕ12.7	0.8		ϕ6.35	0.8	
	45	ϕ12.7	0.8		ϕ6.35	0.8	
	56	ϕ12.7	0.8		ϕ6.35	0.8	
	71	ϕ15.88	1.0		ϕ9.52	0.8	
	90	ϕ15.88	1.0		ϕ9.52	0.8	
	112	ϕ15.88	1.0		ϕ9.52	0.8	
	140	ϕ15.88	1.0		ϕ9.52	0.8	
	160	ϕ15.88	1.0		ϕ9.52	0.8	

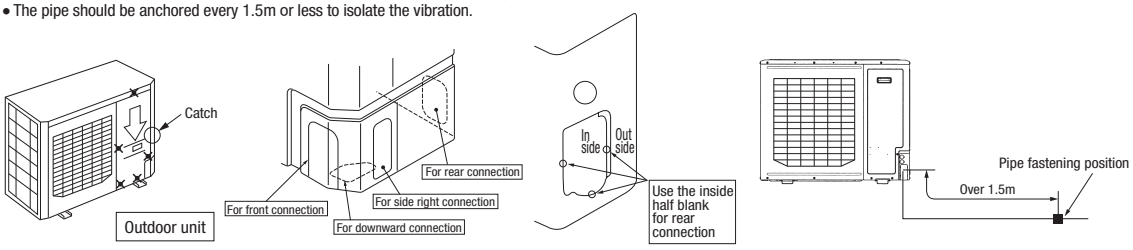
Attention

- Always select pipes meeting the minimum wall thickness requirement.

4-2 Piping work

Piping connection position and the piping remove direction

- First remove the five screws (✕ mark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you.
- The pipe can be laid in any of the following directions: side right, front, rear and downward.
- Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an appropriate length before laying a pipe.
- In laying pipes on the installation site, cut off the casing's half blank that covers a hole for pipe penetration with nippers.
- If there is a risk of small animals entering from the pipe penetration part, close the part with some sealing material or the like (to be arranged on the installer's part).
- In the case of an installation using a collective drain system, use a port other than the bottom one to take out cables and pipes. If the bottom port is used, seal it thoroughly so that drain water may not spill out.
- Use an elbow (to be arranged on the user's part) to connect control valves to the piping.
- In anchoring piping on the installation site, give 1.5m or a longer distance between an outdoor unit and an anchoring point where the piping is secured as illustrated below. (A failure to observe this instruction may result in a pipe fracture depending on a method of isolating vibrations employed.)
- The pipe should be anchored every 1.5m or less to isolate the vibration.

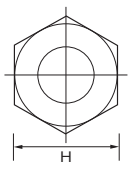


(1) On-site piping work

Important

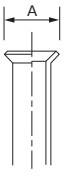
CAUTION
If you tighten it without using double spanners, you may deform the service valve, which can cause an inflow of nitrogen gas into the outdoor unit.

- Please take care so that installed pipes may not touch components within a unit.
- **During the pipe installation at site, keep the service valves shut all the time.**
- Give **sufficient protections** (compressed and brazed or by an adhesive tape) **to pipe ends so that any water or foreign matters may not enter the pipes.**
- In bending a pipe, bend it **to the largest possible radius (at least four times the pipe diameter).** Do not bend a pipe repeatedly to correct its form.
- An outdoor unit's pipe and refrigerant piping are to be flare connected. Flare a pipe after engaging a flare nut onto it. A flare size for R410A is different from that for conventional R407C. Although we recommend the use of flaring tools developed specifically for R410A, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- Tighten a flare joint securely **with two spanners**. Observe flare nut tightening torque specified in the table below.



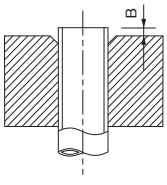
Flare nut parallel side measurement: H (mm)

Copper pipe outer diameter	H
ϕ6.35	17
ϕ9.52	22
ϕ12.7	26
ϕ15.88	29



Flared pipe end: A (mm)

Copper pipe outer diameter	A 0 -0.4
ϕ6.35	9.1
ϕ9.52	13.2
ϕ12.7	16.6
ϕ15.88	19.7

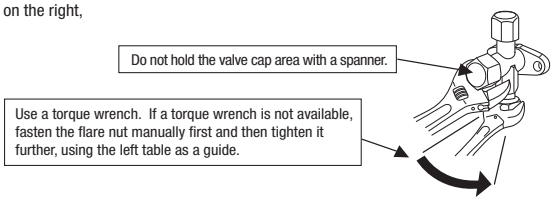


Copper pipe protrusion for flaring: B (mm)

Copper pipe outer diameter	In the case of a rigid (clutch) type	
	With an R410A tool	With a conventional tool
ϕ6.35	0—0.5	0.7—1.3
ϕ9.52		
ϕ12.7		
ϕ15.88		

Fix both liquid and gas service valves at the valve main bodies as illustrated on the right, and then fasten them, applying appropriate fastening torque.

Service valve size (mm)	Tightening torque (N・m)	Tightening angle (°)	Recommended length of a tool handle (mm)
φ6.35 (1/4")	14—18	45—60	150
φ9.52 (3/8")	34—42	30—45	200
φ12.7 (1/2")	49—61	30—45	250
φ15.88(5/8")	68—82	15—20	300

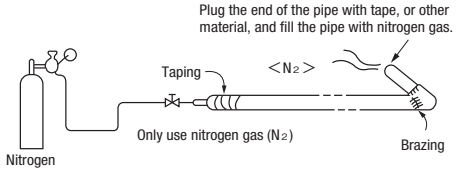


- Do not apply any oil on a flare joint.
- **Blazing must be performed under a nitrogen gas flow.** Without nitrogen gas, a large quantity of foreign matters (oxidized film) are created, causing a critical failure from capillary tube or expansion valve clogging.
- Brazing of the service valve and the pipes should be performed while cooling the valve body with a wet towel.
- Perform flushing. To flush the piping, charge nitrogen gas at about 0.02MPa with a pipe end closed with a hand. When pressure inside builds up to a sufficient level, remove the hand to flush. (in flushing a pipe, close the other end of the pipe with a plug).

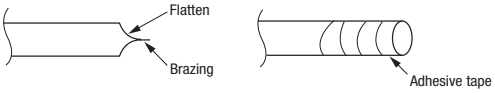
Operation procedure

① **During the pipe installation at site, keep the service valves shut all the time.**

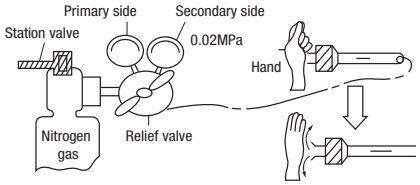
② **Blazing must be performed under a nitrogen gas flow.** Without nitrogen gas, a large quantity of foreign matters (oxidized film) are created, causing a critical failure from capillary tube or expansion valve clogging.



③ Give **sufficient protections** (compressed and brazed or with an adhesive tape) **so that water or foreign matters may not enter the piping.**



④ Perform flushing. To flush the piping, charge nitrogen gas at about 0.02MPa with a pipe end closed with a hand. When pressure inside builds up to a sufficient level, remove the hand to flush. (in flushing a pipe, close the other end of the pipe with a plug).



4-3 Air tightness test and air purge (Carry them out according to the following steps.)

Air tightness test

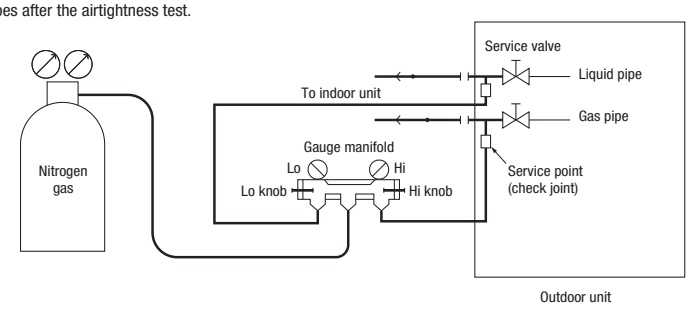
① Although an outdoor unit itself has been tested for air tightness at the factory, please check the connected pipes and indoor units for air tightness from the check joint of the service valve on the outdoor unit side. While conducting a test, **keep the service valve shut all the time.**

② Since refrigerant piping is pressurized to the design pressure of a unit with nitrogen gas for testing air tightness, please connect instruments according the drawing below. Under no circumstances should chlorine-based refrigerant, oxygen or any other combustible gas be used to pressurize a system
Keep the service valve shut all the time. Do not open it under any circumstances.
Be sure to pressurize all of the liquid, gas pipes.

CAUTION
Applying excessive pressure can cause an inflow of nitrogen gas into an outdoor unit.

③ In pressurizing the piping, do not apply the specified level of pressure all at once, but gradually raise pressure.
a) **Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes or more** to see if the pressure drops.
b) **Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes** to see if the pressure drops.
c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
d) **If no pressure drop is observed with an installation pressurized to** the specified level **and left for about one day, it is acceptable.** When the ambient temperature changes 1℃, the pressure also changes approximately 0.01 MPa. The pressure, if changed, should be compensated for.
e) If a pressure drop is observed in checking e) and a) – d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air-tightness test again.

④ Always pull air from the pipes after the airtightness test.



Vacuuming Please pull air **from the check joints of the service valves on both liquid and gas sides**.

＜**Work flow**＞

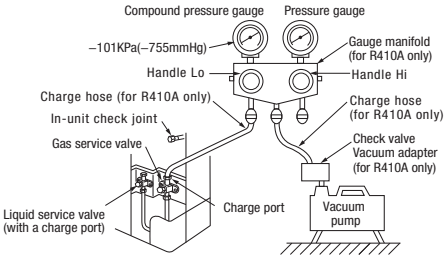
When the system has remaining moisture inside or a leaky point, the vacuum gauge indicator will rise.
Check the system for a leaky point and then draw air to create a vacuum again.

Airtighteness test completed
↓
Vacuuming begins
↓
Please run the vacuum pump for at least one hour after the vacuum gauge shows -101kPa or lower. (-755mmHg or lower)
↓
Vacuuming completed
↓
Confirm that the vacuum gauge indicator does not rise **after leaving the system for an hour or more**.
↓
Vacuum gauge check
↓
Fill refrigerant

CAUTION
Insufficient vacuuming may result in poor performance falling short of the design capacity, pipe clogging due to residue moisture and/or a compressor failure.

Pay attention to the following points in addition to the above for the R410A and compatible machines.

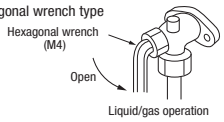
○To prevent a different oil from entering, please assign dedicated tools, etc. to each refrigerant type. Under no circumstances must a gauge manifold and a charge hose in particular be shared with other refrigerant types (R22, R407C, etc.).
○Use a counterflow prevention adapter to prevent vacuum pump oil from entering the refrigerant system.



• You can purge air with either liquid service valve or gas service valve.

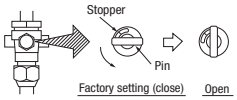
When a vacuum air purge is completed, remove the valve rod cap nuts and open the service valves (both liquid and gas sides) as illustrated below. After you have made sure that the valves are in the full-open position, tighten the cap nuts (for the valve rods and charge ports).

▶ Hexagonal wrench type



• Open the valve rod until it touches the stopper. You need not apply force to push it further.

▶ Pin type
Remove the hexagon cap nut, set it as illustrated in the drawing below.



For tightening torque, refer to the table below.

Service valve size (mm)	Tightening torque (N・m)	Cap tightening torque (N・m)	Cap nut tightening torque of check joint (N・m)
φ9.52 (3/8")	6—8	20—30	13
φ15.88(5/8")	14—16	30—35	13

・When an operation is completed, replace the cap nut and tighten it as before.
・Shaft operation, cap and cap nut is performed by excessive torque, it will become failure and a cause of a leak, please follow a table.

4–4 Additional refrigerant charge

Additional refrigerant charge

Charge additional refrigerant **in the liquid state**.
Be sure to measure the quantity **with a scale in adding refrigerant**.
If you cannot charge all refrigerant with the outdoor unit lying idle, charge it with the unit running in the test run mode. (For the test run method, please refer to Section 8)
If operated for a long time with insufficient refrigerant the compressor will be damaged. (In particular, when adding refrigerant during operation, complete the job within 30min.)
Fill this unit only with the standard amount of refrigerant (piping length 0m fill quantity).
Determine the amount of refrigerant to be charged additionally using the following formula and put down the amount of refrigerant added on the refrigerant charge volume recording plate provided on the back of the side panel.

●Adding additional refrigerant

Charge additional refrigerant according to the size and length of the liquid piping.
Determine additional charge volume by rounding to the nearest 0.1 kg.

Item / Capacity	Standard refrigerant charge volume (kg)	Pipe length for baseline charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
121, 140, 155	3.38	0	0.054 (Liquid piping φ9.52)	5.0	30

Refrigerant pipe size	φ9.52	φ6.35
Additional charge volume (kg)	0.054	0.022

● A standard refrigerant charge volume means a refrigerant charge volume for an installation with 0m long refrigerant piping.
● **This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping.**
When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.

