ecolution KX4

ecolution:high performance solution

K X 4

VRF inverter multi-system
air-conditioning products

MITSUBISHI
HEAVY INDUSTRIES, LTD.

50Hz

07P01E-B-0

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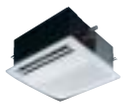
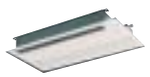
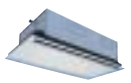
VRF inverter multi-system air-conditioning products

Contents

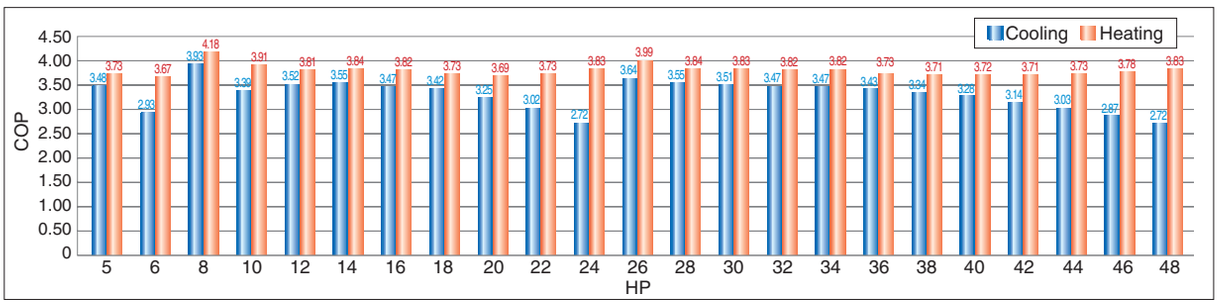
KX4 Introduction

■Indoor unit

Ceiling Cassette Type					Ceiling Concealed Type		
-4way-	-4way- (Compact)	-1way- (Compact)	-1way-	-2way-	-Medium Static Pressure-	-Highs Static Pressure-	-Low Static Pressure- (Ultra thin)
							

Mitsubishi Heavy Industries(MHI) proudly introduces the new Ecolution KX4 VRF Inverter Multi Air Conditioning System. KX4 represents the pinnacle of MHI's research and development of commercial air conditioning systems, with over 80 years of refrigeration engineering heritage, KX4 achieves the highest levels of efficiency and reliability through intelligent design.

Industry leading energy efficiency:
The co-efficient of performance (COP) across the KX4 range ensures reduced running costs and reduced environmental impact:



COP in heating of 3.6 means 3.6kW of heating for every 1kW of electricity used.

Several radical design changes and engineering developments have brought about this vast improvement of efficiency:

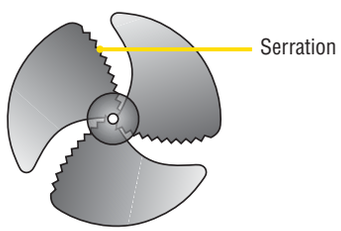
1) Utilising refrigerant R410A:
R410A brings many benefits, not least it is environmentally friendly with a zero ODP (Ozone Depleting Potential) rating. This refrigerant also has much better heat transfer properties than other common refrigerants and has a higher density which allows reduced tube diameter in the heat exchangers and inter-connecting pipework, thus reducing the over all amount of refrigerant required in the system.

2) Compressor design:
KX4 employs MHI's DC inverter compressors ONLY, improving performance and efficiency. The inverter constantly adjusts compressor output to meet the exact demand of the indoor units. No fixed speed compressors are used. Leakage loss and thrust bearing loss are decreased through optimal design of the scroll, with improved support and mechanical efficiency.
A neodymium magnet is embedded in the core of the motor rotator, with efficiency improved at low speeds with the compound effect of Fleming force+ reluctance torque. A high efficiency IPM (Intelligent Power Module) and high voltage drive motor further enhance efficiency.

3) Component Design:
DC fan motors are employed with fan blade design adapted from MHI's aerospace division - with serrated edges that deliver increased air volume with less power input.

Electronic expansion valves constantly adjust during operation to ensure the most efficient use of refrigerant, while an up-sized accumulator stores unused refrigerant during low demand periods, optimising the flow of gas phase refrigerant and oil in to the compressor.

Long-chorded 3 propeller fan with serration



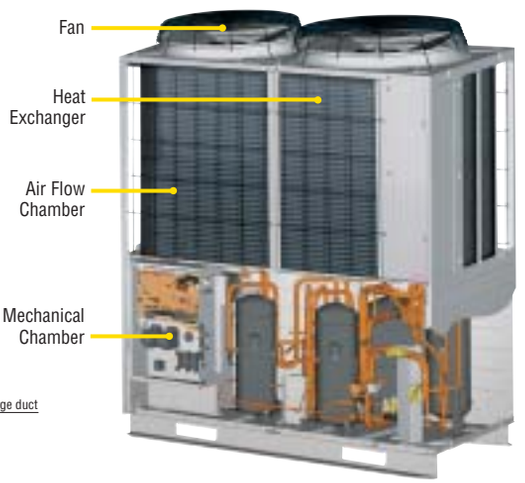
■Outdoor unit

Wall Mounted Type	Ceiling Suspended Type	Floor Standing Type		Fresh Air Ventilation and Heat Exchange unit	Compact Outdoor unit	Single Outdoor unit	Combination Outdoor unit
		with casing	without casing				
							

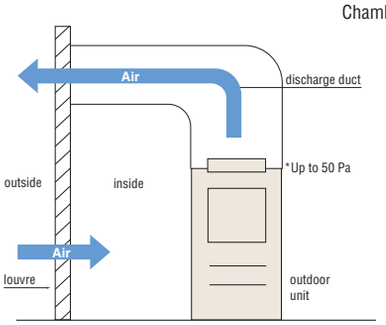
The condensing unit design features separate air flow and mechanical compartments, this improves over all air flow volume and improves frost resistance with MHI's unique 4-sided heat exchanger design providing a larger surface area that further increases efficiency.

Having separate air flow and mechanical compartments also means high protection of mechanical and electronic components in extreme conditions, while making service maintenance easy with simple access to serviceable parts. Noise levels are reduced, footprint is reduced and more piping configurations are possible. (frontside, backside, etc).

The vertical fan configuration also allows ducting of the discharge air with 50Pa static pressure in standard conditions. Outdoor units can then be located in internal plant rooms, with discharge air ducted to outside through a louvre panel.



There is a uniform footprint for all models (except 'compact' KX4) allowing simple, neat continuous side-by-side installation.



Please check manufacturers guidelines for permitted indoor installation conditions.

Additional features:

- KX4 offers the biggest capacity single outdoor unit (24hp/68.0kW cooling) in the industry, with more connectable indoor units than any other system.
- Longer pipe runs than other manufacturers, with more deliverable capacity.
- Less compressors than other manufacturers at equivalent capacity, reducing cost and risk of failure.

KX4 also comes with a wide range of controls options including wired controllers with weekly programmable timer as standard, centralised controls, full-colour touch screen central control and monitoring, PC based control and monitoring and both LonWorks and BACnet interfaces for integration with any building management system.

MHI also offers service maintenance and monitoring software (Mente PC) for on site system interrogation via PC laptop, simply connecting to an RS232C port on the outdoor unit PCB

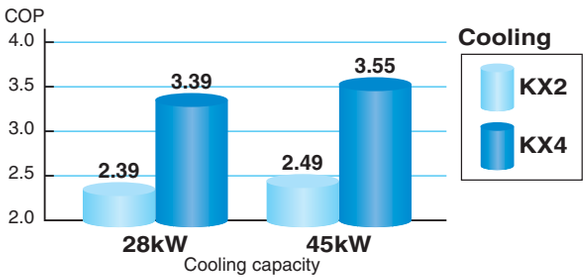
Enhanced Capital Allowance (ECA)/ Energy Technology List

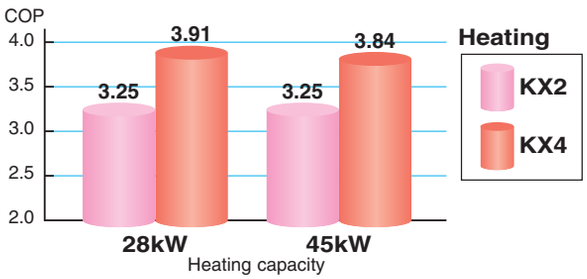
KX4 equipment is included on the Energy Technology List of the government's Carbon Trust, which means a company investing in MHI equipment can claim 100% of the fully installed value of the system as a capital allowance - reducing tax liability. Qualification is subject to individual system design, consult with MHI's dealers for further information.

KX4 Advantages

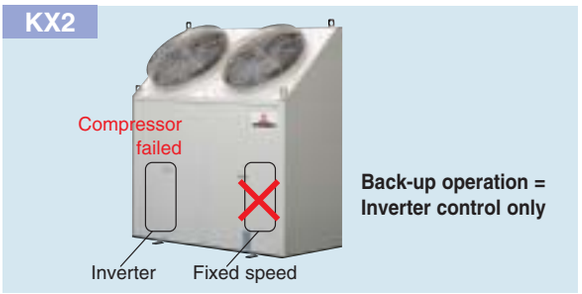
High Efficiency

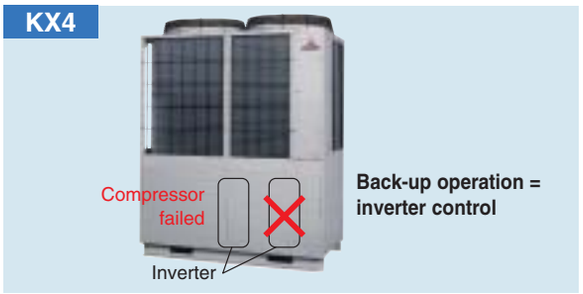
KX4 realized the industry's top class energy efficiency with cooling and heating COP by adoption of DC inverter compressor control and improved heat exchanger performance with a new design.





KX4 employs DC inverter compressor ONLY, in the case of failure, the back up operation should be utilized only for very limited hours.

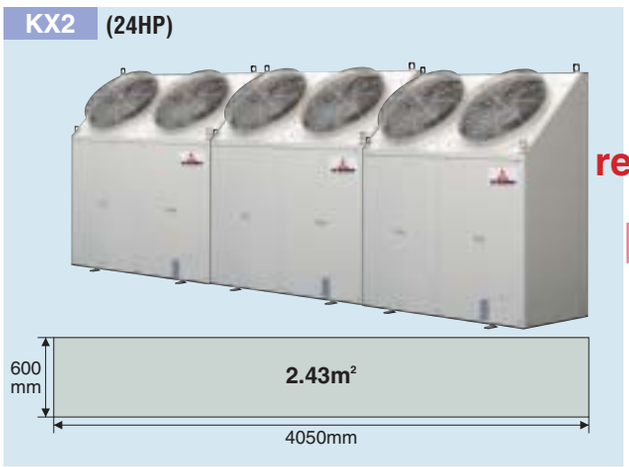


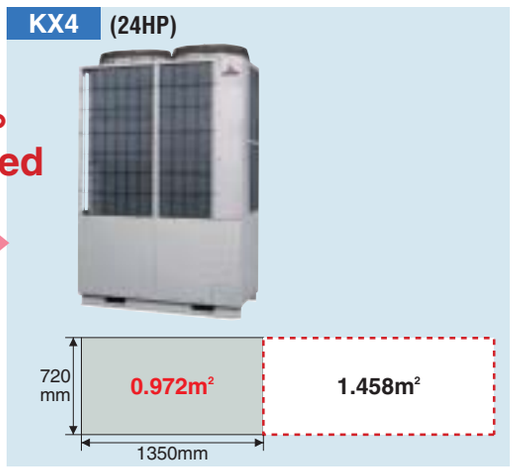


Compact Design

Significant footprint reduction.

Applying front blow outlet on all models and making them into one unit up to 24HP,
significant footprint reduction was realized compared with our fomer model KX2 model series.





Comparison of the footprints of the KX2 and the KX4. The KX4 has realized significant installation space saving.

	HP	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
KX2	m²	0.81	0.81	-	-	1.62	1.62	1.62	-	2.43	2.43	2.43	2.43	3.24	3.24	3.24	3.24	3.24	-	-	-	-
	unit	8	8	-	-	8+8	8+10	10+10	-	8+8+8	8+8+10	8+10+10	10+10+10	8+8+8+8	8+8+8+10	8+8+10+10	8+10+10+10	10+10+10+10	-	-	-	-
KX4	m²	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	0.972	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944	1.944
	unit	8	10	12	14	16	18	20	22	24	14+12	14+14	16+14	16+16	16+18	18+18	18+20	20+20	20+22	22+22	22+24	24+24

-40% -60% -40%

Wide Model Range

Outdoor unit

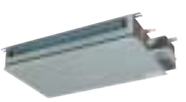
from 14.0kW up to 136.0kW (23 models)

1 Outdoor unit type											
Class (HP)	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0
Capacity (cooling, kW)	14.0	16.0	22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.0	67.5

2 Outdoor units type												
Class (HP)	26.0	28.0	30.0	32.0	34.0	36.0	38.0	40.0	42.0	44.0	46.0	48.0
Capacity (cooling, kW)	73.5	80.0	85.0	90.0	96.0	101.0	106.5	113.0	118.0	123.5	130.0	136.0

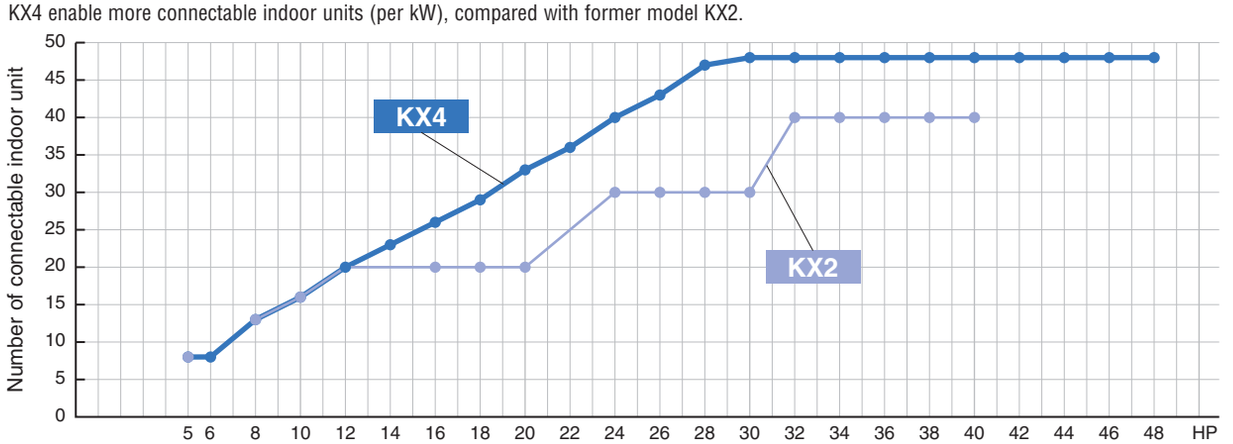
Indoor unit

14 types, 77 models

FDTA	FDTCA	FDTQA	FDTSA	FDTWA
				
FDUMA	**FDUA**	**FDQSA**	**FDKA**	**FDEA**
				
FDFLA	**FDFUA**	**SAF**		
				

More connectable indoor units

KX4 enable more connectable indoor units (per kW), compared with former model KX2.



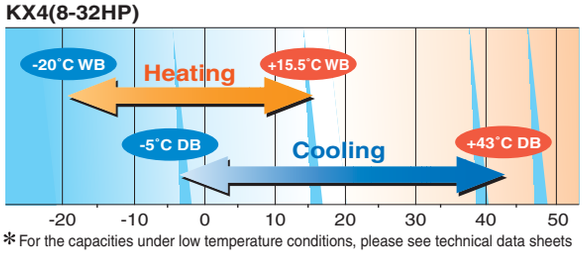
KX4 Advantages

Wide Operation Range

A heating operation is possible at an outdoor temperature as low as –20˚C WB.

The KX4 series has expanded the operable outdoor temperature range downward for a heating operation. These models will permit a system design considering a heating operation under a low temperature condition up to –20˚C WB. (for 8HP or larger models)

KX4(8-32HP)

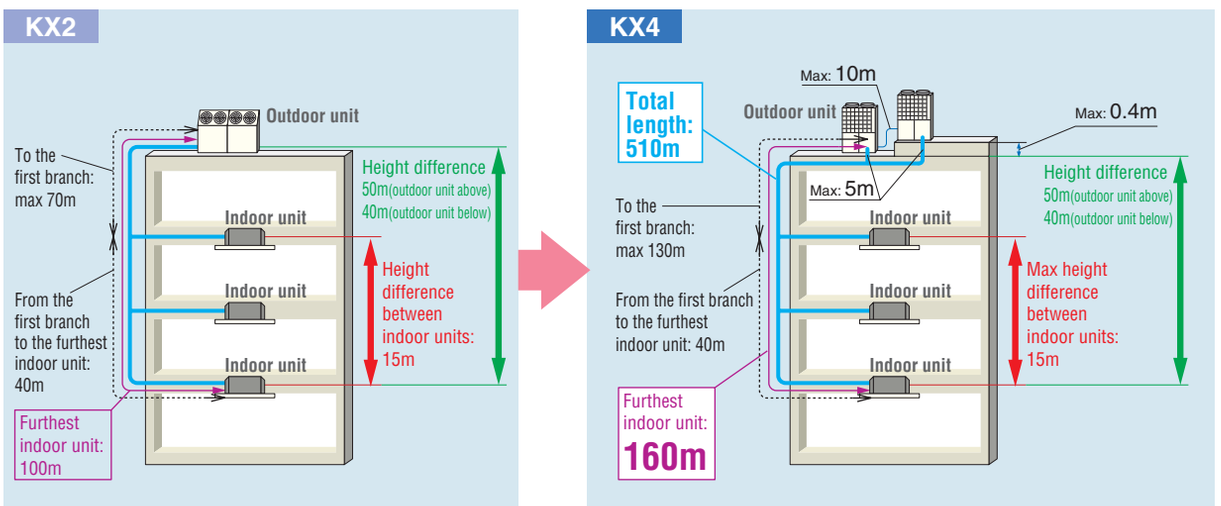


✻For the capacities under low temperature conditions, please see technical data sheets

Piping Length

The industry's longest level. Ample 160m allowable piping length. 510m in total piping length also realized.

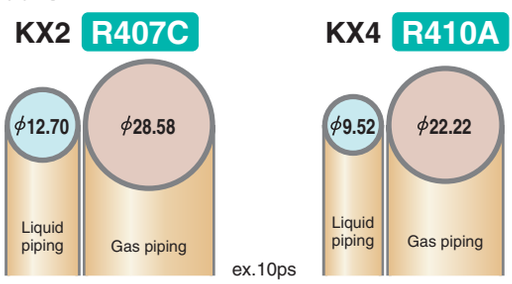
As a result of the adoption of thinner refrigerant piping and refrigerant volume reductions, the industry's longest 160 m actual piping length or 510m total piping length (for 8-48HP models) is realized.



Reduced Refrigerant Volume

The use of thinner diameter refrigerant piping

To use the new refrigerant R410A, these units have adopted thinner diameter refrigerant pipes, which will help reduce piping work cost.



At many cases KX4 can reduce the pipe 1 size smaller in the industries.

Gas piping : downed by 2 sizes
Liquid piping : downed by 2 sizes

The reduction of piping work cost and energy conserving cooling/heating operations
→Up to 80% energy conservation in cooling/heating operations

Outdoor unit

HP	KX2(R407C)		KX4(R410A)	
	Liquid piping	Gas piping	Liquid piping	Gas piping
5	ø9.52	ø19.05	ø9.52	ø15.88
6		ø22.22		
8	ø12.7	ø25.4		ø19.05
10		ø28.58		ø22.22
12	ø15.88	ø31.8	ø12.7	ø25.4(ø22.22)
14				ø25.4(ø28.58)
16	ø19.05	ø38.1		ø28.58
18				
20				
22	—	—		
24	ø19.05	ø38.1		
26	ø22.22	ø44.5	ø15.88	ø31.8(ø34.92)
28				
30				
32				
34				
36				ø38.1(ø34.92)
38	ø25.4	ø50.8	ø19.05	
40				
42	—	—		
44				
46				
48				

Pipe sizes applicable to European installations are shown in parentheses.

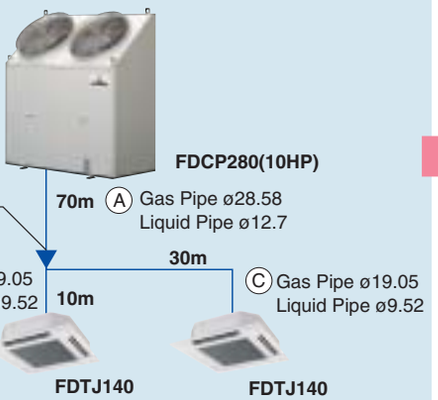
mm	ø9.52	ø12.7	ø15.88	ø19.05	ø22.22	ø25.4	ø28.58	ø31.8	ø34.92	ø38.1	ø44.5	ø50.8
inch	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	1 1/2"	1 3/4"	2"

Comparison by KX2 and KX4 exemplary installations.

As a result of the adoption of the new refrigerant R410A, both refrigerant volume and installation cost are reduced.

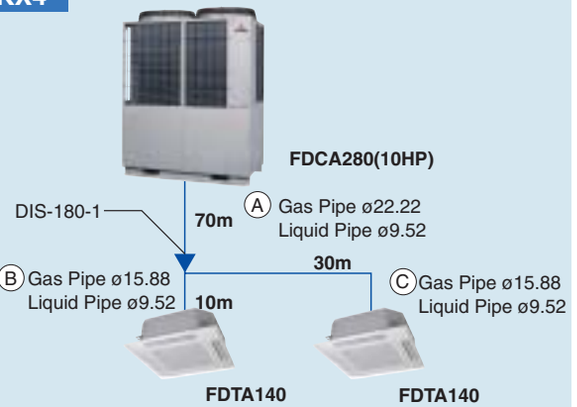
Example

KX2



A	ø12.7/70m x 0.12kg=8.4kg
B	ø9.52/10m x 0.06kg=0.6kg
C	ø9.52/30m x 0.06kg=1.8kg
Total	10.8kg
Factory Charge	12.0kg
Grand total	**22.8kg**

KX4

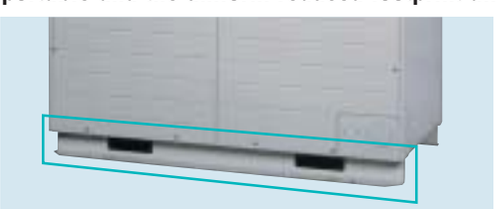


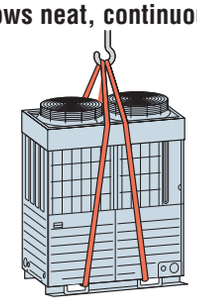
A	ø9.52/70m x 0.054kg=3.78kg
B	ø9.52/10m x 0.054kg=0.54kg
C	ø9.52/30m x 0.054kg=1.62kg
Total	5.94kg
Factory Charge	11.5kg
Grand total	**17.44kg**

23% Down

Easy Installation

KX4 is portable and the uniform reduced footprint allows neat, continuous installation.

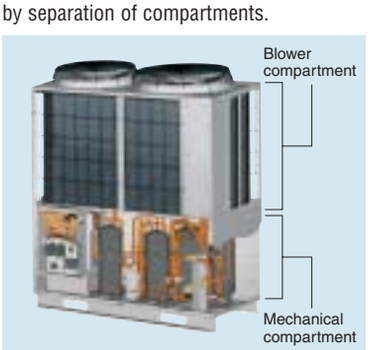




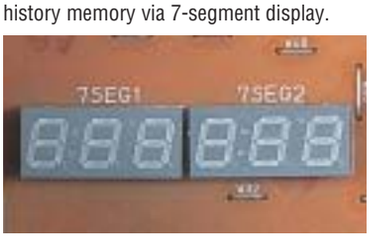
Easy Service

KX4 includes new features to assist with servicing and trouble shooting

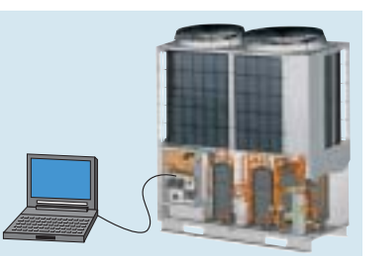
Quick and easy access to seviceable parts by separation of compartments.



Detailed fault diagnosis and operation history memory via 7-segment display.



Equipped with RS232C for connection directly to your PC monitoring and service tasks made simple with MHI's service software ("Mente PC").



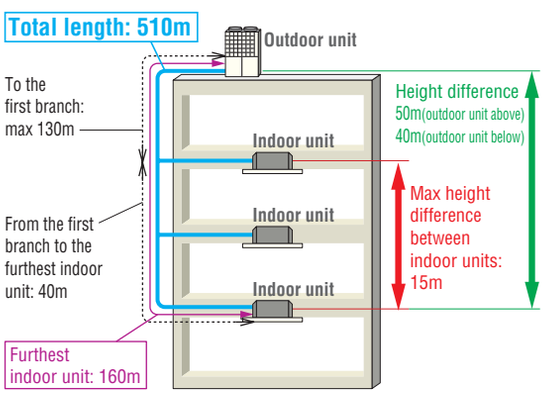
KX4 heat pump systems

KX4 heat pump systems operate with 2 inter-connecting pipes, thus commonly referred to as a '2-pipe system'.

These systems provide either a heating or cooling operation to all indoor units and are suitable for a wide range of applications from an individual apartment (with the KX4 compact 1/phase system) to an entire multi storey building, especially where there are significant open plan areas to be controlled.

The range starts with a compact, 1/phase model with 14.0kW cooling capacity, up to the largest capacity single outdoor unit in the industry (24hp) with 68.0kW cooling capacity. Outdoor units can also be "twinned" providing up to 48HP/136.0kW on a single system.

The KX4 range (8HP+) has a total piping length of 510m and the furthest indoor unit can be connected up to 160m from the outdoor unit.



5HP/14.0kW	6HP/16.0kW	8HP/22.4kW	10HP/28.0kW	12HP/33.5kW	14HP/40.0kW
FDCA140HKXEN4R/S4R	FDCA160HKXES4R	FDCA224HKXE4BR	FDCA280HKXE4BR	FDCA335HKXE4BR	FDCA400HKXE4BR

16HP/45kW	18HP/50.0kW	20HP/56.0kW	22HP/61.5kW	24HP/68.0kW
FDCA450HKXE4BR	FDCA504HKXE4BR	FDCA560HKXE4BR	FDCA615HKXE4BR	FDCA680HKXE4BR

26HP/73.5kW (12+14)	28HP/80.0kW (14+14)	30HP/85.0kW (14+16)
FDCA735HKXE4BR (FDCA335HKXE4BRK+FDCA400HKXE4BR)	FDCA800HKXE4BR (FDCA400HKXE4BR+FDCA400HKXE4BR)	FDCA850HKXE4BR (FDCA400HKXE4BR+FDCA450HKXE4BR)

32HP/90.0kW (16+16)	34HP/96.0kW (16+18)	36HP/101.0kW (18+18)
FDCA900HKXE4BR (FDCA450HKXE4BR+FDCA450HKXE4BR)	FDCA960HKXE4BR (FDCA450HKXE4BR+FDCA504HKXE4BR)	FDCA1010HKXE4BR (FDCA504HKXE4BR+FDCA504HKXE4BR)

38HP/106.5kW (18+20)	40HP/113.0kW (20+20)	42HP/118.0kW (20+22)
FDCA1065HKXE4BR (FDCA504HKXE4BR+FDCA560HKXE4BR)	FDCA1130HKXE4BR (FDCA560HKXE4BR+FDCA560HKXE4BR)	FDCA1180HKXE4BR (FDCA560HKXE4BR+FDCA615HKXE4BR)

44HP/123.5kW (22+22)	46HP/130.0kW (22+24)	48HP/136.0kW (24+24)
FDCA1235HKXE4BR (FDCA615HKXE4BR+FDCA615HKXE4BR)	FDCA1300HKXE4BR (FDCA615HKXE4BR+FDCA680HKXE4BR)	FDCA1360HKXE4BR (FDCA680HKXE4BR+FDCA680HKXE4BR)

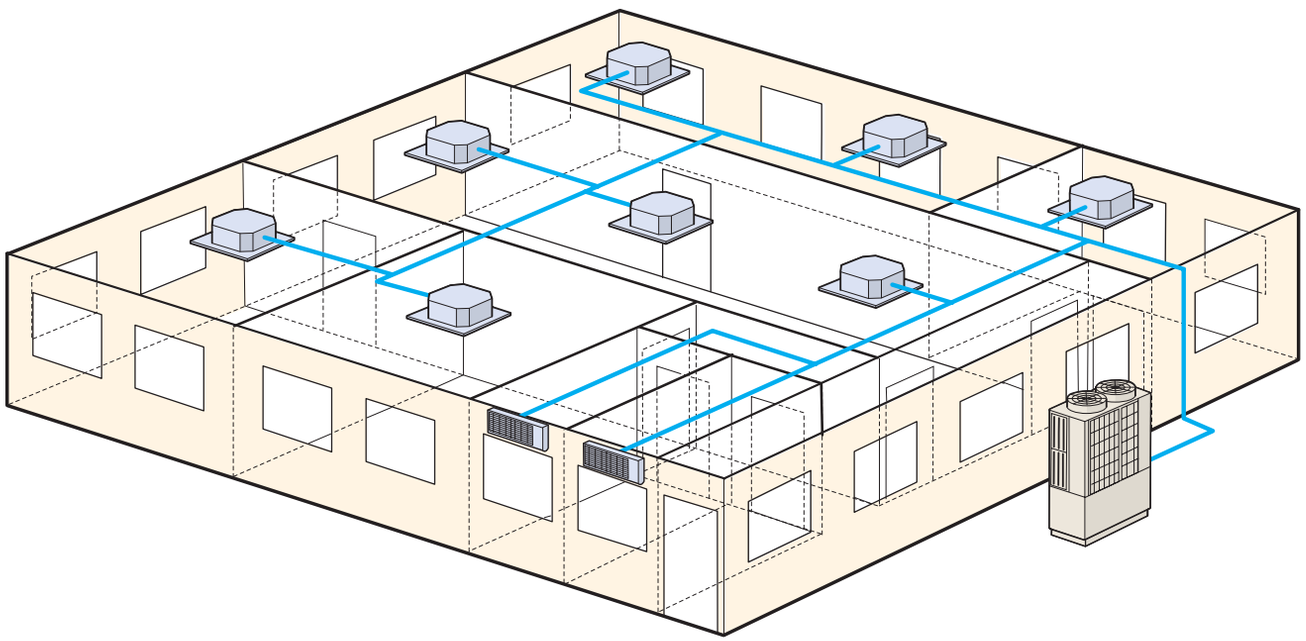
Up to 48 indoor units can be connected to the largest capacity outdoor unit, with a range of 15 types of exposed or concealed indoor unit, in several capacities, a choice of more than 70 indoor units is available.

Equivalent HP	5	6	8	10	12	14	16	18	20	22	24	26
Model	FDCA140HKXEN4R/S4R	FDCA160HKXES4BR	FDCA224HKXE4BR	FDCA280HKXE4BR	FDCA335HKXE4BR	FDCA400HKXE4BR	FDCA450HKXE4BR	FDCA504HKXE4BR	FDCA560HKXE4BR	FDCA615HKXE4BR	FDCA680HKXE4BR	FDCA735HKXE4BR
Number of connectable units	2~8	2~8	1~13	1~16	1~20	1~23	1~26	1~29	1~33	2~36	2~40	2~43

Equivalent HP	28	30	32	34	36	38	40	42	44	46	48
Model	FDCA800HKXE4BR	FDCA850HKXE4BR	FDCA900HKXE4BR	FDCA960HKXE4BR	FDCA1010HKXE4BR	FDCA1065HKXE4BR	FDCA1130HKXE4BR	FDCA1180HKXE4BR	FDCA1235HKXE4BR	FDCA1300HKXE4BR	FDCA1360HKXE4BR
Number of connectable units	2~47	2~48	2~48	2~48	2~48	2~48	3~48	3~48	3~48	3~48	3~48

FDTA | FDTCA | FDTQA | FDTSA | FDTWA | FDUMA | FDUA

FDQSA | FDKA | FDEA | FDFLA | FDFUA | SAF



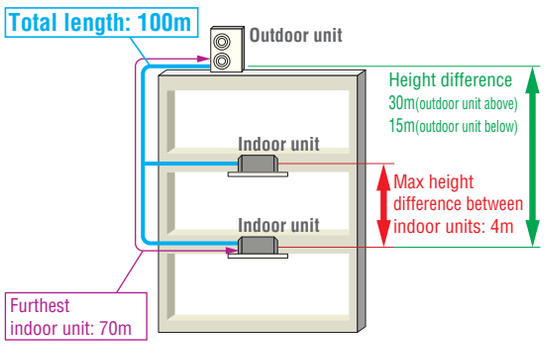
Fixed Cooling mode/fixed heating mode (summer/winter switch):
It is possible to fix the operational mode of the system (either cooling or heating) using a switch (SW3-7) on the outdoor unit PC board - this enables the building user to decide the operation of the system (e.g. cooling only in summer/heating only in winter), to avoid unnecessary energy wastage. It is also possible to wire the control switch to a remote location (inside the building) to a control room, or even linked to an ambient thermostat.

Refer to following pages for full details of all KX4 heat pump systems.

KX4 compact heat pump system 5, 6hp (14.0kW – 16.0kW)

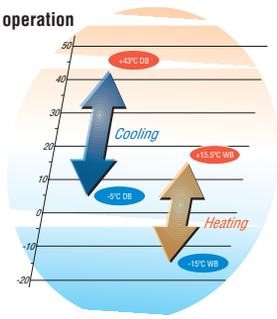
Model No.	Nominal Cooling Capacity
FDCA140HKXEN4R	14.0kW (1phase)
FDCA140HKXES4R	14.0kW (3phase)
FDCA160HKXES4R	16.0kW (3phase)

- The KX4 compact 2-pipe system offers high performance VRF for smaller commercial or residential applications with the 1/phase option.
- High efficiency with COP (in cooling) of 3.4 COP (heating) 3.7
- Connect from 2 to 8 indoor units to a single outdoor unit.
- Compact and light weight: Footprint = 0.36m²
  Weight = 125kgs
- Connect indoor unit capacity up to 150% (max 6 indoor units) or up to 130% with 7-8 indoor units connected.
- **Factory pre-charged with refrigerant for maximum total piping length (100m).**
- **No need to add refrigerant on site.**



* ø3/8"(9.52mm) piping from the outdoor unit must be 50m or less

Range of operation

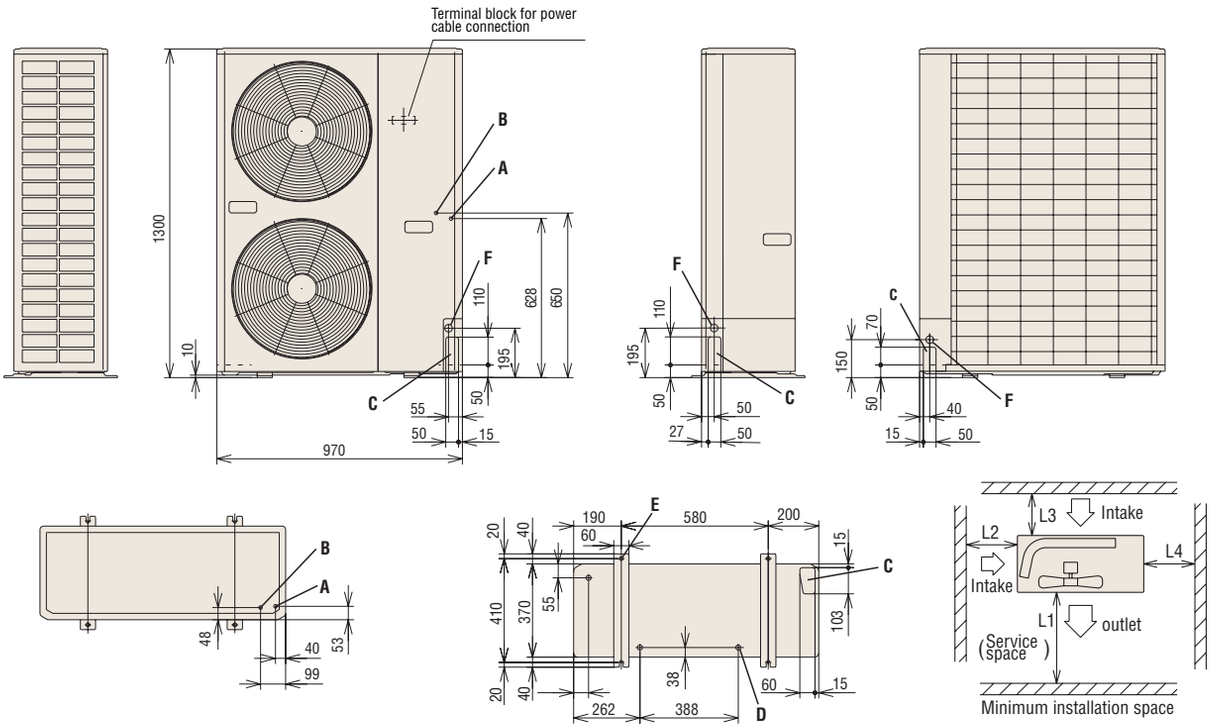


Specifications

Item	Model	FDCA140HKXEN4R	FDCA140HKXES4R	FDCA160HKXES4R
Power source		1PHASE 220-240V, 50Hz	3PHASE 380-415V, 50Hz	
Nominal cooling capacity	kW	14.6		16.0
Nominal heating capacity	kW	16.6		18.0
UK cooling capacity	kW	14.2		
Start current (max)	A	5		
Power consumption (cooling)	kW	42.0		5.46/5.46
Power consumption (heating)	kW	4.45		4.90/4.90
Running current (cooling)	A	21.2/19.4	6.87/6.29	8.91/8.17
Running current (heating)	A	22.5/20.6	7.27/6.64	8.00/7.33
Noise level	dB(A)	53		
Exterior dimensions (HxWxD)	mm	1300x970x370		
Net weight	kg	125		
Compressor motor	kW x units	3.0x1		
Capacity control	%	20-100		25-125
Crankcase heater	W	33		
Heat exchanger		Louvre fines & inner grooved tubing		
Refrigerant		R410A		
Quantity	kg	7.5		
Refrigerant piping size	in (mm)	Liquid line: Ø3/8"(9.52)		
		Gas line: Ø5/8"(15.88)		

Dimensions

All measurements in mm.



Mark	Item	
A	Service valve connection (gas side)	ø5/8" (15.88) (flare)
B	Service valve connection (liquid line)	ø3/8" (9.52) (flare)
C	Pipe/cable draw-out port	4 places
D	Drain discharge port	ø20 x 3 places
E	Anchor bolt hole	M10 x 4 places
F	Cable draw-out port	ø30 x 3 places

	I	II	III
L_1	Open	Open	500
L_2	300	5	Open
L_3	100	300	150
L_4	5	5	5

1m overhead clearance required

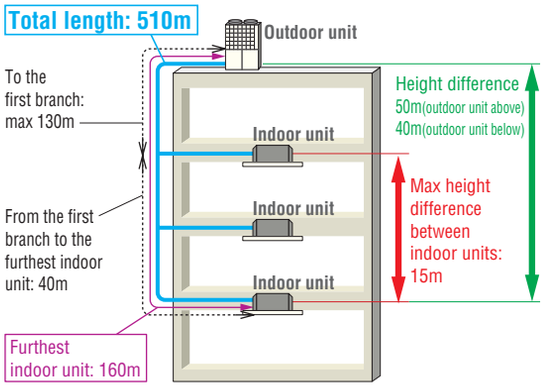
Notes:
(1) It must not be surrounded by walls on the four sides.
(2) The unit must be fixed with anchor bolts. An anchor bolt must not protrude more than 15mm.
(3) Where the unit is subject to strong winds, lay it in such a direction that the blower outlet faces perpendicularly to the dominant wind direction.
(4) Leave a 1m or larger space above the unit.
(5) A wall in front of the blower outlet must not exceed the units height.
(6) The unit name plate is attached on the lower right corner of the front panel.

KX4 heat pump systems 8, 10, 12, 14, 16hp (22.4kW – 45.0kW)

Model No.	Nominal Cooling Capacity
FDCA224HKXE4BR	22.4kW
FDCA280HKXE4BR	28.0kW
FDCA335HKXE4BR	33.5kW
FDCA400HKXE4BR	40.0kW
FDCA450HKXE4BR	45.0kW

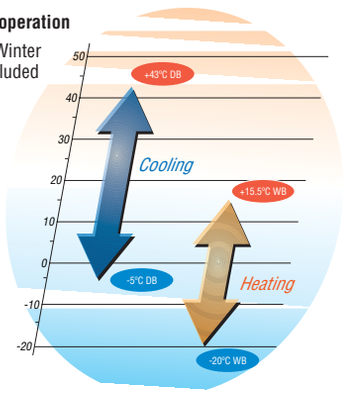
- The KX4 heat pump 2-pipe systems offer high performance VRF for applications that require either cooling only or heating only, ideal for open plan areas.
- Connect up to 26 indoor units/up to 130% capacity.
- High efficiency with COP (in cooling) from 3.4 to 3.9.
- KX4 employs DC inverter compressors ONLY.
- Industry leading total piping length up to 510m and a maximum pipe run of 160m.

