

Air Conditioners

Multi Liberty
DC Inverter

Highwall type Indoor Units:

HKEU 206 X
HKEU 266 X
HKEU 356 X
HKEU 536 X

60 x 60 Cassette type Indoor Units:

HTFU 206 X
HTFU 266 X
HTFU 356 X
HTFU 536 X

Console type Indoor Units:

HFIU 266 X
HFIU 356 X
HFIU 536 X

Floor/Ceiling type Indoor Units:

HSFU 356 X
HSFU 536 X

Low Ducted type Indoor Units:

HRBU 206 X
HRBU 266 X
HRBU 356 X
HRBU 536 X



DUAL Outdoor Units:

HCKU 406 X2
HCKU 536 X2

TRIPLE Outdoor Units:

HCKU 606 X3
HCKU 806 X3

POKER Outdoor Units:

HCKU 706 X4
HCKU 816 X4
HCKU 1066 X4

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Section 1: GENERAL INFORMATION

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1. GENERAL INFORMATION

1.1 GUIDELINES TO CONSULTATION & WARNINGS

This Manual describes operation, installation and procedures for solving operation malfunctions of HOKKAIDO Air Conditioners "Multi Liberty DC Inverter" with Indoor Units Highwall, 60 x 60 Cassette, Console, Floor/Ceiling and Low Ducted type. Up to 4 Indoor Units can be connected to the different Models of Outdoor Units.

This Manual is addressed to Installers and to Authorized Technical Service, that is charged to interventions for malfunction diagnosis and for repairing and/or servicing of system.

This Manual implies that Installers and Authorized Technical Service do know well the equipments and tools which are usually used for repairing electric, mechanical parts and refrigerant components of air-conditioning systems with R410A refrigerant. Furthermore, people who this Manual is addressed to should know terms of current use that are used for describing relevant operations.

In particular, it is recommended to read and follow carefully Safety Precautions and Warnings that are listed in this Manual. Missed observance of above prescriptions may lead to serious injuries to people, and even to death.

■ Relevant Documents

This Manual is not exhaustive about system operation, so it has to be consulted together with the User Manual, the Installation Sheets of Units and Spare Parts List referred to this Models of Units.

■ General Precautions and Warnings



WARNING

In order to avoid the risk of death or of serious personal injuries caused by electric shocks, disconnect the power cable of Units before whatever intervention of repairing or maintenance.



WARNING

In order to avoid the risk of death or of serious personal injuries caused by electric shocks, NEVER tamper with the ground wire for any reason. The appliance must always been equipped with a ground wire. Do not remove the Safety label referred to ground wire, which is on the power cable. If the electric system on installation site is not equipped of ground wire, please contact a qualified Electrician, for conforming electric system to current Regulations.



WARNING

In order to avoid the risk of death or of serious personal injuries caused by overheating of the system's components, it is recommended to always make the system checked for verifying if there are malfunctions or if the system often stops suddenly.



WARNING

In order to avoid the risk of death or of serious personal injuries caused by electric shocks, earth cables and cables whose sheath colour corresponds to ground wires, must not be used for power lines of Phase and Neutral. Standard colour of Ground wires is Green or Yellow/Green. The electric components such as compressor and fan motors are provided of an individual Ground wire, connected to a metal part of the appliance. When interventions of repairing or maintenance are carried out, the above Ground wires must not be disconnected, unless dismantling and replacing of components are needed. Before ending whatever intervention of repairing or maintenance, it is extremely important to connect again all Ground wires eventually disconnected before.

1.2 ESSENTIAL FEATURES OF THESE MODELS

➤ Ozone friendly R410A refrigerant

R410A refrigerant does not damage ozone at all (ODP=0), thus reducing the environmental impact of system.

➤ Advanced control for malfunction diagnosis

In case of eventual operation malfunctions, they will be shown by “Error Codes” on LED Display of Highwall Indoor Units (HKEU X), or by codified flashings of indicators placed on frontal panel of the other types of Indoor Units (HTFU X, HFIU X, HSFU X, HRBU X). In the end, autodiagnosis functions foresee the display of Error Codes on LED Display integrated in each Outdoor Unit’s PCB.

All this allows targeted and therefore quicker interventions for solving of eventual malfunctions.

➤ Operation control of Indoor Units by infrared remote control (IR)

On IR remote control, there is a wide range of options, that is:

☞ On all Indoor Units, the possibility to program Timer operation (“Timer On”, or “Timer Off”) of system - also in combined way (Timer On followed by Timer Off, or vice versa) - within max. 24 hours.

☞ On Highwall Indoor Units (HKEU X), “SLEEP” function allows automatic gradual adjustment of set temperature, for reaching a higher comfort degree during rest.

☞ On Cassette type (HTFU X), Console type (HFIU X), Ceiling/Floor type (HSFU X) and Low Ducted type (HRBU X) Indoor Units, “ECO(NOMIC)” or “Energy Saving” function, (fan turns at Low speed), allows to save energy consumptions and reduce operation noise level, for reaching a higher comfort degree during rest.

☞ On the contrary, if you need to reach temperature value set by remote control quicker, on Highwall Indoor Units (HKEU X) it is available “TURBO” function, while on Console Indoor Units (HFIU X) it is available “POWERFUL” function. In both cases, Indoor Units operate in powerful mode.

☞ On all Indoor Units, except HRBU X Models, “SWING” function (automatic swinging of air outlet flaps) allows a better distribution of air supplied in the room by Indoor Unit, by orienting the airflow upwards to downwards and vice versa.

☞ Moreover, on Ceiling/Floor Indoor Units (HSFU X), it is available the function of automatic swinging of air outlet flaps from right side to left side and vice versa (“WIDE ANGLE”), for allowing a better distribution of air supplied by Indoor Unit, in horizontal direction too.

☞ On Highwall Indoor Units (HKEU X), “FOLLOW ME” function (activation of room temperature sensor integrated in IR remote control, instead of Indoor Unit’s sensor), allows to obtain adjustment of room temperature according to comfort needs of people inside the room.

➤ Automatic restart of Units after a power failure

All types of Indoor Units are able to restart according to the settings that were selected before the

blackout. This means that there is no need to use the IR remote control.

☞ However, if “TIMER” operation had been previously selected, it will be cancelled and need to be set again.

☞ “SLEEP” function on Highwall Models (HKEU X), must be expressly be selected again as well.

☞ If automatic swinging (“SWING”) of air outlet flaps were active when the blackout occurred, must expressly be selected again.

➤ **Devices for a higher salubrity of air**

☞ Highwall Indoor Units (HKEU X) are equipped with ionizer (“CLEAN AIR” function), that can be activated by IR remote control.

☞ Console Indoor Units (HFIU X) are equipped with 2 special antiformaldehyde filters, which are able to absorb eventual bad smells inside the room.

☞ All types of Indoor Units (except Low Ducted Models HRBU X) are equipped with series of mechanical filters (polypropylene net filters) on air inlet, that can be easily reached for peridocal cleaning.

➤ **Operation in Heating mode also at very low outdoor temperature**

☞ These systems are able to operate in Heating mode also if outdoor temperature is very low: the lowest value of operating range in Heating mode is - 15°C.

➤ **Appearance and functions: Indoor Units**

☞ Operation in Emergency mode: also if the IR remote control is temporarily unavailable or malfunctioning, in any case it will be possible to start the Indoor Units in Cooling mode (Test Mode) or in “Auto Mode”. To that end, it will be necessary to press the special button “AUTO/COOL” or “MANUAL” placed on LED Display of each Indoor Unit.

☞ Highwall Indoor Units (HKEU X) have a modern design, characterized by a flat frontal panel so as to fit harmoniously in residential environments. The frontal panel automatically opens when Indoor Unit is started.

☞ On Cassette Indoor Units 60 x 60 (HTFU X), it is possible to raise the condensate drain pump up to 360mm from the drain socket.

☞ On Console Indoor Units (HFIU X), it is possible to make the air being supplied by upper outlet only.

☞ The wide lighted display on Highwall Indoor Units (HKEU X), allows to control the operating state of system. It also shows set value of room temperature.

➤ **Appearance and functions: Outdoor Units**

☞ Outdoor Units' chassis is protected against corrosion by antirust treatment (galvanization) of plates.

☞ The refrigerant fittings (service valves) and the electrical wirings (terminal blocks) are protected against atmospheric agents (infiltrations of rainwater) by panels and service covers.

☞ Protective grille of outdoor fan has a new design.

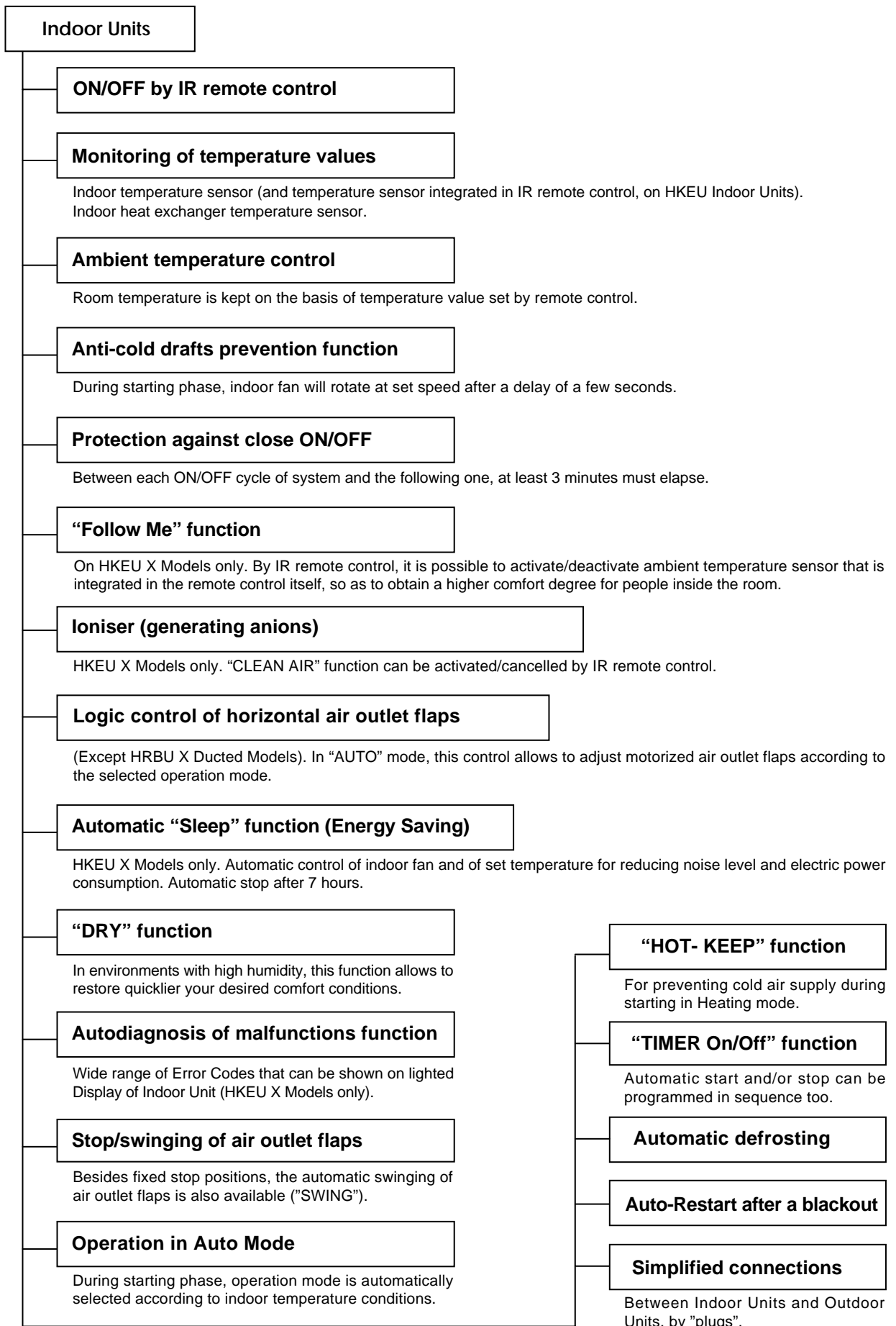
- ☞ The profile of fan's moving part allows to reduce the disturbance phenomena during air circulation inside Outdoor Unit.
- ☞ The 4-way valve coil is powered during operation in Heating mode only.
- ☞ The special fins on Outdoor Unit's heat exchanger allow to obtain a higher efficiency in heat exchange.

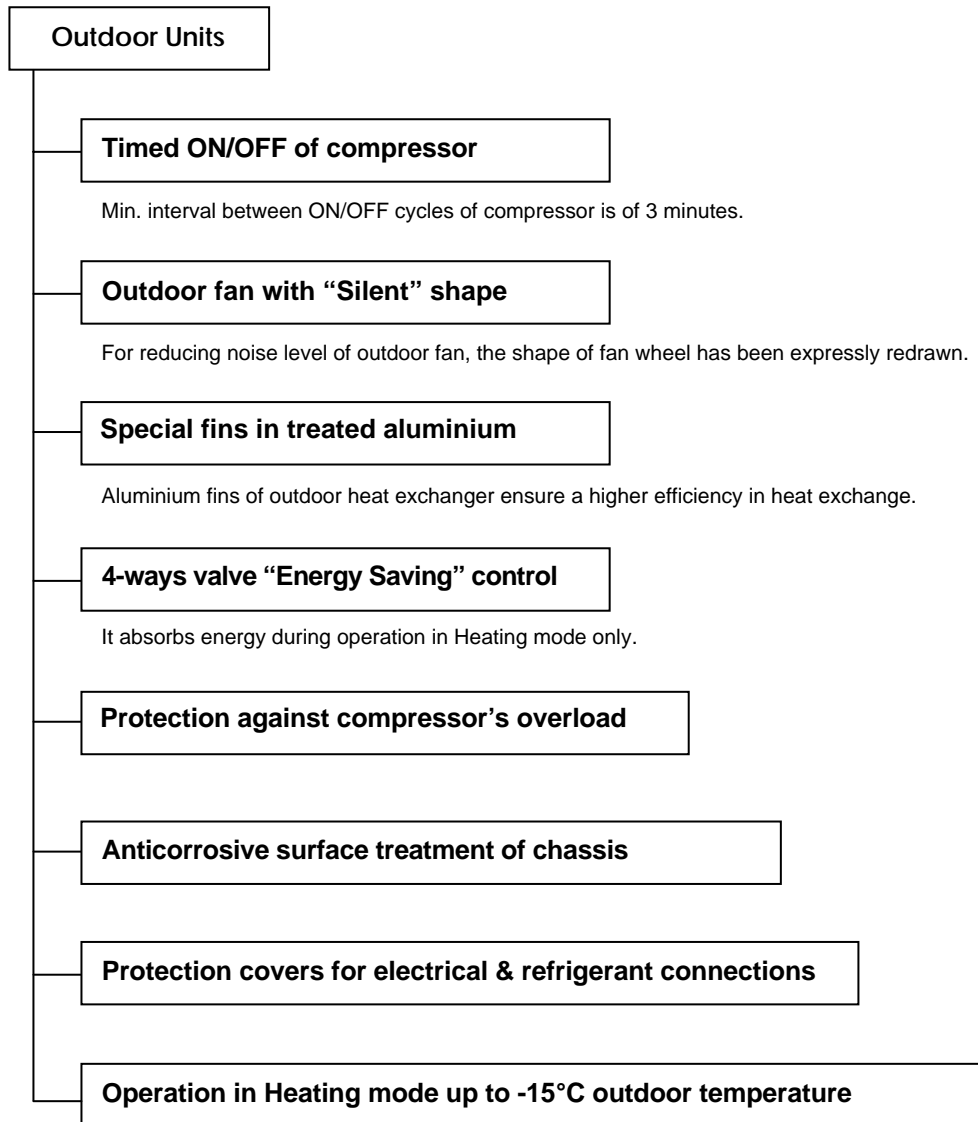
➤ **Operation control of compressor by "Sine Wave Inverter: 180°" technology**

Thanks to this kind of control on compressor operation, it is possible to obtain the following:

- ☞ A sensible reduction of noise level and vibration made by Outdoor Unit.
- ☞ A remarkable increase in efficiency during compressor operation at low frequencies.
- ☞ An increase in range extent of compressor's operation frequencies (variable from 10Hz up to 130Hz).

■ Outline of available functions & features of “Multi Liberty DC Inverter” Units





1.3 MODEL RANGE OF UNITS

Indoor Units					
kW	Highwall	60x60 Cassette	Console	Floor / Ceiling	Low Ducted type
2,00	HKEU 206 X	HTFU 206 X			HRBU 206 X
2,60	HKEU 266 X	HTFU 266 X	HFIU 266 X		HRBU 266 X
3,50	HKEU 356 X	HTFU 356 X	HFIU 356 X	HSFU 356 X	HRBU 356 X
5,30	HKEU 536 X	HTFU 536 X	HFIU 536 X	HSFU 536 X	HRBU 536 X

Outdoor Units					
kW	"Dual"	"Triple"	"Poker"		
4,00	HCKU 406 X2				
5,30	HCKU 536 X2				
6,00		HCKU 606 X3			
7,00			HCKU 706 X4		
8,00		HCKU 806 X3			
8,10				HCKU 816 X4	
10,60					HCKU 1066 X4

1.4 TABLES OF COMBINATIONS BETWEEN INDOOR & OUTDOOR UNITS

■Combinations of Indoor Units with Outdoor Unit HCKU 406 X2

1 I.U.	2 I.U.	
206	206 + 206	266 + 266
266	206 + 266	266 + 356
356	206 + 356	

Note: In combinations with this Outdoor Unit, it is possible to connect only one Indoor Unit HTFU X, HFIU X, HSFU X, HRBU X.

■Combinations of Indoor Units with Outdoor Unit HCKU 536 X2

1 I.U.	2 I.U.	
206	206 + 206	266 + 266
266	206 + 266	266 + 356
356	206 + 356	356 + 356
536	206 + 536	

Note: In combinations with this Outdoor Unit, the Indoor Unit 536 must be HKEU X type.

■Combinations of Indoor Units with Outdoor Unit HCKU 606 X3

1 I.U.	2 I.U.		3 I.U.	
206	206 + 206	266 + 266	206 + 206 + 206	206 + 266 + 356
266	206 + 266	266 + 356	206 + 206 + 266	266 + 266 + 266
356	206 + 356	266 + 536	206 + 206 + 356	266 + 266 + 356
536	206 + 536	536 + 536	206 + 266 + 266	

Note: In combinations with this Outdoor Unit, it is possible to connect only one Indoor Unit HTFU X, HFIU X, HSFU X, HRBU X, and Indoor Unit 536 must be HKEU X type.

■Combinations of Indoor Units with Outdoor Unit HCKU 806 X3

1 I.U.	2 I.U.			3 I.U.		
206	206 + 206	266 + 266	356 + 356	206 + 206 + 206	206 + 266 + 266	266 + 266 + 266
266	206 + 266	266 + 356	356 + 536	206 + 206 + 266	206 + 266 + 356	266 + 266 + 356
356	206 + 356	266 + 536		206 + 206 + 356	206 + 356 + 356	266 + 356 + 356
536	206 + 536			206 + 206 + 536		

Note: In combinations with this Outdoor Unit, Indoor Unit 536 must be HKEU X type.

■Combinations of Indoor Units with Outdoor Unit HCKU 706 X4

1 I.U.	2 I.U.			3 I.U.		
206	206 + 206	266 + 266	356 + 356	206 + 206 + 206	206 + 266 + 266	266 + 266 + 266
266	206 + 266	266 + 356	356 + 536	206 + 206 + 266	206 + 266 + 356	266 + 266 + 356
356	206 + 356	266 + 536		206 + 206 + 356	206 + 356 + 356	266 + 356 + 356
536	206 + 536			206 + 206 + 536		

4 I.U.		
206 + 206 + 206 + 206	206 + 206 + 266 + 266	266 + 266 + 266 + 266
206 + 206 + 206 + 266	206 + 206 + 266 + 356	266 + 266 + 266 + 356
206 + 206 + 206 + 356	206 + 266 + 266 + 266	
	206 + 266 + 266 + 356	

Note: In combinations with this Outdoor Unit, Indoor Unit 536 must be HKEU X type.

■Combinations of Indoor Units with Outdoor Unit HCKU 816 X4

1 I.U.	2 I.U.			3 I.U.		
206	206 + 206	266 + 266	356 + 356	206 + 206 + 206	206 + 266 + 356	356 + 356 + 356
266	206 + 266	266 + 356	356 + 536	206 + 206 + 266	206 + 266 + 536	266 + 266 + 356
356	206 + 356	266 + 536	536 + 536	206 + 206 + 356	206 + 356 + 356	266 + 366 + 536
536	206 + 536			206 + 206 + 536	266 + 356 + 536	266 + 356 + 356
				206 + 266 + 266	356 + 356 + 356	266 + 356 + 536

4 I.U.		
206 + 206 + 206 + 206	206 + 206 + 266 + 266	206 + 266 + 266 + 356
206 + 206 + 206 + 266	206 + 206 + 266 + 356	206 + 266 + 356 + 356
206 + 206 + 206 + 356	206 + 206 + 356 + 356	266 + 266 + 266 + 266
206 + 206 + 206 + 536	206 + 266 + 266 + 266	206 + 206 + 206 + 356

■Combinations of Indoor Units with Outdoor Unit HCKU 1066 X4

1 I.U.	2 I.U.			3 I.U.		
206	206 + 206	266 + 266	356 + 356	206 + 206 + 206	206 + 266 + 266	266 + 356 + 536
266	206 + 266	266 + 356	356 + 536	206 + 206 + 266	206 + 266 + 536	266 + 536 + 536
356	206 + 356	266 + 536	536 + 536	206 + 206 + 356	206 + 536 + 536	356 + 356 + 356
536	206 + 536			206 + 206 + 536	266 + 266 + 266	356 + 356 + 536
				206 + 266 + 266	266 + 266 + 356	356 + 536 + 536
				206 + 266 + 356	266 + 266 + 536	
				206 + 266 + 536	206 + 356 + 356	

4 I.U.			
206 + 206 + 206 + 206	206 + 206 + 266 + 266	206 + 266 + 356 + 536	266 + 266 + 356 + 356
206 + 206 + 206 + 266	206 + 206 + 266 + 536	206 + 266 + 536 + 536	266 + 266 + 356 + 536
206 + 206 + 206 + 356	206 + 206 + 536 + 536	206 + 266 + 266 + 356	266 + 356 + 356 + 356
206 + 206 + 206 + 536	206 + 266 + 266 + 266	206 + 356 + 356 + 536	266 + 356 + 356 + 536
206 + 206 + 266 + 266	206 + 266 + 266 + 356	266 + 266 + 266 + 266	356 + 356 + 356 + 356
206 + 206 + 266 + 356	206 + 266 + 266 + 536	266 + 266 + 266 + 356	356 + 356 + 356 + 536
206 + 206 + 266 + 536	206 + 266 + 356 + 356	266 + 266 + 266 + 536	

1.5 CAPACITY TABLES FOR COMBINATIONS WITH I.U. HKEU, HTFU, HFIU

Outdoor Unit HCKU 406 X2 (Cooling mode)

	Combinations		Nominal Capacity (kW)		Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit A	Unit B	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	2,30	—	1,54	2,27	2,92	0,53	0,74	0,97	370	3,07	B
	266	—	2,78	—	1,75	2,75	3,56	0,62	0,90	1,16	449	3,05	B
	356	—	3,35	—	2,01	3,31	4,29	0,70	1,06	1,35	528	3,13	B
(1x2)	206	206	2,05	2,05	1,72	4,05	5,25	0,51	1,25	1,55	625	3,24	A
	206	266	1,85	2,40	1,79	4,20	5,48	0,53	1,30	1,63	652	3,22	A
	206	356	1,68	2,70	1,84	4,33	5,52	0,54	1,33	1,66	667	3,24	A
	266	266	2,19	2,19	1,84	4,33	5,56	0,54	1,33	1,66	667	3,24	A
	266	356	2,04	2,52	1,92	4,50	5,84	0,56	1,38	1,71	691	3,26	A

Outdoor Unit HCKU 406 X2 (Heating mode)

	Combinations		Nominal Capacity (kW)		Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit A	Unit B	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	2,45	—	1,59	2,54	3,09	0,45	0,70	0,88	350	3,64	A
	266	—	2,92	—	1,87	3,03	3,71	0,54	0,83	1,05	415	3,65	A
	356	—	3,75	—	2,33	3,89	4,73	0,68	1,05	1,32	525	3,71	A
(1x2)	206	206	2,20	2,20	1,85	4,57	5,59	0,49	1,23	1,54	614	3,72	A
	206	266	1,98	2,58	1,92	4,74	5,79	0,50	1,26	1,58	630	3,76	A
	206	356	1,79	2,86	1,95	4,83	5,81	0,51	1,27	1,61	635	3,80	A
	266	266	2,33	2,33	1,95	4,83	5,81	0,51	1,27	1,60	635	3,80	A
	266	356	2,14	2,64	2,01	4,96	5,93	0,53	1,32	1,66	660	3,76	A

Outdoor Unit HCKU 536 X2 (Cooling mode)

	Combinations		Nominal Capacity (kW)		Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit A	Unit B	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	2,30	—	1,40	2,34	3,24	0,41	0,71	0,92	354	3,31	A
	266	—	2,70	—	1,57	2,75	3,27	0,46	0,81	1,07	407	3,38	A
	356	—	3,48	—	1,95	3,55	4,56	0,59	1,06	1,41	528	3,36	A
	536	—	5,15	—	3,19	5,25	6,23	0,92	1,60	2,03	800	3,28	A
(1x2)	206	206	2,16	2,16	1,81	4,40	5,62	0,53	1,29	1,66	644	3,42	A
	206	266	2,07	2,68	2,00	4,84	6,08	0,58	1,41	1,83	703	3,44	A
	206	356	2,07	3,31	2,26	5,48	6,89	0,66	1,61	2,14	804	3,41	A
	206	536	1,56	4,12	2,39	5,79	6,87	0,71	1,72	2,27	862	3,35	A
	266	266	2,60	2,60	2,08	5,30	6,34	0,65	1,57	2,06	785	3,38	A
	266	356	2,46	3,02	2,30	5,58	6,63	0,67	1,63	2,15	814	3,43	A
	356	356	2,75	2,75	2,31	5,60	6,66	0,67	1,64	2,16	819	3,42	A

Outdoor Unit HCKU 536 X2 (Heating mode)

	Combinations		Nominal Capacity (kW)		Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit A	Unit B	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	2,45	—	1,30	2,45	3,16	0,37	0,67	0,87	333	3,68	A
	266	—	2,98	—	1,52	2,98	3,90	0,45	0,79	1,06	395	3,77	A
	356	—	3,95	—	1,98	3,95	4,98	0,60	1,05	1,41	525	3,76	A
	536	—	5,46	—	2,84	5,46	6,83	0,78	1,48	1,95	738	3,70	A
(1x2)	206	206	2,47	2,47	2,07	4,94	6,27	0,64	1,31	1,70	656	3,77	A
	206	266	2,36	3,06	2,28	5,42	6,88	0,60	1,44	1,87	718	3,77	A
	206	356	2,33	3,72	2,54	6,05	7,50	0,66	1,59	2,03	795	3,80	A
	206	536	1,79	4,74	2,74	6,53	7,90	0,72	1,73	2,17	863	3,78	A
	266	266	3,05	3,05	2,56	6,10	7,38	0,67	1,61	2,06	805	3,79	A
	266	356	2,94	3,61	2,75	6,55	7,93	0,72	1,74	2,20	868	3,77	A
	356	356	3,36	3,36	2,82	6,72	8,13	0,74	1,78	2,24	892	3,77	A

Outdoor Unit HCKU 606 X3 (Cooling mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	2,30	—	—	1,56	2,24	2,94	0,53	0,71	1,00	353	3,18	B
	266	—	—	2,70	—	—	1,78	2,63	3,46	0,62	0,83	1,17	414	3,18	B
	356	—	—	3,46	—	—	2,25	3,38	4,43	0,72	1,04	1,47	522	3,23	A
	536	—	—	5,35	—	—	3,32	5,22	6,85	1,04	1,64	2,31	819	3,19	B
(1x2)	206	206	—	2,13	2,13	—	1,79	4,16	5,33	0,54	1,27	1,79	635	3,27	A
	206	266	—	2,07	2,68	—	2,00	4,63	5,89	0,60	1,41	2,00	706	3,28	A
	206	356	—	2,06	3,30	—	2,25	5,23	6,65	0,69	1,62	2,29	810	3,23	A
	206	536	—	1,81	4,81	—	2,78	6,46	8,14	0,84	1,98	2,80	988	3,27	A
	266	266	—	2,64	2,64	—	2,22	5,15	6,49	0,68	1,61	2,27	805	3,20	B
	266	356	—	2,69	3,31	—	2,52	5,85	7,38	0,78	1,83	2,58	913	3,21	A
	266	536	—	2,29	4,66	—	2,92	6,78	8,48	0,89	2,09	2,95	1045	3,24	A
	356	356	—	3,19	3,19	—	2,68	6,22	7,78	0,80	1,87	2,64	937	3,32	A
(1x3)	206	206	206	2,05	2,05	2,05	2,58	6,00	7,44	0,76	1,80	2,54	899	3,34	A
	206	206	266	1,93	1,93	2,51	2,68	6,22	7,72	0,78	1,85	2,60	923	3,37	A
	206	206	356	1,84	1,84	2,94	2,78	6,46	8,01	0,82	1,94	2,73	970	3,33	A
	206	266	266	1,84	2,39	2,39	2,78	6,46	8,01	0,81	1,91	2,70	956	3,38	A
	206	266	356	1,78	2,32	2,85	2,92	6,78	8,41	0,85	2,00	2,82	998	3,40	A
	266	266	266	2,32	2,32	2,32	2,92	6,78	8,41	0,86	2,02	2,86	1012	3,35	A
	266	266	356	2,28	2,28	2,81	3,10	7,20	8,93	0,91	2,15	3,03	1073	3,35	A

Outdoor Unit HCKU 606 X3 (Heating mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	2,45	—	—	1,67	2,44	3,14	0,49	0,69	0,96	343	3,55	B
	266	—	—	2,92	—	—	1,90	2,90	3,74	0,56	0,82	1,15	410	3,54	B
	356	—	—	3,75	—	—	2,33	3,73	4,80	0,68	1,03	1,44	515	3,62	A
	536	—	—	5,40	—	—	3,24	5,37	6,91	0,92	1,46	2,04	730	3,68	A
(1x2)	206	206	—	2,40	2,40	—	2,02	4,77	6,05	0,55	1,31	1,82	653	3,65	A
	206	266	—	2,33	3,02	—	2,25	5,32	6,74	0,60	1,43	1,99	715	3,72	A
	206	356	—	2,33	3,72	—	2,54	6,01	7,56	0,69	1,63	2,28	815	3,69	A
	206	536	—	1,92	5,10	—	2,95	6,98	8,70	0,78	1,87	2,61	935	3,73	A

Outdoor Unit HCKU 606 X3 (Heating mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x2)	266	266	—	3,00	3,00	—	2,52	5,96	7,38	0,67	1,60	2,24	801	3,72	A
	266	356	—	2,89	3,56	—	2,71	6,41	7,93	0,71	1,71	2,38	854	3,76	A
	266	536	—	2,42	4,94	—	3,09	7,32	8,98	0,83	1,97	2,75	987	3,71	A
	356	356	—	3,45	3,45	—	2,90	6,86	8,42	0,76	1,82	2,54	911	3,77	A
(1x3)	206	206	206	2,25	2,25	2,25	2,83	6,70	8,16	0,74	1,77	2,48	887	3,78	A
	206	206	266	2,05	2,05	2,67	2,85	6,74	8,20	0,75	1,78	2,49	892	3,78	A
	206	206	356	1,95	1,95	3,12	2,95	6,98	8,49	0,77	1,84	2,57	920	3,79	A
	206	266	266	1,95	2,54	2,54	2,95	6,98	8,49	0,77	1,83	2,56	916	3,81	A
	206	266	356	1,89	2,45	3,02	3,09	7,32	8,91	0,82	1,95	2,71	973	3,76	A
	266	266	266	2,45	2,45	2,45	3,09	7,32	8,91	0,80	1,91	2,66	954	3,84	A
	266	266	356	2,38	2,38	2,93	3,23	7,65	9,32	0,84	2,00	2,80	1001	3,82	A

Outdoor Unit HCKU 806 X3 (Cooling mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	2,30	—	—	1,38	2,36	2,94	0,48	0,71	0,93	357	3,30	A
	266	—	—	2,70	—	—	1,62	2,77	3,46	0,56	0,83	1,09	416	3,33	A
	356	—	—	3,46	—	—	2,08	3,55	4,43	0,72	1,08	1,40	538	3,29	A
	536	—	—	5,35	—	—	3,10	5,48	6,85	1,05	1,65	2,15	827	3,32	A
(1x2)	206	206	—	2,18	2,18	—	1,83	4,46	5,39	0,55	1,35	1,76	675	3,30	A
	206	266	—	2,07	2,68	—	2,00	4,87	5,89	0,60	1,47	1,92	734	3,32	A
	206	356	—	2,07	3,31	—	2,26	5,51	6,62	0,67	1,63	2,14	817	3,37	A
	206	536	—	2,05	5,45	—	3,15	7,69	9,23	0,94	2,31	2,95	1155	3,33	A
	266	266	—	2,70	2,70	—	2,27	5,54	6,64	0,67	1,63	2,14	817	3,39	A
	266	356	—	2,68	3,30	—	2,51	6,13	7,30	0,74	1,80	2,36	900	3,40	A
	266	536	—	2,57	5,23	—	3,28	8,00	9,52	0,96	2,35	2,93	1174	3,40	A
	356	356	—	3,42	3,42	—	2,87	7,01	8,28	0,85	2,07	2,72	1037	3,38	A
(1x3)	356	536	—	3,01	4,99	—	3,36	8,20	9,68	1,01	2,47	3,07	1233	3,32	A
	206	206	206	2,18	2,18	2,18	2,75	6,70	7,91	0,81	1,99	2,60	993	3,37	A
	206	206	266	2,04	2,04	2,65	2,82	6,89	8,13	0,83	2,04	2,66	1018	3,38	A
	206	206	356	2,07	2,07	3,31	3,13	7,64	9,01	0,92	2,24	2,93	1121	3,41	A
	206	206	536	1,76	1,76	4,66	3,44	8,38	9,90	1,02	2,50	3,13	1248	3,36	A
	206	266	266	2,07	2,69	2,69	3,13	7,64	9,01	0,92	2,24	2,87	1121	3,41	A
	206	266	356	2,00	2,60	3,20	3,28	8,00	9,44	0,96	2,34	2,99	1170	3,42	A
	206	356	356	1,93	3,09	3,09	3,40	8,30	9,80	1,00	2,44	3,07	1218	3,41	A
	266	266	266	2,60	2,60	2,60	3,28	8,00	9,44	0,96	2,35	3,00	1174	3,40	A
	266	266	356	2,51	2,51	3,09	3,40	8,30	9,80	0,99	2,43	3,05	1214	3,42	A
266	356	356	2,35	2,90	2,90	3,42	8,35	9,86	1,01	2,47	3,09	1233	3,39	A	

Outdoor Unit HCKU 806 X3 (Heating mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	2,45	—	—	1,47	2,44	3,14	0,46	0,67	0,90	336	3,62	A
	266	—	—	2,96	—	—	1,78	2,94	3,79	0,56	0,82	1,09	408	3,61	A
	356	—	—	3,75	—	—	2,18	3,73	4,80	0,69	1,01	1,35	507	3,68	A
	536	—	—	5,40	—	—	3,02	5,37	6,91	1,00	1,46	1,95	730	3,68	A
(1x2)	206	206	—	2,40	2,40	—	2,02	4,77	6,00	0,54	1,28	1,73	640	3,73	A
	206	266	—	2,33	3,02	—	2,25	5,32	6,69	0,60	1,42	1,92	711	3,74	A
	206	356	—	2,33	3,72	—	2,54	6,02	7,44	0,68	1,62	2,19	810	3,71	A
	206	536	—	2,27	6,03	—	3,49	8,25	10,04	0,95	2,25	2,96	1123	3,67	A
	266	266	—	3,00	3,00	—	2,52	5,97	7,38	0,67	1,59	2,15	796	3,75	A
	266	356	—	2,89	3,56	—	2,71	6,41	7,80	0,71	1,69	2,23	844	3,80	A
	266	536	—	2,88	5,87	—	3,68	8,70	10,59	0,97	2,30	2,97	1152	3,78	A
	356	356	—	3,45	3,45	—	2,90	6,86	8,35	0,76	1,80	2,43	900	3,81	A
	356	536	—	3,39	5,61	—	3,78	8,95	10,89	1,01	2,39	3,08	1194	3,75	A
(1x3)	206	206	206	2,37	2,37	2,37	2,98	7,06	8,59	0,78	1,86	2,51	929	3,80	A
	206	206	266	2,27	2,27	2,95	3,15	7,46	9,08	0,83	1,96	2,65	981	3,80	A
	206	206	356	2,31	2,31	3,69	3,49	8,25	10,04	0,91	2,17	2,86	1085	3,80	A
	206	206	536	1,96	1,96	5,19	3,82	9,05	11,65	1,01	2,39	3,08	1194	3,79	A
	206	266	266	2,31	3,00	3,00	3,49	8,25	10,04	0,92	2,17	2,87	1085	3,80	A
	206	266	356	2,24	2,92	3,59	3,68	8,70	10,59	0,97	2,29	3,03	1147	3,79	A
	206	356	356	2,15	3,45	3,45	3,80	9,00	10,95	1,00	2,36	3,07	1180	3,81	A
	266	266	266	2,92	2,92	2,92	3,68	8,70	10,59	0,97	2,30	3,02	1150	3,78	A
	266	266	356	2,80	2,80	3,45	3,80	9,00	10,95	0,99	2,35	3,05	1175	3,83	A
266	356	356	2,63	3,24	3,24	3,82	9,05	11,01	1,00	2,37	3,08	1185	3,82	A	

Outdoor Unit HCKU 706 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2,30	—	—	—	1,38	2,29	2,88	0,50	0,69	1,03	345	3,32	A
	266	—	—	—	2,70	—	—	—	1,62	2,69	3,38	0,58	0,81	1,21	404	3,33	A
	356	—	—	—	3,46	—	—	—	2,08	3,45	4,33	0,74	1,03	1,54	517	3,33	A
	536	—	—	—	5,35	—	—	—	3,21	5,33	6,69	1,14	1,59	2,36	793	3,36	A
(1x2)	206	206	—	—	2,21	2,21	—	—	1,85	4,39	5,42	0,58	1,31	1,95	657	3,34	A
	206	266	—	—	2,32	3,02	—	—	2,24	5,32	6,57	0,69	1,57	2,34	784	3,39	A
	206	356	—	—	2,29	3,66	—	—	2,50	5,92	7,32	0,77	1,75	2,61	875	3,39	A
	206	536	—	—	1,88	4,97	—	—	2,88	6,82	8,43	0,88	2,00	2,98	1002	3,40	A
	266	266	—	—	2,97	2,97	—	—	2,49	5,91	7,31	0,76	1,72	2,56	861	3,43	A
	266	356	—	—	2,76	3,40	—	—	2,59	6,13	7,58	0,78	1,77	2,63	884	3,47	A
	266	536	—	—	2,30	4,68	—	—	2,93	6,95	8,59	0,89	2,02	3,01	1011	3,44	A
	356	356	—	—	3,21	3,21	—	—	2,70	6,39	7,90	0,82	1,85	2,75	925	3,46	A
	356	536	—	—	2,73	4,52	—	—	3,05	7,22	8,92	0,93	2,10	3,13	1052	3,43	A
(1x3)	206	206	206	—	2,06	2,06	2,06	—	2,60	6,15	7,54	0,78	1,76	2,62	880	3,50	A
	206	206	266	—	1,95	1,95	2,53	—	2,70	6,39	7,83	0,80	1,82	2,71	911	3,51	A
	206	206	356	—	1,86	1,86	2,97	—	2,81	6,65	8,15	0,83	1,89	2,81	943	3,53	A
	206	206	536	—	1,86	1,86	4,93	—	3,63	8,61	10,55	1,08	2,45	3,65	1224	3,52	A
	206	266	266	—	1,86	2,68	2,68	—	2,81	6,65	8,15	0,83	1,89	2,81	943	3,53	A
	206	266	356	—	1,79	2,33	2,86	—	2,93	6,95	8,52	0,86	1,96	2,92	979	3,55	A
206	356	356	—	1,73	2,76	2,76	—	3,05	7,22	8,85	0,90	2,03	3,03	1016	3,55	A	

Outdoor Unit HCKU 706 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x3)	266	266	266	—	2,33	2,33	2,33	—	2,93	6,95	8,52	0,87	1,97	2,94	984	3,53	A
	266	266	356	—	2,24	2,24	2,76	—	3,05	7,22	8,85	0,90	2,05	3,05	1025	3,52	A
	266	356	356	—	2,24	2,76	2,76	—	3,26	7,74	9,48	0,97	2,19	3,27	1097	3,53	A
(1x4)	206	206	206	206	1,76	1,76	1,76	1,76	2,45	7,00	8,58	0,98	1,99	2,96	993	3,52	A
	206	206	206	266	1,70	1,70	1,70	2,21	3,00	7,28	8,92	0,91	2,06	3,06	1029	3,54	A
	206	206	206	356	1,72	1,72	1,72	2,75	3,25	7,89	9,66	0,98	2,21	3,30	1106	3,56	A
	206	206	266	266	1,72	1,72	2,24	2,24	3,25	7,89	9,66	0,98	2,22	3,31	1111	3,55	A
	206	206	266	356	1,66	1,66	2,16	2,66	3,34	8,10	9,93	1,00	2,27	3,38	1134	3,58	A
	206	266	266	266	1,66	2,16	2,16	2,16	3,34	8,10	9,93	1,00	2,28	3,39	1138	3,56	A
	206	266	266	356	1,58	2,05	2,05	2,53	3,37	8,17	10,02	1,01	2,29	3,41	1147	3,56	A
	266	266	266	266	2,05	2,05	2,05	2,05	3,37	8,17	10,02	1,00	2,27	3,38	1134	3,61	A
266	266	266	356	1,96	1,96	1,96	2,41	3,40	8,25	10,11	1,01	2,30	3,42	1152	3,58	A	

Outdoor Unit HCKU 706 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2,65	—	—	—	1,72	2,64	3,29	0,57	0,75	1,08	377	3,51	B
	266	—	—	—	2,92	—	—	—	1,90	2,91	3,62	0,62	0,83	1,19	414	3,52	B
	356	—	—	—	3,75	—	—	—	2,44	3,74	4,65	0,78	1,04	1,50	521	3,59	B
	536	—	—	—	5,85	—	—	—	3,80	5,83	7,25	1,21	1,61	2,32	805	3,63	A
(1x2)	206	206	—	—	2,38	2,38	—	—	2,00	4,75	5,81	0,56	1,29	1,87	647	3,67	A
	206	266	—	—	2,63	3,41	—	—	2,54	6,02	7,37	0,71	1,65	2,37	823	3,66	A
	206	356	—	—	2,55	4,09	—	—	2,79	6,62	8,10	0,77	1,79	2,58	893	3,71	A
	206	536	—	—	2,29	6,07	—	—	3,51	8,34	10,20	0,96	2,24	3,23	1121	3,72	A
	266	266	—	—	3,32	3,32	—	—	2,79	6,62	8,10	0,77	1,78	2,56	888	3,73	A
	266	356	—	—	3,08	3,78	—	—	2,88	6,84	8,37	0,79	1,83	2,63	916	3,73	A
	266	536	—	—	2,77	5,65	—	—	3,54	8,40	10,27	0,95	2,22	3,20	1112	3,78	A
	356	356	—	—	3,58	3,58	—	—	3,00	7,13	8,72	0,82	1,91	2,75	954	3,74	A
356	536	—	—	3,15	5,21	—	—	3,51	8,34	10,20	0,94	2,20	3,16	1098	3,80	A	
(1x3)	206	206	206	—	2,28	2,28	2,28	—	2,88	6,83	8,36	0,77	1,79	2,57	893	3,83	A
	206	206	266	—	2,36	2,36	3,06	—	3,27	7,76	9,49	0,86	2,01	2,89	1005	3,86	A
	206	206	356	—	2,32	2,32	3,72	—	3,51	8,34	10,20	0,94	2,19	3,16	1093	3,81	A
	206	206	536	—	2,02	2,02	5,35	—	3,94	9,36	11,44	1,05	2,45	3,52	1223	3,82	A
	206	266	266	—	2,32	2,68	2,68	—	3,51	8,34	10,20	0,93	2,17	3,12	1084	3,85	A
	206	266	356	—	2,18	2,84	3,50	—	3,58	8,50	10,39	0,94	2,20	3,16	1098	3,87	A
	206	356	356	—	2,11	3,38	3,38	—	3,72	8,84	10,81	0,98	2,28	3,28	1140	3,88	A
	266	266	266	—	2,84	2,84	2,84	—	3,58	8,50	10,39	0,94	2,20	3,16	1098	3,87	A
	266	266	356	—	2,74	2,74	3,38	—	3,72	8,84	10,81	0,98	2,27	3,27	1135	3,89	A
266	356	356	—	2,50	3,08	3,08	—	3,63	8,63	10,55	0,95	2,21	3,22	1107	3,90	A	
(1x4)	206	206	206	206	1,91	1,91	1,91	1,91	2,85	7,60	9,30	0,91	1,96	2,83	981	3,87	A
	206	206	206	266	1,91	1,91	1,91	2,48	3,37	8,19	10,02	0,91	2,11	3,05	1056	3,88	A

Outdoor Unit HCKU 706 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x4)	206	206	206	356	2,04	2,04	2,04	3,26	3,85	9,36	11,44	1,04	2,41	3,47	1205	3,88	A
	206	206	266	266	2,04	2,04	2,65	2,65	3,85	9,36	11,44	1,03	2,39	3,44	1195	3,91	A
	206	206	266	356	1,96	1,96	2,54	3,13	3,93	9,57	11,70	1,06	2,46	3,54	1228	3,89	A
	206	266	266	266	1,96	2,54	2,54	2,54	3,93	9,57	11,70	1,05	2,45	3,52	1223	3,91	A
	206	266	266	356	1,86	2,41	2,41	2,97	3,96	9,62	11,77	1,06	2,47	3,56	1237	3,89	A
	266	266	266	266	2,41	2,41	2,41	2,41	3,96	9,62	11,77	1,07	2,48	3,57	1242	3,87	A
266	266	266	356	2,30	2,30	2,30	2,83	3,99	9,69	11,86	1,07	2,50	3,60	1251	3,87	A	

Outdoor Unit HCKU 816 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2,30	—	—	—	1,38	2,35	2,81	0,58	0,77	1,04	387	3,04	B
	266	—	—	—	2,70	—	—	—	1,62	2,76	3,29	0,67	0,90	1,21	452	3,05	B
	356	—	—	—	3,46	—	—	—	2,08	3,54	4,22	0,85	1,15	1,54	573	3,09	B
	536	—	—	—	5,35	—	—	—	3,21	5,48	6,53	1,31	1,76	2,36	880	3,11	B
(1x2)	206	206	—	—	2,24	2,24	—	—	1,88	4,59	5,47	0,58	1,46	1,96	729	3,15	B
	206	266	—	—	2,29	2,97	—	—	2,21	5,38	6,42	0,68	1,72	2,31	859	3,13	B
	206	356	—	—	2,35	3,75	—	—	2,56	6,24	7,44	0,78	1,97	2,64	985	3,17	B
	206	536	—	—	2,12	5,61	—	—	3,25	7,91	9,43	0,99	2,50	3,36	1251	3,16	B
	266	266	—	—	3,02	3,02	—	—	2,54	6,18	7,37	0,77	1,94	2,61	970	3,19	B
	266	356	—	—	2,81	3,45	—	—	2,63	6,41	7,64	0,80	2,01	2,70	1005	3,19	B
	266	536	—	—	2,59	5,29	—	—	3,31	8,07	9,61	1,00	2,51	3,38	1257	3,21	A
	356	356	—	—	3,65	3,65	—	—	3,07	7,47	8,91	0,92	2,32	3,12	1161	3,22	A
	356	536	—	—	3,06	5,06	—	—	3,41	8,31	9,91	1,04	2,60	3,50	1302	3,19	B
	536	536	—	—	4,51	4,51	—	—	3,79	9,23	11,00	1,15	2,88	3,88	1442	3,20	A
(1x3)	206	206	206	—	2,09	2,09	2,09	—	2,64	6,43	7,66	0,79	1,98	2,67	990	3,25	A
	206	206	266	—	2,21	2,21	2,88	—	3,07	7,47	8,91	0,91	2,28	3,07	1141	3,27	A
	206	206	356	—	2,10	2,10	3,36	—	3,18	7,74	9,22	0,94	2,37	3,18	1186	3,26	A
	206	206	536	—	1,86	1,86	4,93	—	3,63	8,85	10,55	1,07	2,68	3,60	1342	3,30	A
	206	266	266	—	2,10	2,68	2,68	—	3,18	7,74	9,22	0,93	2,34	3,15	1171	3,30	A
	206	266	356	—	2,02	2,63	3,23	—	3,31	8,07	9,61	0,98	2,45	3,29	1226	3,29	A
	206	266	536	—	1,81	2,35	4,80	—	3,76	9,17	10,93	1,12	2,81	3,78	1407	3,26	A
	206	356	356	—	1,93	3,09	3,09	—	3,41	8,31	9,91	1,00	2,52	3,38	1262	3,29	A
	206	356	536	—	1,72	2,75	4,55	—	3,79	9,23	11,00	1,11	2,79	3,75	1397	3,30	A
	266	266	266	—	2,63	2,63	2,63	—	3,31	8,07	9,61	0,98	2,46	3,31	1231	3,27	A
	266	266	356	—	2,51	2,51	3,09	—	3,41	8,31	9,91	1,01	2,54	3,41	1272	3,27	A
	266	266	536	—	2,23	2,23	4,55	—	3,79	9,23	11,00	1,12	2,80	3,77	1402	3,29	A
	266	356	356	—	2,50	3,08	3,08	—	3,63	8,85	10,55	1,08	2,72	3,66	1362	3,25	A
	266	356	536	—	2,13	2,62	4,34	—	3,82	9,30	11,09	1,13	2,83	3,81	1417	3,28	A
	356	356	356	—	2,95	2,95	2,95	—	3,72	9,06	10,80	1,10	2,76	3,71	1382	3,28	A
(1x4)	206	206	206	206	1,98	1,98	1,98	1,98	2,45	8,10	9,65	0,98	2,48	3,33	1241	3,26	A
	206	206	206	266	1,90	1,90	1,90	2,46	3,34	8,34	9,94	1,02	2,55	3,43	1277	3,27	A
	206	206	206	356	1,90	1,90	1,90	3,04	3,59	8,96	10,68	1,09	2,73	3,67	1367	3,28	A
	206	206	206	536	1,61	1,61	1,61	4,28	3,74	9,33	11,13	1,11	2,79	3,75	1397	3,34	A
	206	206	266	266	1,90	1,90	2,47	2,47	3,59	8,96	10,68	1,09	2,73	3,67	1367	3,28	A
	206	206	266	356	1,83	1,83	2,38	2,93	3,67	9,17	10,93	1,11	2,78	3,74	1392	3,29	A

Outdoor Unit HCKU 816 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x4)	206	206	356	356	1,73	1,73	2,78	2,78	3,70	9,23	11,00	1,11	2,79	3,75	1397	3,30	A
	206	266	266	266	1,83	2,38	2,38	2,38	3,67	9,17	10,93	1,11	2,78	3,74	1392	3,29	A
	206	266	266	356	1,73	2,26	2,26	2,78	3,70	9,23	11,00	1,11	2,79	3,75	1397	3,30	A
	206	266	356	356	1,65	2,15	2,64	2,64	3,73	9,30	11,09	1,11	2,79	3,75	1397	3,33	A
	266	266	266	266	2,26	2,26	2,26	2,26	3,70	9,23	11,00	1,11	2,79	3,75	1397	3,30	A
	266	266	266	356	2,15	2,15	2,15	2,64	3,73	9,30	11,09	1,11	2,79	3,75	1397	3,33	A

Outdoor Unit HCKU 816 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2,65	—	—	—	1,59	2,71	3,23	0,47	0,79	1,06	393	3,45	B
	266	—	—	—	2,92	—	—	—	1,75	2,99	3,56	0,52	0,86	1,16	428	3,50	B
	356	—	—	—	3,75	—	—	—	2,25	3,84	4,58	0,66	1,09	1,47	547	3,51	B
	536	—	—	—	5,85	—	—	—	3,51	5,99	7,14	1,04	1,72	2,31	860	3,48	B
(1x2)	206	206	—	—	2,38	2,38	—	—	2,00	4,87	5,81	0,56	1,38	1,86	691	3,53	B
	206	266	—	—	2,53	3,29	—	—	2,44	5,96	7,10	0,67	1,67	2,25	835	3,57	B
	206	356	—	—	2,48	3,98	—	—	2,71	6,61	7,88	0,74	1,85	2,49	925	3,58	B
	206	536	—	—	2,29	6,07	—	—	3,51	8,56	10,20	0,96	2,40	3,23	1198	3,57	B
	266	266	—	—	3,32	3,32	—	—	2,79	6,80	8,10	0,76	1,90	2,56	950	3,58	B
	266	356	—	—	3,08	3,78	—	—	2,88	7,02	8,37	0,78	1,93	2,60	965	3,64	A
	266	536	—	—	2,77	5,65	—	—	3,54	8,62	10,27	0,95	2,38	3,20	1189	3,63	A
	356	356	—	—	3,58	3,58	—	—	3,00	7,32	8,72	0,80	2,00	2,69	1000	3,66	A
	356	536	—	—	3,15	5,21	—	—	3,51	8,56	10,20	0,93	2,33	3,13	1164	3,68	A
	536	536	—	—	4,41	4,41	—	—	3,70	9,03	10,76	1,00	2,50	3,36	1248	3,62	A
(1x3)	206	206	206	—	2,28	2,28	2,28	—	2,88	7,01	8,36	0,76	1,89	2,54	945	3,71	A
	206	206	266	—	2,36	2,36	3,06	—	3,27	7,97	9,49	0,86	2,15	2,89	1074	3,71	A
	206	206	356	—	2,32	2,32	3,72	—	3,51	8,56	10,20	0,92	2,29	3,09	1144	3,74	A
	206	206	536	—	2,02	2,02	5,35	—	3,94	9,60	11,44	1,04	2,58	3,47	1288	3,73	A
	206	266	266	—	2,32	2,68	2,68	—	3,51	8,56	10,20	0,92	2,29	3,09	1144	3,74	A
	206	266	356	—	2,18	2,84	3,50	—	3,58	8,72	10,39	0,94	2,34	3,15	1169	3,73	A
	206	266	536	—	1,98	2,57	5,24	—	4,11	10,01	11,93	1,09	2,71	3,65	1353	3,70	A
	206	356	356	—	2,11	3,38	3,38	—	3,72	9,07	10,81	0,98	2,45	3,30	1223	3,71	A
	206	356	536	—	1,89	3,02	5,01	—	4,17	10,16	12,10	1,11	2,76	3,72	1382	3,67	A
	266	266	266	—	2,84	2,84	2,84	—	3,58	8,72	10,39	0,94	2,35	3,16	1174	3,72	A
	266	266	356	—	2,74	2,74	3,38	—	3,72	9,07	10,81	1,00	2,48	3,33	1238	3,66	A
	266	266	536	—	2,46	2,46	5,01	—	4,17	10,16	12,10	1,11	2,75	3,70	1373	3,70	A
	266	356	356	—	2,71	3,34	3,34	—	3,94	9,60	11,44	1,05	2,60	3,50	1298	3,70	A
	266	356	536	—	2,36	2,91	4,81	—	4,23	10,32	12,30	1,11	2,76	3,73	1382	3,73	A
356	356	356	—	3,25	3,25	3,25	—	4,10	9,99	11,91	1,08	2,69	3,62	1343	3,72	A	
(1x4)	206	206	206	206	2,20	2,20	2,20	2,20	2,85	9,00	10,72	0,91	2,43	3,26	1213	3,71	A
	206	206	206	266	2,06	2,06	2,06	2,68	3,63	9,07	10,81	0,98	2,44	3,28	1218	3,72	A

Outdoor Unit HCKU 816 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x4)	206	206	206	356	2.04	2.04	2.04	3.26	3.85	9.60	11.44	1.04	2.58	3.47	1288	3.73	A
	206	206	206	536	1.79	1.79	1.79	4.75	4.15	10.37	12.36	1.12	2.79	3.76	1397	3.71	A
	206	206	266	266	2.07	2.07	2.69	2.69	3.90	9.74	11.60	1.05	2.61	3.51	1303	3.74	A
	206	206	266	356	1.99	1.99	2.59	3.19	4.00	9.99	11.91	1.07	2.66	3.58	1328	3.76	A
	206	206	356	356	1.91	1.91	3.05	3.05	4.07	10.16	12.10	1.09	2.71	3.64	1353	3.75	A
	206	266	266	266	1.99	2.59	2.59	2.59	4.00	9.99	11.91	1.06	2.64	3.55	1318	3.79	A
	206	266	266	356	1.91	2.48	2.48	3.05	4.07	10.16	12.10	1.08	2.70	3.63	1348	3.77	A
	206	266	356	356	1.83	2.38	2.93	2.93	4.13	10.32	12.30	1.10	2.74	3.69	1368	3.77	A
	266	266	266	266	2.48	2.48	2.48	2.48	4.07	10.16	12.10	1.09	2.71	3.64	1353	3.75	A
	266	266	266	356	2.38	2.38	2.38	2.93	4.13	10.32	12.30	1.11	2.76	3.71	1378	3.75	A

Outdoor Unit HCKU 1066 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2.30	—	—	—	1.27	2.32	2.78	0.55	0.81	1.03	407	2.85	C
	266	—	—	—	2.70	—	—	—	1.49	2.73	3.27	0.64	0.95	1.20	475	2.87	C
	356	—	—	—	3.46	—	—	—	1.90	3.49	4.19	0.80	1.19	1.51	597	2.93	C
	536	—	—	—	5.84	—	—	—	3.21	5.89	7.07	1.34	2.00	2.54	999	2.95	C
(1x2)	206	206	—	—	2.08	2.08	—	—	1.71	4.20	5.03	0.62	1.43	1.81	713	2.94	C
	206	266	—	—	2.37	3.07	—	—	2.23	5.49	6.58	0.81	1.87	2.37	936	2.93	C
	206	356	—	—	2.25	3.59	—	—	2.39	5.89	7.07	0.86	1.98	2.51	990	2.98	C
	206	536	—	—	1.98	5.24	—	—	2.96	7.29	8.74	1.05	2.43	3.07	1213	3.00	B
	266	266	—	—	2.92	2.92	—	—	2.39	5.89	7.07	0.84	1.95	2.47	975	3.02	B
	266	356	—	—	2.62	3.22	—	—	2.39	5.89	7.07	0.84	1.93	2.45	965	3.05	B
	266	536	—	—	2.68	5.47	—	—	3.34	8.23	9.86	1.18	2.72	3.44	1358	3.03	B
	356	356	—	—	3.14	3.14	—	—	2.57	6.34	7.60	0.89	2.05	2.59	1023	3.10	B
	356	536	—	—	3.07	5.08	—	—	3.34	8.23	9.86	1.17	2.71	3.43	1353	3.04	B
	536	536	—	—	5.25	5.25	—	—	4.31	10.60	12.71	1.48	3.41	4.33	1707	3.10	B
(1x3)	206	206	206	—	2.09	2.09	2.09	—	2.57	6.34	7.60	0.89	2.07	2.62	1033	3.07	B
	206	206	266	—	2.19	2.19	2.84	—	2.96	7.29	8.74	1.02	2.37	3.00	1184	3.08	B
	206	206	356	—	2.01	2.01	3.21	—	2.96	7.29	8.74	1.03	2.39	3.03	1193	3.05	B
	206	206	536	—	2.10	2.10	5.56	—	4.00	9.84	11.80	1.36	3.14	3.98	1572	3.13	B
	206	266	266	—	2.01	2.68	2.68	—	2.96	7.29	8.74	1.02	2.37	3.00	1184	3.08	B
	206	266	356	—	2.09	2.72	3.34	—	3.34	8.23	9.86	1.16	2.69	3.41	1344	3.06	B
	206	266	536	—	2.12	2.76	5.62	—	4.31	10.60	12.71	1.45	3.35	4.25	1673	3.17	B
	206	356	356	—	1.94	3.10	3.10	—	3.34	8.23	9.86	1.15	2.65	3.36	1324	3.11	B
	206	356	536	—	2.00	3.20	5.30	—	4.31	10.60	12.71	1.45	3.35	4.25	1673	3.17	B
	206	536	536	—	1.88	4.98	4.98	—	4.85	11.95	14.33	1.61	3.72	4.71	1858	3.22	A
	266	266	266	—	2.72	2.72	2.72	—	3.34	8.23	9.86	1.16	2.68	3.40	1339	3.07	B
	266	266	356	—	2.52	2.52	3.10	—	3.34	8.23	9.86	1.16	2.67	3.39	1334	3.08	B
	266	266	536	—	2.60	2.60	5.30	—	4.31	10.60	12.71	1.45	3.35	4.25	1673	3.17	B
	266	356	356	—	2.82	3.47	3.47	—	4.00	9.84	11.80	1.35	3.12	3.96	1562	3.15	B
	266	356	536	—	2.13	2.62	4.34	—	3.73	9.18	11.00	1.25	2.88	3.65	1441	3.18	B
	266	536	536	—	2.33	4.75	4.75	—	4.85	11.95	14.33	1.60	3.70	4.68	1848	3.23	A
	356	356	356	—	3.25	3.25	3.25	—	4.00	9.84	11.80	1.34	3.09	3.92	1547	3.18	B
	356	356	536	—	3.20	3.20	4.65	—	4.53	11.15	13.37	1.54	3.55	4.50	1775	3.14	B
356	536	536	—	2.75	4.55	4.55	—	4.85	11.95	14.33	1.61	3.72	4.71	1858	3.22	A	

Outdoor Unit HCKU 1066 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x4)	206	206	206	206	2.04	2.04	2.04	2.04	3.34	8.23	9.78	1.11	2.57	3.23	1285	3.20	A
	206	206	206	266	1.90	1.90	1.90	2.46	3.34	8.23	9.78	1.11	2.57	3.23	1285	3.20	A
	206	206	206	356	2.12	2.12	2.12	3.39	4.00	9.84	11.70	1.33	3.08	3.87	1542	3.19	B
	206	206	206	536	1.96	1.96	1.96	5.18	4.53	11.15	13.26	1.51	3.49	4.39	1746	3.19	B
	206	206	266	266	2.12	2.12	2.76	2.76	4.00	9.84	11.70	1.34	3.10	3.90	1552	3.17	B
	206	206	266	356	2.14	2.14	2.79	3.43	4.31	10.60	12.60	1.45	3.35	4.21	1673	3.17	B
	206	206	266	536	1.86	1.86	2.41	4.92	4.53	11.15	13.26	1.51	3.49	4.39	1746	3.19	B
	206	206	356	356	2.02	2.02	3.23	3.23	4.31	10.60	12.60	1.45	3.35	4.21	1673	3.17	B
	206	206	356	536	1.84	1.84	2.95	4.88	4.72	11.63	13.82	1.57	3.63	4.56	1814	3.20	A
	206	206	536	536	1.67	1.67	4.41	4.41	4.99	12.27	14.59	1.62	3.74	4.71	1872	3.28	A
	206	266	266	266	2.14	2.79	2.79	2.79	4.31	10.60	12.60	1.42	3.29	4.13	1644	3.22	A
	206	266	266	356	2.02	2.63	2.63	3.23	4.31	10.60	12.60	1.45	3.35	4.21	1673	3.17	B
	206	266	266	536	1.84	2.40	2.40	4.88	4.72	11.63	13.82	1.57	3.63	4.56	1814	3.20	A
	206	266	356	356	2.01	2.61	3.21	3.21	4.53	11.15	13.26	1.51	3.49	4.39	1746	3.19	B
	206	266	356	536	1.81	2.35	2.89	4.79	4.85	11.95	14.21	1.59	3.67	4.61	1833	3.26	A
	206	266	536	536	1.56	2.03	4.13	4.13	4.85	11.95	14.21	1.59	3.67	4.61	1833	3.26	A
	206	356	356	356	1.91	3.05	3.05	3.05	4.53	11.15	13.26	1.51	3.49	4.39	1746	3.19	B
	206	356	356	536	1.73	2.77	2.77	4.58	4.85	11.95	14.21	1.59	3.67	4.61	1833	3.26	A
	266	266	266	266	2.63	2.63	2.63	2.63	4.31	10.60	12.81	1.38	3.35	4.32	1675	3.16	B
	266	266	266	356	2.61	2.61	2.61	3.21	4.53	11.15	13.26	1.52	3.51	4.42	1756	3.18	B
266	266	266	536	2.29	2.29	2.29	4.66	4.72	11.63	13.82	1.57	3.63	4.56	1814	3.20	A	
266	266	356	356	2.48	2.48	3.05	3.05	4.53	11.15	13.26	1.51	3.49	4.39	1746	3.19	B	
266	266	356	536	2.25	2.25	2.77	4.58	4.85	11.95	14.21	1.59	3.67	4.61	1833	3.26	A	
266	356	356	356	2.46	3.02	3.02	3.02	4.72	11.63	13.82	1.57	3.63	4.56	1814	3.20	A	
266	356	356	536	2.15	2.65	2.65	4.39	4.85	11.95	14.21	1.59	3.67	4.61	1833	3.26	A	
356	356	356	356	2.88	2.88	2.88	2.88	4.72	11.63	13.82	1.56	3.61	4.53	1804	3.22	A	
356	356	356	536	2.61	2.61	2.61	4.33	4.99	12.27	14.59	1.63	3.75	4.72	1877	3.27	A	

Outdoor Unit HCKU 1066 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2.65	—	—	—	1.59	2.79	3.26	0.61	0.90	1.17	450	3.10	D
	266	—	—	—	2.92	—	—	—	1.75	3.08	3.59	0.67	1.00	1.29	498	3.09	D
	356	—	—	—	3.75	—	—	—	2.25	3.95	4.61	0.86	1.27	1.64	633	3.12	D
	536	—	—	—	6.34	—	—	—	3.80	6.68	7.80	1.22	2.13	2.77	1064	3.14	D
(1x2)	206	206	—	—	2.38	2.38	—	—	2.00	5.02	5.85	0.66	1.59	2.07	795	3.15	D
	206	266	—	—	2.63	3.41	—	—	2.54	6.37	7.43	0.84	2.00	2.61	1002	3.18	D
	206	356	—	—	2.44	3.90	—	—	2.66	6.68	7.80	0.86	2.07	2.70	1035	3.23	C
	206	536	—	—	2.37	6.28	—	—	3.63	9.12	10.64	1.16	2.79	3.64	1394	3.27	C
	266	266	—	—	3.17	3.17	—	—	2.66	6.68	7.80	0.85	2.04	2.66	1021	3.27	C
	266	356	—	—	3.07	3.77	—	—	2.87	7.21	8.41	0.93	2.22	2.90	1112	3.24	C

Outdoor Unit HCKU 1066 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x2)	266	536	—	—	2,90	5,92	—	—	3,70	9,30	10,85	0,99	2,37	3,09	1184	3,93	A
	356	356	—	—	3,61	3,61	—	—	3,03	7,61	8,88	0,97	2,33	3,04	1164	3,27	C
	356	536	—	—	3,32	5,50	—	—	3,70	9,30	10,85	0,99	2,37	3,09	1184	3,93	A
	536	536	—	—	5,55	5,55	—	—	4,66	11,70	13,65	1,38	3,32	4,32	1658	3,53	B
(1x3)	206	206	206	—	2,28	2,28	2,28	—	2,87	7,21	8,41	0,94	2,25	2,94	1126	3,20	C
	206	206	266	—	2,19	2,19	2,84	—	3,03	7,61	8,88	0,94	2,26	2,95	1131	3,36	C
	206	206	356	—	2,40	2,40	3,84	—	3,63	9,12	10,64	1,12	2,68	3,50	1342	3,40	C
	206	206	536	—	2,33	2,33	6,18	—	4,56	11,44	13,35	1,35	3,24	4,23	1620	3,53	B
	206	266	266	—	2,40	2,68	2,68	—	3,63	9,12	10,64	1,11	2,65	3,45	1323	3,45	B
	206	266	356	—	2,22	2,88	3,55	—	3,63	9,12	10,64	1,11	2,65	3,45	1323	3,45	B
	206	266	536	—	2,24	2,92	5,94	—	4,66	11,70	13,65	1,35	3,24	4,23	1620	3,61	A
	206	356	356	—	2,10	3,36	3,36	—	3,70	9,30	10,85	1,15	2,76	3,60	1380	3,37	C
	206	356	536	—	2,11	3,38	5,60	—	4,66	11,70	13,65	1,35	3,24	4,23	1620	3,61	A
	206	536	536	—	1,85	4,89	4,89	—	4,88	12,26	14,30	1,42	3,41	4,45	1706	3,59	B
	266	266	266	—	2,88	2,88	2,88	—	3,63	9,12	10,64	1,12	2,67	3,49	1337	3,41	B
	266	266	356	—	2,73	2,73	3,36	—	3,70	9,30	10,85	1,13	2,71	3,53	1356	3,43	B
	266	266	536	—	2,75	2,75	5,60	—	4,66	11,70	13,65	1,35	3,24	4,23	1620	3,61	A
	266	356	356	—	3,13	3,86	3,86	—	4,56	11,44	13,35	1,44	3,44	4,49	1720	3,32	C
	266	356	536	—	2,13	2,62	4,34	—	3,82	9,58	11,18	1,19	2,85	3,71	1423	3,37	C
	266	536	536	—	2,33	4,75	4,75	—	4,97	12,48	14,56	1,52	3,65	4,76	1826	3,42	B
	356	356	356	—	3,62	3,62	3,62	—	4,56	11,44	13,35	1,39	3,33	4,33	1663	3,44	B
	356	356	536	—	3,25	3,25	4,66	—	4,69	11,76	13,73	1,44	3,45	4,50	1725	3,41	B
356	536	536	—	2,79	4,62	4,62	—	5,06	12,69	14,81	1,49	3,57	4,66	1787	3,55	B	
(1x4)	206	206	206	206	2,21	2,21	2,21	2,21	3,70	9,30	10,67	0,99	2,37	3,01	1184	3,93	A
	206	206	206	266	2,05	2,05	2,05	2,67	3,70	9,30	10,67	0,99	2,37	3,01	1184	3,93	A
	206	206	206	356	2,36	2,36	2,36	3,77	4,56	11,44	13,13	1,40	3,35	4,27	1677	3,41	B
	206	206	206	536	1,98	1,98	1,98	5,23	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	206	206	266	266	2,36	2,36	3,07	3,07	4,56	11,44	13,13	1,35	3,23	4,11	1615	3,54	B
	206	206	266	356	2,27	2,27	2,94	3,62	4,66	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	206	206	266	536	1,88	1,88	2,44	4,97	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	206	206	356	356	2,13	2,13	3,42	3,42	4,66	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	206	206	356	536	1,86	1,86	2,98	4,93	4,88	12,26	14,07	1,41	3,36	4,29	1682	3,64	A
	206	206	536	536	1,82	1,82	4,81	4,81	5,57	13,97	16,03	1,58	3,78	4,81	1888	3,70	A
	206	266	266	266	2,27	2,94	2,94	2,94	4,66	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	206	266	266	356	2,13	2,78	2,78	3,42	4,66	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	206	266	266	536	1,86	2,42	2,42	4,93	4,88	12,26	14,07	1,41	3,36	4,29	1682	3,64	A
	206	266	356	356	2,03	2,64	3,25	3,25	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	206	266	356	536	1,81	2,35	2,89	4,79	4,97	12,48	14,33	1,50	3,59	4,57	1797	3,47	B
	206	266	536	536	1,56	2,03	4,13	4,13	4,97	12,48	14,33	1,50	3,59	4,57	1797	3,47	B
	206	356	356	356	1,92	3,08	3,08	3,08	4,69	11,76	13,50	1,37	3,27	4,16	1634	3,60	B
	206	356	356	536	1,76	2,81	2,81	4,66	5,06	12,69	14,57	1,45	3,49	4,44	1744	3,64	A
	266	266	266	266	2,78	2,78	2,78	2,78	4,55	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	266	266	266	356	2,64	2,64	2,64	3,25	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	266	266	266	536	2,31	2,31	2,31	4,71	4,88	12,26	14,07	1,41	3,36	4,29	1682	3,64	A
	266	266	356	356	2,50	2,50	3,08	3,08	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	266	266	356	536	2,28	2,28	2,81	4,66	5,06	12,69	14,57	1,45	3,49	4,44	1744	3,64	A
	266	356	356	356	2,48	3,05	3,05	3,05	4,88	12,26	14,07	1,40	3,34	4,26	1672	3,67	A
	266	356	356	536	2,19	2,69	2,69	4,46	5,06	12,69	14,57	1,45	3,49	4,44	1744	3,64	A
	356	356	356	356	2,91	2,91	2,91	2,91	4,88	12,26	14,07	1,41	3,36	4,29	1682	3,64	A
	356	356	356	536	2,85	2,85	2,85	4,71	5,57	13,97	16,03	1,58	3,78	4,81	1888	3,70	A

1.6 CAPACITY TABLES FOR COMBINATIONS WITH I.U. HSFU, HRBU

Outdoor Unit HCKU 406 X2 (Cooling mode)

	Combinations		Nominal Capacity (kW)		Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit A	Unit B	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	2,30	—	1,54	2,27	2,92	0,53	0,74	0,97	370	3,07	B
	266	—	2,78	—	1,75	2,75	3,56	0,62	0,90	1,16	449	3,05	B
	356	—	3,35	—	2,01	3,31	4,29	0,70	1,06	1,35	528	3,13	B
(1x2)	206	206	2,05	2,05	1,72	4,05	5,25	0,51	1,25	1,55	625	3,24	A
	206	266	1,85	2,40	1,79	4,20	5,48	0,53	1,30	1,63	652	3,22	A
	266	266	2,19	2,19	1,84	4,33	5,56	0,54	1,33	1,66	667	3,24	A

Outdoor Unit HCKU 406 X2 (Heating mode)

	Combinations		Nominal Capacity (kW)		Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit A	Unit B	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	2,45	—	1,59	2,54	3,09	0,45	0,70	0,88	350	3,64	A
	266	—	2,92	—	1,87	3,03	3,71	0,54	0,83	1,05	415	3,65	A
	356	—	3,75	—	2,33	3,89	4,73	0,68	1,05	1,32	525	3,71	A
(1x2)	206	206	2,20	2,20	1,85	4,57	5,59	0,49	1,23	1,54	614	3,72	A
	206	266	1,98	2,58	1,92	4,74	5,79	0,50	1,26	1,58	630	3,76	A
	266	266	2,33	2,33	1,95	4,83	5,81	0,51	1,27	1,60	635	3,80	A

Outdoor Unit HCKU 536 X2 (Cooling mode)

	Combinations		Nominal Capacity (kW)		Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit A	Unit B	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	2,30	—	1,40	2,34	3,24	0,41	0,71	0,92	354	3,31	A
	266	—	2,70	—	1,57	2,75	3,27	0,46	0,81	1,07	407	3,38	A
	356	—	3,48	—	1,95	3,55	4,56	0,59	1,06	1,41	528	3,36	A
	536	—	5,15	—	3,19	5,25	6,23	0,92	1,60	2,03	800	3,28	A
(1x2)	206	206	2,16	2,16	1,81	4,40	5,62	0,53	1,29	1,66	644	3,42	A
	206	266	2,07	2,68	2,00	4,84	6,08	0,58	1,41	1,83	703	3,44	A
	206	356	2,07	3,31	2,26	5,48	6,89	0,66	1,61	2,14	804	3,41	A
	206	536	1,56	4,12	2,39	5,79	6,87	0,71	1,72	2,27	862	3,35	A
	266	266	2,60	2,60	2,08	5,30	6,34	0,65	1,57	2,06	785	3,38	A
	266	356	2,46	3,02	2,30	5,58	6,63	0,67	1,63	2,15	814	3,43	A

Outdoor Unit HCKU 536 X2 (Heating mode)

	Combinations		Nominal Capacity (kW)		Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit A	Unit B	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	2,45	—	1,30	2,45	3,16	0,37	0,67	0,87	333	3,68	A
	266	—	2,98	—	1,52	2,98	3,90	0,45	0,79	1,06	395	3,77	A
	356	—	3,95	—	1,98	3,95	4,98	0,60	1,05	1,41	525	3,76	A
	536	—	5,46	—	2,84	5,46	6,83	0,78	1,48	1,95	738	3,70	A
(1x2)	206	206	2,47	2,47	2,07	4,94	6,27	0,64	1,31	1,70	656	3,77	A
	206	266	2,36	3,06	2,28	5,42	6,88	0,60	1,44	1,87	718	3,77	A
	206	356	2,33	3,72	2,54	6,05	7,50	0,66	1,59	2,03	795	3,80	A
	206	536	1,79	4,74	2,74	6,53	7,90	0,72	1,73	2,17	863	3,78	A
	266	266	3,05	3,05	2,56	6,10	7,38	0,67	1,61	2,06	805	3,79	A
	266	356	2,94	3,61	2,75	6,55	7,93	0,72	1,74	2,20	868	3,77	A

Outdoor Unit HCKU 606 X3 (Cooling mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	2,30	—	—	1,56	2,24	2,94	0,53	0,71	1,00	353	3,18	B
	266	—	—	2,70	—	—	1,78	2,63	3,46	0,62	0,83	1,17	414	3,18	B
	356	—	—	3,46	—	—	2,25	3,38	4,43	0,72	1,04	1,47	522	3,23	A
	536	—	—	5,35	—	—	3,32	5,22	6,85	1,04	1,64	2,31	819	3,19	B
(1x2)	206	206	—	2,13	2,13	—	1,79	4,16	5,33	0,54	1,27	1,79	635	3,27	A
	206	266	—	2,07	2,68	—	2,00	4,63	5,89	0,60	1,41	2,00	706	3,28	A
	206	356	—	2,06	3,30	—	2,25	5,23	6,65	0,69	1,62	2,29	810	3,23	A
	206	536	—	1,81	4,81	—	2,78	6,46	8,14	0,84	1,98	2,80	988	3,27	A
	266	266	—	2,64	2,64	—	2,22	5,15	6,49	0,68	1,61	2,27	805	3,20	B
	266	356	—	2,69	3,31	—	2,52	5,85	7,38	0,78	1,83	2,58	913	3,21	A
	266	536	—	2,29	4,66	—	2,92	6,78	8,48	0,89	2,09	2,95	1045	3,24	A
	356	356	—	3,19	3,19	—	2,68	6,22	7,78	0,80	1,87	2,64	937	3,32	A
(1x3)	206	206	206	2,05	2,05	2,05	2,58	6,00	7,44	0,76	1,80	2,54	899	3,34	A
	206	206	266	1,93	1,93	2,51	2,68	6,22	7,72	0,78	1,85	2,60	923	3,37	A
	206	206	356	1,84	1,84	2,94	2,78	6,46	8,01	0,82	1,94	2,73	970	3,33	A
	206	266	266	1,84	2,39	2,39	2,78	6,46	8,01	0,81	1,91	2,70	956	3,38	A
	266	266	266	2,32	2,32	2,32	2,92	6,78	8,41	0,86	2,02	2,86	1012	3,35	A

Outdoor Unit HCKU 606 X3 (Heating mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	2,45	—	—	1,67	2,44	3,14	0,49	0,69	0,96	343	3,55	B
	266	—	—	2,92	—	—	1,90	2,90	3,74	0,56	0,82	1,15	410	3,54	B
	356	—	—	3,75	—	—	2,33	3,73	4,80	0,68	1,03	1,44	515	3,62	A
	536	—	—	5,40	—	—	3,24	5,37	6,91	0,92	1,46	2,04	730	3,68	A
(1x2)	206	206	—	2,40	2,40	—	2,02	4,77	6,05	0,55	1,31	1,82	653	3,65	A
	206	266	—	2,33	3,02	—	2,25	5,32	6,74	0,60	1,43	1,99	715	3,72	A
	206	356	—	2,33	3,72	—	2,54	6,01	7,56	0,69	1,63	2,28	815	3,69	A
	206	536	—	1,92	5,10	—	2,95	6,98	8,70	0,78	1,87	2,61	935	3,73	A
	266	266	—	3,00	3,00	—	2,52	5,96	7,38	0,67	1,60	2,24	801	3,72	A

Outdoor Unit HCKU 606 X3 (Heating mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x2)	266	356	—	2,89	3,56	—	2,71	6,41	7,93	0,71	1,71	2,38	854	3,76	A
	266	536	—	2,42	4,94	—	3,09	7,32	8,98	0,83	1,97	2,75	987	3,71	A
	356	356	—	3,45	3,45	—	2,90	6,86	8,42	0,76	1,82	2,54	911	3,77	A
(1x3)	206	206	206	2,25	2,25	2,25	2,83	6,70	8,16	0,74	1,77	2,48	887	3,78	A
	206	206	266	2,05	2,05	2,67	2,85	6,74	8,20	0,75	1,78	2,49	892	3,78	A
	206	206	356	1,95	1,95	3,12	2,95	6,98	8,49	0,77	1,84	2,57	920	3,79	A
	206	266	266	1,95	2,54	2,54	2,95	6,98	8,49	0,77	1,83	2,56	916	3,81	A
	266	266	266	2,45	2,45	2,45	3,09	7,32	8,91	0,80	1,91	2,66	954	3,84	A

Outdoor Unit HCKU 806 X3 (Cooling mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	2,30	—	—	1,38	2,36	2,94	0,48	0,71	0,93	357	3,30	A
	266	—	—	2,70	—	—	1,62	2,77	3,46	0,56	0,83	1,09	416	3,33	A
	356	—	—	3,46	—	—	2,08	3,55	4,43	0,72	1,08	1,40	538	3,29	A
	536	—	—	5,35	—	—	3,10	5,48	6,85	1,05	1,65	2,15	827	3,32	A
(1x2)	206	206	—	2,18	2,18	—	1,83	4,46	5,39	0,55	1,35	1,76	675	3,30	A
	206	266	—	2,07	2,68	—	2,00	4,87	5,89	0,60	1,47	1,92	734	3,32	A
	206	356	—	2,07	3,31	—	2,26	5,51	6,62	0,67	1,63	2,14	817	3,37	A
	206	536	—	2,05	5,45	—	3,15	7,69	9,23	0,94	2,31	2,95	1155	3,33	A
	266	266	—	2,70	2,70	—	2,27	5,54	6,64	0,67	1,63	2,14	817	3,39	A
	266	356	—	2,68	3,30	—	2,51	6,13	7,30	0,74	1,80	2,36	900	3,40	A
	266	536	—	2,57	5,23	—	3,28	8,00	9,52	0,96	2,35	2,93	1174	3,40	A
	356	356	—	3,42	3,42	—	2,87	7,01	8,28	0,85	2,07	2,72	1037	3,38	A
(1x3)	356	536	—	3,01	4,99	—	3,36	8,20	9,68	1,01	2,47	3,07	1233	3,32	A
	206	206	206	2,18	2,18	2,18	2,75	6,70	7,91	0,81	1,99	2,60	993	3,37	A
	206	206	266	2,04	2,04	2,65	2,82	6,89	8,13	0,83	2,04	2,66	1018	3,38	A
	206	206	356	2,07	2,07	3,31	3,13	7,64	9,01	0,92	2,24	2,93	1121	3,41	A
	206	206	536	1,76	1,76	4,66	3,44	8,38	9,90	1,02	2,50	3,13	1248	3,36	A
	206	266	266	2,07	2,69	2,69	3,13	7,64	9,01	0,92	2,24	2,87	1121	3,41	A
	206	266	356	2,00	2,60	3,20	3,28	8,00	9,44	0,96	2,34	2,99	1170	3,42	A
	206	356	356	1,93	3,09	3,09	3,40	8,30	9,80	1,00	2,44	3,07	1218	3,41	A
	266	266	266	2,60	2,60	2,60	3,28	8,00	9,44	0,96	2,35	3,00	1174	3,40	A
	266	266	356	2,51	2,51	3,09	3,40	8,30	9,80	0,99	2,43	3,05	1214	3,42	A
266	356	356	2,35	2,90	2,90	3,42	8,35	9,86	1,01	2,47	3,09	1233	3,39	A	

Outdoor Unit HCKU 806 X3 (Heating mode)

	Combinations			Nominal Capacity (kW)			Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit A	Unit B	Unit C	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	2,45	—	—	1,47	2,44	3,14	0,46	0,67	0,90	336	3,62	A
	266	—	—	2,96	—	—	1,78	2,94	3,79	0,56	0,82	1,09	408	3,61	A
	356	—	—	3,75	—	—	2,18	3,73	4,80	0,69	1,01	1,35	507	3,68	A
	536	—	—	5,40	—	—	3,02	5,37	6,91	1,00	1,46	1,95	730	3,68	A
(1x2)	206	206	—	2,40	2,40	—	2,02	4,77	6,00	0,54	1,28	1,73	640	3,73	A
	206	266	—	2,33	3,02	—	2,25	5,32	6,69	0,60	1,42	1,92	711	3,74	A
	206	356	—	2,33	3,72	—	2,54	6,02	7,44	0,68	1,62	2,19	810	3,71	A
	206	536	—	2,27	6,03	—	3,49	8,25	10,04	0,95	2,25	2,96	1123	3,67	A
	266	266	—	3,00	3,00	—	2,52	5,97	7,38	0,67	1,59	2,15	796	3,75	A
	266	356	—	2,89	3,56	—	2,71	6,41	7,80	0,71	1,69	2,23	844	3,80	A
	266	536	—	2,88	5,87	—	3,68	8,70	10,59	0,97	2,30	2,97	1152	3,78	A
	356	356	—	3,45	3,45	—	2,90	6,86	8,35	0,76	1,80	2,43	900	3,81	A
	356	536	—	3,39	5,61	—	3,78	8,95	10,89	1,01	2,39	3,08	1194	3,75	A
(1x3)	206	206	206	2,37	2,37	2,37	2,98	7,06	8,59	0,78	1,86	2,51	929	3,80	A
	206	206	266	2,27	2,27	2,95	3,15	7,46	9,08	0,83	1,96	2,65	981	3,80	A
	206	206	356	2,31	2,31	3,69	3,49	8,25	10,04	0,91	2,17	2,86	1085	3,80	A
	206	206	536	1,96	1,96	5,19	3,82	9,05	11,65	1,01	2,39	3,08	1194	3,79	A
	206	266	266	2,31	3,00	3,00	3,49	8,25	10,04	0,92	2,17	2,87	1085	3,80	A
	206	266	356	2,24	2,92	3,59	3,68	8,70	10,59	0,97	2,29	3,03	1147	3,79	A
	206	356	356	2,15	3,45	3,45	3,80	9,00	10,95	1,00	2,36	3,07	1180	3,81	A
	266	266	266	2,92	2,92	2,92	3,68	8,70	10,59	0,97	2,30	3,02	1150	3,78	A
	266	266	356	2,80	2,80	3,45	3,80	9,00	10,95	0,99	2,35	3,05	1175	3,83	A
266	356	356	2,63	3,24	3,24	3,82	9,05	11,01	1,00	2,37	3,08	1185	3,82	A	

Outdoor Unit HCKU 706 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2,30	—	—	—	1,38	2,29	2,88	0,50	0,69	1,03	345	3,32	A
	266	—	—	—	2,70	—	—	—	1,62	2,69	3,38	0,58	0,81	1,21	404	3,33	A
	356	—	—	—	3,46	—	—	—	2,08	3,45	4,33	0,74	1,03	1,54	517	3,33	A
	536	—	—	—	5,35	—	—	—	3,21	5,33	6,69	1,14	1,59	2,36	793	3,36	A
(1x2)	206	206	—	—	2,21	2,21	—	—	1,85	4,39	5,42	0,58	1,31	1,95	657	3,34	A
	206	266	—	—	2,32	3,02	—	—	2,24	5,32	6,57	0,69	1,57	2,34	784	3,39	A
	206	356	—	—	2,29	3,66	—	—	2,50	5,92	7,32	0,77	1,75	2,61	875	3,39	A
	206	536	—	—	1,88	4,97	—	—	2,88	6,82	8,43	0,88	2,00	2,98	1002	3,40	A
	266	266	—	—	2,97	2,97	—	—	2,49	5,91	7,31	0,76	1,72	2,56	861	3,43	A
	266	356	—	—	2,76	3,40	—	—	2,59	6,13	7,58	0,78	1,77	2,63	884	3,47	A
	266	536	—	—	2,30	4,68	—	—	2,93	6,95	8,59	0,89	2,02	3,01	1011	3,44	A
	356	356	—	—	3,21	3,21	—	—	2,70	6,39	7,90	0,82	1,85	2,75	925	3,46	A
	356	536	—	—	2,73	4,52	—	—	3,05	7,22	8,92	0,93	2,10	3,13	1052	3,43	A
(1x3)	206	206	206	—	2,06	2,06	2,06	—	2,60	6,15	7,54	0,78	1,76	2,62	880	3,50	A
	206	206	266	—	1,95	1,95	2,53	—	2,70	6,39	7,83	0,80	1,82	2,71	911	3,51	A
	206	206	356	—	1,86	1,86	2,97	—	2,81	6,65	8,15	0,83	1,89	2,81	943	3,53	A
	206	206	536	—	1,86	1,86	4,93	—	3,63	8,61	10,55	1,08	2,45	3,65	1224	3,52	A
	206	266	266	—	1,86	2,68	2,68	—	2,81	6,65	8,15	0,83	1,89	2,81	943	3,53	A
	206	266	356	—	1,79	2,33	2,86	—	2,93	6,95	8,52	0,86	1,96	2,92	979	3,55	A

Outdoor Unit HCKU 706 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x3)	206	356	356	—	1,73	2,76	2,76	—	3,05	7,22	8,85	0,90	2,03	3,03	1016	3,55	A
	266	266	266	—	2,33	2,33	2,33	—	2,93	6,95	8,52	0,87	1,97	2,94	984	3,53	A
	266	266	356	—	2,24	2,24	2,76	—	3,05	7,22	8,85	0,90	2,05	3,05	1025	3,52	A
	266	356	356	—	2,24	2,76	2,76	—	3,26	7,74	9,48	0,97	2,19	3,27	1097	3,53	A
(1x4)	206	206	206	206	1,76	1,76	1,76	1,76	2,45	7,00	8,58	0,98	1,99	2,96	993	3,52	A
	206	206	206	266	1,70	1,70	1,70	2,21	3,00	7,28	8,92	0,91	2,06	3,06	1029	3,54	A
	206	206	266	266	1,72	1,72	2,24	2,24	3,25	7,89	9,66	0,98	2,22	3,31	1111	3,55	A
	206	266	266	266	1,66	2,16	2,16	2,16	3,34	8,10	9,93	1,00	2,28	3,39	1138	3,56	A
	266	266	266	266	2,05	2,05	2,05	2,05	3,37	8,17	10,02	1,00	2,27	3,38	1134	3,61	A

Outdoor Unit HCKU 706 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2,65	—	—	—	1,72	2,64	3,29	0,57	0,75	1,08	377	3,51	B
	266	—	—	—	2,92	—	—	—	1,90	2,91	3,62	0,62	0,83	1,19	414	3,52	B
	356	—	—	—	3,75	—	—	—	2,44	3,74	4,65	0,78	1,04	1,50	521	3,59	B
	536	—	—	—	5,85	—	—	—	3,80	5,83	7,25	1,21	1,61	2,32	805	3,63	A
(1x2)	206	206	—	—	2,38	2,38	—	—	2,00	4,75	5,81	0,56	1,29	1,87	647	3,67	A
	206	266	—	—	2,63	3,41	—	—	2,54	6,02	7,37	0,71	1,65	2,37	823	3,66	A
	206	356	—	—	2,55	4,09	—	—	2,79	6,62	8,10	0,77	1,79	2,58	893	3,71	A
	206	536	—	—	2,29	6,07	—	—	3,51	8,34	10,20	0,96	2,24	3,23	1121	3,72	A
	266	266	—	—	3,32	3,32	—	—	2,79	6,62	8,10	0,77	1,78	2,56	888	3,73	A
	266	356	—	—	3,08	3,78	—	—	2,88	6,84	8,37	0,79	1,83	2,63	916	3,73	A
	266	536	—	—	2,77	5,65	—	—	3,54	8,40	10,27	0,95	2,22	3,20	1112	3,78	A
	356	356	—	—	3,58	3,58	—	—	3,00	7,13	8,72	0,82	1,91	2,75	954	3,74	A
(1x3)	356	536	—	—	3,15	5,21	—	—	3,51	8,34	10,20	0,94	2,20	3,16	1098	3,80	A
	206	206	206	—	2,28	2,28	2,28	—	2,88	6,83	8,36	0,77	1,79	2,57	893	3,83	A
	206	206	266	—	2,36	2,36	3,06	—	3,27	7,76	9,49	0,86	2,01	2,89	1005	3,86	A
	206	206	356	—	2,32	2,32	3,72	—	3,51	8,34	10,20	0,94	2,19	3,16	1093	3,81	A
	206	206	536	—	2,02	2,02	5,35	—	3,94	9,36	11,44	1,05	2,45	3,52	1223	3,82	A
	206	266	266	—	2,32	2,68	2,68	—	3,51	8,34	10,20	0,93	2,17	3,12	1084	3,85	A
	206	266	356	—	2,18	2,84	3,50	—	3,58	8,50	10,39	0,94	2,20	3,16	1098	3,87	A
	206	356	356	—	2,11	3,38	3,38	—	3,72	8,84	10,81	0,98	2,28	3,28	1140	3,88	A
	266	266	266	—	2,84	2,84	2,84	—	3,58	8,50	10,39	0,94	2,20	3,16	1098	3,87	A
	266	266	356	—	2,74	2,74	3,38	—	3,72	8,84	10,81	0,98	2,27	3,27	1135	3,89	A
(1x4)	266	356	356	—	2,50	3,08	3,08	—	3,63	8,63	10,55	0,95	2,21	3,22	1107	3,90	A
	206	206	206	206	1,91	1,91	1,91	1,91	2,85	7,60	9,30	0,91	1,96	2,83	981	3,87	A
	206	206	206	266	1,91	1,91	1,91	2,48	3,37	8,19	10,02	0,91	2,11	3,05	1056	3,88	A
	206	206	266	266	2,04	2,04	2,65	2,65	3,85	9,36	11,44	1,03	2,39	3,44	1195	3,91	A
	206	266	266	266	1,96	2,54	2,54	2,54	3,93	9,57	11,70	1,05	2,45	3,52	1223	3,91	A
266	266	266	266	2,41	2,41	2,41	2,41	3,96	9,62	11,77	1,07	2,48	3,57	1242	3,87	A	

Outdoor Unit HCKU 816 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2.30	—	—	—	1.38	2.35	2.81	0.58	0.77	1.04	387	3.04	B
	266	—	—	—	2.70	—	—	—	1.62	2.76	3.29	0.67	0.90	1.21	452	3.05	B
	356	—	—	—	3.46	—	—	—	2.08	3.54	4.22	0.85	1.15	1.54	573	3.09	B
	536	—	—	—	5.35	—	—	—	3.21	5.48	6.53	1.31	1.76	2.36	880	3.11	B
(1x2)	206	206	—	—	2.24	2.24	—	—	1.88	4.59	5.47	0.58	1.46	1.96	729	3.15	B
	206	266	—	—	2.29	2.97	—	—	2.21	5.38	6.42	0.68	1.72	2.31	859	3.13	B
	206	356	—	—	2.35	3.75	—	—	2.56	6.24	7.44	0.78	1.97	2.64	985	3.17	B
	206	536	—	—	2.12	5.61	—	—	3.25	7.91	9.43	0.99	2.50	3.36	1251	3.16	B
	266	266	—	—	3.02	3.02	—	—	2.54	6.18	7.37	0.77	1.94	2.61	970	3.19	B
	266	356	—	—	2.81	3.45	—	—	2.63	6.41	7.64	0.80	2.01	2.70	1005	3.19	B
	266	536	—	—	2.59	5.29	—	—	3.31	8.07	9.61	1.00	2.51	3.38	1257	3.21	A
	356	356	—	—	3.65	3.65	—	—	3.07	7.47	8.91	0.92	2.32	3.12	1161	3.22	A
	356	536	—	—	3.06	5.06	—	—	3.41	8.31	9.91	1.04	2.60	3.50	1302	3.19	B
(1x3)	206	206	206	—	2.09	2.09	2.09	—	2.64	6.43	7.66	0.79	1.98	2.67	990	3.25	A
	206	206	266	—	2.21	2.21	2.88	—	3.07	7.47	8.91	0.91	2.28	3.07	1141	3.27	A
	206	206	356	—	2.10	2.10	3.36	—	3.18	7.74	9.22	0.94	2.37	3.18	1186	3.26	A
	206	206	536	—	1.86	1.86	4.93	—	3.63	8.85	10.55	1.07	2.68	3.60	1342	3.30	A
	206	266	266	—	2.10	2.68	2.68	—	3.18	7.74	9.22	0.93	2.34	3.15	1171	3.30	A
	206	266	356	—	2.02	2.63	3.23	—	3.31	8.07	9.61	0.98	2.45	3.29	1226	3.29	A
	206	266	536	—	1.81	2.35	4.80	—	3.76	9.17	10.93	1.12	2.81	3.78	1407	3.26	A
	206	356	356	—	1.93	3.09	3.09	—	3.41	8.31	9.91	1.00	2.52	3.38	1262	3.29	A
	206	356	536	—	1.72	2.75	4.55	—	3.79	9.23	11.00	1.11	2.79	3.75	1397	3.30	A
	266	266	266	—	2.63	2.63	2.63	—	3.31	8.07	9.61	0.98	2.46	3.31	1231	3.27	A
	266	266	356	—	2.51	2.51	3.09	—	3.41	8.31	9.91	1.01	2.54	3.41	1272	3.27	A
	266	266	536	—	2.23	2.23	4.55	—	3.79	9.23	11.00	1.12	2.80	3.77	1402	3.29	A
	266	356	356	—	2.50	3.08	3.08	—	3.63	8.85	10.55	1.08	2.72	3.66	1362	3.25	A
	266	356	536	—	2.13	2.62	4.34	—	3.82	9.30	11.09	1.13	2.83	3.81	1417	3.28	A
	356	356	356	—	2.95	2.95	2.95	—	3.72	9.06	10.80	1.10	2.76	3.71	1382	3.28	A
(1x4)	206	206	206	206	1.98	1.98	1.98	1.98	2.45	8.10	9.65	0.98	2.48	3.33	1241	3.26	A
	206	206	206	266	1.90	1.90	1.90	2.46	3.34	8.34	9.94	1.02	2.55	3.43	1277	3.27	A
	206	206	206	356	1.90	1.90	1.90	3.04	3.59	8.96	10.68	1.09	2.73	3.67	1367	3.28	A
	206	206	206	536	1.61	1.61	1.61	4.28	3.74	9.33	11.13	1.11	2.79	3.75	1397	3.34	A
	206	206	266	266	1.90	1.90	2.47	2.47	3.59	8.96	10.68	1.09	2.73	3.67	1367	3.28	A
	206	206	266	356	1.83	1.83	2.38	2.93	3.67	9.17	10.93	1.11	2.78	3.74	1392	3.29	A
	206	266	266	266	1.83	2.38	2.38	2.38	3.67	9.17	10.93	1.11	2.78	3.74	1392	3.29	A
	206	266	266	356	1.73	2.26	2.26	2.78	3.70	9.23	11.00	1.11	2.79	3.75	1397	3.30	A
	266	266	266	266	2.26	2.26	2.26	2.26	3.70	9.23	11.00	1.11	2.79	3.75	1397	3.30	A
	266	266	266	356	2.15	2.15	2.15	2.64	3.73	9.30	11.09	1.11	2.79	3.75	1397	3.33	A

Outdoor Unit HCKU 816 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2.65	—	—	—	1.59	2.71	3.23	0.47	0.79	1.06	393	3.45	B
	266	—	—	—	2.92	—	—	—	1.75	2.99	3.56	0.52	0.86	1.16	428	3.50	B
	356	—	—	—	3.75	—	—	—	2.25	3.84	4.58	0.66	1.09	1.47	547	3.51	B
	536	—	—	—	5.85	—	—	—	3.51	5.99	7.14	1.04	1.72	2.31	860	3.48	B
(1x2)	206	206	—	—	2.38	2.38	—	—	2.00	4.87	5.81	0.56	1.38	1.86	691	3.53	B
	206	266	—	—	2.53	3.29	—	—	2.44	5.96	7.10	0.67	1.67	2.25	835	3.57	B
	206	356	—	—	2.48	3.98	—	—	2.71	6.61	7.88	0.74	1.85	2.49	925	3.58	B
	206	536	—	—	2.29	6.07	—	—	3.51	8.56	10.20	0.96	2.40	3.23	1198	3.57	B
	266	266	—	—	3.32	3.32	—	—	2.79	6.80	8.10	0.76	1.90	2.56	950	3.58	B
	266	356	—	—	3.08	3.78	—	—	2.88	7.02	8.37	0.78	1.93	2.60	965	3.64	A
	266	536	—	—	2.77	5.65	—	—	3.54	8.62	10.27	0.95	2.38	3.20	1189	3.63	A
	356	356	—	—	3.58	3.58	—	—	3.00	7.32	8.72	0.80	2.00	2.69	1000	3.66	A
	356	536	—	—	3.15	5.21	—	—	3.51	8.56	10.20	0.93	2.33	3.13	1164	3.68	A
	536	536	—	—	4.41	4.41	—	—	3.70	9.03	10.76	1.00	2.50	3.36	1248	3.62	A
(1x3)	206	206	206	—	2.28	2.28	2.28	—	2.88	7.01	8.36	0.76	1.89	2.54	945	3.71	A
	206	206	266	—	2.36	2.36	3.06	—	3.27	7.97	9.49	0.86	2.15	2.89	1074	3.71	A
	206	206	356	—	2.32	2.32	3.72	—	3.51	8.56	10.20	0.92	2.29	3.09	1144	3.74	A
	206	206	536	—	2.02	2.02	5.35	—	3.94	9.60	11.44	1.04	2.58	3.47	1288	3.73	A
	206	266	266	—	2.32	2.68	2.68	—	3.51	8.56	10.20	0.92	2.29	3.09	1144	3.74	A
	206	266	356	—	2.18	2.84	3.50	—	3.58	8.72	10.39	0.94	2.34	3.15	1169	3.73	A
	206	266	536	—	1.98	2.57	5.24	—	4.11	10.01	11.93	1.09	2.71	3.65	1353	3.70	A
	206	356	356	—	2.11	3.38	3.38	—	3.72	9.07	10.81	0.98	2.45	3.30	1223	3.71	A
	206	356	536	—	1.89	3.02	5.01	—	4.17	10.16	12.10	1.11	2.76	3.72	1382	3.67	A
	266	266	266	—	2.84	2.84	2.84	—	3.58	8.72	10.39	0.94	2.35	3.16	1174	3.72	A
	266	266	356	—	2.74	2.74	3.38	—	3.72	9.07	10.81	1.00	2.48	3.33	1238	3.66	A
	266	266	536	—	2.46	2.46	5.01	—	4.17	10.16	12.10	1.11	2.75	3.70	1373	3.70	A
	266	356	356	—	2.71	3.34	3.34	—	3.94	9.60	11.44	1.05	2.60	3.50	1298	3.70	A
	266	356	536	—	2.36	2.91	4.81	—	4.23	10.32	12.30	1.11	2.76	3.73	1382	3.73	A
356	356	356	—	3.25	3.25	3.25	—	4.10	9.99	11.91	1.08	2.69	3.62	1343	3.72	A	
(1x4)	206	206	206	206	2.20	2.20	2.20	2.20	2.85	9.00	10.72	0.91	2.43	3.26	1213	3.71	A
	206	206	206	266	2.06	2.06	2.06	2.68	3.63	9.07	10.81	0.98	2.44	3.28	1218	3.72	A
	206	206	206	356	2.04	2.04	2.04	3.26	3.85	9.60	11.44	1.04	2.58	3.47	1288	3.73	A
	206	206	206	536	1.79	1.79	1.79	4.75	4.15	10.37	12.36	1.12	2.79	3.76	1397	3.71	A
	206	206	266	266	2.07	2.07	2.69	2.69	3.90	9.74	11.60	1.05	2.61	3.51	1303	3.74	A
	206	206	266	356	1.99	1.99	2.59	3.19	4.00	9.99	11.91	1.07	2.66	3.58	1328	3.76	A
	206	266	266	266	1.99	2.59	2.59	2.59	4.00	9.99	11.91	1.06	2.64	3.55	1318	3.79	A
	206	266	266	356	1.91	2.48	2.48	3.05	4.07	10.16	12.10	1.08	2.70	3.63	1348	3.77	A
	266	266	266	266	2.48	2.48	2.48	2.48	4.07	10.16	12.10	1.09	2.71	3.64	1353	3.75	A
	266	266	266	356	2.38	2.38	2.38	2.93	4.13	10.32	12.30	1.11	2.76	3.71	1378	3.75	A

Outdoor Unit HCKU 1066 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2,30	—	—	—	1,27	2,32	2,78	0,55	0,81	1,03	407	2,85	C
	266	—	—	—	2,70	—	—	—	1,49	2,73	3,27	0,64	0,95	1,20	475	2,87	C
	356	—	—	—	3,46	—	—	—	1,90	3,49	4,19	0,80	1,19	1,51	597	2,93	C
	536	—	—	—	5,84	—	—	—	3,21	5,89	7,07	1,34	2,00	2,54	999	2,95	C
(1x2)	206	206	—	—	2,08	2,08	—	—	1,71	4,20	5,03	0,62	1,43	1,81	713	2,94	C
	206	266	—	—	2,37	3,07	—	—	2,23	5,49	6,58	0,81	1,87	2,37	936	2,93	C
	206	356	—	—	2,25	3,59	—	—	2,39	5,89	7,07	0,86	1,98	2,51	990	2,98	C
	206	536	—	—	1,98	5,24	—	—	2,96	7,29	8,74	1,05	2,43	3,07	1213	3,00	B
	266	266	—	—	2,92	2,92	—	—	2,39	5,89	7,07	0,84	1,95	2,47	975	3,02	B
	266	356	—	—	2,62	3,22	—	—	2,39	5,89	7,07	0,84	1,93	2,45	965	3,05	B
	266	536	—	—	2,68	5,47	—	—	3,34	8,23	9,86	1,18	2,72	3,44	1358	3,03	B
	356	356	—	—	3,14	3,14	—	—	2,57	6,34	7,60	0,89	2,05	2,59	1023	3,10	B
	356	536	—	—	3,07	5,08	—	—	3,34	8,23	9,86	1,17	2,71	3,43	1353	3,04	B
	536	536	—	—	5,25	5,25	—	—	4,31	10,60	12,71	1,48	3,41	4,33	1707	3,10	B
(1x3)	206	206	206	—	2,09	2,09	2,09	—	2,57	6,34	7,60	0,89	2,07	2,62	1033	3,07	B
	206	206	266	—	2,19	2,19	2,84	—	2,96	7,29	8,74	1,02	2,37	3,00	1184	3,08	B
	206	206	356	—	2,01	2,01	3,21	—	2,96	7,29	8,74	1,03	2,39	3,03	1193	3,05	B
	206	206	536	—	2,10	2,10	5,56	—	4,00	9,84	11,80	1,36	3,14	3,98	1572	3,13	B
	206	266	266	—	2,01	2,68	2,68	—	2,96	7,29	8,74	1,02	2,37	3,00	1184	3,08	B
	206	266	356	—	2,09	2,72	3,34	—	3,34	8,23	9,86	1,16	2,69	3,41	1344	3,06	B
	206	266	536	—	2,12	2,76	5,62	—	4,31	10,60	12,71	1,45	3,35	4,25	1673	3,17	B
	206	356	356	—	1,94	3,10	3,10	—	3,34	8,23	9,86	1,15	2,65	3,36	1324	3,11	B
	206	356	536	—	2,00	3,20	5,30	—	4,31	10,60	12,71	1,45	3,35	4,25	1673	3,17	B
	206	536	536	—	1,88	4,98	4,98	—	4,85	11,95	14,33	1,61	3,72	4,71	1858	3,22	A
	266	266	266	—	2,72	2,72	2,72	—	3,34	8,23	9,86	1,16	2,68	3,40	1339	3,07	B
	266	266	356	—	2,52	2,52	3,10	—	3,34	8,23	9,86	1,16	2,67	3,39	1334	3,08	B
	266	266	536	—	2,60	2,60	5,30	—	4,31	10,60	12,71	1,45	3,35	4,25	1673	3,17	B
	266	356	356	—	2,82	3,47	3,47	—	4,00	9,84	11,80	1,35	3,12	3,96	1562	3,15	B
	266	356	536	—	2,13	2,62	4,34	—	3,73	9,18	11,00	1,25	2,88	3,65	1441	3,18	B
	266	536	536	—	2,33	4,75	4,75	—	4,85	11,95	14,33	1,60	3,70	4,68	1848	3,23	A
	356	356	356	—	3,25	3,25	3,25	—	4,00	9,84	11,80	1,34	3,09	3,92	1547	3,18	B
356	356	536	—	3,20	3,20	4,65	—	4,53	11,15	13,37	1,54	3,55	4,50	1775	3,14	B	
356	536	536	—	2,75	4,55	4,55	—	4,85	11,95	14,33	1,61	3,72	4,71	1858	3,22	A	
(1x4)	206	206	206	206	2,04	2,04	2,04	2,04	3,34	8,23	9,78	1,11	2,57	3,23	1285	3,20	A
	206	206	206	266	1,90	1,90	1,90	2,46	3,34	8,23	9,78	1,11	2,57	3,23	1285	3,20	A
	206	206	206	356	2,12	2,12	2,12	3,39	4,00	9,84	11,70	1,33	3,08	3,87	1542	3,19	B
	206	206	206	536	1,96	1,96	1,96	5,18	4,53	11,15	13,26	1,51	3,49	4,39	1746	3,19	B
	206	206	266	266	2,12	2,12	2,76	2,76	4,00	9,84	11,70	1,34	3,10	3,90	1552	3,17	B
	206	206	266	356	2,14	2,14	2,79	3,43	4,31	10,60	12,60	1,45	3,35	4,21	1673	3,17	B
	206	206	266	536	1,86	1,86	2,41	4,92	4,53	11,15	13,26	1,51	3,49	4,39	1746	3,19	B
	206	206	356	356	2,02	2,02	3,23	3,23	4,31	10,60	12,60	1,45	3,35	4,21	1673	3,17	B
	206	206	356	536	1,84	1,84	2,95	4,88	4,72	11,63	13,82	1,57	3,63	4,56	1814	3,20	A
	206	206	536	536	1,67	1,67	4,41	4,41	4,99	12,27	14,59	1,62	3,74	4,71	1872	3,28	A
	206	266	266	266	2,14	2,79	2,79	2,79	4,31	10,60	12,60	1,42	3,29	4,13	1644	3,22	A
	206	266	266	356	2,02	2,63	2,63	3,23	4,31	10,60	12,60	1,45	3,35	4,21	1673	3,17	B
	206	266	266	536	1,84	2,40	2,40	4,88	4,72	11,63	13,82	1,57	3,63	4,56	1814	3,20	A
	206	266	356	356	2,01	2,61	3,21	3,21	4,53	11,15	13,26	1,51	3,49	4,39	1746	3,19	B
206	266	356	536	1,81	2,35	2,89	4,79	4,85	11,95	14,21	1,59	3,67	4,61	1833	3,26	A	

Outdoor Unit HCKU 1066 X4 (Cooling mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	EER (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x4)	206	266	536	536	1,56	2,03	4,13	4,13	4,85	11,95	14,21	1,59	3,67	4,61	1833	3,26	A
	206	356	356	356	1,91	3,05	3,05	3,05	4,53	11,15	13,26	1,51	3,49	4,39	1746	3,19	B
	266	266	266	266	2,63	2,63	2,63	2,63	4,31	10,60	12,81	1,38	3,35	4,32	1675	3,16	B
	266	266	266	356	2,61	2,61	2,61	3,21	4,53	11,15	13,26	1,52	3,51	4,42	1756	3,18	B
	266	266	266	536	2,29	2,29	2,29	4,66	4,72	11,63	13,82	1,57	3,63	4,56	1814	3,20	A
	266	266	356	356	2,48	2,48	3,05	3,05	4,53	11,15	13,26	1,51	3,49	4,39	1746	3,19	B
	266	266	356	536	2,25	2,25	2,77	4,58	4,85	11,95	14,21	1,59	3,67	4,61	1833	3,26	A
	266	356	356	356	2,46	3,02	3,02	3,02	4,72	11,63	13,82	1,57	3,63	4,56	1814	3,20	A

Outdoor Unit HCKU 1066 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x1)	206	—	—	—	2,65	—	—	—	1,59	2,79	3,26	0,61	0,90	1,17	450	3,10	D
	266	—	—	—	2,92	—	—	—	1,75	3,08	3,59	0,67	1,00	1,29	498	3,09	D
	356	—	—	—	3,75	—	—	—	2,25	3,95	4,61	0,86	1,27	1,64	633	3,12	D
	536	—	—	—	6,34	—	—	—	3,80	6,68	7,80	1,22	2,13	2,77	1064	3,14	D
(1x2)	206	206	—	—	2,38	2,38	—	—	2,00	5,02	5,85	0,66	1,59	2,07	795	3,15	D
	206	266	—	—	2,63	3,41	—	—	2,54	6,37	7,43	0,84	2,00	2,61	1002	3,18	D
	206	356	—	—	2,44	3,90	—	—	2,66	6,68	7,80	0,86	2,07	2,70	1035	3,23	C
	206	536	—	—	2,37	6,28	—	—	3,63	9,12	10,64	1,16	2,79	3,64	1394	3,27	C
	266	266	—	—	3,17	3,17	—	—	2,66	6,68	7,80	0,85	2,04	2,66	1021	3,27	C
	266	356	—	—	3,07	3,77	—	—	2,87	7,21	8,41	0,93	2,22	2,90	1112	3,24	C
	266	536	—	—	2,90	5,92	—	—	3,70	9,30	10,85	0,99	2,37	3,09	1184	3,93	A
	356	356	—	—	3,61	3,61	—	—	3,03	7,61	8,88	0,97	2,33	3,04	1164	3,27	C
	356	536	—	—	3,32	5,50	—	—	3,70	9,30	10,85	0,99	2,37	3,09	1184	3,93	A
536	536	—	—	5,55	5,55	—	—	4,66	11,70	13,65	1,38	3,32	4,32	1658	3,53	B	
(1x3)	206	206	206	—	2,28	2,28	2,28	—	2,87	7,21	8,41	0,94	2,25	2,94	1126	3,20	C
	206	206	266	—	2,19	2,19	2,84	—	3,03	7,61	8,88	0,94	2,26	2,95	1131	3,36	C
	206	206	356	—	2,40	2,40	3,84	—	3,63	9,12	10,64	1,12	2,68	3,50	1342	3,40	C
	206	206	536	—	2,33	2,33	6,18	—	4,56	11,44	13,35	1,35	3,24	4,23	1620	3,53	B
	206	266	266	—	2,40	2,68	2,68	—	3,63	9,12	10,64	1,11	2,65	3,45	1323	3,45	B
	206	266	356	—	2,22	2,88	3,55	—	3,63	9,12	10,64	1,11	2,65	3,45	1323	3,45	B
	206	266	536	—	2,24	2,92	5,94	—	4,66	11,70	13,65	1,35	3,24	4,23	1620	3,61	A
	206	356	356	—	2,10	3,36	3,36	—	3,70	9,30	10,85	1,15	2,76	3,60	1380	3,37	C
	206	356	536	—	2,11	3,38	5,60	—	4,66	11,70	13,65	1,35	3,24	4,23	1620	3,61	A
	206	536	536	—	1,85	4,89	4,89	—	4,88	12,26	14,30	1,42	3,41	4,45	1706	3,59	B
	266	266	266	—	2,88	2,88	2,88	—	3,63	9,12	10,64	1,12	2,67	3,49	1337	3,41	B
	266	266	356	—	2,73	2,73	3,36	—	3,70	9,30	10,85	1,13	2,71	3,53	1356	3,43	B
	266	266	536	—	2,75	2,75	5,60	—	4,66	11,70	13,65	1,35	3,24	4,23	1620	3,61	A
	266	356	356	—	3,13	3,86	3,86	—	4,56	11,44	13,35	1,44	3,44	4,49	1720	3,32	C
	266	356	536	—	2,13	2,62	4,34	—	3,82	9,58	11,18	1,19	2,85	3,71	1423	3,37	C
266	536	536	—	2,33	4,75	4,75	—	4,97	12,48	14,56	1,52	3,65	4,76	1826	3,42	B	

Outdoor Unit HCKU 1066 X4 (Heating mode)

	Combinations				Nominal Capacity (kW)				Rated Capacity (kW)			Power Consumption (kW)			Annual Consumption (kWh) [500h/Year]	COP (W/W) (Std. Data)	Energy Class
	Unit A	Unit B	Unit C	Unit D	Unit A	Unit B	Unit C	Unit D	Min.	Std.	Max	Min.	Std.	Max			
(1x3)	356	356	356	—	3,62	3,62	3,62	—	4,56	11,44	13,35	1,39	3,33	4,33	1663	3,44	B
	356	356	536	—	3,25	3,25	4,66	—	4,69	11,76	13,73	1,44	3,45	4,50	1725	3,41	B
	356	536	536	—	2,79	4,62	4,62	—	5,06	12,69	14,81	1,49	3,57	4,66	1787	3,55	B
(1x4)	206	206	206	206	2,21	2,21	2,21	2,21	3,70	9,30	10,67	0,99	2,37	3,01	1184	3,93	A
	206	206	206	266	2,05	2,05	2,05	2,67	3,70	9,30	10,67	0,99	2,37	3,01	1184	3,93	A
	206	206	206	356	2,36	2,36	2,36	3,77	4,56	11,44	13,13	1,40	3,35	4,27	1677	3,41	B
	206	206	206	536	1,98	1,98	1,98	5,23	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	206	206	266	266	2,36	2,36	3,07	3,07	4,56	11,44	13,13	1,35	3,23	4,11	1615	3,54	B
	206	206	266	356	2,27	2,27	2,94	3,62	4,66	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	206	206	266	536	1,88	1,88	2,44	4,97	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	206	206	356	356	2,13	2,13	3,42	3,42	4,66	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	206	206	356	536	1,86	1,86	2,98	4,93	4,88	12,26	14,07	1,41	3,36	4,29	1682	3,64	A
	206	206	536	536	1,82	1,82	4,81	4,81	5,57	13,97	16,03	1,58	3,78	4,81	1888	3,70	A
	206	266	266	266	2,27	2,94	2,94	2,94	4,66	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	206	266	266	356	2,13	2,78	2,78	3,42	4,66	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	206	266	266	536	1,86	2,42	2,42	4,93	4,88	12,26	14,07	1,41	3,36	4,29	1682	3,64	A
	206	266	356	356	2,03	2,64	3,25	3,25	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	206	266	356	536	1,81	2,35	2,89	4,79	4,97	12,48	14,33	1,50	3,59	4,57	1797	3,47	B
	206	266	536	536	1,56	2,03	4,13	4,13	4,97	12,48	14,33	1,50	3,59	4,57	1797	3,47	B
	206	356	356	356	1,92	3,08	3,08	3,08	4,69	11,76	13,50	1,37	3,27	4,16	1634	3,60	B
	266	266	266	266	2,78	2,78	2,78	2,78	4,55	11,70	13,43	1,35	3,24	4,13	1620	3,61	A
	266	266	266	356	2,64	2,64	2,64	3,25	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A
	266	266	266	536	2,31	2,31	2,31	4,71	4,88	12,26	14,07	1,41	3,36	4,29	1682	3,64	A
266	266	356	356	2,50	2,50	3,08	3,08	4,69	11,76	13,50	1,36	3,26	4,15	1629	3,61	A	
266	266	356	536	2,28	2,28	2,81	4,66	5,06	12,69	14,57	1,45	3,49	4,44	1744	3,64	A	
266	356	356	356	2,48	3,05	3,05	3,05	4,88	12,26	14,07	1,40	3,34	4,26	1672	3,67	A	

1.7 APPEARANCE OF INDOOR & OUTDOOR UNITS

■ "HIGHWALL" type Indoor Units :



HKEU 206 X, 266 X



HKEU 356 X



HKEU 536 X

■ 60 x 60 CASSETTE type Indoor Units :



HTFU 206 X, 266 X, 356 X, 536 X

■ "CONSOLE" type Indoor Units :



HFIU 266 X, 356 X, 536 X

■ FLOOR / CEILING type Indoor Units :



HSFU 356 X, 536 X

■ LOW DUCTED type Indoor Units :



HRBU 206 X, 266 X, 356 X



HRBU 536 X

■ Multi Liberty DC Inverter Outdoor Units :



HCKU 406 X2



HCKU 536 X2
HCKU 606 X3
HCKU 806 X3
HCKU 706 X4



HCKU 816 X4

■ Multi Liberty DC Inverter Outdoor Units :



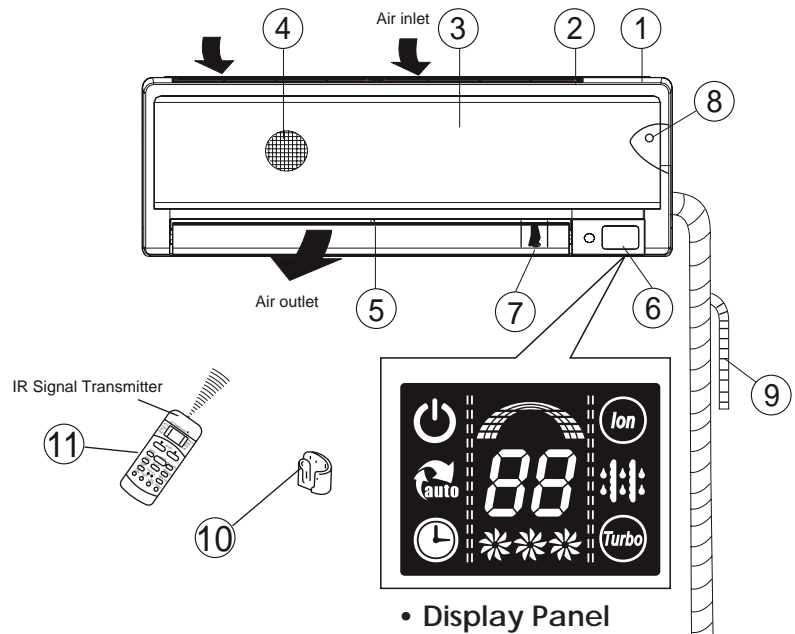
HCKU 1066 X4

1.8 OUTLINE OF INDOOR & OUTDOOR UNITS

The Figure below is for explanation only.

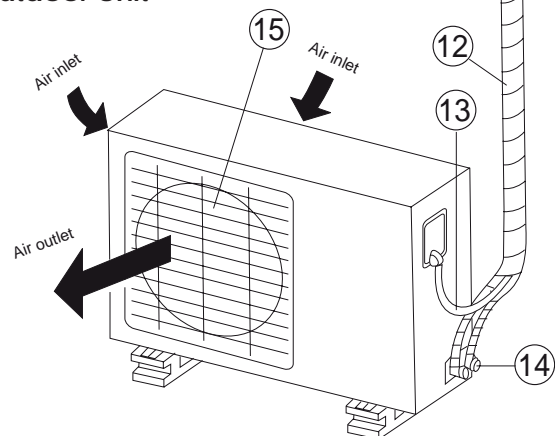
The real appearance of the components could be rather different.

- Multi Liberty Highwall type Indoor Units (HKEU X) [1:1, 1:2, 1:3, 1:4]



• Display Panel

- Outdoor Unit



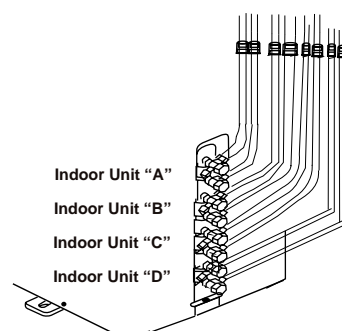
Example: HCKU 706 X4

Indoor Unit

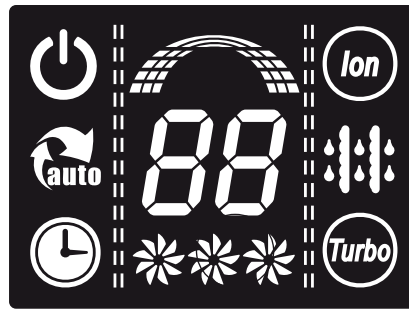
1. Frontal panel frame
2. Rear air inlet grille
3. Unit's frontal panel
4. Air filter (net type)
5. Motorized air outlet flaps
6. LED Display & IR Receiver
7. Vertical airflow louver (manual adjustment)
8. "Manual" button (Emergency/Test)
9. Condensate drain pipe
10. Remote controller holder
11. IR remote control

Outdoor Unit

12. Refrigerant pipings
13. Wiring between Units
14. Service valves
15. Fan hood



• Outline of Display Panel on Multi Liberty Highwall type Indoor Units (HKEU X)



“OPERATION” indication lamp

This lamp illuminates when the air conditioner is in operation.



“SELF CLEAN” indication lamp

It refers to a function which is not available on these Models.



TIMER indication lamp

It lights up if a Timer function is set (TIMER: automatic start and/or stop of air conditioner), included “SLEEP” function (Energy Saving function).



“CLEAN AIR” indication lamp

It lights up when ioniser device (integrated in Indoor Unit) is activated by remote control.



“DEFROST” indication lamp

• If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up.

• The LED also light up when indoor heat exchanger’s Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).



“TURBO” indication lamp

It lights up when “TURBO” function is selected by remote control. This function is available in Cooling mode only.



DIGITAL DISPLAY indication lamp

Displays the current setting temperature when the air conditioner is in operation.



“FAN SPEED” indication lamp

Displays the selected fan speed

- AUTO : nothing is displayed.

- LOW : *

- MED : **

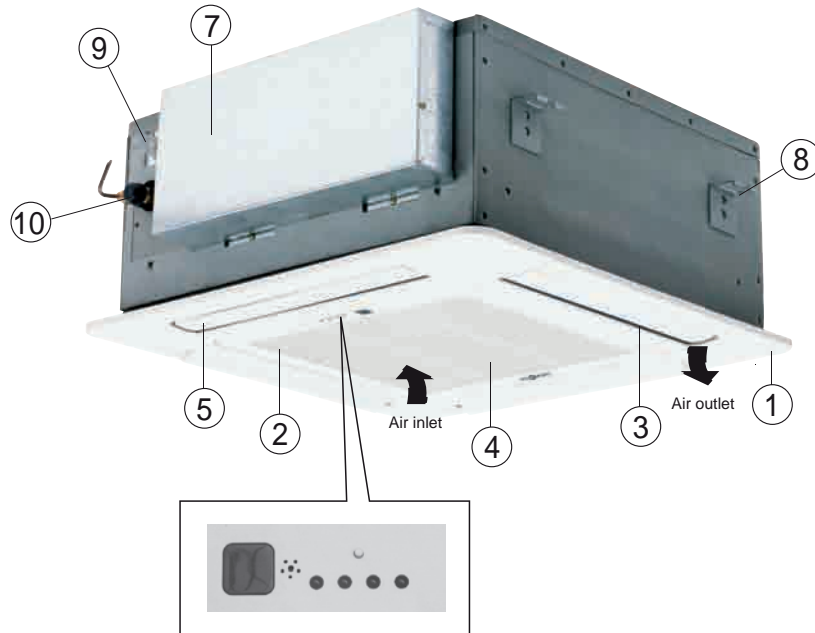
- HIGH : ***



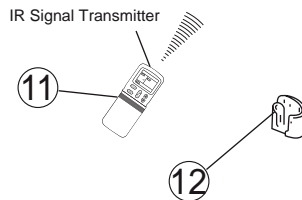
This display is separated into three zones. Once the indoor fan is on, the zones illuminate gradually.

The Figure below is for explanation only.
The real appearance of the components could be rather different.

• Multi Liberty 60 x 60 Cassette type Indoor Units (HTFU X) [1:1, 1:2, 1:3, 1:4]



• Display Panel ⑥



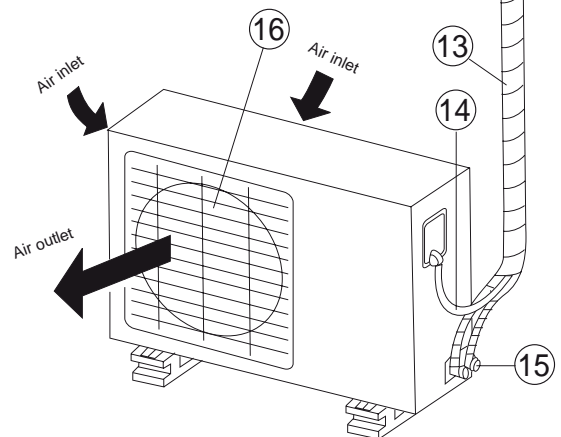
☞ Indoor Unit

1. Decorative panel
2. Air inlet grille
3. Air outlet (4)
4. Air filter (below the grille)
5. Motorized air outlet flaps (4)
6. LED display & IR receiver
7. Electric box
8. Square bracket
9. Drain pipe socket
10. Refrigerant pipings' fittings
11. IR remote controller
12. Remote controller holder

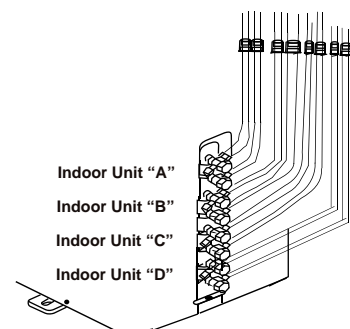
☞ Outdoor Unit

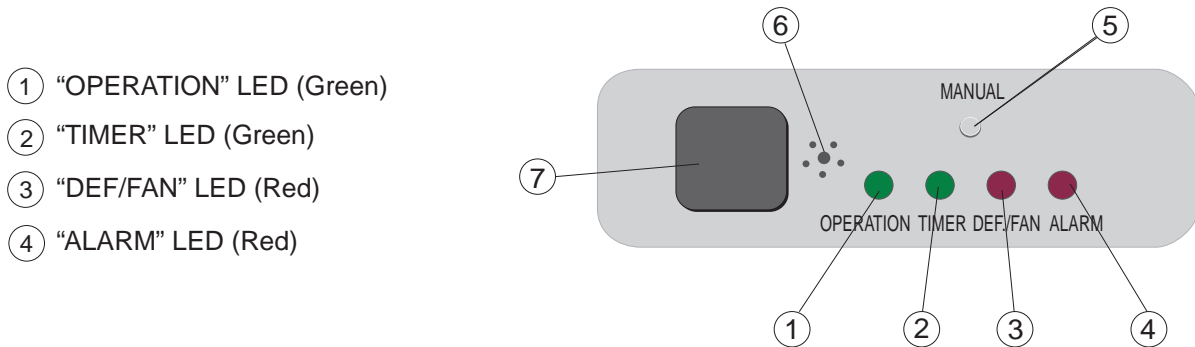
13. Refrigerant pipings
14. Wiring between Units
15. Service valves
16. Fan hood

• Outdoor Unit



☞ Example: HCKU 706 X4



• Outline of Display Panel on Multi Liberty Cassette type Indoor Units (HTFU X)

① “OPERATION” LED (Green)

② “TIMER” LED (Green)

③ “DEF/FAN” LED (Red)

④ “ALARM” LED (Red)

① OPERATION LED

When connecting the Unit to the power source, the LED starts flashing. During the air conditioner’s operation, it stops flashing and lights up.

② TIMER LED

It lights up when TIMER function is selected (air conditioner’s programmed start and/or stop).

③ DEF./FAN (Defrost/Preheating)

If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up.

The LED also lights up when indoor heat exchanger’s Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

④ ALARM LED

The LED flashes when the level in the water condensate pan exceeds the operation limit.

This also makes the compressor stop, till the condensate drain pump has eliminated the surplus water.

⑤ MANUAL button (Emergency/Test)

To start the air conditioner in Automatic mode when the remote controller is not available, and to start the Test mode in Cooling operation.

⑥ Buzzer

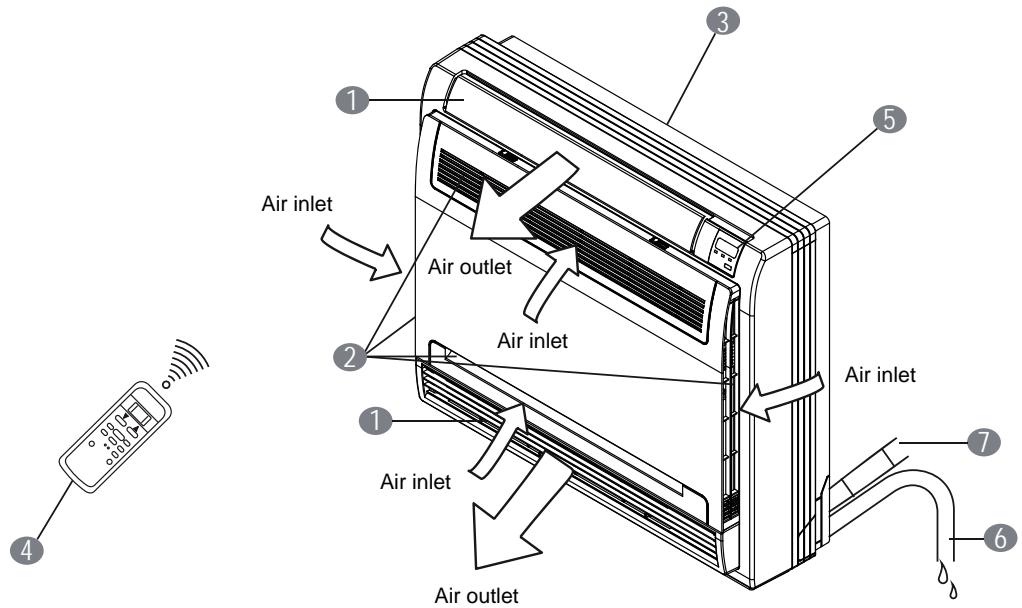
It emits a sound when a signal from IR remote control is received by the Indoor Unit.

⑦ IR signal receiver

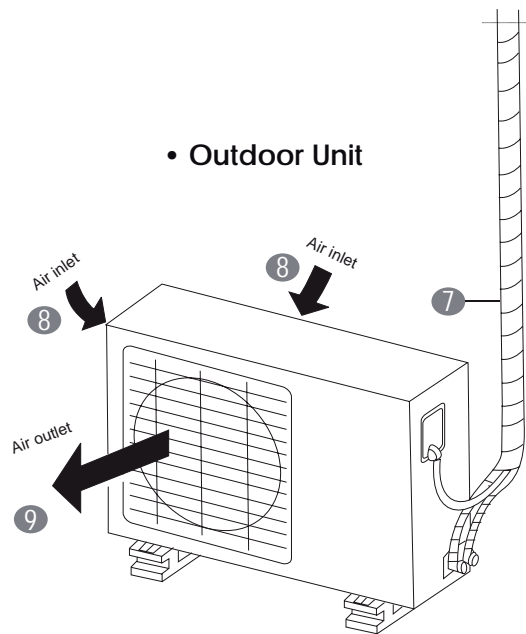
It permits to receive signals from IR remote control.

The Figure below is for explanation only.
The real appearance of the components could be rather different.

• Multi Liberty “Console” type Indoor Unit (HFU X) [1:1, 1:2, 1:3, 1:4]



• Outdoor Unit



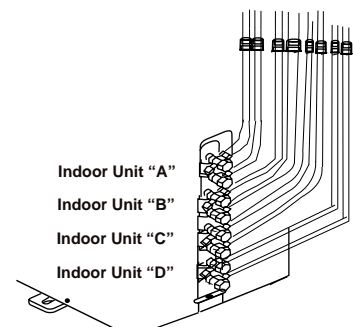
☞ Indoor Unit

- ① Motorized air outlet flaps
- ② Air inlet
- ③ Wall fixing Unit side
- ④ IR remote controller
- ⑤ LED display & IR receiver
- ⑥ Condensate drain pipe

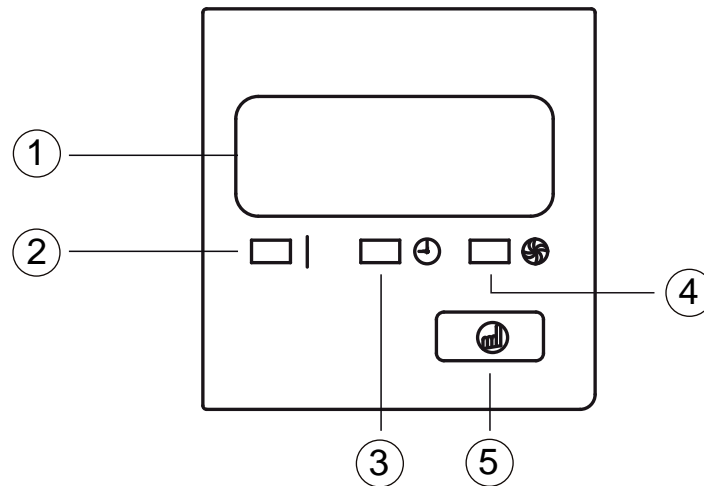
☞ Outdoor Unit

- ⑦ Refrigerant pipings
- ⑧ Air inlet
- ⑨ Air outlet

☞ Example: HCKU 706 X4



- Outline of Display Panel on Multi Liberty "Console" type Indoor Units (HFIU X)



① **IR receiver window**

It allows to receive the signals sent by IR remote controller.

② **OPERATION LED**

It lights up when the air conditioner is operating. It flashes when Indoor Unit is powered but it is not operating (standby).

③ **TIMER LED**

It lights up when TIMER function is selected (automatic start and/or stop of the air conditioner).

④ **PRE-DEF. LED (Preheating/Defrosting)**

If control electronics detects the conditions required for start of Automatic Defrosting (see Section "CF: Control Functions", of this Service Manual), defrosting automatically starts and this LED lights up.

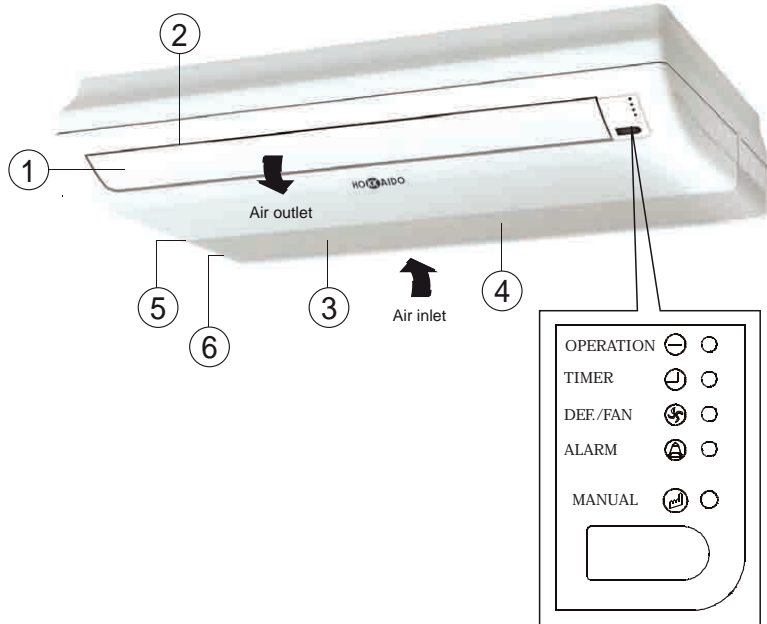
The LED also lights up when indoor heat exchanger's Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

⑤ **MANUAL button (Emergency/Test)**

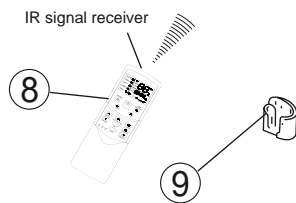
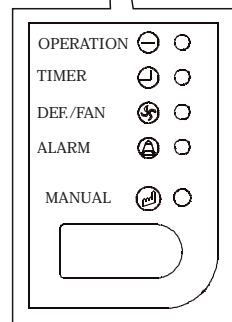
To start the air conditioner in Automatic mode when the remote controller is not available, and to start the Test mode in Cooling operation.

The Figure below is for explanation only.
The real appearance of the components could be rather different.

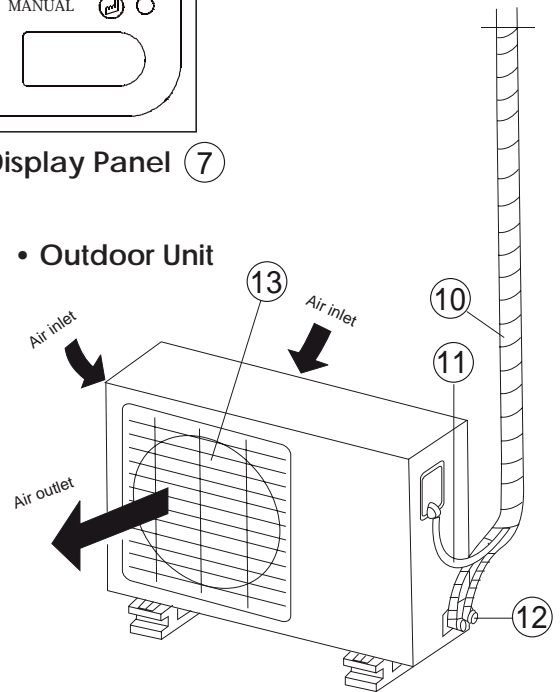
• Multi Liberty Floor/Ceiling type Indoor Units (HSFU X) [1:1, 1:2, 1:3, 1:4]



• Display Panel ⑦



• Outdoor Unit



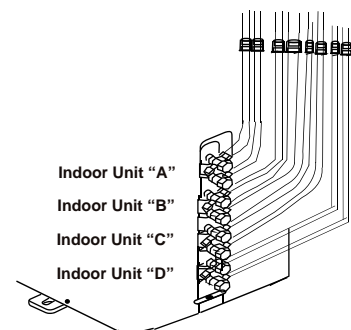
☞ Indoor Unit

1. Motorized air outlet flap
2. Air outlet
3. Air inlet grille
4. Air filters (below the grille)
5. Refrigerant pipings' fittings
6. Drain pipe socket
7. LED display & IR receiver
8. IR remote controller
9. Remote controller holder

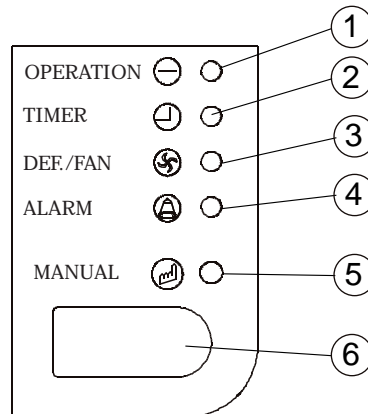
☞ Example: HCKU 706 X4

☞ Unità Esterna

10. Tubazioni frigorifere
11. Collegamenti elettrici tra le Unità
12. Rubinetti di servizio
13. Griglia di protezione del ventilatore



- Outline of Display Panel on Multi Liberty Floor/Ceiling type Indoor Units (HSFU X)



① **OPERATION LED**

When Indoor Unit is powered, this indicator starts flashing. The LED lights up when Indoor Unit is operating.

② **TIMER LED**

This indicator lights up when TIMER function is selected (automatic start and/or stop of the air conditioner).

③ **DEF./FAN LED (Defrosting/Preheating)**

If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up. The LED also lights up when indoor heat exchanger’s Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

④ **ALARM LED**

This LED flashes to indicate that a malfunction has occurred on the system. To identify the kind of malfunction, please check the Error/Protection Codes shown by 2-digit LED display on Outdoor Unit’s PCB. Normal operation of air conditioner can be restored as soon as malfunction is solved.