Formula to calculate the volume of additional refrigerant required

Model 121,140,155	Total refrigerant (necessary) charge volume (kg) = Standard refrigerant charge 3.38kg + φ9.52 Total length of liquid pipes (m) x 0.054(kg/m) + φ6.35 Total length of liquid pipes (m) x 0.022 Additional charge volume (kg) = Total refrigerant (necessary) charge volume (kg) - Factory charged volume 5 (kg)

*When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.

● **If the pipe length is shorter than 5 m, you should charge a reduced refrigerant volume.**
Recover the refrigerant from the system and charge the standard refrigerant charge + the amount for liquid pipe.

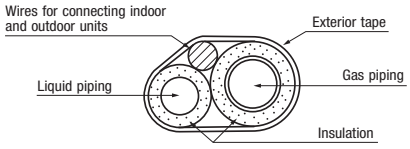
Pay attention to the following points in addition to the above for the R410A and compatible machines.

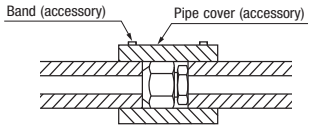
• To prevent a different oil from entering, please assign dedicated tools, etc. to each refrigerant type. Under no circumstances must a gauge manifold and a charge hose in particular be shared with other refrigerant types (R22, R407C, etc.).
• Refrigerant types are indicated by color at the top of the cylinder. (Pink for R410A). Always confirm this.
• Do not use a charge cylinder under any circumstances. There is a danger that the composition of the refrigerant will change when R410A is transferred to a cylinder.
• When charging refrigerant, use liquid refrigerant from a cylinder.
• Use a adverse current prevention adapter so that vacuum pump oil does not mix in a system.

4-4 Heat insulation for prevention of dew condensation

(1) Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation.
Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.
(2) Use a heat insulating material that can withstand 120℃ or a higher temperature. Poor heat insulating capacity can cause heat insulation problems or cable deterioration.

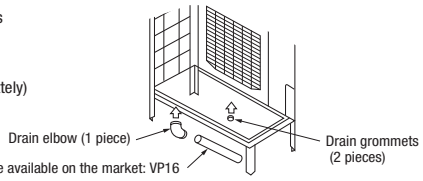
- All gas pipes must be securely heat insulated in order to prevent damage from dripping water that comes from the condensation formed on them during a cooling operation or personal injury from burns because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation.
- Wrap indoor units' flare joints with heat insulating parts (pipe cover) for heat insulation (both gas and liquid pipes).
- Give heat insulation to both gas and liquid side pipes. Bundle a heat insulating material and a pipe tightly together so that no gaps may be left between them and wrap them together with a connecting cable by a dressing tape.
- Although it is verified in a test that this air-conditioning unit shows satisfactory performance under JIS condensation test conditions, both gas and liquid pipes need to be dressed with 10-20mm heat insulation materials additionally above the ceiling where relative humidity exceeds 70%.





5. DRAINAGE

- Where drain water from the outdoor unit causes problems, implement drain piping with drain elbows and drain grommets, which are supplied separately as option parts.
- There are 3 holes in the bottom panel of the outdoor unit to drain condensation.
- Where condensate is guided to a drain, install the unit on a flat base (an option part supplied separately) or concrete blocks.
- Connect a drain elbow as illustrated and plug the other holes with grommets.



6. ELECTRICAL WIRING WORK

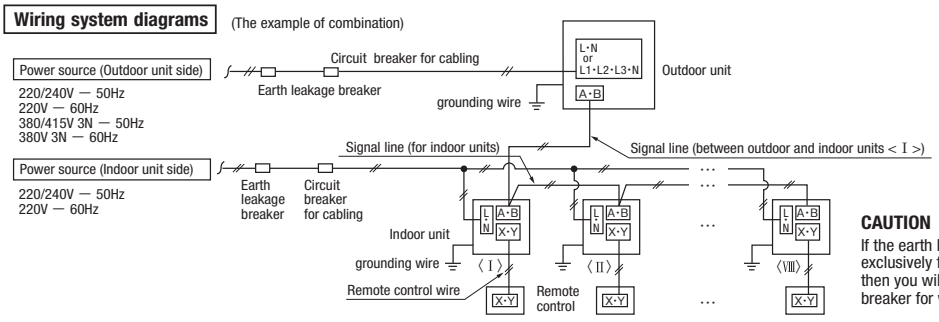
Electrical installation work must be performed by an electrical installation service provider qualified by a power provider of the country.
Electrical installation work must be executed according to the technical standards and other regulations applicable to electrical installations in the country.
⚠ **Please install an earth leakage breaker without fail**. The installation of an earth leakage breaker is compulsory in order to prevent electric shocks or fire accidents.
(Since this unit employs inverter control, please **use an impulse withstanding type** to prevent an earth leakage breaker's false actuation.)

Please note

a) Use only copper wires.
Do not use any supply cord lighter than one specified in parentheses for each type below.
- braided cord (code designation 60245 IEC 51), if allowed in the relevant part 2;
- ordinary tough rubber sheathed cord (code designation 60245 IEC 53);
- flat twin tinsel cord (code designation 60227 IEC 41)
- ordinary polyvinyl chloride sheathed cord (code designation 60227 IEC 53).

Please do not use anything lighter than polychloroprene sheathed flexible cord (cord designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.
b) **Use separate power sources for the indoor and outdoor units**.
c) **The power sources for indoor units in the same system should turn on and off simultaneously**.
d) Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire.
A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
If improperly grounded, an electric shock or malfunction may result. Don't connect the grounding wire to a gas pipe because it could cause explosion or ignition if gas leaks.
e) **The installation of an impulse with standing type earth leakage breaker is necessary**. A failure to install an earth leakage breaker can result in an accident such as an electric shock or a fire. Do not turn on the power until the electrical work is completed. Be sure to turn off the power when servicing.
f) Please do not use a condensive capacitor for power factor improvement under any circumstances. (It does not improve power factor, while it can cause an abnormal overheat accident)
g) For power source cables, use conduits.
h) Please **do not lay electronic control cables (remote control and signaling lines) and other high current cables together outside the unit**. Laying them together can result in malfunctioning or a failure of the unit due to electric noises.
i) Power cables and signaling lines must always be connected to the terminal block and secured by cable fastening clamps provided in the unit.
j) Fasten cables so that they may not touch the piping, etc.
k) **When cables are connected, please make sure that all electrical components within the electrical component box are not free or not loose on the terminal connection** and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)
l) Make sure to use circuit breakers (earth leakage breaker and circuit breaker) of proper capacity. Use of breakers of larger capacity could result in trouble on components or fire accident. The circuit breaker should isolate all poles under over current.
m) Install isolator or disconnect switch on the power source wiring in accordance with the local codes and regulations. The isolator should be locked in OFF state in accordance with EN60204-1.
n) After maintenance, all wiring, wiring ties and the like, should be returned to their original state and wiring route, and the necessary clearance from all metal parts should be secured.

Wiring system diagrams (The example of combination)



CAUTION
If the earth leakage breaker is exclusively for ground fault protection, then you will need to install a circuit breaker for wiring work.

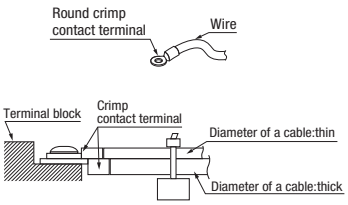
Method of connecting power cables

(1) Method of leading out cables

- As shown on the drawing in Section 4-2, cables can be laid through the front, right, left or bottom casing.
- In wiring on the installation site, cut off a half-blank covering a penetration of the casing with nippers.
- In the case of an installation using a collective drain system, use a port other than the bottom one to take out cables and pipes. If the bottom port is used, seal it thoroughly so that drain water may not spill out.

(2) Notabilia in connecting power cables

- Connect the ground wire before you connect the power cable. When you connect a grounding wire to a terminal block, use a grounding wire longer than the power cable so that it may not be subject to tension.
- Do not turn on power until installation work is completed. Turn off power to the unit before you service the unit.
- Always connect power cables to the power terminal block.
- To connect a cable to the power terminal block, use a round crimp contact terminal. If two cables are to be connected to one terminal, arrange cables in such a manner that you put their crimp contact terminals together back to back. Further, put the thinner cable above the thicker one in arranging cables for such connection.
- Use specified wires in wiring, and fasten them securely in such a manner that the terminal blocks are not subject to external force.
- In fastening a screw of a terminal block, use a correct-size driver. Fastening a screw of a terminal block with excessive force can break the screw.
- When electrical installation work is completed, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection.



Power source specifications

(1) Outdoor unit power source (Indoor unit is another power source.)

Model	Power source	Cable size for power source (mm^2)	Wire length (m)	Moulded-case circuit breaker (A)		Earth leakage breaker	Earth wire	
				Rated current	Switch capacity		Size (mm^2)	Screw type
121KXZEN1 140KXZEN1 155KXZEN1	Single-phase 220/240V 50Hz 220V 60Hz	8	32	40	50	40A, 30mA less than 0.1 sec	2	M5
121KXZES1 140KXZES1 155KXZES1	Three-phase 380/415V 50Hz 380V 60Hz	3.5	46	20	30	20A, 30mA less than 0.1 sec	2	M4

Please note

a) The method of laying cables has been determined pursuant to the Japanese indoor wiring regulations (JEAC8001). (Please adapt it to the regulations in effect in each country)
b) Wire length in the table above is the value for when the indoor unit is connect to the power cable in series also the wire size and minimum length when the power drop is less than 2% are shown. If the current exceeds the value in the table above, change the wire size according to the indoor wiring regulations. (Please adapt it to the regulations in effect in each country)
c) For details, please refer to the installation manual supplied with the indoor unit.

How to connect signal cables

The communication protocol can be choosen from following two types. One of them is the conventional Superlink (hereinafter previous SL) and the other is the new Superlink Ⅱ (hereinafter new SL) . These two communication protocols have the following advantages and restrictions, so please choose a desirable one meeting your installation conditions such as connected indoor units and central control. When signal cables are connected into a network involving outdoor units, indoor units or central control equipment that do not support new SL, please select communications in the previous SL mode, even if the refrigerant system is separated from theirs.

Communication protocol	Conventional communication protocol (previous SL)	New communication protocol (new SL)
Outdoor unit setting (SW5-5)	ON	OFF (factory setting)
No. of connectable indoor units in a network	Max. 48	Max. 128
No. of connectable outdoor unitsin a network	Max. 48	Max. 32
Signal cable (total length)	Up to 1000m	Up to 1500m (When 0.75mm^2 shielded cable used) Up to 1000m (When 1.25mm^2 shielded cable used)
Signal cable (furthest length)	Up to 1000m	Up to 1000m
Connectable units to a network	Units not supporting new SL (FD○A△△KXE4 series) Units supporting new SL (FD○△△KXE6 series) Can be used together. (*1)	Units supporting new SL (FD○△△KXE6 KXZ series)

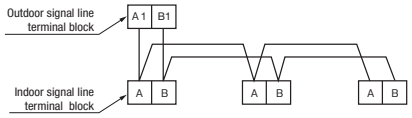
※1 New SL supporting units and non-supporting units cannot be used together in a same refrigerant system.

●**A signal cable system is operated at DC5V, so never connect it to the power source 220/240V or 380/415V.** If the power source is applied, a protective fuse provided on the board will be actuated. If the protective fuse is actuated, follow the procedure set out below.
(1) Turn off power and make sure that 220/240V or 380/415V is not applied to signaling wires.
(2) In the case of an indoor unit, switch from CNK1 to CNK2 and cut the jumper line JSL1.
(3) In the case of an outdoor unit, switch from CNX1 to CNX2 and cut the jumper line J10.
(4) Check signal cable terminal block resistance before you turn on power. If the resistance value is 100 ohms or less, there is possibility that a power cable is connected to a signal cable terminal block.
A typical resistance value is [46000 / (No. of connected FD○A△△KXE4 and KXE5 series units x 5) + (No. of connected FD○△△KXE6 and KXZ series units x 9)].
If the resistance value is 100 ohms or less, tentatively detach signal cables and thus, divide the network into more than one block (to reduce the number of indoor units connected in a network) to check for cabling errors in each such block.

Indoor and outdoor signal wires

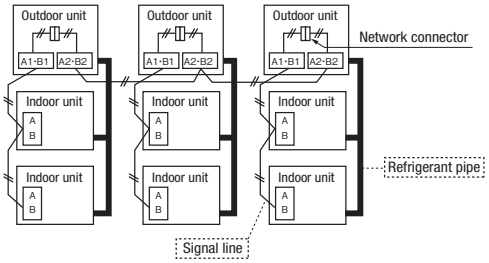
- Connect the signal line between indoor unit and outdoor unit to A1 and B1.
- Connect the signal line between outdoor units to A2 and B2.
- Please use a shielded cable for a signal line and connect a shielding earth at all the indoor units and outdoor units.

(1) When one outdoor unit is used.