Uniform footprint of all models (from 8hp – 24 hp) allows continuous side-by-side installation



Range of operation

Summer/Winter switch included

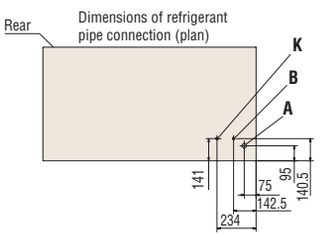


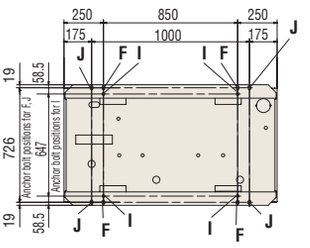
Specifications

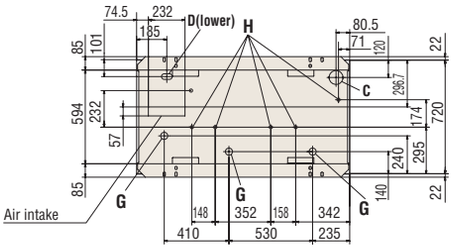
Item				FDCA224HKXE4BR	FDCA280HKXE4BR	FDCA335HKXE4BR	FDCA400HKXE4BR	FDCA450HKXE4BR
Nominal horse power				8HP	10HP	12HP	14HP	16HP
Power source				3 Phase 380-415V, 50Hz				
Nominal capacity	Cooling		kW	22.4	28.0	33.5	40.0	45.0
	Heating			25.0	31.5	37.5	45.0	50.0
UK cooling capacity			kW	19.3	24.1	28.9	34.5	38.8
Electrical characteristics	Starting current		A	5			8	
	Power consumption	Cooling	kW	5.70	8.26	9.53	11.27	12.97
		Heating		5.98	8.06	9.84	11.73	13.10
	Operating current	Cooling	A	9.6/8.8	13.6/12.4	15.5/14.2	18.4/16.9	21.1/19.3
		Heating		9.6/8.8	13.3/12.2	16.3/14.9	19.6/17.9	21.7/19.9
Exterior dimensions	HxWxD		mm	1690x1350x720				
Net weight			kg	245			310	
Refrigerant charge	R410A		kg	14.2			17.0	
Noise level (cooling/heating)			dB(A)	57/57	57/58	60.5/61	58.5/59	61/61
Refrigerant piping size	Liquid line		in (mm)	ø3/8"(9.52)		ø1/2"(12.70)		
	Gas line			ø3/4"(19.05)	ø7/8"(22.22)		ø1 1/8"(28.58)	
Capacity control			%	27-126	20-114	19-117	15-114	13-112
Number of connectable indoor units				13	16	20	23	26

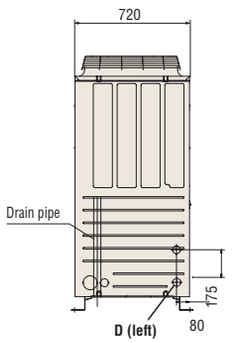
Dimensions

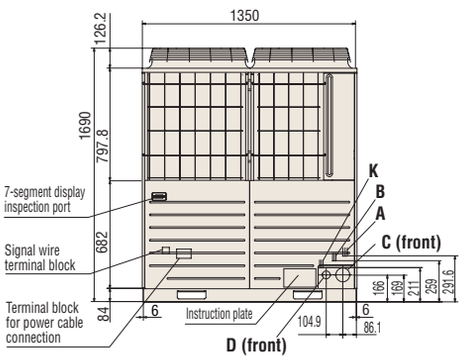
All measurements in mm.

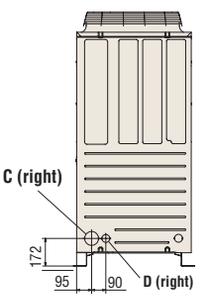


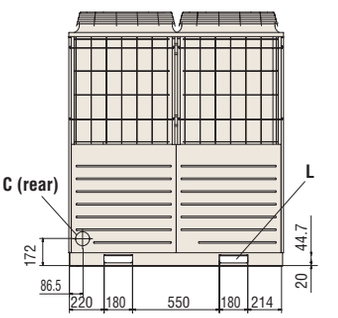








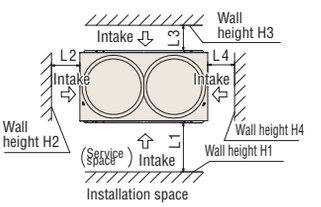




Mark	Item	
A	Service valve connection (gas side)	For refrigerant piping, please refer to the unit specifications.
B	Service valve connection (liquid line)	
C	Refrigerant pipe draw-out port	ø88
D	Power cable draw-in port	ø50
F	Anchor bolt hole	M10 x 4 places
G	Drain hose hole	ø45 x 3 places
H	Drain discharge port	ø20 x 6 places
K*	Oil-equalising pipe joint	ø3/8" flare
L	Sling holes for haulage or hoisting	180 x 44.7

*14 + 16HP models only

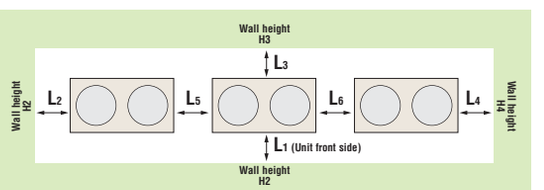
Installation example		
Dimensions	1	2
L_1	500	Open
L_2	10	10
L_3	100	100
L_4	10	Open
H_1	1500	–
H_2	No restrictions	No restrictions
H_3	1000	No restrictions
H_4	No restrictions	–



2m overhead clearance required

Notes:
(1) The unit must be fixed with anchor bolts.
(2) Leave a 2m or larger space above the unit.
(3) The unit name plate is attached on the lower right corner of the front panel.
(4) The ports for refrigerant pipe and power cable penetrations are covered with half-blanks. Please cut off a half-blank with nippers in using these ports.
(5) Use a ø88 port for refrigerant pipe connection.
(6) Anchor holes marked "L J" (four holes for M10) are for a renewal installation.
(7) The oil-equalising pipe K should be used when outdoor units are used in combination. (For 14-16Hp only)

When more than one unit is installed



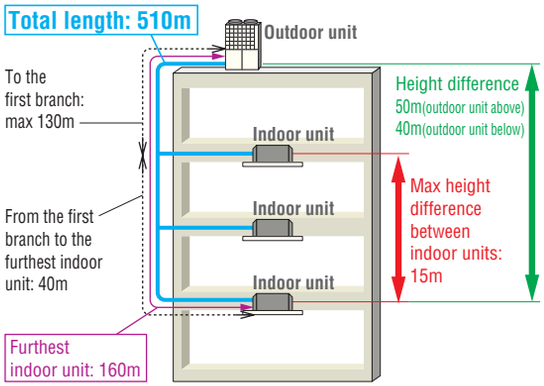
Installation example		
Dimensions	A	B
L_1	500	Open
L_2	10	200
L_3	100	300
L_4	10	Open
L_5	0	400
L_6	0	400
H_1	1500	No restrictions
H_2	No restrictions	No restrictions
H_3	1000	No restrictions
H_4	No restrictions	No restrictions

KX4 heat pump systems 18, 20, 22, 24hp (50.4kW – 68.0kW)

Model No.	Nominal Cooling Capacity
FDCA504HKXE4BR	50.4kW
FDCA560HKXE4BR	56.0kW
FDCA615HKXE4BR	61.5kW
FDCA680HKXE4BR	68.0kW

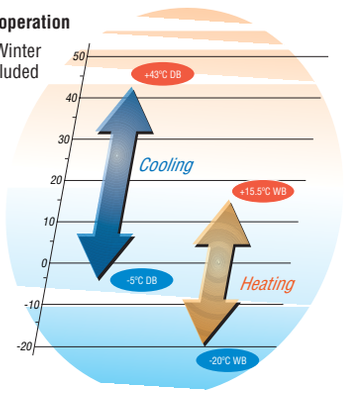
- The KX4 heat pump 2-pipe systems offer high performance VRF for applications that require either cooling only or heating only, ideal for open plan areas.
- Connect up to 40 indoor units/up to 130% capacity.
- High efficiency with COP (in cooling) of 3.4.
- KX4 employs DC inverter compressors ONLY.
- Industry leading total piping length up to 510m and a maximum pipe run of 160m.

Uniform footprint of all models (from 8hp – 24 hp) allows continuous side-by-side installation



Range of operation

Summer/Winter switch included

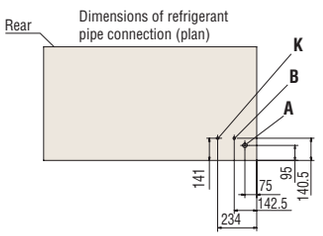


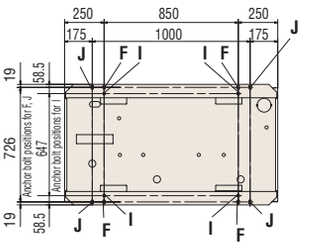
Specifications

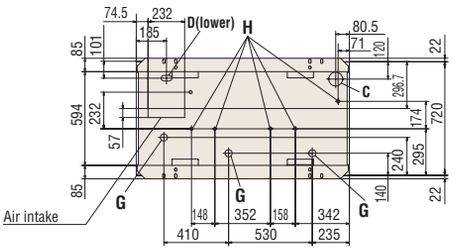
Item				FDCA504HKXE4BR	FDCA560HKXE4BR	FDCA615HKXE4BR	FDCA680HKXE4BR
Nominal horse power				18HP	20HP	22HP	24HP
Power source				3 Phase 380-415V, 50Hz			
Nominal capacity	Cooling		kW	50.4	56.0	61.5	68.0
	Heating			56.5	63.0	69.0	73.0
UK cooling capacity			kW	43.4	48.3	53.0	58.6
Electrical characteristics	Starting current		A	8			
	Power consumption	Cooling	kW	14.73	17.21	20.37	24.98
		Heating		15.15	17.07	18.48	19.08
	Operating current	Cooling	A	24.1/22.0	28.2/25.8	33.1/30.3	40.3/36.9
		Heating		25.2/23.1	28.5/26.1	30.7/28.1	31.6/29.0
Exterior dimensions	HxWxD		mm	2048x1350x720			
Net weight			kg	340		360	
Refrigerant charge	R410A		kg	19.4		21.2	
Noise level (cooling/heating)			dB(A)	60/60.5	60.5/62.5	63/63	63.5/63.5
Refrigerant piping size	Liquid line		in (mm)	ø1/2"(12.70)			
	Gas line			ø1 1/8"(28.58)			
Capacity control			%	11-110	10-113	9-110	8-108
Number of connectable indoor units				29	33	36	40

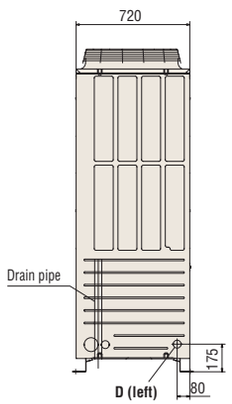
Dimensions

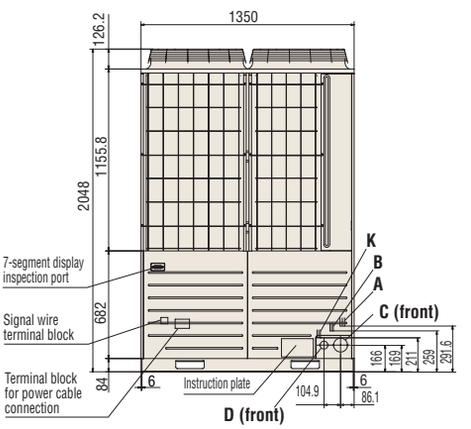
All measurements in mm.

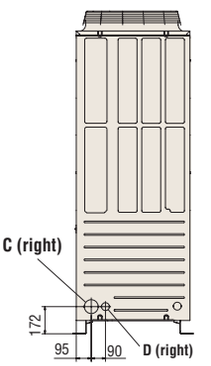


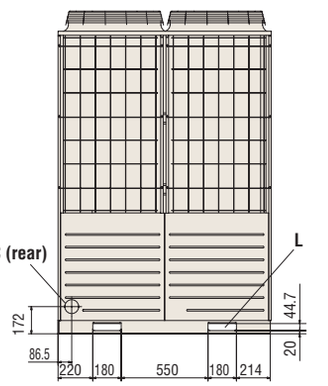






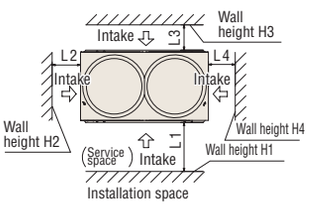






Mark	Item	
A	Service valve connection (gas side)	For refrigerant piping, please refer to the unit specifications.
B	Service valve connection (liquid line)	
C	Refrigerant pipe draw-out port	ø100
D	Power cable draw-in port	ø50
F	Anchor bolt hole	M10 x 4 places
G	Drain hose hole	ø45.3 x 3 places
H	Drain discharge port	ø20.5 x 3 places
K	Oil-equalising pipe joint	ø9.52 flare
L	Sling holes for haulage or hoisting	180 x 44.7

Installation example		
Dimensions	1	2
L_1	500	Open
L_2	10	10
L_3	100	100
L_4	10	Open
H_1	1500	–
H_2	No restrictions	No restrictions
H_3	1000	No restrictions
H_4	No restrictions	–



2m overhead clearance required

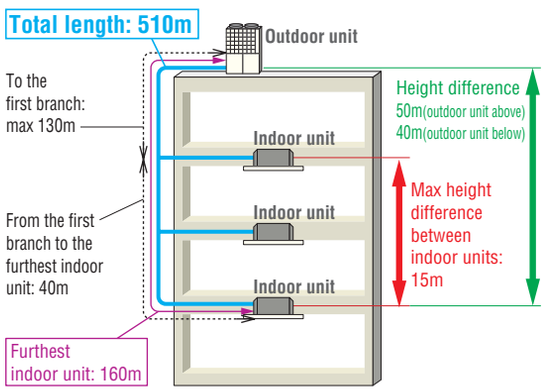
Notes:
(1) The unit must be fixed with anchor bolts.
(2) Leave a 2m or larger space above the unit.
(3) The unit name plate is attached on the lower right corner of the front panel.
(4) The ports for refrigerant pipe and power cable penetrations are covered with half-blanks. Please cut off a half-blank with nippers in using these ports.
(5) Use a ø88 port for refrigerant pipe connection.
(6) Anchor holes marked “L J” (four holes for M10) are for a renewal installation.
(7) The oil-equalising pipe K should be used when outdoor units are used in combination.

KX4 heat pump combination systems 26, 28, 30, 32hp (73.5kW – 90.0kW)

Model No.	Nominal Cooling Capacity
FDCA735HKXE4BR (FDCA335+FDCA400)	73.5kW
FDCA800HKXE4BR (FDCA400x2)	80.0kW
FDCA850HKXE4BR (FDCA400+FDCA450)	85.0kW
FDCA900HKXE4BR (FDCA450x2)	90.0kW

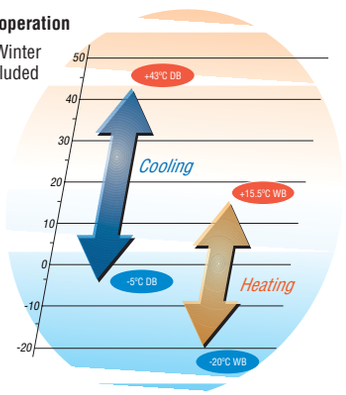
- The KX4 heat pump 2-pipe systems offer high performance VRF for applications that require either cooling only or heating only, ideal for open plan areas.
- Connect up to 48 indoor units/up to 130% capacity.
- High efficiency with COP (in cooling) from 3.4 to 3.6.
- KX4 employs DC inverter compressors ONLY.
- Industry leading total piping length up to 510m and a maximum pipe run of 160m.

Uniform footprint of all models (from 8hp – 24 hp) allows continuous side-by-side installation



Range of operation

Summer/Winter switch included

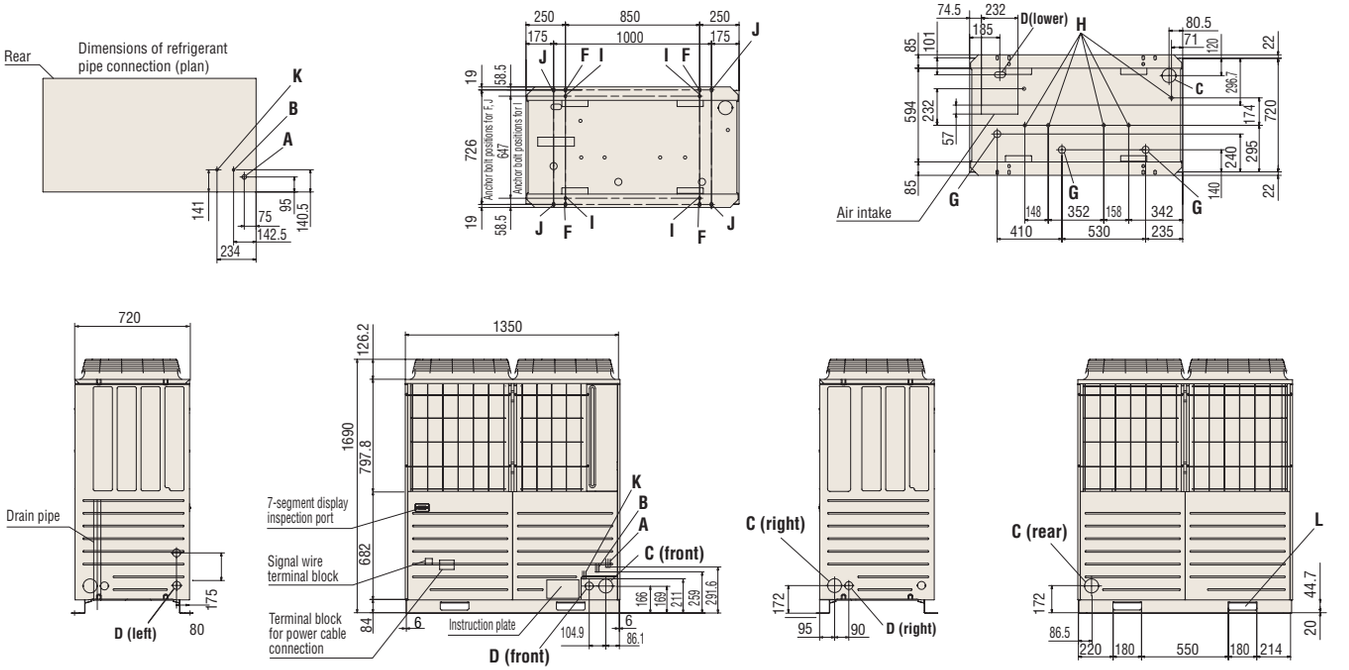


Specifications

Item				FDCA735HKXE4BR	FDCA800HKXE4BR	FDCA850HKXE4BR	FDCA900HKXE4BR
Combination (FDCA)				400HKXE4BR	400HKXE4BR	450HKXE4BR	450HKXE4BR
				335HKXE4BRK	400HKXE4BR	400HKXE4BR	450HKXE4BR
Nominal horse power				26HP	28HP	30HP	32HP
Power source				3 Phase 380-415V, 50Hz			
Nominal capacity *1	Cooling		kW	73.5	80.0	85.0	90.0
	Heating			82.5	90.0	95.0	100.0
UK cooling capacity *2			kW	63.4	69.0	73.3	77.6
Electrical characteristics	Starting current		A	16			
	Power consumption	Cooling	kW	20.21	22.54	24.24	25.94
		Heating		20.66	23.46	24.83	26.20
	Operating current	Cooling	A	32.9/30.2	36.8/33.7	39.5/36.1	42.1/38.6
		Heating		34.4/31.5	39.1/35.8	41.2/37.7	43.3/39.7
Exterior dimensions	HxWxD		mm	1690x2700x720			
Net weight			kg	310x2			
Refrigerant charge			kg	34.0			
Noise level (cooling/heating)			dB(A)	60.5/61	61.5/62	63/63	64/64
Refrigerant piping size	Liquid line		in (mm)	ø5/8"(15.88)			
	Gas line			ø1 3/8"(34.92)			
Capacity control			%	8-123	4-114	4-112	4-112
Number of connectable indoor units				43	47	48	48

Dimensions

All measurements in mm.



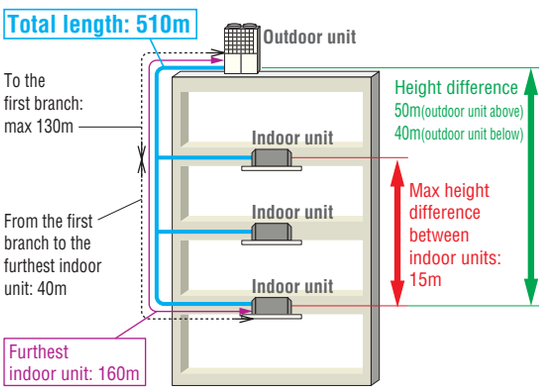
Mark	Item	
A	Service valve connection (gas side)	For refrigerant piping, please refer to the unit specifications.
B	Service valve connection (liquid line)	
C	Refrigerant pipe draw-out port	ø88
D	Power cable draw-in port	ø50
F	Anchor bolt hole	M10 x 4 places
G	Drain hose hole	ø45 x 3 places
H	Drain discharge port	ø20 x 6 places
K	Oil-equalising pipe joint	ø3/8" flare
L	Sling holes for haulage or hoisting	180 x 44.7

Notes:
(1) The unit must be fixed with anchor bolts.
(2) Leave a 2m or larger space above the unit.
(3) The unit name plate is attached on the lower right corner of the front panel.
(4) The ports for refrigerant pipe and power cable penetrations are covered with half-blanks. Please cut off a half-blank with nippers in using these ports.
(5) Use a ø88 port for refrigerant pipe connection.
(6) Anchor holes marked "L J" (four holes for M10) are for a renewal installation.
(7) The oil-equalising pipe K should be used when outdoor units are used in combination.

KX4 heat pump combination systems
34, 36, 38, 40, 42, 44, 46, 48hp (96.0kW – 136.0kW)

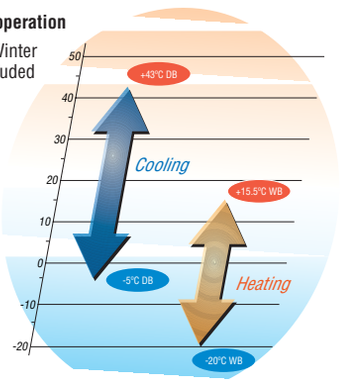
Model No.	**Nominal Cooling Capacity**
FDCA960HKXE4BR (FDCA450+FDCA504)	96.0kW
FDCA1010HKXE4BR (FDCA504x2)	101.0kW
FDCA1065HKXE4BR (FDCA504+FDCA560)	106.5kW
FDCA1130HKXE4BR (FDCA560x2)	113.0kW
FDCA1180HKXE4BR (FDCA560+FDCA615)	118.0kW
FDCA1235HKXE4BR (FDCA615x2)	123.5kW
FDCA1300HKXE4BR (FDCA615+FDCA680)	130.0kW
FDCA1360HKXE4BR (FDCA680x2)	136.0kW

- The KX4 heat pump 2-pipe systems offer high performance VRF for applications that require either cooling only or heating only, ideal for open plan areas.
- Connect up to 48 indoor units/up to 130% capacity.
- High efficiency with COP (in cooling) of up to 3.2.
- KX4 employs DC inverter compressors ONLY.
- Industry leading total piping length up to 510m and a maximum pipe run of 160m.



Range of operation

Summer/Winter switch included

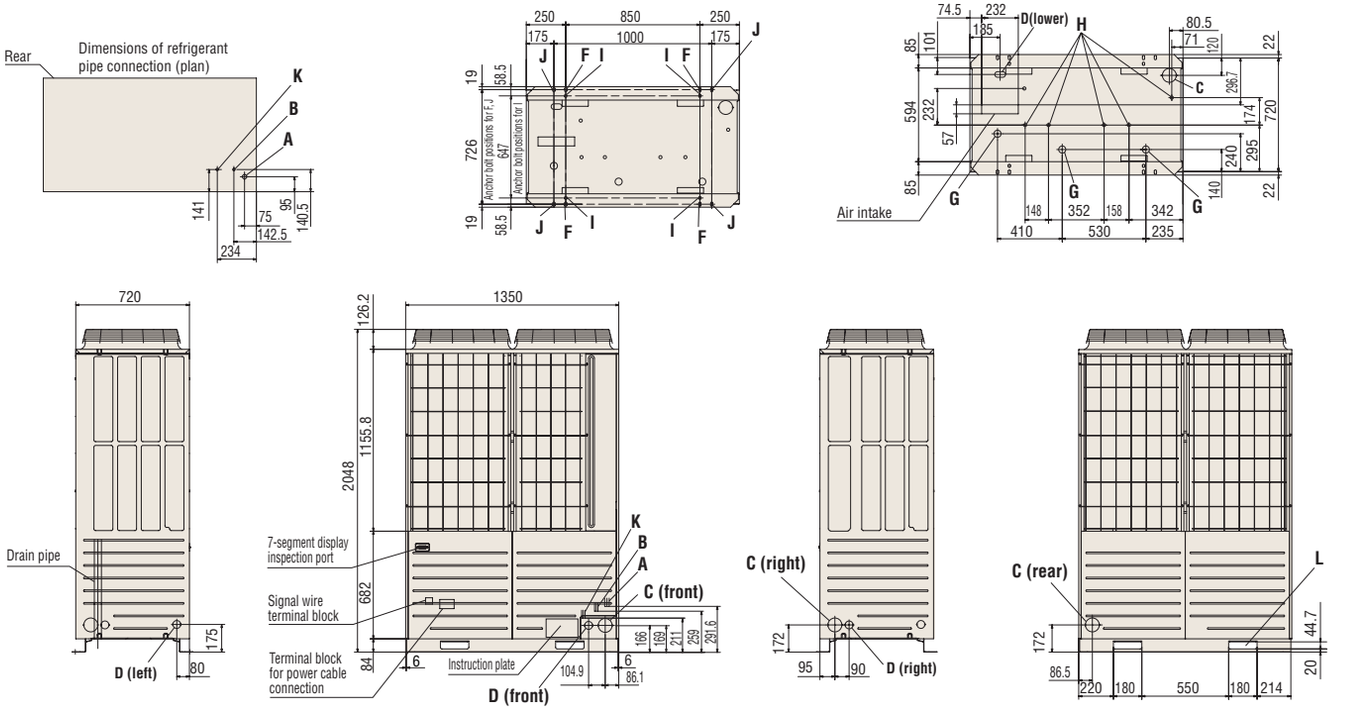


Specifications

Item				FDCA960HKXE4BR	FDCA1010HKXE4BR	FDCA1065HKXE4BR	FDCA1130HKXE4BR	FDCA1180HKXE4BR	FDCA1235HKXE4BR	FDCA1300HKXE4BR	FDCA1360HKXE4BR
Combination (FDCA)				504HKXE4BR	504HKXE4BR	560HKXE4BR	560HKXE4BR	615HKXE4BR	615HKXE4BR	680HKXE4BR	680HKXE4BR
				450HKXE4BR	504HKXE4BR	504HKXE4BR	560HKXE4BR	560HKXE4BR	615HKXE4BR	615HKXE4BR	680HKXE4BR
Nominal horse power				34HP	36HP	38HP	40HP	42HP	44HP	46HP	48HP
Power source				3 Phase 380-415V, 50Hz							
Nominal capacity	Cooling		kW	96.0	101.0	106.5	113.0	118.0	123.5	130.0	136.0
	Heating			108.0	113.0	119.5	127.0	132.0	138.0	142.0	146.0
UK cooling capacity			kW	82.8	87.1	91.8	97.4	101.7	106.5	112.1	117.2
Electrical characteristics	Starting current		A	16							
	Power consumption	Cooling	kW	27.70	29.46	31.93	34.41	37.57	40.74	45.35	49.96
		Heating		28.25	30.30	32.21	34.13	35.54	36.96	37.56	38.16
	Operating current	Cooling	A	45.1/41.3	48.1/44.0	52.2/47.8	56.4/51.6	61.3/56.1	66.2/60.6	73.4/67.2	80.6/73.8
		Heating		46.9/42.9	50.4/46.2	53.7/49.2	57.1/52.2	59.2/54.2	61.4/56.2	62.3/57.1	63.2/57.9
Exterior dimensions	HxWxD		mm	2048x2700x720							
Net weight			kg	340+310	340x2			360+340	360x2		
Refrigerant charge	R410A		kg	36.4	38.8			45.6	52.4		
Noise level (cooling/heating)			dB(A)	63.5/64	63/63.5	63.5/64.5	63.5/65.5	65/66	66/66	66.5/66.5	
Refrigerant piping size	Liquid line		in (mm)	ø5/8"(15.88)		ø3/4"(19.05)					
	Gas line			ø1 3/8"(34.92)							
Capacity control			%	4-110	4-109	4-111	4-112	4-112	4-109	4-108	4-107
Number of connectable indoor units				48							

Dimensions

All measurements in mm.



Mark	Item	
A	Service valve connection (gas side)	For refrigerant piping, please refer to the unit specifications.
B	Service valve connection (liquid line)	
C	Refrigerant pipe draw-out port	ø100
D	Power cable draw-in port	ø50
F	Anchor bolt hole	M10 x 4 places
G	Drain hose hole	ø45.3 x 3 places
H	Drain discharge port	ø20.5 x 3 places
K	Oil-equalising pipe joint	ø9.52 flare
L	Sling holes for haulage or hoisting	180 x 44.7

Notes:
(1) The unit must be fixed with anchor bolts.
(2) Leave a 2m or larger space above the unit.
(3) The unit name plate is attached on the lower right corner of the front panel.
(4) The ports for refrigerant pipe and power cable penetrations are covered with half-blanks. Please cut off a half-blank with nippers in using these ports.
(5) Use a ø88 port for refrigerant pipe connection.
(6) Anchor holes marked “L J” (four holes for M10) are for a renewal installation.
(7) The oil-equalising pipe K should be used when outdoor units are used in combination.

KX4 refrigerant piping

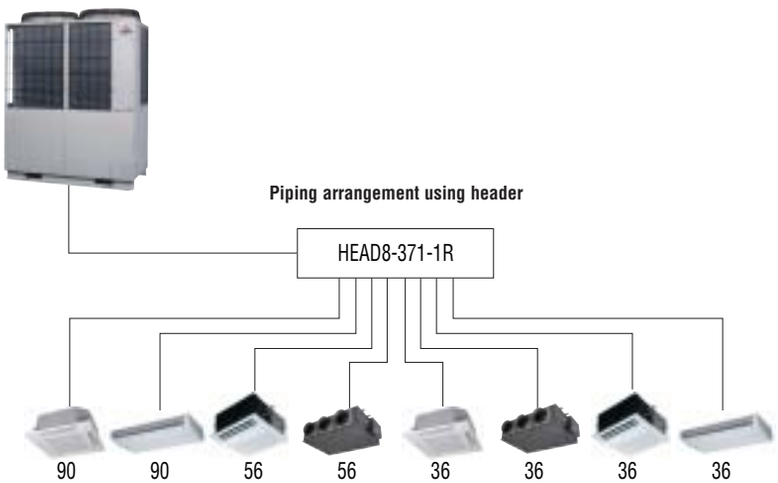
Installation of Interconnecting Pipework
Mitsubishi KX4 equipment is manufactured to the highest standards of quality and reliability. It is imperative the method of installation and the materials used are also to high standards, to ensure trouble free operation and long term reliability.
The interconnecting pipework must be installed by a competent and trained engineer. Refrigeration quality copper tube must be used, soft copper coils or half-hard straight lengths. The refrigeration quality tube must be soft drawn seamless high grade copper pipe. The copper tube must be selected taking into account the higher operating pressures of R410A refrigerant, and that high pressures will occur throughout the system because of the reverse cycle operation. All pipework material used should be EN12735 European standard.

The supplied branch pipe kits, must be used to make connections to indoor units, and the supplied manifold kits must be used to make connections between outdoor units (where applicable); it is not permitted to use standard fittings such as elbows, tees etc. The branch pipes shall be installed in accordance with the manufacturer's instructions, allowing unrestricted flow of refrigerant, and in accordance with European standard E378:2000.
All brazed joints shall be made with dry nitrogen purge to ensure the prevention of oxidisation to the internal surface of the copper pipes.
The ingress of moisture, dirt and any other contaminants to the interior of the copper pipes, and air conditioning units, must be prevented during the installation procedure.
After the installation of pipework, prior to the connection of the outdoor units, and sealing of insulation joints, the pipework must be pressure tested for leakage, using dry nitrogen. The pipe ends must be crimped and brazed, and a suitable service valve connection will need to be fitted (supplied by installer).

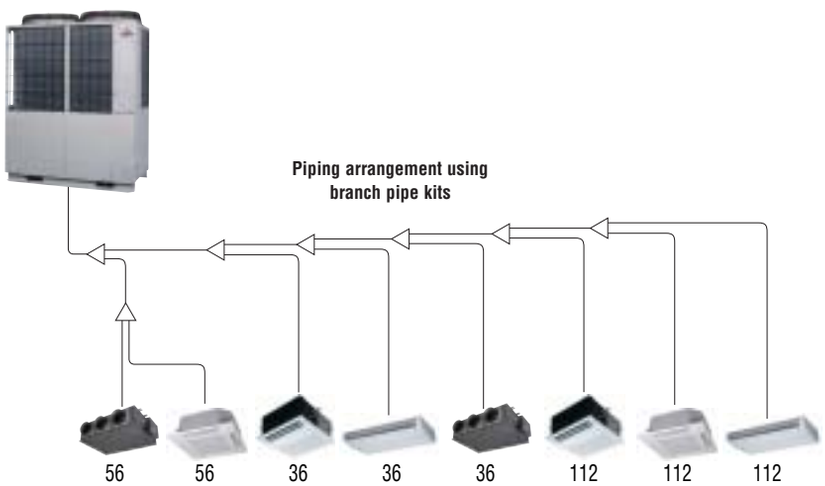
Pipe Insulation
The refrigeration pipework must be insulated with close cell Class 'O' fire performance with a minimum wall thickness of 13mm.

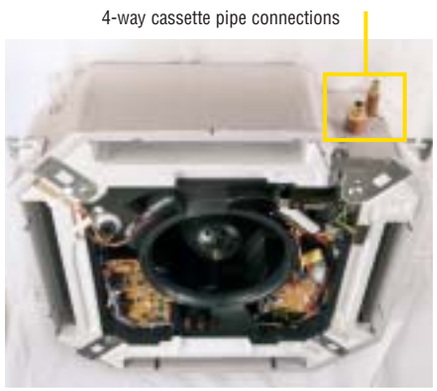
Additional Refrigerant
Additional R410A refrigerant only shall be used, and must be charged by weight only, using electronic scales. The amount of additional refrigerant must be accurately calculated from the manufacturer's data, based on the length and diameter of each section of the liquid refrigerant pipework of the system.

Single outdoor unit piping examples:



FDCA335HKXE4R





FDTA28KXE4R

KX4 refrigerant piping

Outdoor unit (HP)		5	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
Liquid pipe	Furthest indoor unit =<90m	3/8"			1/2"							5/8"						3/4"					
Gas pipe		5/8"	3/4"	7/8"		1 1/8"						1 3/8"											
Liquid pipe	Furthest indoor unit =>90m	X	1/2"				5/8"					3/4"						7/8"					
Gas pipe			7/8"			1 1/8"						1 3/8"											

mm	inch
ø9.52	3/8"
ø12.7	1/2"
ø15.88	5/8"
ø19.05	3/4"
ø22.22	7/8"
ø25.4	1"

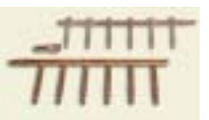
mm	inch
ø28.58	1 1/8"
ø31.8	1 1/4"
ø34.92	1 3/8"
ø38.1	1 1/2"
ø44.5	1 3/4"
ø50.8	2"

Branch pipes

DIS-22-1/DIS-180-1

DIS-540-1/DIS-371-1

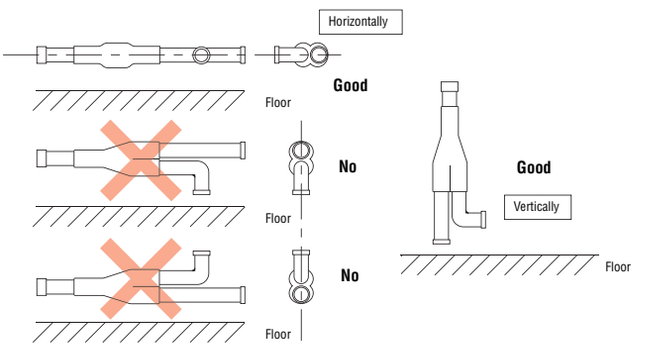
Header pipe



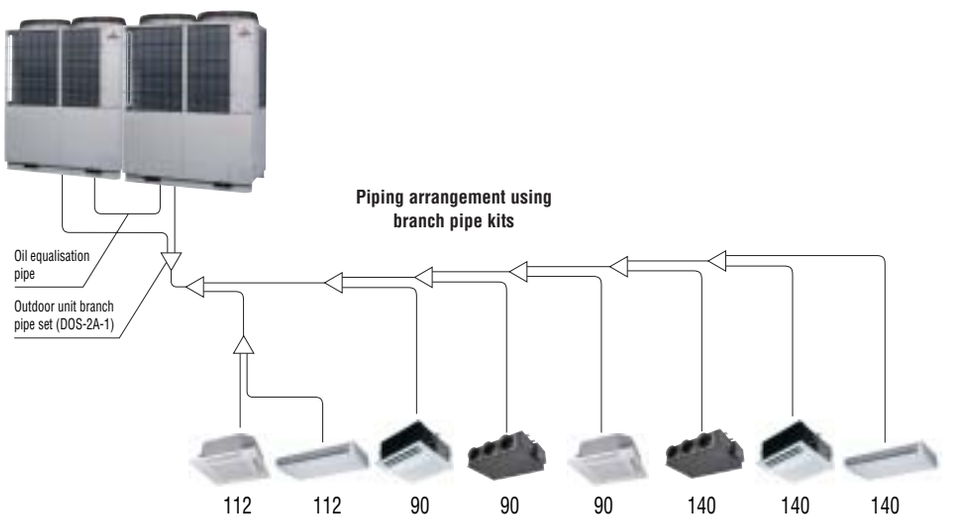
HEAD6-180-1R

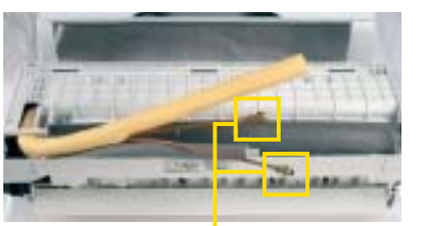
Combination outdoor unit manifold

DOS-2A-1



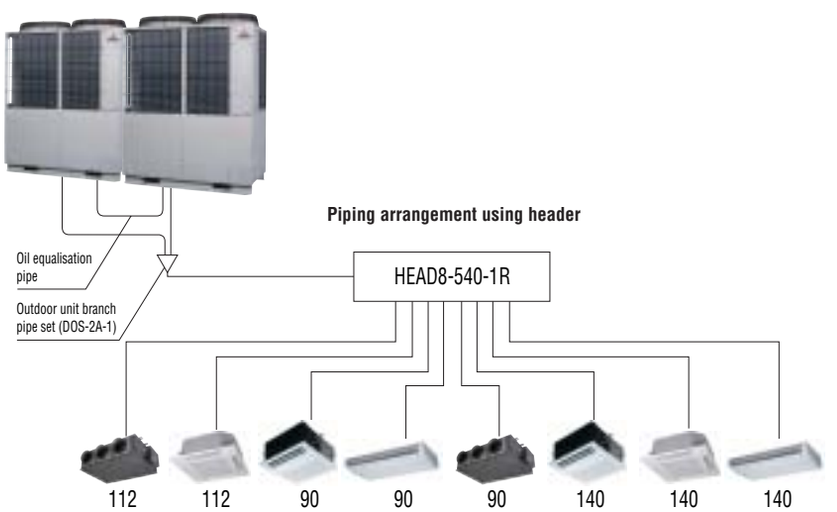
Combination outdoor unit piping examples:





FDKA28KXE4R

High wall unit pipe connection



Outdoor unit's branching piping

Outdoor unit	Branch piping set
2 units (for 735~1360)	DOS-2A-1

Indoor unit's first branching piping

Total capacity of indoor units	Branch piping set	Header set	
		Model	Branches
~179	DIS-22-1	HEAD4-22-1	Max 4 branches
180~370	DIS-180-1	HEAD6-180-1	Max 6 branches
371~539	DIS-371-1	HEAD8-371-1	Max 8 branches
540~	DIS-540-1	HEAD8-540-1	Max 8 branches

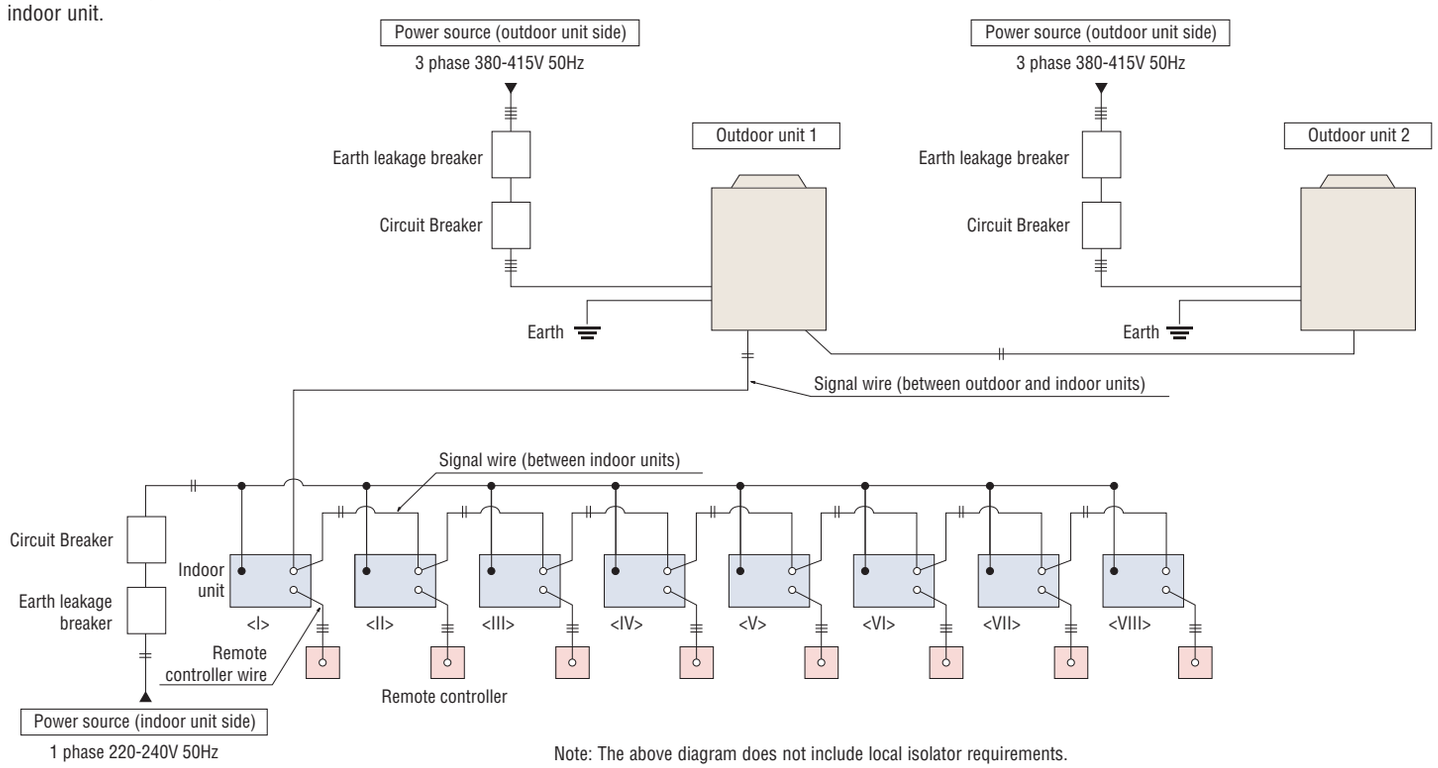
KX4 electrical wiring – power supply

KX4 new design includes greatly simplified wiring requirements utilising a 'polarity-free' two wire control loop connecting the indoor units.

