



TM_PA400_R410A_ONOFF_CE_NA_2208

FLOOR STANDING R410A 50HZ ONOFF CONTROL

TECHNICAL MANUAL

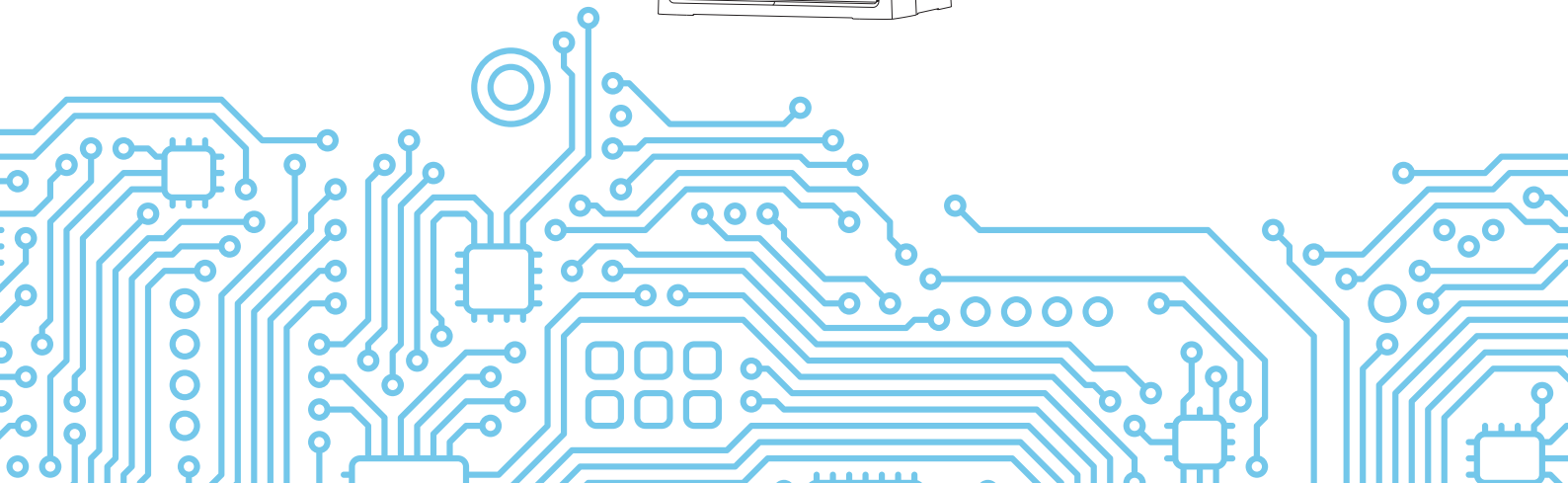
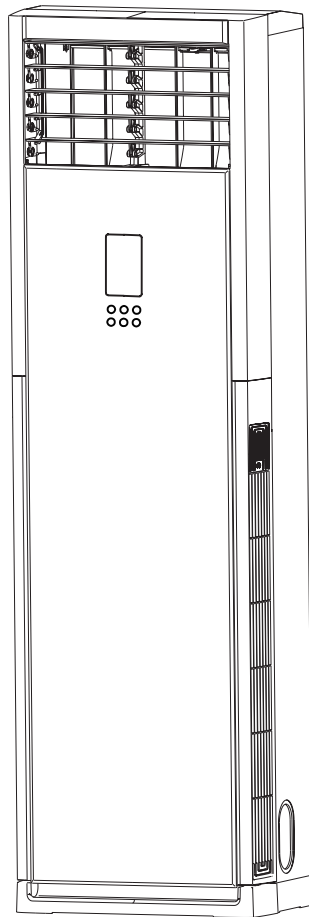


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Specifications

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1. Model Reference

Refer to the following table to determine the specific indoor and outdoor unit model number of your purchased equipment.

Indoor Unit Model	Outdoor Unit Model	Capacity (Btu/h)	Power Supply
MFPA-24ARN1-QB6	MOX430-24HN1-QB6	24k	1Phase, 220-240V~, 50Hz

2. General Specifications

Indoor Model		MFTGA-36CRN1-QC1W		
Outdoor Model		MOTDUL-36CN1-QC1W		
Power supply	V-Hz-Ph	220-240-1-50		
Rated Power Input	W	5500		
Rated Current	A	25.0		
Starting current	A	54.9		
Compressor	Model	KTG275V2VMP		
	Type	ROTARY		
	Brand	GMCC		
	Capacity	Btu/h	8470	
	Input	W	2015	
	Rated current(RLA)	A	9.2	
	Locked rotor Amp(LRA)	A	55	
	Thermal protector		----	
	Thermal protector position		INTERNAL	
	Capacitor	uF	65.0	
Refrigerant oil/oil charge	ml	VG74 750ml		
Indoor fan motor	Model	YKT-65-8-6-3		
	Type	AC		
	Input	W	153	
	Output	W	65	
	Capacitor	uF	4.5	
	Speed(Hi/Mi/Lo)	r/min	540/460/400/350	
Indoor coil	a.Number of rows	2.0		
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	
	c.Fin spacing	mm	1.4	
	d.Fin type (code)		Hydrophilic aluminium	
	e.Tube outside dia.and type	mm	Φ7,innergroove tube	
	f.Coil length x height x width	mm	735x405x26.74	
	g.Number of circuits		6	
Indoor air flow (Turbo/Hi/(Mi)/Lo)		m ³ /h	910/0/800	
Indoor noise level (Turbo/Hi/(Mi)/Lo)		dB(A)	47/0/40	
Indoor unit	Dimension(W*D*H)	mm	510x315x1750	
	Packing (W*D*H)	mm	1905x610x400	
	Net/Gross weight	kg	38.4/46.1	
Outdoor fan motor	Model	YKT-60-6-21		
	Type	AC		
	Input	W	58	
	Output	W	60	
	Capacitor	uF	5	
	Speed	r/min	850	
Outdoor coil	a.Number of rows	YKT-60-6-21		
	b.Tube pitch(a)x row pitch(b)	mm	21x13.37	
	c.Fin spacing	mm	1.4	
	d.Fin type (code)		Hydrophilic aluminium	
	e.Tube outside dia.and type	mm	Φ7,innergroove tube	
	f.Coil length x height x width	mm	900*609*22+865*609*22	
	g.Number of circuits		6	
Outdoor air flow		m ³ /h	3650	
Outdoor noise level		dB(A)	59	
Outdoor unit	Dimension(W*D*H)	mm	890x342x673	
	Packing (W*D*H)	mm	995x398x740	
	Net/Gross weight	kg	55.5/58.7	

Refrigerant type		kg	R410A/1.92
Design pressure		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm(inch)	$\phi 9.52/\phi 15.9(3/8''/5/8'')$
	Max. refrigerant pipe length	m	25
	Max. difference in level	m	15
Connection wiring			2.5x3/0.75x3
Plug type			4.0x3/no-plug
Thermostat type			Remote Control
Operation temperature		C	17~30
Room temperature	Indoor(cooling/ heating)	C	17~32/0~30
	Outdoor(cooling/heating)	C	18~43/-7~24
Application area		m ²	32~47
Qty/per 20' /40' /40'HQ			32/71/77

Notes:

1) Capacities are based on the following conditions:

Cooling(T1): - Indoor Temperature 27°C(80.6°F) DB /19 °C(66.2°F) WB

-Outdoor Temperature 35 °C(95°F) DB /24 °C(75.2°F) WB

-Interconnecting Piping Length 5m

- Level Difference of Zero.

Heating: - Indoor Temperature 20°C(68°F) DB / 15°C(59°F) WB

-Outdoor Temperature 7°C(44.6°F) DB / 6°C(42.8°F) WB

- Interconnecting Piping Length 5 m

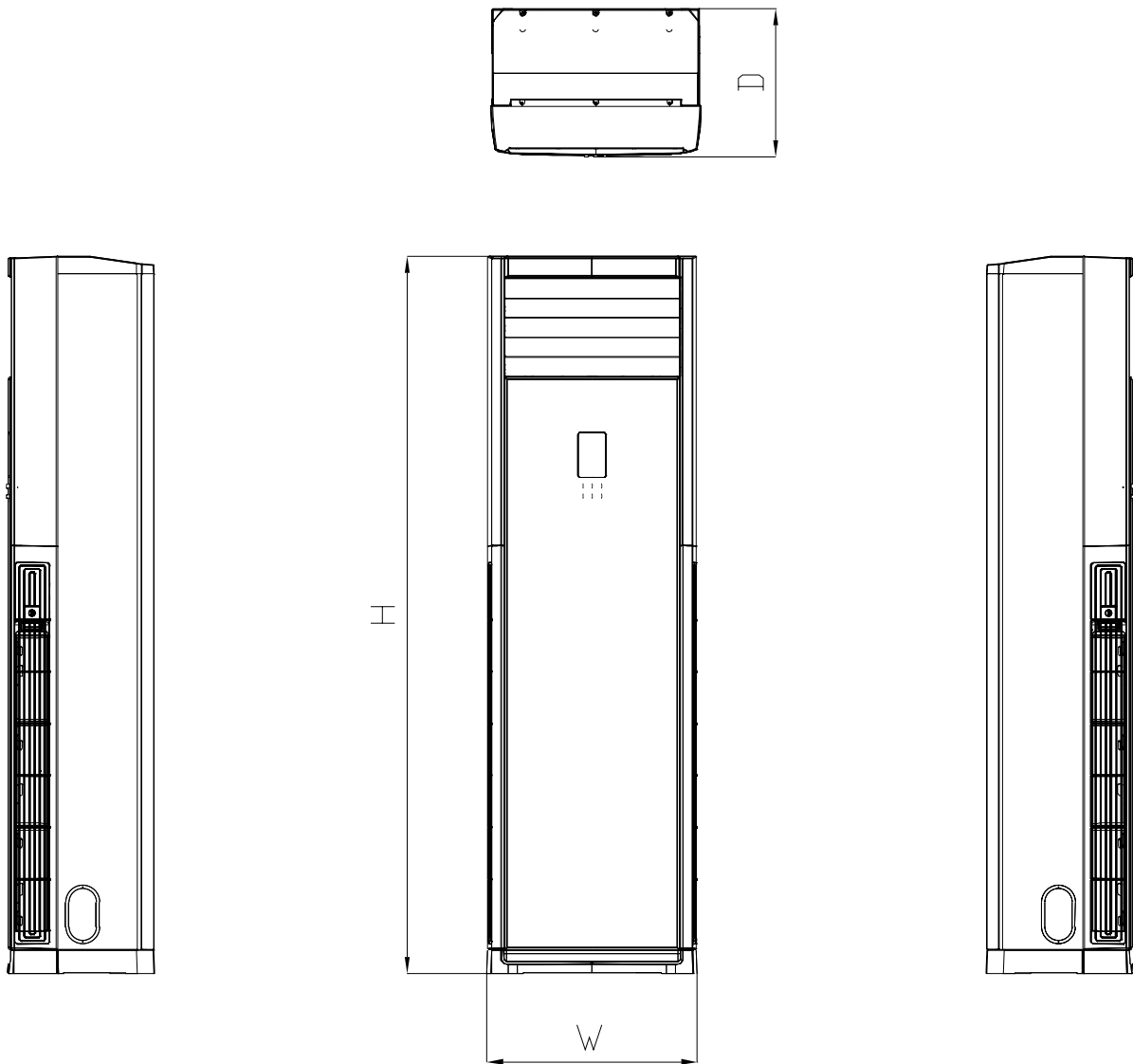
- Level Difference of Zero.