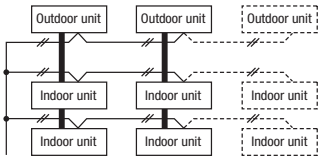


○Indoor and outdoor signal lines do not have a polarity.
Any of the connections in the following illustration can be made.

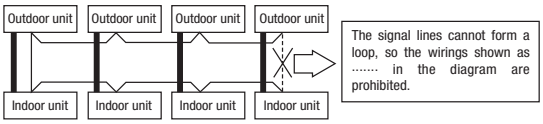
(2) When plural outdoor units are used



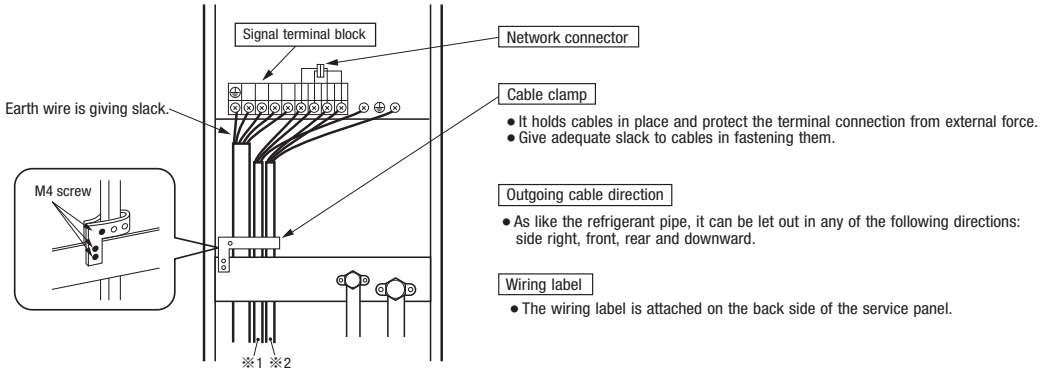
(1) The signal lines can also be connected using the method shown below.



Important ○Loop wiring prohibited.



Power cable and signal line connection



- It holds cables in place and protect the terminal connection from external force.
- Give adequate slack to cables in fastening them.

- As like the refrigerant pipe, it can be let out in any of the following directions: side right, front, rear and downward.

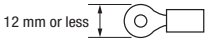
- The wiring label is attached on the back side of the service panel.

※1 Signal line between the indoor unit and the outdoor unit.
※2 Signal line between the outdoor units.

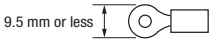
Attention

- For cabling of the power source terminal block, use crimp terminals of the figure shown below.

FDC121—155KXZEN1 (Single-phase)



FDC121—155KXZES1 (Three-phase)



- For cabling of the signal line terminal block, use crimp terminals of the figure shown below.

Remote control wiring specifications

(1) For the remote control the standard wire is 0.3mm² x 2 cores. The max. length is up to 600m. When the wire is more than 100m long, use the wire shown in the table.

Length (m)	Wire size
100 to 200	0.5mm² × 2 cores
to 300	0.75mm² × 2 cores
to 400	1.25mm² × 2 cores
to 600	2.0mm² × 2 cores

Main fuse specification

Specification	Part No.
250V 30A	SSA564A161

7. CONTROL SETTINGS

7-1 Unit address setting

This control system controls the controls of more than one air-conditioner's outdoor unit, indoor unit and remote control unit through communication control, using the microcomputers built in the respective controls. Address setting needs to be done for both outdoor and indoor units. Turn on power in the order of the outdoor units and then the indoor units.

Use 1 minute as the rule of thumb for an interval between them.

The communication protocol can be choosen from following two types. One of them is the conventional Superlink (hereinafter previous SL) and the other is the new Superlink Ⅱ (hereinafter new SL). These two communication protocols have their advantages and restrictions as summarized in a table in "6. ELECTRICAL WIRING WORK" so please choose a desirable one meeting your installation conditions such as connected indoor units and central control.

When signal cables are connected into a network involving outdoor units, indoor units or central control equipment that do not support new SL, please select communications in the previous SL mode, even if the refrigerant system is separated from theirs.

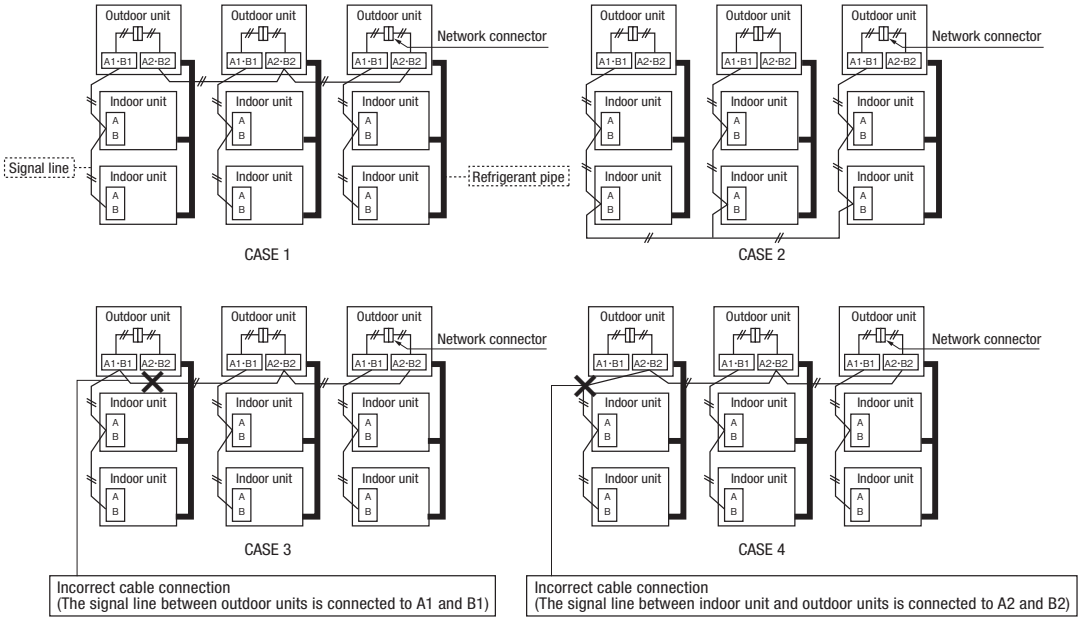
When communication is established after setting addresses, check the communication protocol with the 7-segment display panel of the outdoor unit.

●Address setting methods

The following address setting methods can be used. The procedure for automatic address setting is different from the conventional one.
Please use the automatic address setting function after reading this manual carefully.

Communication protocol		new SL		previous SL	
Address setting method		Automatic	Manual	Automatic	Manual
When only one refrigerant system is involved (signal lines do not link with plural refrigerant systems)		OK	OK	OK	OK
When plural refrigerant systems are linked with signal lines (e.g., to implement central control)	Case 1 When signal lines linking plural refrigerant systems are provided between outdoor units. (When the network connector is disconnected, refrigerant systems are separated each other)	OK※1	OK	×	OK
	Case 2 When signal lines linking plural refrigerant systems are provided between indoor units.	×※2	OK	×	OK

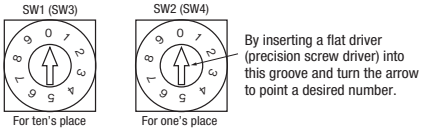
※1 Do not connect the signal line between outdoor units to A1 and B1. This may interrupt proper address setting. (Case 3)
Do not connect the signal line between indoor unit and outdoor unit to A2 and B2. This may interrupt proper address setting. (Case 4)
※2 In Case 2, automatic address setting is not available. Set addresses manually.



●Address No. setting

Set SW1 through 4 and SW5-2 provided on the PCB and SW1 & 2 provided on the outdoor unit PCB as shown in the drawings below.

Indoor PCB	SW1, 2 (blue)	For setting indoor No. (The ten's and one's)
	SW3, 4 (green)	For setting outdoor No. (The ten's and one's)
	SW5-2	Indoor No. switch (The hundred's place) [OFF : 0, ON : 1]
Outdoor PCB	SW1, 2 (green)	For setting outdoor No. (The ten's and one's)



●Summary of address setting methods (figures in [ ] should be used with previous SL)

	Units supporting new SL			Units NOT supporting new SL		
	Indoor unit address setting		Outdoor unit address setting	Indoor unit address setting		Outdoor unit address setting
	Indoor No. switch	Outdoor No. switch	Outdoor No. switch	Indoor No. switch	Outdoor No. switch	Outdoor No. switch
Manual address setting (previous SL/new SL)	000—127[47](*1)	00—31[47]	00—31[47]	00—47	00—47	00—47
Automatic address setting for single refrigerant system installation (previous SL/new SL)	000	49	49	49	49	49
Automatic address setting for multiple refrigerant systems installation (with new SL only)	000	49	00—31	×	×	×

(*1) Do not set numbers other than those shown in the table, or an error may be generated.
Note: When units supporting new SL are added to a network using previous SL such as one involving FD○A△△KXE4 series units, choose previous SL for the communication protocol and set addresses manually.

- An outdoor unit No., which is used to identify which outdoor unit and indoor units are connected in a refrigerant system, is set on outdoor unit PCB and indoor unit PCB. Give the same outdoor unit No. to all outdoor unit and indoor units connected in same refrigerant system.
- An indoor unit No. is used to identify individual indoor units. Assign a unique number that is not assigned to any other indoor units on the network.

Unless stated otherwise, the following procedures apply, when new SL is chosen for the communication protocol.
When previous SL is chosen, use figures shown in [ ] in carrying out these procedures.

Manual address setting Generally applicable to new SL/previous SL, use figures in [ ] with previous SL.

① Outdoor unit address setting
Set as follows before you turn on power. Upon turning on power, the outdoor unit address is registered.
Set **the Outdoor Unit No. switch to a number 00 - 31 [in the case of previous SL: 00 - 47]**.
Set a unique number by avoiding the numbers assigned to other outdoor units on the network.

② Indoor unit address setting
Set as follows before you turn on power. Upon turning on power, the indoor unit address is registered.
Set **the Indoor Unit No. switch to a number 000 - 127 [in the case of previous SL: 00 - 47]**.
Set **the Outdoor Unit No. switch** to the outdoor unit No. of the associated outdoor unit within the range of **00 - 31 [in the case of previous SL: 00 - 47].**
Set a unique number by avoiding the numbers assigned to other indoor units on the network.

③ Turn on power in order from the outdoor unit to indoor units. Give a one-minute or longer interval for them.
* When there are some units not supporting new SL connected in the network, set SW5-5 to ON to choose the previous SL communication mode.
In the case of previous SL, the maximum number of indoor units connectable in a network is 48.

Automatic address setting Generally applicable to new SL/previous SL, use figures in [ ] with previous SL.

With new SL, you can set indoor unit addresses automatically even for an installation involving multiple refrigerant systems connected with same network, in addition to the conventional automatic address setting of a single refrigerant system installation.
However, an installation must satisfy some additional requirements such as for wiring methods, so please read this manual carefully before you carry out automatic address setting.

(1) In the case of a single refrigerant system installation (Generally applicable to new SL/previous SL, use figures in [ ] with previous SL.)

① Outdoor unit address setting
Set as follows before you turn on power.
Make sure that the **Outdoor Unit No. switch** is set to **49 (factory setting)**
② Indoor unit address setting
Set as follows before you turn on power.
Make sure that the **Indoor Unit No. switch** is set to **000 [in the case of previous SL: 49] (factory setting)**
Make sure that the **Outdoor Unit No. switch** is set to **49 (factory setting)**
③ Turn on power in order from the outdoor unit to indoor units. Give a one-minute or longer interval for them. Unlike the procedure set out in (2) below, you need not change settings from the 7-segment display panel.
④ Make sure that the number of indoor units indicated on the 7-segment display panel agrees with the number of the indoor units that are actually connected to the refrigerant system.

(2) In the case of a multiple refrigerant systems installation (Applicable to new SL only. In the case of previous SL, set addresses with some other method.)

(This option is available when the interconnection wiring among refrigerant systems is on the outdoor side and new SL is chosen as the communication protocol.)

Address setting procedure (perform these steps for each outdoor unit)

[STEP1] (Items set before turning on power)

① Outdoor unit address setting
Set as follows before you turn on power.
Set the **Outdoor Unit No. switch** to a number **00 - 31**. Set a unique number by avoiding the numbers assigned to other outdoor units on the network.
② Indoor unit address setting
Set as follows before you turn on power.
Make sure that the **Indoor Unit No. switch** is set to **000 (factory setting)**
Make sure that the **Outdoor Unit No. switch** is set to **49 (factory setting)**
③ Isolate the present refrigerant system from the network.
Disengage the **network connectors (white 2P)** of the outdoor units. (Turning on power without isolating each refrigerant system will result in erroneous address setting.)