⑤ **MANUAL button (Emergency/Test)**

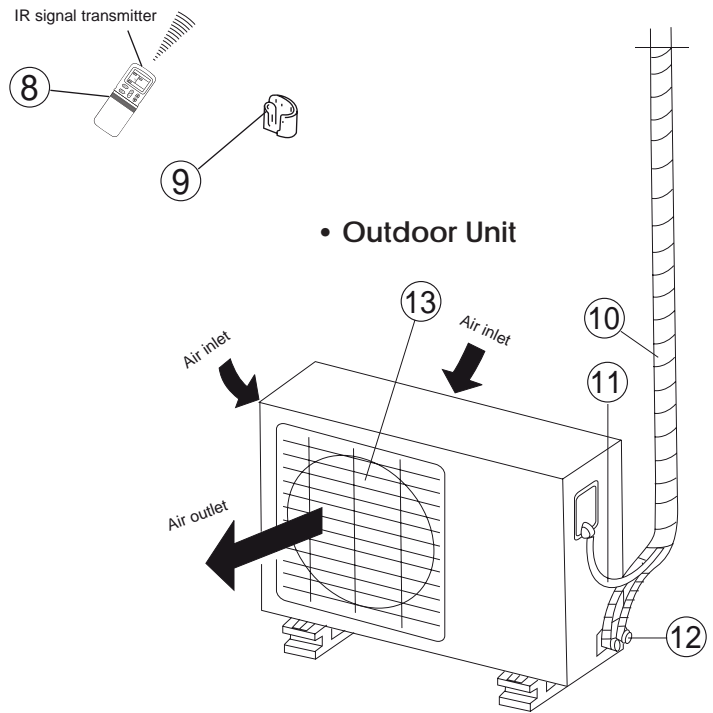
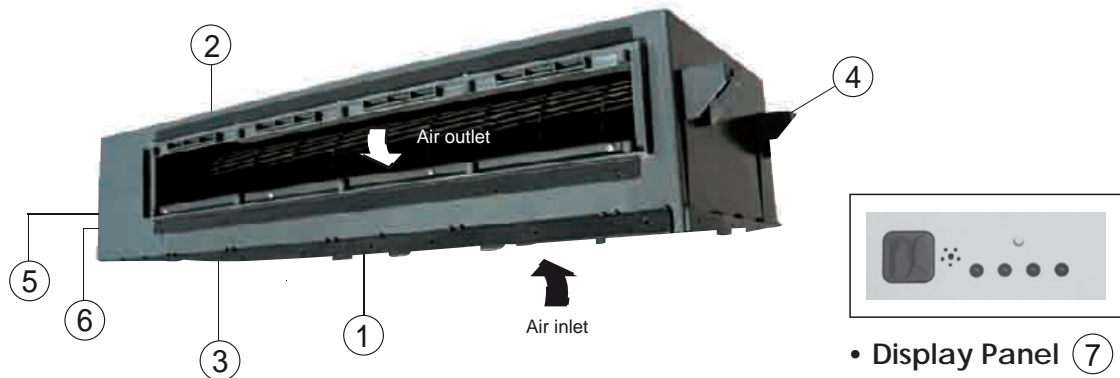
To start the air conditioner in Automatic mode when the remote controller is not available, and to start the Test mode in Cooling operation.

⑥ **IR receiver window**

It allows to receive the signals sent by IR remote controller.

The Figure below is for explanation only.
The real appearance of the components could be rather different.

• Multi Liberty Low Ducted type Indoor Units (HRBU X) [1:1, 1:2, 1:3, 1:4]



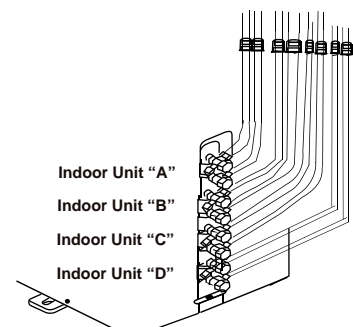
Indoor Unit

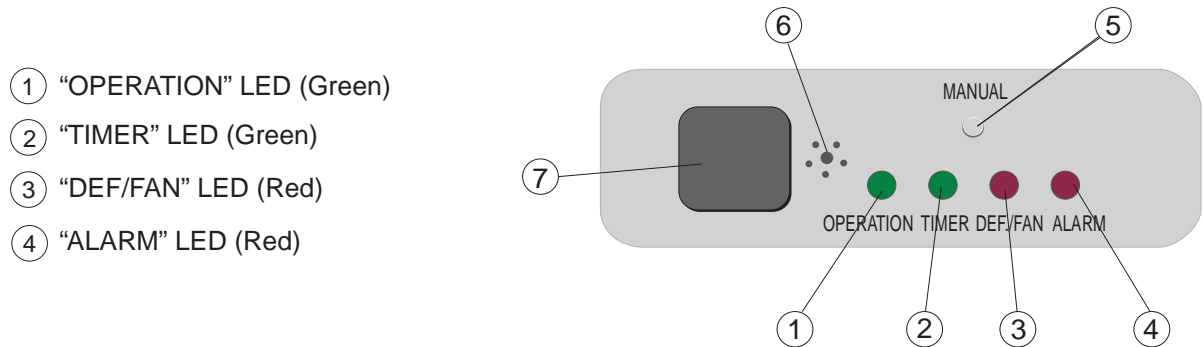
1. Air inlet
2. Air outlet
3. Electric box (reachable from air inlet)
4. Unit's square brackets (4)
5. Refrigerant pipings' fittings
6. Drain pipe socket
7. LED display & IR receiver (separated from Unit's body)
8. IR remote controller
9. Remote controller holder

Outdoor Unit

10. Refrigerant pipings
11. Wiring between Units
12. Service valves
13. Fan hood

Example: HCKU 706 X4



• Outline of Display Panel on Multi Liberty Low Ducted type Indoor Units (HRBU X)**① OPERATION LED**

When connecting the Unit to the power source, the LED starts flashing. During the air conditioner's operation, it stops flashing and lights up.

② TIMER LED

It lights up when TIMER function is selected (air conditioner's programmed start and/or stop).

③ DEF./FAN (Defrost/Preheating)

If control electronics detects the conditions required for start of Automatic Defrosting (see Section "CF: Control Functions", of this Service Manual), defrosting automatically starts and this LED lights up.

The LED also lights up when indoor heat exchanger's Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

④ ALARM LED

This LED flashes to indicate that a system malfunction has occurred. To determine the cause of malfunction, check Error/Protection Code shown by 2-digit display on Outdoor Unit's PCB.

Normal operation can be restored only after problem has been solved.

⑤ MANUAL button (Emergency/Test)

To start the air conditioner in Automatic mode when the remote controller is not available, and to start the Test mode in Cooling operation.

⑥ Buzzer

It emits a sound when a signal from IR remote control is received by the Indoor Unit.

⑦ IR signal receiver

It permits to receive signals from IR remote control.

1.9 IR REMOTE CONTROLLERS (STANDARD TYPE)

For HKEU (206, 266, 356, 536) X Models

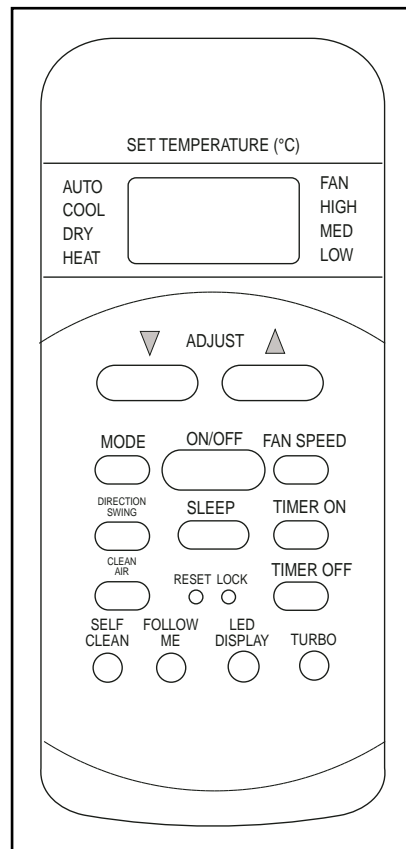


R51I4/BGE

■ INSTALLATION & CORRECT USE OF IR REMOTE CONTROLLER

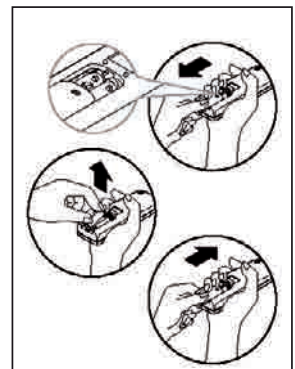
Max. allowed distance of remote controller: 8 metres

- 1) Please make sure the 2 batteries ("AAA" type, 1.5V) are fully charged and correctly fitted in the special slot on the remote controller, by respecting the polarity marked on the remote control itself. The batteries' average life is of about 1 year. Avoid the use of rechargeable batteries.
- 2) In case of installation inside the same room of more than one Indoor Unit, turn the remote controller properly towards the Indoor Unit to be controlled, at a little distance as possible from Indoor Unit.
- 3) The remote controller will not work properly if curtains, doors or other objects placed between the remote controller and the infrared receiver on the Indoor Unit do not allow the signal transmission to Indoor Unit itself. In this case, operation range of remote controller is remarkably reduced.
- 4) If the remote controller is placed sideways as regards the signal receiver, it will operate within a max. angle of 30° on the right or on the left from the receiver. If the remote controller is fixed on its wall bearing, it will work within a side distance of 0.5 metres on the right or on the left from the receiver.
- 5) If the infrared receiver on Indoor Unit is exposed to direct sunlight, the remote controller (and consequently the air conditioner) will probably not work properly.
- 6) In order to avoid interferences, keep the remote controller at least 1 metre away from Hi-Fi, TV, etc..
- 7) If the remote controller stops to operate properly, press "RESET" button on remote controller itself to cancel current settings and restore factory defaults' settings. Set current time again, and check if the remote controller operates properly now.
- 8) Do not wet the remote controller and prevent any liquid from falling into it.
- 9) Never use solvents nor detergents for cleaning the remote controller. Only use a soft, clean and dry cloth.

■ FIRST FITTING IN AND/OR REPLACEMENT OF REMOTE CONTROLLER'S BATTERIES

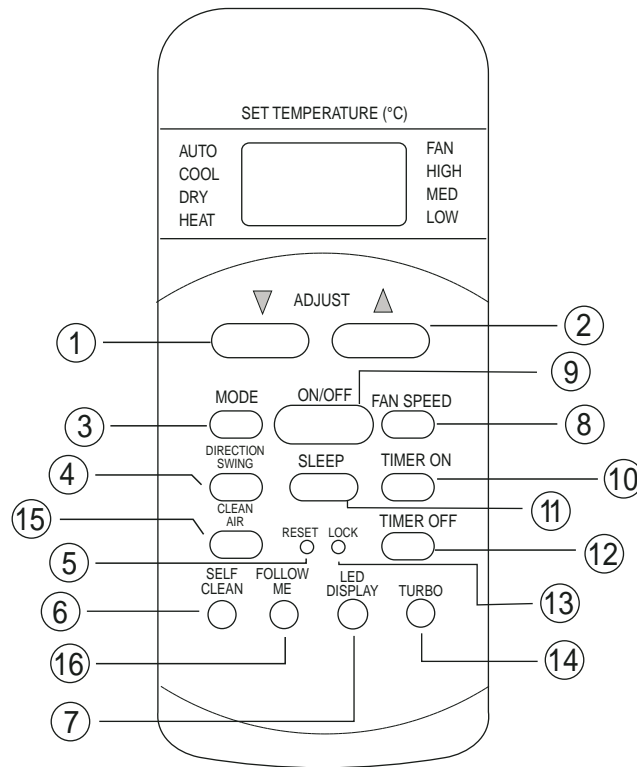
👉 The remote controller requires 2 normal alkaline batteries, “AAA” type, 1.5V.

- Remove the cover of battery case (on rear of remote controller), by sliding it in the direction of the arrows marked on the cover itself.
- Pull out the old batteries and fit in the new batteries by respecting the polarities indicated in the battery case.
- After replacing the batteries, it is necessary to press “RESET” button on remote controller (see further on).

**NOTE:**

Always insert 2 new batteries, of the same brand. Avoid the use of rechargeable batteries. If you foresee not to use the air conditioner for a long time, remove the batteries as they may damage the case and electrical contacts (acid may leak). The average life of a pair of new batteries is of 6 months, and may vary according to the use. Batteries have to be replaced if the signal transmission indicator on remote controller does not light up any more, or if the confirmation sound emitted by Indoor Unit's buzzer is no more heard.

■ **OUTLINE OF IR REMOTE CONTROLLER'S BUTTONS**



1) TEMP button ▼ :

Press this button if you desire to reduce set temperature by 1°C.

2) TEMP button ▲ :

Press this button if you desire to increase set temperature by 1°C.

3) MODE button :

Every time you press this button, the selected operation mode changes in sequence, as indicated:



- ☞ AUTO = Operation in AUTOMATIC mode
- ☞ COOL = Operation in COOLING mode
- ☞ DRY = Operation in DEHUMIDIFYING mode
- ☞ HEAT = Operation in HEATING mode
- ☞ FAN = Operation in FAN mode

4) DIRECTION / SWING button :

It allows to change the angle of motorized flap for airflow distribution. If you keep this button pressed for more than 2 seconds, you can start/stop automatic swinging of motorized flap.

5) RESET button :

Press this button if you want to restore normal operation of remote controller in case of problems, or after replacing batteries.

6) SELF CLEAN button :

This button is referred to a function that is not available on these Models of Indoor Units.

■ OUTLINE OF IR REMOTE CONTROLLER'S BUTTONS**7) LED DISPLAY button :**

To light up/switch off the indicators (digital display, etc.) placed on Indoor Unit's frontal panel.

8) FAN SPEED button :

To change the indoor fan speed.

The available settings are the following:

☞ AUTO (AUTOMATIC setting)

☞ LOW speed

☞ MED speed

☞ HIGH speed.

9) ON/OFF button :

To start/stop the air conditioner.

10) TIMER ON button :

To program the air conditioner 's automatic start.

Each time the button is pressed, programmed time interval is increased by 30 minutes from 0 to 10 hours, and by 60 minutes from 10 to 24 hours.

To cancel "TIMER ON" function, set time to "00".

11) SLEEP button :

To activate or cancel energy saving function by automatic and gradual correction of set temperature. This function can be activated in AUTO, COOL and HEAT modes.

It is possible to cancel SLEEP function by pressing whatever button on remote controller.

The default duration of SLEEP function is 7 hours.

12) TIMER OFF button :

To program the air conditioner's automatic stop.

Each time the button is pressed, programmed time interval is increased by 30 minutes from 0 to 10 hours, and by 60 minutes from 10 to 24 hours.

To cancel "TIMER OFF" function, set time to "00".

13) LOCK button :

To lock/unlock remote controller's buttons. This allows to prevent undesired changes of operation settings.

14) TURBO button :

In "COOL" mode, this button makes the air conditioner blow strong cooling air with super high fan speed. This allows to reach preset temperature value in the shortest time.

"TURBO" function has a default duration of 30 minutes. At the end of this time interval, "TURBO" function will be automatically stopped.

■ **OUTLINE OF IR REMOTE CONTROLLER'S BUTTONS**

15) AIR CLEAN button :

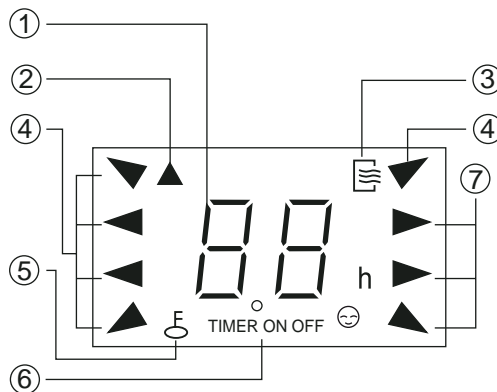
To activate/deactivate ionizer device (generating anions) integrated on these Indoor Units.

16) FOLLOW ME button :

To activate/deactivate ambient temperature sensor which is integrated in IR remote controller. Activation of this temperature sensor allows to detect ambient temperature as it is perceived by the User, on condition that infrared remote controller is positioned at a little distance from the User itself.

Ambient temperature sensor integrated in IR remote controller can be activated in "COOL" and "HEAT" modes only.

■ OUTLINE OF IR REMOTE CONTROLLER'S DISPLAY



1) Digital display:

It shows set temperature value in °C. During TIMER setting procedure, it shows time interval (h) referred to programmed automatic start and/or stop of air conditioner.

In "FAN" operation mode, temperature value is not displayed.

2) Transmission indicator:

It lights up briefly if remote controller sends a signal to Indoor Unit.

3) ON/OFF indicator:

If this indicator lights up, it shows that Indoor Unit has been started (ON) by IR remote controller. If ON/OFF indicator is not displayed, this indicates that Indoor Unit has been stopped (OFF) by IR remote controller.

4) OPERATION MODE indicators:

They show the current selected operation mode.

- AUTO
- COOL
- DRY
- HEAT
- FAN

5) LOCK indicator:

It indicates that buttons' LOCK function is activated.

6) TIMER indicators:

They indicate that TIMER function is active.

- TIMER ON = Automatic programmed start.
- TIMER OFF = Automatic programmed stop.
- TIMER ON-OFF = Automatic start and stop, programmed in sequence.

7) FAN SPEED indicator:

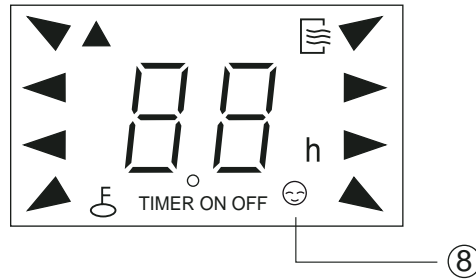
It shows the currently selected speed for indoor fan.

In "AUTO" and "DRY" modes, there is no display of fan set speed, as the setting cannot be modified by the User.

The displayed indications are the following:

- HIGH (HIGH speed)
- MED (MEDIUM speed)
- LOW (LOW speed)

■ OUTLINE OF REMOTE CONTROLLER'S DISPLAY



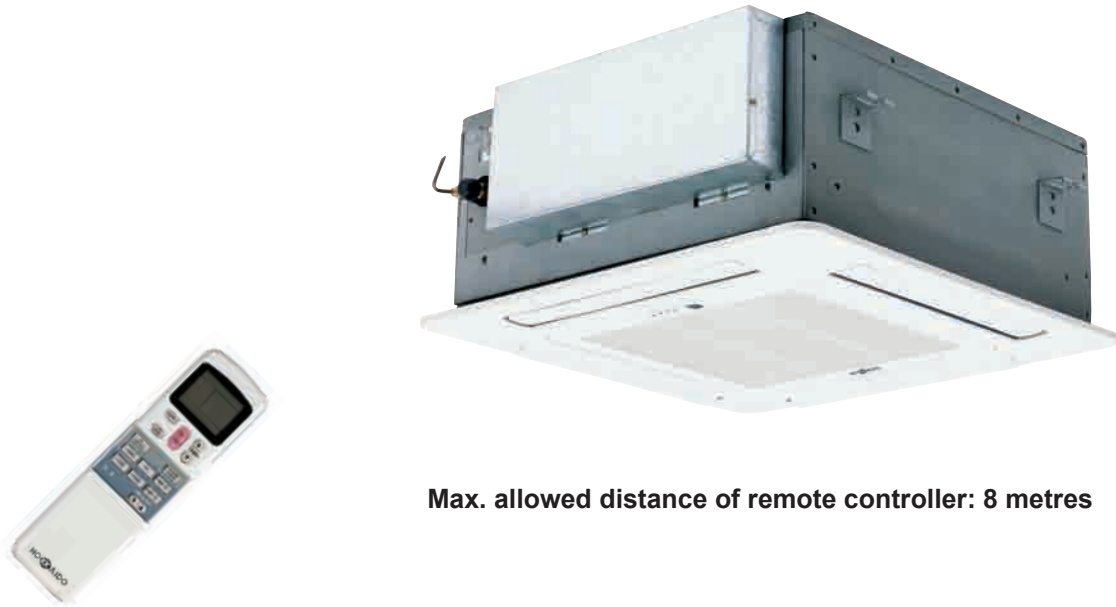
8) "FOLLOW ME" indicator:

When this indicator is displayed, it indicates that ambient temperature sensor integrated in IR remote controller has been activated.

For HTFU (206, 266, 356, 536) X Models



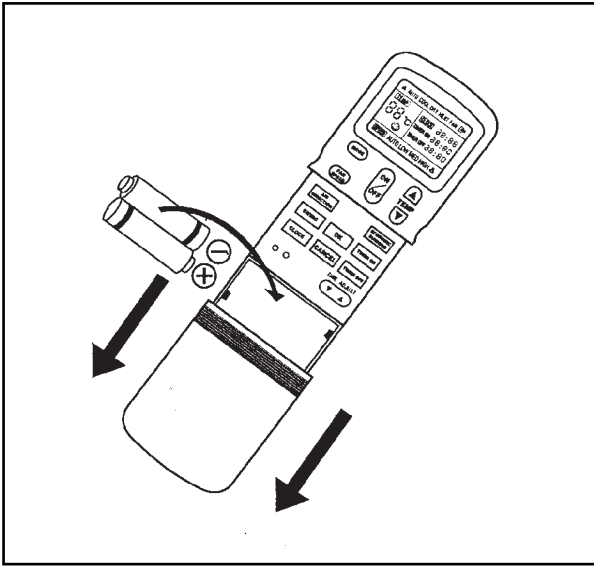
R11HG/E

■ INSTALLATION & CORRECT USE OF IR REMOTE CONTROLLER

Max. allowed distance of remote controller: 8 metres

- 1) Please make sure the 2 batteries (“AAA” type, 1.5V) are fully charged and correctly fitted in the special slot on the remote controller, by respecting the polarity marked on the remote control itself. The batteries’ average life is of about 1 year. Avoid the use of rechargeable batteries.
- 2) In case of installation inside the same room of more than one Indoor Unit, turn the remote controller properly towards the Indoor Unit to be controlled, at a little distance as possible from Indoor Unit.
- 3) The remote controller will not work properly if curtains, doors or other objects placed between the remote controller and the infrared receiver on the Indoor Unit do not allow the signal transmission to Indoor Unit itself. In this case, operation range of remote controller is remarkably reduced.
- 4) If the remote controller is placed sideways as regards the signal receiver, it will operate within a max. angle of 30° on the right or on the left from the receiver. If the remote controller is fixed on its wall bearing, it will work within a side distance of 0.5 metres on the right or on the left from the receiver.
- 5) If the infrared receiver on Indoor Unit is exposed to direct sunlight, the remote controller (and consequently the air conditioner) will probably not work properly.
- 6) In order to avoid interferences, keep the remote controller at least 1 metre away from Hi-Fi, TV, etc..
- 7) If the remote controller stops to operate properly, press “RESET” button on remote controller itself to cancel current settings and restore factory defaults’ settings. Set current time again, and check if the remote controller operates properly now.
- 8) Do not wet the remote controller and prevent any liquid from falling into it.
- 9) Never use solvents nor detergents for cleaning the remote controller. Only use a soft, clean and dry cloth.

■ FIRST FITTING IN AND/OR REPLACEMENT OF REMOTE CONTROLLER'S BATTERIES



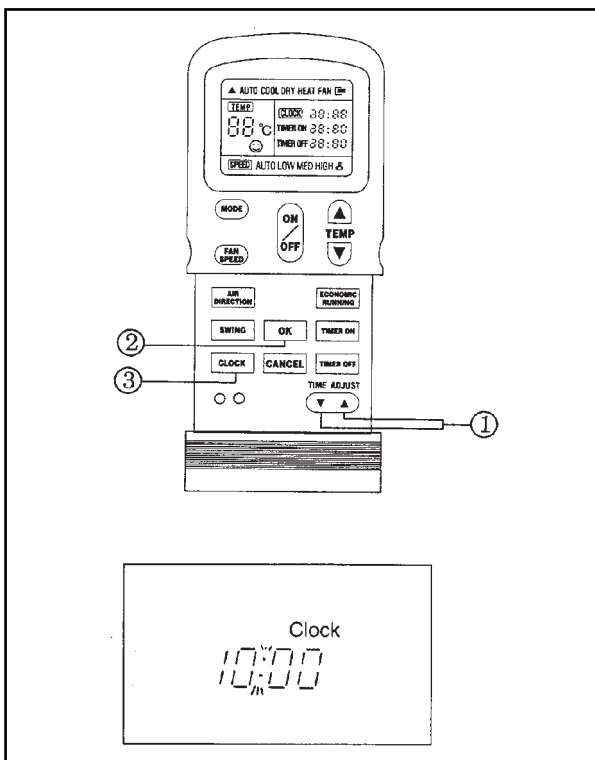
IR remote controller requires 2 normal alkaline batteries "AAA" type, 1.5V.

- Remove the cover of battery case by sliding it in the direction shown by the arrows.
- Pull out old batteries and insert the new ones by respecting the polarities marked on remote control itself.
- After replacing the batteries, it is necessary to press "RESET" button on remote controller (see further on).
- Before closing the cover again, check if on remote controller's display - sideways "CLOCK" indication - "0:00" is displayed with flashing colon (:).

After replacing batteries, it is needed to set current time again (see below).

Note: Insert only 2 new batteries and of the same brand. If you foresee not to use the air conditioner for a long time, remove the batteries: they may damage the case and the electrical contacts, as acid can leak. The average life of a pair of new batteries is of about 6 months~1 year. Batteries have to be replaced if the signal transmission indicator on remote controller does not light any more, or if the confirmation sound emitted by Indoor Unit's buzzer is no more heard.

■ FIRST SETTING OR ADJUSTMENT OF CURRENT TIME ON REMOTE CONTROL DISPLAY



Before starting the air conditioner, it is necessary to set current time on remote controller, as indicated in this paragraph.

Remote control display will show current time, also if Indoor Unit is not operating.

☞ First setting of current time

When batteries are inserted, remote control display will show "00:00" - sideways "CLOCK" indication - with flashing colon.

1. Press "TIME ADJUST" button (▲ to go on and ▼ to go back).
Every time the button is pressed, time will be increased by 1 minute.
2. Press "OK" button to confirm setting of current time.
3. Press "CLOCK" button to modify current time or repeat the setting.

■ **OUTLINE OF REMOTE CONTROLLER'S BUTTONS**

"MODE" BUTTON

Push this button to select operation modes. Each time the button is pressed, one of the following modes will be selected in sequence:

AUTO → COOL → DRY → HEAT
↑ FAN

"FAN SPEED" BUTTON

This button is used to select fan speed. Each time the button is pressed, fan speed indicator changes as follows:

AUTO → LOW → MED → HIGH
↑

"ON/OFF" BUTTON

Push the button to start operation. Push the button again to stop operation.

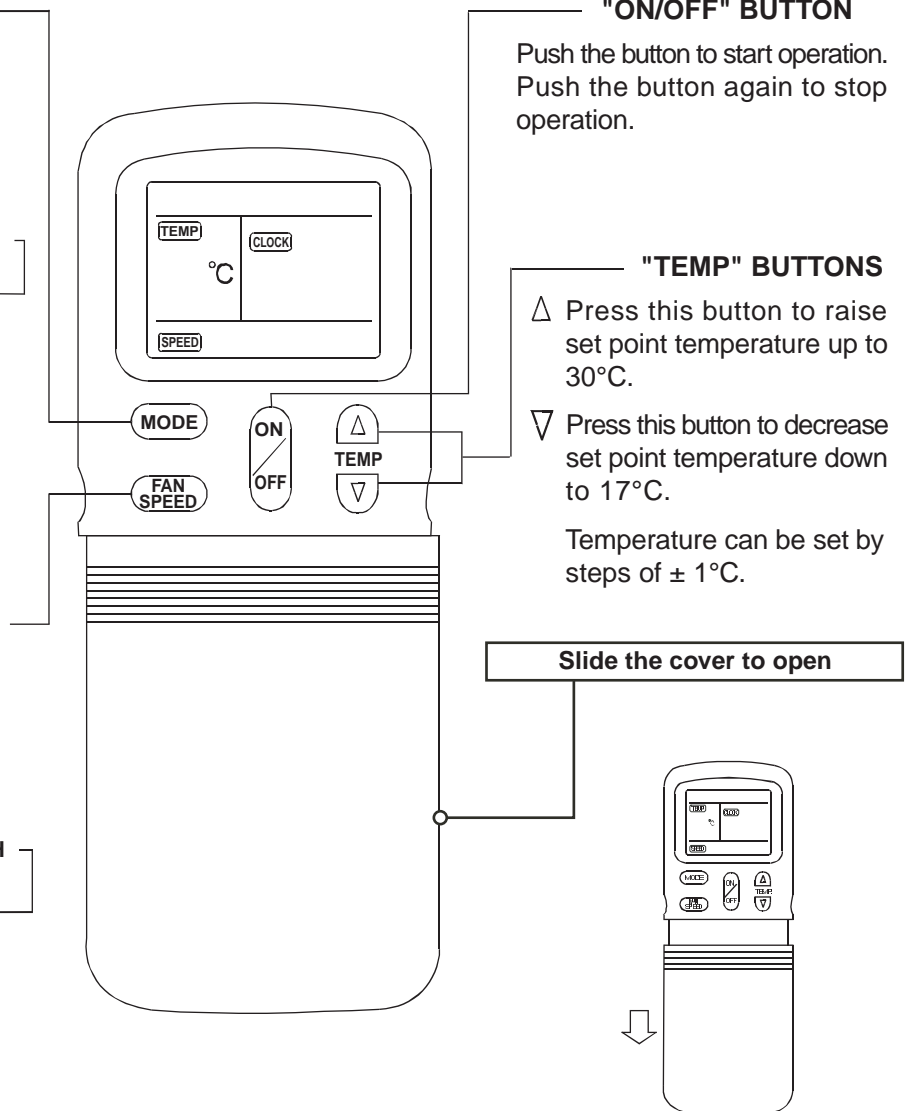
"TEMP" BUTTONS

△ Press this button to raise set point temperature up to 30°C.

▽ Press this button to decrease set point temperature down to 17°C.

Temperature can be set by steps of ± 1°C.

Slide the cover to open



■ OUTLINE OF IR REMOTE CONTROLLER'S BUTTONS

"AIR DIRECTION" BUTTON

Press this button to change the louvers' angle for vertical airflow direction.

"SWING" BUTTON

Press this button to make the louvers automatically swing up and down. Push the button again to stop.

"OK" BUTTON

Press this button to confirm TIMER settings.

"CLOCK" BUTTON

Press this button to access to current time setting.

"LOCK" BUTTON

Press this button to lock all current settings. Press the same button again when you want to disable the lock mode.

"ECONOMIC RUNNING" BUTTON

Press this button to select "Energy Saving" mode.

"ON/OFF TIMER" BUTTONS

Push "TIMER ON" button to set the air conditioner's start time.

Push "TIMER OFF" button to set the air conditioner's stop time.

"TIME ADJUST" BUTTONS

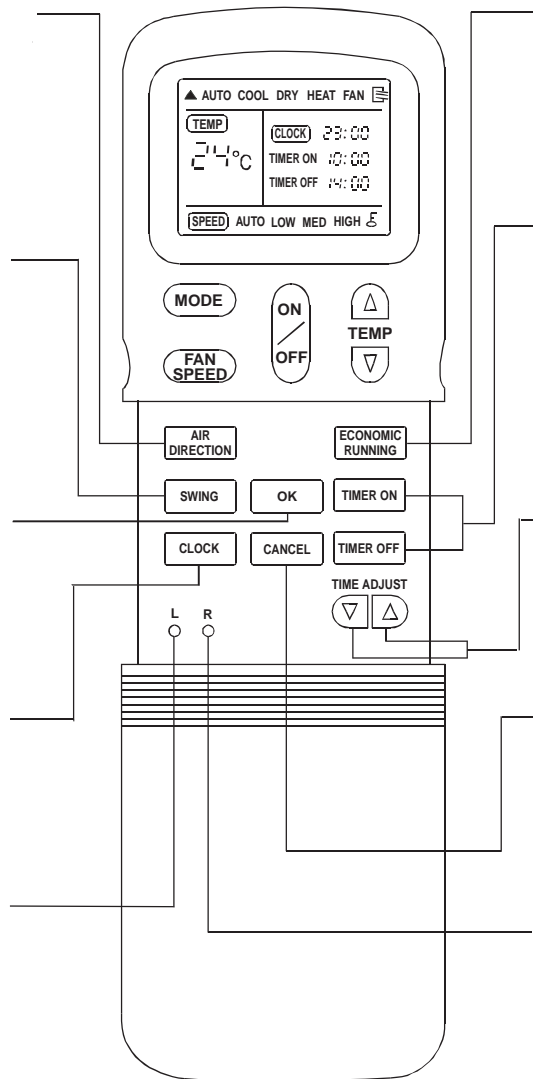
Press these buttons to set current time and TIMER ON/OFF time.

"CANCEL" BUTTON

Press this button to cancel the current settings of TIMER function.

"RESET" BUTTON

Press this button to cancel all current settings and restore the remote controller settings to factory defaults (see note below).



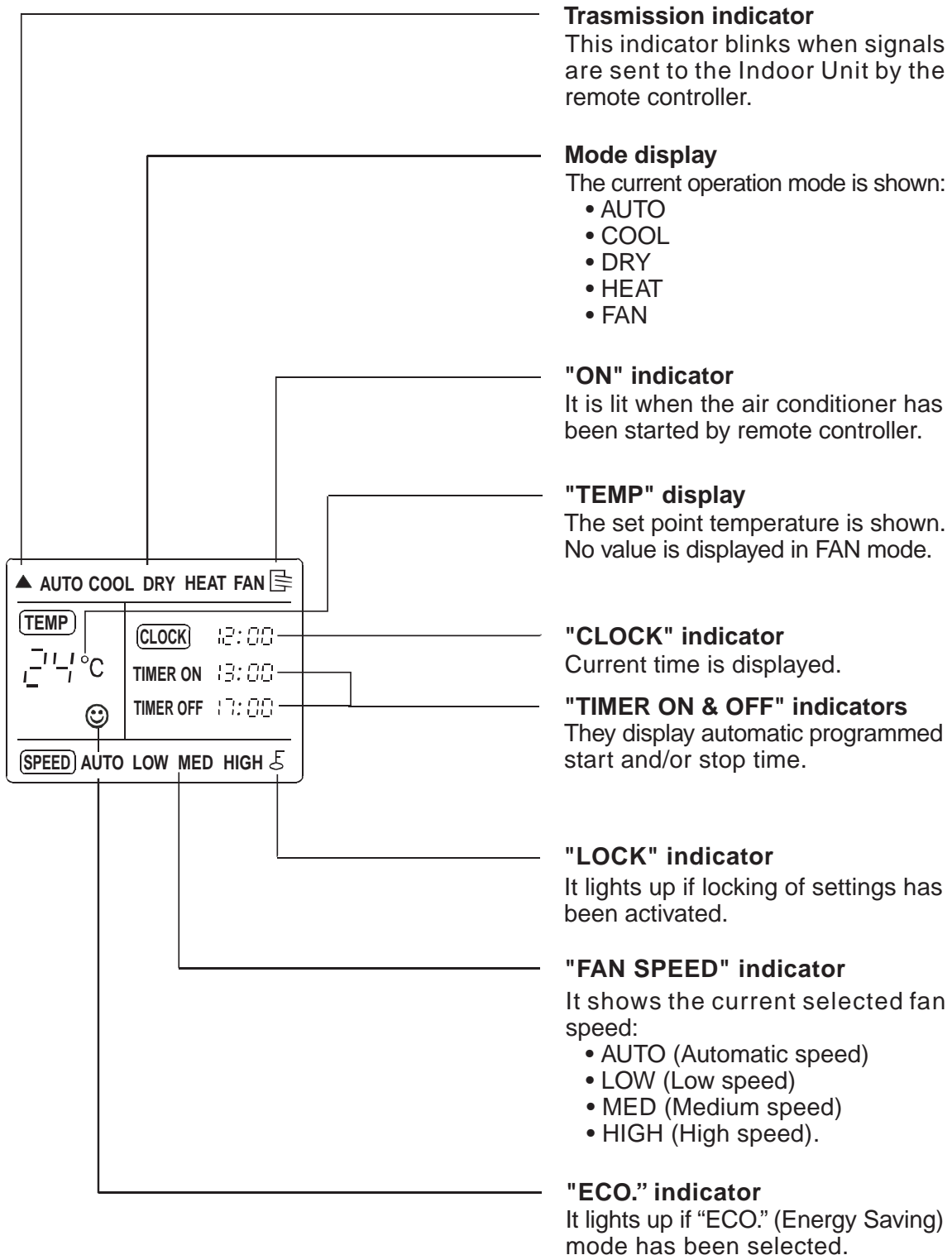
NOTE:

If you press "RESET" button, the clock sign on the panel will show "0:00" and the colon will flash to indicate that current time has to be set again.

TIMER settings have been erased, too, and a new setting is required to activate TIMER function.

The LCD panel will also display "AUTO" as operating mode, and "AUTO" as selected fan speed. The set point temperature will be 24°C.

■ OUTLINE OF REMOTE CONTROLLER'S DISPLAY



Note:

- In the illustration above, all possible indications provided by the display are described for sake of clarity.
- During operation, only the relevant information will be displayed on the remote controller LCD display.

For HFIU (266, 356, 536) X Models

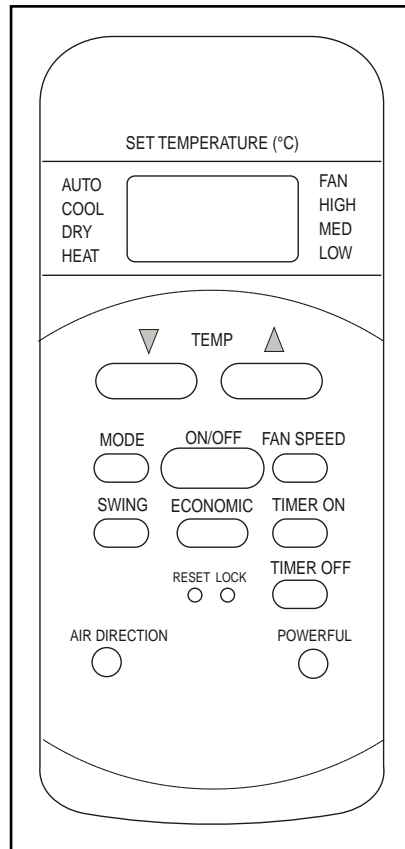


R51D/E

■ INSTALLATION & CORRECT USE OF IR REMOTE CONTROLLER

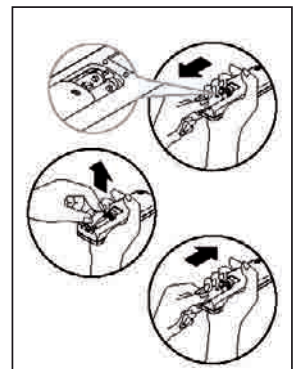
Max. allowed distance of remote controller: 8 metres

- 1) Please make sure the 2 batteries (“AAA” type, 1.5V) are fully charged and correctly fitted in the special slot on the remote controller, by respecting the polarity marked on the remote control itself. The batteries’ average life is of about 1 year. Avoid the use of rechargeable batteries.
- 2) In case of installation inside the same room of more than one Indoor Unit, turn the remote controller properly towards the Indoor Unit to be controlled, at a little distance as possible from Indoor Unit.
- 3) The remote controller will not work properly if curtains, doors or other objects placed between the remote controller and the infrared receiver on the Indoor Unit do not allow the signal transmission to Indoor Unit itself. In this case, operation range of remote controller is remarkably reduced.
- 4) If the remote controller is placed sideways as regards the signal receiver, it will operate within a max. angle of 30° on the right or on the left from the receiver. If the remote controller is fixed on its wall bearing, it will work within a side distance of 0.5 metres on the right or on the left from the receiver.
- 5) If the infrared receiver on Indoor Unit is exposed to direct sunlight, the remote controller (and consequently the air conditioner) will probably not work properly.
- 6) In order to avoid interferences, keep the remote controller at least 1 metre away from Hi-Fi, TV, etc..
- 7) If the remote controller stops to operate properly, press “RESET” button on remote controller itself to cancel current settings and restore factory defaults’ settings. Set current time again, and check if the remote controller operates properly now.
- 8) Do not wet the remote controller and prevent any liquid from falling into it.
- 9) Never use solvents nor detergents for cleaning the remote controller. Only use a soft, clean and dry cloth.

■ FIRST FITTING IN AND/OR REPLACEMENT OF REMOTE CONTROLLER'S BATTERIES

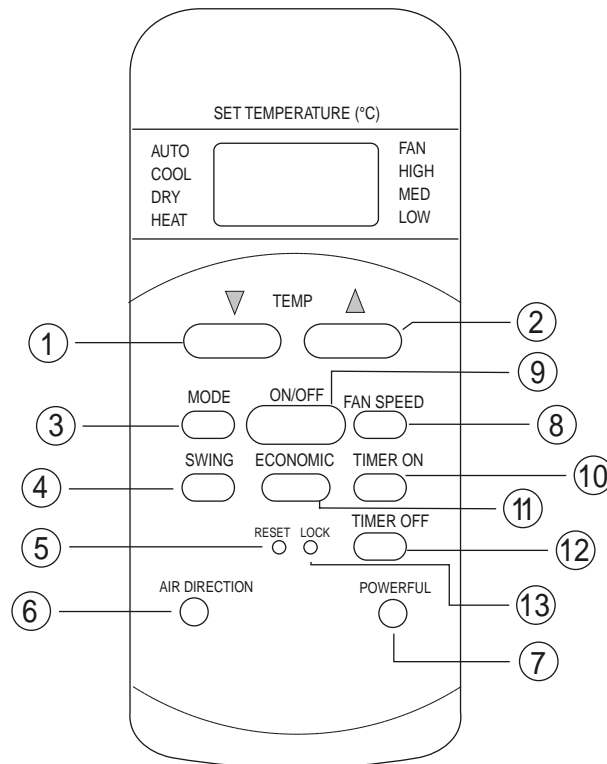
👉 The remote controller requires 2 normal alkaline batteries, “AAA” type, 1.5V.

- Remove the cover of battery case (on rear of remote controller), by sliding it in the direction of the arrows marked on the cover itself.
- Pull out the old batteries and fit in the new batteries by respecting the polarities indicated in the battery case.
- After replacing the batteries, it is necessary to press “RESET” button on remote controller (see further on).

**NOTE:**

Always insert 2 new batteries, of the same brand. Avoid the use of rechargeable batteries. If you foresee not to use the air conditioner for a long time, remove the batteries as they may damage the case and electrical contacts (acid may leak). The average life of a pair of new batteries is of 6 months, and may vary according to the use. Batteries have to be replaced if the signal transmission indicator on remote controller does not light up any more, or if the confirmation sound emitted by Indoor Unit's buzzer is no more heard.

■ **OUTLINE OF IR REMOTE CONTROLLER'S BUTTONS**



1) TEMP button ▼ :

Press this button if you desire to reduce set temperature by 1°C.

2) TEMP button ▲ :

Press this button if you desire to increase set temperature by 1°C.

3) MODE button :

Every time you press this button, the selected operation mode changes in sequence, as indicated:



- ☞ AUTO = Operation in AUTOMATIC mode
- ☞ COOL = Operation in COOLING mode
- ☞ DRY = Operation in DEHUMIDIFYING mode
- ☞ HEAT = Operation in HEATING mode
- ☞ FAN = Operation in FAN mode

4) SWING button :

For starting/stopping the automatic swinging of motorized air outlet flaps.

5) RESET button :

Press this button if you want to restore normal operation of remote controller in case of problems, or after replacing batteries.

6) AIR DIRECTION button :

For changing stop angle of motorized air outlet flaps, according to the User's needs.

■ OUTLINE OF IR REMOTE CONTROLLER'S BUTTONS**7) POWERFUL button:**

In "COOL" mode and "HEAT" mode, this button makes the air conditioner blow strong air with super high fan speed. This allows to reach preset temperature value in the shortest time.

"POWERFUL" function has a default duration of 15 minutes. At the end of this time interval, "POWERFUL" function will be automatically stopped.

8) FAN SPEED button:

To change the indoor fan speed.

The available settings are the following:

- ☞ AUTO (AUTOMATIC speed)
- ☞ LOW (LOW speed)
- ☞ MED (MEDIUM speed)
- ☞ HIGH (HIGH speed).

9) ON/OFF button:

To start/stop the Indoor Unit.

10) TIMER ON button:

To program the air conditioner's automatic start.

Each time the button is pressed, programmed time interval is increased by 30 minutes from 0 to 10 hours, and by 60 minutes from 10 to 24 hours.

To cancel "TIMER ON" function, set time to "00".

11) ECONOMIC button:

To activate or cancel energy saving function, with indoor fan operating at "LOW" speed.

12) TIMER OFF button:

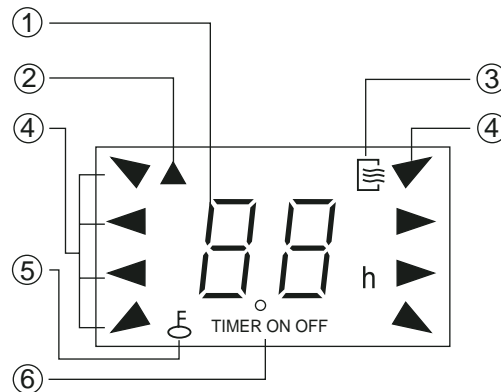
To program the air conditioner's automatic stop.

Each time the button is pressed, programmed time interval is increased by 30 minutes from 0 to 10 hours, and by 60 minutes from 10 to 24 hours.

To cancel "TIMER OFF" function, set time to "00".

13) LOCK button:

To lock/unlock remote controller's buttons. This allows to prevent undesired changes of operation settings.

■ OUTLINE OF IR REMOTE CONTROLLER'S DISPLAY**1) Digital display:**

It shows set temperature value in °C. During TIMER setting procedure, it shows time interval (h) referred to programmed automatic start and/or stop of air conditioner.

In "FAN" operation mode, temperature value is not displayed.

2) Transmission indicator:

It lights up briefly if remote controller sends a signal to Indoor Unit.

3) ON/OFF indicator:

If this indicator lights up, it shows that Indoor Unit has been started (ON) by IR remote controller. If ON/OFF indicator is not displayed, this indicates that Indoor Unit has been stopped (OFF) by IR remote controller.

4) OPERATION MODE indicators:

They show the current selected operation mode.

- AUTO
- COOL
- DRY
- HEAT
- FAN

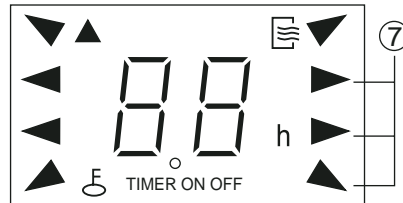
5) LOCK indicator:

It indicates that buttons' LOCK function is activated.

6) TIMER indicators:

They indicate that TIMER function is active.

- TIMER ON = Automatic programmed start.
- TIMER OFF = Automatic programmed stop.
- TIMER ON-OFF = Automatic start and stop, programmed in sequence.

■ OUTLINE OF IR REMOTE CONTROLLER'S DISPLAY**7) FAN SPEED indicator:**

It shows the currently selected speed for indoor fan.

In "AUTO" and "DRY" modes, there is no display of fan set speed, as the setting cannot be modified by the User.

The displayed indications are the following:

- HIGH (HIGH speed)
- MED (MEDIUM speed)
- LOW (LOW speed)

For HSFU (356, 536) X Models



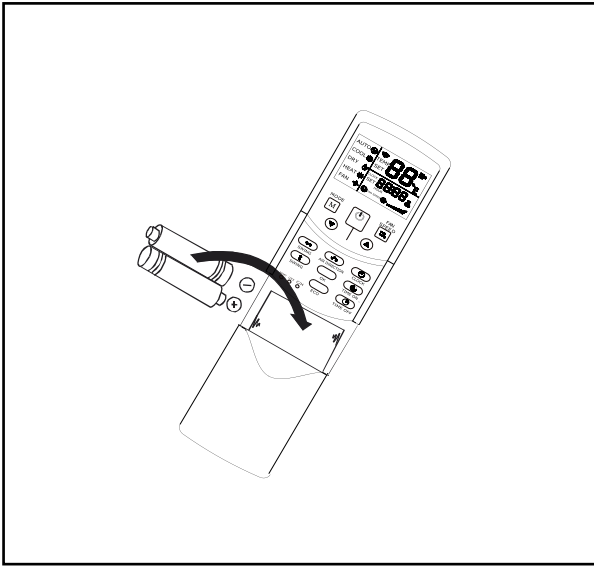
R05/BGE

■ INSTALLATION & CORRECT USE OF IR REMOTE CONTROLLER

Max. allowed distance of remote controller: 8 metres

- 1) Please make sure the 2 batteries (“AAA” type, 1.5V) are fully charged and correctly fitted in the special slot on the remote controller, by respecting the polarity marked on the remote control itself. The batteries’ average life is of about 1 year. Avoid the use of rechargeable batteries.
- 2) In case of installation inside the same room of more than one Indoor Unit, turn the remote controller properly towards the Indoor Unit to be controlled, at a little distance as possible from Indoor Unit.
- 3) The remote controller will not work properly if curtains, doors or other objects placed between the remote controller and the infrared receiver on the Indoor Unit do not allow the signal transmission to Indoor Unit itself. In this case, operation range of remote controller is remarkably reduced.
- 4) If the remote controller is placed sideways as regards the signal receiver, it will operate within a max. angle of 30° on the right or on the left from the receiver. If the remote controller is fixed on its wall bearing, it will work within a side distance of 0.5 metres on the right or on the left from the receiver.
- 5) If the infrared receiver on Indoor Unit is exposed to direct sunlight, the remote controller (and consequently the air conditioner) will probably not work properly.
- 6) In order to avoid interferences, keep the remote controller at least 1 metre away from Hi-Fi, TV, etc..
- 7) If the remote controller stops to operate properly, press “RESET” button on remote controller itself to cancel current settings and restore factory defaults’ settings. Set current time again, and check if the remote controller operates properly now.
- 8) Do not wet the remote controller and prevent any liquid from falling into it.
- 9) Never use solvents nor detergents for cleaning the remote controller. Only use a soft, clean and dry cloth.

■ FIRST FITTING IN AND/OR REPLACEMENT OF REMOTE CONTROLLER'S BATTERIES



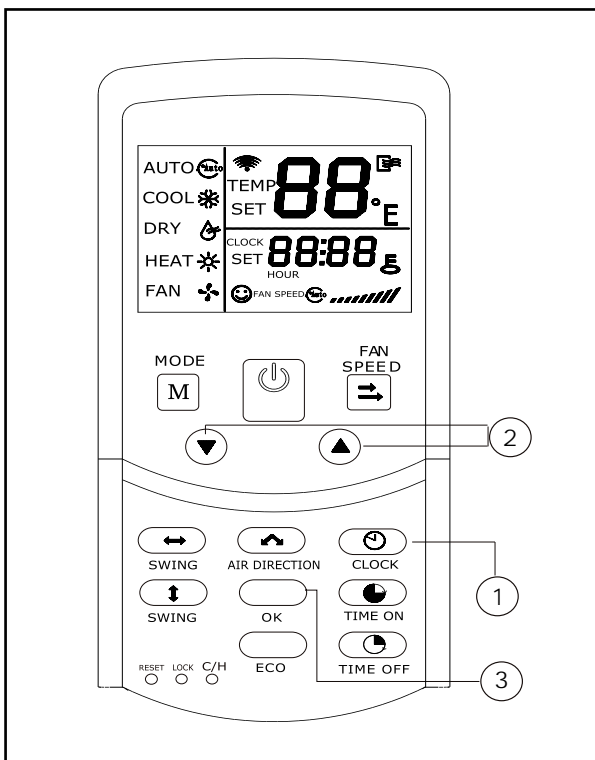
IR remote controller requires 2 normal alkaline batteries "AAA" type, 1.5V.

- Remove the cover of battery case by sliding it in the direction shown by the arrows.
- Pull out old batteries and insert the new ones by respecting the polarities marked on remote control itself.
- After replacing the batteries, it is necessary to press "RESET" button on remote controller (see further on).
- Before closing the cover again, check if on remote controller's display - sideways "CLOCK" indication - "0:00" is displayed with flashing colon (:).

After replacing batteries, it is needed to set current time again (see below).

Note: Insert only 2 new batteries and of the same brand. If you foresee not to use the air conditioner for a long time, remove the batteries: they may damage the case and the electrical contacts, as acid can leak. The average life of a pair of new batteries is of about 6 months~1 year. Batteries have to be replaced if the signal transmission indicator on remote controller does not light any more, or if the confirmation sound emitted by Indoor Unit's buzzer is no more heard.

■ FIRST SETTING OR ADJUSTMENT OF CURRENT TIME ON REMOTE CONTROL DISPLAY



Before starting the air conditioner, it is necessary to set current time on remote controller, as indicated in this paragraph.

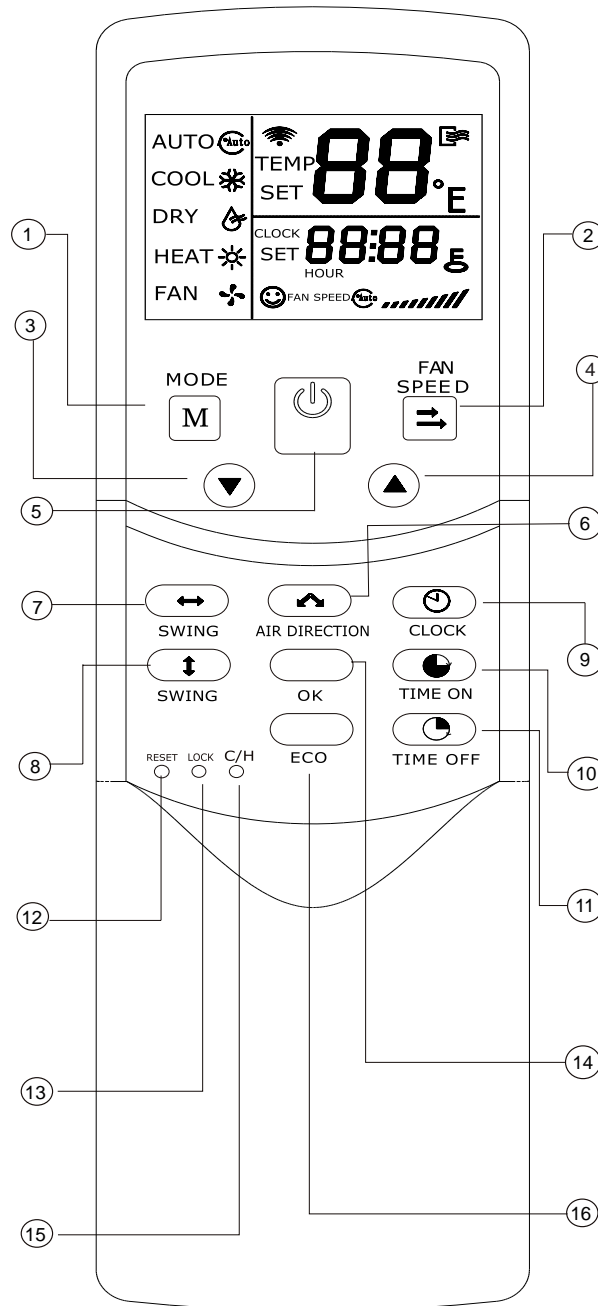
Remote control display will show current time, also if Indoor Unit is not operating.

☞ First setting of current time

When batteries are inserted, remote control display will show "00:00" - sideways "CLOCK" indication - with flashing colon.

1. Press "TIME ADJUST" button (▲ to go on and ▼ to go back).
Every time the button is pressed, time will be increased by 1 minute.
2. Press "OK" button to confirm setting of current time.
3. Press "CLOCK" button to modify current time or repeat the setting.

■ OUTLINE OF IR REMOTE CONTROLLER'S BUTTONS



1) MODE button:

Each time the button is pressed, the selected operation mode changes according to the following sequence:



- ☞ AUTO = Operation in AUTOMATIC mode
- ☞ COOL = Operation in COOLING mode
- ☞ DRY = Operation in DEHUMIDIFYING mode
- ☞ HEAT = Operation in HEATING mode
- ☞ FAN = Operation in FAN only mode

2) FAN SPEED button:

To change the indoor fan speed.

The available settings are the following:

🔊 AUTO (AUTOMATIC speed)

🔊 LOW (LOW speed)

🔊 MED (MEDIUM speed)

🔊 HIGH (HIGH speed).

3) ADJUST button ▼ :

Press this button if you desire to reduce set temperature by 1°C.

Moreover, this button allows to adjust hours & minutes when setting current time.

4) ADJUST button ▲ :

Press this button if you desire to increase set temperature by 1°C.

Moreover, this button allows to adjust hours & minutes when setting current time.

5) ON/OFF button:

To start or stop the Indoor Unit.

6) AIR DIRECTION button:

For changing stop angle for air outlet flap, according to the User's comfort needs.

7) HORIZONTAL SWING button:

It allows to start/stop the automatic swinging of horizontal vertical air outlet louvers, from left side to right side and vice versa.

8) Pulsante VERTICAL SWING:

It allows to start/stop the automatic swinging of horizontal air outlet flap, upwards to downwards and vice versa.

9) CLOCK button:

Press this button if you need to set current time.

For example, after replacing batteries or after pressing RESET button.

10) TIME ON button:

To program the air conditioner's automatic start.

Each time the button is pressed, the programmed time interval is increased by 30 minutes from 0 to 30 hours, and by 60 minutes from 12 to 24 hours.

To cancel "TIMER ON" function, set time to "00".

11) TIMER OFF button:

To program the air conditioner's automatic stop.

Each time the button is pressed, the programmed time interval is increased by 30 minutes from 0 to 12 hours, and by 60 minutes from 12 to 24 hours.

To cancel "TIMER OFF" function, set time to "00".

12) RESET button:

Press this button if it is needed to restore normal operation of remote controller in case of problems, or after replacing batteries.

In both cases, remote controller is initialized again, therefore factory default settings are restored.

Therefore, it is necessary to set current time again.

TIMER settings too have to be set again.

13) LOCK button:

To lock/unlock remote controller's buttons. This allows to prevent undesired changes of operation settings.

14) OK button:

To confirm current time setting.

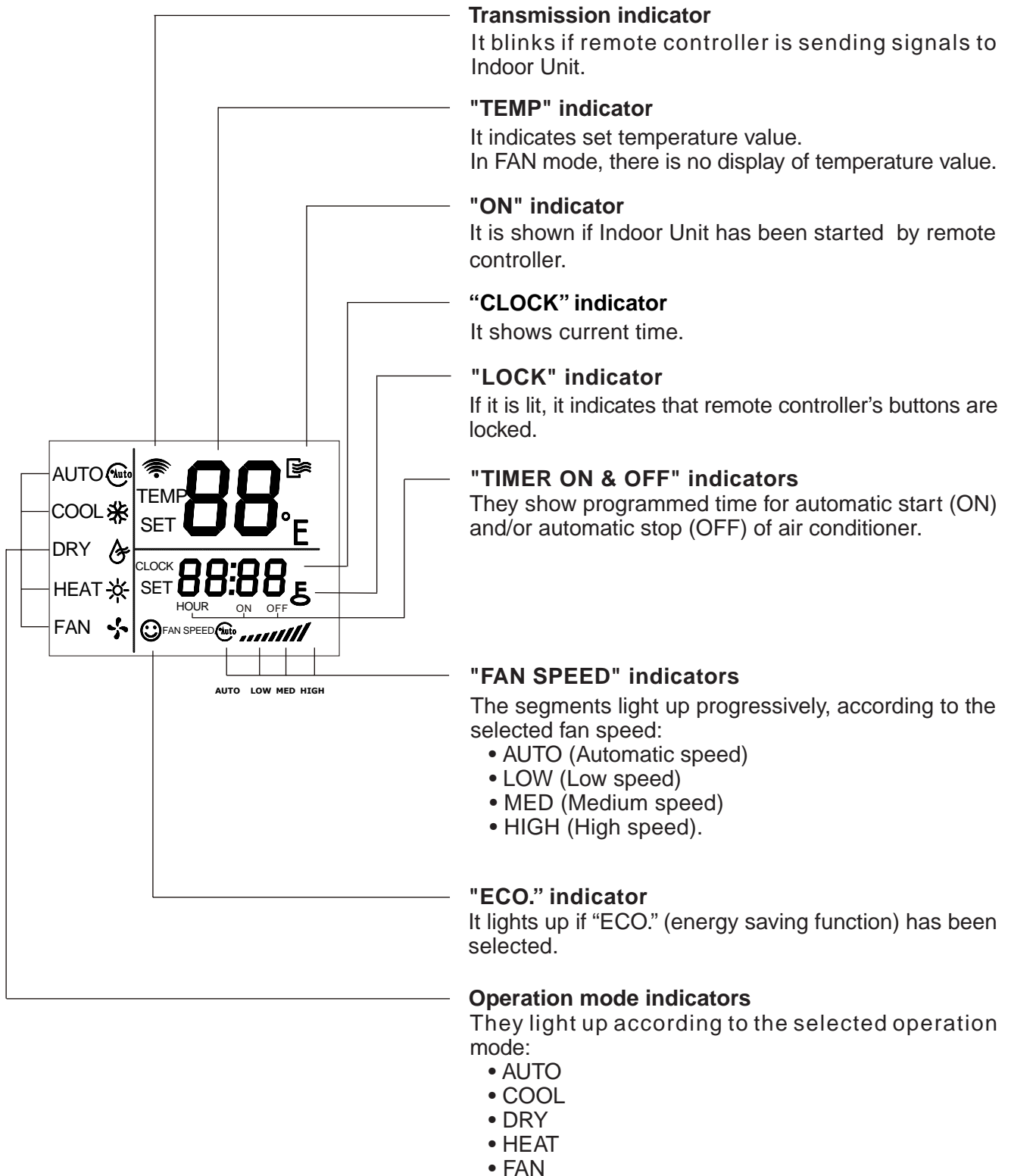
15) C/H button:

To configure IR remote controller, so that it can be used with Indoor Units "cooling only" type ("C" setting: "COOL"), or with heating pump type Indoor Units ("H" setting: "HEAT PUMP").

16) ECO button:

To activate/cancel energy saving function, with indoor fan operating at "LOW" speed.

■ **OUTLINE OF IR REMOTE CONTROLLER'S DISPLAY**



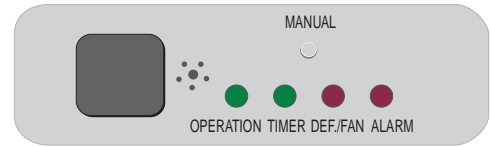
Note:

- In the illustration above, all possible indications provided by the display are described for sake of clarity.
- During operation, only the relevant information will be displayed on the remote controller LCD display.

For HRBU (206, 266, 356, 536) X Models



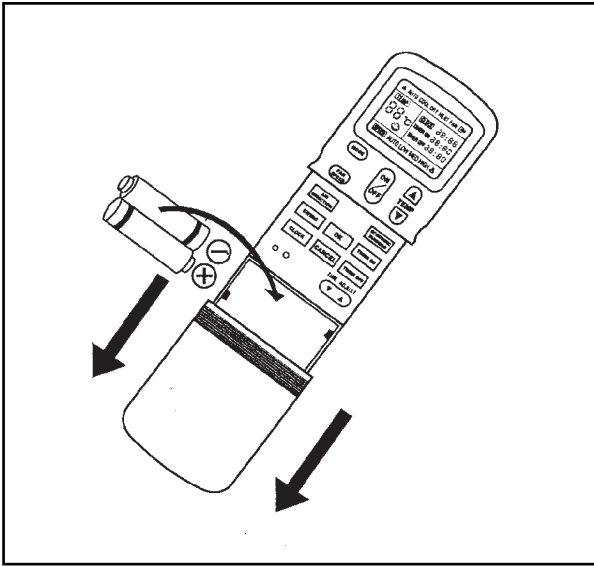
R11HG/E

■ INSTALLATION & CORRECT USE OF IR REMOTE CONTROLLER

Max. allowed distance of remote controller: 8 metres

- 1) Please make sure the 2 batteries ("AAA" type, 1.5V) are fully charged and correctly fitted in the special slot on the remote controller, by respecting the polarity marked on the remote control itself. The batteries' average life is of about 1 year. Avoid the use of rechargeable batteries.
- 2) In case of installation inside the same room of more than one Indoor Unit, turn the remote controller properly towards the Indoor Unit to be controlled, at a little distance as possible from Indoor Unit.
- 3) The remote controller will not work properly if curtains, doors or other objects placed between the remote controller and the infrared receiver on the Indoor Unit do not allow the signal transmission to Indoor Unit itself. In this case, operation range of remote controller is remarkably reduced.
- 4) If the remote controller is placed sideways as regards the signal receiver, it will operate within a max. angle of 30° on the right or on the left from the receiver. If the remote controller is fixed on its wall bearing, it will work within a side distance of 0.5 metres on the right or on the left from the receiver.
- 5) If the infrared receiver on Indoor Unit is exposed to direct sunlight, the remote controller (and consequently the air conditioner) will probably not work properly.
- 6) In order to avoid interferences, keep the remote controller at least 1 metre away from Hi-Fi, TV, etc..
- 7) If the remote controller stops to operate properly, press "RESET" button on remote controller itself to cancel current settings and restore factory defaults' settings. Set current time again, and check if the remote controller operates properly now.
- 8) Do not wet the remote controller and prevent any liquid from falling into it.
- 9) Never use solvents nor detergents for cleaning the remote controller. Only use a soft, clean and dry cloth.

■ FIRST FITTING IN AND/OR REPLACEMENT OF REMOTE CONTROLLER'S BATTERIES



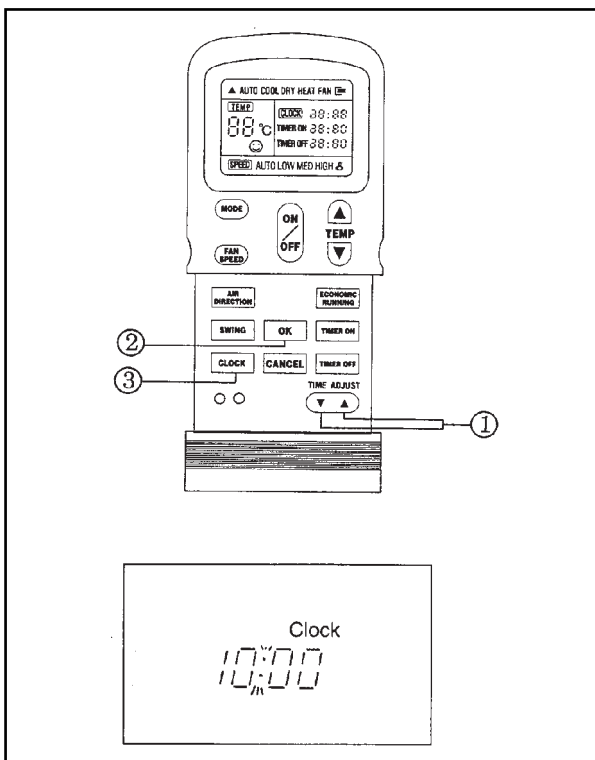
IR remote controller requires 2 normal alkaline batteries "AAA" type, 1.5V.

- Remove the cover of battery case by sliding it in the direction shown by the arrows.
- Pull out old batteries and insert the new ones by respecting the polarities marked on remote control itself.
- After replacing the batteries, it is necessary to press "RESET" button on remote controller (see further on).
- Before closing the cover again, check if on remote controller's display - sideways "CLOCK" indication - "0:00" is displayed with flashing colon (:).

After replacing batteries, it is needed to set current time again (see below).

Note: Insert only 2 new batteries and of the same brand. If you foresee not to use the air conditioner for a long time, remove the batteries: they may damage the case and the electrical contacts, as acid can leak. The average life of a pair of new batteries is of about 6 months~1 year. Batteries have to be replaced if the signal transmission indicator on remote controller does not light any more, or if the confirmation sound emitted by Indoor Unit's buzzer is no more heard.

■ FIRST SETTING OR ADJUSTMENT OF CURRENT TIME ON REMOTE CONTROL DISPLAY



Before starting the air conditioner, it is necessary to set current time on remote controller, as indicated in this paragraph.

Remote control display will show current time, also if Indoor Unit is not operating.

☞ First setting of current time

When batteries are inserted, remote control display will show "00:00" - sideways "CLOCK" indication - with flashing colon.

1. Press "TIME ADJUST" button (▲ to go on and ▼ to go back).
Every time the button is pressed, time will be increased by 1 minute.
2. Press "OK" button to confirm setting of current time.
3. Press "CLOCK" button to modify current time or repeat the setting.

■ **OUTLINE OF REMOTE CONTROLLER'S BUTTONS**

"MODE" BUTTON

Push this button to select operation modes. Each time the button is pressed, one of the following modes will be selected in sequence:

AUTO → COOL → DRY → HEAT
↑ FAN

"FAN SPEED" BUTTON

This button is used to select fan speed. Each time the button is pressed, fan speed indicator changes as follows:

AUTO → LOW → MED → HIGH

"ON/OFF" BUTTON

Push the button to start operation. Push the button again to stop operation.

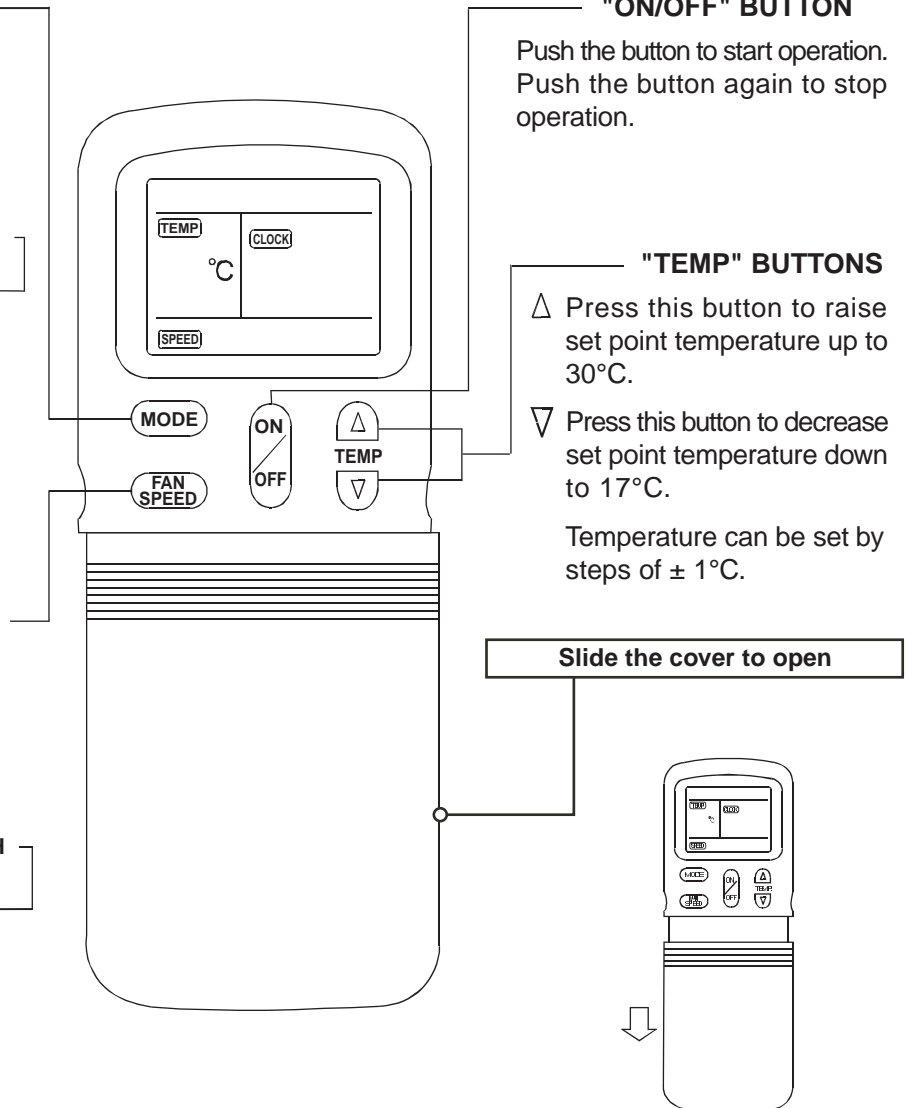
"TEMP" BUTTONS

△ Press this button to raise set point temperature up to 30°C.

▽ Press this button to decrease set point temperature down to 17°C.

Temperature can be set by steps of ± 1°C.

Slide the cover to open



■ **OUTLINE OF IR REMOTE CONTROLLER'S BUTTONS**

"AIR DIRECTION" BUTTON

Press this button to change the louvers' angle for vertical airflow direction.

"SWING" BUTTON

Press this button to make the louvers automatically swing up and down. Push the button again to stop.

"OK" BUTTON

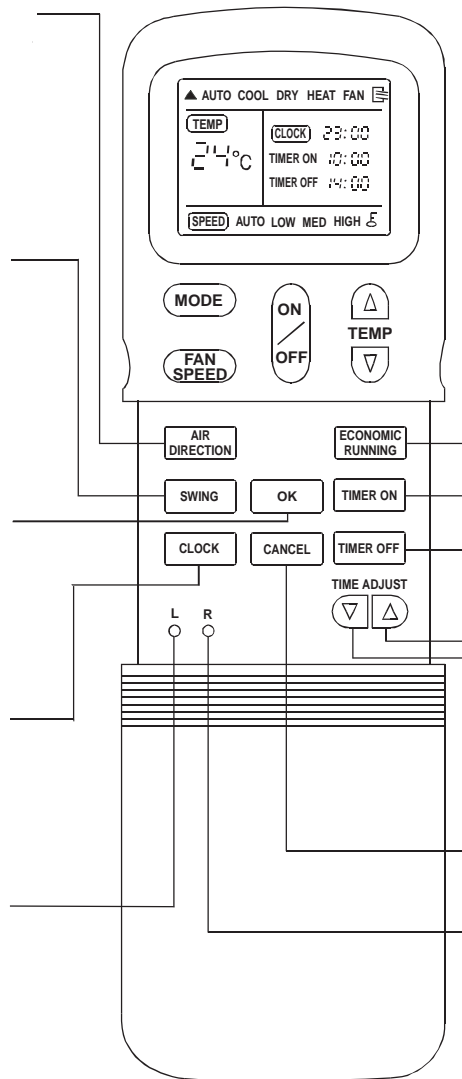
Press this button to confirm TIMER settings.

"CLOCK" BUTTON

Press this button to access to current time setting.

"LOCK" BUTTON

Press this button to lock all current settings. Press the same button again when you want to disable the lock mode.



"ECONOMIC RUNNING" BUTTON

Press this button to select "Energy Saving" mode.

"ON/OFF TIMER" BUTTONS

Push "TIMER ON" button to set the air conditioner's start time.

Push "TIMER OFF" button to set the air conditioner's stop time.

"TIME ADJUST" BUTTONS

Press these buttons to set current time and TIMER ON/OFF time.

"CANCEL" BUTTON

Press this button to cancel the current settings of TIMER function.

"RESET" BUTTON

Press this button to cancel all current settings and restore the remote controller settings to factory defaults (see note below).

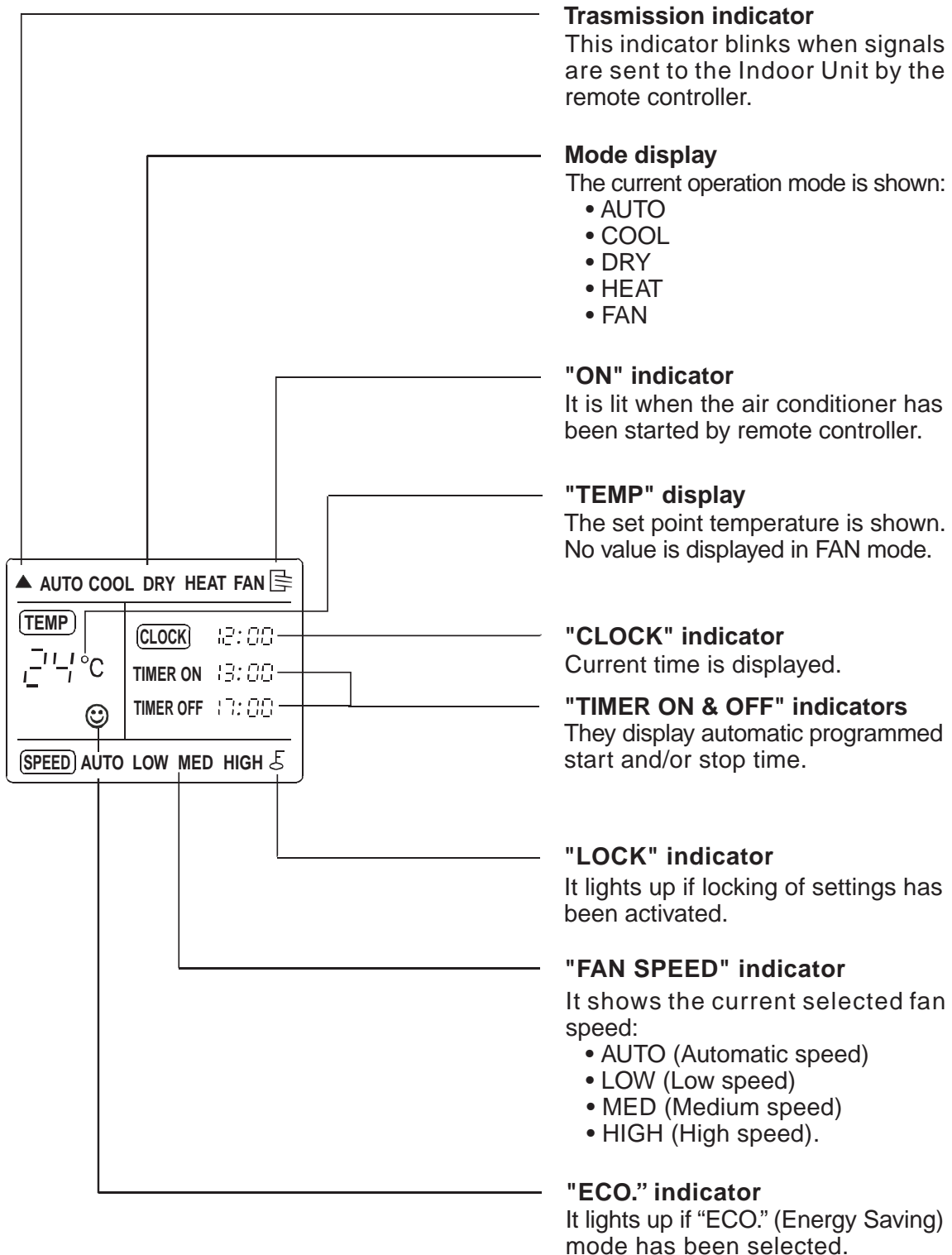
NOTE:

If you press "RESET" button, the clock sign on the panel will show "0:00" and the colon will flash to indicate that current time has to be set again.

TIMER settings have been erased, too, and a new setting is required to activate TIMER function.

The LCD panel will also display "AUTO" as operating mode, and "AUTO" as selected fan speed. The set point temperature will be 24°C.

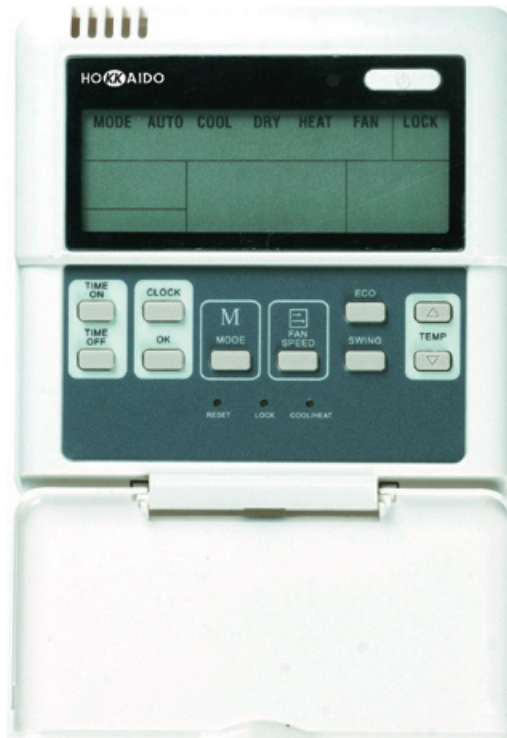
■ OUTLINE OF REMOTE CONTROLLER'S DISPLAY



Note:

- In the illustration above, all possible indications provided by the display are described for sake of clarity.
- During operation, only the relevant information will be displayed on the remote controller LCD display.

1.10 OPTIONAL WIRED CONTROLLERS FOR “CONSOLE” TYPE UNITS



DTW-IHXR Wired Controller



With integrated ambient temperature sensor & “FOLLOW ME” function.

DTWS-IHXR Wired Controller

1.11 OPERATION CONDITIONS FOR MULTI LIBERTY DC INVERTER SYSTEMS

☞ To obtain the best performances from these air-conditioning systems, it is recommended their use under the following temperature ranges:

Operation mode	Temperature conditions	Multi Liberty DC Inverter Outdoor Units
"COOL" mode	Outdoor temperature	0°C ~ 50°C
	Indoor temperature	17°C
"DRY" mode	Outdoor temperature	0°C ~ 50°C
	Indoor temperature	17°C
"HEAT" mode	Outdoor temperature	-15°C ~ 24°C
	Indoor temperature	> 10°C

☞ Use of the air conditioner out of the above mentioned temperature ranges could cause the intervention of built-in protective functions consequently stopping the system operation.

☞ Room relative humidity must always be lower than 80%. Otherwise, condensate may drip inside the installation room during operation in Dry mode, or the surface of indoor heat exchanger could get covered with frost during operation in Cooling mode.

☞ NOTE:

If Unit operates in rooms which are saturated with oil vapors or volatile matters, harmful substances could coat and clog the indoor unit's heat exchanger. Besides, scalings of saltiness could form on the Outdoor Units installed in sea-surroundings; if not removed, they will damage the Units in a very short time.

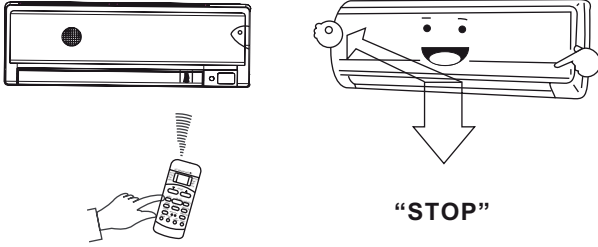
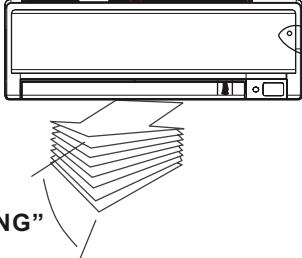
In both cases, please contact the Authorized Technical Service to require frequent maintenance.

1.12 DISTRIBUTION OF AIRFLOW SUPPLIED BY INDOOR UNITS

■ ADJUSTING THE VERTICAL AIRFLOW DIRECTION (HKEU X)

The inner electronics automatically selects the best position for the louver, according to the Indoor Unit's operation mode. If you desire to change this position, please proceed in the following way.

👉 How to orient vertical airflow direction:

<p>a) Customized setting (STOP): Perform this setting while the air conditioner is operating. Press "DIRECTION/SWING" button several times, till the desired angle for the louver is reached. Each time the button is pressed, the louver moves by 6°.</p> 	<p>b) Automatic swinging ("SWING"): Perform this setting while the air conditioner is operating. Keep the "DIRECTION/SWING" button pressed for more than 2 seconds, to start the automatic swinging of louver; press the button again to stop the automatic swinging.</p> 
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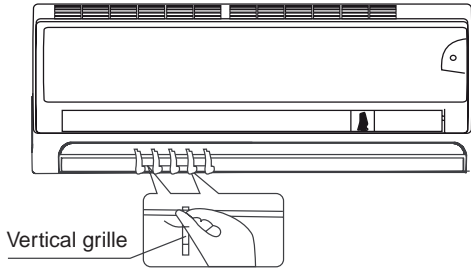
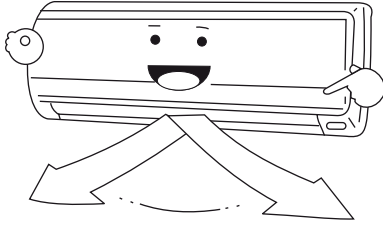
WARNING

- The "DIRECTION/SWING" button will be disabled when the air conditioner is not operating.
- Never operate the air conditioner for a long time with the airflow direction set downwards in Cooling and Dry modes, as condensate may cover the flaps and water may drip inside the room.
- When the air conditioner is turned on, the motorized louver will start moving 10 seconds later, as soon as it gets under control of the inner electronics. When the air conditioner is stopped, the motorized louver will automatically stop in closing position. If the motorized louver malfunctions, it is advised to turn off the air conditioner and cut the power for some minutes; then restore the power, turn the Unit on again and check if the louver works properly.
- Open angle of the horizontal louver should not be set to small, as cooling, drying or heating performance may be impaired due to too restricted airflow area.
- Room temperature humidity should be less than 80%. If the air conditioner operates beyond this limit, the surface of indoor heat exchanger could get covered with frost: in this case, adjust the louver to the maximum open angle and select "HIGH" fan speed.
- When the air conditioner is connected to power (initial power), the horizontal louver may generate a sound for about 10 seconds: this is a normal operation.
- To avoid malfunctions, never attempt to move the motorized flaps by hand, but always use the remote controller for doing this.

■ **ADJUSTING THE HORIZONTAL AIRFLOW DIRECTION (HKEU X)**

☞ Manual adjustment of vertical grille (rightside-leftside):

Horizontal airflow direction can be manually set by moving the vertical outlet grille behind the horizontal flap.

	<p>a) Customized setting:</p> <p>Before you start: press “DIRECTION/SWING” button to adjust vertical flap to middle position. In this way, you will have access to the levers on the airflow grille laying behind: move them to your desired position, as it is shown in the Figure.</p> <p>Take care not to put your fingers inside air outlet, as you may get hurt by heat exchanger’s sharp fins.</p>
 <p>NOT AVAILABLE</p>	<p>b) Automatic setting:</p> <p>No automatic setting is available to select the angle for vertical outlet grille.</p>

■ ADJUSTING THE VERTICAL AIRFLOW DIRECTION (HTFU X)

The inner electronics automatically selects the best position for the louver, according to the Indoor Unit's operation mode. If you desire to change this position, please proceed in the following way.

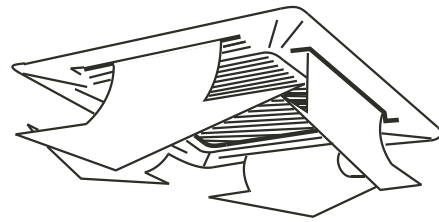
☞ How to orient vertical airflow direction:

Press "AIR DIRECTION" button on remote controller several times, till reaching your desired angle for air outlet louver.

The Figures below show the recommended position for air outlet flaps, according to different operation modes.



Cool/Dry

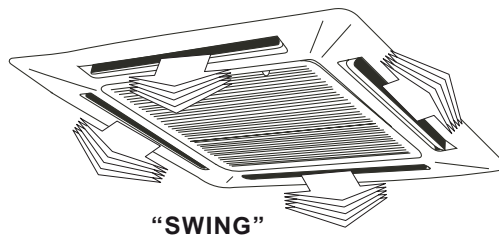


Heat

Flap position will be kept in memory at next restart of air conditioner.

☞ How to set automatic of air outlet flaps:

Press "SWING" button on remote controller, to start the automatic swinging of air outlet flaps. Press "SWING" button again to stop automatic swinging of flaps.



WARNING

- "AIR DIRECTION" & "SWING" buttons are disabled when the air conditioner is not operating.
- Do not operate the air conditioner for a long time with the airflow direction set downwards in Cooling and Dry mode, as condensate may form on flaps and water may drip inside the room.
- When the air conditioner is turned on, the motorized louver will start moving 10 seconds later, as soon as it gets under control of the inner electronics. When the air conditioner is stopped, the motorized louver will automatically stop in closing position.

WARNING

- If the motorized louver malfunctions, it is advised to turn off the air conditioner and cut the power for some minutes; then restore the power, turn the Unit on again and check if the louver works properly.
- Open angle of the horizontal louver should not be set to small, as cooling, drying or heating performance may be impaired due to too restricted airflow area.
- Room temperature humidity should be less than 80%. If the air conditioner operates beyond this limit, the surface of indoor heat exchanger could get covered with frost: in this case, adjust the louver to the maximum open angle and select "HIGH" fan speed.
- When the air conditioner is connected to power (initial power), the horizontal louver may generate a sound for about 10 seconds: this is a normal operation.
- To avoid malfunctions, never attempt to move the motorized flaps by hand, but always use the remote controller for doing this.

■ **ADJUSTING THE VERTICAL AIRFLOW DIRECTION (HFU X)**

🔧 Air outlet selector

This selector allows you to choose the air outlet direction: in this way, Indoor Unit can supply air from both air outlets (factory default), or from upper air outlet only.

Open the Indoor Unit's frontal panel to reach the selector.

WARNING

Before opening the Indoor Unit's frontal panel, switch off the air conditioner and disconnect it from the power source.

Take care not to touch the metal or plastic sharp components inside Unit, as you may get hurt.

- 1) Open the frontal panel as it is shown in Figure 1, by releasing hook mechanisms.
- 2) The position of selector for choosing the kind of air outlet is shown in Figure 2.

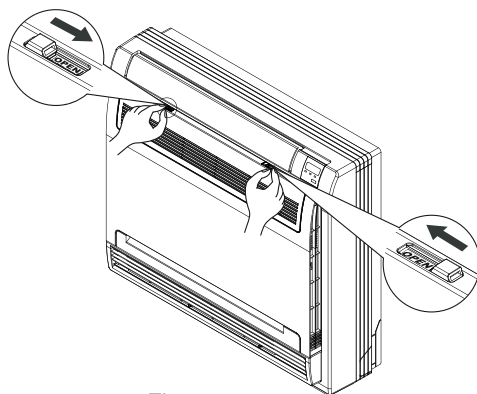


Figure 1

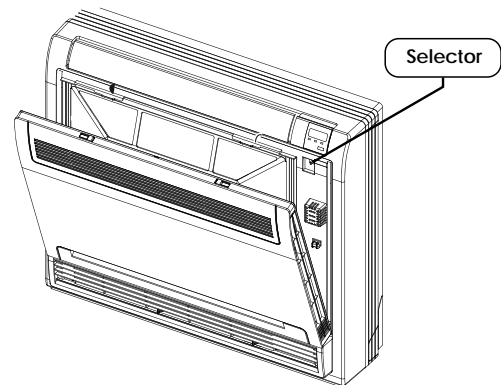
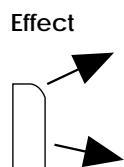
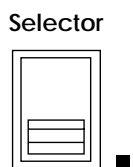


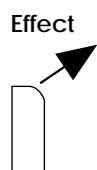
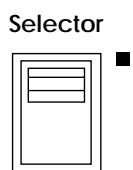
Figure 2

🔧 Positions of selector for selecting the kind of air outlet



• **Factory default**

Indoor Unit automatically adjusts the airflow direction according to the operation conditions and settings carried out by the User.



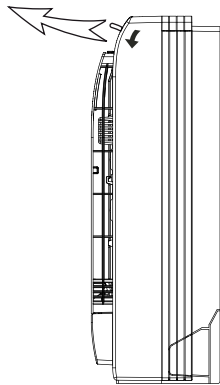
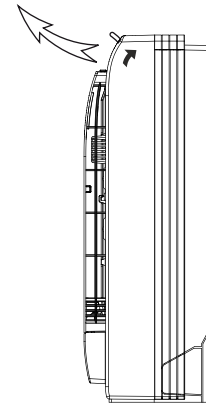
• **Customized setting**

The Unit supplies air by upper outlet only.

■ ADJUSTING THE VERTICAL AIRFLOW DIRECTION (HFU X)**☞ Fixed position of air outlet flaps**

By pressing "AIR DIRECTION" button on remote controller, it is possible to select the angle of flaps on Indoor Unit's air outlets.

It is advised to orient the flaps as it is shown in the following Figures, according to the selected operation mode.

**Cool / Dry modes****Heat mode**

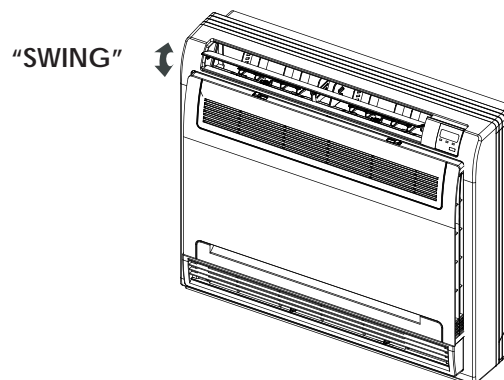
Press "AIR DIRECTION" button on remote controller several times, till reaching your desired angle for motorized flaps.

A correct adjustment allows to reach a higher degree of comfort.

The selected angle will be kept in memory at next restart of Indoor Unit.

☞ Automatic swinging ("SWING") of air outlet flaps

Press "SWING" button on remote controller: motorized flaps will move continuously (swinging) upwards to downwards and vice versa.



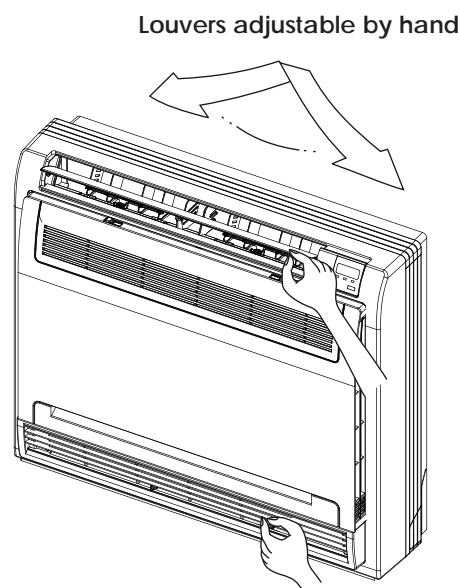
To stop automatic swinging of motorized flaps, press again "SWING" button on remote controller.

WARNING

- The direction of motorized flaps must be adjusted by pressing the relevant button on remote controller only.
- Never apply force on flaps by orienting them by hand, in order to avoid to damage the adjustment mechanism of flaps themselves.
- If flaps do not move properly, try to turn off the air conditioner and then turn it on again by remote controller: now check if normal operation of flaps has been restored.
- Always check if air outlet flaps can move properly. For this reason, no object, plant or animal must stand in positions that may interfere with air outlet flaps' movement.

■ ADJUSTING THE HORIZONTAL AIRFLOW DIRECTION (HFU X)**☞ Manual adjustment of louvers (rightside-leftside)**

To adjust horizontal direction of air supplied by Indoor Unit, orient the louvers on both air outlets according to your needs, by moving the knobs placed sideways on louvers themselves, as it is shown in the Figure below. Louvers cannot be moved by motorized mechanism, therefore horizontal airflow can be carried out by hand only.



For this reason, on these Models of Indoor Unit horizontal automatic swinging of louvers is not available (rightside to leftside and vice versa).

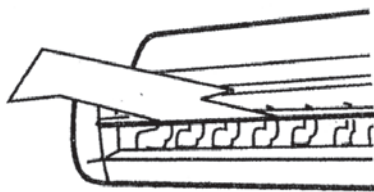
■ ADJUSTING THE VERTICAL AIRFLOW DIRECTION (HSFU X)

The inner electronics automatically selects the best position for the louver, according to the Indoor Unit's operation mode. If you desire to change this position, please proceed in the following way.

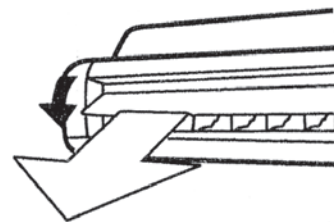
☞ How to orient vertical airflow direction:

Press "AIR DIRECTION" button on remote controller several times, to select a fixed stop position for airflow flaps.

The Figures below show the recommended angle for airflow flaps, according the different operation modes.



Cooling mode / Dry mode




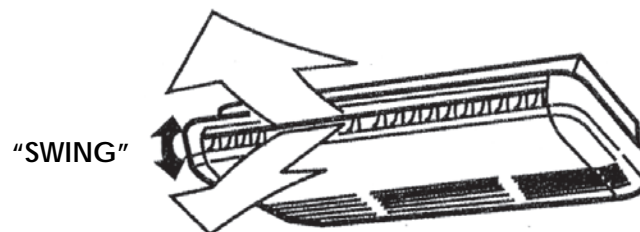
Heating mode


The selected angle for airflow will be kept in memory at next restart of Indoor Unit.

☞ Vertical automatic swinging ("SWING") of flaps

To start automatic swinging of air outlet flaps upwards to downwards and vice versa, it is necessary that Indoor Unit is operating.


Press "SWING " button on remote controller: air outlet horizontal flaps will start moving as it is shown in the Figure below.

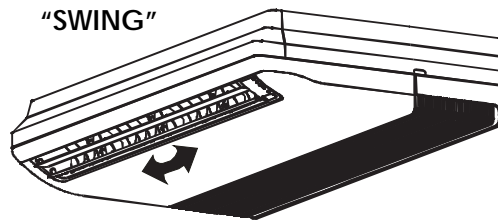



To stop automatic swinging of air outlet flaps upwards to downwards and vice versa, press again "SWING " button on remote controller: horizontal flaps will stop to swing and fixed stop position of flaps themselves will be restored.

■ ADJUSTMENT OF HORIZONTAL AIRFLOW DIRECTION (HSFU X)**☞ Horizontal automatic swinging ("SWING") of louvers**



To obtain automatic swinging of air outlet louvers rightside to leftside and vice versa, it is necessary that Indoor Unit is operating.

Press "SWING  " button on remote controller: vertical louvers will start swinging, as it is shown in the Figure below.



To stop automatic swinging of air outlet louvers rightside to leftside and vice versa, press again "SWING  " button on remote controller: vertical louvers will stop to swing, and fixed stop position of louvers themselves will be restored.

WARNING

- "AIR DIRECTION", "SWING  " and "SWING  " are disabled when the air conditioner is not operating.
- Never operate the air conditioner for a long time with the airflow direction set downwards in Cooling and Dry modes, as condensate may cover the flaps and water may drip inside the room.
- When the air conditioner is turned on, the motorized louver will start moving 10 seconds later, as soon as it gets under control of the inner electronics. When the air conditioner is stopped, the motorized louver will automatically stop in closing position. If the motorized louver malfunctions, it is advised to turn off the air conditioner and cut the power for some minutes; then restore the power, turn the Unit on again and check if the louver works properly.
- Open angle of the horizontal louver should not be set to small, as cooling, drying or heating performance may be impaired due to too restricted airflow area.
- Room temperature humidity should be less than 80%. If the air conditioner operates beyond this limit, the surface of indoor heat exchanger could get covered with frost: in this case, adjust the louver to the maximum open angle and select "HIGH" fan speed.

WARNING

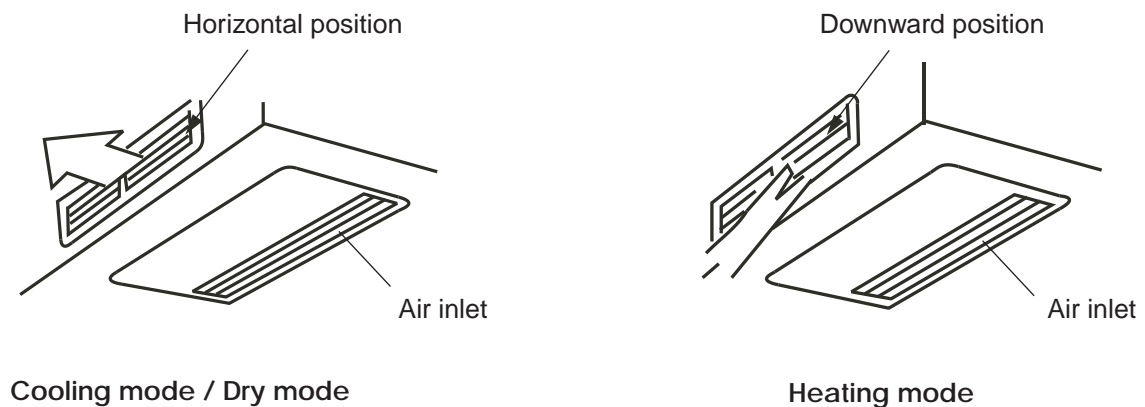
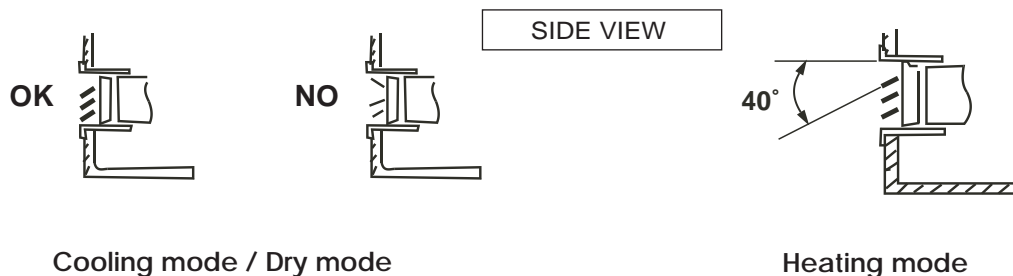
- When the air conditioner is connected to power (initial power), the horizontal louver may generate a sound for about 10 seconds: this is a normal operation.
- To avoid malfunctions, never attempt to move the motorized flaps by hand, but always use the remote controller for doing this.

■ ADJUSTMENT OF VERTICAL AIRFLOW DIRECTION (HRBU X)**☞ Adjustment of horizontal flaps integrated in air outlet vents**

On the Indoor Units of this type, air is supplied through air outlet vents placed at the end of ducts. The position and the type of air outlet vents are determined during design and carrying out of duct work.

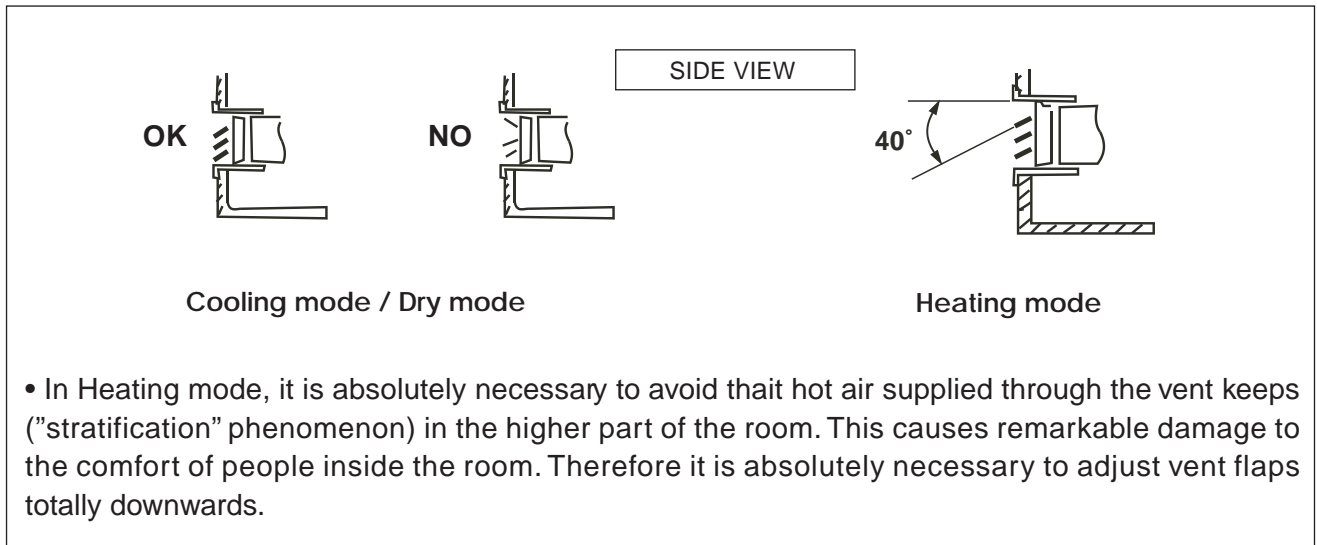
Horizontal flaps which are normally on air outlet vents must be oriented by hand, according to operation mode of system, so as to assure the higher degree of comfort to people inside the room, and to reach a uniform distribution of supplied air.

The Figures below show some examples of manual adjustment of horizontal flaps.

**☞ Recommended options for position of horizontal flaps and errors to be avoided**

- In whatever operation mode, it is very important to orient the horizontal flaps on air outlet vents in parallel position each other.
- Besides, in whatever operation mode, it is essential to avoid too much open angles as regards horizontal position, thus avoiding to choke the supplied airflow through the vents.
- In Cooling mode/Dry mode, a too much open angle of vent flap downwards may cause forming of condensate (consequently water may drip inside the room).

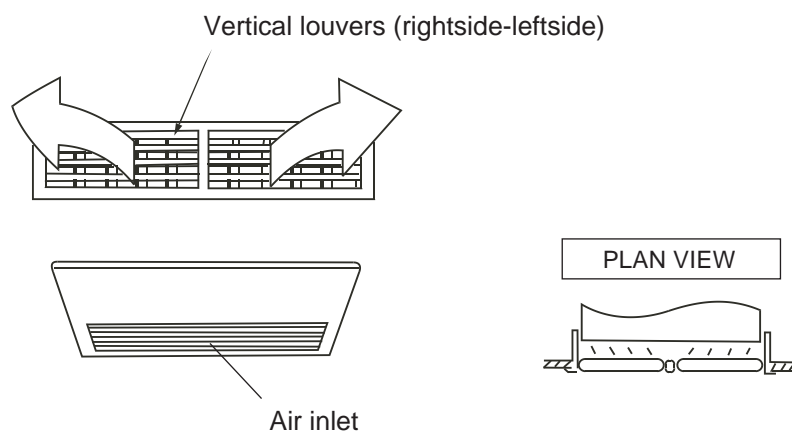
☞ Recommended options for adjustment of horizontal flaps and errors to be avoided



■ ADJUSTMENT OF HORIZONTAL AIRFLOW DIRECTION (HRBU X)

☞ Manual adjustment of vertical louvers integrated in air outlet vents

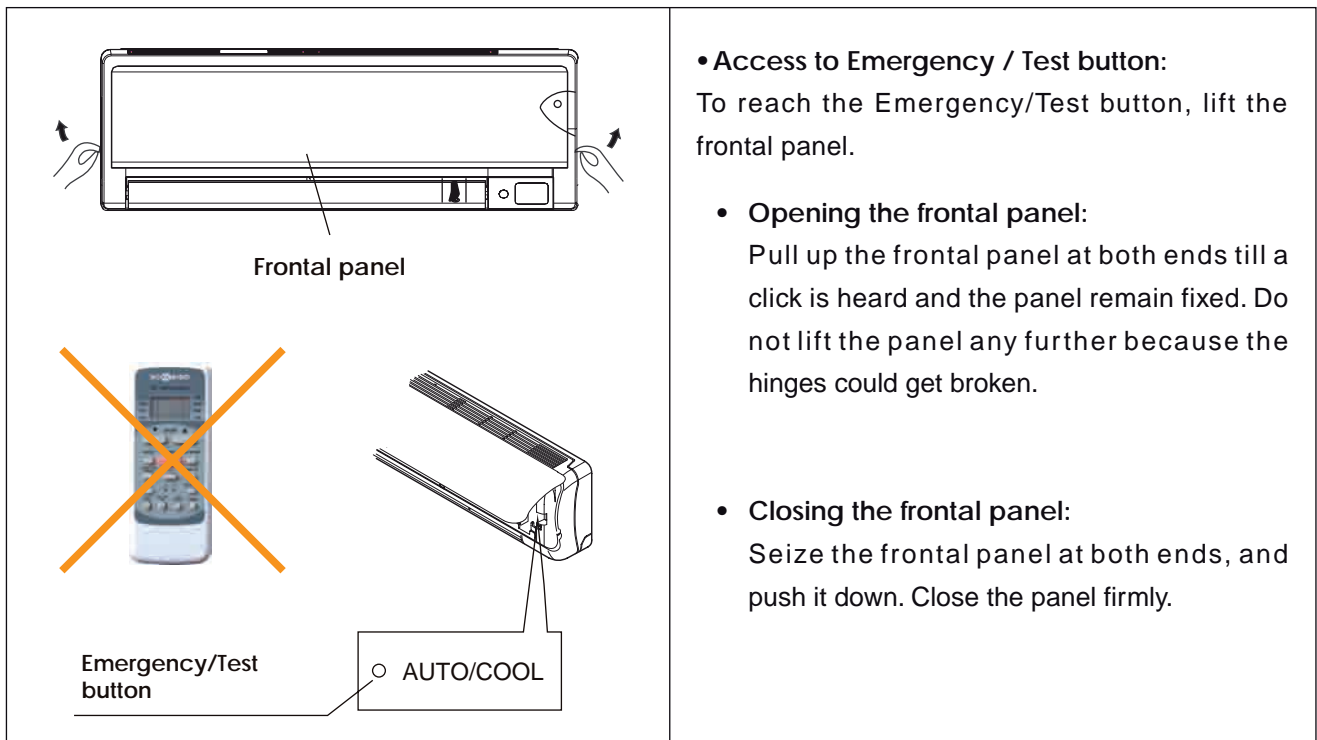
The direction (rightside-leftside) of vertical louvers integrated in air outlet vents has the objective to assure the highest degree of comfort to people inside the room. Usually, this objective is compatible with the distribution of air supplied through the vents as much uniformly as possible inside the room.



- In whatever operation mode, it is essential to adjust side by side the vertical louvers on right side or left side of air outlet vents.
- Besides, in whatever operation mode, it is essential to avoid too much narrow angles as regards perfectly frontal position of louvers, thus preventing to excessively choke airflow supplied through the vents.
- In Cooling mode/Dry mode, a too much open angle of vent's vertical louvers downwards may cause forming of condensate (consequently water may drip inside the room).

1.13 OPERATION IN EMERGENCY MODE/TEST

■ HIGHWALL TYPE MODELS (HKEU X)



- **Access to Emergency / Test button:**

To reach the Emergency/Test button, lift the frontal panel.

- **Opening the frontal panel:**

Pull up the frontal panel at both ends till a click is heard and the panel remain fixed. Do not lift the panel any further because the hinges could get broken.

- **Closing the frontal panel:**

Seize the frontal panel at both ends, and push it down. Close the panel firmly.

- **Operation in "AUTO" Emergency Mode:**

If the Remote Controller is not available or its batteries are exhausted, nevertheless the air conditioner can be started by pressing once the "AUTO/COOL" button with system OFF. In this way, Emergency operation will be started in "AUTO" (Automatic) mode, and the air conditioner will operate in the most suitable mode according to temperature conditions inside the room, with temperature set to 24°C.

- **Test of air conditioner in Cooling mode "(COOL)":**

With system OFF, press twice the "AUTO/COOL" button. In this way, operation in Test mode will be started. The system will start in forced Cooling mode ("COOL"), at "LOW" fan speed. For 30 minutes, room temperature will not be detected, but protection functions will keep active. Then, operation will go on in "AUTO" (Automatic) mode, with temperature set to 24°C.

Note 1: Never use Test mode for normal operation of Air Conditioner.

- **End of operation in Emergency mode or Test mode:**

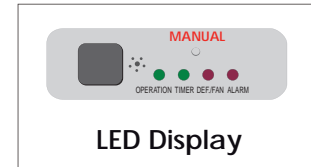
Press twice the "AUTO/COOL" button during Emergency operation, or press it once during Test mode: the system's operation will be stopped (OFF).

Note 2: Besides, to restore normal operation of system, you only need to use the remote controller.

- **Operation sequence referred to each pressing of "AUTO/COOL" button:**

→ **AUTO** → **COOL (Test mode)** → **OFF** →

■ 60 x 60 CASSETTE TYPE MODELS (HTFU X)



- Access to Emergency/Test button:

On Indoor Unit's LED Display, you can easily find "MANUAL" button.

- Operation in "AUTO" Emergency Mode:

If the Remote Controller is not available or its batteries are exhausted, nevertheless the air conditioner can be started by pressing once the "AUTO/COOL" button with system OFF. In this way, Emergency operation will be started in "AUTO" (Automatic) mode, and the air conditioner will operate in the most suitable mode according to temperature conditions inside the room, with temperature set to 24°C.

- Test of air conditioner in Cooling mode "(COOL)":

With system OFF, press twice the "AUTO/COOL" button. In this way, operation in Test mode will be started. The system will start in forced Cooling mode ("COOL"), at "LOW" fan speed. For 30 minutes, room temperature will not be detected, but protection functions will keep active. Then, operation will go on in "AUTO" (Automatic) mode, with temperature set to 24°C.

Note 1: Never use Test mode for normal operation of Air Conditioner.

- End of operation in Emergency mode or Test mode:

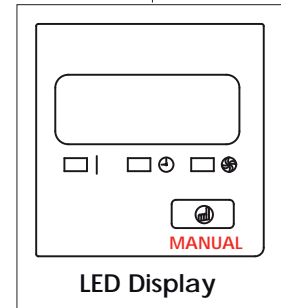
Press twice the "AUTO/COOL" button during Emergency operation, or press it once during Test mode: the system's operation will be stopped (OFF).

Note 2: Besides, to restore normal operation of system, you only need to use the remote controller.

- Operation sequence referred to each pressing of "AUTO/COOL" button:

→ AUTO → COOL (Test mode) → OFF →

■ “CONSOLE” TYPE MODELS (HFIU X)



- **Access to Emergency/Test:**

On Indoor Unit's LED Display, you can easily find “MANUAL” button.

- **Operation in “AUTO” Emergency Mode:**

If the Remote Controller is not available or its batteries are exhausted, nevertheless the air conditioner can be started by pressing once the “AUTO/COOL” button with system OFF. In this way, Emergency operation will be started in “AUTO” (Automatic) mode, and the air conditioner will operate in the most suitable mode according to temperature conditions inside the room, with temperature set to 24°C.

- **Test of air conditioner in Cooling mode “(COOL)”:**

With system OFF, press twice the “AUTO/COOL” button. In this way, operation in Test mode will be started. The system will start in forced Cooling mode (“COOL”), at “LOW” fan speed. For 30 minutes, room temperature will not be detected, but protection functions will keep active. Then, operation will go on in “AUTO” (Automatic) mode, with temperature set to 24°C.

Note 1: Never use Test mode for normal operation of Air Conditioner.

- **End of operation in Emergency mode or Test mode:**

Press twice the “AUTO/COOL” button during Emergency operation, or press it once during Test mode: the system's operation will be stopped (OFF).

Note 2: Besides, to restore normal operation of system, you only need to use the remote controller.

- **Operation sequence referred to each pressing of “AUTO/COOL” button:**

→ **AUTO** → **COOL (Test mode)** → **OFF** →

■ FLOOR/CEILING TYPE MODELS (HSFU X)



- **Access to Emergency/Test button:**

On Indoor Unit's LED Display, you can easily find "MANUAL" button.

- **Operation in "AUTO" Emergency Mode:**

If the Remote Controller is not available or its batteries are exhausted, nevertheless the air conditioner can be started by pressing once the "AUTO/COOL" button with system OFF. In this way, Emergency operation will be started in "AUTO" (Automatic) mode, and the air conditioner will operate in the most suitable mode according to temperature conditions inside the room, with temperature set to 24°C.

- **Test of air conditioner in Cooling mode "(COOL)":**

With system OFF, press twice the "AUTO/COOL" button. In this way, operation in Test mode will be started. The system will start in forced Cooling mode ("COOL"), at "LOW" fan speed. For 30 minutes, room temperature will not be detected, but protection functions will keep active. Then, operation will go on in "AUTO" (Automatic) mode, with temperature set to 24°C.

Note 1: Never use Test mode for normal operation of Air Conditioner.

- **End of operation in Emergency mode or Test mode:**

Press twice the "AUTO/COOL" button during Emergency operation, or press it once during Test mode: the system's operation will be stopped (OFF).

Note 2: Besides, to restore normal operation of system, you only need to use the remote controller.

- **Operation sequence referred to each pressing of "AUTO/COOL" button:**

→ **AUTO** → **COOL (Test mode)** → **OFF** →

■ LOW DUCTED TYPE MODELS (HRBU X)



- Access to Emergency/Test button:

On Indoor Unit's LED Display, you can easily find "MANUAL" button.

- Operation in "AUTO" Emergency Mode:

If the Remote Controller is not available or its batteries are exhausted, nevertheless the air conditioner can be started by pressing once the "AUTO/COOL" button with system OFF. In this way, Emergency operation will be started in "AUTO" (Automatic) mode, and the air conditioner will operate in the most suitable mode according to temperature conditions inside the room, with temperature set to 24°C.

- Test of air conditioner in Cooling mode "(COOL)":

With system OFF, press twice the "AUTO/COOL" button. In this way, operation in Test mode will be started. The system will start in forced Cooling mode ("COOL"), at "LOW" fan speed. For 30 minutes, room temperature will not be detected, but protection functions will keep active. Then, operation will go on in "AUTO" (Automatic) mode, with temperature set to 24°C.

Note 1: Never use Test mode for normal operation of Air Conditioner.

- End of operation in Emergency mode or Test mode:

Press twice the "AUTO/COOL" button during Emergency operation, or press it once during Test mode: the system's operation will be stopped (OFF).

Note 2: Besides, to restore normal operation of system, you only need to use the remote controller.

- Operation sequence referred to each pressing of "AUTO/COOL" button:

→ **AUTO** → **COOL (Test mode)** → **OFF** →

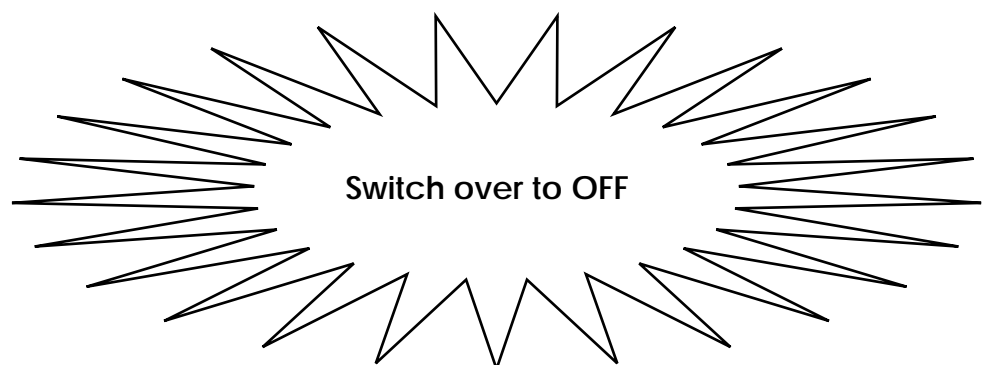
1.14 AUTOMATIC RESTART FUNCTION AFTER A BLACKOUT

✧ This function requires the presence of a special module for automatic restart (“Auto-restart”). This module is already provided in inner electronics of all HOKKAIDO “Multi Liberty DC Inverter” Indoor Units.

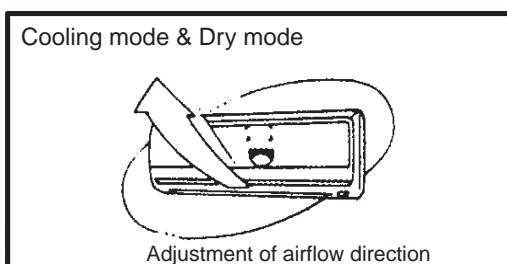
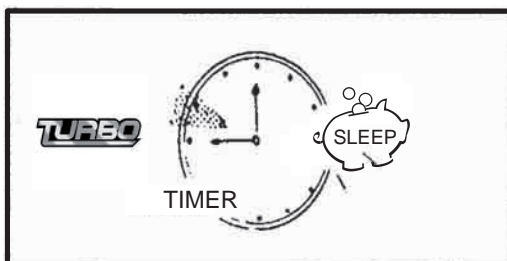
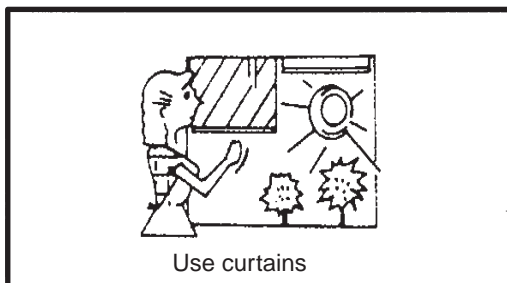
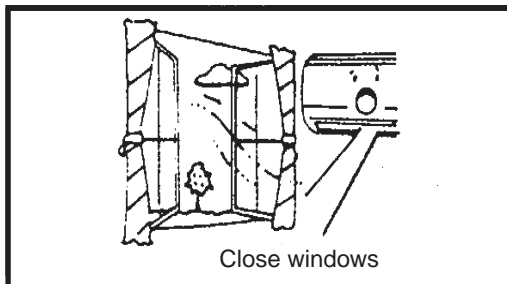
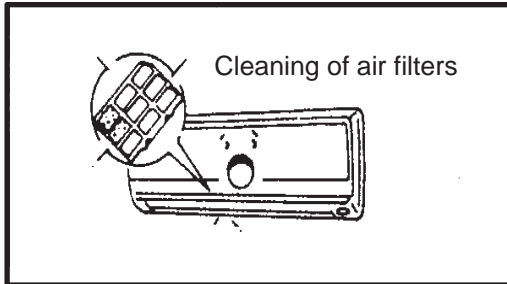
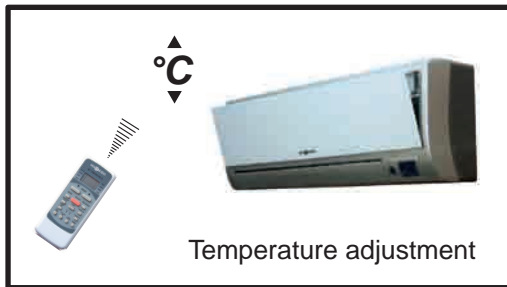
- ☞ A power failure during operation of the air conditioner causes the immediate stop of system.
- ☞ When power is restored, “OPERATION” indicator on each Indoor Unit will start blinking.
- ☞ If when blackout occurred, the system was operating, it will be able to restart automatically 3 minutes after power is restored, without need of pressing ON/OFF button on remote controller.
- ☞ Operation settings will be those that were active when the system was stopped.
- ☞ For all types of Indoor Units, TIMER settings or “SLEEP” settings (HKEU 206 X, 266 X, 356 X, 536 X Units only), will be cancelled and therefore they have to be set again.
- ☞ Automatic swinging functions (“SWING”) of air outlet flaps, eventually active when blackout occurred, have to be selected again when power is restored

WARNING

☞ If the air conditioner is installed in rooms that are occupied only occasionally, it is recommended to stop it before leaving the building, and to turn off main switch as additional safety measure.



1.15 ADVICE FOR ECONOMIC USE OF SYSTEM



■ HIGHWALL MODELS (HKEU X)

■ Set a suitable temperature value:

- During operation in Heating mode, take care not to set a too high temperature value.
- During operation in Cooling mode, take care not to set a too low temperature value.

■ Often clean air filters:

- In order to always assure the perfect performance of system, clean air filters on Indoor Units at least every 2 weeks, as it is described in Section "DM: Diagnostic & Maintenance" of this Service Manual. If dust accumulates on air filters, the system's performances lower.

■ Avoid to keep doors and windows always open:

- This reduces air conditioner's performances and causes an increase in energy consumption. Moreover, in case of heat overcharge, protection functions may intervene, and consequently air conditioner will stop.

■ Reduce exposure to sunlight:

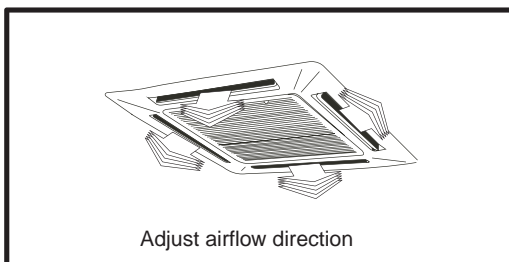
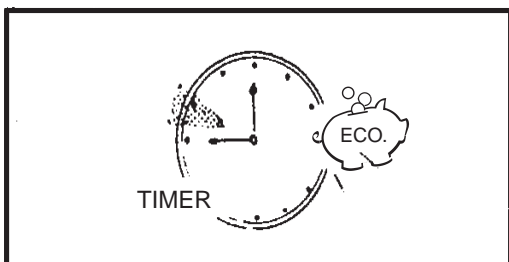
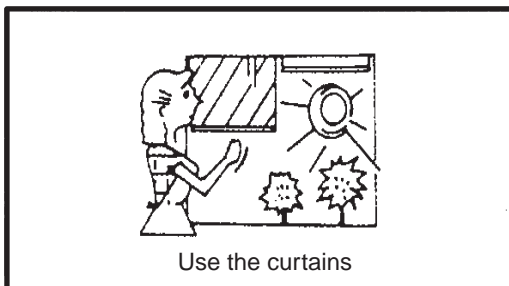
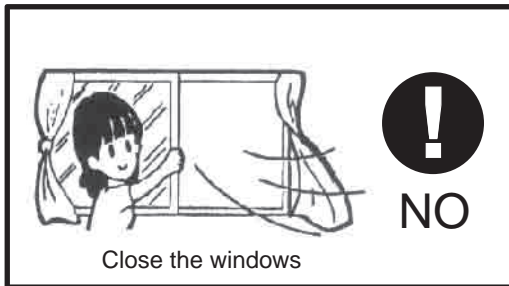
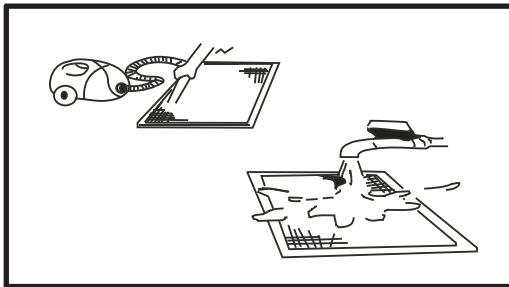
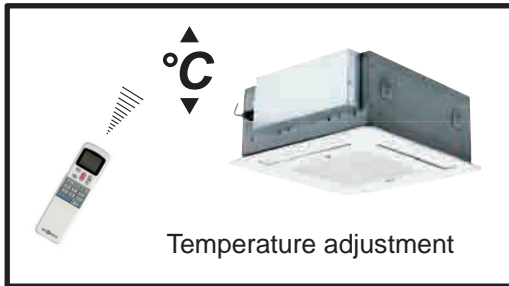
- During operation in Cooling mode, shade by curtains the large windows reached by direct sunlight during the hottest hours of day. In this way, a higher comfort will be obtained, and a sensible reduction of energy consumption.

■ Estimate comfort real needs:

- Never use TIMER function for a time higher than real comfort needs: please consider the time of real presence of people inside the air-conditioned room.
- Use "SLEEP" function or "TURBO" function according to required capacity.

■ Optimize airflow direction:

- By a bit of experience, it will be possible to estimate by yourself the increase in comfort which arises from a correct adjustment of supplied airflow. In this way, energy consumptions being equal, comfort degree is remarkably increased.



■ 60 x 60 CASSETTE MODELS (HTFU X)

■ Set a suitable temperature value:

- During operation in Heating mode, take care not to set a too high temperature value.
- During operation in Cooling mode, take care not to set a too low temperature value.

■ Often clean air filters:

- In order to always assure the perfect performance of system, clean air filters on Indoor Units at least every 2 weeks, as it is described in Section “DM: Diagnostic & Maintenance” of this Service Manual. If dust accumulates on air filters, the system’s performances lower.

■ Avoid to keep doors and windows always open:

- This reduces air conditioner’s performances and causes an increase in energy consumption. Moreover, in case of heat overcharge, protection functions may intervene, and consequently air conditioner will stop.

■ Reduce exposure to sunlight:

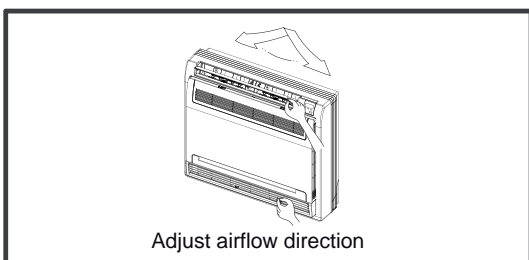
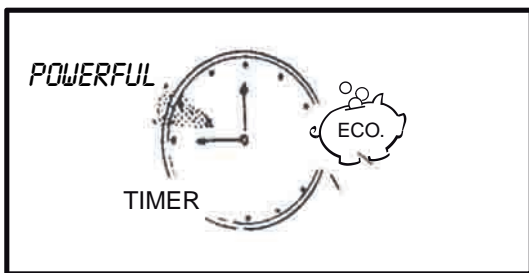
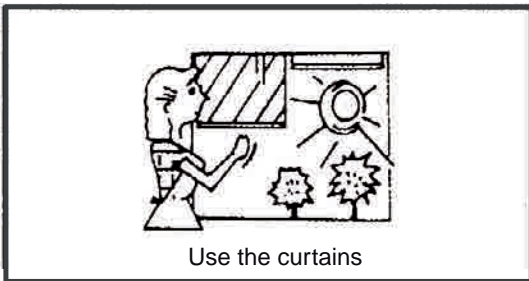
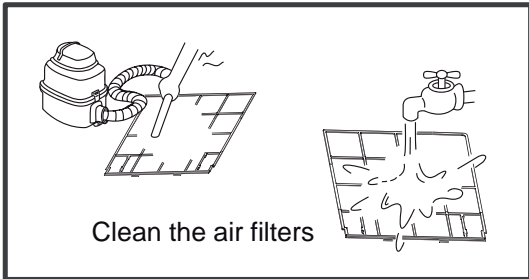
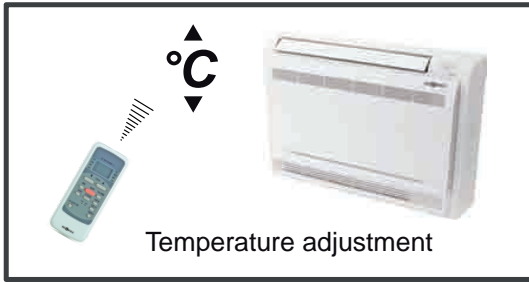
- During operation in Cooling mode, shade by curtains the large windows reached by direct sunlight during the hottest hours of day. In this way, a higher comfort will be obtained, and a sensible reduction of energy consumption.

■ Estimate comfort real needs:

- Never use TIMER function for a time higher than real comfort needs: please consider the time of real presence of people inside the air-conditioned room.
- Use “ECO(NOMIC)” function only when reduced capacity is required.

■ Optimize airflow direction:

- By a bit of experience, it will be possible to estimate by yourself the increase in comfort which arises from a correct adjustment of supplied airflow. In this way, energy consumptions being equal, comfort degree is remarkably increased.



■ "CONSOLE" MODELS (HFU X)

■ **Set a suitable temperature value:**

- During operation in Heating mode, take care not to set a too high temperature value.
- During operation in Cooling mode, take care not to set a too low temperature value.

■ **Often clean air filters:**

- In order to always assure the perfect performance of system, clean air filters on Indoor Units at least every 2 weeks, as it is described in Section "DM: Diagnostic & Maintenance" of this Service Manual. If dust accumulates on air filters, the system's performances lower.

■ **Avoid to keep doors and windows always open:**

- This reduces air conditioner's performances and causes an increase in energy consumption. Moreover, in case of heat overcharge, protection functions may intervene, and consequently air conditioner will stop.

■ **Reduce exposure to sunlight:**

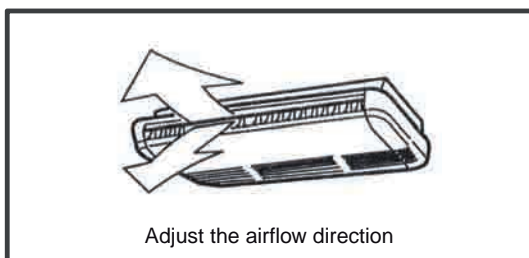
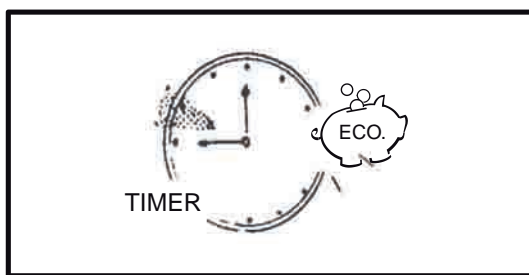
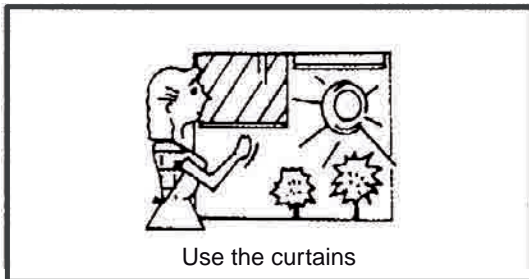
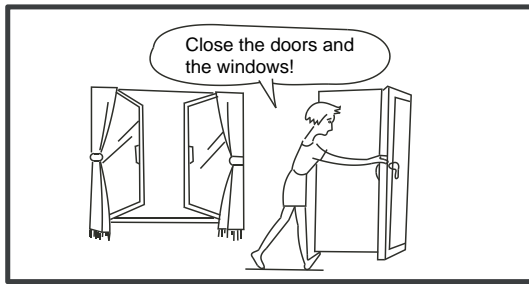
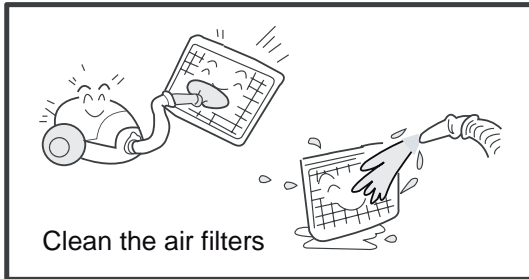
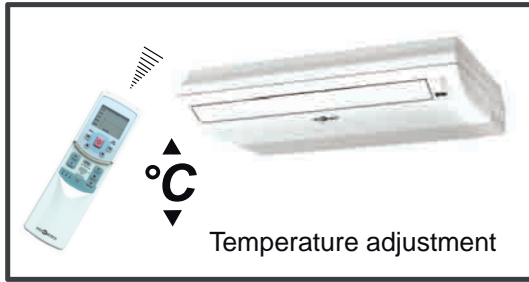
- During operation in Cooling mode, shade by curtains the large windows reached by direct sunlight during the hottest hours of day. In this way, a higher comfort will be obtained, and a sensible reduction of energy consumption.

■ **Estimate comfort real needs:**

- Never use TIMER function for a time higher than real comfort needs: please consider the time of real presence of people inside the air-conditioned room.
- Use "ECO(NOMIC)" function or "POWERFUL" function according to required capacity.

■ **Optimize airflow direction:**

- By a bit of experience, it will be possible to estimate by yourself the increase in comfort which arises from a correct adjustment of supplied airflow. In this way, energy consumptions being equal, comfort degree is remarkably increased.



■ FLOOR/CEILING MODELS (HSFU X)

■ Set a suitable temperature value:

- During operation in Heating mode, take care not to set a too high temperature value.
- During operation in Cooling mode, take care not to set a too low temperature value.

■ Often clean air filters:

- In order to always assure the perfect performance of system, clean air filters on Indoor Units at least every 2 weeks, as it is described in Section “DM: Diagnostic & Maintenance” of this Service Manual. If dust accumulates on air filters, the system’s performances lower.

■ Avoid to keep doors and windows always open:

- This reduces air conditioner’s performances and causes an increase in energy consumption. Moreover, in case of heat overcharge, protection functions may intervene, and consequently air conditioner will stop.

■ Reduce exposure to sunlight:

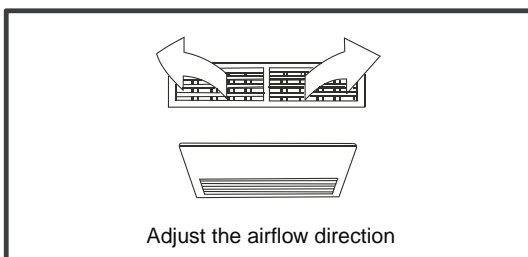
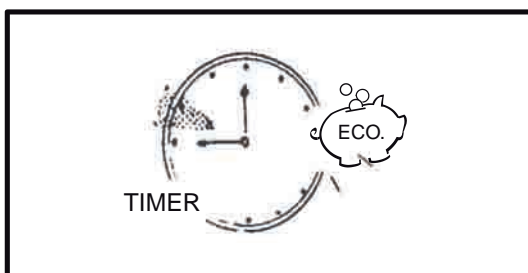
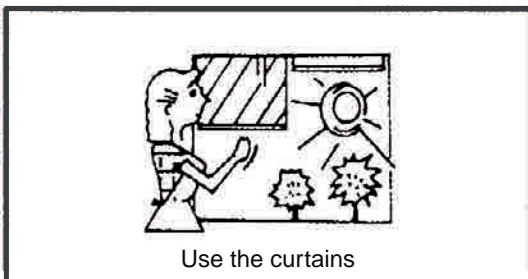
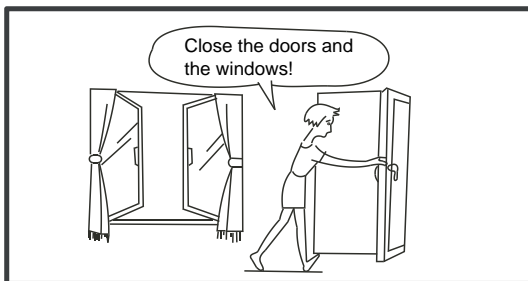
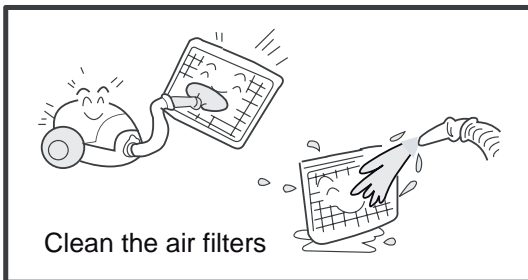
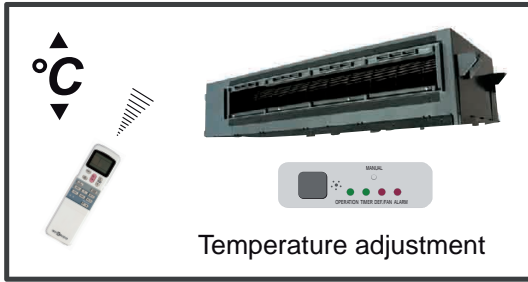
- During operation in Cooling mode, shade by curtains the large windows reached by direct sunlight during the hottest hours of day. In this way, a higher comfort will be obtained, and a sensible reduction of energy consumption.

■ Estimate comfort real needs:

- Never use TIMER function for a time higher than real comfort needs: please consider the time of real presence of people inside the air-conditioned room.
- Use “ECO(NOMIC)” function only when reduced capacity is required.

■ Optimize airflow direction:

- By a bit of experience, it will be possible to estimate by yourself the increase in comfort which arises from a correct adjustment of supplied airflow. In this way, energy consumptions being equal, comfort degree is remarkably increased.



■ **LOW DUCTED MODELS (HRBU X)**

■ **Set a suitable temperature value:**

- During operation in Heating mode, take care not to set a too high temperature value.
- During operation in Cooling mode, take care not to set a too low temperature value.

■ **Often clean air filters:**

- In order to always assure the perfect performance of system, clean air filters on Indoor Units at least every 2 weeks, as it is described in Section “DM: Diagnostic & Maintenance” of this Service Manual. If dust accumulates on air filters, the system’s performances lower.

■ **Avoid to keep doors and windows always open:**

- This reduces air conditioner’s performances and causes an increase in energy consumption. Moreover, in case of heat overcharge, protection functions may intervene, and consequently air conditioner will stop.

■ **Reduce exposure to sunlight:**

- During operation in Cooling mode, shade by curtains the large windows reached by direct sunlight during the hottest hours of day. In this way, a higher comfort will be obtained, and a sensible reduction of energy consumption.

■ **Estimate comfort real needs:**

- Never use TIMER function for a time higher than real comfort needs: please consider the time of real presence of people inside the air-conditioned room.
- Use “ECO(NOMIC)” function only when reduced capacity is required.

■ **Optimize airflow direction:**

- By a bit of experience, it will be possible to estimate by yourself the increase in comfort which arises from a correct adjustment of supplied airflow. In this way, energy consumptions being equal, comfort degree is remarkably increased.