Power wiring

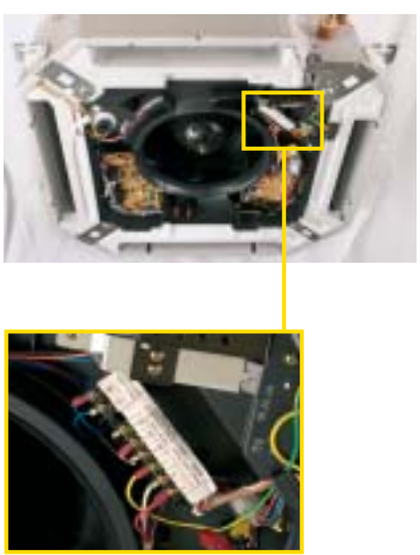
Cables can be laid through the front, right, left or bottom of the outdoor unit casing.

Separate power supplies should be used for the outdoor unit (3/phase) and the indoor units (1/phase). Only control wiring is connected from outdoor to indoor unit.

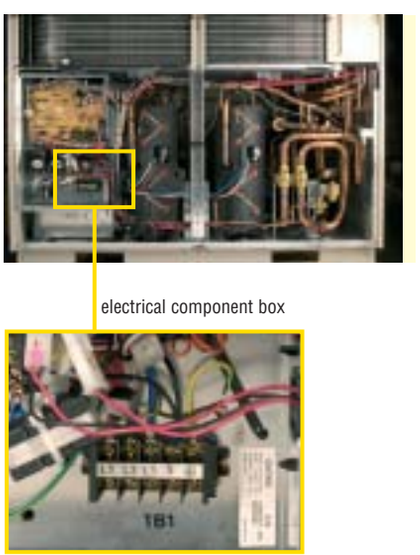


Note: The above diagram does not include local isolator requirements.

4-way cassette power supply connection



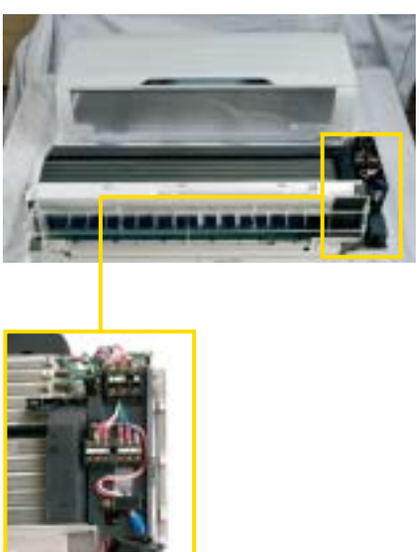
KX4 outdoor unit mechanical compartment



electrical component box

Outdoor unit power supply terminal block

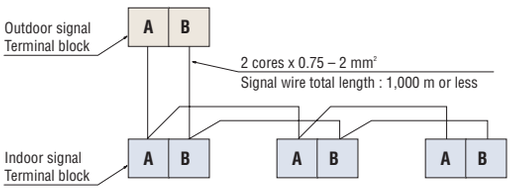
Wall unit



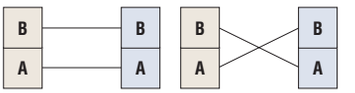
KX4 electrical wiring – control wiring

1. The control wiring is 5 Volt DC, non-polarised, two wire connection notated as 'A' and 'B'. This 'AB' wiring connects outdoor unit to indoor unit and indoor unit to indoor unit.
2. This wiring must be a 2-core shielded cable size 0.75mm to 2.00mm^2. The maximum length of 2-core is 1000 metres.
3. We recommend only one end of the shield of the cable is connected to ground (earth) at one of the outdoor units. At all other terminal connections on the same network, connect all the shields together and electrically insulate them. This will prevent accidental grounding at 2 points and eliminate any electrical noise.
4. For current specification of 2-core (AB) wiring, please consult your MHI dealer.

When there is 1 outdoor unit

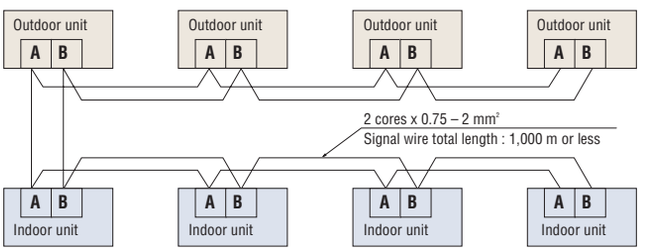


Indoor and outdoor signal wires do not have a polarity. Any of the connections in the following illustrations can be made.



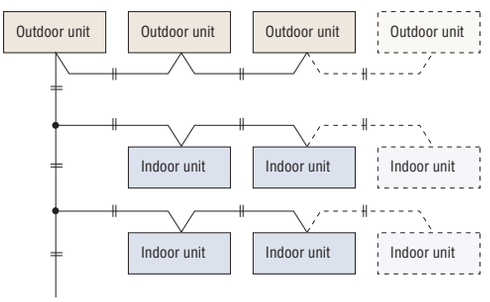
When wiring to the terminal block, use the M3.5 crimp terminals shown in the illustration below to make the connection.

When connecting multiple outdoor units

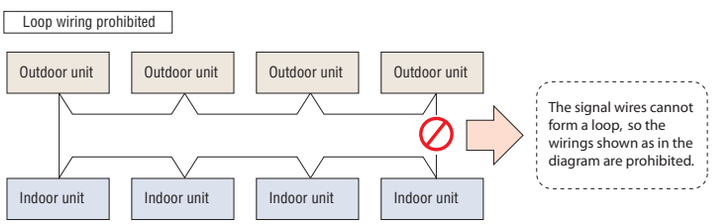


(a) The maximum number of indoor units that can be connected in a system is 48 and it is possible to configure outdoor units and/or indoor units as an outdoor or indoor unit group connected with each other with two wires.

(b) The signal wires can also be connected using the method shown below.



Loop wiring prohibited

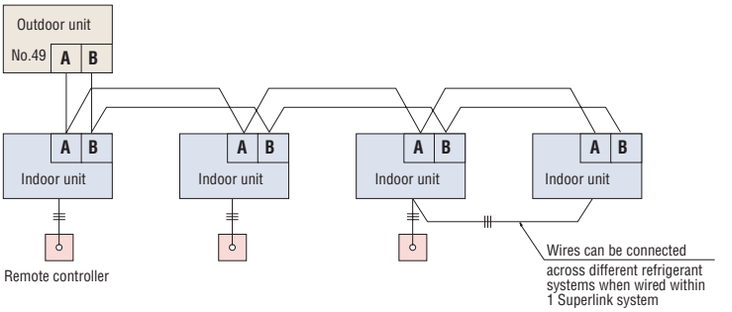


Remote controller wiring specifications

1. For interconnecting wiring between the remote controller and indoor units (XYZ wiring) use 3-core shielded cable size 0.3mm^2. The maximum length of 3-core cable is 600 metres. Where the 3-core wiring exceeds 100m, use the wire size detailed on the table opposite.
2. Be sure to ground (earth) only one end of the shield of the cable. When connecting more than one indoor unit to a remote controller, we recommend the shield of the cable is connected to ground (earth) at the first indoor unit only. At all subsequent terminal connections on the same loop, connect all the shields together and electrically insulate them. This will prevent accidental grounding at 2 points and eliminate any electrical noise.
3. For current specification of 3-core (XYZ) wiring, please consult your MHI dealer.

Length (m)	Wire size
100 to 200	0.5mm^2 x 3 core
To 300	0.75mm^2 x 3 core
To 400	1.25mm^2 x 3 core
To 600	2.0mm^2 x 3 core

For further information about system configuration, addressing and control, please see pages 68-69



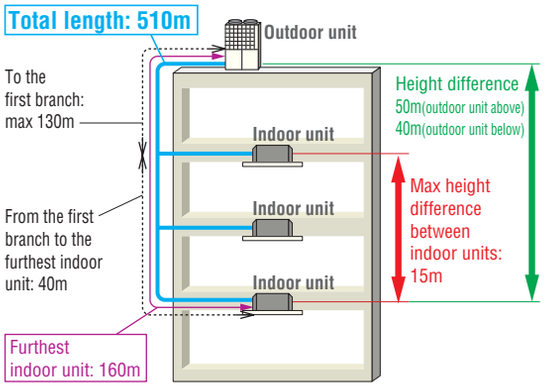
KXR4 heat recovery systems - for simultaneous heating and cooling

KXR4 heat recovery systems operate with 3 inter-connecting pipes, thus commonly referred to as a '3-pipe system'.

KXR4 systems provide both heating and cooling operations to individual indoor units according to the room condition/requirement. KXR4 incorporates highly sophisticated control to condition multiple indoor areas, whatever their requirement for cooling or heating, for applications where the building orientation (N, S, E, W) can mean that heat gain/loss varies on each side of the building.

The range starts from the 8hp model (22.4kW) cooling capacity, up to the largest capacity single outdoor unit in the industry (24hp) with 68.0kW cooling capacity. Outdoor units can also be "twinned" providing up to 48HP/136.0kW on a single system.

The KXR4 range (8HP+) has a total piping length of 510m and the furthest indoor unit can be connected up to 160m from the outdoor unit.



8HP/22.4kW	10HP/28.0kW	12HP/33.5kW	14HP/40.0kW
FDCA224HKXRE4BR	FDCA280HKXRE4BR	FDCA335HKXRE4BR	FDCA400HKXRE4BR

16HP/45kW	18HP/50.0kW	20HP/56.0kW	22HP/61.5kW	24HP/68.0kW
FDCA450HKXRE4BR	FDCA500HKXRE4BR	FDCA560HKXRE4BR	FDCA615HKXRE4BR	FDCA680HKXRE4BR

26HP/73.5kW (12+14)	28HP/80.0kW (14+14)	30HP/85.0kW (14+16)
FDCA735HKXRE4BR (FDCA335HKXRE4BR+FDCA400HKXRE4BR)	FDCA800HKXRE4BR (FDCA400HKXRE4BR+FDCA400HKXRE4BR)	FDCA850HKXRE4BR (FDCA400HKXRE4BR+FDCA450HKXRE4BR)

32HP/90.0kW (16+16)	34HP/96.0kW (16+18)	36HP/101.0kW (18+18)
FDCA900HKXRE4BR (FDCA450HKXRE4BR+FDCA450HKXRE4BR)	FDCA960HKXRE4BR (FDCA450HKXRE4BR+FDCA504HKXRE4BR)	FDCA1010HKXRE4BR (FDCA504HKXRE4BR+FDCA504HKXRE4BR)

38HP/106.5kW (18+20)	40HP/113.0kW (20+20)	42HP/118.0kW (20+22)
FDCA1065HKXRE4BR (FDCA504HKXRE4BR+FDCA560HKXRE4BR)	FDCA1130HKXRE4BR (FDCA560HKXRE4BR+FDCA560HKXRE4BR)	FDCA1180HKXRE4BR (FDCA560HKXRE4BR+FDCA615HKXRE4BR)

44HP/123.5kW (22+22)	46HP/130.0kW (22+24)	48HP/136.0kW (24+24)
FDCA1235HKXRE4BR (FDCA615HKXRE4BR+FDCA615HKXRE4BR)	FDCA1300HKXRE4BR (FDCA615HKXRE4BR+FDCA680HKXRE4BR)	FDCA1360HKXRE4BR (FDCA680HKXRE4BR+FDCA680HKXRE4BR)

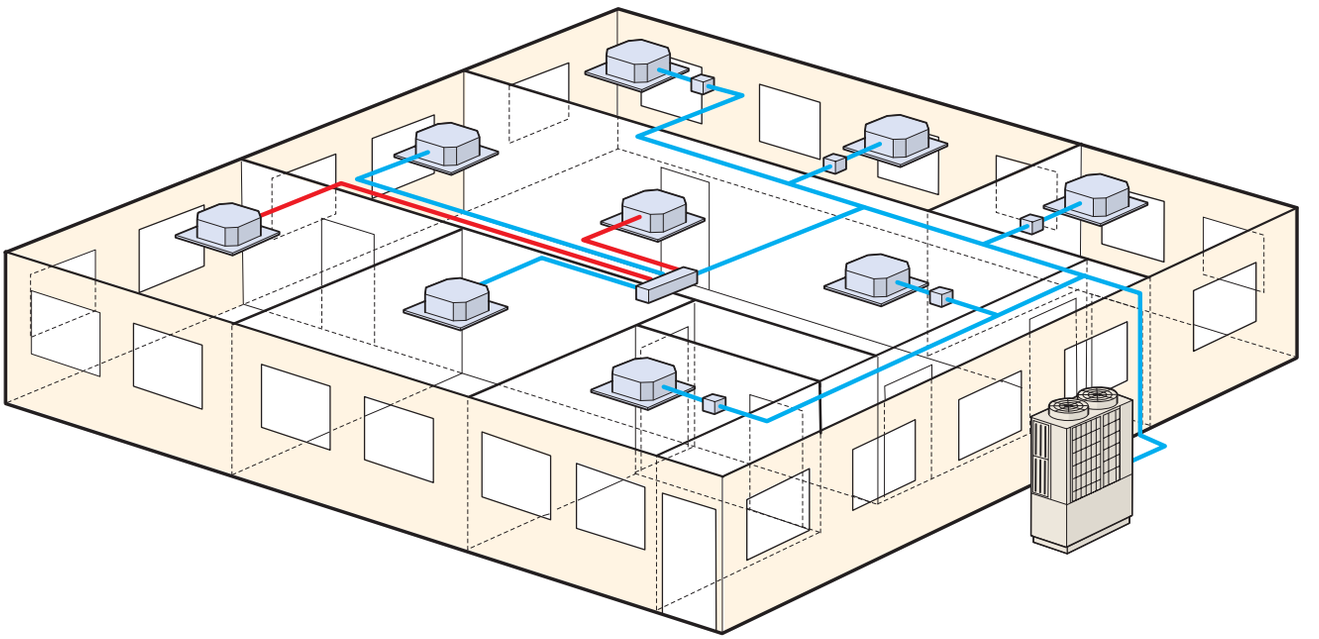
Up to 48 indoor units can be connected to the largest capacity outdoor unit, with a range of 15 types of exposed or concealed indoor unit, in several capacities, a choice of more than 70 indoor units is available.

Equivalent HP		8	10	12	14	16	18	20	22	24	26
Model		FDCA224HKXRE4BR	FDCA280HKXRE4BR	FDCA335HKXRE4BR	FDCA400HKXRE4BR	FDCA450HKXRE4BR	FDCA504HKXRE4BR	FDCA560HKXRE4BR	FDCA615HKXRE4BR	FDCA680HKXRE4BR	FDCA735HKXRE4BR
Number of connectable units		1~13	1~16	1~20	1~23	1~26	1~29	1~33	2~36	2~40	2~43

Equivalent HP	28	30	32	34	36	38	40	42	44	46	48
Model	FDCA800HKXRE4BR	FDCA850HKXRE4BR	FDCA900HKXRE4BR	FDCA960HKXRE4BR	FDCA1010HKXRE4BR	FDCA1065HKXRE4BR	FDCA1130HKXRE4BR	FDCA1180HKXRE4BR	FDCA1235HKXRE4BR	FDCA1300HKXRE4BR	FDCA1360HKXRE4BR
Number of connectable units	2~47	2~48	2~48	2~48	2~48	2~48	3~48	3~48	3~48	3~48	3~48

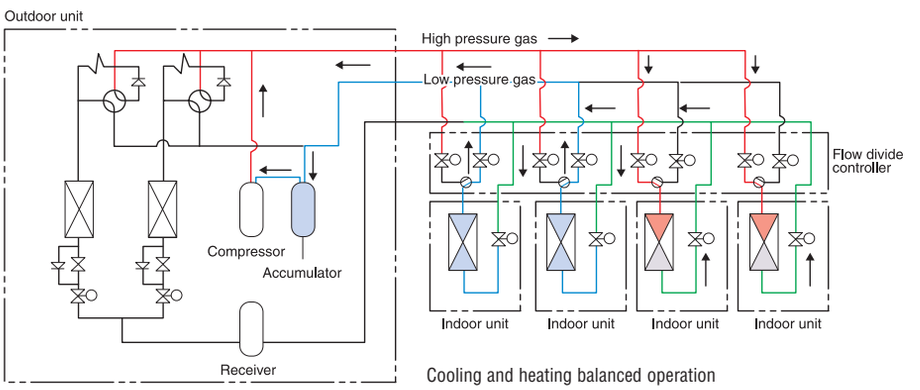
FDTA | FDTCA | FDTQA | FDTSA | FDTWA | FDUMA | FDUA

FDQSA | FDKA | FDEA | FDFLA | FDFUA | SAF



KXR4 heat recovery systems - for simultaneous heating and cooling
The KXR4 system interconnecting pipework has a unique arrangement, with two of the interconnecting pipes routed through a PFD Distribution Controller, and the third pipe connected directly to each indoor unit from the main pipe run. This reduces installation time, and the number of brazed connections on site. The PFD Distribution Controllers are available for single connection, or as a combined PFD 4-way connection, with each connected unit having independent cooling or heating operation.

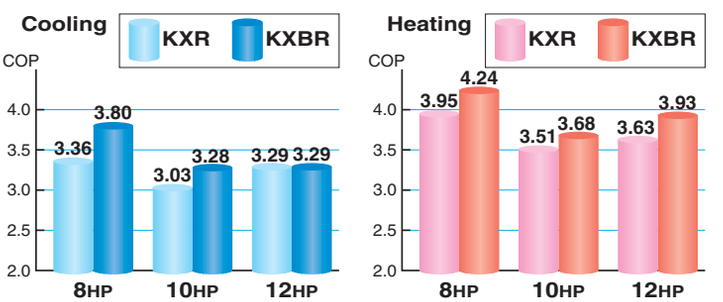
For examples of pipework layout, see pages 40-41.



Cooling and heating balanced operation

Industry leading COP

By minimizing pressure loss through suction and discharge piping line and optimizing the control of expansion valve etc, we have realized industry leading energy efficiency for the new KXR 8,10,12 HP series.

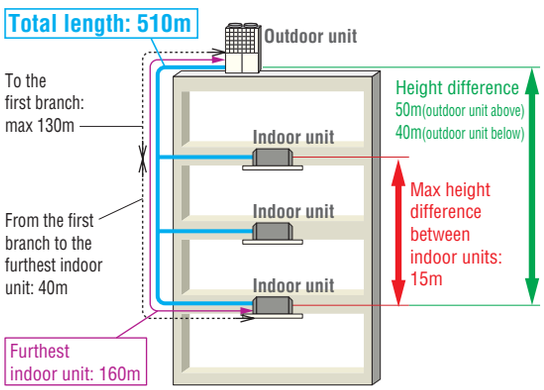


KXR4 heat recovery 3-pipe systems 8, 10, 12, 14, 16hp (22.4kW – 45.0kW) *for simultaneous heating and cooling*

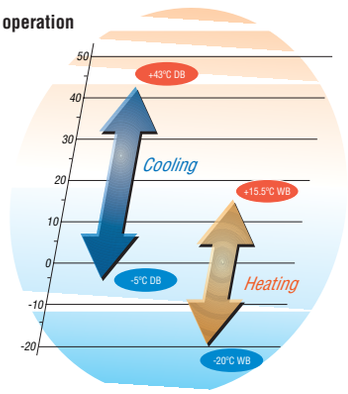
Model No.	Nominal Cooling Capacity
FDCA224HKXRE4BR	22.4kW
FDCA280HKXRE4BR	28.0kW
FDCA335HKXRE4BR	33.5kW
FDCA400HKXRE4BR	40.0kW
FDCA450HKXRE4BR	45.0kW

- The KXR4 heat recovery systems offer high performance VRF for almost every type of building, with the capacity for simultaneous heating and cooling operations of individual indoor units. Energy efficiency is maximised by employing DC inverter compressors ONLY, and distributing surplus heat from cooling operations to areas where it is required (and vice versa) resulting in COP (in cooling) from 3.0 to 3.4.
- Connect from 50% up to 130% capacity indoor units.
- Industry leading total piping length up to 510m and a maximum pipe run of 160m.

Uniform footprint of all models (from 8hp – 24 hp) allows continuous side-by-side installation



Range of operation

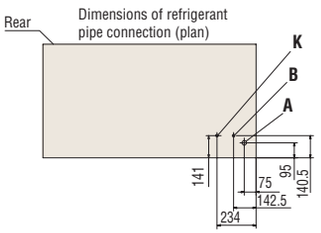


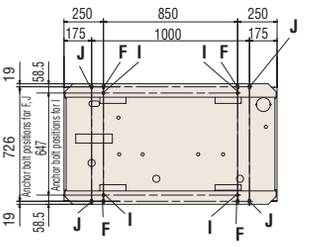
Specifications

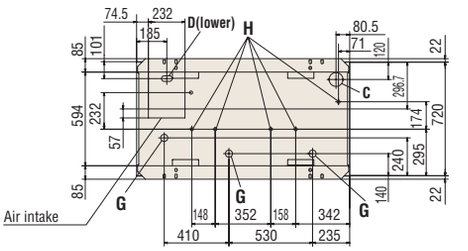
Item				FDCA224HKXRE4BR	FDCA280HKXRE4BR	FDCA335HKXRE4BR	FDCA400HKXRE4BR	FDCA450HKXRE4BR
Nominal horse power				8HP	10HP	12HP	14HP	16HP
Power source				3 Phase 380-415V, 50Hz				
Nominal capacity	Cooling		kW	22.4	28.0	33.5	40.0	45.0
	Heating			25.0	31.5	37.5	45.0	50.0
UK cooling capacity			kW	19.3	24.1	28.9	34.5	38.8
Electrical characteristics	Starting current A			5			8	
	Power consumption	Cooling	kW	5.90	8.54	10.17	11.61	13.57
		Heating		5.90	8.55	9.55	12.18	13.55
	Operating current	Cooling	A	9.1/8.3	13.6/12.4	16.5/15.1	19.0/17.4	21.6/19.8
		Heating		9.2/8.4	13.5/12.4	15.5/14.2	20.3/18.6	22.4/20.5
Exterior dimensions	HxWxD		mm	1690x1350x720				
Net weight			kg	250			315	
Refrigerant charge	R410A		kg	14.2			17	
Noise level (cooling/heating)			dB(A)	57/57	57/59	60.5/62.5	59.5/60	62.5/62.5
Refrigerant piping size	Liquid line		in (mm)	ø3/8"(9.52)		ø1/2"(12.70)		
	Gas suction line			ø3/4"(19.05)	ø7/8"(22.22)		ø1 1/8"(28.58)	
	Gas discharge line			ø5/8"(15.88)	ø3/4"(19.05)		ø7/8"(22.22)	
Capacity control			%	27-126	20-114	19-117	15-114	13-112
Number of connectable indoor units				13	16	20	23	26

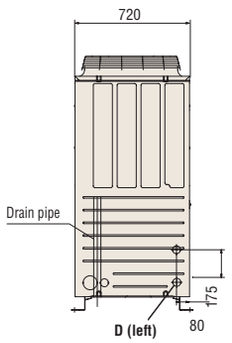
Dimensions

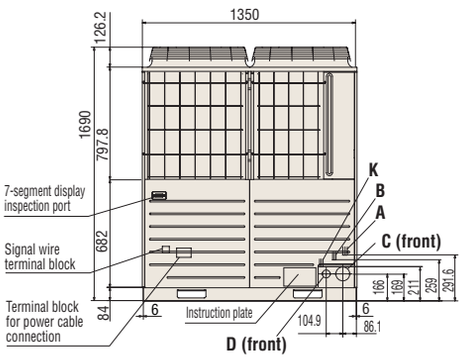
All measurements in mm.

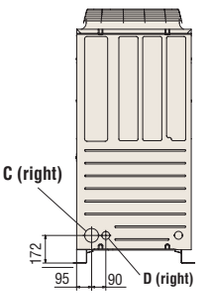


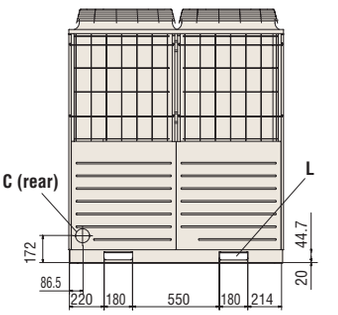








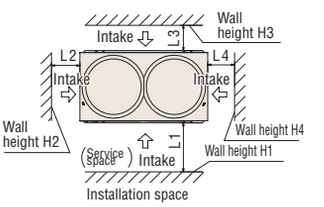




Mark	Item	
A	Service valve connection (gas side)	For refrigerant piping, please refer to the unit specifications.
B	Service valve connection (liquid line)	
C	Refrigerant pipe draw-out port	ø100
D	Power cable draw-in port	ø50
F	Anchor bolt hole	M10 x 4places
G	Drain hose hole	ø45 x 3places
H	Drain discharge port	ø20 x 6places
K*	Oil-equalising pipe joint:	ø3/8" flare
L	Sling holes for haulage or hoisting	180 x 44.7

*14 + 16HP models only

Installation example		
Dimensions	1	2
L_1	500	Open
L_2	10	10
L_3	100	100
L_4	10	Open
H_1	1500	–
H_2	No restrictions	No restrictions
H_3	1000	No restrictions
H_4	No restrictions	–



2m overhead clearance required

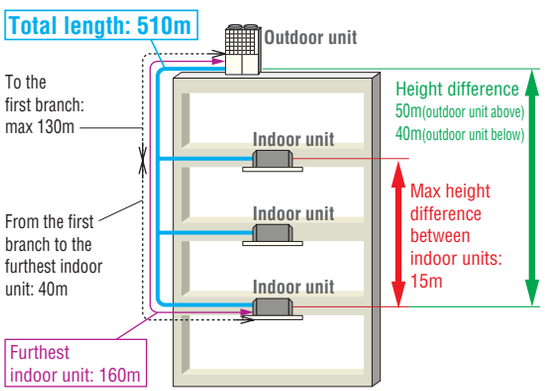
Notes:
(1) The unit must be fixed with anchor bolts.
(2) Leave a 2m or larger space above the unit.
(3) The unit name plate is attached on the lower right corner of the front panel.
(4) The ports for refrigerant pipe and power cable penetrations are covered with half-blanks. Please cut off a half-blank with nippers in using these ports.
(5) Use a ø100 port for refrigerant pipe connection.
(6) Anchor holes marked "L J" (four holes for M10) are for a renewal installation.
(7) The oil-equalising pipe K should be used when outdoor units are used in combination. (For 14-16Hp only)

KXR4 heat recovery 3-pipe systems 18, 20, 22, 24hp (50.4kW – 68.0kW) *for simultaneous heating and cooling*

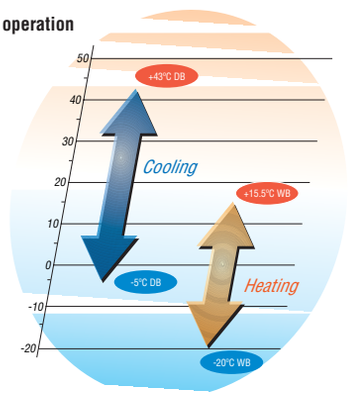
Model No.	Nominal Cooling Capacity
FDCA504HKXRE4BR	50.4kW
FDCA560HKXRE4BR	56.0kW
FDCA615HKXRE4BR	61.5kW
FDCA680HKXRE4BR	68.0kW

- The KXR4 heat recovery systems offer high performance VRF for almost every type of building, with the capacity for simultaneous heating and cooling operations of individual indoor units. Energy efficiency is maximised by employing DC inverter compressors ONLY, and distributing surplus heat from cooling operations to areas where it is required (and vice versa) resulting in COP (in cooling) of up to 3.4.
- Connect from 50% up to 130% capacity indoor units.
- Industry leading total piping length up to 510m and a maximum pipe run of 160m.

Uniform footprint of all models (from 8hp – 24 hp) allows continuous side-by-side installation



Range of operation

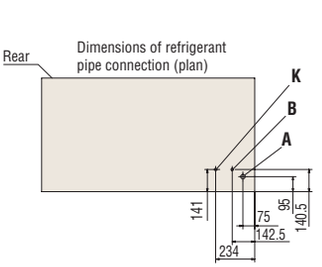


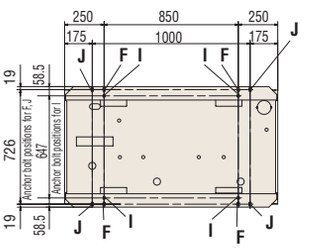
Specifications

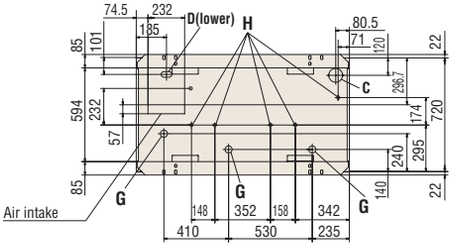
Item				FDCA504HKXRE4BR	FDCA560HKXRE4BR	FDCA615HKXRE4BR	FDCA680HKXRE4BR
Nominal horse power				18HP	20HP	22HP	24HP
Power source				3 Phase 380-415V, 50Hz			
Nominal capacity	Cooling		kW	50.4	56.0	61.5	68.0
	Heating			56.5	63.0	69.0	73.0
UK cooling capacity			kW	43.4	48.3	53.0	58.6
Electrical characteristics	Starting current		A	8			
	Power consumption	Cooling	kW	15.69	18.76	21.47	25.99
		Heating		15.62	17.69	19.11	19.69
	Operating current	Cooling	A	24.6/22.5	29.7/27.2	34.7/31.8	44.9/41.1
		Heating		26.1/23.9	29.5/27.0	31.6/28.9	34.0/31.1
Exterior dimensions	HxWxD		mm	2048x1350x720			
Net weight			kg	345		365	
Refrigerant charge	R410A		kg	19.4		26.2	
Noise level (cooling/heating)			dB(A)	61/61.5	62/62.5	64/64	64.5/64.5
Refrigerant piping size	Liquid line		in (mm)	ø1/2"(12.70)			
	Discharge Gas line			ø7/8"(22.22)			
	Suction Gas line			ø1 1/8"(28.58)			
Capacity control			%	11-110	10-113	9-110	8-108
Number of connectable indoor units				29	33	36	40

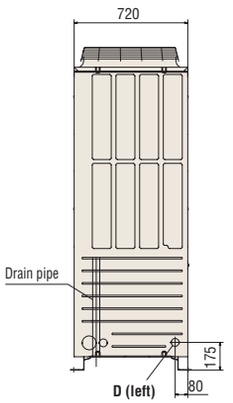
Dimensions

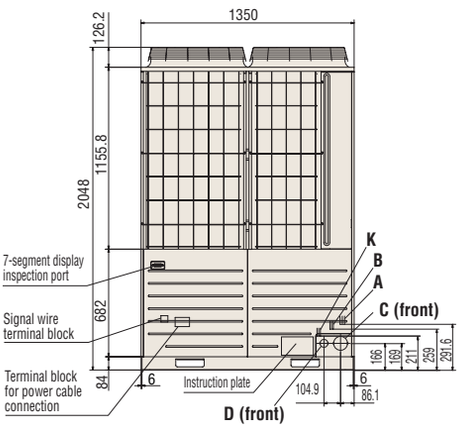
All measurements in mm.

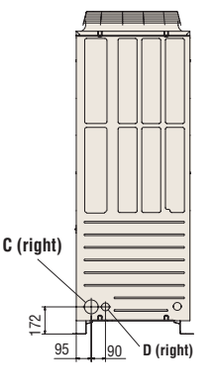


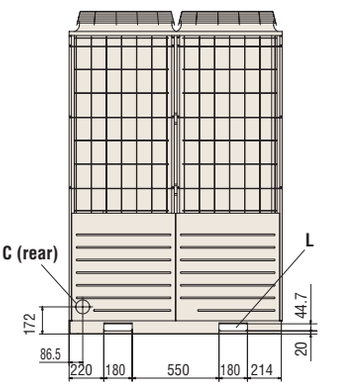






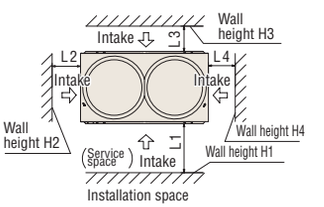






Mark	Item	
A	Service valve connection (gas side)	For refrigerant piping, please refer to the unit specifications.
B	Service valve connection (liquid line)	
C	Refrigerant pipe draw-out port	ø100
D	Power cable draw-in port	ø50
F	Anchor bolt hole	M10 x 4 places
G	Drain hose hole	ø45.3 x 3 places
H	Drain discharge port	ø20.5 x 3 places
K	Oil-equalising pipe joint	ø9.52 flare
L	Sling holes for haulage or hoisting	180 x 44.7

Installation example		
Dimensions	1	2
L_1	500	Open
L_2	10	10
L_3	100	100
L_4	10	Open
H_1	1500	–
H_2	No restrictions	No restrictions
H_3	1000	No restrictions
H_4	No restrictions	–



2m overhead clearance required

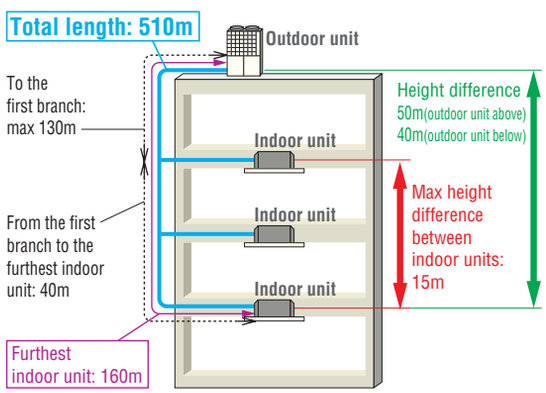
Notes:
(1) The unit must be fixed with anchor bolts.
(2) Leave a 2m or larger space above the unit.
(3) The unit name plate is attached on the lower right corner of the front panel.
(4) The ports for refrigerant pipe and power cable penetrations are covered with half-blanks. Please cut off a half-blank with nippers in using these ports.
(5) Use a ø88 port for refrigerant pipe connection.
(6) Anchor holes marked “L J” (four holes for M10) are for a renewal installation.
(7) The oil-equalising pipe K should be used when outdoor units are used in combination.

KXR4 heat recovery 3-pipe combination systems 26, 28, 30, 32hp (73.5kW – 90.0kW) *for simultaneous heating and cooling*

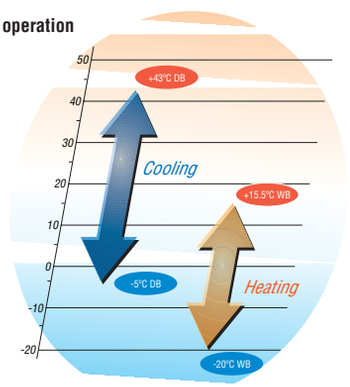
Model No.	Nominal Cooling Capacity
FDCA735HKXRE4BR (FDCA335+FDCA400)	73.5kW
FDCA800HKXRE4BR (FDCA400x2)	80.0kW
FDCA850HKXRE4BR (FDCA400+FDCA450)	85.0kW
FDCA900HKXRE4BR (FDCA450x2)	90.0kW

- The KXR4 heat recovery systems offer high performance VRF for almost every type of building, with the capacity for simultaneous heating and cooling operations of individual indoor units. Energy efficiency is maximised by employing DC inverter compressors ONLY, and distributing surplus heat from cooling operations to areas where it is required (and vice versa) resulting in COP (in cooling) of 3.3 to 3.4.
- Connect from 50% up to 130% capacity indoor units.
- Industry leading total piping length up to 510m and a maximum pipe run of 160m.

Uniform footprint of all models (from 8hp – 24 hp) allows continuous side-by-side installation



Range of operation

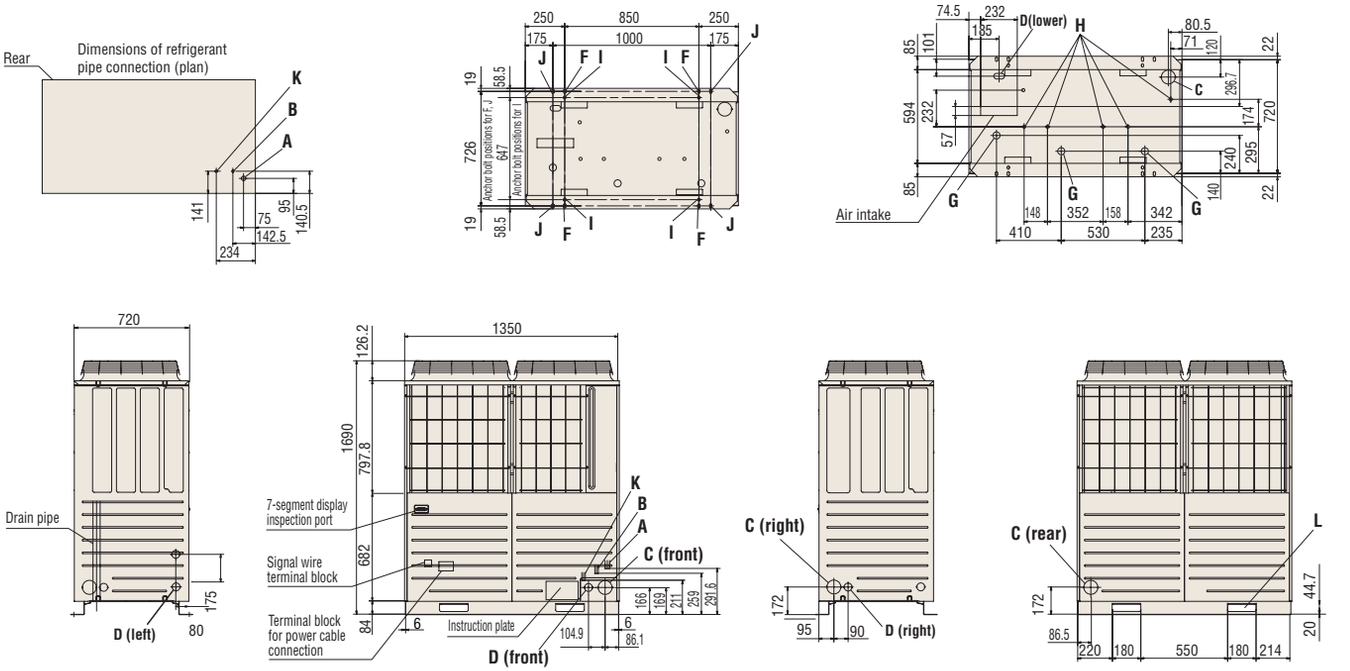


Specifications

Item				FDCA735HKXRE4BR	FDCA800HKXRE4BR	FDCA850HKXRE4BR	FDCA900HKXRE4BR
Combination (FDCA)				400HKXRE4BR	400HKXRE4BR	450HKXRE4BR	450HKXRE4BR
				335HKXRE4BRK	400HKXRE4BR	400HKXRE4BR	450HKXRE4BR
Nominal horse power				26HP	28HP	30HP	32HP
Power source				3 Phase 380-415V, 50Hz			
Nominal capacity	Cooling		kW	73.5	80.0	85.0	90.0
	Heating			82.5	90.0	95.0	100.0
UK cooling capacity			kW	63.4	69.0	73.3	77.6
Electrical characteristics	Starting current		A	16			
	Power consumption	Cooling	kW	21.08	23.22	25.18	27.14
		Heating		21.55	24.36	25.73	27.10
	Operating current	Cooling	A	34.4/31.5	38.0/34.8	40.6/37.3	43.2/39.6
		Heating		35.8/32.8	40.6/37.2	42.7/39.1	44.8/41.0
Exterior dimensions	HxWxD		mm	1690x2700x720			
Net weight			kg	315x2			
Refrigerant charge	R410A		kg	34			
Noise level (cooling/heating)			dB(A)	61.5/62	62.5/63	64.5/64.5	65.5/65.5
Refrigerant piping size	Liquid line		in (mm)	ø5/8"(15.88)			
	Discharge Gas line			ø1 1/8"(28.58)			
	Suction Gas line			ø1 3/8"(34.92)			
Capacity control			%	8-123	4-114	4-112	4-112
Number of connectable indoor units				43	47	48	48

Dimensions

All measurements in mm.