2) Capacities are Net Capacities.

3) Due to our policy of innovation some specifications may be changed without notification.

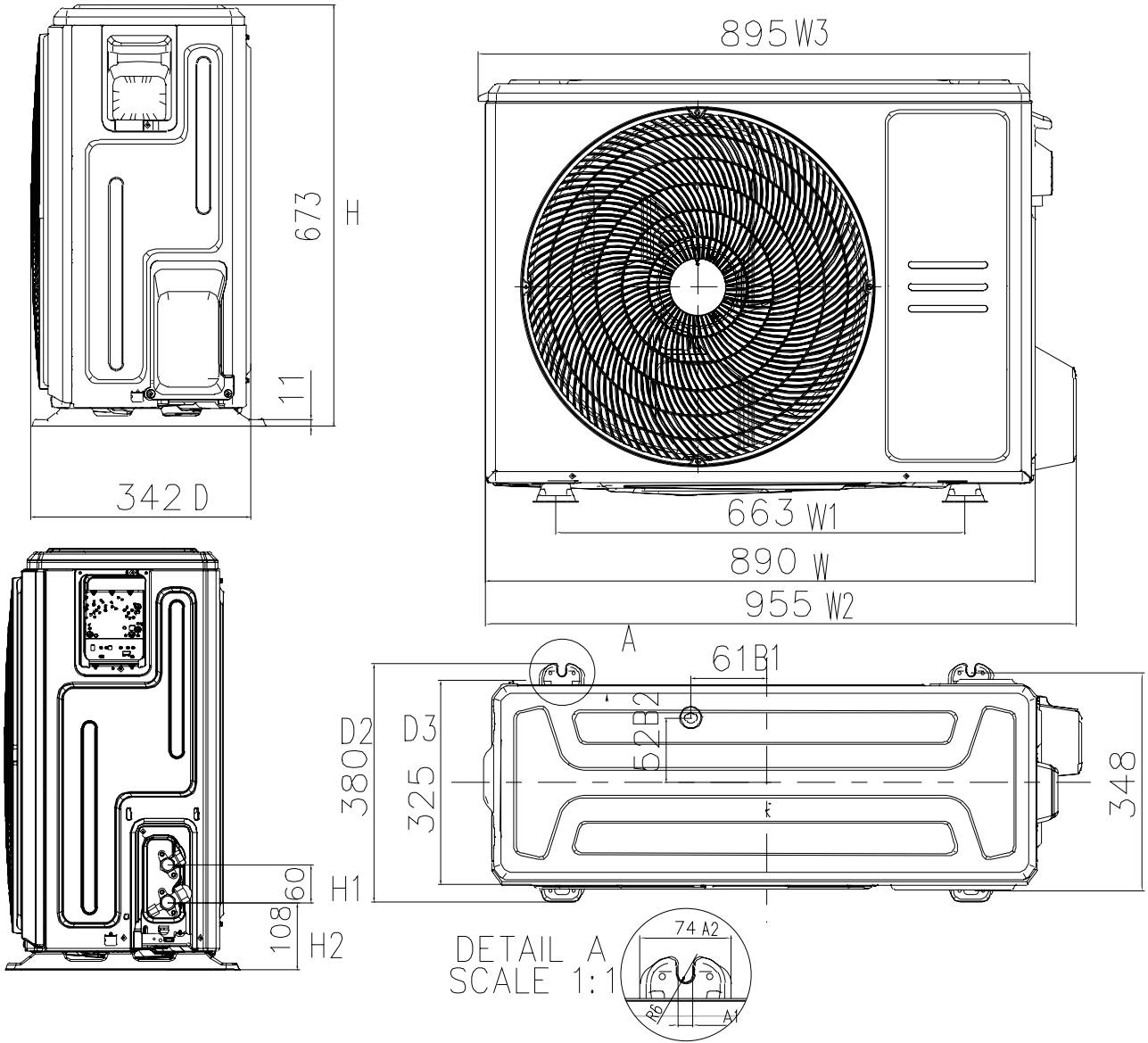
3. Dimensional Drawings

Indoor Unit



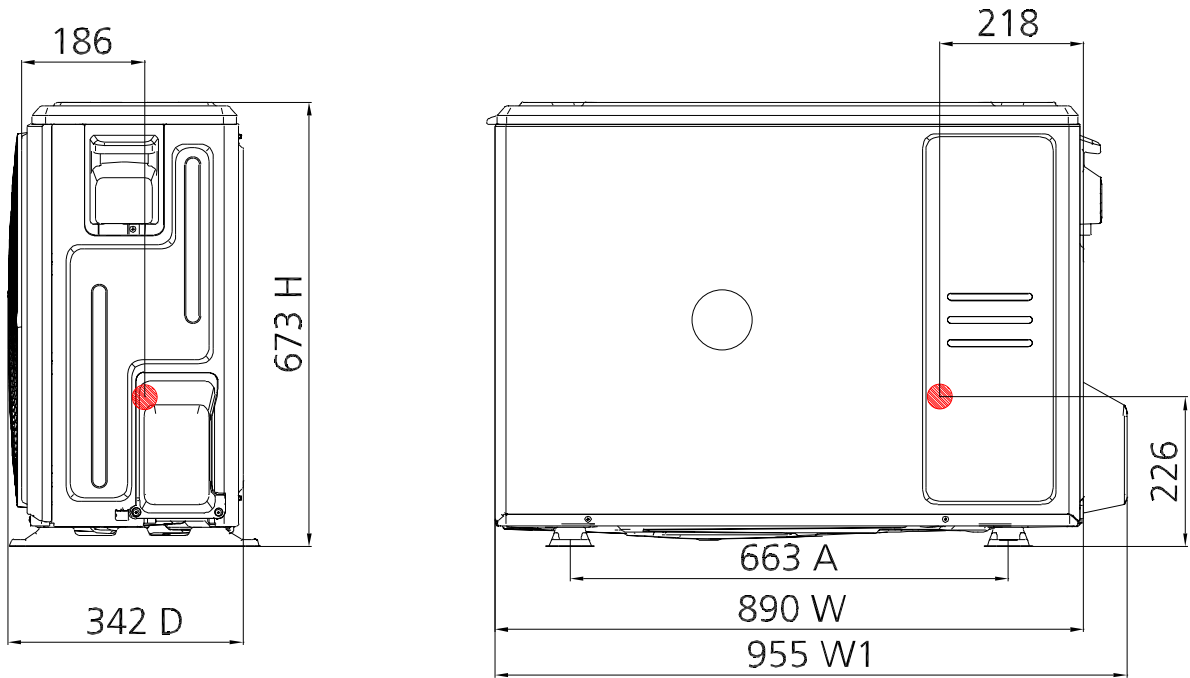
Model	W(mm)	D(mm)	H(mm)
MFPA-24ARN1-QB6	510	315	1750