Section 2: INDOOR UNITS

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2. INDOOR UNITS

2.1 HKEU X MODELS (HIGHWALL TYPE)

1. Technical Specifications of HKEU X Multi Liberty Indoor Units

Model name		HKEU 206 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	2.00
	Power input	W	38
	Running current	A	0.17
Heating	Capacity	kW	2.35
	Power input	W	38
	Running current	A	0.17
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RPG20D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	43
	Condenser	μF	1.5μF
	Fan speed (Hi/Me/Lo)	rpm	1150/1000/850
Indoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	621 x 315 x 26.74
	Number of circuits		2
Indoor air flow (Hi/Me/Lo)		m ³ /h	570/480/350
Noise level (Hi/Me/Lo) at 1m		dB(A)	37/33/27
Indoor Unit	Dimensions (W x H x D)	mm	795 x 270 x 165
	Packaging (W x H x D)	mm	850 x 340 x 285
	Net / Gross weight	kg	10/11.5
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø9.52(3/8")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø20
Operation control			R5114/BGE Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



Model name		HKEU 266 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	2.60
	Power input	W	38
	Running current	A	0.17
Heating	Capacity	kW	2.90
	Power input	W	38
	Running current	A	0.17
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RPG20D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	43
	Condenser	μF	1.5μF
	Fan speed (Hi/Me/Lo)	rpm	1150/1000/850
Indoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Traited aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	621 x 315 x 26.74
	Number of circuits		2
Indoor air flow (Hi/Me/Lo)		m ³ /h	570/480/350
Noise level (Hi/Me/Lo) at 1m		dB(A)	37/33/27
Indoor Unit	Dimensions (W x H x D)	mm	795 x 270 x 165
	Packaging (W x H x D)	mm	850 x 340 x 285
	Net / Gross weight	kg	10/11.5
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø9.52(3/8")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø20
Operation control			R5114/BGE Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



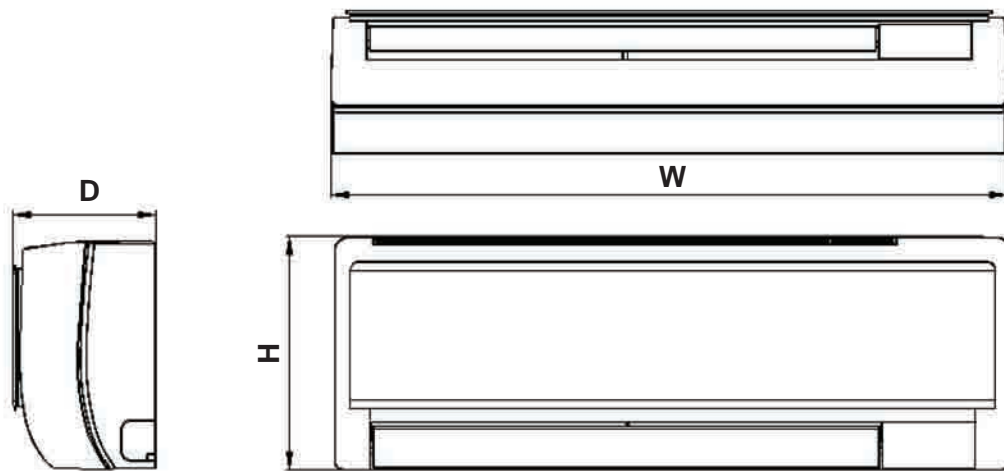
Model name		HKEU 356 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	3.50
	Power input	W	44
	Running current	A	0.20
Heating	Capacity	kW	3.80
	Power input	W	44
	Running current	A	0.20
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RPG20D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	43
	Condenser	μF	1.5μF
	Fan speed (Hi/Me/Lo)	rpm	1250/1050/900
Indoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Traited aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	672 x 336 x 26.74
	Number of circuits		2
Indoor air flow (Hi/Me/Lo)		m ³ /h	700/520/420
Noise level (Hi/Me/Lo) at 1m		dB(A)	40/35/28
Indoor Unit	Dimensions (W x H x D)	mm	845 x 286 x 165
	Packaging (W x H x D)	mm	905 x 355 x 285
	Net / Gross weight	kg	10.5/12.0
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø20
Operation control			R5114/BGE Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



Model name		HKEU 536 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	5.30
	Power input	W	52
	Running current	A	0.24
Heating	Capacity	kW	5.45
	Power input	W	52
	Running current	A	0.24
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RPG28D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	47
	Condenser	μF	1.5μF
	Fan speed (Hi/Me/Lo)	rpm	1250/1100/1000
Indoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x P)	mm	808 x 336 x 26.74
	Number of circuits		4
Indoor air flow (Hi/Me/Lo)		m ³ /h	800/700/600
Noise level (Hi/Me/Lo) at 1m		dB(A)	42/37/33
Indoor Unit	Dimensions (W x H x D)	mm	995 x 292 x 194
	Packaging (W x H x D)	mm	1100 x 415 x 290
	Net / Gross weight	kg	12.5/15.5
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø20
Operation control			R5114/BGE Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



2. Dimensions of HKEU X Multi Liberty Indoor Units

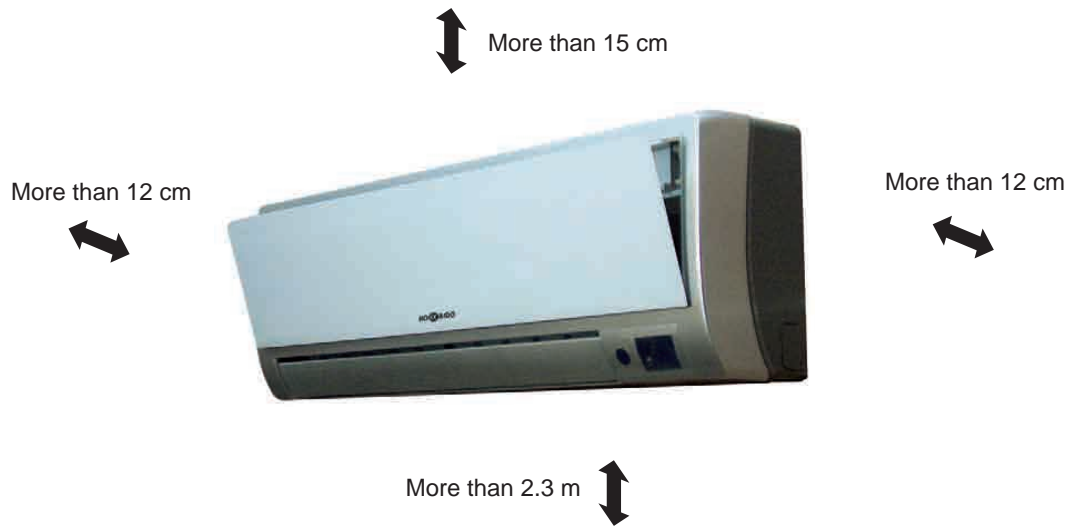


Unit: mm

Dimension Model	Width (W)	Height (H)	Depth (D)
HKEU 206 X	795	270	165
HKEU 266 X	795	270	165
HKEU 356 X	845	286	165
HKEU 536 X	995	292	194

3. Installation & Service spaces of HKEU X Multi Liberty Indoor Units

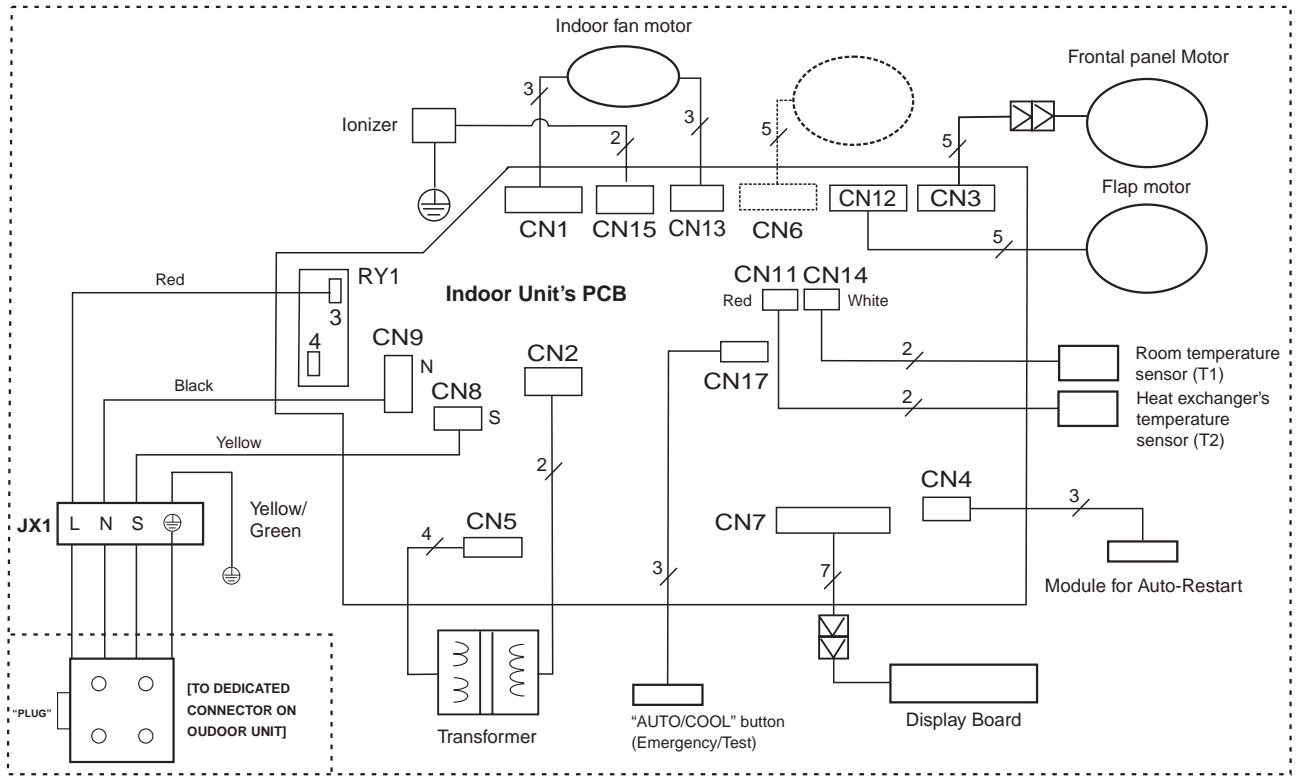
HKEU (206, 266, 356, 536) X Models



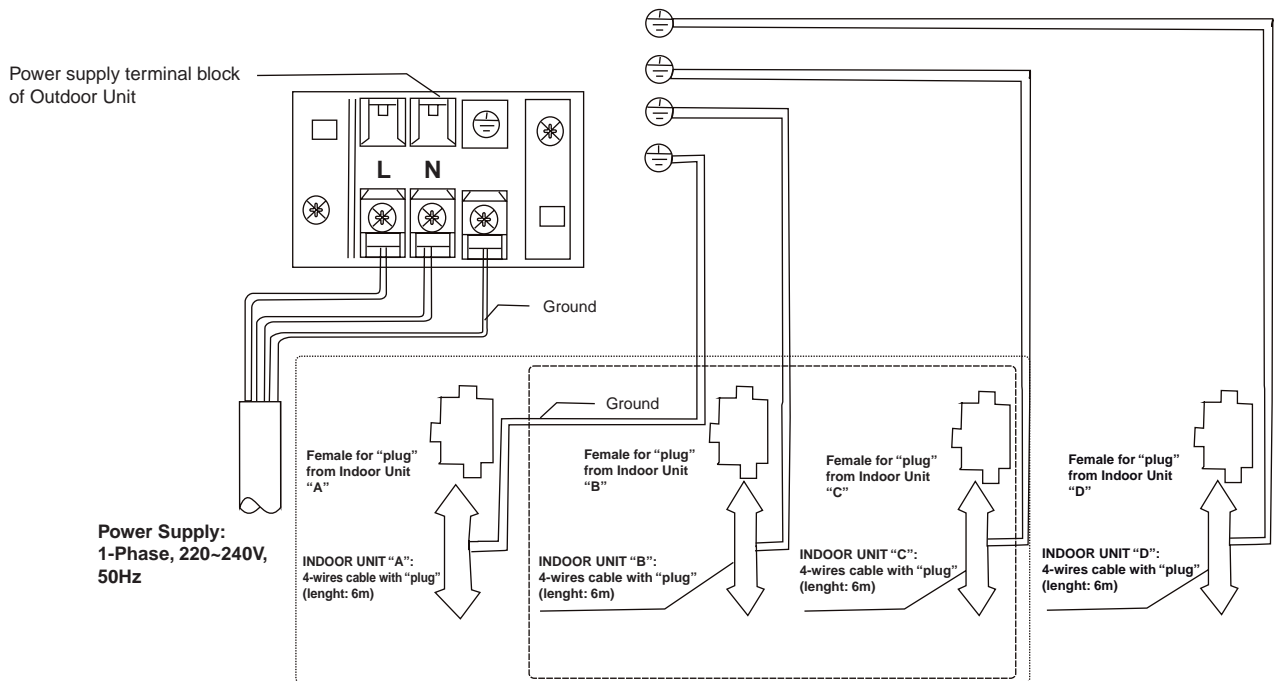
CAUTION

Highwall type Indoor Unit must be installed, by fixation plate, at 2.3m higher from floor.

4. Wiring Diagrams of HKEU (206, 266, 356, 536) X Multi Liberty Indoor Units

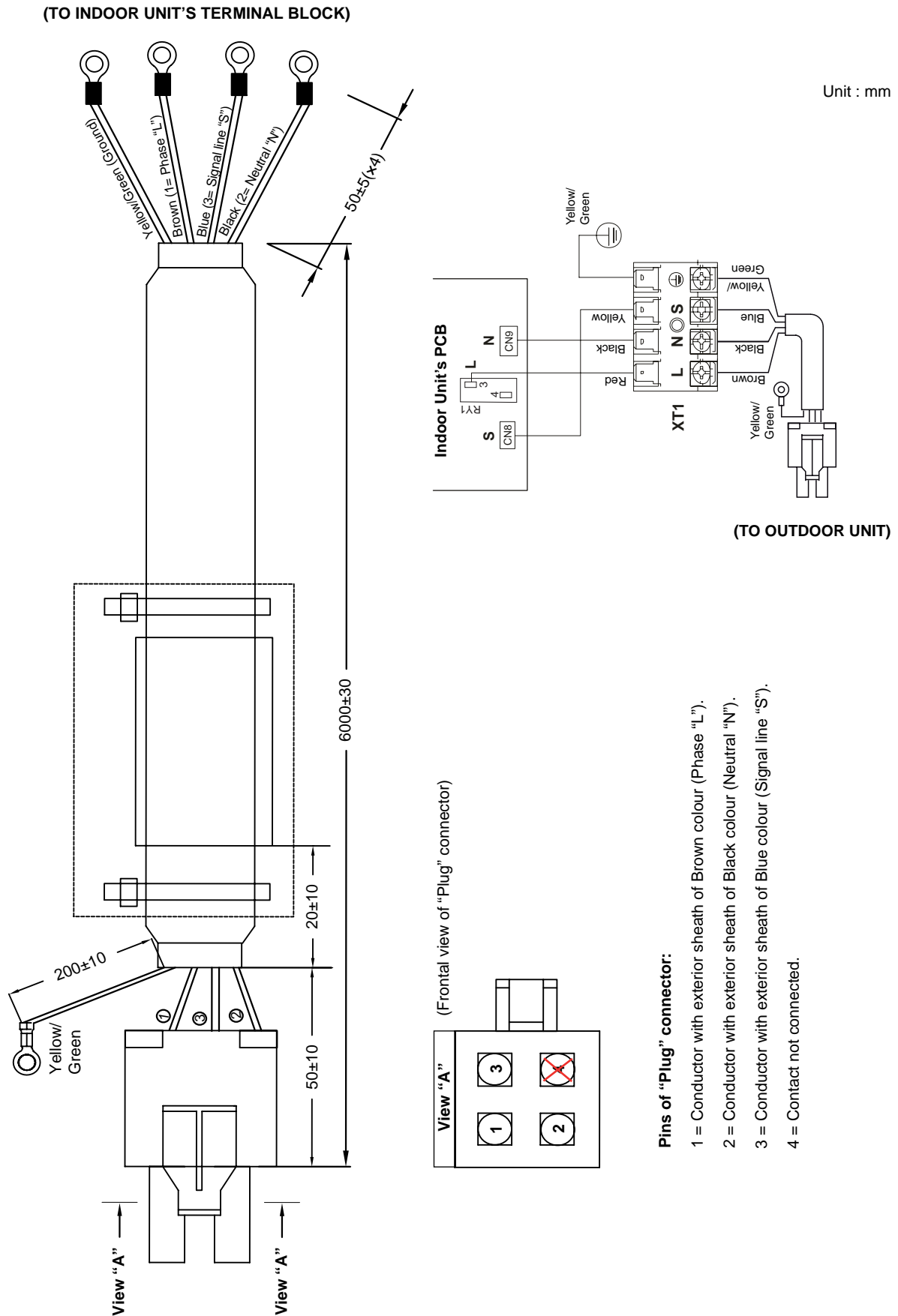


■ Dedicated connectors (Units "A", "B", "C", "D") for "PLUG", on Outdoor Unit



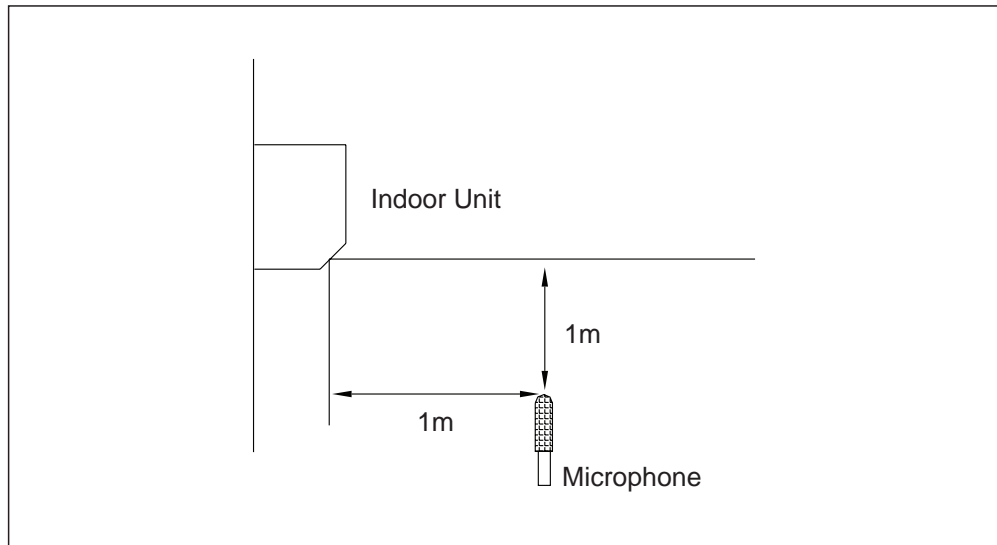
Note: The wiring above refers to HCKU 706 Outdoor Unit X4 (4 Indoor Units can be connected).

■ “Plug” cable for Connection between HKEU X Indoor Units and Multi Liberty DC Inverter Outdoor Units
(By dedicated connectors (Units “A”, “B”, “C”, “D”) for “Plug”, on Outdoor Unit)



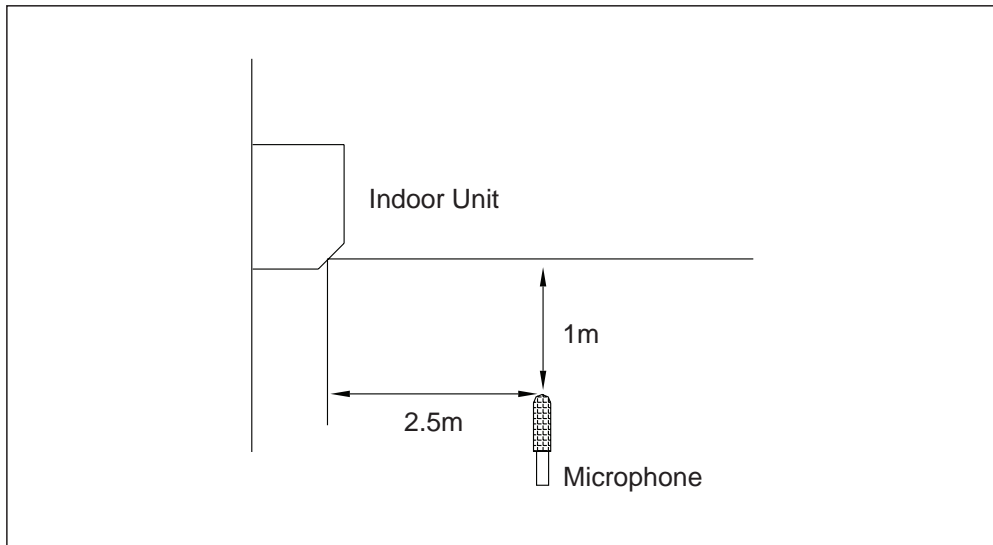
5. Noise level of HKEU X Multi Liberty Indoor Units

Measurement conditions: 1m in front of Indoor Unit



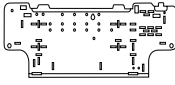







Models	Noise level at 1m, dB(A)		
	“Hi.” speed	“Me” speed	“Lo.” speed
HKEU 206 X	37	33	27
HKEU 266 X	37	33	27
HKEU 356 X	40	35	28
HKEU 536 X	42	37	33

Measurement conditions: 2.5m in front of Indoor Unit



Models	Noise level at 2.5m, dB(A)		
	“Hi.” speed	“Me” speed	“Lo.” speed
HKEU 206 X	29	25	19
HKEU 266 X	29	25	19
HKEU 356 X	32	27	20
HKEU 536 X	34	29	25

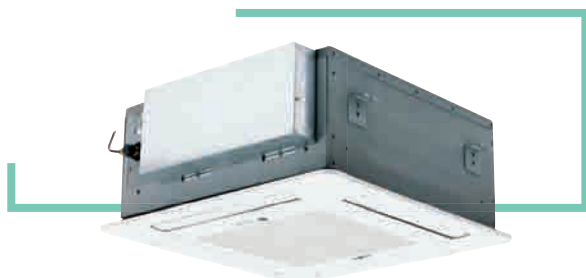
6. Accessories provided with HKEU X Multi Liberty Indoor Units

Component	Aspect	Q.ty	Function
Installation plate		1	/
Installation screws ST3.9 x 25		3	For fixing Unit's components
Infrared Remote Controller		1	/
Wall bearing for Remote Controller		1	Wall fixing of Remote Controller
Screws ST2.9 x 10-C-H for Remote Controller's wall bearing		2	Wall fixing of Remote Controller's bearing
Alkaline battery (AM4)		2	/
User's Manual		1	/
Installation Manual		1	/

2.2 HTFU X MODELS (60 x 60 CASSETTE TYPE)

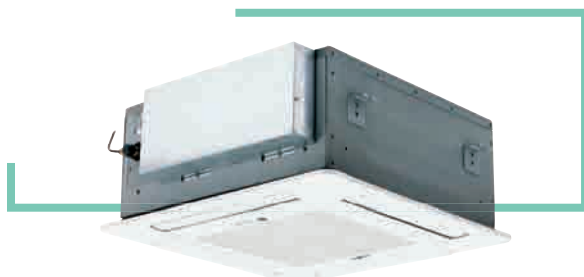
1. Technical Specifications of HTFU X Multi Liberty Indoor Units

Model name		HTFU 206 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	2.00
	Power input	W	58
	Running current	A	0.26
Heating	Capacity	kW	2.90
	Power input	W	58
	Running current	A	0.26
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		YDK45-6D
	Type		Motore AC
	Supplier		Welling
	Capacity	W	41
	Condenser	μF	2.5μF
	Fan speed (Hi/Me/Lo)	rpm	690/600/470
Indoor heat exchanger	Number of rows		1
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensione (W x H x D)	mm	1188 x 210 x 13.37
	Number of circuits		3
Indoor air flow (Hi/Me/Lo)		m ³ /h	580/510/400
Noise level (Hi/Me/Lo) at 1m		dB(A)	40/34/30
Indoor Unit	Dimensions (W x H x D)	mm	580 x 254 x 580
	Packaging (W x H x D)	mm	745 x 345 x 750
	Net / Gross weight	kg	18/25
Panel	Panel name	-	TFP 351 IHR
	Dimensions (W x H x D)	mm	650 x 30 x 650
	Net weight	kg	3
Refrigeran circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Oudoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø9.52(3/8")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø20
Operation control			R11HG/E Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



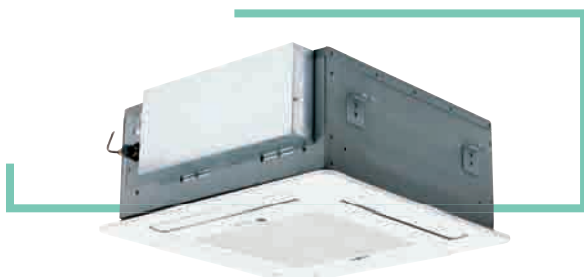
Condensate drain pump = raised up to 360mm from drain socket.

Model name		HTFU 266 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	2.90
	Power input	W	58
	Running current	A	0.26
Heating	Capacity	kW	3.20
	Power input	W	58
	Running current	A	0.26
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		YDK45-6D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	41
	Condenser	μF	2.5μF
	Fan speed (Hi/Me/Lo)	rpm	690/600/470
Indoor heat exchanger	Number of rows		1
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	1188 x 210 x 13.37
	Number of circuits		3
Indoor air flow (Hi/Me/Lo)		m ³ /h	580/510/400
Noise level (Hi/Me/Lo) at 1m		dB(A)	40/34/30
Indoor Unit	Dimensions (W x H x D)	mm	580 x 254 x 580
	Packaging (W x H x D)	mm	745 x 345 x 750
	Net / Gross weight	kg	18/25
Panel	Panel name	-	TFP 351 IHR
	Dimensions (W x H x D)	mm	650 x 30 x 650
	Net weight	kg	3
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø9.52(3/8")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø20
Operation control			R11HG/E Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



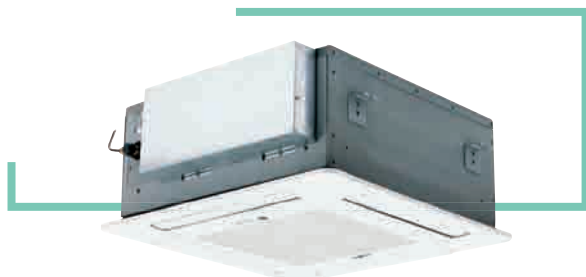
Condensate drain pump = raised up to 360mm from drain socket.

Model name		HTFU 356 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	3.50
	Power input	W	58
	Running current	A	0.26
Heating	Capacity	kW	3.80
	Power input	W	58
	Running current	A	0.26
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		YDK45-6D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	41
	Condenser	μF	2.5μF
	Fan speed (Hi/Me/Lo)	rpm	750/650/500
Indoor heat exchanger	Number of rows		1
	Tube pitch & row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	1188 x 210 x 13.37
	Number of circuits		3
Indoor air flow (Hi/Me/Lo)		m ³ /h	650/550/420
Noise level (Hi/Me/Lo) at 1m		dB(A)	41/36/31
Indoor Unit	Dimensions (W x H x D)	mm	580 x 254 x 580
	Packaging (W x H x D)	mm	745 x 345 x 750
	Net / Gross weight	kg	18/25
Panel	Panel name	-	TFP 351 IHR
	Dimensions (W x H x D)	mm	650 x 30 x 650
	Net weight	kg	3
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø20
Operation control			R11HG/E Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



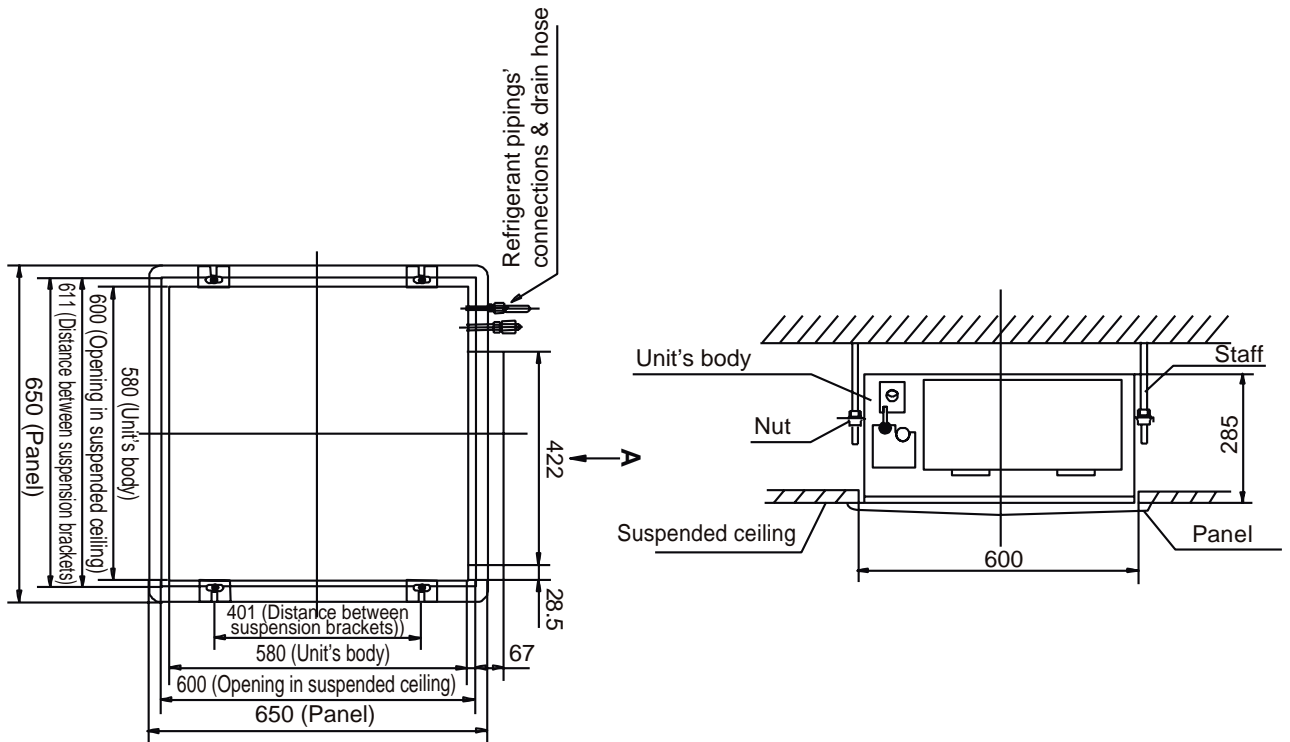
Condensate drain pump = raised up to 360mm from drain socket.

Model name		HTFU 536 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	5.30
	Power input	W	80
	Running current	A	0.40
Heating	Capacity	kW	5.90
	Power input	W	80
	Running current	A	0.40
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		YDK45-4F
	Type		AC Motor
	Supplier		Welling
	Capacity	W	63
	Condenser	μF	2.5μF
	Fan speed (Hi/Me/Lo)	rpm	930/830/660
Indoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Exterior dia. of pipes & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	1188 x 210 x 26.74
	Number of circuits		5
Indoor air flow (Hi/Me/Lo)		m³/h	790/700/560
Noise level (Hi/Me/Lo) at 1m		dB(A)	44/38/35
Indoor Unit	Dimensions (W x H x D)	mm	580 x 254 x 580
	Packaging (W x H x D)	mm	745 x 345 x 750
	Net / Gross weight	kg	21/28
Panel	Panel name	-	TFP 351 IHR
	Dimensions (W x H x D)	mm	650 x 30 x 650
	Net weight	kg	3
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø20
Operation control			R11HG/E Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



Condensate drain pump = raised up to 360mm from drain socket.

2. Dimensions of HTFU X Multi Liberty Indoor Units



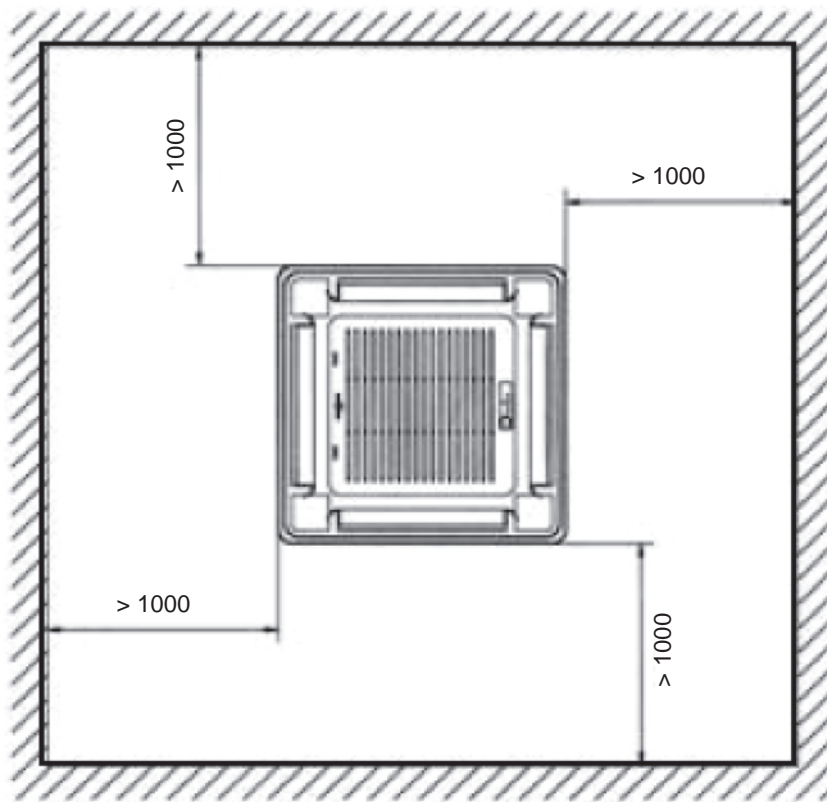
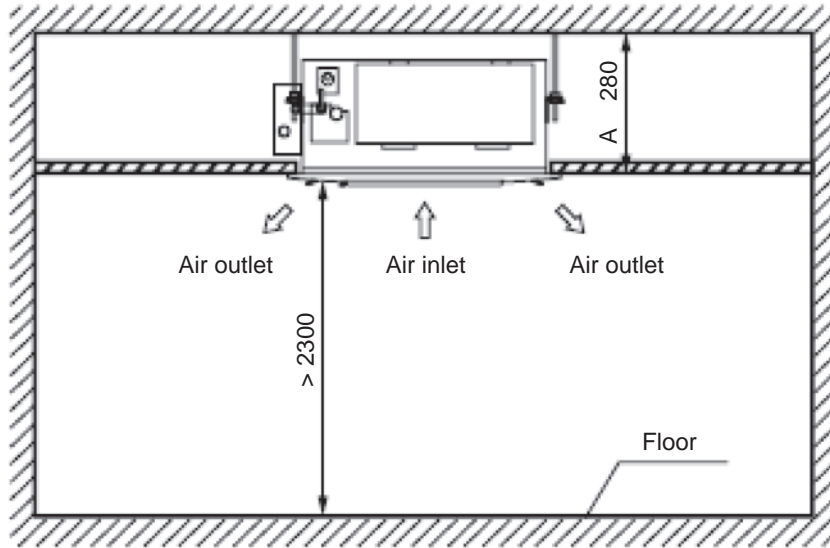
Unit: mm

Dimension Model	Width (W)	Height (H)	Depth (D)
HTFU 206 X	580	254	580
HTFU 266 X	580	254	580
HTFU 356 X	580	254	580
HTFU 536 X	580	254	580

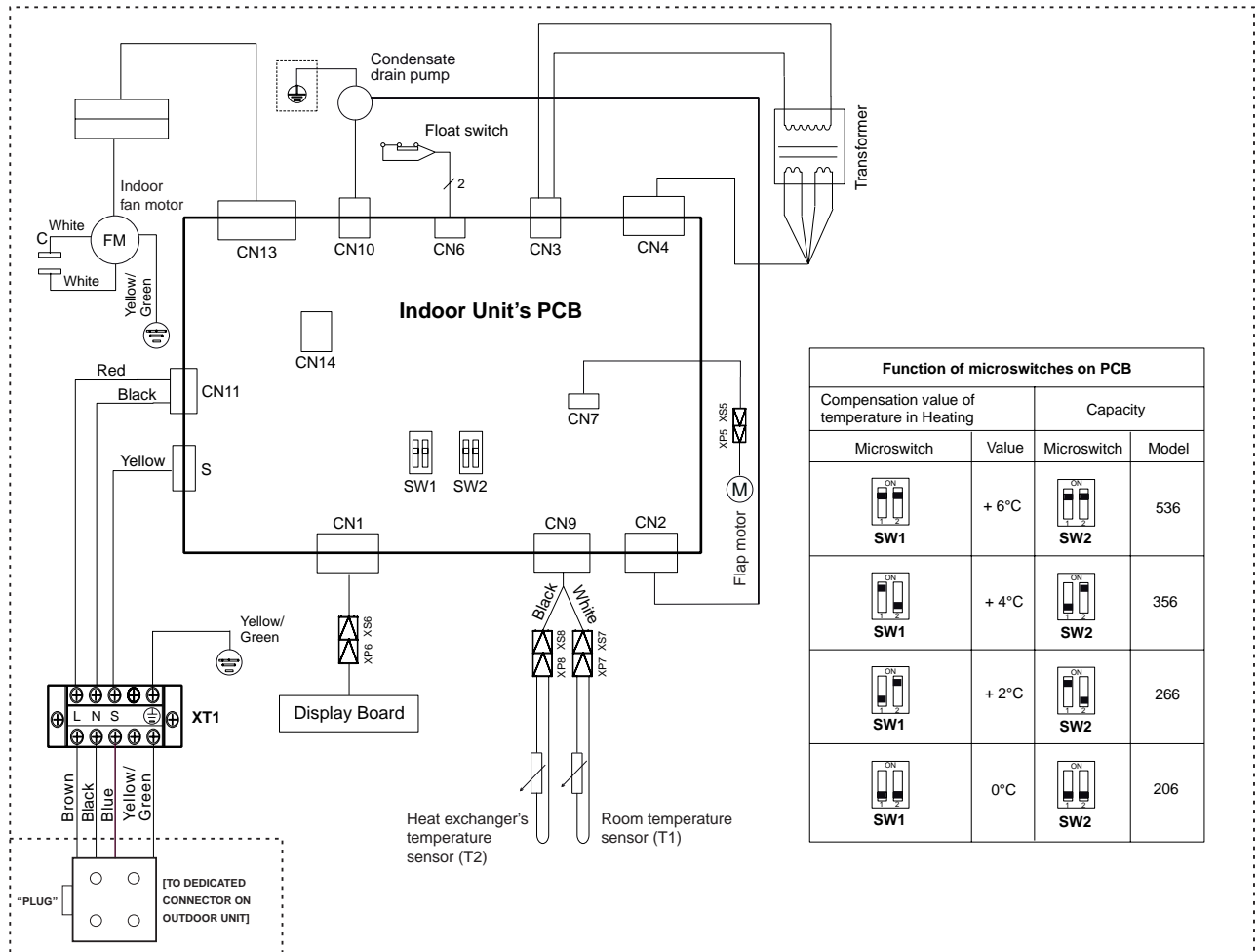
3. Installation & service spaces for HTFU X Multi Liberty Indoor Units

HTFU (206, 266, 356, 536) X Models

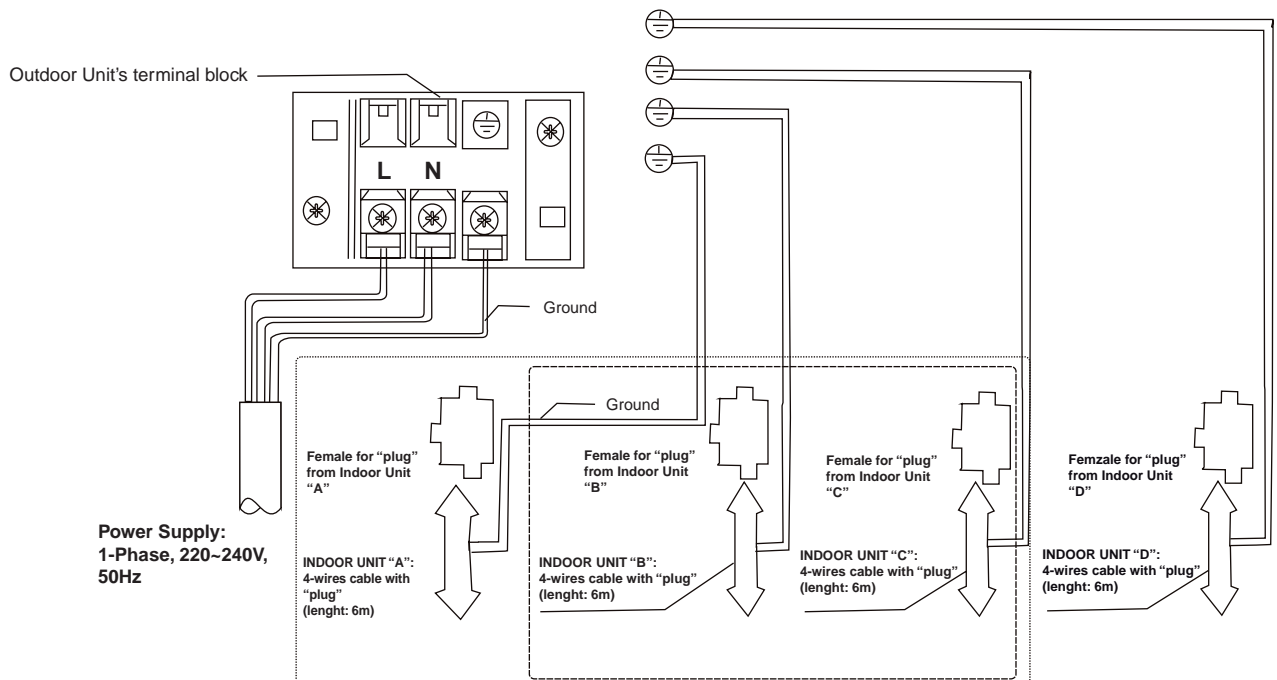
Unit: mm



4. Wiring Diagrams of HTFU (206, 266, 356, 536) X Multi Liberty Indoor Units



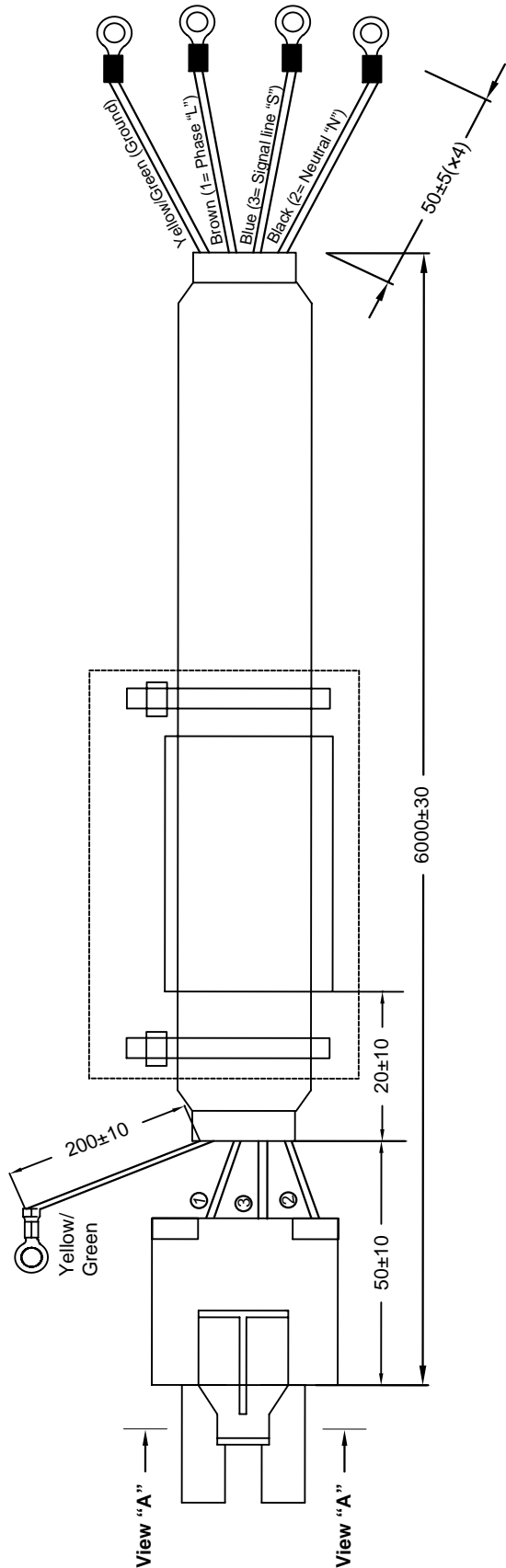
■ Dedicated connectors (Units "A", "B", "C", "D") for "PLUG", on Outdoor Unit



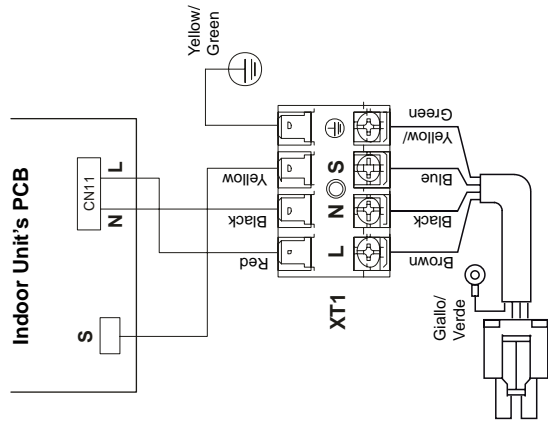
Note: The above diagram refers to HCKU 706 Indoor Unit X4 (4 Indoor Units can be connected).

■ “Plug” cable for Connection between HTFU X Indoor Units and Multi Liberty DC Inverter Outdoor Units
(By dedicated connectors (Units “A”, “B”, “C”, “D”) for “Plug”, on Outdoor Unit)

(TO INDOOR UNIT'S TERMINAL BLOCK)

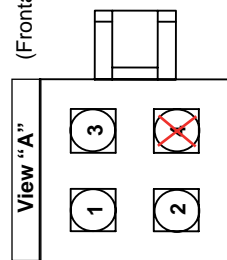


Unit : mm



(TO OUTDOOR UNIT)

(Frontal view of “Plug” Connector)

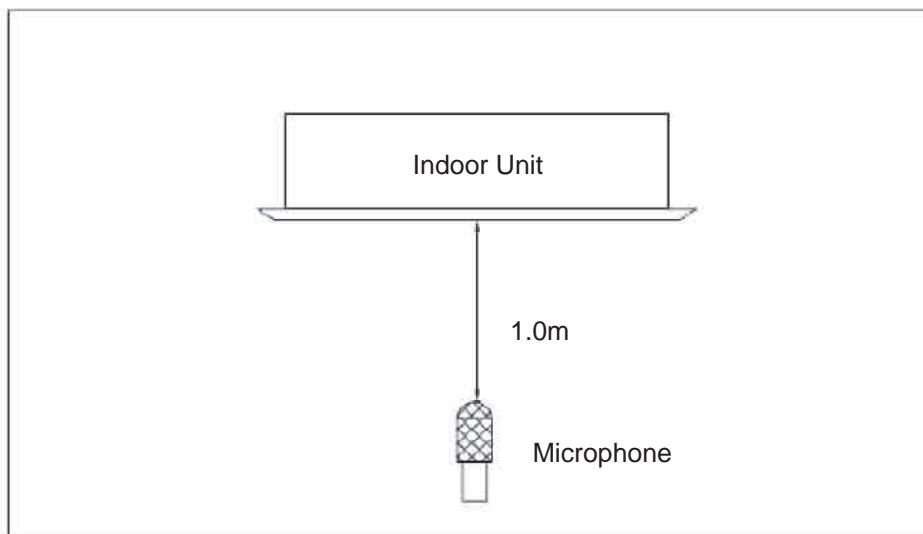


Pins of “Plug” connector:

- 1 = Conductor with exterior sheath of Brown colour (Phase “L”).
- 2 = Conductor with exterior sheath of Black colour (Neutral “N”).
- 3 = Conductor with exterior sheath of Blue colour (Signal line “S”).
- 4 = Contact not connected.

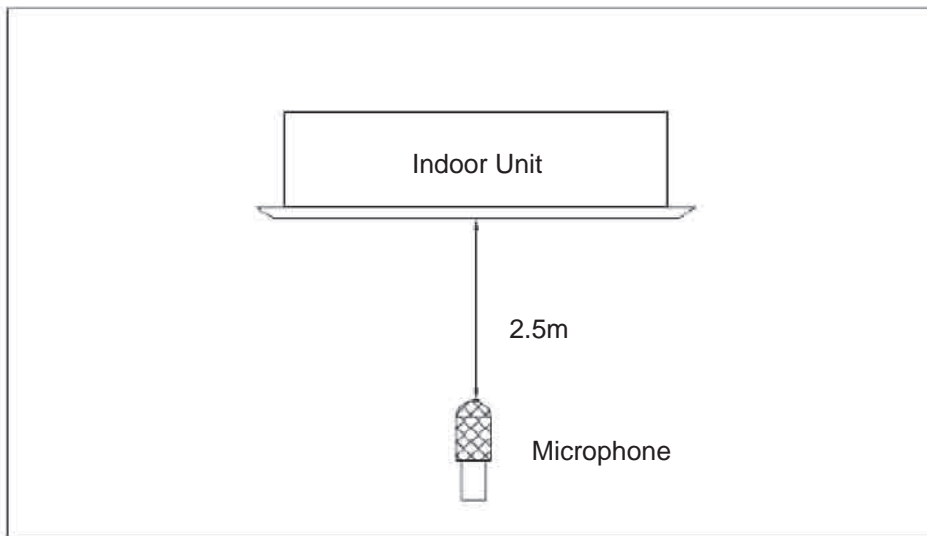
5. Noise level of HTFU X Multi Liberty Indoor Units

Measurement conditions: 1m below Indoor Unit



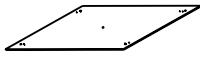

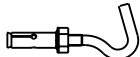







Models	Noise level at 1m, dB(A)		
	"Hi." speed	"Me" speed	"Lo." speed
HTFU 206 X	40	34	30
HTFU 266 X	40	34	30
HTFU 356 X	41	36	31
HTFU 536 X	44	38	35

Measurement conditions: 2.5m below Indoor Unit



Models	Noise level at 2.5m, dB(A)		
	"Hi." speed	"Me" speed	"Lo." speed
HTFU 206 X	32	26	22
HTFU 266 X	32	26	22
HTFU 356 X	33	28	23
HTFU 536 X	36	30	27

6. Accessories provided with HTFU X Multi Liberty Indoor Units

Component	Aspect	Q.ty	Function
Paper reference pattern		1	For opening the suspended ceiling
Bolts M5 x 16		4	To fix the reference pattern
Screw anchor (Ø12) (hook type)		4	For suspending the Indoor Unit
Suspension bracket (bored and threaded at one end)		4	For suspending the Indoor Unit
Infrared Remote Controller		1	/
Wall bearing for Remote Controller		1	Wall installation of Remote Controller
Screw ST2.9 x 10-C-H for Remote Controller's wall bearing		2	Wall installation of Remote Controller's bearing
Alkaline battery		2	/
User's Manual		1	/
Installation Manual		1	/

2.3 HFIU X MODELS (CONSOLE TYPE)

1. Technical Specifications of HFIU X Multi Liberty Indoor Units

Model name		HFIU 266 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	2.60
	Power input	W	30
	Running current	A	0.13
Heating	Capacity	kW	2.90
	Power input	W	30
	Running current	A	0.13
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RD-280-20-8A
	Type		DC Motor
	Supplier		Welling
	Capacity	W	42
	Condenser	μF	-
	Fan speed (Hi/Me/Lo)	rpm	560/460/420
Indoor heat exchanger	Number of rows		1
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	512 x 378 x 13.37
	Number of circuits		1
Indoor air flow (Hi/Me/Lo)		m³/h	450/360/250
Noise level (Hi/Me/Lo) at 1m		dB(A)	37/32/27
Indoor Unit	Dimensions (W x H x D)	mm	700 x 600 x 210
	Packaging (W x H x D)	mm	810 x 710 x 305
	Net /Gross weight	kg	13/19
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø9.52(3/8")
Wiring	Power lines & Signal lines		4 x 1.5mm² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø16
Operation control			R51D/E Infrared Remote Controller
Optional controls			DTW-IHXR Wired Controller / DTWS-IHXR Wired Controller
Centralized control devices			DTC-IHXR / DTCWT-IHXR (they both require NIM-GRH)
Digital interface module			NIM-GRH
Setting temperature range		°C	17 ~ 30



Model name		HFIU 356 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	3.50
	Power input	W	30
	Running current	A	0.13
Heating	Capacity	kW	4.10
	Power input	W	30
	Running current	A	0.13
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RD-280-20-8A
	Type		DC Motor
	Supplier		Welling
	Capacity	W	42
	Condenser	μF	-
	Fan speed (Hi/Me/Lo)	rpm	560/460/420
Indoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	512 x 378 x 26.74
	Number of circuits		2
Indoor air flow (Hi/Me/Lo)		m ³ /h	450/360/250
Noise level (Hi/Me/Lo) at 1m		dB(A)	37/32/27
Indoor Unit	Dimensions (W x H x D)	mm	700 x 600 x 210
	Packaging (W x H x D)	mm	810 x 710 x 305
	Net / Gross weight	kg	15/20
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø16
Operaiton control			R51D/E Infrared Remote Controller
Optional controls			DTW-IHXR Wired Controller / DTWS-IHXR Wired Controller
Centralized control devices			DTC-IHXR / DTCWT-IHXR (they both require NIM-GRH)
Digital interface module			NIM-GRH
Setting temperature range		°C	17 ~ 30



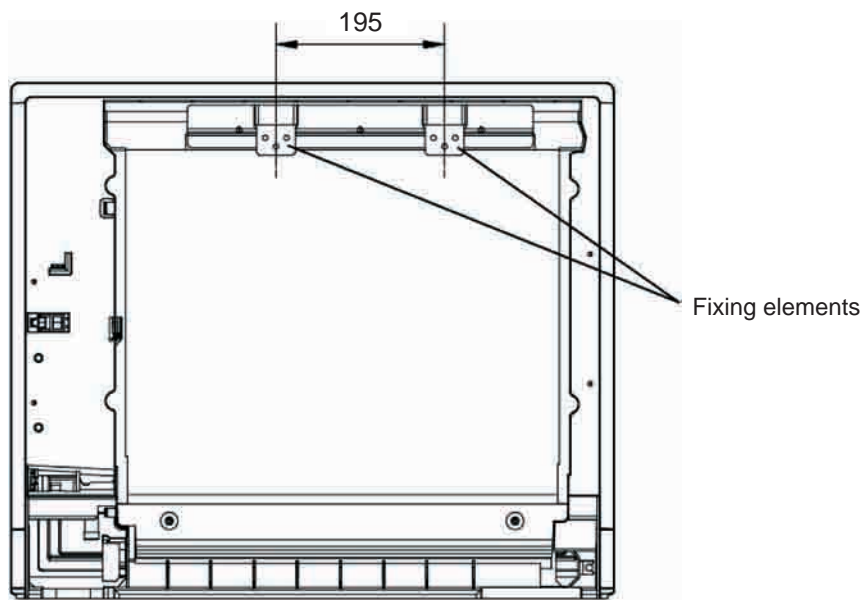
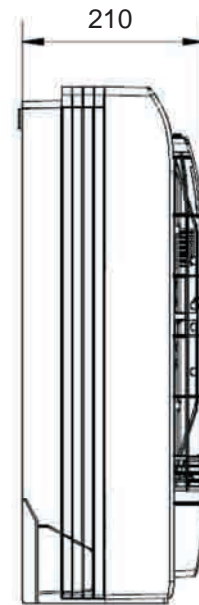
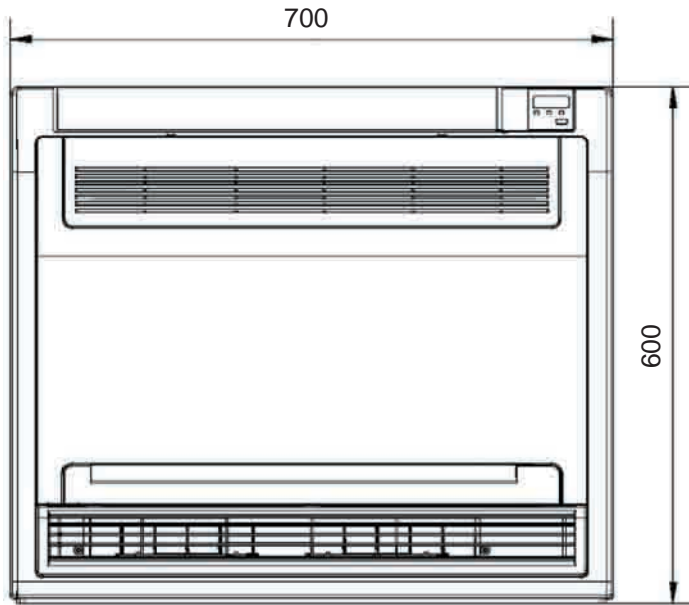
Model name		HFIU 536 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	5.30
	Power input	W	50
	Running current	A	0.22
Heating	Capacity	kW	5.90
	Power input	W	50
	Running current	A	0.22
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RD-280-20-8A
	Type		DC Motor
	Supplier		Welling
	Capacity	W	42
	Condenser	μF	-
	Fan speed (Hi/Me/Lo)	rpm	780/680/530
Indoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.3
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	512 x 378 x 26.74
	Number of circuits		2
Indoor air flow (Hi/Me/Lo)		m³/h	630/550/430
Noise level (Hi/Me/Lo) at 1m		dB(A)	39/34/29
Indoor Unit	Dimensions (W x H x D)	mm	700 x 600 x 210
	Packaging (W x H x D)	mm	810 x 710 x 305
	Net / Gross weight	kg	15/20
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø16
Operation control			R51D/E Infrared Remote Controller
Optional controls			DTW-IHXR Wired Controller / DTWS-IHXR Wired Controller
Centralized control devices			DTC-IHXR / DTCWT-IHXR (they both require NIM-GRH)
Digital interface module			NIM-GRH
Setting temperature range		°C	17 ~ 30



2. Dimensions of HFIU X Multi Liberty Indoor Units

HFIU (266, 356, 536) X Models

Unit: mm

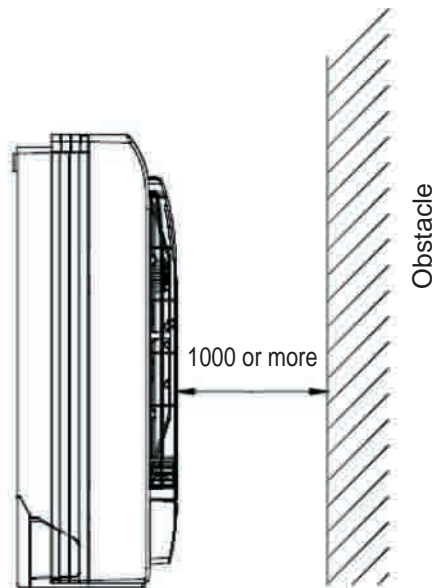
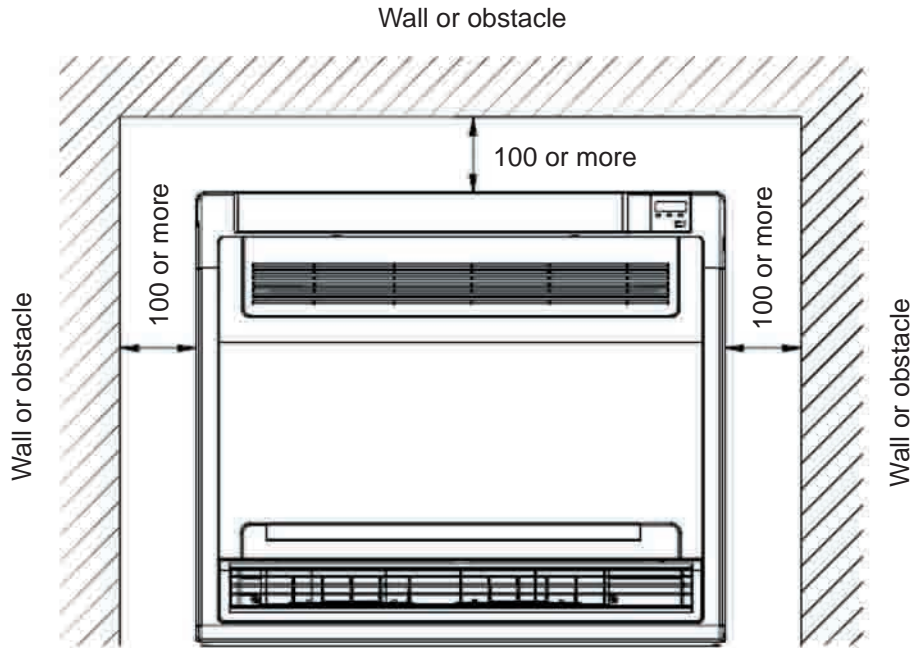


3. Installation & service spaces for HFIU (266, 356, 536) X Multi Liberty Indoor Units

This type of Indoor Unit is installed in vertical position, with frontal and side air inlet and upper and lower air outlet (factory default setting).

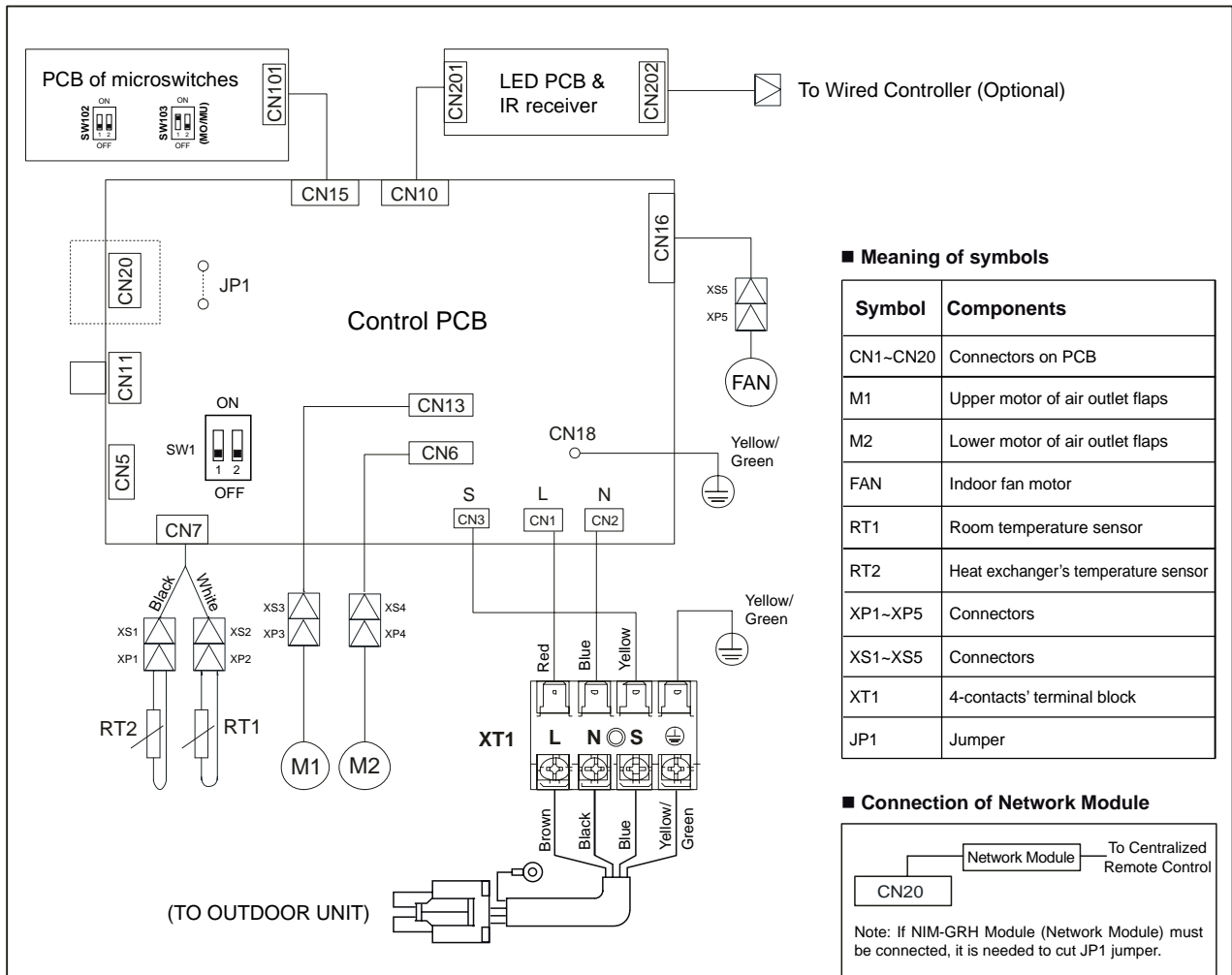
HFIU X Multi Liberty Indoor Units have been designed for being installed on wall base, or at a medium height along the wall itself.

Unit: mm



4. Wiring Diagrams of HFIU X Multi Liberty Indoor Units

HFIU (266, 356, 536) X Models

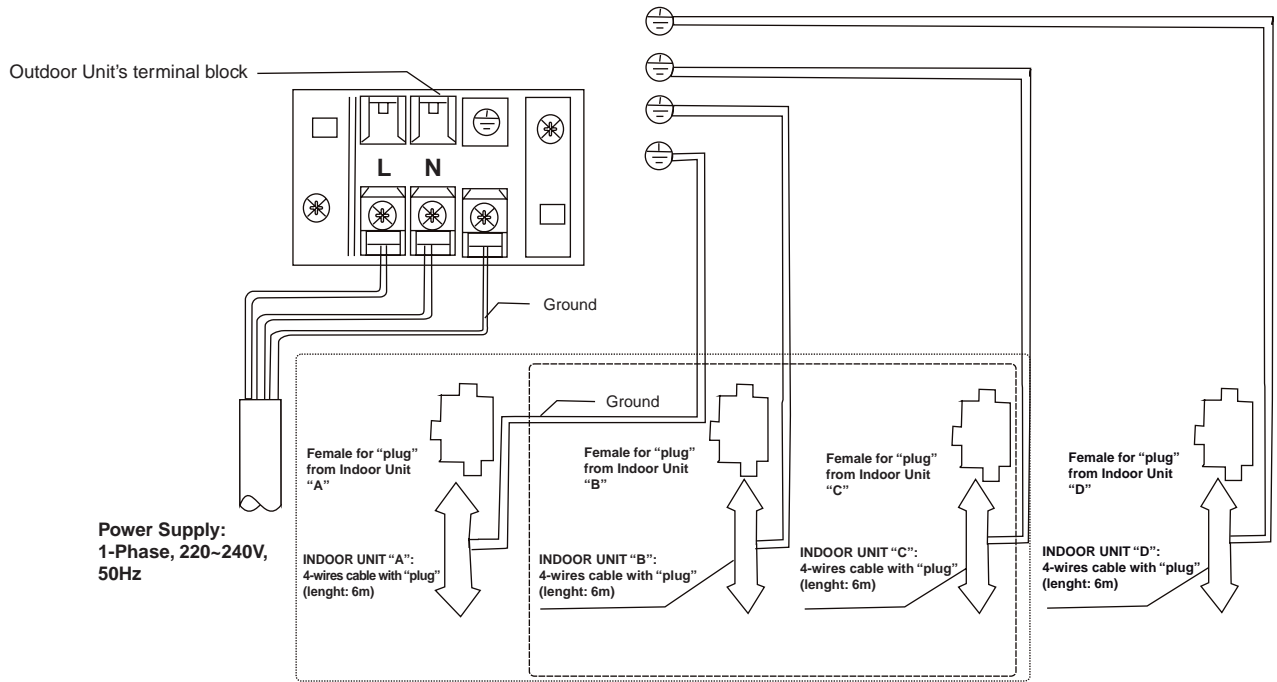


■ Function of microswitches on dedicated PCB

Temperature compensation in Heating mode					Fan speed in in "Powerful" mode		
SW102					SW103 (MO / MU)		
	(Factory default setting)					(Factory default setting)	
Value	0°C	+2°C	+4°C	+6°C	Speed	4th speed	5th speed

Indoor Unit's capacity setting			
SW1			
	(Factory default setting)		
Capacity	266	356	536

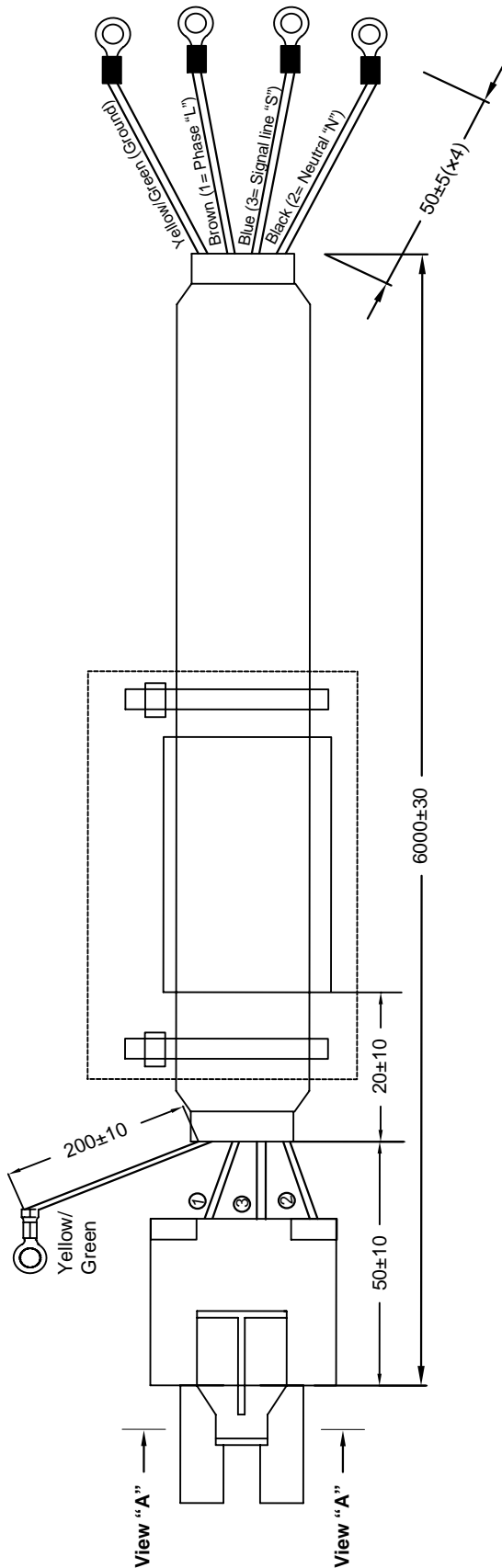
■ **Dedicated connectors (Units “A”, “B”, “C”, “D”) for “PLUG”, on Outdoor Unit**



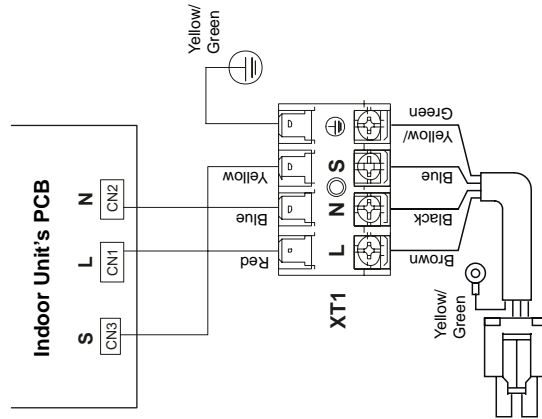
Note: The above diagram refers to HCKU 706 Indoor Unit X4 (4 Indoor Units can be connected).

■ “Plug” cable for Connection between HFIU X Indoor Units and Multi Liberty DC Inverter Outdoor Units
(By dedicated connectors (Units “A”, “B”, “C”, “D”) for “Plug”, on Outdoor Unit)

(TO OUTDOOR UNIT'S TERMINAL BLOCK)

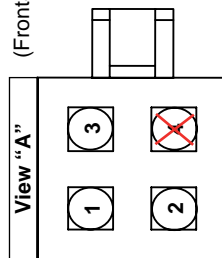


Unit : mm



(TO OUTDOOR UNIT)

(Frontal view of “Plug” connector)

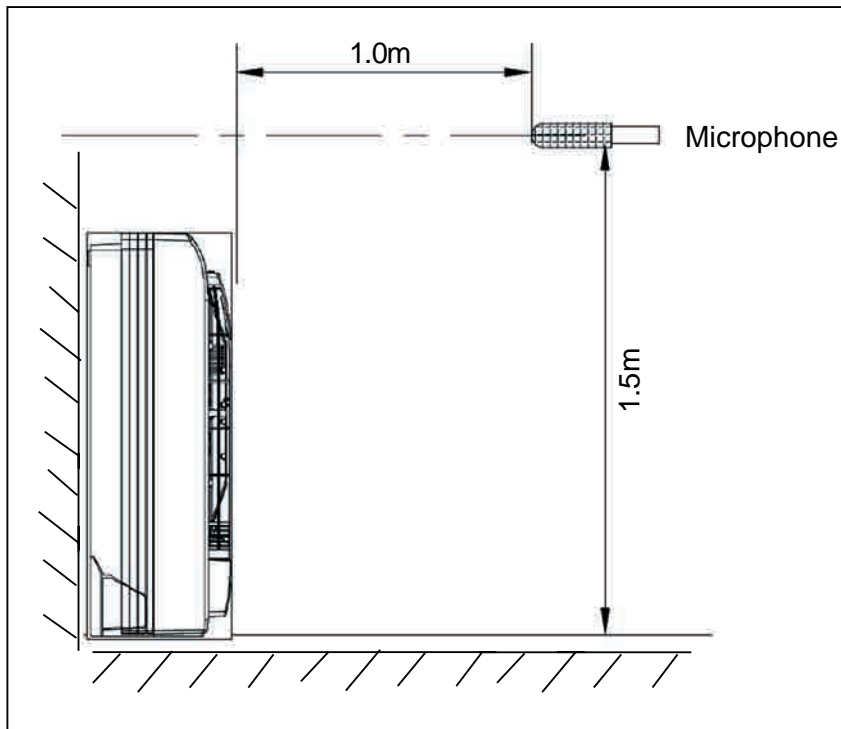


Pins of del “Plug” connector:

- 1 = Conductor with exterior sheath of Brown colour (Phase “L”).
- 2 = Conductor with exterior sheath of Black colour (Neutral “N”).
- 3 = Conductor with exterior sheath of Blue colour (Signal line “S”).
- 4 = Contact not connected.

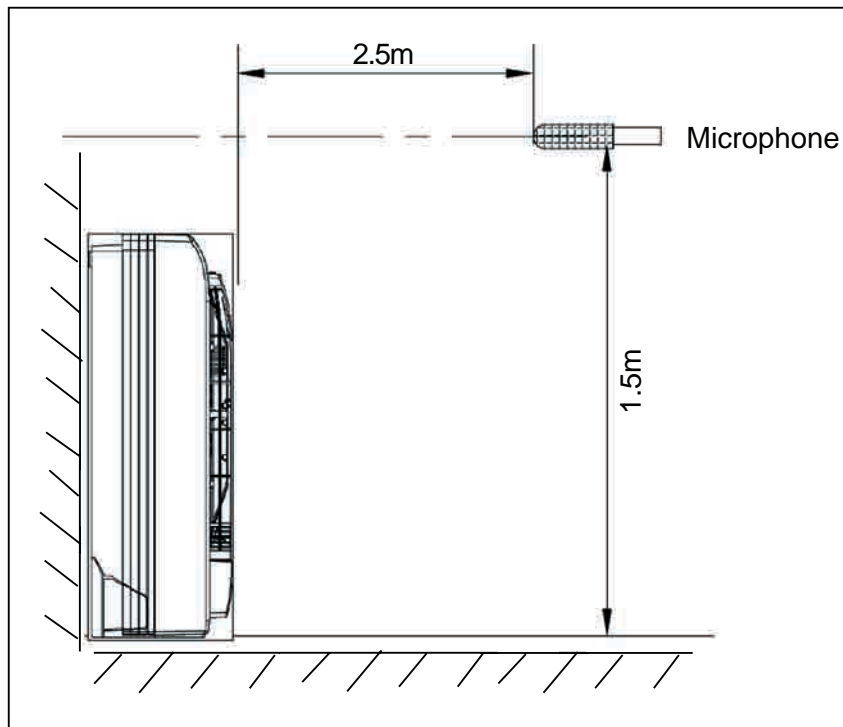
5. Noise level of HFIU X Multi Liberty Indoor Units

Measurement conditions: 1m in front of Indoor Unit








Models	Noise level at 1m, dB(A)		
	“Hi.” speed	“Me” speed	“Lo.” speed
HFIU 266 X	31	26	22
HFIU 356 X	32	27	23
HFIU 536 X	33	31	28

Measurement conditions: 2.5m in front of Indoor Unit



Models	Noise level at 2.5m, dB(A)		
	“Hi.” speed	“Me” speed	“Lo.” speed
HFIU 266 X	29	24	19
HFIU 356 X	29	24	19
HFIU 536 X	31	26	21

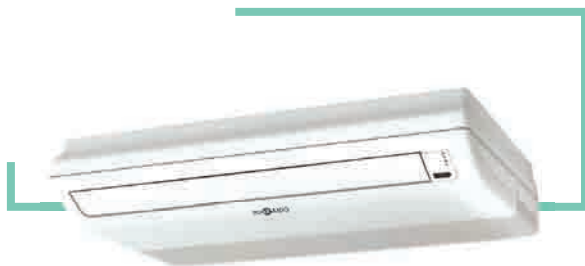
6. Accessories provided with HFIU X Multi Liberty Indoor Units

Components	Q.ty	Aspect	Function
User's Manual	1	/	/
Installation Manual	1	/	/
Indoor Unit's installation brackets	2		For Unit's fixing
Infrared Remote Controller	1		Control of Unit
Remote Controller's wall bearing	1		Wall fixing
Screws for Remote Controller's wall bearing (ST2.9 x 10-C-H)	2		/
Alkaline batteries (AM4)	2		/

2.4 HSFU X MODELS (FLOOR/CEILING TYPE)

1. Technical Specifications of HSFU X Multi Liberty Indoor Units

Model name		HSFU 356 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	3.50
	Power input	W	35
	Running current	A	0.145
Heating	Capacity	kW	3.96
	Power input	W	35
	Running current	A	0.145
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		YSK25-6L
	Type		AC Motor
	Supplier		Welling
	Capacity	W	33.4/31.1/29.5
	Condenser	μF	1.2μF
	Fan speed (Hi/Me/Lo)	rpm	756/666/592
Indoor heat exchanger	Number of rows		3
	Tube pitch x row pitch	mm	25.4 x 22
	Fin spacing	mm	1.7
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø9.53 Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	804 x 254 x 66
	Number of circuits		3
Indoor air flow (Hi/Me/Lo)		m ³ /h	650/550/440
Noise level (Hi/Me/Lo) at 1m		dB(A)	41/36/31
Indoor Unit	Dimensions (W x H x D)	mm	990 x 660 x 203
	Packaging (W x H x D)	mm	1089 x 744 x 296
	Net / Gross weight	kg	24/30
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø16
Operation control			R05/BGE Infrared Remote Controller
Setting temperature range		°C	17 ~ 30

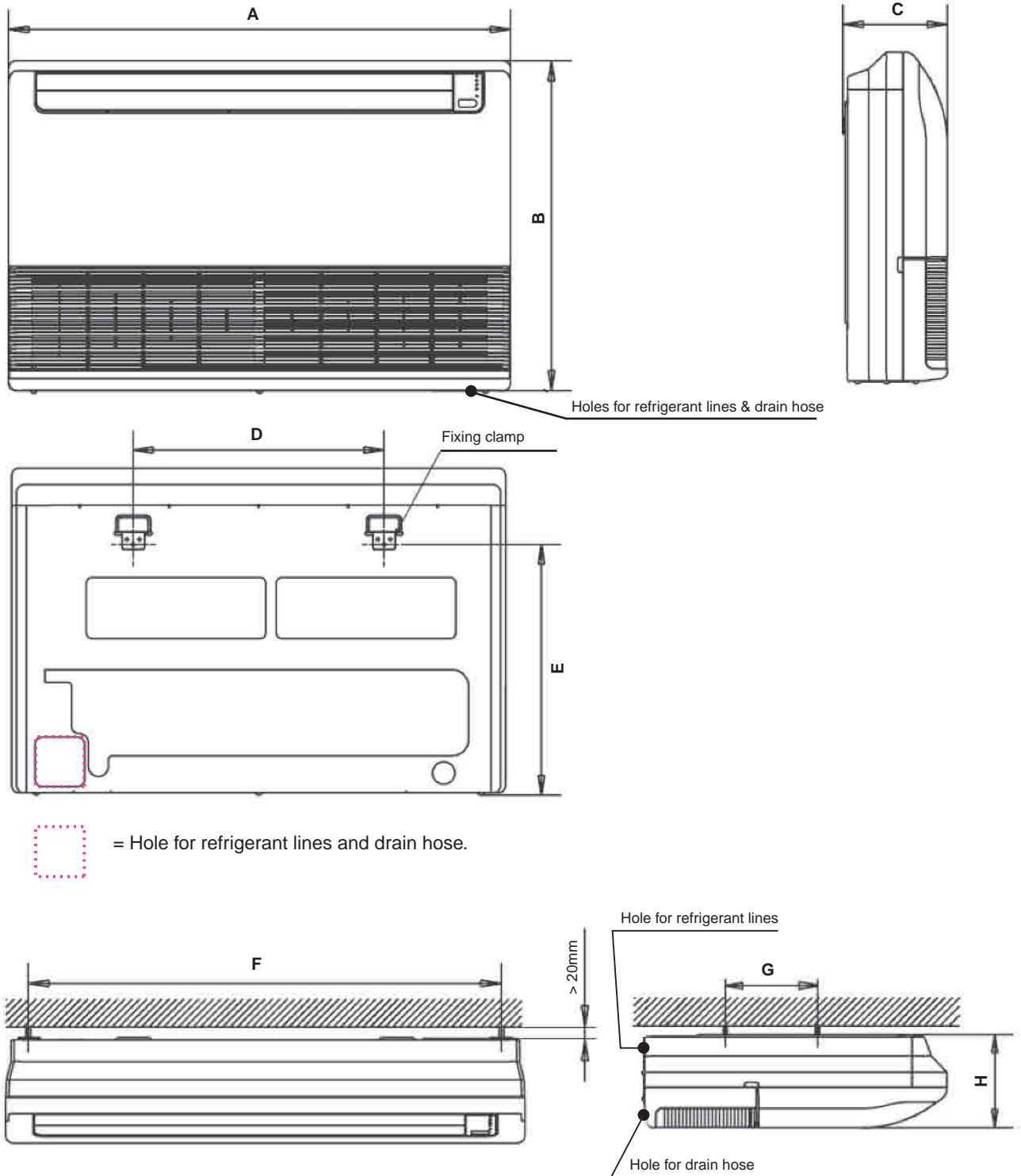


Model name		HSFU 536 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	5.30
	Power input	W	35
	Running current	A	0.145
Heating	Capacity	kW	5.90
	Power input	W	35
	Running current	A	0.145
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		YSK25-6L
	Type		AC Motor
	Supplier		Welling
	Capacity	W	33.4/31.1/29.5
	Condenser	μF	1.2μF
	Fan speed (Hi/Me/Lo)	rpm	756/666/592
Indoor heat exchanger	Number of rows		3
	Tube pitch x row pitch	mm	25 x 4/22
	Fin spacing	mm	1.7
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø9.53 Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	804 x 254 x 66
	Number of circuits		3
Indoor air flow (Hi/Me/Lo)		m ³ /h	650/550/440
Noise level (Hi/Me/Lo) at 1m		dB(A)	43/38/33
Indoor Unit	Dimensions (W x H x D)	mm	990 x 660 x 203
	Packaging (W x H x D)	mm	1089 x 744 x 296
	Net / Gross weight	kg	24/30
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø16
Operation control			R05/BGE Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



2. Dimensions of HSFU X Multi Liberty Indoor Units

Unit: mm



■References to dimensioned drawings:

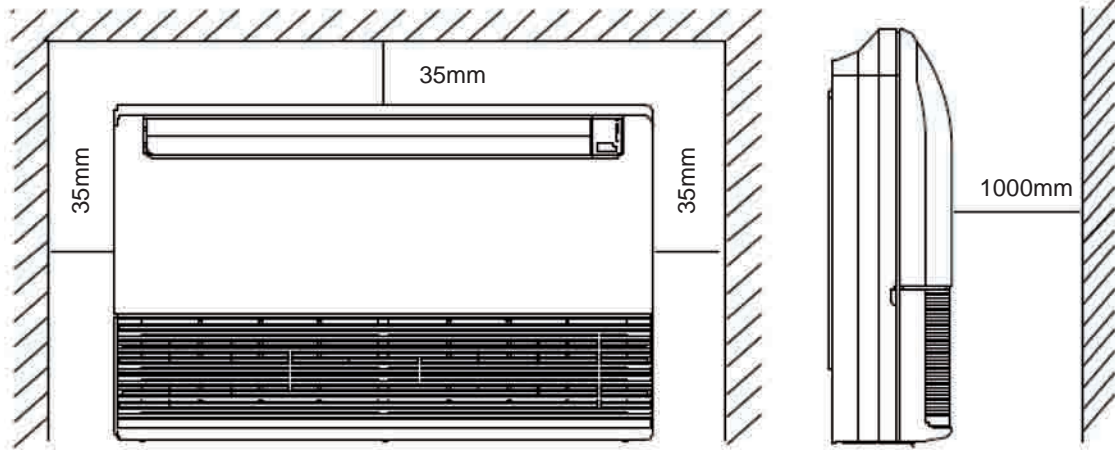
Unit: mm

Models	Ref.	A	B	C	D	E	F	G	H
HSFU 356 X		990	660	206	505	506	907	200	203
HSFU 536 X		990	660	206	505	506	907	200	203

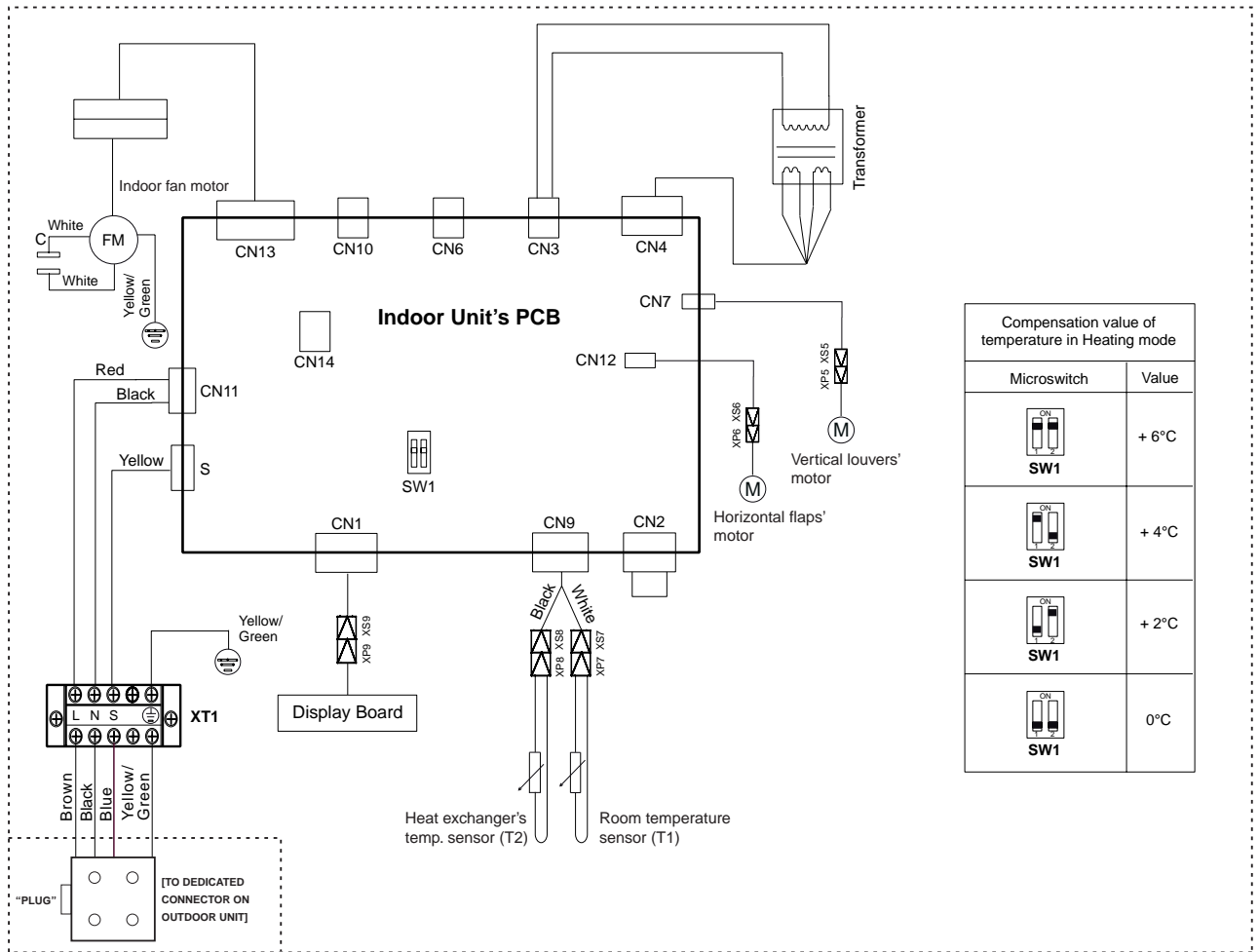
3. Service spaces for HSFU X Multi Liberty Indoor Units

HSFU (356, 536) X Models

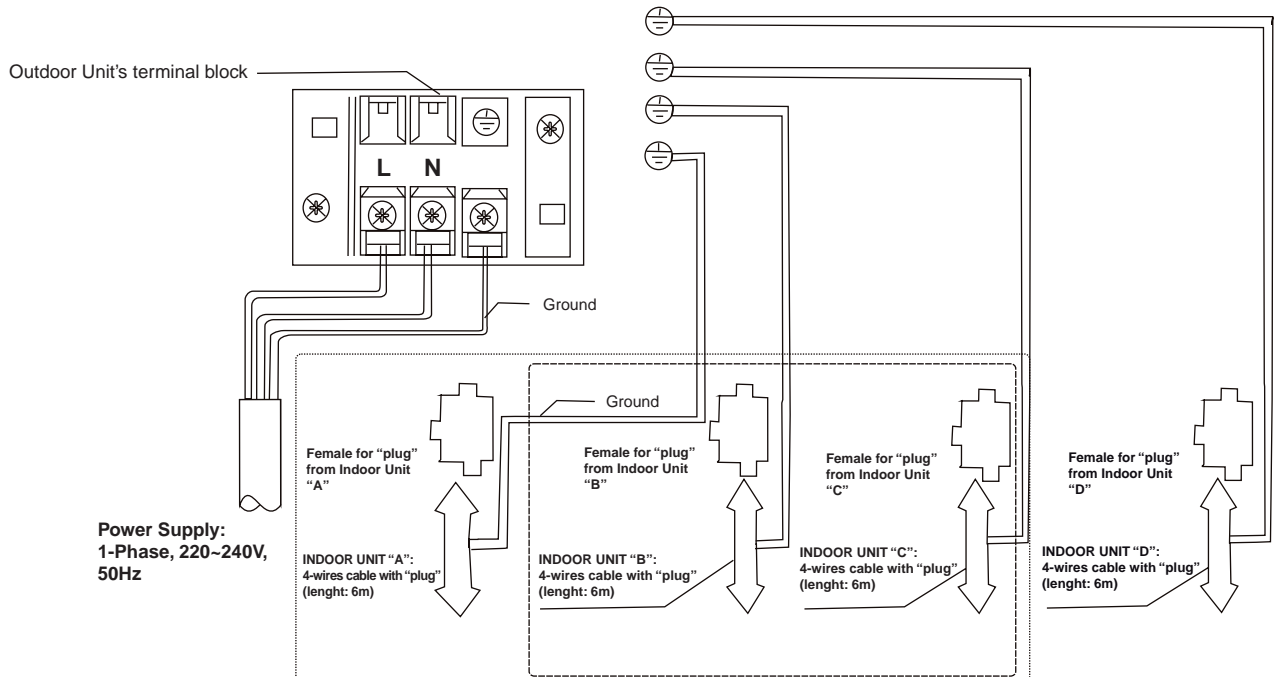
Unit: mm



4. Wiring Diagrams of HSFU (356, 536) X Multi Liberty Indoor Units



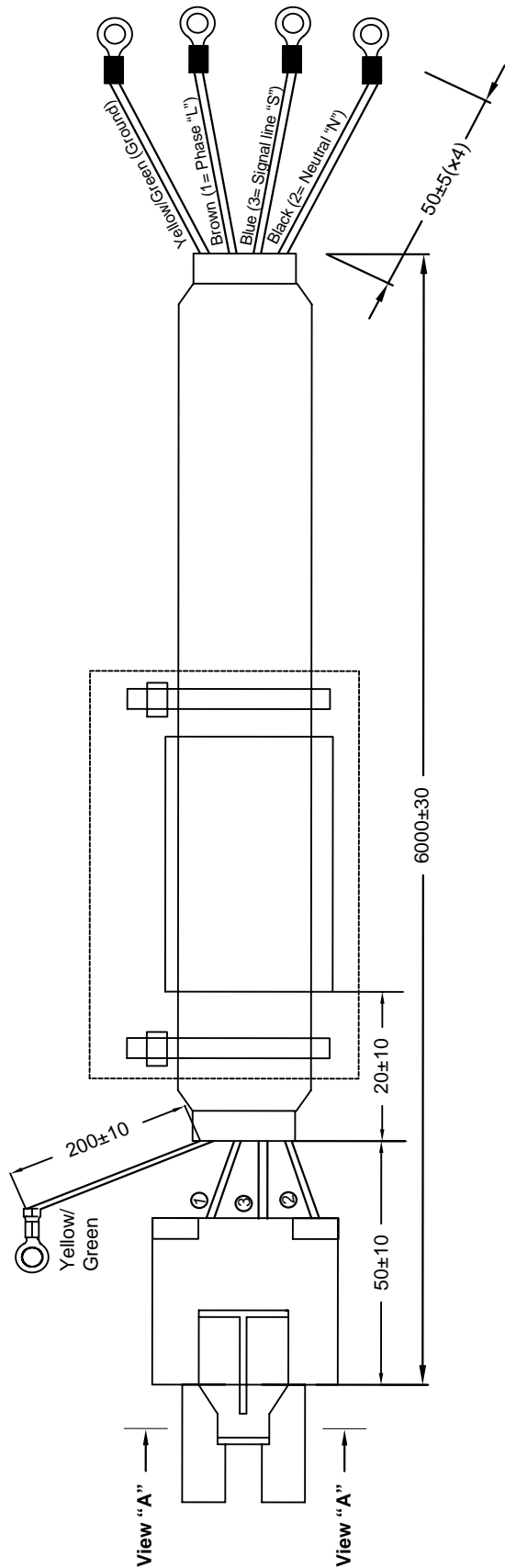
■ Dedicated connectors (Units "A", "B", "C", "D") for "PLUG", on Outdoor Unit



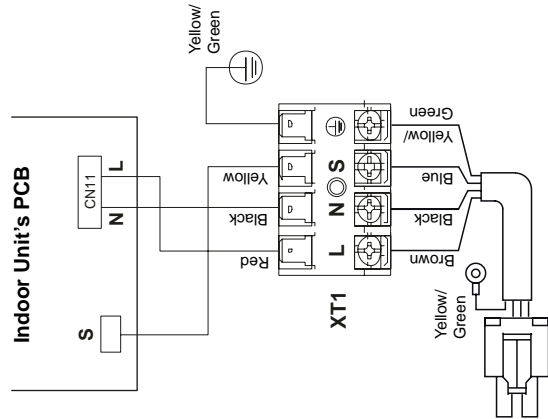
Note: The above diagram refers to HCKU 706 Indoor Unit X4 (4 Indoor Units can be connected).

■ “Plug” cable for Connection between HSFU X Indoor Units and Multi Liberty DC Inverter Outdoor Units
(By dedicated connectors (Units “A”, “B”, “C”, “D”) for “Plug”, on Outdoor Unit)

(TO INDOOR UNIT'S TERMINAL BLOCK)

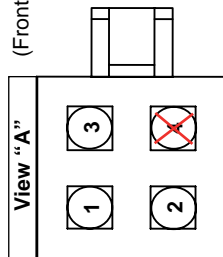


Unit : mm



(TO OUTDOOR UNIT)

(Frontal view of “Plug” Connector)

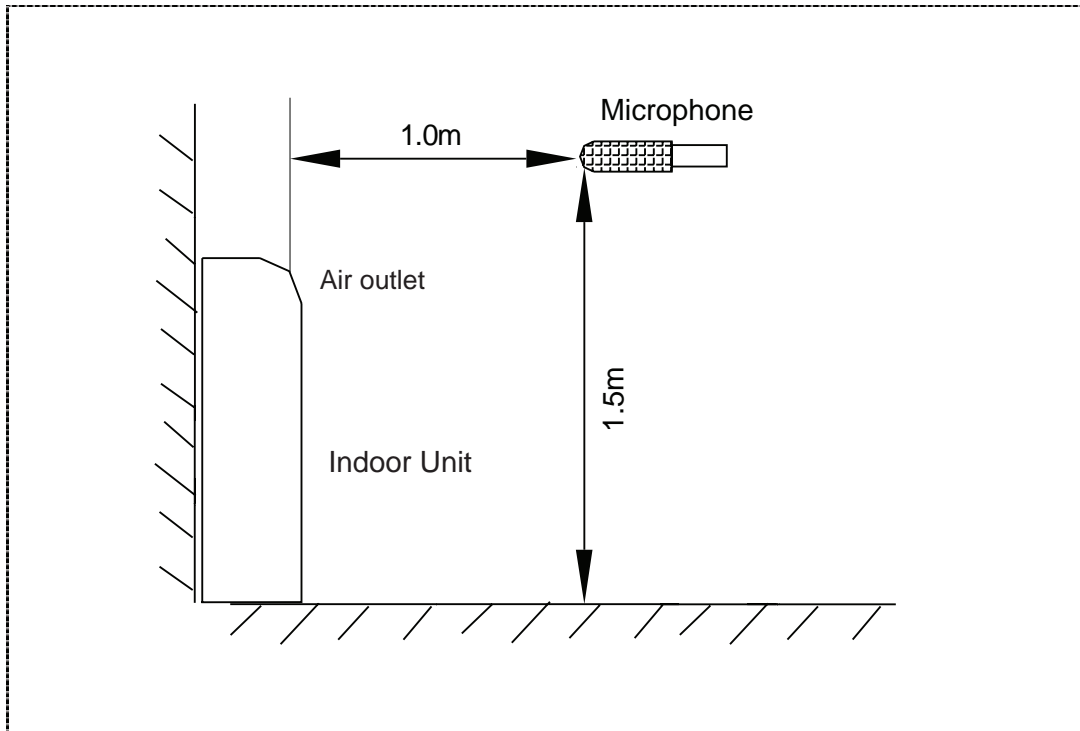


Pins of “Plug” connector:

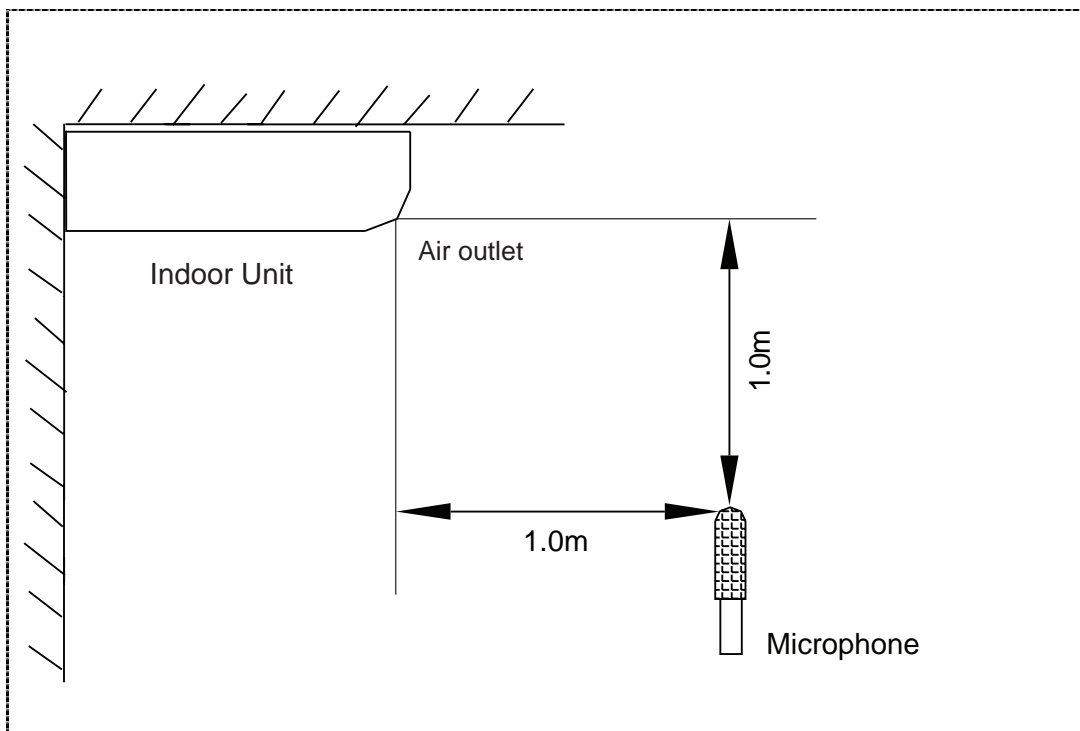
- 1 = Conductor with exterior sheath of Brown colour (Phase “L”).
- 2 = Conductor with exterior sheath of Black colour (Neutral “N”).
- 3 = Conductor with exterior sheath of Blue colour (Signal line “S”).
- 4 = Contact not connected.

5. Noise level of HSFU X Multi Liberty Indoor Units

Measurement conditions (Floor type installation): 1 m in front of Indoor Unit

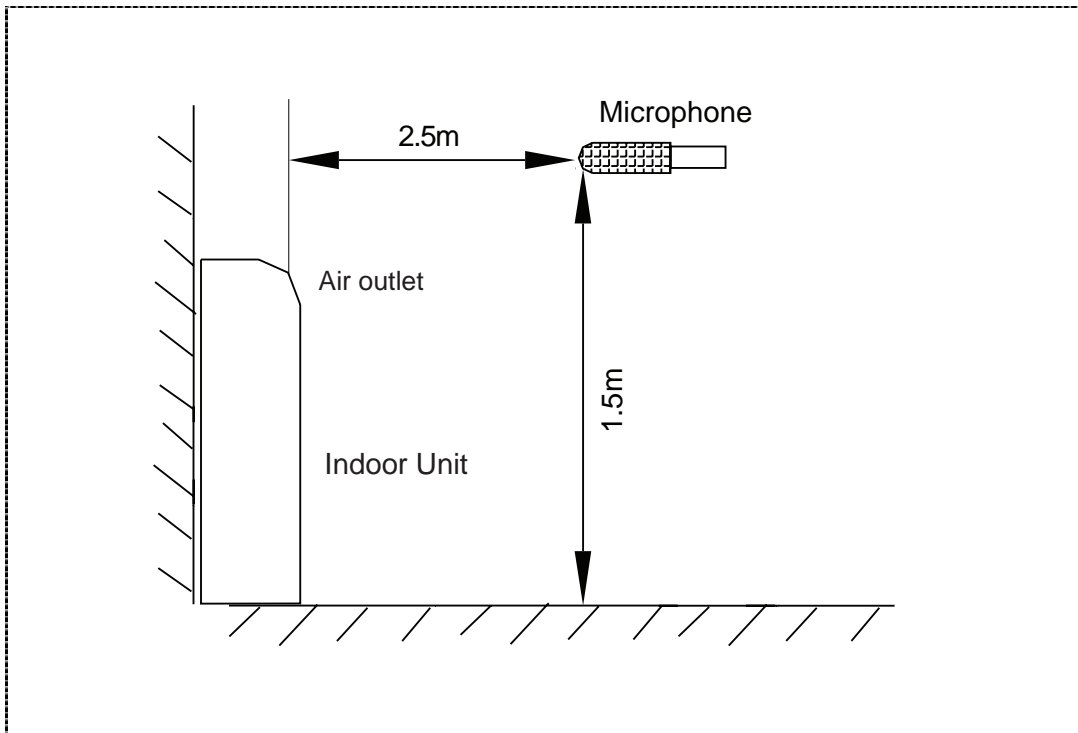


Measurement conditions (Ceiling type installation): 1 m below Indoor Unit

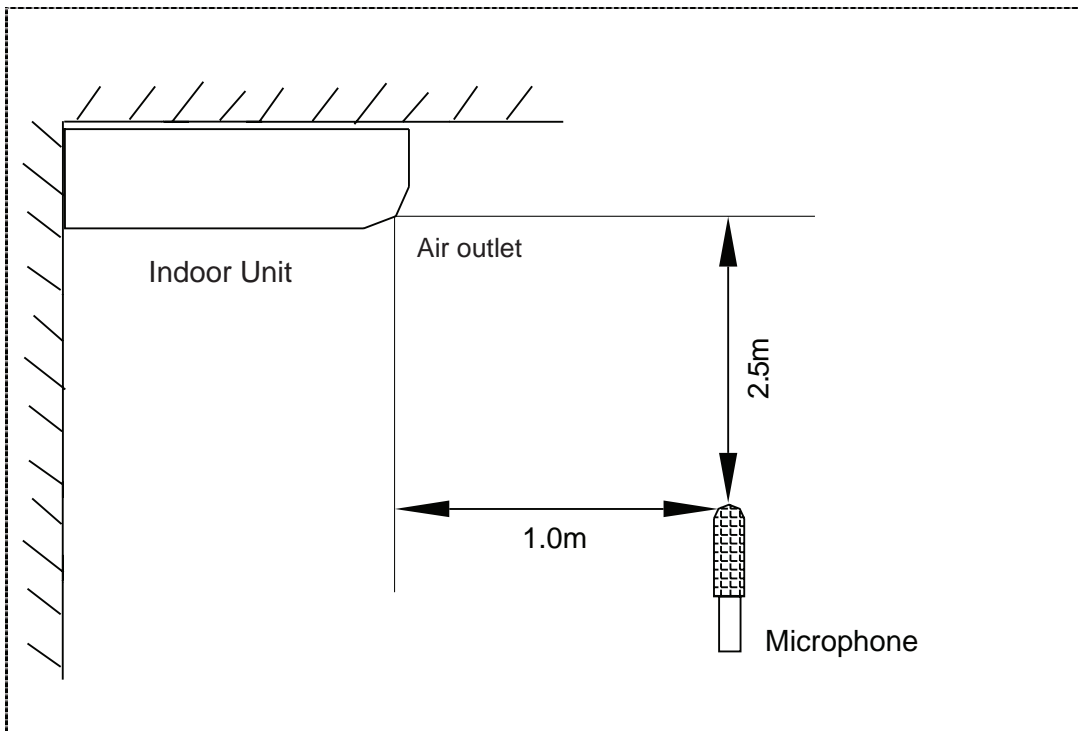


Models	Noise level at 1m, dB(A)		
	“Hi.” speed	“Me” speed	“Lo.” speed
HSFU 356 X	41	36	31
HSFU 536 X	43	38	33

Measurement conditions (Floor type installation): 2.5m in front of Indoor Unit






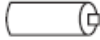


Measurement conditions (Ceiling type installation): 2.5m below Indoor Unit



Models	Noise level at 2.5m, dB(A)		
	“Hi.” speed	“Me” speed	“Lo.” speed
HSFU 356 X	33	28	23
HSFU 536 X	35	30	25

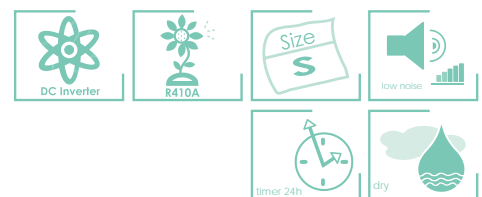
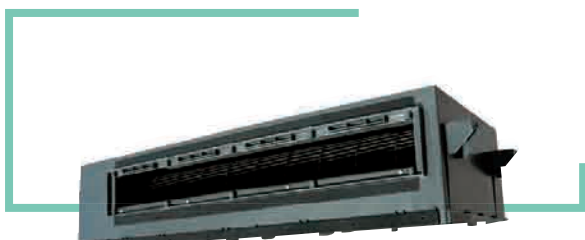
6. Accessories provided with HSFU X Multi liberty Indoor Units

Component	Q.ty	Aspect	Function
User's Manual	1	/	/
Installation Manual	1	/	/
Floor type installation bracket	2		For wall fixing
Ceiling type installation bracket	2		For ceiling fixing
Infrared Remote Controller	1		Control of Unit
Remote Controller's wall bearing	1		For wall fixing
Screws for Remote Controller's wall bearing (ST2.9 x 10-C-H)	2		/
Alkaline battery (AM4)	2		/

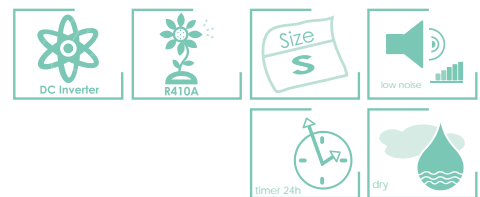
2.5 HRBU X MODELS (LOW DUCTED TYPE)

1. Technical Specifications of HRBU X Multi Liberty Indoor Units

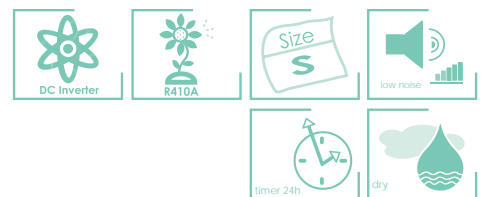
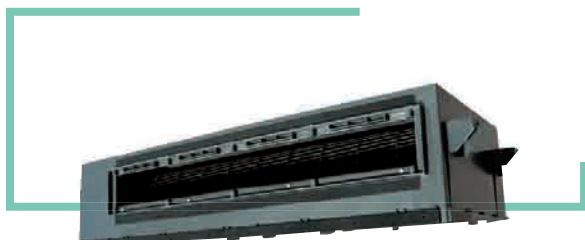
Model name		HRBU 206 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	2.00
	Power input	W	40
	Running current	A	0.20
Heating	Capacity	kW	2.50
	Power input	W	40
	Running current	A	0.20
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RPS20D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	36
	Condenser	μF	1.2μF
	Fan speed (Hi/Me/Lo)	rpm	1030/940/850
Indoor heat exchanger	Number of rows		2
	Tube pitch & row pitch	mm	21 x 13.37
	Fin spacing	mm	1.5
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	718 x 350 x 26.74
	Number of circuits		2
Indoor air flow (Hi/Me/Lo)		m ³ /h	680/620/540
Available static pressure		Pa	10
Noise level (Hi/Me/Lo) at 1m		dB(A)	41/36/31
Indoor Unit	Dimensions (W x H x D)	mm	874 x 203 x 375
	Packaging (W x H x D)	mm	1045 x 278 x 440
	Net / Gross weight	kg	15/19
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø9.52(3/8")
Wiring	Power lines & Signal lines		4 x 1.5mm ² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø25
Operation control			R11HG/E Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



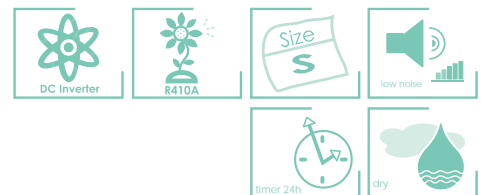
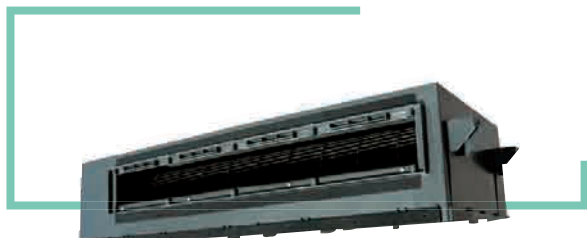
Model name		HRBU 266 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	2.60
	Power input	W	40
	Running current	A	0.20
Heating	Capacity	kW	3.20
	Power input	W	40
	Running current	A	0.20
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RPS20D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	36
	Condenser	μF	1.2μF
	Fan speed (Hi/Me/Lo)	rpm	1030/940/850
Indoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.5
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	718 x 350 x 26.74
	Number of circuits		2
Indoor air flow (Hi/Me/Lo)		m³/h	680/620/540
Available static pressure		Pa	10
Noise level (Hi/Me/Lo) at 1m		dB(A)	41/36/31
Indoor Unit	Dimensions (W x H x D)	mm	874 x 203 x 375
	Packaging (W x H x D)	mm	1045 x 278 x 440
	Net / Gross weight	kg	15/19
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø9.52(3/8")
Wiring	Power lines & Signal lines		4 x 1.5mm² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø25
Operation control			R11HG/E Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



Model name		HRBU 356 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	3.20
	Power input	W	45
	Running current	A	0.20
Heating	Capacity	kW	3.80
	Power input	W	45
	Running current	A	0.20
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		RPS20D
	Type		AC Motor
	Supplier		Welling
	Capacity	W	36
	Condenser	μF	1.2μF
	Fan speed (Hi/Me/Lo)	rpm	1030/940/850
Indoor heat exchanger	Number of rows		2
	Tube pitch & row pitch	mm	21 x 13.37
	Fin spacing	mm	1.5
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	718 x 350 x 26.74
	Number of circuits		2
Indoor air flow (Hi/Me/Lo)		m³/h	680/620/540
Available static pressure		Pa	10
Noise level (Hi/Me/Lo) at 1m		dB(A)	42/36/31
Indoor Unit	Dimensions (W x H x D)	mm	874 x 203 x 375
	Packaging (W x H x D)	mm	1045 x 278 x 440
	Net / Gross weight	kg	15/19
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø25
Operation control			R11HG/E Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



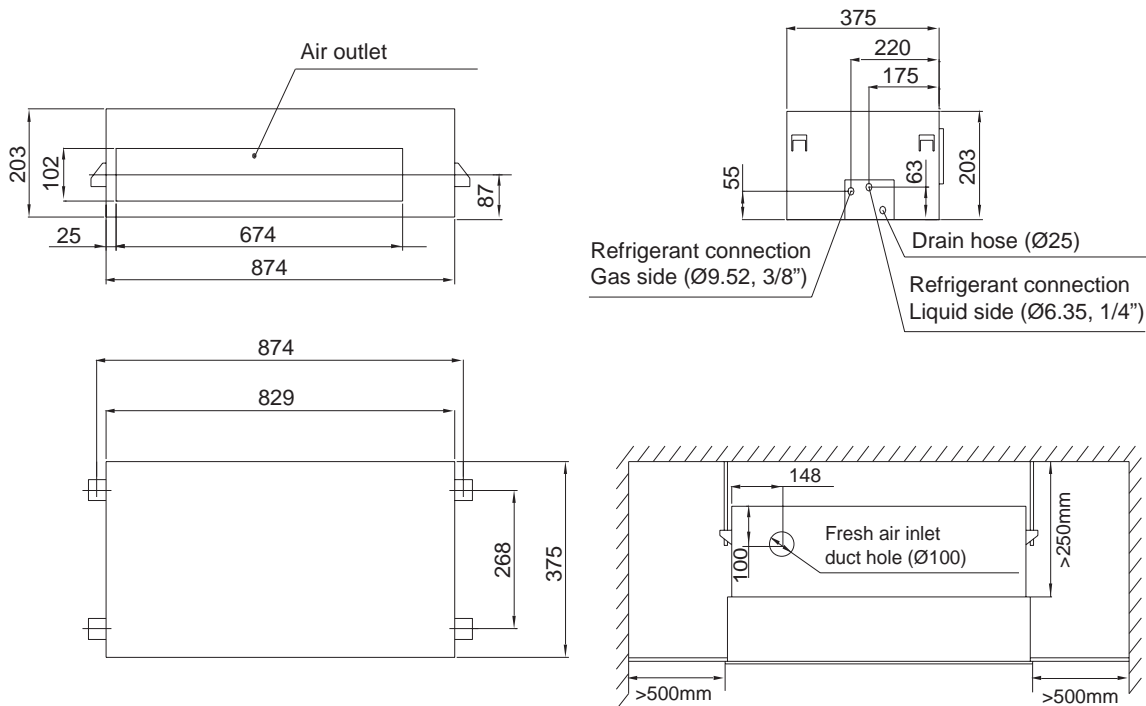
Model name		HRBU 536 X	
Power supply		V-Ph-Hz	220~240-1-50 (on Outdoor Unit)
Cooling	Capacity	kW	5.30
	Power input	W	60
	Running current	A	0.30
Heating	Capacity	kW	5.90
	Power input	W	60
	Running current	A	0.30
Dehumidifying capacity		Litres/h	-
Indoor fan motor	Model		YDK30-4A
	Type		AC Motor
	Supplier		Welling
	Capacity	W	52
	Condenser	μF	3μF
	Fan speed (Hi/Me/Lo)	rpm	940/850/750
Indoor heat exchanger	Number of rows		2
	Tube pitch & row pitch	mm	21 x 13.37
	Fin spacing	mm	1.5
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7, Inner grooved tubing
	Heat exchanger's dimensions (W x H x D)	mm	1014 x 350 x 26.74
	Number of circuits		4
Indoor air flow (Hi/Me/Lo)		m³/h	870/800/720
Available static pressure		Pa	10
Noise level (Hi/Me/Lo) at 1m		dB(A)	45/39/35
Indoor Unit	Dimensions (W x H x D)	mm	1224 x 206 x 365
	Packaging (W x H x D)	mm	1390 x 278 x 440
	Net / Gross weight	kg	18/23
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant control		Electronic expansion valve + Capillary tubes (Outdoor Unit)
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	Ø6.35(1/4"), Ø12.7(1/2")
Wiring	Power lines & Signal lines		4 x 1.5mm² (plug cable, 6m long)
Diameter of drain pipe		mm	Ø25
Operatio control			R11HG/E Infrared Remote Controller
Setting temperature range		°C	17 ~ 30



2. Dimensions of HRBU X Multi Liberty Indoor Units

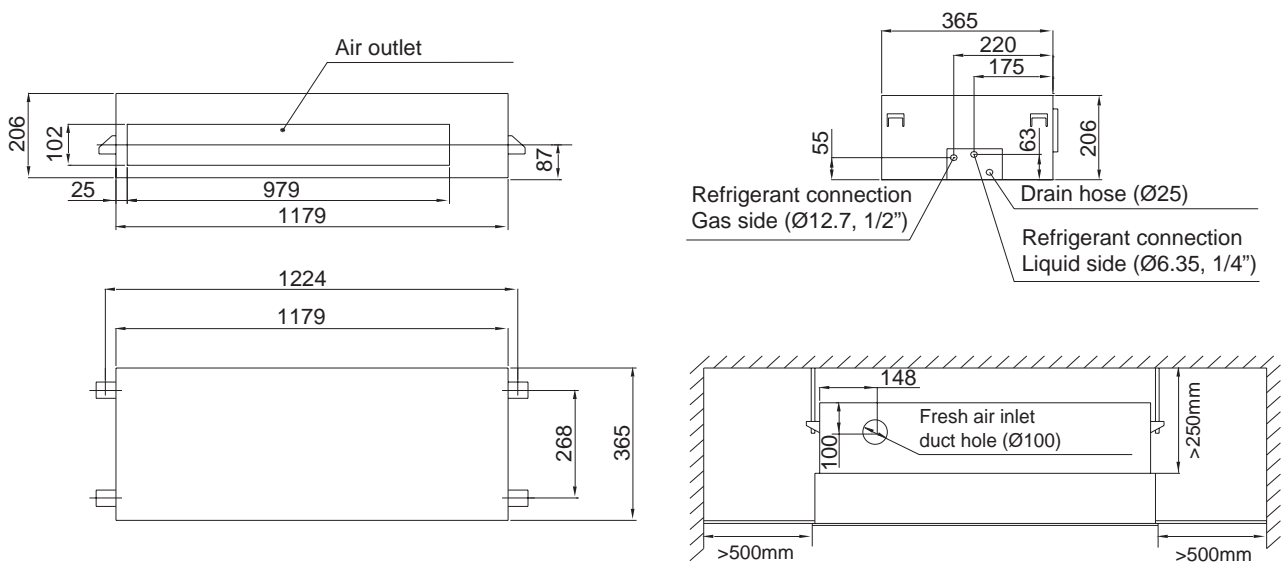
HRBU (206, 266, 356) X Models

Unit: mm



HRBU 536 X Model

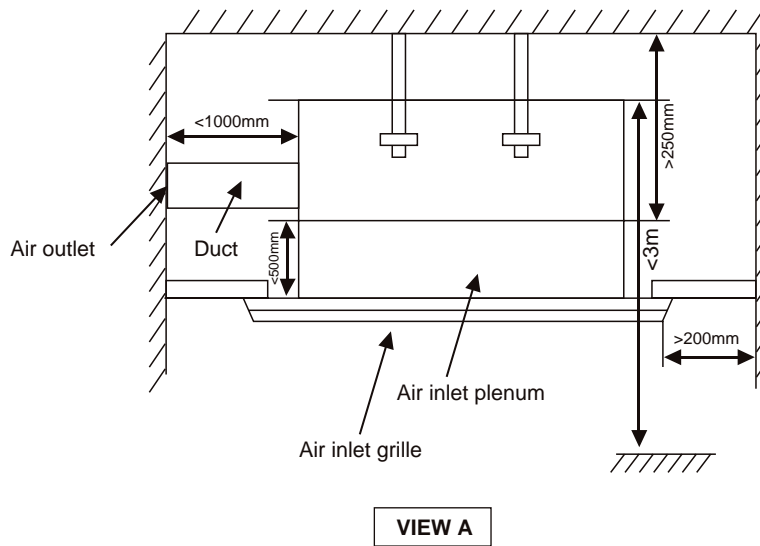
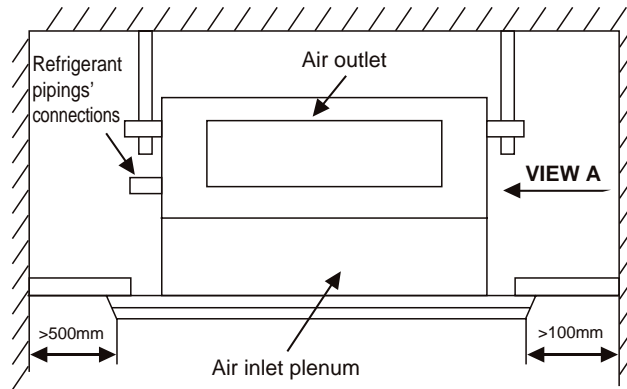
Unit: mm



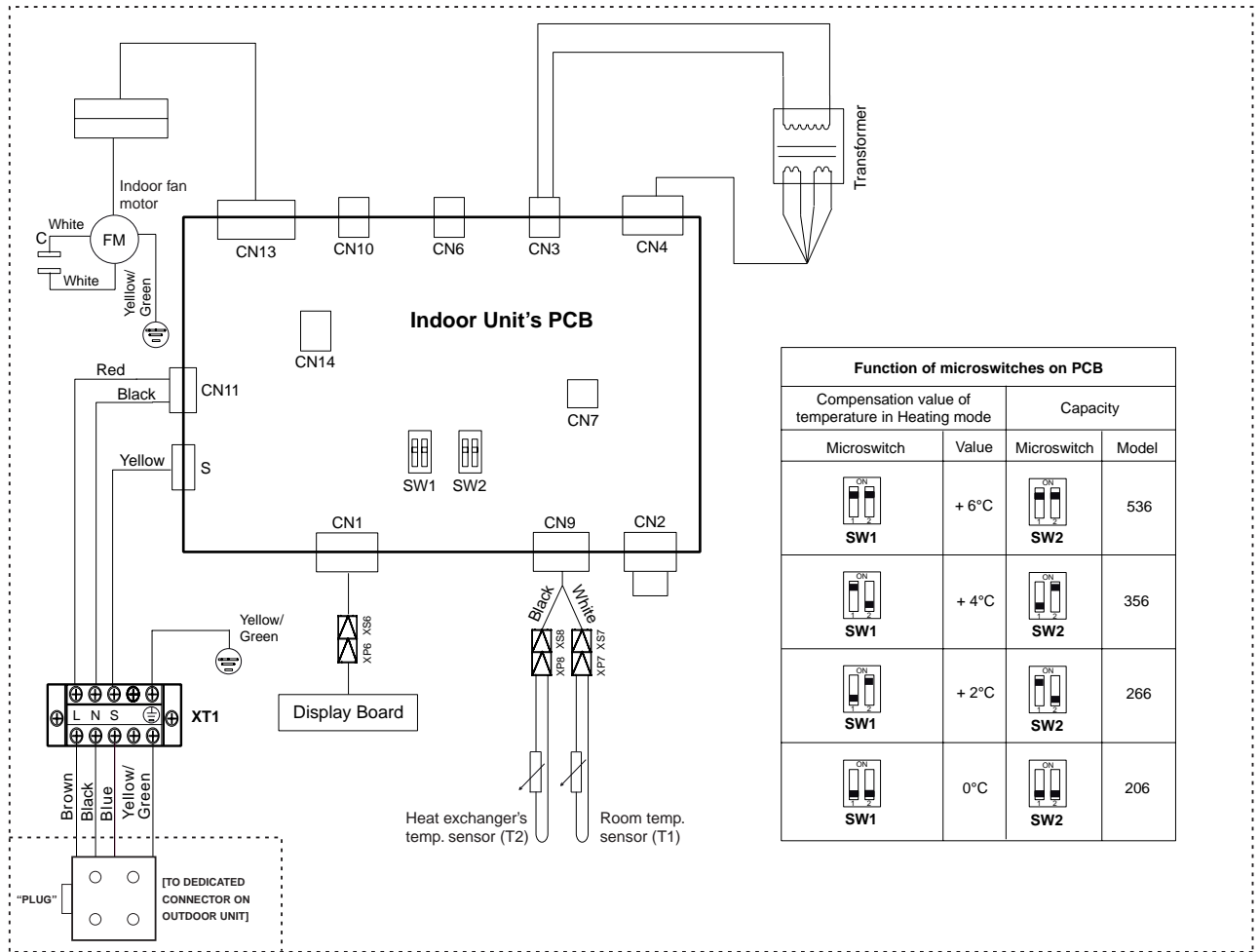
3. Service spaces for HRBU X Multi Liberty Indoor Units

HRBU (206, 266, 356, 536) X Models

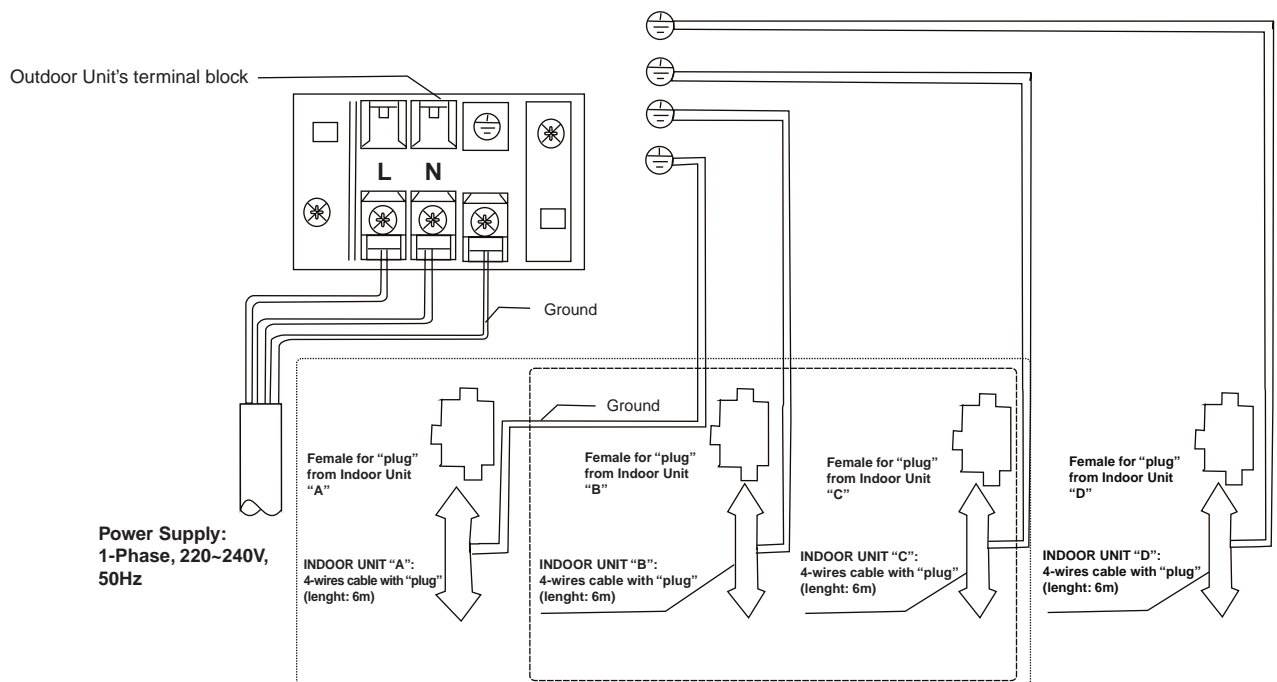
Unit: mm



4. Wiring Diagrams of HRBU (206, 266, 356, 536) X Multi Liberty Indoor Units



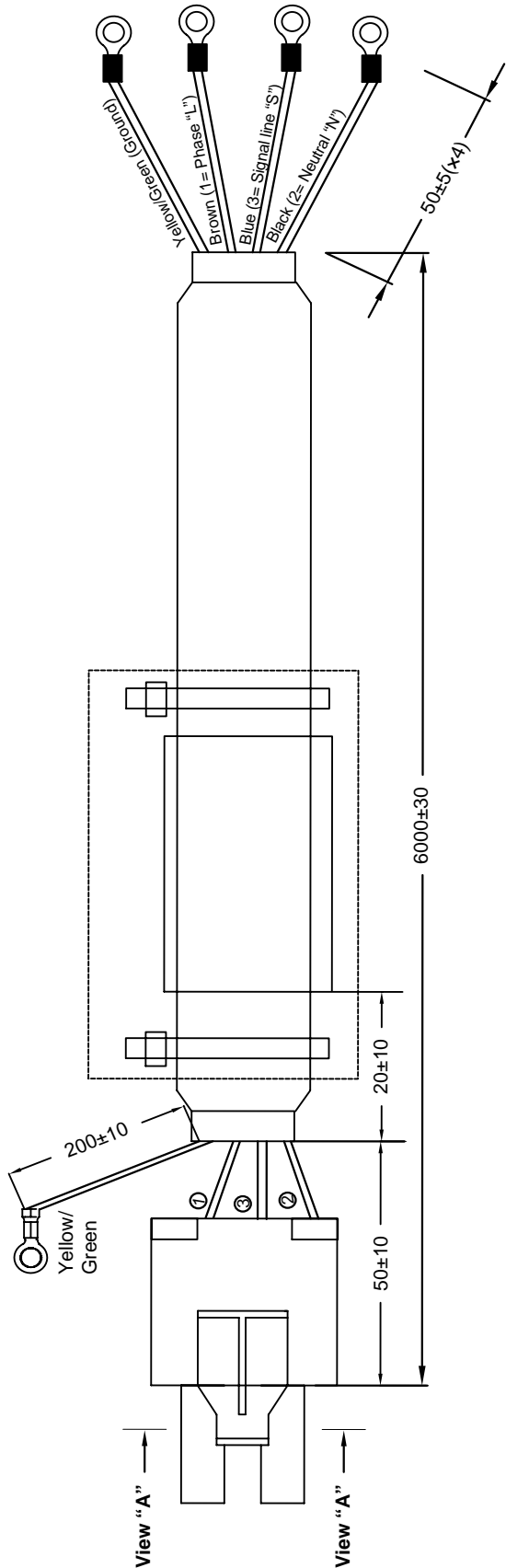
■ Dedicated connectors (Units "A", "B", "C", "D") for "PLUG", on Outdoor Unit



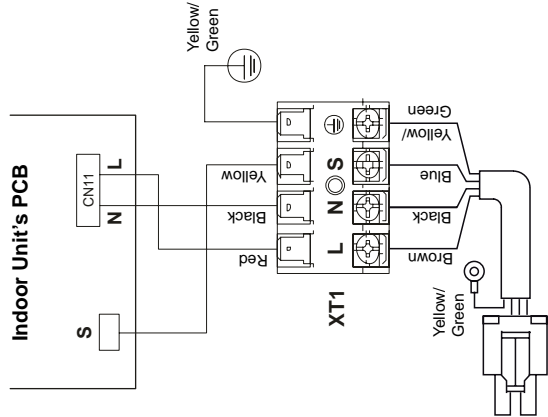
Note: The above diagram refers to HCKU 706 Indoor Unit X4 (4 Indoor Units can be connected).

■ “Plug” cable for Connection between HRBU X Indoor Units and Multi Liberty DC Inverter Outdoor Units
(By dedicated connectors (Units “A”, “B”, “C”, “D”) for “Plug”, on Outdoor Unit)

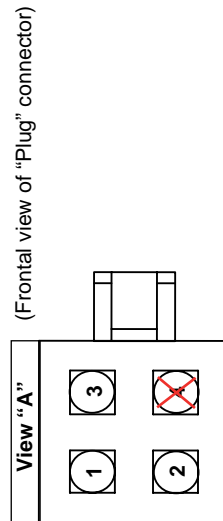
(TO INDOOR UNIT'S TERMINAL BLOCK)



Unit : mm



(TO OUTDOOR UNIT)

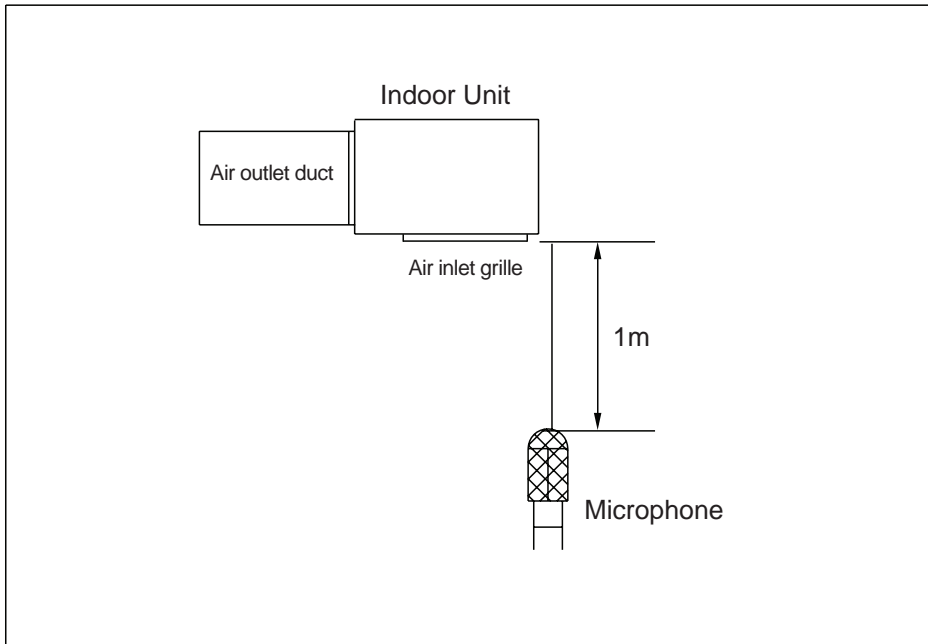


Pins of “Plug” connector:

- 1 = Conductor with exterior sheath of Brown colour (Phase “L”).
- 2 = Conductor with exterior sheath of Black colour (Neutral “N”).
- 3 = Conductor with exterior sheath of Blue colour (Signal line “S”).
- 4 = Contact not connected.

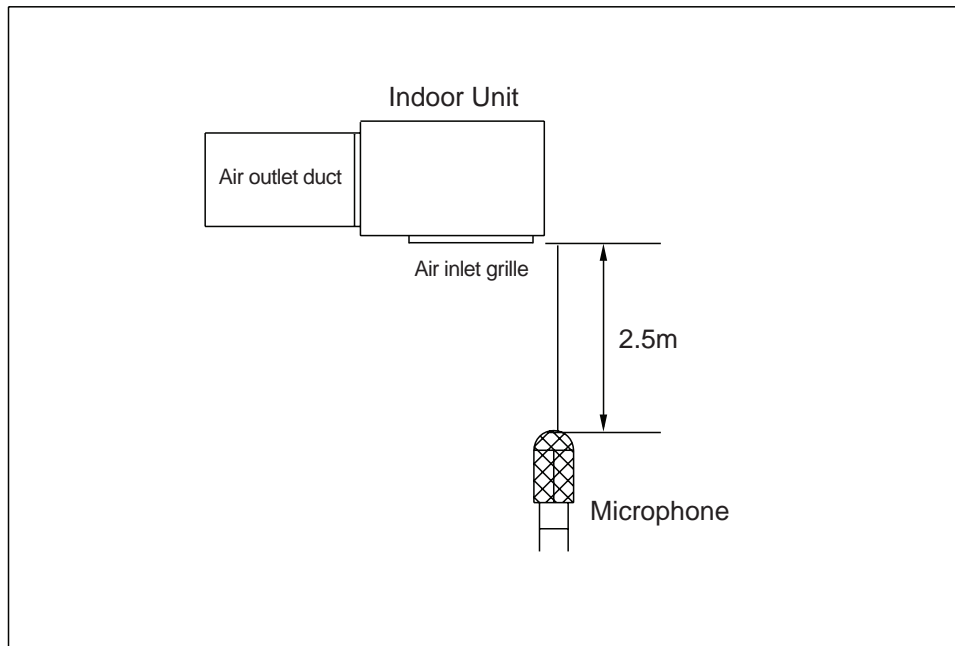
5. Noise level of HRBU X Multi Liberty Indoor Units

Measurement conditions: 1m below Indoor Unit's air inlet grille










Models	Noise level at 1m, dB(A)		
	“Hi.” speed	“Me” speed	“Lo.” speed
HRBU 206 X	41	36	31
HRBU 266 X	41	36	31
HRBU 356 X	42	36	31
HRBU 536 X	45	39	35

Measurement conditions: 2.5m below Indoor Unit's air inlet grille



Models	Noise level at 2.5m, dB(A)		
	"Hi" speed	"Me" speed	"Lo." speed
HRBU 206 X	33	28	23
HRBU 266 X	33	28	23
HRBU 356 X	34	28	23
HRBU 536 X	37	31	27

6. Accessories provided with HRBU X Multi Liberty Indoor Units

Component	Q.ty	Aspect	Function
User's Manual	1		To be delivered to Customer
Installation Manual	1		To be delivered to Customer
Display Board & IR Signal Receiver	1		Signal reception
Washer	8		For fixing Units to threaded bars
Infrared Remote Controller	1		To operate the air conditioner
Alkaline battery (AM4)	2		For supplying IR Remote Controller
Nylon clamp	10		To fix insulating sleeves

2.6 CLEANING & MAINTENANCE OF INDOOR UNITS

■ HIGHWALL TYPE MODELS (HKEU X)

⚠ WARNING

Before starting any kind of ordinary maintenance, it is necessary to stop operation of system and disconnect system itself by switching over main switch to "OFF".

■ Cleaning of Indoor Unit and Remote Controller (HKEU X Multi Liberty Models)

⚠ WARNING

- For cleaning the Indoor Unit and the Remote Controller, please preferably use a dry cloth.
- If Indoor Unit is very dirty, a cloth dampened in cold water can be used. Indoor Unit's frontal panel cannot be removed: after dampening it, use a soft cloth for drying it.
- Never use a dampened cloth for cleaning the Remote Controller, nor use whatever chemical products for cleaning the Indoor Unit, in order to avoid damages and/or buckling of surfaces.

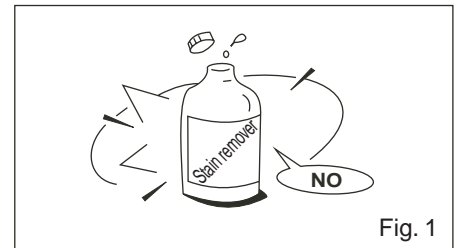


Fig. 1

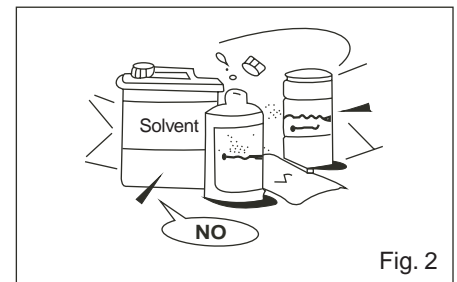


Fig. 2

■ Opening of Indoor Unit's frontal panel (HKEU X Multi Liberty Models)

Periodical cleaning (every 2 weeks at least) of net type filters and of the rear air inlet grille is recommended in order to assure the perfect efficiency of Indoor Unit, and to avoid a decrease in its performances. To carry on the cleaning procedure correctly, please observe carefully the following directions, or contact the Authorized Technical Service. Take care not to hurt yourself by touching the metal sharp parts (heat exchanger's fins) placed beneath net filters.

- 1) Open upper side of Indoor Unit's frontal panel (Fig. 3).
Max. opening angle is of about 15°.
- 2) Hold the lower edge of frontal panel and lift up the panel, as it is shown in Fig. 4.
- 3) Open the panel till max. opening angle, as it is shown in Fig. 5.
Never force the panel opening besides max. limit angle, to avoid breaking of panel's hinges.

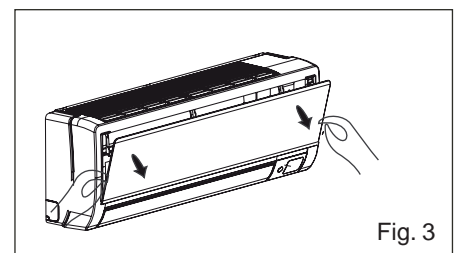


Fig. 3

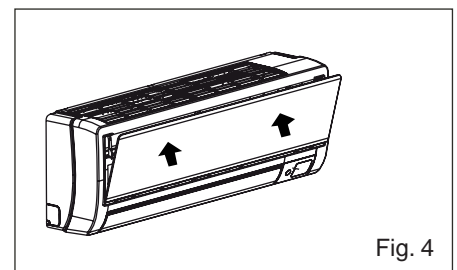


Fig. 4

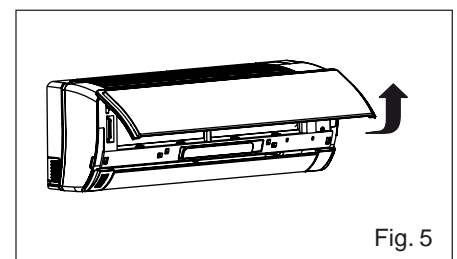
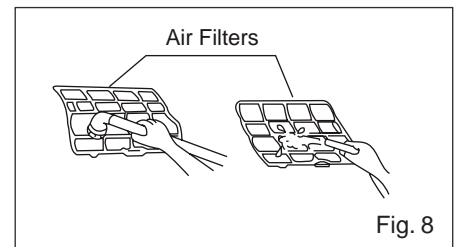
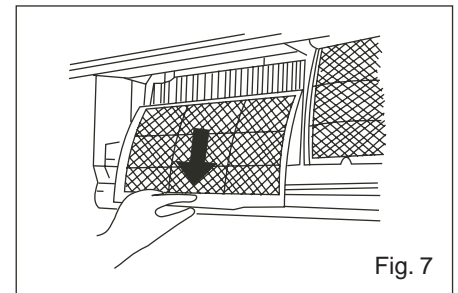
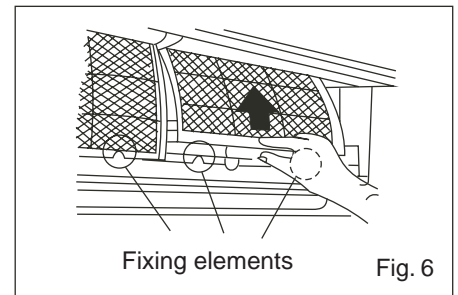


Fig. 5

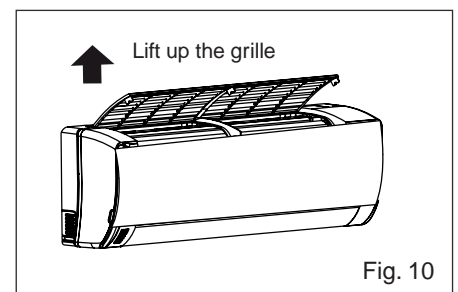
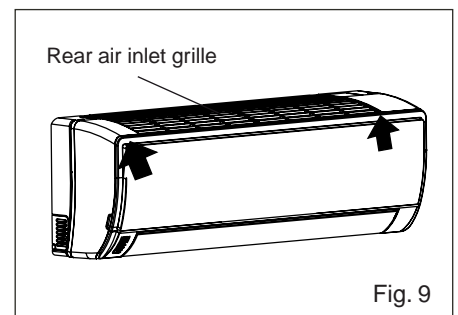
■ Cleaning of polypropylene net type filters (HKEU X Multi Liberty Models)

- 1) Remove the net type filters by detaching the fixing latches, as it is shown in Fig. 6.
- 2) Take out each filter by pulling it downwards, as it shown in Fig. 7.
- 3) Carry out the cleaning of filters by using first a vacuum cleaner, and then wash the filters in running water (Fig. 8).
- 4) Dry the net type filters in a shaded place and far from heat sources.
- 5) Re-install the filters on Indoor Unit by following the reverse procedure of that described for disassembly.
- 6) In the end, gently close the Indoor Unit's frontal panel, taking care not to damage hinges and jointed arms.



■ Cleaning of Indoor Unit's rear air inlet grille (HKEU X Multi Liberty Models)

- 1) Push at the same time the right and left sides of grille (see Fig. 9), to release the rear air inlet grille's latches.
- 2) Lift up the rear air inlet grille in the direction indicated by the arrow (Fig. 10), then detach it from the Indoor Unit's body.
- 3) Wash the grille in low pressure running water, and completely dry it by using a cloth which does not leave material pieces on the grille itself.
- 4) Re-install the grille by following the reverse procedure of that previously carried out for removing it. Please make sure that grille is perfectly closed and that latches are properly attached.



■ If you foresee not to use the system for a long time

- 1) Operate the Indoor Unit in "Fan" mode for at least 2 hours, in order to remove residual humidity inside it.
- 2) Disconnect the system by switching over main switch to "OFF".

■ **If you foresee not using the system for a long time**

- 1) Operate the Indoor Unit in “Fan” mode for at least 2 hours, in order to remove residual humidity inside it.
- 2) Disconnect the system by switching over main switch to “OFF”.
- 3) Remove batteries from infrared Remote Controller, in order to avoid that eventual acid leakage might damage the contacts inside the battery case.
- 4) Clean the Indoor Unit, the frontal panel and air filters as it has been previously indicated.
- 5) Take care to prevent dust and/or foreign matters from entering the Indoor Unit, by protecting it properly by a nylon covering.