[STEP2] (Power on and automatic address setting)

④ Turn on power to the outdoor unit
Turn on power in order from the outdoor unit to indoor units. Give a one-minute or longer interval for them.
⑤ Select and enter "1" in P31 on the 7-segment display panel of each outdoor unit to input "Automatic address start."
⑥ Input a starting address and the number of connected indoor units.
Input a starting address in P32 on the 7-segment display panel of each outdoor unit.
⑦ When a starting address is entered, the display indication will switch back to the "Number of Connected Indoor Units Input" screen.
Input the number of connected indoor units from the 7-segment display panel of each outdoor unit. Please input the number of connected indoor units for each outdoor unit. (You can input it from P33 on the 7-segment display panel.)When the number of connected indoor units is entered, the 7-segment display panel indication will switch to "AUX" and start flickering.

[STEP3] (Automatic address setting completion check)

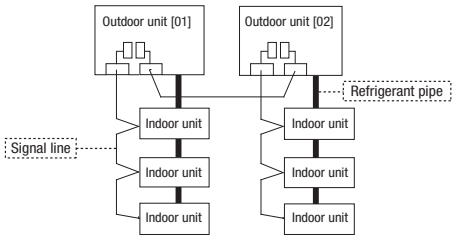
⑧ Indoor unit address determination
When the indoor unit addresses are all set, the 7-segment display panel indication will switch to "AUE" and start flickering.
If an error is detected in this process, the display will show "A○○."
Check the 7-segment display panel of each outdoor unit.
Depending on the number of connected indoor units, it may take **about 30 minutes** before the indoor unit addresses are all set.

[STEP4] (Network definition setting)

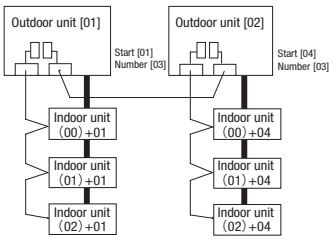
⑨ Network connection
When you have confirmed an "AUE" indication on the display of each outdoor unit, **engage the network connectors** again.
⑩ Network polarity setting
After you have made sure that the network connectors are engaged, select and enter "1" in P34 on the 7-segment display panel of **any outdoor unit (on only 1 unit)** to specify network polarity.
⑪ Network setting completion check
When the network is defined, "End" will appear on the 7-segment display panel. An "End" indication will go off, when some operation is made from the 7-segment display panel or 3 minutes after.

	STEP1	STEP2	STEP3	STEP4
Indoor unit power source	②OFF	④ON	—	—
Outdoor unit power source	①OFF	④ON	—	—
Indoor unit (indoor/outdoor No.switch)	②indoor000/outdoor 49 (factory setting)	—	—	—
Outdoor unit (outdoor No.switch)	①01,02(Ex)	—	—	—
Network connectors	③Disconnect(each outdoor unit)	—	—	⑨Connect(each outdoor unit)
Start automatic address setting		⑤ Select "Automatic Address Start" on each outdoor unit.		
Set starting address		⑥outdoor 01:「01」(Ex) outdoor 02:「04」(Ex)	—	—
Set the number of indoor unit		⑦outdoor 01:「03」(Ex) outdoor 02:「03」(Ex)	—	—
Polarity setting		—	—	⑩ Set in P34 on the 7-segment display panel of any outdoor unit.
7-segment display		⑦ 「AUX」 (Blink)	⑧ "AUE"(blink), or "A○○" in error events.	⑪ 「End」

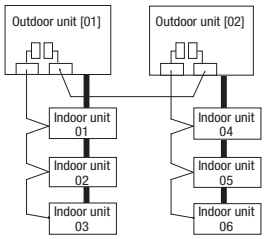
[STEP1]



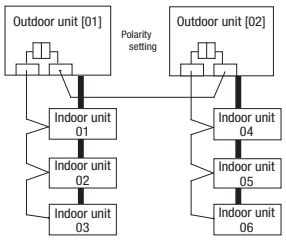
[STEP2]



[STEP3]



[STEP4]



- Within a refrigerant system, indoor units are assigned addresses in the order they are recognized by the outdoor unit. Therefore, they are not necessarily assigned addresses in order from the nearest to the outdoor unit first as depicted in drawings above.
- Make sure that power has been turned on to all indoor units.
- When addresses are set, you can have the registered indoor unit address No.'s and the outdoor unit address No. displayed on the remote control unit by pressing its inspection switch.
- Automatic address setting can be used for an installation in which prulal indoor units are controlled from one remote control unit.
- Once they are registered, addresses are stored in microcomputers, even if power is turned off.
- If you want to change an address after automatic address setting, you can change it from the remote control unit with its "Address Change" function or by means of manual setting. Set a unique address by avoiding the address assigned to other indoor unit on the network when the address is changed.
- Do not turn on power to central control equipment until automatic address setting is completed.
- When addresses are set, be sure to perform a test run and ensure that you can operate all indoor and outdoor units normally. Also check the addresses assigned to the indoor units.

Address change (available only with new SL)

"Address Change" is used, **when you want to change an indoor unit address assigned with the "Automatic Address Setting" function from a remote control unit**. Accordingly, the conditions that permit an address change from a remote control unit are as follows.

	Indoor unit address setting		Outdoor unit address setting
	Indoor No.switch	Outdoor No.switch	Outdoor No.switch
Automatic address setting forsingle refrigerant system installation	000	49	49
Automatic address setting for multiple refrigerant systems installation	000	49	00—31

If "CHANGE ADD. ▼" is selected with some addresses falling outside these conditions, the following indication will appear for 3 seconds on the remote control "INVALID OPER" .

Operating procedure

(1) When single indoor unit is connected to the remote control.

	Item	Operation	Display
1	Address change mode	① Press the AIR CON No. switch for 3 seconds or longer.	[CHANGE ADD.▼]
		② Each time when you press the ◆switch, the display indication will be switched.	[CHANGE ADD.▼] ⇔[MASTER I/U▲]
		③ Press the Set switch when the display shows "CHANGE ADD. ▼" and then start the address change mode, changing the display indication to the "Indoor Unit No. Setting" screen from the currently assigned address.	[I/U 001 O/U 01] (1sec) →[◆ SET I/U ADD.] (1sec) →[I/U 001 ◆] (Blink)
2	To set a new indoor unit No.	④ Set a new indoor unit No. with the ◆switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively.	[I/U 000▲] ⇔[I/U 001] ⇔[I/U 002] ⇔ ・・・ ⇔[I/U 127▼]
		⑤ After selecting an address, press the Set switch, and then the indoor unit address No. is defined.	[I/U 002] (2sec)
3	To set a new outdoor unit No.	⑥ After showing the defined indoor address No. for 2 seconds, the display will change to the "Outdoor Address No. Setting" screen. The currently assigned address is shown as a default value.	[I/U 002] (2sec Lighting) →[◆SET O/U ADD.] (1sec) →[O/U 01 ◆] (Blink)
		⑦ Set a new outdoor unit No. with the ◆switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively.	[O/U 00▲] ⇔[O/U 01 ◆] ⇔[O/U 02 ◆] ⇔ ・・・ ⇔[O/U 31▼]
		⑧ After selecting an address, press the Set switch, and then the outdoor unit No. and the indoor unit No. are defined.	[I/U 002 O/U 02] (2sec Lighting) →[SET COMPLETE] (2sec Lighting) →Returns to normal condition.

(2) When plural indoor units are connected to the remote control.

When plural indoor units are connected, you can change their addresses without altering their cable connection.

	Item	Operation	Display
1	Address change mode	① Press the AIR CON No. switch for 3 seconds or longer.	[CHANGE ADD▼]
		② Each time when you press the ◆ switch, the display indication will be switched.	[CHANGE ADD▼] ⇔[MASTER I/U▲]
		③ Press the Set switch when the display shows "CHANGE ADD. ▼" The lowest indoor unit No. among the indoor units connected to the remote control unit will be shown.	[◆SELECT I/U] (1sec) →[I/U 001 O/U 01▲] (Blink)
2	Selecting an indoor unit to be changed address	④ Pressing the ◆ switch will change the display indication cyclically to show the unit No.'s of the indoor units connected to the remote control and the unit No.'s of the outdoor units connected with them.	[I/U 001 O/U 01▲] ⇔[I/U 002 O/U 01 ◆] ⇔[I/U 003 O/U 01 ◆] ⇔ ・・・ ⇔[I/U 016 O/U 01▼]
		⑤ Then the address No. of the indoor unit to be changed is determined and the screen switches to the display " ◆ SET I/U ADD."	[◆ SET I/U ADD.] (1sec) →[I/U 001◆](Blink)
3	Setting a new indoor unit No.	⑥ Set a new indoor unit No. with the ◆ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively.	[I/U 000▲] ⇔[I/U 001 ◆] ⇔[I/U 002 ◆] ⇔ ・・・ ⇔[I/U 127▼]
		⑦ After selecting an address, press the Set switch. Then the address No.of the indoor unit is determined.	[I/U 002] (2sec)
4	Setting a new outdoor unit No.	⑧ The display will indicate the determined indoor address No. for 2 seconds and then switch to the " ◆ SET O/U ADD." screen. A default value shown on the display is the current address.	[I/U 002] (2sec lighting) ⇔[◆ SET O/U ADD.](1sec) ⇔[O/U 01 ◆] (Blink)
		⑨ Set a new outdoor unit No. with the ◆ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively.	[O/U 00▲] ⇔[O/U 01 ◆] ⇔[O/U 02 ◆] ⇔ ・・・ ⇔[O/U 31▼]
		⑩ After selecting an address, press the Set switch. Then the address of the indoor unit and outdoor unit are determined.	[I/U 002 O/U 02](2sec lighting) →[◆ SELECT](1sec lighting) →[I/U SELECTION▼](lighting)
		⑪ If you want to continue to change addresses, return to step ④.	[Press the ◆switch](1sec) →[SET COMPLETE] (2—10sec lighting)
5	Ending the session	⑫ If you want to end the session (and reflect new address settings) In Step ⑩, press the ▼ switch to select "END ▲." If you have finished changing addresses, press the Set switch while "END ▲" is shown. While new settings are being transmitted, "SET COMPLETE" will be indicated. Then the remote control display will change to the normal state.	[END▲] →[SET COMPLETE] (2—10sec lighting) →Normal state
		⑬ If you want to end the session (without reflecting new address settings) Before you complete the present address setting session, press the "ON/OFF" switch. Then the display is change to exit from this mode and switch the display to the normal state. All address settings changed in the session will be aborted and not reflected.	[ON/OFF] →Forced termination

The ◆switch will continuously change the display indication to the next one in every 0.25 seconds when it is pressed for 0.75 seconds or longer.
If the Reset switch is pressed during an operation, the display indication returns to the one that was shown before the last Set switch operation.
Even if an indoor unit No. is changed in this mode, the registered indoor unit No. before address change mode is displayed when [I/U SELECTION▼] is shown.
When "SET COMPLETE" is shown, indoor unit No.'s are registered.

NOTICE Turn on power to central control equipment after the addresses are determined.
Turning on power in wrong order may result in a failure to recognize addresses.

● 7 segment display indication in automatic address setting

Items that are to be set by the customer

Code	Contents of a display	
P30	Communication protocol	1: New SL mode 0: Previos SL mode (The communication plotocol is displayed ; display only)
P31	Automatic address start	0: Automatic address standby 1: Automatic address start
P32	Input starting address	Specify a starting indoor unit address in automatic address setting.
P33	Input number of connected indoor units	Specify the number of indoor units connected in the refrigerant system in automatic address setting.
P34	Polarity difinition	0: Network polarity not defined. 1: Network polarity defined.

7-segment display indication in automatic address setting.

Code	Contents of a display
AUX	During automatic address setting. X: The number of indoor units recognized by the outdoor unit.
AUE	Indoor unit address setting is completed normally.
End	Polarity is defined. (Automatic address) Completed normally.

Address setting failure indication

Code	Contents of a display	Please check
A00	Unable to find any indoor unit that can be actually communicated with.	Are signal lines connected properly without any loose connections? Is power for indoor units all turned on?
A01	The number of the indoor units that can be actually communicated with is less than the number specified in P33 on the 7-segment display panel.	Are signal lines connected properly without any loose connections? Are the network connectors coupled properly? Input the number of connected indoor units again.
A02	The number of the indoor units that can be actually communicated with is more than the number specified in P33 on the 7-segment display panel.	Are signal lines connected properly without any loose connections? Are the network connectors coupled properly? Input the number of connected indoor units again.
A03	Starting address (P32) + Number of connected indoor units (P33) > 128	Input the starting address again. Input the number of connected indoor units again.
A04	While some units are operating in the previous SL mode on the network, the automatic address setting on multiple refrigerant systems is attempted.	Perform manual address setting. Arrange all units to operate in the new SL.

Error indication

Code	Contents of a display	Cause
E2	Duplicating indoor unit address.	・Incorrect manual address setting
E3	Incorrect pairing of indoor-outdoor units.	・An outdoor unit number that does not exist in the network is specified ・No master unit exists in combination outdoor unit.
E11	Address setting for plural remote controls.	・Indoor unit address is set from plural remote controls.
E12	Incorrect adderess setting of indoor units.	・Automatic address setting and manual address setting are mixed.
E31	Duplicating outdoor unit address.	・Plural outdoor units are exist as same address in same network.
E46	Incorrect setting.	・Automatic address setting and manual address setting are mixed.