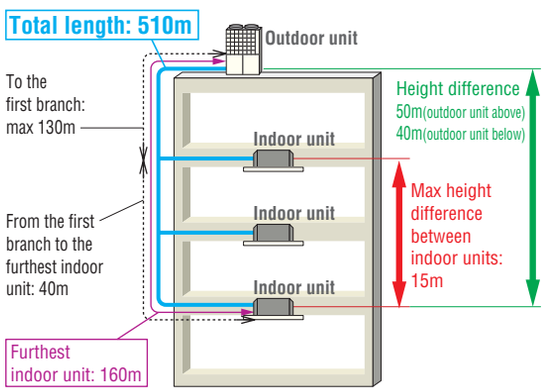
Mark	Item	
A	Service valve connection (gas side)	For refrigerant piping, please refer to the unit specifications.
B	Service valve connection (liquid line)	
C	Refrigerant pipe draw-out port	ø88
D	Power cable draw-in port	ø50
F	Anchor bolt hole	M10 x 4 places
G	Drain hose hole	ø45 x 3 places
H	Drain discharge port	ø20 x 6 places
K	Oil-equalising pipe joint	ø3/8" flare
L	Sling holes for haulage or hoisting	180 x 44.7

Notes:
(1) The unit must be fixed with anchor bolts.
(2) Leave a 2m or larger space above the unit.
(3) The unit name plate is attached on the lower right corner of the front panel.
(4) The ports for refrigerant pipe and power cable penetrations are covered with half-blanks. Please cut off a half-blank with nippers in using these ports.
(5) Use a ø88 port for refrigerant pipe connection.
(6) Anchor holes marked "L J" (four holes for M10) are for a renewal installation.
(7) The oil-equalising pipe K should be used when outdoor units are used in combination.

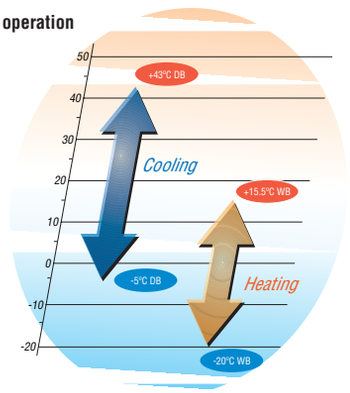
KXR4 heat recovery 3-pipe combination systems 34, 36, 38, 40, 42, 44, 46, 48hp (96.0kW – 136.0kW)

Model No.	Nominal Cooling Capacity
FDCA960HKXRE4BR (FDCA450+FDCA504)	96.0kW
FDCA1010HKXRE4BR (FDCA504x2)	101.0kW
FDCA1065HKXRE4BR (FDCA504+FDCA560)	106.5kW
FDCA1130HKXRE4BR (FDCA560x2)	113.0kW
FDCA1180HKXRE4BR (FDCA560+FDCA615)	118.0kW
FDCA1235HKXRE4BR (FDCA615x2)	123.5kW
FDCA1300HKXRE4BR (FDCA615+FDCA680)	130.0kW
FDCA1360HKXRE4BR (FDCA680x2)	136.0kW

- The KX4 heat recovery systems offer high performance VRF for almost every type of building, with the capacity for simultaneous heating and cooling operations of individual indoor units. Energy efficiency is maximised by employing DC inverter compressors ONLY, and distributing surplus heat from cooling operations to areas where it is required (and vice versa) resulting in COP (in cooling) of up to 3.4.
- Connect from 50% up to 130% capacity indoor units.
- Industry leading total piping length up to 510m and a maximum pipe run of 160m.



Range of operation

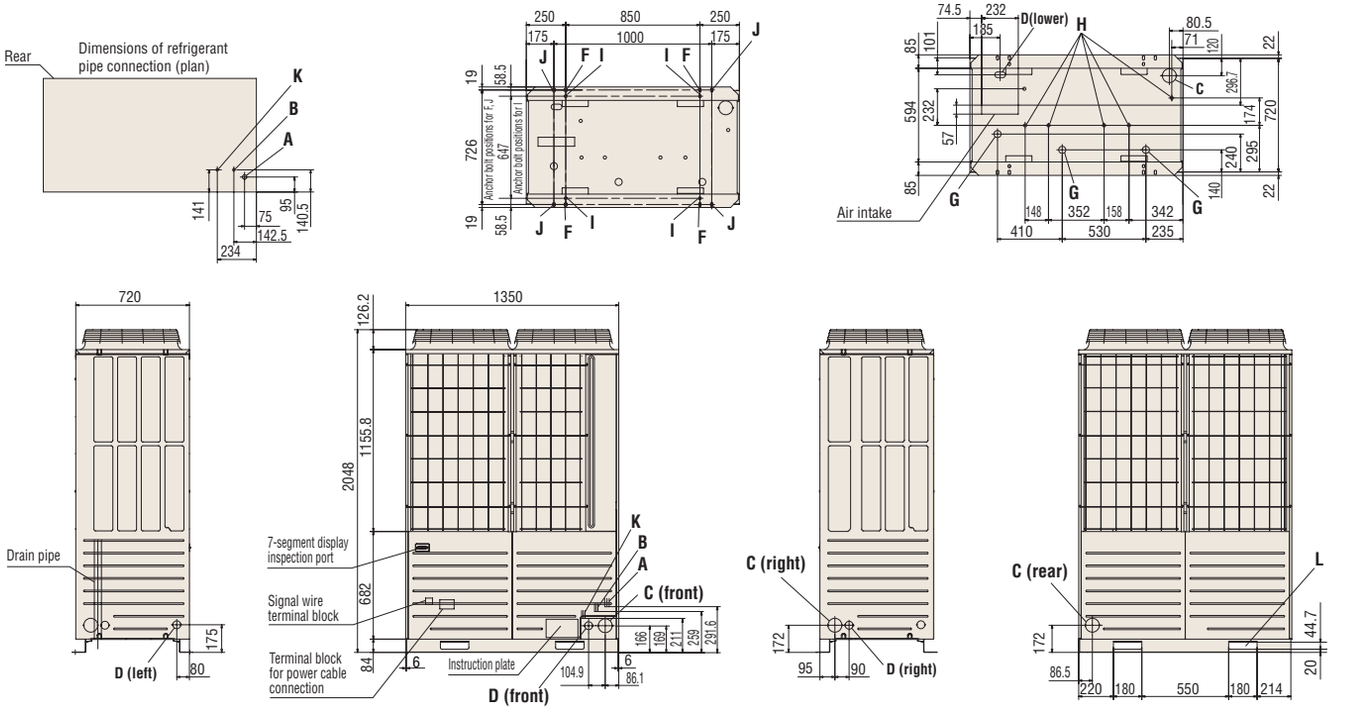


Specifications

Item				FDCA960HKXRE4BR	FDCA1010HKXRE4BR	FDCA1065HKXRE4BR	FDCA1130HKXRE4BR	FDCA1180HKXRE4BR	FDCA1235HKXRE4BR	FDCA1300HKXE4BR	FDCA1360HKXRE4BR
Combination (FDCA)				504HKXRE4BR	504HKXRE4BR	560HKXRE4BR	560HKXRE4BR	615HKXRE4BR	615HKXRE4BR	680HKXRE4BR	680HKXRE4BR
				450HKXRE4BR	504HKXRE4BR	504HKXRE4BR	560HKXRE4BR	560HKXRE4BR	615HKXRE4BR	615HKXRE4BR	680HKXRE4BR
Nominal horse power				34HP	36HP	38HP	40HP	42HP	44HP	46HP	48HP
Power source				3 Phase 380-415V, 50Hz							
Nominal capacity	Cooling		kW	96.0	101.0	106.5	113.0	118.0	123.5	130.0	136.0
	Heating			108.0	113.0	119.5	127.0	132.0	138.0	142.0	146.0
UK cooling capacity			kW	82.8	87.1	91.8	97.4	101.7	106.5	112.1	117.2
Electrical characteristics	Starting current		A	16							
	Power consumption	Cooling	kW	29.26	31.38	34.45	37.52	40.23	42.94	47.46	51.98
		Heating		29.17	31.24	33.31	35.38	36.80	38.22	38.80	39.38
	Operating current	Cooling	A	46.2/42.3	49.2/45.0	54.3/49.7	59.4/54.4	64.4/59.0	69.4/63.6	79.6/72.9	89.8/82.2
		Heating		48.5/44.4	52.2/47.8	55.6/50.9	59.0/54.0	61.1/55.9	63.2/57.8	65.6/60.0	68.0/62.2
Exterior dimensions	HxWxD		mm	2048x2700x720							
Net weight			kg	345+315	345x2			365+345	365x2		
Refrigerant charge	R410A		kg	36.4	38.8			45.6	52.4		
Noise level (cooling/heating)			dB(A)	65/65	64/64.5	64.5/65	65/65.5	66/66.5	67/67	67.5/67.5	
Refrigerant piping size	Liquid line		in (mm)	ø5/8"(15.88)		ø3/4"(19.05)					
	Discharge Gas line			ø1 1/8"(28.58)							
	Suction Gas line			ø1 3/8"(34.92)							
Capacity control			%	4-110	4-109	4-111	4-112	4-112	4-109	4-108	4-107
Number of connectable indoor units				48							

Dimensions

All measurements in mm.



Mark	Item	
A	Service valve connection (gas side)	For refrigerant piping, please refer to the unit specifications.
B	Service valve connection (liquid line)	
C	Refrigerant pipe draw-out port	ø100
D	Power cable draw-in port	ø50
F	Anchor bolt hole	M10 x 4 places
G	Drain hose hole	ø45.3 x 3 places
H	Drain discharge port	ø20.5 x 3 places
K	Oil-equalising pipe joint	ø9.52 flare
L	Sling holes for haulage or hoisting	180 x 44.7

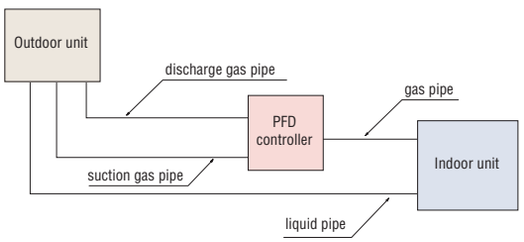
Notes:
(1) The unit must be fixed with anchor bolts.
(2) Leave a 2m or larger space above the unit.
(3) The unit name plate is attached on the lower right corner of the front panel.
(4) The ports for refrigerant pipe and power cable penetrations are covered with half-blanks. Please cut off a half-blank with nippers in using these ports.
(5) Use a ø88 port for refrigerant pipe connection.
(6) Anchor holes marked “L J” (four holes for M10) are for a renewal installation.
(7) The oil-equalising pipe K should be used when outdoor units are used in combination.

KXR4 piping/PFD controller
PFD refrigerant flow branch controller (1 to 1 and 4 to 1 connection)

Model No.	Maximum downstream indoor unit capacity
PFD112-ER	11.1kW
PFD180-ER	17.9kW
PFD280-ER	28.0kW
PFD112X4-ER	37.0kW

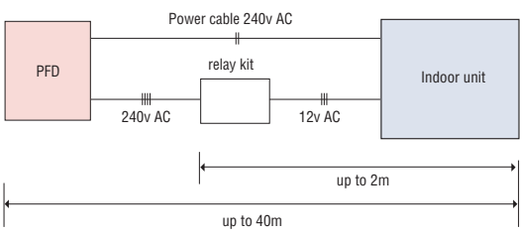
- The PFD branch controller permits free design of simultaneous heating and cooling of indoor units. Each unit or group of units connected to the PFD controller can operate in it's individual mode irrespective of the demands of other areas of the building. The new design PFD refrigerant circuit includes an additional solenoid valve and capillary that reduces pressure difference and eliminates refrigerant noise during mode change over (cooling - heating - cooling).

Easy installation
New PFD design means the connection of the indoor unit liquid pipe is made directly to the liquid line - bypassing the PFD. This means (x2) less pipe connections per indoor unit, reducing installation time and cost.



PFD pipe connections

The PFD is connected to the indoor unit by 3 core signal wire via a relay kit (supplied) to be located within 2m of each other.
The indoor unit however can be up to 40m away. Power to the PFD can be connected from the indoor unit or other supply.



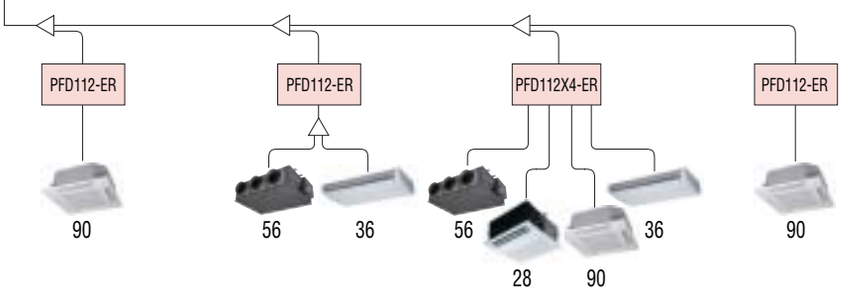
PFD wiring connection

Relay kit

Groups of indoor units can be connected (up to a total capacity 37.1kW) to a single PFD with branch piping and all units in that group will operate in the same mode only (cooling or heating).

Now MHI also introduces the 4-way PFD controller PFD112X4 which can connect up to four indoor units with individual control - simultaneous cooling or heating.

Branch controller	Total downstream capacity	Connectable indoor units
PFD112-ER	less than 11.2kW	1-5
PFD180-ER	less than 18.0kW	1-8
PFD280-ER	less than 28.0kW	1-10
PFD112X4-ER	less than 37.1kW	Up to 16



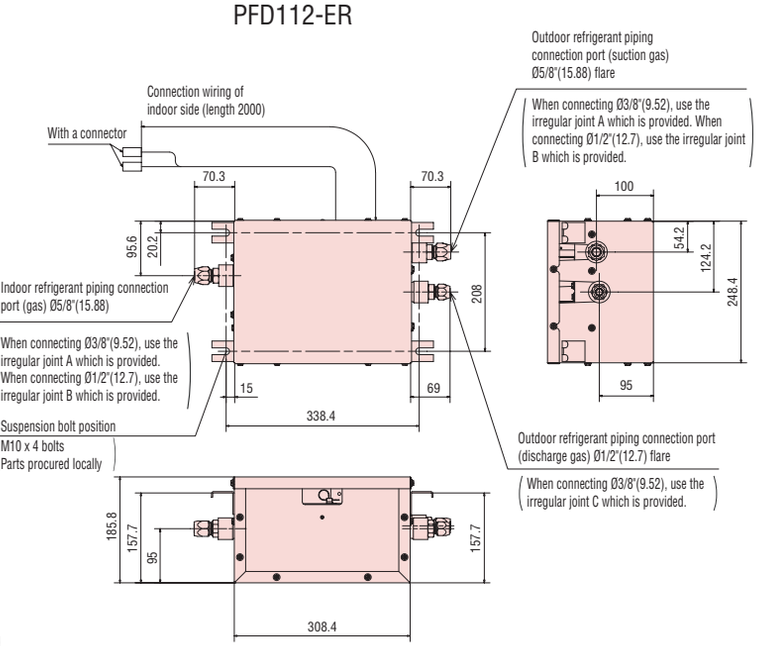
4-Way PFD box

see page 40-41 for further examples of piping arrangements

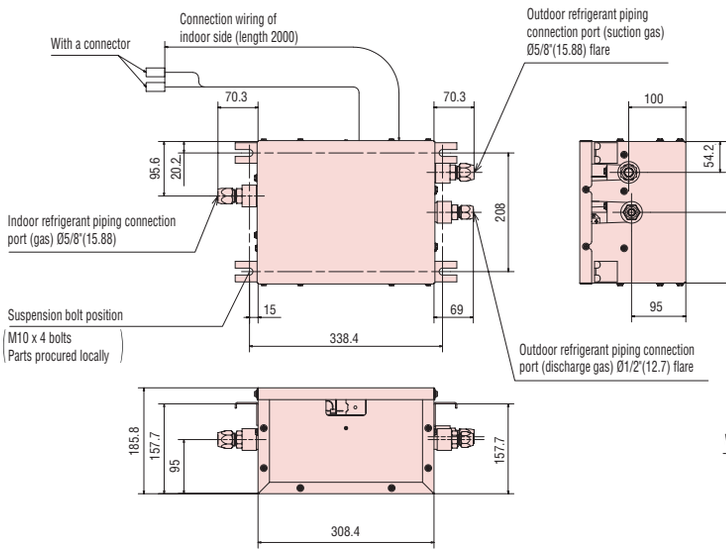
Dimensions

All measurements in mm.

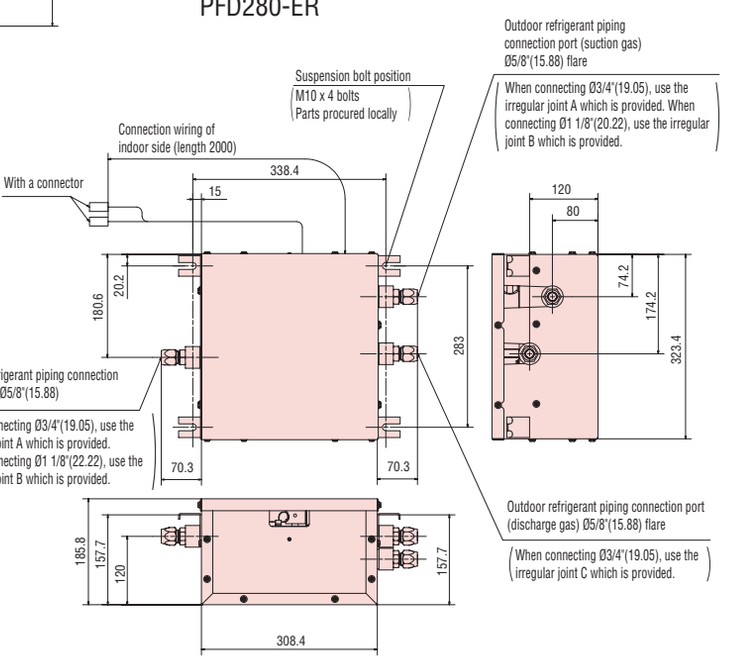
PFD112-ER



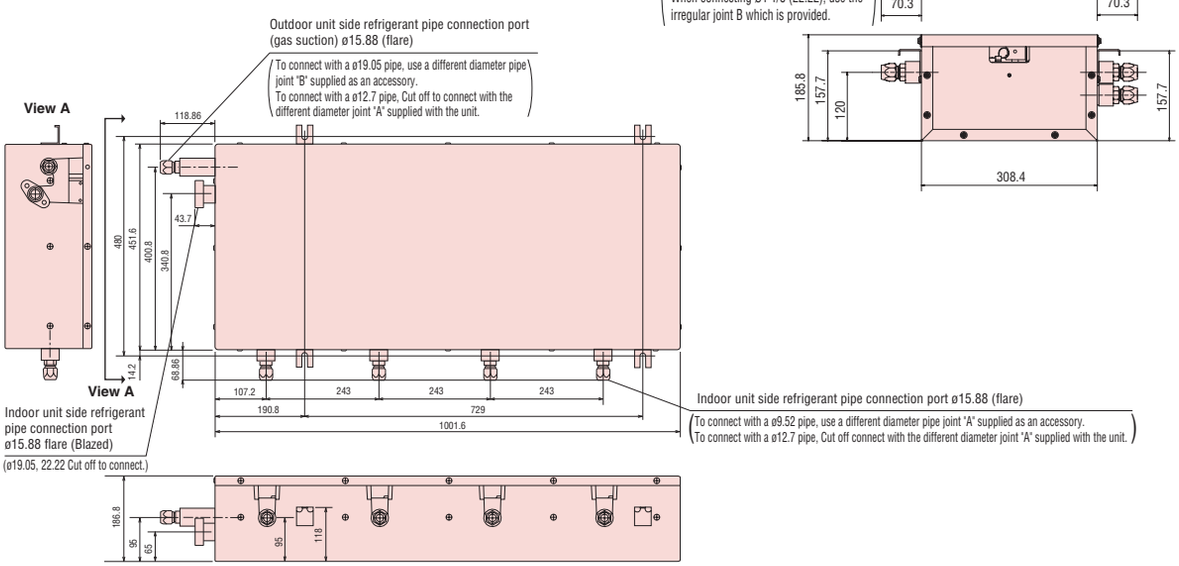
PFD180-ER



PFD280-ER



PFD112X4-ER



KXR4 refrigerant piping

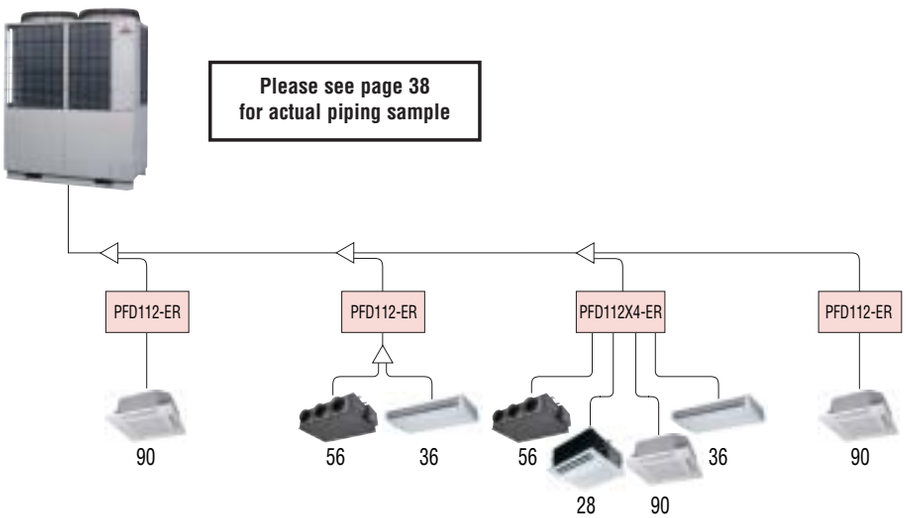
Installation of Interconnecting Pipework
Mitsubishi KX4 equipment is manufactured to the highest standards of quality and reliability. It is imperative the method of installation and the materials used are also to high standards, to ensure trouble free operation and long term reliability.
The interconnecting pipework must be installed by a competent and trained engineer. Refrigeration quality copper tube must be used, soft copper coils or half-hard straight lengths. The refrigeration quality tube must be soft drawn seamless high grade copper pipe. The copper tube must be selected taking into account the higher operating pressures of R410A refrigerant, and that high pressures will occur throughout the system because of the reverse cycle operation. All pipework material used should be EN12735 European standard.

The supplied branch pipe kits, must be used to make connections to indoor units, and the supplied manifold kits must be used to make connections between outdoor units (where applicable); it is not permitted to use standard fittings such as elbows, tees etc. The branch pipes shall be installed in accordance with the manufacturer's instructions, allowing unrestricted flow of refrigerant, and in accordance with European standard E378:2000.
All brazed joints shall be made with dry nitrogen purge to ensure the prevention of oxidisation to the internal surface of the copper pipes.
The ingress of moisture, dirt and any other contaminants to the interior of the copper pipes, and air conditioning units, must be prevented during the installation procedure.
After the installation of pipework, prior to the connection of the outdoor units, and sealing of insulation joints, the pipework must be pressure tested for leakage, using dry nitrogen. The pipe ends must be crimped and brazed, and a suitable service valve connection will need to be fitted (supplied by installer).

Pipe Insulation
The refrigeration pipework must be insulated with close cell Class 'O' fire performance with a minimum wall thickness of 13mm.

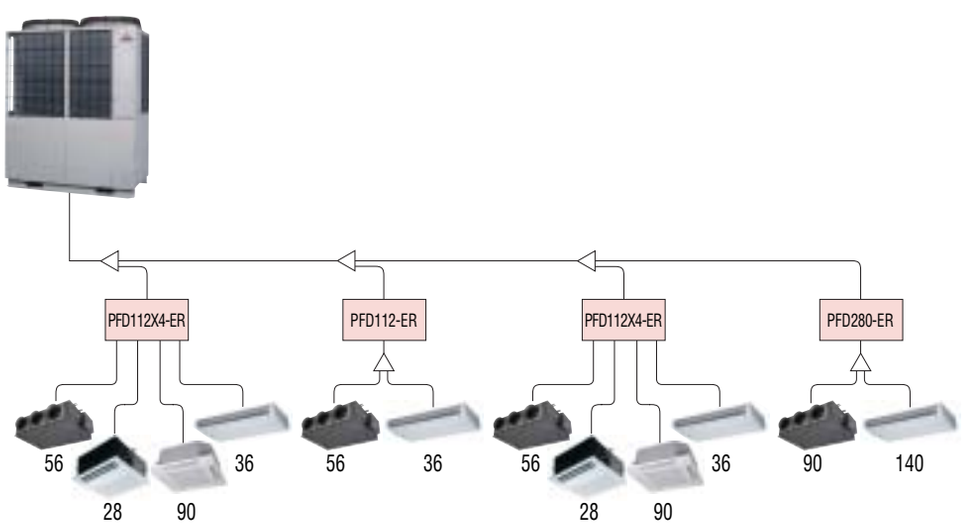
Additional Refrigerant
Additional R410A refrigerant only shall be used, and must be charged by weight only, using electronic scales. The amount of additional refrigerant must be accurately calculated from the manufacturer's data, based on the length and diameter of each section of the liquid refrigerant pipework of the system.

Single outdoor unit piping examples:



FDCA400HKXRE4BR

Liquid pipe
Suction gas pipe
Discharge gas pipe



FDTA28KXE4BR

4-way cassette pipe connections

KXR4 refrigerant piping

Outdoor unit (HP)		8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
Liquid pipe	Furthest indoor unit =<90m	3/8"		1/2"							5/8"						3/4"					
Suction Gas pipe		3/4"	7/8"			1 1/8"					1 3/8"											
Discharge Gas Pipe		5/8"	3/4"			7/8"					1 1/8"											
Liquid pipe	Furthest indoor unit >90m	1/2"					5/8"				3/4"						7/8"					
Suction Gas pipe		7/8"				1 1/8"					1 3/8"											
Discharge Gas Pipe		5/8"	3/4"			7/8"					1 1/8"											

mm	inch
ø9.52	3/8"
ø12.7	1/2"
ø15.88	5/8"
ø19.05	3/4"
ø22.22	7/8"
ø25.4	1"

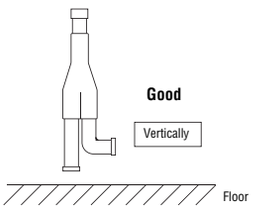
mm	inch
ø28.58	$1^{1/8"}$
ø31.8	$1^{1/4"}$
ø34.92	$1^{3/8"}$
ø38.1	$1^{1/2"}$
ø44.5	$1^{3/4"}$
ø50.8	2"

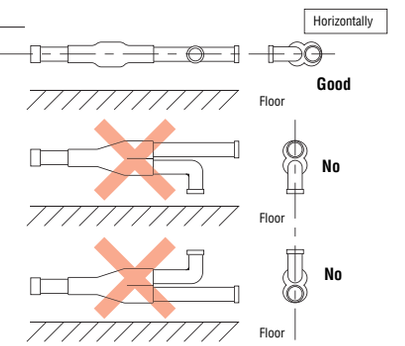
Branch pipes

DIS-22-1-R/DIS-180-1-R

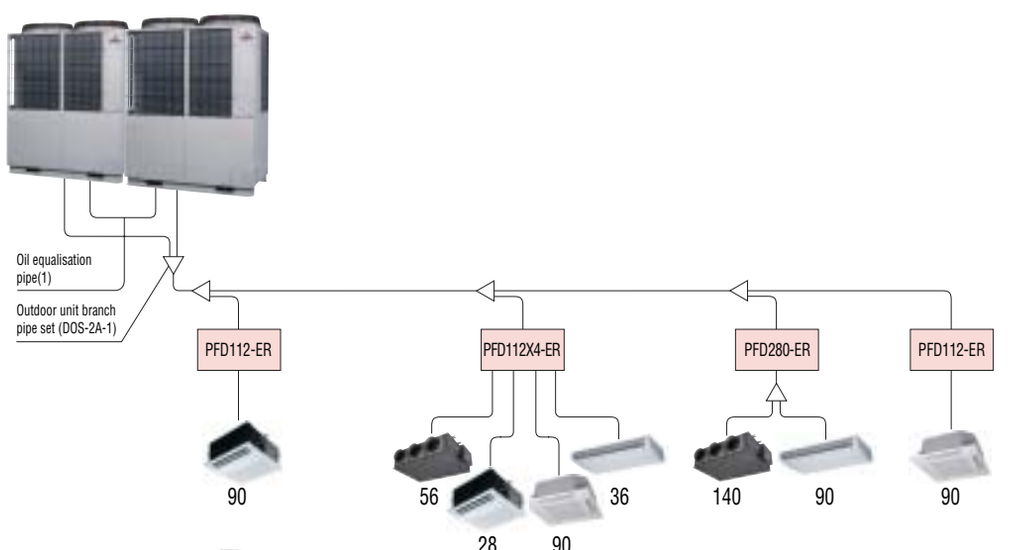
Combination outdoor unit manifold

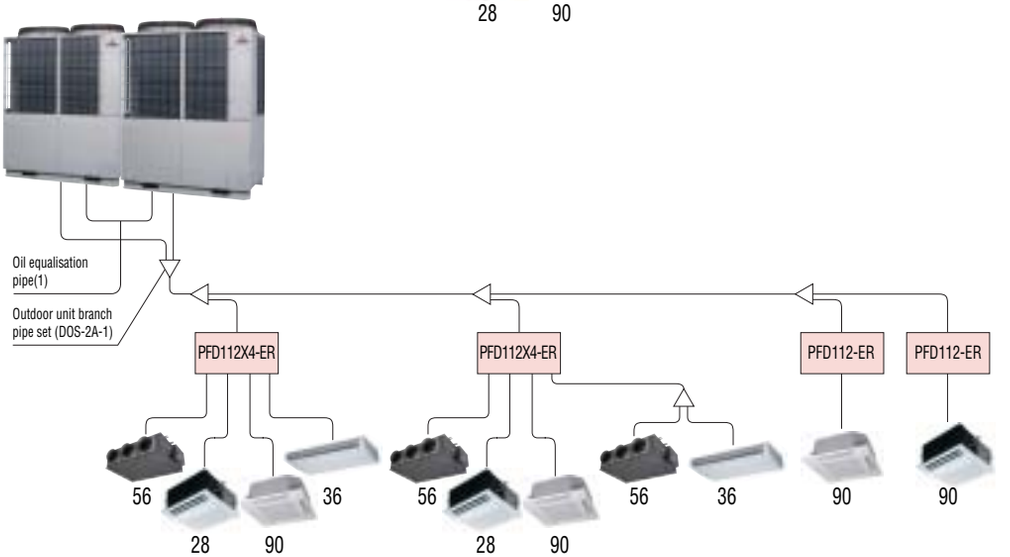
DOS-2A-1-R



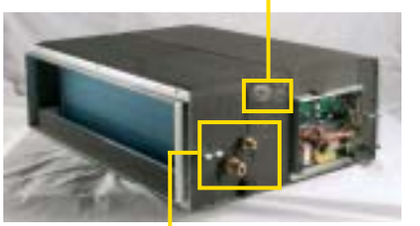


Combination outdoor unit piping examples:



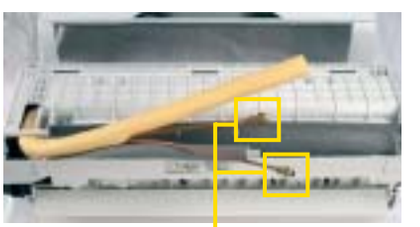


Condensate drain pipe outlet



FDURA45KXE4R

Ducted unit pipe connection



FDKA28KXE4R

High wall unit pipe connection

Outdoor unit's branching piping

Outdoor unit	Branch piping set
2 units (for 735~1360)	DOS-2A-1-R

Indoor unit's first branching piping

Total capacity of indoor units	Branch piping set
~179	DIS-22-1-R
180~370	DIS-180-1-R
371~539	DIS-371-1-R
540~	DIS-540-1-R

For Down Stream of PFD box

Total capacity of indoor units	Branch piping set
~179	DIS-22-1
180~370	DIS-180-1
371~539	DIS-371-1

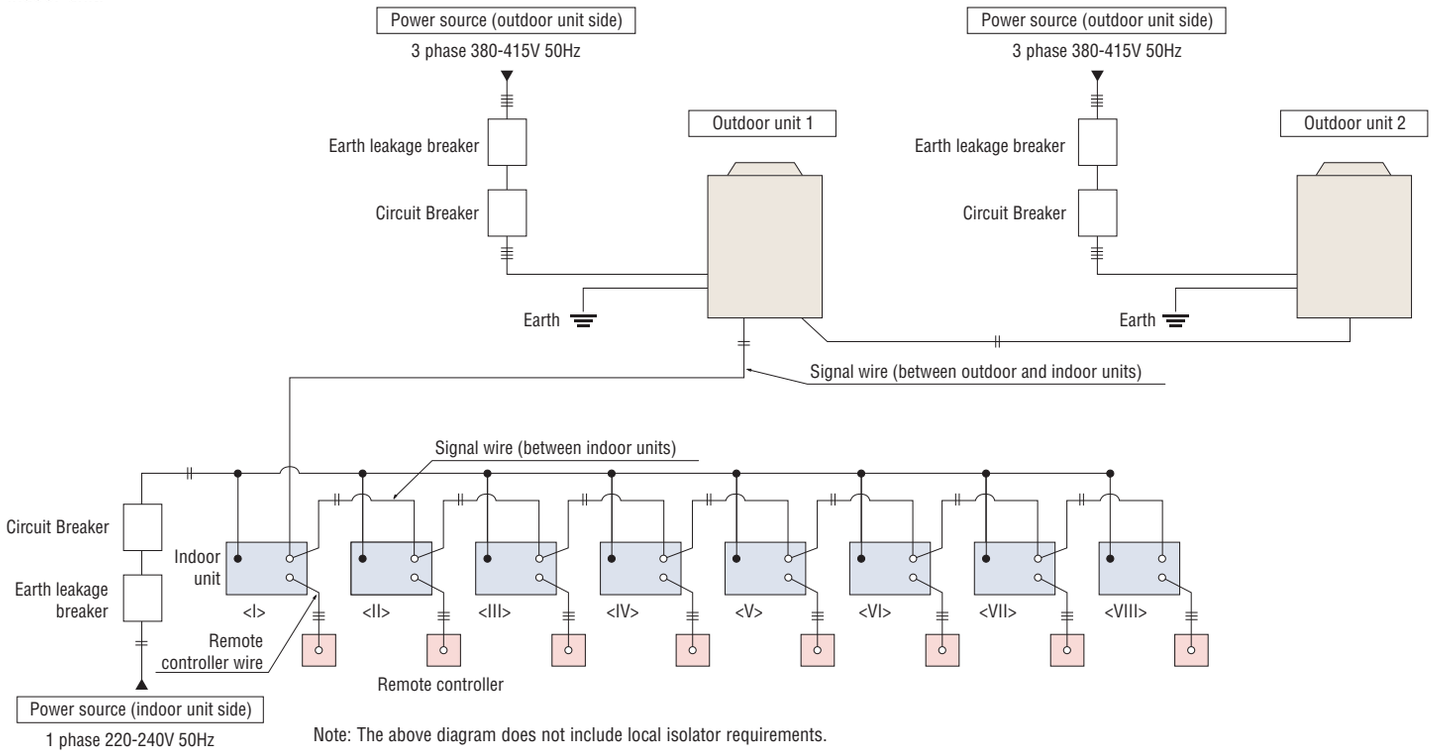
KXR4 electrical wiring – power supply

KX4 new design includes greatly simplified wiring requirements utilising a 'polarity-free' two wire control loop connecting indoor units.

Power wiring

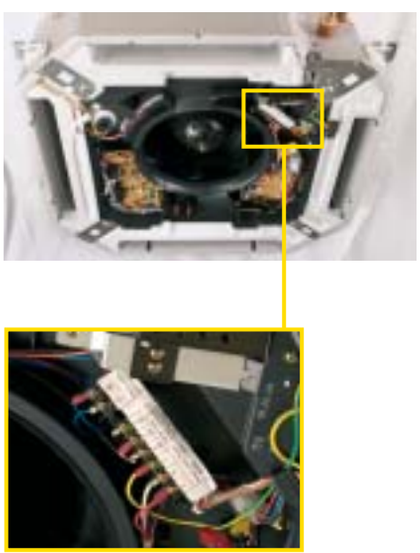
Cables can be laid through the front, right left or bottom of the outdoor unit casing.

Separate power supplies should be used for the outdoor unit (3/phase) and the indoor units (3/phase). Only control wiring is connected from outdoor to indoor unit.

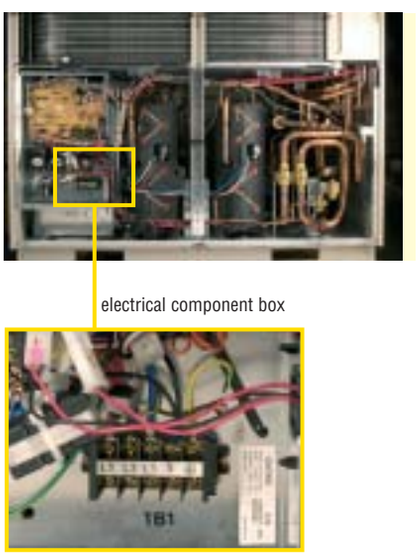


Note: The above diagram does not include local isolator requirements.

4-way cassette power supply connection

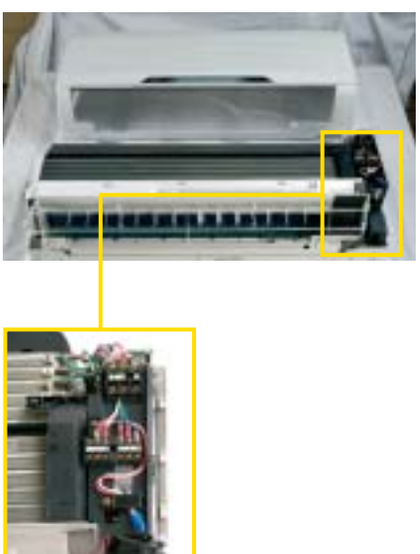


KXR4 outdoor unit mechanical compartment



electrical component box

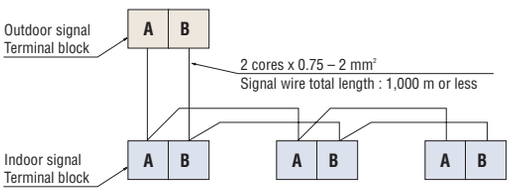
Wall unit



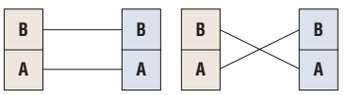
KXR4 electrical wiring – control wiring

1. The control wiring is 5 Volt DC, non-polarised, two wire connection notated as 'A' and 'B'. This 'AB' wiring connects outdoor unit to indoor unit and indoor unit to indoor unit.
2. This wiring must be a 2-core shielded cable size 0.75mm to 2.00mm^2. The maximum length of 2-core is 1000 metres.
3. We recommend only one end of the shield of the cable is connected to ground (earth) at one of the outdoor units. At all other terminal connections on the same network, connect all the shields together and electrically insulate them. This will prevent accidental grounding at 2 points and eliminate any electrical noise.
4. For current specification of 2-core (AB) wiring, please consult your MHI dealer.

When there is 1 outdoor unit

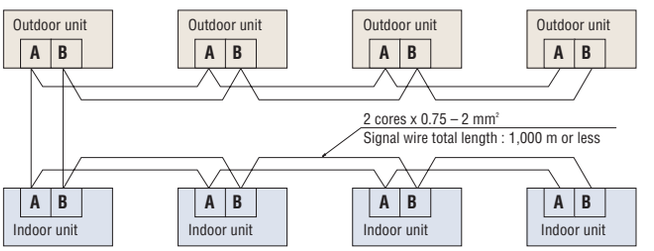


Indoor and outdoor signal wires do not have a polarity. Any of the connections in the following illustrations can be made.



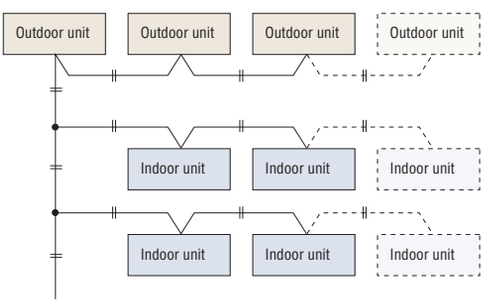
When wiring to the terminal block, use the M3.5 crimp terminals shown in the illustration below to make the connection.

When connecting multiple outdoor units

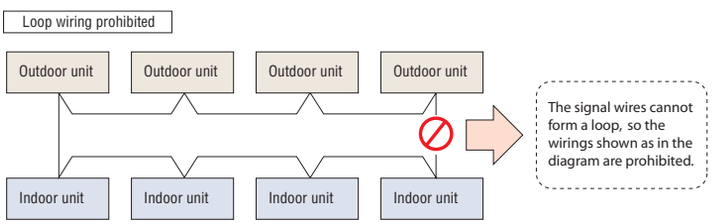


(a) The maximum number of indoor units that can be connected in a system is 48 and it is possible to configure outdoor units and/or indoor units as an outdoor or indoor unit group connected with each other with two wires.