■ **Before starting the system after it has not been operated for a long time**

- 1) Please check also visually the general state of wiring and refrigerant connections.
- 2) Remove the eventual protective covering on Indoor Unit.
- 3) Check if all air filters are installed on Indoor Unit: air filters must be well clean and not damaged.
- 4) Check if frontal panel is properly installed in closing position.
- 5) Replace batteries in infrared Remote Controller, and check if contacts are not damaged (eventual oxidation, etc.) inside the battery case.
- 6) Check there is no object and/or foreign matters which may obstruct air inlet and/or air outlet of Indoor Unit.
- 7) Connect the system to power supply by switching over main switch to “ON”, at least 6 hours before starting the system itself.

■ 60 x 60 CASSETTE TYPE MODELS (HTFU X)

⚠ WARNING

Before starting cleaning operations, it is necessary to stop operation of system and disconnect system itself by switching over main switch to "OFF".

■ Cleaning of Indoor Unit and Remote Controller (HTFU X Multi Liberty Models)

⚠ WARNING

- To clean Indoor Unit's panel and Remote Controller, preferably use a dry cloth.
- If Indoor Unit's panel and air inlet grille are very dirty, a cloth dampened in cold water may be used. For cleaning Indoor Unit's panel, you do not need to remove it; after dampening it, use a soft cloth for drying it.
- Never use a dampened cloth for cleaning the Remote Controller, nor chemical products for cleaning Indoor Unit's panel and grille, in order to avoid damages and/or buckling of surfaces.

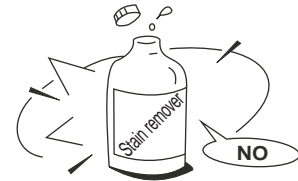


Fig. 1



Fig. 2

■ Opening of Indoor Unit's frontal panel (HTFU X Multi Liberty Models)

Periodical cleaning (every 2 weeks at least) of net type filter and of air inlet grille is recommended in order to assure the perfect efficiency of Indoor Unit, and to avoid a decrease in its performances. To carry on the cleaning procedure correctly, please observe the following directions, or contact the Authorized Technical Service. Take care not to hurt yourself by touching the metal sharp parts beneath the net filter.

- 1) Open the air inlet by moving both locking slides, as it is shown in Fig. 3. It is necessary to move the slides closer to each other, as it is shown by the arrows.
- 2) Pull air inlet grille downwards, and open it by an angle of about 45°, as it is shown in Fig. 4.
- 3) Push the air inlet grille slightly upwards, for releasing the grille's fixing latches from corresponding slots in decorative panel.
- 4) Detach air inlet grille - provided with air filter - from Indoor Unit's body.

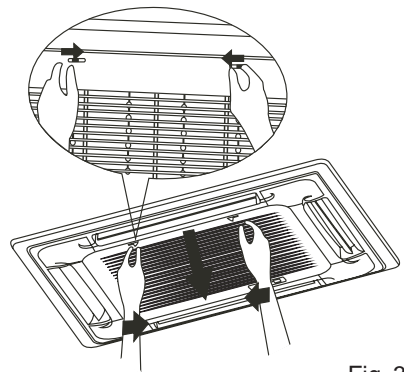


Fig. 3

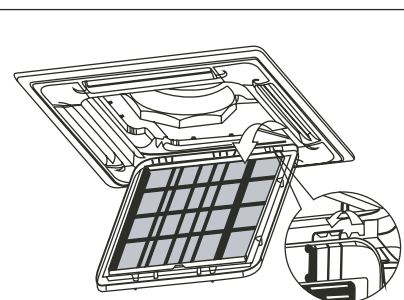


Fig. 4

■ Cleaning the polypropylene net type filter (HTFU X Multi Liberty Models)

- 1) Remove the net type filter by detaching the fixing latches on Indoor Unit's air inlet grille.
- 2) Carry out the cleaning of filters by using first a vacuum cleaner, and then wash the filters in cold or just tepid running water (Fig. 6).
- 3) Dry the net type filter in a shaded place and far from heat sources.
- 4) Re-install the net filter on Indoor Unit's air inlet grille by following the reverse procedure of that described for disassembly.
- 5) In the end, replace Indoor Unit's air inlet grille, taking care not to damage fixing slides on the grille itself.

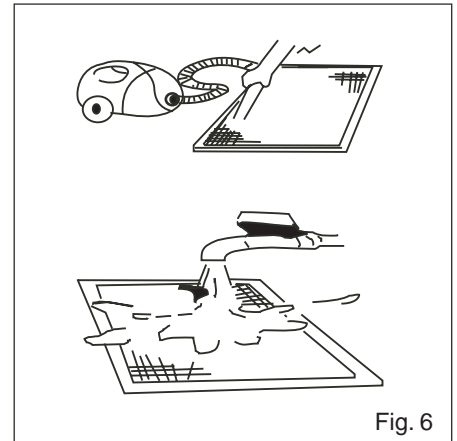


Fig. 6

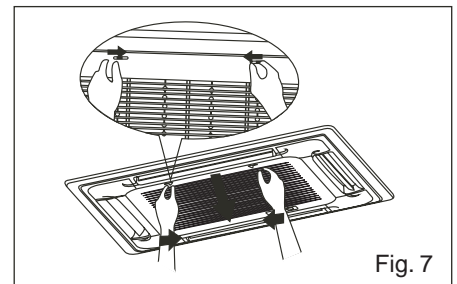


Fig. 7

■ If you foresee not to use the system for a long time

- 1) Operate the Indoor Unit in "Fan" mode for at least 2 hours, in order to remove residual humidity inside it.
- 2) Disconnect the system by switching over main switch to "OFF".
- 3) Remove batteries from Remote Controller, in order to avoid that eventual acid leakage might damage the contacts inside the battery case.
- 4) Clean the Indoor Unit and the air filter, as it has been previously indicated.
- 5) Take care to prevent dust and/or foreign matters from entering the Indoor Unit, by protecting it properly by a nylon covering.

■ Before starting the system after it has been not operated for a long time

- 1) Please check also visually the general state of wiring and refrigerant connections.
- 2) Remove the eventual protective covering on Indoor Unit.
- 3) Check if air filter is installed on Indoor Unit: air filter must be well clean and not damaged.
- 4) Also check if air inlet grille is clean and firmly blocked by special slides, so as to avoid that grille opens accidentally.

■ **Before starting the system after it has not been operated for a long time**

- 4) Replace batteries in infrared Remote Controller, and check if contacts are not damaged (eventual oxidation, etc.) inside the battery case.
- 5) Check there is no object and/or foreign matters that may obstruct air inlet and/or air outlet of Indoor Unit.
- 6) Connect the system to power supply by switching over main switch to "ON", at least 6 hours before starting the system itself.

■ CONSOLE TYPE MODELS (HFUI X)

⚠ WARNING

Before starting cleaning operations, it is necessary to stop operation of system and disconnect the system itself by switching over main switch to "OFF".

■ Cleaning of Indoor Unit and Remote Controller (HFUI X Multi Liberty Models)

⚠ WARNING

- To clean Indoor Unit and Remote Controller, preferably use a dry cloth.
- If Indoor Unit is very dirty, a cloth dampened in cold water may be used. Indoor Unit's frontal panel may be removed (see further on). After dampening it, use a soft cloth for drying it.
- Never use a dampened cloth for cleaning the Remote Controller, nor whatever chemical products for cleaning Indoor Unit, in order to avoid damages and/or buckling of surfaces.



Fig. 1

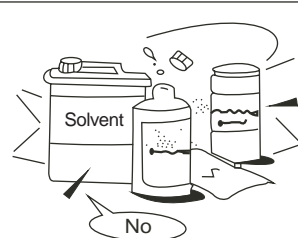


Fig. 2

■ Opening of Indoor Unit's frontal panel (HFUI X Multi Liberty Models)

Periodical cleaning (every 2 weeks at least) of net type filters and of air inlet grille is recommended in order to assure the perfect efficiency of Indoor Unit, and to avoid a decrease in its performances. To carry on the cleaning procedure correctly, please observe the following directions, or contact the Authorized Technical Service. Take care not to hurt yourself by touching the metal sharp parts (heat exchanger's fins) placed beneath the net filters.

- 1) Open upper side of Indoor Unit's frontal panel by moving the two locking slides towards the centre, closer to each other (Fig. 3).
- 2) Detach the net type filter as it shown in Fig. 4, then take it out by sliding it upwards.
- 3) Detach the 2 anti-formaldehyde filters that are installed on net type filter (Fig. 5). Anti-formaldehyde filters must be washed in water every 6 months and **must be replaced every 3 years, as they are not regenerable**. These filters are available as spare parts.

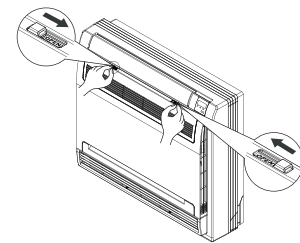


Fig. 3

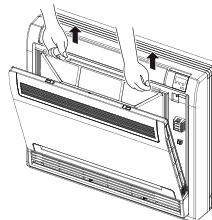


Fig. 4

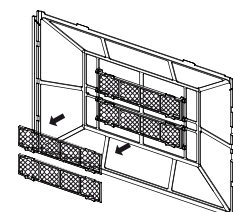
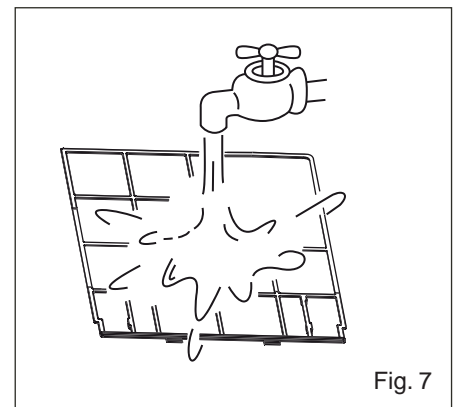
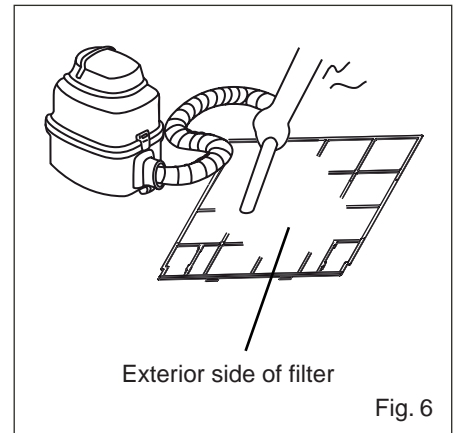


Fig. 5

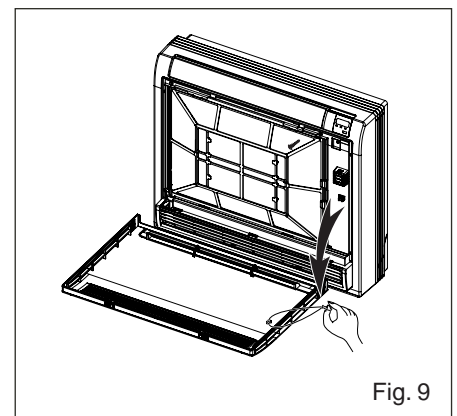
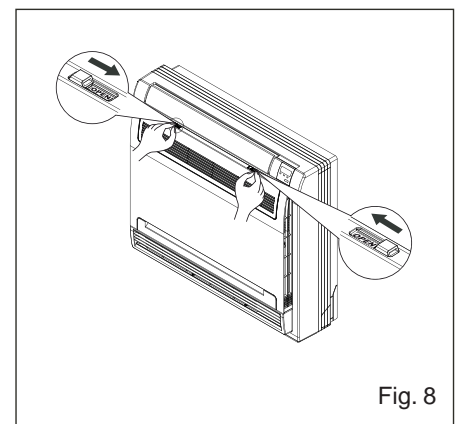
■ Cleaning of polypropylene net type filter (HFU X Multi Liberty Models)

- 1) Clean net type filter by using a vacuum cleaner and adjusting it at min. suction capacity, in order to avoid to damage the filtering net, as it is shown in Fig. 6. Dust must be sucked up from exterior side of filter, that is the side which is normally addressed towards frontal panel of Indoor Unit.
- 2) If air filter is very dirty, wash it under low pressure running water (Fig. 7), or immerse it in just tepid water and neutral soap. In both cases, please carry out the cleaning gently, in order to avoid to damage the filtering net.
- 3) Dry net filter in a shaded place and far from heat sources.
- 4) Reinstall all filters (included anti-formaldehyde) on Indoor Unit by following the reverse procedure of that described for disassembly.
- 5) In the end, close the Indoor Unit's frontal panel and replace slides to locking position.



■ Cleaning of Indoor Unit's air inlet grille (HFU X Multi Liberty Models)

- 1) Open upper side of Indoor Unit's frontal panel by moving the locking slides towards the centre (Fig. 8).
- 2) Detach the string that allows partial opening of panel (Fig. 9). Pull down the frontal panel to 90° as regards Indoor Unit's body.
- 3) Detach hinges on lower side of frontal panel, then detach the panel from Indoor Unit's body.
- 4) Wash the grille under low pressure running water, and completely dry it by a cloth which does not leave material pieces on the grille itself.
- 5) Re-install the grille by reverse operations of those previously carried out for removing it.
- 6) Completely close the grille and make sure it is properly fixed by locking slides.



■ **If you foresee not using the system for a long time**

- 1) Operate the Indoor Unit in “Fan” mode for at least 2 hours, in order to remove residual humidity inside it.
- 2) Disconnect the system by switching over main switch to “OFF”.
- 3) Remove batteries from infrared Remote Controller, in order to avoid that eventual acid leakage might damage the contacts inside the battery case.
- 4) Clean the Indoor Unit, the frontal panel and air filters as it has been previously indicated.
- 5) Take care to prevent dust and/or foreign matters from entering the Indoor Unit, by protecting it properly by a nylon covering.

■ **Before starting the system after it has not been operated for a long time**

- 1) Please check also visually the general state of wiring and refrigerant connections.
- 2) Remove the eventual protective covering on Indoor Unit.
- 3) Check if all air filters are installed on Indoor Unit: air filters must be well clean and not damaged.
- 4) Check if frontal panel is properly installed in closing position.
- 5) Replace batteries in infrared Remote Controller, and check if contacts are not damaged (eventual oxidation, etc.) inside the battery case.
- 6) Check there is no object and/or foreign matters which may obstruct air inlet and/or air outlet of Indoor Unit.
- 7) Connect the system to power supply by switching over main switch to “ON”, at least 6 hours before starting the system itself.

■ FLOOR/CEILING TYPE MODELS (HSFU X)

⚠ WARNING

Before starting cleaning operations, it is necessary to stop operation of system and disconnect system itself by switching over main switch to "OFF".

■ Cleaning of Indoor Unit and Remote Controller (HSFU X Multi Liberty Models)

⚠ WARNING

- To clean Indoor Unit's panel and Remote Controller, preferably use a dry cloth.
- If Indoor Unit is very dirty, a cloth dampened in cold water may be used. Indoor Unit's air inlet grille may also be removed (see further on). At the end of cleaning, dry Indoor Unit by a soft cloth.
- Never use a dampened cloth for cleaning the Remote Controller, nor use whatever chemical product for cleaning the Indoor Unit, in order to avoid damages and/or buckling of surfaces.

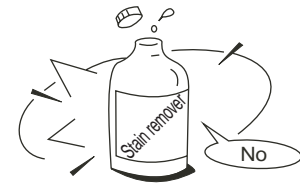


Fig. 1

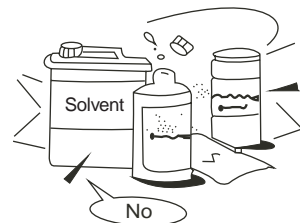


Fig. 2

■ Opening of Indoor Unit's air inlet grille (HSFU X Multi Liberty Models)

Periodic cleaning (every 2 weeks at least) of net type filters and of air inlet grille is recommended in order to assure the perfect efficiency of Indoor Unit, and to avoid a decrease in its performances. To carry on the cleaning procedure correctly, please observe the following directions, or contact the Authorized Technical Service. Take care not to hurt yourself by touching the metal sharp parts beneath the air inlet grille.

- 1) Open air inlet grille by seizing it at both sides, near the hollows on Indoor Unit's frame (Fig. 3).
- 2) Opening of grille is limited to few centimetres, that is the necessary space for taking out polypropylene net type filters, which are installed in the grille's rear side. There are 2 plastic transparent stop strips (1 on each side of grille, see Fig. 4).
- 3) Never force the grille's max. opening angle, in order not to break the stop strips.

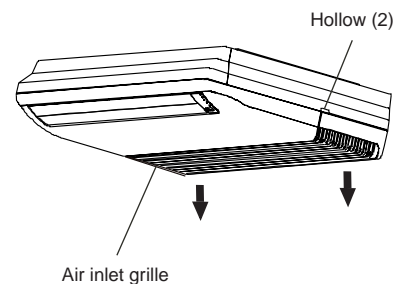


Fig. 3

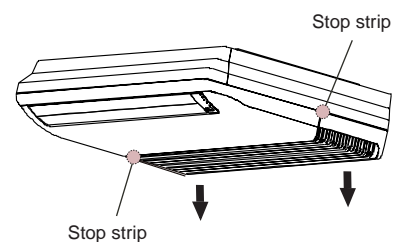
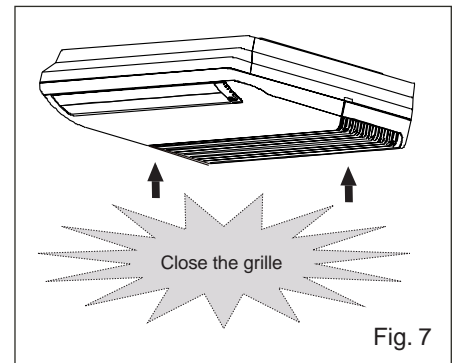
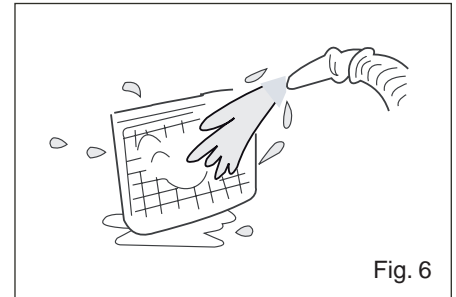
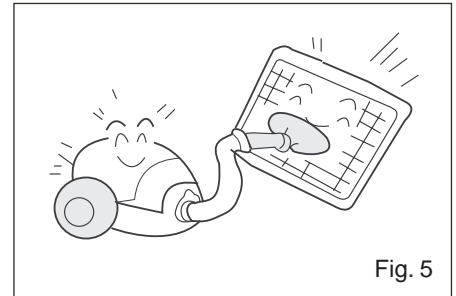


Fig. 4

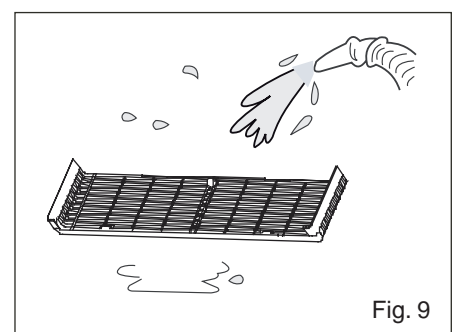
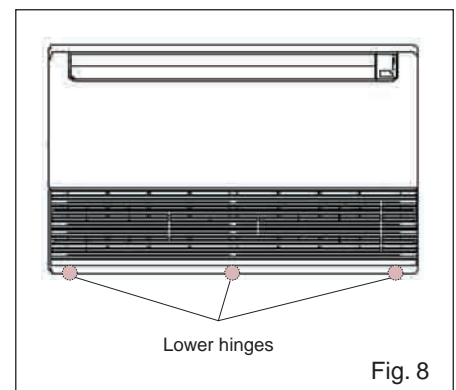
■ Cleaning of polypropylene net type filters (HSFU X Multi Liberty Models)

- 1) With air inlet grille slightly open, detach the air filters (one on rightside and one on leftside) and take them out, making them sliding in the direction of Indoor Unit's air outlet.
- 2) Clean each net filter by using a vacuum cleaner adjusted at min. suction capacity, so as to avoid to damage the filtering net, as it is shown in Fig. 5. Dust must be sucked up from the filter's exterior side, that is normally addressed towards air inlet grille of Indoor Unit.
- 3) If air filters are very dirty, wash them under low pressure running water (Fig. 6), or immerse them in just tepid water and neutral soap. In both cases, carry out the cleaning gently, in order to avoid to damage the filtering net.
- 4) Dry the net type filters in a shaded place and far from heat sources.
- 5) Re-install both air filters on Indoor Unit.
- 6) Close Indoor Unit's air inlet grille (Fig. 7).



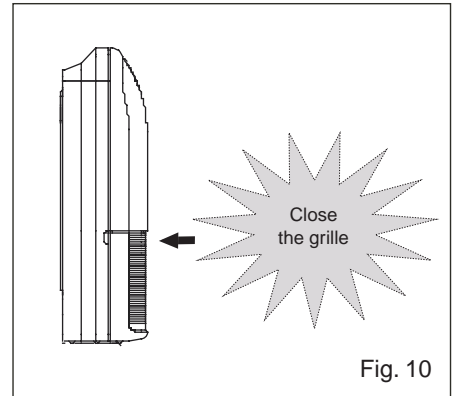
■ Cleaning of Indoor Unit's air inlet frontal grille (HSFU X Multi Liberty Models)

- 1) Partially open the air inlet grille by seizing it at both sides, as it is described on the previous page.
- 2) Remove both net type filters, as it has previously described (see above).
- 3) Completely unscrew the screws of stop strips on air inlet grille.
- 4) Pull down the air inlet grille to 90° as regards the Indoor Unit's body.
- 5) Detach the lower hinges (Fig. 8) of air inlet grille, to separate the grille itself from the Indoor Unit's body.
- 6) Wash the grille under low pressure running water (Fig. 9).



■ Cleaning of Indoor Unit's air inlet grille (HSFU X Multi Liberty Models)

- 7) Dry well air inlet grille, by using a soft cloth which does not leave material pieces on the grille itself.
- 8) Re-install the grille and the air filters by reverse operations of those previously carried out for removing them.
- 9) Close completely the air inlet grille (Fig. 10).

**■ If you foresee not using the system for a long time**

- 1) Operate the Indoor Unit in "Fan" mode for at least 2 hours, in order to remove residual humidity inside it.
- 2) Disconnect the system by switching over main switch to "OFF".
- 3) Remove batteries from infrared Remote Controller, in order to avoid that eventual acid leakage might damage the contacts inside the battery case.
- 4) Clean the Indoor Unit, the frontal panel and air filters as it has been previously indicated.
- 5) Take care to prevent dust and/or foreign matters from entering the Indoor Unit, by protecting it properly by a nylon covering.

■ Before starting the system after it has not been operated for a long time

- 1) Please check also visually the general state of wiring and refrigerant connections.
- 2) Remove the eventual protective covering on Indoor Unit.
- 3) Check if all air filters are installed on Indoor Unit: air filters must be well clean and not damaged.
- 4) Check if frontal panel is properly installed in closing position.
- 5) Replace batteries in infrared Remote Controller, and check if contacts are not damaged (eventual oxidation, etc.) inside the battery case.
- 6) Check if no objects and/or foreign matters might obstruct air inlet and/or air outlet of Indoor Unit.
- 7) Connect the system to power supply by switching over main switch to "ON", at least 6 hours before starting the system itself.

■ LOW DUCTED TYPE MODELS (HRBU X)

⚠ WARNING

Before starting whatever cleaning operation, it is necessary to stop operation of system and disconnect the system itself by switching over main switch to "OFF"..

■ Cleaning of air inlet panel and remote controller (HRBU X Multi Liberty Models)

⚠ WARNING

- For cleaning Indoor Unit's air inlet panel and Remote Controller, use preferably a dry cloth. This operation must be carried out by a technician of Authorized Technical Service.
- If Indoor Unit's air inlet panel is very dirty, a cloth dampened in cold water may be used. At the end of cleaning, dry the panel by a soft cloth.
- Never use a dampened cloth for cleaning the remote controller, nor whatever chemical product for cleaning Indoor Unit's panel, in order to avoid damages and/or buckling of surfaces.



Fig. 1

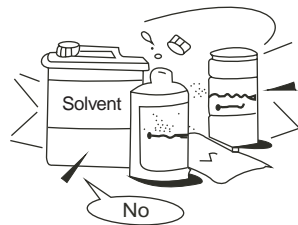


Fig. 2

■ Removal of Indoor Unit's air inlet panel (HRBU X Multi Liberty Models)

Periodical cleaning (every 2 weeks at least) of air inlet panel and of rear net type filter is recommended in order to assure the perfect efficiency of Indoor Unit, and to avoid a decrease in its performances. To carry on the cleaning procedure correctly and for safety reasons, it is recommended to contact the Authorized Technical Service. In fact, these operations need expertise and tools which User normally does not have.

- 1) Remove the Indoor Unit's air inlet panel installed at the bottom of inlet plenum, by screwing safety fixing screws and pulling the panel toward you (Fig. 3).
- 2) With air inlet plenum, the polypropylene net type filter is immediately visible after removing air inlet panel. Without air inlet plenum, net type filter - provided with Indoor Unit - is directly installed on Unit's main body (Fig. 4).

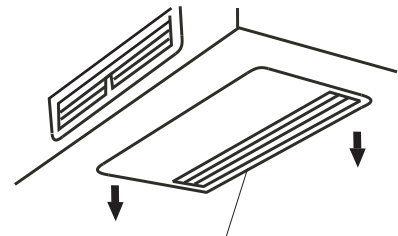
Air inlet panel
(commercial type)

Fig. 3

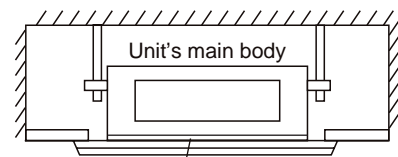
Polypropylene net type filter
(installed on Unit's main body)

Fig. 4

■ Cleaning of polypropylene net type filter (HRBU X Multi Liberty Models)

- 1) After removing air inlet filter, remove polypropylene net type filter by detaching it from Unit's body or from bottom of inlet plenum.
- 2) Clean net type filter by using a vacuum cleaner adjusted to min. suction capacity, in order to avoid to damage the filtering net, as it is shown in Fig. 5. Dust must be sucked up from the filter's exterior side, that is normally addressed towards the air inlet panel of Indoor Unit.
- 3) If air filter is very dirty, wash it under low pressure running water (Fig. 6), or immerse it in just tepid water and neutral soap. In both cases, carry out the cleaning gently, in order to avoid to damage the filtering net.
- 4) Dry the net type filter in a shaded place and far from heat sources.
- 5) Re-install the air filter properly by fixing devices.
- 6) Re-install Indoor Unit's air inlet panel, by the reverse procedure of that carried out for removal (Fig. 7).

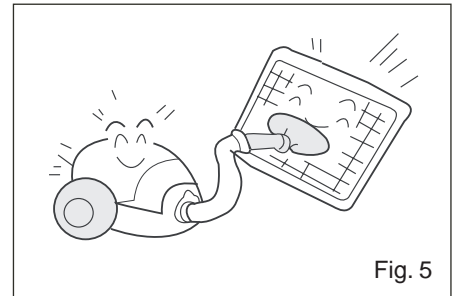


Fig. 5

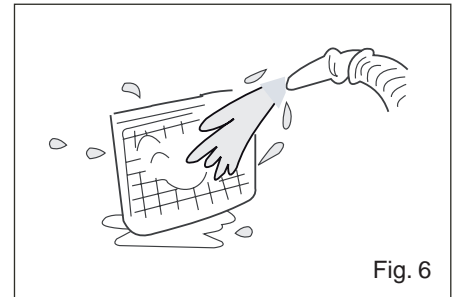


Fig. 6

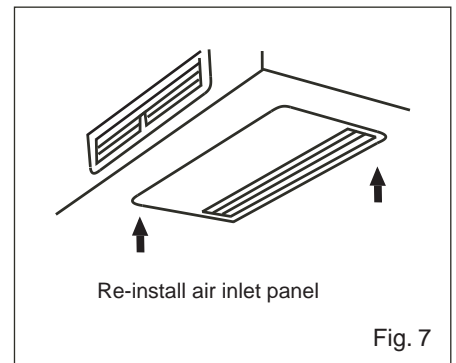


Fig. 7

■ Cleaning of Indoor Unit's air outlet grille (HRBU X Multi Liberty Models)

- 1) Remove air outlet grille from its place, at the end of air outlet duct (Fig. 8). Please carry out this operation gently, in order to avoid to damage flaps and louvers for adjusting airflow direction.
- 2) First clean the air outlet grille's inside part - that is the side which is normally addressed towards the Unit's body - by using a vacuum cleaner adjusted to the suitable suction capacity, as it is shown in Fig. 9.
- 3) If the grille is very dirty, wash it under low pressure running water, or immerse it briefly in just tepid water and neutral soap.
- 4) In order to prevent oxidation of grille, immediately dry it by a hairdryer before re-installing it.

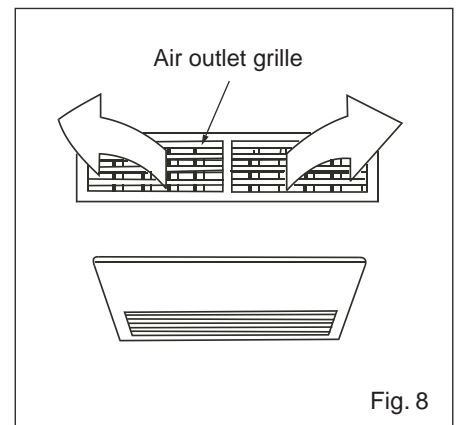


Fig. 8

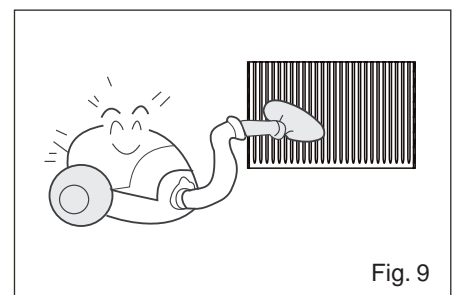


Fig. 9

■ **If you foresee not using the system for a long time**

- 1) Operate the Indoor Unit in “Fan” mode for at least 2 hours, in order to remove residual humidity inside it.
- 2) Disconnect the system by switching over main switch to “OFF”.
- 3) Remove batteries from infrared Remote Controller, in order to avoid that eventual acid leakage might damage the contacts inside the battery case.
- 4) Clean the air inlet panel, the air filter and the air outlet grille as it has been previously indicated.
- 5) Take care to prevent dust and/or foreign matters from entering the Indoor Unit, by protecting it properly by a nylon covering.

■ **Before starting the system after it has not operated for a long time**

- 1) Please check also visually the general state of wiring and refrigerant connections.
- 2) Remove the eventual protective covering on air inlet panel and air outlet grille.
- 3) Check if air filter is installed on Indoor Unit: air filter must be well clean and not damaged.
- 4) Check if frontal panel is properly installed, and that air does not pass through the panel, the false ceiling and the eventual inlet plenum.
- 5) Replace batteries in infrared Remote Controller, and check if contacts are not damaged (eventual oxidation, etc.) inside the battery case.
- 6) Check if in front of infrared receiver’s window there is no object which may interfere with the reception of signals sent by remote controller to Indoor Unit.
- 7) Check there is no object or foreign matter which may obstruct the air inlet and/or air outlet on Indoor Unit.
- 8) Connect the system to power supply by switching over main switch to “ON”, at least 6 hours before starting the system itself.

Section 3: OUTDOOR UNITS & TROUBLESHOOTING

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3. OUTDOOR UNITS & TROUBLESHOOTING

3.1 SPECIFICATIONS OF MULTI LIBERTY OUTDOOR UNITS

3.1.1 Technical Specifications of HCKU 406 Outdoor Unit X2 (Dual)

Model name		HCKU 406 X2	
Power supply		V-Ph-Hz	220~240-1-50
Cooling	Capacity	kW	4.05 (1.54 ~ 5.80)
	Power input	W	1.250 (0.53 ~ 1.71)
	Running current	A	5.7
Heating	Capacity	kW	4.57 (1.59 ~ 5.90)
	Power input	kW	1.227 (0.45 ~ 1.66)
	Running current	A	5.5
EER/COP		See Tables of combinations between Indoor Units	
Max. power input		W	1700
Starting current		A	8.0
Compressor Motor	Model	DA108X1C-20FZ3	
	Type	DC Inverter Rotary type	
	Brand	Toshiba	
	Capacity	kW	3.20
	Power input	W	855
	Rated current (RLA)	A	5.3
	Temperature protection	INT01L-4619, or CS-74	
	Oil type	ml	VG74, 480ml
Indoor fan motor	Model	YDK24-6G	
	Supplier	Welling	
	Capacity	W	59/47
	Condenser	μF	2.5μF
	Fan speed	rpm	800/550
Outdoor heat exchanger	Number of rows	2	
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.4
	Fin type	Treated aluminium	
	Tube outside dia. & type	mm	Ø7 Inner grooved tubing
	Dimensions (W x H x D)	mm	655 x 546 x 26.74
	Number of circuits	2	
Indoor air flow	m ³ /h	2200	
Sound level (sound pressure) at 1m	dB(A)	53	
Outdoor Unit	Dimensions (W x H x D)	mm	760 x 590 x 285
	Packaging (W x H x D)	mm	887 x 645 x 355
	Net / Gross weight	kg	39/41
Refrigerant circuit	Refrigerant type	R410A	
	Refrigerant precharge	g	1350
Refrigerant control		Electronic expansion valves (EXV) + Capillary tubes	
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	2 x Ø6.35(1/4"), 2 x Ø9.52(3/8")
	Max. splitting distance I/O	m	15 + 15
	Max. splitting level diff.[U.I.-U.E.]	m	10
	Max. splitting level diff.[U.I.-U.I.]	m	5
	Max. splitting distance with Refrig. precharge	m	5 + 5
	Additional refrigerant precharge	g/m	15 (for Liquid side piping Ø6.35(1/4"))
Refrigerant accessories		Diameter adapter (1 piece): Ø3/8" Ø1/2"	
Wiring cables	Power lines & Signal lines	Core nb. x Size	Outdoor Unit: 3 x 4.0mm ² For every U.I.: 4 x 1.5mm ² (plug cable, 6m long)
Outdoor temperature ranges		°C	Cooling: 0°C ~ 50°C. Heating: -15° ~ +24°C

3.1.2 Technical Specifications of HCKU 536 Outdoor Unit X2 (Dual)

Model name		HCKU 536 X2	
Power supply		V-Ph-Hz	220~240-1-50
Cooling	Capacity	kW	5.30 (1.40 ~ 6.66)
	Power input	W	1.570 (0.41 ~ 2.16)
	Running current	A	7.5
Heating	Capacity	kW	6.10 (1.30 ~ 8.13)
	Power input	kW	1.610 (0.37 ~ 2.24)
	Running current	A	7.6
EER/COP		See Tables of combinations between Indoor Units	
Max. power input		W	2150
Starting current		A	10.5
Compressor Motor	Model		DA13051C-20FZ
	Type		DC Inverter Double Rotary type
	Brand		Toshiba
	Capacity	kW	3.86
	Power input	W	990
	Rated current (RLA)	A	4.97
	Temperature protection		Indoor
	Oil type	ml	VG74, 500ml
Indoor fan motor	Model		YDK53-6F
	Supplier		Welling
	Capacity	W	126/106
	Condenser	μF	2.5μF
	Fan speed	rpm	760/600
Outdoor heat exchanger	Number of rows		1.5
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.4
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7 Inner grooved tubing
	Dimensions (W x H x D)	mm	785 x 651 x 26.74
	Number of circuits		4
Indoor air flow		m ³ /h	2500
Sound level (sound pressure) at 1m		dB(A)	54
Outdoor Unit	Dimensions (W x H x D)	mm	845 x 695 x 335
	Packaging (W x H x D)	mm	965 x 755 x 395
	Net / Gross weight	kg	53.5/57
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant precharge	g	1450
Refrigerant control		Electronic expansion valves (EXV) + Capillary tubes	
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	2 x Ø6.35(1/4"), 2 x Ø9.52(3/8")
	Max. splitting distance I/O	m	15 + 15
	Max. splitting level diff.[U.I.-U.E.]	m	10
	Max. splitting level diff.[U.I.-U.I.]	m	5
	Max. splitting distance with Refrig. precharge	m	5 + 5
	Additional refrigerant precharge	g/m	15 (for Liquid side piping Ø6.35(1/4"))
Refrigerant accessories		Diameter adapters (2 pieces): Ø3/8" Ø1/2"	
Wiring cables	Power lines & Signal lines	Core nb. x Size	Outdoor Unit: 3 x 4.0mm ² For every U.I.: 4 x 1.5mm ² (plug cable, 6m long)
Outdoor temperature ranges		°C	Cooling: 0°C ~ 50°C. Heating: -15° ~ +24°C

3.1.3 Technical Specifications of HCKU 606 Outdoor Unit X3 (Triple)

Model name		HCKU 606 X3	
Power supply		V-Ph-Hz	220~240-1-50
Cooling	Capacity	kW	6.00 (1.56 ~ 8.93)
	Power input	W	1.798 (0.53 ~ 3.03)
	Running current	A	8.6
Heating	Capacity	kW	6.70 (1.67 ~ 9.32)
	Power input	kW	1.774 (0.49 ~ 2.80)
	Running current	A	8.4
EER/COP		See Tables of combinations between Indoor Units	
Max. power input		W	3335
Starting current		A	14.0
Compressor Motor	Model	DA13051C-20FZ	
	Type	DC Inverter Double Rotary type	
	Brand	Toshiba	
	Capacity	kW	3.86
	Power input	W	990
	Rated current (RLA)	A	4.97
	Temperature protection	Indoor, INT11L-5270 L115-5	
	Oil type	ml	VG74, 500ml
Indoor fan motor	Model	YDK53-6F	
	Supplier	Welling	
	Capacity	W	126/106
	Condenser	μF	2.5μF
	Fan speed	rpm	760/600
Outdoor heat exchanger	Number of rows	1.5	
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.4
	Fin type	Treated aluminium	
	Tube outside dia. & type	mm	Ø7 Inner grooved tubing
	Dimensions (W x H x D)	mm	785 x 651 x 26.74
	Number of circuits	2	
Indoor air flow	m ³ /h	2500	
Sound level (sound pressure) at 1m	dB(A)	55	
Outdoor Unit	Dimensions (W x H x D)	mm	845 x 695 x 335
	Packaging (W x H x D)	mm	965 x 755 x 395
	Net / Gross weight	kg	55/60
Refrigerant circuit	Refrigerant type	R410A	
	Refrigerant precharge	g	1450
Refrigerant control	Electronic expansion valves (EXV) + Capillary tubes		
Running pressure	MPa	4.2/2.5	
Refrigerant pipings	Liquid side, Gas side	mm(inches)	3 x Ø6.35(1/4"), 3 x Ø9.52(3/8")
	Max. splitting distance I/O	m	15 + 15 + 15
	Max. splitting level diff.[U.I.-U.E.]	m	10
	Max. splitting level diff.[U.I.-U.I.]	m	5
	Max. splitting distance with Refrig. precharge	m	5 + 5 + 5
	Additional refrigerant precharge	g/m	15 (for Liquid side piping Ø6.35(1/4"))
Refrigerant accessories	Diameter adapters (2 pieces): Ø3/8" Ø1/2"		
Wiring cables	Power lines & Signal lines	Core nb. x Size	Outdoor Unit: 3 x 4.0mm ² For every U.I.: 4 x 1.5mm ² (plug cable, 6m long)
Outdoor temperature ranges	°C	Cooling: 0°C ~ 50°C. Heating: -15° ~ +24°C	

3.1.4 Technical Specifications of HCKU 806 Outdoor Unit X3 (Triple)

Model name		HCKU 806 X3	
Power supply		V-Ph-Hz	220~240-1-50
Cooling	Capacity	kW	8.00 (1.38 ~ 9.86)
	Power input	W	2.350 (0.53 ~ 3.03)
	Running current	A	11.0
Heating	Capacity	kW	8.70 (0.48 ~ 3.09)
	Power input	kW	2.300 (0.46 ~ 3.08)
	Running current	A	11.2
EER/COP		See Tables of combinations between Indoor Units	
Max. power input		W	3100
Starting current		A	16.0
Compressor Motor	Model	DA15051C-20FZ	
	Type	DC Inverter Double Rotary type	
	Brand	Toshiba	
	Capacity	kW	4.48
	Power input	W	1150
	Rated current (RLA)	A	9.7
	Temperature protection	Indoor	
	Oil type	ml	VG74, 500ml
Indoor fan motor	Model	YDK53-6F	
	Supplier	Welling	
	Capacity	W	126/106
	Condenser	μF	2.5μF
	Fan speed	rpm	760/600
Outdoor heat exchanger	Number of rows	2	
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.4
	Fin type	Treated aluminium	
	Tube outside dia. & type	mm	Ø7 Inner grooved tubing
	Dimensions (W x H x D)	mm	779 x 651 x 26.74
	Number of circuits	4	
Indoor air flow	m ³ /h	2500	
Sound level (sound pressure) at 1m	dB(A)	55	
Outdoor Unit	Dimensions (W x H x D)	mm	845 x 695 x 335
	Packaging (W x H x D)	mm	965 x 755 x 395
	Net / Gross weight	kg	57/60.5
Refrigerant circuit	Refrigerant type	R410A	
	Refrigerant precharge	g	2000
Refrigerant control	Electronic expansion valves (EXV) + Capillary tubes		
Running pressure	MPa	4.2/2.5	
Refrigerant pipings	Liquid side, Gas side	mm(inches)	3 x Ø6.35(1/4"), 3 x Ø9.52(3/8")
	Max. splitting distance I/O	m	15 + 15 + 15
	Max. splitting level diff. U.I.-U.E.	m	10
	Max. splitting level diff. U.I.-U.I.	m	5
	Max. splitting distance with Refrig. precharge	m	5 + 5 + 5
	Additional refrigerant precharge	g/m	15 (for Liquid side piping Ø6.35(1/4"))
	Refrigerant accessories	Diameter adapters (2 pieces): Ø3/8" Ø1/2"	
Wiring cables	Power lines & Signal lines	Core nb. x Size	Outdoor Unit: 3 x 4.0mm ² For every U.I.: 4 x 1.5mm ² (plug cable, 6m long)
Outdoor temperature ranges	°C	Cooling: 0°C ~ 50°C. Heating: -15° ~ +24°C	

3.1.5 Technical Specifications of HCKU 706 Outdoor Unit X4 (Poker)

Model name		HCKU 706 X4	
Power supply		V-Ph-Hz	220~240-1-50
Cooling	Capacity	kW	7.00 (1.38 ~ 10.11)
	Power input	W	1.986 (0.50 ~ 3.42)
	Running current	A	9.6
Heating	Capacity	kW	7.60 (1.72 ~ 11.86)
	Power input	kW	1.963 (0.57 ~ 3.60)
	Running current	A	9.2
EER/COP		See Tables of combinations between Indoor Units	
Max. power input		W	3800
Starting current		A	15.0
Compressor Motor	Model		DA15051C-20FZ
	Type		DC Inverter Double Rotary type
	Brand		Toshiba
	Capacity	kW	4.48
	Power input	W	1150
	Rated current (RLA)	A	9.7
	Temperature protection		Indoor
	Oil type	ml	VG74, 500ml
Indoor fan motor	Model		YDK53-6F
	Supplier		Welling
	Capacity	W	126/106
	Condenser	μF	2.5μF
	Fan speed	rpm	760/600
Outdoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	21 x 13.37
	Fin spacing	mm	1.4
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	Ø7 Inner grooved tubing
	Dimensions (W x H x D)	mm	779 x 651 x 26.74
	Number of circuits		4
Indoor air flow	m ³ /h		2500
Sound level (sound pressure) at 1m	dB(A)		55
Outdoor Unit	Dimensions (W x H x D)	mm	845 x 695 x 335
	Packaging (W x H x D)	mm	965 x 755 x 395
	Net / Gross weight	kg	56/60
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant precharge	g	2300
Refrigerant control		Electronic expansion valves (EXV) + Capillary tubes	
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	4 x Ø6.35(1/4"), 4 x Ø9.52(3/8")
	Max. splitting distance I/O	m	15 + 15 + 15 + 15
	Max. splitting level diff. U.I.-U.E.	m	10
	Max. splitting level diff. U.I.-U.I.	m	5
	Max. splitting distance with Refrig. precharge	m	5 + 5 + 5 + 5
	Additional refrigerant precharge	g/m	15 (for Liquid side piping Ø6.35(1/4"))
Refrigerant accessories		Diameter adapters (3 pieces): Ø3/8" Ø1/2"	
Wiring cables	Power lines & Signal lines	Core nb. x Size	Outdoor Unit: 3 x 4.0mm ² For every U.I.: 4 x 1.5mm ² (plug cable, 6m long)
Outdoor temperature ranges		°C	Cooling: 0°C ~ 50°C. Heating: -15° ~ +24°C

3.1.6 Technical Specifications of HCKU 816 Outdoor Unit X4 (Poker)

Model name		HCKU 816 X4	
Power supply		V-Ph-Hz	220~240-1-50
Cooling	Capacity	kW	8.10 (1.38 ~ 11.09)
	Power input	W	2.483 (0.58 ~ 3.75)
	Running current	A	11.2
Heating	Capacity	kW	9.00 (1.59 ~ 12.30)
	Power input	kW	2.427 (0.47 ~ 3.71)
	Running current	A	11.1
EER/COP		See Tables of combinations between Indoor Units	
Max. power input		W	4800
Starting current		A	21.0
Compressor Motor	Model		TNB220FLHMC-L
	Type		DC Inverter Double Rotary type
	Brand		Mitsubishi
	Capacity	kW	7.13
	Power input	W	2200
	Rated current (RLA)	A	9.7
	Temperature protection		Indoor
	Oil type	ml	FV50S, 870ml
Indoor fan motor	Model		YDK53-6N
	Supplier		Welling
	Capacity	W	144/100
	Condenser	μ F	2.5 μ F
	Fan speed	rpm	780/600
Outdoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	22 x 19
	Fin spacing	mm	1.4
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	\varnothing 8 Inner grooved tubing
	Dimensions (W x H x D)	mm	836 x 814 x 38
	Number of circuits		4
Indoor air flow	m ³ /h		3500
Sound level (sound pressure) at 1m	dB(A)		57
Outdoor Unit	Dimensions (W x H x D)	mm	895 x 860 x 330
	Packaging (W x H x D)	mm	1043 x 915 x 395
	Net / Gross weight	kg	78/82
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant precharge	g	2400
Refrigerant control		Electronic expansion valves (EXV) + Capillary tubes	
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	4 x \varnothing 6.35(1/4"), 4 x \varnothing 9.52(3/8")
	Max. splitting distance I/O	m	15 + 15 + 15 + 15
	Max. splitting level diff. U.I.-U.E.	m	10
	Max. splitting level diff. U.I.-U.I.	m	5
	Max. splitting distance with Refrig. precharge	m	5 + 5 + 5 + 5
	Additional refrigerant precharge	g/m	15 (for Liquid side piping \varnothing 6.35(1/4"))
Refrigerant accessories		Diameter adapters (3 pieces): \varnothing 3/8" \varnothing 1/2"	
Wiring cables	Power lines & Signal lines	Core nb. x Size	Outdoor Unit: 3 x 4.0mm ² For every U.I.: 4 x 1.5mm ² (plug cable, 6m long)
Outdoor temperature ranges		$^{\circ}$ C	Cooling: 0 $^{\circ}$ C ~ 50 $^{\circ}$ C. Heating: -15 $^{\circ}$ ~ +24 $^{\circ}$ C

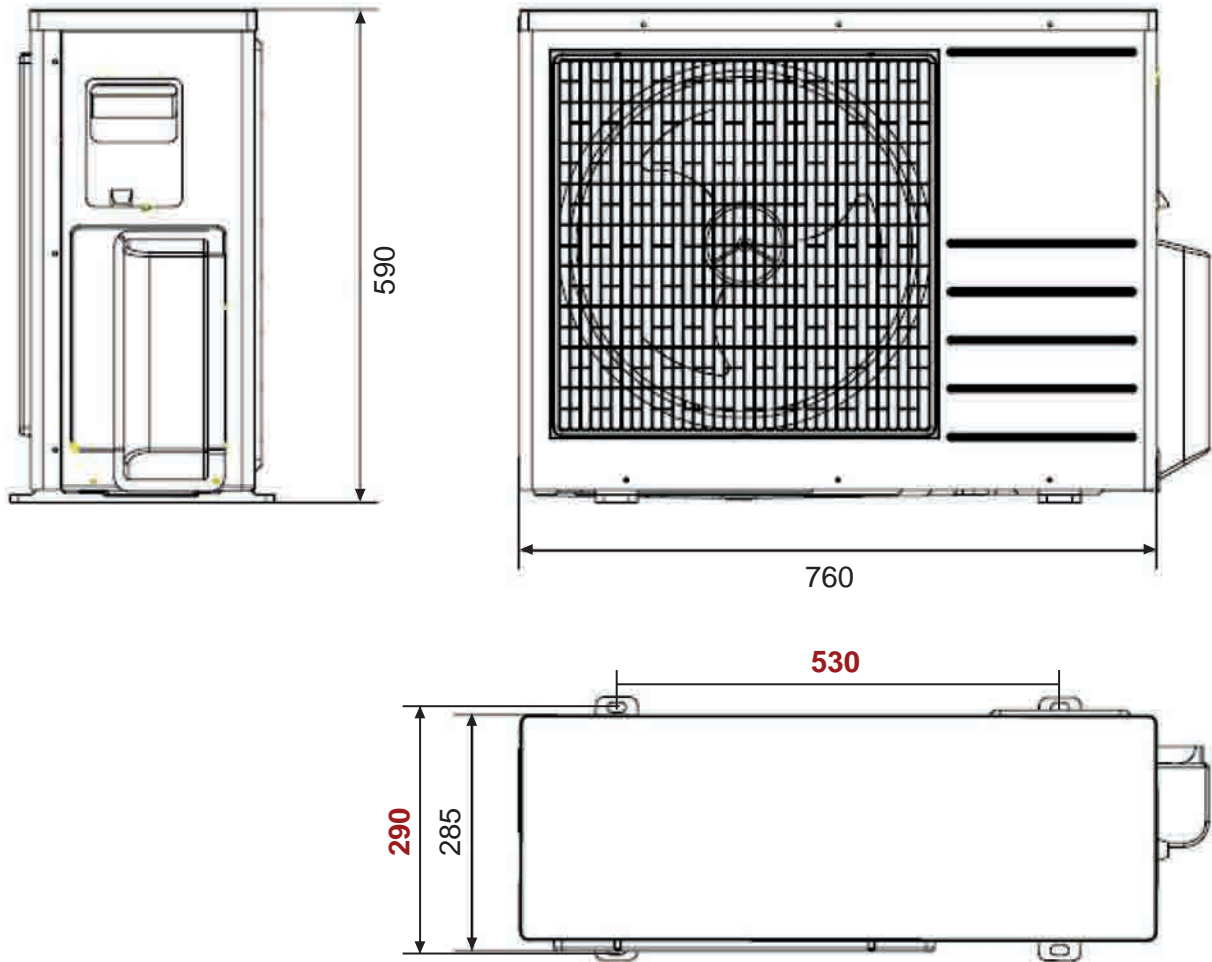
3.1.7 Technical Specifications of HCKU 1066 Outdoor Unit X4 (Poker)

Model name		HCKU 1066 X4	
Power supply		V-Ph-Hz	220~240-1-50
Cooling	Capacity	kW	10.60 (1.27 ~ 14.59)
	Power input	W	3.350 (0.55 ~ 4.72)
	Running current	A	15.5
Heating	Capacity	kW	11.70 (1.59 ~ 16.03)
	Power input	kW	3.245 (0.61 ~ 4.81)
	Running current	A	15.2
EER/COP		See Tables of combinations between Indoor Units	
Max. power input		W	4900
Starting current		A	22.5
Compressor Motor	Model		TNB306FPGM
	Type		DC Inverter Double Rotary type
	Brand		Mitsubishi
	Capacity	kW	9.86
	Power input	W	3080
	Rated current (RLA)	A	13.5
	Temperature protection		Indoor
	Oil type	ml	FV50S, 870ml
Indoor fan motor	Model		YDK250-6C
	Supplier		Welling
	Capacity	W	320/240
	Condenser	μ F	10 μ F
	Fan speed	rpm	760/620
Outdoor heat exchanger	Number of rows		2
	Tube pitch x row pitch	mm	22 x 19
	Fin spacing	mm	1.5
	Fin type		Treated aluminium
	Tube outside dia. & type	mm	\varnothing 8 Inner grooved tubing
	Dimensions (W x H x D)	mm	954 x 902 x 38
	Number of circuits		4
Indoor air flow		m ³ /h	5800
Sound level (sound pressure) at 1m		dB(A)	61
Outdoor Unit	Dimensions (W x H x D)	mm	990 x 966 x 396
	Packaging (W x H x D)	mm	1120 x 1100 x 435
	Net / Gross weight	kg	86/90
Refrigerant circuit	Refrigerant type		R410A
	Refrigerant precharge	g	2700
Refrigerant control		Electronic expansion valves (EXV) + Capillary tubes	
Running pressure		MPa	4.2/2.5
Refrigerant pipings	Liquid side, Gas side	mm(inches)	4 x \varnothing 6.35(1/4"), 4 x \varnothing 9.52(3/8")
	Max. splitting distance I/O	m	15 + 15 + 15 + 15
	Max. splitting level diff. U.I.-U.E.	m	10
	Max. splitting level diff. U.I.-U.I.	m	5
	Max. splitting distance with Refrig. precharge	m	5 + 5 + 5 + 5
	Additional refrigerant precharge	g/m	15 (for Liquid side piping \varnothing 6.35(1/4"))
	Refrigerant accessories		Diameter adapters (4 pieces): \varnothing 3/8" \varnothing 1/2"
Wiring cables	Power lines & Signal lines	Core nb. x Size	Outdoor Unit: 3 x 4.0mm ² For every U.I.: 4 x 1.5mm ² (plug cable, 6m long)
Outdoor temperature ranges		°C	Cooling: 0°C ~ 50°C. Heating: -15° ~ +24°C

3.2 Dimensions of Multi Liberty DC Inverter Outdoor Units

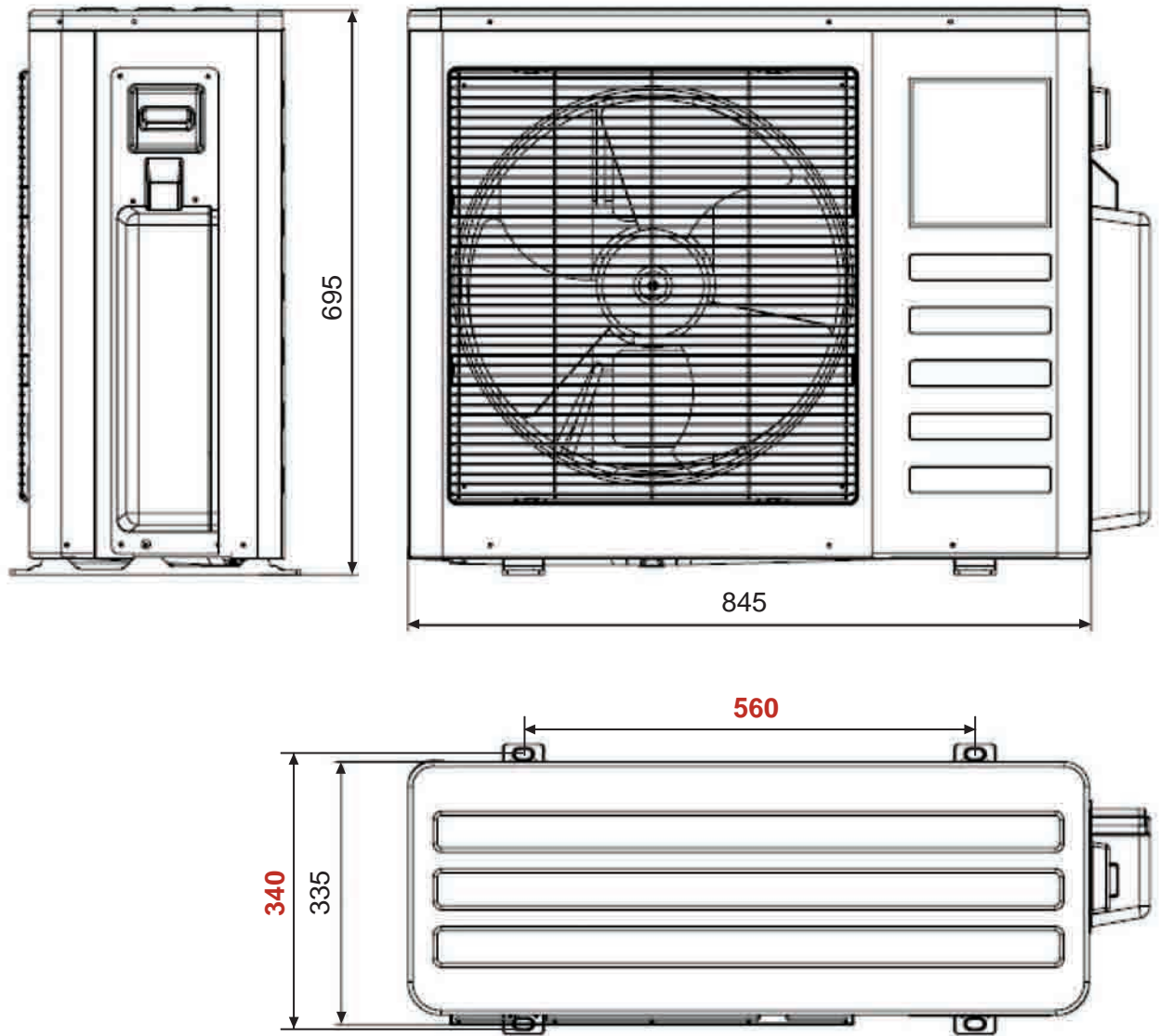
■ HCKU 406 Outdoor Unit X2

Unit: mm



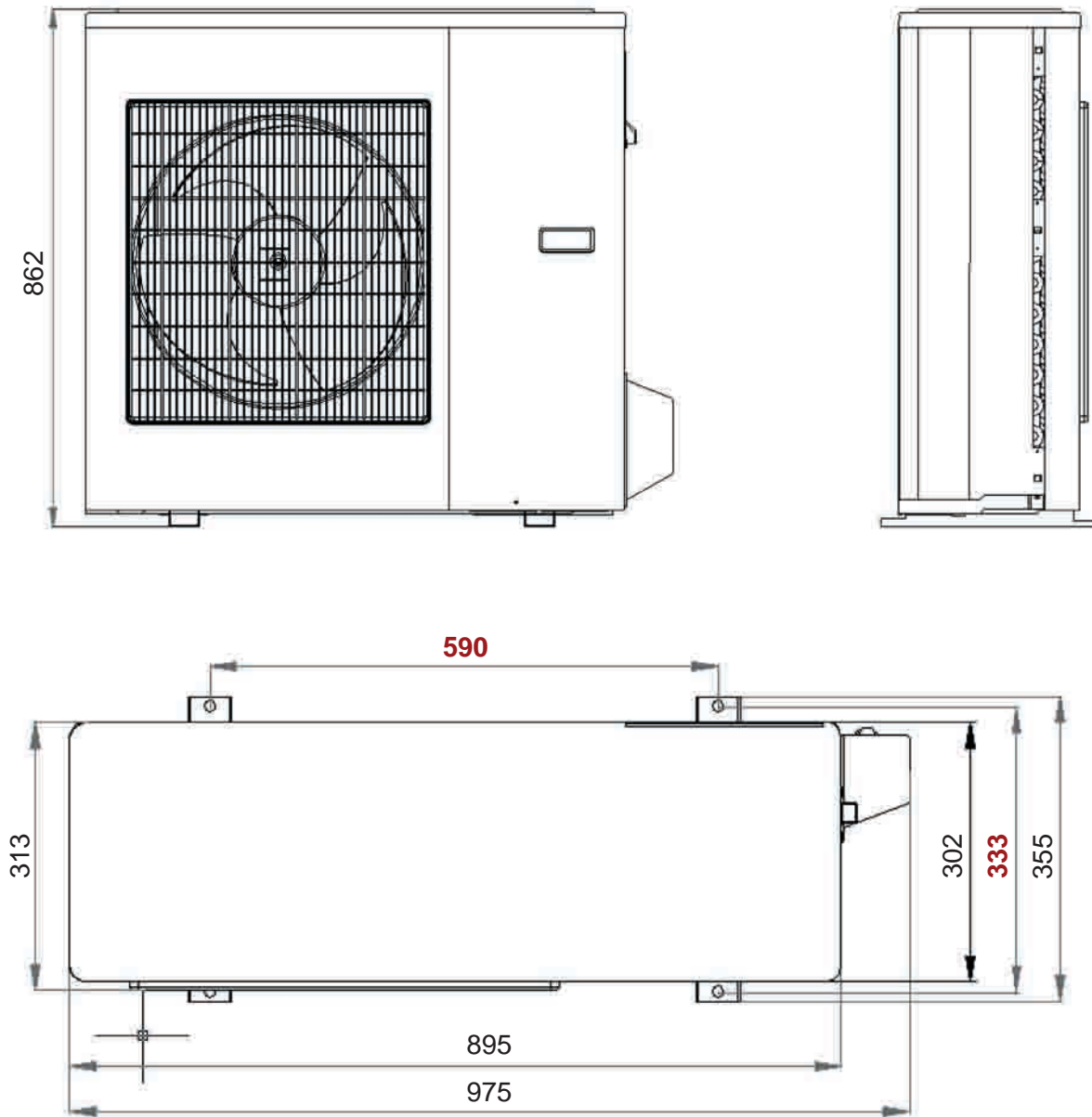
■ HCKU 536 X2, HCKU 606 X3, HCKU 806 X3, HCKU 706 Outdoor Units X4

Unit: mm



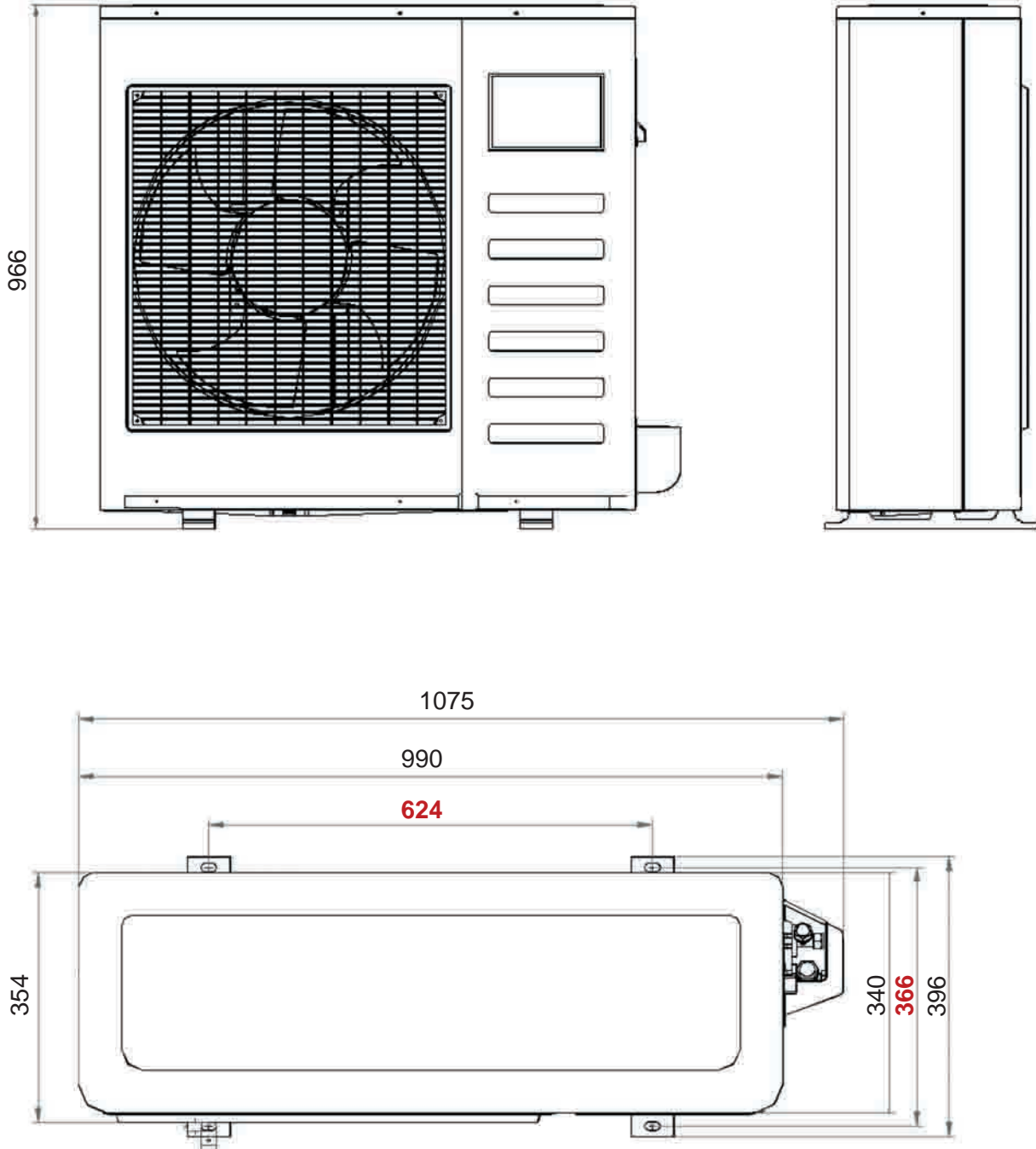
■ HCKU 816 Outdoor Unit X4

Unit: mm



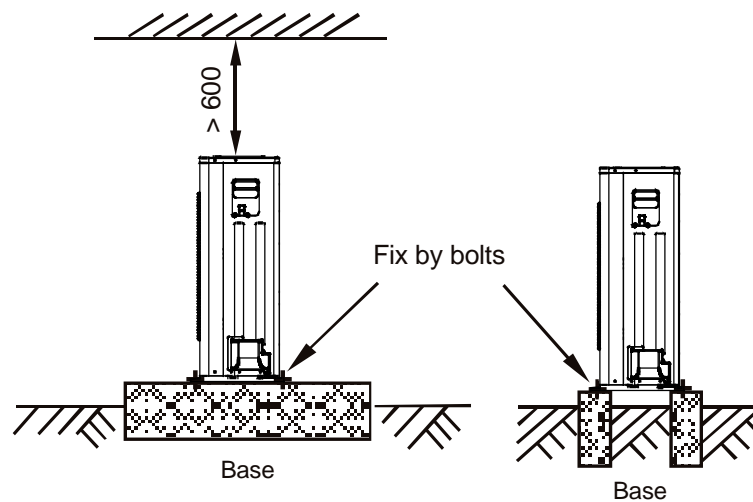
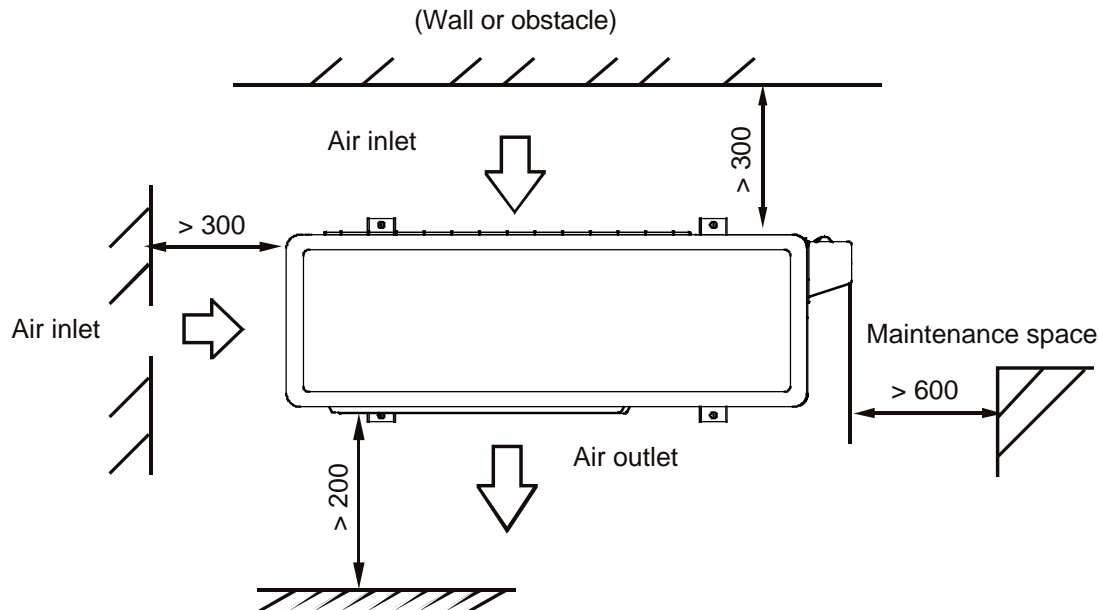
■ HCKU 1066 Outdoor Unit X4

Unit: mm



3.3 Installation & Service spaces for Multi Liberty DC Inverter Outdoor Units

Unit: mm

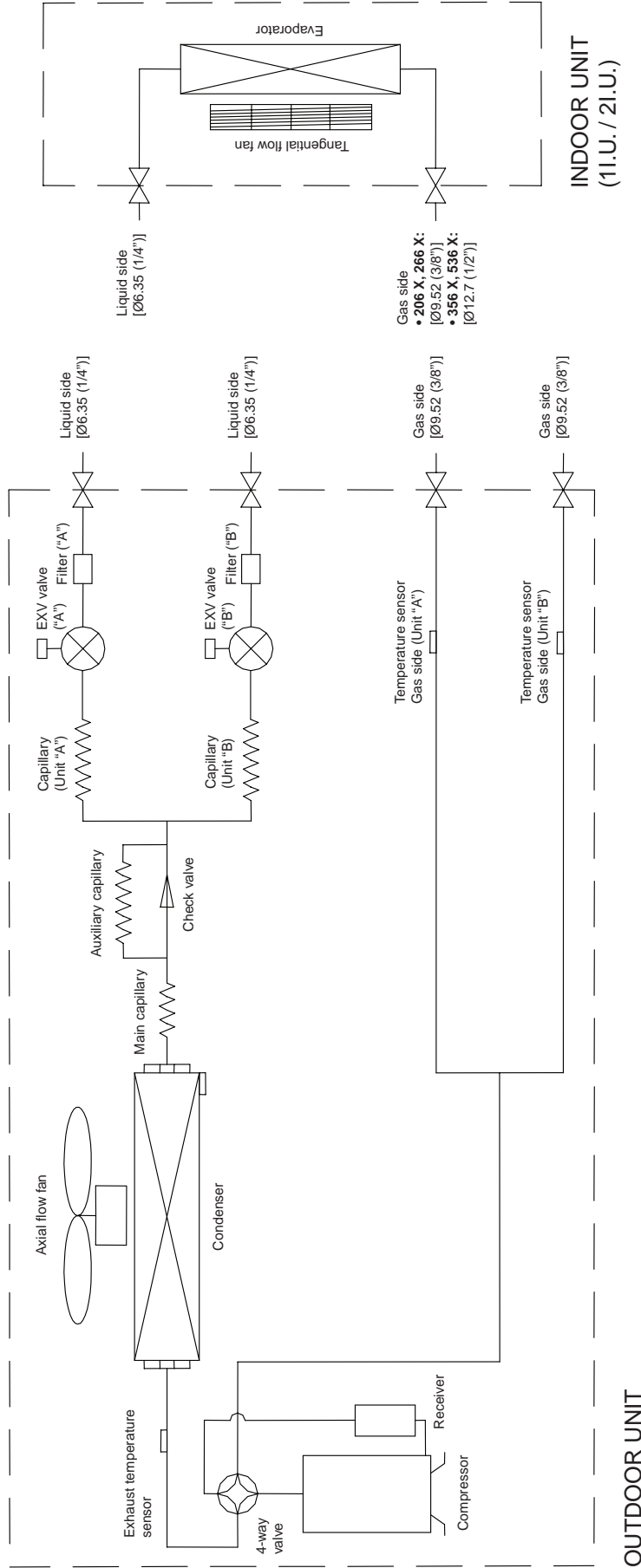


Notes:

- 1) Make sure that concrete base's height may assure a suitable length for anchor bolts' fitting in the base itself.
- 2) In case the base has been arranged before Outdoor Unit's delivery, take care to observe the recommended distances (see Outdoor Units' drawings in the previous pages) between the holes on Outdoor Unit's bearing feet, where anchor bolts must be fixed.
- 3) Fit in anchor bolts in concrete base according to sufficient depth, to assure a steady fixing of Unit.
- 4) Outdoor Unit must be installed in perfectly horizontally position, or its eventual slope as regards level surface must be not higher than 3°.

3.4 Refrigerant piping diagrams for Multi Liberty DC Inverter systems

■ Combinations with HCKU 406 X2, HCKU 536 X2 Outdoor Units



Note:

For refrigerant connection of 356 X and 536 X Indoor Units, it is needed a diameter adapter Ø9.52 (3/8") Ø12.7 (1/2") on Outdoor Unit's Gas side. With each Outdoor Unit, 1 adapter (HCKU 406 X2) or 2 adapters (HCKU 536 X2) are provided. Each adapter must be connected (Flare connection) to Outdoor Unit's service valve on one side and to Gas side piping (always with Flare connection) directed to Indoor Unit on the other side.

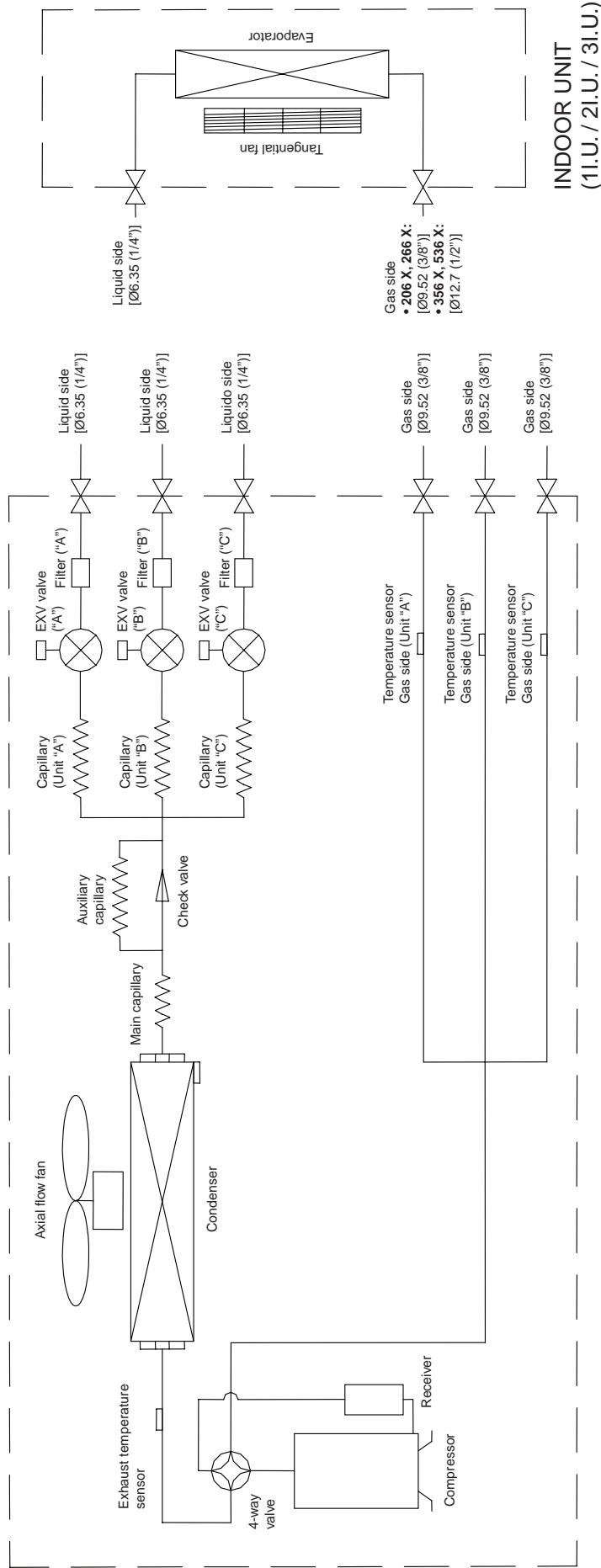
Adapter



Gas side, Outdoor Unit
[(Ø9.52 (3/8"))]

To Gas side piping, Indoor Unit: [(Ø12.7 mm (1/2"))].
Except 206 X, 266 X [(Ø9.52mm (3/8"))].

■ Combinations with HCKU 606 X3, HCKU 806 Outdoor Units X3



Note:

For refrigerant connection of 356 X and 536 X Indoor Units, it is needed a diameter adapter Ø9.52 (3/8") Ø12.7 (1/2") on Outdoor Unit's Gas side. With each Outdoor Unit HCKU 606 X3, HCKU 806 X3, 2 adapters are provided. Each adapter must be connected (Flare connection) to Outdoor Unit's service valve on one side, and on the other side (always with Flare connection) to Gas side piping directed to Indoor Unit.

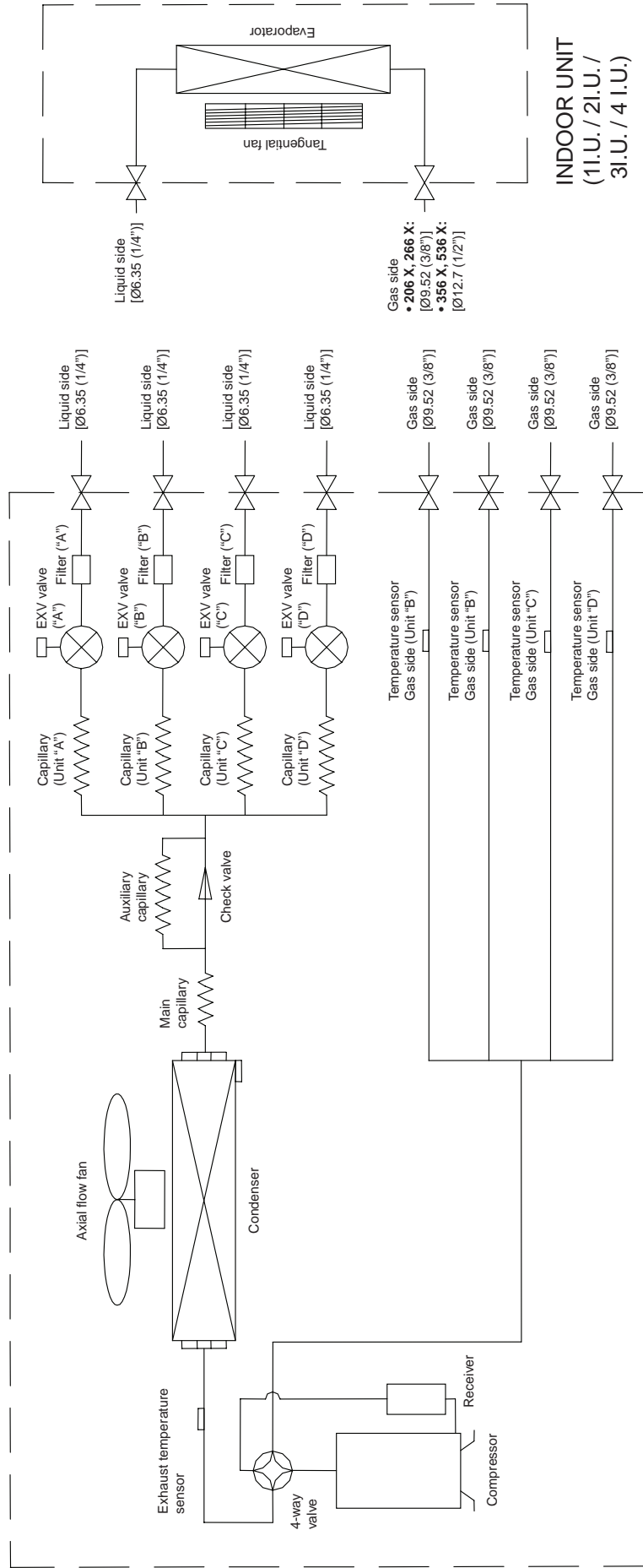
Adapter



Gas side, Outdoor Unit
[Ø9.52 (3/8")]

To Gas side piping, Indoor Unit: [Ø12.7mm (1/2")].
Except 206 X, 266 X [Ø9.52mm (3/8")].

■ Combinations with HCKU 706 X4, HCKU 816 X4, HCKU 1066 X4 Outdoor Units



Note:

For refrigerant connection of 356 X and 536 X Indoor Units, it is needed a diameter adapter Ø9.52 (3/8") Ø12.7 (1/2") on Outdoor Unit's Gas side. With each Outdoor Unit, 3 adapters (HCKU 706 X4, HCKU 816 X4) or 4 adapters (HCKU 1066 X4) are provided. Each adapter must be connected (Flare connection) on Outdoor Unit's service valve on one side, and on the other side (always with Flare connection) to Gas side piping directed to Indoor Unit.

Adapter

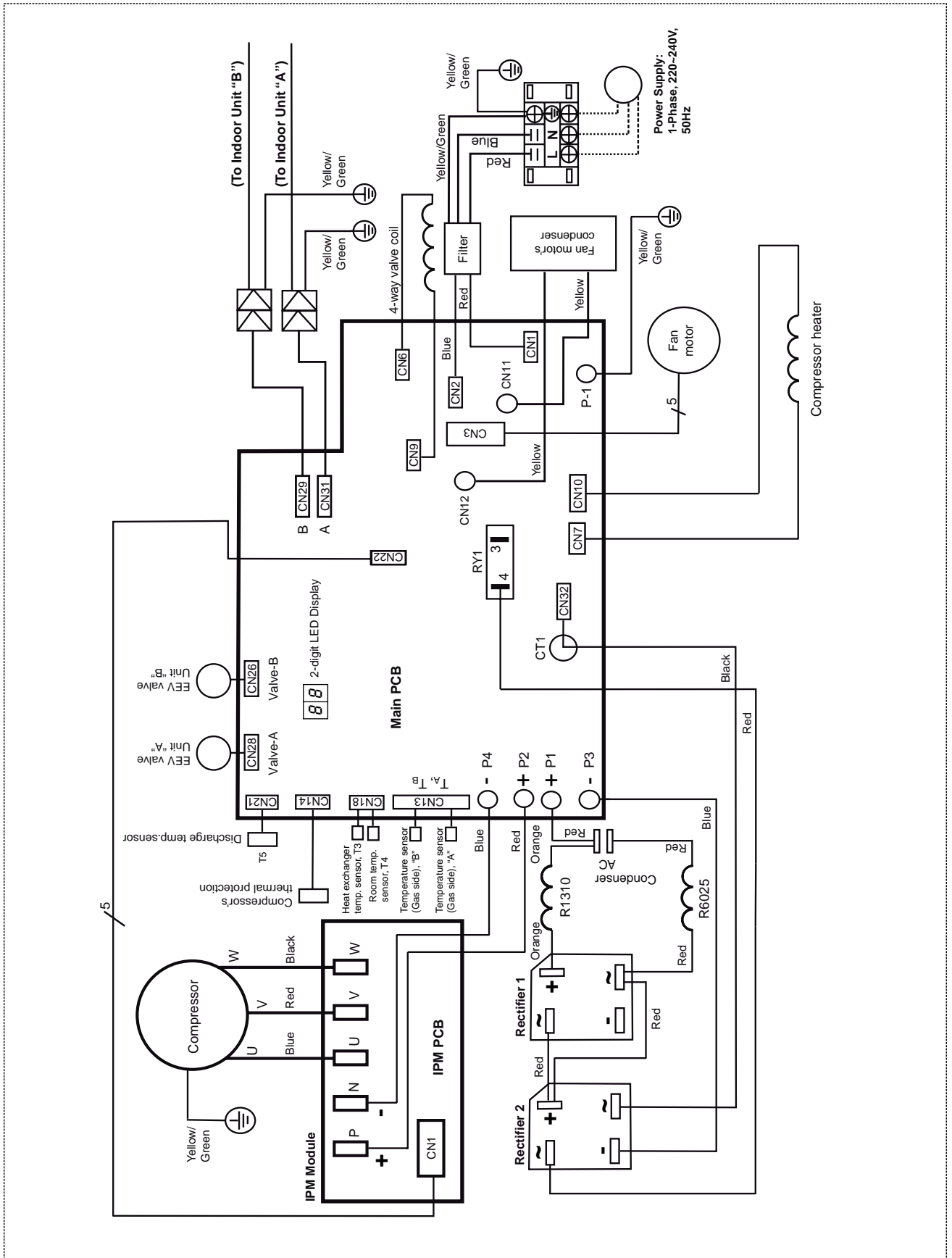


Gas side, Outdoor Unit
[(Ø9.52 (3/8"))]

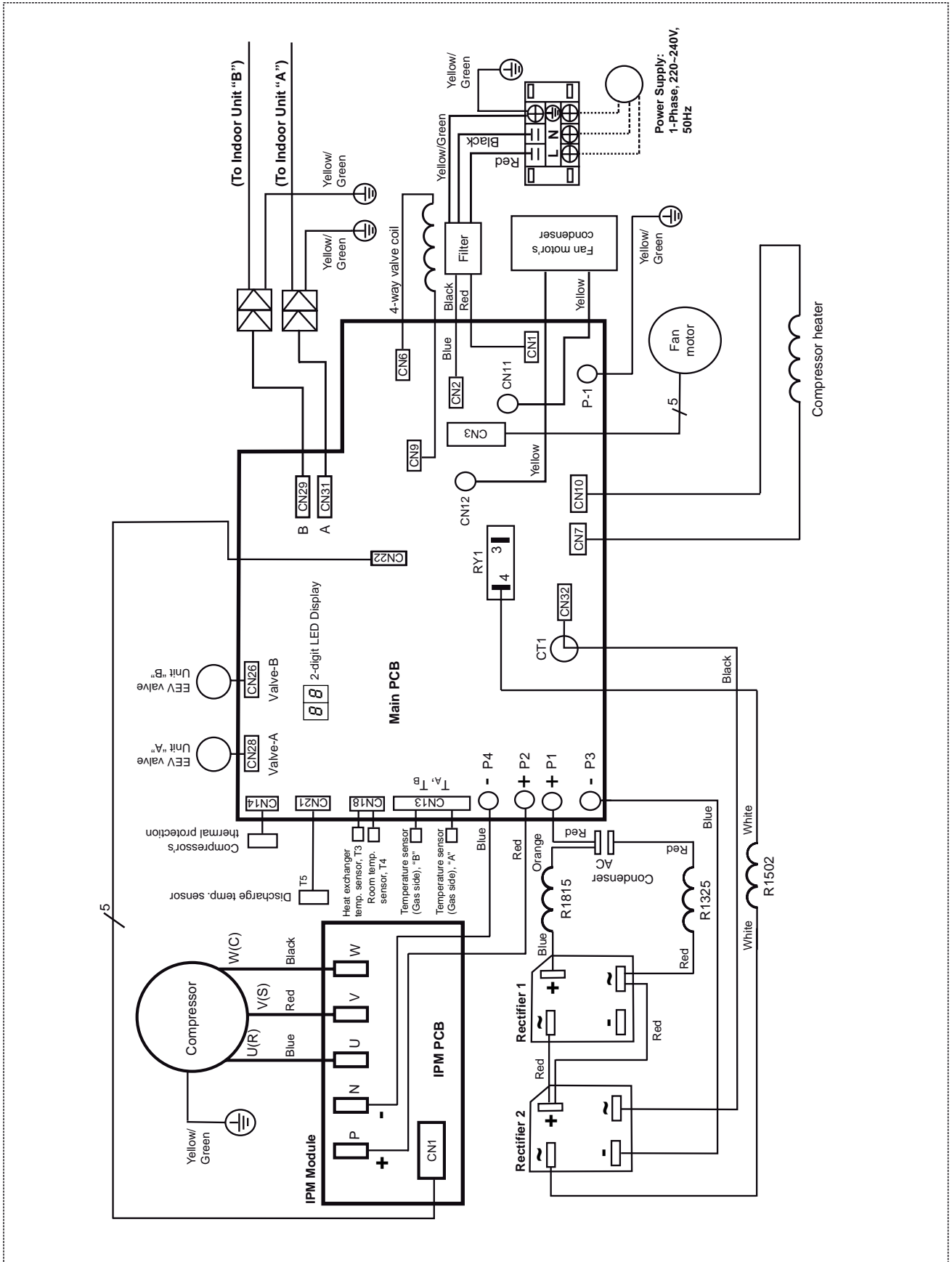
To Gas side piping, Indoor Unit: [(Ø12.7mm (1/2"))].
Except 206 X, 266 X [(Ø9.52mm (3/8"))].

3.5. Wiring Diagrams of Multi Liberty DC Inverter Outdoor Units

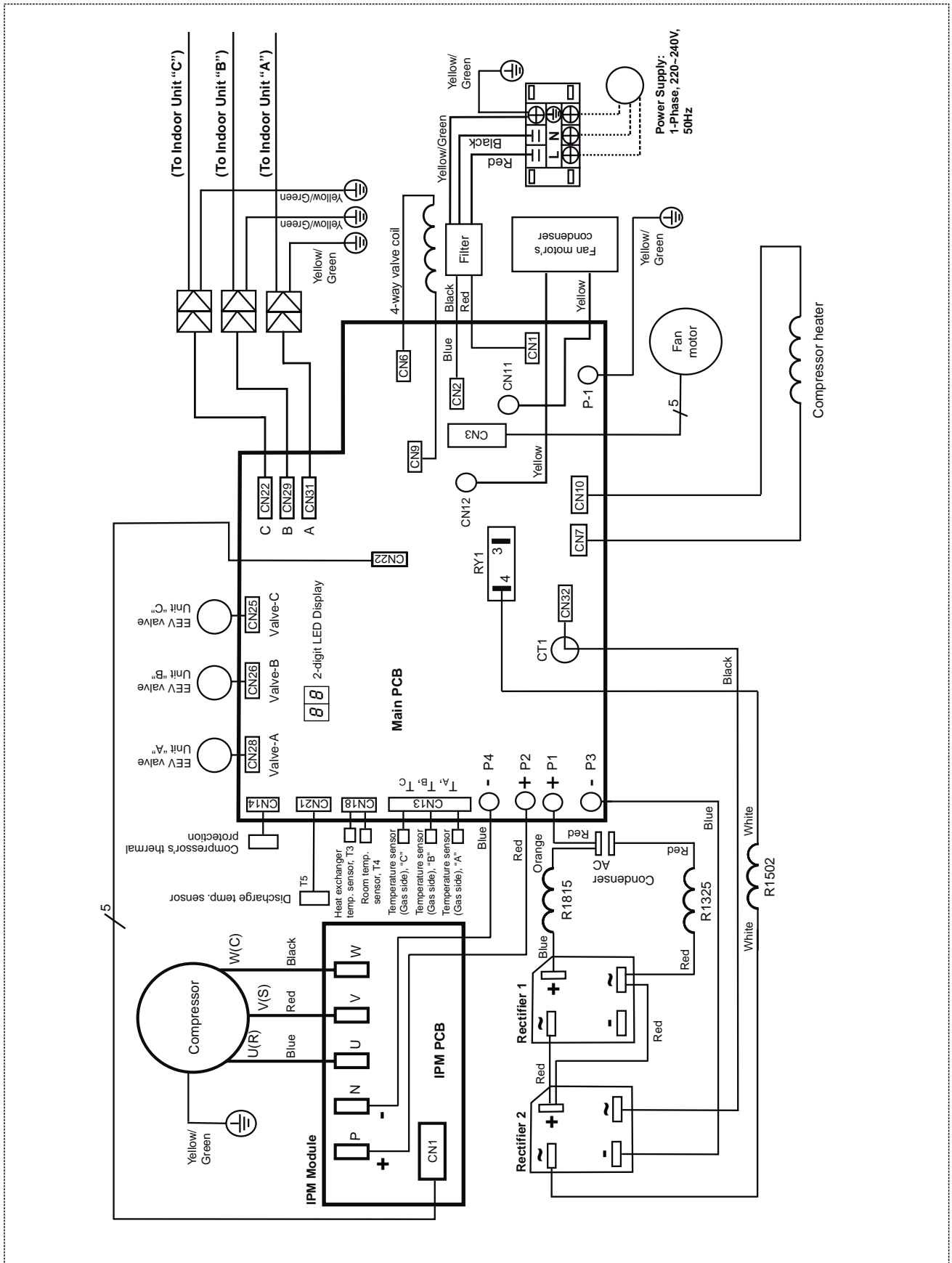
■ HCKU 406 X2 Outdoor Unit



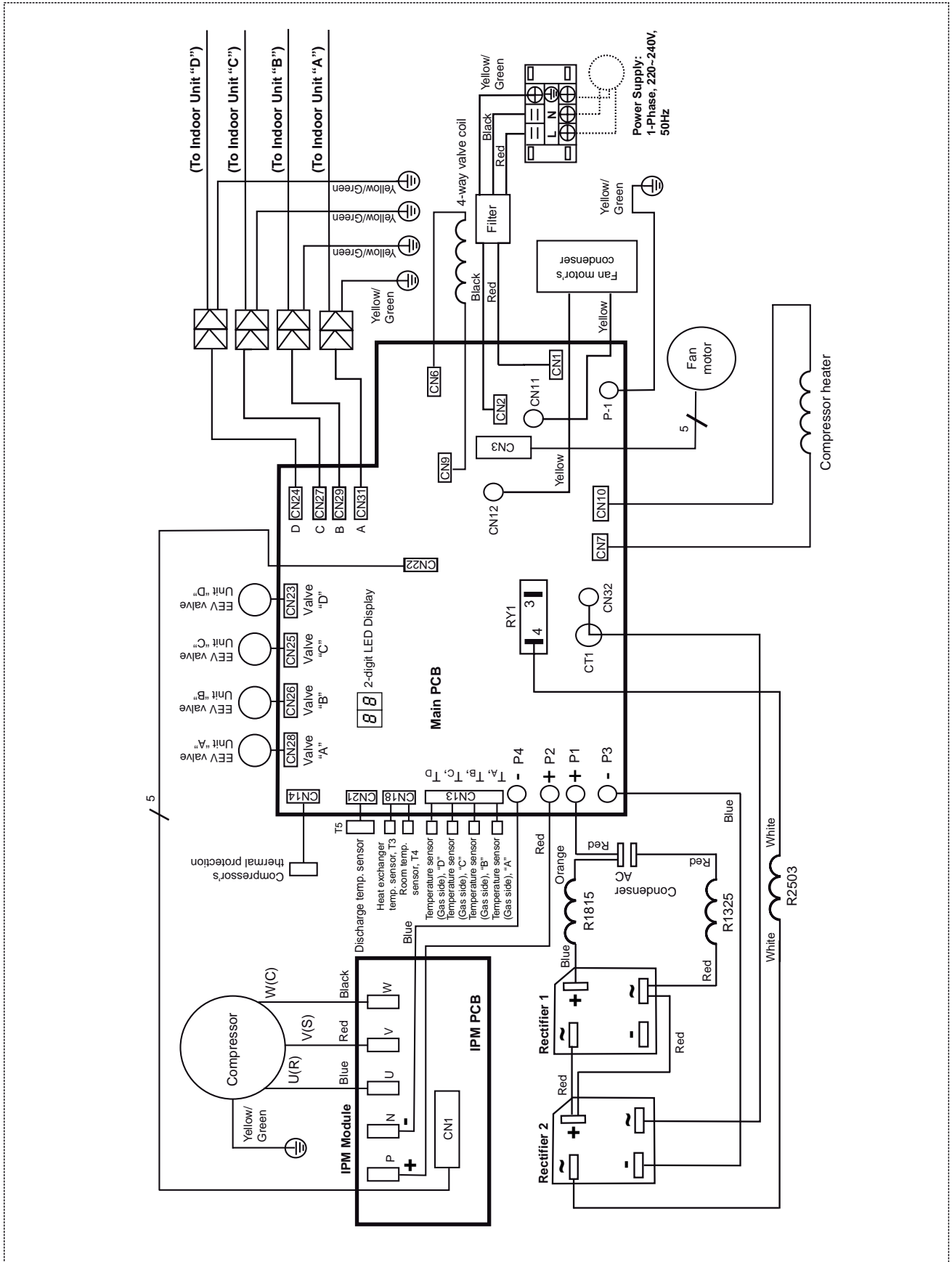
■ HCKU 536 Outdoor Unit X2



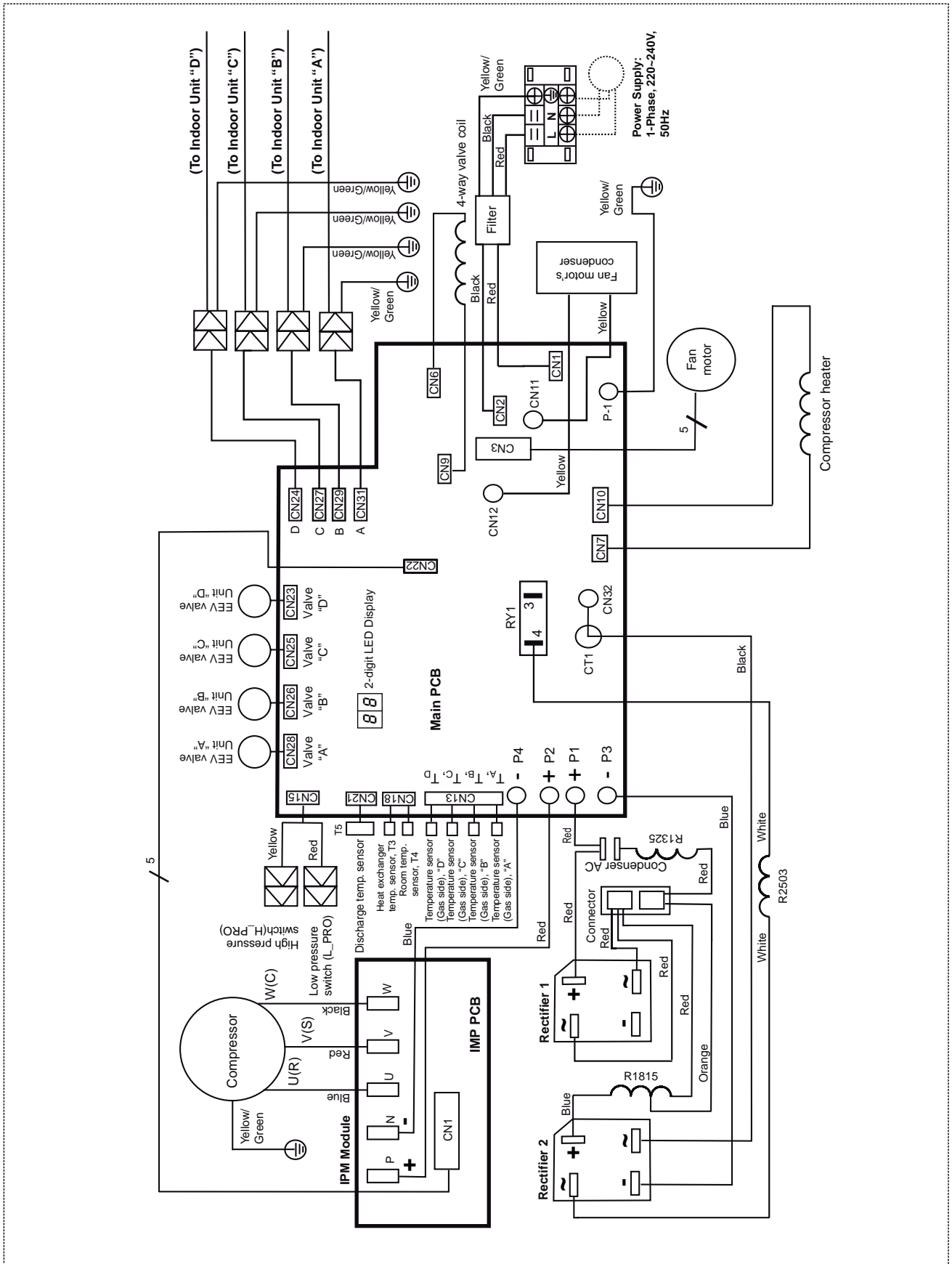
■ HCKU 606 Outdoor Unit X3



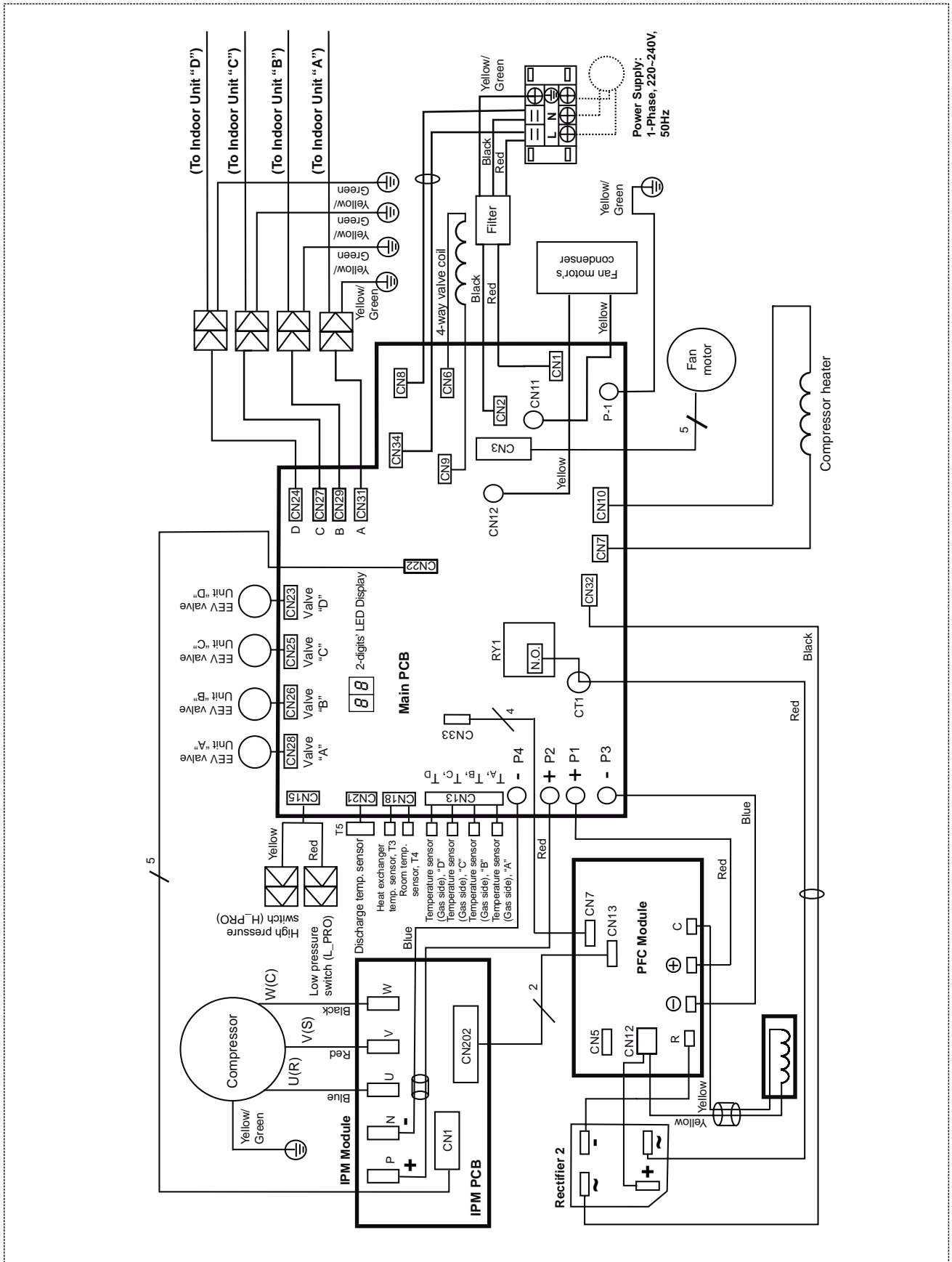
■ HCKU 706 Outdoor Unit X4



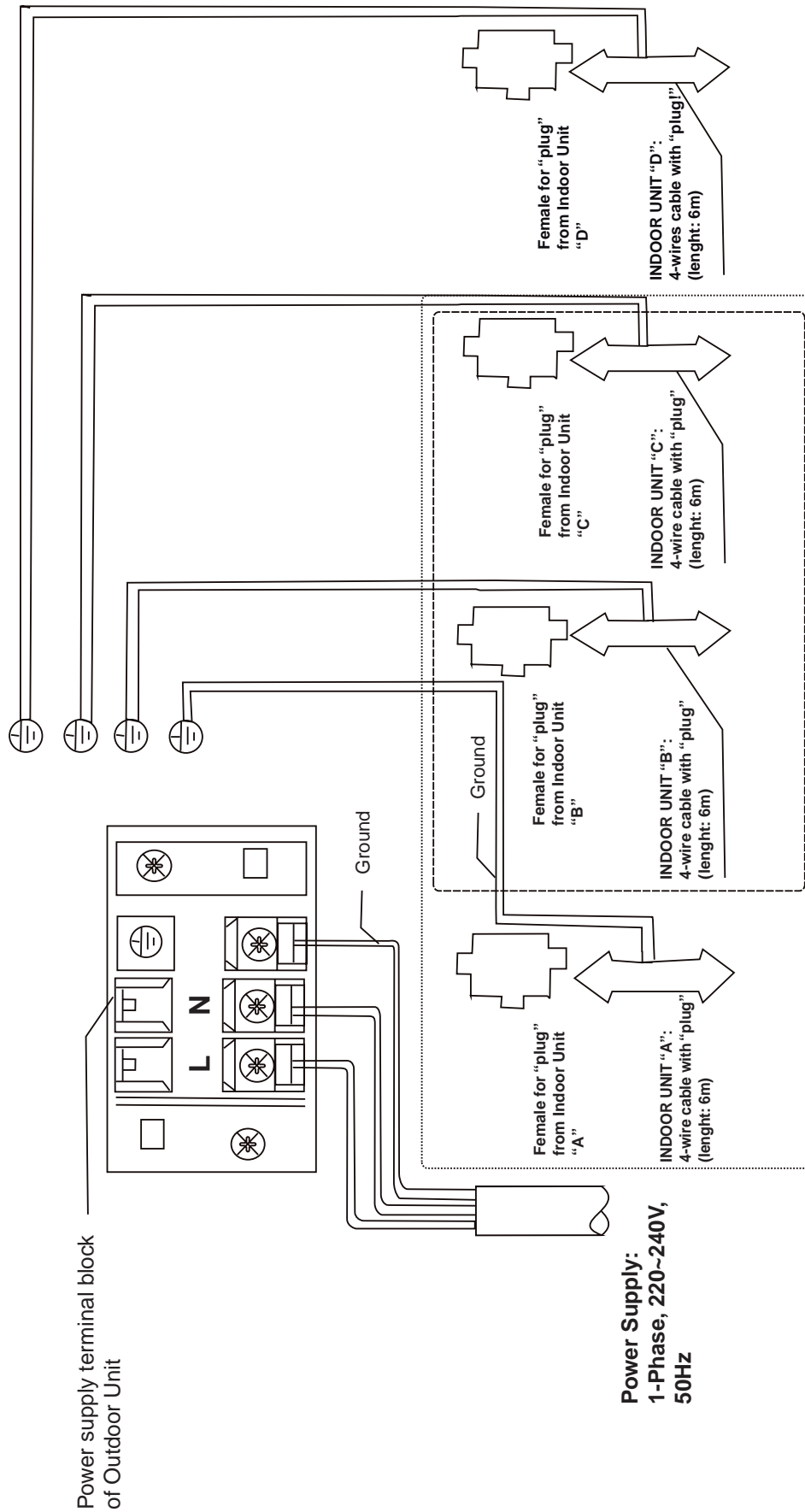
■ HCKU 816 Outdoor Unit X4



■ HCKU 1066 Outdoor Unit X4

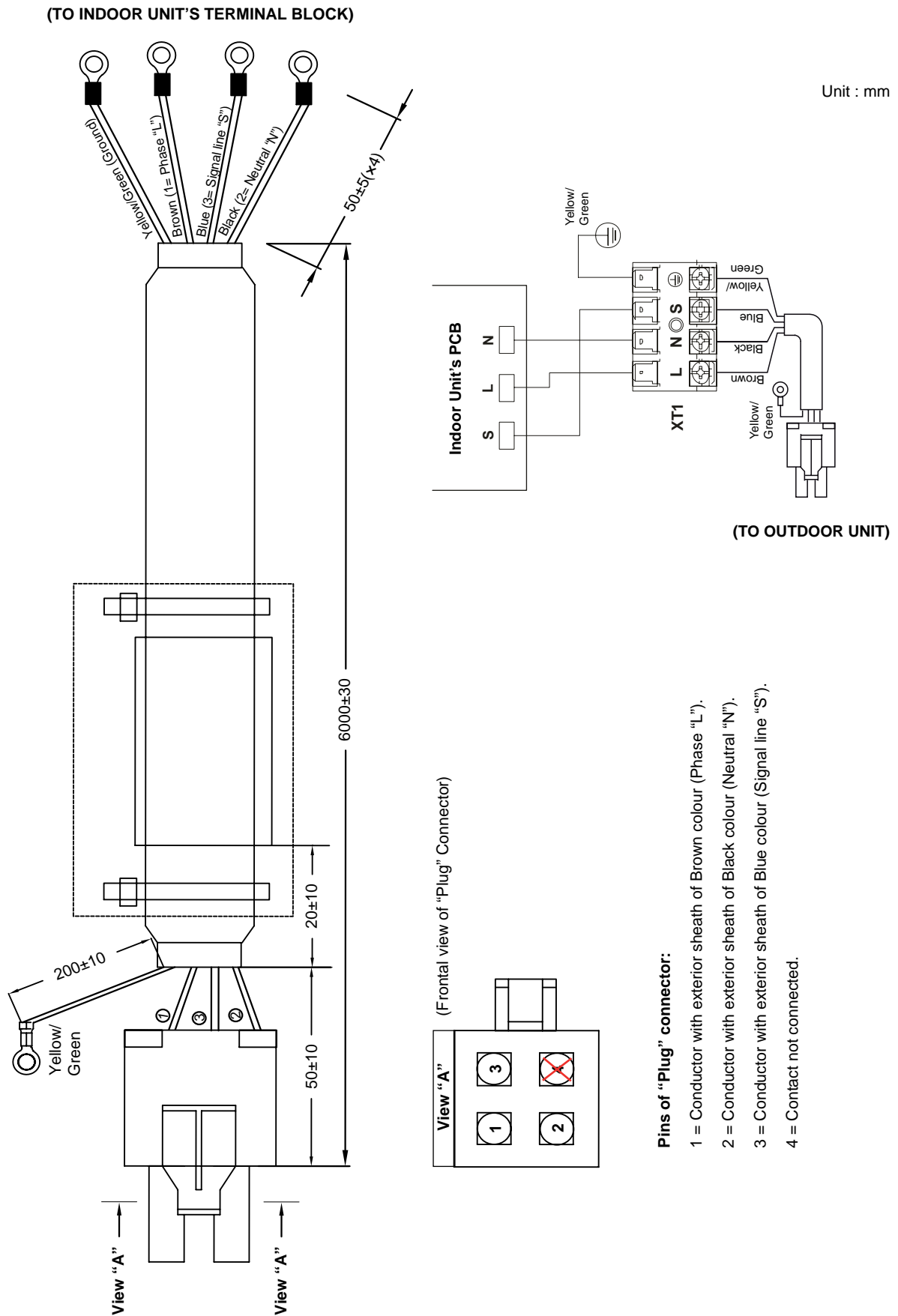


■ **Wiring Diagram between Indoor Units and Outdoor Units Multi Liberty DC Inverter**
(By dedicated connectors (Units "A", "B", "C", "D") for "Plug", on Outdoor Unit)



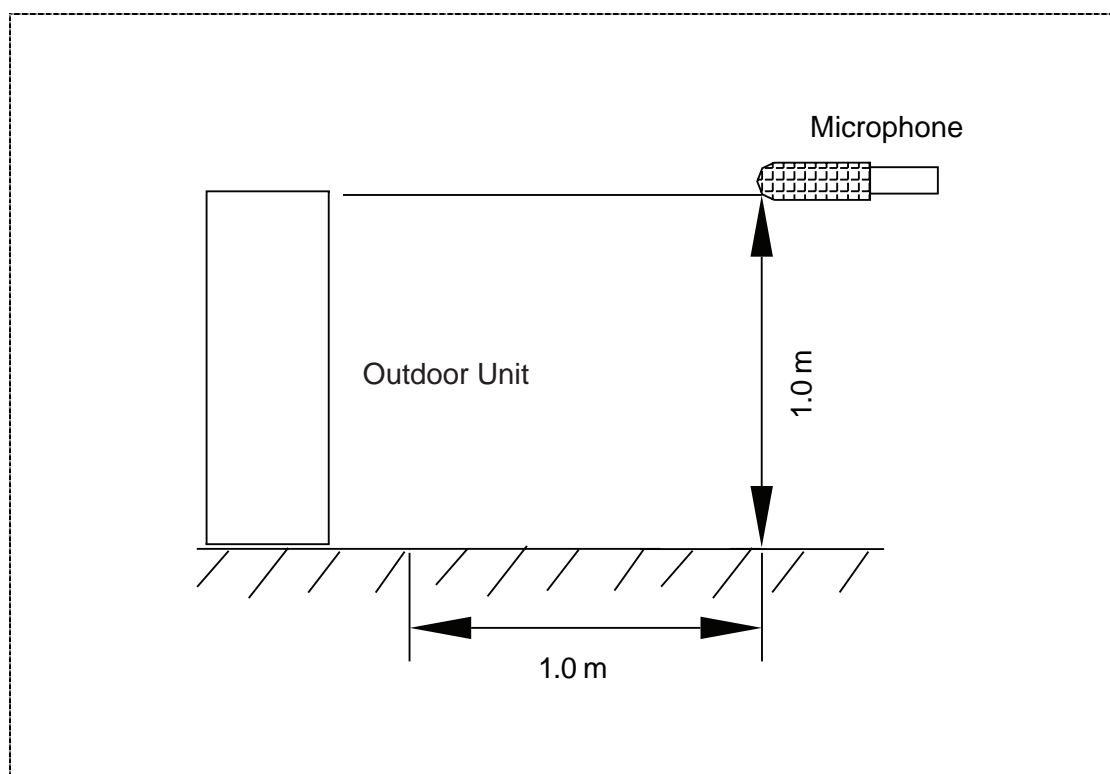
Note: The wiring above refers to HCKU 706 Outdoor Unit X4 (4 Indoor Units can be connected).

■ “Plug” cable for Connection between per Indoor U. and Outdoor U. Multi Liberty DC Inverter
(By dedicated connectors (Units “A”, “B”, “C”, “D”) for “Plug”, on Outdoor Unit)



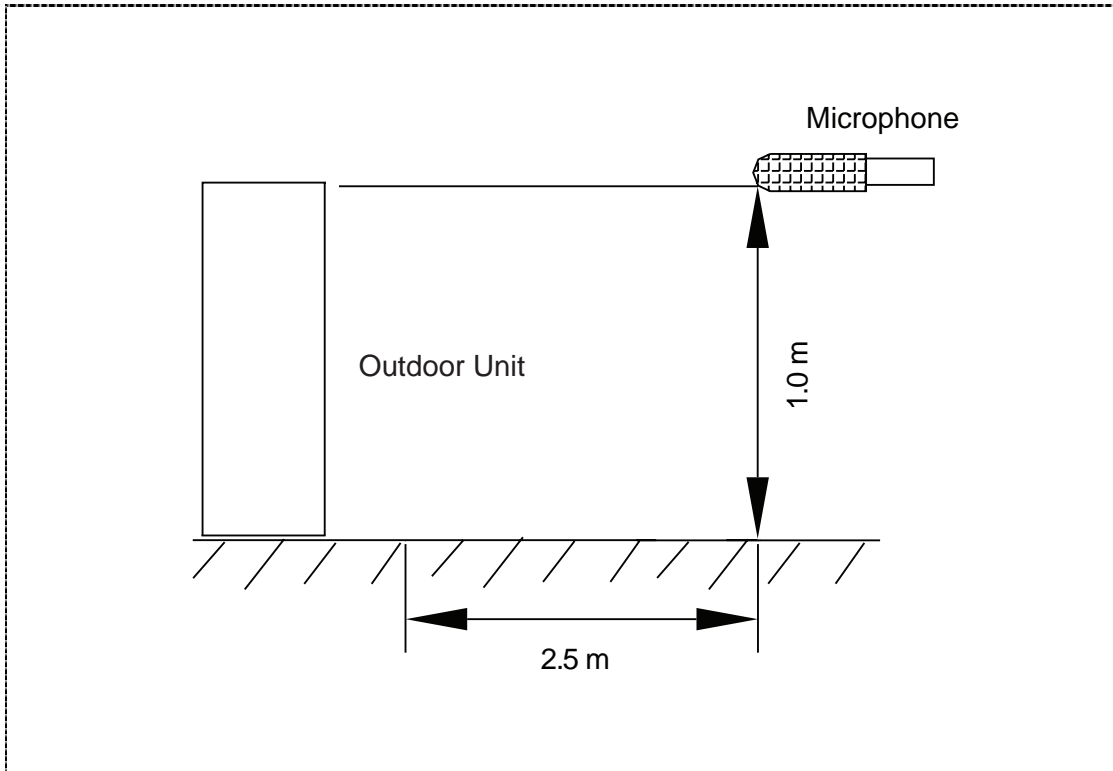
3.6 Noise level of Multi Liberty DC Inverter Outdoor Units

Measurement conditions: 1m in front of Outdoor Unit



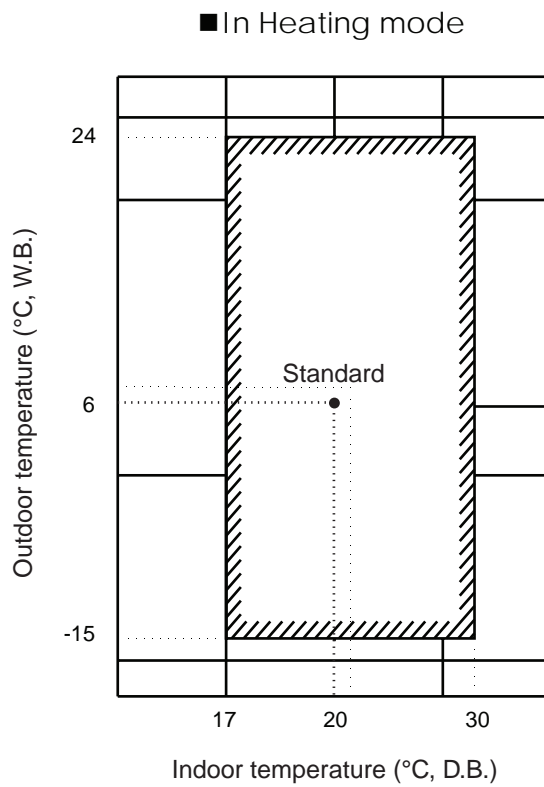
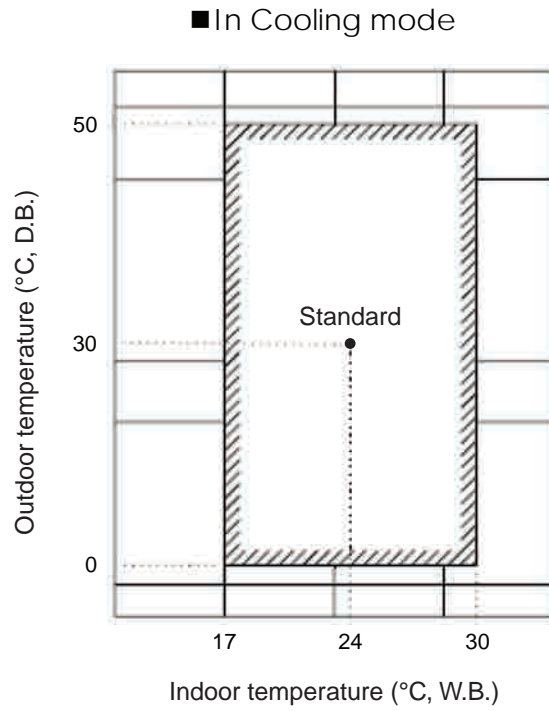
Models	Noise level at 1m, dB(A)
HCKU 406 X2	53
HCKU 536 X2	54
HCKU 606 X3	55
HCKU 806 X3	55
HCKU 706 X4	55
HCKU 816 X4	57
HCKU 1066 X4	61

Measurement conditions: 2.5m in front of Outdoor Unit



Models	Noise level at 2.5m, dB(A)
HCKU 406 X2	45
HCKU 536 X2	46
HCKU 606 X3	47
HCKU 806 X3	47
HCKU 706 X4	47
HCKU 816 X4	49
HCKU 1066 X4	53

3.7 Operating conditions of Multi Liberty DC Inverter systems

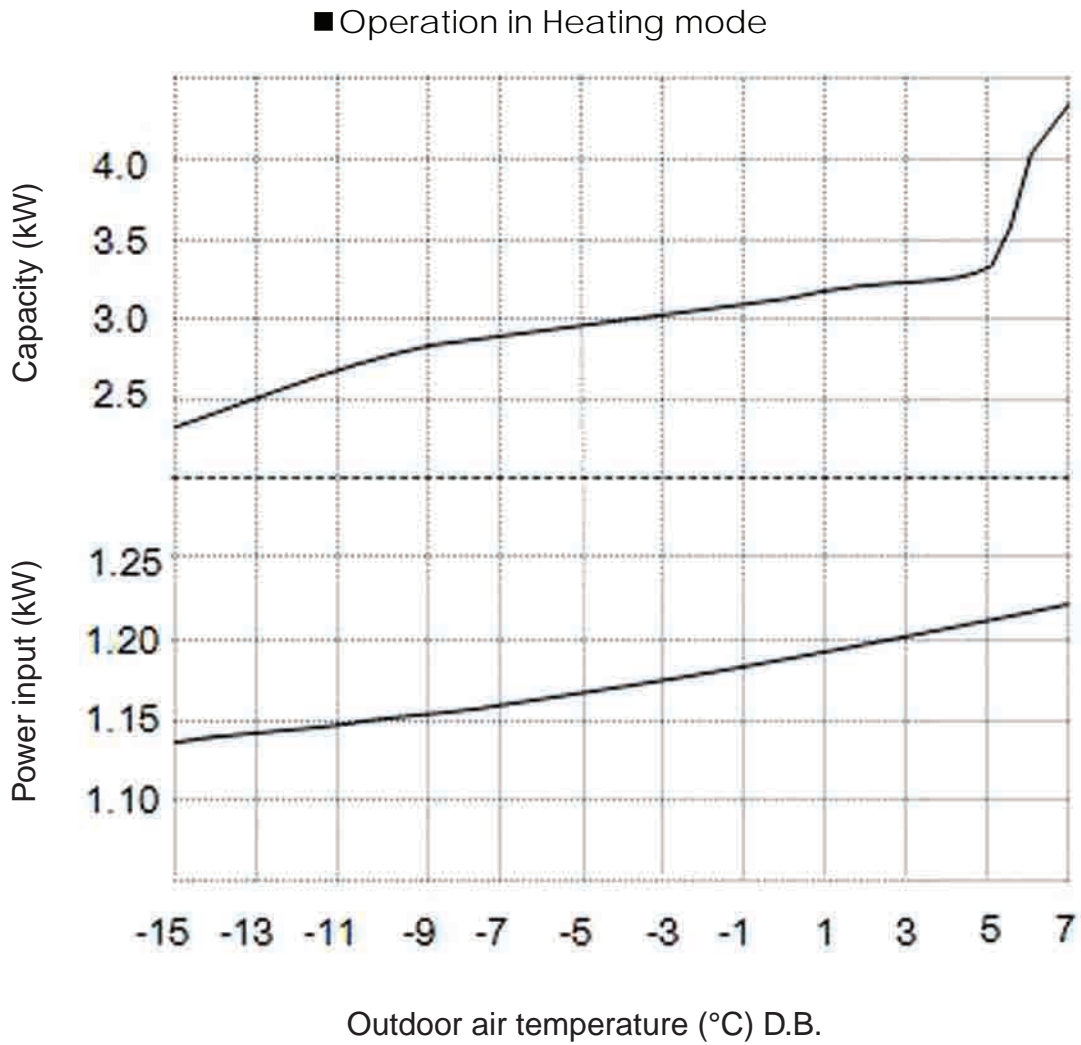


3.8 Capacity & Power Input in Heating mode of Multi Liberty DC Inverter Outdoor Units

Operation in Heating mode												
Models	Outdoor Temperature (°C)	Indoor temperature 20°C (D.B.)										
		12°C D.B. 11°C W.B.	7°C D.B. 6°C W.B.	4°C D.B. 3°C W.B.	0°C D.B. -1°C W.B.	-5°C D.B. -6°C W.B.	-7°C D.B. -8°C W.B.	-10°C D.B. -11°C W.B.	-15°C D.B. -16°C W.B.			
HCKU 406 X2	Capacity (kW)	5,24	4,57	3,74	3,21	2,73	2,29	1,98	1,36			
	Power Input (kW)	1,39	1,23	1,15	1,05	0,98	0,96	0,90	0,85			
HCKU 536 X2	Capacity (kW)	7,08	6,10	5,12	4,21	3,97	3,29	2,81	2,07			
	Power Input (kW)	1,89	1,61	1,55	1,44	1,35	1,32	1,25	1,20			
HCKU 606 X3	Capacity (kW)	7,55	6,70	5,73	4,85	4,25	3,57	3,03	2,16			
	Power Input (kW)	2,05	1,77	1,71	1,58	1,49	1,47	1,40	1,30			
HCKU 806 X3	Capacity (kW)	9,98	8,70	7,44	6,30	5,51	4,55	3,94	2,89			
	Power Input (kW)	2,73	2,30	2,25	2,08	1,96	1,86	1,77	1,69			
HCKU 706 X4	Capacity (kW)	8,92	7,60	6,25	5,18	4,57	3,89	3,35	2,29			
	Power Input (kW)	2,36	1,96	1,98	1,81	1,73	1,69	1,58	1,48			
HCKU 816 X4	Capacity (kW)	10,02	9,00	7,47	6,42	5,36	4,48	3,87	2,81			
	Power Input (kW)	2,68	2,43	2,24	2,10	2,00	1,93	1,85	1,76			
HCKU 1066 X4	Capacity (kW)	12,88	11,70	9,66	7,99	6,88	5,99	5,00	3,66			
	Power Input (kW)	3,82	3,25	3,18	2,97	2,84	2,70	2,57	2,47			

3.9 Capacity curve and power consumption of Multi Liberty DC Inverter Outdoor Units

□ Model: HCKU 406 Outdoor Unit X2



■ Test conditions:

Indoor temperature = 20°C (B.S.)

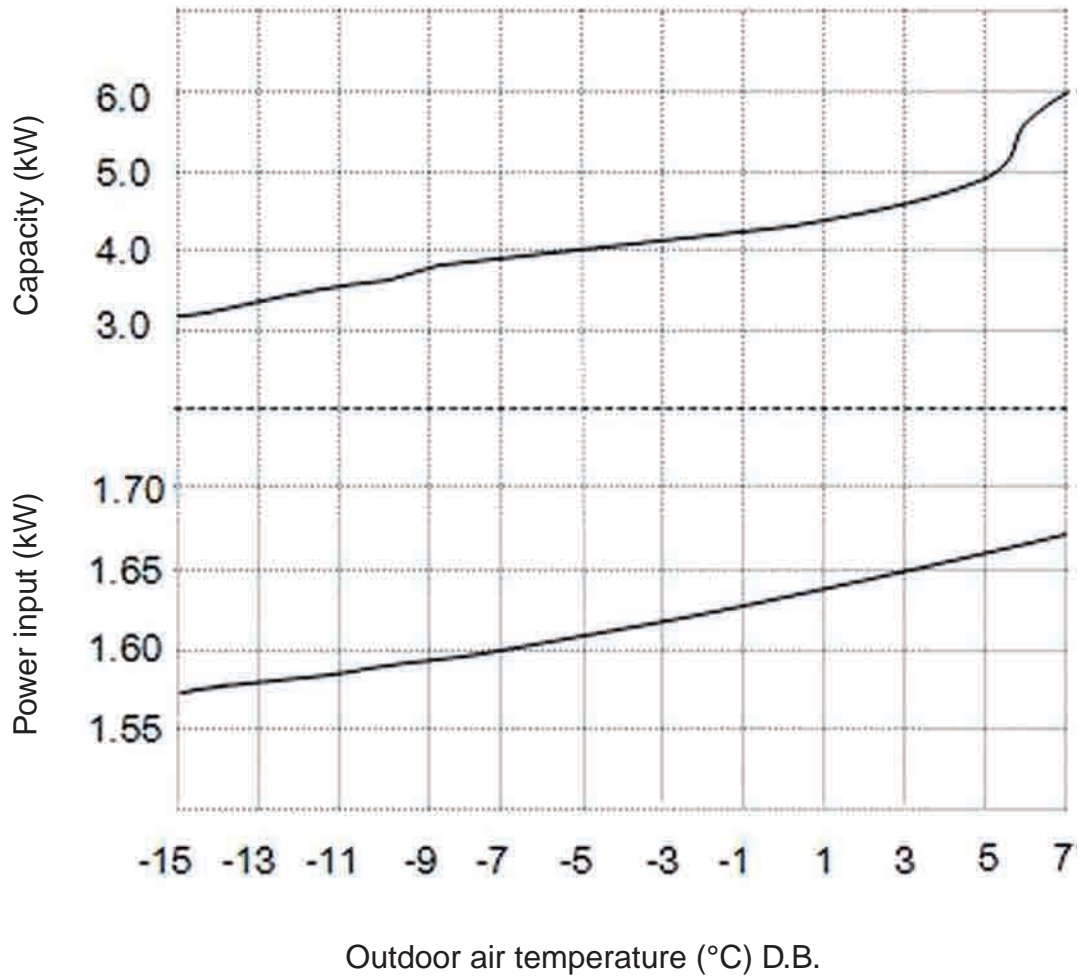
Number and capacity of connected Indoor Units = (2 x) 206X

Setting of indoor fan speed = "High"

Splitting distances = 5m + 5m

□ **Model: HCKU 536 Outdoor Unit X2**

■ **Operation in Heating mode**



■ **Test conditions:**

Indoor temperature = 20°C (D.B.)

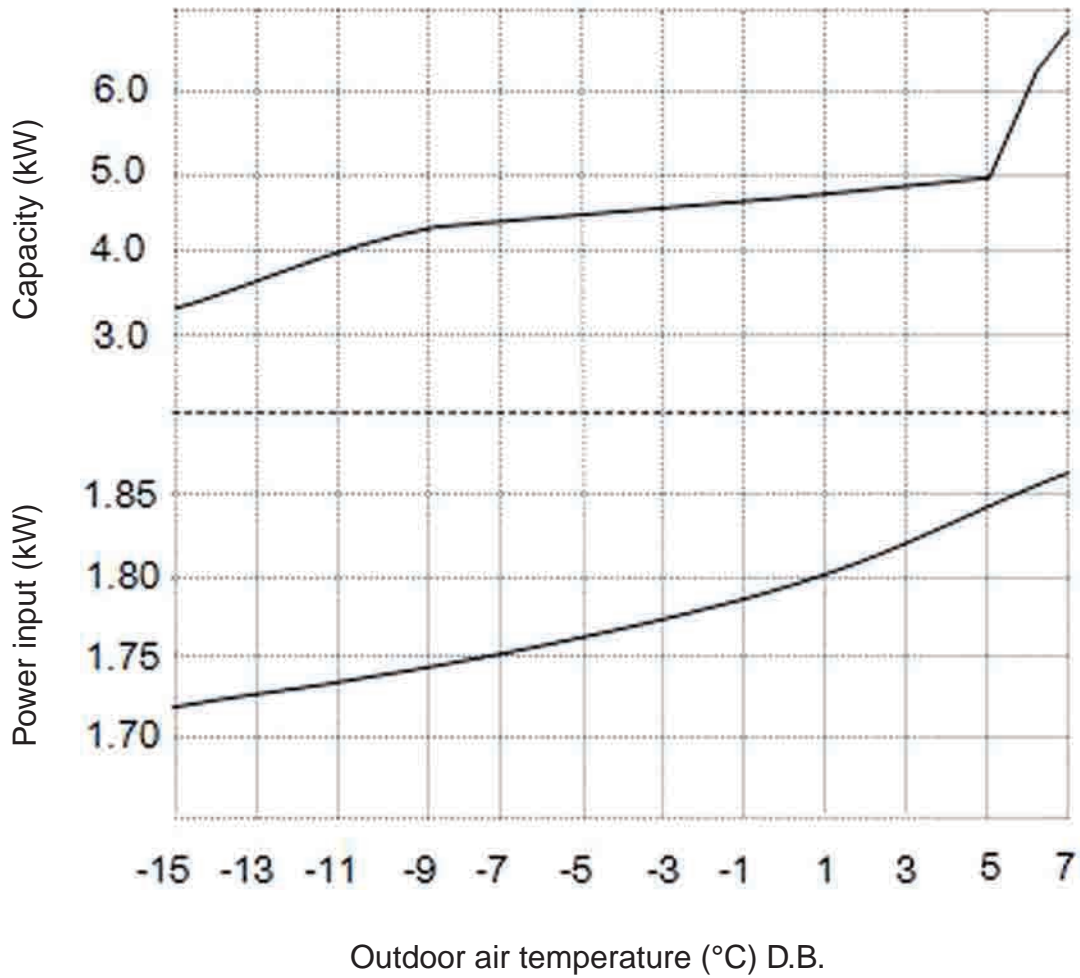
Number and capacity of connected Indoor Units = (2 x) 266X

Setting of indoor fan speed = "High"

Splitting distances = 5m + 5m

□ **Model: HCKU 606 Outdoor Unit X3**

■ **Operation in Heating mode**



■ **Test conditions:**

Indoor temperature = 20°C (D.B.)

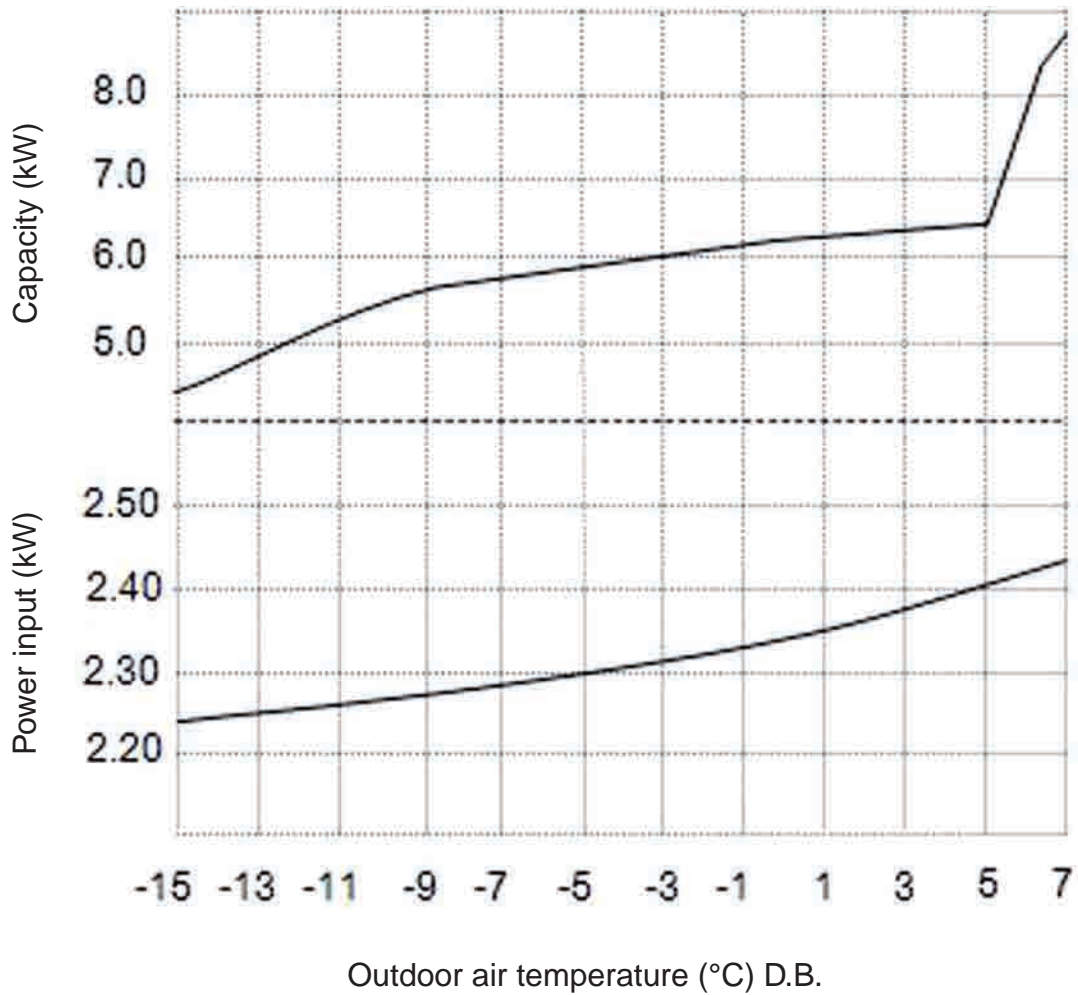
Number and capacity of connected Indoor Units = (3 x) 206X

Setting of indoor fan speed = "High"

Splitting distances = 5m + 5m + 5m

□ **Model: HCKU 806 Outdoor Unit X3**

■ **Operation in Heating mode**



■ **Test conditions:**

Indoor temperature = 20°C (D.B.)

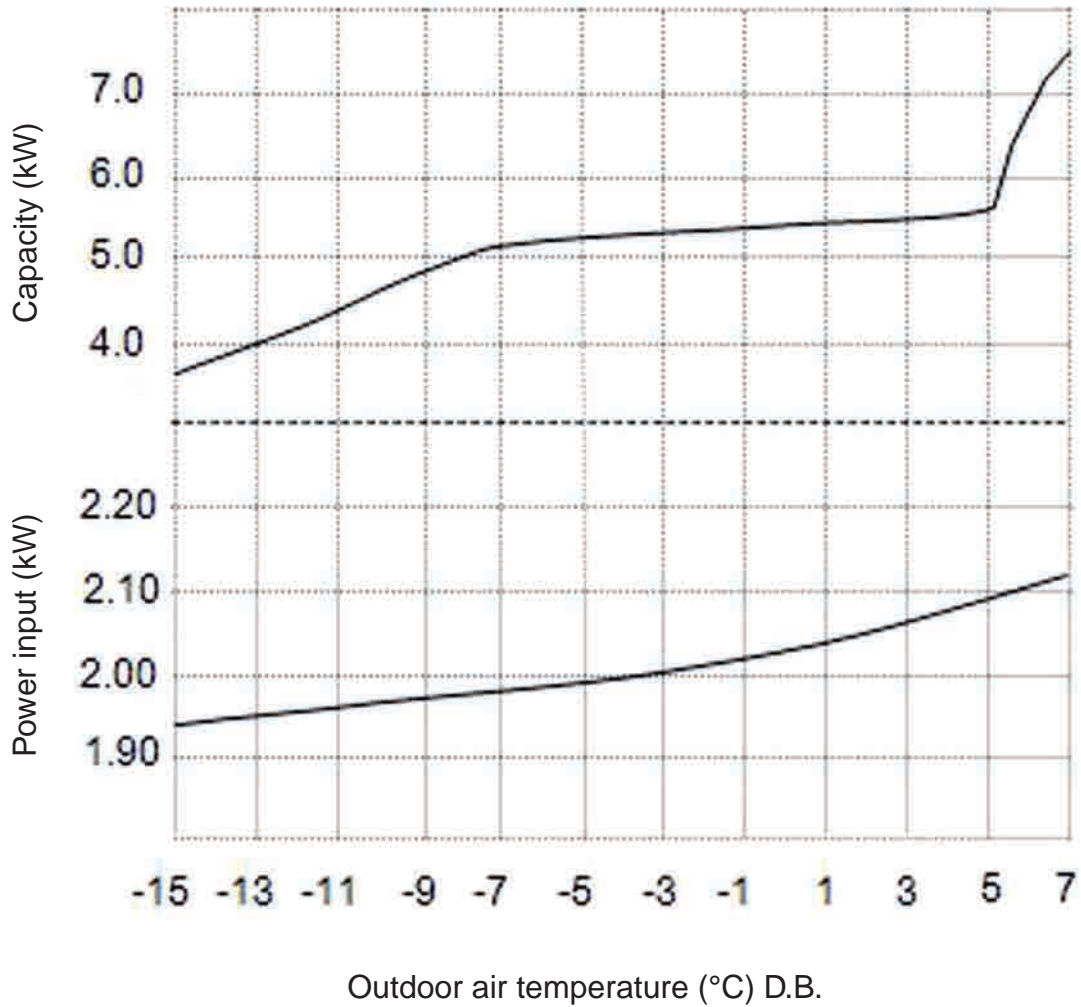
Number and capacity of connected Indoor Units = (3 x) 266X

Setting of indoor fan speed = "High"

Splitting distances = 5m + 5m + 5m

□ **Model: HCKU 706 Outdoor Unit X4**

■ **Operation in Heating mode**



■ **Test conditions:**

Indoor temperature = 20°C (D.B.)

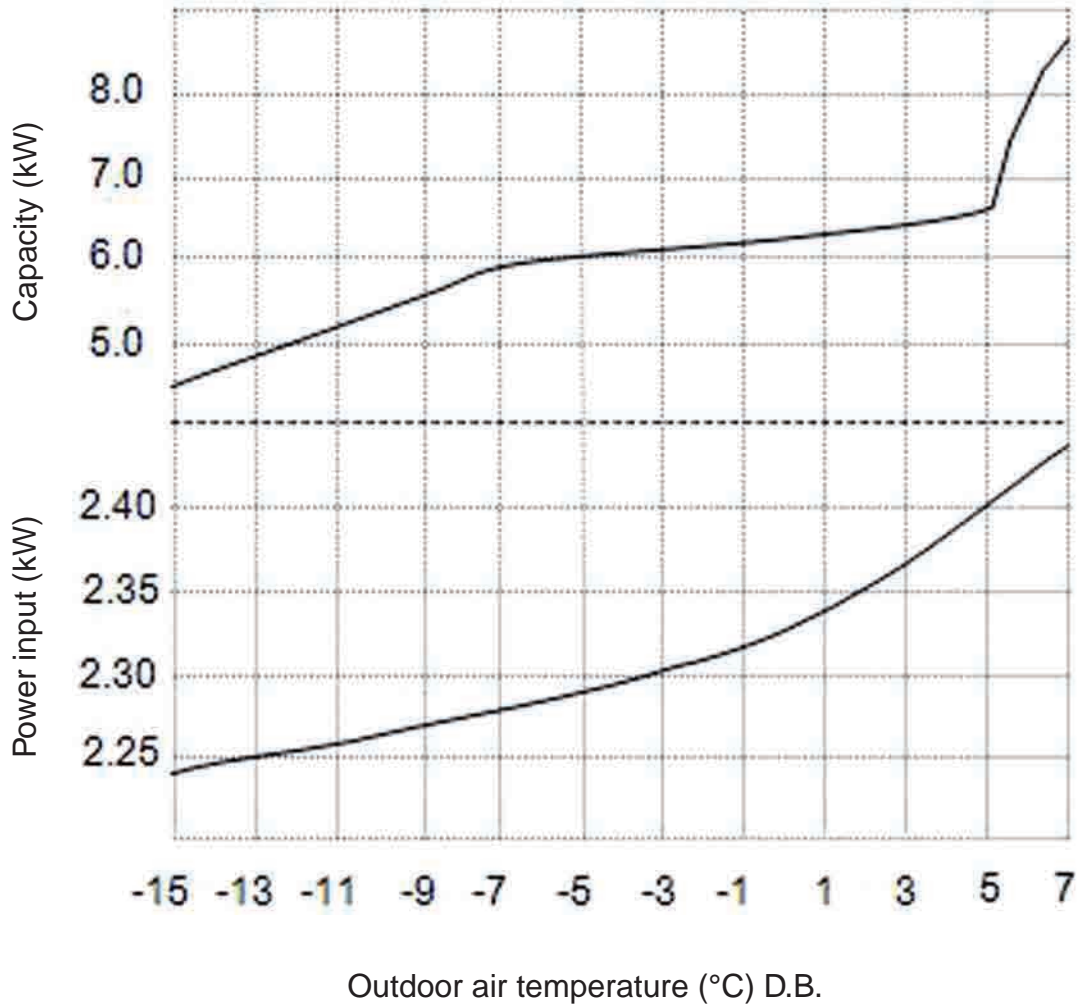
Number and capacity of connected Indoor Units = (4 x) 206X

Setting of indoor fan speed = "High"

Splitting distances = 5m + 5m + 5m + 5m

□ **Model: HCKU 816 Outdoor Unit X4**

■ **Operation in Heating mode**



■ **Test conditions:**

Indoor temperature = 20°C (D.B.)