7-2 CONTROL SWITCHING

Outdoor unit control settings can be changed with the DIP switch and 7-segment display P○○ setting on the PCB. In changing settings in P○○ on the 7-segment display panel, you can use SW8 (increasing a number shown on the 7-segment display panel: one's place), SW9 (increasing a number shown on the 7-segment display panel: tens place) and SW7 (data write/enter) by pressing them for a prolonged time.

Contents of Control switching	Method of control setting	
	DIP switch setting	P○○ setting on the 7-segment display panel
Forced cooling/heating mode*2	Switch SW3-7 to ON※1	Select "2" in P07. *1
Cooling test operation	Switch SW5-1 to ON + SW5-2 to ON	—
Heating test operation	Switch SW5-1 to ON + SW5-2 to OFF	—
Pump down	Close the outdoor unit service valves and perform the following operations in the stated order: (1) Switch SW5-2 to ON (2) Switch SW5-3 to ON (3) Switch SW5-1 to ON	—
Demand mode *2 (J13 closed: level input J13 opened: pulse input)	SW4-7:OFF, SW4-8:OFF※1 80% (factory setting) SW4-7:ON , SW4-8:OFF※1 60% SW4-7:OFF, SW4-8:ON※1 40% SW4-7:ON , SW4-8:ON※1 00%	Select "1" in P07. *1 —
Communication protocol setting	SW5-5 ON: previous SL communication, OFF: new SL communication	—
CnS1 input setting	J13: closed (factory setting) for level input, J13: opened for pulse input	—
Defrost setting	J15: closed (factory setting) for normal defrost, J15: opened for enhanced defrost	
Operation priority change	—	P01 0: earlier entry priority (factory setting) 1: later entry priority
Outdoor fan snow guard control	—	P02 0: invalid (factory setting) 1: valid
Outdoor fan snow guard control operation time setting	—	P03 30sec (factory setting) 10, 30—600sec
Capacity save mode *3	—	P04 OFF: invalid (factory setting) 000, 040, 060, 080 [%]
Silent mode setting *2	—	P05 0 (factory setting) – 3: the larger the number, the stronger the effect.
External output (CnZ1) function assignment	—	P06
External input (CnS1) function assignment	—	P07
Spare	—	P8—29

*1 The switching is activated when both SW and P○○ are changed.
*2 The switching is activated when a signal is input to CnS1.
*3 Capacity restriction is effected without a signal input to CnS1 in the capacity save mode.

The external input function of CnS1 can be changed by changing the setting in P07 on the 7-segment display panel. When a signal is input to CnS1, the following functions are enabled.

	CnS1 closed	CnS1 opened
"0" : External operation input	Operation permitted	Operation prohibition
"1" : Demand input	Invalid	Valid
"2" : Cooling/heating forced input	Heating	Cooling
"3" : Silent mode input 1 *1	Valid	Invalid
"4" : Spare	–	–
"5" : Outdoor fan snow guard control input	Valid	Invalid
"6" : Test run external input 1 (equivalent to SW5-1)	Test run start	Normal operation
"7" : Test run external input 2 (equivalent to SW5-2)	Cooling test run	Heating test run
"8" : Silent mode 2 *2	Valid	Invalid
"9" : Spare	–	–

*1 Switch valid/invalid depending on the outdoor temperature.
*2 Any time valid not depending on the outdoor temperature.

The external output function of CnZ1 can be changed by changing the setting in P06 on the 7 segment display panel.

"0" : Operation output
"1" : Error output
"2" : Compressor ON output
"3" : Fan ON output
"4 – 9" : Spare

7-3 External input and output specifications.

Contents	Specification	Connector on PCB
External input CnS1	Non-voltage contact (DC12V)	J.S.T(NICHIATSU) B02B-XAKS-1-T
External output CnZ1	DC12V output	MOLEX 5566-02A-RE

8. TEST OPERATION

Before beginning operation

(1) **Make sure that a measurement between the power source terminal block and ground, when measured with a 500V megger tester, is greater than 1 MΩ.**
When the unit is left for a long time with power OFF or just after the installation, there is possibility that the refrigerant is accumulated in the compressor and the insulation resistance between the contact terminals for power source and grounding decreases to 1MΩ or around.
When the insulation resistance is 1MΩ or more, the insulation resistance will rise with crank case heater power ON for 6 hours or more because the refrigerant in the compressor is evaporated.
(2) Please check the resistance of the signaling line terminal block before power is turned on. If a resistance measurement is 100Ω or less, it suggests a possibility that power cables are connected to the signaling line terminal block. (Please check wiring refer to section 6.ELECTRICAL WIRING WORK)
(3) **Be sure to turn on the crank case heater 6 hours before operation.**
(4) **Make sure that the bottom of the compressor casing is warm.** (Outdoor temperature + 5℃ or more)
(5) Be sure to fully open the service valves (liquid, gas) for the outdoor unit.
Operating the outdoor unit with the valves closed may damage the compressor.
(6) **Check that the power to all indoor units has been turned on. If not, a failure may occur.**

> **CAUTION**
> Please make sure that the service valves (gas, liquid) are full open before a test run. Conducing a test run with any of them in a closed position can result in a compressor failure.

Check operation

It is recommended to practice the check operation before the test run.
(You may test run or perform normal operation even if the check operation is not performed.)
For details of check operation, refer to the technical manual.

Important:

- Before starting the check operation, complete the address setting of indoor and outdoor units and the refrigerant charge.
- You cannot check precisely unless proper quantity of refrigerant is charged.
- You cannot perform the check operation when the system is stopped under abnormal condition.
- You cannot perform the check operation when total capacity of connected indoor units is less than 80% of outdoor units.
- You cannot perform the check operation if the communication protocol is previous SL.
- Don't perform the check operation at the same time on a plural number of refrigerant systems. You cannot check precisely.
- Perform the check operation within the applicable temperature range (Outdoor air temperature: 0 - 43℃, indoor air temperature: 10 - 32℃). You cannot start the check operation if it is out of the applicable temperature range.
- You cannot check the fresh air ventilation indoor unit. (You can check indoor units other than the fresh air ventilation indoor unit on the same refrigerant system.)
- You cannot performe the check operation if the connected indoor unit is only one in one refrigerant system.
- You cannot performe the check operation if it is set at 0% in the demand mode or capacity save mode.

(1) Check item

Check operation allows confirming the following points.

- Whether the service valve is closed or not (Open/close check)
- Whether refrigerant pipes and signal line are connected properly on indoor/outdoor units or not (Mismatch check)
- Whether the indoor unit expansion valve operates properly or not (Expansion valve failure check)

(2) Procedure of check operation

(a) Start of check operation

- Confirm that all of SW3-7 (Forced cooling/heating mode), SW-5-1 (Test run), SW5-2 (Test run cooling setting) and SW5-3 (Pump-down operation) are turned OFF.
- Change then SW3-5 (Check operation) OFF→ON to start the check operation.
- It takes normally about 15 - 30 minutes from the start to the end of check operation. (Max. 80 minutes)

(b) Termination of check operation and result display

- As the check operation terminates, the system stops automatically and displays the result on the 7-segment indicator.

<Normal termination>

- "CHO End" is shown on the 7-segment indicator.
- Return SW3-5 to OFF setting. 7-segment indicator returns to normal display.

<Termination by error>

- Error is displayed on the 7-segment indicator.
- Correct the abnormal condition referring to the "Check Point" column, and return SW3-5 to OFF.
- Restart then the check operation from (2) (a).

7-segment display during check operation

Code	Data	Content
H1	Max. remaining time	• Preparing for check operation. Indicates the maximum remaining time (minute).
H2	Max. remaining time	• During the check operation. Indicates the maximum remaining time (minute).
CHO	End	• Normal termination of check operation.

Display on 7-segment indicator after check operation

Code	Data	Content	Check Point
CHL	– – –	Service valve is closed. (Refrigerant circuit is choked somewhere.)	• Is the service valve of outdoor unit closed? • Is the low pressure sensor normal? (Detection pressure can be confirmed on 7-segment indicator.) • Is the coil connector of indoor unit expansion valve connected? • Is the expansion valve coil of indoor unit detached from the valve body? • Is the heat exchanger sensor of indoor unit normal? (Check for sensor disconnection.)
CHU	Abnormal indoor unit No.	Mismatch of refrigrant pipes/signal line. Refrigerant is not circulated in the abnormal indoor unit.	• Are refrigerant pipes/signal line connected properly between indoor and outdoor units? • Is the coil connector of indoor unit expansion valve connected? • Is the expansion valve coil of indoor unit detached from the valve body? • Is the heat exchanger sensor of indoor unit normal? (Check for sensor disconnection.)
CHJ	Abnormal indoor unit No.	Expansion valve does not operate properly on the abnormal indoor unit.	• Is the coil connector of indoor unit expansion valve connected? • Is the expansion valve coil of indoor unit detached from the valve body? • Is the heat exchanger sensor of indoor unit normal? (Check for sensor disconnection.)
CHE	– – –	Termination of check operation by error	• Is any error (E??) indicated on indoor or outdoor units? • Is signal line connected without loose? • Was any SW setting changed during check operation?
CHE	Abnormal indoor unit No.	Termination of check operation by error. Indicated indoor unit is under abnormal condition.	• Is any error (E??) indicated on indoor or outdoor units? • Is signal line connected without loose? • Is the power source turned ON at the indoor unit side?

*Errors other than the above may be indicated by the detection of error. In such occasion, correct the matter by referring to the technical manual.
*Code and Data are indicated alternately by 4-second intervals.

Test operation

(1) Test run from an outdoor unit.

Whether CnS1 is set to ON or OFF, you can start a test run by using the SW5-1 and SW5-2 switches provided on the outdoor unit PCB.
Select the test run mode first.
Please set SW5-2 to ON for a cooling test run or OFF for a heating test run. (It is set to OFF at the factory for shipment.)
Turning SW5-1 from OFF to ON next will cause all connected indoor units to start.
When a test run is completed, please set SW5-1 to OFF.
Note: During a test run, an indoor unit cannot be operated from the remote control unit (to change settings). ("Under central control" is indicated.)

(2) Method of starting a test run for a cooling operation from an outdoor unit: please operate a remote control unit according to the following steps.

(a) Start of a cooling test run

○Operate the unit by pressing the [START/STOP] button.
○Select the "COOLING" mode with the [MODE] button.
○Press the [TEST RUN] button for 3 seconds or longer.
The screen display will be switched from "Select with ITEM ▲▼ "→"Determine with [SET] "→"Cooling test run▼."
○When the [SET] button is pressed while "Cooling test run▼ " is displayed, a cooling test run will start. The screen display will be switched to "COOLING TEST RUN."

(b) Termination of a cooling test run

○When the [START/STOP] button or the "TEMP SET ▽△ " button is pressed, a cooling test run will be terminated.

Transfer

- Use the instruction manual that came with the outdoor unit to explain the operation method to the customer.
  Please ask the customer to keep this installation manual together with the user's manual of his indoor units.
- Instruct the customer that the power should not be turned off even if the unit is not to be used for a long time. This will enable operation of the air-conditioner any time. (Since the compressor bottom is warmed by the crank case heater, seasonal compressor trouble can be prevented.)

9. CAUTIONS FOR SERVICING (for R410A and compatible machines)

(1) To avoid mixing of different types of oil, use separate tools for each type of refrigerant.
(2) To avoid moisture from being absorbed by the ice machine oil, the time for when the refrigerant circuit is open should be kept as short as possible.
(Within 10 min. is ideal.)
(3) For other piping work, airtighteness testing , vacuuming, and refrigerant charging, refer to section 4, REFRIGERANT PIPING.
(4) Diagnostic Inspection Procedures
For the meanings of failure diagnosis messages, please refer to the technical manual.
(5) 7-segment LED indication
Data are indicated when so chosen with the indication selector switch. For the details of indication, please refer to the technical manual.