(b) The signal wires can also be connected using the method shown below.



Loop wiring prohibited

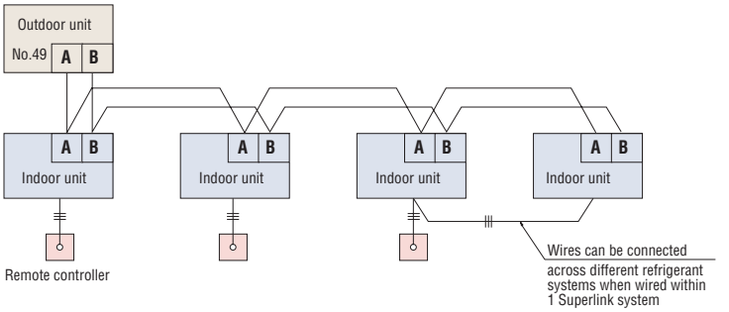


Remote controller wiring specifications

1. For interconnecting wiring between the remote controller and indoor units (XYZ wiring) use 3-core shielded cable size 0.3mm^2. The maximum length of 3-core cable is 600 metres. Where the 3-core wiring exceeds 100m, use the wire size detailed on the table opposite.
2. Be sure to ground (earth) only one end of the shield of the cable. When connecting more than one indoor unit to a remote controller, we recommend the shield of the cable is connected to ground (earth) at the first indoor unit only. At all subsequent terminal connections on the same loop, connect all the shields together and electrically insulate them. This will prevent accidental grounding at 2 points and eliminate any electrical noise.
3. For current specification of 3-core (XYZ) wiring, please consult your MHI dealer.

Length (m)	Wire size
100 to 200	0.5mm^2 x 3 core
To 300	0.75mm^2 x 3 core
To 400	1.25mm^2 x 3 core
To 600	2.0mm^2 x 3 core

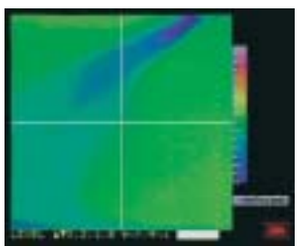
For further information about system configuration, addressing and control, please see pages 68-69

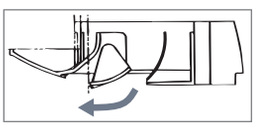


KX4 Indoor units
FDTA: Ceiling Cassette Type -4way- (2.8kW–16.0kW)

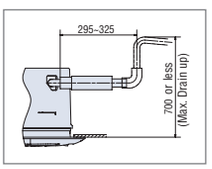
Model No.	Nominal Cooling Capacity
FDTA28KXE4R	2.8kW
FDTA36KXE4R	3.6kW
FDTA45KXE4R	4.5kW
FDTA56KXE4R	5.6kW
FDTA71KXE4R	7.1kW
FDTA90KXE4R	9.0kW
FDTA112KXE4R	11.2kW
FDTA140KXE4R	14.0kW
FDTA160KXE4R	16.0kW

"CLEARER"AIR FLOW





New shape & angled louvre re-directs the air current away from the ceiling, to reduce ceiling stains



Condensate drain pump included as standard

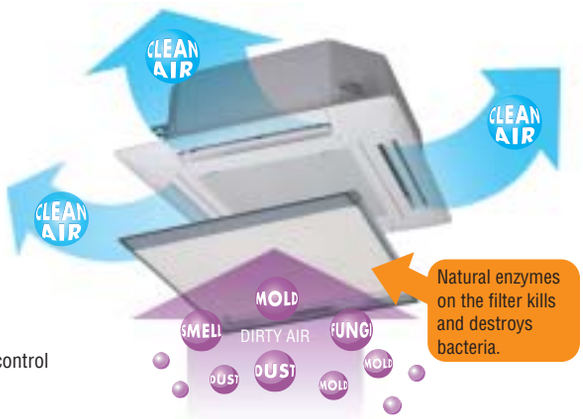
INSTALLATION WORKABILITY

Installation height can be adjusted through the panel corner cover

For wireless control simply insert the infra-red receiver kit on any corner of the panel

wireless remote control
RCN-T-35W-ER

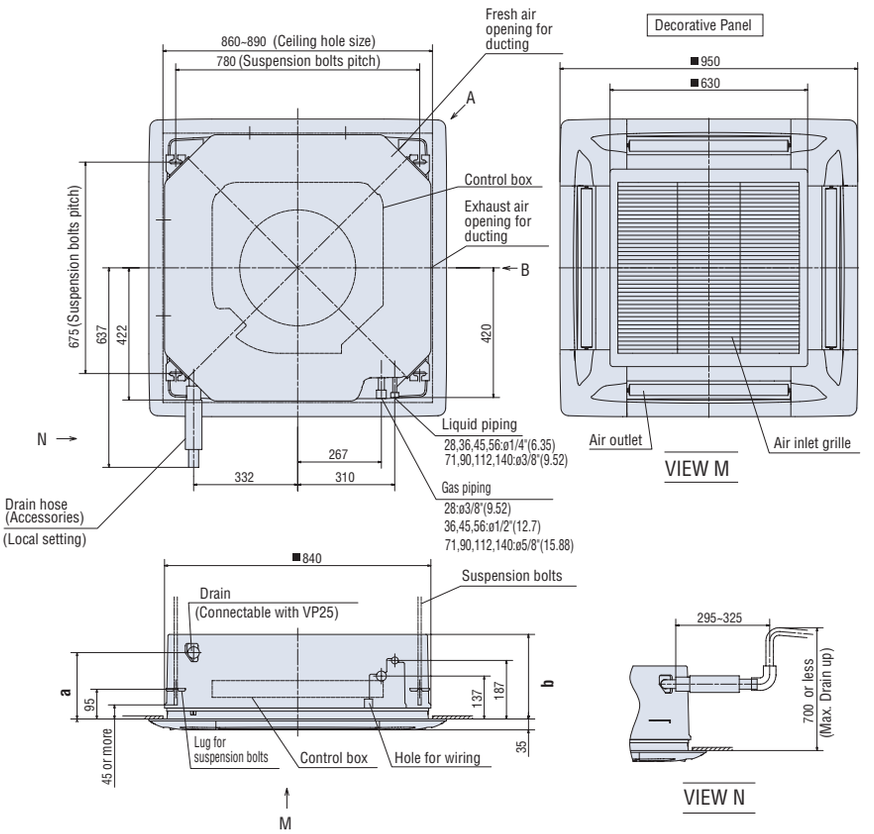
OPTIONAL PART: CLEAN AIR ENZYME FILTER

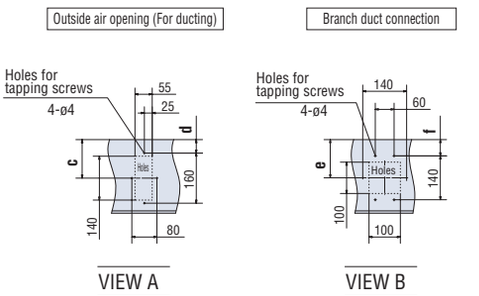


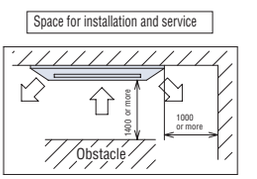
Item / Model		FDTA28KXE4R	FDTA36KXE4R	FDTA45KXE4R	FDTA56KXE4R	FDTA71KXE4R	FDTA90KXE4R	FDTA112KXE4R	FDTA140KXE4R	FDTA160KXE4R
Nominal cooling capacity	kW	2.8	3.6	4.5	5.6	7.1	9.0	11.2	14.0	16.0
Nominal heating capacity	kW	3.2	4.0	5.0	6.3	8.0	10.0	12.5	16.0	18.0
Total UK cooling capacity	kW	2.41	3.10	3.88	4.83	6.12	7.76	9.65	12.07	
UK sensible cooling capacity	kW	2.32	2.73	3.16	3.59	4.56	6.01	7.59	8.93	
Power source		1 Phase 220-240V, 50Hz								
Noise level	dB(A)	Hi:35 Me:33 Lo:31			Hi:36 Me:34 Lo:32	Hi:37 Me:35 Lo:33	Hi:43 Me:41 Lo:38		Hi:45 Me:43 Lo:41	
Exterior dimensions H x W x D	mm	Unit:270x840x840 Panel:35x950x950					Unit:295x840x840 Panel:35x950x950	Unit:365x840x840 Panel:35x950x950		
Net Weight	kg	Unit:24 Panel:7					Unit:26 Panel:7	Unit:31 Panel:7		
Air flow (Standard)	CMM	Hi:13 Me:12 Lo:11		Hi:14 Me:13 Lo:12		Hi:15 Me:14 Lo:13	Hi:21 Me:19 Lo:17	Hi:27 Me:23 Lo:20	Hi:29 Me:26 Lo:23	
Fresh air intake		Possible								
Panel		T-PSA-35W-ER								
remote control		wired:RC-E1R wireless:RCN-T-35W-ER								
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35) Gas line:ø3/8"(9.52)		Liquid line:ø1/4"(6.35) Gas line:ø1/2"(12.7)		Liquid line:ø3/8"(9.52) Gas line:ø5/8"(15.88)				
Accessories		Mounting kit, Drain hose								

Dimensions

All measurements in mm.







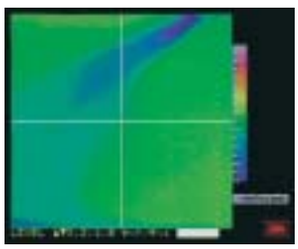
Dimension table

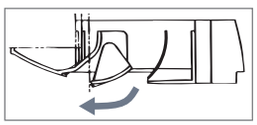
Model	a	b	c	d	e	f
FDTA28KXE4R–71KXE4R	212	270	123	43	122	52
FDTA90KXE4R	212	295	148	68	147	77
FDTA112KXE4R–160KXE4R	269	365	218	138	215	147

KX4 Indoor units
FDTCA: Ceiling Cassette Type -4way- (Compact) (2.2kW–5.6kW)

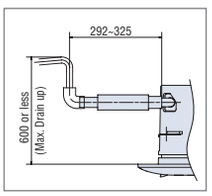
Model No.	Nominal Cooling Capacity
FDTCA22KXE4R	2.2kW
FDTCA28KXE4R	2.8kW
FDTCA36KXE4R	3.6kW
FDTCA45KXE4R	4.5kW
FDTCA56KXE4R	5.6kW

"CLEARER" AIR FLOW





New shape & angled louvre re-directs the air current away from the ceiling, to reduce ceiling stains

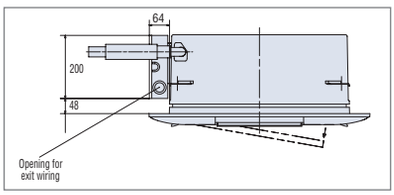


Condensate drain pump included as standard

INSTALLATION WORKABILITY

For wireless control simply insert the infra-red receiver kit on any corner of the panel

wireless remote control RCN-TC-W-ER

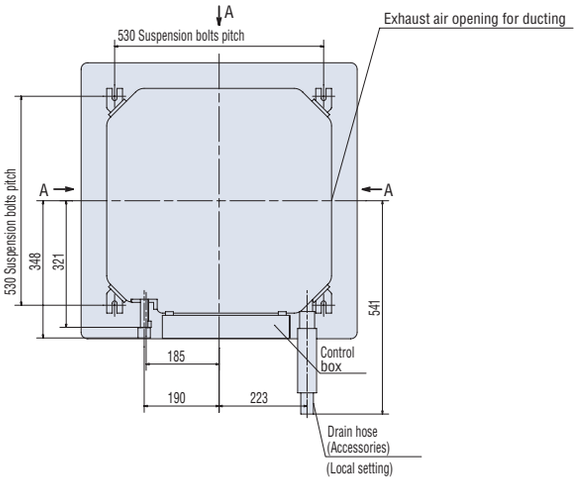


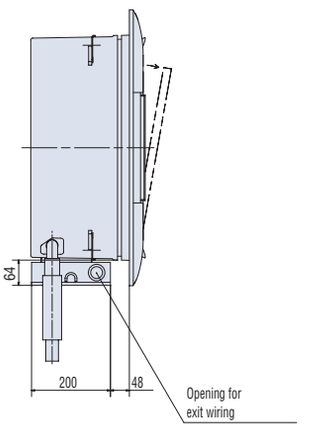
Ultra slim design at just 248mm above the ceiling

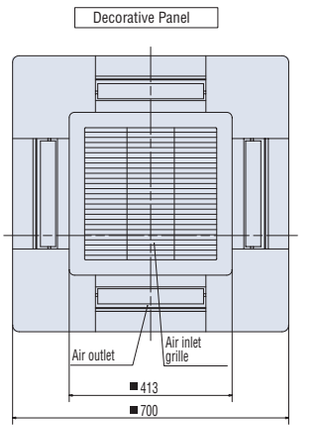
Item	Model	FDTCA22KXE4R	FDTCA28KXE4R	FDTCA36KXE4R	FDTCA45KXE4R	FDTCA56KXE4R
Nominal cooling capacity	kW	2.2	2.8	3.6	4.5	5.6
Nominal heating capacity	kW	2.5	3.2	4.0	5.0	6.3
Total UK cooling capacity	kW	1.90	2.41	3.10	3.88	4.83
UK sensible cooling capacity	kW	1.79	2.00	2.57	3.04	3.68
Power source		1 Phase 220-240V, 50Hz				
Noise level	dB(A)	Hi:35 Me:33 Lo:32		Hi:38 Me:36 Lo:34	Hi:40 Me:38 Lo:36	Hi:45 Me:42 Lo:39
Exterior dimensions H x W x D	mm	Unit:248x570x570 Panel:35x700x700				
Net Weight	kg	Unit:15 Panel:3.5		Unit:16 Panel:3.5		
Air flow (Standard)	CMM	Hi:9.5 Me:8.5 Lo:8		Hi:10 Me:9 Lo:8	Hi:11 Me:10 Lo:9	Hi:13 Me:11.5 Lo:10
Fresh air intake		–				
Panel		TC-PSA-24W-ER				
remote control		wired:RC-E1R wireless:RCN-TC-W-ER				
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35), Gas line:ø3/8"(9.52)		Liquid line:ø1/4"(6.35), Gas line:ø1/2"(12.7)		

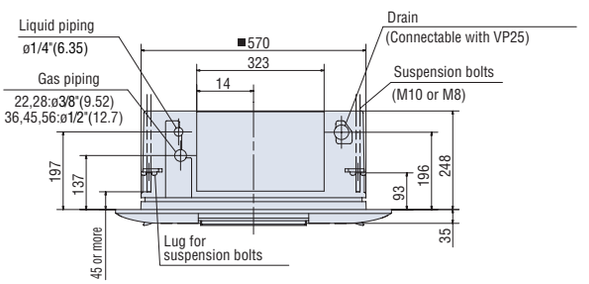
Dimensions

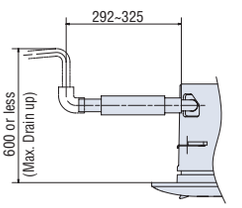
All measurements in mm.



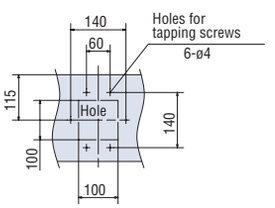






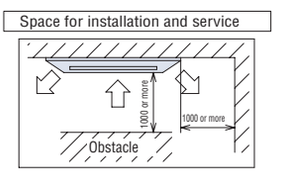


Fresh air opening



VIEW A

Space for installation and service



KX4 Indoor units
FDTQA: Ceiling Cassette Type -1way- (Compact) (2.2kW–3.6kW)

Model No.	Nominal Cooling Capacity
FDTQA22KXE4R	2.2kW
FDTQA28KXE4R	2.8kW
FDTQA36KXE4R	3.6kW

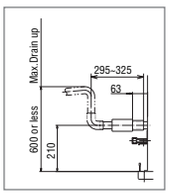
- Comfortable effective cooling for small rooms, with low fan speed air flow at just 5.4m³/min.

Fits into standard 600 x 600 ceiling grid opening

Ultra slim design at just 250mm above the ceiling

Optional wide panel shown for solid ceilings

wireless remote control
RCND-KIT-HER



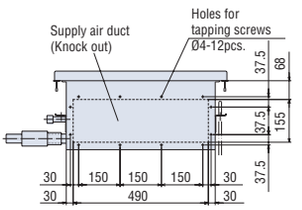
Condensate drain pump included as standard

Item / Model		FDTQA22KXE4R				FDTQA28KXE4R				FDTQA36KXE4R			
Panel Name		Direct blow panel		Duct panel		Direct blow panel		Duct panel		Direct blow panel		Duct panel	
Panel mode (Option)		TQ-PSA-13W-ER	TQ-PSB-13W-ER	QR-PNA-13W-ER	QR-PNB-13W-ER	TQ-PSA-13W-ER	TQ-PSB-13W-ER	QR-PNA-13W-ER	QR-PNB-13W-ER	TQ-PSA-13W-ER	TQ-PSB-13W-ER	QR-PNA-13W-ER	QR-PNB-13W-ER
Nominal cooling capacity	kW	2.2				2.8				3.6			
Nominal heating capacity	kW	2.5				3.2				4.0			
Total UK cooling capacity	kW	1.90				2.41				3.10			
UK sensible cooling capacity	kW	1.47				1.90				2.26			
Power source		1 Phase 220-240V, 50Hz											
Noise level	dB(A)	Hi:38 Lo:34		Hi:42 Lo:39		Hi:38 Lo:34		Hi:42 Lo:39		Hi:38 Lo:34		Hi:42 Lo:39	
Exterior dimensions H x W x D	Unit mm Panel	250x570x570 35x625x650	250x570x570 35x780x650	250x570x570 35x625x650	250x570x570 35x780x650	250x570x570 35x625x650	250x570x570 35x780x650	250x570x570 35x625x650	250x570x570 35x780x650	250x570x570 35x625x650	250x570x570 35x780x650	250x570x570 35x625x650	250x570x570 35x780x650
Net Weight	kg	Unit:19 Panel:2.5	Unit:19 Panel:3	Unit:19 Panel:2.5	Unit:19 Panel:3	Unit:19 Panel:2.5	Unit:19 Panel:3	Unit:19 Panel:2.5	Unit:19 Panel:3	Unit:19 Panel:2.5	Unit:19 Panel:3	Unit:19 Panel:2.5	Unit:19 Panel:3
Air flow (Standard)	CMM	Hi:7 Lo:5.4		Hi:7 Lo:6.5		Hi:7 Lo:5.4		Hi:7 Lo:6.5		Hi:7 Lo:5.4		Hi:7 Lo:6.5	
Fresh Air intake		Possible											
Air filter, Quantity		Long life filter x1 (Washable)											
remote control		wired:RC-E1R wireless:RCND-KIT-HER											
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35) Gas line:ø3/8"(9.52)								Liquid line:ø1/4"(6.35) Gas line:ø1/2"(12.7)			

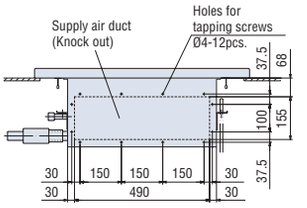
Dimensions

All measurements in mm.

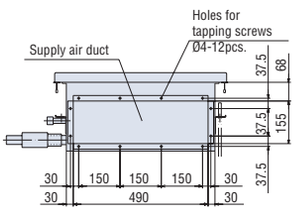
Direct blow panel (TQ-PSA-13W-ER)



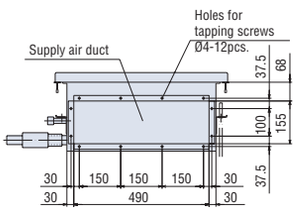
Direct blow panel (TQ-PSB-13W-ER)

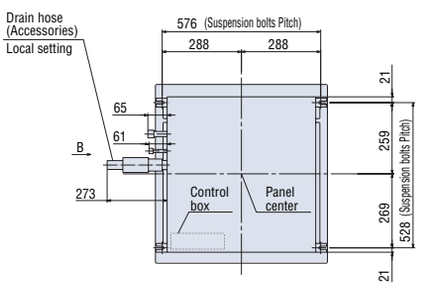


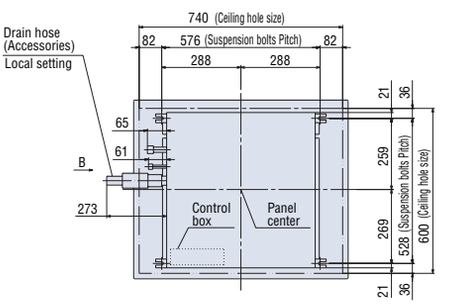
Duct panel (QR-PNA-13W-ER)

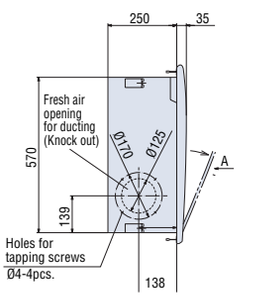


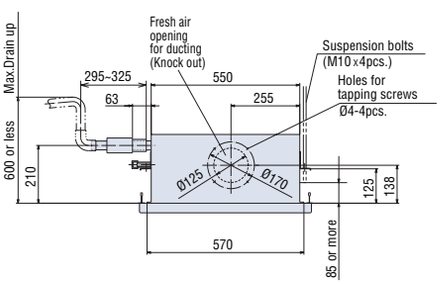
Duct panel (QR-PNB-13W-ER)





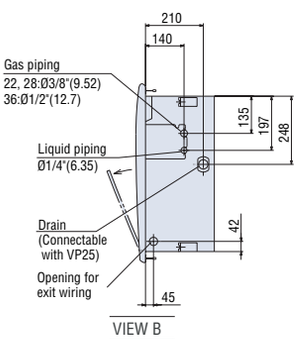


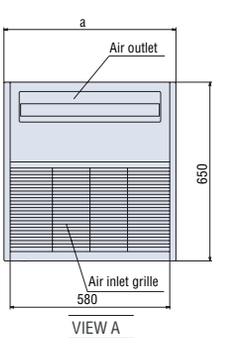


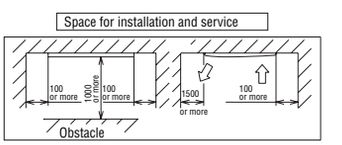


Dimension table

Model	a
Direct blow panel (TQ-PSA-13W-ER) Duct panel (QR-PNA-13W-ER)	625
Direct blow panel (TQ-PSB-13W-ER) Duct panel (QR-PNB-13W-ER)	780

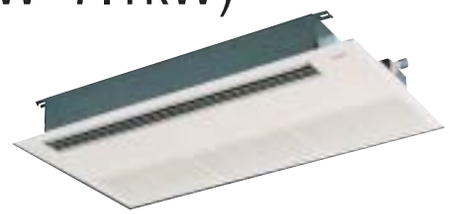






KX4 Indoor units
FDTSA: Ceiling Cassette Type -1way- (2.2kW–7.1kW)

Model No.	**Nominal Cooling Capacity**
FDTSA22KXE4R	2.2kW
FDTSA28KXE4R	2.8kW
FDTSA36KXE4R	3.6kW
FDTSA45KXE4BR	4.5kW
FDTSA71KXE4BR	7.1kW

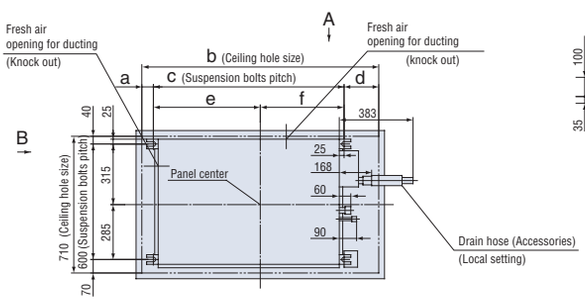


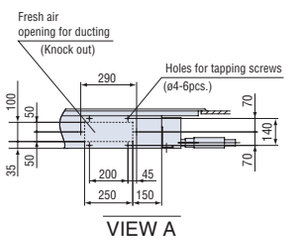
- Slim design 194mm height.
- Powerful airflow for high ceiling rooms.

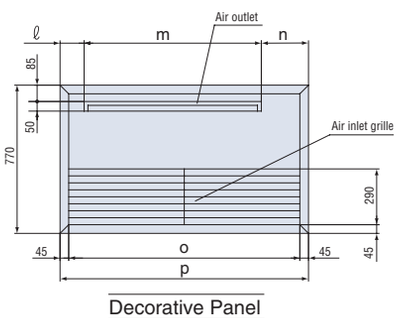
Item / Model		FDTSA22KXE4R	FDTSA28KXE4R	FDTSA36KXE4R	FDTSA45KXE4BR	FDTSA71KXE4BR
Nominal cooling capacity	kW	2.2	2.8	3.6	4.5	7.1
Nominal heating capacity	kW	2.5	3.2	4.0	5.0	8.0
Total UK cooling capacity	kW	1.90	2.41	3.10	3.88	6.12
Power source		1 Phase 220-240V, 50Hz				
Noise level	dB(A)	Me:39 Lo:38	Hi:40 Me:39 Lo:38		Hi:43 Me:40 Lo:38	Hi:44 Me:40 Lo:38
Exterior dimensions H x W x D	mm	Unit:194x1040x650 Panel:10x1290x770				Unit:194x1300x650 Panel:10x1500x790
Net Weight	kg	Unit:26 Panel:6				Unit:30 Panel:7
Air flow (Standard)		Hi:11 Lo:8	Hi:12 Me:11 Lo:10		Hi:14 Me:12 Lo:10	Hi:18 Me:15 Lo:12
Fresh air intake	W	Possible				
Panel		TS-PSA-28W-ER				TS-PSA-38W-ER
Air filter, Q'ty	CMM	Long life filter x1 (Washable)				
Remote control		wired:RC-E1R wireless:RCND-KIT-HER				
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35) Gas line:ø3/8"(9.52)		Liquid line:ø1/4"(6.35) Gas line:ø1/2"(12.7)	Liquid line:ø1/4"(6.35) Gas line:ø1/2"(12.7)	Liquid line:ø3/8"(9.52) Gas line:ø5/8"(15.88)

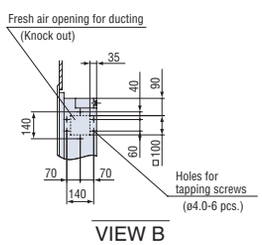
Dimensions

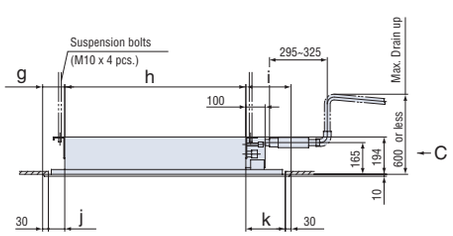
All measurements in mm.

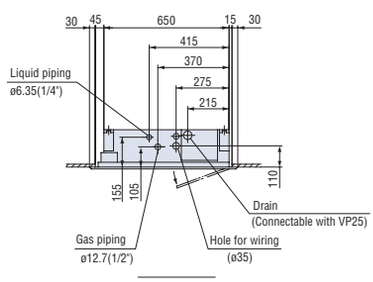


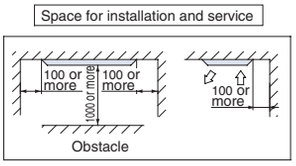












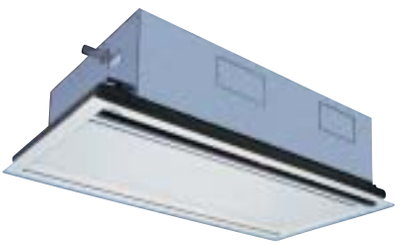
Dimension Table

model	a	b	c	d	e	f	g	h	i	j	k	ℓ	m	n	o	p
FDTSA22~45KXE4R	60	1230	990	180	555	435	115	940	235	85	205	125	920	245	1200	1290
FDTSA71KXE4R	45	1440	1250	145	675	575	100	1200	200	70	170	110	1180	210	1410	1500

KX4 Indoor units

FDTWA: Ceiling Cassette Type -2way- (2.8kW–14.0kW)

Model No.	Nominal Cooling Capacity
FDTWA28KXE4BR	2.8kW
FDTWA45KXE4BR	4.5kW
FDTWA56KXE4BR	5.6kW
FDTWA71KXE4R	7.1kW
FDTWA90KXE4R	9.0kW
FDTWA112KXE4R	11.2kW
FDTWA140KXE4R	14.0kW

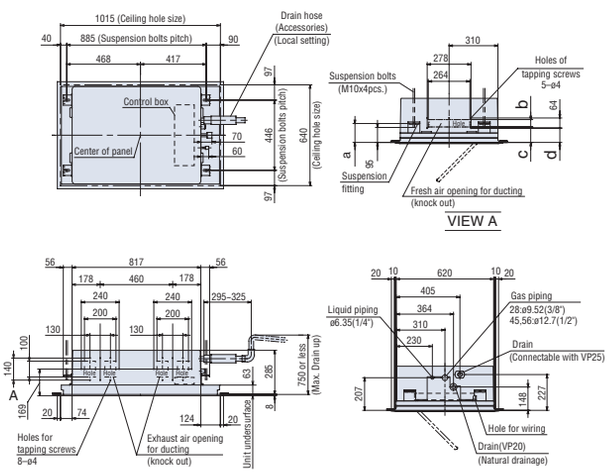


Item	Model	FDTWA28KXE4BR	FDTWA45KXE4BR	FDTWA56KXE4BR	FDTWA71KXE4R	FDTWA90KXE4R	FDTWA112KXE4R	FDTWA140KXE4R
Nominal cooling capacity	kW	2.8	4.5	5.6	7.1	9.0	11.2	14.0
Nominal heating capacity	kW	3.2	5.0	6.3	8.0	10.0	12.5	16.0
Total UK cooling capacity	kW	2.41	3.88	4.83	6.12	7.76	9.65	12.07
Power source		1 Phase 220-240V, 50Hz						
Noise level	dB(A)	Hi:39 Me:36 Lo:33			Hi:41 Me:38 Lo:35	Hi:41 Me:39 Lo:36	Hi:44 Me:41 Lo:38	Hi:45 Me:42 Lo:39
Exterior dimensions H x W x D	mm	Unit:285x817x620 Panel:8x1055x680			Unit:335x1054x620 Panel:8x1300x680		Unit:357x1524x620 Panel:8x1770x680	
Net Weight	kg	Unit:19 Panel:7			Unit:26 Panel:9		Unit:38 Panel:11	
Air flow (Standard)	CMM	Hi:14 Me:12 Lo:10			Hi:16 Me:13 Lo:11	Hi:19 Me:16 Lo:12	Hi:28 Me:25 Lo:23	Hi:32 Me:28 Lo:24
Fresh air intake		Possible						
Panel		TW-PSA-23W-ER			TW-PSA-33W-ER		TW-PSA-43W-ER	
Air filter, Q'ty		Long life filter x1 (Washable)					Long life filter x2 (Washable)	
Remote control		wired:RC-E1R wireless:RCND-KIT-HER						
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35) Gas line:ø3/8"(9.52)	Liquid line:ø1/4"(6.35), Gas line:ø1/2"(12.7)		Liquid line:ø3/8"(9.52), Gas line:ø5/8"(15.88)			

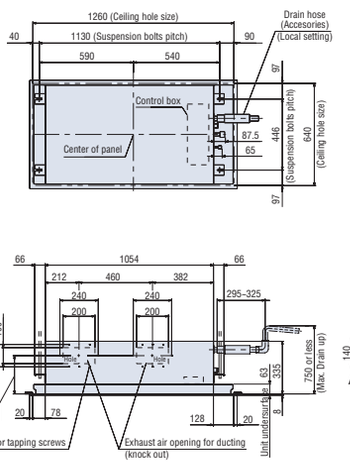
Dimensions

All measurements in mm.

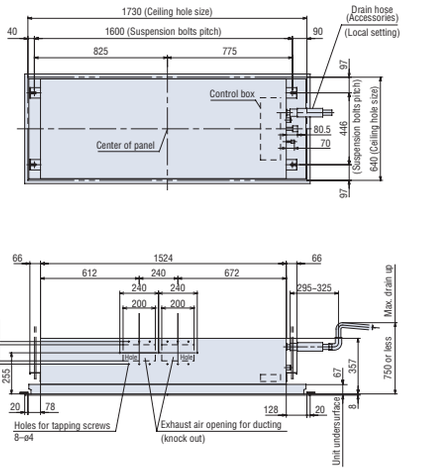
FDTWA28KXE4BR, 45KXE4BR, 56KXE4BR

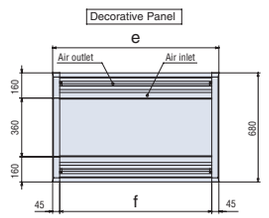


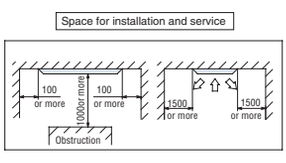
FDTWA71KXE4R, 90KXE4R



FDTWA112KXE4R, 140KXE4R







Dimension Table

model	a	b	c	d	e	f
FDTWA28,45,56KXE4R	120	47	98	91	1055	965
FDTWA71,90KXE4R	120	50	95	88	1300	1210
FDTWA112,140KXE4R	130	50	110	103	1770	1680

KX4 Indoor units
FDUMA: Ceiling Concealed Type -Medium Static Pressure- (2.2kW-14.0kW)

Model No.	**Nominal Cooling Capacity**
FDUMA22KXE5R	2.2kW
FDUMA28KXE5R	2.8kW
FDUMA36KXE5R	3.6kW
FDUMA45KXE5R	4.5kW
FDUMA56KXE5R	5.6kW
FDUMA71KXE5R	7.1kW
FDUMA90KXE5R	9.0kW
FDUMA112KXE5R	11.2kW
FDUMA140KXE5R	14.0kW

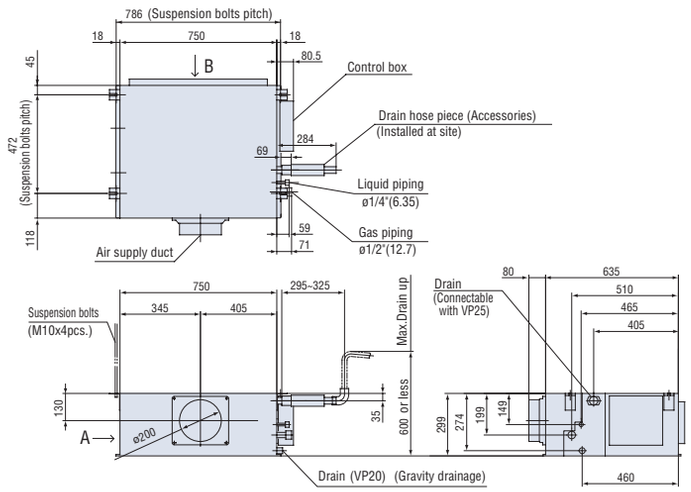
LOW NOISE

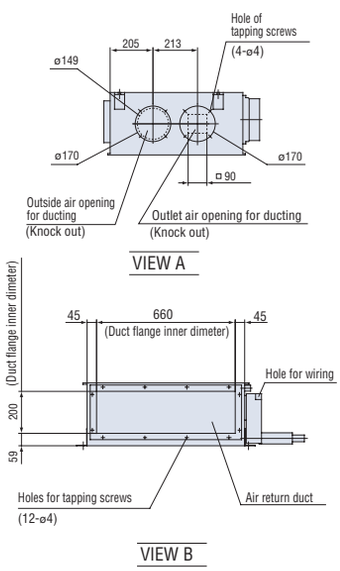
Item / Model		FDUMA22KXE5R	FDUMA28KXE5R	FDUMA36KXE5R	FDUMA45KXE5R	FDUMA56KXE5R	FDUMA71KXE5R	FDUMA90KXE5R	FDUMA112KXE5R	FDUMA140KXE5R
Nominal cooling capacity	kW	2.2	2.8	3.6	4.5	5.6	7.1	9.0	11.2	14.0
Nominal heating capacity	kW	2.5	3.2	4.0	5.0	6.3	8.0	10.0	12.5	16.0
Total UK cooling capacity	kW	1.90	2.41	3.10	3.88	4.83	6.12	7.76	9.65	12.07
Power source		Phase 220-240V, 50Hz								
Noise level	dB(A)	Hi:33 Me:31 Lo:28	Hi:34 Me:32 Lo:29		Hi:35 Me:32 Lo:29			Hi:36 Me:33 Lo:30	Hi:38 Me:35 Lo:32	Hi:39 Me:37 Lo:34
Exterior dimensions H x W x D	mm	299 x 750 x 635					299x950x635		350x1370x635	
Net Weight	kg	33	34				40		59	
Air flow (Standard)	CMM	Hi:10 Me:9 Lo:8	Hi:12 Me:11 Lo:10		Hi:14 Me:12 Lo:11		Hi:18 Me:16 Lo:14	Hi:20 Me:18 Lo:15	Hi:28 Me:25 Lo:22	Hi:34 Me:31 Lo:27
Available static pressure (at Hi)	Pa	Standard:50 Hi speed:85							Standard:60 Hi speed:90	Standard:60 Hi speed:85
Outside air intake		Possible								
Remote control		Wired:RC-E1R Wireless:RCND-KIT-HER								
Installation data Refrigerant piping size	in(mm)	Liquid line:1/4"(6.35), Gas line:1/2"(12.7)					Liquid line:3/8"(9.52), Gas line:5/8"(15.88)			

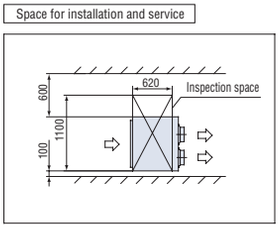
Dimensions

All measurements in mm.

FDUMA22KXE5R



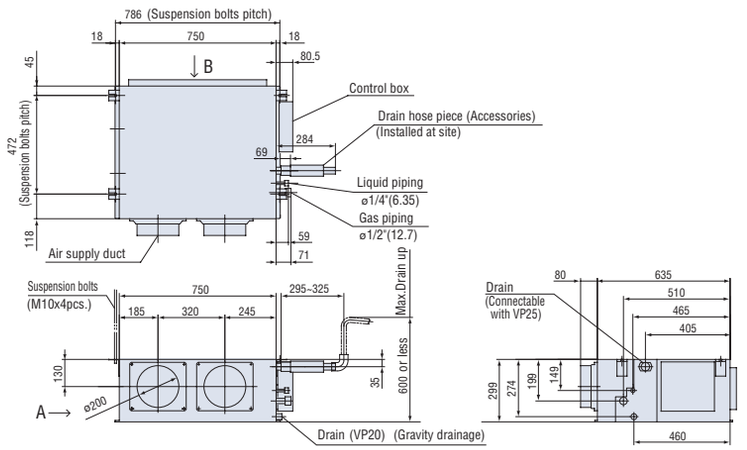


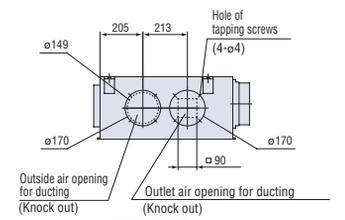


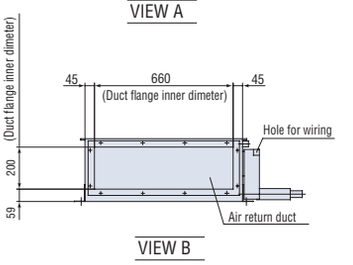
Dimensions

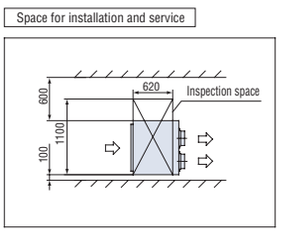
All measurements in mm.