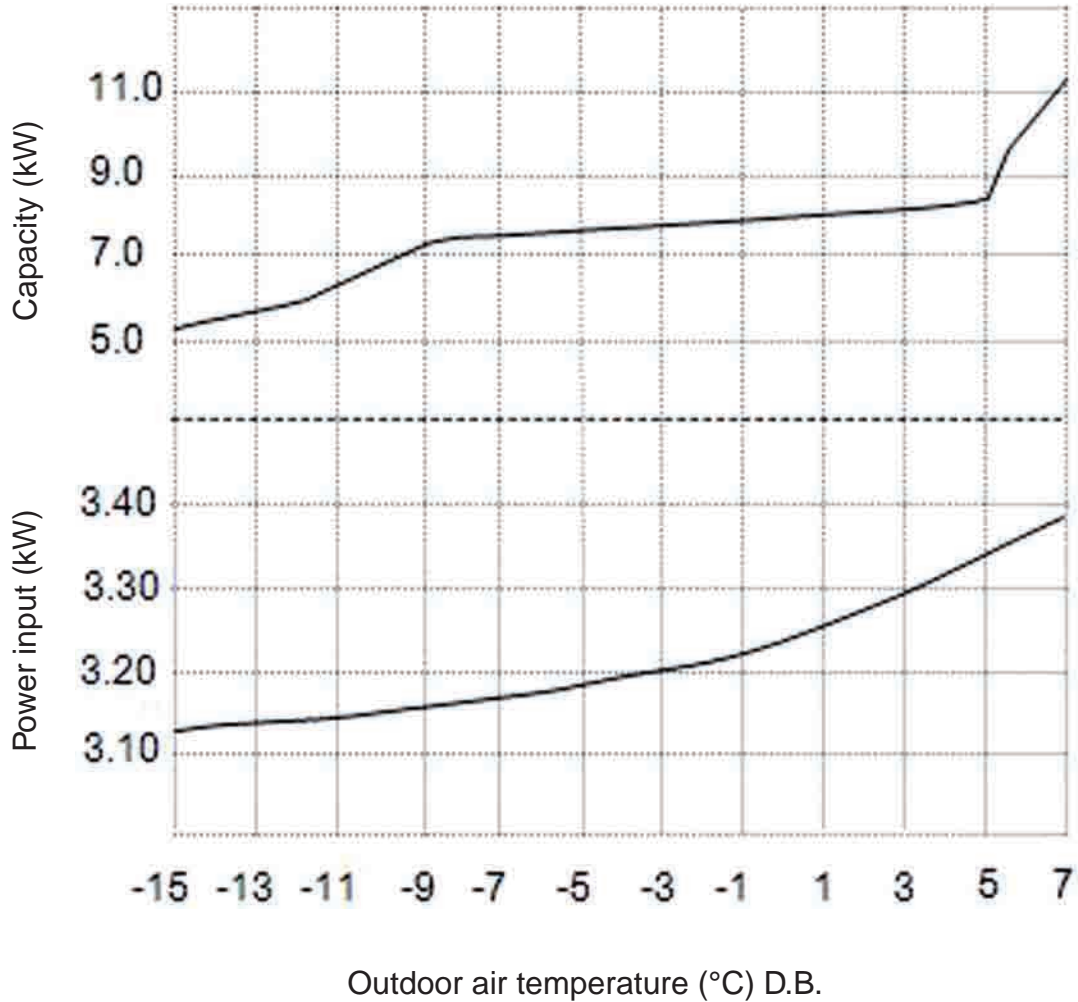
Number and capacity of connected Indoor Units = (4 x) 206X

Setting of indoor fan speed = "High"

Splitting distances = 5m + 5m + 5m + 5m

□ **Model: HCKU 1066 Outdoor Unit X4**

■ **Operation in Heating mode**



■ **Test conditions:**

Indoor temperature = 20°C (D.B.)

Number and capacity of connected Indoor Units = (4 x) 266X

Setting of indoor fan speed = "High"

Splitting distances = 5m + 5m + 5m + 5m

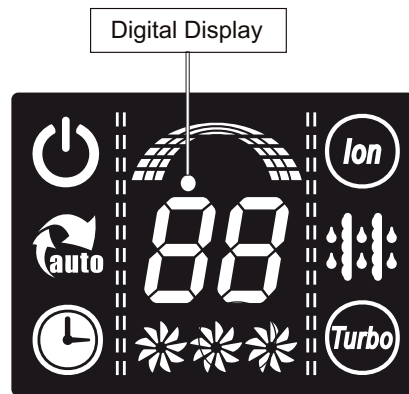
3.2 TROUBLESHOOTING

The following table shows a series of problems and their possible reasons and solutions. Please carry out the following checks before contacting the Authorized Technical Service.

CONDITION	CAUSES OR CHECK POINTS
Unit does not start.	<ul style="list-style-type: none"> • Check if electric power is available and whether the Unit is correctly connected to the power source. • Check whether the batteries in the remote controller are charged. • If Timer has been set, check if settings are correct.
After an operation stop, the air conditioner does not perform a restart immediately.	<ul style="list-style-type: none"> • This is normal. A protective function (3 minutes delay) is active to avoid damages to the compressor each time the air conditioner must be restarted after a stop condition.
Various noises are emitted from the Indoor Unit.	<ul style="list-style-type: none"> • When Cooling is started or Heating is stopped, a swishing or a gurgling noise may be heard. This noise is generated while the refrigerant is flowing in the air conditioner. • When starting or stopping operation, a cracking noise may be heard. This noise is generated by the Indoor Unit's parts because of temperature changes. • A whooshing noise may be heard when operating mode is changed (from Cooling to Heating or vice versa) and the air conditioner is running. This noise is generated when the refrigerant changes direction inside the refrigerant circuit.
Air does not flow out of the Indoor Unit or airflow speed cannot be changed.	<ul style="list-style-type: none"> • During operation in Dry mode, the fan speed is always set to "LO", to prevent excessive cooling. • During start-up in Heating mode, air does not flow out until the indoor heat exchanger is warm enough to prevent emission of cold air drafts into the room (see "Section 5: Operation Control"). • During operation in Heating mode, hot air may sometimes not flow due to automatic defrosting of Outdoor Unit.
Cooling/Heating effect is not sufficient to satisfy the user's comfort needs.	<ul style="list-style-type: none"> • The air conditioner could not work efficiently if air filters on one or more Indoor Units are clogged or dirty. • Make sure the room temperature has not yet reached the desired level: compare the room temperature with the set temperature. • Windows or doors are open. • Make sure the airflow speed is not set to "LO". • Make sure the air inlet or outlet on both Indoor and Outdoor Units are not blocked by any obstacles. • If the rating power of the air conditioner is not adequate because the room is too wide or the outdoor temperature is too low, add other appliances.
The transmission indicator on the remote controller does not light up at all or dims when sending signals to Indoor Unit.	<ul style="list-style-type: none"> • Make sure the dry batteries (2 batteries, "AAA" type) have enough charge. Replace both batteries with new ones if necessary. • Make sure the batteries are inserted in the right direction with regard to polarity indicated on the remote controller itself.
Misting on the surface of the Indoor Unit.	<ul style="list-style-type: none"> • During operation in Cooling mode. This indicates that the room temperature is already at a very low value.
Steaming from the Outdoor Unit.	<ul style="list-style-type: none"> • During operation in Heating mode. This indicates that de-icing is being performed on the outdoor unit heat exchanger.

3.2.1 ERROR CODES DISPLAYED ON INDOOR UNITS

- Error Codes on Display of Multi Liberty HKEU X Indoor Units



■ Digital Display

- 1) In case of whatever malfunction, the Digital Display (see above) shows the corresponding Error Code or Protection Code.
- 2) Concerning the list of Error Codes and of Protection Codes, and the detailed outline of each kind of malfunction or of protection function, see the following Table and the following pages.

■ Error Codes shown on Display of Multi Liberty HKEU X Indoor Units

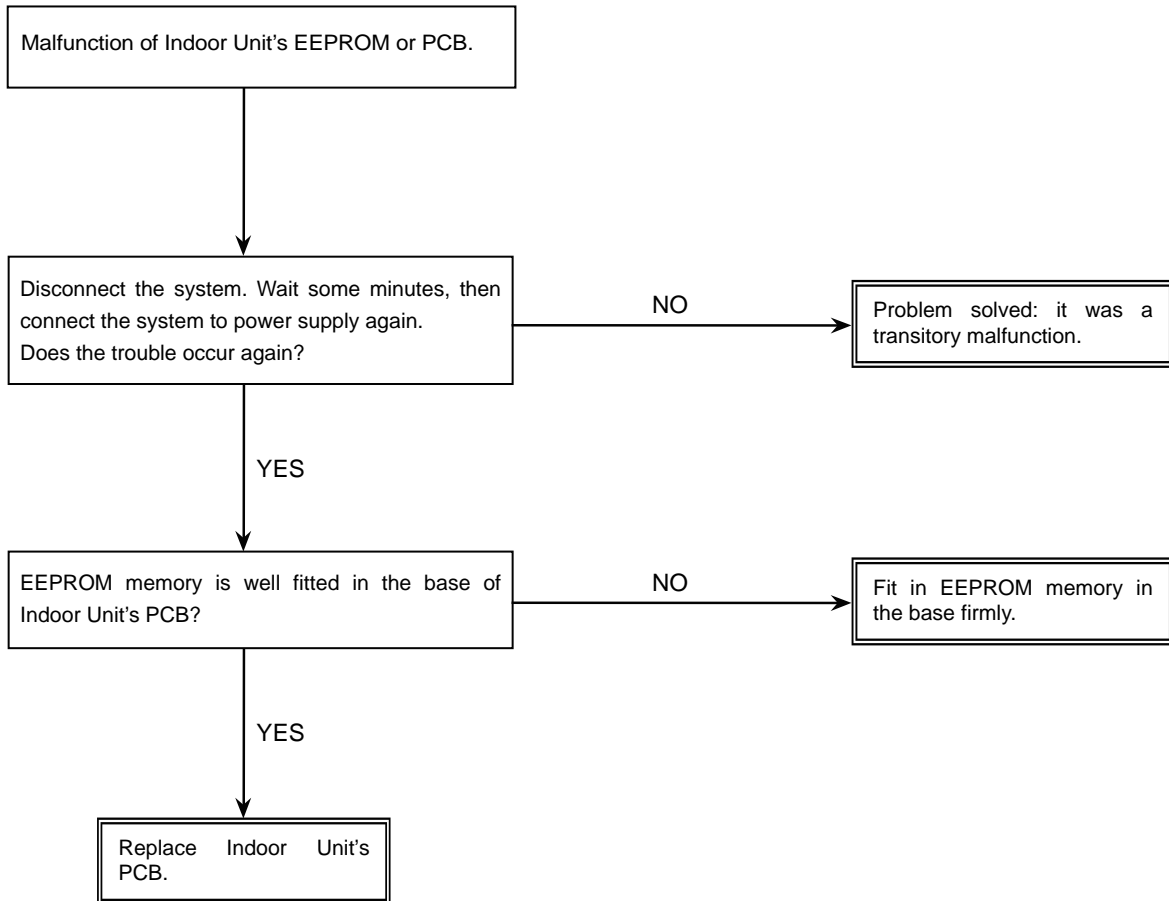
Error Code	Outline of malfunction
<i>E0</i>	Malfunction of EEPROM parameters.
<i>E1</i>	Communication error between Indoor Unit ↔ Outdoor Unit.
<i>E2</i>	Transmission error of data sequence along signal line.
<i>E3</i>	Malfunction of fan motor (beyond control) on Indoor Unit.
<i>E5</i>	Malfunction of temperature sensor (broken or in short circuit) on Outdoor Unit.
<i>E6</i>	Malfunction of temperature sensor T1 or T2 (Indoor Unit).

■ Protection Codes shown in Display of Multi Liberty HKEU X Indoor Units

Protection Code	Outline of Protection function
<i>P0</i>	Overcurrent on Inverter Module (Outdoor Unit).
<i>P1</i>	Power supply voltage error (too low/too high voltage) on Outdoor Unit.
<i>P2</i>	Intervention of compressor's thermal protection. [Excluded Outdoor Units HCKU 816 X4, HCKU1066 X4]
<i>P3</i>	Protection intervention for compressor overcurrent.
<i>P4</i>	Protection intervention on Inverter Module (IPM).
<i>P5</i>	Conflict between operation modes of Indoor Units.

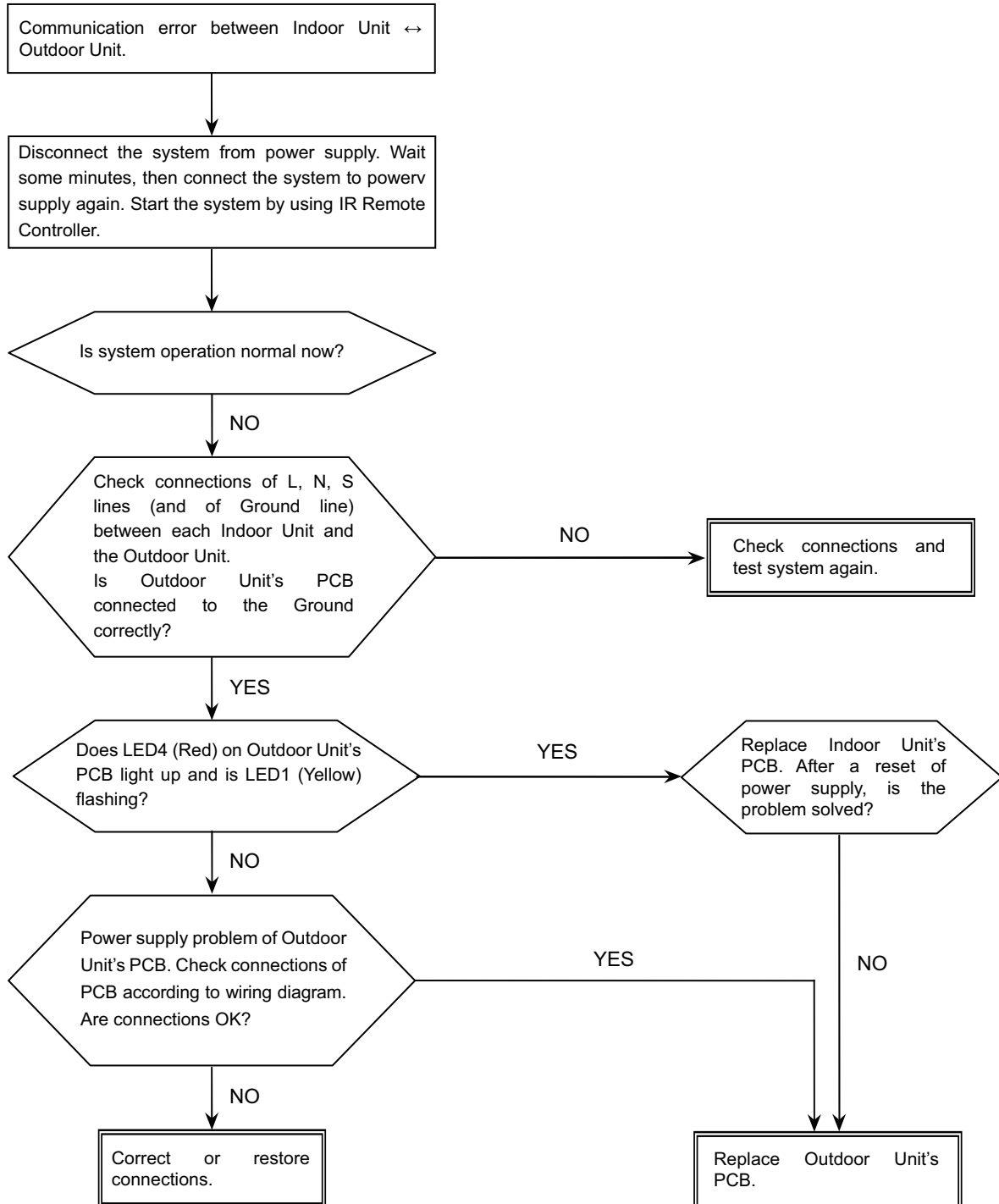
• Troubleshooting for Error Codes shown on the Display of Multi Liberty HKEU X Indoor Unit

Error Codes on Indoor Unit	Outline of malfunction
<i>E0</i>	EEPROM malfunction



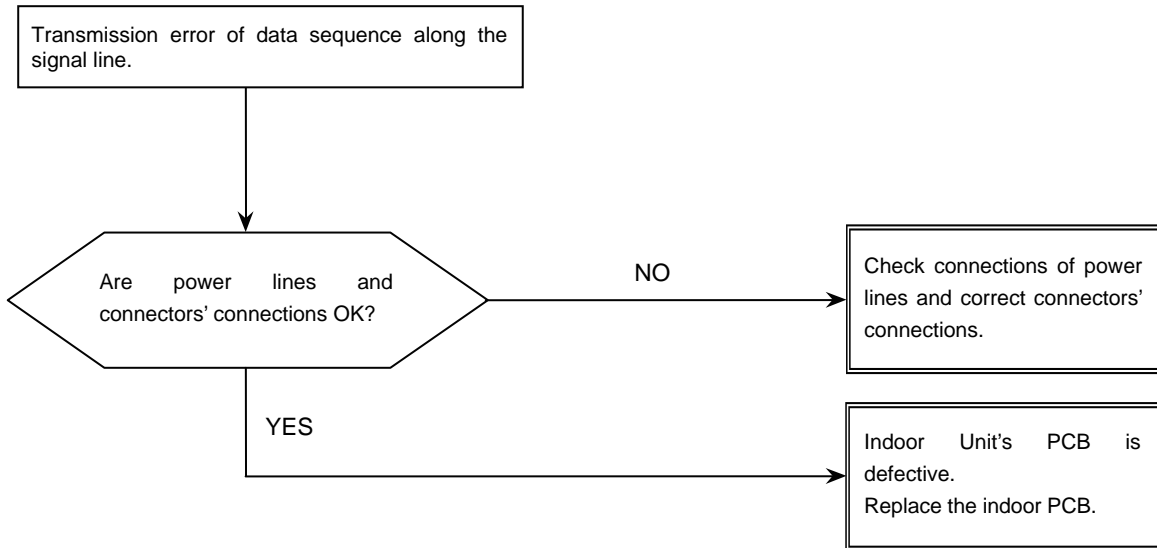
•Troubleshooting for Error Codes shown on Display of Multi Liberty HKEU X Indoor Unit

Error Code on Indoor Unit	Outline of malfunction
<i>E1</i>	Communication error between Indoor Unit ↔ Outdoor Unit



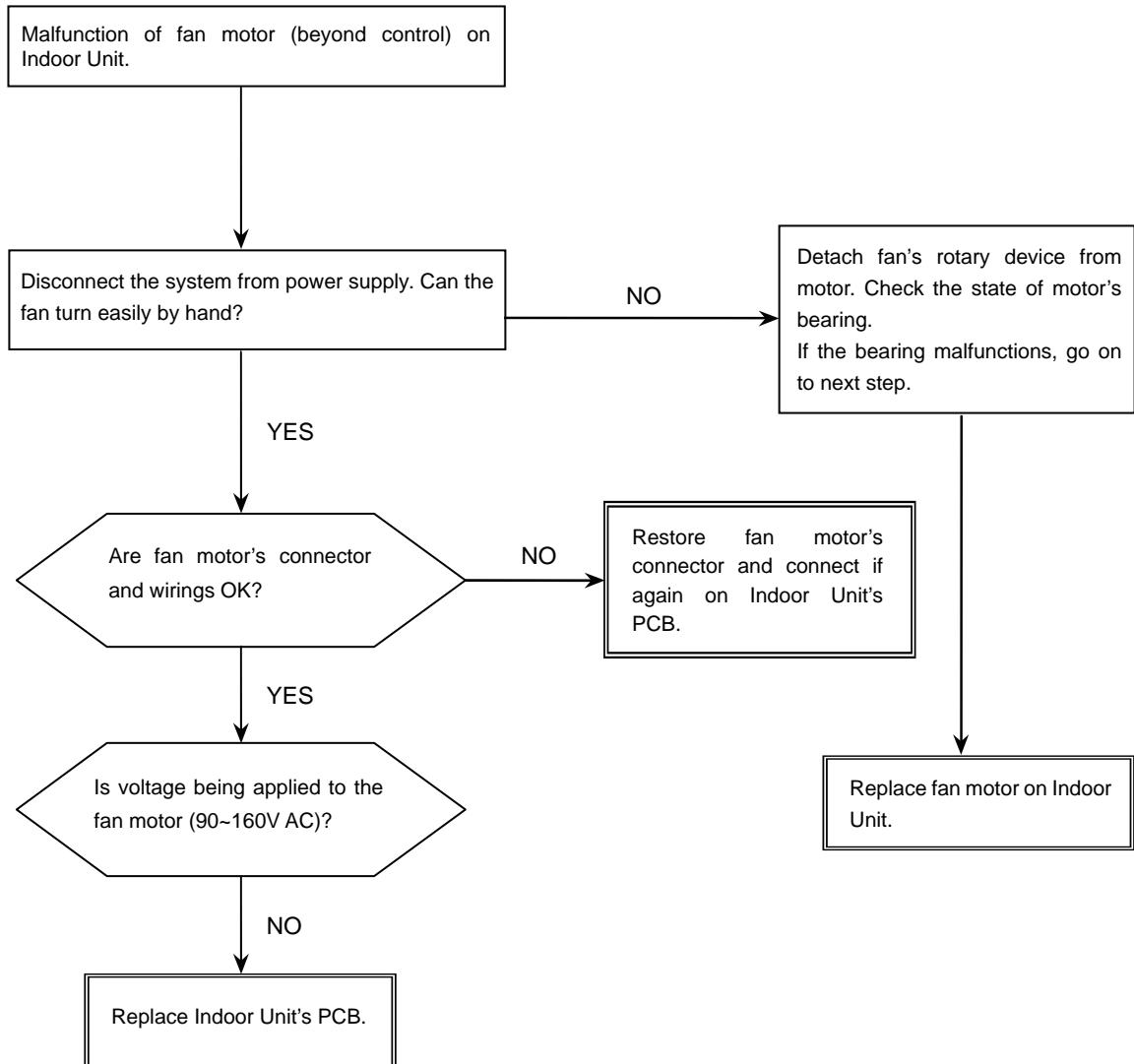
• Troubleshooting for Error Codes shown on Display of Multi Liberty HKEU X Indoor Units

Error Code on Indoor Unit	Outline of malfunction
E2	Transmission error of data sequence along the signal line



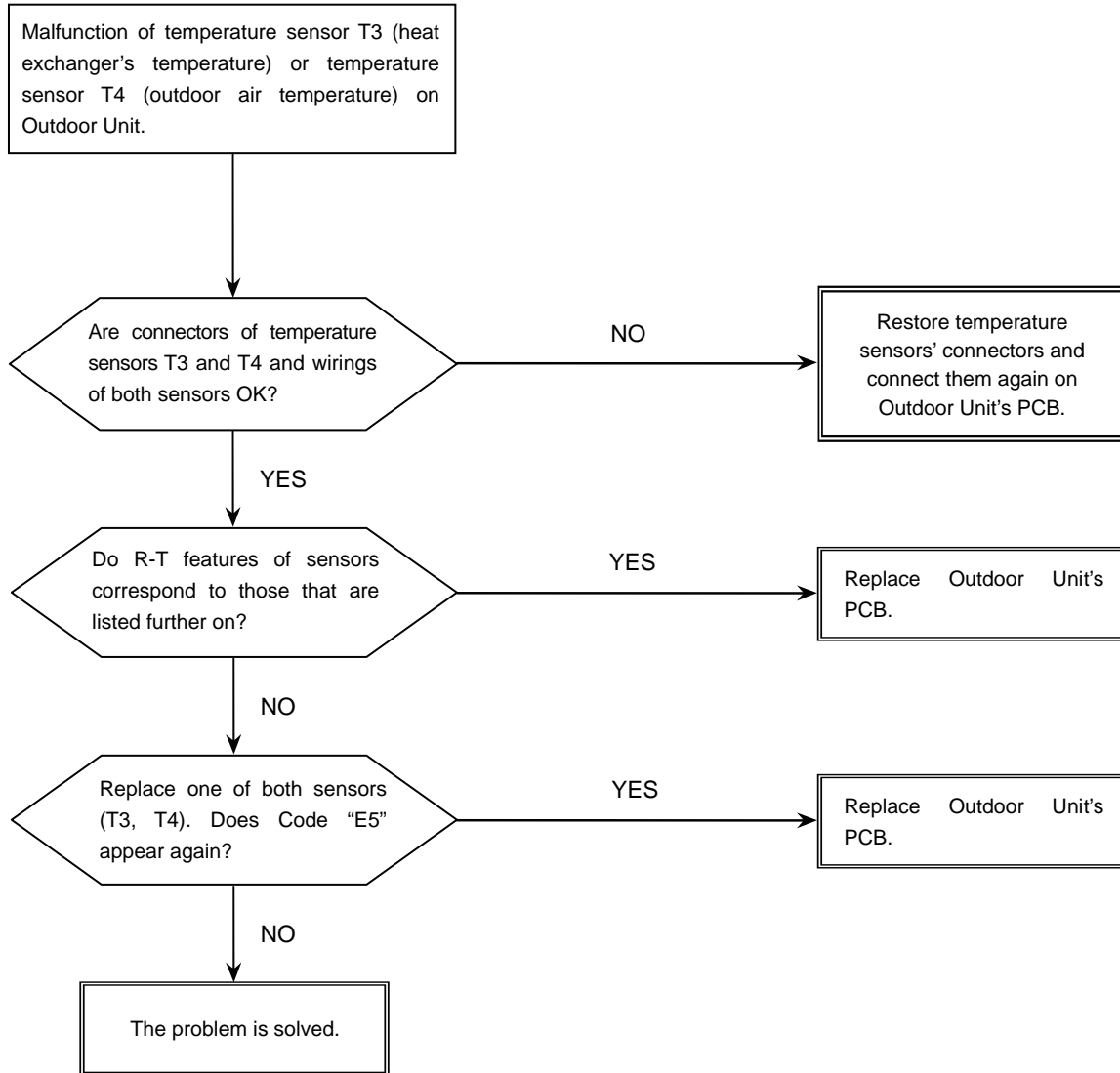
• Troubleshooting for Error Codes shown on Display of Multi Liberty HKEU X Indoor Units

Error Code on Indoor Unit	Outline of malfunction
E3	Malfunction of fan motor (beyond control) on Indoor Unit



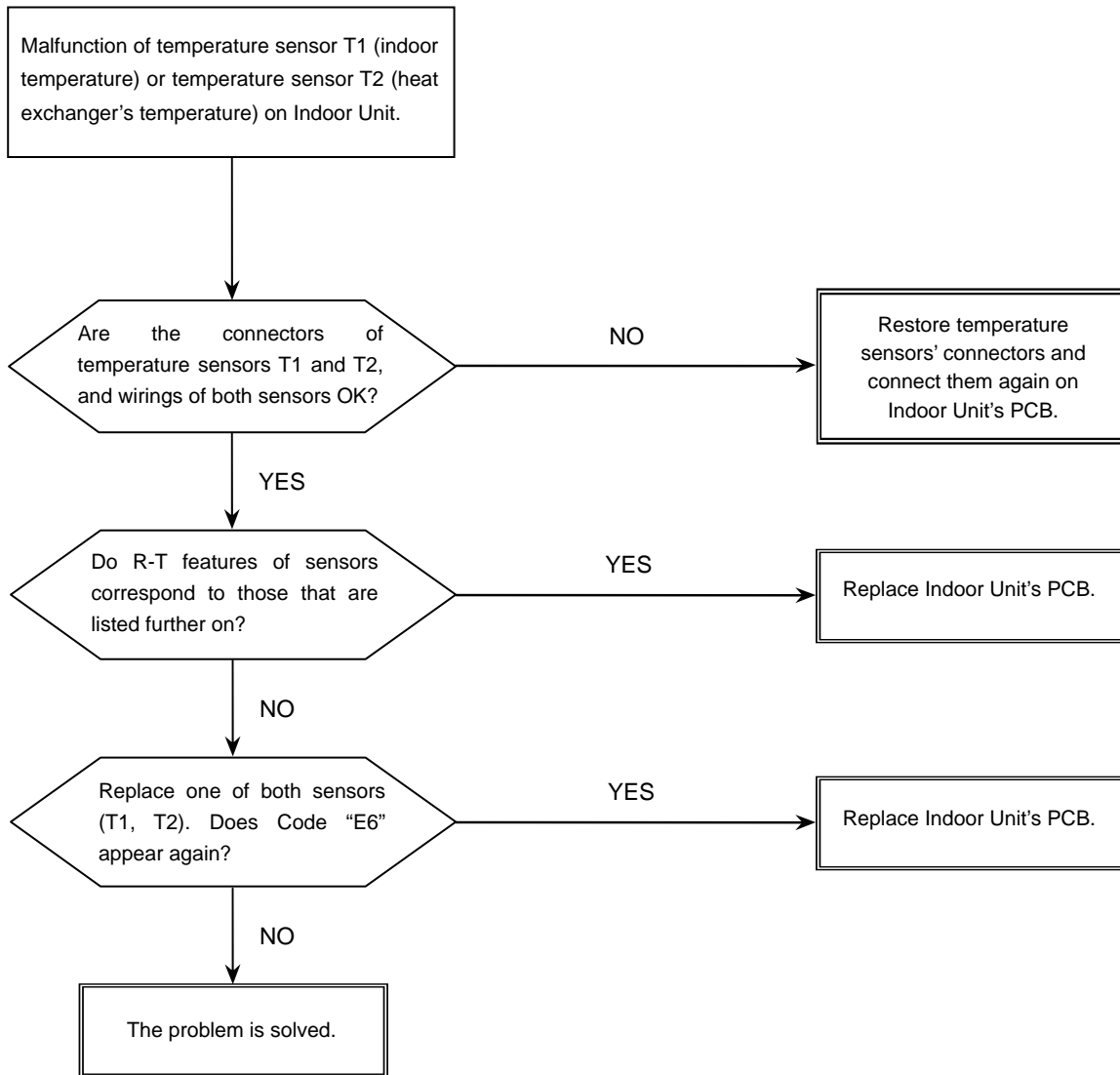
• Troubleshooting for Error Codes shown on Display of Multi Liberty HKEU X Indoor Units

Error Code on Indoor Unit	Outline of malfunction
E5	Malfunction of temperature sensor (broken or in short-circuit) on O.U.



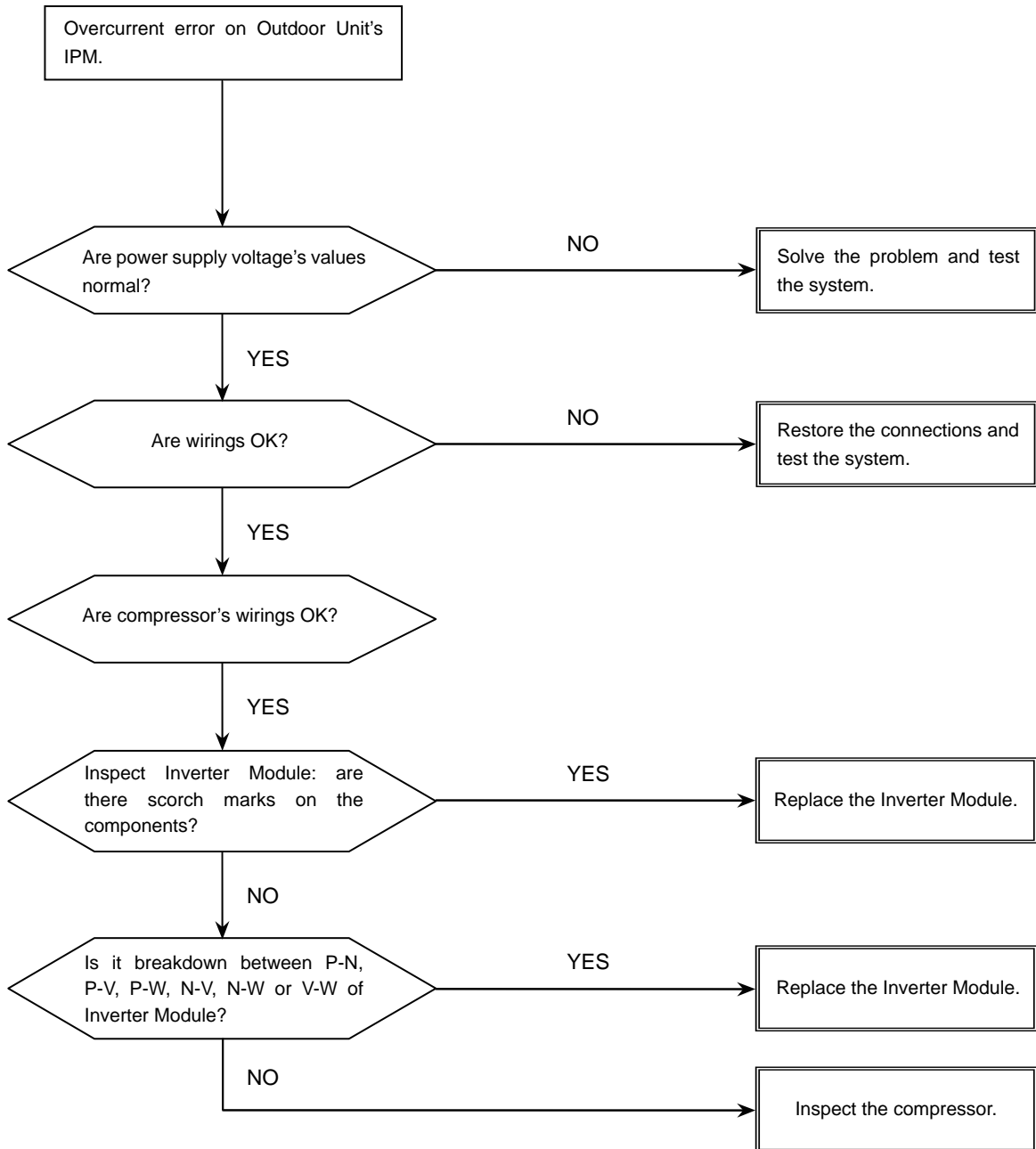
• Troubleshooting for Error Codes shown on Display on Multi Liberty HKEU X Indoor Units

Error on Indoor Unit	Outline of malfunction
E6	Malfunction of T1 sensor or T2 sensor on Indoor Unit



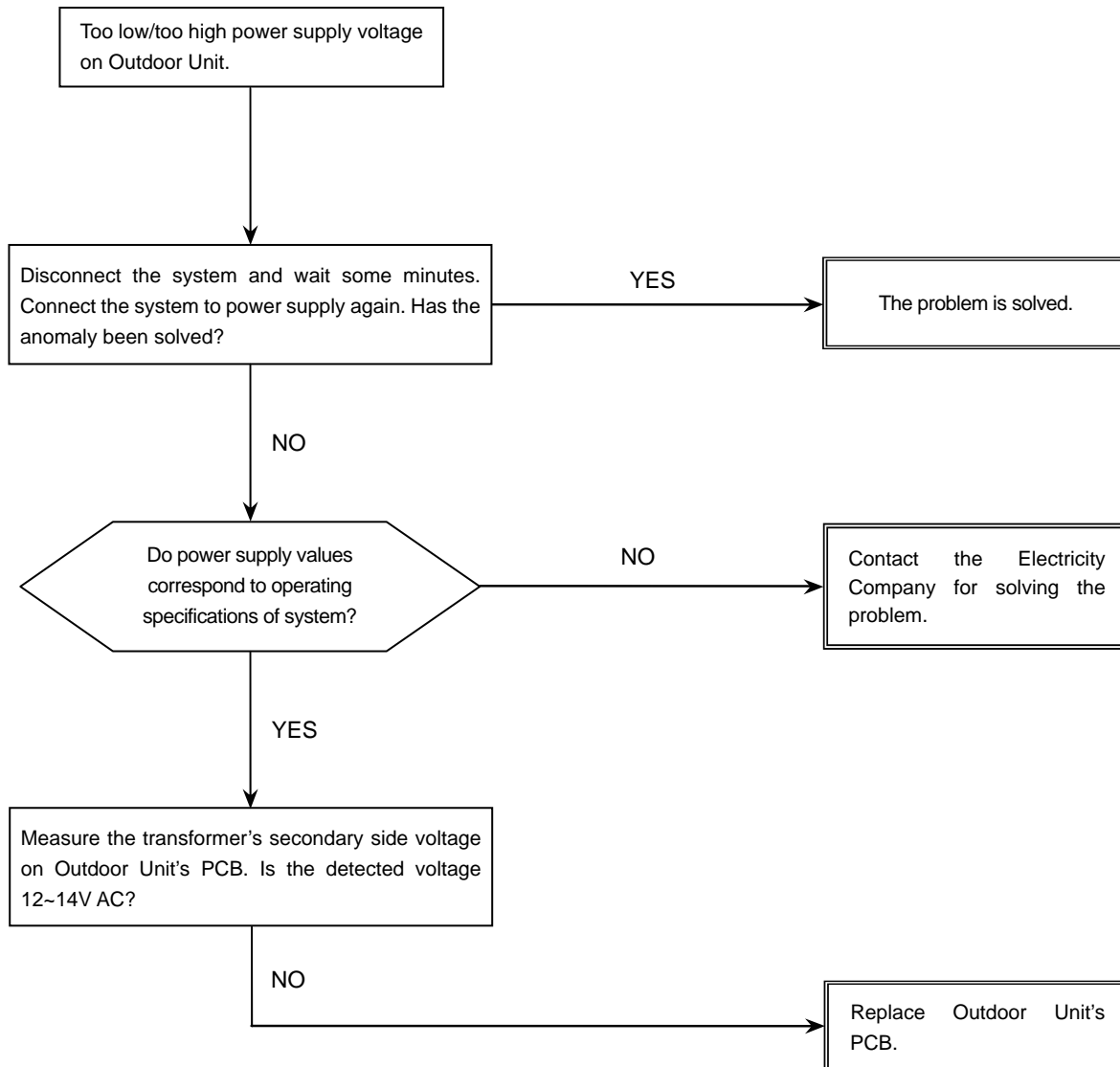
• Troubleshooting for Protection Codes shown on Display of Multi Liberty HKEU X Indoor Units

Protection Code on Indoor Unit	Outline of Protection function
P0	Overcurrent error on Outdoor Unit's Inverter Module



• Troubleshooting for Protection Codes shown on Display of Multi Liberty HKEU X Indoor Units

Protection Code on Indoor Unit	Outline of Protection function
P1	Too low/too high power supply voltage on O.U.

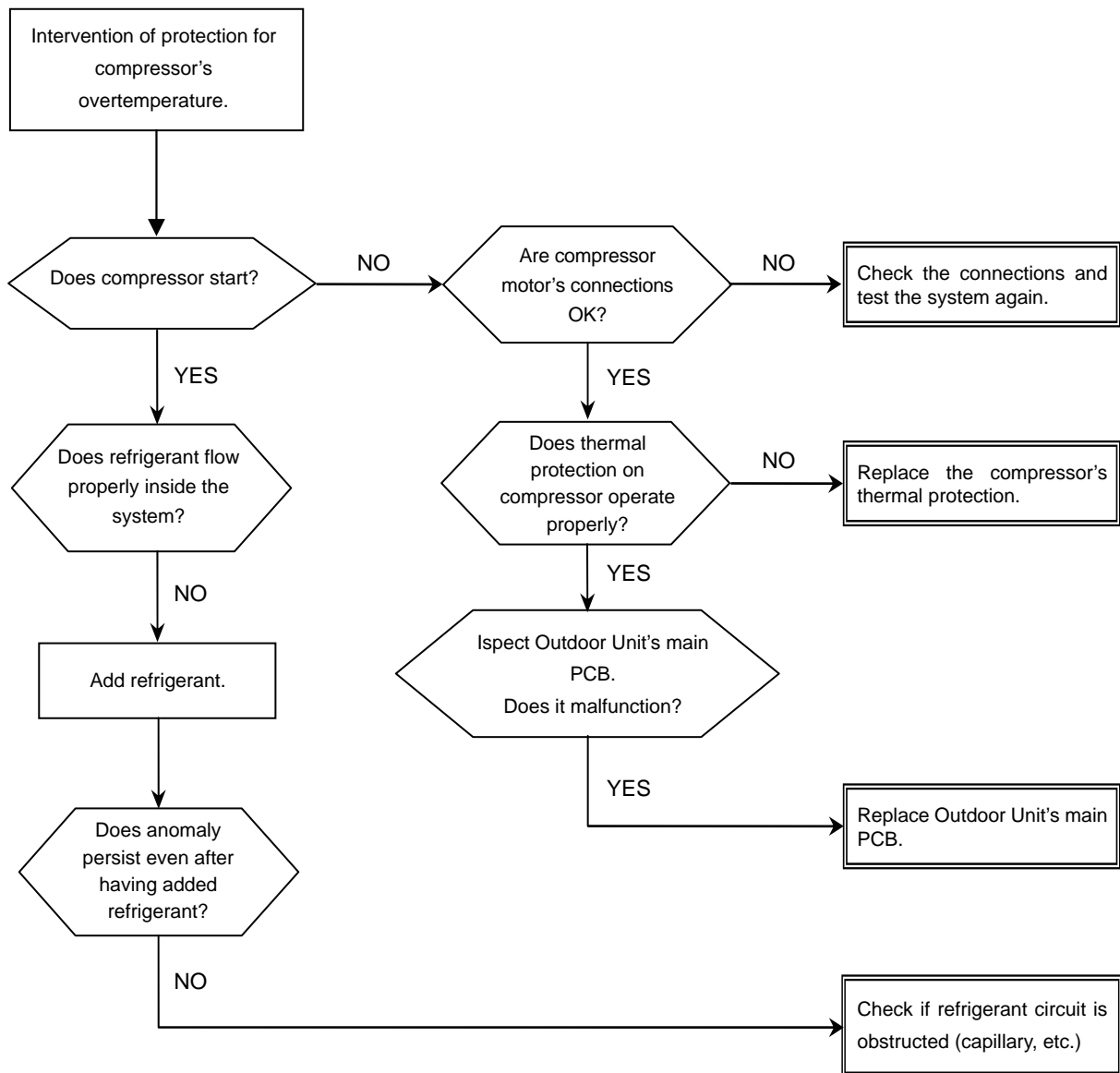


• Troubleshooting for Protection Codes shown on Display of Multi Liberty HKEU X Indoor Units

Protection Code on Indoor Unit	Outline of Protection function
P2	Intervention of compressor's thermal protection. [Excluded Outdoor Units HCKU 816 X4, HCKU1066 X4]

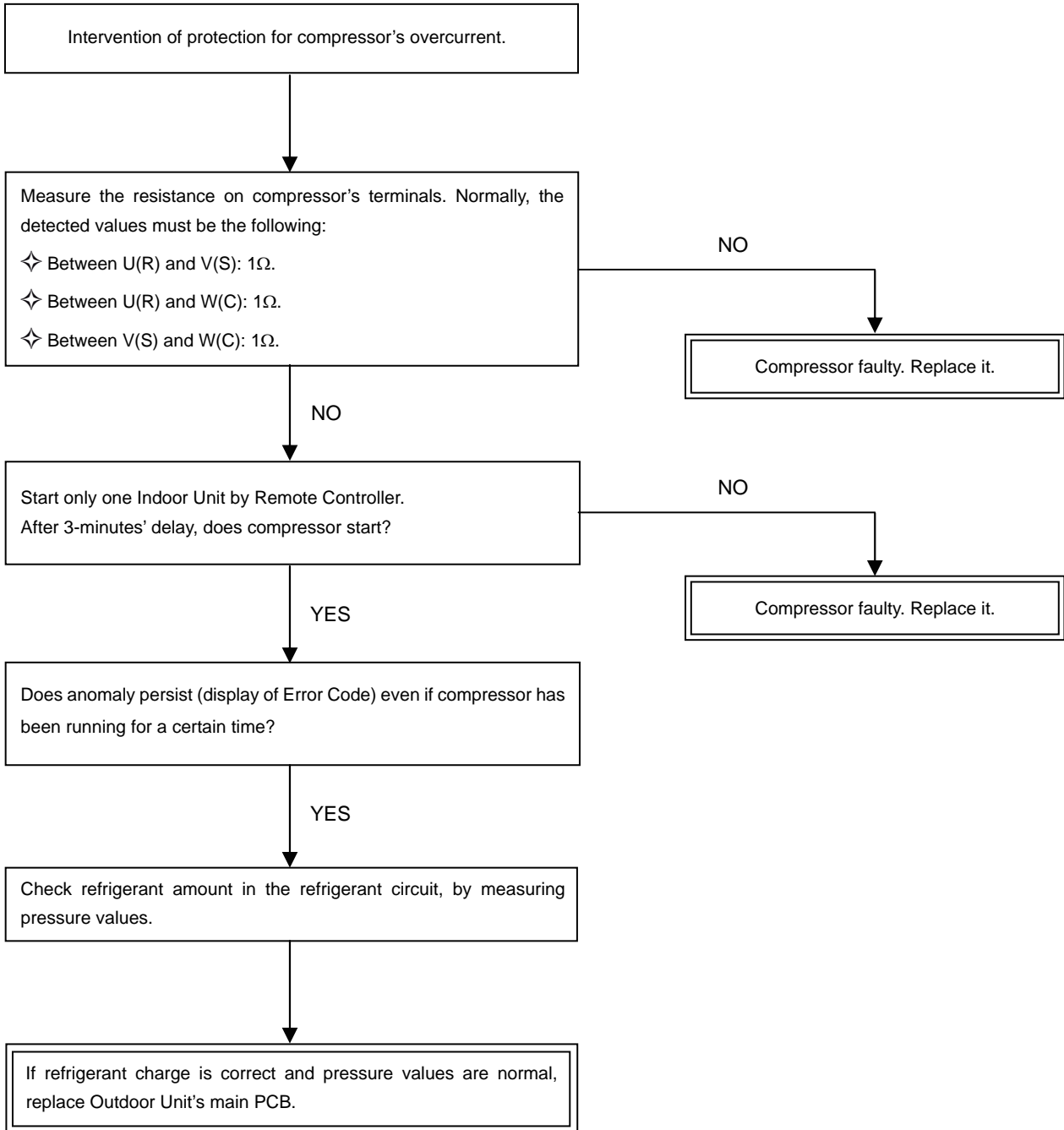
✧ If temperature detected on compressor is higher than 120°C, the system is stopped by the intervention of compressor's thermal protection.

✧ Normal operation can be restored only when temperature detected on compressor is lower than 90°C (reactivation threshold of thermal protection).



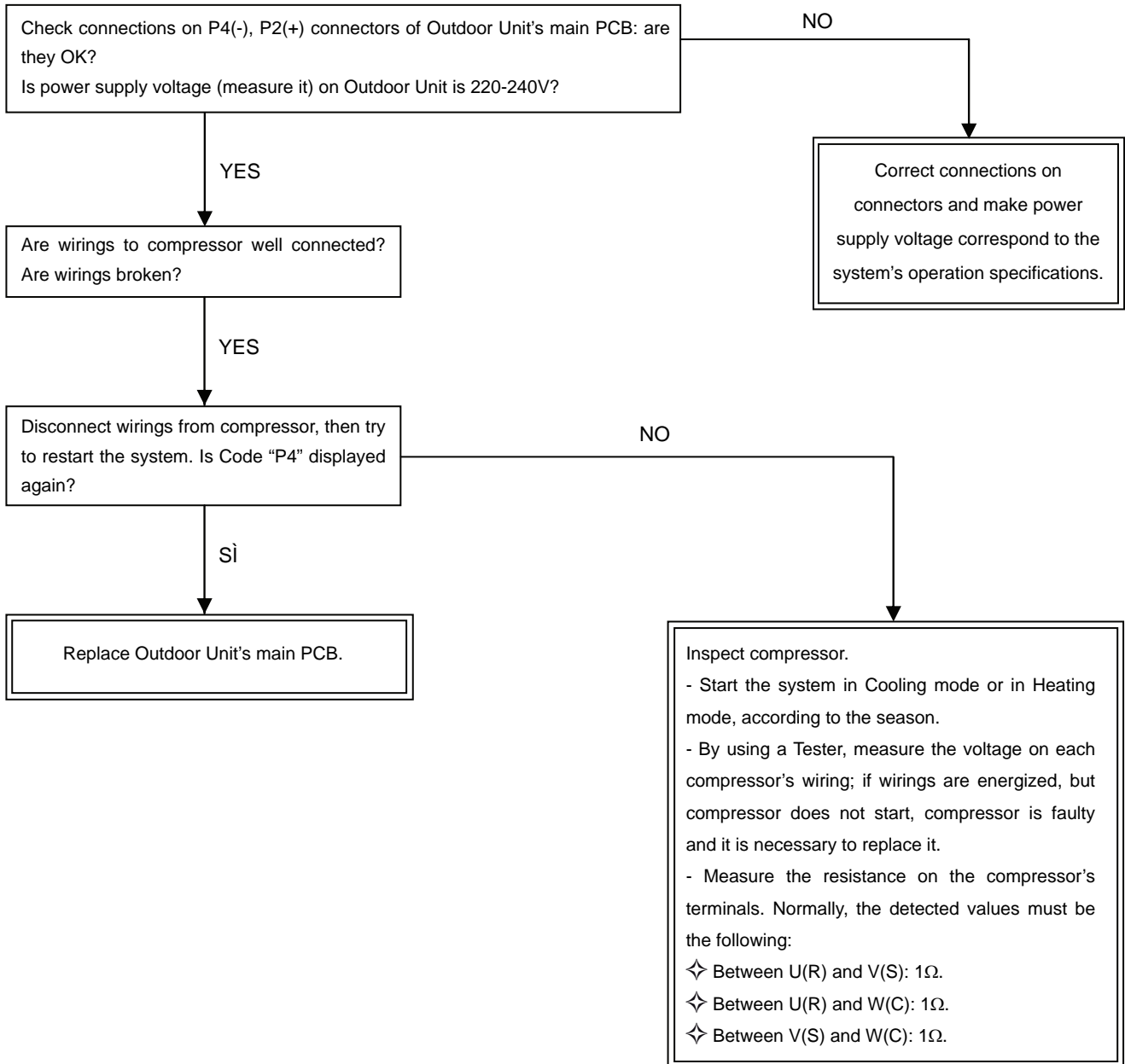
• Troubleshooting for Protection Codes shown on Display of Multi Liberty of HKEU X Indoor Units

Protection Code on Indoor Unit	Outline of Protection function
P3	Protection for compressor overcurrent



• Troubleshooting for Protection Codes shown on Display of Multi Liberty HKEU X Indoor Units

Protection Code on Indoor Unit	Outline of Protection function
P4	Intervention of a protection function of Inverter Module



• Troubleshooting for Protection Codes shown on Display of Multi Liberty HKEU X Indoor Unit

Protection Code on Indoor Unit	Outline of Protection function
P 5	Operation mode in conflict with operation mode of other Indoor Units

On Indoor Units of the same system, have operation modes not compatible among them been set (see the Table below)?

YES

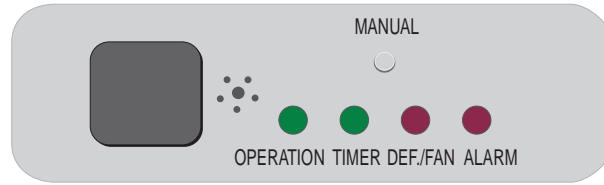
On the Indoor Units of the same system, operation modes must be compatible among them (see the Table below): correct the setting.

⇨Table of compatibility between Indoor Units' operation modes:

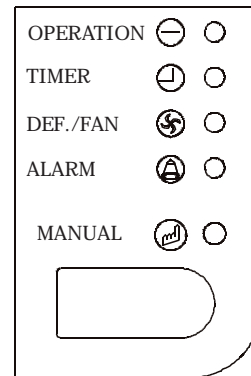
	Cooling	Heating	Fan	OFF
Cooling	YES	NO	YES	YES
Heating	NO	YES	NO	YES
Fan	YES	NO	YES	YES
OFF	YES	YES	YES	YES

• Troubleshooting by LED Indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

• HTFU X, HRBU X Models



• HSFU X Models



■ LED Display on Indoor Units

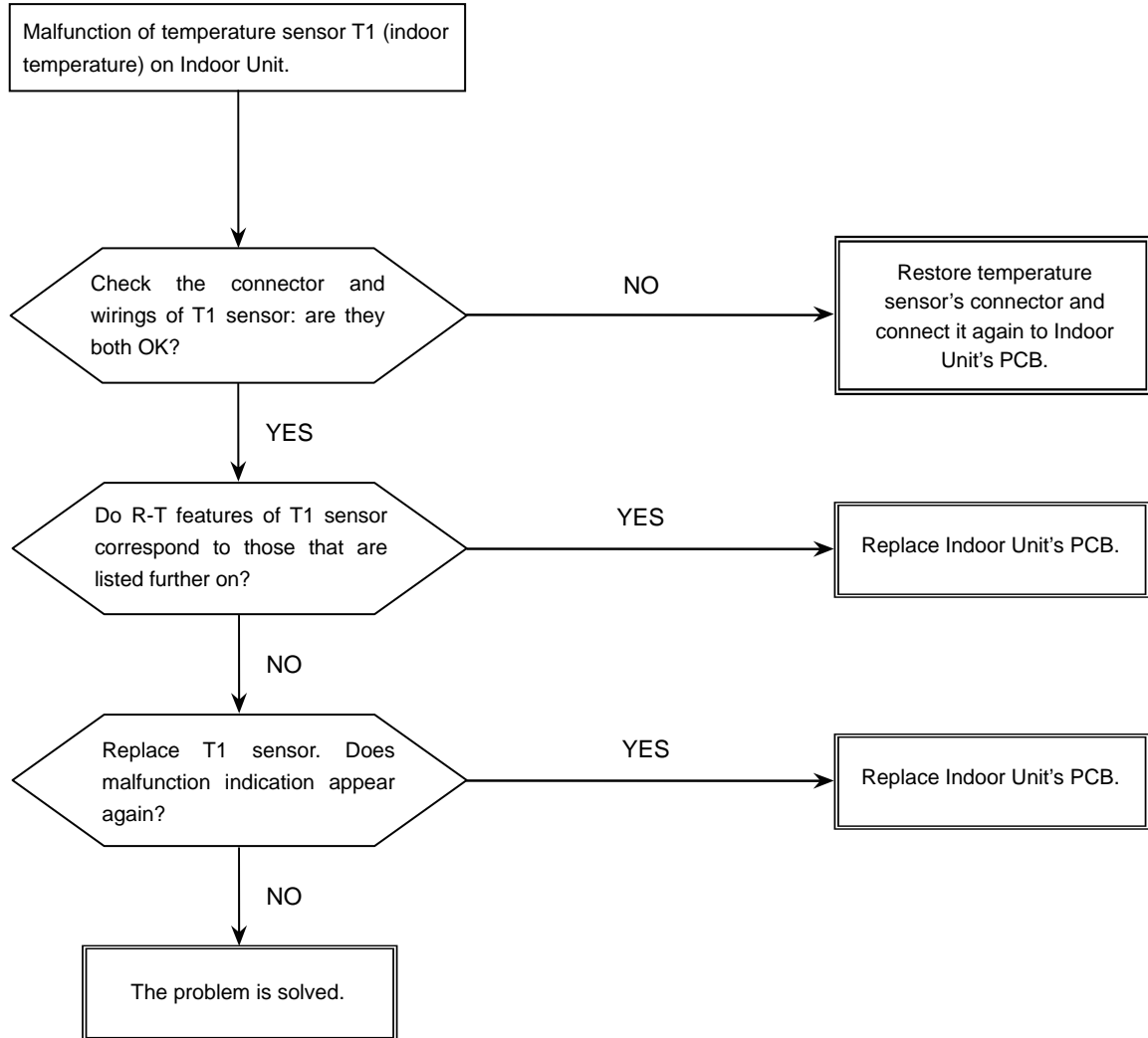
- 1) In case of operation malfunctions, the codified flashing of LED indicators on Indoor Units' display allows to explain the cause of malfunction, thus making easier the troubleshooting.
- 2) As far as the list of malfunctions and the detailed outline of each malfunction are concerned, see the following Table and the following pages.

■ Codified malfunctions: LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
Flashing	OFF	OFF	OFF	Malfunction of indoor temp. sensor (broken/in short circuit) T1 (I.U.).
OFF	OFF	Flashing	OFF	Malfunction of heat exchanger's temp. sensor (broken/in short circuit) T2 (I.U.).
OFF	Flashing	OFF	OFF	Communication error between Indoor Unit Outdoor Unit.
OFF	OFF	OFF	Flashing	Malfunction on drain condensation system (I.U. HTFU X only).
Flashing	Flashing	OFF	OFF	Faulty EEPROM on Indoor Unit.
Flashing	OFF	OFF	ON	Intervention of a protection on Inverter Module (IPM).
Flashing	ON	OFF	OFF	Faulty temp. sensor (broken/in short-circuit) on O.U.
Flashing	ON	OFF	ON	Too low/too high power supply voltage on O.U.
Flashing	OFF	ON	OFF	Intervention of compressor's thermal protection. [Excluded Outdoor Units HCKU 816 X4, HCKU1066 X4]
Flashing	OFF	ON	ON	Operation mode in conflict with operation mode of other Indoor Units.
Flashing	OFF	Flashing	Flashing	Protection for compressor's overcurrent.

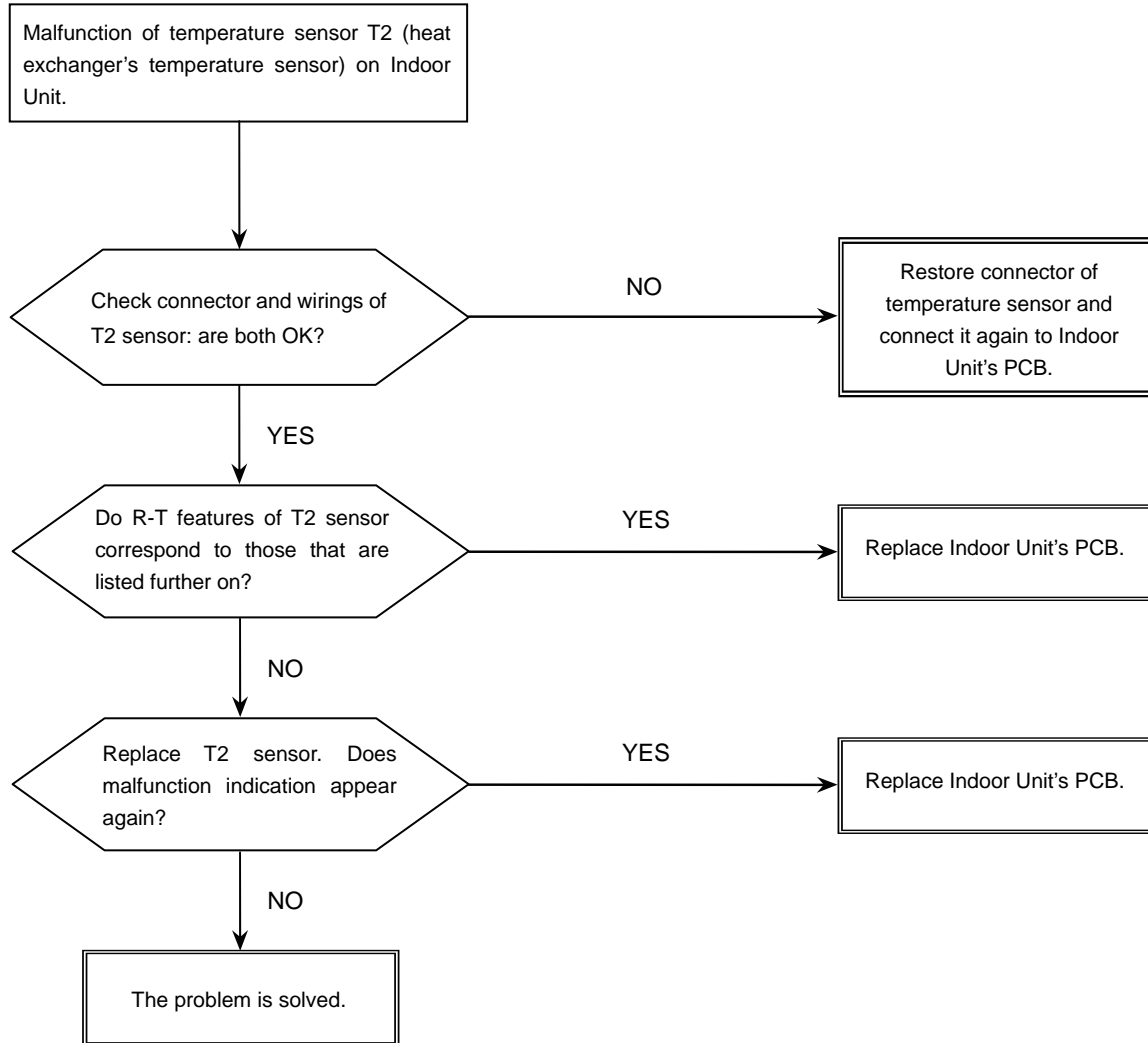
• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
Flashing	OFF	OFF	OFF	Malfunction of T1 sensor (room temperature) on Indoor Unit



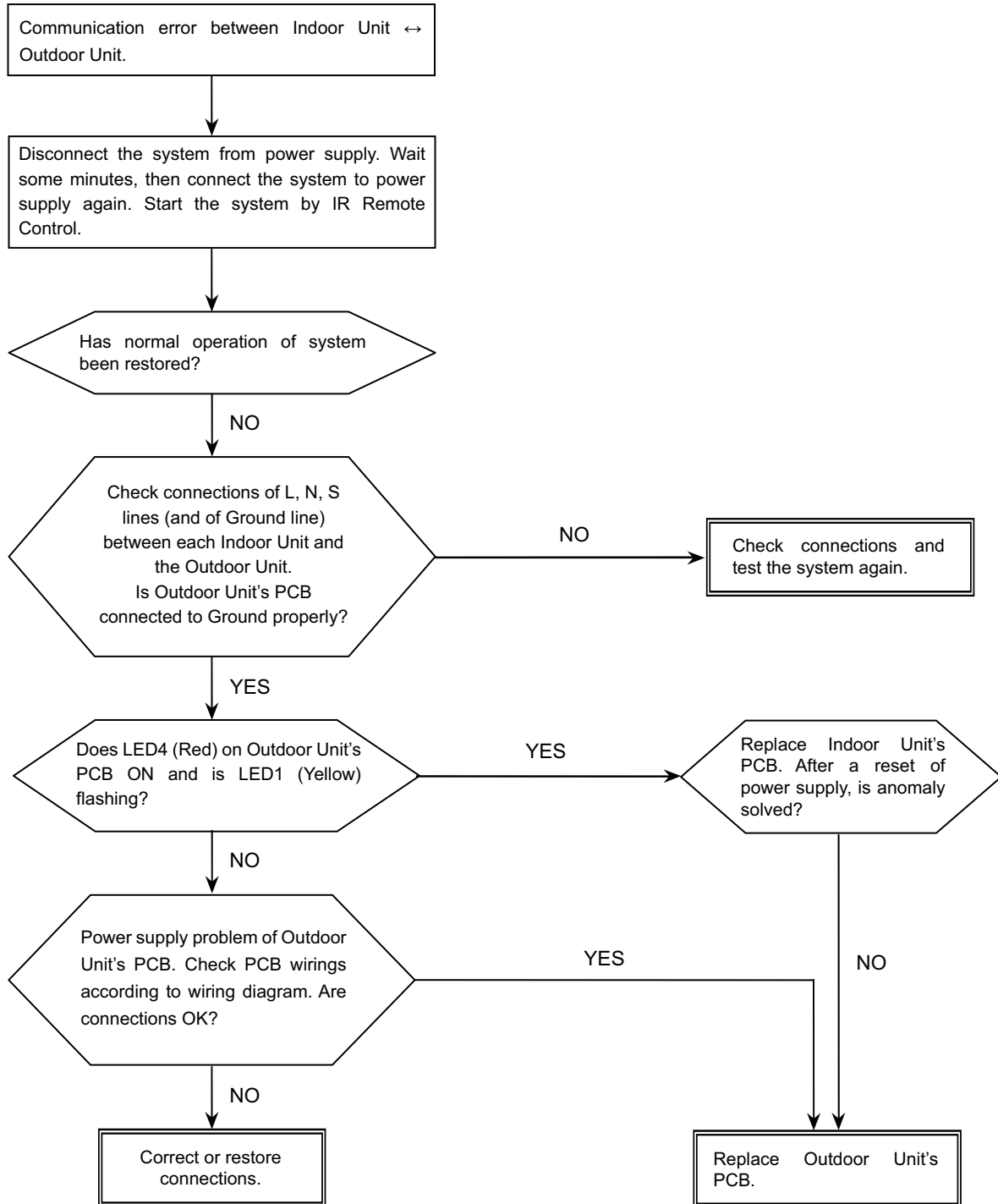
• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
OFF	OFF	Flashing	OFF	Malfunction of T2 sensor (heat exchanger) on Indoor Unit



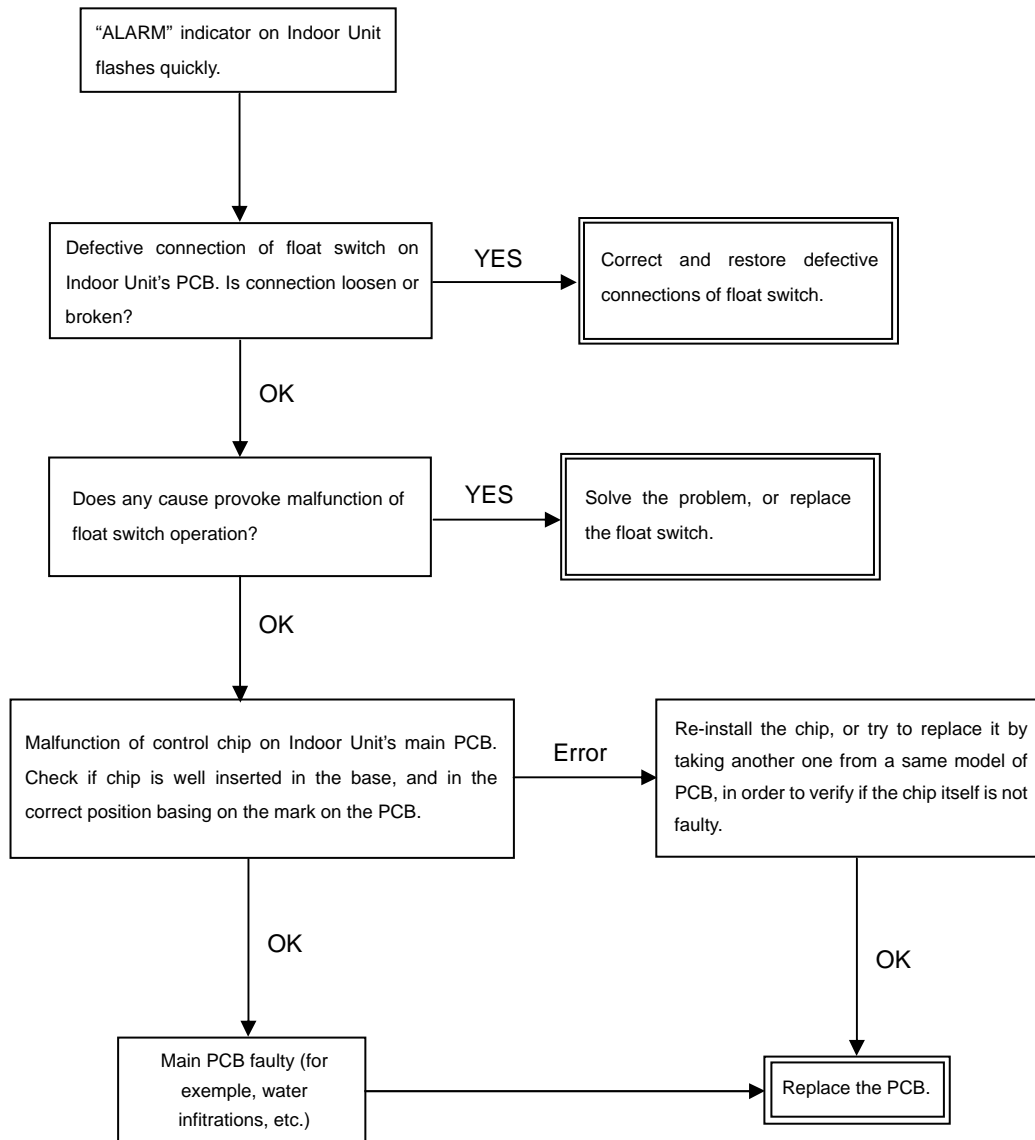
• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
OFF	Flashing	OFF	OFF	Communication error between Indoor Unit ↔ Outdoor Unit



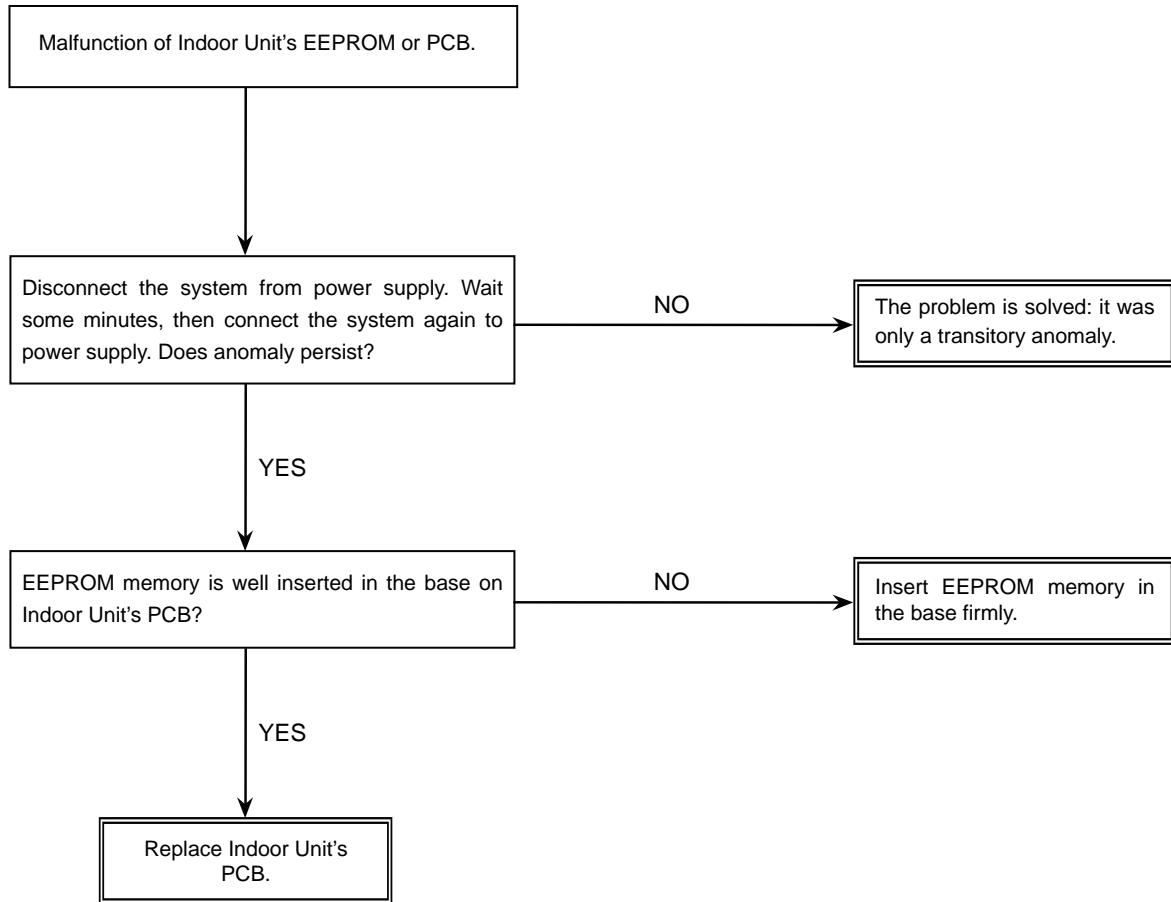
• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN.	ALARM	Outline of malfunction
OFF	OFF	OFF	Flashing	Malfunction on drain condensate system [HTFU X I.U. only]



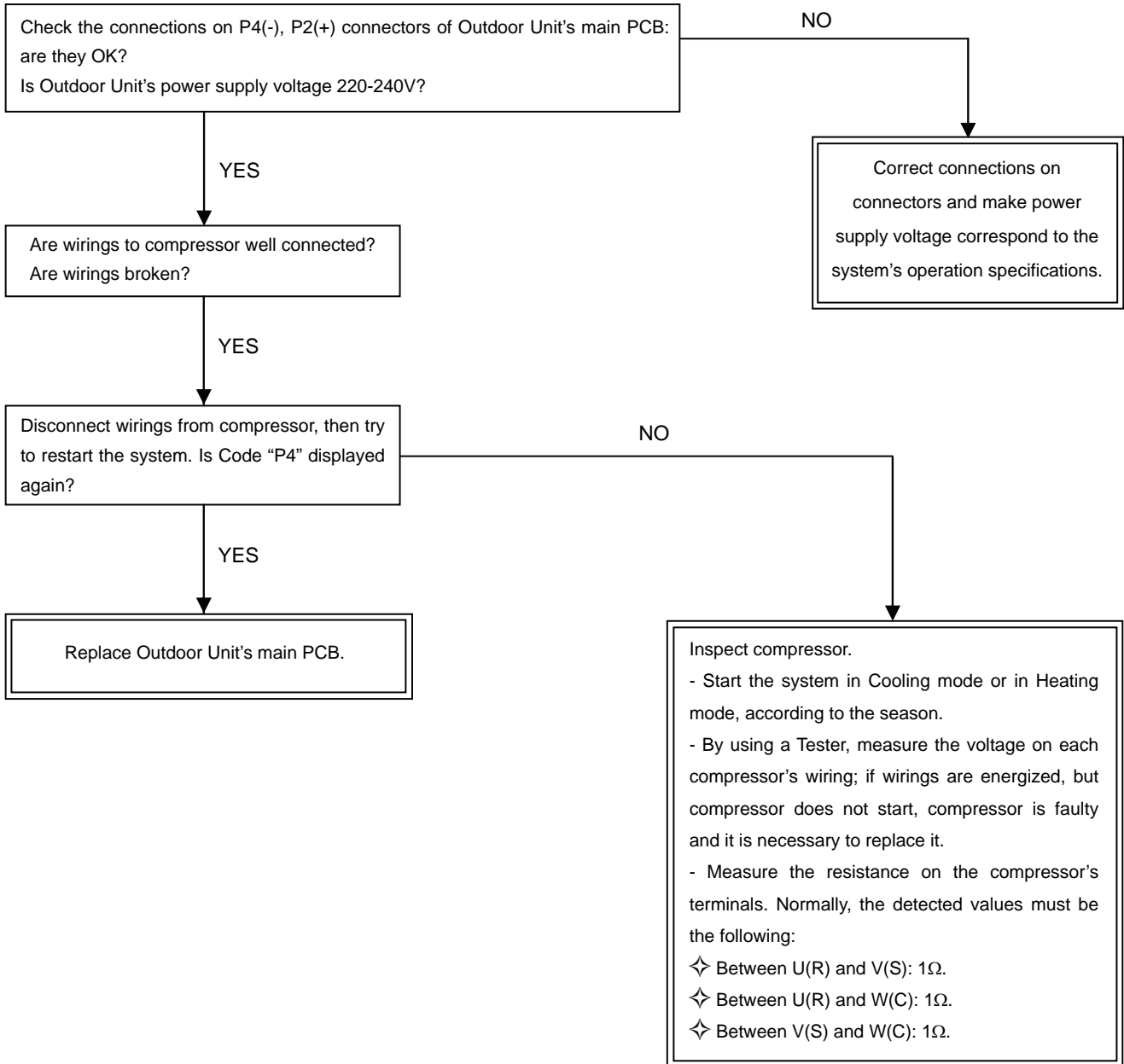
• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN	ALARM	Descrizione dell'anomalia
Flashing	Flashing	OFF	OFF	Malfunction of EEPROM on Indoor Unit



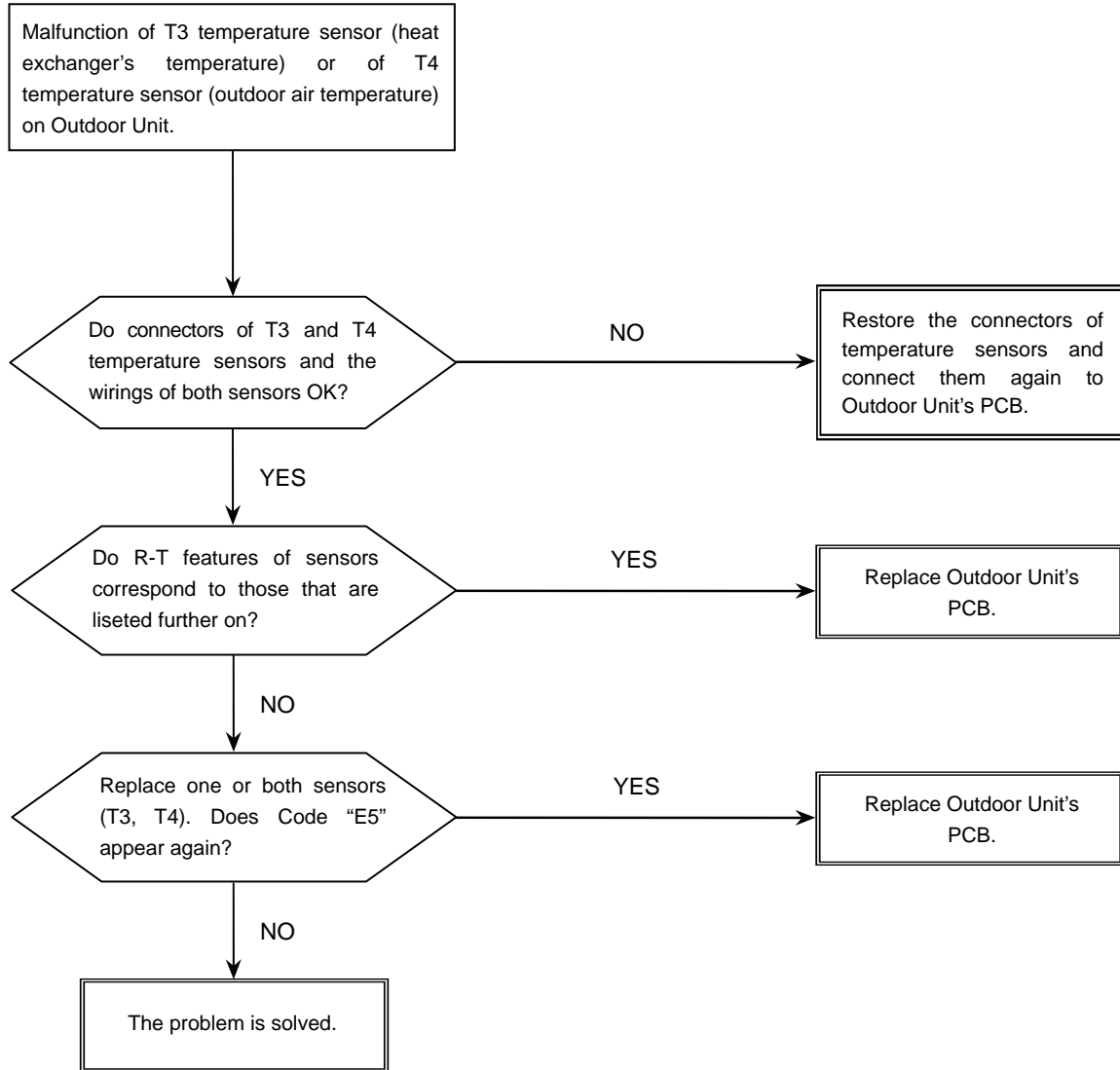
• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Unit

OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
Flashing	OFF	OFF	ON	Intervention of a protection on Inverter Module (IPM)



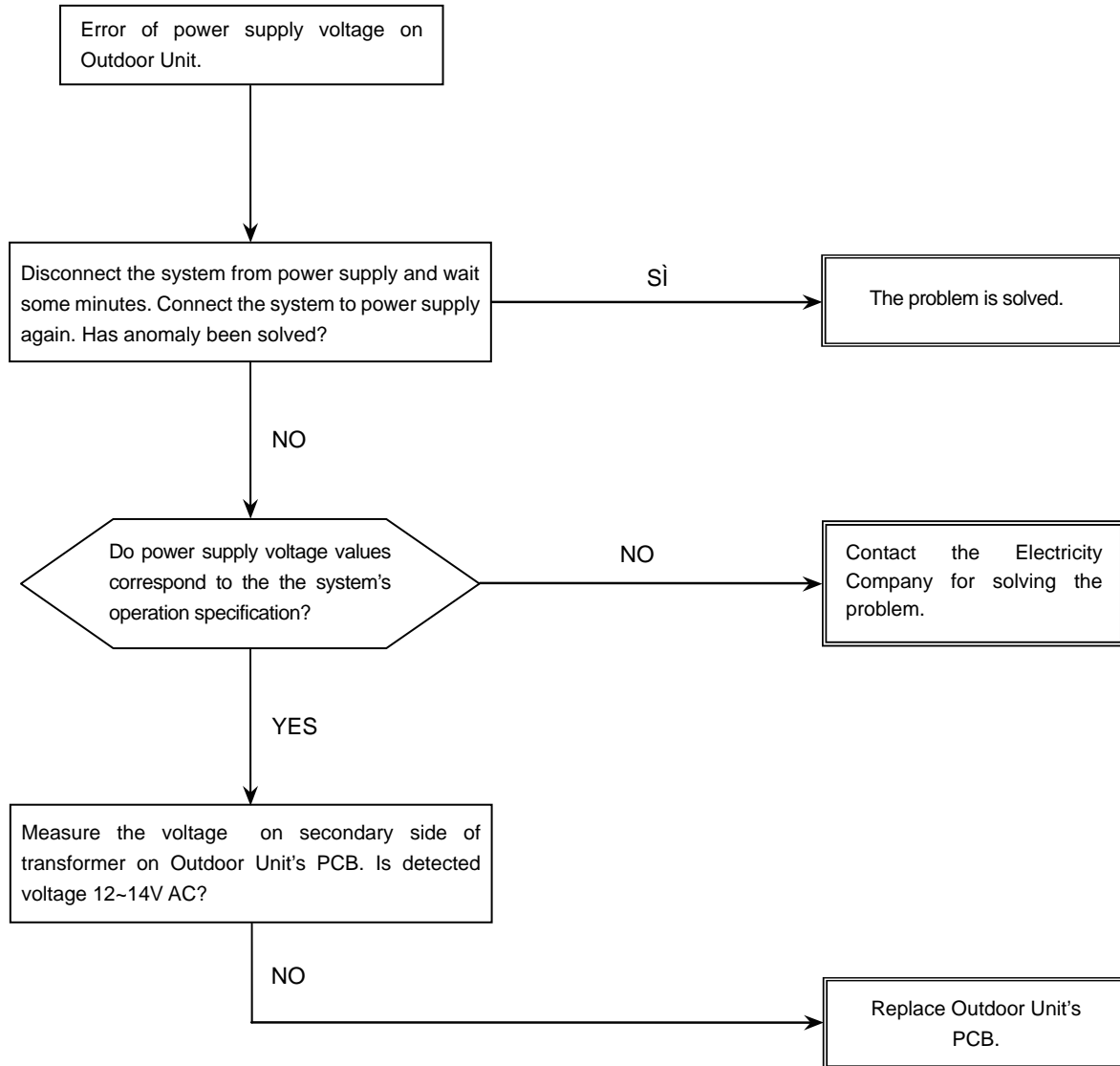
• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
Flashing	ON	OFF	OFF	Malfunction of temp. sensor (broken or in short-circuit) on O.U.



• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

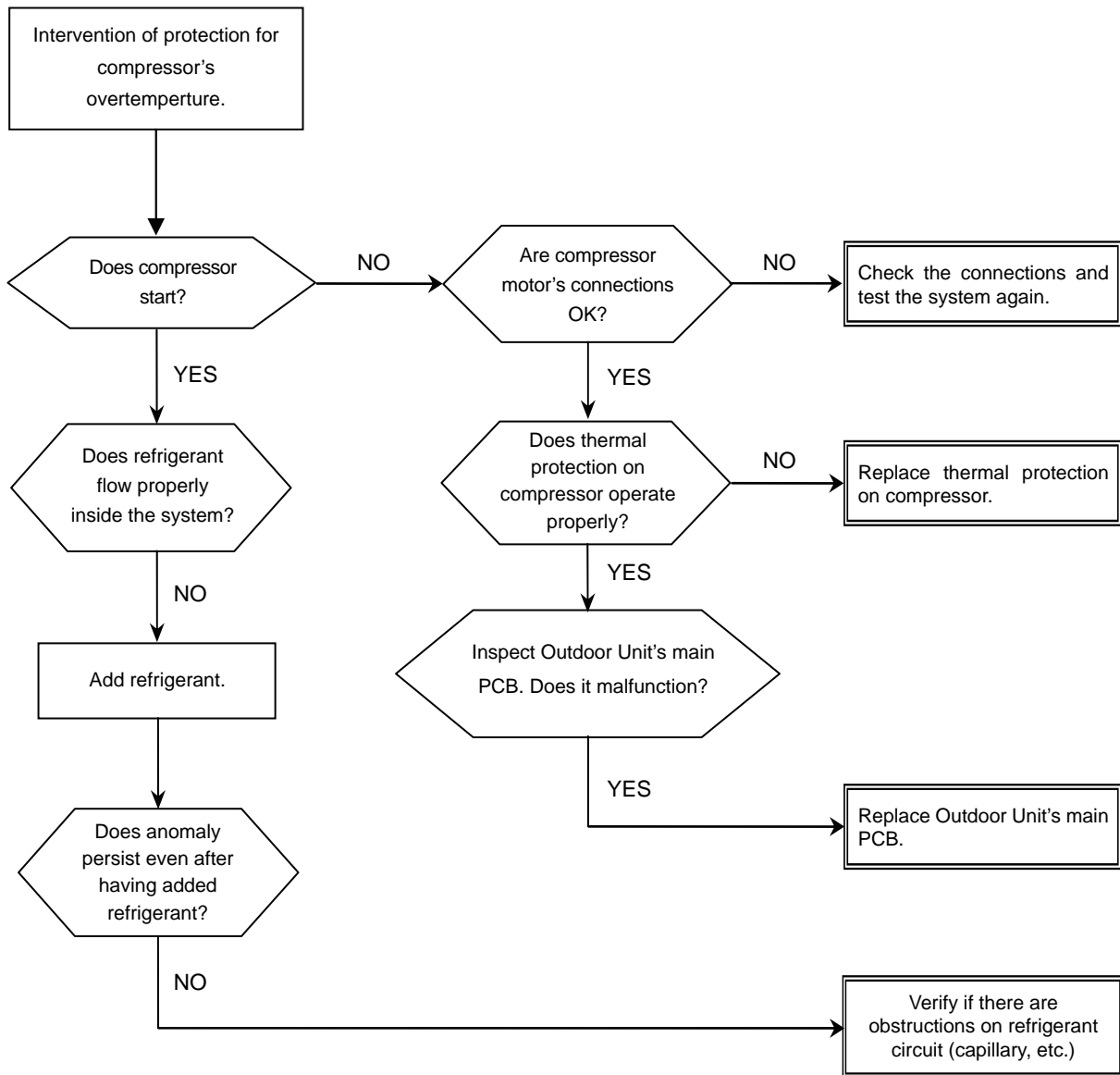
OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
Flashing	ON	OFF	ON	Too low/too high power supply voltage on Outdoor Unit.



• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

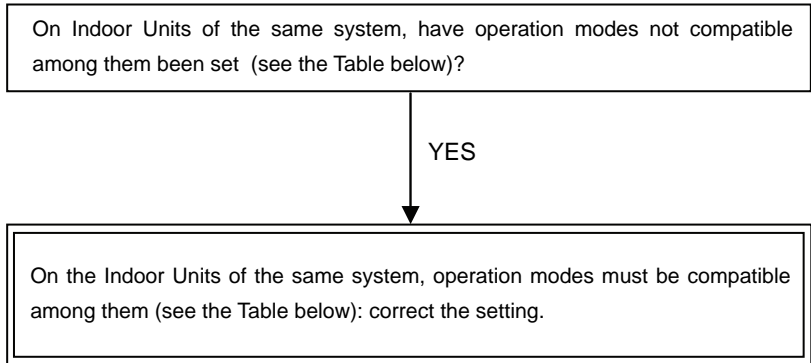
OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
Flashing	OFF	ON	OFF	Intervention of compressor's thermal protection. [Excluded Outdoor Units HCKU 816 X4, HCKU1066 X4]

- ✧ If temperature detected on compressor is higher than 120°C, the system is stopped for intervention of thermal protection of compressor itself.
- ✧ Normal operation will be restored only when temperature value detected on compressor is lower than 90°C (reactivation threshold of thermal protection).



• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
Flashing	OFF	ON	ON	Operation mode in conflict with operation mode of other Indoor Units

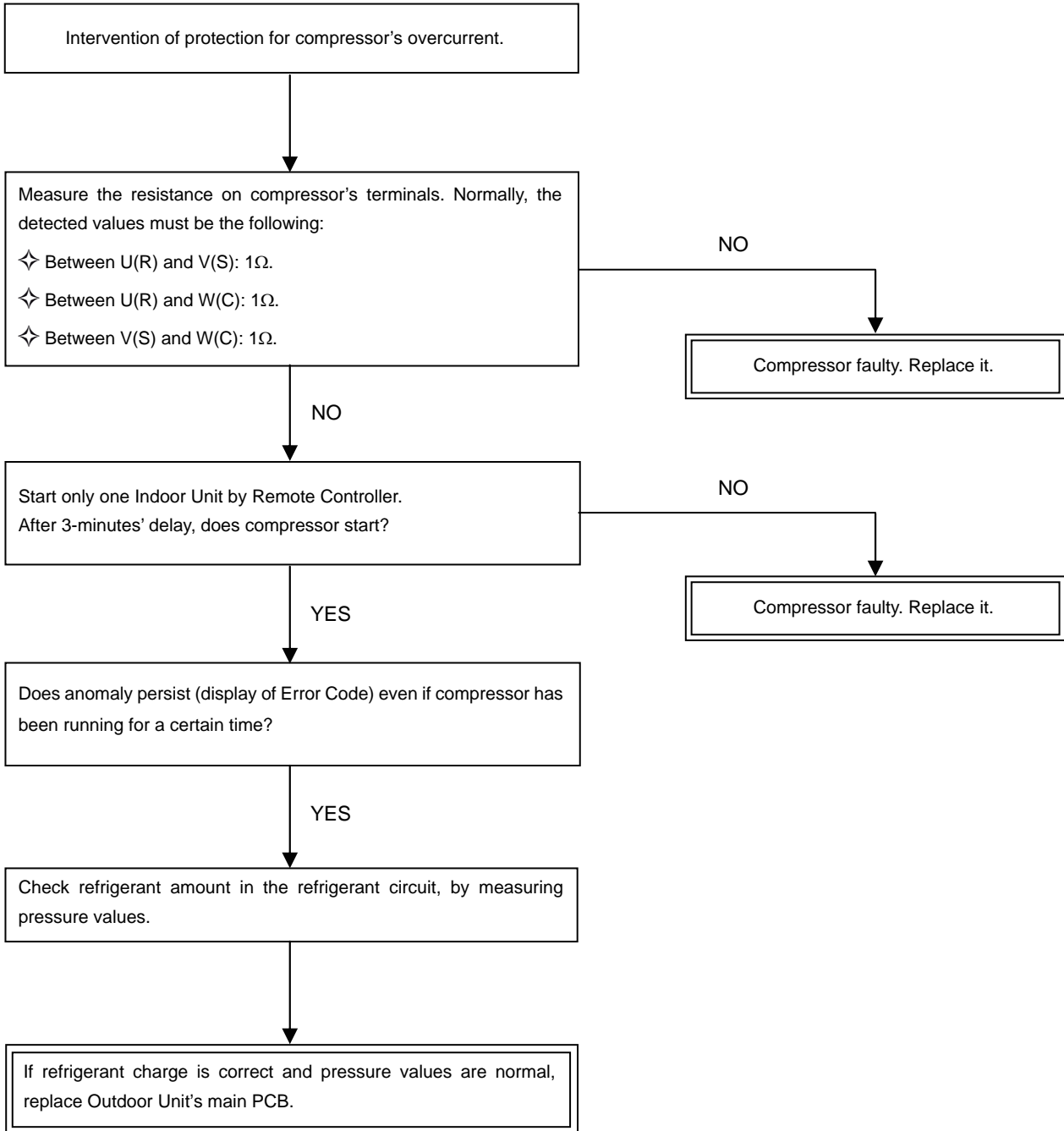


✧Table of compatibility between Indoor Units' operation modes:

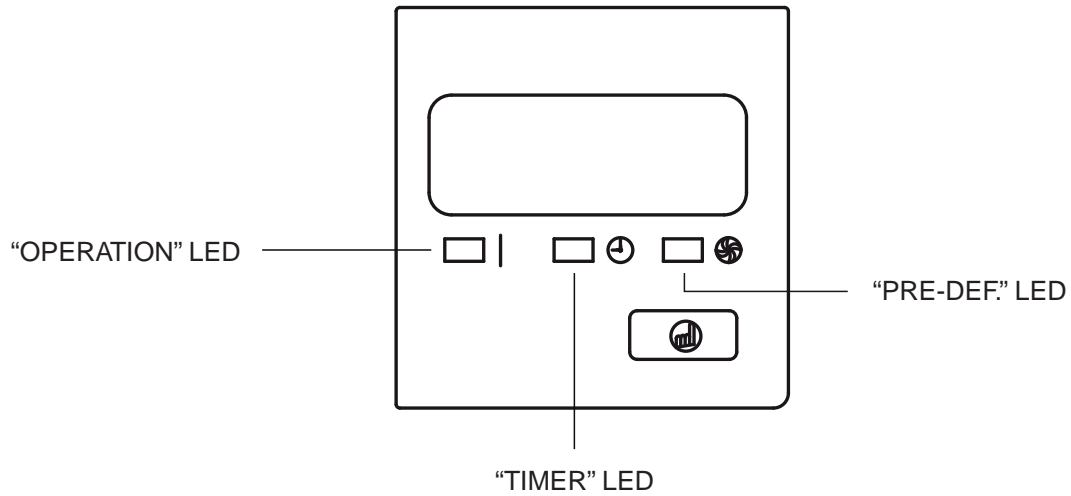
	Cooling	Heating	Fan	OFF
Cooling	YES	NO	YES	YES
Heating	NO	YES	NO	YES
Fan	YES	NO	YES	YES
OFF	YES	YES	YES	YES

• Troubleshooting by LED indicators of Multi Liberty (HTFU, HSFU, HRBU) X Indoor Units

OPERATION	TIMER	DEF./FAN	ALARM	Outline of malfunction
Flashing	OFF	ON	ON	Protection for compressor overcurrent



• Troubleshooting by LED indicators on Multi Liberty (HFIU 266 X, 356 X) Indoor Units



■ LED Display on Indoor Units

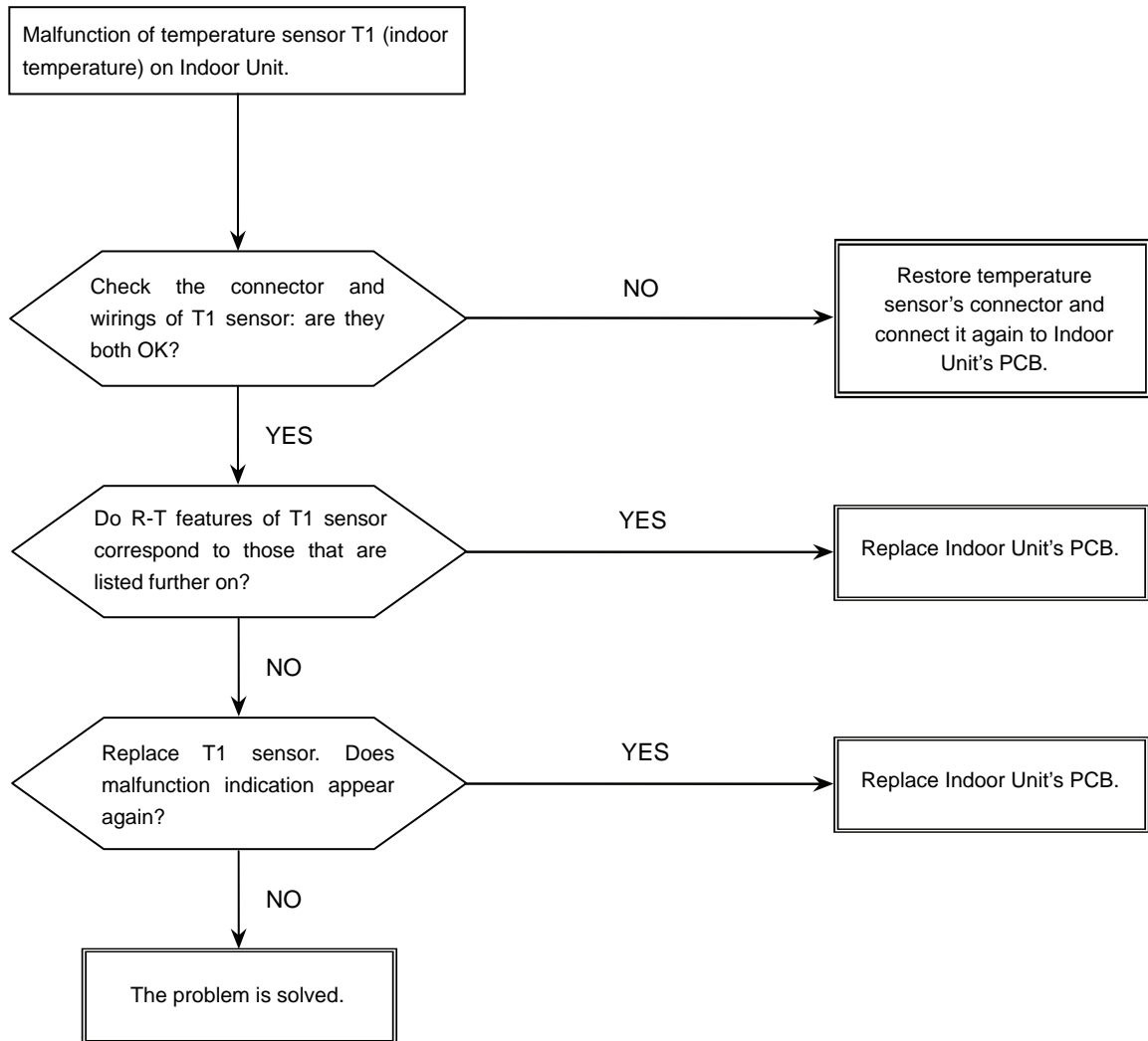
- 1) In case of operation malfunctions, the codified flashing of LED indicators on display allows to explain the cause of malfunction, thus making easier the troubleshooting.
- 2) As far as the list of malfunctions and the detailed outline of each malfunction are concerned, see the following Table and the following pages.

■ Codified malfunctions: LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	OFF	OFF	Malfunction of indoor temp. sensor (broken/in short-circuit) T1 (I.U.)
OFF	OFF	Flashing	Malfunction of heat exchanger's temp. sensor (broken/in short-circuit) T2 (I.U.)
OFF	Flashing	OFF	Communication error between Indoor Unit ↔ Outdoor Unit.
Flashing	Flashing	OFF	Faulty EEPROM on Indoor Unit.
Flashing	OFF	Flashing	Intervention of a protection on Inverter Module (IPM).
Flashing	Flashing	Flashing	Faulty temp. sensor (broken/in short-circuit) on O.U.
Flashing	ON	OFF	Intervention of compressor's thermal protection. [Excluded Outdoor Units HCKU 816 X4, HCKU1066 X4]
Flashing	OFF	ON	Operation mode in conflict with operation mode of other Indoor Units.

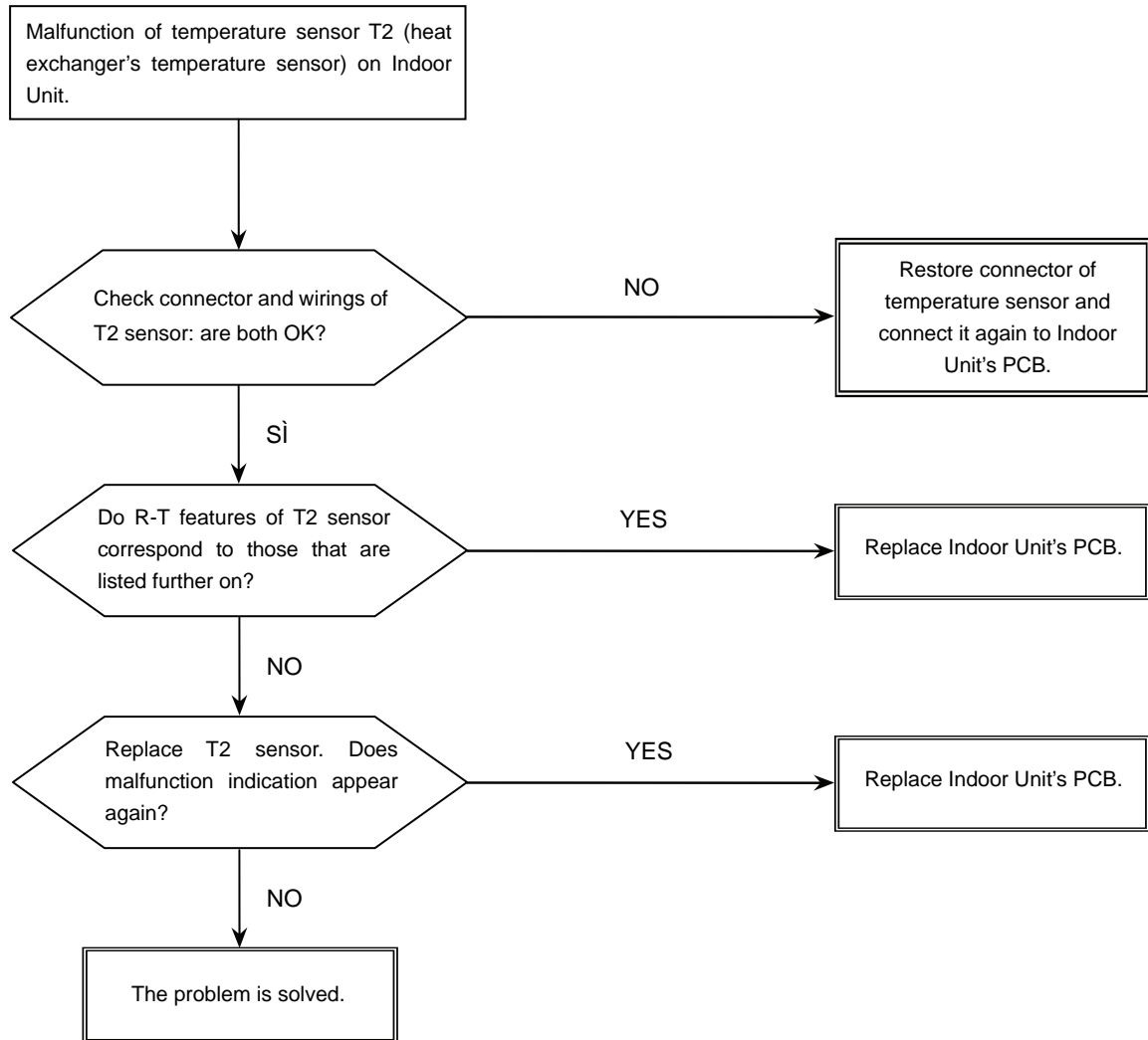
• Troubleshooting by LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	OFF	OFF	Malfunction of T1 sensor (room temperature) on Indoor Unit



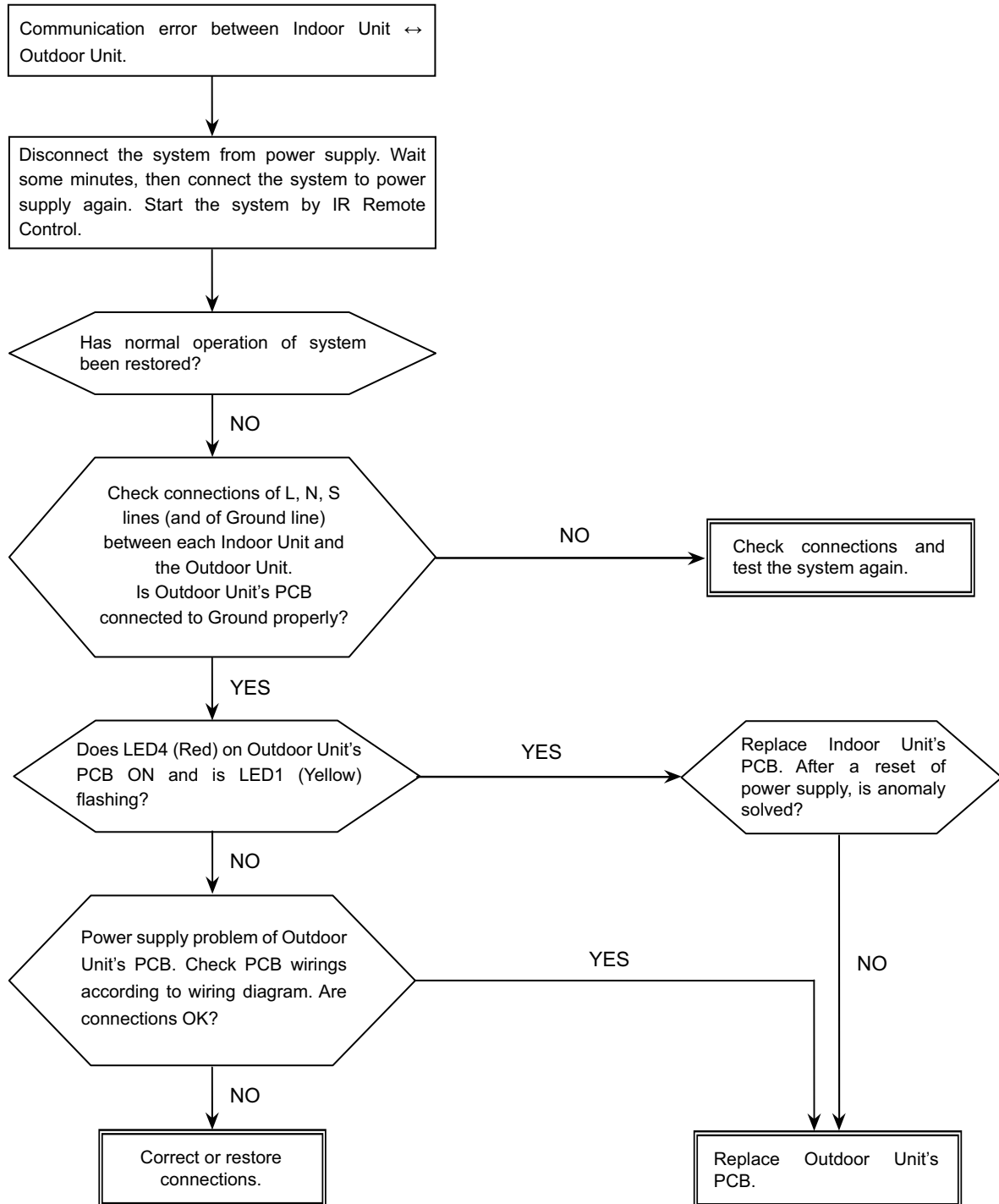
• Troubleshooting by LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
OFF	OFF	Flashing	Malfunction of T2 sensor (heat exchanger's temp.) on Indoor Unit



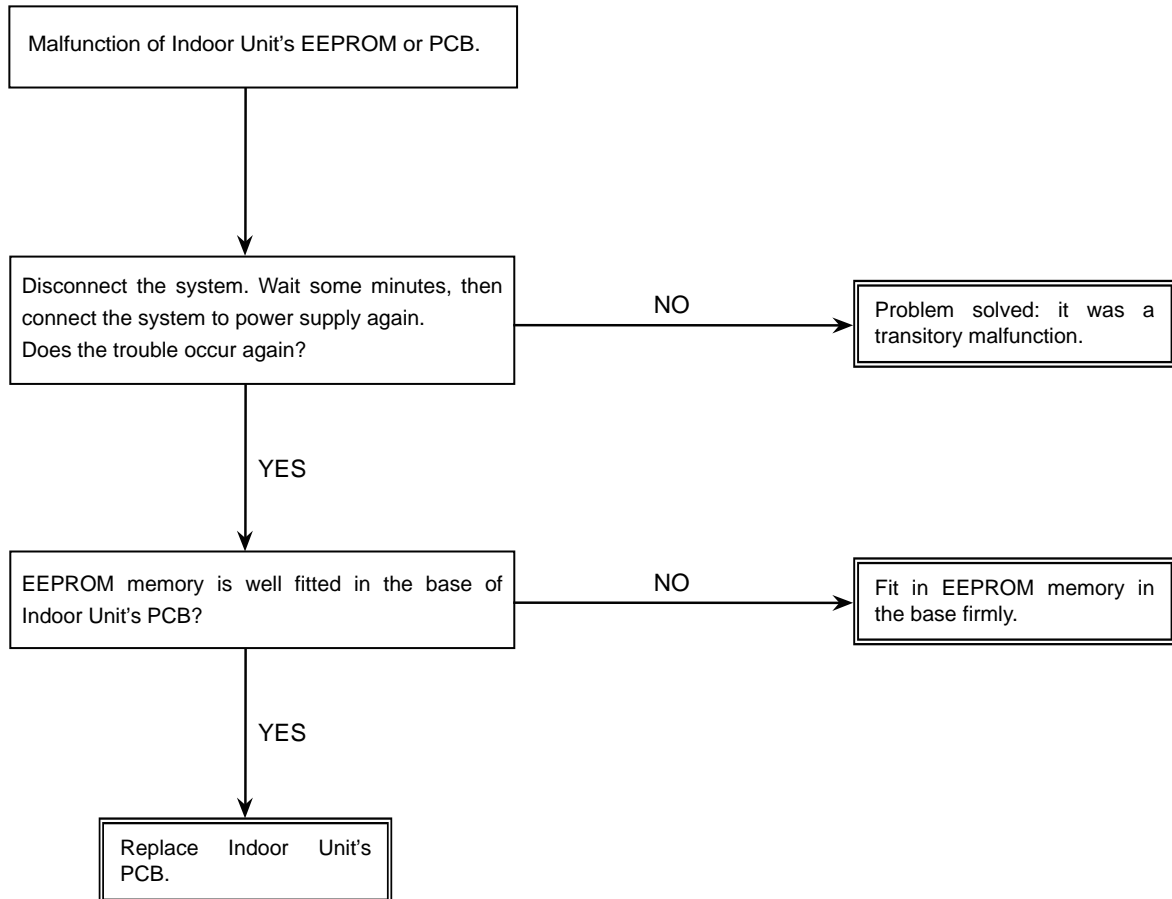
• Troubleshooting by LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
OFF	OFF	Flashing	Communication error between Indoor Unit ↔ Outdoor Unit



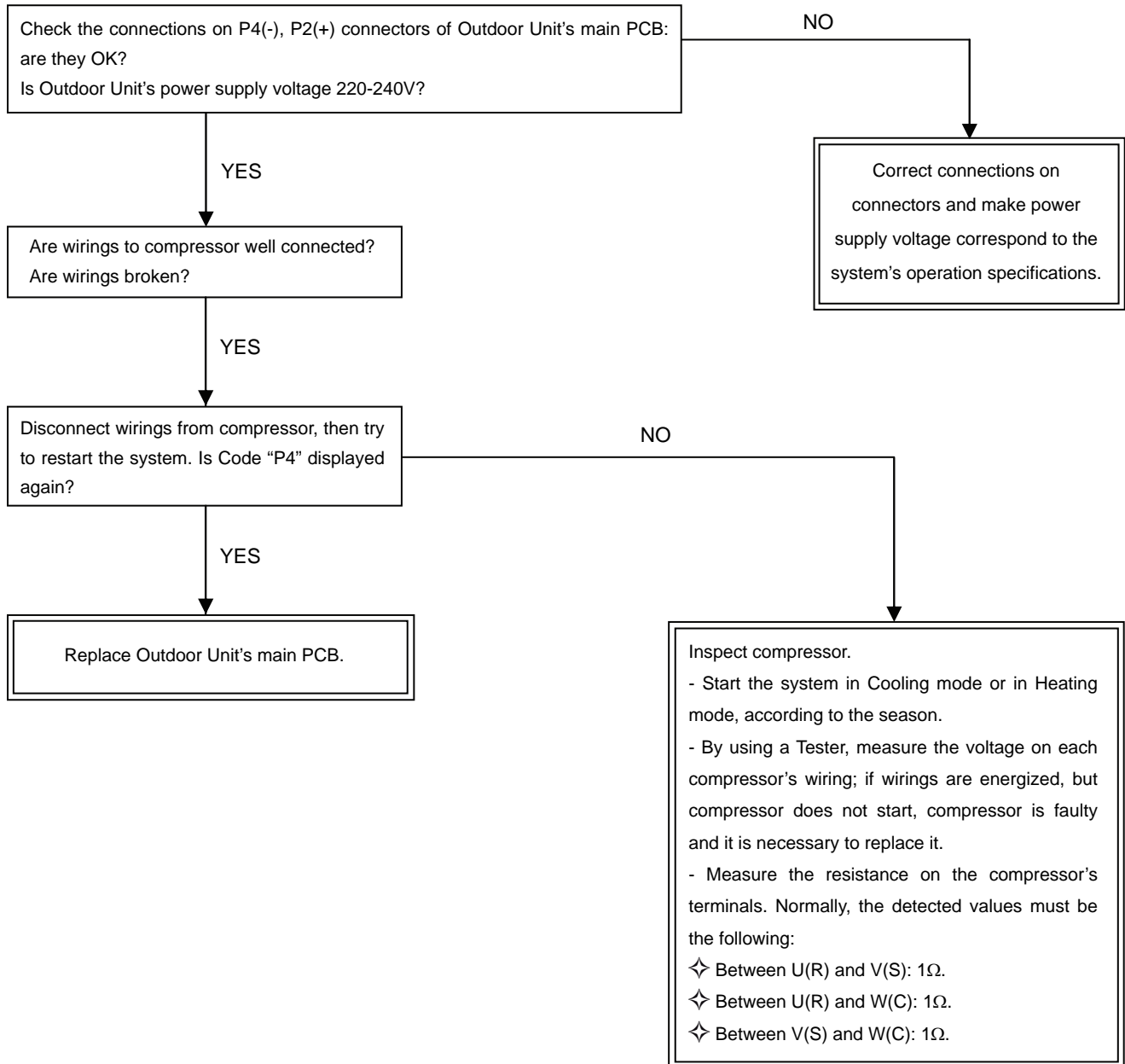
• Troubleshooting by LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	Flashing	OFF	Faulty EEPROM on Indoor Unit



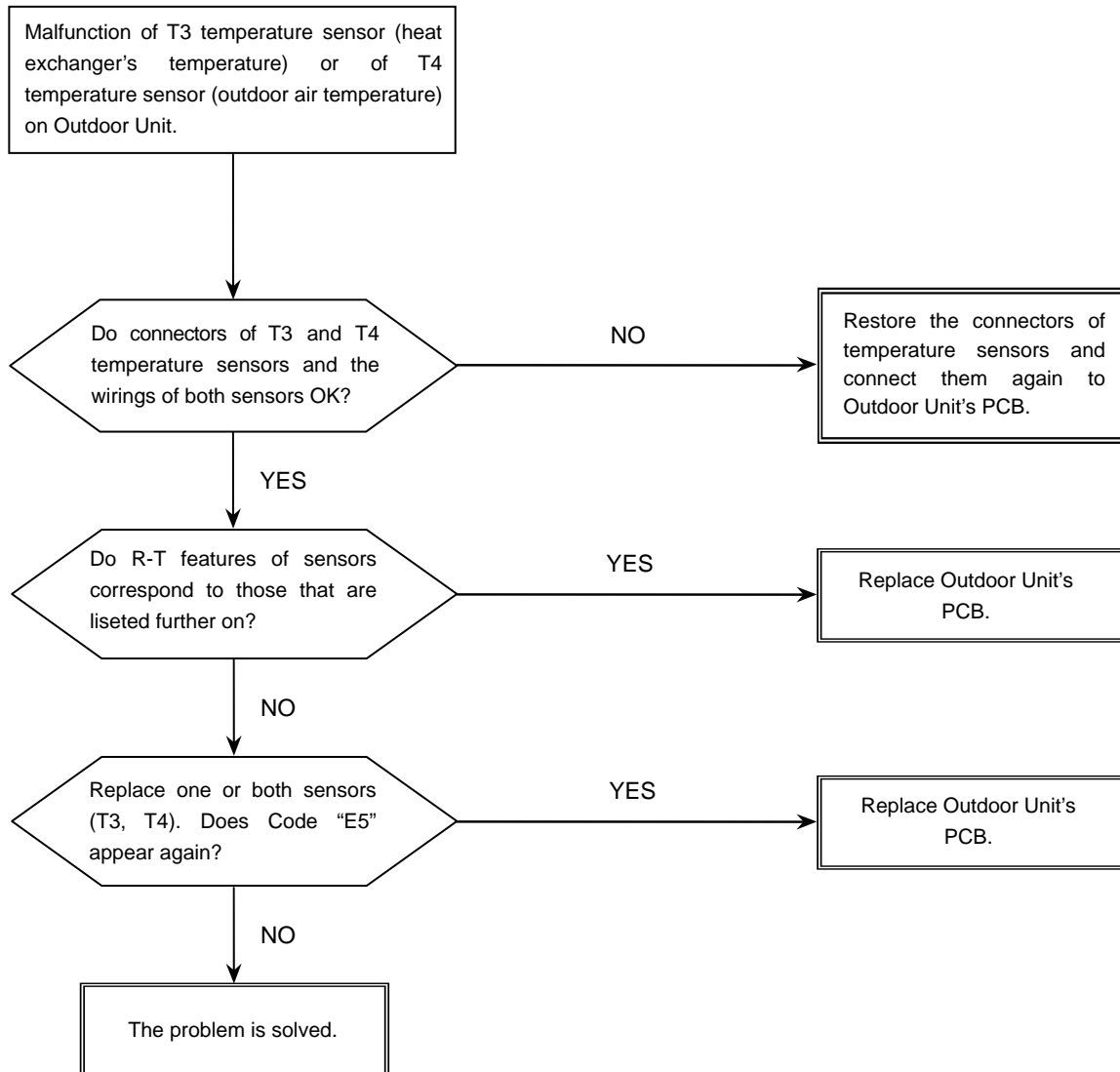
• Troubleshooting by LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	OFF	Flashing	Intervention of a protection on Inverter Module (IPM)



• Troubleshooting by LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

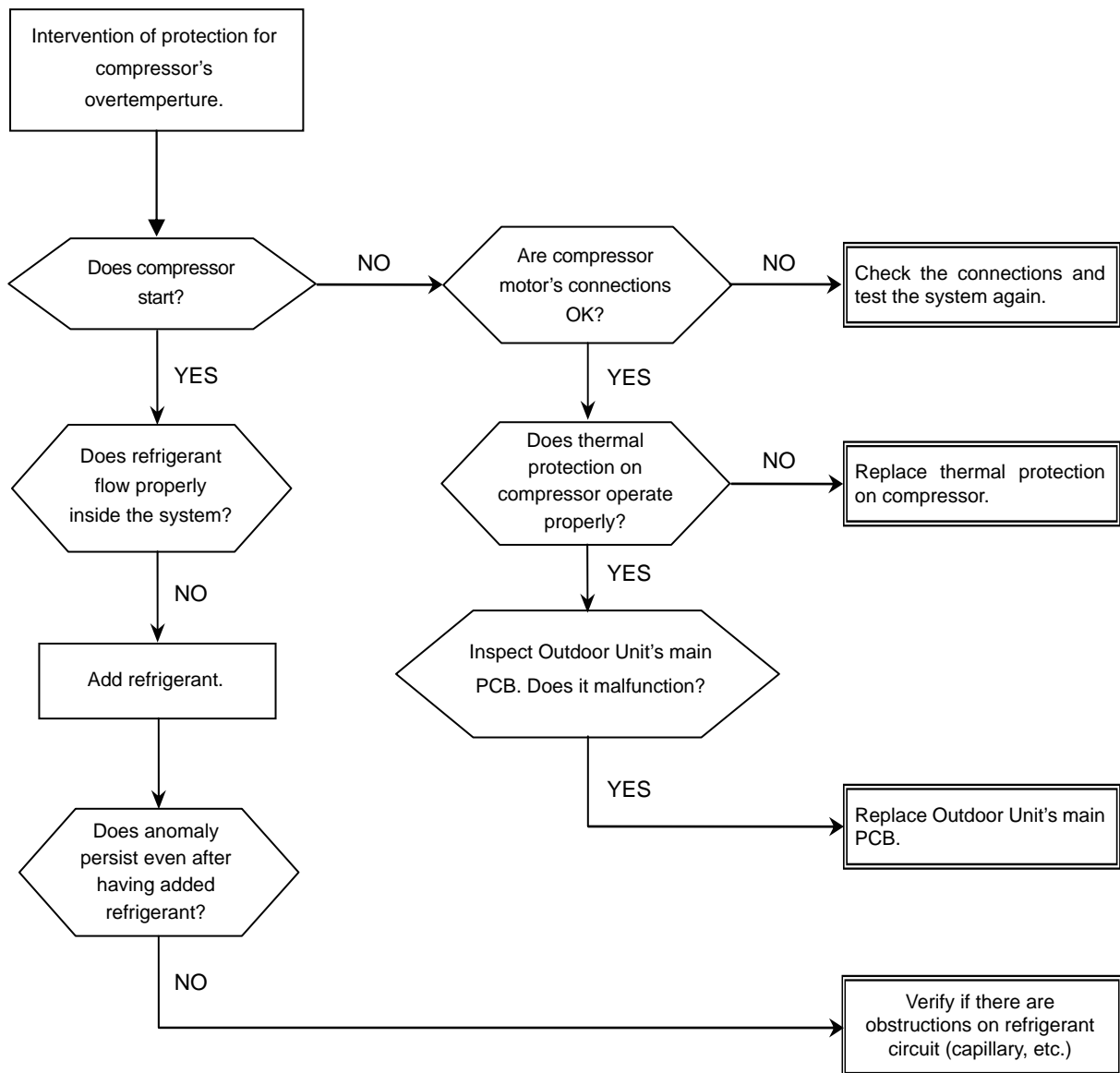
OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	Flashing	Flashing	Malfunction of temp. sensor (broken or in short-circuit) on O.U.



• Troubleshooting by LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

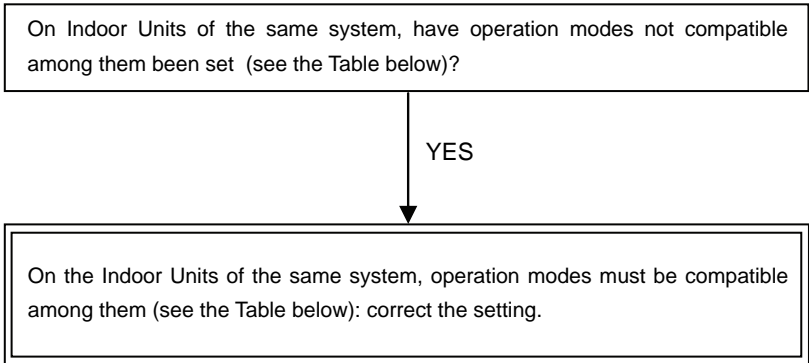
OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	ON	OFF	Intervention of compressor's thermal protection. [Excluded Outdoor Units HCKU 816 X4, HCKU1066 X4]

- ✧ If temperature detected on compressor is higher than 120°C, the system is stopped for intervention of thermal protection of compressor itself.
- ✧ Normal operation will be restored only when temperature value detected on compressor is lower than 90°C (reactivation threshold of thermal protection).



• Troubleshooting by LED indicators of Multi Liberty (HFIU 266 X, 356 X) Indoor Units

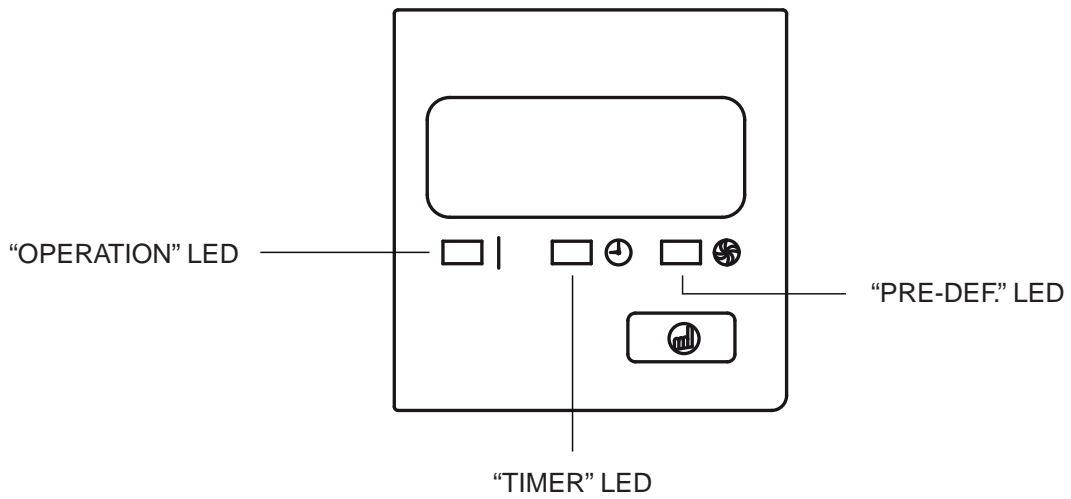
OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	OFF	ON	Operation mode in conflict with operation mode of other I.U. of system



✧Table of compability between Indoor Units' operation modes:

	Cooling	Heating	Fan	OFF
Cooling	YES	NO	YES	YES
Heating	NO	YES	NO	YES
Fan	YES	NO	YES	YES
OFF	YES	YES	YES	YES

• Troubleshooting by LED indicators of Multi Liberty HFIU 536 X Indoor Unit



■LED Display on Indoor Units

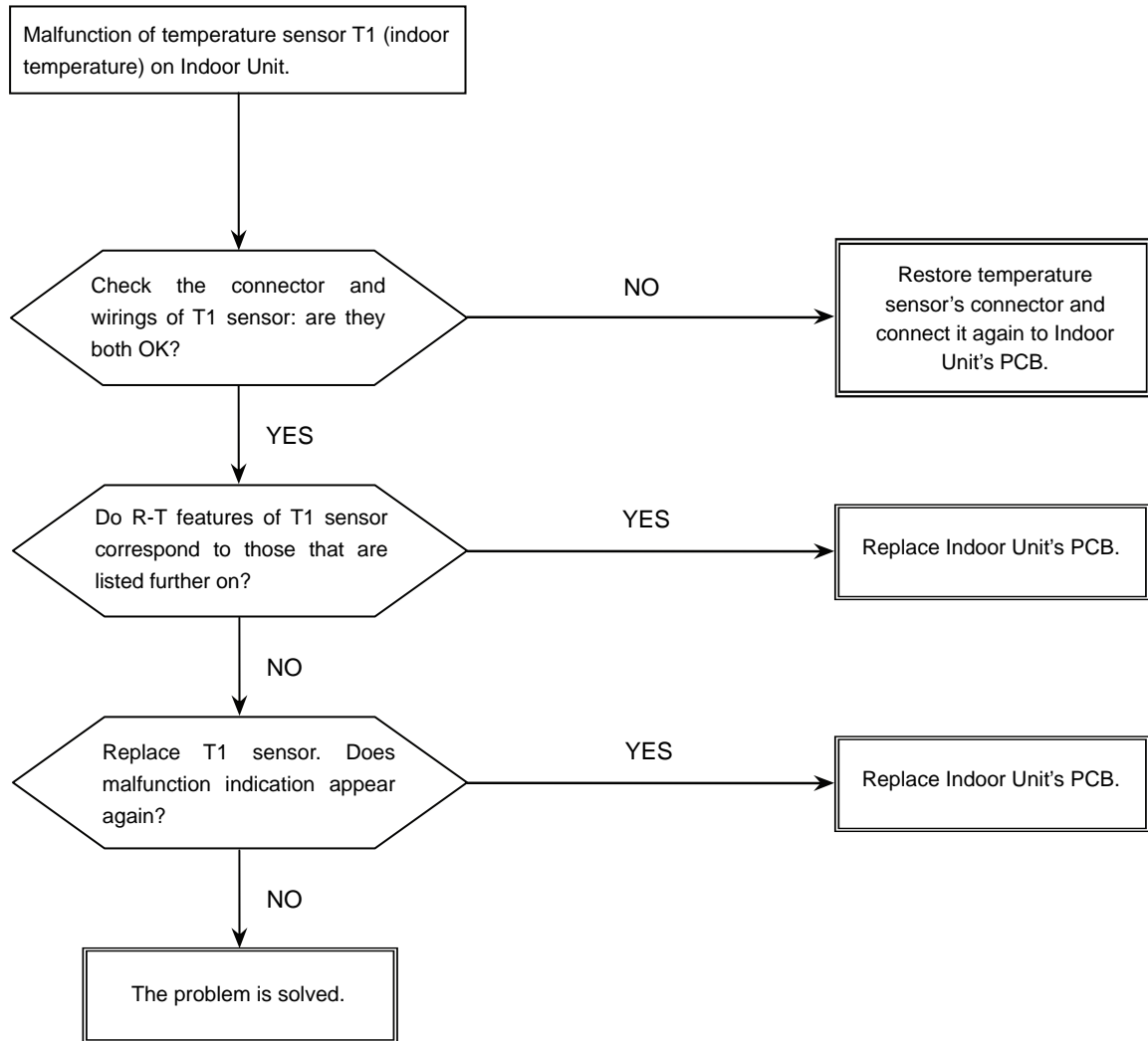
- 1) In case of operation malfunctions, the codified flashing of LED indicators on display allows to explain the cause of malfunction, thus making easier the troubleshooting.
- 2) As far as the list of malfunctions and the detailed outline of each malfunction are concerned, see the following Table and the following pages.

■Codified malfunctions: LED indicators of Multi Liberty HFIU 536 X Indoor Unit

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	Flashing	OFF	Malfunction of indoor temp. sensor (broken/in short-circuit) T1 (I.U.)
OFF	Flashing	OFF	Communication error between Indoor Unit Outdoor Unit.
Flashing	Flashing	Flashing	Faulty EEPROM on Indoor Unit.
OFF	OFF	Flashing	Malfunction on Outdoor Unit (see display on Outdoor Unit's PCB).
Flashing	OFF	Flashing	Operation mode in conflict with operation mode of other Indoor Units.

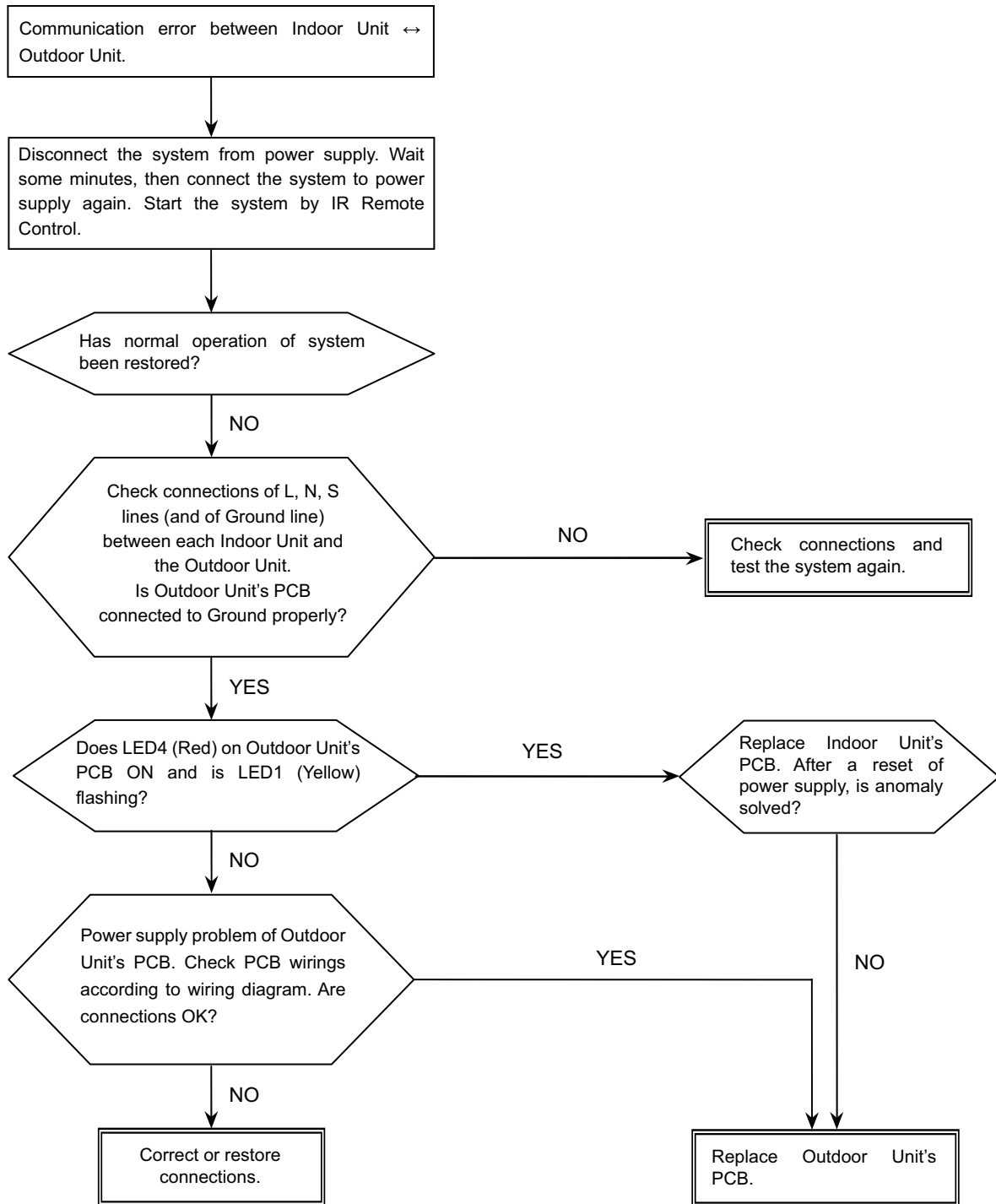
• Troubleshooting by LED indicators of Multi Liberty HFIU 536 X Indoor Unit

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	Flashing	OFF	Malfunction of T1 sensor (room temperature) on Indoor Unit



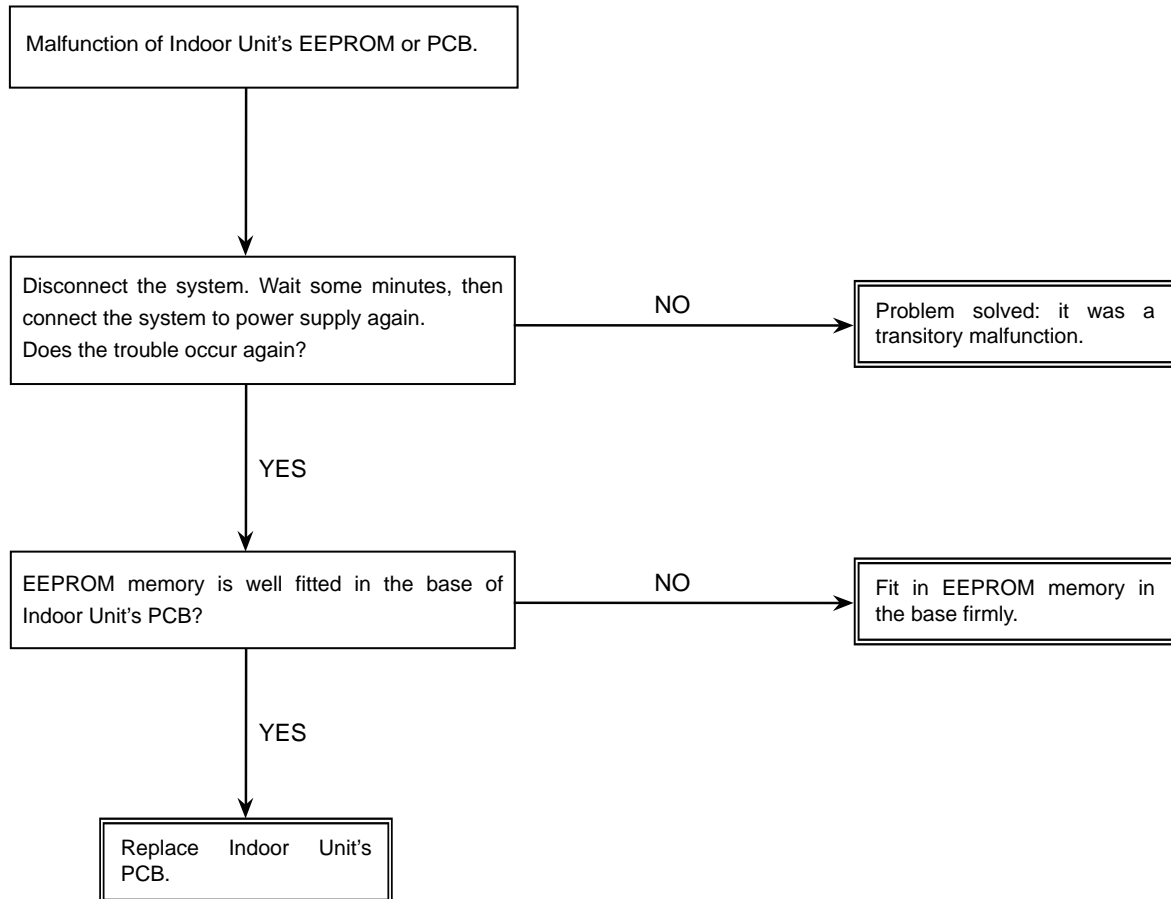
• Troubleshooting by LED indicators of Multi Liberty HFIU 536 X Indoor Unit

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
OFF	Flashing	OFF	Communication error between Indoor Unit ↔ Outdoor Unit



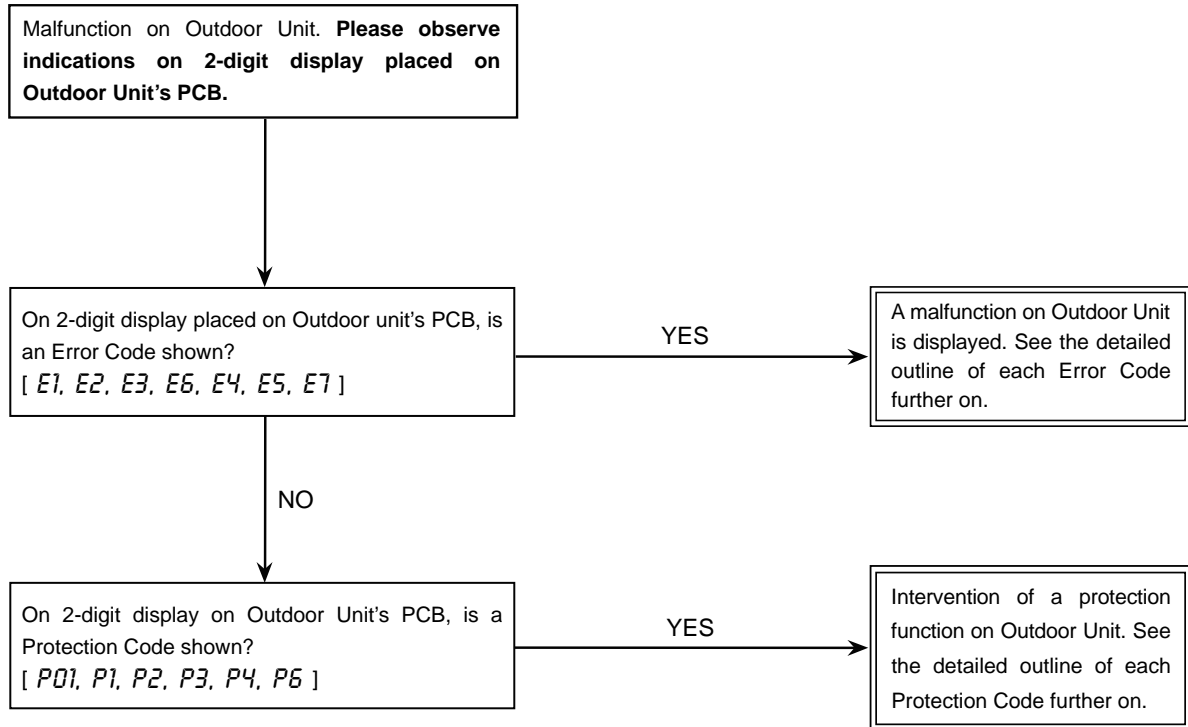
• Troubleshooting by LED indicators of Multi Liberty HFIU 536 X Indoor Unit

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	Flashing	Flashing	Faulty EEPROM on Indoor Unit



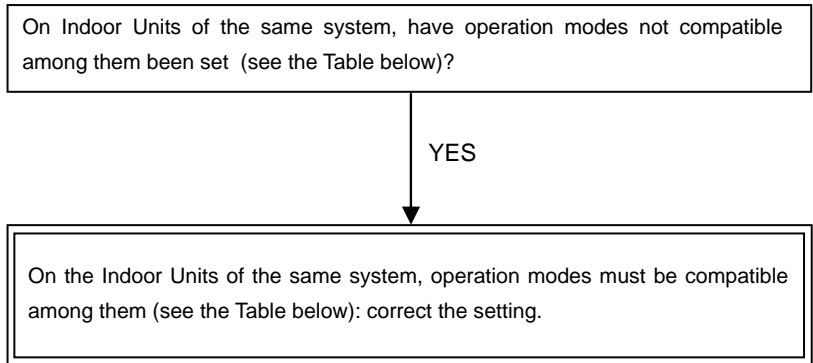
• Troubleshooting by LED indicators of Multi Liberty HFIU 536 X Indoor Unit

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
OFF	OFF	Flashing	Malfunction on Outdoor Unit (see display on Outdoor Unit's PCB)



• Troubleshooting by LED indicators of Multi Liberty HFIU 536 X Indoor Unit

OPERATION	TIMER	PRE-DEF.	Outline of malfunction
Flashing	OFF	Flashing	Operation mode in conflict with operation mode of other I.U.