7. TECHNICAL INFORMATION

7.1 Outdoor units

Model(s) :FDC121KXZEN1							
Outdoor side heat exchanger of air conditioner : air							
Indoor side heat exchanger of air conditioner : air							
Type : vapour compression							
if applicable : electric motor							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	12.1	kW	Seasonal space cooling energy efficiency ηs,c		323.1	%
Declared cooling capacity for part load at given outdoor temperatures Tj and indoor 27℃/19℃(dry/wet bulb)				Declared energy efficiency ratio or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
Tj=+35℃	Pdc	12.1	kW	Tj=+35℃	EERd or GUEc,bin / AEFc,bin	382.0	%
Tj=+30℃	Pdc	8.9	kW	Tj=+30℃	EERd or GUEc,bin / AEFc,bin	600.0	%
Tj=+25℃	Pdc	5.7	kW	Tj=+25℃	EERd or GUEc,bin / AEFc,bin	1200.0	%
Tj=+20℃	Pdc	4.9	kW	Tj=+20℃	EERd or GUEc,bin / AEFc,bin	1920.0	%
Degradation coefficient for air conditioners**	Cdc	0.25	-				
Power consumpiton in other than 'active mode'							
Off mode	P_{OFF}	0.034	kW	Crankcase heater mode	P_{CK}	0.034	kW
Thermostat-off mode	P_{TO}	0.000	kW	Standby mode	P_{SB}	0.034	kW
Other items							
Capacity control		variable		For air-to-air air conditioner: air flow-rate,outdoor measured		4500	m3/h
Sound power level, outdoor	L_{WA}	70.0	dB				
If engine driven: Emissions of nitrogen oxides	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdc is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Information to identify the model(s) to which the information relates: FDC121KXZEN1							
Outdoor side heat exchanger of heat pump : air							
Indoor side heat exchanger of heat pump : air							
Indication if the heater is equipped with a supplementary heater : No							
if applicable : electric motor							
Parameters shall be declared for the average heating season , parameters for the warmer and colder heating seasons are optional.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heating capacity	Prated,h	12.1	kW	Seasonal space heating energy efficiency ηs,h		182.1	%
Declared heating capacity for part load at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
T_j=-7℃	Pdh	9.1	kW	T_j=-7℃	COPd or GUEh,bin / AEFh,bin	321.0	%
T_j=+2℃	Pdh	5.6	kW	T_j=+2℃	COPd or GUEh,bin / AEFh,bin	403.0	%
T_j=+7℃	Pdh	3.6	kW	T_j=+7℃	COPd or GUEh,bin / AEFh,bin	695.0	%
T_j=+12℃	Pdh	3.6	kW	T_j=+12℃	COPd or GUEh,bin / AEFh,bin	909.0	%
T_{biv}=bivalent temperature	Pdh	10.3	kW	T_{biv}=bivalent temperature	COPd or GUEh,bin / AEFh,bin	290.0	%
T_{OL}=operation limit	Pdh	7.8	kW	T_{OL}=operation limit	COPd or GUEh,bin / AEFh,bin	240.0	%
For air-to-water heat pumps : T_j=-15℃ (if T_{OL}＜-20℃)	Pdh	-	kW	For air-to-water heat pumps:T_j=-15℃ (if T_{OL}＜-20℃)	COPd or GUEh,bin / AEFh,bin	-	%
Bivalent temperature	T_{biv}	-10.0	℃	For water-to-air heat pumps:Operation limit T_{OL} temperature		-	℃
Degradation coefficient heat pumps**	C_{dh}	0.25	-				
Power consumpiton in modes other than 'active mode'				Supplementary heater back-up heating capacity	elbu	-	kW
Off mode	P_{OFF}	0.034	kW	Type of energy input Standby mode	P_{SB}	0.034	kW
Thermostat-off mode	P_{TO}	0.034	kW				
Crankcase heater mode	P_{CK}	0.034	kW				
Other items							
Capacity control		variable		For air-to-air heat pumps: air flow-rate,outdoor measured		4920	m3/h
Sound power level, outdoor measured	L_{WA}	72.0	dB	For water-/brine-to-air heat pumps : Rated brine or water fiow-rate, outdoor side heat exchanger		-	m3/h
Emissions of nitrogen oxides(if applicable)	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdh is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Model(s) : FDC121KXZES1							
Outdoor side heat exchanger of air conditioner : air							
Indoor side heat exchanger of air conditioner : air							
Type : vapour compression							
if applicable : electric motor							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	12.1	kW	Seasonal space cooling energy efficiency ηs,c		323.1	%
Declared cooling capacity for part load at given outdoor temperatures Tj and indoor 27℃/19℃(dry/wet bulb)				Declared energy efficiency ratio or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
Tj=+35℃	Pdc	12.1	kW	Tj=+35℃	EERd or GUEc,bin / AEFc,bin	382.0	%
Tj=+30℃	Pdc	8.9	kW	Tj=+30℃	EERd or GUEc,bin / AEFc,bin	600.0	%
Tj=+25℃	Pdc	5.7	kW	Tj=+25℃	EERd or GUEc,bin / AEFc,bin	1200.0	%
Tj=+20℃	Pdc	4.9	kW	Tj=+20℃	EERd or GUEc,bin / AEFc,bin	1920.0	%
Degradation coefficient for air conditioners**	Cdc	0.25	-				
Power consumpiton in other than 'active mode'							
Off mode	P_{OFF}	0.034	kW	Crankcase heater mode	P_{CK}	0.034	kW
Thermostat-off mode	P_{TO}	0.000	kW	Standby mode	P_{SB}	0.034	kW
Other items							
Capacity control		variable		For air-to-air air conditioner: air flow-rate,outdoor measured		4500	m3/h
Sound power level, outdoor	L_{WA}	70.0	dB				
If engine driven: Emissions of nitrogen oxides	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdc is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Information to identify the model(s) to which the information relates: FDC121KXZES1							
Outdoor side heat exchanger of heat pump : air							
Indoor side heat exchanger of heat pump : air							
Indication if the heater is equipped with a supplementary heater : No							
if applicable : electric motor							
Parameters shall be declared for the average heating season , parameters for the warmer and colder heating seasons are optional.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heating capacity	Prated,h	12.1	kW	Seasonal space heating energy efficiency ηs,h		182.1	%
Declared heating capacity for part load at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
T_j=-7℃	Pdh	9.1	kW	T_j=-7℃	COPd or GUEh,bin / AEFh,bin	321.0	%
T_j=+2℃	Pdh	5.6	kW	T_j=+2℃	COPd or GUEh,bin / AEFh,bin	403.0	%
T_j=+7℃	Pdh	3.6	kW	T_j=+7℃	COPd or GUEh,bin / AEFh,bin	695.0	%
T_j=+12℃	Pdh	3.6	kW	T_j=+12℃	COPd or GUEh,bin / AEFh,bin	909.0	%
T_{biv} =bivalent temperature	Pdh	10.3	kW	T_{biv}=bivalent temperature	COPd or GUEh,bin / AEFh,bin	290.0	%
T_{OL}=operation limit	Pdh	7.8	kW	T_{OL}=operation limit	COPd or GUEh,bin / AEFh,bin	240.0	%
For air-to-water heat pumps : T_j=-15℃ (if T_{OL}＜-20℃)	Pdh	-	kW	For air-to-water heat pumps:T_j=-15℃ (if T_{OL}＜-20℃)	COPd or GUEh,bin / AEFh,bin	-	%
Bivalent temperature	T_{biv}	-10.0	℃	For water-to-air heat pumps:Operation limit T_{ol} temperature		-	℃
Degradation coefficient heat pumps**	C_{dh}	0.25	-				
Power consumpiton in modes other than 'active mode'				Supplementary heater back-up heating capacity	elbu	-	kW
Off mode	P_{OFF}	0.034	kW				
Thermostat-off mode	P_{TO}	0.034	kW	Type of energy input			
Crankcase heater mode	P_{CK}	0.034	kW	Standby mode	P_{SB}	0.034	kW
Other items							
Capacity control		variable		For air-to-air heat pumps: air flow-rate,outdoor measured		4920	m3/h
Sound power level, outdoor measured	L_{WA}	72.0	dB	For water-/brine-to-air heat pumps : Rated brine or water fiow-rate, outdoor side heat exchanger		-	m3/h
Emissions of nitrogen oxides(if applicable)	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdh is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Model(s) : FDC140KXZEN1							
Outdoor side heat exchanger of air conditioner : air							
Indoor side heat exchanger of air conditioner : air							
Type : vapour compression							
if applicable : electric motor							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	14.0	kW	Seasonal space cooling energy efficiency ηs,c		306.2	%
Declared cooling capacity for part load at given outdoor temperatures Tj and indoor 27℃/19℃(dry/wet bulb)				Declared energy efficiency ratio or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
Tj=+35℃	Pdc	14.0	kW	Tj=+35℃	EERd or GUEc,bin / AEFc,bin	353.5	%
Tj=+30℃	Pdc	10.3	kW	Tj=+30℃	EERd or GUEc,bin / AEFc,bin	570.0	%
Tj=+25℃	Pdc	6.6	kW	Tj=+25℃	EERd or GUEc,bin / AEFc,bin	1030.0	%
Tj=+20℃	Pdc	4.9	kW	Tj=+20℃	EERd or GUEc,bin / AEFc,bin	1920.0	%
Degradation coefficient for air conditioners**	Cdc	0.25	-				
Power consumpiton in other than 'active mode'							
Off mode	P_{OFF}	0.034	kW	Crankcase heater mode	P_{CK}	0.034	kW
Thermostat-off mode	P_{TO}	0.000	kW	Standby mode	P_{SB}	0.034	kW
Other items							
Capacity control		variable		For air-to-air air conditioner: air flow-rate,outdoor measured		4500	m3/h
Sound power level, outdoor	L_{WA}	71.0	dB				
If engine driven: Emissions of nitrogen oxides	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdc is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Information to identify the model(s) to which the information relates : FDC140KXZEN1							
Outdoor side heat exchanger of heat pump : air							
Indoor side heat exchanger of heat pump : air							
Indication if the heater is equipped with a supplementary heater : No							
if applicable : electric motor							
Parameters shall be declared for the average heating season , parameters for the warmer and colder heating seasons are optional.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heating capacity	Prated,h	14.0	kW	Seasonal space heating energy efficiency ηs,h		180.5	%
Declared heating capacity for part load at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
T_j=-7℃	Pdh	9.4	kW	T_j=-7℃	COPd or GUEh,bin / AEFh,bin	317.0	%
T_j=+2℃	Pdh	5.7	kW	T_j=+2℃	COPd or GUEh,bin / AEFh,bin	398.0	%
T_j=+7℃	Pdh	3.7	kW	T_j=+7℃	COPd or GUEh,bin / AEFh,bin	693.0	%
T_j=+12℃	Pdh	3.6	kW	T_j=+12℃	COPd or GUEh,bin / AEFh,bin	913.0	%
T_{biv}=bivalent temperature	Pdh	10.6	kW	T_{biv}=bivalent temperature	COPd or GUEh,bin / AEFh,bin	287.0	%
T_{OL}=operation limit	Pdh	8.0	kW	T_{OL}=operation limit	COPd or GUEh,bin / AEFh,bin	239.0	%
For air-to-water heat pumps : T_j=-15℃ (if T_{OL}＜-20℃)	Pdh	-	kW	For air-to-water heat pumps:T_j=-15℃ (if T_{OL}＜-20℃)	COPd or GUEh,bin / AEFh,bin	-	%
Bivalent temperature	T_{biv}	-10.0	℃	For water-to-air heat pumps:Operation limit T_{ol} temperature		-	℃
Degradation coefficient heat pumps**	C_{dh}	0.25	-				
Power consumpiton in modes other than 'active mode'				Supplementary heater back-up heating capacity	elbu	-	kW
Off mode	P_{OFF}	0.034	kW				
Thermostat-off mode	P_{TO}	0.034	kW	Type of energy input Standby mode	P_{SB}	0.034	kW
Crankcase heater mode	P_{CK}	0.034	kW				
Other items							
Capacity control		variable		For air-to-air heat pumps: air flow-rate,outdoor measured		4920	m3/h
Sound power level, outdoor measured	L_{WA}	72.0	dB	For water-/brine-to-air heat pumps : Rated brine or water fiow-rate, outdoor side heat exchanger		-	m3/h
Emissions of nitrogen oxides(if applicable)	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdh is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Model(s) : FDC140KXZES1							
Outdoor side heat exchanger of air conditioner : air							
Indoor side heat exchanger of air conditioner : air							
Type : vapour compression							
if applicable : electric motor							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	14.0	kW	Seasonal space cooling energy efficiency ηs,c		306.2	%
Declared cooling capacity for part load at given outdoor temperatures Tj and indoor 27°C/19°C(dry/wet bulb)				Declared energy efficiency ratio or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
Tj=+35°C	Pdc	14.0	kW	Tj=+35°C	EERd or GUEc,bin / AEFc,bin	353.5	%
Tj=+30°C	Pdc	10.3	kW	Tj=+30°C	EERd or GUEc,bin / AEFc,bin	570.0	%
Tj=+25°C	Pdc	6.6	kW	Tj=+25°C	EERd or GUEc,bin / AEFc,bin	1030.0	%
Tj=+20°C	Pdc	4.9	kW	Tj=+20°C	EERd or GUEc,bin / AEFc,bin	1920.0	%
Degradation coefficient for air conditioners**	Cdc	0.25	-				
Power consumpiton in other than 'active mode'							
Off mode	P_{OFF}	0.034	kW	Crankcase heater mode	P_{CK}	0.034	kW
Thermostat-off mode	P_{TO}	0.000	kW	Standby mode	P_{SB}	0.034	kW
Other items							
Capacity control		variable		For air-to-air air conditioner: air flow-rate,outdoor measured		4500	m3/h
Sound power level, outdoor	L_{WA}	71.0	dB				
If engine driven: Emissions of nitrogen oxides	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdc is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Information to identify the model(s) to which the information relates : FDC140KXZES1							
Outdoor side heat exchanger of heat pump : air							
Indoor side heat exchanger of heat pump : air							
Indication if the heater is equipped with a supplementary heater : No							
if applicable : electric motor							
Parameters shall be declared for the average heating season , parameters for the warmer and colder heating seasons are optional.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heating capacity	Prated,h	14.0	kW	Seasonal space heating energy efficiency ηs,h		180.5	%
Declared heating capacity for part load at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
T_j=-7℃	Pdh	9.4	kW	T_j=-7℃	COPd or GUEh,bin / AEFh,bin	317.0	%
T_j=+2℃	Pdh	5.7	kW	T_j=+2℃	COPd or GUEh,bin / AEFh,bin	398.0	%
T_j=+7℃	Pdh	3.7	kW	T_j=+7℃	COPd or GUEh,bin / AEFh,bin	693.0	%
T_j=+12℃	Pdh	3.6	kW	T_j=+12℃	COPd or GUEh,bin / AEFh,bin	913.0	%
T_{biv}=bivalent temperature	Pdh	10.6	kW	T_{biv}=bivalent temperature	COPd or GUEh,bin / AEFh,bin	287.0	%
T_{OL}=operation limit	Pdh	8.0	kW	T_{OL}=operation limit	COPd or GUEh,bin / AEFh,bin	239.0	%
For air-to-water heat pumps : T_j=-15℃ (if T_{OL}＜-20℃)	Pdh	-	kW	For air-to-water heat pumps:T_j=-15℃ (if T_{OL}＜-20℃)	COPd or GUEh,bin / AEFh,bin	-	%
Bivalent temperature	T_{biv}	-10.0	℃	For water-to-air heat pumps:Operation limit T_{ol} temperature		-	℃
Degradation coefficient heat pumps**	C_{dh}	0.25	-				
Power consumpiton in modes other than 'active mode'				Supplementary heater back-up heating capacity	elbu	-	kW
Off mode	P_{OFF}	0.034	kW				
Thermostat-off mode	P_{TO}	0.034	kW	Type of energy input Standby mode	P_{SB}	0.034	kW
Crankcase heater mode	P_{CK}	0.034	kW				
Other items							
Capacity control		variable		For air-to-air heat pumps: air flow-rate,outdoor measured		4920	m3/h
Sound power level, outdoor measured	L_{WA}	72.0	dB	For water-/brine-to-air heat pumps : Rated brine or water fiow-rate, outdoor side heat exchanger		-	m3/h
Emissions of nitrogen oxides(if applicable)	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdh is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Model(s) : FDC155KXZEN1							
Outdoor side heat exchanger of air conditioner : air							
Indoor side heat exchanger of air conditioner : air							
Type : vapour compression							
if applicable : electric motor							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	15.5	kW	Seasonal space cooling energy efficiency ηs,c		284.4	%
Declared cooling capacity for part load at given outdoor temperatures Tj and indoor 27℃/19℃(dry/wet bulb)				Declared energy efficiency ratio or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
Tj=+35℃	Pdc	15.5	kW	Tj=+35℃	EERd or GUEc,bin / AEFc,bin	298.1	%
Tj=+30℃	Pdc	11.4	kW	Tj=+30℃	EERd or GUEc,bin / AEFc,bin	511.0	%
Tj=+25℃	Pdc	7.3	kW	Tj=+25℃	EERd or GUEc,bin / AEFc,bin	933.0	%
Tj=+20℃	Pdc	4.9	kW	Tj=+20℃	EERd or GUEc,bin / AEFc,bin	1942.0	%
Degradation coefficient for air conditioners**	Cdc	0.25	-				
Power consumpiton in other than 'active mode'							
Off mode	P_{OFF}	0.034	kW	Crankcase heater mode	P_{CK}	0.034	kW
Thermostat-off mode	P_{TO}	0.000	kW	Standby mode	P_{SB}	0.034	kW
Other items							
Capacity control		variable		For air-to-air air conditioner: air flow-rate,outdoor measured		4500	m3/h
Sound power level, outdoor	L_{WA}	71.0	dB				
If engine driven: Emissions of nitrogen oxides	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdc is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Information to identify the model(s) to which the information relates : FDC155KXZEN1							
Outdoor side heat exchanger of heat pump : air							
Indoor side heat exchanger of heat pump : air							
Indication if the heater is equipped with a supplementary heater : No							
if applicable : electric motor							
Parameters shall be declared for the average heating season , parameters for the warmer and colder heating seasons are optional.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heating capacity	Prated,h	15.5	kW	Seasonal space heating energy efficiency ηs,h		179.0	%
Declared heating capacity for part load at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
T_j=-7℃	Pdh	9.6	kW	T_j=-7℃	COPd or GUEh,bin / AEFh,bin	313.0	%
T_j=+2℃	Pdh	5.9	kW	T_j=+2℃	COPd or GUEh,bin / AEFh,bin	395.0	%
T_j=+7℃	Pdh	3.8	kW	T_j=+7℃	COPd or GUEh,bin / AEFh,bin	686.0	%
T_j=+12℃	Pdh	3.6	kW	T_j=+12℃	COPd or GUEh,bin / AEFh,bin	913.0	%
T_{biv}=bivalent temperature	Pdh	10.9	kW	T_{biv}=bivalent temperature	COPd or GUEh,bin / AEFh,bin	286.0	%
T_{OL}=operation limit	Pdh	8.2	kW	T_{OL}=operation limit	COPd or GUEh,bin / AEFh,bin	235.0	%
For air-to-water heat pumps : T_j=-15℃ (if T_{OL}＜-20℃)	Pdh	-	kW	For air-to-water heat pumps:T_j=-15℃ (if T_{OL}＜-20℃)	COPd or GUEh,bin / AEFh,bin	-	%
Bivalent temperature	T_{biv}	-10.0	℃	For water-to-air heat pumps:Operation limit T_{ol} temperature		-	℃
Degradation coefficient heat pumps**	C_{dh}	0.25	-				
Power consumpiton in modes other than 'active mode'				Supplementary heater back-up heating capacity	elbu	-	kW
Off mode	P_{OFF}	0.034	kW				
Thermostat-off mode	P_{TO}	0.034	kW	Type of energy input Standby mode	P_{SB}	0.034	kW
Crankcase heater mode	P_{CK}	0.034	kW				
Other items							
Capacity control		variable		For air-to-air heat pumps: air flow-rate,outdoor measured		4920	m3/h
Sound power level, outdoor measured	L_{WA}	74.0	dB	For water-/brine-to-air heat pumps : Rated brine or water flow-rate, outdoor side heat exchanger		-	m3/h
Emissions of nitrogen oxides(if applicable)	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdh is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Model(s) : FDC155KXZES1							
Outdoor side heat exchanger of air conditioner : air							
Indoor side heat exchanger of air conditioner : air							
Type : vapour compression							
if applicable : electric motor							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	15.5	kW	Seasonal space cooling energy efficiency ηs,c		284.4	%
Declared cooling capacity for part load at given outdoor temperatures Tj and indoor 27℃/19℃(dry/wet bulb)				Declared energy efficiency ratio or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
Tj=+35℃	Pdc	15.5	kW	Tj=+35℃	EERd or GUEc,bin / AEFc,bin	298.1	%
Tj=+30℃	Pdc	11.4	kW	Tj=+30℃	EERd or GUEc,bin / AEFc,bin	511.0	%
Tj=+25℃	Pdc	7.3	kW	Tj=+25℃	EERd or GUEc,bin / AEFc,bin	933.0	%
Tj=+20℃	Pdc	4.9	kW	Tj=+20℃	EERd or GUEc,bin / AEFc,bin	1942.0	%
Degradation coefficient for air conditioners**	Cdc	0.25	-				
Power consumpiton in other than 'active mode'							
Off mode	P_{OFF}	0.034	kW	Crankcase heater mode	P_{CK}	0.034	kW
Thermostat-off mode	P_{TO}	0.000	kW	Standby mode	P_{SB}	0.034	kW
Other items							
Capacity control		variable		For air-to-air air conditioner: air flow-rate,outdoor measured		4500	m3/h
Sound power level, outdoor	L_{WA}	71.0	dB				
If engine driven: Emissions of nitrogen oxides	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdc is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