Outdoor Unit
MOX430-24HN1-QB6



4. Centre of gravity

MOX430-24HN1-QB6

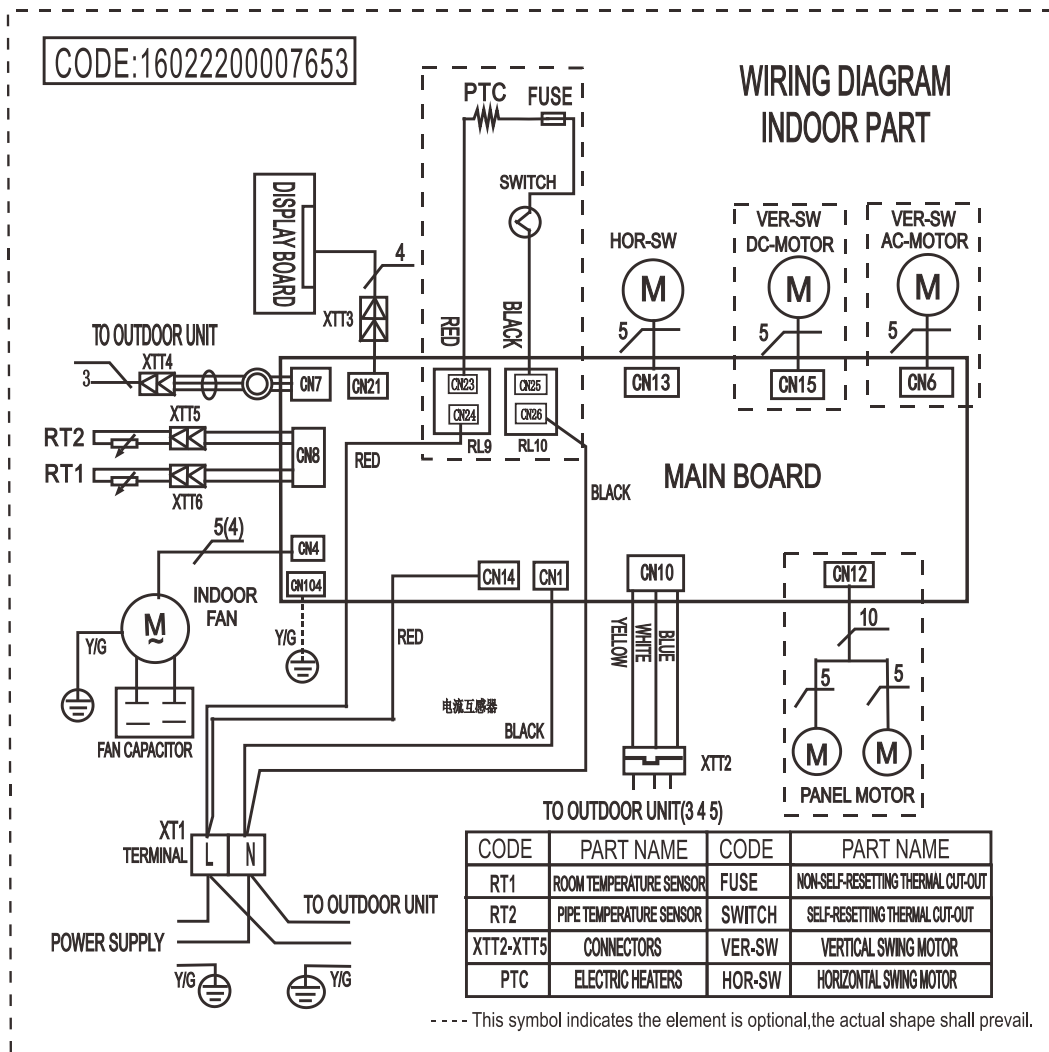


5. Electrical Wiring Diagrams

5.1 Indoor unit

Indoor unit abbreviations

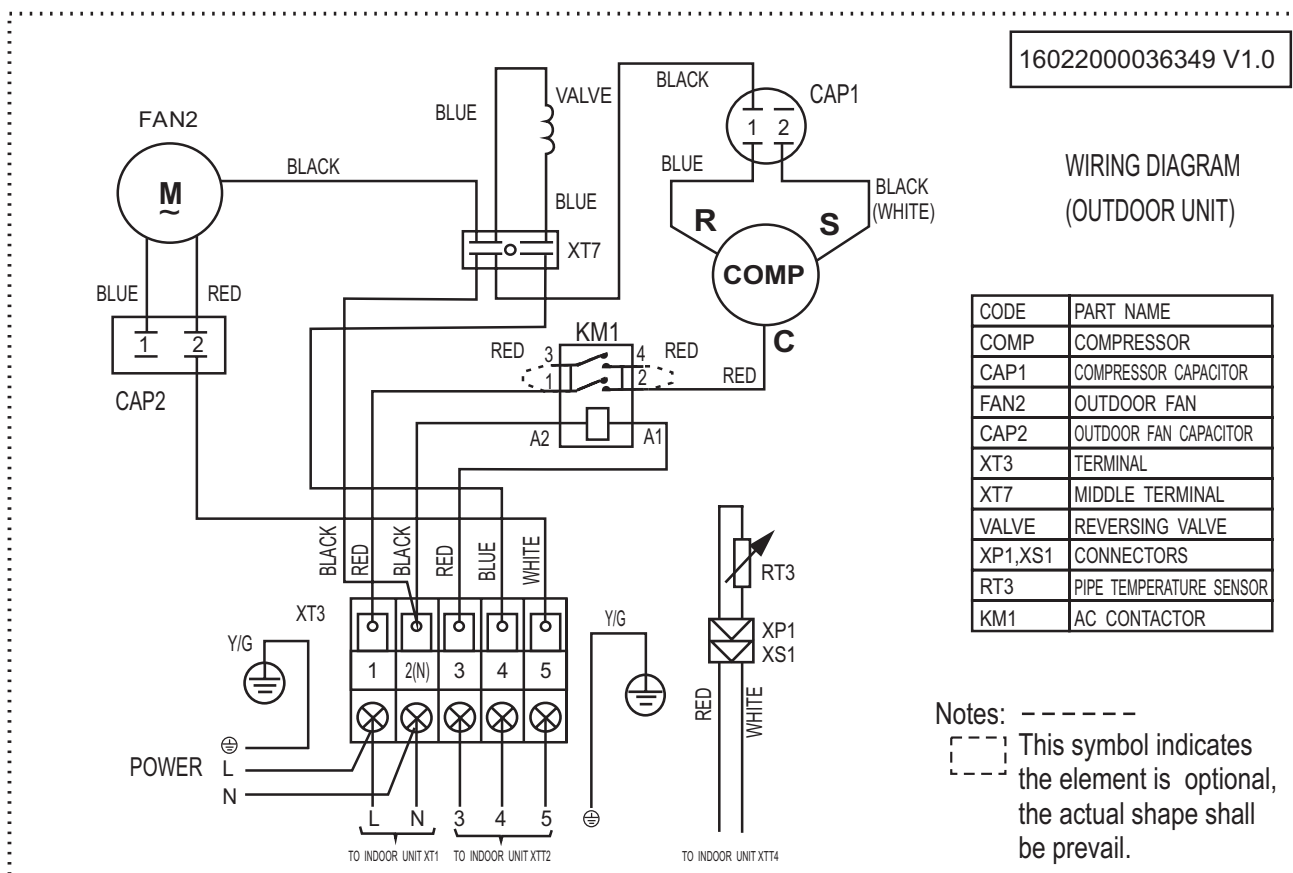
Abbreviation	Paraphrase
PTC	Electric Heaters
Y/G	Yellow-Green Conductor
HOR-SW	Horizontal Fan
VER-SW	Vertical Fan
L	LIVE
N	NEUTRAL
RT1, T1	Indoor Room Temperature
RT2, T2	Coil Temperature of Indoor Heat Exchanger



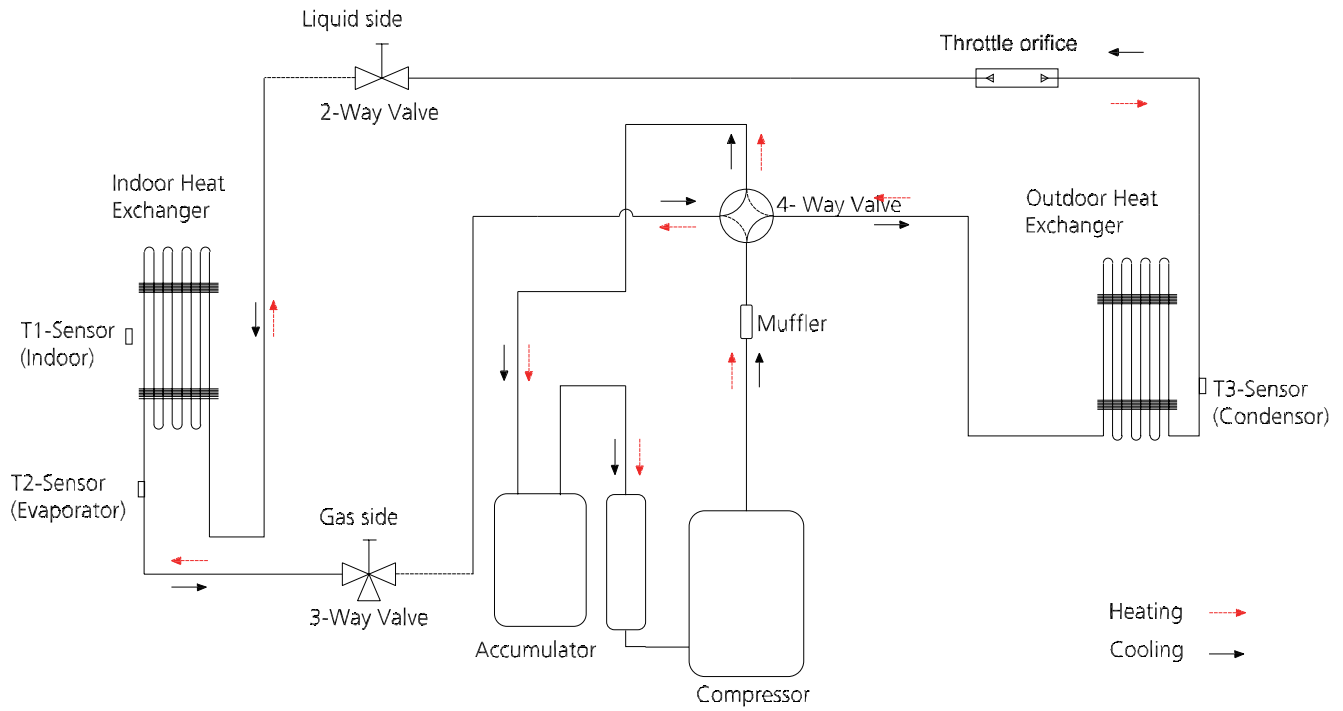
5.2 Outdoor Unit

Outdoor unit abbreviations

Abbreviation	Paraphrase
COMP	Compressor
CAP1	Compressor Capacitor
CAP2	Outdoor Fan Capacitor
FAN2	Outdoor Fan Motor
R	Resistance
K3	Temp. Protector
SV	4-Way Valve
KM1	AC contactor
RT3	Condenser Temperature Sensor
XP1, XS1	Connectors
VALVE	Reversing Valve



6. Refrigerant Cycle Diagrams



Model	Pipe Size (Diameter:ø) mm(inch)		Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant
	Gas	Liquid	Rated	Max.	Rated	Max.	
MFPA-24ARN1-QB6	15.9(5/8)	9.52(3/8)	5/16.4	25/82	0	15/49.2	30g/m (0.32oz/ft)