✧Table of compability between Indoor Units' operation modes:

	Cooling	Heating	Fan	OFF
Cooling	YES	NO	YES	YES
Heating	NO	YES	NO	YES
Fan	YES	NO	YES	YES
OFF	YES	YES	YES	YES

3.2.2 ERROR/PROTECTION CODES DISPLAYED ON OUTDOOR UNITS

- Error Codes shown by 2-digit LED Display (Multi Liberty Outdoor Unit's PCB):

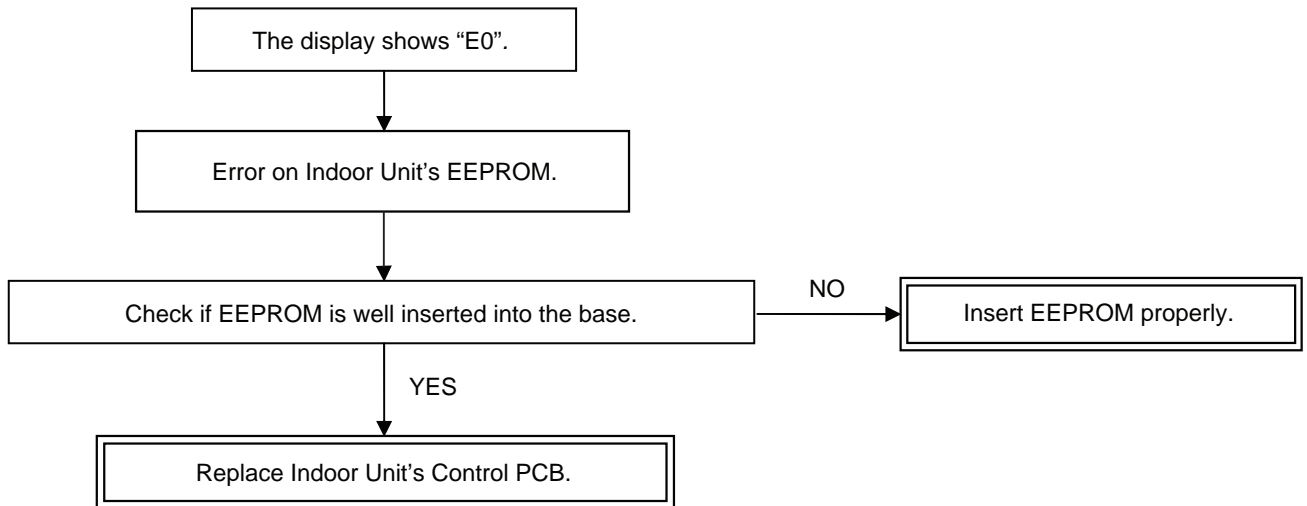
Error Code	Outline of malfunction
<i>E0</i>	Error of parameters in EEPROM (Indoor Units).
<i>E1</i>	Malfunction of temperature sensor, Gas side, on Indoor Unit "A".
<i>E2</i>	Malfunction of temperature sensor, Gas side, on Indoor Unit "B".
<i>E3</i>	Malfunction of temperature sensor, Gas side, on Indoor Unit "C".
<i>E4</i>	Malfunction of temperature sensor T3 (outdoor air) on Outdoor Unit.
<i>E5</i>	Error of compressor voltage.
<i>E6</i>	Malfunction of temperature sensor, Gas side, on Indoor Unit "D".
<i>E7</i>	Communication error on Outdoor Unit's PCB.

- Protection Codes shown on 2-digit LED Display (Multi Liberty Outdoor Unit's PCB):

Protection Code	Outline of protection function
<i>P0</i>	1) Protection for compressor discharge overtemperature. [All Models of Outdoor Unit] 2) Intervention of thermal protection for compressor overtemperature. [Excluded Models HCKU 816 X4, HCKU 1066 X4].
<i>P1</i>	High pressure protection [Models HCKU 816 X4, HCKU 1066 X4 only].
<i>P2</i>	Low pressure protection [Models HCKU 816 X4, HCKU 1066 X4 only].
<i>P3</i>	Protection for compressor overcurrent.
<i>P4</i>	Intervention of a protection function on Inverter Module.
<i>P5</i>	Protection for outdoor low temperature (in Heating mode).
<i>P6</i>	Protection for heat exchanger overtemperature on Outdoor Unit (in Cooling mode).

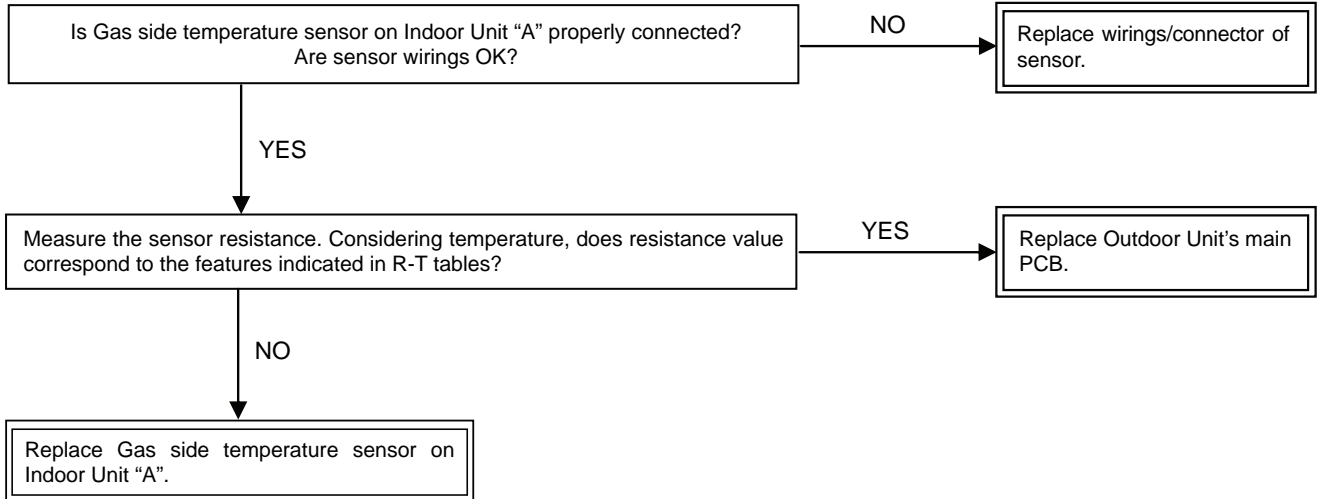
- Troubleshooting flowcharts, referred to Error Codes displayed on Outdoor Unit:

Error Code on Outdoor Unit	Outline of malfunction
<i>E0</i>	Error of EEPROM parameters (Indoor Unit)

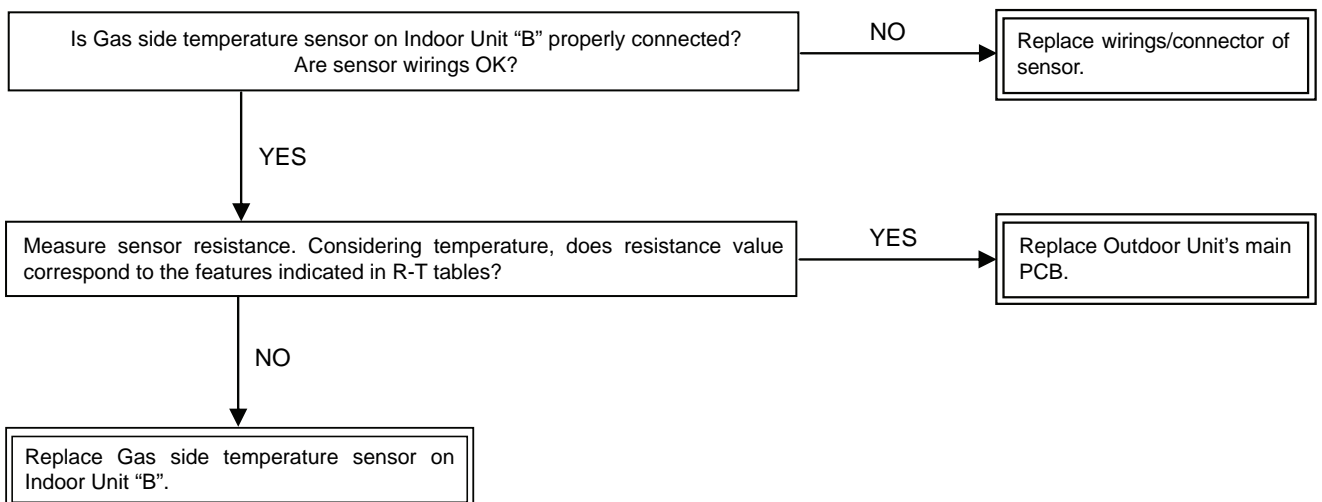


• Troubleshooting flowchart, referred to Error Codes displayed on Outdoor Unit:

Error Code on Outdoor Unit	Outline of malfunction
<i>E 1</i>	Malfunction of temperature sensor, Gas side, on Indoor Unit "A"

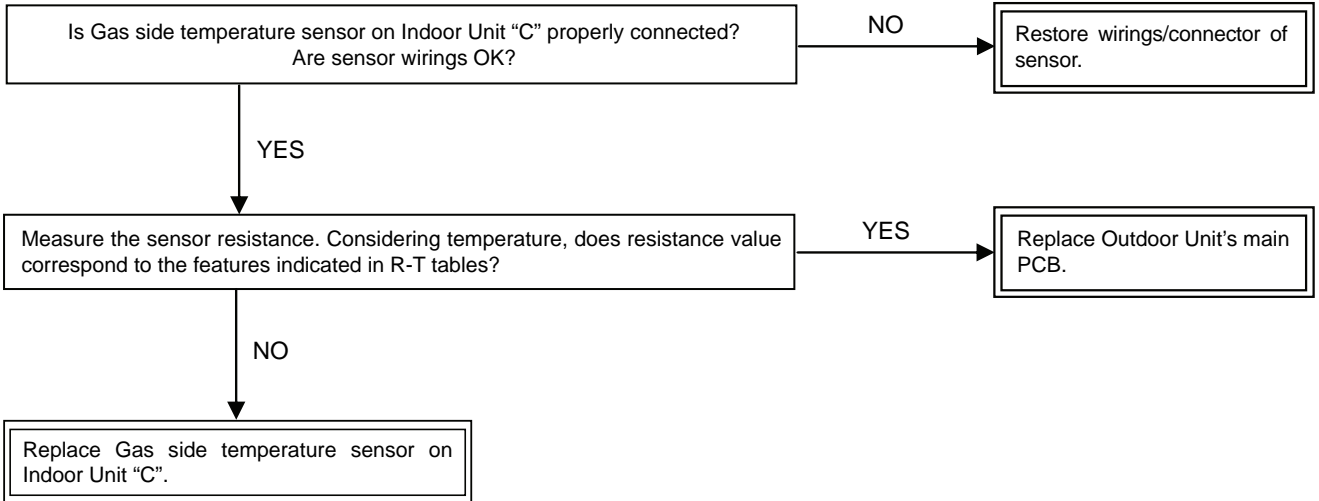


Error Code on Outdoor Unit	Outline of malfunction
<i>E 2</i>	Malfunction of temperature sensor, Gas side, on Indoor Unit "B"

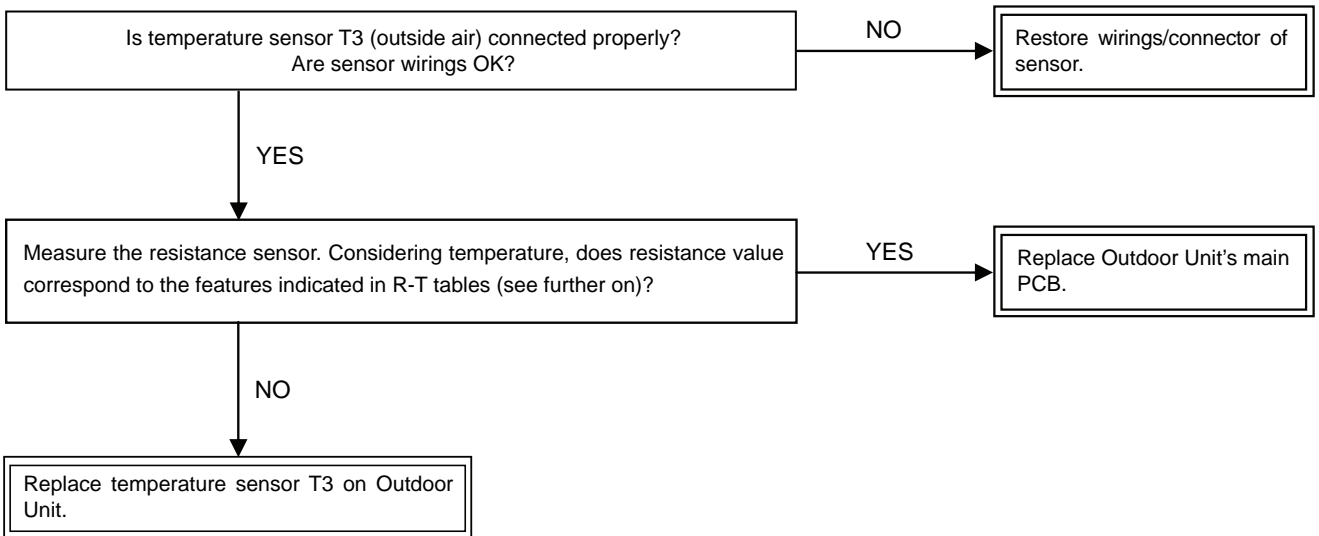


• Troubleshooting flowcharts, referred to Error Codes displayed on Outdoor Unit:

Error Code on Outdoor Unit	Outline of malfunction
<i>E 3</i>	Malfunction of temperature sensor, Gas side, on Indoor Unit "C"

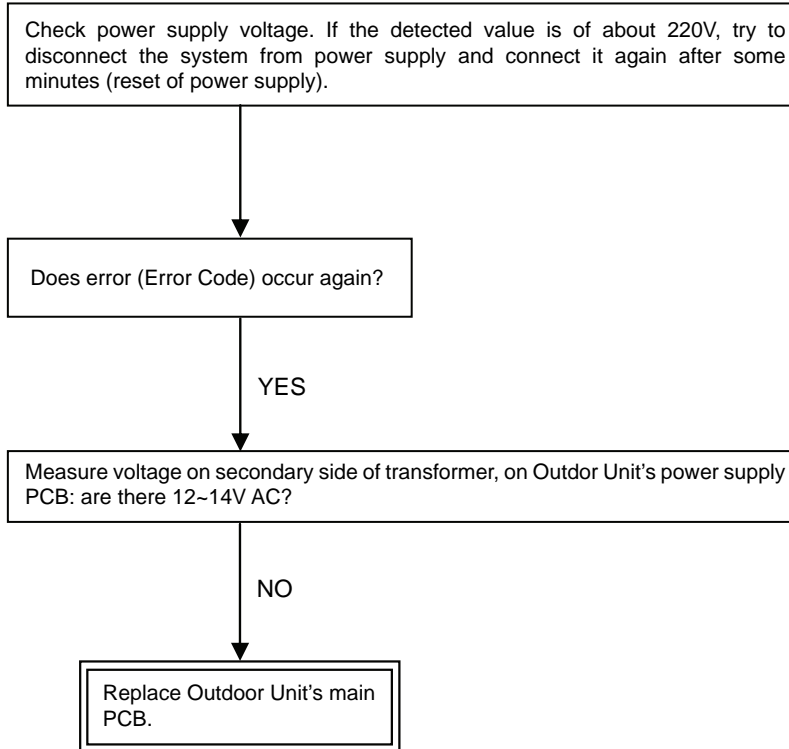


Error Code on Outdoor Unit	Outline of malfunction
<i>E 4</i>	Malfunction of temperature sensor T3 (outside air) on O.U.

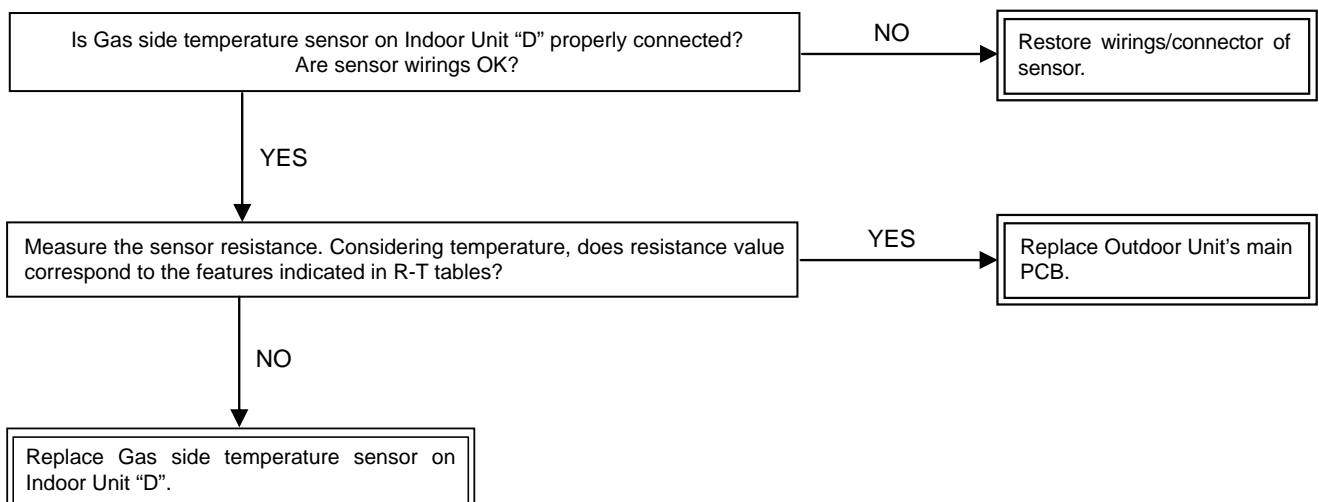


• Troubleshooting flowcharts, referred to Error Codes displayed on Outdoor Unit:

Error Code on Outdoor Unit	Outline of malfunction
<i>E 5</i>	Error of voltage to compressor



Error Code on Outdoor Unit	Outline of malfunction
<i>E 6</i>	Malfunction of Gas side temperature sensor, on Indoor Unit "D"



- Troubleshooting flowcharts, referred to Error Codes displayed on Outdoor Unit:

Error Code on Outdoor Unit	Outline of malfunction
E 7	Communication error on Outdoor Unit's PCB

Outdoor Unit's display (PCB) shows Error Code "E7".

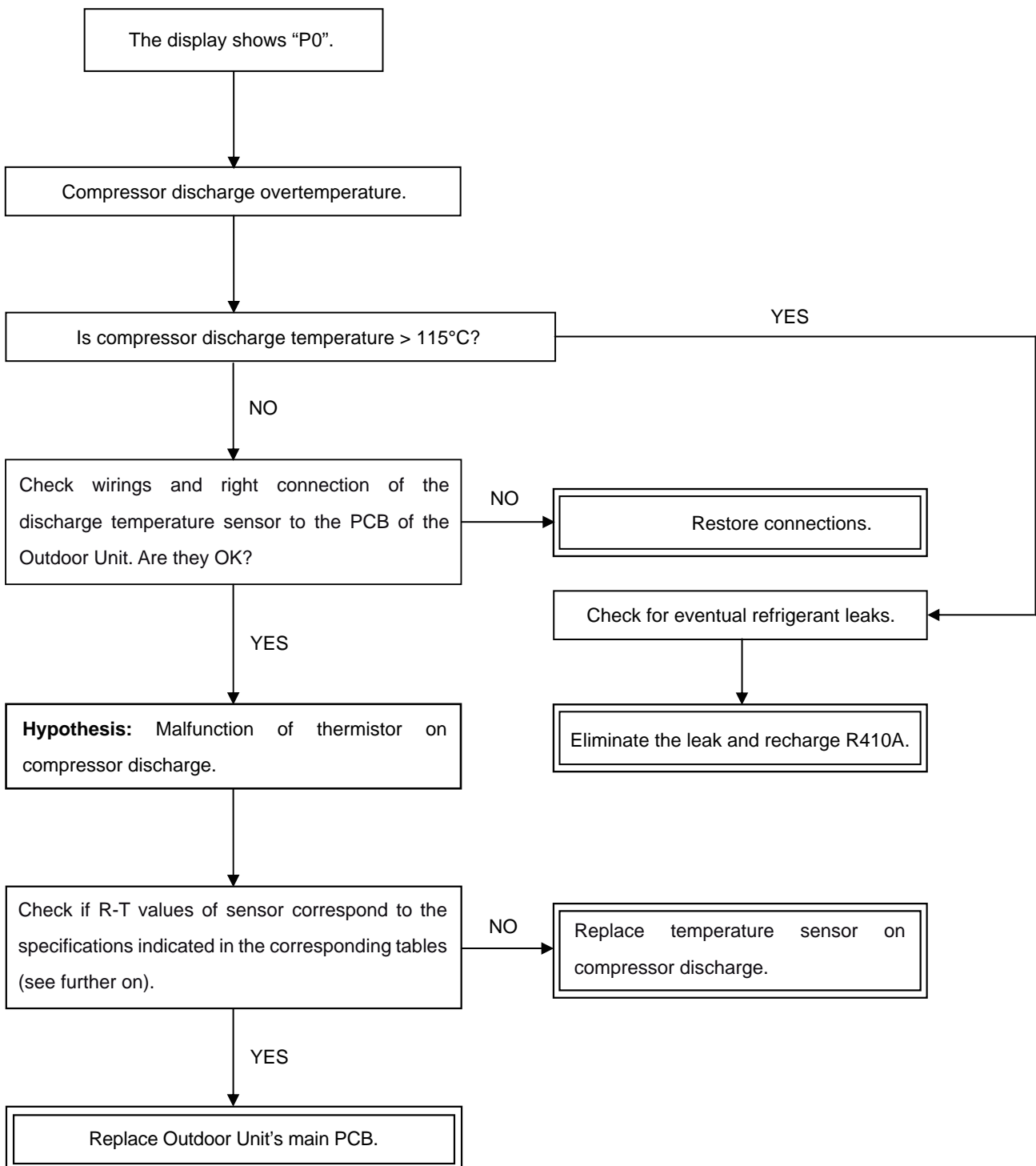


Replace Outdoor Unit's main PCB.

• Troubleshooting flowcharts, referred to Protection Codes displayed on Outdoor Unit:

Protection Code on Outdoor Unit	Outline of protection function
<i>P0</i>	Protection for compressor's discharge overtemperature [All Models of Outdoor Units]

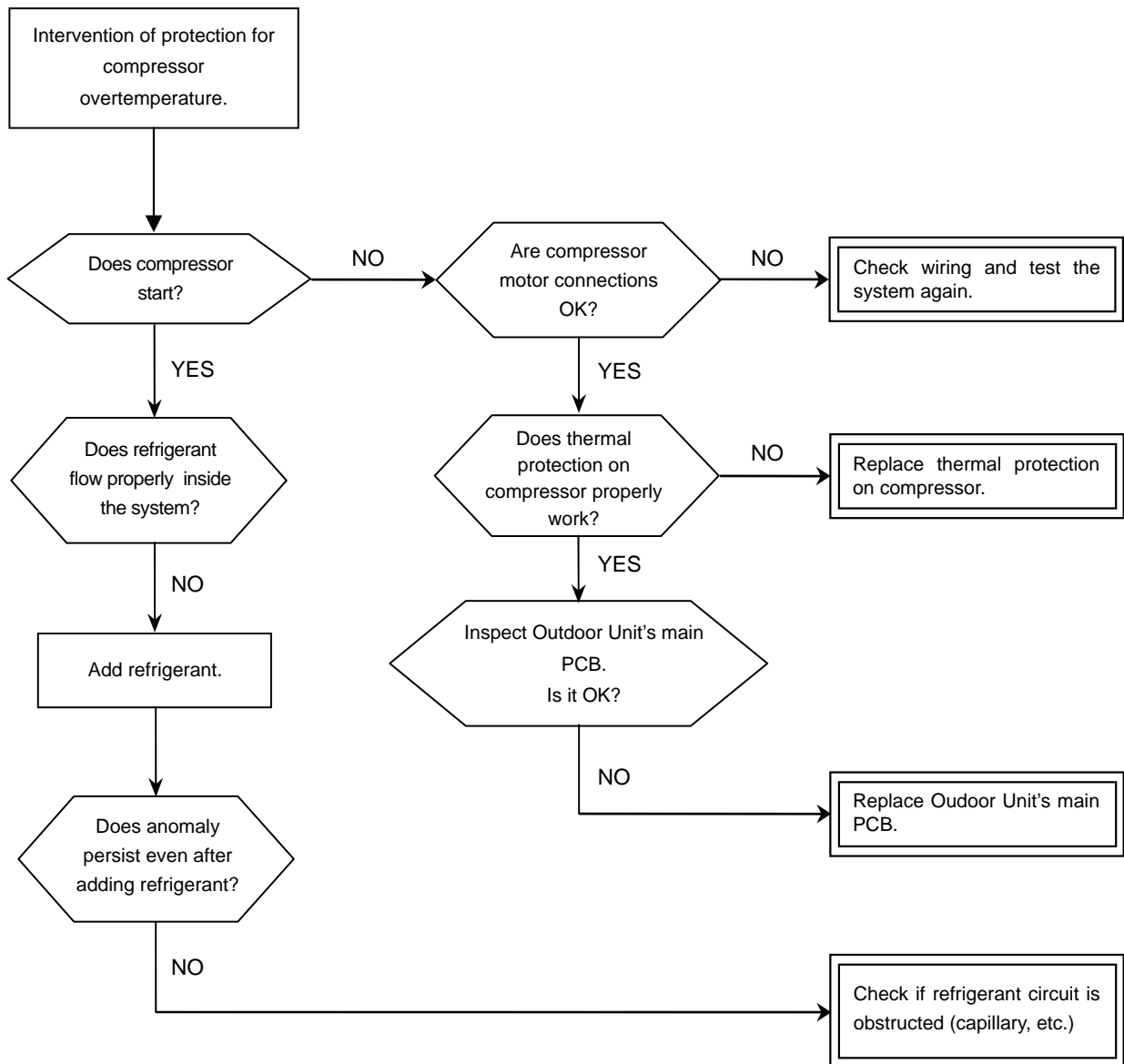
- ✧ If detected temperature on compressor discharge is higher than 115°C for at least 10 seconds, the system is stopped.
- ✧ Normal operation can be restored only if temperature value detected on compressor discharge is lower than 90°C.



• Troubleshooting flowcharts, referred to Protection Codes displayed on Outdoor Unit:

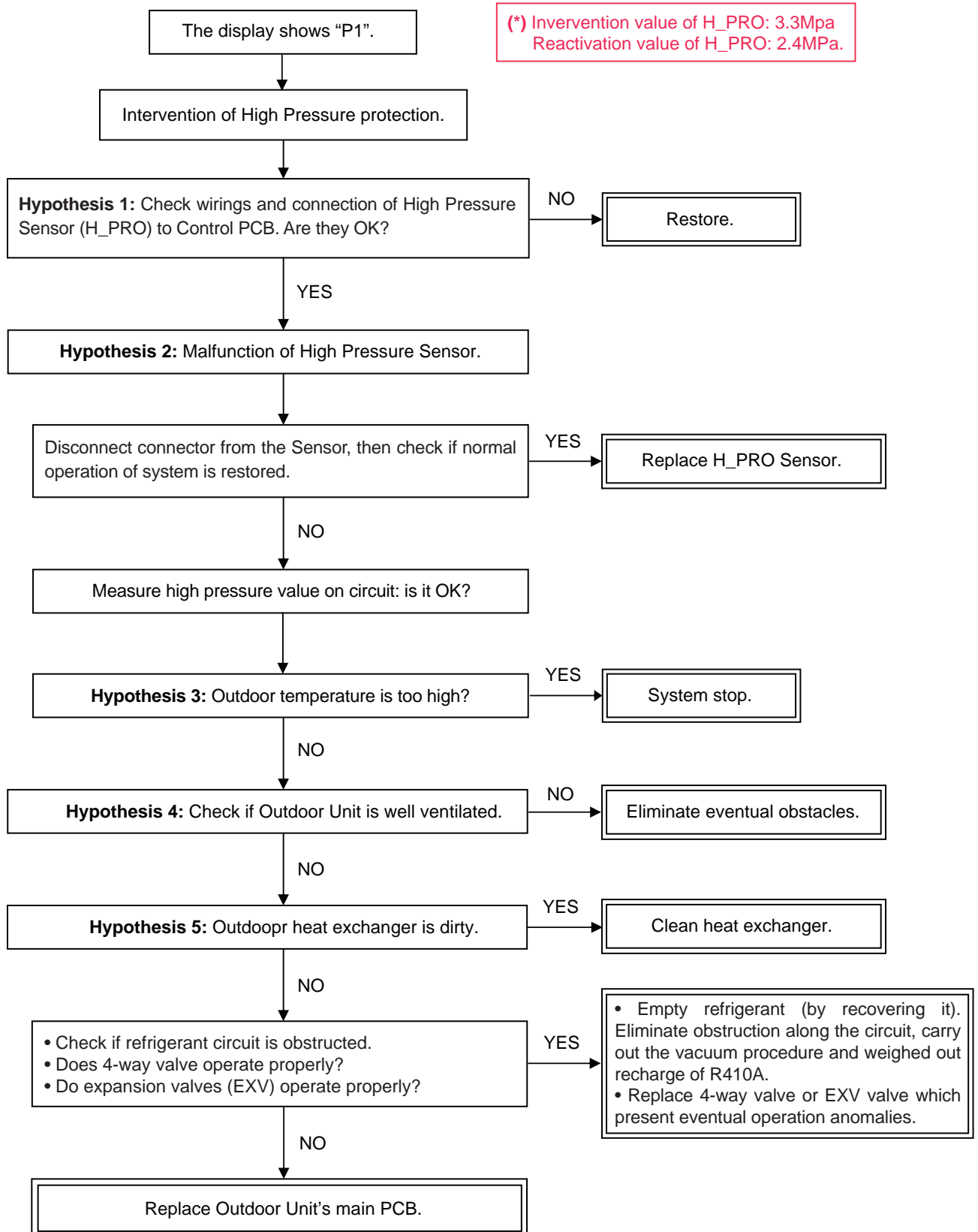
Protection Code on Outdoor Unit	Outline of protection function
<i>P0</i>	Intervention of thermal protection for compressor overtemperature [Excluded Models HCKU 816 X4, HCKU 1066 X4]

- ✧ If temperature detected on compressor is higher than 120°C, the system is stopped for the intervention of thermal protection of compressor itself.
- ✧ Normal operation can be restored only if temperature value detected on compressor is lower than 90°C (reactivation threshold of thermal protection).



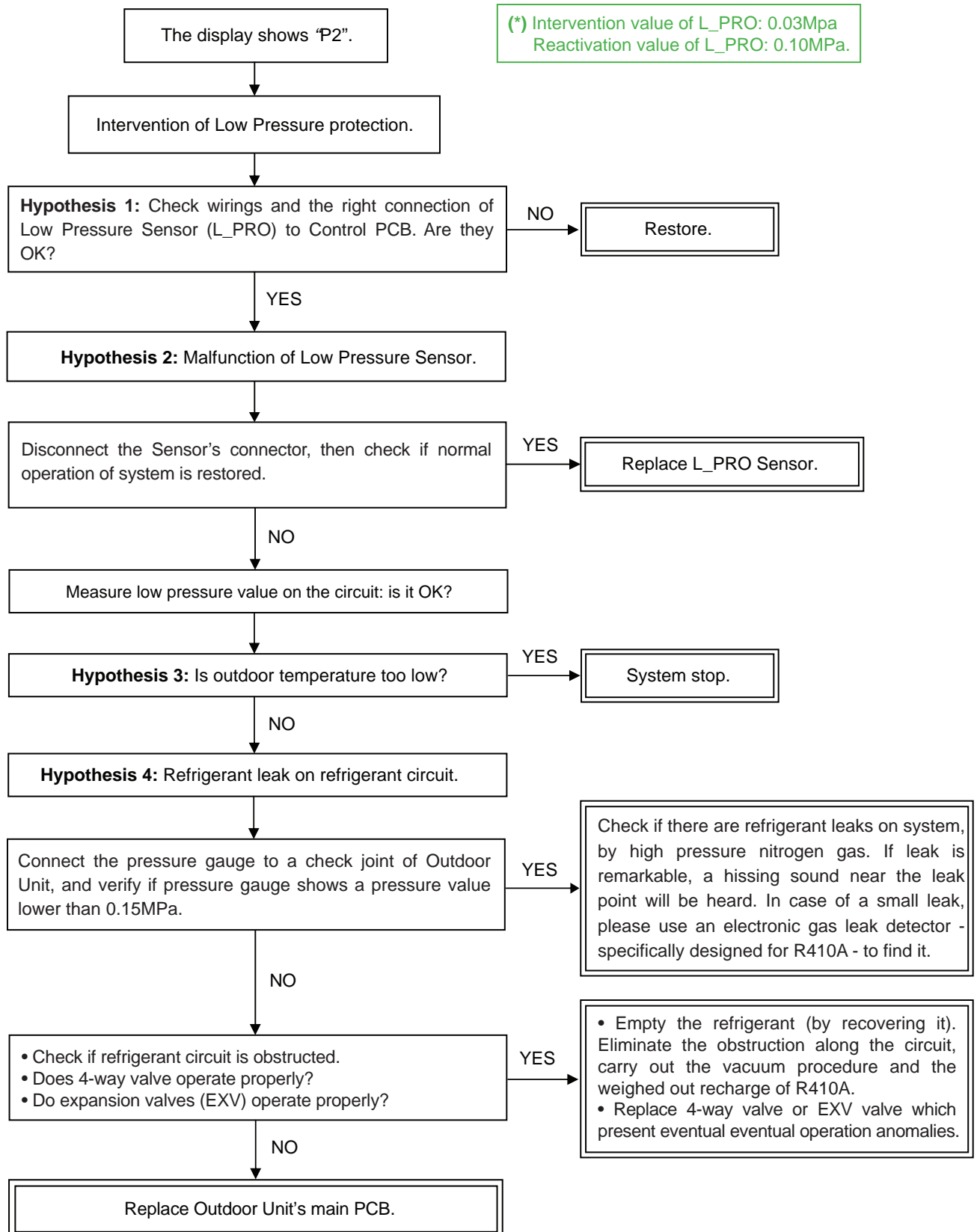
• Troubleshooting flowcharts, referred to Protection Codes displayed on Outdoor Unit:

Protection Code on Outdoor Unit	Outline of protectio function
P1	Intervention of high pressure protection (*) [Models HCKU 816 X4, HCKU 1066 X4 only]



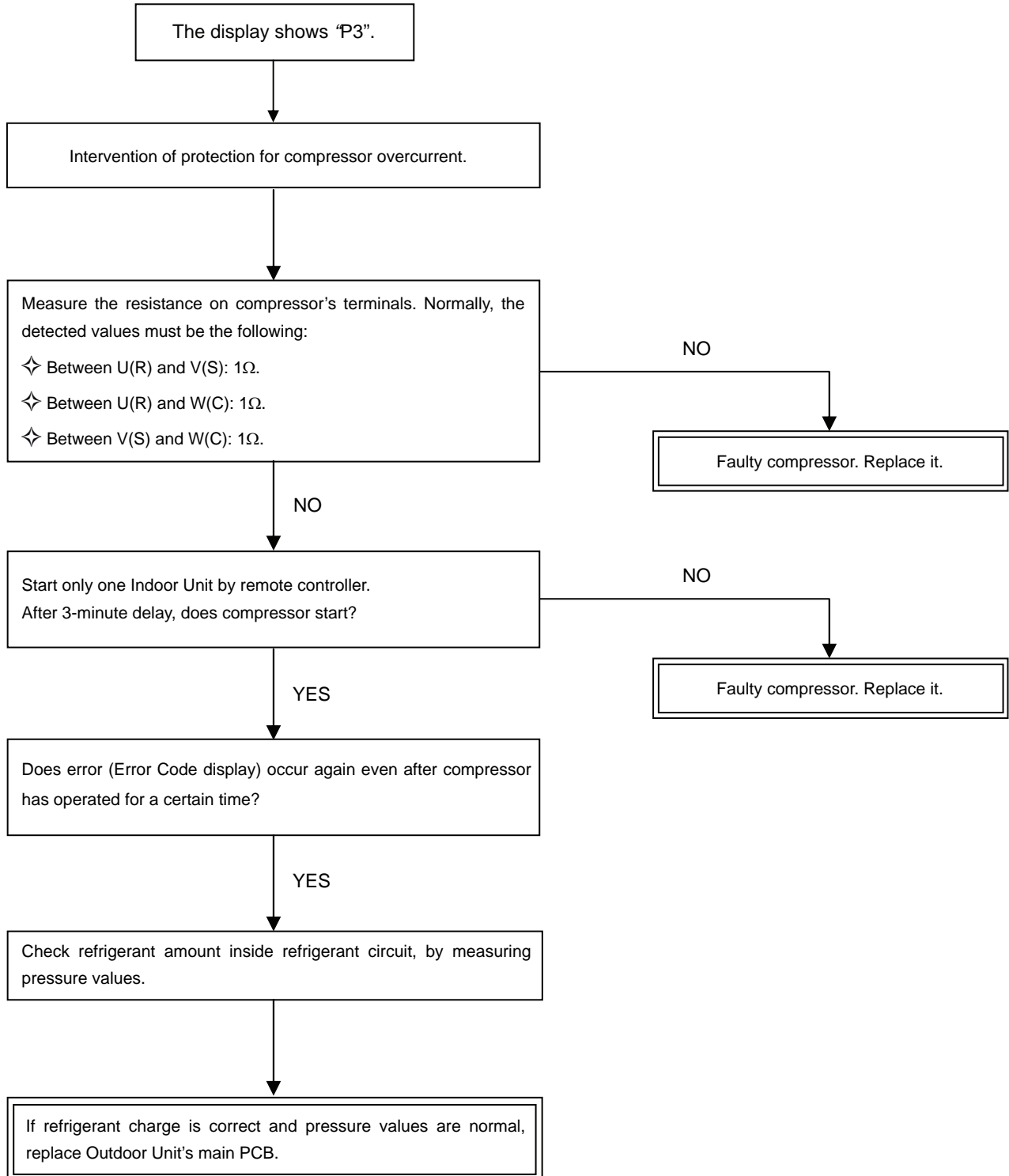
• Troubleshooting flowcharts, referred to Protection Codes displayed on Outdoor Unit:

Protection Code on Outdoor Unit	Outline of protection function
P2	Intervention of low pressure protection (*) [Models HCKU 816 X4, HCKU 1066 X4 only]



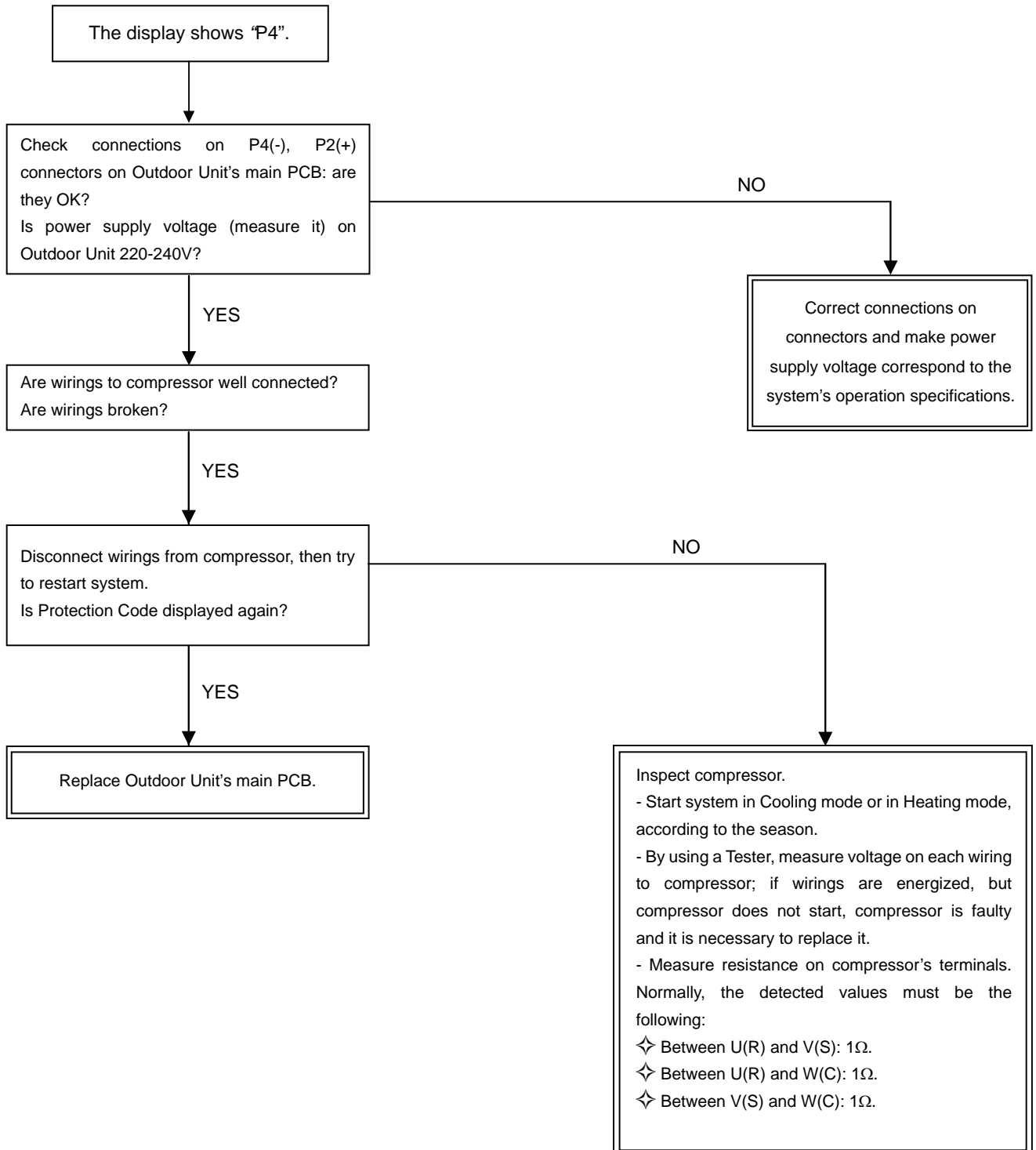
• Troubleshooting flowcharts, referred to Protection Codes displayed on Outdoor Unit:

Protection Code on Outdoor Unit	Outline of protection function
<i>P3</i>	Protection for compressor overcurrent



• Troubleshooting flowcharts, referred to Protection Codes displayed on Outdoor Unit:

Protection Code on Outdoor Unit	Outline of protection function
<i>P4</i>	Intervention of a protection function on Inverter Module

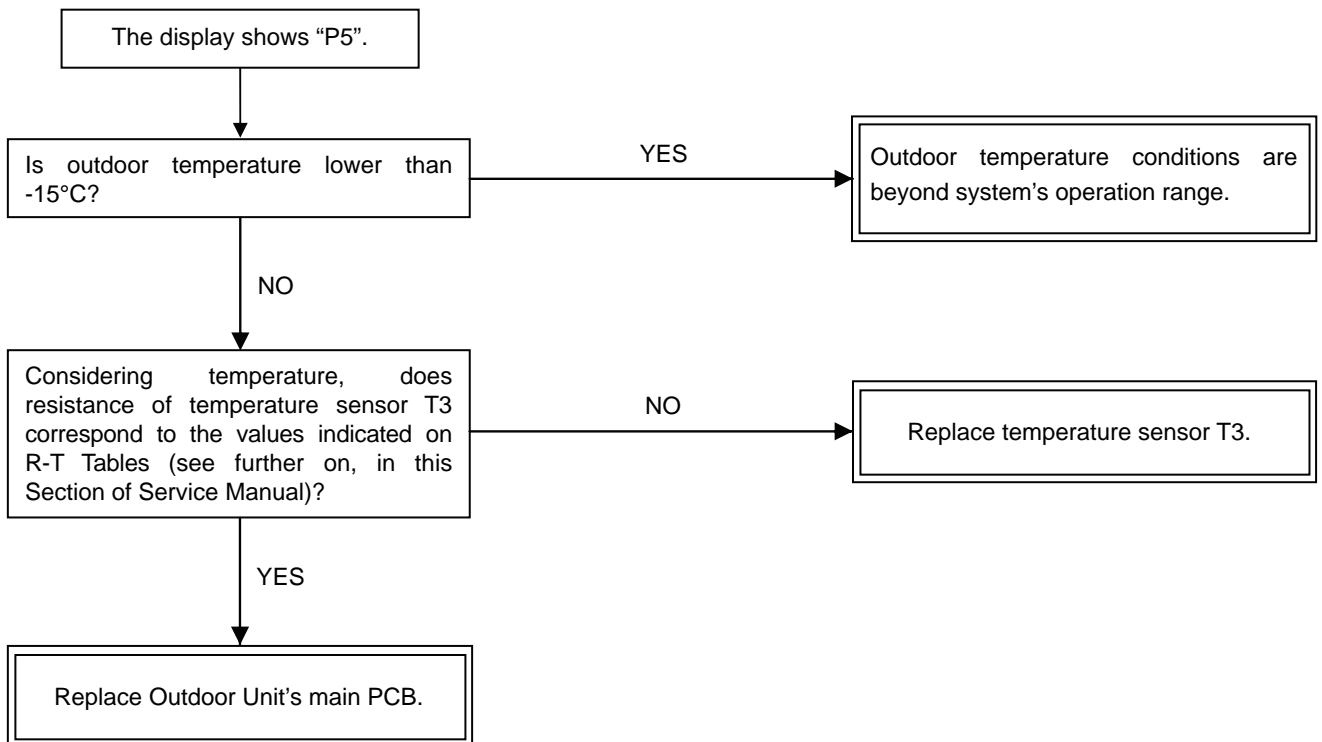


• Troubleshooting flowcharts, referred to Protection Codes displayed on Outdoor Unit:

Protection Code on Outdoor Unit	Outline of protection function
P5	Protection for outdoor low temperature, in Heating mode

✧ If outdoor temperature keeps lower than -15°C for more than 1 hour, system is stopped.

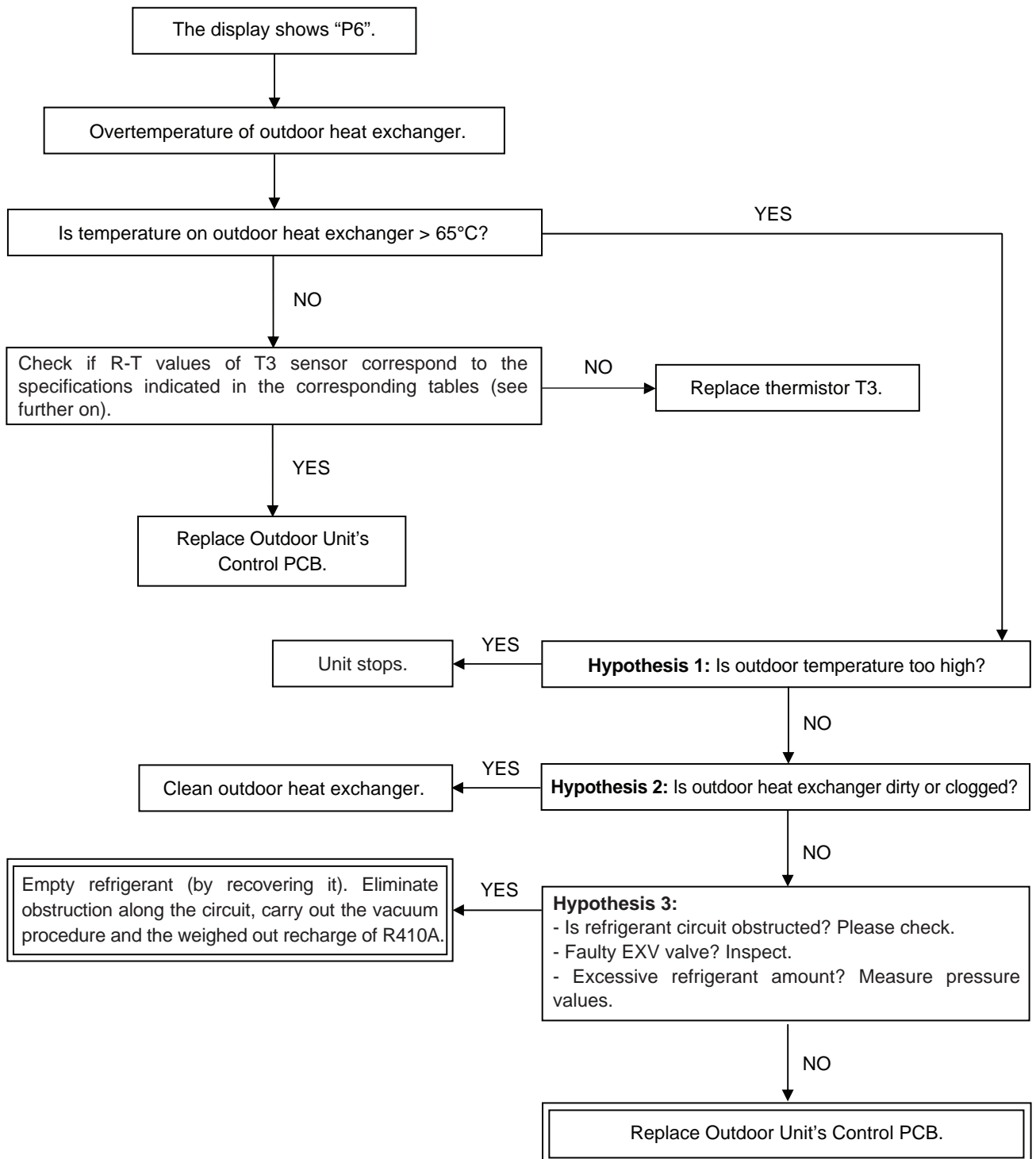
✧ The system will be restarted if outdoor temperature keeps higher than -12°C for more than 10 minutes and compressor has been stopped for more than 1 hour, or if outdoor temperature keeps higher than 5°C for more than 10 minutes.



• Troubleshooting flowcharts, referred to Protection Codes displayed on Outdoor Unit:

Protection on Outdoor Unit	Outline of protection function
P6	Overtemperature of Outdoor Unit's heat exchanger (in Cooling mode)

- ✧ If temperature detected on outdoor heat exchanger is higher than 65°C, system is stopped.
- ✧ Normal operation can be restored only when temperature value detected on outdoor heat exchanger is lower than 52°C.



3.3 ELECTRICAL SPECIFICATIONS OF SOME COMPONENTS

✧ Resistance values of temperature sensors (thermistors)

Temperature sensors on system are the following:

- T1 = Indoor temperature sensor.
- T2 = Temperature sensor on Indoor Unit's heat exchanger.
- T3 = Outdoor air temperature sensor.
- T4 = Temperature sensor on Outdoor Unit's heat exchanger.
- T5 = Temperature sensor on compressor discharge pipe.
- T_A, T_B, T_C, T_D = Pipe sensors Gas side, one for every Indoor Unit.

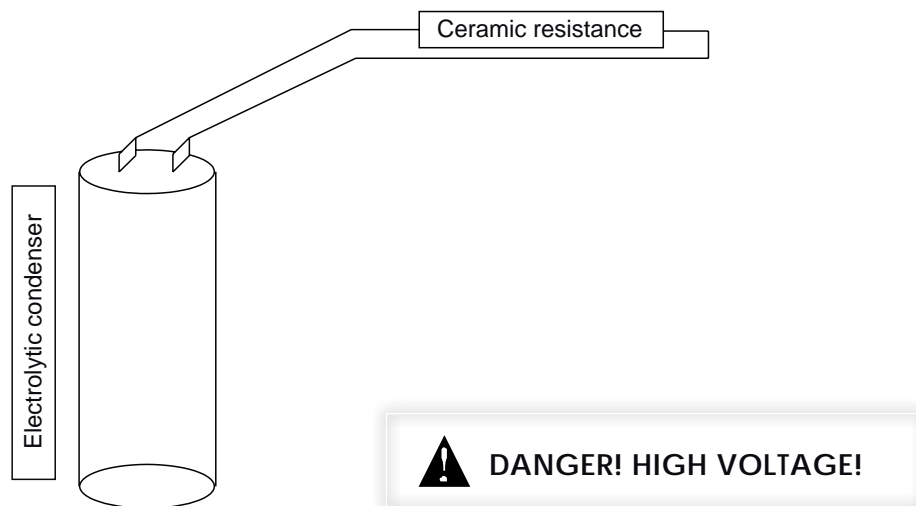
Concerning thermistors' Resistance value based on temperature, please refer to the tables further on, in this Section "Outdoor Units & Troubleshooting" of this Service Manual.

Important warning for Safety:

On Outdoor Unit there are electrolytic condensers, that is high voltage components if system is powered, even if it is not operating.

In case you need to have access to Outdoor Unit to carry out maintenance operations or repairing interventions, in order to avoid the danger of electric shocks, it is recommended to wait at least 5 minutes after disconnecting the system from power supply.

For example, on contacts P3, P4 of Outdoor Unit PCB there is high voltage: about 310V.



• Advice:

To discharge all remaining voltage in electrolytic condensers, the ends of a ceramic resistance of 1500Ω to 2000Ω may be put in contact with the terminals of each condenser.

This procedure is shown in the Figure above.

✧ **Voltage values on Rectifier (1 & 2), on Inverter Module and other components**

- a) Rectifier (1 & 2). Input: 220-230V (AC). Output: 310V (AC)
- b) Inverter Module (3-Phase). Terminals U, V, W: see Table below.

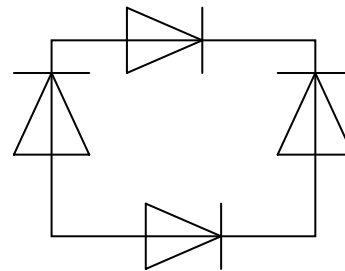
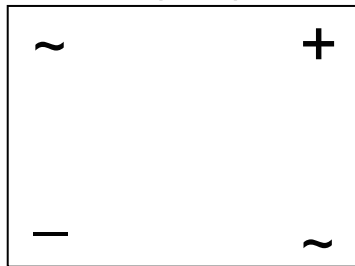
Inverter Module	Measurement's result
U-V	60-150V(AC)
U-W	60-150V(AC)
V-W	60-150V(AC)
P-N	DC 310V

- c) Photo-couplers PC817, PC851. Control side: +5V. AC side: < 24V AC.
- d) Terminals S (signal line) and N (Power supply phase) on terminal blocks: voltage variable between 0~24V.

✧ **Resistance values on Rectifier (1 & 2)**

- a) By using a Tester, carry out the measurements on both Rectifiers, as it is shown in the Table below. Check if detected values correspond to reference values.
- b) If LED on each Rectifier does not light up, the component is faulty (it must be replaced).

• **Rectifier (1 & 2)**



Tester prods		Measurement's result		
		Resistance (direct measurement)	Resistance (inverted prods)	
Rectifier	⊕	⊖	Infinity (∞)	Infinity (∞)
	~	⊕	About 500Ω	Infinity (∞)
	~		About 500Ω	Infinity (∞)
	—	~	About 500Ω	Infinity (∞)

3.4 R-T FEATURES OF TEMPERATURE SENSORS

■Room temperature sensors. Heat exchangers & refrigerant pipings temperature sensors.

Temp. °C	Resistance (kΩ)			Resistance Tolerance (%)		Temperature Tolerance (%)	
	RMAX	RNORM	RMIN	MAX(+)	MIN(+)	MAX(+)	MIN(+)
-20	116.539	106.732	96.920	9.19	9.19	1.59	1.59
-19	110.231	100.552	91.451	9.63	9.05	1.57	1.57
-18	103.743	94.769	86.328	9.47	8.91	1.56	1.55
-17	97.673	89.353	81.525	9.31	8.76	1.54	1.54
-16	91.990	84.278	77.017	9.15	8.62	1.53	1.52
-15	86.669	79.521	72.788	8.99	8.47	1.51	1.50
-14	81.684	75.059	68.815	8.83	8.32	1.49	1.48
-13	77.013	70.873	65.083	8.66	8.17	1.47	1.47
-12	72.632	66.943	61.574	8.50	8.02	1.45	1.45
-11	68.523	63.252	58.274	8.33	7.87	1.44	1.43
-10	64.668	59.784	55.169	8.17	7.72	1.42	1.41
-9	61.048	56.524	52.246	8.00	7.57	1.40	1.39
-8	57.649	53.458	49.492	7.84	7.42	1.38	1.37
-7	54.456	50.575	46.899	7.67	7.27	1.35	1.35
-6	51.456	47.862	44.455	7.51	7.12	1.33	1.32
-5	48.636	45.308	42.150	7.35	6.97	1.31	1.30
-4	45.984	42.903	39.977	7.18	6.82	1.29	1.28
-3	43.490	40.638	37.927	7.02	6.67	1.27	1.26
-2	41.144	38.504	35.992	6.86	6.52	1.25	1.24
-1	38.935	36.492	34.165	6.70	6.38	1.23	1.21
0	36.857	34.596	32.440	6.53	6.23	1.21	1.19
1	34.898	32.807	30.810	6.38	6.09	1.18	1.17
2	33.055	31.120	29.271	6.22	5.94	1.16	1.15
3	31.317	29.528	27.815	6.06	5.80	1.14	1.12
4	29.681	28.026	26.440	5.90	5.66	1.12	1.10
5	28.138	26.608	25.140	5.75	5.52	1.10	1.08
6	26.682	25.268	23.909	5.60	5.38	1.07	1.06
7	25.310	24.003	22.745	5.45	5.24	1.05	1.03
8	24.016	22.808	21.644	5.30	5.10	1.03	1.01
9	22.794	21.678	20.601	5.15	4.97	1.01	0.99
10	21.641	20.610	19.614	5.00	4.83	0.99	0.97
11	20.553	19.601	18.680	4.86	4.70	0.96	0.94
12	19.525	18.646	17.794	4.71	4.57	0.94	0.92
13	18.554	17.743	16.955	4.57	4.44	0.92	0.90
14	17.636	16.888	16.160	4.43	4.31	0.90	0.88
15	16.769	16.079	15.406	4.29	4.19	0.88	0.85
16	15.949	15.313	14.691	4.15	4.06	0.86	0.83
17	15.174	14.588	14.014	4.02	3.94	0.84	0.81
18	14.442	13.902	13.372	3.89	3.81	0.81	0.79
19	13.748	13.251	12.762	3.75	3.69	0.79	0.76
20	13.093	12.635	12.183	3.62	3.57	0.77	0.74
21	12.471	12.050	11.634	3.50	3.46	0.75	0.72
22	11.883	11.496	11.112	3.37	3.34	0.73	0.70
23	11.327	10.971	10.617	3.25	3.23	0.71	0.68
24	10.800	10.473	10.147	3.12	3.11	0.69	0.66
25	10.300	10.000	9.700	3.00	3.00	0.67	0.63

■ Room temperature sensors. Heat exchangers & refrigerant pipings temperature sensors.

Temp. °C	Resistance (kΩ)			Resistance Tolerance (%)		Temperature Tolerance (%)	
	RMAX	RNORM	RMIN	MAX(+)	MIN(+)	MAX(+)	MIN(+)
26	9.848	9.551	9.255	3.11	3.10	0.69	0.66
27	9.418	9.125	8.834	3.21	3.19	0.72	0.69
28	9.010	8.721	8.434	3.31	3.29	0.75	0.71
29	8.621	8.337	8.055	3.41	3.38	0.77	0.74
30	8.252	7.972	7.695	3.51	3.47	0.80	0.77
31	7.900	7.625	7.353	3.61	3.57	0.83	0.79
32	7.566	7.296	7.029	3.70	3.66	0.85	0.82
33	7.247	6.982	6.721	3.80	3.74	0.88	0.84
34	6.944	6.684	6.428	3.89	3.83	0.91	0.87
35	6.656	6.401	6.150	3.98	3.92	0.93	0.90
36	6.381	6.131	5.886	4.08	4.00	0.96	0.93
37	6.119	5.874	5.634	4.17	4.09	0.98	0.95
38	5.870	5.630	5.395	4.26	4.17	1.01	0.98
39	5.631	5.397	5.167	4.34	4.26	1.03	1.01
40	5.404	5.175	4.951	4.43	4.34	1.06	1.03
41	5.188	4.964	4.745	4.52	4.42	1.09	1.06
42	4.982	4.763	4.549	4.60	4.50	1.12	1.09
43	4.785	4.571	4.362	4.69	4.58	1.14	1.12
44	4.596	4.387	4.183	4.77	4.66	1.17	1.14
45	4.417	4.213	4.014	4.85	4.74	1.19	1.17
46	4.246	4.046	3.851	4.93	4.81	1.22	1.20
47	4.082	3.887	3.697	5.02	4.89	1.25	1.23
48	3.925	3.735	3.550	5.10	4.97	1.28	1.25
49	3.776	3.590	3.409	5.18	5.04	1.30	1.28
50	3.632	3.451	3.274	5.25	5.12	1.33	1.30
51	3.495	3.318	3.146	5.33	5.19	1.35	1.33
52	3.363	3.191	3.023	5.41	5.26	1.41	1.36
53	3.237	3.069	2.905	5.49	5.34	1.43	1.38
54	3.116	2.952	2.793	5.56	5.41	1.46	1.41
55	3.001	2.841	2.685	5.64	5.48	1.48	1.44
56	2.890	2.734	2.582	5.71	5.55	1.51	1.46
57	2.784	2.632	2.484	5.79	5.62	1.54	1.49
58	2.682	2.534	2.390	5.86	5.69	1.56	1.52
59	2.585	2.440	2.299	5.93	5.76	1.59	1.54
60	2.491	2.350	2.213	6.01	5.83	1.62	1.57
61	2.401	2.264	2.130	6.08	5.90	1.64	1.60
62	2.315	2.181	2.051	6.15	5.96	1.67	1.62
63	2.233	2.102	1.975	6.22	6.03	1.70	1.65
64	2.154	2.026	1.903	6.29	6.10	1.72	1.68
65	2.077	1.953	1.833	6.36	6.16	1.75	1.70
66	2.004	1.883	1.766	6.42	6.23	1.77	1.73
67	1.934	1.816	1.702	6.49	6.29	1.80	1.76
68	1.867	1.752	1.641	6.56	6.35	1.83	1.78
69	1.802	1.690	1.582	6.62	6.41	1.85	1.81
70	1.740	1.631	1.525	6.69	6.48	1.88	1.84
71	1.680	1.574	1.471	6.75	6.54	1.91	1.86
72	1.622	1.519	1.419	6.82	6.60	1.93	1.89
73	1.567	1.466	1.369	6.88	6.66	1.96	1.92

■Room temperature sensors. Heat exchangers & refrigerant pipings sensors.

Temp. °C	Resistance (kΩ)			Resistance Tolerance (%)		Temperature Tolerance (%)	
	RMAX	RNORM	RMIN	MAX(+)	MIN(+)	MAX(+)	MIN(+)
74	1.514	1.416	1.321	6.94	6.71	1.98	1.94
75	1.463	1.367	1.275	7.00	6.77	2.01	1.97
76	1.414	1.321	1.230	7.06	6.83	2.04	2.00
77	1.367	1.276	1.188	7.12	6.88	2.06	2.02
78	1.321	1.233	1.147	7.17	6.94	2.09	2.05
79	1.277	1.191	1.108	7.23	6.99	2.12	2.08
80	1.235	1.151	1.070	7.28	7.04	2.14	2.11
81	1.195	1.113	1.034	7.33	7.09	2.17	2.13
82	1.156	1.076	0.999	7.39	7.14	2.20	2.16
83	1.118	1.041	0.966	7.44	7.18	2.22	2.19
84	1.082	1.007	0.934	7.48	7.23	2.25	2.21
85	1.047	0.974	0.903	7.53	7.27	2.27	2.24
86	1.014	0.942	0.874	7.57	7.31	2.30	2.27
87	0.982	0.912	0.845	7.62	7.35	2.33	2.29
88	0.951	0.883	0.818	7.66	7.39	2.35	2.32
89	0.921	0.855	0.791	7.69	7.43	2.38	2.35
90	0.892	0.828	0.766	7.73	7.46	2.41	2.37
91	0.864	0.802	0.742	7.76	7.49	2.43	2.40
92	0.838	0.777	0.719	7.80	7.52	2.46	2.43
93	0.812	0.753	0.696	7.82	7.54	2.48	2.45
94	0.787	0.730	0.675	7.85	7.57	2.51	2.48
95	0.763	0.708	0.654	7.87	7.59	2.54	2.51
96	0.740	0.686	0.634	7.89	7.61	2.56	2.53
97	0.718	0.666	0.615	7.91	7.62	2.59	2.56
98	0.697	0.646	0.597	7.93	7.63	2.62	2.59
99	0.677	0.627	0.579	7.94	7.64	2.64	2.61
100	0.657	0.609	0.562	7.94	7.65	2.67	2.64
101	0.638	0.591	0.546	7.95	7.65	2.70	2.67
102	0.620	0.574	0.530	7.95	7.65	2.72	2.69
103	0.602	0.558	0.515	7.94	7.64	2.75	2.72
104	0.585	0.542	0.501	7.94	7.63	2.77	2.75
105	0.569	0.527	0.485	7.92	7.92	2.80	2.77

■Discharge pipe temperature sensor.

Temp. (°C)	Resist. (kΩ)	Temp. (°C)	Resist. (kΩ)	Temp. (°C)	Resist. (kΩ)	Temp. (°C)	Resist. (kΩ)
-20	542.7	20	68.66	60	13.59	100	3.702
-19	511.9	21	65.62	61	13.11	101	3.595
-18	483	22	62.73	62	12.65	102	3.492
-17	455.9	23	59.98	63	12.21	103	3.392
-16	430.5	24	57.37	64	11.79	104	3.296
-15	406.7	25	54.89	65	11.38	105	3.203
-14	384.3	26	52.53	66	10.99	106	3.113
-13	363.3	27	50.28	67	10.61	107	3.025
-12	343.6	28	48.14	68	10.25	108	2.941
-11	325.1	29	46.11	69	9.902	109	2.86
-10	307.7	30	44.17	70	9.569	110	2.781
-9	291.3	31	42.33	71	9.248	111	2.704
-8	275.9	32	40.57	72	8.94	112	2.63
-7	261.4	33	38.89	73	8.643	113	2.559
-6	247.8	34	37.3	74	8.358	114	2.489
-5	234.9	35	35.78	75	8.084	115	2.422
-4	222.8	36	34.32	76	7.82	116	2.357
-3	211.4	37	32.94	77	7.566	117	2.294
-2	200.7	38	31.62	78	7.321	118	2.233
-1	190.5	39	30.36	79	7.086	119	2.174
0	180.9	40	29.15	80	6.859	120	2.117
1	171.9	41	28	81	6.641	121	2.061
2	163.3	42	26.9	82	6.43	122	2.007
3	155.2	43	25.86	83	6.228	123	1.955
4	147.6	44	24.85	84	6.033	124	1.905
5	140.4	45	23.89	85	5.844	125	1.856
6	133.5	46	22.89	86	5.663	126	1.808
7	127.1	47	22.1	87	5.488	127	1.762
8	121	48	21.26	88	5.32	128	1.717
9	115.2	49	20.46	89	5.157	129	1.674
10	109.8	50	19.69	90	5	130	1.632
11	104.6	51	18.96	91	4.849		
12	99.69	52	18.26	92	4.703		
13	95.05	53	17.58	93	4.562		
14	90.66	54	16.94	94	4.426		
15	86.49	55	16.32	95	4.294	B(25/50)=3950K	
16	82.54	56	15.73	96	4.167		
17	78.79	57	15.16	97	4.045	R(90°C)=5k ±3%	
18	75.24	58	14.62	98	3.927		
19	71.86	59	14.09	99	3.812		

Section 4: INSTALLATION

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4. INSTALLATION

All steps of installation must be carried out according to National and local laws and rules. The following directions do not meet all possible circumstances of installation. For more information or in case of particular problems, please contact the local Distributor.

SAFETY PRECAUTIONS

- Please read carefully the following “**SAFETY PRECAUTIONS**” first then accurately execute the installation work.
- The precautionary points indicated herein are divided under two headings, “**WARNING**” and “**CAUTION**”. If you do not observe what is indicated in “**WARNING**” you may have dramatic consequences such as death or serious injuries. In the same way, there is also a possibility of serious consequences in relationship to the points listed in the “**CAUTION**” section as well. In either case, important safety related information is indicated, so by all means, properly observe all that is mentioned.
- After completing the installation, along with confirming that no abnormalities were seen from the operation tests, please explain operating methods as well as maintenance methods to the User of this equipment, based on the Owner’s Manual. Moreover, ask the Customer to keep this sheet together with the Owner’s Manual.



WARNING

- This system should be applied to places as households, residences and the like. Application to other environment such as engineering shop could cause equipment malfunction.
- Please entrust installation to either the Company which sold you the equipment or to a professional Installer. Defects from improper installations can be the cause of water leakage, electric shocks and fires.
- Execute the installation accurately, based on following the Installation instructions. Again, improper installations can result in water leakage, electric shocks and fires.
- If an air-conditioning system of high capacity is installed in a small room, it is needed to take the necessary countermeasures to face up to the rare event that in case of **R410A** refrigerant leakages, the gas concentration exceeds the threshold value (**0.3kg/m³**). In this rare possibility, there is a risk of lack of oxygen. In order to prepare the suitable countermeasures, please call the Distributor who sold you the air conditioner.
- If during the Indoor Unit’s installation work the refrigerant gas leaks, it is necessary to immediately ventilate the room, as if the gas gets in contact with a heating source or fire, it becomes toxic. Confirm after the installation work that refrigerant does not leak. If coming in contact with fire or heating sources (a fan heater, a stove or movable cooking stove, etc.), refrigerant leaking in the room could generate toxic gas.
- For installation, confirm that the installation site can sufficiently support heavy weight. When strength is insufficient, injury can result from a falling of the Units.
- For electrical work, please check that a licensed Electrician executes the work while following the safety standards related to electrical equipment, and local regulations as well as the installation instructions, and that only exclusive use circuits are used. Insufficient power source circuit capacity and defective instalment execution can be the cause of electric shocks and fires.
- Accurately connect wiring by using the proper cable, and ensure that the external force of the cable is not conducted to the terminal connection part, through properly securing it; improper connection or securing can result in heat generation or fire.
- Take care to insert the electrical cables into the electric box by the bottom side (so as to avoid water that may reach the cable to enter the electric box), and accurately install the special service cover on the Unit’s panel. Improper installation can result in heat generation or fire.
- When setting up or moving the location of the air conditioner, do not mix air or anything other than the designated refrigerant **R410A** within the refrigerating cycle. If air enters the refrigerating circuit, compressor may break down or it may occur malfunctions and/or abnormal high pressure.
- For the installation, always use accessories and components authorized by the Manufacturer. If using unauthorized parts, this may result in water leaks, electric shocks, fire and/or refrigerant leaks.

**CAUTION**

- Execute proper grounding. Do not connect the ground wire to a gas pipe, water pipe, lighting rod or telephone ground wire. Improper placement of ground wires can result in electric shock.
- The installation of an earth leakage breaker is necessary, specific for Inverter appliances. Not installing an earth breaker may result in electric shock.
- Do not install Units where there is a hazard about leakage of combustible gas. The rare event of leaked gas collecting around Units could result in explosion or fire.
- For the drain pipe, follow the installation instructions to ensure that it allows proper drainage. It is very important to insulate the first section (about 1 metre) of the drain hose on Indoor Unit to prevent condensation outside the piping. Inadequate discharge piping can result in water leakage and/or damages on installation site.

PRECAUTIONS TO TAKE WHEN INSTALLING R410A AIR CONDITIONERS

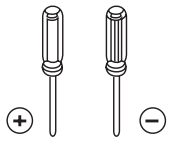



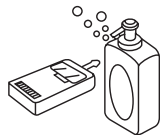
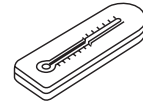

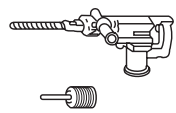

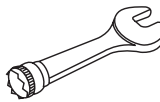
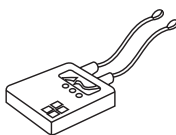
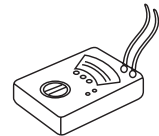


- All the fixtures used for installing and checking the refrigerant system (gauge manifold, service hoses, and so on) must be expressly designed for this kind of appliances (see further on).
- As the vapor pressure of **R410A** refrigerant is about 1.6 times higher than R22 refrigerant at the same temperature, you need to use refrigerant copper pipes having a sufficient thickness (at least 0.8mm), depending on piping's diameter.
- Never use the same fixtures that are used on systems adopting R22 refrigerant. This is due to the fact that systems adopting **R410A** refrigerant do not tolerate infiltrations of mineral refrigerant oil deriving from circuit with R22. That above except for vacuum pump, provided that a one-way valve has been added to the vacuum pump. This one-way valve must be able to operate in case of accidental turn off of the vacuum pump itself (i.e.: blackout) during air purge operations.
- In particular, the gauge manifold, the service hoses, the torque wrench (for tightening of flare connections having 1/2" and 5/8" diameters), the flaring tool and the refrigerant cylinder must be exclusively designed for **R410A** refrigerant.
- Moreover, the electronic gas leakage detector must be exclusive for HFC refrigerant (high sensitiveness type, lower than 3 grammes/year) so the same device as for R407C refrigerant can be used.
- All the operation of refrigerant charging must be carried out with R410A refrigerant in liquid phase. For this purpose, an electronic balance and a refrigerant cylinder with suction from its bottom are necessary. In this way, the exact amount of refrigerant in liquid phase can be charged from the bottom of charging cylinder.
- The liquid phase of refrigerant drawn from the cylinder for the above mentioned operations must be over 90% (in weight percentage) compared to the gaseous phase.
- In case of considerable refrigerant leakage from the system, avoid to do partial topping up, because the exact amount of refrigerant left inside the air conditioner's circuit will remain unknown, definitely leading to excessive or insufficient refrigerant charge.
As R410 refrigerant is a binary mixture of R32 and R125, refrigerant leakage in gaseous phase may change slightly ratio between the two components, nevertheless this does not remarkably modify the working conditions inside refrigerant circuit.
- In case of leakages of R410A refrigerant, it is strongly recommended to discharge - of course by recovering it - all refrigerant, and to perform all necessary steps for a new charge of refrigerant, complete and weighed out according to indications on Outdoor Unit's label, after vacuum operation.

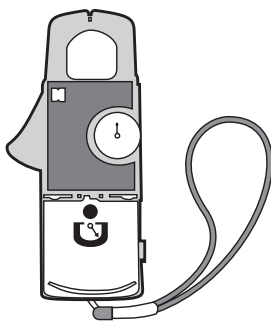


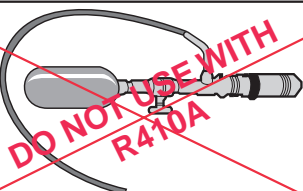
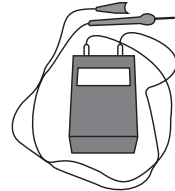
4.1 CHECKS AND PRELIMINARY OPERATIONS

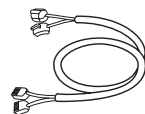


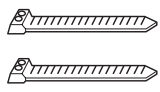


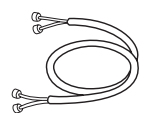
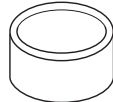


○Before starting the installation work, be sure to have all necessary tools and materials for carrying out all different phases of procedures.

○Check if there are all accessories sold together with Units, and then buy on site all necessary accessories and components which are not sold with the appliance.

■Tools and components necessary for installation (not exhaustive list):

<p>Screw drivers (flat and cross-shaped)</p>  <p>Assembly and disassembly.</p>	<p>Drill</p>  <p>Making holes for fixation plugs.</p>	<p>Tape measure</p>  <p>Cutter</p>  <p>Metre: for measuring length/distance Cutter: cutting of plastic bands.</p>	<p>Gas leakage detector for R410 and liquid soap</p>  <p>Check of gas leakages.</p>	<p>Thermometer</p>  <p>Inlet and outlet temperature on Indoor Unit.</p>	<p>Allen keys (4 and 5mm)</p>  <p>Opening and closing of service valves.</p>
<p>Wall cutter (65mm diameter)</p>  <p>Making holes into the wall.</p>	<p>Fork wrench and adjustable spanner</p>  <p>Connection tightening.</p>	<p>Torque wrench</p>  <p>Pipe connection tightening.</p>	<p>Digital or analogue multimeter</p>  <p>For measuring resistance, voltage and current.</p>	<p>Isolation resistance meter</p>  <p>Prevention of electric shocks.</p>	<p>Roller pipe cutter</p>  <p>Deburring tool</p>  <p>For cutting of pipings. For deburring of rims.</p>

 <p>Amperometric pliers</p>	 <p>Spirit level</p>	 <p>Thermometric sensor</p>
	 <p>DO NOT USE WITH R410A</p> <p>Gas leak detector lamp</p>	 <p>Tester</p>

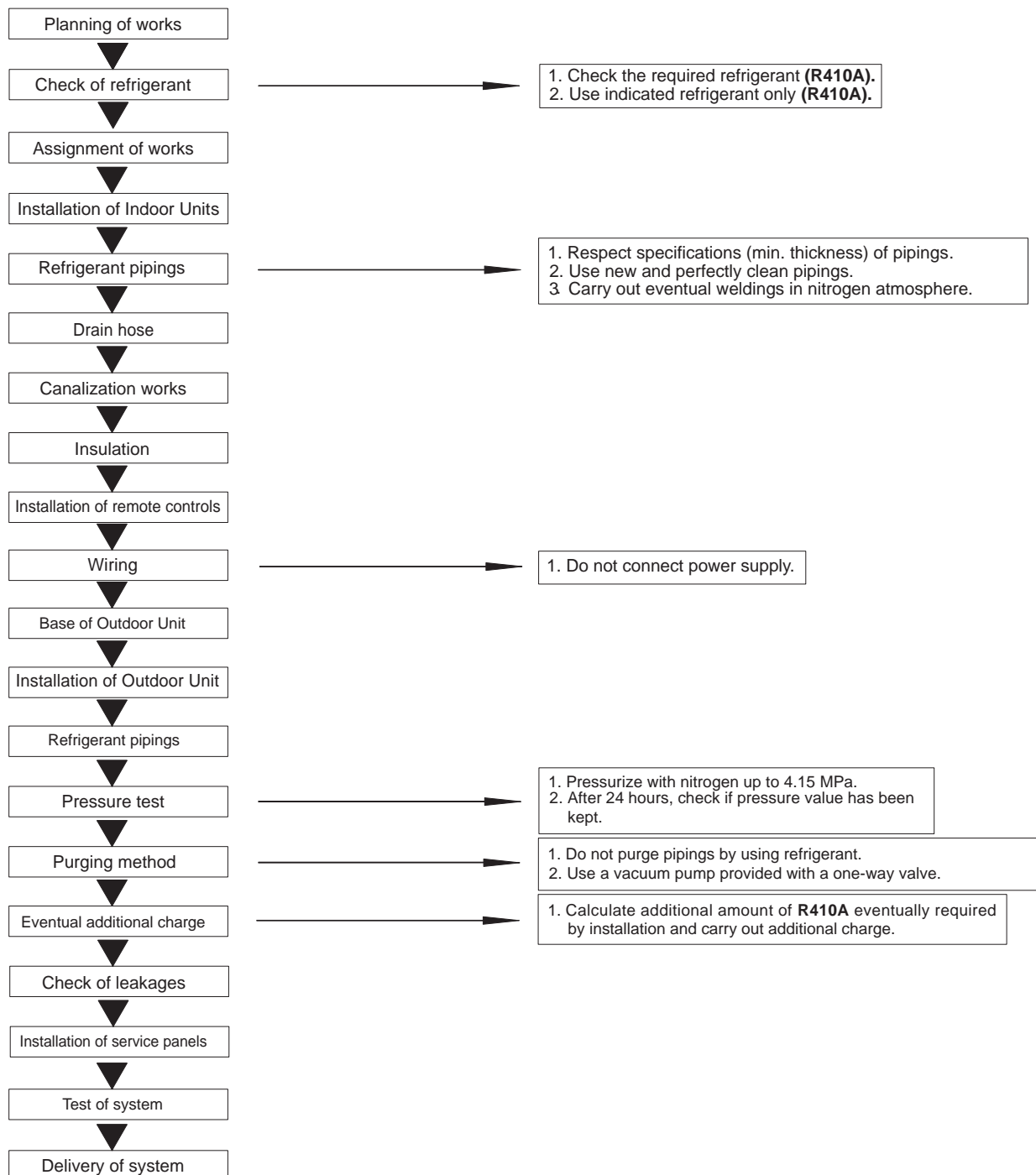
<p>Electrical cables</p>  <p>Wiring between Units.</p>	<p>Protection cover</p>  <p>For covering O.U. (when it is not used)</p>	<p>Rubber pads</p>  <p>Absorption of vibrations (O. U.).</p>	<p>Pipe clips</p>  <p>Fixing of cables and pipes.</p>	<p>Adhesive</p>  <p>Finishing.</p>	<p>Flexible drain hose</p>  <p>For draining condensate.</p>
<p>Refrigerant pipings</p>  <p>Piping connections between Units.</p>	<p>Putty</p>  <p>Finishing of wall hole (I.U. side)</p>	<p>Vinyl adhesive tape</p>  <p>For taping cables and pipings.</p>	<p>IR Remote Controls</p>  <p>R5114/BGE (HKEU X) R11HG/E (HTFU X, HRBU X) R51D/E (HFU X) R05/BGE (HSFU X)</p>		

■ R410A Refrigerant Specifications

Working pressures of **R410A** refrigerant are about 1.6 times higher than those of R22 refrigerant. For systems with **R410A**, it is required the use of compressors having polyester synthetic lubrication oil (POE). Mineral lubrication oil is not compatible with refrigerant circuits with **R410A**.

Refrigerant	R22 (pure)	R410A (mixture)	R407C (mixture)
Refrigerant oil	Mineral oil (SONTEX 200L)	Synthetic oil (POE)	Synthetic oil (POE)
Pressures	Factor: "1"	Factor: 1.6	Factor: 1.1

■ Sequence (purely as an indication) of installation work



■ Refrigerant pipings

1. Use refrigerant pipings and materials designed for **R410A** refrigerant.
2. For min. thickness of refrigerant pipings, refer to the following table.

Pipings' diameter	Φ 6.35mm	Φ 9.52mm	Φ 12.7mm	Φ 15.88mm	Φ 19.05mm
Min. thickness (mm)	0.8	0.8	0.8	1.0	1.2

Note: Carry out installation of refrigerant pipings in full observance of current regulations.

■ Tools

The star (*) indicates tools that have been designed for **R410A** refrigerant specifically. Please keep these tools separately from those that are currently used for other kind of refrigerant.

Tool	Specific use of tool	
Roller pipe cutter	Cutting of refrigerant pipings.	Refrigerant pipings connections.
*Flare tool	Piping flaring.	
*Torque wrench	Piping connection tightening.	
Countersink (weldings only)	Expansion ("sockets") of pipings.	
Tube bender	Bending of pipings.	
Nitrogen cylinder (gas)	For welding without oxidation.	Connections' seal.
Cylinders and torch	Braze welding.	
*Gaugemanifold	Vacuum operations and refrigerant charge.	Pressure test.
*Service pipings (so-called "whips")		Additional charge of R410A refrigerant.
*Vacuum pump (with one-way valve)		Elimination of air and humidity left over in refrigerant pipings.
Electronic balance		Additional charge: with R410A refrigerant.
*Electronic gas leak detector	Specific for HFC. Check of leakages.	

■ Useful suggestions

Check of refrigerant required by system. Before starting installation, check which refrigerant (**R410A**) is required by system, and get ready the materials and tools specific for refrigerant itself.

Refrigerant pipings. Respect usual precautions for a professional installation of pipings, in order to prevent any possible malfunction of system. If weldings are required, take care of making them in nitrogen atmosphere, in order to prevent any oxidation inside the pipings, near welding points.

Pressure test. Keep the system under pressure (4.15 MPa) with nitrogen for about 24 hours so as to make sure that refrigerant connections have a satisfactory seal.

Vacuum operation. Install a one-way valve on vacuum pump, in case this device is not already foreseen on the pump itself.

Additional charge. Calculate the eventual additional amount of **R410A**, and add refrigerant in correct way, by using an electronic precision balance and specific service pipings.

4.2 INSTALLATION OF HKEU (206, 356, 356, 536) X INDOOR UNITS

Before starting the air conditioner, please read carefully the information in this "USER'S MANUAL". The User's Manual contains very important suggestions related to installation, operation and maintenance of the air conditioner and concerning your personal safety.

The Manufacturer accept no responsibility for the damages that may arise due to non-observance of the instructions listed in this "USER'S MANUAL".

Disposal of an old air conditioner

Before disposing an old air conditioner, please make sure it is inoperative and carry out the disposal by adopting all safety precautions. Unplug it from the power line in order to avoid risks of electric shock.

Please remember that an air conditioner contains refrigerant fluid, requiring specialized waste disposal.

The valuable materials contained in the air conditioner can be recycled. Contact your local Waste Disposal Center for adequate disposal or contact your Dealer for any question.

Please make sure that piping of your air conditioner does not get damaged before being picked up by the relevant Waste Disposal Center. You can contribute to the protection of the environment by adopting an appropriate anti-pollution method of disposal.

Disposal of the packaging of your new air conditioner

All the packaging materials used in the package of your new air conditioner can be disposed without any danger for the environment.

The cardboard may be broken or cut into small pieces and given to a Waste Paper Disposal Service. The wrapping bag made of polyethylene and the polyethylene foam pads contain no fluorochloric hydrocarbon.

All these valuable materials may be taken to a Waste Collecting Center and used again after adequate recycling.

Consult your local Authorities for the name and address of the Waste Materials Collecting Centers and Waste Paper Disposal Services nearest to your house.

General warnings for safety

- Do not operate damaged air conditioners. In case of doubt, contact your Dealer.
- Use of air conditioner must be carried out in strict compliance with the instructions listed further on.
- Do not damage any parts of the air conditioner that carry refrigerant by piercing or perforating the piping with sharp or pointed objects, by crushing or twisting the tubes or scraping off the surfaces' coatings. If the refrigerant spurts out and gets into eyes, this may result in serious injuries.
- Do not obstruct or cover the ventilation grille of the air conditioner. Do not put fingers nor insert objects into the inlet/outlet vent or into the motorized louver.
- Do not allow children to play with the air conditioner. Children should be never allowed to sit on the Outdoor Unit.
- The appliance is not intended for children and disabled people. They must not operate the air conditioner without supervision.
- Electrical works must be carried out according to the local laws. If the power cable is damaged, it must be replaced by the Manufacturer or by qualified Personnel. Size of power cables and connecting wires must be adequate to the characteristics of the air conditioner (current values and power input values).
- If fuses on the PCB are blown, they must be replaced with new fuses of the same type and size.
- After installation, power plug should be properly disposed.
- Exhausted batteries (infrared remote controller) should be properly disposed.
- Always remember to unplug the air conditioner and wait at least 5 minutes before opening the Units' panels.

- **Strictly observe the instructions provided in this Service Manual.**
- **The air conditioning system contains inside its circuit a refrigerant gas (R410A) under pressure. Never disconnect for any reason refrigerant pipings before recovering refrigerant first.**
- **Never perform any improper handling on Outdoor Unit's service valves or on Indoor Unit's pipe unions.**
- **Invite the Customer to keep User's Manual within reach for convenient reference, in case of need.**
- **In case the system's Units are transferred and reinstalled, the User's Manual should always be attached to the appliance.**

SAFETY INSTRUCTIONS

- Please read carefully the following Safety Instructions before operating the air conditioner.
- A strict observance of the instructions indicated in this "USER'S MANUAL" will prevent personal hurt and incidents to the User. Moreover, correct operation and long life of the system will be ensured.
- Depending on the seriousness of potential risks and damages, the reported Instructions are classified in two types: "**WARNING**" and "**CAUTION**". A strict observance of the Instructions is required to guarantee your personal safety and the safety of the environments where the Units are installed.
- The following Instructions are related to the air conditioner's installation. They have been reported also in the "USER'S MANUAL", just to allow the User to check that installation has been properly carried out. If an improper installation - not corresponding to the Instructions - is verified, please contact the Dealer or the Authorized Technical Service.

The User must never attempt to repair, install or perform special maintenance of system by himself. To carry out these operations in safety way, User must always contact Authorized Technical Service.

KEY OF SYMBOLS



WARNING

This symbol points out the risk of serious injury or death.



CAUTION

This symbol points out the risk of injury or damage to the property.






Prohibition. Action or procedure not allowed, with serious effects on objects and people.








Obligation. Compulsory action or procedure. The missed observance could bring serious effects on objects and people.



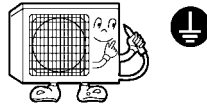



INSTALLATION






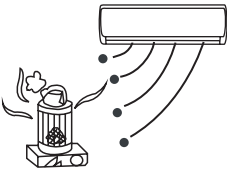

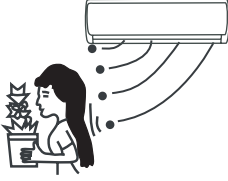





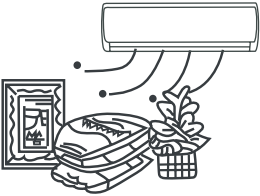





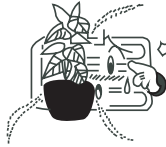






Never try to install this system by yourself, i.e. without the support of Technical Personnel. Never try to repair the system by yourself. The Units' components can be reached only by opening or removing the covering panels, and this involves exposure to high voltage. Even by disconnecting power supply, it is not always possible to avoid the risk of electric shocks.

 WARNING	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for installation. Never attempt to install the air conditioner by yourself, because improper installation could cause electric shock, injuries, water leakage or fire. 	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for any servicing operation or special maintenance. Never try to repair or carry out special maintenance by yourself. Improper repair or maintenance could cause electric shock, injuries, water leakage or fire. 	

ALWAYS confirm that installation has been carried out according to the following prescriptions:

 WARNING	
<ul style="list-style-type: none"> • When installing, all possible countermeasures must be taken to avoid refrigerant leaks. If there is a high concentration of refrigerant gas in the room, oxygen lack may occur. 	
<ul style="list-style-type: none"> • Do not install the air conditioner near burners, heat sources or flammable gas. This is to avoid the risk of malfunctioning, fire or explosion. 	
<ul style="list-style-type: none"> • Ensure that a circuit breaker has been installed on the power supply line of the air conditioner, to avoid the risk of electric shocks. 	
<ul style="list-style-type: none"> • When installing in a small room, countermeasures should be taken in case of a R410A refrigerant leak exceeds the proper range (0.3kg/m³). 	

 CAUTION	
<ul style="list-style-type: none"> • Ensure that drain hose and drain pipe installation has been carried out correctly. Incorrect installation or maintenance will cause water leakage. 	
<ul style="list-style-type: none"> • Ensure that Indoor and Outdoor Units have been properly grounded. Defective grounding could cause electric shock. 	 
<ul style="list-style-type: none"> • This kind of appliance needs a specific circuit breaker with proper protective devices against overcurrent and short circuits (fuses or automatic switches). 	 <p>Circuit breaker (specific)</p> 

 CAUTION	
<p>Ventilation should be operated when using at the same time the air conditioner and gas burners. Insufficient ventilation may cause lack of oxygen.</p>  	<p>Do not use sprays near the air conditioner and do not spray anything towards the appliance.</p>  
<p>Do not place burners near airflow supplied by Indoor Unit.</p>  	<p>Do not expose plants or animals to direct airflow of air conditioner.</p>  
<p>For preventing the risk of electric shocks, do not sprinkle water nor other liquid on Indoor Unit. Do not clean the Indoor Unit by water spurts.</p>  	<p>Ventilate the room regularly while the system is operating. Fail to follow this advice could result in lack of oxygen inside the room.</p>  
<p>Do not expose food, plants, animals, precise devices or works of art to direct airflow supplied by Indoor Unit.</p>  	<p>For proper performance, operate the system under the recommended temperature and humidity range. If the Indoor Unit operates beyond these conditions, malfunctions may occur or dew may drip out of Indoor Unit's body.</p>  
<p>When necessary, replace fuses with new ones of same type. Never replace a fuse by a piece of iron or copper.</p>  	<p>Do not place anything in front of Indoor Unit.</p>  
<p>Do not put any object on Indoor Unit. On the appliance's upper part there is an air grille that must not be obstructed. Besides, eventual objects may damage the air conditioner's components. Heavy objects may cause the detachment of Indoor Unit from wall fixation plate.</p>  	
<p>Never touch heat exchangers' metal flaps on Indoor and Outdoor Units. This could cause hurts due to the sharp shape of flaps.</p> 	

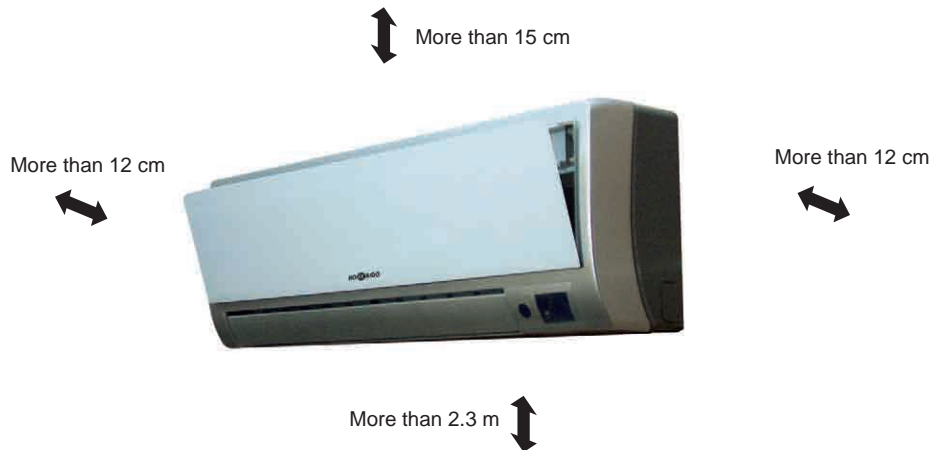
(1) Selection of installation site for HKEU (206, 266, 356, 536) X Indoor Units

■ Install Indoor Units in a place having the following requirements:

- The fixing surface must be able to support the Unit's weight.
- Material features of wall must not cause vibrations.
- There must be no heating sources nor vapors near the Unit.
- There must be no obstacles on the air inlet and outlet.
- Spaces for maintenance and air circulation (inlet and outlet) must be assured.
- Indoor Unit must not be exposed to direct sunlight for a long time.
- Drain hose must be correctly installed, so as the condensate water can easily flow away.
- Laying of cables and refrigerant pipings towards outside must be easy.
- Air supplied by Indoor Unit must reach whole room.

■ Installation must be avoided in places where there are the following conditions (not exhaustive list):

- There are sources of electromagnetic noises (TV, radio, wireless appliances) or fluorescent lamps.
- Kitchens with high humidity and vapors/oil sprinkles.
- There are considerable sudden changes in power supply voltage.



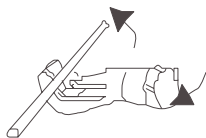
CAUTION

Install Indoor Unit to wall, by using the fixation plate, at more than 2.3m high from the floor.

(2) Piping flaring

■ If piping's length is too long or its end is damaged, it is necessary to cut it by the special pipe cutter, before carrying out piping flaring.

1. Pipes' cutting



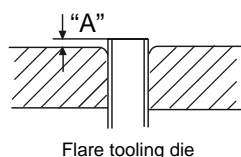
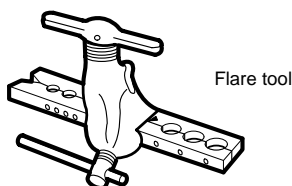
2. Deburring



3. Nuts' insertion



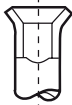
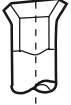
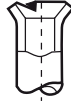
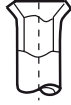
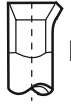

4. Piping flaring



• Dimension "A"

Pipe diameter:	"A" (mm):
6.35 mm (1/4")	0.7~1.3
9.52 mm (3/8")	1.0~1.6
12.7 mm (1/2")	1.0~1.6

Examples of piping flaring:

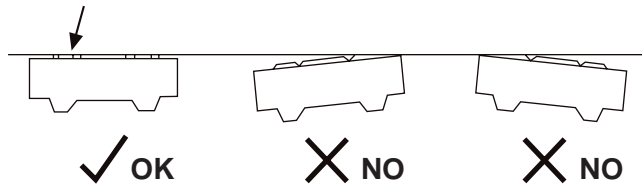
Correct	Wrong				
	 NO	 NO	 NO	 NO	 NO
OK	Lean	Crack	Damage of flare	Partial	Too outside

(3) Fixing of installation plate

The surface to which fixing plate will be installed must be perfectly vertical and as regular as possible. Once installation position of fixing plate has been selected, fix the plate temporarily by a wall nail and level it horizontally by a spirit level.

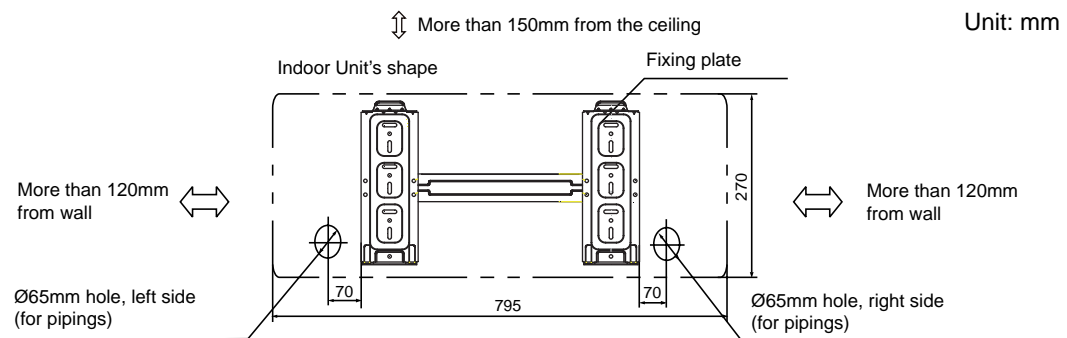
Previously mark by a pencil the points on fixing surface where screw anchors must be positioned for definitive fixing of plate, in order to avoid to make holes in wrong places. **Use 8 screw anchors 5mm.**

Right position of fixing plate as regards fixing surface

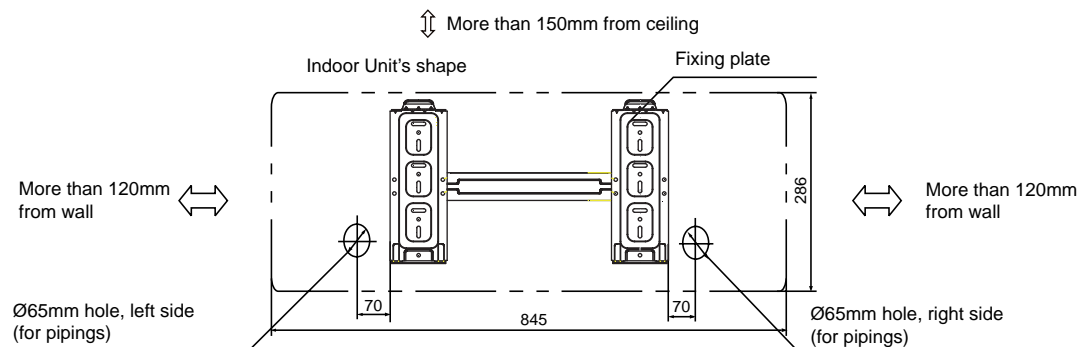


Dimensions of Fixing plates for wall installation of Indoor Units

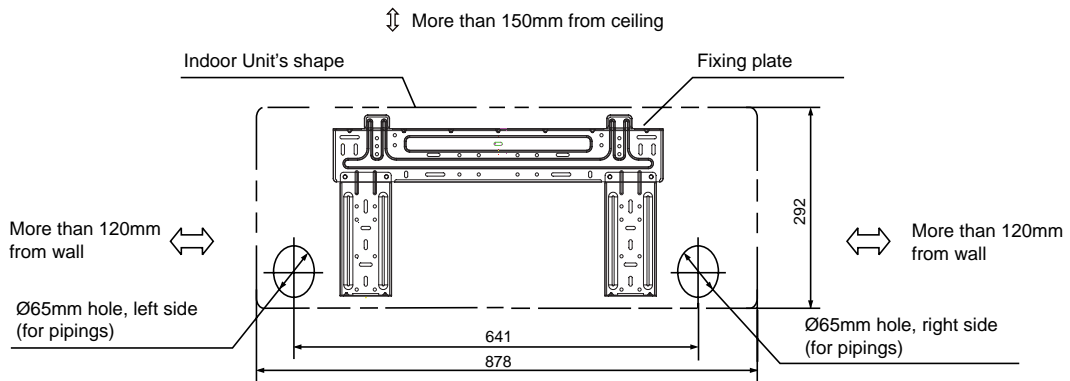
■HKEU 206 X, 266 X Models



■HKEU 356 X Model



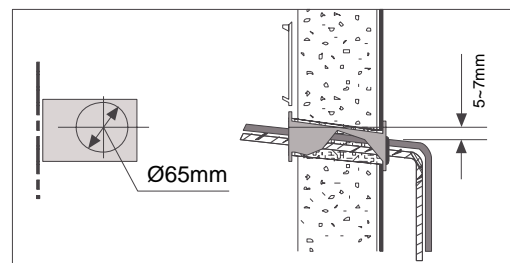
■ **HKEU 536 X Model**



(4) Drilling of wall

- Drill a hole of about 65mm diameter on wall, by using a wall cutter (Ø65mm).
- Drill the hole with a light incline from indoor side to outdoor side, as it is shown on Figure on the right.
- Insert the sleeve for wall hole and seal it with putty.

■ Installation of sleeve for wall hole:



(5) Disposal of pipings and cables

a) Right-rear and left-rear outlet of pipings:

- Take out refrigerant pipings and flexible drain hose from Indoor Unit and orient them properly according to installation needs.

b) Left-side outlet of pipings:

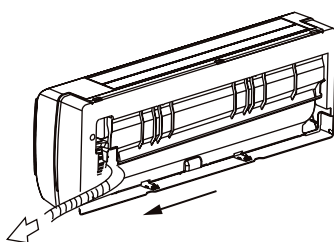
- In case of pipings' outlet on left side, remove the corresponding precut part. After removing precut part, take care to remove completely eventual protrusions of plastic material on hole's edge, as they are sharp and may damage especially power supply cable and wirings.

c) Right-side outlet of pipings:

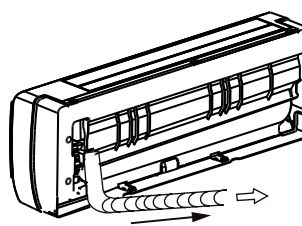
- Remove the precut part (see warning above), then consequently bend the pipings by using the tube bender.
- Properly orient Indoor Unit's refrigerant pipe fittings and flexible drain hose.

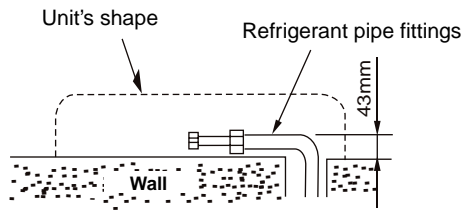
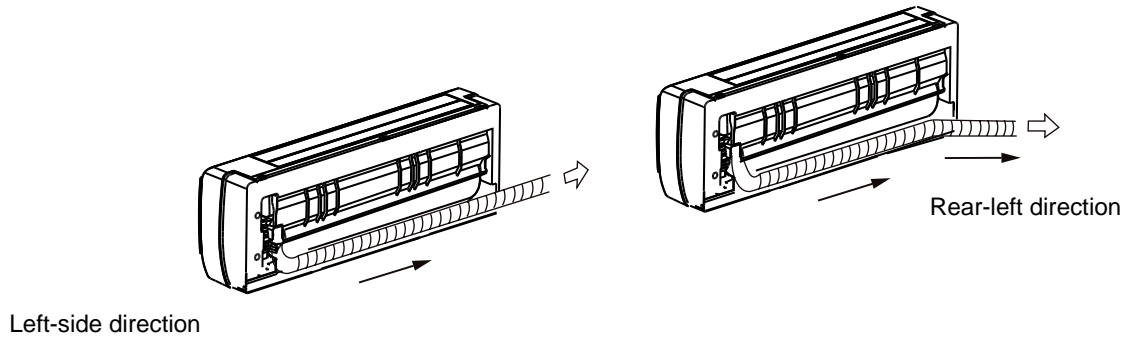
Possible outlet directions of refrigerant pipings and drain hose

Right-side direction



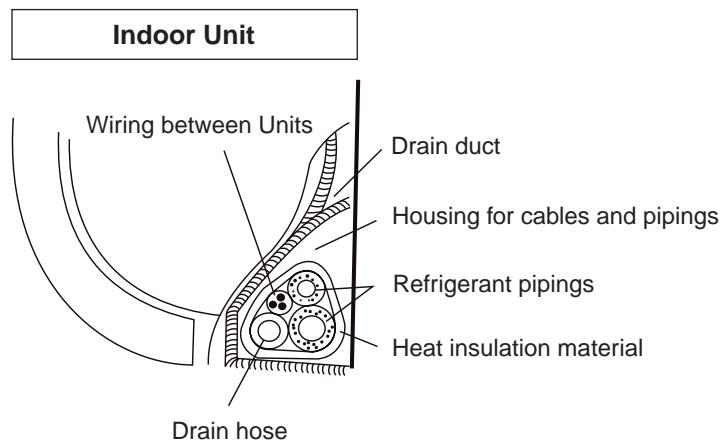
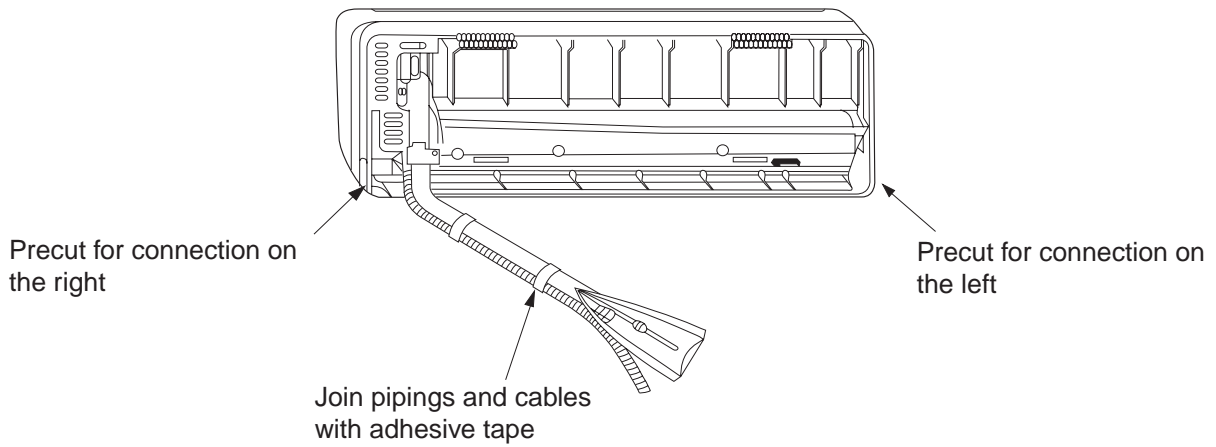
Rear-right direction





Note: In case of right-side or left-side outlet of refrigerant pipings, bend refrigerant pipe fittings so as to keep a distance not higher than 43mm between refrigerant pipe fittings and wall, as it is shown in the Figure.

Corresponding position of refrigerant pipings, wiring and drain hose



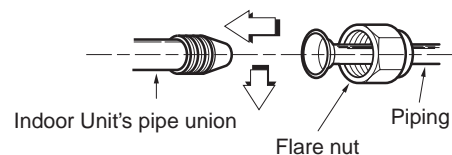
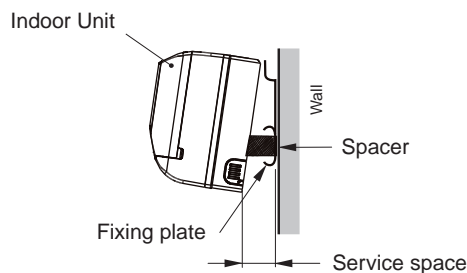
Keep in mind the following:

1. Wiring between each Indoor Unit and the Outdoor Unit, and of drain hose, must be taped together with refrigerant pipings, by using adhesive tape.
2. On Outdoor Unit, wiring and refrigerant connections of each Indoor Unit ("A", "B", "C", "D") must correspond.
3. The corresponding position of pipes and cables is indicated on the Figure at the bottom of the previous page.
4. In case of left-side outlet [case described in item "b)" on the previous page] or rear-left outlet of pipings, fix the whole of pipings nad cables to Indoor Unit by special clips.
5. These air conditioning systems require insulation of pipings and of related connection points both on Gas side and Liquid side, as they can both reach low temperatures or high temperatures during operation.
 - Strictly tape (no air pocket must be left between connections and insulating material) connection points by using insulating material, and seal by adhesive tape. If you fail this precaution, condensate may form on connection points, and water may drip inside the room.

(6) Fixing of Indoor Units

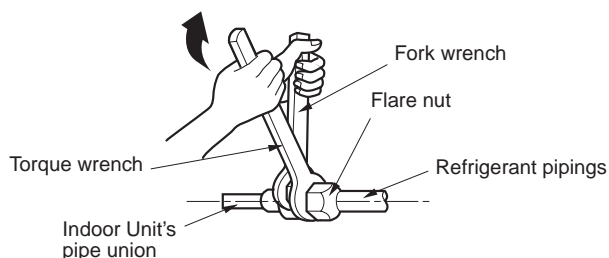
Temporarily suspension of Indoor Units on upper hooks of fixing plate.

Insert a spacer (wooden block or other object) between the lower part of each Indoor Unit and its fixing plate, to separate the Unit's base from wall and get space for carrying on work.



(7) Refrigerant pipings

Oil flares' back and indoor side of flare nuts by refrigerant synthetic oil. Align to pipe fittings the axis of pipings to be connected and screw flare nuts on threaded pipe union of Indoor Unit. First of all, tighten the connection manually as much as possible.



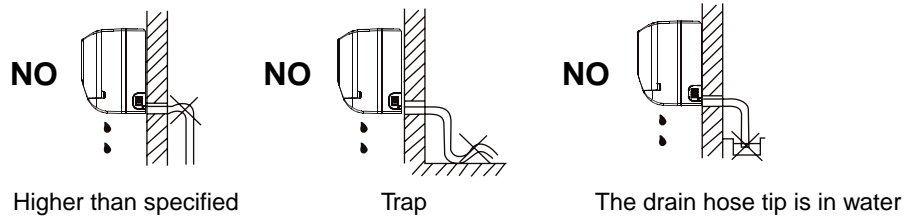
Fastening torque and pipe diameter (Ø")	
LIQUID side	GAS side
15.7~19.6 N•m (1/4")	29.4~34.3 N•m (3/8")
	49.0~53.9 N•m (1/2")

•Tighten the connection definitively with a torque wrench and a spanner:

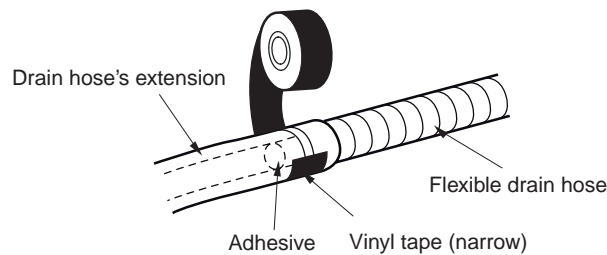
(8) Position of drain hose

As regards the whole formed by wiring and refrigerant pipings, drain hose must be positioned downwards. Besides, in particular, the first portion of drain hose (about 1m) - that is the portion which is inside Unit - must be covered by insulating material.

The Figures on the following page show some examples of incorrect installation of drain hose. They are the most common errors during installation work (so they must be avoided).



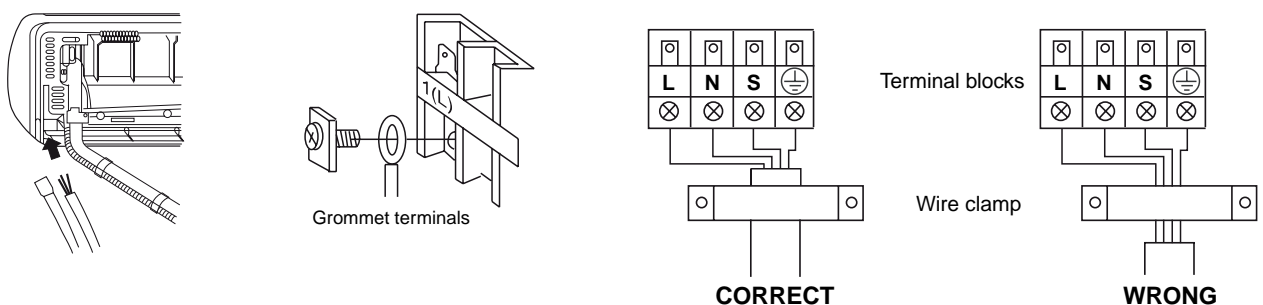
The connection of drain hose is on right side of each Indoor Unit only. If it is necessary to extend drain hose, use a pipe in semirigid plastic (PVC) of VP20 type, to buy separately. Connect the extension by using a special fitting (refer to the Figure below).



(9) Wiring

1. Indoor Units. Power lines and signal cable (min. section of 1.5mm² for all Models), prewired-up on each Indoor Unit and provided of plug, must pass from Indoor Unit to Outdoor Unit, by starting from Indoor Unit's back and getting to specific connector (Unit "A", "B", "C", "D") on Outdoor Unit. If it is needed to increase wiring standard length (6 metres), always use cables in accordance with to law only.
2. Terminal block can be reached by removing electric box's protection cover, on Indoor Unit's right side.
3. Always fix cables on screw terminal blocks firmly, and always use the special wire clamps on Indoor Units to avoid that any traction on cables may be sent to terminal blocks' contacts.
4. If protection fuse is broken, replace it by a fuse which is equivalent to original one.
5. Outdoor Unit. Power supply line must be for system only, that is it must not be shared with other appliances. A circuit breaker must be installed - with suitable calibration to the system's power input - which simultaneously interrupts all contacts; in opening position, min. distance between contacts must be of 3 mm. Moreover, the installation of an earth breaker is required, specific for Inverter appliances.

Passage of wiring, connections of terminals and use of wire clamps



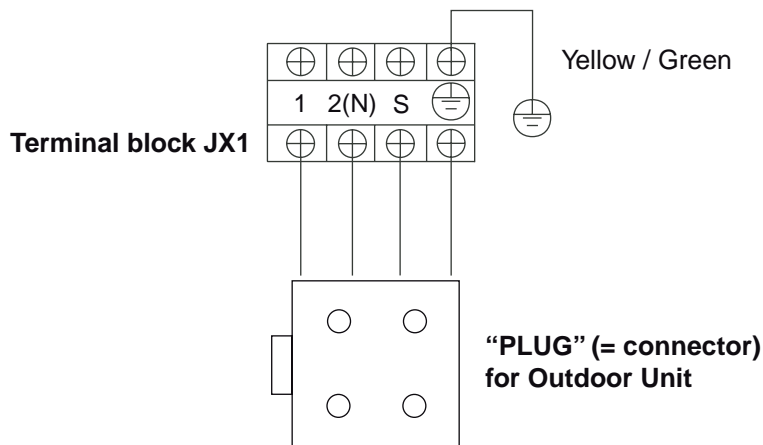
Basic information on wiring for Multi Liberty DC Inverter systems

- **Power supply (on Outdoor Unit):**
 - 1-Phase, 220~240V, 50 Hz.
 - Power source limitations: ±10% as regards rating value.
 - Voltage at starting: 85% as regards rating value.

• **Calibrations of circuit breakers and min. section of power cables:**

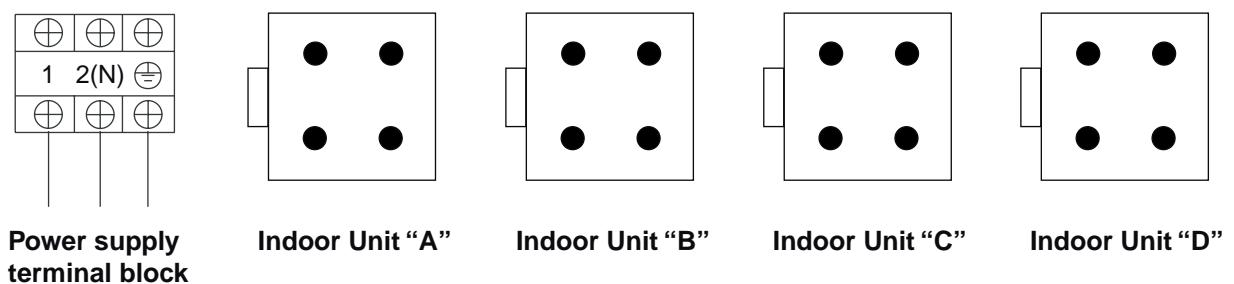
Outdoor Units	Calibration of circuit breaker (A)	Section of power cables (mm ²)
HCKU 406 X2	12A	2.5 mm ²
HCKU 536 X2	16A	4.0 mm ²
HCKU 606 X3	20A	6.0 mm ²
HCKU 806 X3	20A	6.0 mm ²
HCKU 706 X4	20A	6.0 mm ²
HCKU 816 X4	32A	8.0 mm ²
HCKU 1066 X4	32A	8.0 mm ²

Indoor Unit “A”, “B”, “C”, or “D”



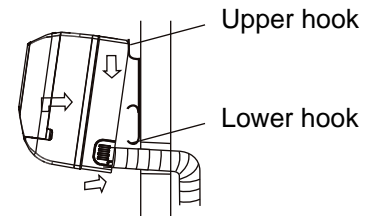
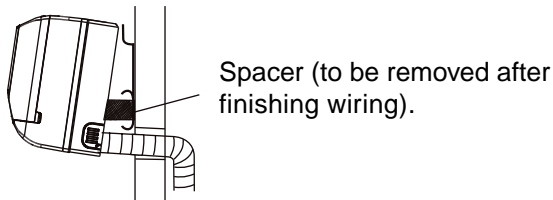
- **Min. section of cables (prewiring-up = 6m) between each Indoor Unit and the Outdoor Unit:**
 - All Models 1.5mm².

Outdoor Unit



(10) Definitive fixing of Indoor Units

1. Remove the spacer from Indoor Unit's back.
2. Suspend each Indoor Unit to upper hooks of fixing plate and move Unit left side and right side to check if it is properly fixed. In the end, hold Unit on both sides firmly, and press it to the installation plate till definitive fixing.



(11) Final checks

1. On Outdoor Unit, check the correspondence between wiring and piping connections for each Indoor Unit.
2. Check way and laying of drain hose and electrical wiring for each Indoor Unit.
3. In case of extension of connection lines (power supply and signal lines) between the Outdoor Unit and one or more Indoor Units, check the correspondence between wires and terminals on terminal blocks, both for signal lines and power supply lines.
4. Check heat insulation of refrigerant pipings and drain hoses.
5. Check the correspondence between available power supply specifications and plate specifications required by system.
6. Check correct water drainage by carrying out the Test on each drain hose.
7. Check if each Indoor Unit is fixed to its wall fixing plate firmly.
8. By using an electronic gas leakage detector, at high sensitivity and specific for HFC, check if there are refrigerant leakages near refrigerant connections (Flare connections).

(12) Test of system

Carry out automatic Test procedure which is described in "Section 1: General Information" of this Service Manual, or start the system's Indoor Units normally (manual Test) by using corresponding IR Remote Controllers.

System Test in Cooling mode is only possible at indoor temperature not lower than 17°C.

System manual Test in Heating mode is possible at indoor temperature not higher than 30°C.

In particular, during system manual Test, check the following:

1. Is it possible to adjust room temperature correctly on each Indoor Unit?
2. Is it possible to change fan speed freely on all Indoor Units?
3. Are there abnormal noises or excessive vibrations coming from Indoor Units or from the Outdoor Unit?
4. Do outlet flaps properly reply to impulses sent by remote control, and do they work properly on all Units?
5. Does air supplied by Indoor Units reach all installation environment uniformly?
6. Does condensate water drip from Indoor Units into the room?
7. Does temperature difference between air inlet and air outlet (ΔT) on each Indoor Unit show a satisfactory performance of system?

4.3 INSTALLATION OF HTFU (206, 356, 356, 536) X INDOOR UNITS

Before starting the air conditioner, please read carefully the information in this "USER'S MANUAL". The User's Manual contains very important suggestions related to installation, operation and maintenance of the air conditioner and concerning your personal safety.

The Manufacturer accept no responsibility for the damages that may arise due to non-observance of the instructions listed in this "USER'S MANUAL".

Disposal of an old air conditioner

Before disposing an old air conditioner, please make sure it is inoperative and carry out the disposal by adopting all safety precautions. Unplug it from the power line in order to avoid risks of electric shock.

Please remember that an air conditioner contains refrigerant fluid, requiring specialized waste disposal.

The valuable materials contained in the air conditioner can be recycled. Contact your local Waste Disposal Center for adequate disposal or contact your Dealer for any question.

Please make sure that piping of your air conditioner does not get damaged before being picked up by the relevant Waste Disposal Center. You can contribute to the protection of the environment by adopting an appropriate anti-pollution method of disposal.

Disposal of the packaging of your new air conditioner

All the packaging materials used in the package of your new air conditioner can be disposed without any danger for the environment.

The cardboard may be broken or cut into small pieces and given to a Waste Paper Disposal Service. The wrapping bag made of polyethylene and the polyethylene foam pads contain no fluorochloric hydrocarbon.

All these valuable materials may be taken to a Waste Collecting Center and used again after adequate recycling.

Consult your local Authorities for the name and address of the Waste Materials Collecting Centers and Waste Paper Disposal Services nearest to your house.

General warnings for safety

- Do not operate damaged air conditioners. In case of doubt, contact your Dealer.
- Use of air conditioner must be carried out in strict compliance with the instructions listed further on.
- Do not damage any parts of the air conditioner that carry refrigerant by piercing or perforating the piping with sharp or pointed objects, by crushing or twisting the tubes or scraping off the surfaces' coatings. If the refrigerant spurts out and gets into eyes, this may result in serious injuries.
- Do not obstruct or cover the ventilation grille of the air conditioner. Do not put fingers nor insert objects into the inlet/outlet vent or into the motorized louver.
- Do not allow children to play with the air conditioner. Children should be never allowed to sit on the Outdoor Unit.
- The appliance is not intended for children and disabled people. They must not operate the air conditioner without supervision.
- Electrical works must be carried out according to the local laws. If the power cable is damaged, it must be replaced by the Manufacturer or by qualified Personnel. Size of power cables and connecting wires must be adequate to the characteristics of the air conditioner (current values and power input values).
- If fuses on the PCB are blown, they must be replaced with new fuses of the same type and size.
- After installation, power plug should be properly disposed.
- Exhausted batteries (infrared remote controller) should be properly disposed.
- Always remember to unplug the air conditioner and wait at least 5 minutes before opening the Units' panels.

- **Strictly observe the instructions provided in this Service Manual.**
- **The air conditioning system contains inside its circuit a refrigerant gas (R410A) under pressure. Never disconnect for any reason refrigerant pipings before recovering refrigerant first.**
- **Never perform any improper handling on Outdoor Unit's service valves or on Indoor Unit's pipe unions.**
- **Invite the Customer to keep User's Manual within reach for convenient reference, in case of need.**
- **In case the system's Units are transferred and reinstalled, the User's Manual should always be attached to the appliance.**

SAFETY INSTRUCTIONS

- Please read carefully the following Safety Instructions before operating the air conditioner.
- A strict observance of the instructions indicated in this "USER'S MANUAL" will prevent personal hurt and incidents to the User. Moreover, correct operation and long life of the system will be ensured.
- Depending on the seriousness of potential risks and damages, the reported Instructions are classified in two types: "**WARNING**" and "**CAUTION**". A strict observance of the Instructions is required to guarantee your personal safety and the safety of the environments where the Units are installed.
- The following Instructions are related to the air conditioner's installation. They have been reported also in the "USER'S MANUAL", just to allow the User to check that installation has been properly carried out. If an improper installation - not corresponding to the Instructions - is verified, please contact the Dealer or the Authorized Technical Service.

The User must never attempt to repair, install or perform special maintenance of system by himself. To carry out these operations in safety way, User must always contact Authorized Technical Service.

KEY OF SYMBOLS



WARNING

This symbol points out the risk of serious injury or death.



CAUTION

This symbol points out the risk of injury or damage to the property.






Prohibition. Action or procedure not allowed, with serious effects on objects and people.








Obligation. Compulsory action or procedure. The missed observance could bring serious effects on objects and people.





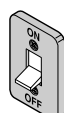

INSTALLATION

Never try to install this system by yourself, i.e. without the support of Technical Personnel. Never try to repair the system by yourself. The Units' components can be reached only by opening or removing the covering panels, and this involves exposure to high voltage. Even by disconnecting power supply, it is not always possible to avoid the risk of electric shocks.

 WARNING	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for installation. Never attempt to install the air conditioner by yourself, because improper installation could cause electric shock, injuries, water leakage or fire. 	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for any servicing operation or special maintenance. Never try to repair or carry out special maintenance by yourself. Improper repair or maintenance could cause electric shock, injuries, water leakage or fire. 	

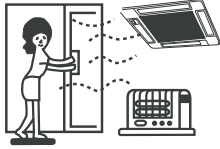
ALWAYS confirm that installation has been carried out according to the following prescriptions:

 WARNING	
<ul style="list-style-type: none"> • When installing, all possible countermeasures must be taken to avoid refrigerant leaks. If there is a high concentration of refrigerant gas in the room, oxygen lack may occur. 	
<ul style="list-style-type: none"> • Do not install the air conditioner near burners, heat sources or flammable gas. This is to avoid the risk of malfunctioning, fire or explosion. 	
<ul style="list-style-type: none"> • Ensure that a circuit breaker has been installed on the power supply line of the air conditioner, to avoid the risk of electric shocks. 	
<ul style="list-style-type: none"> • When installing in a small room, countermeasures should be taken in case of a R410A refrigerant leak exceeds the proper range (0.3kg/m³). 	

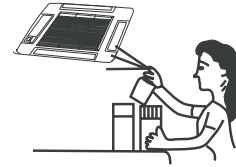
 CAUTION	
<ul style="list-style-type: none"> • Ensure that drain hose and drain pipe installation has been carried out correctly. Incorrect installation or maintenance will cause water leakage. 	
<ul style="list-style-type: none"> • Ensure that Indoor and Outdoor Units have been properly grounded. Defective grounding could cause electric shock. 	 
<ul style="list-style-type: none"> • This kind of appliance needs a specific circuit breaker with proper protective devices against overcurrent and short circuits (fuses or automatic switches). 	 Circuit breaker (specific) 

⚠ CAUTION

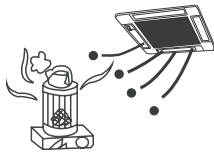
Ventilation should be operated when using at the same time the air conditioner and gas burners. Insufficient ventilation may cause lack of oxygen.



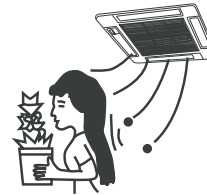
Do not use sprays near the air conditioner and do not spray anything towards the appliance.



Do not place burners near airflow supplied by Indoor Unit.



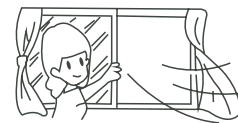
Do not expose plants or animals to direct airflow of air conditioner.



For preventing the risk of electric shocks, do not sprinkle water no other liquid on Indoor Unit. Do not clean the Indoor Unit by water spurts.



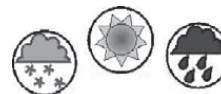
Ventilate the room regularly while the system is operating. Fail to follow this advice could result in lack of oxygen inside the room.



Do not expose food, plants, animals, precise devices or works of art to direct airflow supplied by Indoor Unit.



For proper performance, operate the system under the recommended temperature and humidity range. If the Indoor Unit operates beyond these conditions, malfunctions may occur or dew may drip out of Indoor Unit's body.



When necessary, replace fuses with new ones of same type. Never replace a fuse by a piece of iron or copper.



Do not place anything in front of Indoor Unit.



Never touch heat exchangers' metal flaps on Indoor and Outdoor Units. This could cause hurts due to the sharp shape of flaps. Take care of this, especially if air inlet grille and air filter have been removed, and flaps are visible.

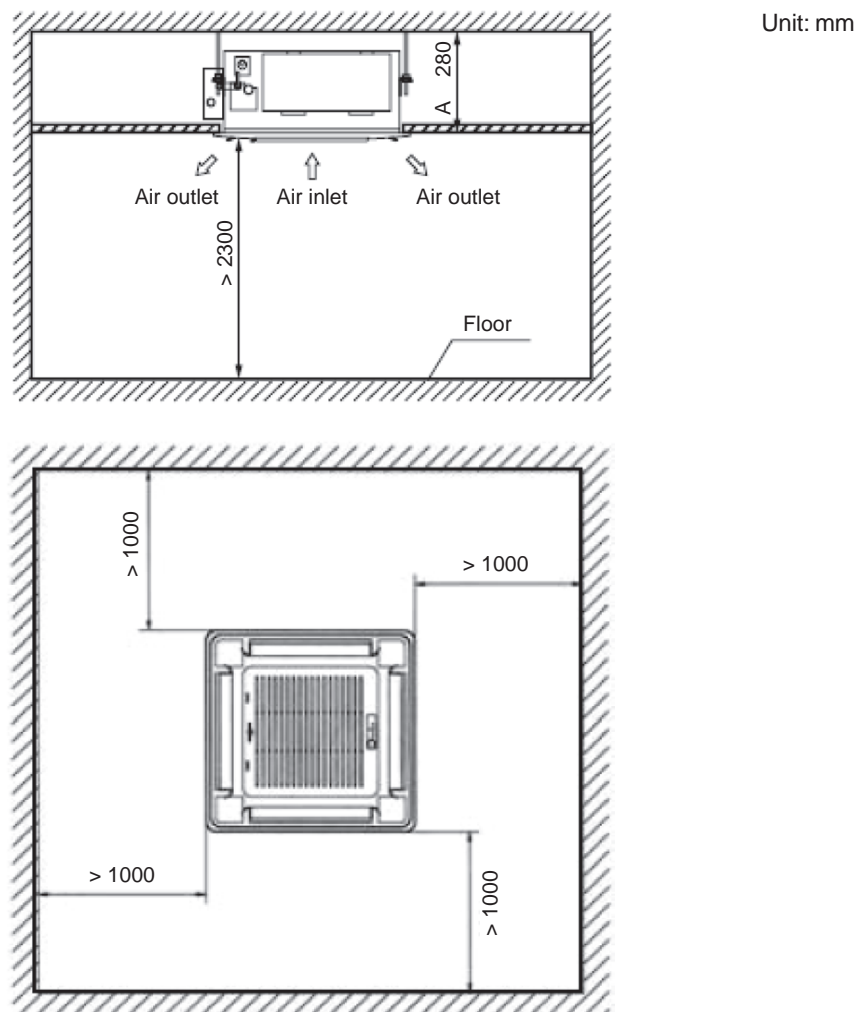


(1) Selection of installation site for HTFU (206, 266, 356, 536) X Indoor Units**■ Install Indoor Units in a place having the following requirements:**

- The fixing surface must be able to support the Unit's weight.
- Material features of wall must not cause vibrations.
- There must be no heating sources nor vapors near the Unit.
- There must be no obstacles on the air inlet and outlet.
- Spaces for maintenance and air circulation (inlet and outlet) must be assured.
- Indoor Unit must not be exposed to direct sunlight for a long time.
- Drain hose must be correctly installed, so as the condensate water can easily flow away.
- Laying of cables and refrigerant pipings towards outside must be easy.
- Air supplied by Indoor Unit must reach whole room.

■ Installation must be avoided in places where there are the following conditions (not exhaustive list):

- There are sources of electromagnetic noises (TV, radio, wireless appliances) or fluorescent lamps.
- Kitchens with high humidity and vapors/oil sprinkles.
- There are considerable sudden changes in power supply voltage.

■ Min. spaces indicated on the Figure below must be respected:**CAUTION**

Install Indoor Unit in the false ceiling, by threaded bars, at more than 2.3m high from the floor.

(2) Transport of Indoor Unit

1. Decide the correct carry-in path.
2. Move this Unit as originally packaged as possible.
3. If the air conditioner is installed on a metal part of the building, it must be electrically insulated according to the relevant electrical code.
4. If installing in a lonely building or at a high position where it is hot and humid with frequent thunderstorm, lightning-protection equipment is necessary.

(3) Installation of Indoor Unit's body**Case "A". In case of existing false ceiling.**

a) Please cut a quadrangular hole of 600 x 600mm in the false ceiling, according to the shape of the installation paper board (provided with the Indoor Unit).

- The centre of the hole should be at the same position of that of the air conditioner's main body.
- Determine the length and outlets of the connecting pipes, drain pipe and cables.
- To balance the ceiling and to avoid vibration, please enforce the ceiling when necessary.

b) Please select the position of installation hooks for wall anchors ($\varnothing 12\text{mm}$, hook-ended, supplied with the Indoor Unit), indicated on the installation paper board.

○ Drill 4 holes ($\varnothing 12\text{mm}$), 50~55mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).

○ Face the concave side of the installation hooks toward the expansible hooks. Determine the length of the installation hooks from the height of ceiling, then cut off the unnecessary part.

○ Standard length of suspension bars must be: $(210\text{mm} + L)$, where "L" is the part of threaded bar that juts out as regards square brackets for Indoor Unit's suspending.

○ If the false ceiling is extremely high, please determine the length of suspension bars according to facts. If suspension bars are extremely long, please connect reinforcement

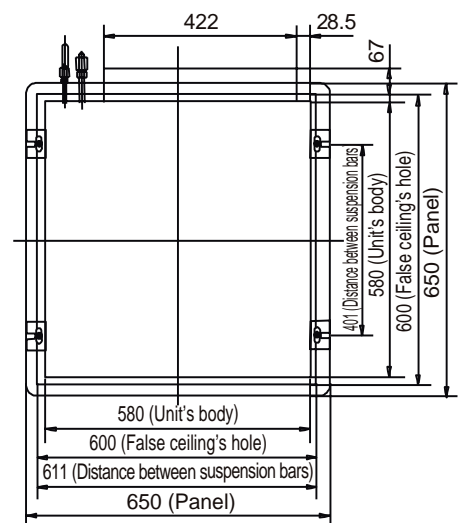


Fig.1

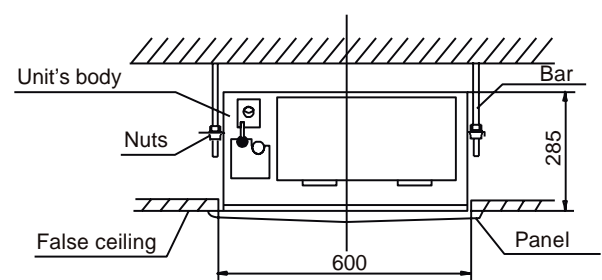


Fig.2

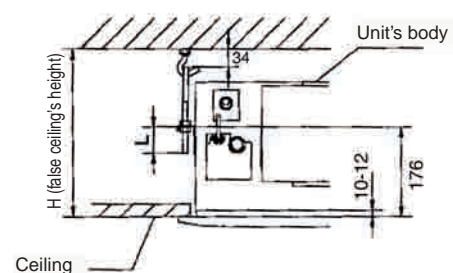


Fig.3

brackets (Ø12mm) between each bar and contiguous bars, so as to make an external square structure.

c) Please adjust scrupulously Indoor Unit's height, by intervention on lower hexangular nut of each threaded bar, so as to ensure the best balance of Indoor Unit's body - after Indoor Unit has been suspended to bars by its square brackets.

○ Use the PVC transparent hose filled with water to check the horizontal adjustment of Indoor Unit's body. Position the hose as it is shown in the Figure below, or please use a spirit level.

○ If Indoor Unit is not perfectly horizontally positioned, the air conditioner may stop for a malfunction due to the intervention of the float switch, or leakages of water due to non-intervention of float switch.

○ Please centre Indoor Unit's body as regards 4 sides of hole cut in the false ceiling.

○ Indoor Unit's suspension height must be such as the body's lower part is about 10~12mm higher than false ceiling's lower side.

○ After Indoor Unit has been positioned perfectly horizontally, definitively tighten the nut and the lock nut near each square bracket of Unit's body.

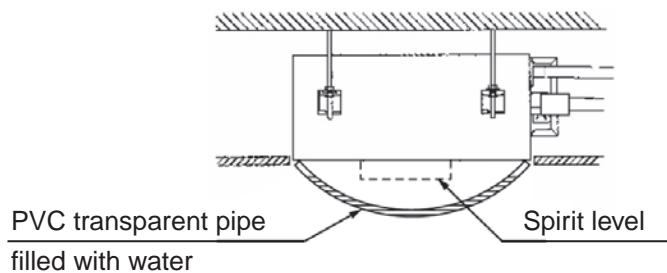


Fig.4

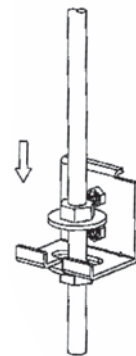


Fig.5

CASE "B". New built houses and false ceilings.

a) In case of new built house, the hook can be embedded in advance. But it should be strong enough to bear the Indoor Unit and will not become loose because of concrete shrinking.

b) After installing the body, please fasten the installation paper board onto the air conditioner with the provided 4 bolts (M5 x 16). In this way, it will be easy to determine the sizes and positions of the hole opening on ceiling.

○ Please first guarantee the flatness and horizontal of false ceiling when installing it.

c) For following phases of installation, please refer to items b) & c) of previous Case "A".

○ At the end of installation of Unit's body, please remove installation paper board.

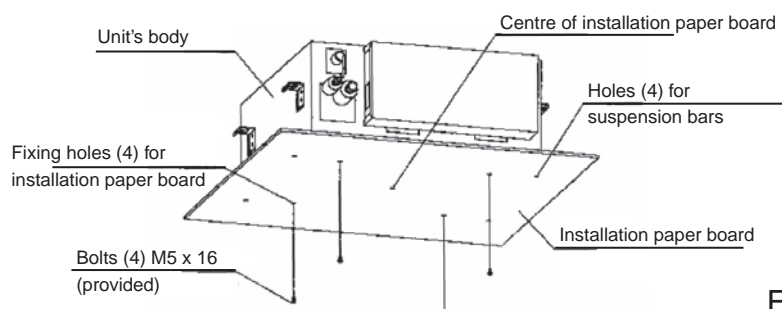


Fig.6

(4) Installation of decorative panel on Indoor Unit

Cautions:

- Never put the panel face down on floor or against the wall, or near object or materials which may damage its surface.
- Never crash or strike the decorative panel, to avoid to damage its structure; this may cause problems during panel's installation and determine malfunction of motorized flaps.

(4.1) Remove the air inlet grille

- Slide the two grid switches toward the middle at the same time, then pull up the air inlet grid as it is shown in the Figures below.
- When air inlet grid reaches an opening angle of at least 30° , it will be possible to detach the grid and remove it from panel.

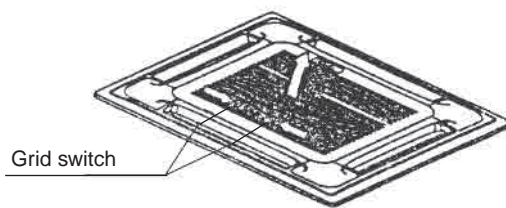


Fig.7

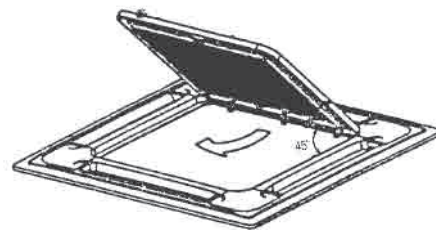


Fig.8

(4.2) Installation of decorative panel on Indoor Unit

- For installation of decorative panel, a precise position is foreseen, which is shown further on. If this position is not observed, decorative panel cannot be installed.

- Rotate the panel till aligning the swing motor - positioned on the panel and protected by its cover - to the condensate water pan on Indoor Unit's body, as it is shown in the Figure below.
- Suspend the decorative panel to Indoor Unit by using the 4 steel safety tie rods, which are already on Indoor Unit (one for each corner). The end of each tie rod must be hooked to the below corner of decorative panel.

Caution:

- Always observe installation position of decorative panel, previously described.

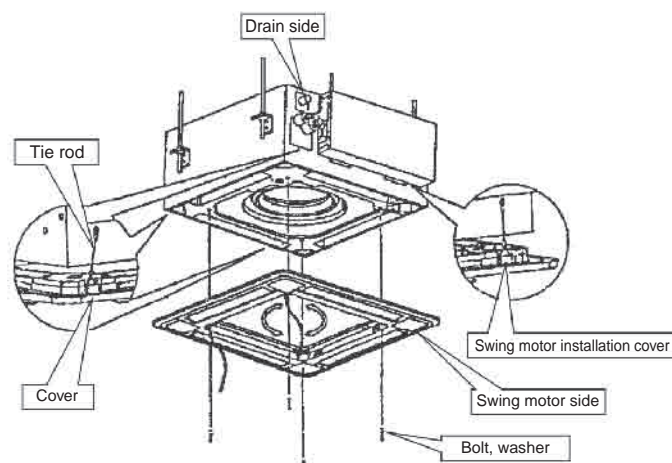


Fig.9

- c) Temporarily fix the decorative panel to Indoor Unit's body, by screwing for about 5 mm the 4 provided bolts M5 x 16, after inserting the corresponding washer on each bolt.
- d) Horizontally adjust the position of the decorative panel, so as to centre it as regards the hole cut in the false ceiling.
- e) Screw or unscrew each bolt till the decorative panel is perfectly horizontally positioned, and till the thickness of insulation spongy material placed between the panel and the Indoor Unit's body, is reduced to 4 ~ 6mm, as it is shown in the following Figure.

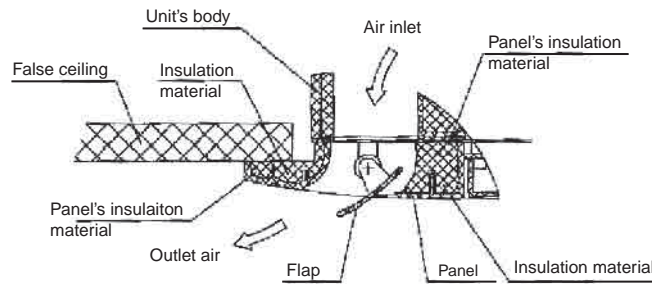


Fig.10

- There must be no gap between the panel and the false ceiling. In case of gaps, some problems may occur as it is shown in the Figure below (humidity condensation on false ceiling, with consequent water dripping inside the room).

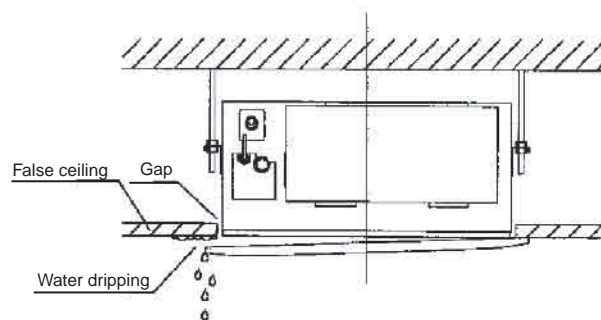


Fig.11

- If after fastening the panel's bolts thoroughly, there is still a gap between inside surface of decorative panel and false ceiling, it is needed to adjust again the installation height of Indoor Unit. This is possible by simply removing the 4 corners of panel and by adjusting the Indoor Unit's below suspension nuts, reachable through the holes beneath the corner.
- When adjusting the Indoor Unit's installation height again, it is needed to keep the Unit perfectly horizontally, so as not to cause problems to condensate drain system. Example: inverted slope. This problem is shown in the Figure below.