Information to identify the model(s) to which the information relates : FDC155KXZES1							
Outdoor side heat exchanger of heat pump : air							
Indoor side heat exchanger of heat pump : air							
Indication if the heater is equipped with a supplementary heater : No							
if applicable : electric motor							
Parameters shall be declared for the average heating season , parameters for the warmer and colder heating seasons are optional.							
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heating capacity	Prated,h	15.5	kW	Seasonal space heating energy efficiency ηs,h		179.0	%
Declared heating capacity for part load at indoor temperature 20℃ and outdoor temperature Tj				Declared coefficient of performance or gas utilization efficiency / auxiliary energy factor for part load at given outdoor temperatures Tj			
T_j=-7℃	Pdh	9.6	kW	T_j=-7℃	COPd or GUEh,bin / AEFh,bin	313.0	%
T_j=+2℃	Pdh	5.9	kW	T_j=+2℃	COPd or GUEh,bin / AEFh,bin	395.0	%
T_j=+7℃	Pdh	3.8	kW	T_j=+7℃	COPd or GUEh,bin / AEFh,bin	686.0	%
T_j=+12℃	Pdh	3.6	kW	T_j=+12℃	COPd or GUEh,bin / AEFh,bin	913.0	%
T_{biv}=bivalent temperature	Pdh	10.9	kW	T_{biv}=bivalent temperature	COPd or GUEh,bin / AEFh,bin	286.0	%
T_{OL}=operation limit	Pdh	8.2	kW	T_{OL}=operation limit	COPd or GUEh,bin / AEFh,bin	235.0	%
For air-to-water heat pumps : T_j=-15℃ (if T_{OL}＜-20℃)	Pdh	-	kW	For air-to-water heat pumps:T_j=-15℃ (if T_{OL}＜-20℃)	COPd or GUEh,bin / AEFh,bin	-	%
Bivalent temperature	T_{biv}	-10.0	℃	For water-to-air heat pumps:Operation limit T_{ol} temperature		-	℃
Degradation coefficient heat pumps**	C_{dh}	0.25	-				
Power consumpiton in modes other than 'active mode'				Supplementary heater back-up heating capacity	elbu	-	kW
Off mode	P_{OFF}	0.034	kW				
Thermostat-off mode	P_{TO}	0.034	kW	Type of energy input Standby mode	P_{SB}	0.034	kW
Crankcase heater mode	P_{CK}	0.034	kW				
Other items							
Capacity control		variable		For air-to-air heat pumps: air flow-rate,outdoor measured		4920	m3/h
Sound power level, outdoor measured	L_{WA}	74.0	dB	For water-/brine-to-air heat pumps : Rated brine or water fiow-rate, outdoor side heat exchanger		-	m3/h
Emissions of nitrogen oxides(if applicable)	NOx ***	-	mg/kWh fuel input GCV				
GWP of the refrigerant		2088	kg CO_{2eq} (100years)				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

** If Cdh is not determined by measurement then the default degradation coefficient air conditioners shall be 0,25.

*** from 26 September 2018

Where information relates to multi-spilt air conditioners,the test result and performance data be obtained on the basis of the performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer.