7. Capacity Tables

7.1 Cooling

		24k																
INDOOR AIRFLOW (CMH)	OUTDOOR DB (C)	ID WB (C)	16.0				18.0				19.0				22.0			
		ID DB (C)	23.0	25.0	27.0	30.0	23.0	25.0	27.0	30.0	23.0	25.0	27.0	30.0	23.0	25.0	27.0	30.0
Low speed: 800	18	TC	7.14	7.15	7.15	7.20	7.57	7.58	7.58	7.58	7.78	7.78	7.78	7.78	8.35	8.35	8.35	8.35
		S/T	0.70	0.77	0.85	0.92	0.57	0.64	0.71	0.78	0.51	0.58	0.65	0.72	0.37	0.44	0.50	0.57
		PI	1.69	1.69	1.69	1.69	1.68	1.68	1.68	1.68	1.67	1.67	1.67	1.67	1.66	1.66	1.66	1.66
	25	TC	6.69	6.69	6.69	6.74	7.09	7.09	7.09	7.09	7.32	7.32	7.32	7.32	7.86	7.86	7.86	7.86
		S/T	0.71	0.79	0.87	0.94	0.57	0.65	0.73	0.80	0.51	0.59	0.66	0.73	0.37	0.44	0.51	0.57
		PI	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
	30	TC	6.37	6.37	6.37	6.43	6.77	6.77	6.77	6.77	6.97	6.97	6.97	6.97	7.52	7.52	7.52	7.52
		S/T	0.72	0.80	0.88	0.96	0.58	0.66	0.74	0.81	0.51	0.59	0.67	0.74	0.37	0.44	0.51	0.58
		PI	2.12	2.12	2.12	2.12	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.13	2.14	2.14	2.14	2.14
	35	TC	6.06	6.06	6.11	6.17	6.43	6.43	6.43	6.43	6.63	6.63	6.74	6.63	7.17	7.17	7.17	7.17
		S/T	0.72	0.81	0.90	0.98	0.58	0.66	0.75	0.83	0.51	0.60	0.67	0.76	0.36	0.44	0.51	0.59
		PI	2.32	2.32	2.32	2.32	2.33	2.33	2.33	2.33	2.34	2.34	2.34	2.34	2.35	2.35	2.35	2.35
	40	TC	5.58	5.58	5.64	5.69	5.94	5.94	5.94	5.94	6.14	6.14	6.18	6.14	6.63	6.63	6.63	6.63
		S/T	0.74	0.84	0.93	1.00	0.59	0.68	0.77	0.86	0.52	0.61	0.70	0.78	0.35	0.44	0.52	0.60
		PI	2.64	2.64	2.64	2.64	2.65	2.65	2.65	2.65	2.66	2.66	2.66	2.66	2.68	2.68	2.68	2.68
	43	TC	5.29	5.29	5.35	5.40	5.63	5.63	5.63	5.63	5.83	5.83	5.83	5.83	6.29	6.29	6.29	6.29
		S/T	0.75	0.86	0.95	1.00	0.59	0.69	0.79	0.88	0.52	0.61	0.70	0.80	0.35	0.44	0.52	0.61
		PI	2.84	2.84	2.84	2.84	2.85	2.85	2.85	2.85	2.86	2.86	2.86	2.86	2.89	2.89	2.89	2.89
High speed: 910	18	TC	7.44	7.44	7.44	7.52	7.90	7.90	7.90	7.90	8.12	8.12	8.12	8.12	8.73	8.73	8.73	8.73
		S/T	0.71	0.79	0.88	0.95	0.58	0.65	0.73	0.81	0.51	0.59	0.66	0.74	0.37	0.44	0.51	0.58
		PI	1.75	1.75	1.75	1.75	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.72	1.72	1.72	1.72
	25	TC	6.98	6.98	7.03	7.09	7.41	7.41	7.41	7.41	7.64	7.64	7.64	7.64	8.21	8.21	8.21	8.21
		S/T	0.72	0.81	0.89	0.98	0.58	0.66	0.74	0.83	0.51	0.59	0.67	0.75	0.36	0.44	0.51	0.58
		PI	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01
	30	TC	6.63	6.63	6.69	6.75	7.06	7.06	7.06	7.06	7.29	7.29	7.29	7.29	7.84	7.84	7.84	7.84
		S/T	0.73	0.82	0.91	1.00	0.58	0.67	0.76	0.84	0.52	0.60	0.68	0.77	0.36	0.44	0.51	0.59
		PI	2.20	2.20	2.20	2.20	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.21	2.22	2.22	2.22	2.22
	35	TC	6.32	6.32	6.37	6.43	6.72	6.72	6.72	6.72	6.92	6.92	7.03	6.92	7.46	7.46	7.46	7.46
		S/T	0.74	0.84	0.93	1.00	0.59	0.68	0.77	0.86	0.52	0.61	0.69	0.78	0.36	0.44	0.52	0.60
		PI	2.41	2.41	2.41	2.41	2.42	2.42	2.42	2.42	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43
	40	TC	5.82	5.86	5.92	5.97	6.21	6.21	6.21	6.24	6.39	6.39	6.43	6.39	6.92	6.92	6.92	6.92
		S/T	0.77	0.87	0.97	1.00	0.60	0.70	0.80	0.90	0.52	0.62	0.72	0.81	0.35	0.44	0.53	0.60
		PI	2.75	2.75	2.75	2.75	2.76	2.76	2.76	2.76	2.77	2.77	2.77	2.77	2.80	2.80	2.80	2.80
	43	TC	5.52	5.58	5.64	5.69	5.89	5.89	5.89	5.95	6.07	6.07	6.07	6.07	6.58	6.58	6.58	6.58
		S/T	0.78	0.88	0.99	1.00	0.61	0.71	0.81	0.91	0.53	0.63	0.73	0.83	0.35	0.44	0.53	0.62
		PI	2.96	2.96	2.96	2.96	2.97	2.97	2.97	2.97	2.98	2.98	2.98	2.98	3.01	3.01	3.01	3.01

TC: Total Cooling Capacity (kW)
 S/T: Sensible Cooling Capacity Ratio
 PI: Power Input (kW)

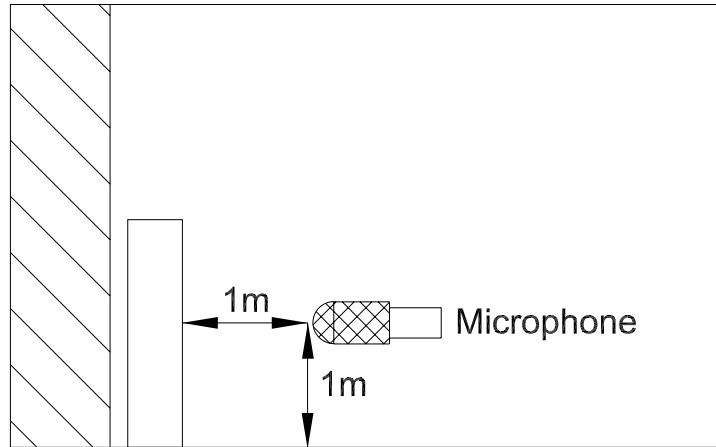
24k								[SL_Unit]	
INDOOR AIRFLOW (CMH)	HEATING PERFORMANCE AT INDOOR DRY BULB TEMPERATURE								
	OUTDOOR DB(°C)	TC:TOTAL CAPACITY IN KILOWATTS (KW)				PI:TOTAL POWER IN KILOWATTS (KW)			
		Indoor Conditions (DB °C)				Indoor Conditions (DB °C)			
		16.0	20.0	22.0	24.0	16.0	20.0	22.0	24.0
800	-7.0	7.78	7.73	7.70	7.67	1.66	1.70	1.78	1.82
	-5.6	7.64	7.58	7.55	7.52	1.70	1.79	1.83	1.87
	-2.8	7.49	7.44	7.41	7.35	1.81	1.89	1.94	1.98
	0.0	7.26	7.20	7.14	7.12	1.91	1.99	2.04	2.08
	2.8	7.29	7.20	7.14	7.12	2.03	2.13	2.17	2.22
	5.6	7.52	7.41	7.38	7.32	2.15	2.26	2.31	2.36
	7.0	7.80	7.68	7.65	7.62	2.24	2.42	2.39	2.44
	11.1	7.83	7.71	7.65	7.59	2.40	2.51	2.57	2.62
	13.9	7.83	7.71	7.65	7.59	2.51	2.63	2.69	2.75
	16.7	7.83	7.71	7.65	7.57	2.63	2.75	2.81	2.87
18.0	7.83	7.71	7.62	7.57	2.68	2.81	2.87	2.94	
910	-7.0	8.02	7.96	7.93	7.90	1.70	1.74	1.82	1.86
	-5.6	7.87	7.81	7.78	7.75	1.74	1.83	1.87	1.91
	-2.8	7.73	7.64	7.61	7.58	1.85	1.93	1.98	2.01
	0.0	7.49	7.41	7.38	7.32	1.95	2.03	2.08	2.13
	2.8	7.49	7.41	7.38	7.32	2.07	2.16	2.21	2.26
	5.6	7.75	7.64	7.58	7.55	2.19	2.30	2.35	2.40
	7.0	8.03	7.91	7.88	7.86	2.27	2.46	2.43	2.48
	11.1	8.06	7.94	7.88	7.83	2.44	2.55	2.61	2.66
	13.9	8.06	7.94	7.88	7.83	2.55	2.67	2.73	2.79
	16.7	8.06	7.94	7.88	7.80	2.66	2.79	2.85	2.92
18.0	8.06	7.94	7.86	7.80	2.72	2.85	2.91	2.98	

8. Capacity Correction Factor for Height Difference

Capacity(Btu/h)		24K		Pipe Length (m)			
				5	10	15	25
Cooling							
Height difference H (m)	Indoor Upper than Outdoor	15				0.900	0.830
		10			0.949	0.914	0.842
		5	0.995	0.959	0.923	0.851	
		0	1.000	0.964	0.928	0.855	
	Outdoor Upper than Indoor	-5	1.000	0.964	0.928	0.855	
		-10		0.964	0.928	0.855	
		-15			0.928	0.855	
	Heating						
Height difference H (m)	Indoor Upper than Outdoor	15				0.973	0.946
		10			0.987	0.973	0.946
		5	1.000	0.987	0.973	0.946	
		0	1.000	0.987	0.973	0.946	
	Outdoor Upper than Indoor	-5	0.992	0.979	0.965	0.938	
		-10		0.971	0.957	0.931	
		-15			0.950	0.923	

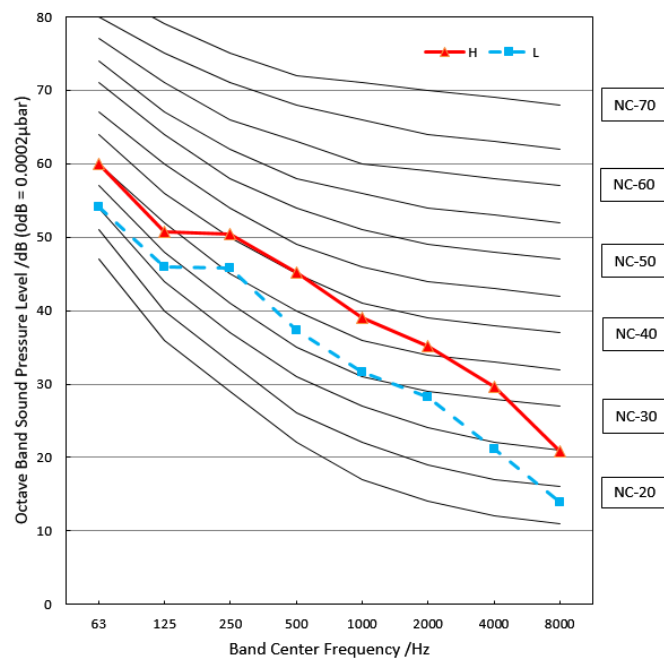
9. Noise Criterion Curves

Indoor Unit

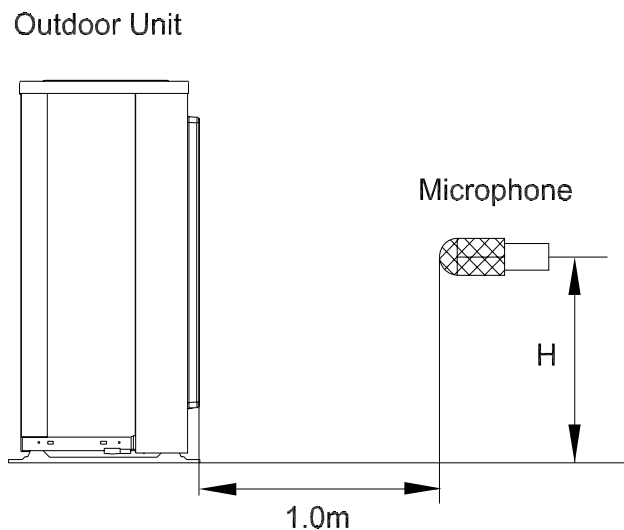


Notes:

- Sound measured at 1m away from the noisiest location of the unit.
- Data is valid at free field condition
- Data is valid at nominal operation condition
- Reference acoustic pressure $OdB = 20\mu Pa$
- Sound level will vary depending on a range of factors such as the construction -(acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.