FDUMA28KXE5R, 36KXE5R, 45KXE5R, 56KXE5R

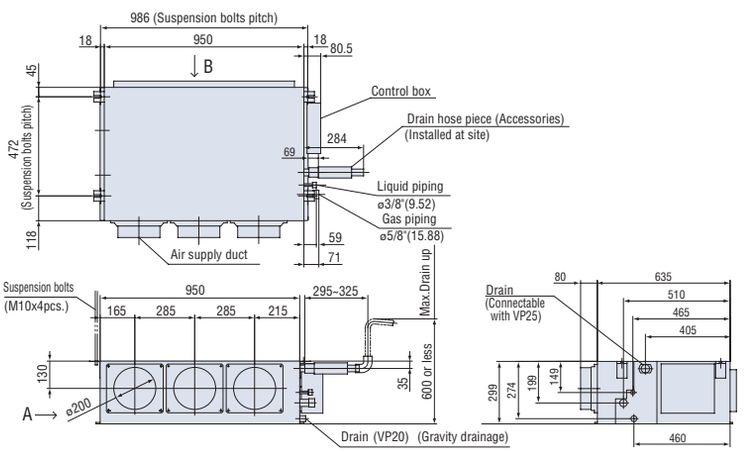


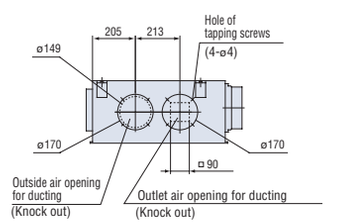


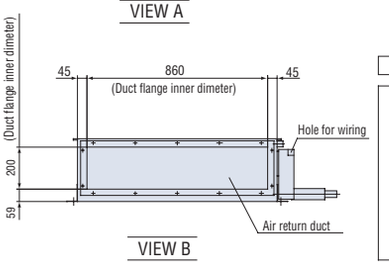


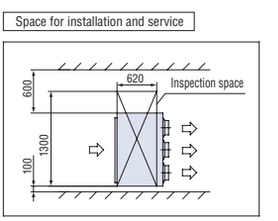


FDUMA71KXE5R, 90KXE5R

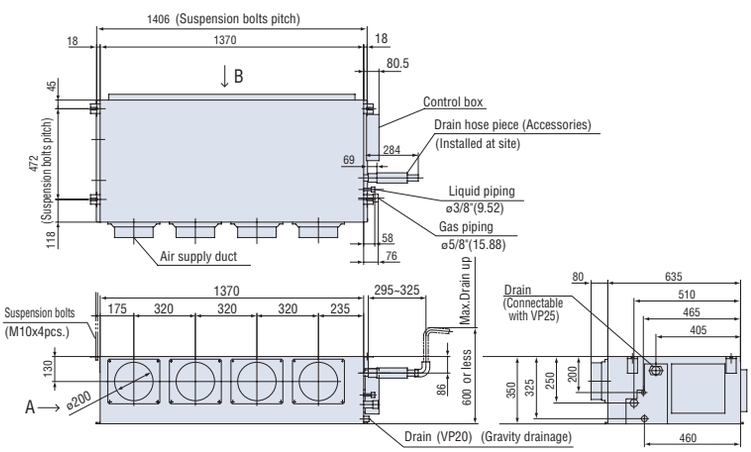


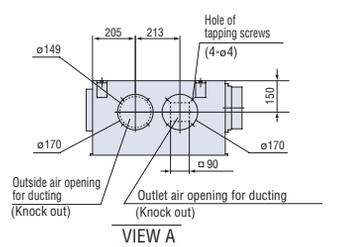


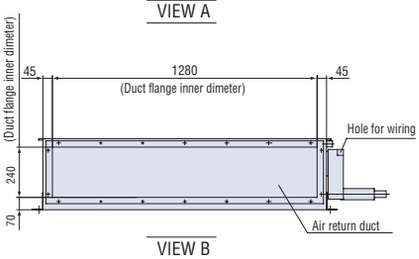


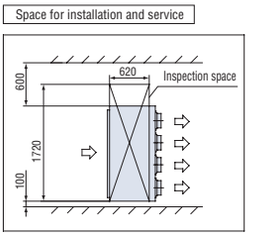


FDUMA112KXE5R, 140KXE5R









Fan data

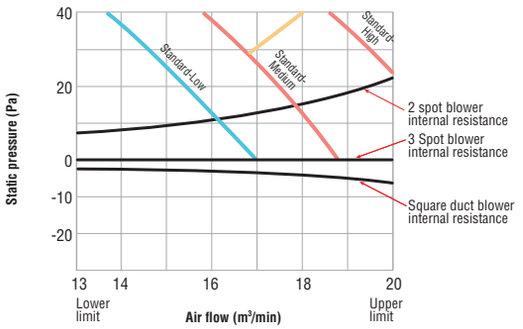
External static pressure table (Unit Pa)

Model	Duct Specs. Air Flow (m³/min)	1 Spot closing		Standard		Square Duct	
		Standard	High Speed(4)	Standard	High Speed(4)	Standard	High Speed(1)
FDUMA22	10	-	-	50	85	50	85
FDUMA28,36	12	-	-	50	85	50	85
FDUMA45,56	14	-	-	50	85	50	90
FDUMA71	18	35	70	50	85	55	90
FDUMA90	20	30	65	50	85	55	90
FDUMA112	28	50	80	60	90	65	95
FDUMA140	34	50	75	60	85	65	95

Notes(1) 1 spot closing:Round duct flange at center is removed and shield with a special panel (option).
(2) Standard:Ø200 duct are installed at all blowout holes.
(3) Square duct:All round ducts are removed and replaced with special square duct flanges (option).
(4) When using the high speed setting, turn the dip switch SW9-4 on the indoor PCB to the ON position. (When setting from the remote controller, select “Hi CEILING 1”)

How to interpret the blower characteristics table

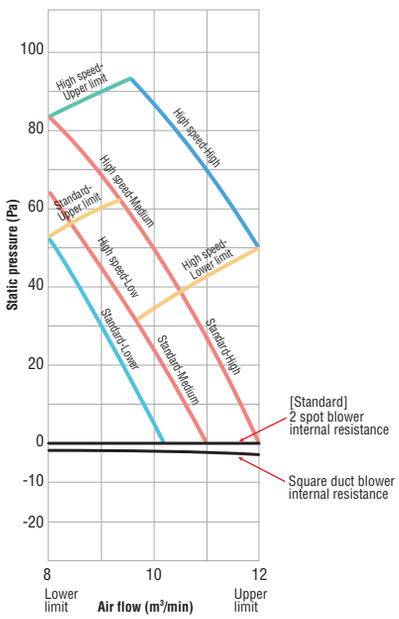
Example: Case of FDUMA71KXE5R



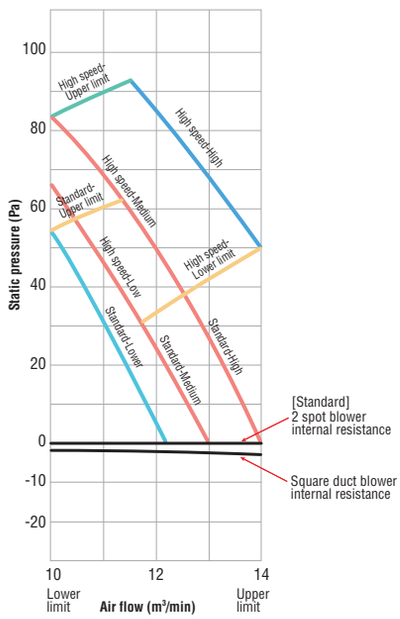
① **2 Spot blowout……**
Internal resistance increases more than the standard 3-spot blowout. Approx. 14Pa at 17m³/min

② **Square duct blowout……**
Internal resistance decreases more than the standard round duct (Ø200-3-spot). 3Pa at 17m³/min.
External static pressure increases in reverse.

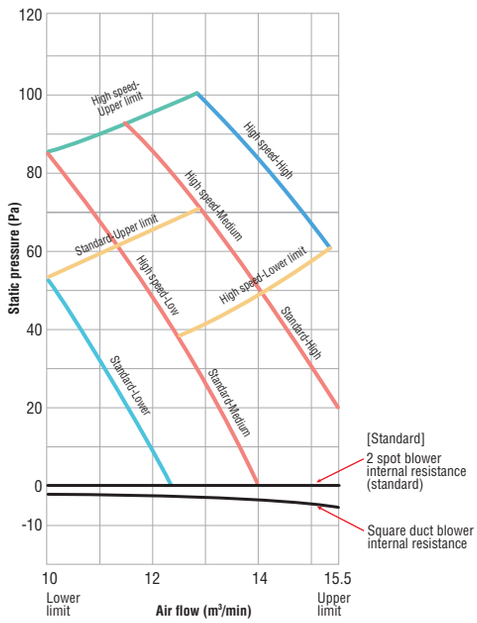
FDUMA22KXE5R



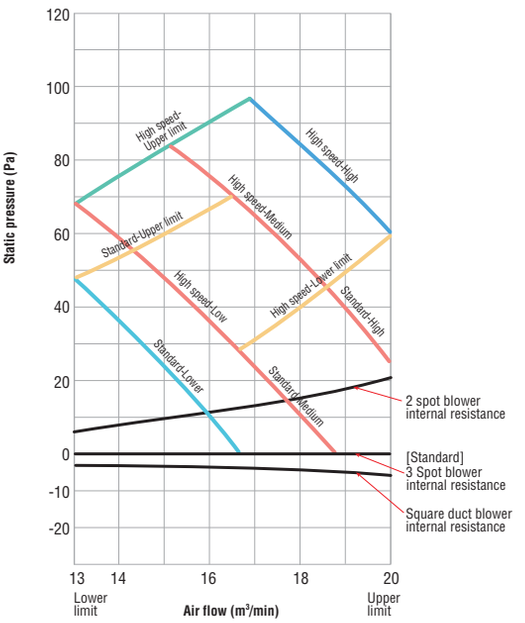
FDUMA28KXE5R & FDUMA36KXE5R



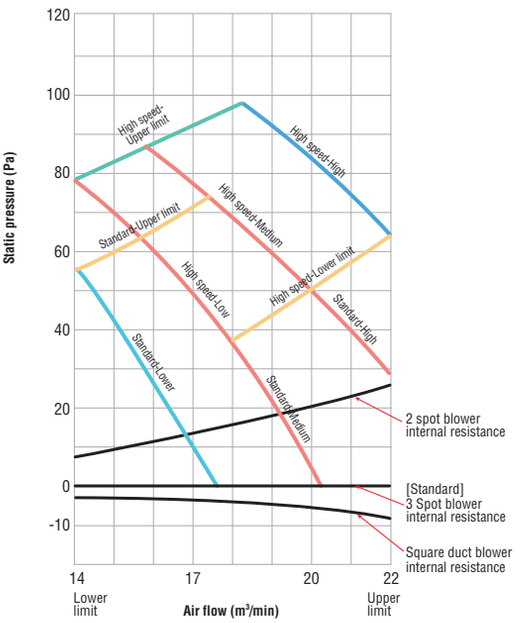
FDUMA45KXE5R & FDUMA56KXE5R



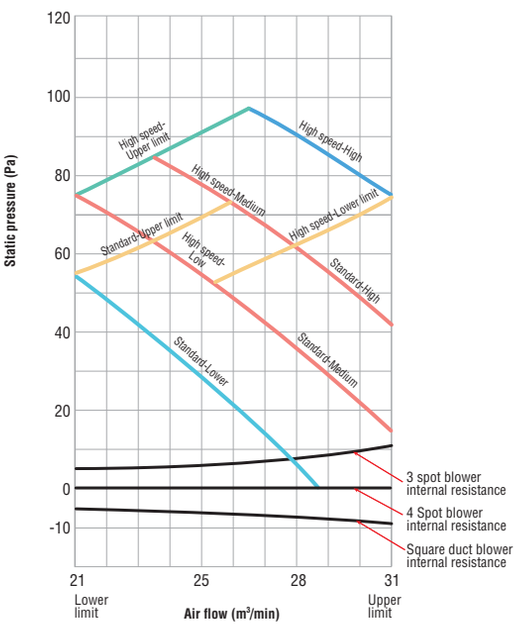
FDUMA71KXE5R



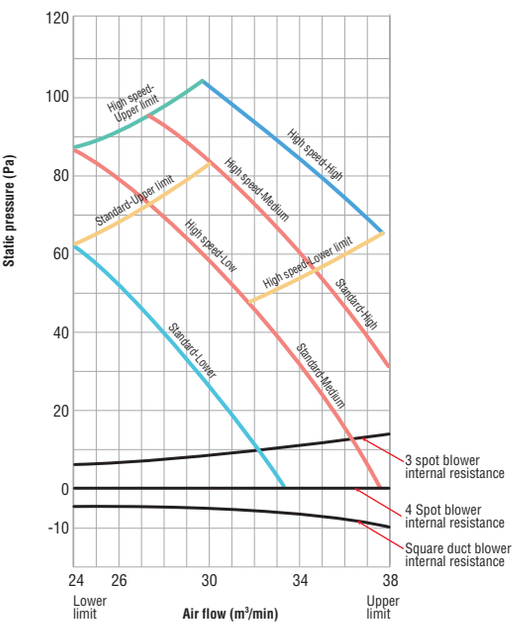
FDUMA90KXE5R



FDUMA112KXE5R



FDUMA140KXE5R



KX4 Indoor units

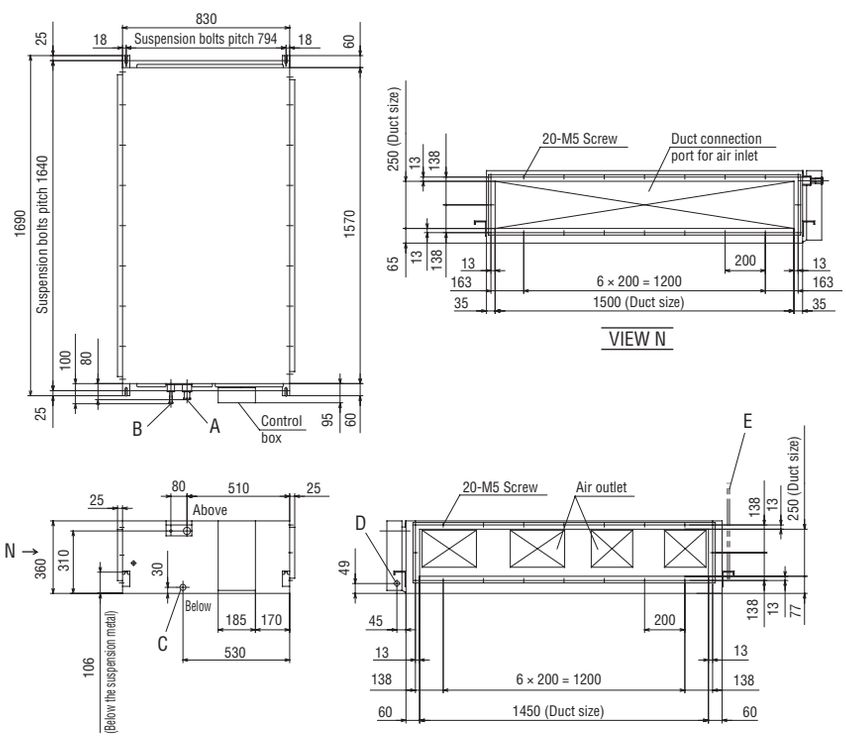
FDUA: Ceiling Concealed Type -High Static Pressure- (22.4kW–28.0kW)

Model No.	**Nominal Cooling Capacity**
FDUA224KXE4R	22.4kW
FDUA280KXE4R	28.0kW

Item / Model		FDUA224KXE4R	FDUA280KXE4R
Nominal cooling capacity	kW	22.4	28.0
Nominal heating capacity	kW	25.0	31.5
Total UK cooling capacity	kW	19.31	24.14
UK sensible cooling capacity	kW	14.85	18.92
Power source		1 Phase 220-240V, 50Hz	
Noise level	dB(A)	Hi:48	Hi:49
Exterior dimensions H x W x D	mm	360x1570x830	
Net Weight	kg	92	
Air flow (Standard)	CMM	51	68
Available Static pressure	Pa	Standard 100, Max 200	
Air filter, Q'ty		Field purchased	
Fresh air intake		Available	
remote control		wired:RC-E1R wireless:RCND-KIT-HER	
Installation data Refrigerant piping size	in (mm)	Liquid line:ø3/8"(9.52), Gas line:ø3/4"(19.05)	Liquid line:ø3/8"(9.52), Gas line:ø7/8"(22.22)
Optional parts		-	

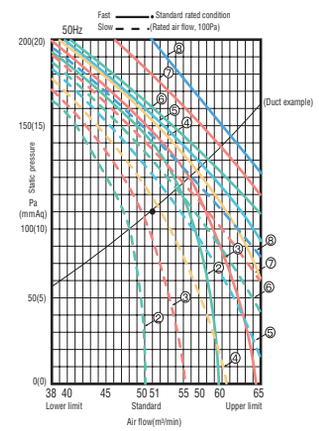
Dimensions

All measurements in mm.

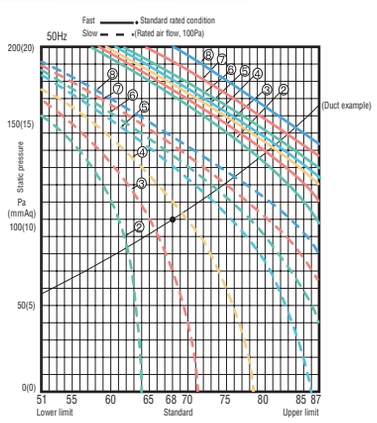


Fan data

FDUA224KXE4A



FDUA280KXE4A



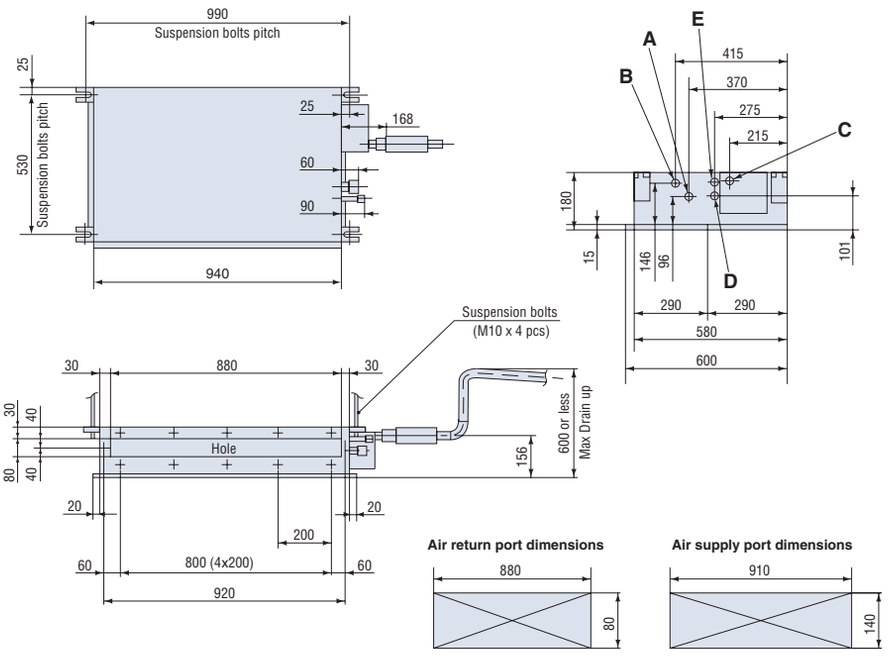
KX4 Indoor units
FDQSA: Ceiling Concealed Type -Low Static Pressure- (Ultra thin)

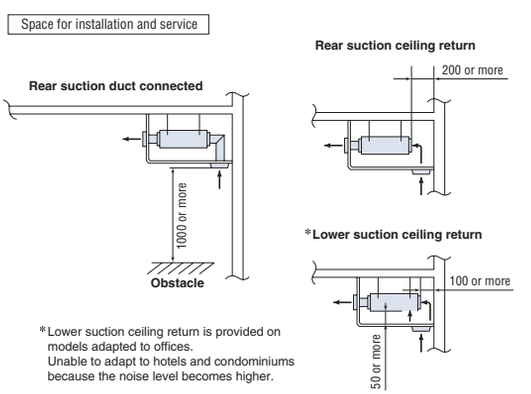
Model No.	Nominal Cooling Capacity
FDQSA22KXE5R	2.2kW
FDQSA28KXE5R	2.8kW
FDQSA36KXE5R	3.6kW
FDQSA45KXE5R	4.5kW
FDQSA56KXE5R	5.6kW

Item	Model	FDQSA22KXE5R	FDQSA28KXE5R	FDQSA36KXE5R	FDQSA45KXE5R	FDQSA56KXE5R
Nominal cooling capacity	kW	2.2	2.8	3.6	4.5	5.6
Nominal heating capacity	kW	2.5	3.2	4.0	5.0	6.0
Power source		1 Phase 220-240V, 50Hz				
Noise level	dB(A)	Rear air return Hi:37 Me:35 Lo:33 Bottom air return Hi:43 Me:41 Lo:39				
Exterior dimensions H x W x D	mm	180 x 940 x 580				
Net Weight	kg	27		28		
Air flow (Standard)	CMM	Hi:9 Me:8 Lo:7.5			Hi:11 Me:10 Lo:9	
Available Static pressure (at Hi)	Pa	Standard:15,Maximum:30				
Remote control		wired:RC-E1R wireless:RCND-KIT-HER				
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35) Gas line:ø3/8"(9.52)		Liquid line:ø1/4"(6.35) Gas line:ø1/2"(12.7)		

Dimensions

All measurements in mm.





*Lower suction ceiling return is provided on models adapted to offices.
Unable to adapt to hotels and condominiums because the noise level becomes higher.

Mark	Models	
	22, 28	36, 45, 56
A	Gas piping ø3/8"(9.52)	Gas piping ø1/2"(12.7)
B	Liguid piping ø1/4"(6.35)	Liguid piping ø1/4"(6.35)
C	Drain Pipe Connection (Connectable with VP25)	
D	Power Supply Wiring Connection(ø35)	
E	Remote control wires and Signal wires connection(ø35)	

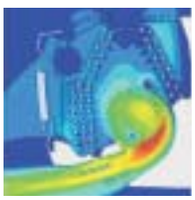
KX4 Indoor units
FDKA: Wall Mounted Type (2.2kW–7.1kW)

Model No.	Nominal Cooling Capacity
FDKA22KXE4R	2.2kW
FDKA28KXE4R	2.8kW
FDKA36KXE4R	3.6kW
FDKA45KXE4R	4.5kW
FDKA56KXE4R	5.6kW
FDKA71KXE5R	7.1kW

FDKA22-56

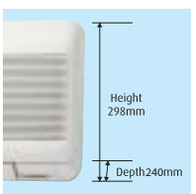
FDKA71

INNOVATIVE DESIGN



New FDKA models adopt the air flow design that's proven to minimise resistance in a CFD analysis to achieve uniform air conditioning to the furthest corners of the room.

INSTALLATION WORKABILITY



The new slimmer design allows easy & neat installation even in tight spaces.

wireless remote control
RCND-KIT-HER

IMPROVED MAINTAINABILITY

Also included is a new easy clean mechanism where the front panel is opened/closed simply from the bottom to easily access the detachable filters.

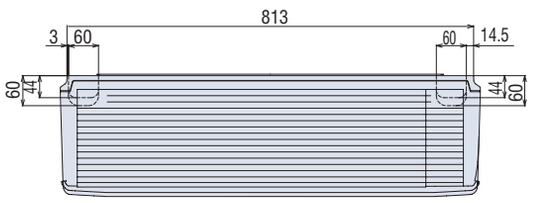
Item / Model		FDKA22KXE4R	FDKA28KXE4R	FDKA36KXE4R	FDKA45KXE4R	FDKA56KXE4R	FDKA71KXE5R
Nominal cooling capacity	kW	2.2	2.8	3.6	4.5	5.6	7.1
Nominal heating capacity	kW	2.5	3.2	4.0	5.0	6.3	8.0
Total UK cooling capacity	kW	1.90	2.41	3.10	3.88	4.83	6.12
UK sensible cooling capacity	kW	1.82	2.05	2.58	3.10	3.89	4.93
Power source		1 Phase 220-240V, 50Hz					
Noise level	dB(A)	Hi:40 Me:36 Lo:32		Hi:41 Me:37 Lo:33	Hi:41 Me:37 Lo:32	Hi:46 Me:43 Lo:39	Hi:47 Me:44 Lo:40
Exterior dimensions H x W x D	mm	298x840x240					318x1098x248
Net Weight	kg	12			12.5	13	22
Air flow (Standard)	CMM	Hi:8 Me:7 Lo:6		Hi:10 Me:9 Lo:7	Hi:11 Me:9 Lo:7	Hi:14 Me:12 Lo:10	Hi:21 Me:18 Lo:15
Air filter, Q'ty		Polypropylene net x2 (Washable)					Polypropylene net x2 (Washable)
Remote control		wired:RC-E1R wireless:RCND-KIT-HER					
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35), Gas line:ø3/8"(9.52)		Liquid line:ø1/4"(6.35), Gas line:ø1/2"(12.7)			Liquid line:ø3/8"(9.52) Gas line:ø5/8"(15.88)

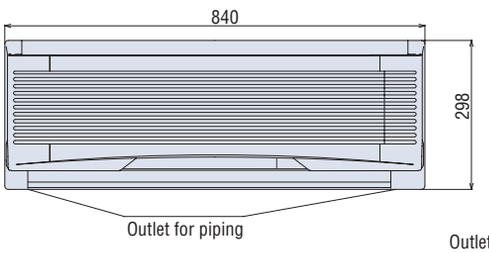
FDKA71KXE5R can not be connected with FDCA 140/160 HKXES4R.

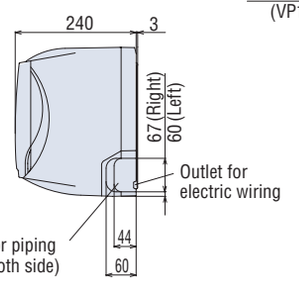
Dimensions

All measurements in mm.

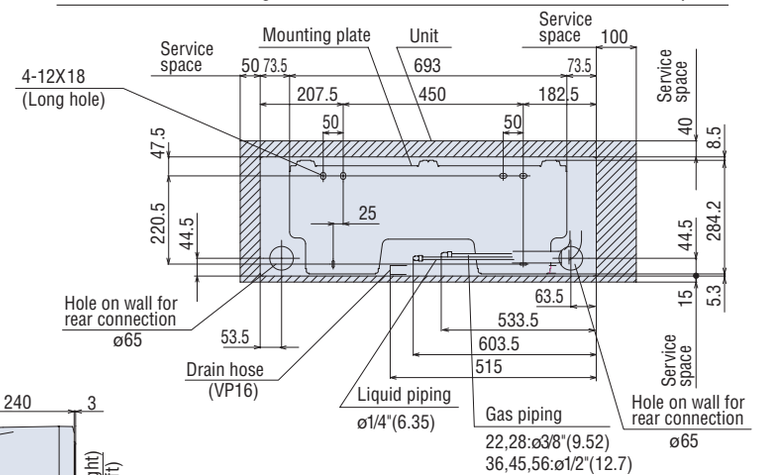
FDKA22-56KXE4R



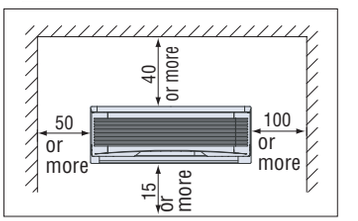




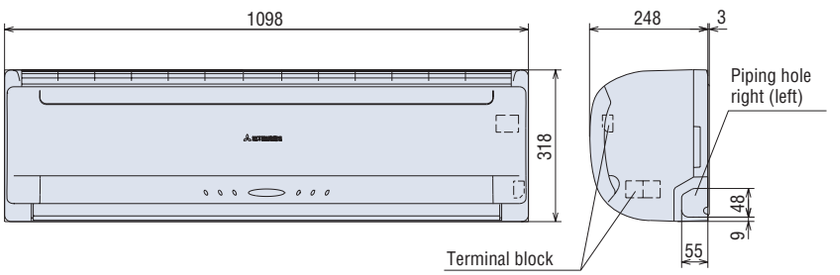
Installation Position Diagram when viewed from the front and installation space.

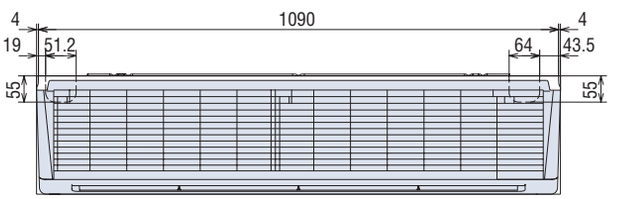


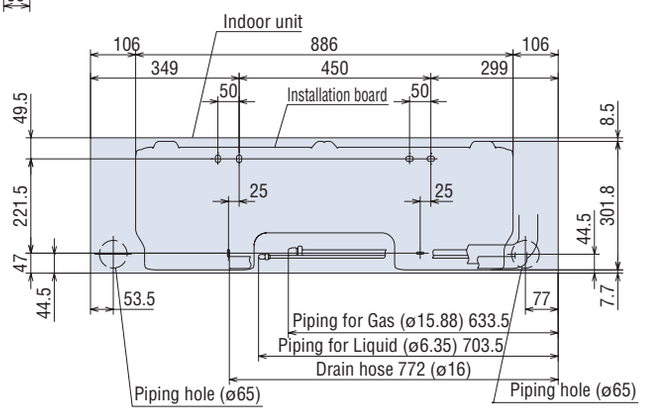
Space for installation and service



FDKA71KXE5R



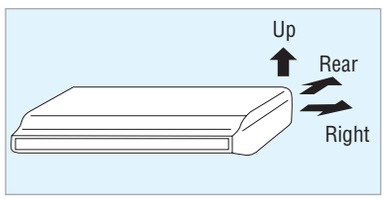




KX4 Indoor units
FDEA: Ceiling Suspended Type (3.6kW–14.0kW)

Model No.	Nominal Cooling Capacity
FDEA36KXE4R	3.6kW
FDEA45KXE4R	4.5kW
FDEA56KXE4R	5.6kW
FDEA71KXE4R	7.1kW
FDEA112KXE4R	11.2kW
FDEA140KXE4R	14.0kW

INSTALLATION WORKABILITY

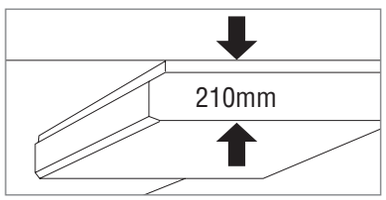


Refrigerant piping can be routed in three directions (rear, up, right) & drain piping in left or right directions, allowing free layout to meet installation conditions.

wireless remote control
RCND-KIT-HER

- Small
- Light-weight
- Quiet
- Sleek, intelligent design

NEW SLIM DESIGN

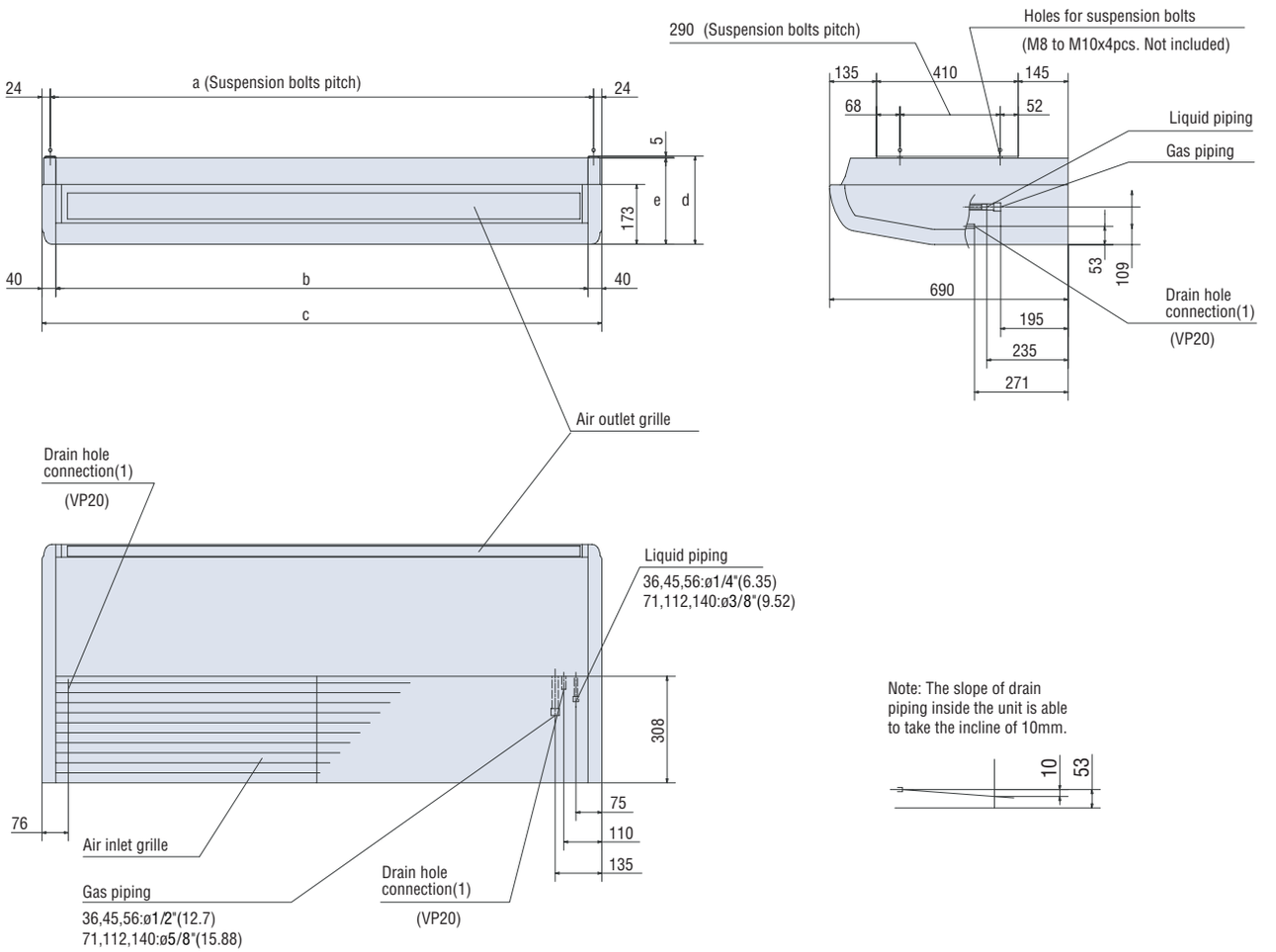


Slim and sleek design starting at just 30kgs in weight means quick, easy & neat installation.

Item / Model		FDEA36KXE4R	FDEA45KXE4R	FDEA56KXE4R	FDEA71KXE4R	FDEA112KXE4R	FDEA140KXE4R
Nominal cooling capacity	kW	3.6	4.5	5.6	7.1	11.2	14.0
Nominal heating capacity	kW	4.0	5.0	6.3	8.0	12.5	16.0
Total UK cooling capacity	kW	3.10	3.88	4.83	6.12	9.65	12.07
UK sensible cooling capacity	kW	2.68	3.03	3.53	4.93	7.50	8.97
Power source		1 Phase 220-240V, 50Hz					
Noise level	dB(A)	Hi:39 Me:38 Lo:36			Hi:41 Me:39 Lo:37	Hi:44 Me:41 Lo:39	Hi:46 Me:44 Lo:43
Exterior dimensions H x W x D	mm	210x1070x690			210x1320x690	250x1620x690	
Net Weight	kg	30			36	46	
Air flow (Standard)	CMM	Hi:11 Me:9 Lo:7			Hi:18 Me:14 Lo:12	Hi:26 Me:23 Lo:21	Hi:29 Me:26 Lo:23
Air filter, Q'ty		Polypropylene net x2 (Washable)					
Remote control		wired:RC-E1R wireless:RCND-KIT-HER					
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35), Gas line:ø1/2"(12.7)			Liquid line:ø3/8"(9.52), Gas line:ø5/8"(15.88)		

Dimensions

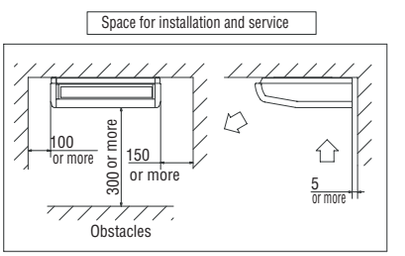
All measurements in mm.



Note: The slope of drain piping inside the unit is able to take the incline of 10mm.

Dimension table

Model	a	b	c	d	E
FDEA36KXE4R–56KXE4R	1022	990	1070	215	210
FDEA71KXE4R	1272	1240	1320	215	210
FDEA112KXE4R–140KXE4R	1572	1540	1620	255	250



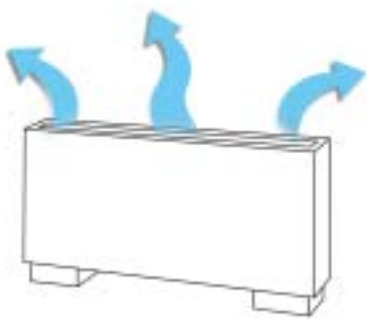
KX4 Indoor units
FDFLA: Floor Standing Type (with casing) (2.8kW–7.1kW)
FDFUA: Floor Standing Type (without casing) (2.8kW–7.1kW)

Model No.	Nominal Cooling Capacity
FDFLA28KXE4R	2.8kW
FDFLA45KXE4R	4.5kW
FDFLA71KXE4R	7.1kW
FDFUA28KXE4R	2.8kW
FDFUA45KXE4R	4.5kW
FDFUA56KXE4R	5.6kW
FDFUA71KXE4R	7.1kW

FDFLA

FDFUA (concealed type)

Compact design at 630mm height



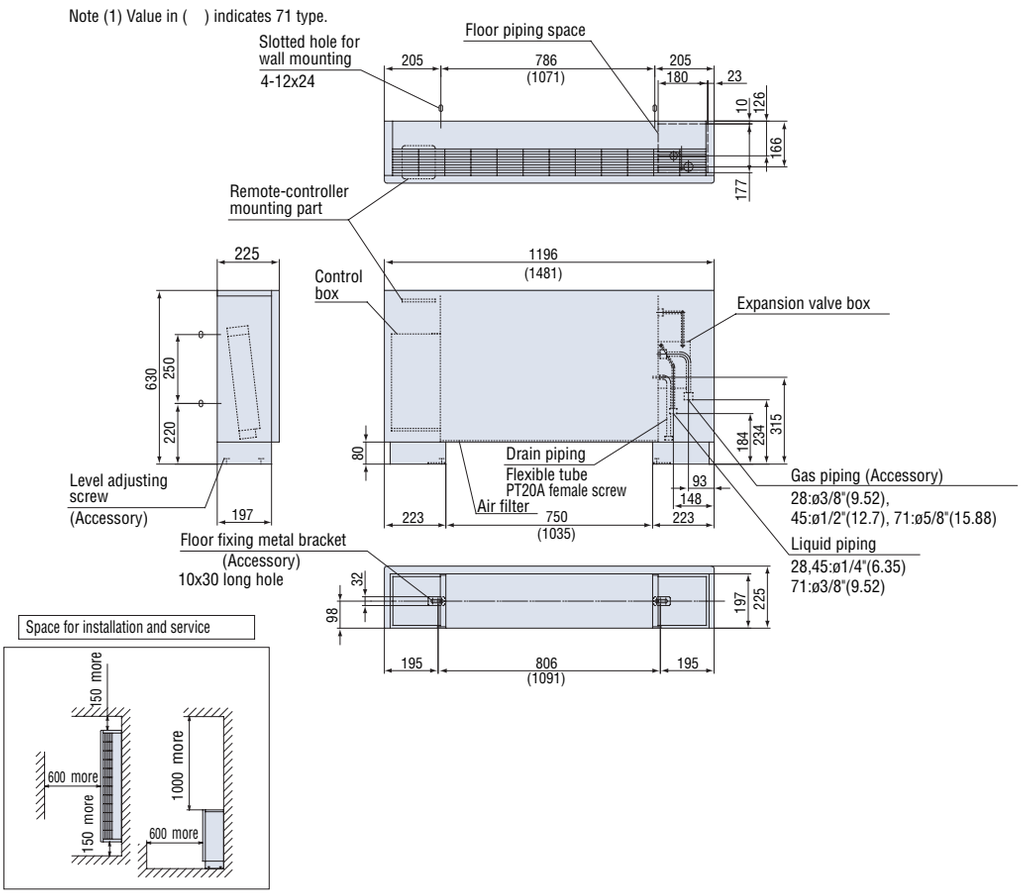
Wider airflow for optimum comfort

Item / Model		FDFLA28KXE4R	FDFLA45KXE4R	FDFLA71KXE4R	FDFUA28KXE4R	FDFUA45KXE4R	FDFUA56KXE4R	FDFUA71KXE4R
Nominal cooling capacity	kW	2.8	4.5	7.1	2.8	4.5	5.6	7.1
Nominal heating capacity	kW	3.2	5.0	8.0	3.2	5.0	6.3	8.0
Total UK cooling capacity	kW	2.41	3.88	6.12	2.41	3.88	4.83	6.12
UK sensible cooling capacity	kW	2.32	3.42	4.91	2.32	3.42	3.84	4.91
Power source		1 Phase 220-240V, 50Hz						
Noise level	dB(A)	Hi:41 Me:38 Lo:36	Hi:43 Me:41 Lo:40		Hi:41 Me:38 Lo:36	Hi:43 Me:41 Lo:40		
Exterior dimensions H x W x D	mm	630x1196x225		630x1481x225	630x1077x225			630x1362x225
Net Weight	kg	32		40		25		32
Air flow (Standard)	CMM	Hi:12 Me:11 Lo:10	Hi:14 Me:12 Lo:10	Hi:18 Me:15 Lo:12	Hi:12 Me:11 Lo:10	Hi:14 Me:12 Lo:10		Hi:18 Me:15 Lo:12
Air filter, Q'ty		Polypropylene net x2 (Washable)						
Remote control		wired:RC-E1R wireless:RCND-KIT-HER						
Installation data Refrigerant piping size	in(mm)	Liquid line:ø1/4"(6.35) Gas line:ø3/8"(9.52)	Liquid line:ø1/4"(6.35) Gas line:ø1/2"(12.7)	Liquid line:ø3/8"(9.52) Gas line:ø5/8"(15.88)	Liquid line:ø1/4"(6.35) Gas line:ø3/8"(9.52)	Liquid line:ø1/4"(6.35), Gas line:ø1/2"(12.7)		Liquid line:ø3/8"(9.52) Gas line:ø5/8"(15.88)

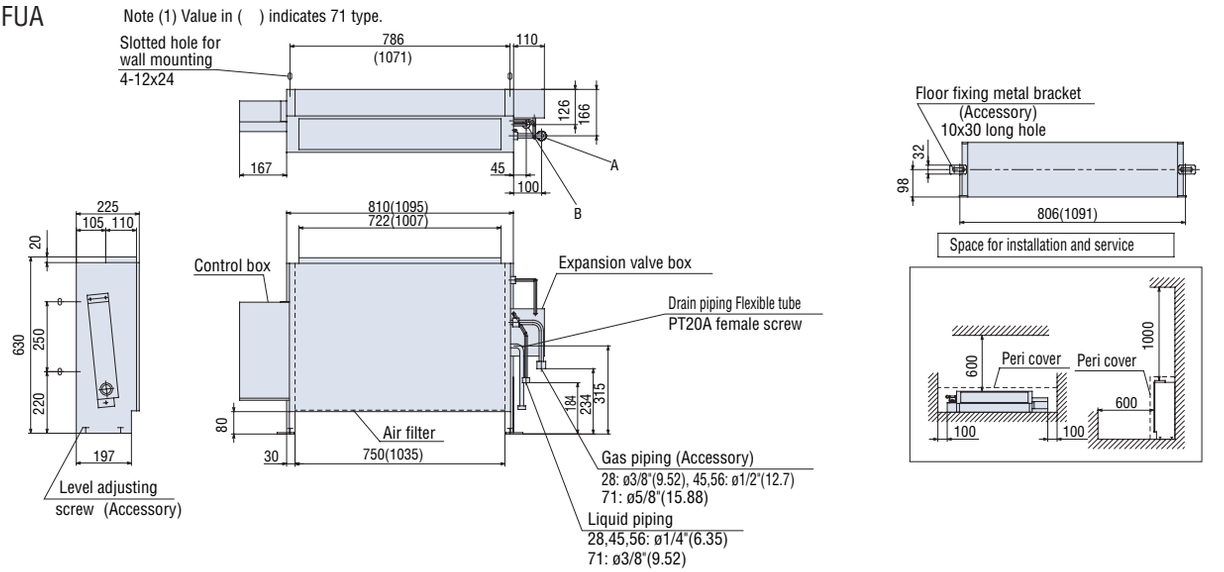
Dimensions

All measurements in mm.