7.2 Indoor units

Model(s) : FDT28KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.7	kW	Total electric power input	P_{elec}	0.020	kW
Cooling capacity (latent)	$P_{rated,c}$	0.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	49.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDT36KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.4	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	0.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	49.0	dB
Heating capacity	$P_{rated,h}$	4.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDT45KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.8	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	0.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	50.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDT56KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.7	kW	Total electric power input	P_{elec}	0.040	kW
Cooling capacity (latent)	$P_{rated,c}$	0.9	kW	Sound power level (per speed setting,if applicable)	L_{WA}	55.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDT71KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	6.2	kW	Total electric power input	P_{elec}	0.080	kW
Cooling capacity (latent)	$P_{rated,c}$	0.9	kW	Sound power level (per speed setting,if applicable)	L_{WA}	62.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDT90KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	7.9	kW	Total electric power input	P_{elec}	0.130	kW
Cooling capacity (latent)	$P_{rated,c}$	1.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	65.0	dB
Heating capacity	$P_{rated,h}$	10.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDT112KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	9.4	kW	Total electric power input	P_{elec}	0.140	kW
Cooling capacity (latent)	$P_{rated,c}$	1.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	66.0	dB
Heating capacity	$P_{rated,h}$	12.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDT140KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	10.7	kW	Total electric power input	P_{elec}	0.140	kW
Cooling capacity (latent)	$P_{rated,c}$	3.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	66.0	dB
Heating capacity	$P_{rated,h}$	16.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDT160KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	11.5	kW	Total electric power input	P_{elec}	0.140	kW
Cooling capacity (latent)	$P_{rated,c}$	4.5	kW	Sound power level (per speed setting,if applicable)	L_{WA}	66.0	dB
Heating capacity	$P_{rated,h}$	18.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM22KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.1	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	0.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	2.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM28KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.7	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	0.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM36KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.3	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	0.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	4.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM45KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.7	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	0.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM56KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.1	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	1.5	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM71KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	6.0	kW	Total electric power input	P_{elec}	0.200	kW
Cooling capacity (latent)	$P_{rated,c}$	1.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	65.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM90KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	6.7	kW	Total electric power input	P_{elec}	0.200	kW
Cooling capacity (latent)	$P_{rated,c}$	2.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	65.0	dB
Heating capacity	$P_{rated,h}$	10.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM112KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	8.6	kW	Total electric power input	P_{elec}	0.290	kW
Cooling capacity (latent)	$P_{rated,c}$	2.6	kW	Sound power level (per speed setting,if applicable)	L_{WA}	67.0	dB
Heating capacity	$P_{rated,h}$	12.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM140KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	11.2	kW	Total electric power input	P_{elec}	0.330	kW
Cooling capacity (latent)	$P_{rated,c}$	2.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	72.0	dB
Heating capacity	$P_{rated,h}$	16.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUM160KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	12.4	kW	Total electric power input	P_{elec}	0.450	kW
Cooling capacity (latent)	$P_{rated,c}$	3.6	kW	Sound power level (per speed setting,if applicable)	L_{WA}	76.0	dB
Heating capacity	$P_{rated,h}$	18.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU224KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	19.7	kW	Total electric power input	P_{elec}	1.180	kW
Cooling capacity (latent)	$P_{rated,c}$	2.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	75.0	dB
Heating capacity	$P_{rated,h}$	25.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU280KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	21.9	kW	Total electric power input	P_{elec}	1.180	kW
Cooling capacity (latent)	$P_{rated,c}$	6.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	75.0	dB
Heating capacity	$P_{rated,h}$	31.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDK15KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.2	kW	Total electric power input	P_{elec}	0.020	kW
Cooling capacity (latent)	$P_{rated,c}$	0.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	54.0	dB
Heating capacity	$P_{rated,h}$	1.7	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDK22KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.8	kW	Total electric power input	P_{elec}	0.020	kW
Cooling capacity (latent)	$P_{rated,c}$	0.4	kW	Sound power level (per speed setting,if applicable)	L_{WA}	55.0	dB
Heating capacity	$P_{rated,h}$	2.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDK28KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.2	kW	Total electric power input	P_{elec}	0.020	kW
Cooling capacity (latent)	$P_{rated,c}$	0.6	kW	Sound power level (per speed setting,if applicable)	L_{WA}	55.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDK36KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.8	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	0.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	4.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDK45KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.3	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	1.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDK56KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.9	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	1.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDK71KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	5.4	kW	Total electric power input	P_{elec}	0.040	kW
Cooling capacity (latent)	$P_{rated,c}$	1.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	59.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDK90KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	6.5	kW	Total electric power input	P_{elec}	0.050	kW
Cooling capacity (latent)	$P_{rated,c}$	2.5	kW	Sound power level (per speed setting,if applicable)	L_{WA}	61.0	dB
Heating capacity	$P_{rated,h}$	10.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTC15KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.3	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	0.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	47.0	dB
Heating capacity	$P_{rated,h}$	1.7	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTC22KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.1	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	0.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	49.0	dB
Heating capacity	$P_{rated,h}$	2.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTC28KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.4	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	0.4	kW	Sound power level (per speed setting,if applicable)	L_{WA}	49.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTC36KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.2	kW	Total electric power input	P_{elec}	0.040	kW
Cooling capacity (latent)	$P_{rated,c}$	0.4	kW	Sound power level (per speed setting,if applicable)	L_{WA}	54.0	dB
Heating capacity	$P_{rated,h}$	4.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTC45KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.8	kW	Total electric power input	P_{elec}	0.050	kW
Cooling capacity (latent)	$P_{rated,c}$	0.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTC56KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.4	kW	Total electric power input	P_{elec}	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	1.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTW28KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.3	kW	Total electric power input	P_{elec}	0.090	kW
Cooling capacity (latent)	$P_{rated,c}$	0.5	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTW45KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.4	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	1.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTW56KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.0	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	1.6	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTW71KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.8	kW	Total electric power input	P_{elec}	0.140	kW
Cooling capacity (latent)	$P_{rated,c}$	2.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTW90KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	6.8	kW	Total electric power input	P_{elec}	0.190	kW
Cooling capacity (latent)	$P_{rated,c}$	2.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	65.0	dB
Heating capacity	$P_{rated,h}$	10.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTW112KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	8.1	kW	Total electric power input	P_{elec}	0.190	kW
Cooling capacity (latent)	$P_{rated,c}$	3.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	65.0	dB
Heating capacity	$P_{rated,h}$	12.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTW140KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	9.9	kW	Total electric power input	P_{elec}	0.190	kW
Cooling capacity (latent)	$P_{rated,c}$	4.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	65.0	dB
Heating capacity	$P_{rated,h}$	16.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTS45KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.3	kW	Total electric power input	P_{elec}	0.040	kW
Cooling capacity (latent)	$P_{rated,c}$	1.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTS71KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	5.0	kW	Total electric power input	P_{elec}	0.090	kW
Cooling capacity (latent)	$P_{rated,c}$	2.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	61.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTQ22KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.8	kW	Total electric power input	P_{elec}	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	0.4	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	2.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTQ28KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.1	kW	Total electric power input	P_{elec}	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	0.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDTQ36KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.5	kW	Total electric power input	P_{elec}	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	1.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	4.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDFL71KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	5.3	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	1.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	62.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDFU28KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.7	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	0.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDFU45KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.8	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	0.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDFU56KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.2	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	1.4	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDFU71KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	5.3	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	1.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU45KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.7	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	0.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU56KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.1	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	1.5	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU71KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	6.0	kW	Total electric power input	P_{elec}	0.250	kW
Cooling capacity (latent)	$P_{rated,c}$	1.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	65.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU90KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	6.7	kW	Total electric power input	P_{elec}	0.250	kW
Cooling capacity (latent)	$P_{rated,c}$	2.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	65.0	dB
Heating capacity	$P_{rated,h}$	10.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU112KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	8.6	kW	Total electric power input	P_{elec}	0.320	kW
Cooling capacity (latent)	$P_{rated,c}$	2.6	kW	Sound power level (per speed setting,if applicable)	L_{WA}	67.0	dB
Heating capacity	$P_{rated,h}$	12.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU140KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	11.2	kW	Total electric power input	P_{elec}	0.360	kW
Cooling capacity (latent)	$P_{rated,c}$	2.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	72.0	dB
Heating capacity	$P_{rated,h}$	16.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU160KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	12.4	kW	Total electric power input	P_{elec}	0.430	kW
Cooling capacity (latent)	$P_{rated,c}$	3.6	kW	Sound power level (per speed setting,if applicable)	L_{WA}	76.0	dB
Heating capacity	$P_{rated,h}$	18.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUT15KXE6F-E							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.2	kW	Total electric power input	P_{elec}	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	0.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	52.0	dB
Heating capacity	$P_{rated,h}$	1.7	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUT22KXE6F-E							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.7	kW	Total electric power input	P_{elec}	0.070	kW
Cooling capacity (latent)	$P_{rated,c}$	0.5	kW	Sound power level (per speed setting,if applicable)	L_{WA}	52.0	dB
Heating capacity	$P_{rated,h}$	2.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUT28KXE6F-E							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.0	kW	Total electric power input	P_{elec}	0.070	kW
Cooling capacity (latent)	$P_{rated,c}$	0.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	52.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUT36KXE6F-E							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.5	kW	Total electric power input	P_{elec}	0.070	kW
Cooling capacity (latent)	$P_{rated,c}$	1.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	57.0	dB
Heating capacity	$P_{rated,h}$	4.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUT45KXE6F-E							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.2	kW	Total electric power input	P_{elec}	0.080	kW
Cooling capacity (latent)	$P_{rated,c}$	1.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	58.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUT56KXE6F-E							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.9	kW	Total electric power input	P_{elec}	0.080	kW
Cooling capacity (latent)	$P_{rated,c}$	1.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	59.0	dB
Heating capacity	$P_{rated,h}$	6.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUT71KXE6F-E							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.9	kW	Total electric power input	P_{elec}	0.080	kW
Cooling capacity (latent)	$P_{rated,c}$	2.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	59.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUH22KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.8	kW	Total electric power input	P_{elec}	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	0.4	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	2.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUH28KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.2	kW	Total electric power input	P_{elec}	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	0.6	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDUH36KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.6	kW	Total electric power input	P_{elec}	0.060	kW
Cooling capacity (latent)	$P_{rated,c}$	1.0	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	4.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDFW28KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.3	kW	Total electric power input	P_{elec}	0.020	kW
Cooling capacity (latent)	$P_{rated,c}$	0.5	kW	Sound power level (per speed setting,if applicable)	L_{WA}	55.0	dB
Heating capacity	$P_{rated,h}$	3.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDFW45KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.0	kW	Total electric power input	P_{elec}	0.020	kW
Cooling capacity (latent)	$P_{rated,c}$	1.5	kW	Sound power level (per speed setting,if applicable)	L_{WA}	57.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDFW56KXE6F							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.8	kW	Total electric power input	P_{elec}	0.030	kW
Cooling capacity (latent)	$P_{rated,c}$	1.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDE36KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.7	kW	Total electric power input	P_{elec}	0.050	kW
Cooling capacity (latent)	$P_{rated,c}$	0.9	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	4.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDE45KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.3	kW	Total electric power input	P_{elec}	0.050	kW
Cooling capacity (latent)	$P_{rated,c}$	1.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	5.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDE56KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.9	kW	Total electric power input	P_{elec}	0.050	kW
Cooling capacity (latent)	$P_{rated,c}$	1.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	60.0	dB
Heating capacity	$P_{rated,h}$	6.3	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDE71KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	5.2	kW	Total electric power input	P_{elec}	0.070	kW
Cooling capacity (latent)	$P_{rated,c}$	1.9	kW	Sound power level (per speed setting,if applicable)	L_{WA}	62.0	dB
Heating capacity	$P_{rated,h}$	8.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDE112KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	7.9	kW	Total electric power input	P_{elec}	0.100	kW
Cooling capacity (latent)	$P_{rated,c}$	3.3	kW	Sound power level (per speed setting,if applicable)	L_{WA}	63.0	dB
Heating capacity	$P_{rated,h}$	12.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDE140KXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	9.8	kW	Total electric power input	P_{elec}	0.130	kW
Cooling capacity (latent)	$P_{rated,c}$	4.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	66.0	dB
Heating capacity	$P_{rated,h}$	16.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU650FKXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.2	kW	Total electric power input	P_{elec}	0.250	kW
Cooling capacity (latent)	$P_{rated,c}$	5.8	kW	Sound power level (per speed setting,if applicable)	L_{WA}	62.0	dB
Heating capacity	$P_{rated,h}$	6.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU1100FKXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.1	kW	Total electric power input	P_{elec}	0.360	kW
Cooling capacity (latent)	$P_{rated,c}$	9.9	kW	Sound power level (per speed setting,if applicable)	L_{WA}	66.0	dB
Heating capacity	$P_{rated,h}$	10.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU1800FKXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	7.4	kW	Total electric power input	P_{elec}	1.180	kW
Cooling capacity (latent)	$P_{rated,c}$	15.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	70.0	dB
Heating capacity	$P_{rated,h}$	16.0	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : FDU2400FKXZE1							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	9.3	kW	Total electric power input	P_{elec}	1.180	kW
Cooling capacity (latent)	$P_{rated,c}$	18.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	73.0	dB
Heating capacity	$P_{rated,h}$	21.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : SAF-DX250E6							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.3	kW	Total electric power input	P_{elec}	0.007	kW
Cooling capacity (latent)	$P_{rated,c}$	0.7	kW	Sound power level (per speed setting,if applicable)	L_{WA}	-	dB
Heating capacity	$P_{rated,h}$	1.8	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : SAF-DX350E6							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	1.8	kW	Total electric power input	P_{elec}	0.007	kW
Cooling capacity (latent)	$P_{rated,c}$	1.0	kW	Sound power level (per speed setting,if applicable)	L_{WA}	-	dB
Heating capacity	$P_{rated,h}$	2.2	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : SAF-DX500E6							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	2.4	kW	Total electric power input	P_{elec}	0.007	kW
Cooling capacity (latent)	$P_{rated,c}$	1.2	kW	Sound power level (per speed setting,if applicable)	L_{WA}	-	dB
Heating capacity	$P_{rated,h}$	2.8	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : SAF-DX800E6							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	3.7	kW	Total electric power input	P_{elec}	0.007	kW
Cooling capacity (latent)	$P_{rated,c}$	1.9	kW	Sound power level (per speed setting,if applicable)	L_{WA}	-	dB
Heating capacity	$P_{rated,h}$	4.5	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

Model(s) : SAF-DX1000E6							
Item	**Symbol**	**Vaiue**	**Unit**	**Item**	**Symbol**	**Vaiue**	**Unit**
Cooling capacity (sensible)	$P_{rated,c}$	4.2	kW	Total electric power input	P_{elec}	0.007	kW
Cooling capacity (latent)	$P_{rated,c}$	2.1	kW	Sound power level (per speed setting,if applicable)	L_{WA}	-	dB
Heating capacity	$P_{rated,h}$	5.6	kW				
Contact details	Mitsubishi heavy industries thermal systems,LTD						

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