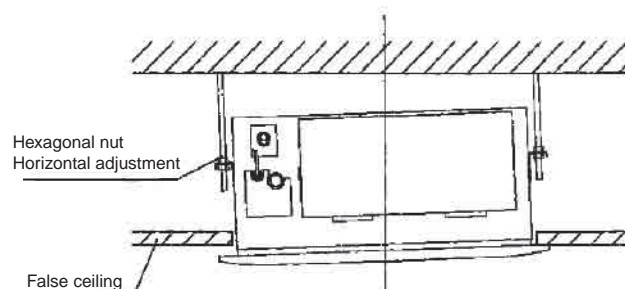


Fig.12

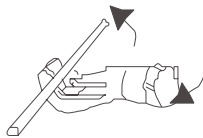
(4.3) Reinstall the air inlet grille on the decorative panel

- Relocate the grille to the panel by side of clamps which allow the grille to sway.
- Connect the connector of flap motor to the corresponding connector from Indoor Unit's electric box.
- To definitively fix the grille to the panel, carry out the procedure in reversed order as regards that previously described for removing the grille itself.
- At the end of procedure, always check if grille is well inserted in its location and if it cannot detach accidentally during operation of Indoor Unit.

(5) Piping flaring

■ If piping's length is too long or its end is damaged, it is necessary to cut it by the special pipe cutter, before carrying out piping flaring.

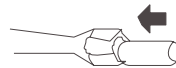
1. Pipes' cutting



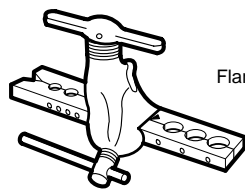
2. Deburring



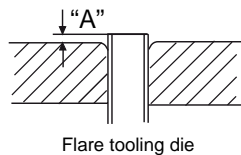
3. Nuts' insertion



4. Piping flaring



Flare tool

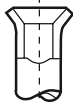
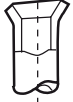

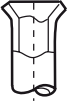
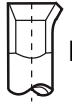



Flare tooling die

• Dimension "A"

Pipe diameter:	"A" (mm):
6.35 mm (1/4")	0.7~1.3
9.52 mm (3/8")	1.0~1.6
12.7 mm (1/2")	1.0~1.6

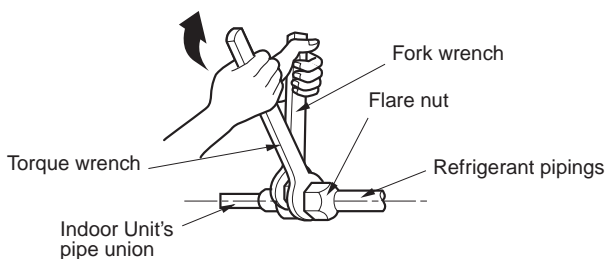
Examples of piping flaring:

Correct	Wrong				
	 NO	 NO	 NO	 NO	 NO
OK	Lean	Crack	Damage of flare	Partial	Too outside

(6) Refrigerant pipings

Oil flares' back and indoor side of flare nuts by refrigerant synthetic oil. Align to pipe fittings the axis of pipings to be connected and screw flare nuts on threaded pipe union of Indoor Unit. First of all, tighten the connection manually as much as possible.

For definitive tightening, use a torque wrench and observe fastening torques indicated by Manufacturer (see the Table below).

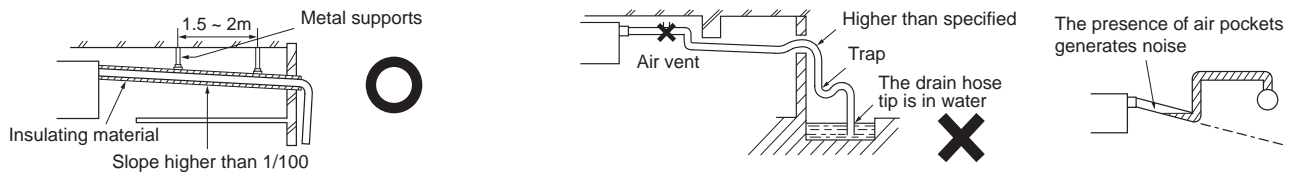


Fastening torque and pipe diameter (Ø")	
LIQUID side	GAS side
15.7~19.6 N•m (1/4")	29.4~34.3 N•m (3/8")
	49.0~53.9 N•m (1/2")

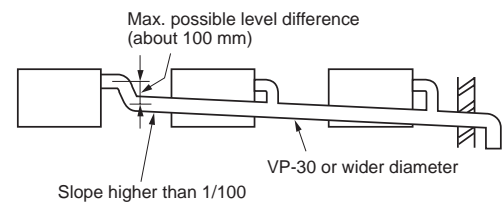
•Tighten the connection definitively with a torque wrench and a spanner:

(7) Position of drain hose

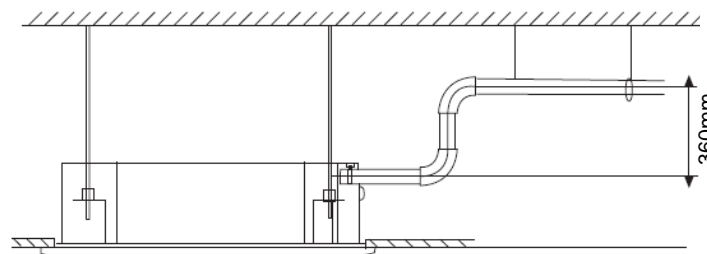
- Check if drain piping (VP20) has a min. slope of at least 1/100 along all its path.
- Avoid to carry out pipings' portions with inverted slope, traps or air vents along the piping itself.
- The end of piping must not be immersed, nor must be conveyed to manholes, hydroseparators of toxic substances, to avoid that bad smells or vapors of noxious or toxic substances may enter the installation room by going up along the drain piping.



- In case of installation of an exhaust manifold for collecting the condensate water from several Indoor Units of same type, the main pipe must be at least 100mm beneath the drain connection point of each Unit. For exhaust manifold, use a piping VP-30 or wider diameter.



- This type of Indoor Unit is equipped with a condensate drain pump, and therefore it is possible to raise drain pipe up to max. 360mm as regards drain socket, as it is shown in the Figure below.

Max. raising of drain pipe**(8) Wiring**

- Indoor Units. Power lines and signal cable (min. section of 1.5mm² for all Models), prewired-up on each Indoor Unit and provided of plug, must pass from Indoor Unit to Outdoor Unit, by starting from Indoor Unit's electric box and getting to specific connector (Unit "A", "B", "C", "D") on Outdoor Unit. If it is needed to increase wiring standard length (6 metres), always use cables in accordance with to law only.
- Terminal block can be reached by removing electric box's protection cover, on Indoor Unit's right side.
- Always fix cables on screw terminal blocks firmly, and always use the special wire clamps on Indoor Units to avoid that any traction on cables may be sent to terminal blocks' contacts.
- If protection fuse is broken, replace it by a fuse which is equivalent to original one.
- Outdoor Unit. Power supply line must be for system only, that is it must not be shared with other appliances. A circuit breaker must be installed - with suitable calibration to the system's power input - which simultaneously interrupts all contacts; in opening position, min. distance between contacts must be of 3 mm. Moreover, the installation of an earth breaker is required, specific for Inverter appliances.

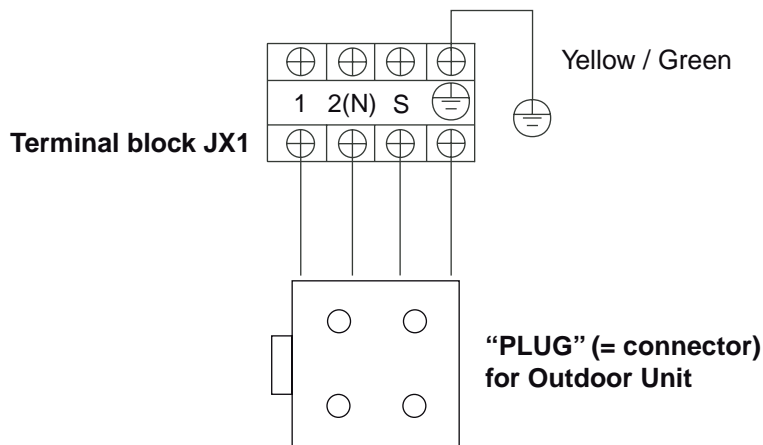
Basic information on wiring for Multi Liberty DC Inverter systems

- **Power supply (on Outdoor Unit):**
 - 1-Phase, 220~240V, 50 Hz.
 - Power source limitations: ±10% as regards rating value.
 - Voltage at starting: 85% as regards rating value.

• **Calibrations of circuit breakers and min. section of power cables:**

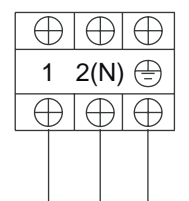
Outdoor Units	Calibration of circuit breaker (A)	Section of power cables (mm ²)
HCKU 406 X2	12A	2.5 mm ²
HCKU 536 X2	16A	4.0 mm ²
HCKU 606 X3	20A	6.0 mm ²
HCKU 806 X3	20A	6.0 mm ²
HCKU 706 X4	20A	6.0 mm ²
HCKU 816 X4	32A	8.0 mm ²
HCKU 1066 X4	32A	8.0 mm ²

Indoor Unit “A”, “B”, “C”, or “D”

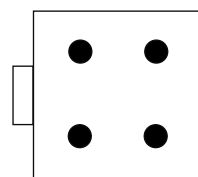


- **Min. section of cables (prewiring-up = 6m) between each Indoor Unit and the Outdoor Unit:**
 - All Models 1.5mm².

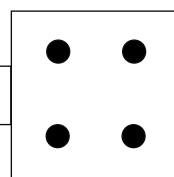
Outdoor Unit



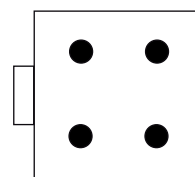
Power supply terminal block



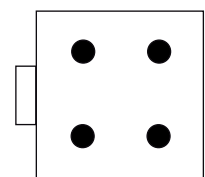
Indoor Unit “A”



Indoor Unit “B”



Indoor Unit “C”



Indoor Unit “D”

(9) Final checks

1. On Outdoor Unit, check the correspondence between wiring and piping connections for each Indoor Unit.
2. Check way and laying of drain hose and electrical wiring for each Indoor Unit.
3. In case of extension of connection lines (power supply and signal lines) between the Outdoor Unit and one or more Indoor Units, check the correspondence between wires and terminals on terminal blocks, both for signal lines and power supply lines.
4. Check heat insulation of refrigerant pipings and drain hoses.
5. Check the correspondence between available power supply specifications and plate specifications required by system.
6. Check correct water drainage by carrying out the Test on each drain hose.
7. Check if each Indoor Unit is fixed to its wall fixing plate firmly.
8. By using an electronic gas leakage detector, at high sensitivity and specific for HFC, check if there are refrigerant leakages near refrigerant connections (Flare connections).

(10) Test of system

Carry out automatic Test procedure which is described in "Section 1: General Information" of this Service Manual, or start the system's Indoor Units normally (manual Test) by using corresponding IR Remote Controllers.

System Test in Cooling mode is only possible at indoor temperature not lower than 17°C.

System manual Test in Heating mode is possible at indoor temperature not higher than 30°C.

In particular, during system manual Test, check the following:

1. Is it possible to adjust room temperature correctly on each Indoor Unit?
2. Is it possible to change fan speed freely on all Indoor Units?
3. Are there abnormal noises or excessive vibrations coming from Indoor Units or from the Outdoor Unit?
4. Do outlet flaps properly reply to impulses sent by remote control, and do they work properly on all Units?
5. Does air supplied by Indoor Units reach all installation environment uniformly?
6. Does condensate water drip from Indoor Units into the room?
7. Does temperature difference between air inlet and air outlet (ΔT) on each Indoor Unit show a satisfactory performance of system?

4.4 INSTALLATION OF HFIU (266, 356, 536) X INDOOR UNITS

Before starting the air conditioner, please read carefully the information in this "USER'S MANUAL". The User's Manual contains very important suggestions related to installation, operation and maintenance of the air conditioner and concerning your personal safety.

The Manufacturer accept no responsibility for the damages that may arise due to non-observance of the instructions listed in this "USER'S MANUAL".

Disposal of an old air conditioner

Before disposing an old air conditioner, please make sure it is inoperative and carry out the disposal by adopting all safety precautions. Unplug it from the power line in order to avoid risks of electric shock.

Please remember that an air conditioner contains refrigerant fluid, requiring specialized waste disposal.

The valuable materials contained in the air conditioner can be recycled. Contact your local Waste Disposal Center for adequate disposal or contact your Dealer for any question.

Please make sure that piping of your air conditioner does not get damaged before being picked up by the relevant Waste Disposal Center. You can contribute to the protection of the environment by adopting an appropriate anti-pollution method of disposal.

Disposal of the packaging of your new air conditioner

All the packaging materials used in the package of your new air conditioner can be disposed without any danger for the environment.

The cardboard may be broken or cut into small pieces and given to a Waste Paper Disposal Service. The wrapping bag made of polyethylene and the polyethylene foam pads contain no fluorochloric hydrocarbon.

All these valuable materials may be taken to a Waste Collecting Center and used again after adequate recycling.

Consult your local Authorities for the name and address of the Waste Materials Collecting Centers and Waste Paper Disposal Services nearest to your house.

General warnings for safety

- Do not operate damaged air conditioners. In case of doubt, contact your Dealer.
- Use of air conditioner must be carried out in strict compliance with the instructions listed further on.
- Do not damage any parts of the air conditioner that carry refrigerant by piercing or perforating the piping with sharp or pointed objects, by crushing or twisting the tubes or scraping off the surfaces' coatings. If the refrigerant spurts out and gets into eyes, this may result in serious injuries.
- Do not obstruct or cover the ventilation grille of the air conditioner. Do not put fingers nor insert objects into the inlet/outlet vent or into the motorized louver.
- Do not allow children to play with the air conditioner. Children should be never allowed to sit on the Outdoor Unit.
- The appliance is not intended for children and disabled people. They must not operate the air conditioner without supervision.
- Electrical works must be carried out according to the local laws. If the power cable is damaged, it must be replaced by the Manufacturer or by qualified Personnel. Size of power cables and connecting wires must be adequate to the characteristics of the air conditioner (current values and power input values).
- If fuses on the PCB are blown, they must be replaced with new fuses of the same type and size.
- After installation, power plug should be properly disposed.
- Exhausted batteries (infrared remote controller) should be properly disposed.
- Always remember to unplug the air conditioner and wait at least 5 minutes before opening the Units' panels.

- **Strictly observe the instructions provided in this Service Manual.**
- **The air conditioning system contains inside its circuit a refrigerant gas (R410A) under pressure. Never disconnect for any reason refrigerant pipings before recovering refrigerant first.**
- **Never perform any improper handling on Outdoor Unit's service valves or on Indoor Unit's pipe unions.**
- **Invite the Customer to keep User's Manual within reach for convenient reference, in case of need.**
- **In case the system's Units are transferred and reinstalled, the User's Manual should always be attached to the appliance.**

SAFETY INSTRUCTIONS

- Please read carefully the following Safety Instructions before operating the air conditioner.
- A strict observance of the instructions indicated in this "USER'S MANUAL" will prevent personal hurt and incidents to the User. Moreover, correct operation and long life of the system will be ensured.
- Depending on the seriousness of potential risks and damages, the reported Instructions are classified in two types: "**WARNING**" and "**CAUTION**". A strict observance of the Instructions is required to guarantee your personal safety and the safety of the environments where the Units are installed.
- The following Instructions are related to the air conditioner's installation. They have been reported also in the "USER'S MANUAL", just to allow the User to check that installation has been properly carried out. If an improper installation - not corresponding to the Instructions - is verified, please contact the Dealer or the Authorized Technical Service.

The User must never attempt to repair, install or perform special maintenance of system by himself. To carry out these operations in safety way, User must always contact Authorized Technical Service.

KEY OF SYMBOLS



WARNING

This symbol points out the risk of serious injury or death.



CAUTION

This symbol points out the risk of injury or damage to the property.






Prohibition. Action or procedure not allowed, with serious effects on objects and people.








Obligation. Compulsory action or procedure. The missed observance could bring serious effects on objects and people.



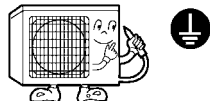



INSTALLATION

Never try to install this system by yourself, i.e. without the support of Technical Personnel. Never try to repair the system by yourself. The Units' components can be reached only by opening or removing the covering panels, and this involves exposure to high voltage. Even by disconnecting power supply, it is not always possible to avoid the risk of electric shocks.

 WARNING	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for installation. Never attempt to install the air conditioner by yourself, because improper installation could cause electric shock, injuries, water leakage or fire. 	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for any servicing operation or special maintenance. Never try to repair or carry out special maintenance by yourself. Improper repair or maintenance could cause electric shock, injuries, water leakage or fire. 	

ALWAYS confirm that installation has been carried out according to the following prescriptions:

 WARNING	
<ul style="list-style-type: none"> • When installing, all possible countermeasures must be taken to avoid refrigerant leaks. If there is a high concentration of refrigerant gas in the room, oxygen lack may occur. 	
<ul style="list-style-type: none"> • Do not install the air conditioner near burners, heat sources or flammable gas. This is to avoid the risk of malfunctioning, fire or explosion. 	
<ul style="list-style-type: none"> • Ensure that a circuit breaker has been installed on the power supply line of the air conditioner, to avoid the risk of electric shocks. 	
<ul style="list-style-type: none"> • When installing in a small room, countermeasures should be taken in case of a R410A refrigerant leak exceeds the proper range (0.3kg/m³). 	

 CAUTION	
<ul style="list-style-type: none"> • Ensure that drain hose and drain pipe installation has been carried out correctly. Incorrect installation or maintenance will cause water leakage. 	
<ul style="list-style-type: none"> • Ensure that Indoor and Outdoor Units have been properly grounded. Defective grounding could cause electric shock. 	 
<ul style="list-style-type: none"> • This kind of appliance needs a specific circuit breaker with proper protective devices against overcurrent and short circuits (fuses or automatic switches). 	 <p>Circuit breaker (specific)</p> 

⚠ CAUTION

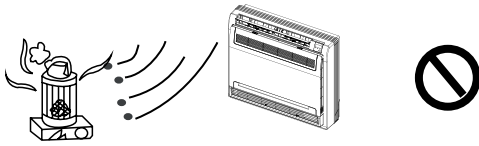
Ventilation should be operated when using at the same time the air conditioner and gas burners. Insufficient ventilation may cause lack of oxygen.



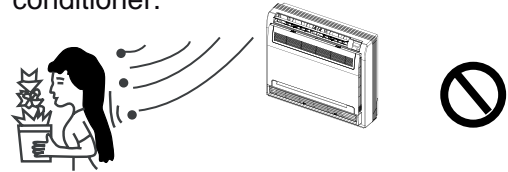
Do not use sprays near the air conditioner and do not spray anything towards the appliance.



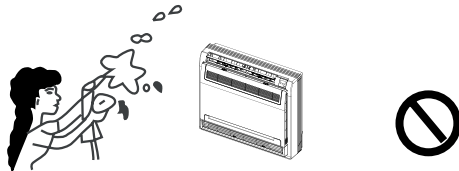
Do not place burners near airflow supplied by Indoor Unit.



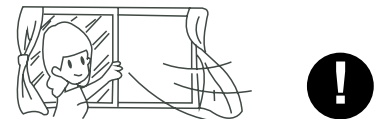
Do not expose plants or animals to direct airflow of air conditioner.



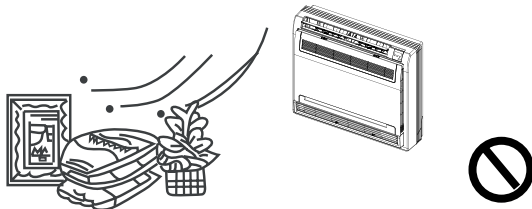
For preventing the risk of electric shocks, do not sprinkle water nor other liquid on Indoor Unit. Do not clean the Indoor Unit by water spurts.



Ventilate the room regularly while the system is operating. Fail to follow this advice could result in lack of oxygen inside the room.



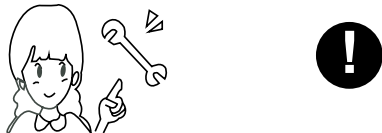
Do not expose food, plants, animals, precise devices or works of art to direct airflow supplied by Indoor Unit.



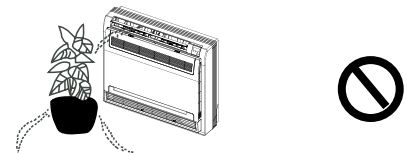
For proper performance, operate the system under the recommended temperature and humidity range. If the Indoor Unit operates beyond these conditions, malfunctions may occur or dew may drip out of Indoor Unit's body.



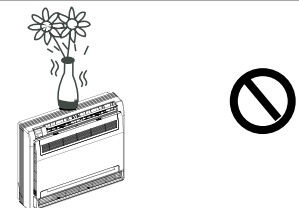
When necessary, replace fuses with new ones of same type. Never replace a fuse by a piece of iron or copper.



Do not place anything in front of Indoor Unit.



Do not put any object on Indoor Unit. On the appliance's upper part there is an air grille that must not be obstructed. Besides, eventual objects may damage the air conditioner's components. Heavy objects may cause the detachment of Indoor Unit from wall.



Never touch heat exchangers' metal flaps on Indoor and Outdoor Units. This could cause hurts due to the sharp shape of flaps.



1. Selection of installation site & position

1.1 Requirements for Indoor Unit's installation

- 1) Spaces for installation and maintenance must be available.
- 2) There must be no obstacles on Indoor Unit's air outlet and inlet, nor air drafts coming from outdoor must interfere with Indoor Unit's operation.
- 3) A uniform distribution of air supplied by Indoor Unit must be assured, inside whole room.
- 4) Laying of refrigerant pipings and installation of drain hose must be easy.
- 5) There must be no heating sources near Indoor Unit and/or in the same room.

Do not carry out Units' installation in places having the following features or similar features:

- Storage sites of inflammable liquids, as for example oil or its by-products.
- Places with outside highly salty atmosphere, as for example buildings near the sea.
- Places with corrosive volatile substances (compounds of sulphur), as for example near thermal sulphur springs.
- Places where there are appliances that cause power voltage instability (factories, workshops, etc.).
- Places not enough ventilated, as underground rooms, etc.
- Environments as restaurant kitchens, because of the strong presence of oil vapors.
- Places as hospitals or consulting rooms, where there are diagnostic appliances generating electromagnetic waves.
- Storage sites of easily inflammable materials, or where inflammable gas can easily concentrate.
- Places with vapors of acid or alkaline volatile substances.
- Other places where particular operation conditions occur, not listed in these items.

1.2 Preliminary notes for installation

- 1) Determine the easiest path for moving Units till reaching the chosen position.
- 2) Keep Units as originally packaged as possible.
- 3) If a Unit is installed on a metal part of the building, it must be electrically insulated according to the relevant electrical code.

1.3 Cautions for IR Remote Controller's installation

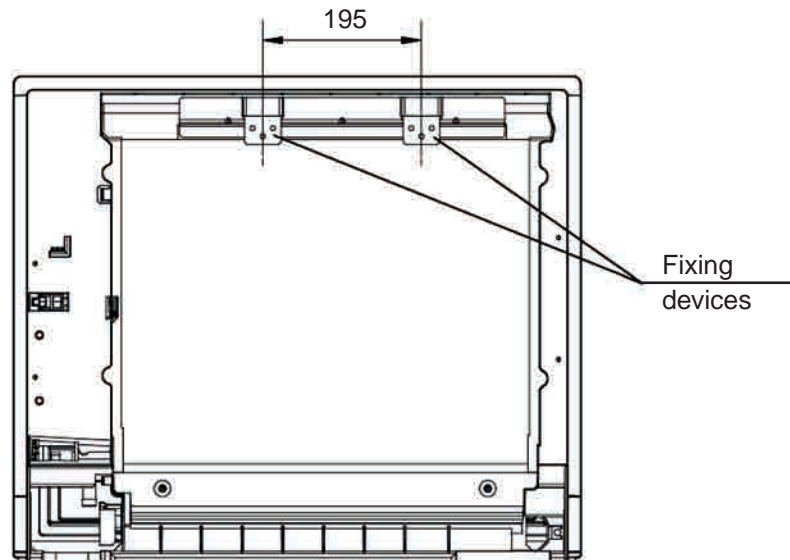
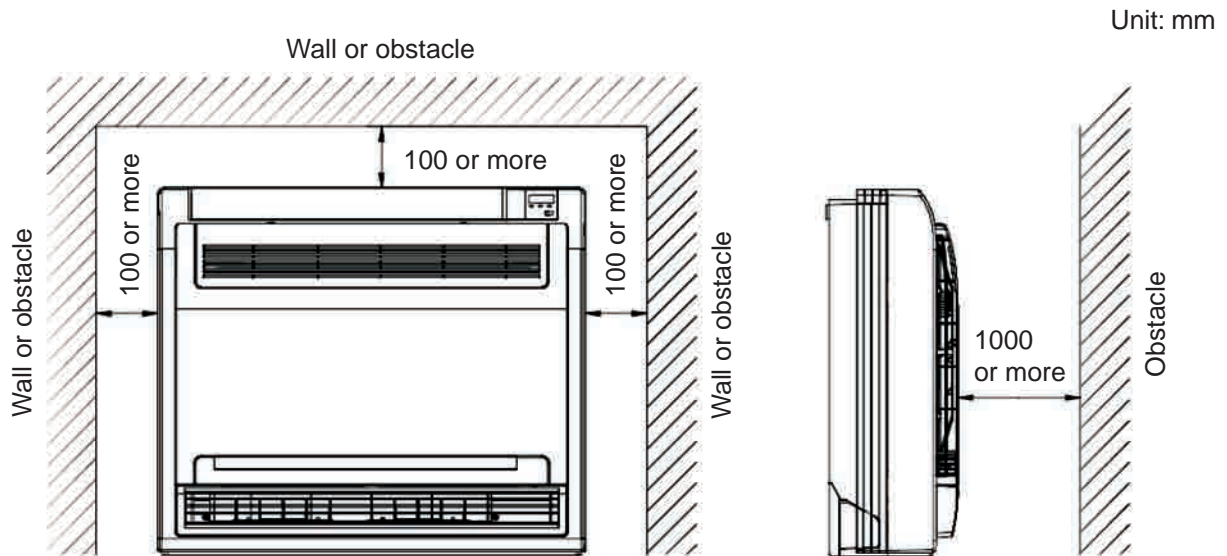
- 1) Determine the position for IR remote control's wall bearing installation, by considering the remote control's range and the need for orienting the transmitter towards the IR signal receiver, placed on Indoor Unit.
- 2) Never expose IR remote control to direct sunlight for a long time. This could obstruct or prevent the transmission of signals to Indoor Unit, and damage plastic parts of remote control, the buttons and the display.
- 3) Never expose remote control to the heat coming from stoves, sprinklings of water or oil vapors. Never expose remote control to solvents or by-products of oil.
- 4) If air conditioner is not operated for a long time, please remove batteries from remote controller.

2. Installation of Indoor Unit

2.1 Service spaces

Install the Indoor Unit in a place having the following requirements:

- Suitable free spaces for installation and maintenance of Unit must be available (see the following Figure).

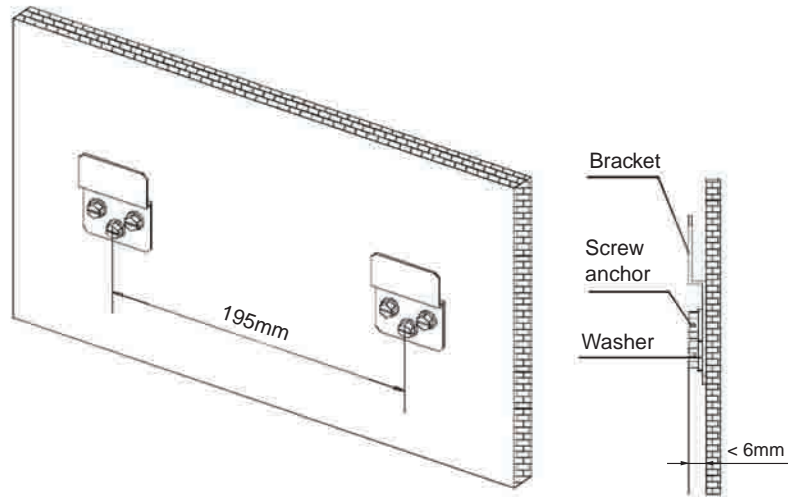


- There must be no obstacles on the air outlet and inlet of Unit, nor air drafts coming from outdoor which could interfere with Unit's operation.
- A uniform distribution of air supplied by Unit must be assured inside whole room.
- Laying of refrigerant pipings and drain hose installation must be easy.
- There must be no heating sources near Unit.

Caution: Install Units at more than 1m from radio and TV appliances, and set power lines and wiring at a suitable distance from these appliances, to avoid the danger of mutual interferences and electromagnetic noises on system operation. Sometimes, min. distance of 1m from radio frequency appliances is not sufficient to avoid the risk of noises on system operation. In this case, please use shielded cables.

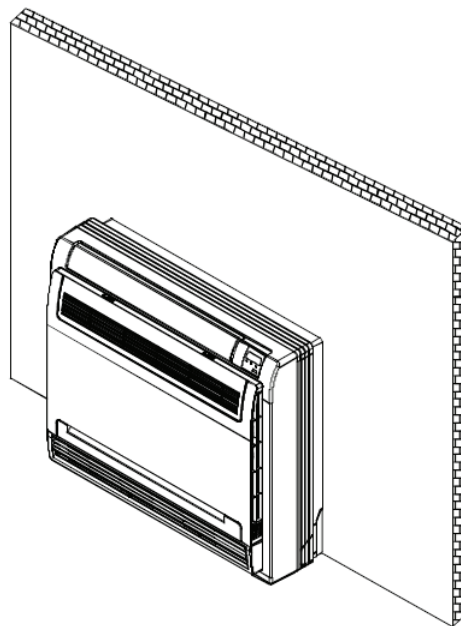
2.2 Fixing of Indoor Unit

- Fix installation brackets to wall, by using screw anchors.



- Suspend Indoor Unit to installation brackets previously set.

Unit's bottom can be placed on the floor, as it is shown in the Figure below, or it can be installed at medium height from floor. However, Unit's body must always be installed vertically, along a wall.



3. Connection of refrigerant pipings

Please check if splitting distance (also considering the number of bends on pipings) and splitting level distance between Indoor Units and the Outdoor Unit respect limitations indicated by the Manufacturer.

3.1 Access to refrigerant connections of HFIU (266, 356, 536) X Indoor Units

- 1) Slide the two switches of frontal grille toward the middle, as it is shown in Figure 3.1.1.
- 2) Open frontal grille to 90°, after removing the string (see Figure 3.1.2). Remove the grid from Indoor Unit, by detaching the bottom hinges. Unscrew the 4 screws of Indoor Unit's frontal panel (see Figure 3.1.2).
- 3) Lift frontal panel by about 30° (see Figure 3.1.3); now it is possible to remove it from back side of Indoor Unit.
- 4) The position of Indoor Unit's refrigerant piping connections is shown in Figure 3.1.3.
- 5) Concerning the part of refrigerant pipings inside Unit, the allowed position is downwards only. Outside Unit, refrigerant pipings can be set downwards, or on the back and/or sideways of Indoor Unit.

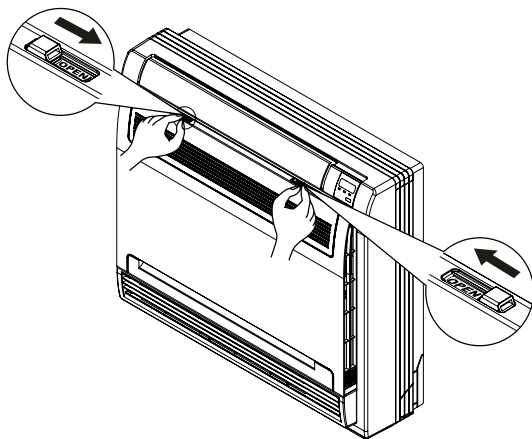


Figure 3.1.1

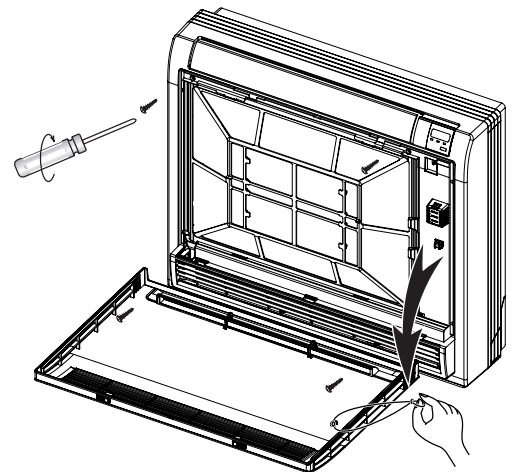


Figure 3.1.2

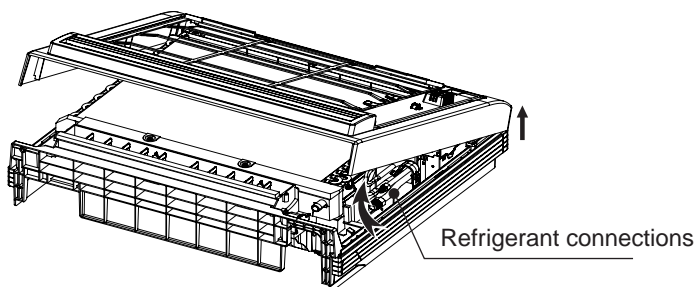


Figure 3.1.3

3.2 Procedure for connection of refrigerant pipings

Caution:

- Connection of refrigerant pipings must be carried out by Authorized Technical Service, in accordance with current regulations as far as refrigerant installations are concerned.
- Prevent water, humidity, polluting materials and foreign matters from entering pipings' inside.
- Refrigerant pipings must be carried out only after installation of Indoor and Outdoor Units.
- Thermally insulate pipings on both sides (Liquid & Gas), as it is indicated further on.
 - 1) Drill a wall hole of suitable diameter, for the passage of wiring and refrigerant connections, and cover the hole's inside by a protective sleeve.
 - 2) Strictly tape wiring and refrigerant pipings.
 - 3) Refrigerant pipings must be set from outside to inside installation room.
 - 4) Connect refrigerant pipings to Units, as it is explained further on.
 - 5) Carry out the vacuum procedure of refrigerant pipings and of Indoor Unit, by using a vacuum pump.
 - 6) In the end, if vacuum is not satisfactory - and after checking refrigerant (Flare) connections' tightness - open service valves on Outdoor Unit to let precharged refrigerant flow inside Outdoor Unit.
 - 7) Check if there are leakages on flares, by using a gas leakage specific for detector R410A.
 - 8) Cover the connection points with sleeves made of insulating material resistant to temperatures of at least 120°C, and strictly tape insulating material to avoid inside air pockets.

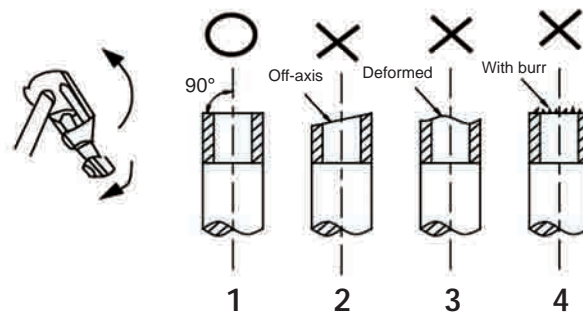
Caution:

- Thermally insulate, by close cells' material of suitable thickness, refrigerant piping connections and pipings on both sides (Liquid & Gas). This material must be resistant to temperatures of at least 120°C. Strictly tape insulating material, to avoid air pockets between pipings and insulating material itself (otherwise, there is risk of condensation forming).

Connection of refrigerant pipings

3.3 Flaring of refrigerant pipings:

Cut refrigerant pipings by using the special roller pipe cutter.



Insert flared nuts on pipings and carry out a professional flaring avoiding the most common errors, shown in the Figure above (cases 2, 3, 4).

The following Table shows recommended dimensions for flares and tightening torques of flared nuts.

Pipings' diameter	Tightening torque	Dimension "A" (mm)		References for flaring
		Min.	Max.	
Ø6.35(1/4")	14.2 ~ 17.2 N•m (144 ~ 176 kgf•cm)	8.3	8.7	
Ø9.52(3/8")	32.7 ~ 39.9 N•m (333 ~ 407 kgf•cm)	12.0	12.4	
Ø12.7(1/2")	49.5 ~ 60.3 N•m (504 ~ 616 kgf•cm)	15.4	15.8	

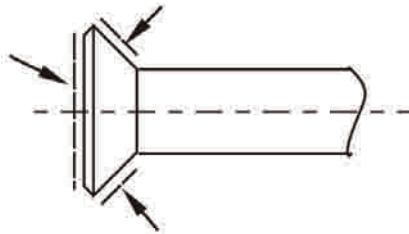
3.4 Carry out connection of refrigerant pipings, first on Indoor Unit then on Outdoor Unit.

- If a pipe bender is not available, please observe min. radius of curvature shown on Figure below.

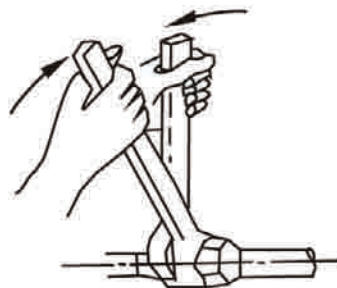


In case of manual bending of pipings, please observe min. radius of curvature of 100mm.

- Never bend pipings at right angle.
- Bend the piping so as the bend is in the middle of the concerned straight section. Take care to keep a radius of curvature as wide as possible.
- Do not bend several times the same section of piping.
- Oil (as it is shown by arrows in the Figure) the flare's back and the flare nut's inside with refrigerant synthetic oil, and manually screw the flared nut 3-4 turns before carrying out final tightening.



- For tightening of flared nut, use a spanner and a torque wrench to keep still the refrigerant connection. Observe recommended tightening torques.



Caution:

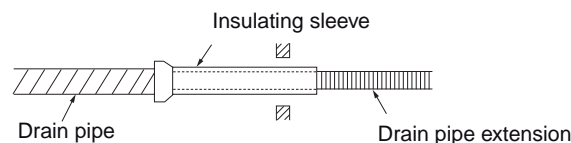
- Excessive tightening may cause the breaking of flare, while an insufficient tightening is not able to assure perfect tightness of flare.
- At the end of tightening, there must be no leakages near connections points.

4. Drain piping

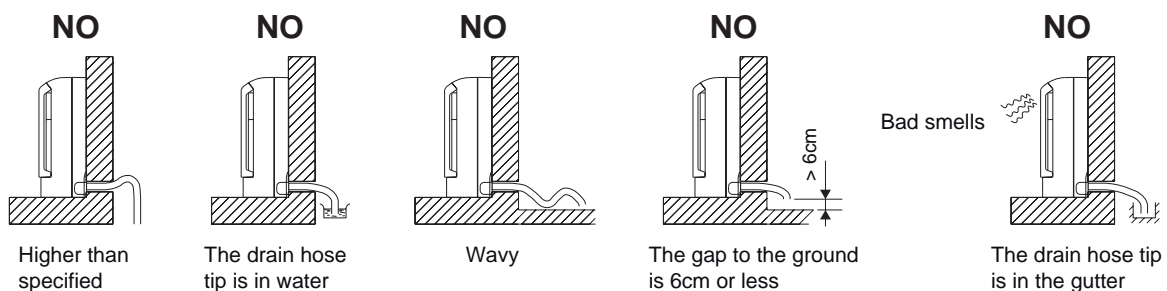
4.1 Installation of drain pipe for Indoor Unit

Caution:

- 1) Condensate drain piping must be properly insulated by close cells' insulating material of suitable thickness, near connection point on Indoor Unit and on the first portion (about 1m). This precaution is for avoiding condensation forming on drain piping's outside.
- 2) Connection of drain hose on this kind of Indoor Units is at the bottom, on right side (by frontally watching air conditioner). Drain hose's connection can be reached by bottom side of Unit's body, with no need of removing frontal grille nor any other panel of Indoor Unit.
- 3) For drain piping, please use a PVC semi-rigid pipe of commercial type (VP16).
- 4) When installing piping on drain connection on Indoor Unit, take care not to force excessively in order not to damage the connection itself.
- 5) Keep a slope of 1/50~1/100 along whole piping path. Pipe must not be wavy or higher than specified.
- 6) It is recommended to reduce as much as possible drain piping length and to prepare, if needed, special supporting structures which prevent piping from bending under its own weight.
- 7) Do not lead drain piping to manholes where there could be toxic, harmful or inflammable gas. This gas could enter installation rooms through drain piping, thus being a danger for health and safety of User (risk of poisoning or lack of oxygen). Moreover, heat exchanger may corrode and bad smells may exhale.
- 8) For properly installation, please refer to the Figures below.



- During laying of drain pipe, please avoid the most common errors, shown in the Figure below.



4.2 Drain hose test

- 1) Pour water inside drain piping, and check if it flows down properly.
- 2) Take care that drain piping is not pressed along its path.
- 3) In new buildings, drain hose test must be carried out before laying of superstructures as panels, air spaces, etc.

5. Wiring

5.1 General cautions

- 1) Electric part of installation must be carried out in accordance with national and local current regulations as far as electric installation are concerned.
- 2) These systems require one power supply line, specific to the system only.
- 3) Specifications of power supply voltage must correspond to plate specifications required by system.
- 4) The system requires Ground wire for Indoor and Outdoor Units.
- 5) Wiring must be carried out by Authorized Technical Service, in accordance with wiring diagrams on the following pages.
- 6) Main power supply switch (circuit breaker) must be at open circuit, which determines all poles' disconnection. In opening position, the distance between contacts must be at least of 3mm on each pole. Always install an earth breaker on power supply lines; earth breaker must be specific for Inverter appliances. Circuit breaker's calibration must be suitable to electric specifications of system.
- 7) Do not supply power to system before checking several times if wiring has been carried out properly on terminal blocks/connectors of Indoor and Outdoor Units.

5.2 Access to terminal block of HFIU (266, 356, 536) X Indoor Units

- 1) Slide the two switches of frontal grille toward the middle, as it is shown in Figure 5.2.1.
- 2) Open frontal grille to 90°, after removing the string (see Figure 5.2.2). Remove the grid from Indoor Unit, by detaching the bottom hinges. Unscrew the 4 screws of Indoor Unit's frontal panel (see Figure 5.2.2).
- 3) Lift frontal panel by about 30° (see Figure 5.2.3 on the following page); now it is possible to remove it from back side of Indoor Unit.
- 4) Rotate room temperature sensor holder (see Figure 5.2.4 on the following page), in order to remove electric box cover. Then remove the cover itself, to reach Indoor Unit's terminal block.

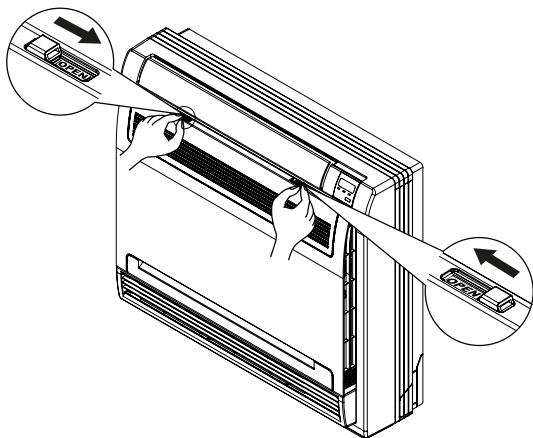


Figure 5.2.1

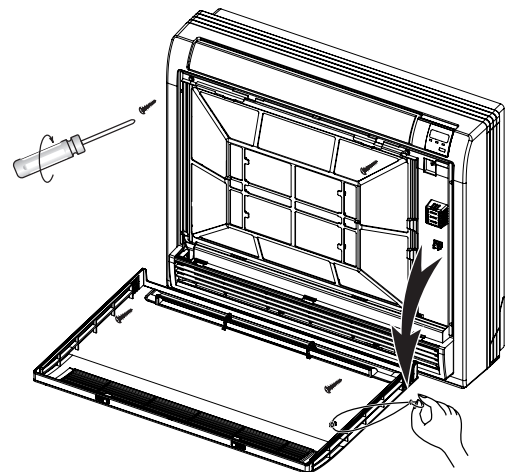


Figure 5.2.2

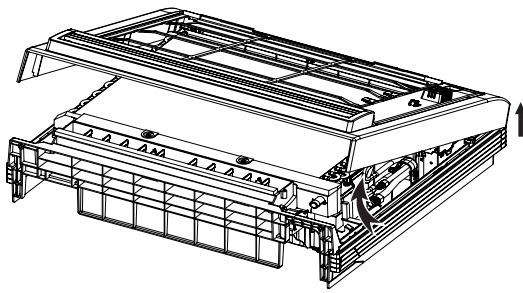


Figure 5.2.3

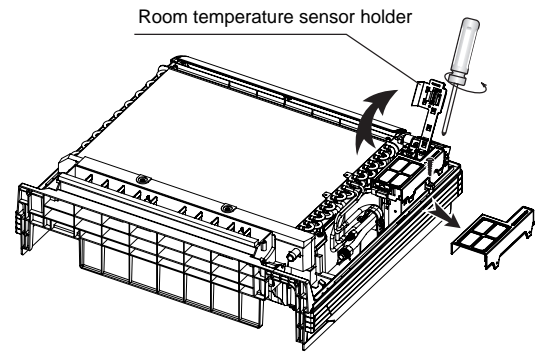
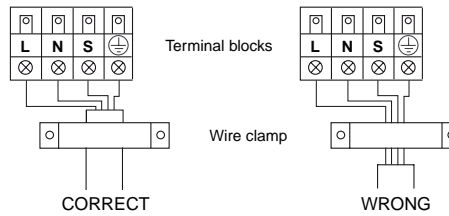
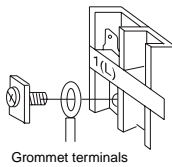


Figure 5.2.4

5) Always use wire clamps on Indoor Units, to avoid that any traction applied to connection cables between Indoor and Outdoor Units could be transmitted to terminal blocks' contacts or to connectors. For proper use of wire clamps, please refer to the Figure below.



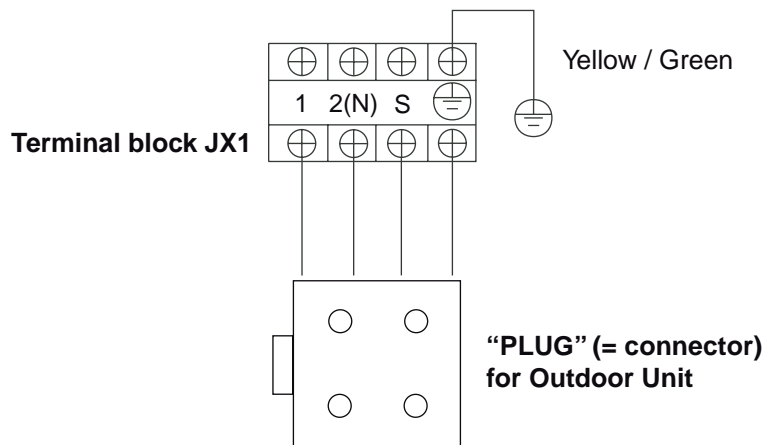
Basic information on wiring for Multi Liberty DC Inverter systems

- **Power supply (on Outdoor Unit):**
 - 1-Phase, 220~240V, 50 Hz.
 - Power source limitations: ±10% as regards rating value.
 - Voltage at starting: 85% as regards rating value.

• **Calibrations of circuit breakers and min. section of power cables:**

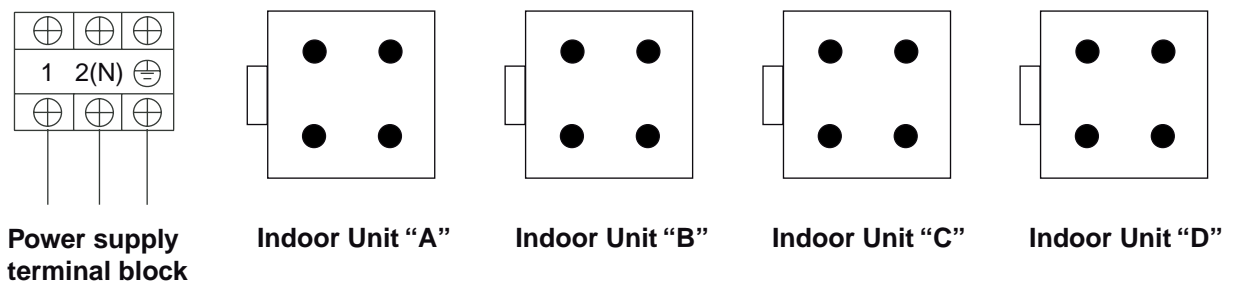
Outdoor Units	Calibration of circuit breaker (A)	Section of power cables (mm ²)
HCKU 406 X2	12A	2.5 mm ²
HCKU 536 X2	16A	4.0 mm ²
HCKU 606 X3	20A	6.0 mm ²
HCKU 806 X3	20A	6.0 mm ²
HCKU 706 X4	20A	6.0 mm ²
HCKU 816 X4	32A	8.0 mm ²
HCKU 1066 X4	32A	8.0 mm ²

Indoor Unit “A”, “B”, “C”, or “D”



- **Min. section of cables (prewiring-up = 6m) between each Indoor Unit and the Outdoor Unit:**
 - All Models 1.5mm².

Outdoor Unit



6. Test

1. Test procedure of system must be carried out only after installation has been completed in all its parts (electric part and refrigerant part).

2. Before carrying out the Test, please check the following:

- Has installation of Indoor Units and Outdoor Unit been completed?
- Have wiring and refrigerant connections been completed?
- Are there any refrigerant leakages on the refrigerant circuit?
- Does drain piping assure proper flowing of water poured inside it (test)?
- Have refrigerant pipings and drain hose been thermally insulated properly?
- Has Ground connection been carried out properly on system?
- Have refrigerant pipings' length and the eventual additional refrigerant charge been written down?
- Do power supply voltage specifications correspond to the system's plate specifications?
- Are there any obstacles which obstruct air outlet and air inlet on Indoor and Outdoor Units?
- Have Outdoor Unit's service valves been completely opened?
- Has system been powered for any hours, to heat the bottom of compressor?

3. With the agreement of User, install the remote control's bearing in such a position that signals sent by remote control - installed on its bearing - can be received by Indoor Unit.

4. Test

Set Cooling mode by remote controller and press "ON/OFF" button on remote control itself to start system. Check the following, and in case of malfunctions please refer to final part of "Section 3: Outdoor Units & Troubleshooting" of this Service Manual.

1) Indoor Unit

- a. Check if "ON/OFF" button on remote controller allows to start/stop operation of Unit.
- b. Check if other buttons on remote controller operate properly too.
- c. Check if outlet motorized flaps move properly.
- d. Check if room temperature value satisfy comfort needs.
- e. Check if LED indicators on Indoor Unit's IR receiver display operate properly.
- f. Check if Emergency button on Indoor Unit works properly.
- g. Check if condensate water flows properly through drain piping.
- h. Check if there is no noise nor anomalous vibration during operation.
- i. Carry out test of system in Heating mode too.

2) Outdoor Unit

- a. Check if there is no noise nor anomalous vibration during operation.
- b. Make sure that supplied air and noise produced by Outdoor Unit do not disturb the neighbourhood.
- c. Check there are no refrigerant leakages on refrigerant circuit.
- d. Verify there are no electrical leakages towards the Ground.

Caution:

In case of stop of system operation, a protection function is active which prevents immediate restart, unless at least 3 minutes have elapsed since last stop of compressor.

4.5 INSTALLATION OF HSFU (356, 536) X INDOOR UNITS

Before starting the air conditioner, please read carefully the information in this "USER'S MANUAL". The User's Manual contains very important suggestions related to installation, operation and maintenance of the air conditioner and concerning your personal safety.

The Manufacturer accept no responsibility for the damages that may arise due to non-observance of the instructions listed in this "USER'S MANUAL".

Disposal of an old air conditioner

Before disposing an old air conditioner, please make sure it is inoperative and carry out the disposal by adopting all safety precautions. Unplug it from the power line in order to avoid risks of electric shock.

Please remember that an air conditioner contains refrigerant fluid, requiring specialized waste disposal.

The valuable materials contained in the air conditioner can be recycled. Contact your local Waste Disposal Center for adequate disposal or contact your Dealer for any question.

Please make sure that piping of your air conditioner does not get damaged before being picked up by the relevant Waste Disposal Center. You can contribute to the protection of the environment by adopting an appropriate anti-pollution method of disposal.

Disposal of the packaging of your new air conditioner

All the packaging materials used in the package of your new air conditioner can be disposed without any danger for the environment.

The cardboard may be broken or cut into small pieces and given to a Waste Paper Disposal Service. The wrapping bag made of polyethylene and the polyethylene foam pads contain no fluorochloric hydrocarbon.

All these valuable materials may be taken to a Waste Collecting Center and used again after adequate recycling.

Consult your local Authorities for the name and address of the Waste Materials Collecting Centers and Waste Paper Disposal Services nearest to your house.

General warnings for safety

- Do not operate damaged air conditioners. In case of doubt, contact your Dealer.
- Use of air conditioner must be carried out in strict compliance with the instructions listed further on.
- Do not damage any parts of the air conditioner that carry refrigerant by piercing or perforating the piping with sharp or pointed objects, by crushing or twisting the tubes or scraping off the surfaces' coatings. If the refrigerant spurts out and gets into eyes, this may result in serious injuries.
- Do not obstruct or cover the ventilation grille of the air conditioner. Do not put fingers nor insert objects into the inlet/outlet vent or into the motorized louver.
- Do not allow children to play with the air conditioner. Children should be never allowed to sit on the Outdoor Unit.
- The appliance is not intended for children and disabled people. They must not operate the air conditioner without supervision.
- Electrical works must be carried out according to the local laws. If the power cable is damaged, it must be replaced by the Manufacturer or by qualified Personnel. Size of power cables and connecting wires must be adequate to the characteristics of the air conditioner (current values and power input values).
- If fuses on the PCB are blown, they must be replaced with new fuses of the same type and size.
- After installation, power plug should be properly disposed.
- Exhausted batteries (infrared remote controller) should be properly disposed.
- Always remember to unplug the air conditioner and wait at least 5 minutes before opening the Units' panels.

- **Strictly observe the instructions provided in this Service Manual.**
- **The air conditioning system contains inside its circuit a refrigerant gas (R410A) under pressure. Never disconnect for any reason refrigerant pipings before recovering refrigerant first.**
- **Never perform any improper handling on Outdoor Unit's service valves or on Indoor Unit's pipe unions.**
- **Invite the Customer to keep User's Manual within reach for convenient reference, in case of need.**
- **In case the system's Units are transferred and reinstalled, the User's Manual should always be attached to the appliance.**

SAFETY INSTRUCTIONS

- Please read carefully the following Safety Instructions before operating the air conditioner.
- A strict observance of the instructions indicated in this "USER'S MANUAL" will prevent personal hurt and incidents to the User. Moreover, correct operation and long life of the system will be ensured.
- Depending on the seriousness of potential risks and damages, the reported Instructions are classified in two types: "**WARNING**" and "**CAUTION**". A strict observance of the Instructions is required to guarantee your personal safety and the safety of the environments where the Units are installed.
- The following Instructions are related to the air conditioner's installation. They have been reported also in the "USER'S MANUAL", just to allow the User to check that installation has been properly carried out. If an improper installation - not corresponding to the Instructions - is verified, please contact the Dealer or the Authorized Technical Service.

The User must never attempt to repair, install or perform special maintenance of system by himself. To carry out these operations in safety way, User must always contact Authorized Technical Service.

KEY OF SYMBOLS



WARNING

This symbol points out the risk of serious injury or death.



CAUTION

This symbol points out the risk of injury or damage to the property.






Prohibition. Action or procedure not allowed, with serious effects on objects and people.








Obligation. Compulsory action or procedure. The missed observance could bring serious effects on objects and people.



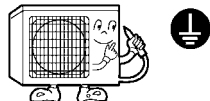



INSTALLATION

Never try to install this system by yourself, i.e. without the support of Technical Personnel. Never try to repair the system by yourself. The Units' components can be reached only by opening or removing the covering panels, and this involves exposure to high voltage. Even by disconnecting power supply, it is not always possible to avoid the risk of electric shocks.

 WARNING	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for installation. Never attempt to install the air conditioner by yourself, because improper installation could cause electric shock, injuries, water leakage or fire. 	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for any servicing operation or special maintenance. Never try to repair or carry out special maintenance by yourself. Improper repair or maintenance could cause electric shock, injuries, water leakage or fire. 	

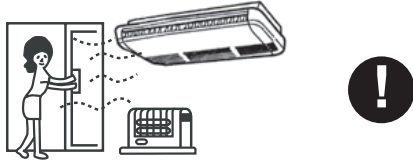
ALWAYS confirm that installation has been carried out according to the following prescriptions:

 WARNING	
<ul style="list-style-type: none"> • When installing, all possible countermeasures must be taken to avoid refrigerant leaks. If there is a high concentration of refrigerant gas in the room, oxygen lack may occur. 	
<ul style="list-style-type: none"> • Do not install the air conditioner near burners, heat sources or flammable gas. This is to avoid the risk of malfunctioning, fire or explosion. 	
<ul style="list-style-type: none"> • Ensure that a circuit breaker has been installed on the power supply line of the air conditioner, to avoid the risk of electric shocks. 	
<ul style="list-style-type: none"> • When installing in a small room, countermeasures should be taken in case of a R410A refrigerant leak exceeds the proper range (0.3kg/m³). 	

 CAUTION	
<ul style="list-style-type: none"> • Ensure that drain hose and drain pipe installation has been carried out correctly. Incorrect installation or maintenance will cause water leakage. 	
<ul style="list-style-type: none"> • Ensure that Indoor and Outdoor Units have been properly grounded. Defective grounding could cause electric shock. 	 
<ul style="list-style-type: none"> • This kind of appliance needs a specific circuit breaker with proper protective devices against overcurrent and short circuits (fuses or automatic switches). 	 <p>Circuit breaker (specific)</p> 

⚠ CAUTION

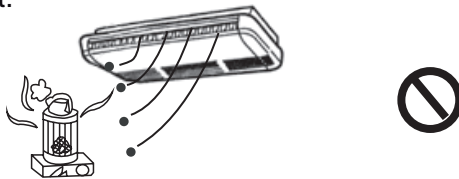
Ventilation should be operated when using at the same time the air conditioner and gas burners. Insufficient ventilation may cause lack of oxygen.



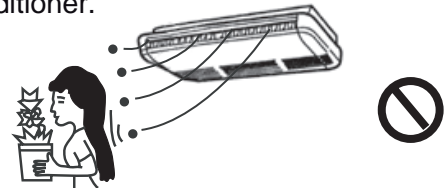
Do not use sprays near the air conditioner and do not spray anything towards the appliance.



Do not place burners near airflow supplied by Indoor Unit.



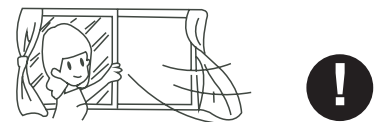
Do not expose plants or animals to direct airflow of air conditioner.



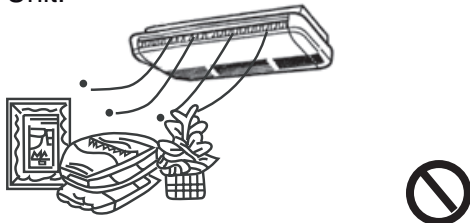
For preventing the risk of electric shocks, do not sprinkle water nor other liquid on Indoor Unit. Do not clean the Indoor Unit by water spurts.



Ventilate the room regularly while the system is operating. Fail to follow this advice could result in lack of oxygen inside the room.



Do not expose food, plants, animals, precise devices or works of art to direct airflow supplied by Indoor Unit.



For proper performance, operate the system under the recommended temperature and humidity range. If the Indoor Unit operates beyond these conditions, malfunctions may occur or dew may drip out of Indoor Unit's body.



When necessary, replace fuses with new ones of same type. Never replace a fuse by a piece of iron or copper.



Do not place anything in front of Indoor Unit.



Do not put any object on Indoor Unit. On the appliance's upper part there is an air grille that must not be obstructed. Besides, eventual objects may damage the air conditioner's components. Heavy objects may cause the detachment of Indoor Unit from wall.



Never touch heat exchangers' metal flaps on Indoor and Outdoor Units. This could cause hurts due to the sharp shape of flaps.



1. Selection of installation site & position

1.1 Requirements for Indoor Unit's installation

- 1) Spaces for installation and maintenance must be available.
- 2) There must be no obstacles on Indoor Unit's air outlet and inlet, nor air drafts coming from outdoor must interfere with Indoor Unit's operation.
- 3) A uniform distribution of air supplied by Indoor Unit must be assured, inside whole room.
- 4) Laying of refrigerant pipings and installation of drain hose must be easy.
- 5) There must be no heating sources near Indoor Unit and/or in the same room.

Do not carry out Units' installation in places having the following features or similar features:

- Storage sites of inflammable liquids, as for example oil or its by-products.
- Places with outside highly salty atmosphere, as for example buildings near the sea.
- Places with corrosive volatile substances (compounds of sulphur), as for example near thermal sulphur springs.
- Places where there are appliances that cause power voltage instability (factories, workshops, etc.).
- Places not enough ventilated, as underground rooms, etc.
- Environments as restaurant kitchens, because of the strong presence of oil vapors.
- Places as hospitals or consulting rooms, where there are diagnostic appliances generating electromagnetic waves.
- Storage sites of easily inflammable materials, or where inflammable gas can easily concentrate.
- Places with vapors of acid or alkaline volatile substances.
- Other places where particular operation conditions occur, not listed in these items.

1.2 Preliminary notes for installation

- 1) Determine the easiest path for moving Units till reaching the chosen position.
- 2) Keep Units as originally packaged as possible.
- 3) If a Unit is installed on a metal part of the building, it must be electrically insulated according to the relevant electrical code.


1.3 Cautions for IR Remote Controller's installation

- 1) Determine the position for IR remote control's wall bearing installation, by considering the remote control's range and the need for orienting the transmitter towards the IR signal receiver, placed on Indoor Unit.
- 2) Never expose IR remote control to direct sunlight for a long time. This could obstruct or prevent the transmission of signals to Indoor Unit, and damage plastic parts of remote control, the buttons and the display.
- 3) Never expose remote control to the heat coming from stoves, sprinklings of water or oil vapors. Never expose remote control to solvents or by-products of oil.
- 4) If air conditioner is not operated for a long time, please remove batteries from remote controller.

2. Check of Indoor Unit after transport and following removal

Check if Indoor Unit has not suffered damages by transport. The packaging must be intact. Otherwise, lodge a complaint to transporter.

During removal, take care to the following symbols on packaging.

1.  "Fragile". Handle with care.



Do not turn packaging upside down to avoid damages to panels.

2. Determine the easiest path for removing Indoor Unit to installation site.
3. Keep Indoor Unit protected inside its original packaging till installation.
4. During lifting of Indoor Unit, place special protective devices between slinging tie rods and Unit itself.

3. Installation of Indoor Unit

3.1 Selection of installation position

For installation of Indoor Unit, select a place having the following requirements:

Suitable spaces for installation and maintenance must be available.

Select a leveled fixing surface, which is strong enough to support Unit's weight.

Air outlet and inlet must be free. Air draft from outside must not interfere with Unit's operation.

Air supplied by Unit must be distributed inside the room uniformly.

Laying of refrigerant pipings and drain hose must be easy.

There must be no heating source near Unit.

Caution:

Install Units at more than 1m from radio and TV appliances, and set power lines and wiring at a suitable distance from these appliances, to avoid the danger of mutual interferences and electromagnetic noises on system operation. Sometimes, min. distance of 1m from radio frequency appliances is not sufficient to avoid the risk of noises on system operation. It is a good rule to use shielded cables.

3.2 Fixing of Indoor Unit's body

1. Installation of bolts with anchors (Ø10, 4 pieces) for Unit's fixing

Concerning the details related to the installation of fixing devices, refer to the following Figures.

For fixing, use bolts with anchors of suitable diameter (Ø10mm).

Fixing devices to be used for ceiling depend on nature of building materials. In case of doubts, please contact the building firm.

Installation & Service spaces

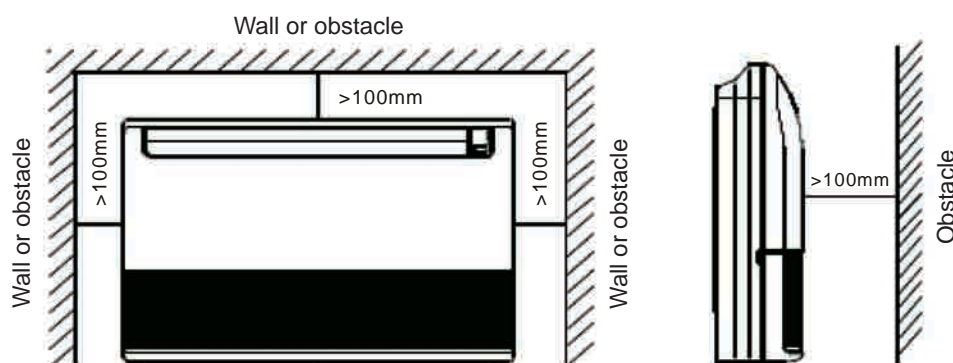


Fig. 3.2.1

- Suitable spaces must be available, equal or wider as regards those indicated on the previous Figure.
- If needed, strengthen the surface where fixing devices must be inserted.
- After choosing Indoor Unit's installation position, arrange refrigerant piping connections, drain connection and wiring before Unit's fixing.
- Installation of fixing devices depends on the nature of selected surface, as it is indicated below.

■ **WOODEN STRUCTURE**

Hanging screw bolts must pass through wooden structure. Fix them properly.

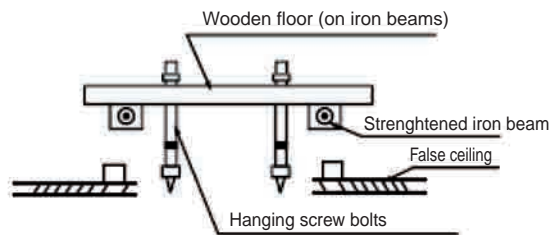


Fig. 3.2.2

■ **NEW CONCRETE BRICKS**

Insert the anchors inside the masonry, as it is illustrated in the cases below.

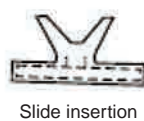


Fig. 3.2.3

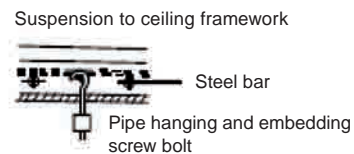


Fig. 3.2.4

■ **ORIGINAL CONCRETE BRICKS**

Drill concrete structure and insert screw bolt anchors for at least 45 ~ 50mm.



Fig. 3.2.5

■ **STEEL ROOF BEAM STRUCTURE ("L" SECTION ELEMENTS)**

For suspending Indoor Unit, screw hanging bolts on metal frame directly.

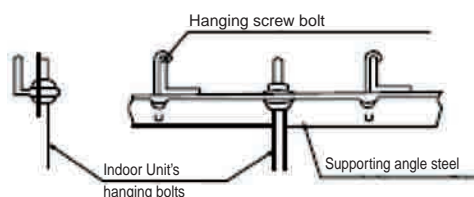


Fig. 3.2.6

2. Wall installation of HSFU 356 X, 536 X Indoor Units

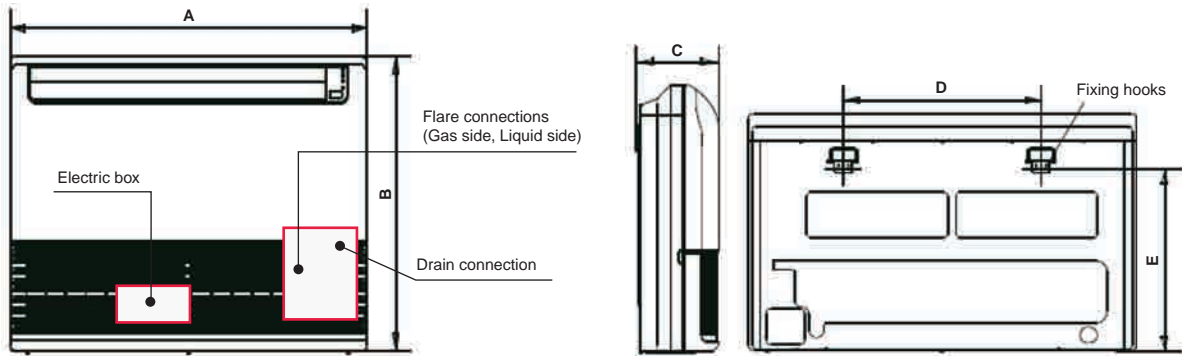


Fig. 3.2.7

1. As it is shown in Fig. 3.2.8, install fixing brackets to wall by using screw anchors.

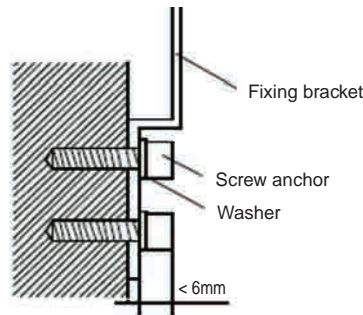


Fig. 3.2.8

2. Suspend Indoor Unit to fixing brackets.

3. Ceiling installation of HSFU 356 X, 536 X Indoor Units

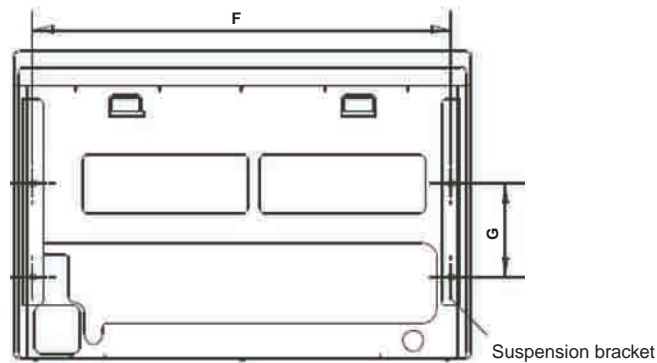


Fig. 3.2.9

1. As it is shown in Fig. 3.2.10 on the following page, remove covering side panel on both sides (right and left) and air inlet grille.

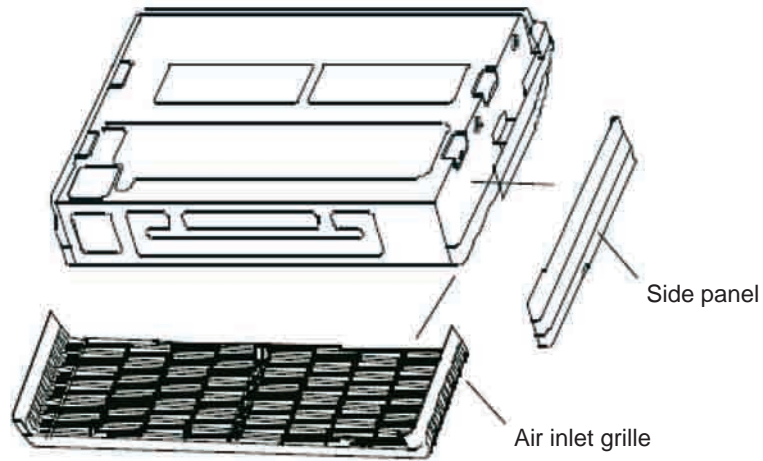


Fig. 3.2.10

2. Fix installation brackets on suspension threaded bolts (see Fig. 3.2.11).

Fix bolts on Indoor Unit to install brackets on Unit's body (see Fig. 3.2.12).

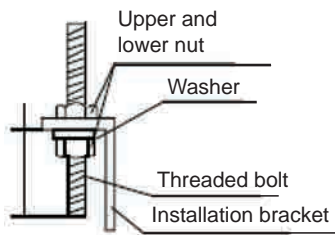


Fig. 3.2.11

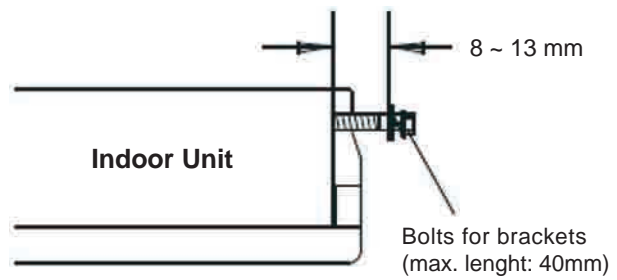


Fig. 3.2.12

3. Fix Indoor Unit to installation brackets, then make it slide along the brackets' slots (see Fig. 3.2.13).

Fasten brackets' fixing bolts to complete Unit's installation.

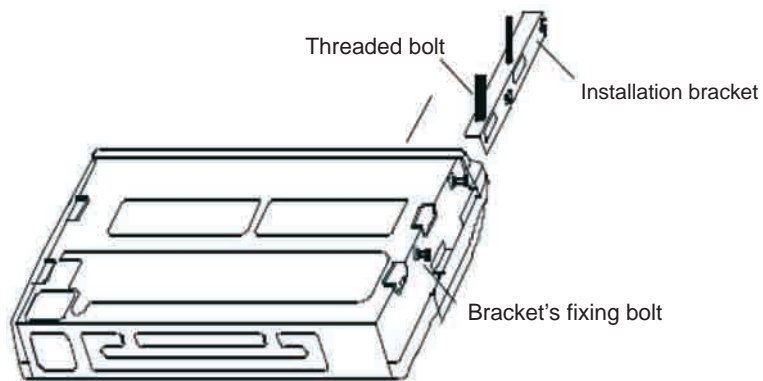


Fig. 3.2.13

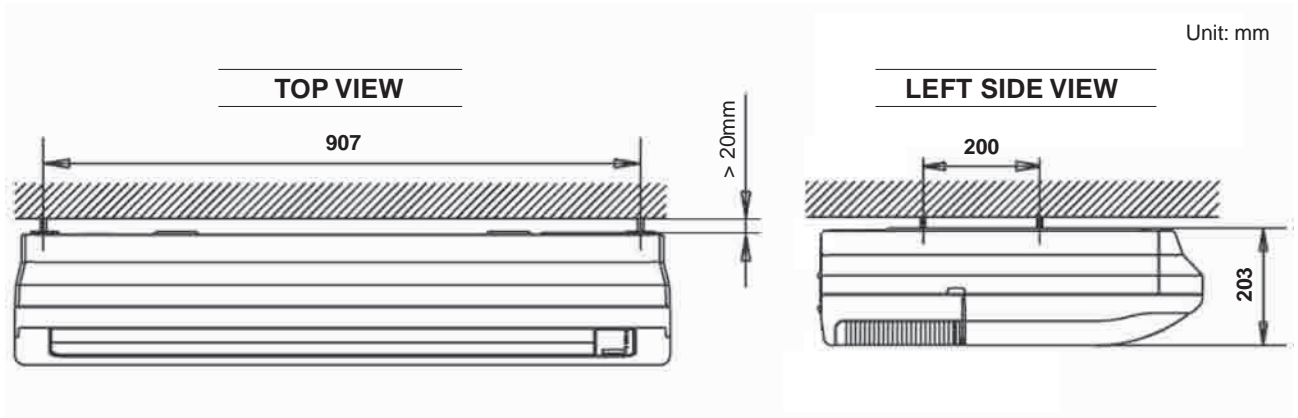


Fig. 3.2.14

4. Connection of refrigerant pipings

Check if splitting distance (also considering the number of bends on pipings) and splitting level distance between Indoor Units and Outdoor Unit respect limitations indicated by the Manufacturer.

4.1 Procedure for connection of refrigerant pipings

Caution:

- Connection of refrigerant pipings must be carried out by Authorized Technical Service, in accordance with current regulations as far as refrigerant installations are concerned.
- Prevent water, humidity, polluting materials and foreign matters from entering pipings' inside.
- Refrigerant pipings must be carried out only after installation of Indoor and Outdoor Units.
- Thermally insulate pipings on both sides (Liquid & Gas), as it is indicated further on.
 - 1) Drill a wall hole of suitable diameter, for the passage of wiring and refrigerant connections, and cover the hole's inside by a protective sleeve.
 - 2) Strictly tape wiring and refrigerant pipings.
 - 3) Refrigerant pipings must be set from outside to inside installation room.
 - 4) Connect refrigerant pipings to Units, as it is explained further on.
 - 5) Carry out the vacuum procedure of refrigerant pipings and of Indoor Unit, by using a vacuum pump.
 - 6) In the end, if vacuum is not satisfactory - and after checking refrigerant (Flare) connections' tightness - open service valves on Outdoor Unit to let precharged refrigerant flow inside Outdoor Unit.
 - 7) Check if there are leakages on flares, by using a gas leakage specific for detector R410A.
 - 8) Cover the connection points with sleeves made of insulating material resistant to temperatures of at least 120°C, and strictly tape insulating material to avoid inside air pockets.

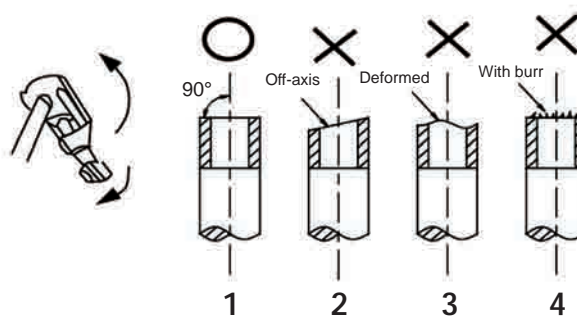
Caution:

- Thermally insulate, by close cells' material of suitable thickness, refrigerant piping connections and pipings on both sides (Liquid & Gas). This material must be resistant to temperatures of at least 120°C. Strictly tape insulating material, to avoid air pockets between pipings and insulating material itself (otherwise, there is risk of condensation forming).

Connection of refrigerant pipings

4.2 Flaring of refrigerant pipings:

Cut refrigerant pipings by using the special roller pipe cutter.

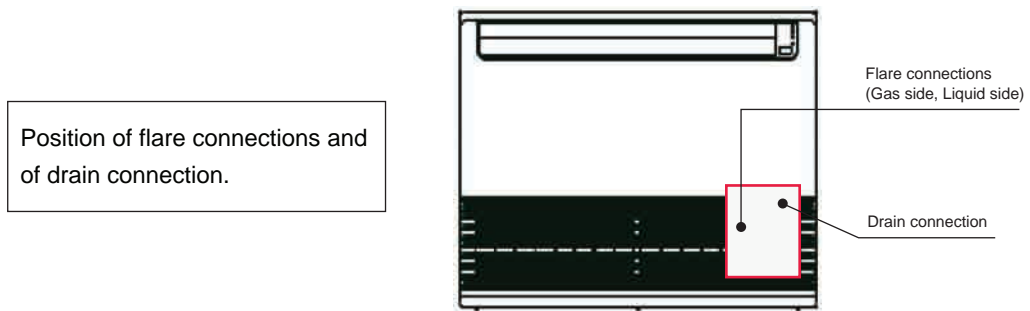


Insert flared nuts on pipings and carry out a professional flaring avoiding the most common errors, shown in the Figure above (cases 2, 3, 4).

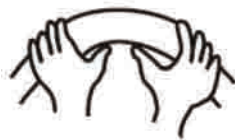
The following Table shows recommended dimensions for flares and tightening torques of flared nuts.

Pipings' diameter	Tightening torque	Dimension "A" (mm)		References for flaring
		Min.	Max.	
Ø6.35(1/4")	14.2 ~ 17.2 N•m (144 ~ 176 kgf•cm)	8.3	8.7	
Ø12.7(1/2")	49.5 ~ 60.3 N•m (504 ~ 616 kgf•cm)	15.4	15.8	

4.3 Carry out connection of refrigerant pipings first on Indoor Unit, then on Outdoor Unit.

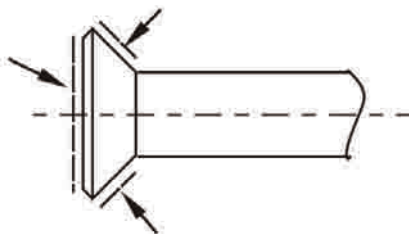


- If a pipe bender is not available, please observe min. radius of curvature shown on Figure below.

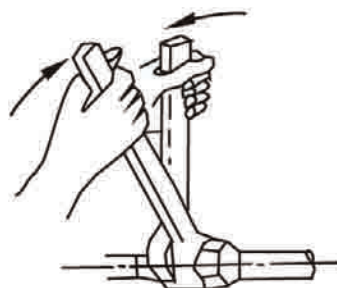


In case of manual bending of pipings, please observe min. radius of curvature of 100mm.

- Never bend pipings at right angle.
- Bend the piping so as the bend is in the middle of the concerned straight section. Take care to keep a radius of curvature as wide as possible.
- Do not bend several times the same section of piping.
- Oil (as it is shown by arrows in the Figure) the flare's back and the flare nut's inside with refrigerant synthetic oil, and manually screw the flared nut 3-4 turns before carrying out final tightening.



- For tightening of flared nut, use a spanner and a torque wrench to keep still the refrigerant connection. Observe recommended tightening torques.



Caution:

- Excessive tightening may cause the breaking of flare, while an insufficient tightening is not able to assure perfect tightness of flare.
- At the end of tightening, there must be no leakages near connections points.

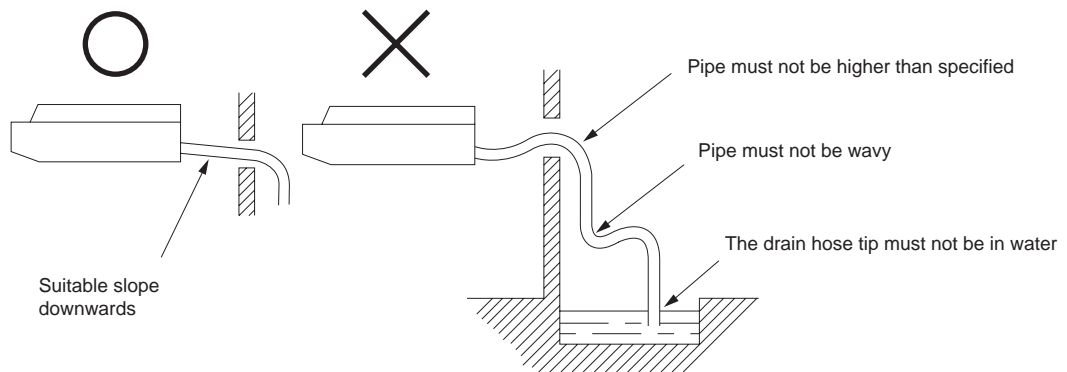
5. Drain piping

5.1 Installation of drain pipe for Indoor Unit

Caution:

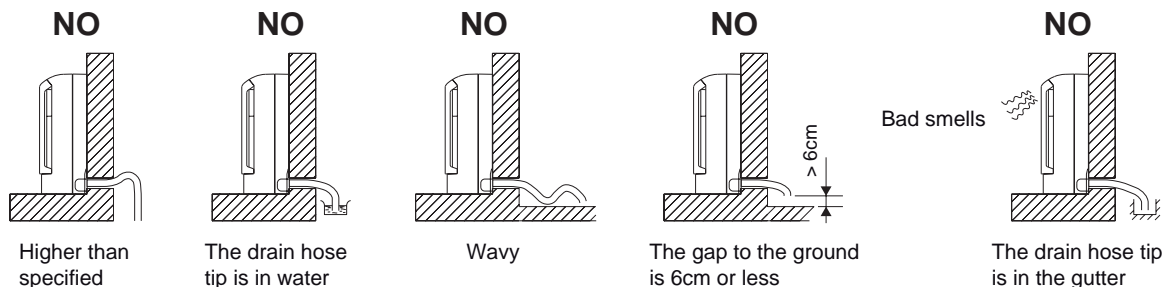
- 1) Condensate drain piping must be properly insulated by close cells' insulating material of suitable thickness, near connection point on Indoor Unit and on the first portion (about 1m). This precaution is for avoiding condensation forming on drain piping's outside.
- 2) For drain piping, please use a PVC of commercial type (VP16).
- 3) When installing piping on drain connection on Indoor Unit, take care not to force excessively in order not to damage the connection itself.
- 4) Keep a slope of 1/50~1/100 along whole piping path. Pipe must not be wavy or higher than specified.
- 5) It is advised to reduce drain piping length up to max. 20m, and to arrange, if needed, special supporting structures which prevent piping from bending under its own weight.
- 6) For proper installation, please refer to the Figures below.

Note (1): The Figure below refers to ceiling installation



Note (2): The Figure below refers to floor installation

- During laying of drain pipe, please avoid the most common errors, shown in the Figure below.



4.2 Drain hose test

- 1) Pour water inside drain piping, and check if it flows down properly.
- 2) Take care that drain piping is not pressed along its path.
- 3) In new buildings, drain hose test must be carried out before laying of superstructures as panels, air spaces, etc.

6. Wiring

6.1 General cautions

- 1) Electric part of installation must be carried out in accordance with national and local current regulations as far as electric installation are concerned.
- 2) These systems require one power supply line, specific to the system only.
- 3) Specifications of power supply voltage must correspond to plate specifications required by system.
- 4) The system requires Ground wire for Indoor and Outdoor Units.
- 5) Wiring must be carried out by Authorized Technical Service, in accordance with wiring diagrams on the following pages.
- 6) Main power supply switch (circuit breaker) must be at open circuit, which determines all poles' disconnection. In opening position, the distance between contacts must be at least of 3mm on each pole. Always install an earth breaker on power supply lines; earth breaker must be specific for Inverter appliances. Circuit breaker's calibration must be suitable to electric specifications of system.
- 7) Do not supply power to system before checking several times if wiring has been carried out properly on terminal blocks/connectors of Indoor and Outdoor Units.

6.2 Access to terminal block of HSFU (356, 536) X Indoor Units

- 1) Position of Indoor Unit's electric box is shown in Figure 6.2.1 below.
- 2) To reach electric box, first of all remove Indoor Unit's air inlet grille.
- 3) Then unscrew the screws of electric box cover, to reach terminal blocks.
- 4) After completing wiring, carry out in the operations previously described in reversed order, by taking care that air inlet grille is well closed. Air inlet grille must not accidentally open during Indoor Unit's operation. This is very important in case of ceiling installation of this kind of Indoor Units.

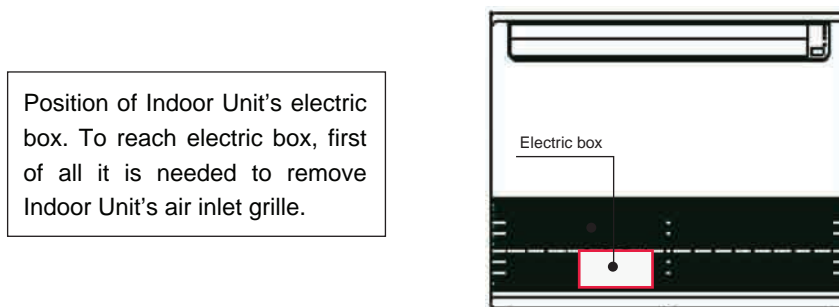
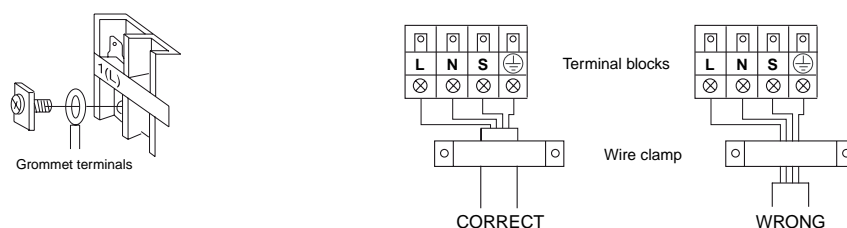


Figure 6.2.1

- 5) Always use wire clamps on Indoor Units, to avoid that any traction applied to connection cables between Indoor and Outdoor Units could be transmitted to terminal blocks' contacts or to connectors. For proper use of wire clamps, please refer to the Figure below.



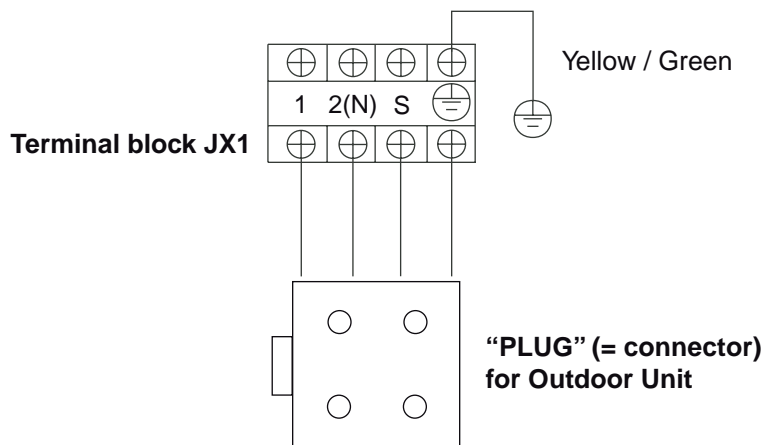
Basic information on wiring for Multi Liberty DC Inverter systems

- **Power supply (on Outdoor Unit):**
 - 1-Phase, 220~240V, 50 Hz.
 - Power source limitations: ±10% as regards rating value.
 - Voltage at starting: 85% as regards rating value.

• **Calibrations of circuit breakers and min. section of power cables:**

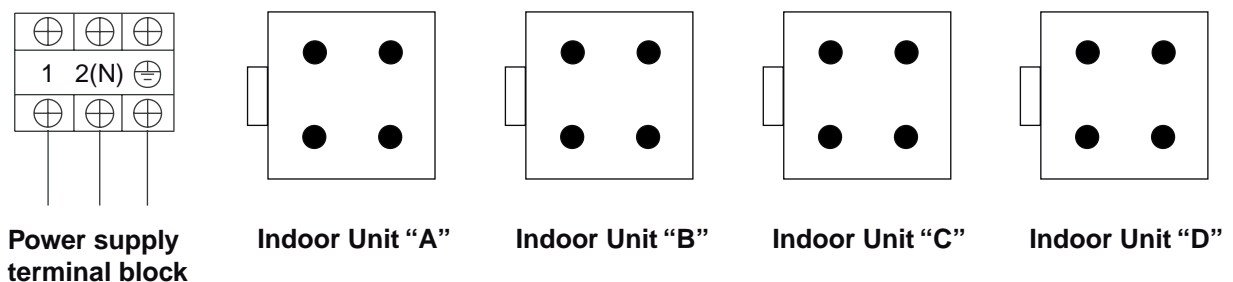
Outdoor Units	Calibration of circuit breaker (A)	Section of power cables (mm ²)
HCKU 406 X2	12A	2.5 mm ²
HCKU 536 X2	16A	4.0 mm ²
HCKU 606 X3	20A	6.0 mm ²
HCKU 806 X3	20A	6.0 mm ²
HCKU 706 X4	20A	6.0 mm ²
HCKU 816 X4	32A	8.0 mm ²
HCKU 1066 X4	32A	8.0 mm ²

Indoor Unit “A”, “B”, “C”, or “D”



- **Min. section of cables (prewiring-up = 6m) between each Indoor Unit and the Outdoor Unit:**
 - All Models 1.5mm².

Outdoor Unit



7. Test

1. Test procedure of system must be carried out only after installation has been completed in all its parts (electric part and refrigerant part).

2. Before carrying out the Test, please check the following:

- Has installation of Indoor Units and Outdoor Unit been completed?
- Have wiring and refrigerant connections been completed?
- Are there any refrigerant leakages on the refrigerant circuit?
- Does drain piping assure proper flowing of water poured inside it (test)?
- Have refrigerant pipings and drain hose been thermally insulated properly?
- Has Ground connection been carried out properly on system?
- Have refrigerant pipings' length and the eventual additional refrigerant charge been written down?
- Do power supply voltage specifications correspond to the system's plate specifications?
- Are there any obstacles which obstruct air outlet and air inlet on Indoor and Outdoor Units?
- Have Outdoor Unit's service valves been completely opened?
- Has system been powered for any hours, to heat the bottom of compressor?

3. With the agreement of User, install the remote control's bearing in such a position that signals sent by remote control - installed on its bearing - can be received by Indoor Unit.

4. Test

Set Cooling mode by remote controller and press "ON/OFF" button on remote control itself to start system. Check the following, and in case of malfunctions please refer to final part of "Section 3: Outdoor Units & Troubleshooting" of this Service Manual.

1) Indoor Unit

- a. Check if "ON/OFF" button on remote controller allows to start/stop operation of Unit.
- b. Check if other buttons on remote controller operate properly too.
- c. Check if outlet motorized flaps move properly.
- d. Check if room temperature value satisfy comfort needs.
- e. Check if LED indicators on Indoor Unit's IR receiver display operate properly.
- f. Check if Emergency button on Indoor Unit works properly.
- g. Check if condensate water flows properly through drain piping.
- h. Check if there is no noise nor anomalous vibration during operation.
- i. Carry out test of system in Heating mode too.

2) Outdoor Unit

- a. Check if there is no noise nor anomalous vibration during operation.
- b. Make sure that supplied air and noise produced by Outdoor Unit do not disturb the neighbourhood.
- c. Check there are no refrigerant leakages on refrigerant circuit.
- d. Verify there are no electrical leakages towards the Ground.

Caution:

In case of stop of system operation, a protection function is active which prevents immediate restart, unless at least 3 minutes have elapsed since last stop of compressor.

4.6 INSTALLATION OF HRBU (206, 266, 356, 536) X INDOOR UNITS

Before starting the air conditioner, please read carefully the information in this "USER'S MANUAL". The User's Manual contains very important suggestions related to installation, operation and maintenance of the air conditioner and concerning your personal safety.

The Manufacturer accept no responsibility for the damages that may arise due to non-observance of the instructions listed in this "USER'S MANUAL".

Disposal of an old air conditioner

Before disposing an old air conditioner, please make sure it is inoperative and carry out the disposal by adopting all safety precautions. Unplug it from the power line in order to avoid risks of electric shock.

Please remember that an air conditioner contains refrigerant fluid, requiring specialized waste disposal.

The valuable materials contained in the air conditioner can be recycled. Contact your local Waste Disposal Center for adequate disposal or contact your Dealer for any question.

Please make sure that piping of your air conditioner does not get damaged before being picked up by the relevant Waste Disposal Center. You can contribute to the protection of the environment by adopting an appropriate anti-pollution method of disposal.

Disposal of the packaging of your new air conditioner

All the packaging materials used in the package of your new air conditioner can be disposed without any danger for the environment.

The cardboard may be broken or cut into small pieces and given to a Waste Paper Disposal Service. The wrapping bag made of polyethylene and the polyethylene foam pads contain no fluorochloric hydrocarbon.

All these valuable materials may be taken to a Waste Collecting Center and used again after adequate recycling.

Consult your local Authorities for the name and address of the Waste Materials Collecting Centers and Waste Paper Disposal Services nearest to your house.

General warnings for safety

- Do not operate damaged air conditioners. In case of doubt, contact your Dealer.
- Use of air conditioner must be carried out in strict compliance with the instructions listed further on.
- Do not damage any parts of the air conditioner that carry refrigerant by piercing or perforating the piping with sharp or pointed objects, by crushing or twisting the tubes or scraping off the surfaces' coatings. If the refrigerant spurts out and gets into eyes, this may result in serious injuries.
- Do not obstruct or cover the ventilation grille of the air conditioner. Do not put fingers nor insert objects into the inlet/outlet vent or into the motorized louver.
- Do not allow children to play with the air conditioner. Children should be never allowed to sit on the Outdoor Unit.
- The appliance is not intended for children and disabled people. They must not operate the air conditioner without supervision.
- Electrical works must be carried out according to the local laws. If the power cable is damaged, it must be replaced by the Manufacturer or by qualified Personnel. Size of power cables and connecting wires must be adequate to the characteristics of the air conditioner (current values and power input values).
- If fuses on the PCB are blown, they must be replaced with new fuses of the same type and size.
- After installation, power plug should be properly disposed.
- Exhausted batteries (infrared remote controller) should be properly disposed.
- Always remember to unplug the air conditioner and wait at least 5 minutes before opening the Units' panels.

- **Strictly observe the instructions provided in this Service Manual.**
- **The air conditioning system contains inside its circuit a refrigerant gas (R410A) under pressure. Never disconnect for any reason refrigerant pipings before recovering refrigerant first.**
- **Never perform any improper handling on Outdoor Unit's service valves or on Indoor Unit's pipe unions.**
- **Invite the Customer to keep User's Manual within reach for convenient reference, in case of need.**
- **In case the system's Units are transferred and reinstalled, the User's Manual should always be attached to the appliance.**

SAFETY INSTRUCTIONS

- Please read carefully the following Safety Instructions before operating the air conditioner.
- A strict observance of the instructions indicated in this "USER'S MANUAL" will prevent personal hurt and incidents to the User. Moreover, correct operation and long life of the system will be ensured.
- Depending on the seriousness of potential risks and damages, the reported Instructions are classified in two types: "**WARNING**" and "**CAUTION**". A strict observance of the Instructions is required to guarantee your personal safety and the safety of the environments where the Units are installed.
- The following Instructions are related to the air conditioner's installation. They have been reported also in the "USER'S MANUAL", just to allow the User to check that installation has been properly carried out. If an improper installation - not corresponding to the Instructions - is verified, please contact the Dealer or the Authorized Technical Service.

The User must never attempt to repair, install or perform special maintenance of system by himself. To carry out these operations in safety way, User must always contact Authorized Technical Service.

KEY OF SYMBOLS



WARNING

This symbol points out the risk of serious injury or death.



CAUTION

This symbol points out the risk of injury or damage to the property.






Prohibition. Action or procedure not allowed, with serious effects on objects and people.








Obligation. Compulsory action or procedure. The missed observance could bring serious effects on objects and people.



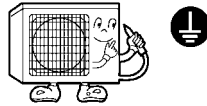



INSTALLATION

Never try to install this system by yourself, i.e. without the support of Technical Personnel. Never try to repair the system by yourself. The Units' components can be reached only by opening or removing the covering panels, and this involves exposure to high voltage. Even by disconnecting power supply, it is not always possible to avoid the risk of electric shocks.

 WARNING	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for installation. Never attempt to install the air conditioner by yourself, because improper installation could cause electric shock, injuries, water leakage or fire. 	
<ul style="list-style-type: none"> • Please always contact the Dealer or the Authorized Service Center for any servicing operation or special maintenance. Never try to repair or carry out special maintenance by yourself. Improper repair or maintenance could cause electric shock, injuries, water leakage or fire. 	

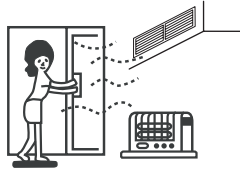
ALWAYS confirm that installation has been carried out according to the following prescriptions:

 WARNING	
<ul style="list-style-type: none"> • When installing, all possible countermeasures must be taken to avoid refrigerant leaks. If there is a high concentration of refrigerant gas in the room, oxygen lack may occur. 	
<ul style="list-style-type: none"> • Do not install the air conditioner near burners, heat sources or flammable gas. This is to avoid the risk of malfunctioning, fire or explosion. 	
<ul style="list-style-type: none"> • Ensure that a circuit breaker has been installed on the power supply line of the air conditioner, to avoid the risk of electric shocks. 	
<ul style="list-style-type: none"> • When installing in a small room, countermeasures should be taken in case of a R410A refrigerant leak exceeds the proper range (0.3kg/m³). 	

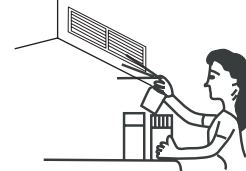
 CAUTION	
<ul style="list-style-type: none"> • Ensure that drain hose and drain pipe installation has been carried out correctly. Incorrect installation or maintenance will cause water leakage. 	
<ul style="list-style-type: none"> • Ensure that Indoor and Outdoor Units have been properly grounded. Defective grounding could cause electric shock. 	 
<ul style="list-style-type: none"> • This kind of appliance needs a specific circuit breaker with proper protective devices against overcurrent and short circuits (fuses or automatic switches). 	 <p>Circuit breaker (specific)</p> 

⚠ CAUTION

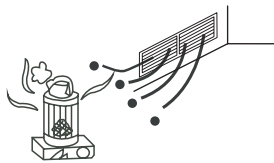
Ventilation should be operated when using at the same time the air conditioner and gas burners. Insufficient ventilation may cause lack of oxygen.



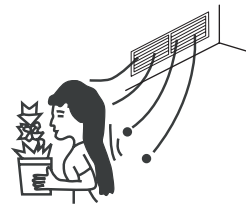
Do not use sprays near the air conditioner and do not spray anything towards the appliance.



Do not place burners near airflow supplied by Indoor Unit.



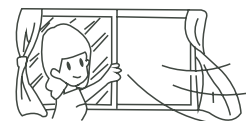
Do not expose plants or animals to direct airflow of air conditioner.



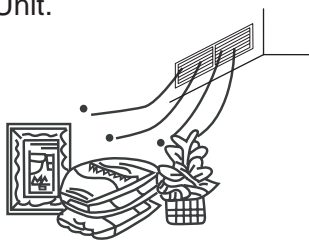
For preventing the risk of electric shocks, do not sprinkle water no other liquid on Indoor Unit. Do not clean the Indoor Unit by water spurts.



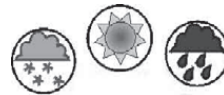
Ventilate the room regularly while the system is operating. Fail to follow this advice could result in lack of oxygen inside the room.



Do not expose food, plants, animals, precise devices or works of art to direct airflow supplied by Indoor Unit.



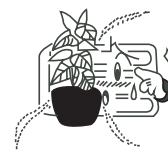
For proper performance, operate the system under the recommended temperature and humidity range. If the Indoor Unit operates beyond these conditions, malfunctions may occur or dew may drip out of Indoor Unit's body.



When necessary, replace fuses with new ones of same type. Never replace a fuse by a piece of iron or copper.



Do not place anything in front of Indoor Unit.



Never touch heat exchangers' metal flaps on Indoor and Outdoor Units. This could cause hurts due to the sharp shape of flaps. Take care of this, especially if air inlet grille and air filter have been removed, and flaps are visible.



1. Selection of installation site & position

1.1 Requirements for Indoor Unit's installation

- 1) Spaces for installation and maintenance must be available.
- 2) There must be no obstacles on Indoor Unit's air outlet and inlet, nor air drafts coming from outdoor must interfere with Indoor Unit's operation.
- 3) A uniform distribution of air supplied by Indoor Unit must be assured, inside whole room.
- 4) Laying of refrigerant pipings and installation of drain hose must be easy.
- 5) There must be no heating sources near Indoor Unit and/or in the same room.

Do not carry out Units' installation in places having the following features or similar features:

- Storage sites of inflammable liquids, as for example oil or its by-products.
- Places with outside highly salty atmosphere, as for example buildings near the sea.
- Places with corrosive volatile substances (compounds of sulphur), as for example near thermal sulphur springs.
- Places where there are appliances that cause power voltage instability (factories, workshops, etc.).
- Places not enough ventilated, as underground rooms, etc.
- Environments as restaurant kitchens, because of the strong presence of oil vapors.
- Places as hospitals or consulting rooms, where there are diagnostic appliances generating electromagnetic waves.
- Storage sites of easily inflammable materials, or where inflammable gas can easily concentrate.
- Places with vapors of acid or alkaline volatile substances.
- Other places where particular operation conditions occur, not listed in these items.

1.2 Preliminary notes for installation

- 1) Determine the easiest path for moving Units till reaching the chosen position.
- 2) Keep Units as originally packaged as possible.
- 3) If a Unit is installed on a metal part of the building, it must be electrically insulated according to the relevant electrical code.


1.3 Cautions for installation of IR receiver and IR Remote Controller

- 1) Determine the position for IR remote control's wall bearing installation, by considering the remote control's range and the need for orienting the transmitter towards the IR signal receiver, placed on Indoor Unit.
- 2) Select installation position of LED Display and IR receiver, by considering that max. length of provided cable is 6m.
- 3) Never expose IR remote control to direct sunlight for a long time. This could obstruct or prevent the transmission of signals to Indoor Unit, and damage plastic parts of remote control, the buttons and the display.
- 4) Never expose remote control to the heat coming from stoves, sprinklings of water or oil vapors. Never expose remote control to solvents or by-products of oil.
- 5) If air conditioner is not operated for a long time, please remove batteries from remote controller.

2. Check of Indoor Unit after transport and following removal

Check if Indoor Unit has not suffered damages by transport. The packaging must be intact. Otherwise, lodge a complaint to transporter.

During removal, take care to the following symbols on packaging.

1.  "Fragile". Handle with care.



Do not turn packaging upside down to avoid damages to panels.

2. Determine the easiest path for removing Indoor Unit to installation site.
3. Keep Indoor Unit protected inside its original packaging till installation.
4. During lifting of Indoor Unit, place special protective devices between slinging tie rods and Unit itself.

3. Installation of Indoor Unit

3.1 Selection of installation position

For installation of Indoor Unit, select a place having the following requirements:

Suitable spaces for installation and maintenance must be available.

Select a leveled fixing surface, which is strong enough to support Unit's weight.

Air outlet and inlet must be free. Air draft from outside must not interfere with Unit's operation.

Air supplied by Unit must be distributed inside the room uniformly.

Laying of refrigerant pipings and drain hose must be easy.

There must be no heating source near Unit.

Caution:

Install Units at more than 1m from radio and TV appliances, and set power lines and wiring at a suitable distance from these appliances, to avoid the danger of mutual interferences and electromagnetic noises on system operation. Sometimes, min. distance of 1m from radio frequency appliances is not sufficient to avoid the risk of noises on system operation. It is a good rule to use shielded cables.

3.2 Fixing of Indoor Unit's body

1. Installation of bolts with anchors (Ø10, 4 pieces) for Unit's fixing

Concerning the details related to the installation of fixing devices, refer to the following Figures.

For fixing, use bolts with anchors of suitable diameter as regards Unit's weight.

Fixing devices to be used for ceiling depend on nature of building materials. In case of doubts, please contact the building firm.

Installation & Service spaces

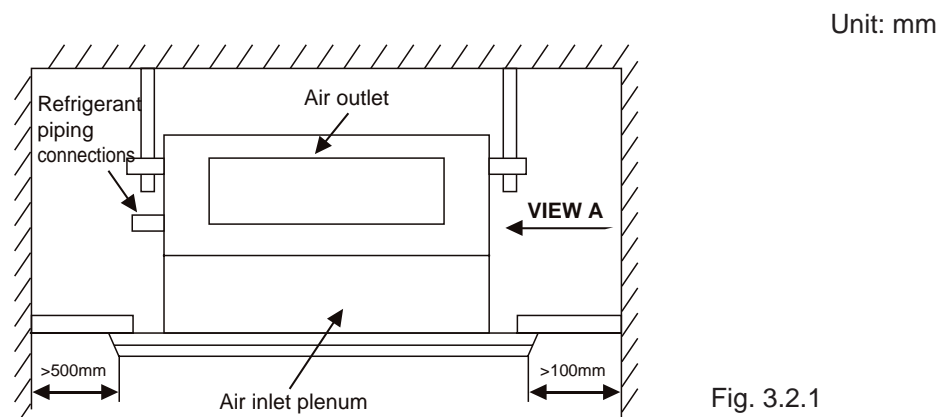
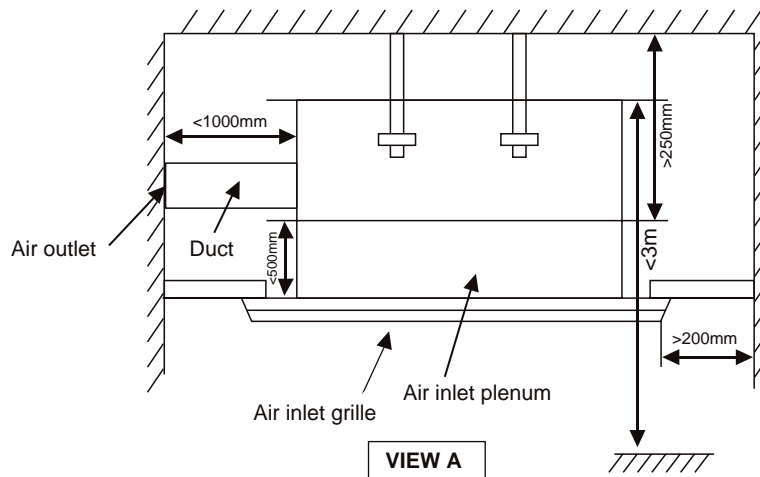


Fig. 3.2.1



- Suitable spaces must be available, equal or wider as regards those indicated on the previous Figure.
- If needed, strengthen the surface where fixing devices must be inserted.
- After choosing Indoor Unit's installation position, arrange refrigerant piping connections, drain connection and wiring before Unit's fixing.
- Installation of fixing devices depends on the nature of selected surface, as it is indicated below.

WOODEN STRUCTURE

Hanging screw bolts must pass through wooden structure. Fix them properly.

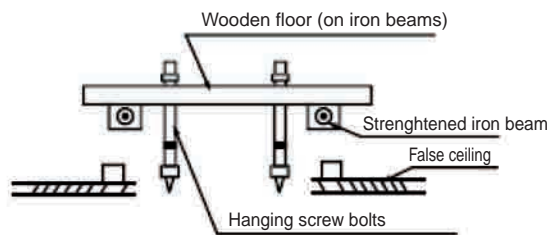


Fig. 3.2.2

NEW CONCRETE BRICKS

Insert the anchors inside the masonry, as it is illustrated in the cases below.



Blade shape insertion



Slide insertion

Fig. 3.2.3

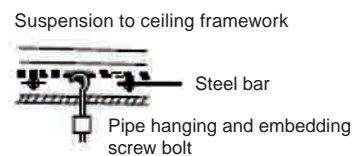


Fig. 3.2.4

ORIGINAL CONCRETE BRICKS

Drill concrete structure and insert screw bolt anchors for at least 45 ~ 50mm.



Fig. 3.2.5

■ **STEEL ROOF BEAM STRUCTURE (“L” SECTION ELEMENTS)**

For suspending Indoor Unit, screw hanging bolts on metal frame directly.

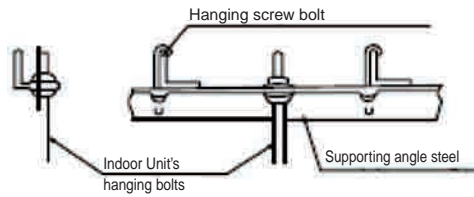


Fig. 3.2.6

2. Suspension of Indoor Unit to threaded bars (M10)

- Insert each threaded bar into the “U” slot on each suspension bearing of Indoor Unit. “U” shape allows to make little horizontal adjustments in Indoor Unit’s position, that is to centre it in the best way as regards installation needs.
- Suspend Indoor Unit to threaded bars and position it perfectly horizontally by using a spirit level. Adjust height and horizontal position of Indoor Unit by lower fixing nuts, provided with washer.
- When height and Indoor Unit’s horizontal position are correct, fasten each fixing upper nut (provided of their washer, too).

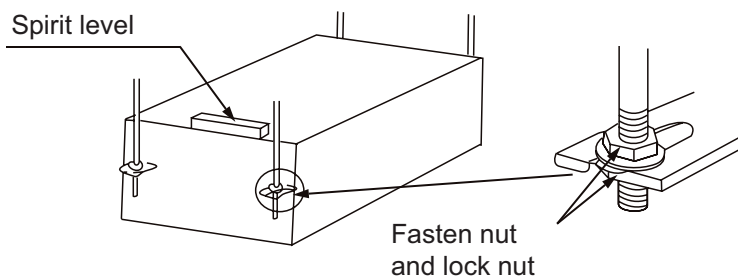


Fig. 3.2.7

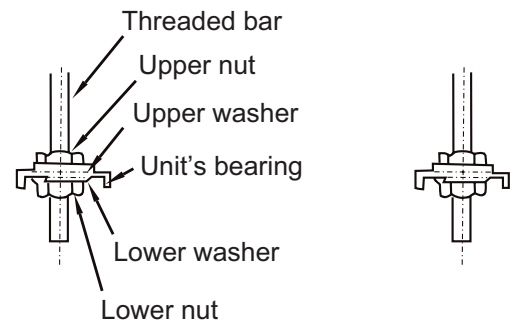
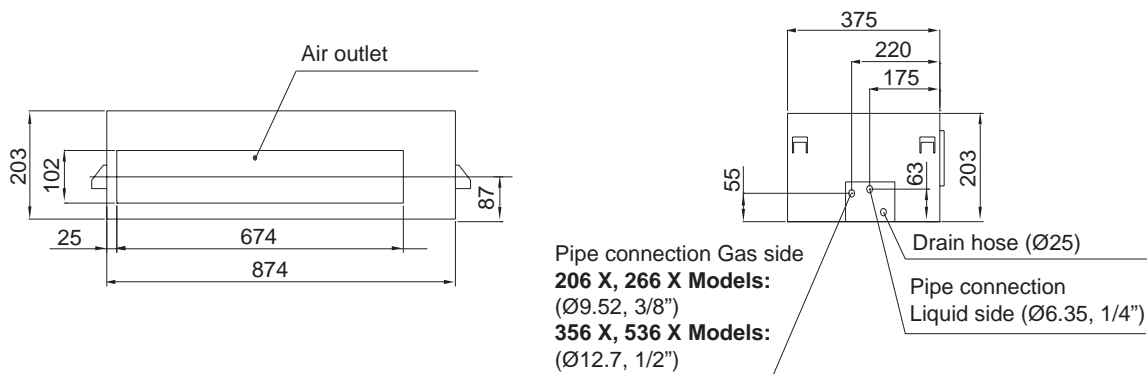


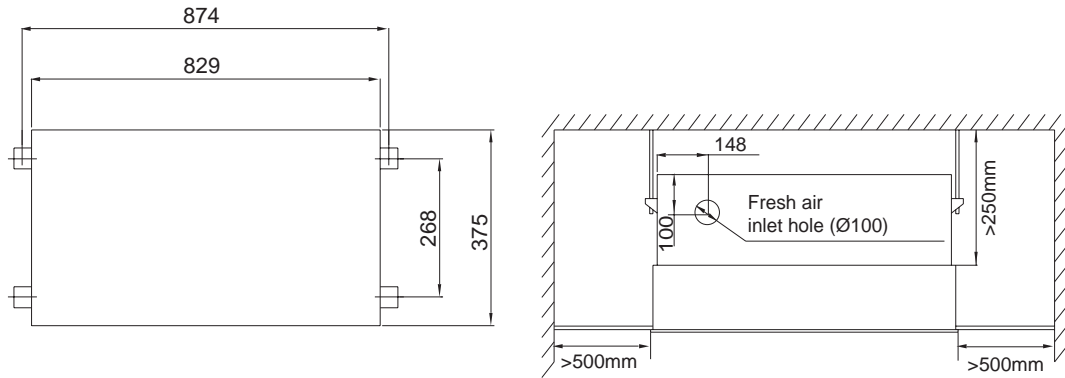
Fig. 3.2.8

3. Useful dimensions for installation

- **HRBU (206, 266, 356) X Models**

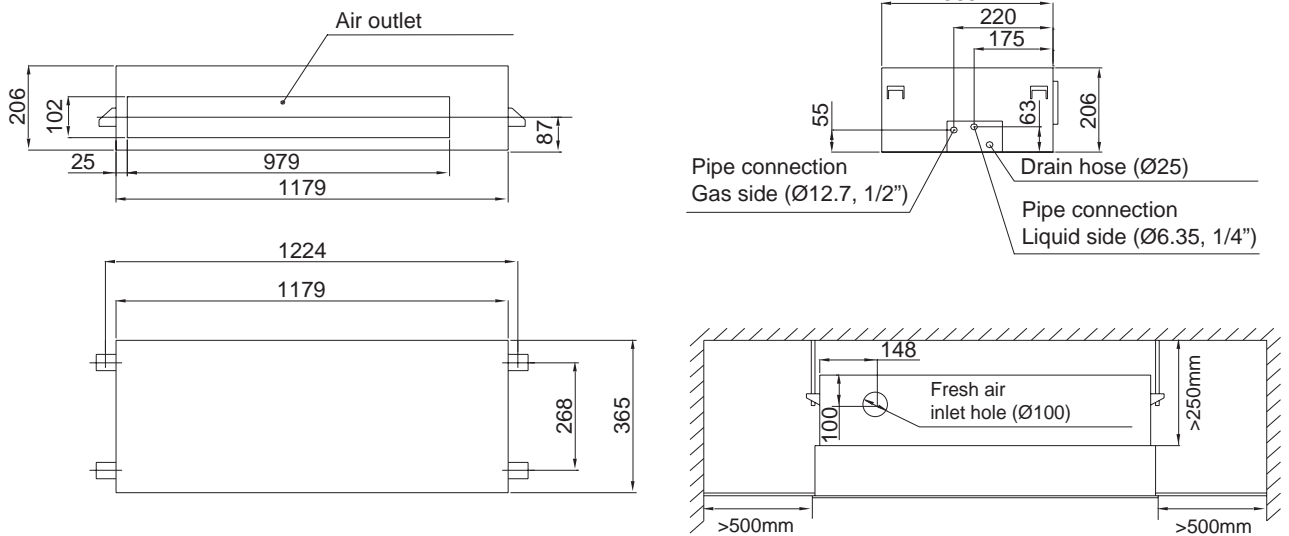
Unit: mm





■ HRBU 536 X Model

Unit: mm



4. Works on ducts

4.1 Air outlet grille

Caution:

- Adjust eventual louvers on air outlet grille properly, as it is shown in the Figures below. If louvers' adjustment is not correct, noise produced by operation of Indoor Unit may increase.

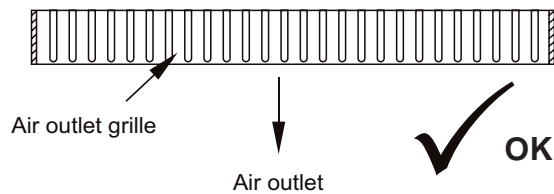


Fig. 4.1.1

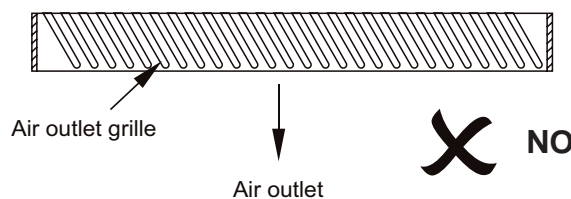


Fig. 4.1.2

4.2 Installation of air outlet duct

Length of air outlet duct:

- As these Models are of low ducted type (about 10Pa), it's a good rule to reduce as much as possible the length of air outlet connection duct (max. 1-2m).

Arrangement for fixing the air outlet duct on Indoor Unit:

- Fix 8 "L" brackets (see the Figure below) by bolts on Indoor Unit's body. The bolts must not be too much long, so as not to damage inner components of Unit.

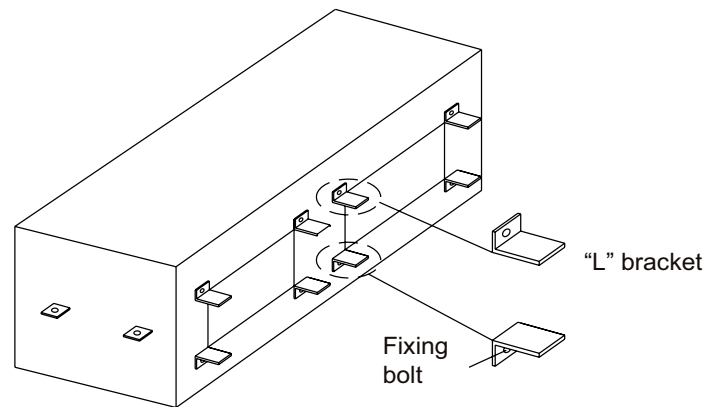


Fig. 4.2.1

Fixing the air outlet duct to Indoor Unit:

- Fix the air outlet duct to "L" bracket already installed (see above) by using rivets, as it is shown in the Figure below.

Notes:

1. Install supporting elements for air outlet duct, so as the weight this component does not rest on Indoor Unit's fixing elements.
2. Arrange an inspection hole - closed by a trap door - near air outlet duct, so that it can be easily reachable for whatever operation of inspection and/or maintenance.
3. In case of installation in rooms where Indoor Unit's noise level is needed to be reduced, carry out the air outlet connection by adopting every possible precaution for sound insulation, and also use special accessories on sale.
4. Insulate air outlet connection's outside, in particular along the way between the connection itself and Indoor Unit's body, to avoid condensation of humidity on false ceiling and dripping of water inside the room.

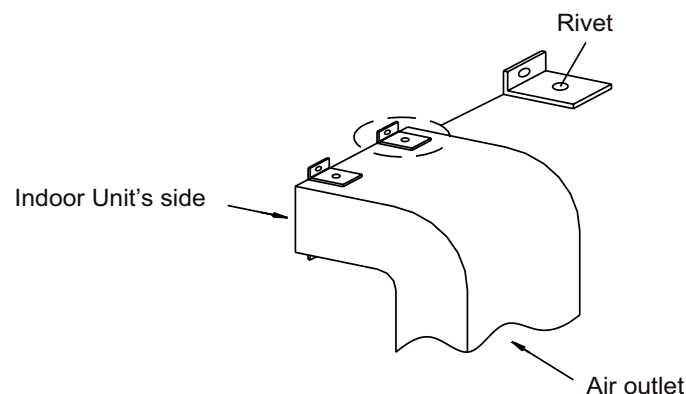


Fig. 4.2.2

4.3 Panel or air inlet grille of Indoor Unit

Installation of panel or air inlet grille:

- On Indoor Unit's air inlet side, a panel or an air inlet grille of commercial type must be installed, as it is not provided with Indoor Unit. The grille or the panel must be installed perfectly in contact with false ceiling, to avoid air pockets, condensation phenomena and dripping of water inside the room.

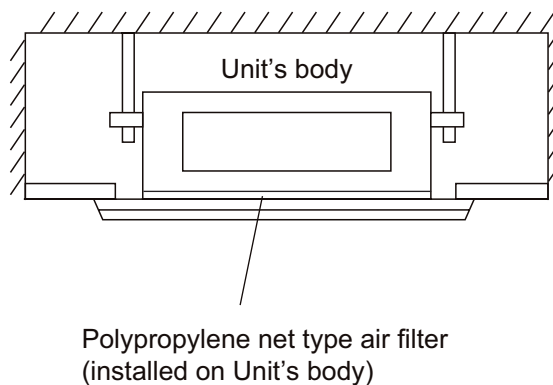
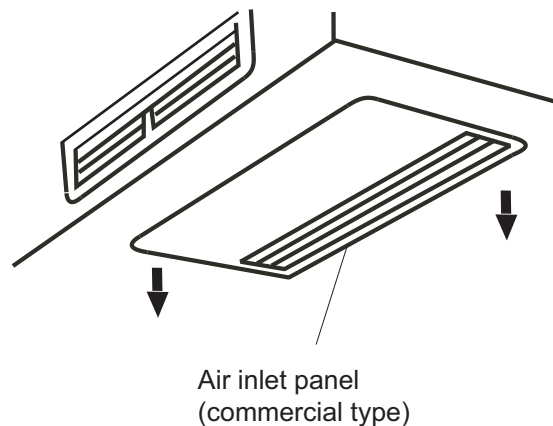
Eventual installation of an air inlet plenum:

- According to false ceiling's height, it could be necessary to interpose an air inlet plenum between the Unit's body and the panel or between the Unit's body and the air inlet grille.
The panel of the air inlet grille must be fixed by screws or bolts on Unit's body (without air inlet plenum) or on air inlet plenum.

Installation of air inlet filter (polypropylene net type) provided with Indoor Unit:

- It is always needed to install an air filter (polypropylene net type, provided with Indoor Unit) on Indoor Unit's air inlet, so as to prevent dust and foreign matters from entering Indoor Unit and reaching heat exchanger and/or fans.

If there is an air inlet plenum, the air filter is immediately visible after removing air inlet panel. If there is no air inlet plenum, air filter is placed in contact with Unit's body directly.



5. Refrigerant pipings

Check if splitting distance (also considering the number of bends on pipings) and splitting level distance between Indoor Units and Outdoor Unit respect limitations indicated by the Manufacturer.

5.1 Procedure for connection of refrigerant pipings

Caution:

- Connection of refrigerant pipings must be carried out by Authorized Technical Service, in accordance with current regulations as far as refrigerant installations are concerned.
- Prevent water, humidity, polluting materials and foreign matters from entering pipings' inside.
- Refrigerant pipings must be carried out only after installation of Indoor and Outdoor Units.
- Thermally insulate pipings on both sides (Liquid & Gas), as it is indicated further on.
 - 1) Strictly tape wiring and refrigerant pipings.
 - 2) Refrigerant pipings must be set from outside to inside installation room.
 - 3) Connect refrigerant pipings to Units, as it is explained further on.
 - 4) Carry out the vacuum procedure of refrigerant pipings and of Indoor Unit, by using a vacuum pump.
 - 5) In the end, if vacuum is not satisfactory - and after checking refrigerant (Flare) connections' tightness - open service valves on Outdoor Unit to let precharged refrigerant flow inside Outdoor Unit.
 - 6) Check if there are leakages on flares, by using a gas leakage specific for detector R410A.
 - 7) Cover the connection points with sleeves made of insulating material resistant to temperatures of at least 120°C, and strictly tape insulating material to avoid inside air pockets.

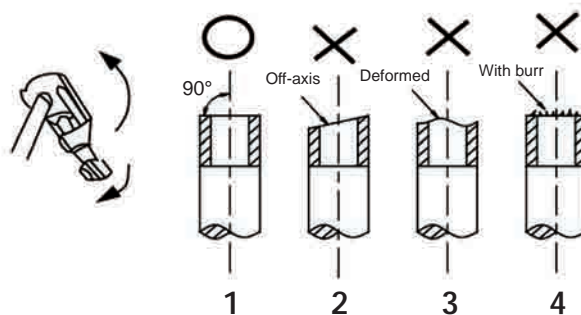
Caution:

- Thermally insulate, by close cells' material of suitable thickness, refrigerant piping connections and pipings on both sides (Liquid & Gas). This material must be resistant to temperatures of at least 120°C. Strictly tape insulating material, to avoid air pockets between pipings and insulating material itself (otherwise, there is risk of condensation forming).

Connection of refrigerant pipings

5.2 Flaring of refrigerant pipings:

Cut refrigerant pipings by using the special roller pipe cutter.



Insert flared nuts on pipings and carry out a professional flaring avoiding the most common errors, shown in the Figure above (cases 2, 3, 4).

The following Table shows recommended dimensions for flares and tightening torques of flared nuts.

Pipings' diameter	Tightening torque	Dimension "A" (mm)		References for flaring
		Min.	Max.	
Ø6.35(1/4")	14.2 ~ 17.2 N•m (144 ~ 176 kgf•cm)	8.3	8.7	
Ø9.52(3/8")	32.7 ~ 39.9 N•m (333 ~ 407 kgf•cm)	12.0	12.4	
Ø12.7(1/2")	49.5 ~ 60.3 N•m (504 ~ 616 kgf•cm)	15.4	15.8	

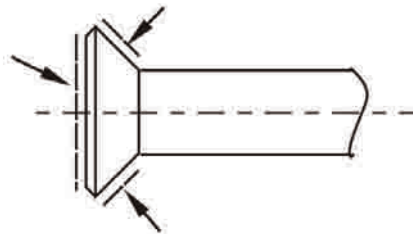
5.3 Carry out connection of refrigerant pipings first on Indoor Unit, then on Outdoor Unit.

- If a pipe bender is not available, please observe min. radius of curvature shown on Figure below.

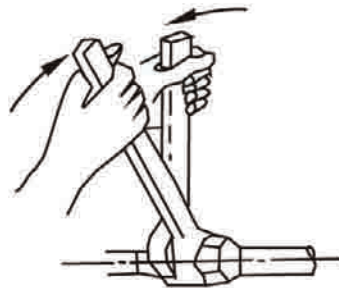


In case of manual bending of pipings, please observe min. radius of curvature of 100mm.

- Never bend pipings at right angle.
- Bend the piping so as the bend is in the middle of the concerned straight section. Take care to keep a radius of curvature as wide as possible.
- Do not bend several times the same section of piping.
- Oil (as it is shown by arrows in the Figure) the flare's back and the flare nut's inside with refrigerant synthetic oil, and manually screw the flared nut 3-4 turns before carrying out final tightening.



- For tightening of flared nut, use a spanner and a torque wrench to keep still the refrigerant connection. Observe recommended tightening torques.



Caution:

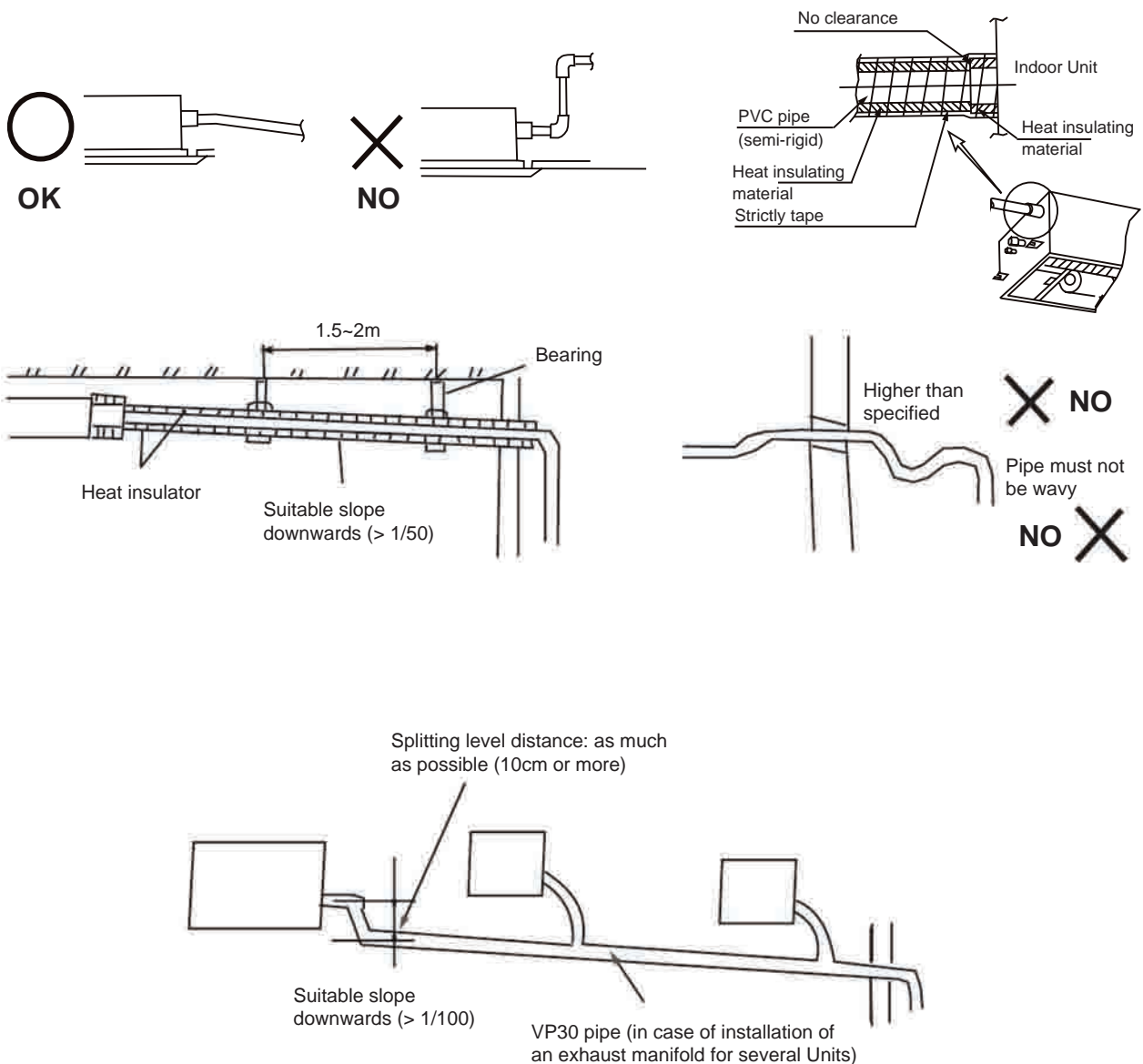
- Excessive tightening may cause the breaking of flare, while an insufficient tightening is not able to assure perfect tightness of flare.
- At the end of tightening, there must be no leakages near connections points.

6. Drain piping

6.1 Installation of drain pipe for Indoor Unit

Caution:

- 1) Condensate drain piping must be properly insulated by close cells' insulating material of suitable thickness, near connection point on Indoor Unit and on the first portion (at least 1m). This precaution is for avoiding condensation forming on drain piping's outside.
- 2) For drain piping, please use a PVC of commercial type (VP25).
- 3) When installing piping on drain connection on Indoor Unit, take care not to force excessively in order not to damage the connection itself.
- 4) Keep a slope of 1/50~1/100 along whole piping path. Pipe must not be wavy or higher than specified.
- 5) It is advised to reduce drain piping length up to max. 20m, and to arrange, if needed, special supporting structures which prevent piping from bending under its own weight.
- 6) For proper installation, please refer to the Figures below.



6.2 Drain hose test

- 1) Pour water inside drain piping, and check if it flows down properly.
- 2) Take care that drain piping is not pressed along its path.
- 3) Along piping path, there must be no portions with inverted slope.
- 4) In new buildings, drain hose test must be carried out before laying of superstructures as panels, air spaces, etc.

7. Wiring

7.1 General cautions

- 1) Electric part of installation must be carried out in accordance with national and local current regulations as far as electric installation are concerned.
- 2) These systems require one power supply line, specific to the system only.
- 3) Specifications of power supply voltage must correspond to plate specifications required by system.
- 4) The system requires Ground wire for Indoor and Outdoor Units.
- 5) Wiring must be carried out by Authorized Technical Service, in accordance with wiring diagrams on the following pages.
- 6) Main power supply switch (circuit breaker) must be at open circuit, which determines all poles' disconnection. In opening position, the distance between contacts must be at least of 3mm on each pole. Always install an earth breaker on power supply lines; earth breaker must be specific for Inverter appliances. Circuit breaker's calibration must be suitable to electric specifications of system.
- 7) Do not supply power to system before checking several times if wiring has been carried out properly on terminal blocks/connectors of Indoor and Outdoor Units.

7.2 Access to terminal block of HRBU (206, 266, 356, 536) X Indoor Units

- 1) Position of Indoor Unit's electric box is shown in Figure 7.2.1 below.
- 2) It is possible to reach the electric box by Indoor Unit's air inlet directly.
- 3) Unscrew the screws of electric box cover, to reach terminal blocks.
- 4) Connect power lines and signal line.
- 5) Connect LED Display and IR receiver by the special connector on cable's end (standard length: 6m). Please refer to wiring diagram of these Models, in "Section 2: Indoor Units" of this Service Manual.

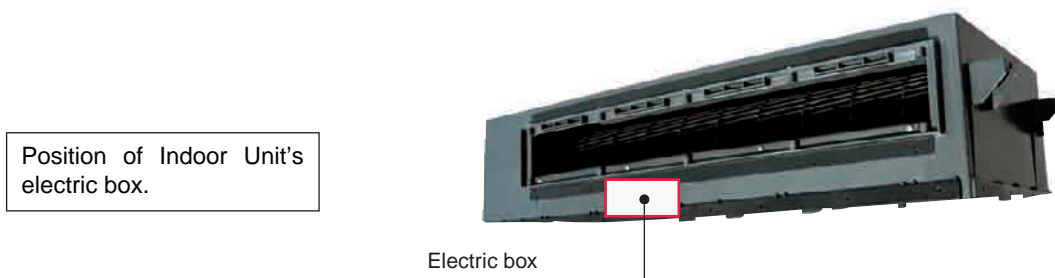
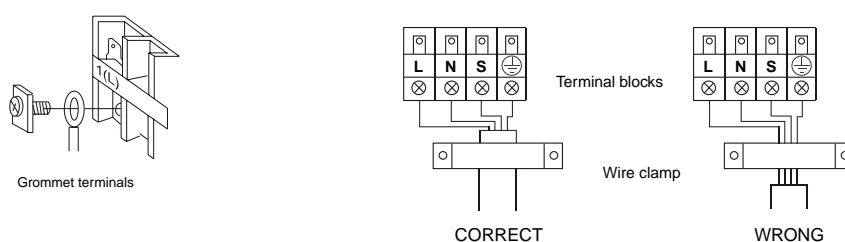


Figure 7.2.1

- 5) Always use wire clamps on Indoor Units, to avoid that any traction applied to connection cables between Indoor and Outdoor Units could be transmitted to terminal blocks' contacts or to connectors. For proper use of wire clamps, please refer to the Figure below.



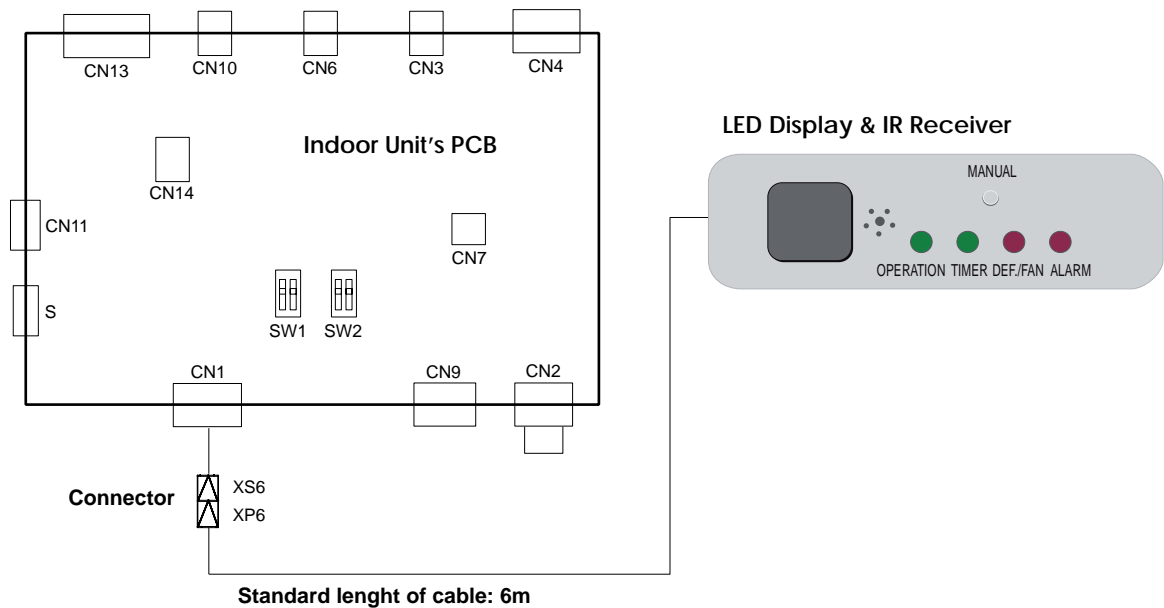
Basic information on wiring for Multi Liberty DC Inverter systems

- **Power supply (on Outdoor Unit):**
 - 1-Phase, 220~240V, 50 Hz.
 - Power source limitations: ±10% as regards rating value.
 - Voltage at starting: 85% as regards rating value.

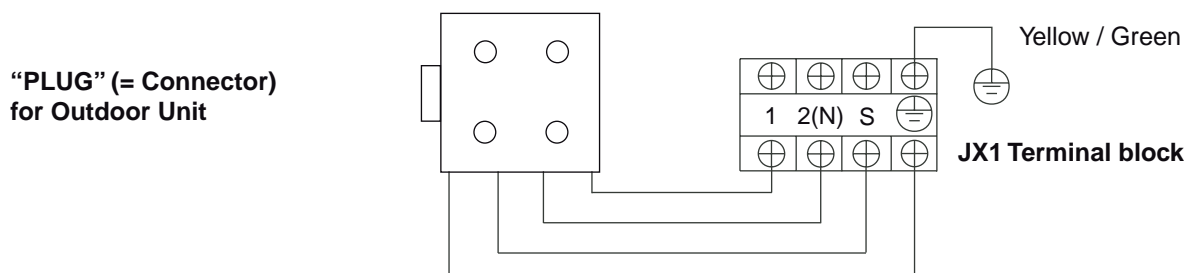
• **Calibrations of circuit breakers and min. section of power cables:**

Outdoor Units	Calibration of circuit breaker (A)	Section of power cables (mm ²)
HCKU 406 X2	12A	2.5 mm ²
HCKU 536 X2	16A	4.0 mm ²
HCKU 606 X3	20A	6.0 mm ²
HCKU 806 X3	20A	6.0 mm ²
HCKU 706 X4	20A	6.0 mm ²
HCKU 816 X4	32A	8.0 mm ²
HCKU 1066 X4	32A	8.0 mm ²

Connection of LED Display and IR Receiver

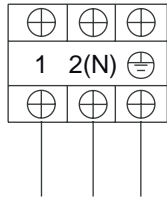


Indoor Unit "A", "B", "C", or "D"

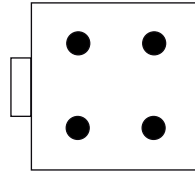


- **Min. section of cables (prewiring-up = 6m) between each Indoor Unit and the Outdoor Unit:**
- All Models → 1.5mm².

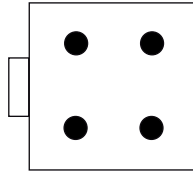
Outdoor Unit



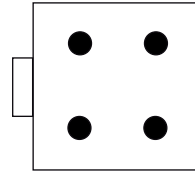
**Power supply
terminal block**



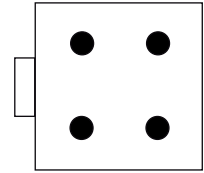
Indoor Unit "A"



Indoor Unit "B"



Indoor Unit "C"



Indoor Unit "D"

8. Test

1. Test procedure of system must be carried out only after installation has been completed in all its parts (electric part and refrigerant part).

2. Before carrying out the Test, please check the following:

- Has installation of Indoor Units and Outdoor Unit been completed?
- Have wiring and refrigerant connections been completed?
- Are there any refrigerant leakages on the refrigerant circuit?
- Does drain piping assure proper flowing of water poured inside it (test)?
- Have refrigerant pipings and drain hose been thermally insulated properly?
- Has Ground connection been carried out properly on system?
- Have refrigerant pipings' length and the eventual additional refrigerant charge been written down?
- Do power supply voltage specifications correspond to the system's plate specifications?
- Are there any obstacles which obstruct air outlet and air inlet on Indoor and Outdoor Units?
- Have Outdoor Unit's service valves been completely opened?
- Has system been powered for any hours, to heat the bottom of compressor?

3. With the agreement of User, install the remote control's bearing in such a position that signals sent by remote control - installed on its bearing - can be received by Indoor Unit.

4. Test

Set Cooling mode by remote controller and press "ON/OFF" button on remote control itself to start system. Check the following, and in case of malfunctions please refer to final part of "Section 3: Outdoor Units & Troubleshooting" of this Service Manual.

1) Indoor Unit

- a. Check if "ON/OFF" button on remote controller allows to start/stop operation of Unit.
- b. Check if other buttons on remote controller operate properly too.
- c. Check if room temperature value satisfy comfort needs.
- d. Check if LED indicators on Indoor Unit's IR receiver display operate properly.
- e. Check if Emergency button on Indoor Unit works properly.
- f. Check if condensate water flows properly through drain piping.
- g. Check if there is no noise nor anomalous vibration during operation.
- h. Carry out test of system in Heating mode too.

2) Outdoor Unit

- a. Check if there is no noise nor anomalous vibration during operation.
- b. Make sure that supplied air and noise produced by Outdoor Unit do not disturb the neighbourhood.
- c. Check there are no refrigerant leakages on refrigerant circuit.
- d. Verify there are no electrical leakages towards the Ground.




Caution:

In case of stop of system operation, a protection function is active which prevents immediate restart, unless at least 3 minutes have elapsed since last stop of compressor.