FDFLA

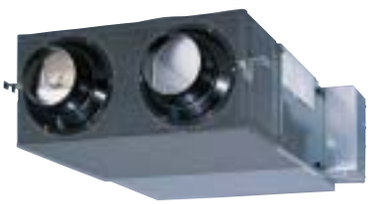


FDFUA



SAF-E4
Fresh Air Ventilation and Heat Exchange unit

Model No.	Air Flow M^3/h
SAF250E4	250
SAF350E4	350
SAF500E4	500
SAF800E4	800
SAF1000E4	1000



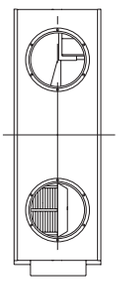
Re; Building Regulations Part L2

The Part L2 (April 2006) regulations limit the amount of electrical/gas power to be used to provide heating or cooling in commercial buildings. Therefore the building designer needs to select energy efficient heating/cooling equipment, and to minimise energy losses through ventilation systems.

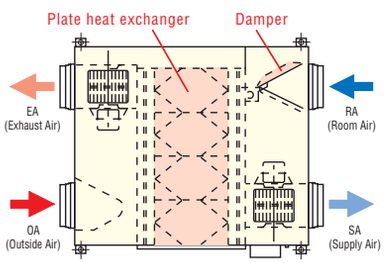
The SAF recovers heat energy which would otherwise be exhausted to atmosphere, and uses this energy to warm the air entering the building. The reverse happens in warmer climates, where the exhausted cool air is used to partially cool the incoming air.

Capturing this waste energy, means the heating/ cooling requirements of the building are reduced, so smaller size plant can be selected, savings can be made in long term energy consumption, and carbon emissions are reduced.

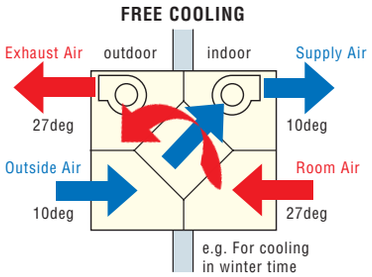
The inclusion of the SAF energy recovery ventilation units in the building design, will reduce the total amount of carbon emissions.



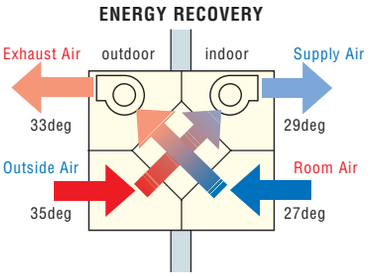
Structure (SAF1000E4)



Principle of operation (simple ventilation)



Principle of operation (heat exchanging)

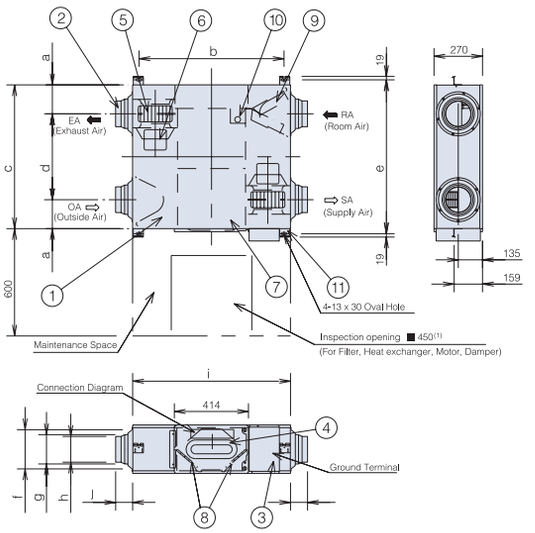


Item		Model			SAF250E4	SAF350E4	SAF500E4	SAF800E4	SAF1000E4
Power source					1 Phase 220-240V, 50Hz				
Exterior dimensions Height x Width x Depth					270x882x599	170x882x804	270x962x904	388x1322x884	388x1322x1135
Exterior appearance					Galvanised steel sheet				
		Power input		W	99-114/118	124-137/149	169-188/202	309-359/391	360-399
		Running current		A	0.46/-0.48/0.55	0.59-0.60/0.75	0.79-0.81/1.00	1.48-1.50/1.92	1.85-1.93
Capacity	UHi	Enthalpy exchange efficiency	Cooling	%	63	66	62	65	
			Heating		70	69	67	71	
		Temperature exchange efficiency			75				
	Hi	Enthalpy exchange efficiency	Cooling		63	66	62	65	
			Heating		70	69	67	71	
		Temperature exchange efficiency			75				
	Lo	Enthalpy exchange efficiency	Cooling		66/68	69/71	77/79	68/69	68
			Heating		73/75	71/73	67/69	74/75	73
		Temperature exchange efficiency			77/78	77/79	75/79	76/77	76
Motor & Q'ty				kW	0.02/0.02x2	0.018/0.044x2	0.035/0.062x2	0.081/0.117x2	0.118x2
Air handling equipment Fan type & Q'ty					Sirocco fan x 2				
Air flow			UHi	m^3/h	250	350	500	800	1000
			Hi		250	350	500	800	1000
			Lo		170/135	280/240	370/310	650/575	810
Available static pressure			UHi	Pa	90/135	95/155	105/165	140/190	90
			Hi		80/100	65/90	70/85	110/100	55
			Lo		37/30	42/43	38/33	70/50	35
Air filter	Outake intake air				Protection for element (Washable) PS400				
	Exhaust air								

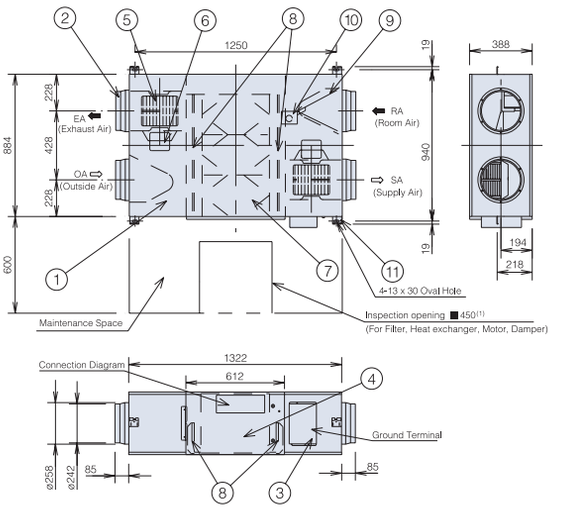
Dimensions

All measurements in mm.

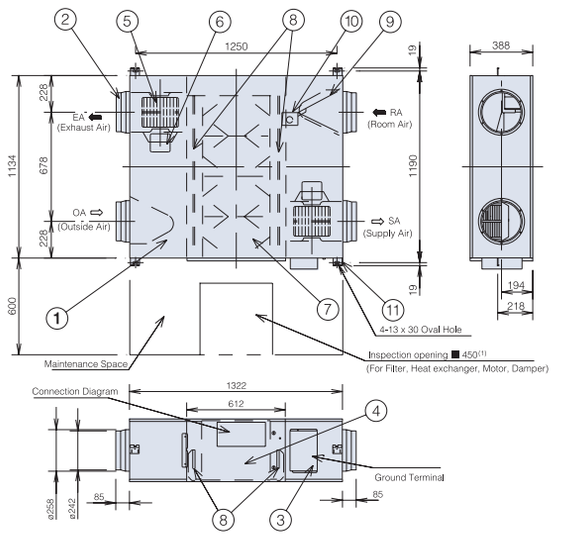
SAF250E4,350E4,500E4



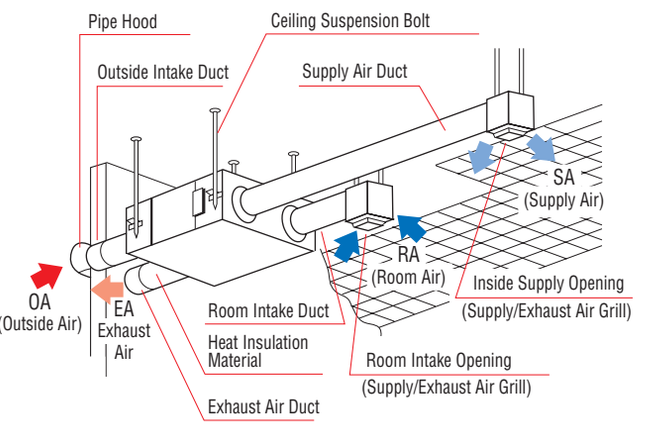
SAF800E4



SAF1000E4, 1000E4S



Installation reference



NO.	Name	Quantity	Material	Remarks
1	Frame	1	Zinc-plated steel	
2	Adaptor	4	ABS Resin	
3	Electrical Equipment Box	1		
4	Inspection Cover	1	Zinc-plated steel	
5	Fan	2	ABS Resin	
6	Motor	2		
7	Heat Exchange Element	2	Flame Retardant Paper + Plastic	Air to air Heat Exchanger
8	Filter	2	Non-woven Cloth	Collection Efficiency Gravimetric Method 82%
9	Damper	1		
10	Damper Motor	1		
11	Ceiling Suspension Fixture	4	Zinc-plated Steel	

Note(1) An inspection port is needed for cleaning the heat exchanger and filter 1 or 2 times a year.

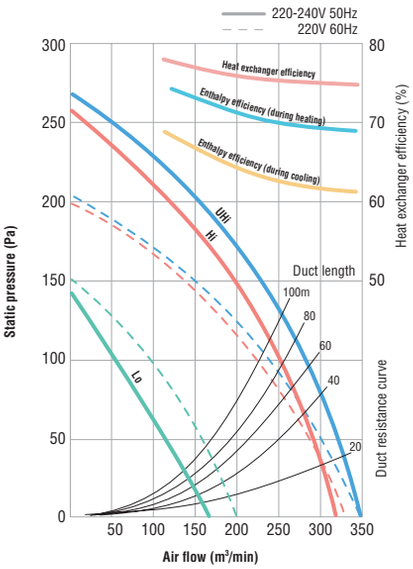
Dimension table

Model	a	b	c	d	e
SAF250E4	142	810	599	315	655
SAF350E4	162	810	804	480	860
SAF500E4	202	890	904	500	960

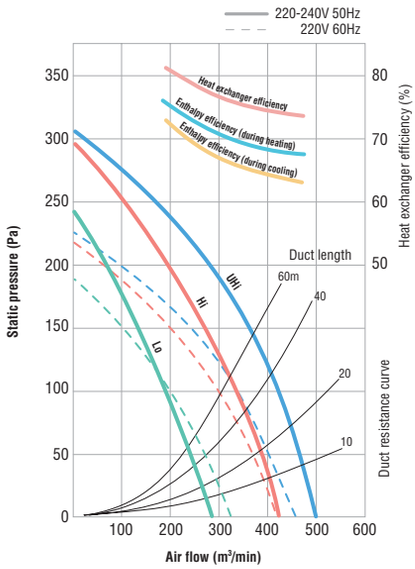
Model	f	g	h	i	j
SAF250E4	Ø219	Ø164	Ø144	882	95
SAF350E4	Ø219	Ø164	Ø144	882	95
SAF500E4	Ø246	Ø210	Ø194	962	107

Fan data

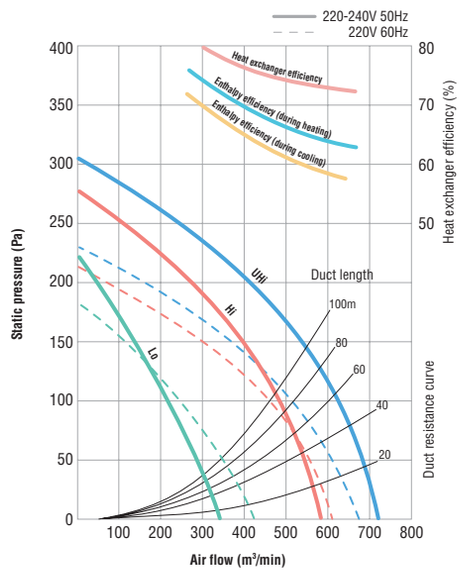
SAF250E4



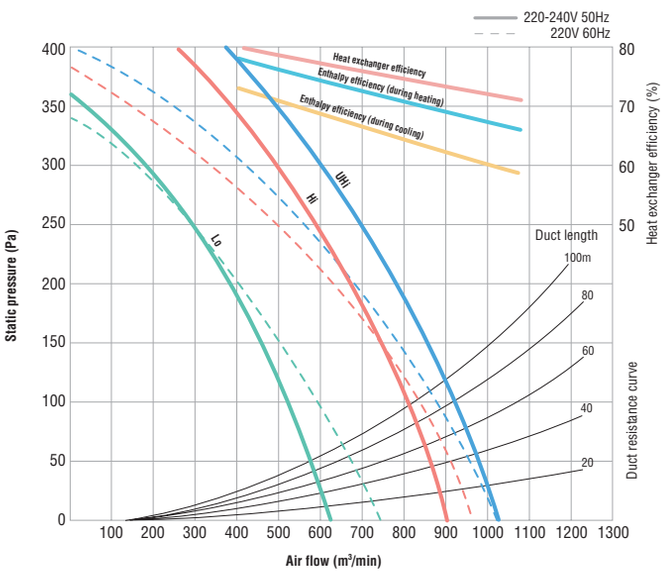
SAF350E4



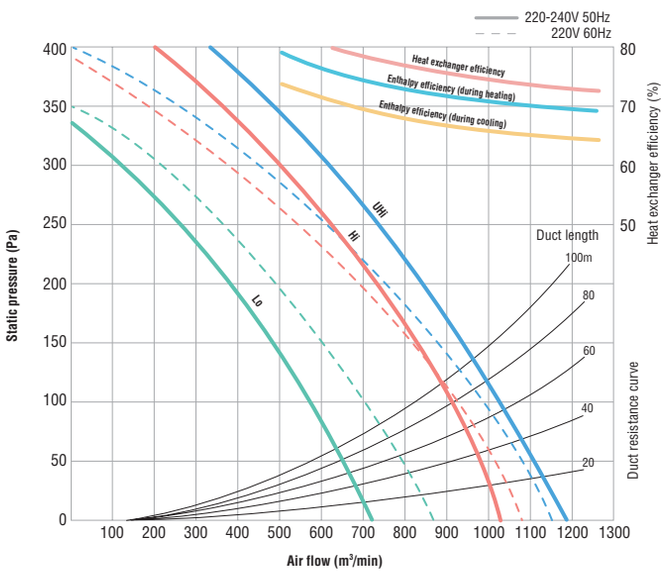
SAF500E4



SAF800E4



SAF1000E4

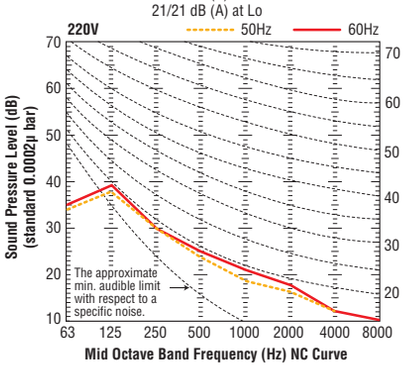


Note: Duct length is equivalent to the length of straight pipe when λ (Resistance coefficient) = 0.020 (Friction loss coefficient)

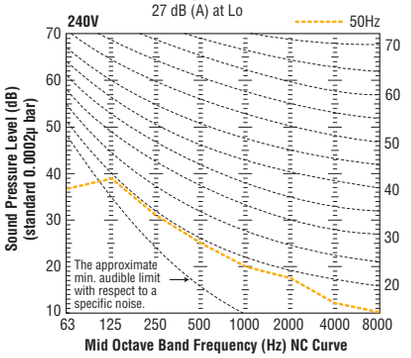
Noise level data

SAF250E4

Noise level 27/28 dB (A) at UHi
26/26 dB (A) at Hi
21/21 dB (A) at Lo

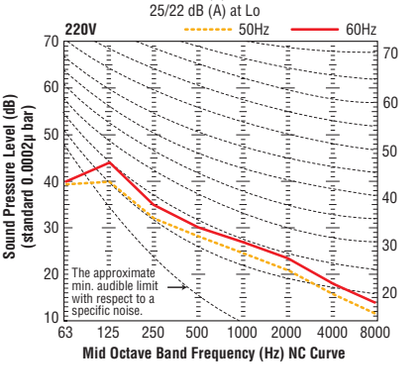


Noise level 28 dB (A) at UHi
27 dB (A) at Hi
27 dB (A) at Lo

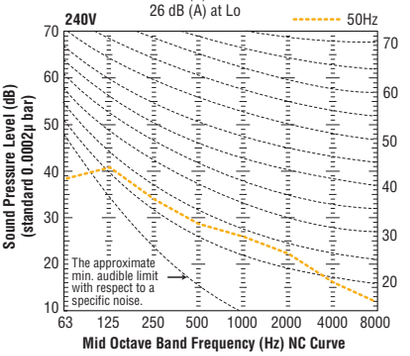


SAF350E4

Noise level 31/33 dB (A) at UHi
29/30 dB (A) at Hi
25/22 dB (A) at Lo

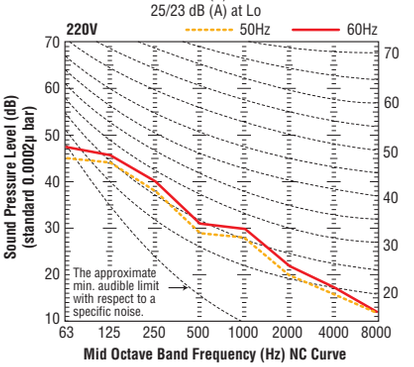


Noise level 32 dB (A) at UHi
30 dB (A) at Hi
26 dB (A) at Lo

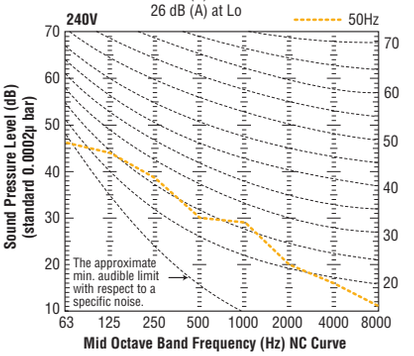


SAF500E4

Noise level 33/35 dB (A) at UHi
31/31 dB (A) at Hi
25/23 dB (A) at Lo

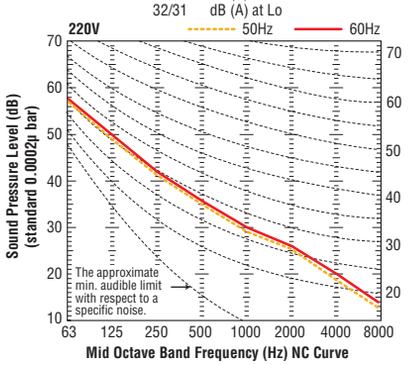


Noise level 34 dB (A) at UHi
32 dB (A) at Hi
26 dB (A) at Lo

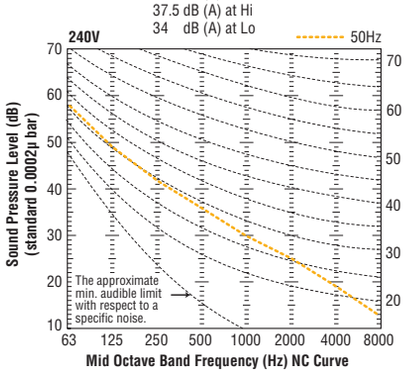


SAF800E4

Noise level 38/39 dB (A) at UHi
26.5/36 dB (A) at Hi
32/31 dB (A) at Lo

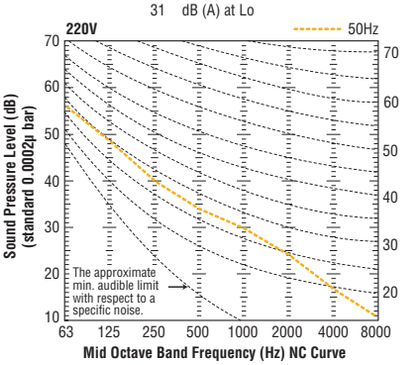


Noise level 39 dB (A) at UHi
37.5 dB (A) at Hi
34 dB (A) at Lo

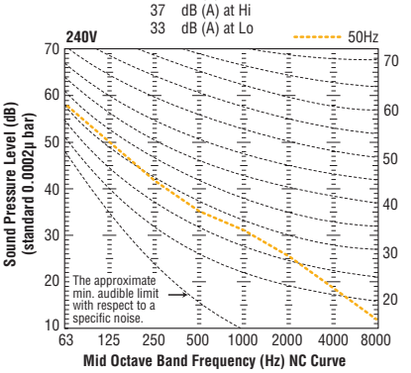


SAF1000E4

Noise level 37.5 dB (A) at UHi
36 dB (A) at Hi
31 dB (A) at Lo



Noise level 38.5 dB (A) at UHi
37 dB (A) at Hi
33 dB (A) at Lo



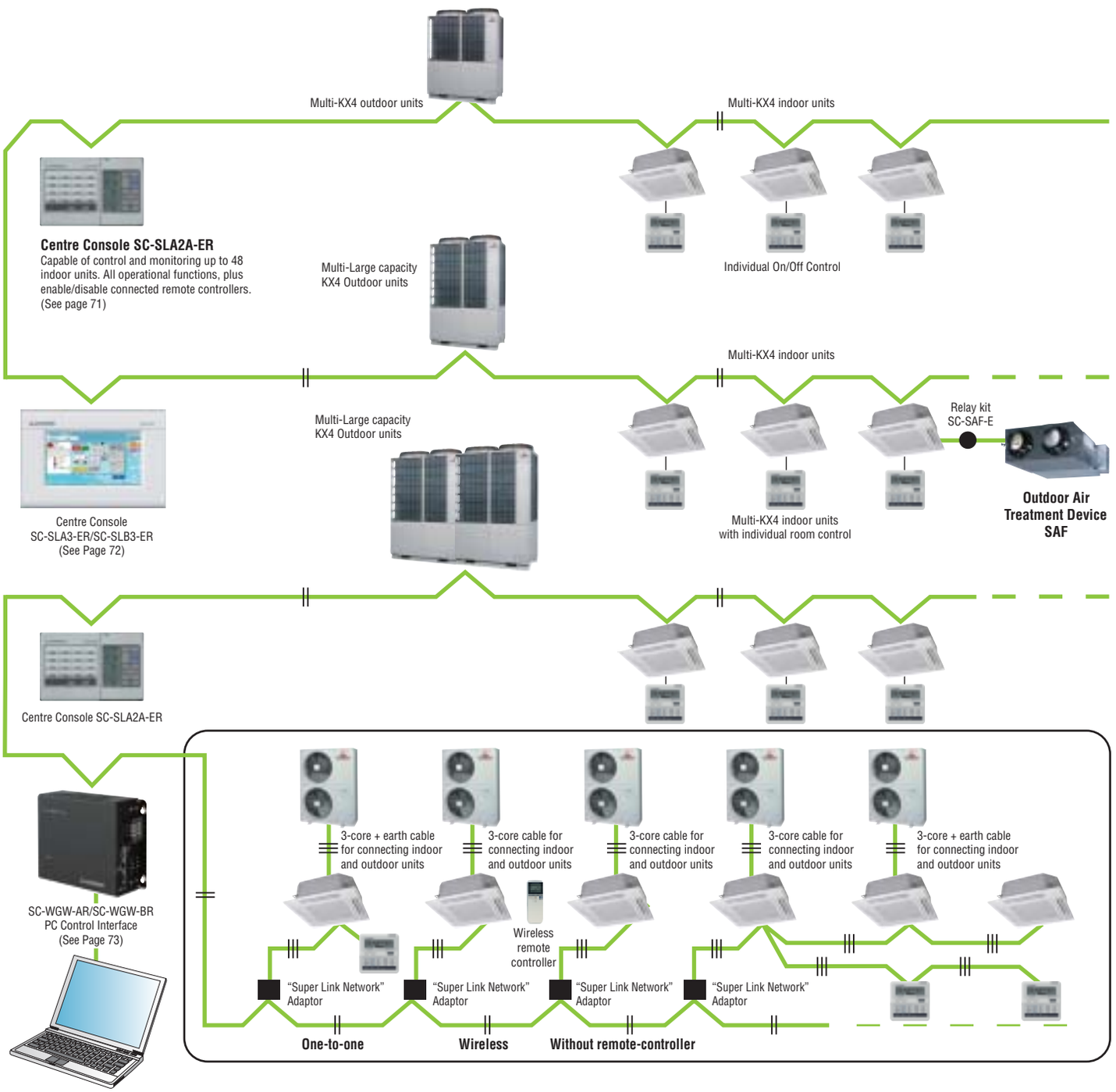
Summary
If measured after an actual installation, results may differ due to ambient conditions.

Notes:
(1) The data is based on the following condition.
Distance centre and low point: 1.5m
(2) The data in the charts is measured in an anechoic room.
(3) The noise level measured in the field is usually higher than test room data because of reflection.

KX4 Control System: SUPERLINK

MHI has now combined simplicity of installation with our highly sophisticated Superlink control system, to offer building owners and occupiers a comprehensive control and management system, while providing complete commissioning and service maintenance assistance for installers and service engineers. The Superlink network utilises two wire, non-polar cable – for further details of wiring, please refer to pages 22/23 or pages 38/39.

Superlink is an advanced high speed data transmission system that can connect up to 48 indoor units as a network. MHI offers a wide range of control options for the Superlink network to suit any application large or small, as well as connection to new or existing building management systems. Individual MHI split systems can also be integrated on to the Superlink network using an adaptor (SC-AD-ER).



System communication is enabled via the setting of an address code to each unit, which can be done in three ways:

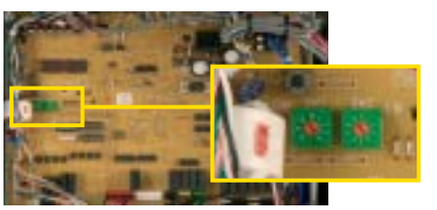
1) Automatic address setting:
Once the power supply has been connected to all outdoor and indoor units, simply turn on the the units (power on) in order and the system micro computer automatically allocates the address number to each unit and the address number is displayed on each remote controller and the central controller. The address settings are memorised after the power is turned off.

2) Address setting by remote controller:
When a wired remote controller is connected to the indoor units, it is possible to program the unit address by simply using the ▲up ▼down temperature set buttons on the controller. It is necessary to set the outdoor unit address number to 00-47 when setting the system in this way.

3) Manual address setting:
The outdoor unit has two rotary switches on the PCB which can be set to the required address number by simply turning with a slot screw driver.

Likewise each indoor unit PCB has four rotary switches for setting the required address number - (two dials for the corresponding outdoor unit, two dials for the indoor unit address number).

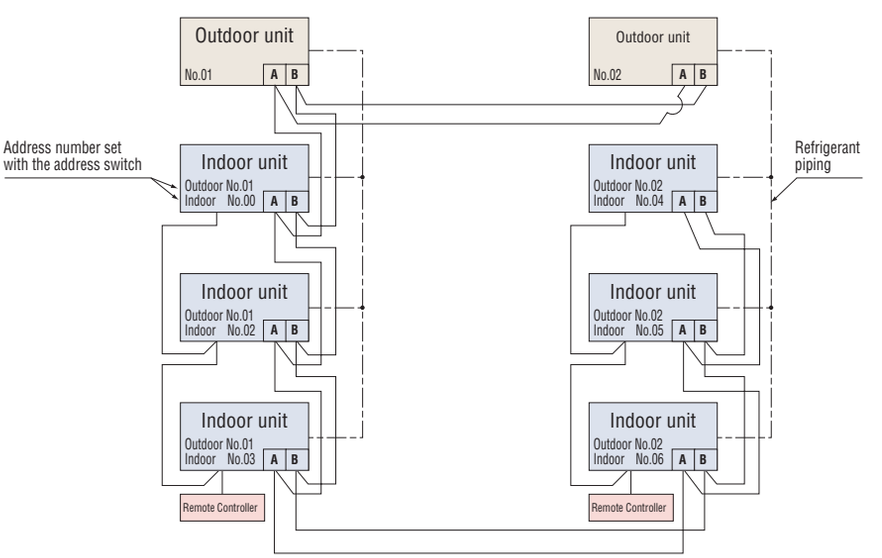
4-way cassette PCB
FDTA28



Outdoor unit PCB
FDCA400

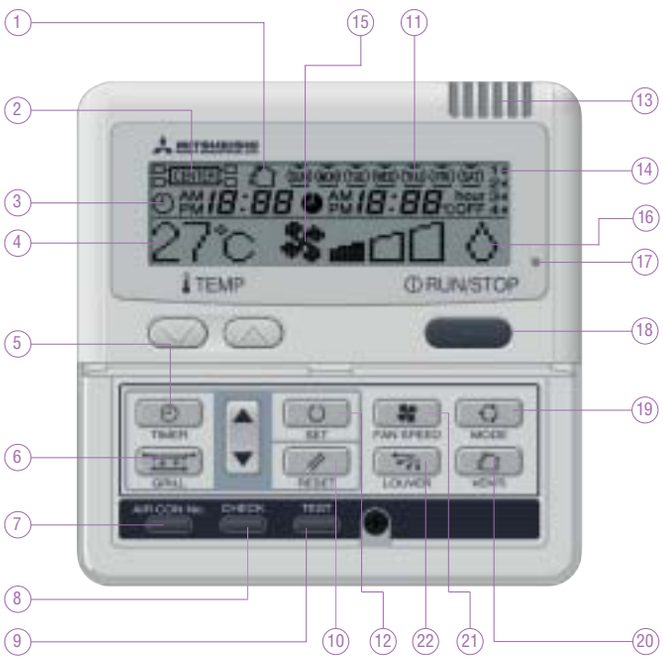
The unit address setting should correspond with the table below for each method of addressing:

Method of setting address	Outdoor unit	Indoor unit	
	Outdoor No.	Outdoor No	Indoor No.
Automatic address setting	49	49	49
Remote control address setting	00 ~ 47	49	49
Manual address setting	00 ~ 47	00 ~ 47	00 ~ 47



KX4 Controls options: Wired controller RC-E1R

The RC-E1R controller enables extensive access to service and maintenance technical data combined with easy to use functions and a clear LCD display.



1 VENTILATION INDICATION
Displays operation of external fresh air fan

2 CENTRALISED CONTROL INDICATION
Illuminated when centralised control is functioning

3 TIMER INDICATION
Indicates time period ON/OFF when setting timer

4 SET TEMPERATURE
Displays set temperature ºC

5 CLOCK SETTING SWITCH
To set the timer mode and the weekly timer functions

6 GRILL SWITCH
This switch has no function. When this switch is pressed, INVALID OPER(Invalid Operation) is displayed, but it does not mean a failure

7 UNIT ADDRESS SWITCH
To select 'a' numbered unit within a connected group

8 MAINTENANCE DIAGNOSIS
To display error codes and history

9 TEST RUN SWITCH
Commissioning sequence in cooling

10 RESET SWITCH
To cancel previously set functions

11 WEEKLY TIMER
To select and set weekly operation schedule

12 FUNCTION SET SWITCH
To register selected operation setting

13 REMOTE CONTROL SENSOR
Slits to allow air movement to sensor.

14 TIMER INDICATION
Shows sequence of four ON/OFF functions per day

15 FAN SPEED INDICATIONS
Indicates selected fan speed

16 OPERATION MODE
Indicates cooling/heating/fan only mode etc.

17 OPERATION/FAULT INDICATION LAMP
Illuminated green when unit is operating, flashes red when error is detected

18 ON/OFF switch
To switch unit ON/OFF

19 MODE OPERATION SWITCH
To select operation mode cooling/heating/fan only

20 VENTILATION SWITCH
To run/stop external ventilation unit
— can also be interlocked

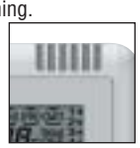
21 FAN SPEED ADJUSTMENT
Selection of low/med/high fan speed

22 LOUVER SWITCH
To select louver position or auto swing function

Weekly timer function as standard
RC-E1R provides (as a standard feature) a weekly timer, which allows one-week operation schedules to be registered. A user can specify up to four times a day to start/stop the air conditioner. (Temperature setting is also possible with the timer).

Run hour meters to facilitate maintenance checking
RC-E1R stores operation data when an anomaly occurs and indicates the error on the LCD. It also indicates cumulative operation hours of the air conditioner and compressor since commissioning.

Room temperature controlled by the remote control sensor
The temperature sensor is housed in the top section of the remote control unit. This arrangement has improved the sensitivity of the remote control unit's heat sensor, which permits more finely controlled air conditioning.



Changeable set temperature ranges
RC-E1R allows the upper and lower limits of a set temperature range to be specified separately.
By adjusting a set temperature range, you can ensure energy saving air conditioning by avoiding excessive cooling or heating.

Changeable range	
Upper limit	(effective for heating operation)
Lower limit	(effective for non-heating operation)

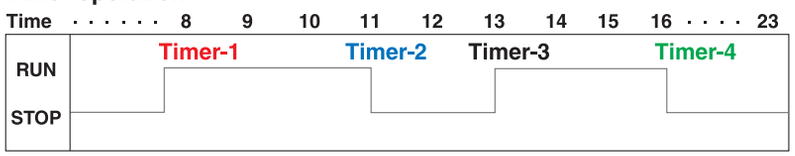
Optional mode settings
Functional setting with remote control operation switches.

- High Ceiling Mode
- Filter Sign Enabled/Disabled
- Fan Tap No.
- Remote Sensor Enabled/Disabled

Remote Controller

	indoor unit	remote control
wired	all models	RC-E1R
wireless	FDTA	RCN-T-35W-ER
	FDTCA	RCN-TC-W-ER
	others	RCND-KIT-HER

Timer operation



No.	Data items of indoor units	Display range	No.	Data items of outdoor units	Display range
01	Operation mode	Cooling/heating/ drying/air supply	21	Outdoor air temperature	-20 ~ (ºC)
02	Set temperature	18 ~ 30 (ºC)	22	Outdoor unit heat exchanger temperature (Main unit)	-20 ~ (ºC)
03	Air return temperature	0ºC or more	23	Outdoor unit heat exchanger temperature (Main unit)	-20 ~ (ºC)
04	Inner heat exchanger Temperature 1	The same as above	24	Operation Hz (Main unit CM1)	0 ~ 100 (Hz)
05	Inner heat exchanger Temperature 2	The same as above	25	High pressure	0.0 ~ (MPa)
06	Inner heat exchanger Temperature 3		26	Low pressure	0.00 ~ (MPa)
07	Indoor fan speed		27	Discharge pipe temperature (Main unit CM1)	30 ~ (ºC)
08	Required frequency		28	Compressor dome lower part temperature (Main unit CM1)	-20 ~ (ºC)
09	Response frequency		29	CT current (Main unit CM1)	0 ~ (A)
10	Expansion valve opening	0 ~ 480 (pulse)	37	Expansion valve opening 1 (Main unit)	0 ~ 500 (pulse)
11	Indoor operation time	0 ~ 25500h	38	Expansion valve opening 2 (Main unit)	0 ~ 500 (pulse)

Centralised controllers

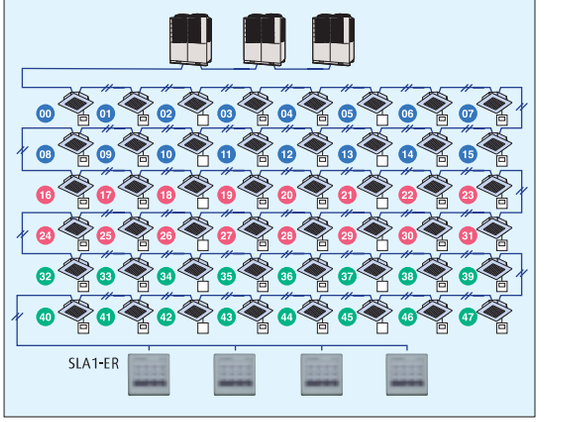
Group On/Off Control SC-SLA1-ER

Start/stop control of up to 16 indoor units either individually or collectively.

Simple centralised control.

1. The SC-SLA1-ER is connected to the Superlink network via 2-core, non-polar wires ('AB' connection).
2. It will monitor and control the start/stop function of up to 16 units, or 16 groups of units, with the sixteen operation switches.
3. The unit or group numbers in operation or in need of service are displayed with an LCD.
4. Collective start/stop is also available through the simultaneous on/off switch.
5. Up to 6 SC-SLA1-ER units can be connected to a Superlink network (consisting of up to 48 indoor units).
6. If a power failure occurs, the SC-SLA1-ER will resume the operation of the system according to a stored operation condition, once power is restored.
7. This centralised controller can be connected anywhere on the Superlink network, at indoor units as well as outdoor units. This can substantially reduce the amount of electrical installation work.
   This feature is common to both SC-SLA1-ER and SC-SLA2A-ER controllers.

Example of control by a centre console SC-SLA1-ER

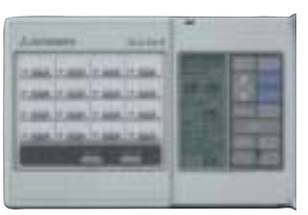


More than one unit (up to 16) can be controlled for individual or collective start/stop operation and indication of unit statuses such as in operation or in need of service.

- Outer dimensions: H120 x W120 x D15+50*mm.

50* is the measurement including the part contained in a recess.

Centre Console SC-SLA2A-ER



Centralised control of up to 48 indoor units.

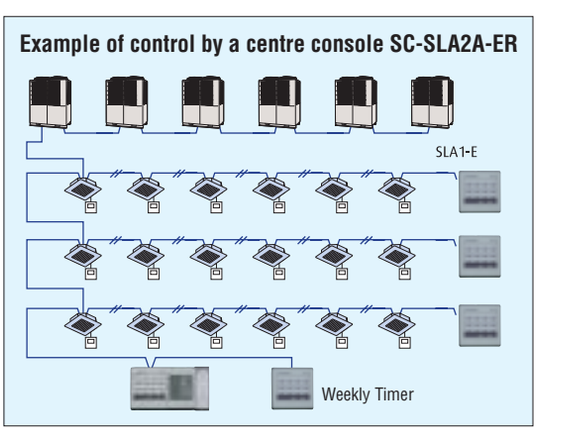
Connection with a weekly timer possible without using any interface.

1. The SC-SLA2A-ER is connected to the Superlink network via 2-core, non-polar wires ('AB' connection).
2. It will monitor and control the start/stop function of up to 16 units, or 16 groups of units, with the sixteen operation switches.
3. It also monitors and controls the following functions for individual units, groups of units or the complete network: operation mode, set point temperature, return air temperature, louvre position, error code.
4. The unit or group numbers in operation or in need of service are displayed with an LCD.
5. Collective start/stop is also available through the simultaneous on/off switch.
6. If a power failure occurs, the SC-SLA1-ER will resume the operation of the system according to a stored operation condition, once power is restored.
7. The SC-SLA2A-ER can be connected to an external timer to facilitate timed on/off cycles.
8. The number of SC-SLA1-ER and SC-SLA2A-ER units connected to one network are detailed on the table below.
9. This centralised controller can be connected anywhere on the Superlink network, at indoor units as well as outdoor units. This can substantially reduce the amount of electrical installation work. This feature is common to both SC-SLA1-ER and SC-SLA2A-ER controllers.

Number of controllers allowed in a network

SC-SLA1-ER	0	1	2	3
SC-SLA2A-ER	3	2	1	1

Example of control by a centre console SC-SLA2A-ER



An SC-SLA2A-ER performs the start/stop control, monitoring and mode setting of up to 48 units. It is a high quality air conditioner control system that allows up to 48 indoor units to be freely grouped into 1 to 16 groups. It allows not only the start/stop control but also the monitoring, indication of operation statuses such as in operation or in need of service and mode setting such as switching of operation modes of connected units collectively, by group or individually.

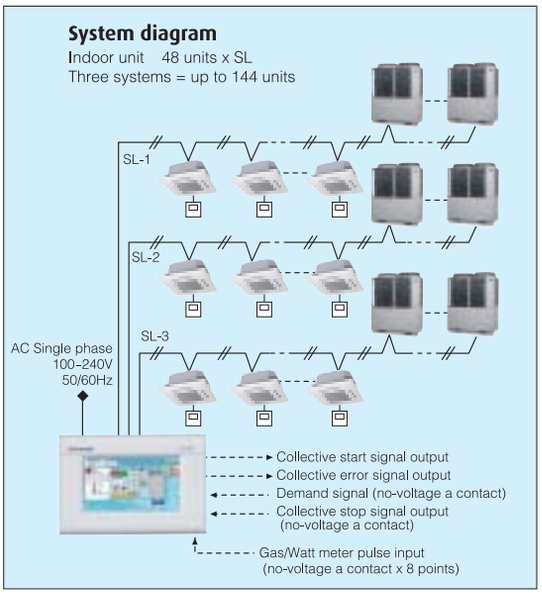
- Outer dimensions: H120 x W180 x D16+50*mm.