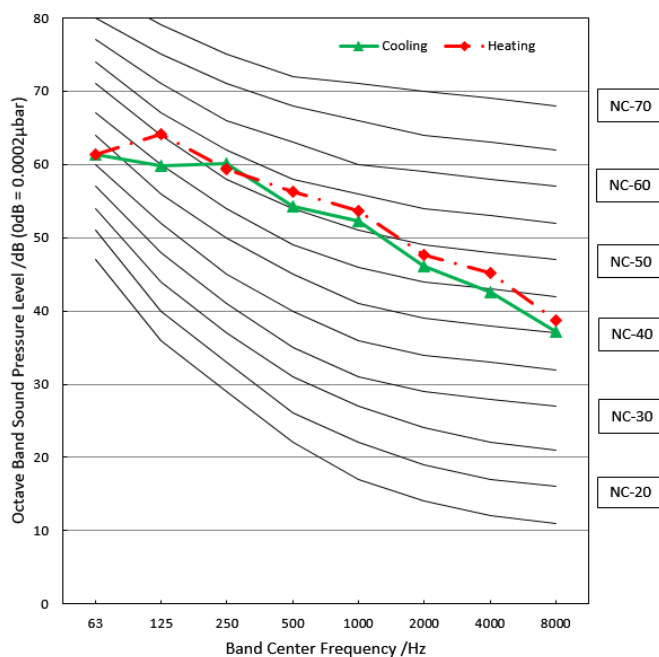
Outdoor Unit



Note: $H = 0.5 \times$ height of outdoor unit

Notes:

- Sound measured at 1.0m away from the center of the unit.
- Data is valid at free field condition
- Data is valid at nominal operation condition
- Reference acoustic pressure $OdB=20\mu Pa$
- Sound level will vary depending on arrange off actors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.



10. Electrical Characteristics

	Model	24k
Power	Phase	1- Phase
	Frequency and Voltage	220-240V~,50Hz
	Circuit Breaker/ Fuse (A)	42/35
	Indoor Unit Power Wiring (mm ²)	3x4.0
Indoor/Outdoor Connecting Wiring (mm ²)	Ground Wiring	2.5
	Power Wiring	3x2.5
	Strong Electric Signal	3x0.75
	Weak Electric Signal	3x0.2

Product Features

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1. Operation Modes and Functions

1.1 Abbreviation

Unit element abbreviations

Abbreviation	Element
T1	Indoor room temperature
T2	Coil temperature of evaporator
T3	Coil temperature of condenser
T4	Outdoor ambient temperature
TS	Set temperature

- Auto operation
- Cooling operation
- Dry operation
- Heating operation
- Fan operation
- Vertical airflow (optional)
- Horizontal airflow
- Indoor room temperature
- Electric heating function
- Lock operation
- Defrost operation

1.2 Safety Features

Compressor three-minute delay at restart

Compressor functions are delayed for up to 20 seconds upon the first startup of the unit, and are delayed for up to three minutes upon subsequent unit restarts.

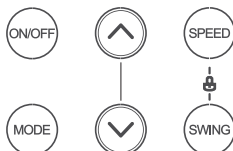
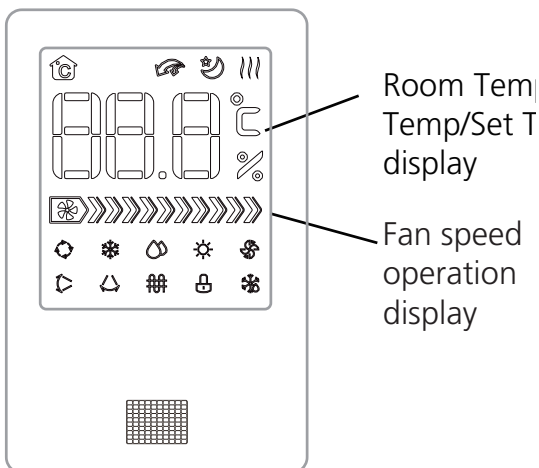
Open Circuit/Disconnection Sensor Protection

Refrigerant leakage detection

This function is active only when cooling mode is selected. It will detect if the compressor is being damaged by refrigerant leakage or by compressor overload. This is measured using the coil temperature of evaporator T2 when the compressor is in operation.

1.3 Display Function

Unit display functions



1.4 Fan Mode

When fan mode is activated:

- The outdoor fan and compressor are stopped.
- Temperature control is disabled and no temperature setting is displayed.
- The indoor fan speed can be set to high, medium, low, or auto.
- The louver operations are identical to those in cooling mode.
- Sleep function, turbo and electric auxiliary heat are disabled.
- Auto fan: In fan-only mode, AC operates the same as auto fan in cooling mode with the temperature set at 24°C

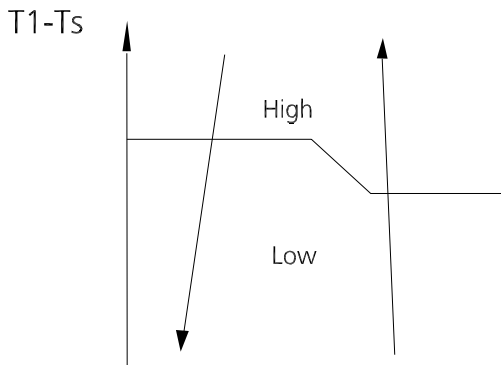
1.5 Cooling Mode

1.5.1 Compressor Control

When indoor room temperature T1 is lower than setting value, the compressor and outdoor fan cease operation.

1.5.2 Indoor Fan Control

- In cooling mode, the indoor fan operates continuously. The fan speed can be set to high, low or auto.
- The indoor fan speed will adjust according to the value of T1-TS.



1.5.3 Outdoor Fan Control

- For single-fan outdoor units, units just have one single fan speed. The operation of outdoor fan is consistent with the operation of compressor. Except the following situations:
 - Condenser high temperature protection
 - Current protection

1.5.4 Evaporator Temperature Protection

When evaporator temperature drops below a configured value for some time, the compressor and outdoor fan cease operations.

1.5.5 Condenser Temperature Protection(For the units have T3 sensor)

When condenser temperature is more than setting value, the compressor and outdoor fan cease operation.

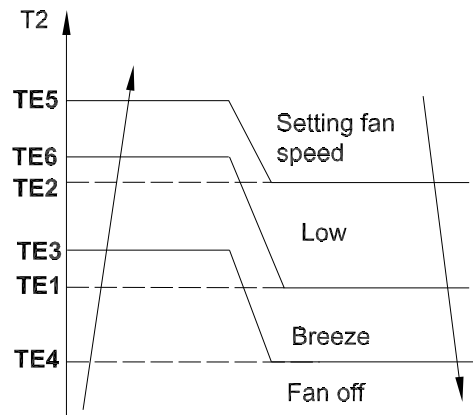
1.6 Heating Mode(For heat pump models)

1.6.1 Compressor Control

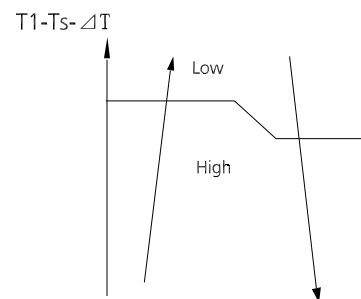
- When $T1-TS-\Delta T$ is higher than $1\text{ }^{\circ}\text{C}$, the compressor ceases operation.
- When $T1-TS-\Delta T$ is lower than $0\text{ }^{\circ}\text{C}$, the compressor continues operation.

1.6.2 Indoor Fan Control

- When the compressor is on, the indoor fan can be set to high, low, or auto. And the anti-cold wind function has the priority.
- Anti-cold air function
 - When indoor unit coil temperature $T2$ is low, the anti-cold air function will start and the indoor fan is controlled by indoor unit coil temperature $T2$.



- The indoor fan speed will adjust according to the value of $T1-TS-\Delta T$.



1.6.3 Outdoor Fan Control

- For single-fan outdoor units, units just have one single fan speed. The operation of outdoor fan is consistent with the operation of compressor. Except the following situations:
 - Evaporator high temperature protection
 - Defrosting
 - Current protection.

1.6.4 Defrosting mode

- The unit enters the defrosting mode according to the value of temperature difference $T3$ and the value range of temperature change of $T3$ as well as the compressor runtime
- In defrosting mode, the compressor continues to run, the indoor and outdoor motor will cease operation, defrost lamp of the indoor unit will be lighted "df" will be displayed
- If any one of the following conditions is satisfied, defrosting ends and the machine switches to normal heating mode:
 - $T3$ rises above $15\text{ }^{\circ}\text{C}$.
 - $T3$ maintained above $8\text{ }^{\circ}\text{C}$ for 80 seconds.
 - Unit runs for 10 minutes consecutively in defrosting

mode

1.6.5 Evaporator Temperature Protection

When the evaporator temperature exceeds a preset protection value, the compressor and outdoor fan cease operation.

1.7 Auto Mode

- This mode can be selected with the remote controller and the setting temperature can be changed between 17°C~30°C.
- In auto mode, the machine selects cooling, heating, or fan-only mode on the basis of ΔT ($\Delta T = T1 - T_s$).

ΔT	Running mode
$\Delta T > 2\text{ }^{\circ}\text{C}$	Cooling
$-3\text{ }^{\circ}\text{C} \leq \Delta T \leq 2\text{ }^{\circ}\text{C}$	Fan-only
$\Delta T < -3\text{ }^{\circ}\text{C}$	Heating*

Heating*: In auto mode, cooling only models run the fan.

- Indoor fan will run at auto fan speed.
- The unit will choose running mode, when
 - received the auto signal from the remote controller;
 - the setting temperature is modified;
 - the compressor doesn't start in 20 minutes when a running mode is set in auto.
- The louver operates same as in relevant mode.

1.8 Drying Mode

- Indoor fan speed is fixed at breeze and can't be changed. The louver angle is the same as in cooling mode.
- All protections are active and the same as that in cooling mode.

1.9 Timer Function

- The timing range is 24 hours.
- Timer On. The machine turns on automatically at the preset time.
- Timer Off. The machine turns off automatically at the preset time.
- Timer On/Off. The machine turns on automatically at the preset On Time, and then turns off automatically at the preset Off Time.
- Timer Off/On. The machine turns on automatically at the preset Off Time and then turns off automatically at the preset On Time.
- The timer does not change the unit operation mode. If the unit is off now, it does not start up immediately

after the "timer off" function is set. When the setting time is reached, the timer LED switches off and the unit running mode remains unchanged.