4.7 INSTALLATION OF MULTI LIBERTY DC INVERTER OUTDOOR UNITS

4.7 .1 Accessories required for installation

The following accessories must be available for Outdoor Unit's installation:

No.	Appearance	Description	Quantity
1		Drain elbow	1
2		Rubber pads	4
3		Clip	1

4.7.2 Selection of place & installation position

- Place and supporting surface must not amplify vibrations generated by Outdoor Unit.
- The supporting surface must be able to bear Outdoor Unit's weight.
- Air outlet must be oriented to 90° as regards prevailing direction of wind.
- Noise generated by Outdoor Unit must not disturb the neighbours.
- A place where condensate or defrosting water from Outdoor Unit do not disturb people nor causes damages to objects.
- Installation of a concrete bed for Outdoor Unit must be possible.
[The projection of anchor bolts (4 x Ø8mm, or 4 x Ø10mm) for Outdoor Unit's base, must be of about 20mm as regards concrete bed].
- Please keep Outdoor Unit in safety by reinforcing the fixing system, if Outdoor Unit is exposed to strong wind or it may fall because of earthquakes or exceptional climatic occurrences.
- The installation of a snow shelter must be possible, according to climatic recurrent conditions in the environment.
- Sufficient spaces must be kept free for repairing and maintenance of Unit.
- Splitting level differences and max. splitting distances that are foreseen for system must be observed, also by taking into consideration the position of Indoor Units which belong to the system.
- A power supply line has to be prepared having such features as to respect the specifications required by system. The wires of this power line must have a section suitable to the system's features. Besides, the power line must be provided of an earth breaker (specific for Inverter appliances) and of a circuit breaker having a calibration suitable to the system's power input, that are indicated on Outdoor Unit's plate.

4.7.3 Essential dimensions for installation of Multi Liberty DC Inverter Outdoor Units

Unit: mm

Dimension Model	Width	Height (Max.)	Depth	Distance between holes (1)	Distance between holes (2)
HCKU 406 X2	760	590	285	530	290
HCKU 536 X2	845	695	335	560	340
HCKU 606 X3	845	695	335	560	340
HCKU 806 X3	845	695	335	560	340
HCKU 706 X4	845	695	335	560	340
HCKU 816 X4	895	860	330	590	333
HCKU 1066 X4	990	966	395	624	366

4.7.4 Overall view of installation (Example: HKEU X Models)

1. When chased laying is carried out of refrigerant pipings, take care to seal the ends of these refrigerant lines, by pinching and welding them so as to protect them from infiltrations.
2. Check if chosen pipings have such diameters and features (copper thickness) as to be suitable to Units which belong to system to R410A refrigerant.

• Infrared Remote Controller

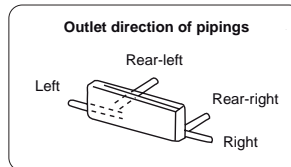
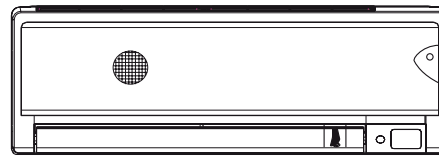


Bearing with screws
ST2.9x10-C-H for
wall fixing

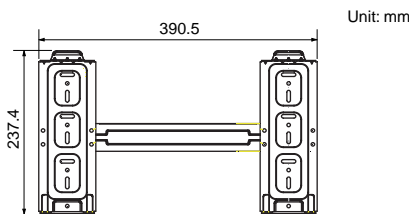
Cover the pipings with closed cells' insulation material, resistant to temperatures of at least 120°C. It is important that there is no air pocket between insulating material and the material which wraps refrigerant pipings.

Finishing of installation: strictly tape insulating material that wraps refrigerant pipings, by proceeding from the bottom upwards.

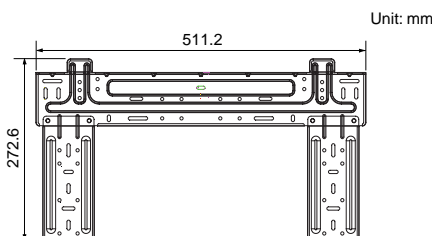
• Highwall type Indoor Units



• Installation plates of Indoor Units

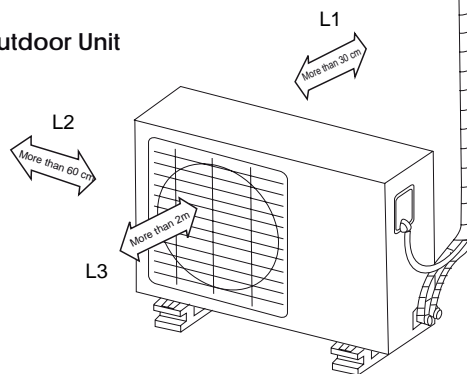


• HKEU (206, 266, 356) X Models



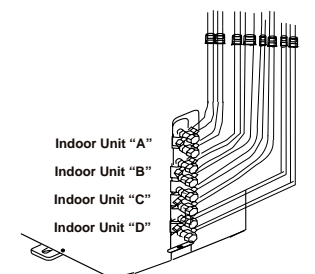
• HKEU 355 XR Model

• Outdoor Unit



NOTE: at least 2 sides that are indicated in the Figure by "L1", "L2" and "L3" must be kept free from obstacles.

Example: HCKU 706 X4



1. If there is the risk that Outdoor Unit may fall down or overturn, it is advised to install tie rods in addition to anchor bolts (4 x Ø8mm, or 4 x Ø10mm) on Outdoor Unit's base.
2. The installation of a raised bearing bed as regards ground prevents snow from piling up around Outdoor Unit, and at the same time it makes easier condensate and defrosting water drainage.
3. Take care to fix Outdoor Unit perfectly horizontally.

4.7.5 Overall view of installation (Example: HTFU X Models)

1. When chased laying is carried out of refrigerant pipings, take care to seal the ends of these refrigerant lines, by pinching and welding them so as to protect them from infiltrations.
2. Check if chosen pipings have such diameters and features (copper thickness) as to be suitable to Units which belong to system to R410A refrigerant.

• Infrared Remote Controller



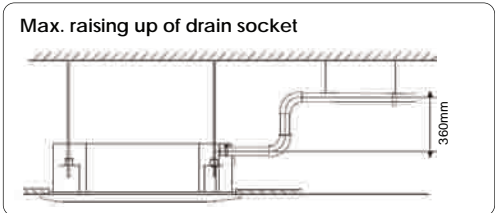
Bearing with screws
ST2.9x10-C-H for
wall fixing

• 60 x 60 Cassette type Indoor Units

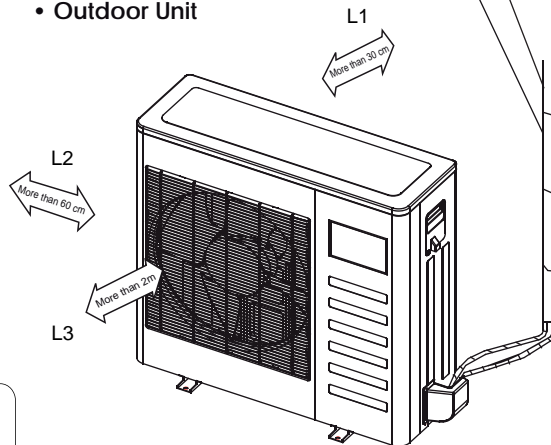


Cover the pipings with closed cells' insulation material, resistant to temperatures of at least 120°C. It is important that there is no air pocket between insulating material and the material which wraps refrigerant pipings.

Finishing of installation: strictly tape insulating material that wraps refrigerant pipings, by proceeding from the bottom upwards.

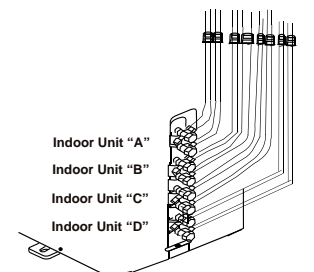


• Outdoor Unit



NOTE: at least 2 sides that are indicated in the Figure by "L1", "L2" and "L3" must be kept free from obstacles.

Example: HCKU 706 X4



1. If there is the risk that Outdoor Unit may fall down or overturn, it is advised to install tie rods in addition to anchor bolts (4 x Ø8mm, or 4 x Ø10mm) on Outdoor Unit's base.
2. The installation of a raised bearing bed as regards ground prevents snow from piling up around Outdoor Unit, and at the same time it makes easier condensate and defrosting water drainage.
3. Take care to fix Outdoor Unit perfectly horizontally.

4.7.6 Overall view of installation (Example: HFIU X Models)

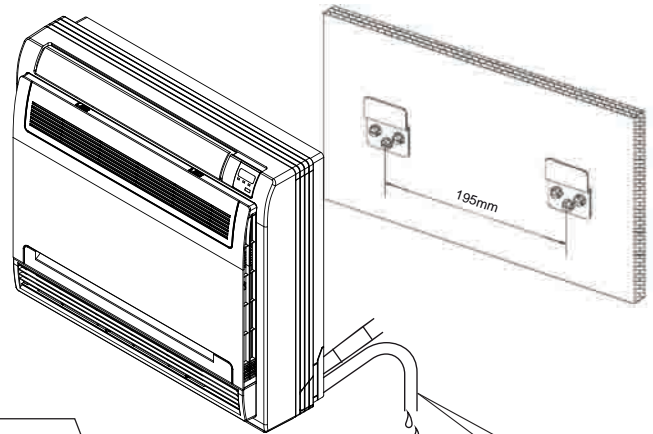
1. When chased laying is carried out of refrigerant pipings, take care to seal the ends of these refrigerant lines, by pinching and welding them so as to protect them from infiltrations.
2. Check if chosen pipings have such diameters and features (copper thickness) as to be suitable to Units which belong to system to R410A refrigerant.

• Infrared Remote Controller



Bearing with screws
ST2.9x10-C-H for
wall fixing

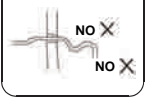
• Console type Indoor Units



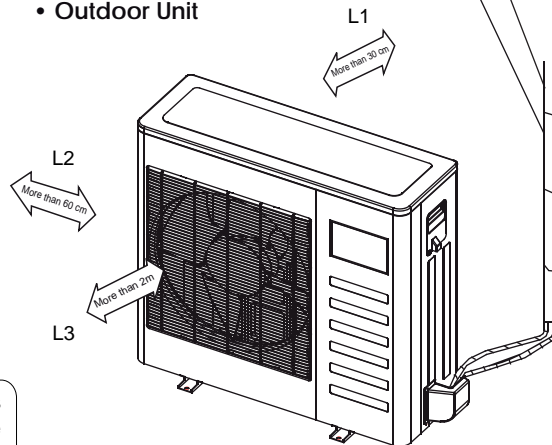
Cover the pipings with closed cells' insulation material, resistant to temperatures of at least 120°C. It is important that there is no air pocket between insulating material and the material which wraps refrigerant pipings.

Finishing of installation: strictly tape insulating material that wraps refrigerant pipings, by proceeding from the bottom upwards.

Drain hose must never go up

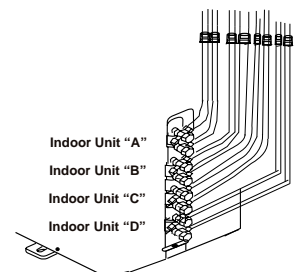


• Outdoor Unit



NOTE: at least 2 sides that are indicated in the Figure by "L1", "L2" and "L3" must be kept free from obstacles.

Example: HCKU 706 X4



1. If there is the risk that Outdoor Unit may fall down or overturn, it is advised to install tie rods in addition to anchor bolts (4 x Ø8mm, or 4 x Ø10mm) on Outdoor Unit's base.
2. The installation of a raised bearing bed as regards ground prevents snow from piling up around Outdoor Unit, and at the same time it makes easier condensate and defrosting water drainage.
3. Take care to fix Outdoor Unit perfectly horizontally.

4.7.7 Overall view of installation (Example: HSFU X Models)

1. When chased laying is carried out of refrigerant pipings, take care to seal the ends of these refrigerant lines, by pinching and welding them so as to protect them from infiltrations.
2. Check if chosen pipings have such diameters and features (copper thickness) as to be suitable to Units which belong to system to R410A refrigerant.

Infrared Remote Controller



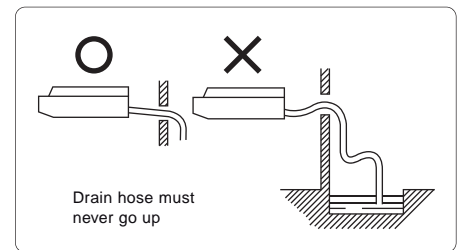
Bearing with screws
ST2.9x10-C-H for
wall fixing

Floor / Ceiling type Indoor Units

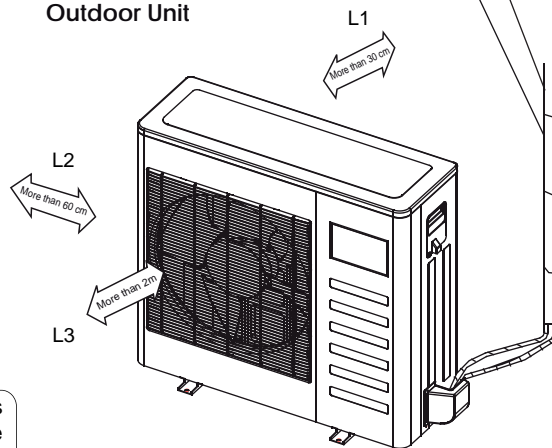


Cover the pipings with closed cells' insulation material, resistant to temperatures of at least 120°C. It is important that there is no air pocket between insulating material and the material which wraps refrigerant pipings.

Finishing of installation: strictly tape insulating material that wraps refrigerant pipings, by proceeding from the bottom upwards.

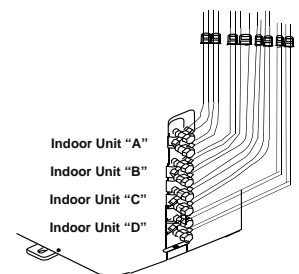


Outdoor Unit



NOTE: at least 2 sides that are indicated in the Figure by "L1", "L2" and "L3" must be kept free from obstacles.

Example: HCKU 706 X4



1. If there is the risk that Outdoor Unit may fall down or overturn, it is advised to install tie rods in addition to anchor bolts (4 x Ø8mm, or 4 x Ø10mm) on Outdoor Unit's base.
2. The installation of a raised bearing bed as regards ground prevents snow from piling up around Outdoor Unit, and at the same time it makes easier condensate and defrosting water drainage.
3. Take care to fix Outdoor Unit perfectly horizontally.

4.7.8 Overall view of installation (Example: HRBU X Models)

1. When chased laying is carried out of refrigerant pipings, take care to seal the ends of these refrigerant lines, by pinching and welding them so as to protect them from infiltrations.
2. Check if chosen pipings have such diameters and features (copper thickness) as to be suitable to Units which belong to system to R410A refrigerant.

Infrared Remote Controller



Bearing with screws
ST2.9x10-C-H for
wall fixing

Low Ducted type Indoor Units



Drain hose must never go up



OK

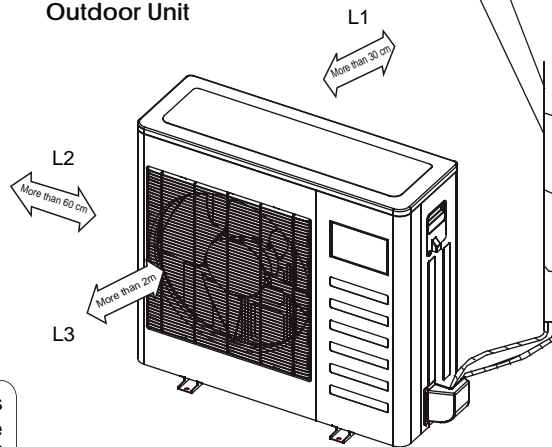


NO

Cover the pipings with closed cells' insulation material, resistant to temperatures of at least 120°C. It is important that there is no air pocket between insulating material and the material which wraps refrigerant pipings.

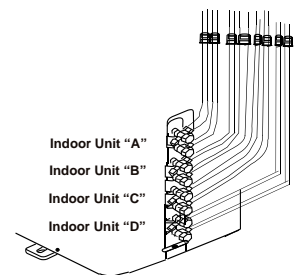
Finishing of installation: strictly tape insulating material that wraps refrigerant pipings, by proceeding from the bottom upwards.

Outdoor Unit



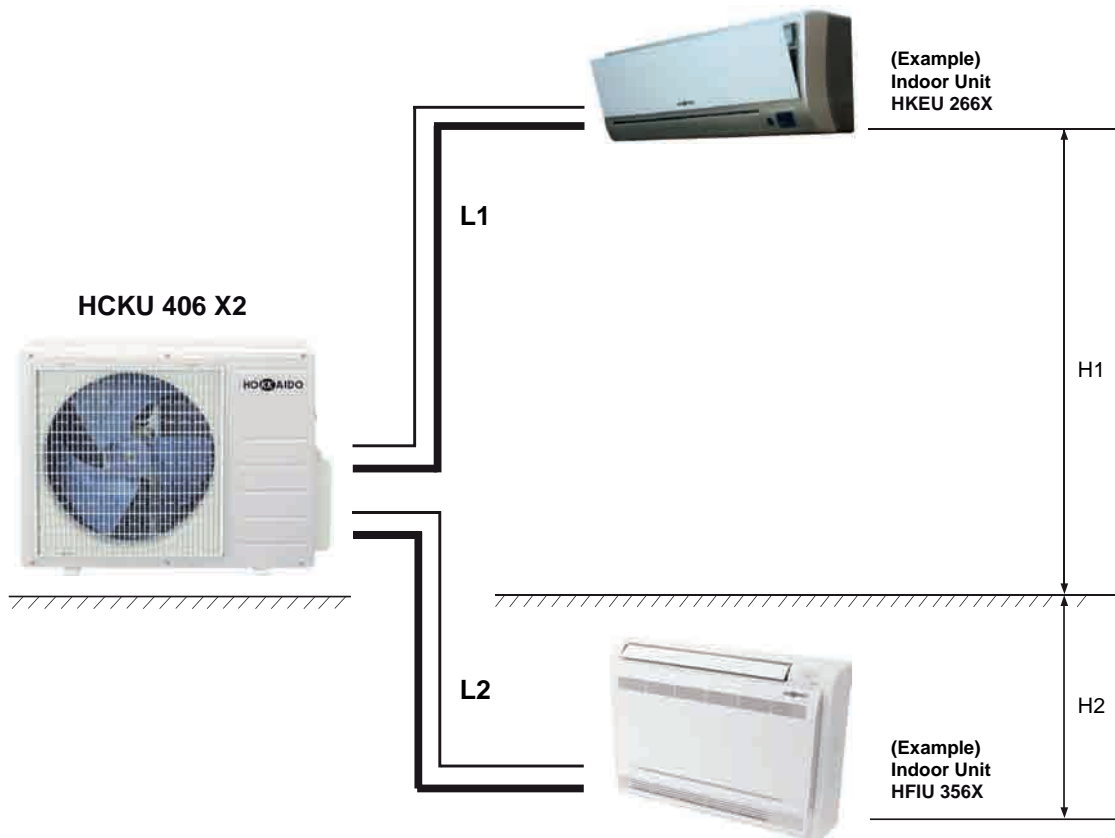
NOTE: at least 2 sides that are indicated in the Figure by "L1", "L2" and "L3" must be kept free from obstacles.

Example: HCKU 706 X4



1. If there is the risk that Outdoor Unit may fall down or overturn, it is advised to install tie rods in addition to anchor bolts (4 x Ø8mm, or 4 x Ø10mm) on Outdoor Unit's base.
2. The installation of a raised bearing bed as regards ground prevents snow from piling up around Outdoor Unit, and at the same time it makes easier condensate and defrosting water drainage.
3. Take care to fix Outdoor Unit perfectly horizontally.

4.7.9 Systems with O.U. HCKU 406 X2: Limitations for distances & splitting level distances



■ Distances & splitting level distances

Item	Unit	Description	Measure
Liquid side	mm	Piping connection diameter on Outdoor Unit	Ø6.35 (1/4")
Gas side	mm	Piping connection diameter on Outdoor Unit	Ø9.52 (3/8")
L1, L2	m	Splitting distance (on Liquid side)	Max. 15m
L _{Standard}	m	Piping's standard distance (on Liquid side) for which no additional charge is required ^(*)	5m + 5m
H2	m	Splitting level distance between O.U. (higher) and I.U.	Max. 10m
H1	m	Splitting level distance between O.U. (lower) and I.U.	Max. 10m
H1+H2	m	Splitting level distance between I.U. of same system	Max. 5m

^(*) Note: If splitting distance is more than 5m (Liquid side, one line), additional charge is: 15g/m of R410A.

■ Refrigerant pipings

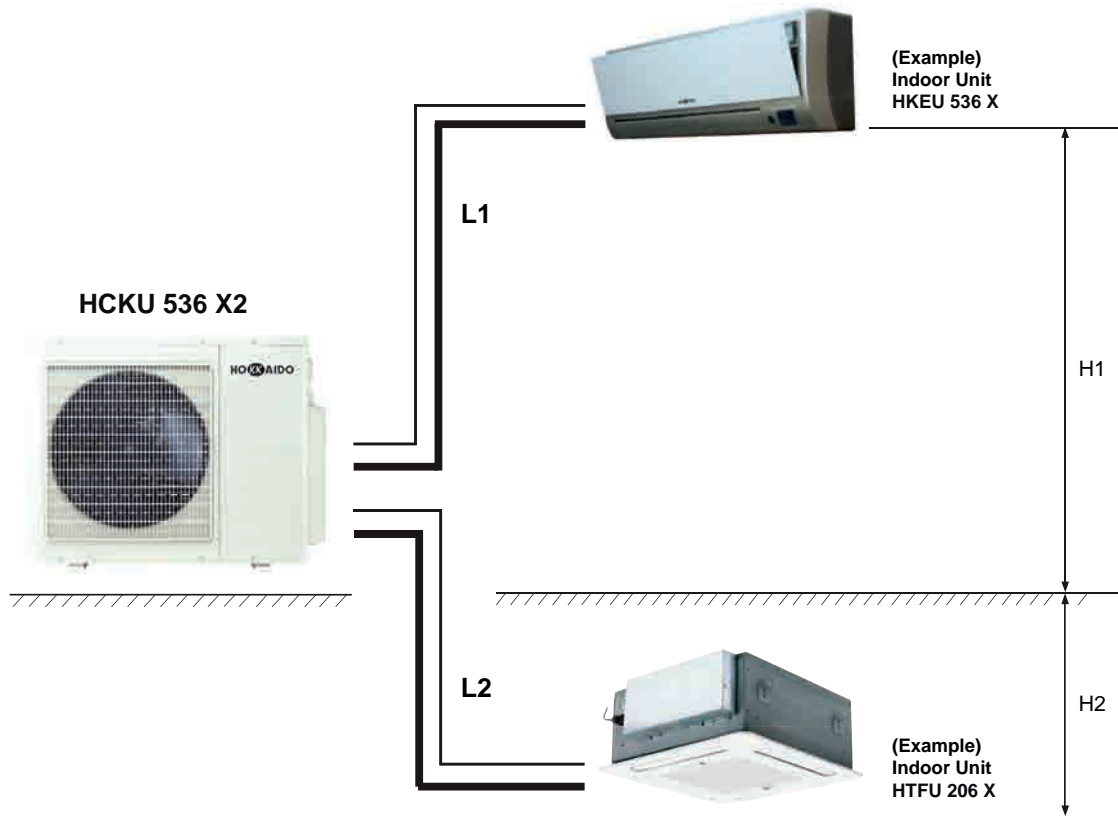
1. Selection of pipings and specifications

- Thermally insulate pipings on Liquid side and Gas side, as according to operation mode, both of them may reach low temperatures during system's operation.
- Use close cells' insulating material, in addition to the material that already wraps the pipings and which is resistant to temperatures of at least 120°C.

Liquid side piping	Ø6.35mm (1/4") x 0.8mm
Gas side piping	I.U. 206 X, 266 X: Ø9.52mm (3/8") x 0.8mm I.U. 356 X, 536 X: Ø12.7mm (1/2") x 0.8mm

NOTE: For each Indoor Unit to be connected (except for 206 X, 266 X Indoor Units), it is required the use of diameter adapter Ø9.52 (3/8") → Ø12.7 (1/2") provided with the Outdoor Unit, to be installed on the corresponding piping connection (Gas side) of Outdoor Unit (see "Section 3: Outdoor Units & Troubleshooting" of this Service Manual).

4.7.10 Systems with O.U. HCKU 536 X2: Limitations for distances & splitting level distances



■ Distance and splitting level distances

Item	Unit	Description	Measure
Liquid side	mm	Piping connection diameter on Outdoor Unit	Ø6.35 (1/4")
Gas side	mm	Piping connection diameter on Outdoor Unit	Ø9.52 (3/8")
L1, L2	m	Splitting distance (on Liquid side)	Max. 15m
L _{Standard}	m	Piping's standard distance (on Liquid side) for which no additional charge is required (*)	5m + 5m
H2	m	Splitting level distance between O.U. (higher) and I.U.	Max. 10m
H1	m	Splitting level distance between O.U. (lower) and I.U.	Max. 10m
H1+H2	m	Splitting level distance between I.U. of same system	Max. 5m

(*) Note: If splitting distance is more than 5m (Liquid side, one line), additional charge is: 15g/m of R410A.

■ Refrigerant pipings

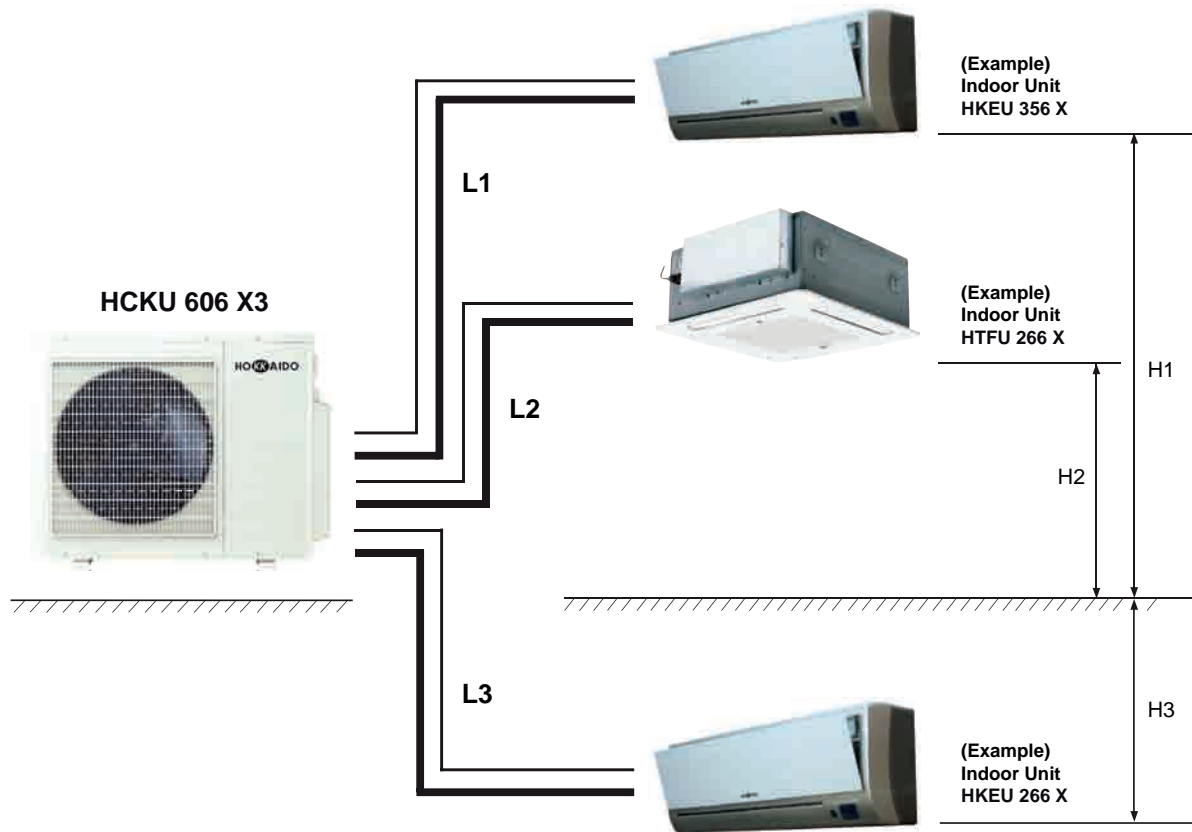
1. Selection of pipings and specifications

- Thermally insulate pipings on Liquid side and Gas side, as according to operation mode, both of them may reach low temperatures during system's operation.
- Use close cells' insulating material, in addition to the material that already wraps the pipings and which is resistant to temperatures of at least 120°C.

Liquid side piping	Ø6.35mm (1/4") x 0.8mm
Gas side piping	I.U. 206 X, 266 X: Ø9.52mm (3/8") x 0.8mm I.U. 356 X, 536 X: Ø12.7mm (1/2") x 0.8mm

NOTE: For each Indoor Unit to be connected (except for 206 X, 266 X Indoor Units), use is required of one of 2 diameter adapters Ø9.52 (3/8") → Ø12.7 (1/2") provided with the Outdoor Unit, to be installed on the corresponding piping connection (Gas side) of Outdoor Unit (see "Section 3: Outdoor Units & Troubleshooting" of this Service Manual).

4.7.11 Systems with O.U. con HCKU 606 X3: Limitations for distance & splitting level distances



■ Distances and splitting level distances

Item	Unit	Description	Measure
Liquid side	mm	Piping connection diameter on Outdoor Unit	Ø6.35 (1/4")
Gas side	mm	Piping connection diameter on Outdoor Unit	Ø9.52 (3/8")
L1, L2, L3	m	Splitting distance (on Liquid side)	Max. 15m
L _{Standard}	m	Piping's standard distance (on Liquid side) for which no additional charge is required (*)	5m + 5m + 5m
H1, H2, H3	m	Splitting level distance between O.U. and each I.U.	Max. 10m
H1+H3, H2+H3	m	Splitting level distance between I.U. of same system	Max. 5m

(*) Note: If splitting distance is more than 5m (Liquid side, one line), additional charge is: 15g/m of R410A.

■ Refrigerant pipings

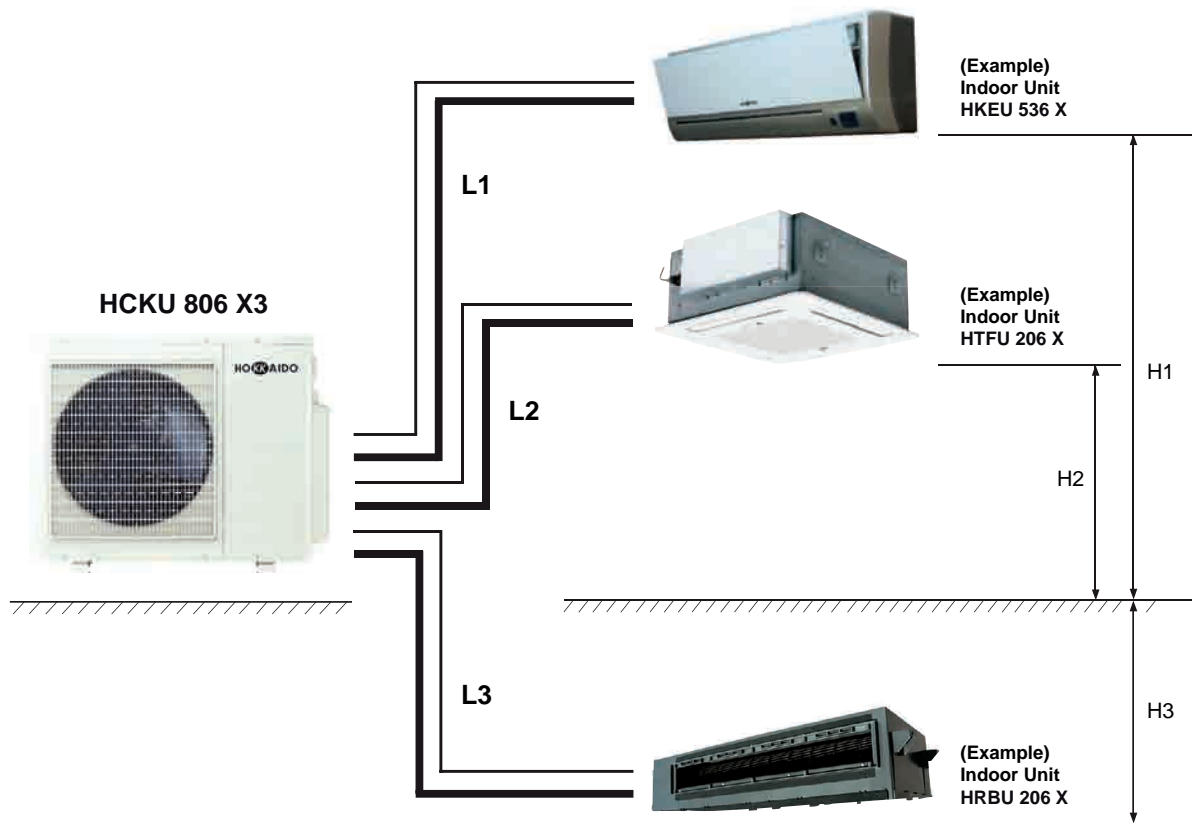
1. Selection of pipings and specifications

- Thermally insulate pipings on Liquid side and Gas side, as according to operation mode, both of them may reach low temperatures during system's operation.
- Use close cells' insulating material, in addition to the material that already wraps the pipings and which is resistant to temperatures of at least 120°C.

Liquid side piping	Ø6.35mm (1/4") x 0.8mm
Gas side piping	I.U. 206 X, 266 X: Ø9.52mm (3/8") x 0.8mm I.U. 356 X, 536 X: Ø12.7mm (1/2") x 0.8mm

NOTE: For each Indoor Unit to be connected (except for 206 X, 266 X Indoor Units), use is required of one of 2 diameter adapters Ø9.52 (3/8") → Ø12.7 (1/2") provided with the Outdoor Unit, to be installed on the corresponding piping connection (Gas side) of Outdoor Unit (see "Section 3: Outdoor Units & Troubleshooting" of this Service Manual).

4.7.12 Systems with O.U. HCKU 806 X3: Limitations for distances & splitting level distances



■ Distances and splitting level distances

Item	Unit	Description	Measure
Liquid side	mm	Piping connection diameter on Outdoor Unit	Ø6.35 (1/4")
Gas side	mm	Piping connection diameter on Outdoor Unit	Ø9.52 (3/8")
L1, L2, L3	m	Splitting distance (on Liquid side)	Max. 15m
L _{Standard}	m	Piping's standard distance (on Liquid side) for which no additional charge is required (*)	5m + 5m + 5m
H1, H2, H3	m	Splitting level distance between O.U. and each I.U.	Max. 10m
H1+H3, H2+H3	m	Splitting level distance between I.U. of same system	Max. 5m

(*) Note: If splitting distance is more than 5m (Liquid side, one line), additional charge is: 15g/m of R410A.

■ Refrigerant pipings

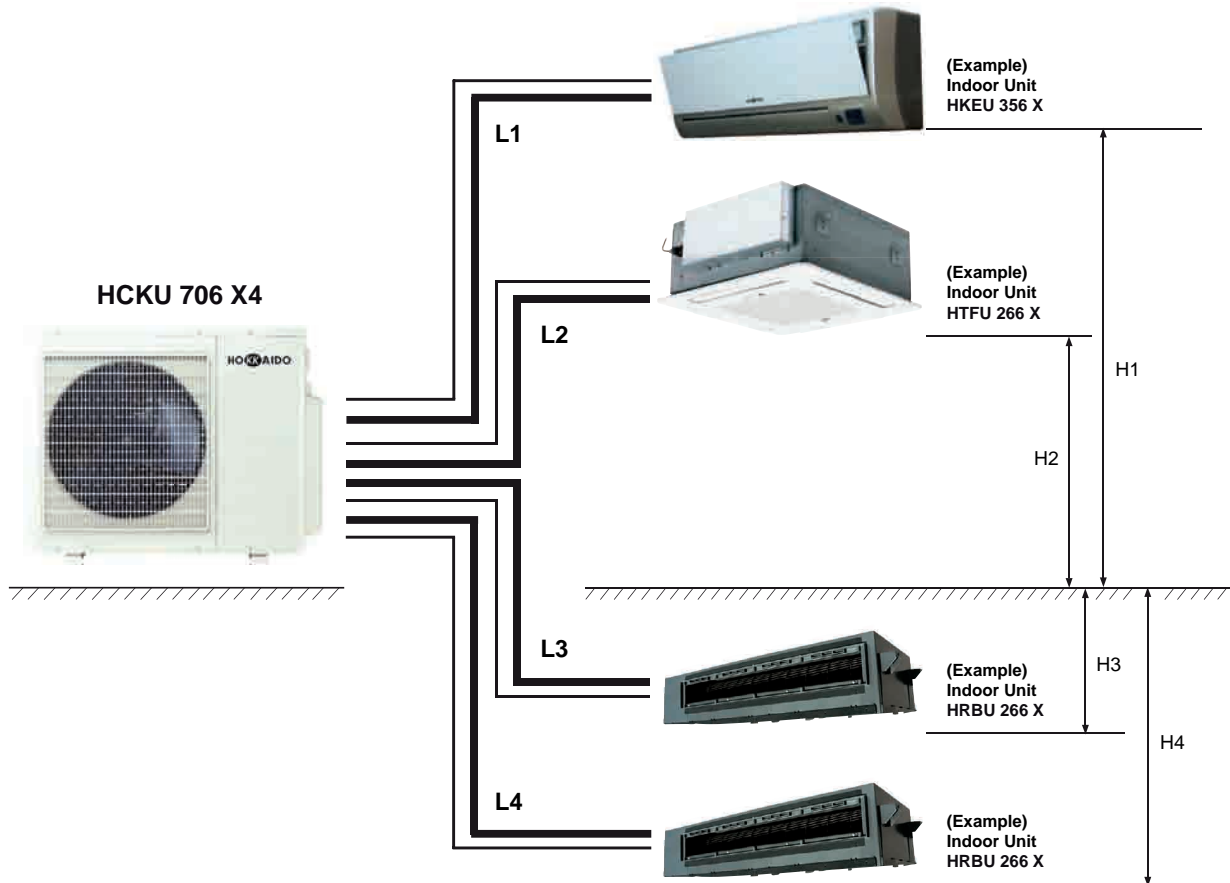
1. Selection of pipings and specifications

- Thermally insulate pipings on Liquid side and Gas side, as according to operation mode, both of them may reach low temperatures during system's operation.
- Use close cells' insulating material, in addition to the material that already wraps the pipings and which is resistant to temperatures of at least 120°C.

Liquid side piping	Ø6.35mm (1/4") x 0.8mm
Gas side piping	I.U. 206 X, 266 X: Ø9.52mm (3/8") x 0.8mm I.U. 356 X, 536 X: Ø12.7mm (1/2") x 0.8mm

NOTE: For each Indoor Unit to be connected (except for 206 X, 266 X Indoor Units), use is required of one of 2 diameter adapters Ø9.52 (3/8") → Ø12.7 (1/2") provided with the Outdoor Unit, to be installed on the corresponding piping connection (Gas side) of Outdoor Unit (see "Section 3: Outdoor Units & Troubleshooting" of this Service Manual).

4.7.13 Systems with O.U. HCKU 706 X4: Limitations for distances & splitting level distances



Distances and splitting level distances

Item	Unit	Description	Measure
Liquid side	mm	Piping connection diameter on Outdoor Unit	Ø6.35 (1/4")
Gas side	mm	Piping connection diameter on Outdoor Unit	Ø9.52 (3/8")
L1, L2, L3, L4	m	Splitting distance (on Liquid side)	Max. 15m
L _{Standard}	m	Piping's standard distance (on Liquid side) for which no additional charge is required (*)	5m + 5m + 5m + 5m
H1, H2, H3, H4	m	Splitting level distance between O.U. and each I.U.	Max. 10m
H1-H2 (ecc.)	m	Splitting level distance between I.U. of same system	Max. 10m

(*) Note: If splitting distance is more than 5m (Liquid side, one line), additional charge is: 15g/m of R410A.

Refrigerant pipings

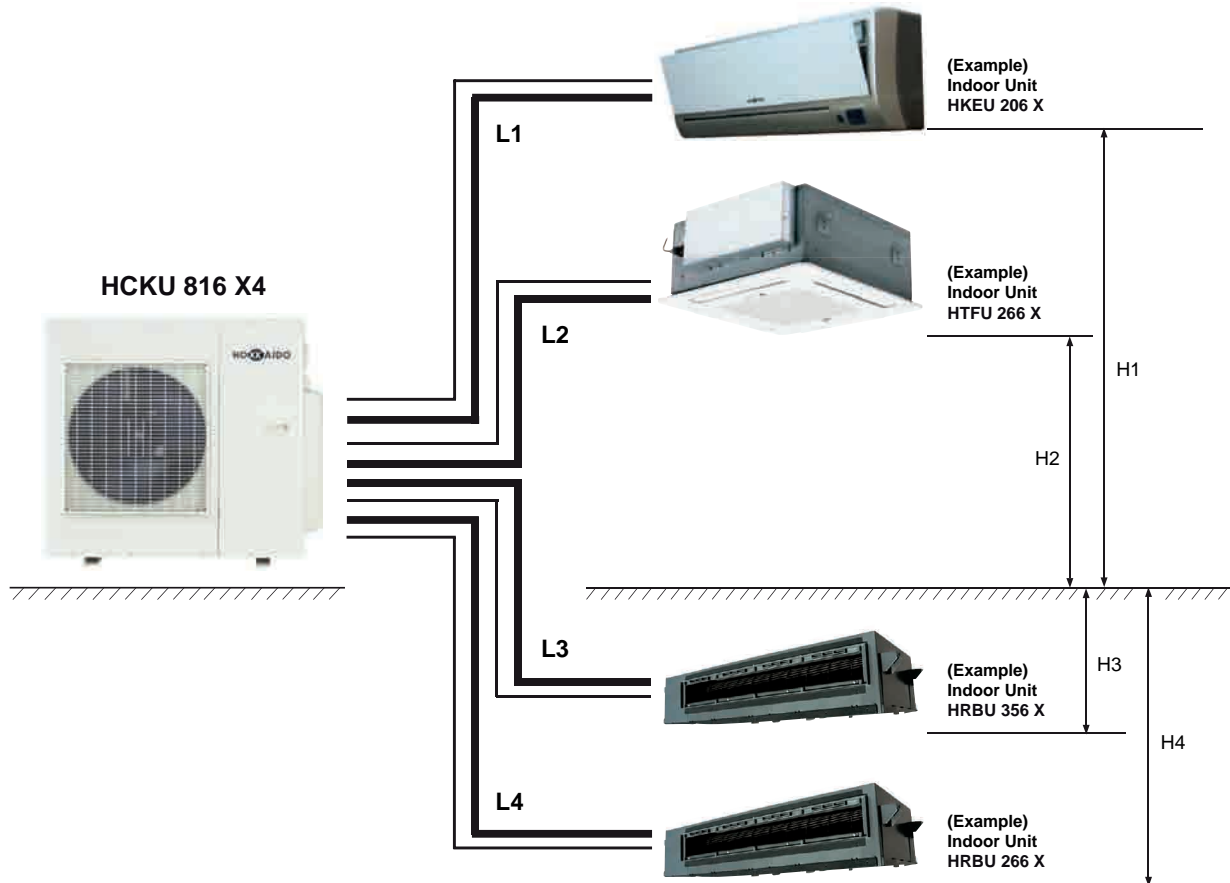
1. Selection of pipings and specifications

- Thermally insulate pipings on Liquid side and Gas side, as according to operation mode, both of them may reach low temperatures during system's operation.
- Use close cells' insulating material, in addition to the material that already wraps the pipings and which is resistant to temperatures of at least 120°C.

Liquid side piping	Ø6.35mm (1/4") x 0.8mm
Gas side piping	I.U. 206 X, 266 X: Ø9.52mm (3/8") x 0.8mm I.U. 356 X, 536 X: Ø12.7mm (1/2") x 0.8mm

NOTE: For each Indoor Unit to be connected (except for 206 X, 266 X Indoor Units), use is required of one of 3 diameter adapters Ø9.52 (3/8") → Ø12.7 (1/2") provided with the Outdoor Unit, to be installed on the corresponding piping connection (Gas side) of Outdoor Unit (see "Section 3: Outdoor Units & Troubleshooting" of this Service Manual).

4.7.14 Systems with O.U. HCKU 816 X4: Limitations for distances & splitting level distances



Distances and splitting level distances

Item	Unit	Description	Measure
Liquid side	mm	Piping connection diameter on Outdoor Unit	Ø6.35 (1/4")
Gas side	mm	Piping connection diameter on Outdoor Unit	Ø9.52 (3/8")
L1, L2, L3, L4	m	Splitting distance (on Liquid side)	Max. 15m
L _{Standard}	m	Piping's standard distance (on Liquid side) for which no additional charge is required (*)	5m + 5m + 5m + 5m
H1, H2, H3, H4	m	Splitting level distance between O.U. and each I.U.	Max. 10m
H1-H2 (ecc.)	m	Splitting level distance between I.U. of same system	Max. 10m

(*) Note: If splitting distance is more than 5m (Liquid side, one line), additional charge is: 15g/m of R410A.

Refrigerant pipings

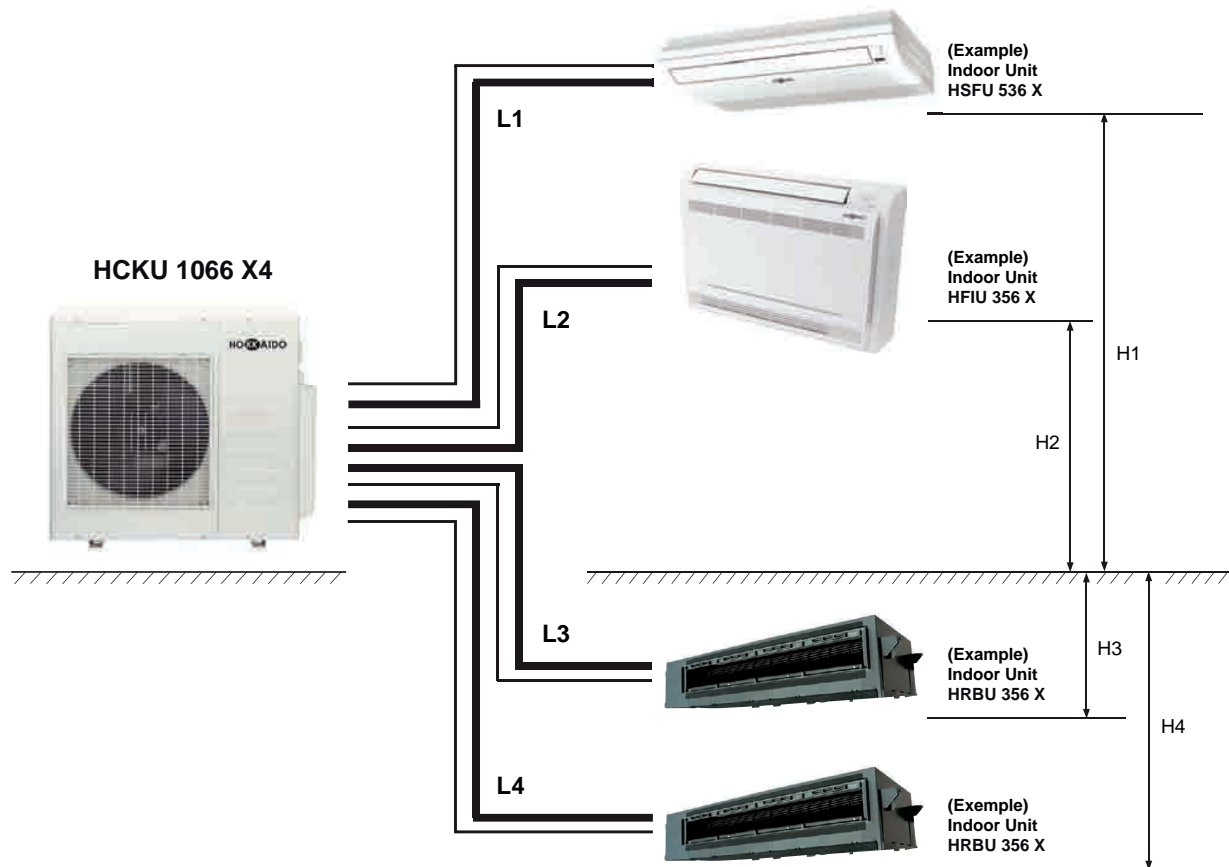
1. Selection of pipings and specifications

- Thermally insulate pipings on Liquid side and Gas side, as according to operation mode, both of them may reach low temperatures during system's operation.
- Use close cells' insulating material, in addition to the material that already wraps the pipings and which is resistant to temperatures of at least 120°C.

Liquid side piping	Ø6.35mm (1/4") x 0.8mm
Gas side piping	I.U. 206 X, 266 X: Ø9.52mm (3/8") x 0.8mm I.U. 356 X, 536 X: Ø12.7mm (1/2") x 0.8mm

NOTE: For each Indoor Unit to be connected (except for 206 X, 266 X Indoor Units), use is required of one of 3 diameter adapters Ø9.52 (3/8") → Ø12.7 (1/2") provided with the Outdoor Unit, to be installed on the corresponding piping connection (Gas side) of Outdoor Unit (see "Section 3: Outdoor Units & Troubleshooting" of this Service Manual).

4.7.15 Systems with O.U. HCKU 1066 X4: Limitations for distances & splitting level distances



Distance and splitting level distances

Item	Unit	Description	Measure
Liquid side	mm	Piping connection diameter on Outdoor Unit	Ø6.35 (1/4")
Gas side	mm	Piping connection diameter on Outdoor Unit	Ø9.52 (3/8")
L1, L2, L3, L4	m	Splitting distance (on Liquid side)	Max. 15m
L _{Standard}	m	Piping's standard distance (on Liquid side) for which no additional charge is required (*)	5m + 5m + 5m + 5m
H1, H2, H3, H4	m	Splitting level distance between O.U. and each I.U.	Max. 10m
H1-H2 (ecc.)	m	Splitting level distance between I.U. of same system	Max. 10m

(*) Note: If splitting distance is more than 5m (Liquid side, one line), additional charge is: 15g/m of R410A.

Refrigerant pipings

1. Selection of pipings and specifications

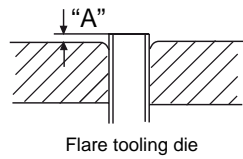
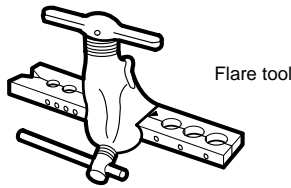
- Thermally insulate pipings on Liquid side and Gas side, as according to operation mode, both of them may reach low temperatures during system's operation.
- Use close cells' insulating material, in addition to the material that already wraps the pipings and which is resistant to temperatures of at least 120°C.

Liquid side piping	Ø6.35mm (1/4") x 0.8mm
Gas side piping	I.U. 206 X, 266 X: Ø9.52mm (3/8") x 0.8mm I.U. 356 X, 536 X: Ø12.7mm (1/2") x 0.8mm

NOTE: For each Indoor Unit to be connected (except for 206 X, 266 X Indoor Units), use is required of one of 3 diameter adapters Ø9.52 (3/8") → Ø12.7 (1/2") provided with the Outdoor Unit, to be installed on the corresponding piping connection (Gas side) of Outdoor Unit (see "Section 3: Outdoor Units & Troubleshooting" of this Service Manual).

4.7.16 Pippings' cutting and flaring

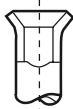
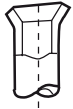
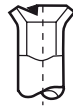
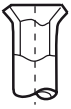
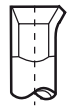

- Cut pippings at your desired length, by using the special pipe cutter.
- At the end of operation, please remove burr from pippings' ends by using the deburring tool.
- Insert flared nut on piping before starting piping flaring.



• **Dimension "A"**

Pipe diameter:	"A" (mm):
6.35 mm (1/4")	0.7~1.3
9.52 mm (3/8")	1.0~1.6
12.7 mm (1/2")	1.0~1.8

Examples of piping flaring:

Correct	Wrong				
					
OK	NO Lean	NO Crack	NO Damage of flare	NO Partial	NO Too outside

4.7.17 Connections of refrigerant pippings

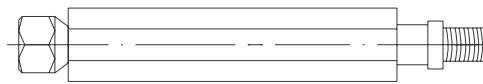
- Always apply refrigerant oil on flares' back and on flared nut's inner side, before tightening flared nuts. This will assure seal of connections.
- Always use a pipe bender for bending pippings, and take care that radius of cvature is always wide enough in order not to block pippings.
- Carry out the connection first on Gas side and then on Liquid side, as Gas side piping has a wider diameter and requires wider service spaces.

Note (for Indoor Units 356 X, 536 X only):

For piping connection of each Indoor Unit 356 X and 536 X to the Outdoor, it is needed to use a diameter adapter $\varnothing 9.52$ (3/8") \rightarrow $\varnothing 12.7$ (1/2") on Outdoor Unit's Gas side.

According to Outdoor Unit's Model, 1, 2, 3 or 4 diameter adapters are provided (see the Figure below). If necessary, each adapter must be connected (Flare connection) to Outdoor Unit's service valve on one side, and on the other side (always by Flare connection) to Gas side piping directed to Indoor Unit.

Gas side, Outdoor Unit
[[$\varnothing 9.52$ (3/8")]]



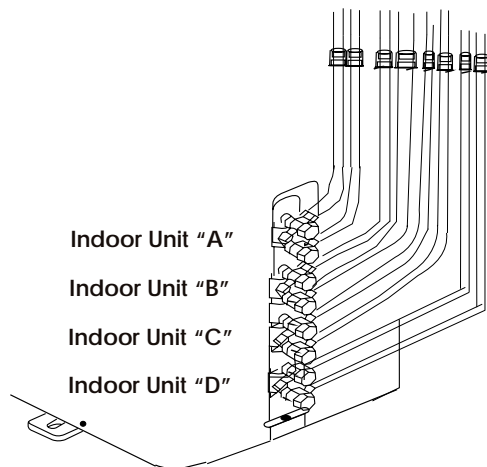
To Gas side piping, Indoor Unit
[[$\varnothing 12.7$ mm (1/2")]], except for 206 X, 266 X

Caution: Always centre the piping on Outdoor Unit's piping connection, before screwing flared nut by hand and carrying out definitive tightening. Ignoring this precaution may cause damages to threads of flared nuts and piping connections; flares may also be deformed and refrigerant leakages may occur.

Please use a spanner to keep still the Outdoor Unit's piping connection and prevent it from being twisted. Use a torque wrench for tightening flared nuts. Always observe the recommended tightening torque.

Piping diameter (\varnothing)	Tightening torque
Liquid side: 6.35mm (1/4")	15.7 ~ 19.6 N•m
Gas side: 9.52mm (3/8")	29.4 ~ 34.3 N•m
Gas side: 12.7mm (1/2")	49.0 ~ 53.9 N•m

4.7.18 Position of piping connections on Outdoor Unit [Example: Model HCKU 706 X4]



Note: For reaching piping connections, placed on right side of Outdoor Unit (if you are watching Unit frontally), it is needed to remove protective side cover, fixed by screws.

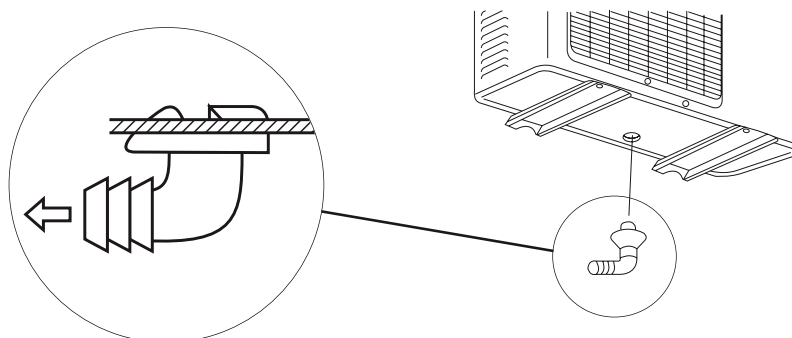
4.7.19 Installation of drain elbow on Outdoor Unit

• This accessory, provided with the Outdoor Unit, allows the connection of a piping for condensate or defrosting water.

- 1) Install the provided washer on drain elbow.
- 2) Insert drain elbow - together with its washer - in the special hole at the bottom of Outdoor Unit's frame.
- 3) Rotate the drain elbow by 90° in its seat, for blocking it.
- 4) Insert a semi-rigid piping of suitable diameter - easily available in the best shops of thermohydraulic supplies - on stepped end of drain elbow, for conveying condensate water (for Cooling operation during summer) or defrosting water (for Heating operation during winter) towards a suitable drain point.

Note: It is decidedly not recommended to install drain elbow and drain piping in places where low outdoor temperatures are often registered (lower than or next to 0°C) for long periods.

• The Figure below shows the components previously described and indicates the procedure to be followed for installation.



4.7.20 Opening/closing of service valves on Outdoor Unit

How to operate on service valves of Outdoor Unit

a. Opening of service valve

- 1) Remove the service valve's protective nut and use an Allen key having the dimensions indicated in the Table below for rotating the service valve anticlockwise.
- 2) Rotate the valve till opening it completely. Do not force valve beyond opening max. limit, as the valve's body may be broken. Do not use tools other than Allen key for opening service valves.
- 3) After opening the valve, tighten the protective nut according to the recommended tightening torque (see the Table below).

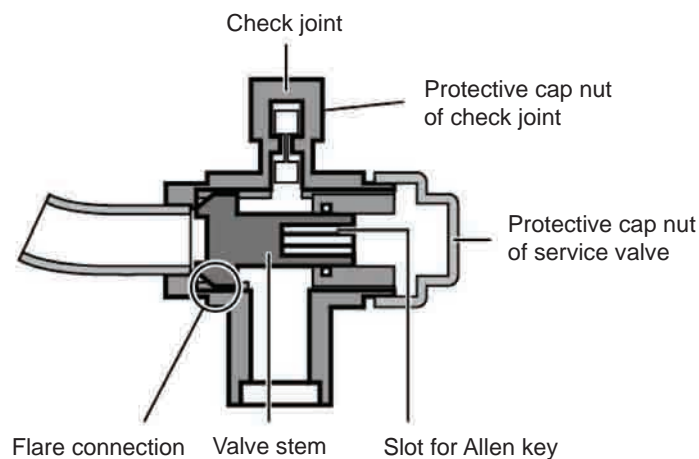
b. Closing of service valves

- 1) Remove protective nut and use an Allen key having the dimensions indicated in the Table below for rotating the valve clockwise.
 - 2) Close the valve completely.
- Screw again valve's protective nut according to the recommended tightening torque (see the Table below).

Recommended tightening torque (N•m)				
Valve's dimension	Service valve		Valve's nut	Check joint's nut
Ø6.35(1/4")	5.4 ~ 6.6	Allen key 4mm	13.5 ~ 16.5	11.5 ~ 13.9
Ø9.52(3/8")			18 ~ 22	
Ø12.7(1/2")	8.1 ~ 9.9	Allen key 6mm	23 ~ 27	
Ø15.88(5/8")	13.5 ~ 16.5		36 ~ 44	
Ø22.22(7/8")	27 ~ 33	Allen key 10mm		
Ø25.4(1")				

Caution:

- For connection of check joint, always use special charge hose.
- After tightening protective nut of check joint, please check there are no refrigerant leakages.

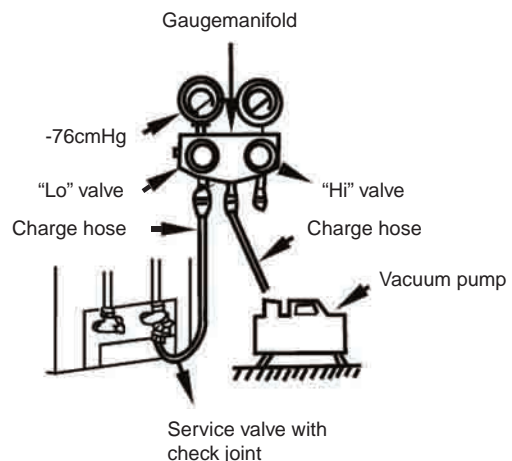
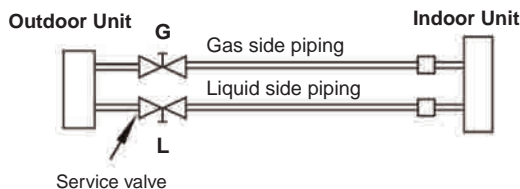


4.7.21 Use of vacuum pump (separately, on circuit of each connected Indoor Unit)

- 1) Screw and remove protective nuts of service valves "G" and "L" and connect to check joint of service valve "G" (Gas side) the charge hose from low pressure connection of gaugemanifold. Before doing it, please check that both service valves "G" and "L" are completely closed.
- 2) Connect common connection (central connection: see the Figure) of gaugemanifold to the vacuum pump, also by using a special charge hose.
- 3) Completely open the valve on "Lo" side of gaugemanifold.
- 4) Start vacuum pump. At starting operation of pump, lightly loosen for few seconds the Flare connection's flared nut on service valve "L" (Liquid side) of Outdoor Unit. After completing this operation, noise generated by vacuum pump will change for indicating that air is entering through Flare connection previously loosened. The tool's pointer on "Lo" side of gaugemanifold will rise again to "0". If this happens, there are no obstructions on the portion of refrigerant circuit between service valve "G" and service valve "L" (connection pipings and refrigerant circuit of Indoor Unit), therefore vacuum operation can be carried out. Immediately tighten the flared nut previously loosened.
- 5) After vacuum operation has been carried out for a time enough long (at least 15 minutes or more, depending on pipings' length), close "Lo" valve of gaugemanifold and stop vacuum pump. The tool's pointer on "Lo" side will show -76cmHg (-10Pa).
- 6) Open service valves "G" and "L", then screw again the valves' protective nuts according to the recommended tightening torque.
- 7) Disconnect the charge hose from check joint on valve "G", then screw again the protective nut of check joint.

Note: The Figure below shows, for explanation purposes, a pair of piping connections on Outdoor Unit.

- a) Vacuum procedure must be carried out separately on refrigerant circuit of each connected Indoor Unit.
- b) Additional charge of R410A refrigerant (if required), can be carried out by check joint, placed on Gas side service valve, of whatever pair of piping connections.



4.7.22 Additional charge of R410A refrigerant

Caution:

- Always carry out additional charge of R410A refrigerant after completing wiring.
- Refrigerant can be charged only after vacuum procedure and after checking there are no gas leakages.
- Never exceed r_{max} amount of refrigerant which is allowed to be charged, in order to prevent refrigerant from flowing back to compressor.
- Please charge the system with the prescribed R410A refrigerant only, otherwise there is danger of explosions and accidents.
- The valves of refrigerant cylinders must be gradually opened.
- When refrigerant is charged in the system, hands must be protected by gloves and eyes must be properly protected.

When out of factory, **Outdoor Unit is precharged for a splitting distance of 5m - for each Indoor Unit - measured on Liquid side**. Please calculate the eventual additional charge for each portion of piping exceeding this length, according to piping diameter on Liquid side, as it is shown on the following Table.

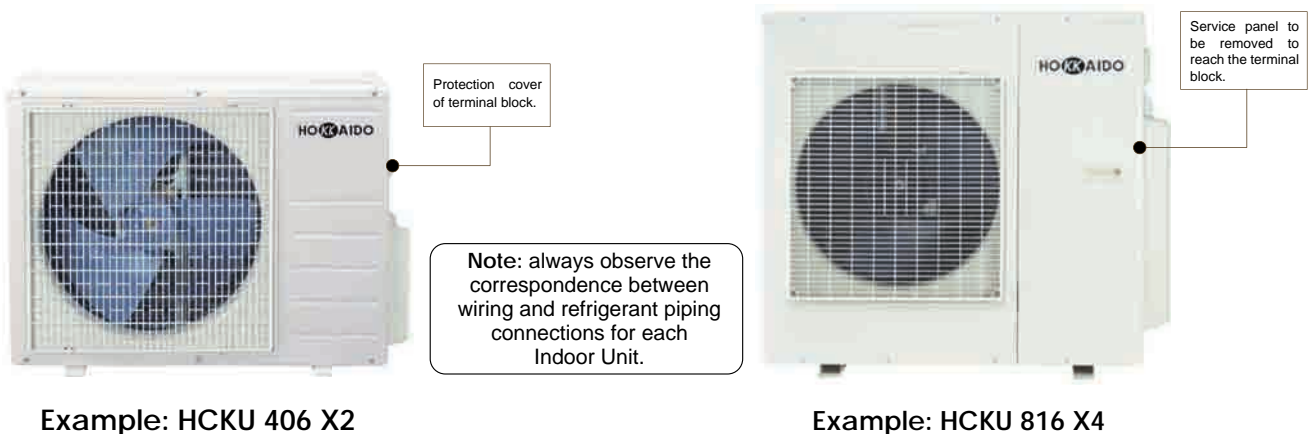
Diameter of refrigerant piping, Liquid side	Ø6.35(1/4")
Piping on Liquid side, up to 5m	Additional charge: 0g/m
For each metre of piping exceeding 5m, Liquid side	Add 15g/m

4.7.23 Wiring

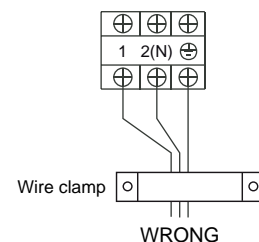
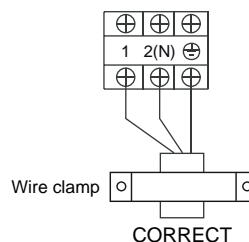
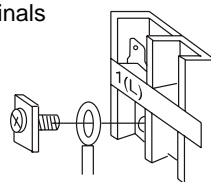
Electrical work must be carried out by Authorized Technical Service, that works in accordance with current national and local regulations.

1. Power supply line must be for system only. A circuit breaker must be installed which interrupts all contacts (in opening position, min. distance between contacts must be of 3 mm) of suitable calibration as regards power input of system. Installation of an earth breaker is required, specific for Inverter appliances.
2. Ground wire and neutral wire of power supply line must be kept separated.
3. Only use copper wires of suitable section and cables in accordance with to law.
4. There must be a perfect correspondence between wiring and refrigerant piping connections of all Indoor Units ("A", "B", "C", "D") as regards Outdoor Unit.
5. Power supply specifications are the following: 1-Phase, 220~240V, 50 Hz.
6. If a protection fuse is damaged, please replace it by an original one or by an equivalent. But first of all try to find the reasons that caused the damaging of fuse.
7. Min. recommended sections of cables are the following:
 - a) Power supply of Outdoor Unit: 2 cables + Ground wire. Concerning min. recommended sections of cables for each Model, see the corresponding Table at the following pages.
 - b) Connection lines (pre-wiring) between each Indoor Unit and the Outdoor Unit: 3 wires + Ground wire with "plug". Min. section: 1.5mm² for all Models.
8. To reach Outdoor Unit's terminal block, please remove protection cover (fixed by screws) on right side of Outdoor Unit and/or frontal service panel. Before inserting wiring inside of Outdoor Unit's electrical box, please bend wiring downwards ("U"); this precautions allows to prevent infiltrations of rainwater inside of box itself.
9. Firmly fix wires on screw terminal blocks, and always use the special wire clamps to prevent eventual tractions to be transmitted to terminal blocks' contacts.

Access to terminal blocks, connections of terminals and use of wire clamps



Grommet terminals



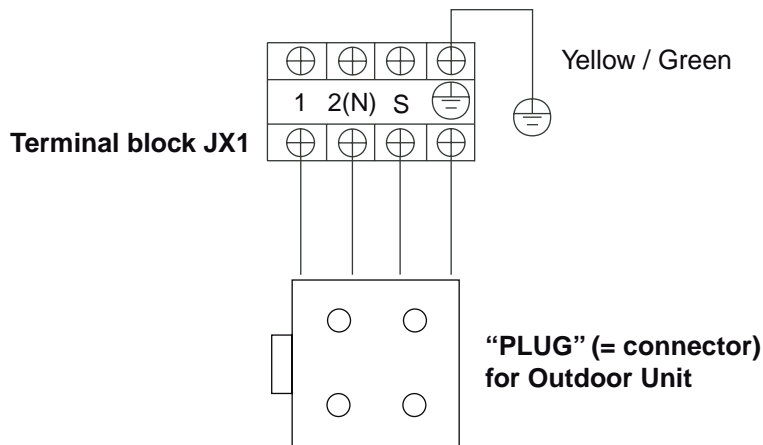
Basic information on wiring for Multi Liberty DC Inverter systems

- **Power supply (on Outdoor Unit):**
 - 1-Phase, 220~240V, 50 Hz.
 - Power source limitations: ±10% as regards rating value.
 - Voltage at starting: 85% as regards rating value.

• **Calibrations of circuit breakers and min. section of power cables:**

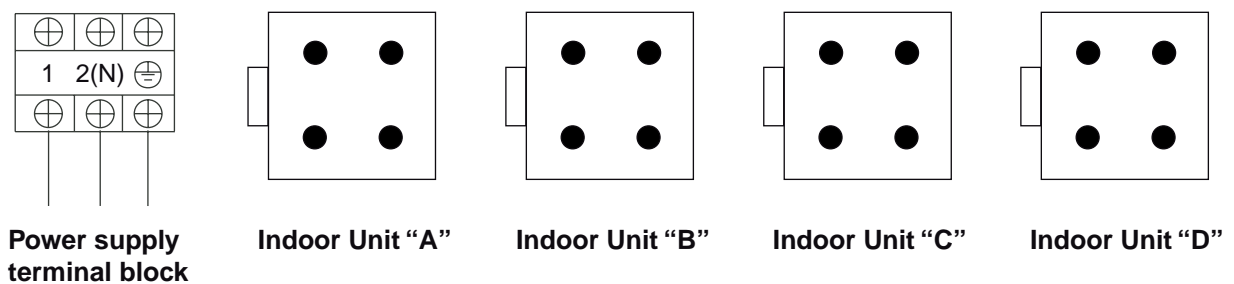
Outdoor Units	Calibration of circuit breaker (A)	Section of power cables (mm ²)
HCKU 406 X2	12A	2.5 mm ²
HCKU 536 X2	16A	4.0 mm ²
HCKU 606 X3	20A	6.0 mm ²
HCKU 806 X3	20A	6.0 mm ²
HCKU 706 X4	20A	6.0 mm ²
HCKU 816 X4	32A	8.0 mm ²
HCKU 1066 X4	32A	8.0 mm ²

Indoor Unit “A”, “B”, “C”, or “D”

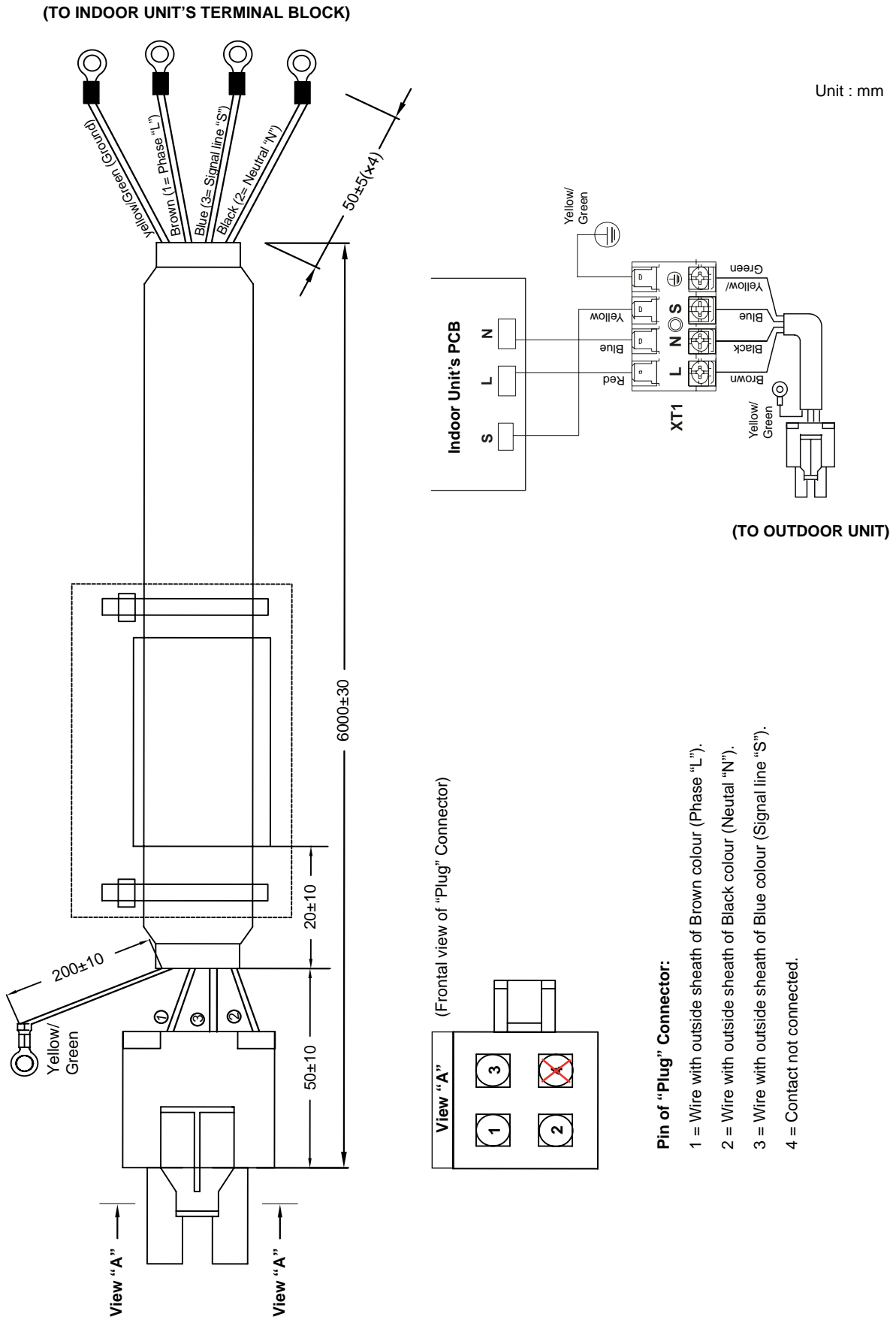


- **Min. section of cables (prewiring-up = 6m) between each Indoor Unit and the Outdoor Unit:**
 - All Models 1.5mm².

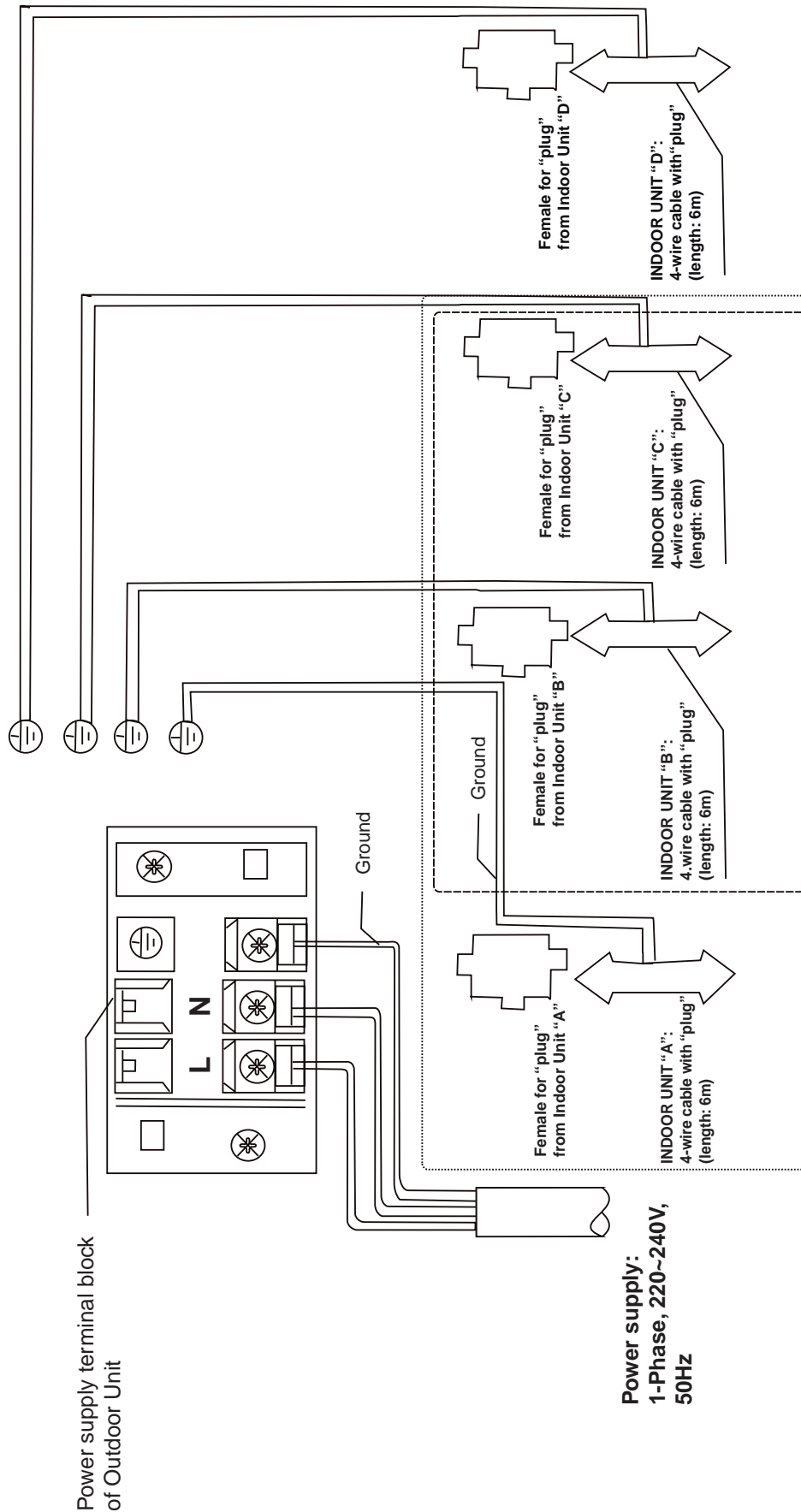
Outdoor Unit



■ “Plug” Cable for Connection between Indoor Units & Outdoor Unit Multi Liberty DC Inverter
(By dedicated connectors (Units “A”, “B”, “C”, “D”) for “Plug”, on Outdoor Unit)



■ **Wiring between Indoor Units & Outdoor Units Multi Liberty DC Inverter**
 (By dedicated connectors (Units “A”, “B”, “C”, “D”) for “PLUG”, on Outdoor Unit)



Note: The above diagram refers to Outdoor Unit HCKU 706 X4 (4 Indoor Units can be connected).

4.7.24 Final checks & Test

1. Test procedure of system must be carried out only after installation has been completed in all its parts (electric part and refrigerant part).

2. Before carrying out the Test, please check the following:

- Has installation of Indoor Units and Outdoor Unit been completed?
- Have wiring and refrigerant connections been completed?
- Are there any refrigerant leakages on the refrigerant circuit?
- Does each drain piping assure proper flowing of water poured inside of it (test)?
- Have refrigerant pipings and drain hose been thermally insulated properly?
- Has Ground connection been carried out properly on system?
- Have refrigerant pipings' length and the eventual additional refrigerant charge been written down?
- Do power supply voltage specifications correspond to the system's plate specifications?
- Are there any obstacles which obstruct air outlet and air inlet on Indoor and Outdoor Units?
- Have Outdoor Unit's service valves been completely opened?
- Has system been powered for any hours, to heat the bottom of compressor?

3. With the agreement of User, install the remote control's bearing in such a position that signals sent by remote control - installed on its bearing - can be received by Indoor Unit.

4. Test

Set Cooling mode by remote controller and press "ON/OFF" button on remote control itself to start system. Check the following, and in case of malfunctions please refer to final part of "Section 3: Outdoor Units & Troubleshooting" of this Service Manual.

1) Checks to be carried out on each Indoor Unit

- a. Check if "ON/OFF" button on remote controller allows to start/stop operation of Unit.
- b. Check if other buttons on remote controller operate properly too.
- c. Check if air outlet motorized flaps (if present) is regular.
- d. Check if room temperature value satisfy comfort needs.
- e. Check if LED indicators on IR receiver of each Indoor Unit operate properly.
- f. Check if Emergency button on each Indoor Unit works properly.
- g. Check if condensate water flows properly through drain piping.
- h. Check if there is no noise nor anomalous vibration during operation.
- i. Carry out test of system in Heating mode too.

2) Outdoor Unit

- a. Check if there is no noise nor anomalous vibration during operation.
- b. Make sure that supplied air and noise produced by Outdoor Unit do not disturb the neighbourhood.
- c. Check there are no refrigerant leakages on refrigerant circuit.
- d. Verify there are no electrical leakages towards the Ground.

Caution:

In case of stop of system operation, a protection function is active which prevents immediate restart, unless at least 3 minutes have elapsed since last stop of compressor.

Section 5: CONTROL FUNCTIONS

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5. CONTROL FUNCTIONS.....CF-2

5. CONTROL FUNCTIONS

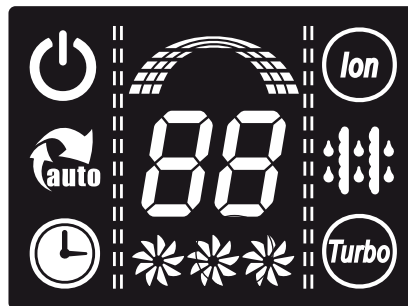
5.1 Specifications of power supply & power input of some components

- 5.1.1 Power supply voltage range: 175~254V.
- 5.1.2 Power supply frequency: 50 Hz.
- 5.1.3 Power input of indoor fan motor in normal conditions: < 1A.
- 5.1.4 Power input of outdoor fan motor in normal conditions: < 1.5A.
- 5.1.5 Power input of 4-way valve coil in normal conditions: < 1A.
- 5.1.6 Power supply voltage of servomotor for air outlet flaps: 12V DC.

5.2 Indicators on Indoor Units' display panel

The following pages show the appearance of display panel on each kind of Indoor Unit.

Outline of Display Panel on Highwall type Indoor Units (HKEU X) Multi Liberty



“OPERATION” indication lamp

This lamp illuminates when the air conditioner is in operation.



“SELF CLEAN” indication lamp

It refers to a function which is not available on these Models.



TIMER indication lamp

It lights up if a Timer function is set (TIMER: automatic start and/or stop of air conditioner), included “SLEEP” function (Energy Saving function).



“CLEAN AIR” indication lamp

It lights up when ioniser device (integrated in Indoor Unit) is activated by remote control.



“DEFROST” indication lamp

- If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up.
- The LED also light up when indoor heat exchanger's Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

**“TURBO” indication lamp**

It lights up when “TURBO” function is selected by remote control. This function is available in Cooling mode only.

**DIGITAL DISPLAY indication lamp**

Displays the current setting temperature when the air conditioner is in operation.

**“FAN SPEED” indication lamp**

Displays the selected fan speed

- AUTO : nothing is displayed.

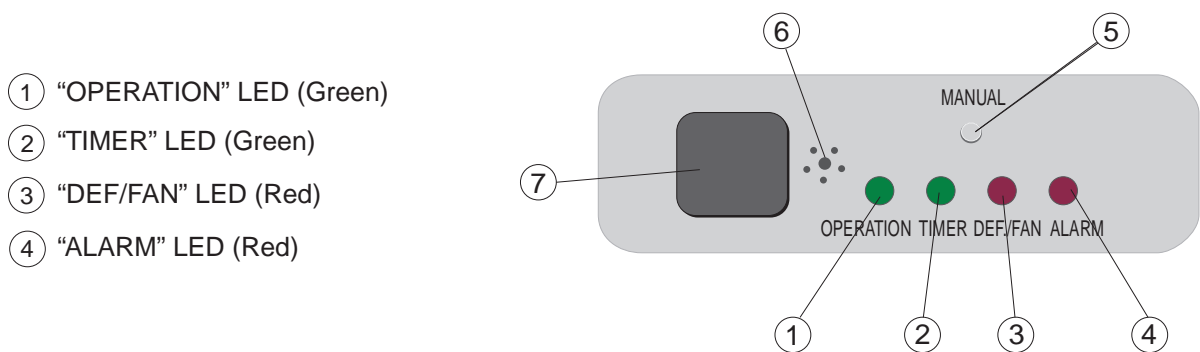
- LOW : *

- MED : **

- HIGH : ***



This display is separated into three zones. Once the indoor fan is on, the zones illuminate gradually.

Outline of Display Panel on 60 x 60 Cassette type Indoor Units (HTFU X) Multi Liberty

① “OPERATION” LED (Green)

② “TIMER” LED (Green)

③ “DEF./FAN” LED (Red)

④ “ALARM” LED (Red)

① OPERATION LED

When connecting the Unit to the power source, the LED starts flashing. During the air conditioner’s operation, it stops flashing and lights up.

② TIMER LED

It lights up when TIMER function is selected (air conditioner’s programmed start and/or stop).

③ DEF./FAN (Defrost/Preheating)

If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up.

The LED also lights up when indoor heat exchanger’s Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

④ ALARM LED

The LED flashes when the level in the water condensate pan exceeds the operation limit.
This also makes the compressor stop, till the condensate drain pump has eliminated the surplus water.

⑤ MANUAL button (Emergency/Test)

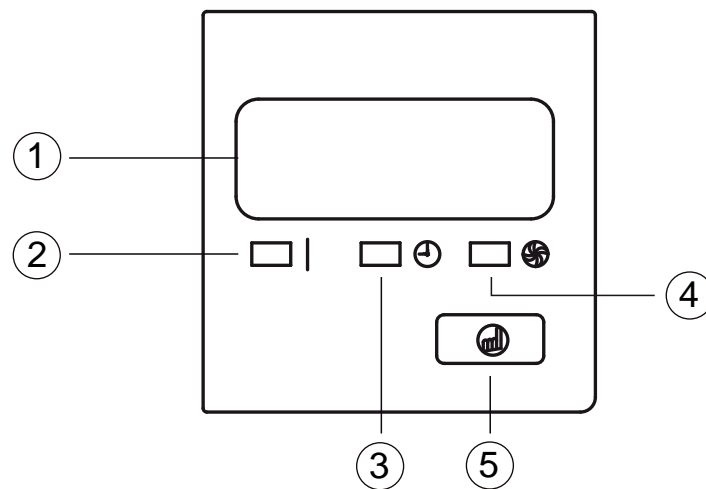
To start the air conditioner in Automatic mode when the remote controller is not available, and to start the Test mode in Cooling operation.

⑥ Buzzer

It emits a sound when a signal from IR remote control is received by the Indoor Unit.

⑦ IR signal receiver

It permits to receive signals from IR remote control.

Outline of Display Panel on "Console" type Indoor Units (HFIU X) Multi Liberty**① IR receiver window**

It allows to receive the signals sent by IR remote controller.

② OPERATION LED

It lights up when the air conditioner is operating. It flashes when Indoor Unit is powered but it is not operating (standby).

③ TIMER LED

It lights up when TIMER function is selected (automatic start and/or stop of the air conditioner).

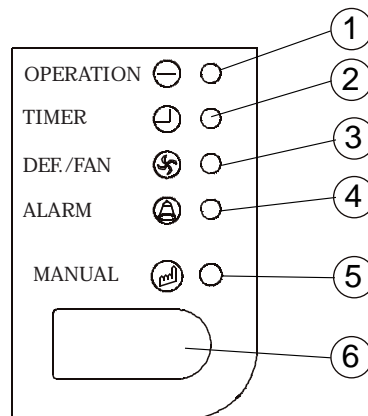
④ PRE-DEF. LED (Preheating/Defrosting)

If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up.

The LED also lights up when indoor heat exchanger’s Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

⑤ MANUAL button (Emergency/Test)

To start the air conditioner in Automatic mode when the remote controller is not available, and to start the Test mode in Cooling operation.

Outline of Display Panel on Floor/Ceiling type Indoor Units (HSFU X) Multi Liberty**① OPERATION LED**

When Indoor Unit is powered, this indicator starts flashing. The LED lights up when Indoor Unit is operating.

② TIMER LED

This indicator lights up when TIMER function is selected (automatic start and/or stop of the air conditioner).

③ DEF./FAN LED (Defrosting/Preheating)

If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up.

The LED also lights up when indoor heat exchanger’s Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

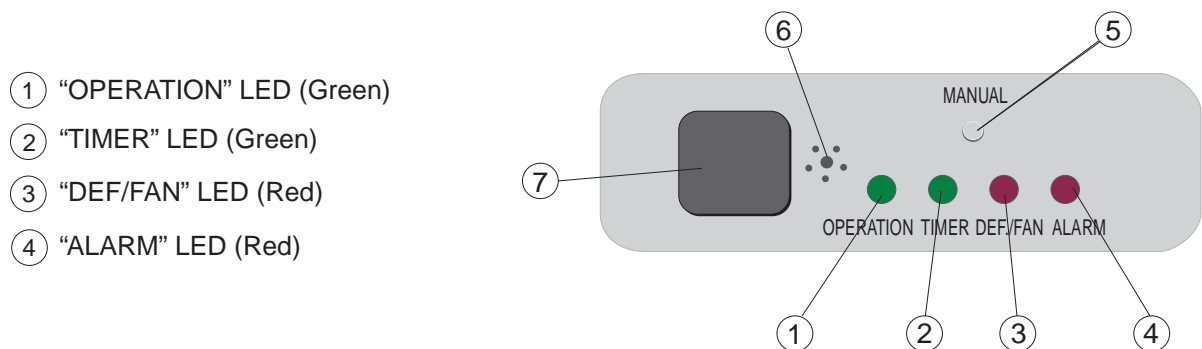
④ PRE-DEF. LED (Preheating/Defrosting)

If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up.

The LED also lights up when indoor heat exchanger’s Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

⑤ MANUAL button (Emergency/Test)

To start the air conditioner in Automatic mode when the remote controller is not available, and to start the Test mode in Cooling operation.

Outline of Display Panel of Low Ducted type Indoor Units (HRBU X) Multi Liberty**① OPERATION LED**

When connecting the Unit to the power source, the LED starts flashing. During the air conditioner’s operation, it stops flashing and lights up.

② TIMER LED

It lights up when TIMER function is selected (air conditioner’s programmed start and/or stop).

③ DEF./FAN (Defrost/Preheating)

If control electronics detects the conditions required for start of Automatic Defrosting (see Section “CF: Control Functions”, of this Service Manual), defrosting automatically starts and this LED lights up.

The LED also lights up when indoor heat exchanger’s Preheating function is activated. This occurs in Heating mode, in order to avoid the emission of air at low temperature (anti-cold drafts prevention function).

④ ALARM LED

This LED flashes to indicate that a system malfunction has occurred. To determine the cause of

malfunction, check Error/Protection Code shown by 2-digit display on Outdoor Unit's PCB.
Normal operation can be restored only after problem has been solved.

⑤ **MANUAL button (Emergency/Test)**

To start the air conditioner in Automatic mode when the remote controller is not available, and to start the Test mode in Cooling operation.

⑥ **Buzzer**

It emits a sound when a signal from IR remote control is received by the Indoor Unit.

⑦ **IR signal receiver**

It permits to receive signals from IR remote control.

5.3 2-digit LED Display on Outdoor Unit's PCB

5.3.1 On Outdoor Unit's main PCB, there is a 2-digit LED Display which is able to show a series of information (see below and further on), as for example:

1. In stand-by (system powered, but not operating), the display shows the number of connected Indoor Units.
2. When compressor is operating, the display shows the operation frequency of compressor (Hz).
3. During automatic defrosting, the display shows "dF" indication.
4. When oil heater of compressor is activated, the display shows "1 1" indication.
5. When a malfunction occurs or a protection function intervenes, the display shows the corresponding Error Code or Protection Code (see "Section 3: Outdoor Units & Troubleshooting" of this Service Manual).

5.4 Query of operation parameters by "SW1" microswitch on Outdoor Unit's PCB

5.4.1 On Outdoor Unit's main PCB, there is a microswitch "SW1", having the function of "CHECK" (reading & checking) of some operation parameters of system. Every time "SW1" microswitch is pressed, the kind of displayed parameter changes in sequence, as it is shown on the following Table.

	Type of displayed parameter	Additional notes
1	Capacity required by Indoor Units	
2	Operation mode of Outdoor Unit	OFF: 0, Cooling: 1, Heating: 2.
3	Required capacity (after correction)	
4	Status of outdoor fan motor	OFF: 0, Low speed: 1, High speed: 2.
5	Evaporator output temp. (I.U. #1)	Actual value
6	Evaporator output temp. (I.U. #2)	Actual value
7	Evaporator output temp. (I.U. #3)	Actual value
8	Evaporator output temp. (I.U. #4)	Actual value
9	Heat exchanger's temp. (Outdoor Unit)	Actual value

	Type of displayed parameter	Additional notes
10	Outdoor air temperature	Actual value
11	Compressor discharge temperature	Actual value
12	Inverter current	Actual value
13	EXV open angle (for I.U. #1)	Actual value x 8
14	EXV open angle (for I.U. #2)	Actual value x 8
15	EXV open angle (for I.U. #3)	Actual value x 8
16	EXV open angle (for I.U. #4)	Actual value x 8
17	Power supply of Outdoor Unit	Actual value
18	Number of connected Indoor Units	Indoor Units can communicate with the Outdoor Unit well.
19	Error Code related to the last anomaly	"00" means there is no malfunction.
20	Power supply frequency (Outdoor Unit)	Actual value
21	Room temperature (I.U. #1)	Actual value
22	Heat exchanger temperature (I.U. #1)	Actual value
23	Room temperature (I.U. #2)	Actual value
24	Heat exchanger temperature (I.U. #2)	Actual value
25	Room temperature (I.U. #3)	Actual value
26	Heat exchanger temperature (I.U. #3)	Actual value
27	Room temperature (I.U. #4)	Actual value
28	Heat exchanger temperature (I.U. #4)	Actual value
29	-	End of "Check" sequence.

5.4.2 Operation frequency of compressor (when compressor is operating)

Display	Frequency of compressor (Hz)
30	30
--	Stand-by
60	60

5.4.3 Operation mode of Outdoor Unit (if SW1 is pressed for the 2nd time)

Display	Operation mode
0	OFF
1	Cooling mode
2	Heating mode

5.4.4 Capacity required by Indoor Units, after correction (if SW1 is pressed for the 3rd time)

Cooling mode

Capacity (Watt)	2000 2500	2000 2500	3000 3800	4500 5000	5000 5500	5500 6100	6100 7000	7000 7500	7500 8000	7500 8000
Display	1	2	3	4	5	6	7	8	9	10

Heating mode

Capacity (Watt)	2000 2500	2000 2500	3000 3800	4500 5000	5500 6100	6100 7000	6100 7000	7000 7500	7500 8000	8000 8900
Display	1	2	3	4	5	6	7	8	9-10	11

Note:

Value in the Table are approximate.

5.4.5 Number of connected Indoor Units (when system is in stand-by)

Display	Number of Indoor Units
1	1
2	2
3	3
4	4

5.4.6 Outdoor air temperature (when SW1 is pressed for the 10th time)

Display	Outdoor air temperature (°C)	Display	Outdoor air temperature (°C)	Display	Outdoor air temperature (°C)
15	-7.5	30	0	44	7
16	-7	31	0.5	45	7.5
17	-6.5	32	1	46	8
18	-6	33	1.5	47	8.5
19	-5.5	34	2	48	9
20	-5	35	2.5	49	9.5
21	-4.5	36	3	50	10
22	-4	37	3.5	51	10.5
23	-3.5	38	4	52	11
24	-3	39	4.5	53	11.5
26	-2	40	5	54	12
27	-1.5	41	5.5	55	12.5
28	-1	42	6	56	13
29	-0.5	43	6.5	57	13.5

Display	Outdoor air temperature (°C)	Display	Outdoor air temperature (°C)	Display	Outdoor air temperature (°C)
58	14	76	23	94	32
59	14.5	77	23.5	95	32.5
60	15	78	24	96	33
61	15.5	79	24.5	97	33.5
62	16	80	25	98	34
63	16.5	81	25.5	99	34.5
64	17	82	26	100	35~40
65	17.5	83	26.5	110	40~45
66	18	84	27	120	45~50
67	18.5	85	27.5	130	50~55
68	19	86	28	140	55~60
69	19.5	87	28.5	150	60~65
70	20	88	29	160	65~70
71	20.5	89	29.5		
72	21	90	30		
73	21.5	91	30.5		
74	22	92	31		
75	22.5	93	31.5		

5.4.7 EXV open angle for Indoor Unit #1 (Unit "A"). This parameter is displayed after that SW1 has been pressed for the 13th time.

The displayed value, multiplied x 8, gives the actual value of EXV open angle.

5.4.8 EXV open angle for Indoor Unit #2 (Unit "B"). This parameter is displayed after that SW1 has been pressed for the 14th time.

The displayed value, multiplied x 8, gives the actual value of EXV open angle.

5.4.9 EXV open angle for Indoor Unit #3 (Unit "C"). This parameter is displayed after that SW1 has been pressed for the 15th time.

The displayed value, multiplied x 8, gives the actual value of EXV open angle.

5.4.10 EXV open angle for Indoor Unit #4 (Unit "D"). This parameter is displayed after that SW1 has been pressed for the 16th time.

The displayed value, multiplied x 8, gives the actual value of EXV open angle.

5.5 Integrated functions of troubleshooting and protection

5.5.1 3-minute delay protection (delayed start of compressor)

It consists in delayed restart of compressor: in case a compressor stop followed by a restart, operation of air conditioner will restart after 3 minutes have elapsed.

5.5.2 Protection for overtemperature on discharge pipe of compressor

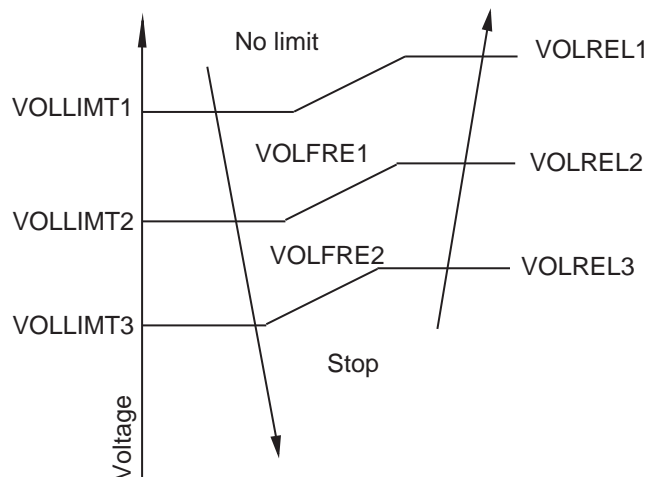
If an increase of temperature value is detected on compressor discharge pipe (T5 sensor), control electronics intervenes according to the detected value, as it is described in the following.

- If $102^{\circ}\text{C} < T5 < 115^{\circ}\text{C}$, compressor frequency is progressively reduced every 2 minutes up to lowest limit of F1 frequency.
- If temperature on compressor discharge pipe is higher than 115°C , and this condition keeps on for at least 10 seconds, compressor is stopped. It can be restarted only when $T5 < 90^{\circ}\text{C}$.
- If $T5 < 90^{\circ}\text{C}$, control electronics applies no limit to compressor's operation frequency.

5.5.3 Protection for too low power supply voltage and frequency on Outdoor Unit

Depending on power supply voltage and frequency on Outdoor Unit, control electronics monitors both values and may intervene till commanding the eventual stop of Outdoor Unit, according to modes which are shown in the following diagram.

The parameters of voltage and frequency for the intervention of the protection function have different values according to every Model of Outdoor Unit. Values of parameters for each Model are listed below thw following diagram.



□ Model HCKU 406 X2

VOLLIMT1 = 220V, VOLLIMT2 = 200V, VOLLIMT3 = 80V
VOLREL1 = 250V, VOLREL2 = 210V, VOLREL3 = 100V VOLFRE1 = 62Hz, VOLFRE2 = 54Hz

□ Model HCKU 536 X2

VOLLIMT1 = 230V, VOLLIMT2 = 200V, VOLLIMT3 = 120V
VOLREL1 = 260V, VOLREL2 = 210V, VOLREL3 = 135V
VOLFRE1 = 62Hz, VOLFRE2 = 54Hz

□ Model HCKU 606 X3

VOLLIMIT1 = 245V, VOLLIMIT2 = 220V, VOLLIMIT3 = 80V
VOLREL1 = 265V, VOLREL2 = 240V, VOLREL3 = 100V
VOLFRE1 = 78Hz, VOLFRE2 = 45Hz

□ Model HCKU 806 X3

VOLLIMIT1 = 245V, VOLLIMIT2 = 220V, VOLLIMIT3 = 120V
VOLREL1 = 265V, VOLREL2 = 240V, VOLREL3 = 135V
VOLFRE1 = 78Hz, VOLFRE2 = 45Hz

□ Model HCKU 706 X4

VOLLIMIT1 = 245V, VOLLIMIT2 = 220V, VOLLIMIT3 = 120V
VOLREL1 = 265V, VOLREL2 = 240V, VOLREL3 = 135V
VOLFRE1 = 78Hz, VOLFRE2 = 45Hz

□ Model HCKU 816 X4

VOLLIMIT1 = 221V, VOLLIMIT2 = 210V, VOLLIMIT3 = 80V
VOLREL1 = 260V, VOLREL2 = 225V, VOLREL3 = 100V
VOLFRE1 = 53Hz, VOLFRE2 = 44Hz

□ Model HCKU 1066 X4

VOLLIMIT1 = 200V, VOLLIMIT2 = 185V, VOLLIMIT3 = 80V
VOLREL1 = 210V, VOLREL2 = 195V, VOLREL3 = 100V
VOLFRE1 = 54Hz, VOLFRE2 = 42Hz

5.5.4 Thermal protection on compressor [excluded Models HCKU 816 X4 & HCKU 1066 X4]

If temperature detected on compressor is too high (more than 120°C), and therefore protection device against overcharge has intervened (with consequent opening of contact), the compressor is stopped. When protection device is restored (closing of contact) - that is as soon as compressor temperature is lower than 105°C - the compressor can restart. In this case too, however, at least 3-minute delay elapses since protection is restored.

5.5.5 Integrated protection functions on Inverter Module (IPM)

IPM Module (*"Intelligent Power Module"*) combines protections referred to current values, voltage values and temperature values. In case of intervention of a function of this kind, the corresponding Protection Code will be shown by LED display (or by display panel) on Indoor Unit and/or by 2-digit LED display on Outdoor Unit's PCB.

5.5.6 Malfunction of temperature sensors (in case of bad connection or interruption of sensor)

Temperature sensors that are monitored by control electronics are the following: T1 (indoor temperature sensor), T2 (heat exchanger temperature sensor of every Indoor Unit), T3 (outdoor temperature sensor) and T4 (heat exchanger temperature sensor on Outdoor Unit).

5.5.7 Malfunction of indoor fan speed

If for at least 60 seconds, fan speed is higher than that foreseen for "High" speed setting, increased by 300rpm, or lower than 400rpm, air conditioner stops because of a malfunction, and normal operation cannot be restored automatically. Concerning HKEU X Multi Liberty Indoor Units, the malfunction will be indicated by the corresponding Error Code, which is shown by LED display on Indoor Unit.

5.5.8 Error in the transmission of data sequences along signal line [HKEU X Multi Liberty only]

If the transmission of signals between HKEU X Indoor Unit and the Outdoor Unit does not occur properly for 4 minutes, the air conditioner stops because of a malfunction and normal operation cannot be restored automatically. The malfunction will be indicated by the corresponding Error Code, on LED display LED of Indoor Unit.

5.5.9 Protection for compressor overcurrent

When compressor current is higher than operation limit value for at least 10 seconds, compressor frequency is subjected to limitations, as it is shown on the following Tables. In case of stop for the intervention of this protection function, this will be indicated by a Protection Code, shown on LED display of Indoor Unit (HKEU X Multi Liberty Models only) or by codified flashing of LED indicators on frontal panel of Indoor Unit (HTFU X, HSFU X, HRBU X Multi Liberty Models). Besides, the corresponding Protection Code will be shown on 2-digit LED display on Outdoor Unit's PCB.

□ In case of operation in Cooling mode:

Current frequency (Hz)	Current limit (A)	Intervention by control electronics
COOL_F10	ICOOLLMT6	Frequency reduction down to "COOL_F4" step; this frequency is kept for 3 minutes. Then, frequency will be increased by 3-minute intervals, starting from "COOL_F4" step - based on the capacity required by system - till reaching upper limit corresponding to the required capacity.
COOL_F9	ICOOLLMT5	
COOL_F8	ICOOLLMT4	
COOL_F7	ICOOLLMT3	
COOL_F6	ICOOLLMT2	
COOL_F5	ICOOLLMT1	
If current frequency is lower than "COOL_F4", frequency will not be subjected to limitations. If within 10 seconds since the start, compressor current is lower than operation upper limit, ("ICOOL"), the corresponding Protection Code will be displayed for 30 seconds and system will be stopped. Operation can restart after 3 minutes have elapsed since the stop occurred.		

□ In case of operation in Heating mode:

Current frequency (Hz)	Current limit (A)	Intervention by control electronics
HEAT_F12	IHEATLMT8	Frequency reduction down to "HEAT_F4" step; this frequency is kept for 3 minutes. Then, frequency will be increased by 3-minute intervals, starting from "HEAT_F4" step - based on the capacity required by system - till reaching upper limit corresponding to the required capacity.
HEAT_F11	IHEATLMT7	
HEAT_F10	IHEATLMT6	
HEAT_F9	IHEATLMT5	
HEAT_F8	IHEATLMT4	
HEAT_F7	IHEATLMT3	
HEAT_F6	IHEATLMT2	
HEAT_F5	IHEATLMT1	
If current frequency is lower than "HEAT_F4", frequency will not be subjected to limitations. If within 10 seconds since the start, compressor current is lower than operation upper limit, ("IHEAT"), the corresponding Protection Code will be displayed for 30 seconds and system will be stopped. Operation can restart after 3 minutes have elapsed since the stop occurred.		

5.5.10 Communication error between Indoor Unit ↔ Outdoor Unit

If for max. 2 minutes one Indoor Unit does not receive any return signal by Outdoor Unit, the corresponding malfunction indication will be shown on Indoor Unit's LED display (HKEU X Models) or on Indoor Unit's display panel (all other Models: HTFU X, HFIU X, HSFU X, HRBU X). This causes the system stop.

5.5.11 Outdoor Unit's heat exchanger overtemperature control, in Cooling mode

If in Cooling mode, outdoor heat exchanger temperature (T3) keeps higher than 65°C for 3 minutes, compressor is stopped. The intervention of protection will end when $T3 < 52^{\circ}\text{C}$. The intervention of protection function will be shown only by 2-digit LED display on Outdoor Unit's PCB.

5.5.12 Outdoor low temperature control, in Heating mode

If outdoor temperature (T4 sensor) keeps lower than -15°C for at least 1 hour, compressor and fan motor on Outdoor Unit are stopped. Then, if outdoor temperature keeps higher than -12°C for at least 10 minutes after the compressor has been stopped for at least 1 hour, or if outdoor temperature is higher than 5°C for at least 10 minutes, the system can be restarted according to the previous operation mode (before the protection intervention). The intervention of protection function will be shown only by 2-digit LED display on Outdoor Unit's PCB.

5.5.13 Antifrost control on Indoor Unit, in Cooling mode (stop of indoor fan)

For HKEU X Models. If temperature detected by T2 sensor on Indoor Unit's heat exchanger keeps $< 4^{\circ}\text{C}$ for 4 minutes and 10 seconds, indoor fan is stopped. The protection intervention will end when $T2 > 8^{\circ}\text{C}$.

For HFIU X Models. If temperature detected by T2 sensor on Indoor Unit's heat exchanger keeps $\leq 4^{\circ}\text{C}$ for 3 minutes, indoor fan is stopped. The protection intervention will end when $T2 > 8^{\circ}\text{C}$.

For HTFU X, HFIU X, HSFU X, HRBU X Models. If temperature detected by T2 sensor on Indoor Unit's heat exchanger keeps $\leq 3^{\circ}\text{C}$ for 3 minutes, indoor fan is stopped. The protection intervention will end when $T2 > 7^{\circ}\text{C}$.

5.5.14 Compressor oil recovering procedure from refrigerant circuit

Conditions for intervention of oil recovering procedure. If for 2 hours, operation frequency of compressor keeps lower than "RECOILNFRE" value (for Outdoor Unit HCKU 1066 X4: 45Hz; for all other Models of Outdoor Unit: 50Hz) set out by Manufacturer, control electronics will decide an increase in operation frequency up to "RECOILFRE" value (for Outdoor Unit HCKU 1066 X4: 48Hz; for all other Models: 62Hz) set out by Manufacturer. This increase in frequency will last for 3 minutes and at the end of this interval the previous operation frequency will be restored. Outline of oil recovery procedure. During the 3-minute procedure for oil recovery, opening of EXV valves for Indoor Units and current operation mode are kept. Limitations of operation frequency due to monitoring of compressor discharge temperature and compressor current value are deactivated.

Advance stop of oil recovery procedure. If outdoor temperature (T4 sensor) is more than 15°C during oil recovery procedure, it is stopped.

5.5.15 Oil heater of compressor

Outline of function. By an electric resistance placed at the bottom of compressor, compressor oil is pre-heated and refrigerant eventually mixed to oil is vaporized.

Conditions for intervention of function. This function intervenes if outdoor air temperature (T4 sensor) is $< 3^{\circ}\text{C}$ and the system has recently been powered again, or if outdoor air temperature (T4 sensor) is $> 3^{\circ}\text{C}$ and compressor has been stopped for more than 3 hours.

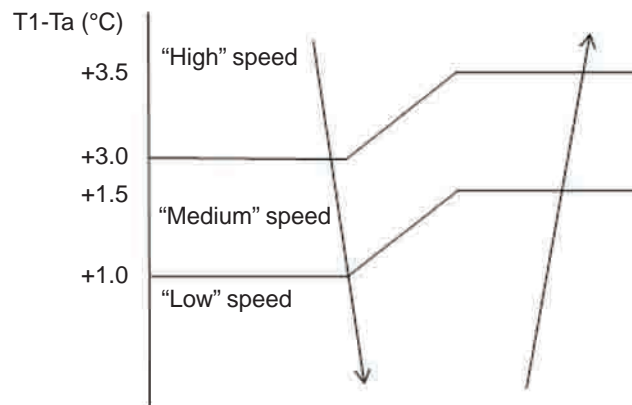
Deactivation of function. The intervention of function deactivates if outdoor air temperature (T4 sensor) is $> 5^{\circ}\text{C}$ or if system is started (ON) and compressor starts.

5.6 Operation in Fan mode ("FAN")

- In this operation mode, compressor and fan of Outdoor Unit are stopped.
- In this operation mode, it is possible to set fan speed on Indoor Unit by selecting among the following options: "High", "Med", "Low", "Auto".
- In this operation mode, compressor and fan of Outdoor Unit are stopped.
- In this operation mode, operation of air outlet motorized flaps is the same as for operation in Cooling mode.

5.6.1 Automatic control of fan speed (HFIU X Models) in Fan mode ("FAN")

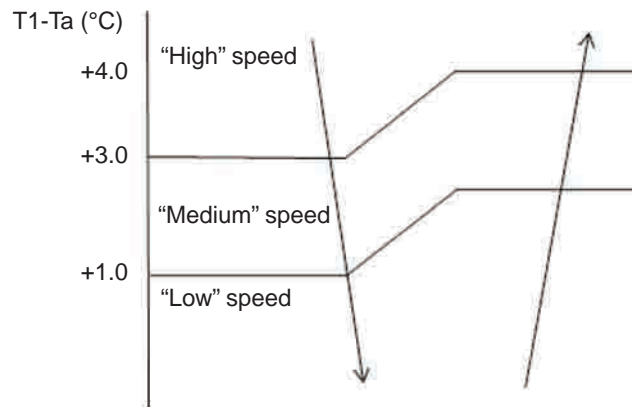
This function is illustrated in the following diagram.



Briefly, according to changes of temperature detected inside the room (T1), as regards temperature fixed by control electronics ($T_a = 24^{\circ}\text{C}$), it occurs the following:

- If $(T1 - T_a) \leq 3^{\circ}\text{C}$, indoor fan speed changes from "High" to "Medium".
- If $(T1 - T_a) \leq 1^{\circ}\text{C}$, indoor fan speed changes from "Medium" to "Low".
- If $(T1 - T_a) > 1.5^{\circ}\text{C}$, indoor fan speed changes from "Low" to "Medium".
- If $(T1 - T_a) > 3.5^{\circ}\text{C}$, indoor fan speed changes from "Medium" to "High".

5.6.2 Automatic control of fan speed (HKEU X, HTFU X, HSFU X, HRBU X Models) in Fan mode (“FAN”). This function is illustrated in the following diagram.



Briefly, according to changes of temperature detected inside the room (T1), as regards temperature fixed by control electronics (Ta = 24°C for HKEU X Models; Ta = 23°C for HTFU X, HSFU X, HRBU X Models), it occurs the following:

- If $(T1 - Ta) \leq 3^\circ\text{C}$, indoor fan speed changes from “High” to “Medium”.
- If $(T1 - Ta) \leq 1^\circ\text{C}$, indoor fan speed changes from “Medium” to “Low”.
- If $(T1 - Ta) > 1.0^\circ\text{C}$, indoor fan speed changes from “Low” to “Medium”.
- If $(T1 - Ta) > 4.0^\circ\text{C}$, indoor fan speed changes from “Medium” to “High”.

5.7 Operation in Cooling mode (“COOL”)

5.7.1 In this operation mode, it possible to set fan speed on Indoor Unit among the following options: “High”, “Med”, “Low”, “Auto”.

For HFIU X Multi Liberty Indoor Units only, the 4th step of fan speed (“S-Hi” (Super-High) or “U-Hi” (“Ultra-High”) can be selected, by “SW103” dip-switches on dedicated micro-PCB of Indoor Unit. This speed setting is active in “Powerful” mode.

5.7.2 If “Auto” setting is selected, fan speed is automatically selected by control electronics, according to the difference between temperature (T1) detected inside the room and temperature (Ts) set by remote control, as it is illustrated in the following Table and diagrams.

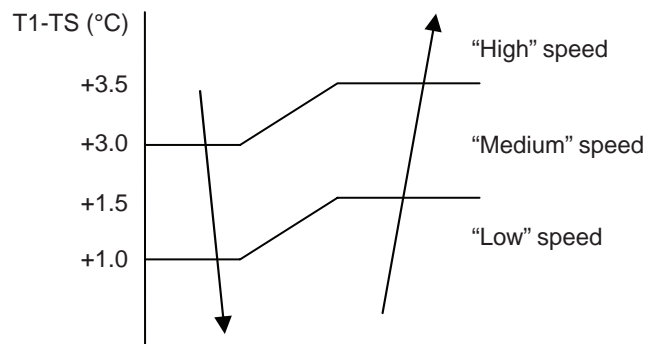
□ HKEU X Models

(T = T1 - Ts)

	Condition	Indoor fan speed
In case of increase in temperature (T1) inside the room	$T < 1.5^\circ\text{C}$	“Low”
	$1.5^\circ\text{C} < T < 4^\circ\text{C}$	“Med”
	$T > 4^\circ\text{C}$	“High”
In case of decrease of temperature (T1) inside the room	$T > 3^\circ\text{C}$	“High”
	$1^\circ\text{C} < T < 3^\circ\text{C}$	“Med”
	$T < 1^\circ\text{C}$	“Low”

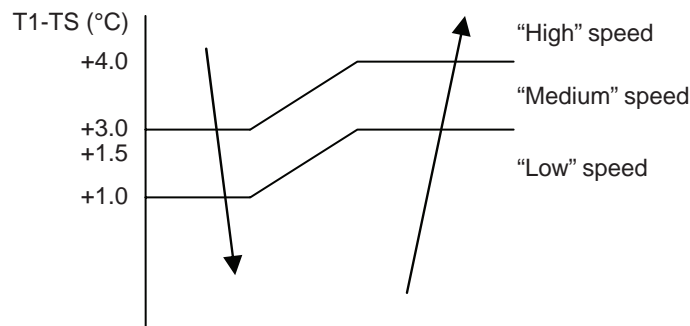
T1 = temperature detected inside the room. Ts = temperature set by remote control.

□ HFIU X Models



T1 = temperature detected inside the room. Ts = temperature set by remote control.

□ HTFU X, HSFU X, HRBU X Models



T1 = temperature detected inside the room. Ts = temperature set by remote control.

5.7.3 Antifrost prevention control of Indoor Unit's heat exchanger, in Cooling mode

The intervention of protection causes the compressor stop (OFF), if the condition shown in the following Table occurs.

(T2 = Temperature of Indoor Unit's heat exchanger)

Models of Indoor Units	Conditions	Operation status of compressor
HKEU X	T2 < 4°C	OFF
	T2 > 8°C	ON
HFIU X	T2 < 4°C	OFF
	T2 > 8°C	ON
HTFU X, HSFU X, HRBU X	T2 < 3°C	OFF
	T2 > 7°C	ON

5.8 Operation in Dehumidifying mode ("DRY")

5.8.1 In Dry mode, fan speed is set to "Low" and cannot be modified by the User.

5.8.2 Protection in case of low temperature inside the room

If temperature (T1) inside the room is lower than 10°C, indoor fan is stopped and normal operation will be restored only after room temperature has reached a value of at least 12°C.

5.8.3 Frost prevention function of Indoor Unit's heat exchanger, in Dry mode

The conditions for intervention/restoring of frost prevention function are the same as those already described concerning operation in Cooling mode (see the previous page).

5.9 Operation in Heating mode ("HEAT")

5.9.1 Indoor fan speed control

In this mode, it is possible to set Indoor Unit's fan speed by selecting among the following options: "High", "Med", "Low", "Auto".

For HFIU X Multi Liberty Indoor Units only, the 4th step for fan speed - "S-Hi" (Super-High) or "U-Hi" ("Ultra-High") - can be selected by "SW103" dip-switches on dedicated micro-PCB of Indoor Unit. This speed setting is active in "Powerful" mode.

5.9.2 Anticold air draft prevention control, at start in Heating mode

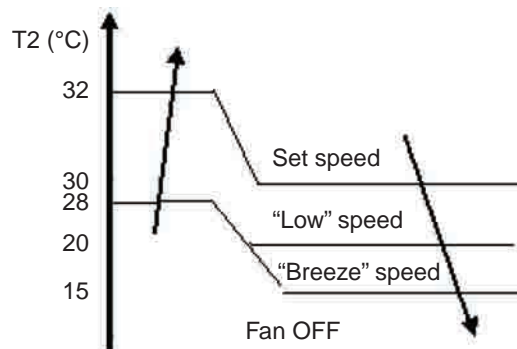
At start, this function has priority as regards speed setting by remote control. In fact, fan speed is controlled depending on T2 temperature, detected on Indoor Unit's heat exchanger, as it is shown on the following Tables and diagrams.

□ HKEU X Models

(T2 = Temperature of Indoor Unit's heat exchanger)

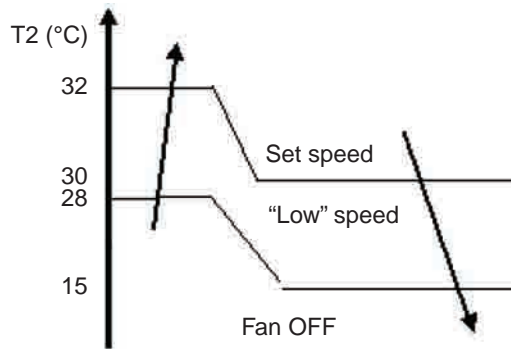
	Conditions	Indoor fan speed
If heat exchanger's temperature (T2) tends to increase	T2 < 34°C	OFF
	34°C < T2 < 37°C	"Breeze"
	37°C < T2 < 44°C	"Low"
	T2 > 44°C	Set speed
If heat exchanger's temperature (T2) tends to decrease	T2 > 38°C	Set speed
	33°C < T2 < 38°C	"Low"
	24°C < T2 < 33°C	"Breeze"
	T2 < 24°C	OFF

□ HFIU X Models



T2 = temperature of Indoor Unit's heat exchanger.

□ HTFU X, HSFU X, HRBU X Models



T2 = temperature of Indoor Unit's heat exchanger.

5.9.2 Automatic control of fan speed, in Heating mode

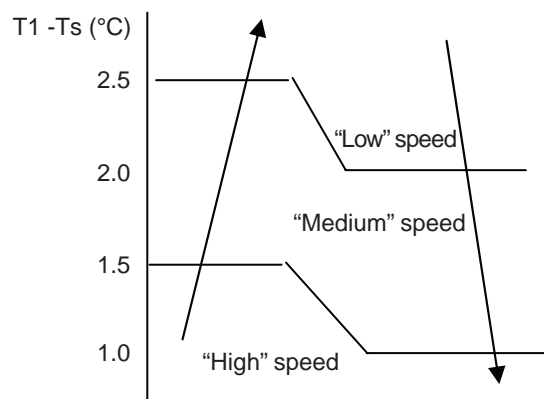
If "Auto" mode is selected, indoor fan speed is automatically selected by control electronics, according to the difference between temperature (1) detected inside the room and temperature (Ts) set by the User, as it is shown in the following Table and diagrams.

□ HKEU X Models

$(T = T1 - Ts)$

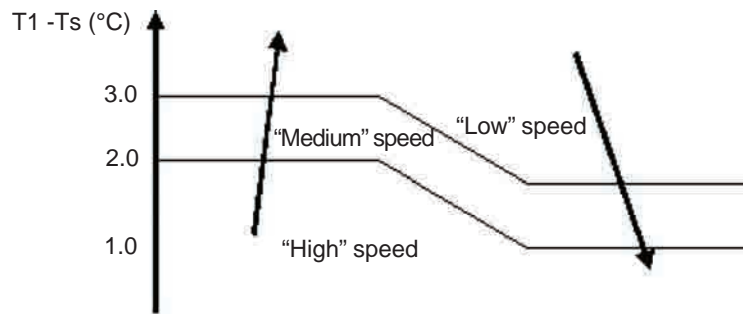
	Condition	Indoor fan speed
In case of increase in room temperature (T1)	$T < 1.5^{\circ}\text{C}$	"High"
	$1.5^{\circ}\text{C} < T < 2.5^{\circ}\text{C}$	"Med"
	$T > 2.5^{\circ}\text{C}$	"Low"
In case of decrease of room temperature (T1)	$T > 2^{\circ}\text{C}$	"Low"
	$1^{\circ}\text{C} < T < 2^{\circ}\text{C}$	"Med"
	$T < 1.0^{\circ}\text{C}$	"High"

□ HFIU X Models



T1 = temperature detected inside the room. Ts = temperature set by remote control.

□ HTFU X, HSFU X, HRBU X Models



T1 = temperature detected inside the room. Ts = temperature set by remote control.

5.9.3 Indoor heat exchanger overtemperature control, in Heating mode

The following Tables show the conditions and intervention modes of protection and the restoring conditions when the protection intervention ends.

□ HKEU X Models

(T2 = Temperature of Indoor Unit's heat exchanger)

Conditions	Operation status of compressor
$T2 < 48^{\circ}\text{C}$	ON
$53^{\circ}\text{C} < T2 < 63^{\circ}\text{C}$	Reduction of operation frequency
$T2 > 63^{\circ}\text{C}$	OFF

□ HFIU X Models

(T2 = Temperature of Indoor Unit's heat exchanger)

Conditions	Operation status of compressor
$T2 < 54^{\circ}\text{C}$	ON
$54^{\circ}\text{C} < T2 < 63^{\circ}\text{C}$	Reduction of operation frequency
$T2 > 63^{\circ}\text{C}$	OFF

□ HTBU X, HSFU X, HRBU X Models

(T2 = Temperature of Indoor Unit's heat exchanger)

Conditions	Operation status of compressor
$T2 < 48^{\circ}\text{C}$	ON
$48^{\circ}\text{C} < T2 < 60^{\circ}\text{C}$	Reduction of operation frequency
$T2 > 60^{\circ}\text{C}$	OFF

5.9.4 Indoor heat exchanger's overheating prevention control (thermostatic OFF) in Heating mode.

For HFIU X Models, during thermostatic OFF in Heating mode, indoor fan will run at "Low" speed to prevent overheating of Indoor Unit's heat exchanger.

5.10 Automatic defrosting (during operation in Heating mode)

5.10.1 Conditions for start of automatic defrosting

Automatic defrosting starts when Outdoor Unit's heat exchanger temperature (T4) has been lower than -2°C for more than 40 minutes.

5.10.2 Conditions for end of automatic defrosting

Defrosting procedure ends, and normal operation in Heating mode is restored, when at least one of the following conditions occurs:

- a. Defrosting has already lasted for 10 minutes.
- b. Heat exchanger's temperature (T4) has reached a value of at least 15°C.

5.10.3 Operation of main components during defrosting

- a. Compressor is operating.
- b. 4-way valve switches over to OFF (position for operation in Cooling mode).
- c. Outdoor Unit's fan is stopped (OFF).
- d. Fan operation on every Indoor Unit is controlled when anticold air drafts prevention control is active, as it has previously described.

5.11 Operation in Auto mode ("AUTO")

5.11.1 Concerning Auto mode, control electronics automatically selects the most suitable operation mode, by choosing among "COOL", "HEAT" or "FAN" according to the difference between temperature (T1) inside the room and temperature (Ts) set by the User, as it is shown in the following Tables.

5.11.2 Indoor fan will run according to "AUTO" setting, relevant to operation mode selected by control electronics, as it has already been described previously.

5.11.3 Air outlet motorized flaps will be controlled according to operation mode selected by control electronics.

□ HKEU X Models

Temperature differential T1 - Ts	Operation mode
T1 - Ts > 2°C	Cooling
-1°C T1 - Ts 2°C	Fan
T1 - Ts < -1°C	Heating

□ HFIU X Models

Temperature differential $ T1 - Ts $	Operation mode
$ T1 - Ts > 1^{\circ}\text{C}$	Cooling
$-1^{\circ}\text{C} < T1 - Ts \leq 1^{\circ}\text{C}$	Fan
$ T1 - Ts \leq -1^{\circ}\text{C}$	Heating

□ HTBU X, HSFU X, HRBU X Models

Temperature differential $ T1 - Ts $	Operation mode
$ T1 - Ts > 2^{\circ}\text{C}$	Cooling
$-1^{\circ}\text{C} \leq T1 - Ts \leq 2^{\circ}\text{C}$	Fan
$ T1 - Ts \leq -1^{\circ}\text{C}$	Heating

5.11.4 In case of automatic switching from Heating mode to Cooling mode, compressor will stop for 15 minutes before confirming new selection of operation mode, estimating again the temperature differential between T1 and Ts.

5.11.5 Each time set temperature value is modified (Ts), control electronics will select operation mode again, always on the basis of temperature differential between T1 and new value of Ts.

5.12 Operation by Emergency/Test Button

□ HKEU X Models (AUTO/COOL button)

5.12.1 Emergency operation in "AUTO" mode:

If Remote Control is not available or batteries are exhausted, it is possible to operate the air conditioner by pressing "AUTO/COOL" button once when system is OFF. In this way, Emergency operation in "AUTO" (Automatic) mode will be started, and the air conditioner will operate in the most suitable way according to room temperature conditions, with temperature set to 24°C.

5.12.2 Test of air conditioner in Cooling mode "(COOL)":

When system is OFF, press "AUTO/COOL" button twice. In this way, operation in Test mode will be started. System will operated in forced Cooling mode ("COOL"), with fan speed set to "LOW". For 30 minutes, room temperature will not be detected, but protection functions will remain active. Then, operation will go on in "AUTO" (Automatic) mode, with temperature set to 24°C.

Note 1: Do not use Test mode for normal operation of Air Conditioner.

5.12.3 End of Emergency or Test operation of air conditioner:

Press "AUTO/COOL" button twice during Emergency Operation, or press it once during Test mode: operation of system will be stopped (OFF).

Note 2: It is sufficient to use IR Remote Control at any moment to restore normal operation of system.

□HTFU X Models (“MANUAL” button)**5.12.4 Emergency Operation in “AUTO” mode:**

If Remote Control is not available or batteries are exhausted, it is possible to operate the air conditioner by pressing “MANUAL” button once when system is OFF. In this way, Emergency operation in “AUTO” (Automatic) mode will be started and the air conditioner will operate in the most suitable mode according to room temperature conditions, with temperature set to 24°C.

5.12.5 Test of air conditioner in Cooling mode “(COOL)”:

When system is OFF, press “MANUAL” button twice. In this way, operation in Test mode will be started. System will operate in forced Cooling mode (“COOL”), with fan speed set to “LOW”. For 30 minutes, room temperature will not be detected, but protection functions will remain active. Then, operation will go on in “AUTO” (Automatic) mode, with temperature set to 24°C.

Note 1: Do not use Test mode for normal operation of Air Conditioner.

5.12.6 End of Emergency or Test operation of air conditioner:

Press “MANUAL” button twice during Emergency Operation or press it once during Test mode: operation of system will be stopped (OFF).

Note 2: It is sufficient to use IR Remote Control at any moment to restore normal operation of system.

□HFIU X Models (“MANUAL” button)**5.12.7 Emergency Operation in “AUTO” mode:**

If Remote Control is not available or batteries are exhausted, it is possible to operate the air conditioner by pressing “MANUAL” button once when system is OFF. In this way, Emergency operation in “AUTO” (Automatic) mode will be started, and the air conditioner will operate in the most suitable mode according to the room temperature conditions, with temperature set to 24°C.

5.12.8 Test of air conditioner in Cooling mode “(COOL)”:

When system is OFF, press “MANUAL” button twice. In this way, operation in Test mode will be started. System will operate in forced Cooling mode (“COOL”), with fan speed set to “LOW”. For 30 minutes, room temperature will not be detected, but protection functions will remain active. Then, operation will go on in “AUTO” (Automatic) mode, with temperature set to 24°C.

Note 1: Do not use Test mode for normal operation of Air Conditioner.

5.12.9 End of Emergency operation or Test mode of air conditioner:

Press “MANUAL” button twice during Emergency Operation or press it once during Test mode: operation of system will be stopped (OFF).

Note 2: It is sufficient to use IR remote control at any moment to restore normal operation of system.

□HSFU X Models (“MANUAL” button)**5.12.10 Emergency Operation in “AUTO” mode:**

If Remote Control is not available or batteries are exhausted, it is possible to operate the air conditioner

by pressing “MANUAL” button once when system is OFF. In this way, Emergency operation in “AUTO” (Automatic) mode will be started, and the air conditioner will operate in the most suitable mode according to room temperature conditions, with temperature set to 24°C.

5.12.11 Test of air conditioner in Cooling mode “(COOL)”:

When system is OFF, press “MANUAL” button twice. In this way, operation in Test mode will be started. System will operate in forced Cooling mode (“COOL”), with fan speed set to “HIGH”. For 30 minutes, room temperature will not be detected, but protection functions will remain active. Then, operation will go on in “AUTO” (Automatic) mode, with temperature set to 24°C.

Note 1: Do not use Test mode for normal operation of Air Conditioner.

5.12.12 End of Emergency operation and Test mode of air conditioner:

Press “MANUAL” button during Emergency Operation or press it once during Test mode: operation of system will be stopped (OFF).

Note 2: It is sufficient to use IR remote control at any moment to restore normal operation of system.

□HRBU X Models (“MANUAL” button)

5.12.13 Emergency Operation in “AUTO” mode:

If Remote Control is not available or batteries are exhausted, it is possible to use air conditioner by pressing “MANUAL” button once when system is OFF. In this way, Emergency operation in “AUTO” (Automatic) mode will be started, and the air conditioner will operate in the most suitable mode according to room temperature conditions, with temperature set to 24°C.

5.12.14 Test of air conditioner in Cooling mode “(COOL)”:

When system is OFF, press “MANUAL” button twice. In this way, operation in Test mode will be started. System will operate in forced Cooling mode (“COOL”), with fan speed set to “HIGH”. For 30 minutes, room temperature will not be detected, but protection functions will remain active. Then, operation will go on in “AUTO” (Automatic) mode, with temperature set to 24°C.

Note 1: Do not use Test mode for normal operation of Air Conditioner.

5.12.15 End of Emergency operation or Test mode of air conditioner:

Press “MANUAL” button twice during Emergency Operation or press it once during Test mode: operation of system will be stopped (OFF).

Note 2: It is sufficient to use remote control at any moment to restore normal operation of system.

5.13 Operation with “TIMER”

□HKEU X Models

5.13.1 Max. time interval that can be programmed for Timer function is of 24 hours. If programmed time is 0.5 hours to 10.0 hours, setting is made by 30-minute steps.

If programmed time is 10.0 hours to 24.0 hours, setting is made by 60-minute steps.

5.13.2 Programmed settings follow a simple timer, as remote control has no current time setting function (real time clock).

5.13.3 "TIMER ON" function. When system is OFF, it will be restarted (ON) after programmed set time has elapsed.

5.13.4 "TIMER OFF" function. When system is ON, it will be stopped (OFF) after programmed set time has elapsed.

5.13.5 "TIMER ON-OFF" function. When system is OFF, it will be restarted (ON) after programmed set time has elapsed; then, the system will be stopped (OFF) after programmed set time has elapsed.

5.13.6 "TIMER OFF-ON" function. When system is ON, it will be stopped (OFF) after programmed set time has elapsed; then, the system will be restarted (ON) after programmed set time has elapsed.

Note: The approximation degree in elapsed time calculation is of 1 minute each hour of Timer setting.

Important: for right carrying out of "TIMER" operations, it is needed that IR remote control is always positioned within max. 8 metres as regards Indoor Unit.

□HTFU X & HRBU X Models

5.13.7 Max. time interval that can be programmed for Timer function is of 24 hours. Setting is made by 10-minute steps.

5.13.8 Programmed settings occur on the basis of a real time clock, that displays current time. Therefore, first of all it is absolutely necessary to set current time, before carrying out Timer settings.

5.13.9 "TIMER ON" function. When system is OFF, it will be restarted (ON) as soon as programmed set time is reached.

5.13.10 "TIMER OFF" function. When system is ON, it will be stopped (OFF) as soon as programmed set time is reached.

5.13.11 "TIMER ON-OFF" function. When system is OFF, it will be restarted (ON) as soon as programmed set time is reached; then, system will be stopped (OFF) as soon as programmed set time is reached.

5.13.12 "TIMER OFF-ON" function. When system is ON, it will be stopped (OFF) as soon as programmed set time is reached; then, system will be restarted (ON) as soon as programmed set time is reached.

Important: for right carrying out of "TIMER" operations, it is necessary that IR remote control is always positioned within max. 8 metres as regards Indoor Unit.

□HFIU X Models

5.13.13 Max. time interval that can be programmed for Timer function is of 24 hours. If programmed time is 0.5 hours to 12.0 hours, setting is made by 30-minute steps.

If programmed time is 12.0 hours to 24.0 hours, setting is made by 60-minute steps.

5.13.14 Programmed settings follow a simple timer, as remote control has no current time setting function (real time clock).

5.13.15 "TIMER ON" function. When system is stopped (OFF), it will be restarted (ON) after programmed set time has elapsed.

5.13.16 "TIMER OFF" function. When system is ON, it will be stopped (OFF) after programmed set time has elapsed.

5.13.17 "TIMER ON-OFF" function. When system is OFF, it will be restarted after programmed set time has elapsed; then, system will be stopped (OFF) after programmed set time has elapsed.

5.13.18 "TIMER OFF-ON" function. When system is ON, it will be stopped (OFF) after programmed set time has elapsed; then, system will be restarted (ON) after programmed set time has elapsed.

Note: The approximate degree in elapsed time calculation is of 1 minute each hour of Timer setting.

Important: for right carrying out of "TIMER" operations, it is needed that IR remote control is always positioned within max. 8 metres as regards Indoor Unit.

□HSFU X Models

5.13.19 Max. time interval that can be programmed for Timer function is of 24 hours. If programmed time is 0.5 hours to 12.0 hours, setting is made by 30-minute steps.

If programmed time is 12.0 hours to 24.0 hours, setting is made by 60-minute steps.

5.13.20 Programmed settings occur on the basis of a real time clock, that displays current time. Therefore, first of all it is absolutely necessary to set current time, before carrying out Timer settings.

5.13.21 "TIMER ON" function. When system is OFF, it will be restarted (ON) as soon as programmed set time is reached.

5.13.22 "TIMER OFF" function. When system is ON, it will be stopped (OFF) as soon as programmed set time is reached.

5.13.23 "TIMER ON-OFF" function. When system is OFF, it will be restarted (ON) as soon as programmed set time is reached; then, system will be stopped (OFF) as soon as programmed set time is reached.

5.13.24 "TIMER OFF-ON" function. When system is ON, it will be stopped (OFF) as soon as programmed set time is reached; then, system will be restarted (ON) as soon as programmed set time is reached.

Important: for right carrying out of "TIMER" operations, it is needed that IR remote control is always positioned within max. 8 metres as regards Indoor Unit.

5.14 "SLEEP" function for Energy Saving operation [HKEU X Models only]

5.14.1 "SLEEP" function is available in the following operation modes: Cooling mode, Heating mode and Auto mode. It can be activated by pressing the special button ("SLEEP") on IR remote control.

5.14.2 "SLEEP" in Cooling mode. During the first 2 hours, set temperature is increased by 1°C

every hour. At the end of this time, operation goes on for 5 hours with constant set temperature, and indoor fan speed is set to "LOW". After 7 hours since "SLEEP" function was selected, Indoor Unit automatically stops (OFF).

5.14.3 "SLEEP" in Heating mode. During the first 2 hours, set temperature is reduced by 1°C each hour. At the end of this time, operation goes on for 5 hours with constant set temperature, and indoor fan speed is set to "LOW", however anticold air drafts prevention function (with fan operating at "Breeze" - that is reduced - speed) has the priority. After 7 hours since "SLEEP" function was selected, Indoor Unit automatically stops (OFF).

5.14.4 "SLEEP" in Auto mode. After 1 hour of operation since "SLEEP" function was activated, if control electronics had selected operation in Cooling mode, set temperature is increased by 1°C; if control electronics has selected operation in Heating mode, after 1 hour of operation since "SLEEP" function was activated, set temperature is reduced by 1°C; if control electronics has selected operation in Fan mode, set temperature will not be changed; during the second hour of operation since "Sleep" function was activated, operation of system will not be modified and set temperature will not be changed.

5.14.5 "Sleep" function has a fixed and not modifiable duration of 7 hours, at the end of which "Sleep" function will be automatically deactivated. If you desire to deactivate "SLEEP" function in advance, it will be sufficient to press "SLEEP" button on remote control while "SLEEP" function is active.

5.14.6 If "SLEEP" function and "TIMER OFF" operation overlap, the remaining time of "SLEEP" function will be cancelled at the end of "TIMER OFF" operation (Indoor Unit's stop), if "TIMER OFF" setting exceeds 7 hours; if on the contrary, "TIMER OFF" setting is less than 7 hours, the remaining time of "SLEEP" function will be kept even after the end of "TIMER OFF" operation, up to default duration of 7 hours, at the end of which Indoor Unit will stop (OFF).

5.15 "ECO" function for Energy Saving operation [Models different from HKEU X]

5.15.1 "ECO" function is available in the following operation modes: Cooling mode, Heating mode and Auto mode. It can be activated by pressing the special button ("ECONOMIC RUNNING" for HTFU X & HRBU X Models; "ECONOMIC" for HFIU X Models; "ECO" for HSFU Models) on IR remote control.

5.15.2 Concerning all Models of Indoor Units mentioned above, indoor fan speed is set to "LOW". This allows to reduce noise level from Indoor Unit and electricity consumption, but volume of treated air decreases and consequently necessary time increases for reaching the required degree of comfort. Therefore, "ECO" function must not be activated if thermal charge inside the room is already high.

5.16 Operation in "POWERFUL" mode [HFIU X Models]

5.16.1 "POWERFUL" mode is available in the following operation modes: Cooling mode and Heating

mode. It can be activated by the special button (“POWERFUL”) on IR remote control provided with this Models of Indoor Unit.

5.16.2 Indoor fan speed is set to “S-Hi” (“Super-High”) or to “U-Hi” (“Ultra-High”), that is to the 4th (higher) step of fan speed, according to the setting of 2 dip-switches “SW103” placed on dedicated micro-PCB of Indoor Unit.

5.16.3 “POWERFUL” function allows to reduce necessary time to reach the required degree of comfort, as it increases the volume of treated air. However, this increases noise level from Indoor Unit and electricity consumption is increased as well. Therefore, “POWERFUL” function must be activated only if thermal charge inside the room is already very high. It must also be considered that a sudden decrease of room temperature - especially in small rooms - is not advised as it exposes people to a danger for their health.

5.16.4 The default duration - not modifiable - of operation in “POWERFUL” mode is of 15 minutes. At the end of this time, Indoor Unit’s fan will run again according to previous speed set before activation of “POWERFUL” function.

5.17 Operation in “TURBO” mode [HKEU X Models]

5.17.1 “TURBO” function is available only when Indoor Unit is operating in Cooling mode. It can be activated by pressing the special button (“TURBO”) on IR remote control provided with this Models of Indoor Unit.

5.17.2 Indoor fan speed is automatically set to “HIGH”.

5.17.3 “TURBO” function allows to reduce necessary time to reach the required degree of comfort, as it increases the volume of treated air. However, this increases noise level from Indoor Unit and electricity consumption is increased as well. Therefore, “TURBO” function must be activated only if thermal charge inside the room is already very high. It must also be considered that a sudden decrease of room temperature - especially in small rooms - it is not advised as it exposes people to a danger for their health.

5.17.4 The default duration - not modifiable - of operation in “TURBO” function is of 30 minutes. At the end of this time, Indoor Unit’s fan will run again according to previous speed set before activation of “TURBO” function.

5.18 Conflict because of not compatible operation modes among Indoor Units of system

5.18.1 Concerning these systems, simultaneous operation in Cooling and Heating mode of Indoor Units connected to the same Outdoor Unit is not allowed.

Heating mode has always the priority over the other operation modes.

5.18.2 The Table on the following page shows survey of compatible operation modes (“YES” indication on the Table) for Indoor Units which are connected to the same Outdoor Unit; the Table also shows not compatible operation modes (“NO” indication) for Indoor Units that are connected to the same Outdoor Unit.

	Cooling	Heating	Fan	OFF
Cooling	YES	NO	YES	YES
Heating	NO	YES	NO	YES
Fan	YES	NO	YES	YES
OFF	YES	YES	YES	YES

5.18.3 Some examples of operation in case of operation modes' conflict

- a. If one or more Indoor Units are operating in Cooling or Fan mode, and operation in Heating mode is selected on at least one Indoor Unit of the same system, the Indoor Unit operating in Cooling or Fan mode will get to stand-by status. System's Outdoor Unit will start operating in Heating mode, as Heating mode has always the priority over the other operation modes.
- b. However, if all Indoor Units operating in Heating mode are stopped (OFF), the system's Indoor Unit(s) in stand-by (see above) can restart in Cooling or Fan mode.
- c. If one or more Indoor Units of system are operating in Heating mode, and operation in Cooling or Fan mode is selected on at least one Indoor Unit of system, the Indoor Units operating in Heating mode keeps on operating regularly, while the other Indoor Units keeps in stand-by. The Outdoor Unit will keep on operating in Heating mode, as Heating mode has always the priority over the other operation modes.
- d. The above Table shows that Fan mode of one or more Indoor Units is compatible with operation in Cooling mode of the other Indoor Units; however, Fan mode is not compatible with operation in Heating mode of one or more Indoor Units of the same system.

5.19 Automatic auto-restart after a blackout

5.19.1 This function requires the presence of a special restart module, which is pre-installed on Indoor Units of these systems.

As it has already been shown, (see "Section 1: General Information" of this Service Manual), the system is able to restart automatically with the previous settings before the blackout.

5.19.2 Automatic restart will take place after a 3-minute delay since power supply is restored.

5.19.3 However, "TIMER" and "SLEEP" settings (for HKEU X Multi Liberty Models only) will be cancelled, so they must be set again by the User when power supply is restored.

5.19.4 In the same way, automatic swinging ("SWING") of air outlet flaps - if it was active when the blackout occurred - must be selected again by the User after power supply is restored.

5.20 Troubleshooting functions of system's malfunctions

5.20.1 The codified indications referred to malfunctions or to protection functions' interventions of Indoor and Outdoor Units of each system are shown in "Section 3: Outdoor Units & Troubleshooting" of this Service Manual.

Multi Liberty DC Inverter



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