50* is the measurement including the part contained in a recess.

KX4 Controls options: Touch screen centralised controller SC-SLA3-ER/ SC-SLB3-ER

MHI introduces the full colour touch screen central controller SC-SLA3-ER/SC-SLB3-ER, with 7 inch interactive LCD display. Offers control, monitoring, scheduling and service/maintenance functions for up to 144 indoor units.

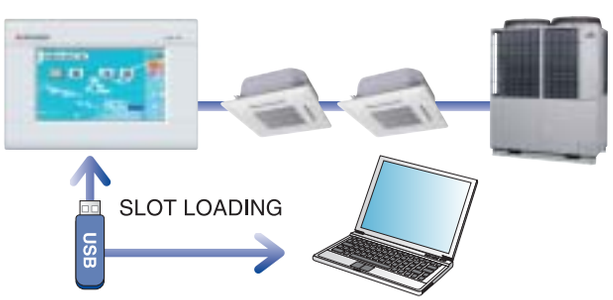
Indoor units can be controlled, scheduled, monitored and interrogated either individually, as groups or as blocks of groups with the following functions:



Control	Monitoring	Scheduling	Administration/Service
Run/Stop	Operating state	Yearly schedule	Block definition
Mode (cool/heat/fan)	Mode	Today's schedule	Group definition
Set temperature	Set temperature	Special day schedule	Unit definition
Operation permitted/prohibited	Room temperature		Time and date setting
Fan speeds	Operation enabled		Alarm history
Air direction	Fan speed		Energy consumption calculation period
Filter reset	Air direction		Energy consumption cumulative operation time
Filter sign			
Maintenance (1, 2 or back-up)			Demand control
Breakdown			Emergency stop
			Power failure recovery control

Electric power calculation function:

(for SC-SLB3-ER only)
SC-SLB3-ER gives outputs as "electric power consumption kW data -each indoor unit, each group, each SUPERLINK system and each power pulse system-" and uses USB memory.
The data can be edited by using the software that comes with the unit.



	SC-SLB3-ER
Method of data saving	USB
Calculation software	Standard
Air-conditioner power propotional distribution pulse input	8 systems
Signal networkline of Air-conditioner	3 lines (Superlink)
Connecting indoor units number (Maximum)	144

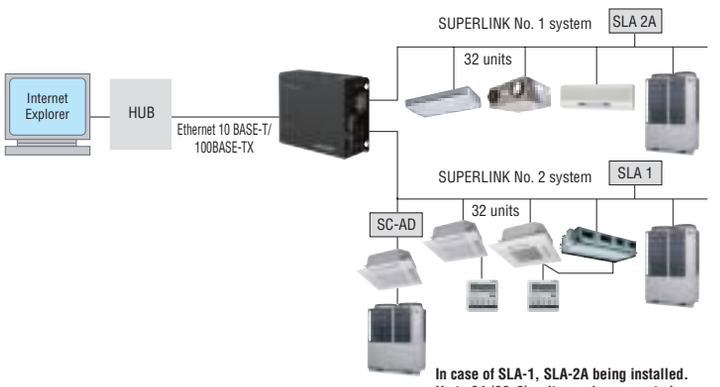
Item	Model	SC-SLA3-ER/SC-SLB3-ER
Ambient temperature during use		0 ~ 40°C
Power supply		1 Phase 100-240V 50/60Hz
Power consumption		18W
External dimensions (Height x Width x Depth)		162mm x 240mm x 108mm
Net weight		2.0kg
Maximum number of connectable units (indoor units)		Maximum 48 units system x 3 systems = 144 units
LCD touch panel		Colour LCD, 7 inches wide
Inputs	SL (Superlink) Signal inputs	3 systems
	Gas, Power pulse input*	8-point pulse width 100ms or more
	Fire signal input*	1 point non-voltage a contact input continuous input (closed, forced stop)
	Demand signal input*	1 point non-voltage a contact input continuous input (closed, demand control)
Outputs	Simultaneous operation output	1 point maximum rated current 40mA, 24 V During full stop; Open. If even one unit is operating; Closed
	Simultaneous error output	1 point maximum rated current 40mA, 24 V Normal; closed. If even one unit is abnormal; Open

* The receiving side power supply is DC 12V (10mA).
The air conditioning charges calculations of this unit are based on OIML, the international standard.
* In case embodying in a wall, please be sure to special box SLA3R-BX (option).

PC windows centralised controller SC-WGW-AR/SC-WGW-BR

(SC-WGW-BR is with electric power calculation function)

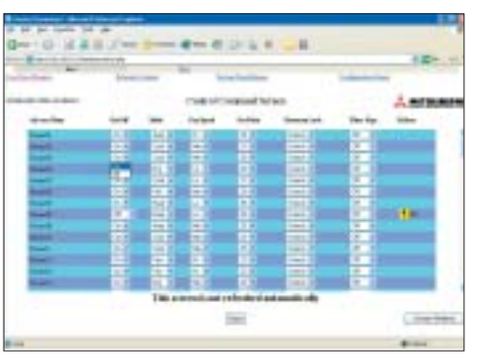
Control and monitoring of up to 96 indoor units centralised to a network PC using the Superlink web gateway. Simple installation is assured with no special software requirements, operation is via Internet Explorer. A low power embedded CPU and compact flash ROM ensure a large storage capacity with high reliability (no moving parts such as a PC fan, etc). An IP address filter function combined with three-level user authentication check also ensures security. In case of SC-SLA1-ER or SC-SLA2A-ER being installed, up to 64(32x2)indoor units can be connected. SC-SLA3-ER/SC-SLB3-ER can't be installed.

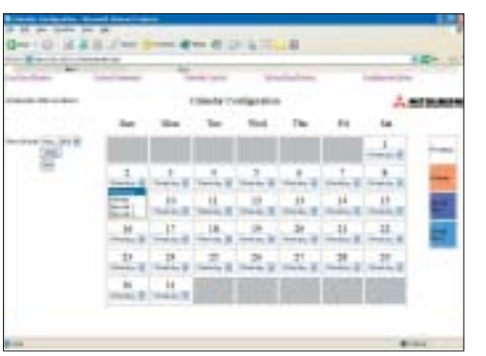


In case of SLA-1, SLA-2A being installed. Up to 64 (32x2) units can be connected.

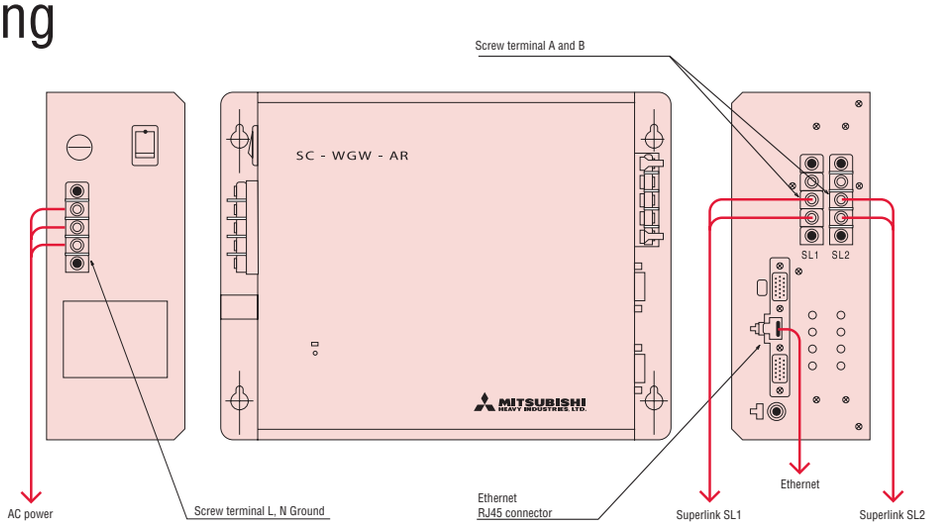
Control Functions	Monitoring functions
Run/Stop	Run/Stop
Mode	Mode
Set temperature	Set point
Fan speed	Fan speed
Filter sign reset	Filter sign
Remote lock/unlock	Room temperature
System stop	Alarm
Yearly timer	Error code
	Remote lock/unlock

PC requirements: Windows 2000 or Windows XP. Monitor resolution 1024 x 768.
Web browser requirements: Internet Explorer 6.0 or later.



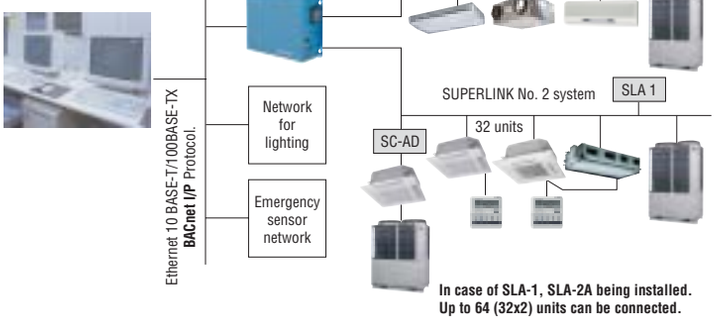


SC-WGW-AR wiring



KX4 Controls options:
BACnet gateway BMS interface SC-BGW-AR

SC-BGW-AR is an interface device that converts MHI's Superlink communication data to BACnet code. Control and monitoring functions of the a/c system for up to 96 indoor units can be integrated to a central control point via the building management system network. In case of SC-SLA1-ER or SC-SLA2A-ER being installed, up to 64(32x2)indoor units can be connected. SC-SLA2A-ER/SC-SLB3-ER can't be installed.



Function list

Control functions

1 ON/OFF COMMAND
Control the Operation/Stop (On/Off) of each indoor unit.

2 MODE COMMAND
Conduct setting of the operation mode (automatic, cooling, air supply, heating) of each indoor unit.

3 SETPOINT COMMAND
Determine the set temperature of indoor unit. Set value is set in the unit of 1°C. The scope is 18-30°C.

4 FAN SPEED COMMAND
Send fan speed select command (Hi, Me, Lo) to an indoor unit.

5 FILTER SIGN RESET COMMAND
Reset the filter sign of each indoor unit.

6 REMOCON LOCK/UNLOCK COMMAND
Implement the setting of control room operation permit/prohibit.
The function of uniform permit/prohibit of remote controller functions.

7 SYSTEM STOP SETTING
Immediately stop the indoor unit under control, and prohibit operation from the remote controller.

Monitor functions

1 ON/OFF STATUS
Inform the operation/stop status of each indoor unit.

2 OPERATION MODE STATUS
Inform the setting of operation mode of each indoor unit.

3 SETPOINT STATUS
Inform the temperature setting of indoor unit.

4 FAN SPEED STATUS
Monitor fan speed select status of indoor unit.

5 FILTER SIGN STATUS
Inform the filter sign that urges the cleaning of air suction filter of indoor unit.

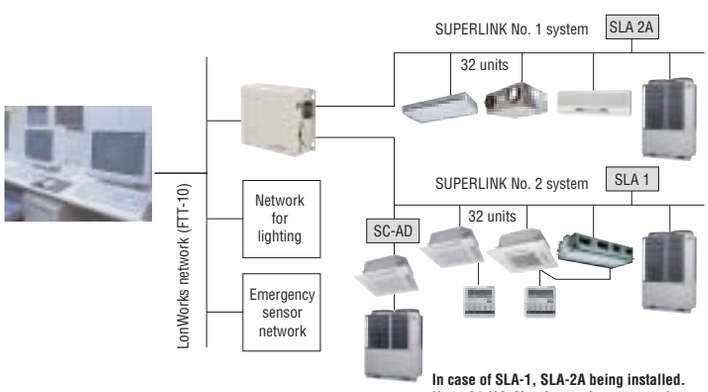
6 ROOM TEMPERATURE STATUS
Inform the temperature of air return sensor of indoor unit (room temperature).

7 FAILURE STATUS
Inform with/without failure of indoor unit.

8 INDOOR UNIT COMMUNICATION STATUS
Inform whether this interface equipment can communicate with each indoor unit.

LONworks gateway BMS interface SC-LGW-AR

SC-LGW-AR is an interface device that converts MHI's Superlink communication data to LONworks code. Control and monitoring functions of the a/c system for up to 96 indoor units can be integrated to a central control point via the building management system network.
In case of SC-SLA1-ER or SC-SLA2A-ER being installed, up to 64(32x2)indoor units can be connected. SC-SLA3-ER/SC-SLB3-ER can't be installed.



Function list

Control functions

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Control the Operation/Stop (On/Off) of each indoor unit.

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Reset the filter sign of each indoor unit.

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Implement the setting of control room operation permit/prohibit.
The function of uniform permit/prohibit of remote controller functions.

7 SYSTEM STOP SETTING
Immediately stop the indoor unit under control, and prohibit operation from the remote controller.

Monitor functions

1 ON/OFF STATUS
Inform the operation/stop status of each indoor unit.

2 OPERATION MODE STATUS
Inform the setting of operation mode of each indoor unit.

3 SETPOINT STATUS
Inform the temperature setting of indoor unit.

4 FAN SPEED STATUS
Monitor fan speed select status of indoor unit.

5 FILTER SIGN STATUS
Inform the filter sign that urges the cleaning of air suction filter of indoor unit.

6 ROOM TEMPERATURE STATUS
Inform the temperature of air suction sensor of indoor unit (room temperature).

7 FAILURE STATUS
Inform with/without failure of indoor unit.

8 SYSTEM STOP STATUS
Monitor all air-conditioner forced off status.

External switch connection CnT

All KX4 indoor units are equipped with an additional connection point – CnT – to connect indoor units to an external ON/OFF switch; e.g. time clock, fire alarm, etc.

XR1: Operation Output – Outputted when unit is in operation.

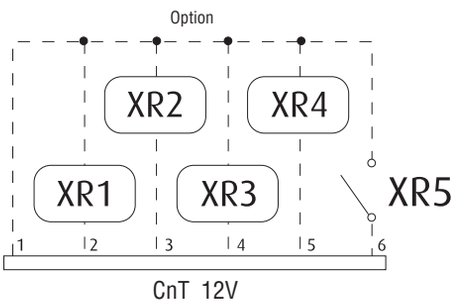
XR2: Heating Output – Outputted when the mode is HEATING.

XR3: Thermo ON Output (KX4) – Outputted when the compressor is in operation.

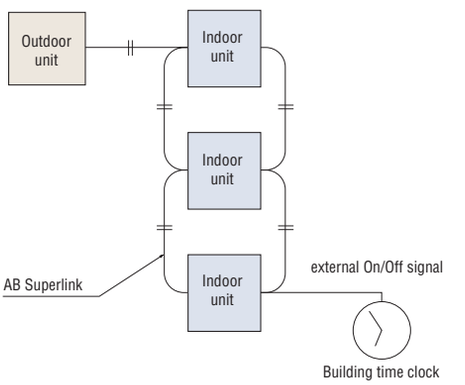
PFD box control Output (KXR4) – Coil on PFD box is controlled by this signal.

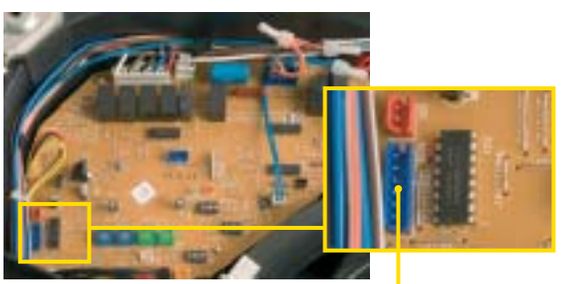
XR4: Inspection Output – Outputted when Error occurs.

XR5: Remote Operation Input – Inputted to operate the unit.



CnT: 12VDC Operation Input/Output, Error output

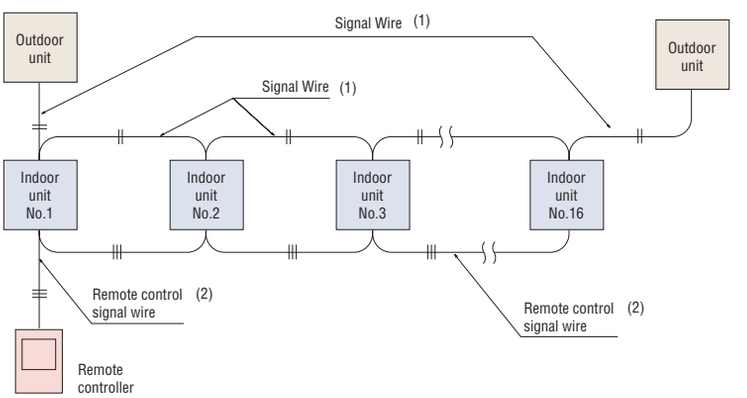




4-way cassette PCB
FDTA28

Simultaneous multiple unit control:

It is also possible to control up to 16 indoor units (even if connected to different outdoor units) simultaneously connected to a single wired controller. The operation mode can be set together with RUN/STOP function and if a unit in the group encounters a fault, an abnormal stop will be registered for that unit, however all other units in the group will continue to operate.



Notes (1) The overall length of the signal wire shall be less than 1000m.
(2) The lengh of remote control signal wire and crossover for remote controller between rooms shall be less than 600m

KX4 Service/maintenance and monitoring

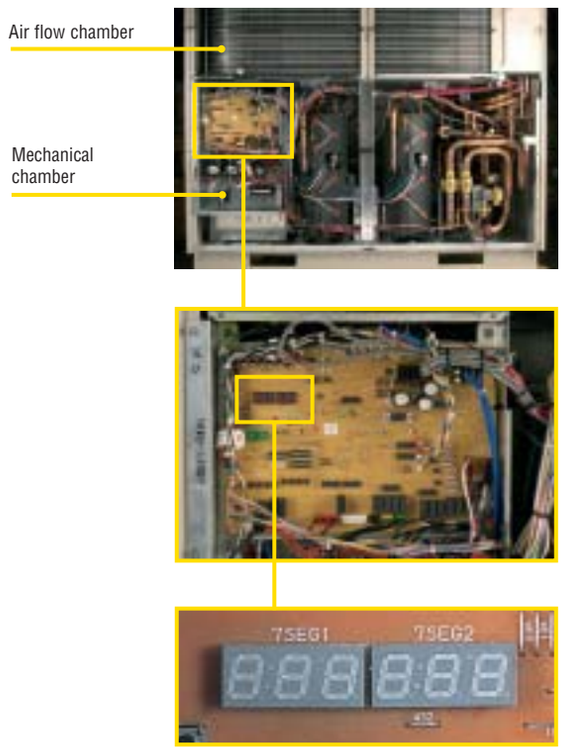
The design of the outdoor units separates the air flow compartment from the mechanical compartment, allowing easy access to serviceable parts by simply removing the panel.

This design also means that the base plate of the air flow compartment acts as a drain tray connected to a drain pipe that runs through the mechanical compartment, so a simple connection of a drain hose to the base of the unit is all that is required, no need for a separate drain tray to be installed.

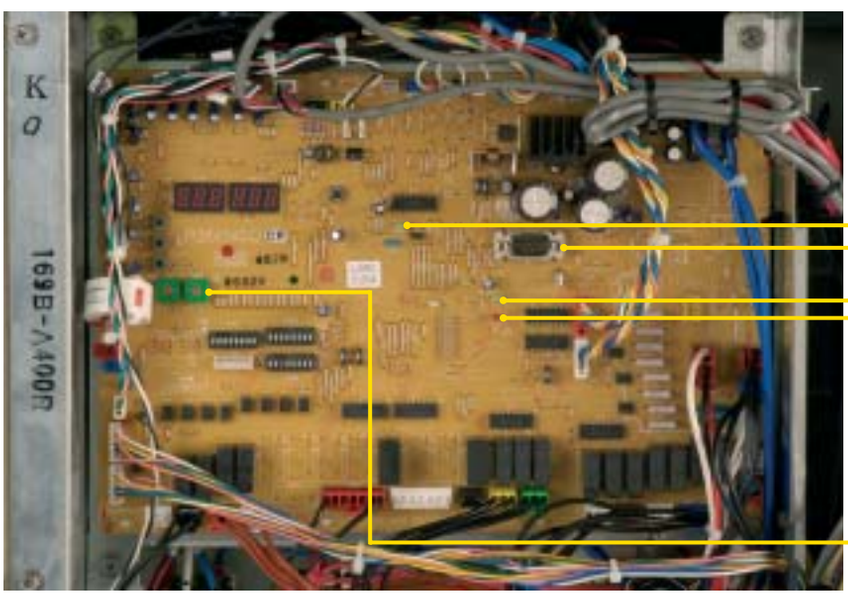
Service maintenance and trouble shooting tasks can be carried out easily via the wired remote controller, as well as a cooling test operation to assist commissioning.

The outdoor unit control box is also equipped with a switch to invoke a 'test-run' mode. This function can be used to help detect any installation errors, indoor/outdoor unit matching errors, EEV and valve operation. A 'pump-down' switch on the PCB allows refrigerant to be recovered with the compressor protected.

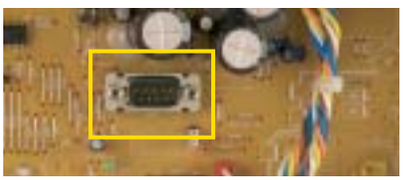
All outdoor unit PCBs are also equipped with a 7-segment digital display for detailed operation history and fault finding. Operation data is stored for the 30 minute period preceding a fault occurring and details are displayed on the 7-segment reading.



Outdoor unit PCB 7-segment display

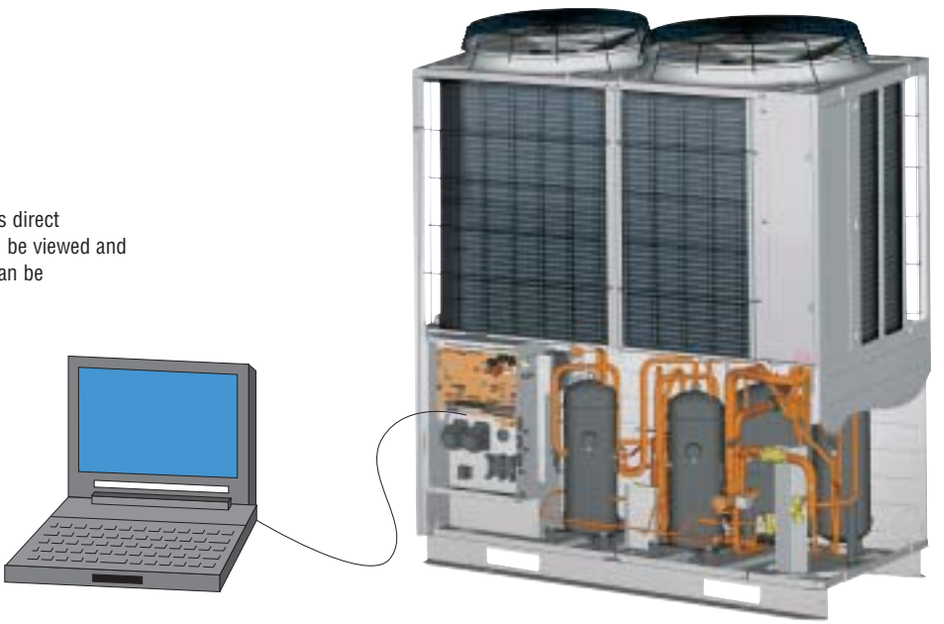


MHI also offer a comprehensive service software tool - Mente PC - that permits detailed interrogation of the KX4 system, making service and trouble shooting easy.

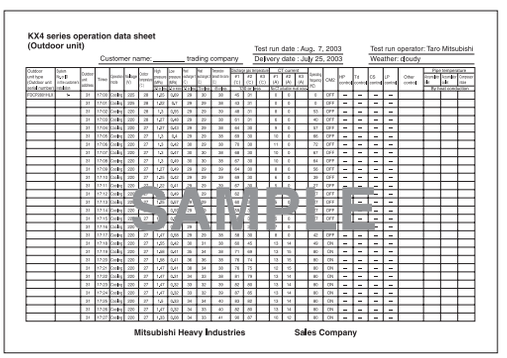


An RS232C connecter on the outdoor unit PCB allows direct connection to a PC or PDA, where operation data can be viewed and stored, as well as producing test run reports which can be downloaded to the PC.

Real time monitoring and control is also possible through the Mente PC software.



Automatically produced test-run report

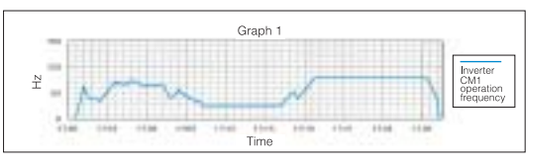


KX4 series operation data sheet
(Outdoor unit)

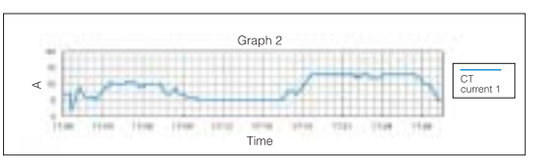
Customer name: _____ trading company
Test run date : Aug. 7, 2003
Delivery date : July 25, 2003
Test run operator: Taro Mitsubishi
Weather :cloudy

Mitsubishi Heavy Industries
Sales Company

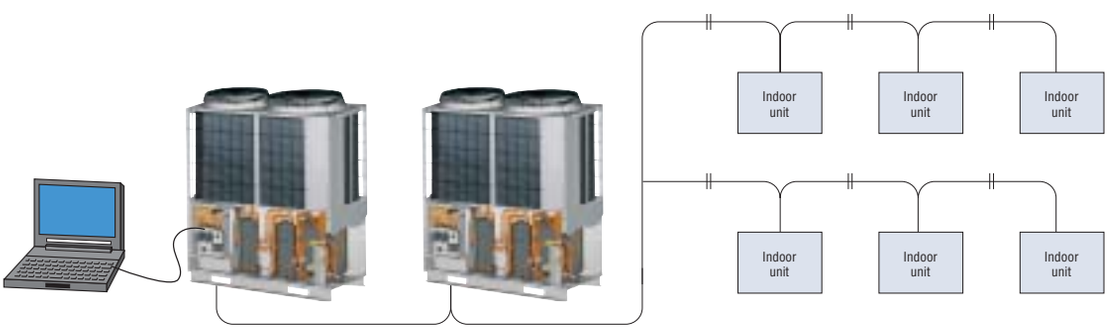
Operation data storage during servicing



Operation data storage when a fault occurs



Method of connecting Mente PC in the combination Multi system



Mitsubishi Heavy Industries KX4/further information

Mitsubishi Heavy Industries operates a continuous CSR (Corporate Social Responsibility) policy, with a role to realise a sustainable society through it's various areas of business.

Creed

- We strongly believe that the customer comes first and that we are obliged to be an innovative partner to society.
- We base our activities on honesty, harmony, and a clear distinction between public and private life.
- We shall strive for innovative management and technological development from an international perspective.

Reason for Instituting the Creed

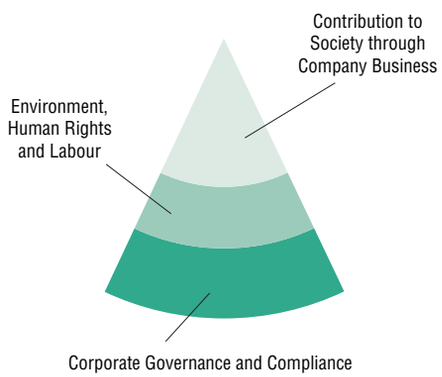
In Japan there are many enterprises with their own "creeds" which simply represent their management concept.

Mitsubishi Heavy Industries, Ltd. has a creed of this type, also. It was instituted in 1970 on the basis of the policy advocated by Koyata Iwasaki, president of Mitsubishi Goshi Kaisha in the 1920's, to indicate the essential attitude of the company, the mental attitude of the employees, and the future directions of the company.

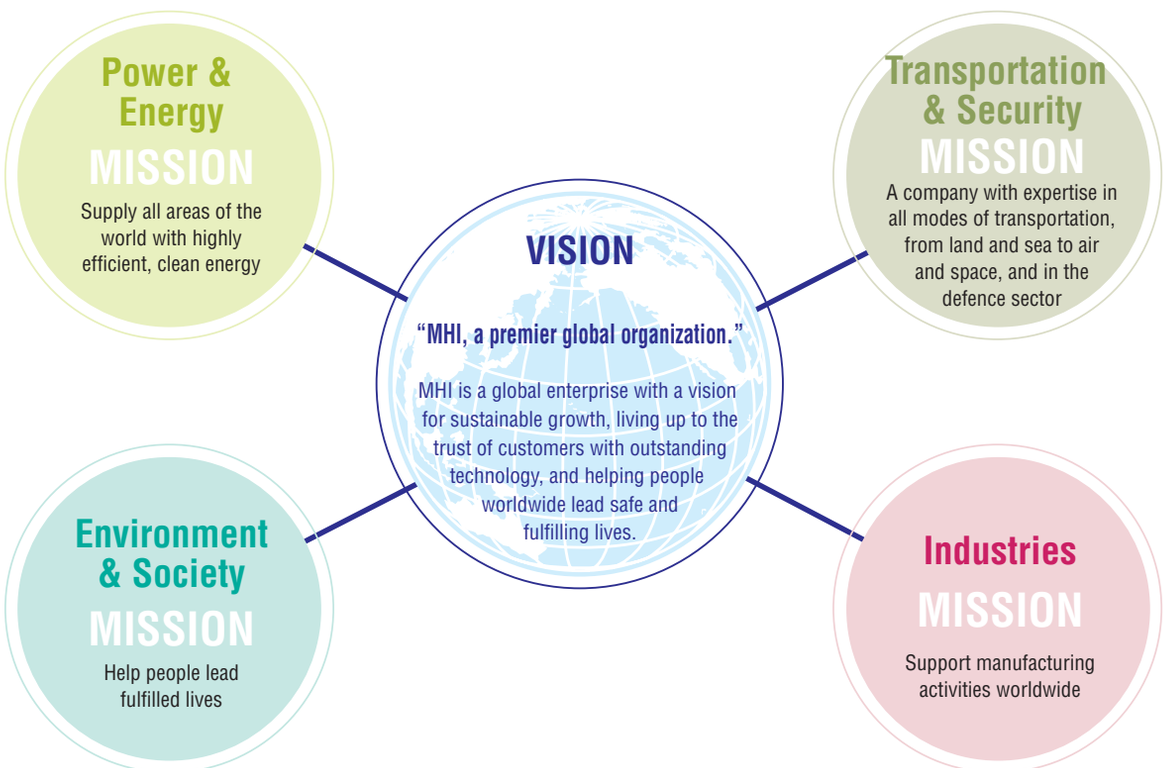
The reason for instituting the present creed is so that all of us can call to mind our one hundred years of tradition, and strive for further development in the future.

Issued 1 June 1970

MHI's creed was established based on "The Three Corporate Principles" shared by the Mitsubishi Group from the company's beginnings. In the spirit of this creed, MHI continues its efforts to fulfil its three corporate social responsibilities (CSRs): "corporate governance and compliance," "the environment, human rights and labour," and "contribution to society through business activities."



Contribution to Society through Company Business



The KX4 product range has been developed in compliance with the Mitsubishi Heavy Industries Policy on the Environment.

In order to make the sustainable development of society possible, a basic policy on environmental matters has been established.

Pursuant to the express provision of Section 1 of its creed that "We strongly believe that customers come first and that we are obligated to be an innovative partner to society," MHI shall, as a matter of primary importance, strive, through its R&D, manufacturing and other business activities, to play a useful role in the development of society. To this end, while remaining aware that a business enterprise is a member of society, MHI shall endeavour, in all aspects of its business activities, to reduce the burden on the environment and shall concentrate and fully utilise its technological capabilities for the development of technologies and products that will protect the environment, thus contributing to the establishment of a society in which sustainable development is possible.

In order to realise its basic policy, MHI has set the following seven conduct guidelines.

1. Recognise that environmental protection is top priority in the company's operations, and encourage the entire company in its endeavours to protect and improve the environment.
2. Define roles and responsibilities regarding environmental protection by developing and maintaining a corporate organisation designated for environmental protection, and create and implement corporate policies and procedures on environmental matters.
3. Endeavour to reduce the burden on the environment by preventing pollution, saving resources, saving energy, reducing waste, reusing materials, and recycling in all aspects of the company's business activities in R&D, designing, procurement of materials, manufacturing, transportation, use, service and disposal.
4. Endeavour to develop and provide advanced, highly reliable, unique technologies and products that contribute to solving environmental and energy problems.
5. Comply with national and local environmental laws and regulations, beyond mere compliance by enacting, implementing and evaluating voluntary standards where necessary, and to endeavour to continuously improve and promote environmental protection activities by establishing environmental goals and targets.
6. Endeavour to protect the environments of foreign countries by carefully examining the consequences of the company's overseas business operations and the exportation of its products, and to become actively involved in technological co-operation overseas in areas of environmental protection.
7. Provide environmental training and other programs to enhance the environmental awareness of all company employees, and take steps to expand public relations activities, such as providing environment-related information to the public and social contribution activities.

ISO9001
Our Air Conditioning & Refrigeration Systems Headquarters is an ISO9001 approved factory for residential air conditioners and commercial-use air conditioners (including heat pumps).

BIWAJIMA PLANT
Mitsubishi Heavy Industries, Ltd.
Air-conditioning & Refrigeration Systems Headquarters
Certified ISO 9001
Certificate number : JQA-0709
Date of certification : December 16, 1994

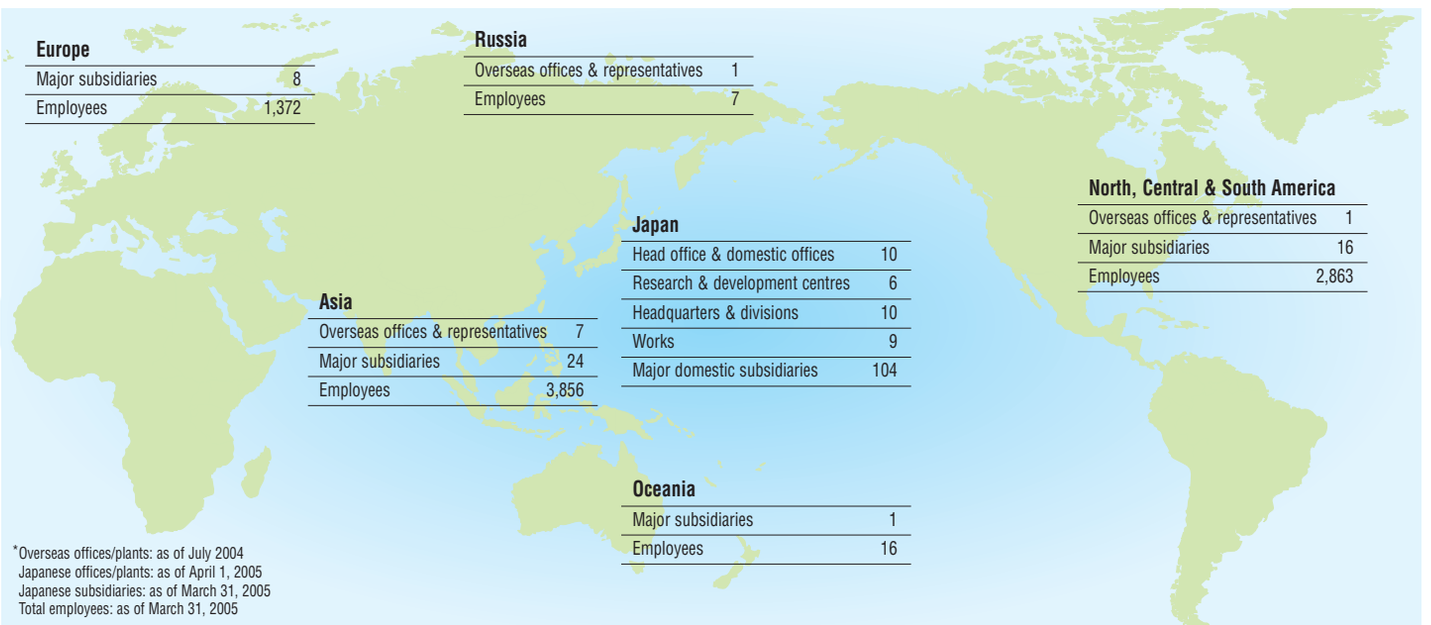
MITSUBISHI HEAVY INDUSTRIES-MAHAJAK AIR CONDITIONERS CO., LTD.
Certified ISO 9001
Certificate Number : 04100 1998 0813
Date of Registration : October 1998

ISO14001
Our Air Conditioning & Refrigeration Systems Headquarters has been assessed and found to comply with the requirements of ISO14001.

BIWAJIMA PLANT
Mitsubishi Heavy Industries, Ltd.
Air-conditioning & Refrigeration Systems Headquarters
Certified ISO 14001
Certificate number : JQA-EM0256
Date of certification : November 20, 1998

Mitsubishi Heavy Industries-Haier (Quingdao) Air-conditioners Co.,Ltd.
ISO14001

Number of offices/plants and employees by region (Consolidated)*



Europe

Major subsidiaries	8
Employees	1,372

Russia

Overseas offices & representatives	1
Employees	7

North, Central & South America

Overseas offices & representatives	1
Major subsidiaries	16
Employees	2,863

Japan

Head office & domestic offices	10
Research & development centres	6
Headquarters & divisions	10
Works	9
Major domestic subsidiaries	104

Asia

Overseas offices & representatives	7
Major subsidiaries	24
Employees	3,856

Oceania

Major subsidiaries	1
Employees	16

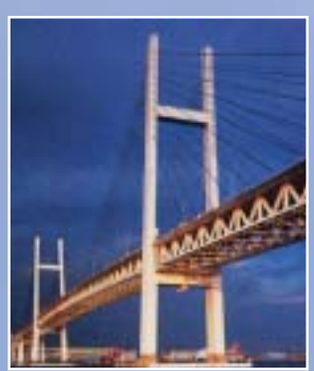
*Overseas offices/plants: as of July 2004
Japanese offices/plants: as of April 1, 2005
Japanese subsidiaries: as of March 31, 2005
Total employees: as of March 31, 2005

On the land and sea, in the sky and even in space, MHI's stage of operations is expanding limitlessly. We manufacture more than 700 different products which support various industrial and civil activities in both domestic and international markets.

Ships, steel structures, power systems, machinery for both industrial and general use, air-conditioners, pollution reduction and environmental control systems, aerospace systems – the MHI product lines which create rich and comfortable living environments, are as harmonious as an orchestra.

What creates this harmony is MHI's general technological expertise developed over more than a century of hard work. We are highly esteemed in the world for providing high quality products through untiring technological research and development. From new energy development and environmental concerns to the exploration of space, with the advent of the 21st century MHI is confronting a variety of issues to ensure the realisation of a society in which there is harmony between mankind and technology.

- Crude Oil Storage Barges
- LNG Tanks
- Boilers & Turbines
- Oil Production Plants
- Contra-Rotating Propellers
- Thermal Power Plants
- Combined Cycle Plants
- Fuel Cells
- Water Turbines
- Wind Turbines
- Geothermal Power Plants
- PWR Nuclear Power Plants
- Uranium Enrichment Equipment
- FBRs
- Co-Generation Systems



- Ultra-High Steel Stacks
- Refuse Incineration Plants
- Night Soil Treatment Plants
- Electrostatic Precipitators
- Flue Gas Desulfurization System
- Fluidized Incinerators
- CFC Collecting Equipment

- Spillway Radial Gates
- Steel Bridges
- Penstocks
- Desalination Plants
- Physical Distribution Equipment
- Engines

- Unloader & Container Cranes
- Mechanical Parking Facilities
- Integrated Automated Storage Systems
- Rubber & Tyre Machinery
- Skyrails
- Monorail Cars
- New Transportation Systems
- Passenger Boarding Bridges

- Toll Collection Machine Systems
- Forklift Trucks
- Helicopters
- Aircraft
- Railway Maintenance Equipment
- LNG Carrier
- Container Ships

TRANSPORTATION
LOCAL DEVELOPMENT
ENVIRONMENT
RESOURCES/ENERGY

MITSUBISHI HEAVY INDUSTRIES, LTD.

INDUSTRIAL

- Chemical Plants
- Wind Tunnel/Experiment Equipment
- Casting Machines
- Strip Mill
- Cement Plant
- Stepless Variable Speed Gears
- Industrial Robots
- Injection Moulding Machines
- Pulp & Paper Machinery
- Corrugation Machines
- Box Making Machines
- Machine Tools

LEISURE/LIFESTYLE

- Ceiling Recess Packaged Air Conditioners
- Automotive Air Conditioners
- Residential Use Split Air Conditioners
- Refrigeration Units
- Dry Cleaning Machines
- Food Machinery
- Cruise Ships
- Multi-purpose Dome
- Stage Machinery Systems

INFORMATION SYSTEM

- Cable Layer
- Printing Machinery

DEVELOPMENT

- Oceanographic Research Ships
- Deep Submergence Research Vehicles
- Communications Satellite Rockets
- Space Transportation
- Rockets & Engines

DEFENCE

- Submarines
- Naval Vessels
- Jet Fighters
- Helicopters
- Missiles
- Tanks & Infantry Fighting Vehicles

MITSUBISHI HEAVY INDUSTRIES, LTD.

Japan Head Office:
Mitsubishi Heavy Industries Ltd
16-5 2-Chome Kounan Minato-ku Tokyo
108-8215, Japan
www.mhi.co.jp

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Mitsubishi Heavy Industries-Haier (Quingdao) Air-conditioners Co., Ltd.
ISO14001

CE

Because of our policy of continuous improvement, we reserve the right to make changes in all specifications without notice.

HB-91-07P01E-B-0