- The timer uses relative time, not clock time

1.10 Sleep Function

- The sleep function is available in cooling, heating, or auto mode.
- The operational process for sleep mode is as follows:
 - When cooling, the temperature rises 1°C (to not higher than 30°C) every hour. After 2 hours, the temperature stops rising and the indoor fan is fixed at low speed.
 - When heating, the temperature decreases 1°C (to not lower than 17°C) every hour. After 2 hours, the temperature stops decreasing and the indoor fan is fixed at low speed. Anti-cold wind function takes priority.
- Power off, changing mode by display button or setting fan speed, the unit exits this mode.

1.11 Auto-Restart

- The indoor unit has an auto-restart module that allows the unit to restart automatically. The module automatically stores the current settings and in the case of a sudden power failure, will restore those setting automatically within 3 minutes after power returns.
- If there is a power failure while the unit is running, the compressor starts 3 minutes(cooling)/4 minutes(heating) after the unit restarts. If the unit was already off before the power failure, the compressor starts 20 seconds after the unit restarts.

2. Remoted Controller Functions

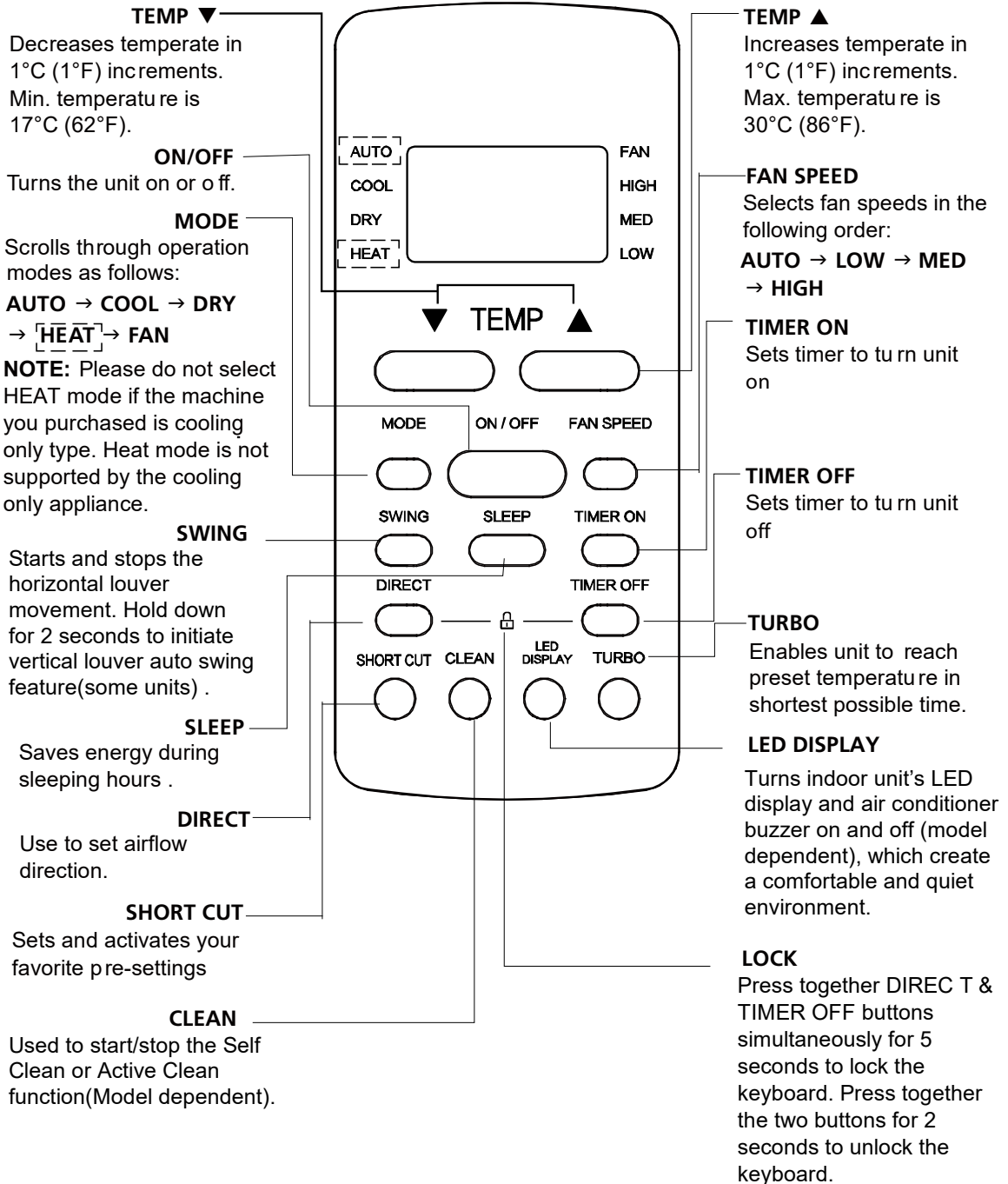
2.1 Infrared Wireless Remote Controller

2.1.1. RG51B/E(Standard)

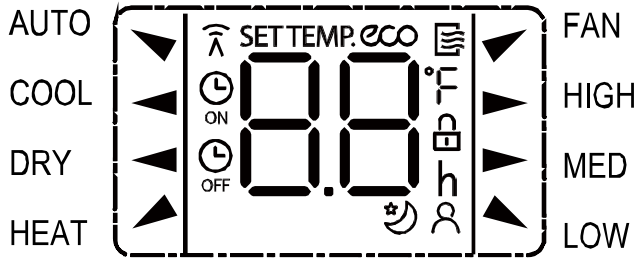
Remote Controller Specifications

Model	RG51B/E
Rated Voltage	3.0V (Dry batteries R03/LR03×2)
Reaching Distance	8m((when using 3.0 voltage, it Gets 11m))
Environment Temperature Range	-5°C~60°C (23°F~140°F)

Buttons and Functions












Remote LCD Screen Indicators



Mode display

AUTO ▼ COOL ◀ DRY ◀
HEAT ▲ ▼ FAN

-
-  Displayed when data transmitted.
 -  Displayed when remote controller is ON.
 -  Displayed when TIMER ON time is set
 -  Displayed when TIMER OFF time is set
 -  Shows set temperature or room temperature, or time under TIMER setting
 -  Displayed when ECO feature is activated (some unit)
 -  Indicated all the current settings are locked
 -  Displayed when Follow Me feature is activated (some units)
 -  Displayed when SLEEP feature is activated

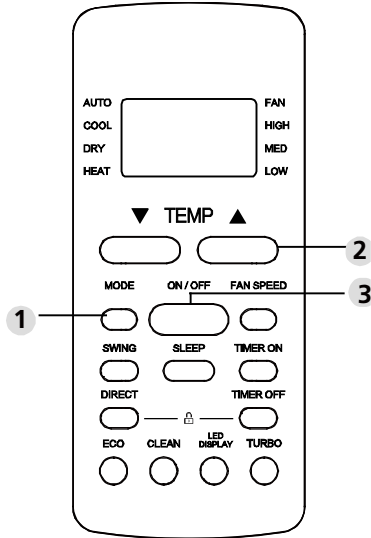
Fan speed indication

-
- ▶ HIGH High speed
 - ▶ MED Medium speed
 - ▲ LOW Low speed
 - NO display Auto fan speed
-

Note:

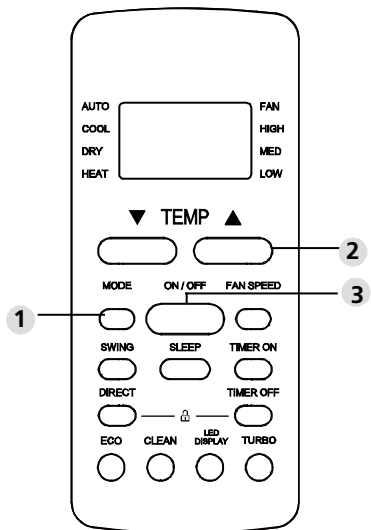
All indicators shown in the figure are for the purpose of clear presentation. But during the actual operation, only the relative function signs are shown on the display window.

How To Use The Basic Functions



COOL Operation

1. Press the MODE button to select COOL mode.
2. Set your desired temperature using the Temp ▲ or Temp ▼ button.
3. Press the FAN button to select the fan speed in a range of Au-100%, in conjunction with Temp ▲ or Temp ▼ button.
4. Press the ON/OFF button to start the unit.



Setting Temperature

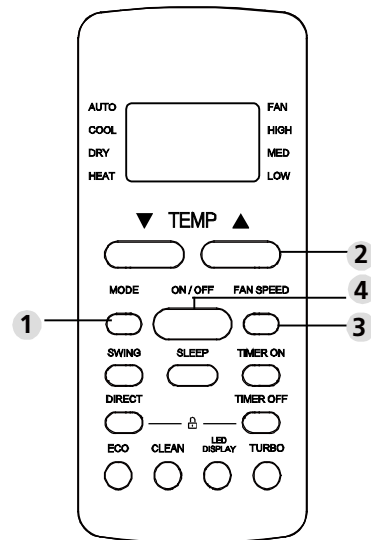
The operating temperature range for units is 16-30°C/60-86°F. You can increase or decrease the set temperature in 0.5°C/1°F increments.

AUTO Operation

In AUTO mode, the unit will automatically select the COOL, FAN, HEAT or DRY mode based on the set temperature.

1. Press the MODE button to select Auto mode.
2. Set your desired temperature using the Temp ▲ or Temp ▼ button.
3. Press the ON/OFF button to start the unit.

NOTE: FAN SPEED can't be set in Auto mode.



DRY Operation(dehumidifying)

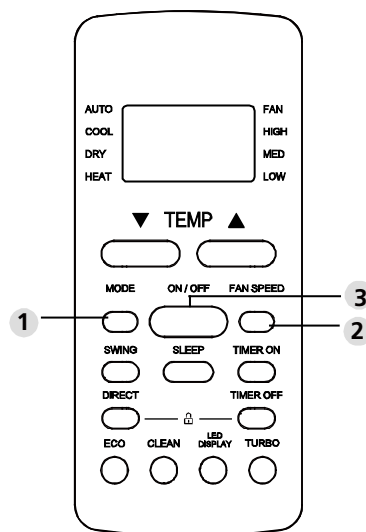
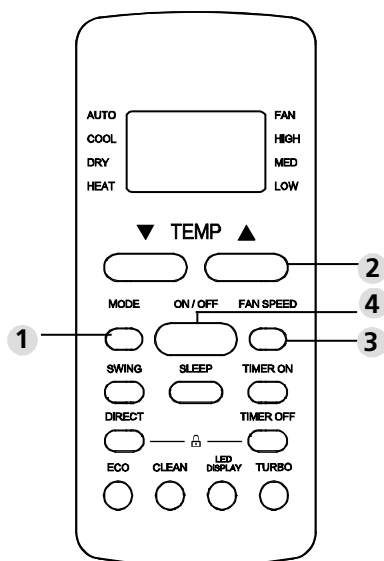
1. Press the MODE button to select DRY mode.
2. Set your desired temperature using the Temp ▲ or Temp ▼ button.
3. Press the ON/OFF button to start the unit.

NOTE: FAN SPEED can't be changed in DRY mode.

FAN Operation

1. Press the MODE button to select FAN mode.
2. Press the FAN button to select the fan speed in a range of Au-100%, in conjunction with Temp ▲ or Temp ▼ button.
3. Press the ON/OFF button to start the unit.

NOTE: You can't set temperature in FAN mode. As a result, your remote control sLCD screen will not display temperature.



HEAT Operation

1. Press the MODE button to select HEAT mode.
2. Set your desired temperature using the Temp ▲ or Temp ▼ button.
3. Press the FAN button to select the fan speed in a range of Au-100%, in conjunction with Temp ▲ or Temp ▼ button.
4. Press the ON/OFF button to start the unit.

NOTE: As outdoor temperature drops, the performance of your unit's HEAT function may be affected. In such instances, we recommend using this air conditioner in conjunction with other heating appliance.

How To Use The Advanced Functions

Swing Button

- The horizontal louver will swing up and down automatically when pressing Swing button. Press again to make it stop.
- Hold down the Swing button for 2 seconds will start or stop the vertical louver auto swing feature.

Airflow direction

Each time you press the DIRECT button, it will adjust the louver by 6 degrees . Press the button until the direction you prefer is reached.

LED Display

- Press this button to turn on and turn off the display on the indoor unit.
- Keep pressing this button more than 5 seconds, the indoor unit will display the actual room temperature. Press more than 5 seconds again will revert back to display the setting temperature.

SHORTCUT Function

- Push this button when remote controller is on, the system will automatically revert back to the previous settings including operating mode, setting temperature, fan speed level and sleep feature(if activated).
- If pushing more than 2 seconds, the system will automatically restore the current operation settings including operating mode, setting temperature, fan speed level and sleep feature(if activated).

SLEEP Function

- The SLEEP function is used to decrease energy use while you sleep (and don't need the same temperature settings to stay comfortable). This function can only be activated via remote control. The sleep function is not available in Fan or Dry mode.

Silence Function









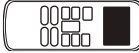





Keep pressing Fan button for more than 2 seconds to activate/disable Silence function

Installation

Contents

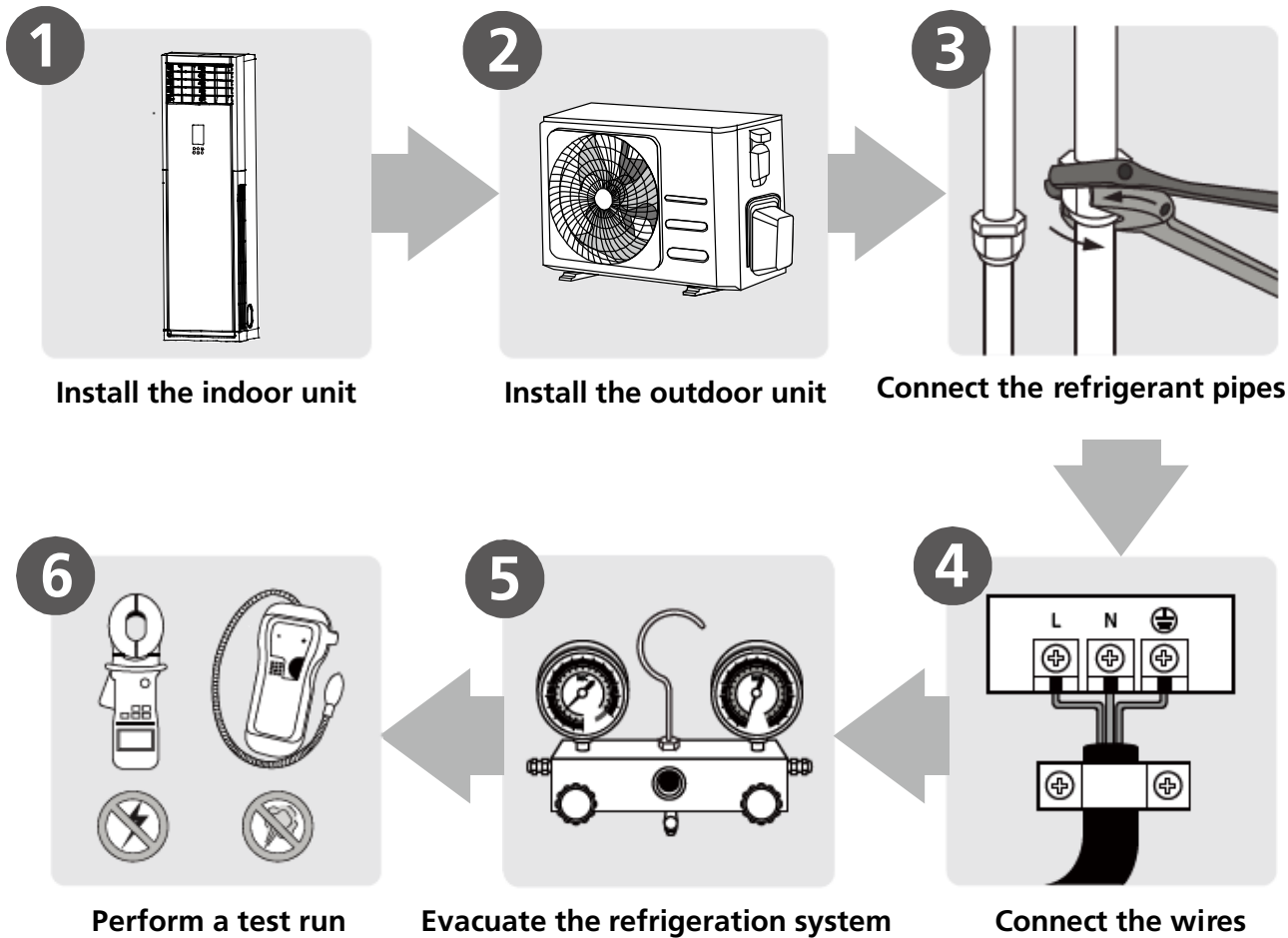
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Accessories

	Name	Shape	Quantity
Indoor unit installation	Self-tapping screw 3.9×12 (Used to fix the cord clamp of indoor unit after wire connection)		3
	Flat washers		2
	Wall hole cover		1
Refrigeration Fittings	Soundproof/insulation sheath (some models)		2
Drainpipe Fittings	Band(some models)		2
	Drain joint (some models)		1
	Seal (some models)		1
	Drain hose (some models)		1
Remote controller & Its Frame	Remote controller		1
	Fixing screw for remote controller holder ST2.9 x 10(optional)		2
	Remote controller holder(optional)		1
	Dry battery AAA		2
Installation Accessory (some models)	Connection cables		1
	Putty		1
	Rodent-proof mesh		1
Others	Manual		2-3
	Refrigerant Pipe (optional)		1
	Copper nut (Used to make the connective pipes between indoor and outdoor units.)		2

1. Installation Overview-Indoor Unit

Installation Order



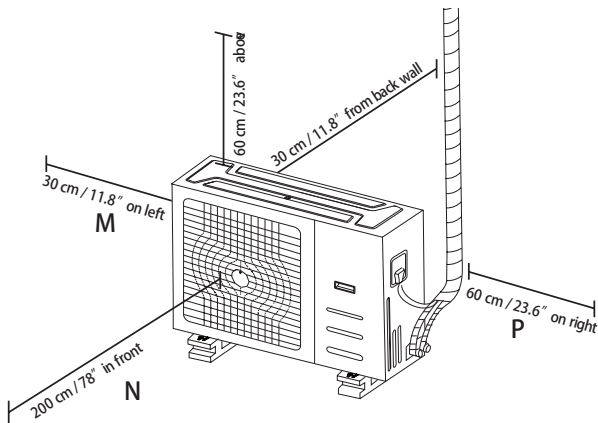
2. Location selection

2.1 Unit location selection can refer to installation manual.

2.2 DO NOT install the unit in the following locations:

- Where oil drilling or fracking is taking place.
- Coastal areas with high salt content in the air.
- Areas with caustic gases in the air, such as near hot springs.
- Areas with power fluctuations, such as factories.
- Enclosed spaces, such as cabinets.
- Areas with strong electromagnetic waves.
- Areas that store flammable materials or gas.
- Rooms with high humidity, such as bathrooms or laundry rooms.
- If possible, DO NOT install the unit where it is exposed to direct sunlight.

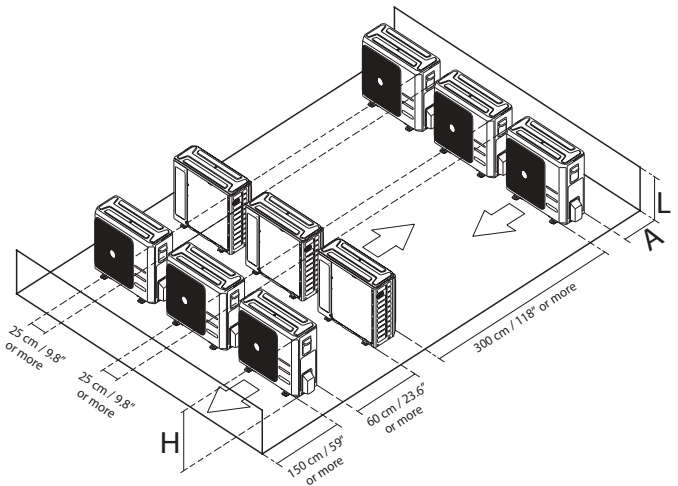
2.3 The minimum distance between the outdoor unit and walls described in the installation guide does not apply to airtight rooms. Be sure to keep the unit unobstructed in at least two of the three directions (M, N, P)



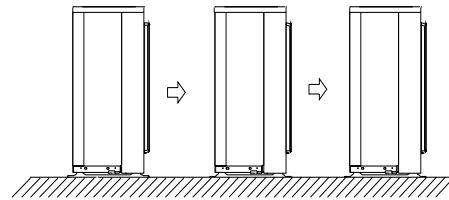
2.4 Rows of series installation

The relations between H, A and L are as follows.

	L	A
$L \leq H$	$L \leq 1/2H$	25 cm / 9.8" or more
	$1/2H < L \leq H$	30 cm / 11.8" or more
$L > H$	Can not be installed	

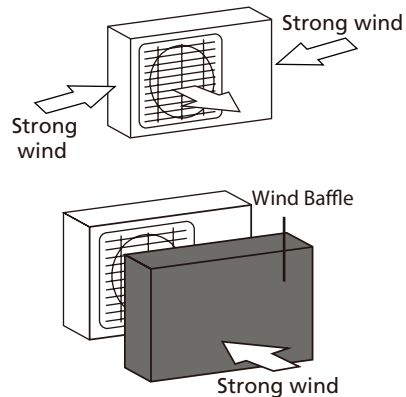


DO NOT install the rows of series like following figure.



2.5. If the unit is exposed to heavy wind:

- Install unit so that air outlet fan is at a 90° angle to the direction of the wind. If needed, build a barrier in front of the unit to protect it from extremely heavy winds.



2.6 If the unit is frequently exposed to heavy rain or snow:

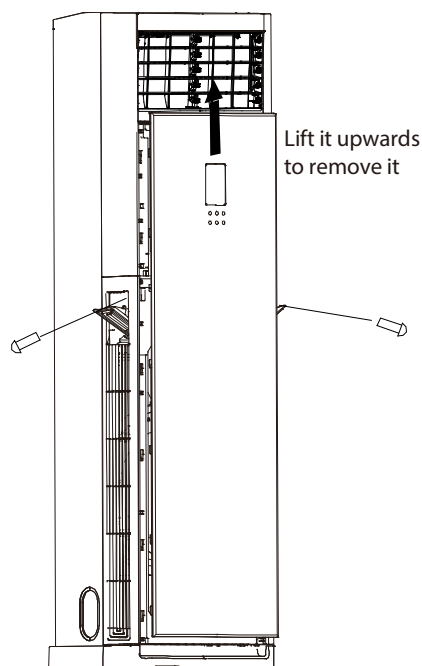
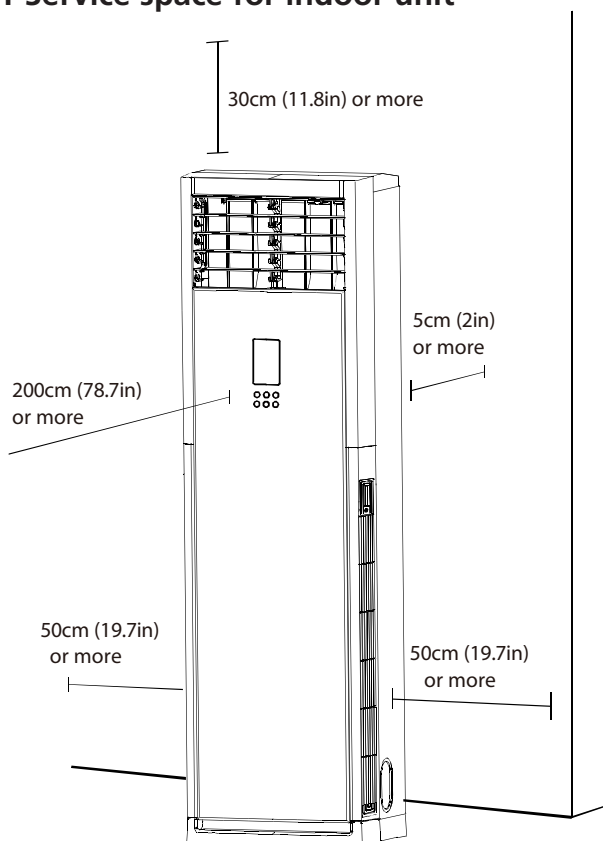
Build a shelter above the unit to protect it from the rain or snow. Be careful not to obstruct air flow around the unit.

2.7 If the unit is frequently exposed to salty air (seaside):

Use outdoor unit that is specially designed to resist corrosion.

3. Indoor Unit Installation

3.1 Service space for indoor unit



- Use both hands to gently hold the decorative part at the top of the operation panel, then lift it upwards to remove it along with the wire terminal which is connected to it.
- Undo the two screws on the front of the filter.
- Use both hands to hold the two sunken areas on either side of the filter and pull away from the unit. Lift the filter upwards to remove it.
- Remove all of the accessories placed inside the bottom cavity of the indoor unit.
- Check that all of the accessories.

3.2 Install Indoor Unit

1. Unfastening the operation panel and detaching the filter

- Open the packaging and take out the indoor unit. Remove the protective tape and any components.
- Open the two boxes for storing the remote control found on either side of the indoor unit, then undo the screws on the operation panel.

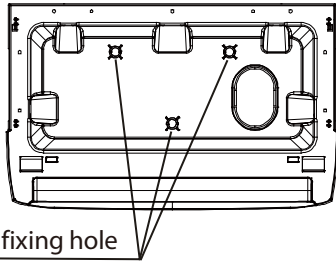
NOTE: Before remove the front panel, make sure the horizontal louver is in open position.

2. Remove the fasteners from the roller (only found on selected models)

- Check to see whether the roller on the indoor unit has any fasteners holding it in place and tear off the notice sticker.
- Remove the fasteners from the roller according to the directions on the sticker.

3. Fastening the indoor unit (to prevent it from falling down)

- Measure the position of the holes for installation.
- Insert the M8 bolts into the unit while it is on the floor (the amount of bolts used depends on the number of holes on the unit's chassis).
- Lift up the indoor unit so that the installation holes cover the bolts, then fasten the nuts onto the bolts and tighten them.



screw bolt fixing hole

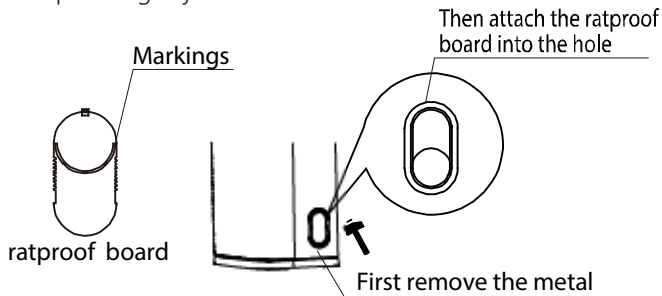
CAUTION:

If further support is needed to prevent the unit from falling down, a protective wedge can be installed. The installation procedure for this wedge is as follows:

- Take out the protective wedge and measure the correct size.
- Use the self-tapping screws to fasten the protective wedge to the top cover of the indoor unit.
- Fasten the other end of the wedge tightly to the wall using the self-tapping screws.

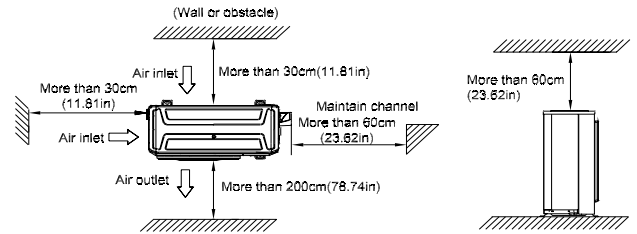
4. Installing the rodent-proof mesh

- Remove the metal rodent-proof mesh from the piping found on the unit by gently tapping on it.
- Use a knife to cut a small hole by following the markings on the ratproof board.
- Insert the ratproof board into the unit and hold it in place tightly.

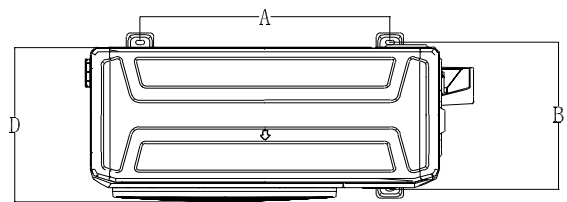


4. Outdoor unit installation

4.1 Service space for outdoor unit



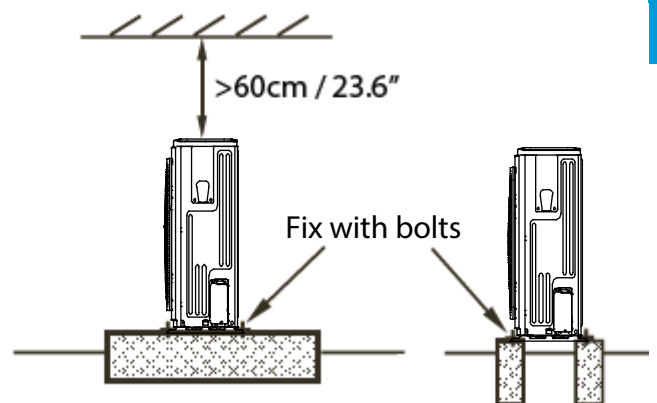
4.2 Bolt pitch



Capacity(kBtu/h)	A	B	D
24k	663	354	342

4.3 Install Outdoor Unit

Fix the outdoor unit with anchor bolts(M10)



Caution

Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.

Never hold the inlet of the outdoor unit to prevent it from deforming.

Do not touch the fan with hands or other objects.

Do not lean it more than 45, and do not lay it sidelong.

Make concrete foundation according to the specifications of the outdoor units.

Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.

4.4 Install drain joint

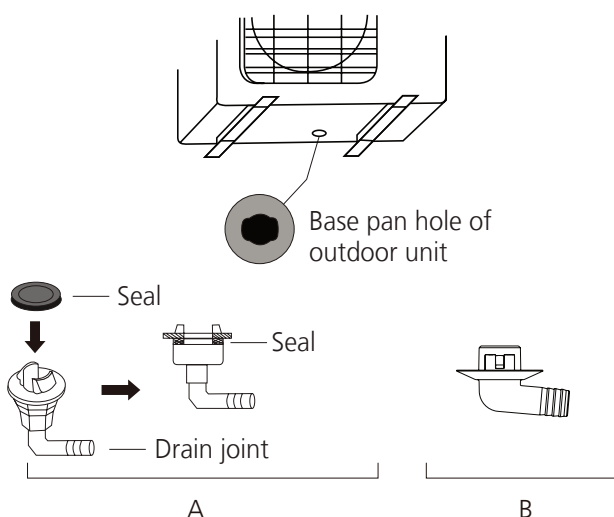
Heat pump units require a drain joint. Before bolting the outdoor unit in place, you must install the drain joint at the bottom of the unit. Note that there are two different types of drain joints depending on the type of outdoor unit.

- **If the drain joint comes with a rubber seal (see Fig. A), do the following:**

1. Fit the rubber seal on the end of the drain joint that will connect to the outdoor unit.
2. Insert the drain joint into the hole in the base pan of the unit.
3. Rotate the drain joint 90° until it clicks in place facing the front of the unit.
4. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.

- **If the drain joint doesn't come with a rubber seal (see Fig. B), do the following:**

1. Insert the drain joint into the hole in the base pan of the unit. The drain joint will click in place.
2. Connect a drain hose extension (not included) to the drain joint to redirect water from the unit during heating mode.



5. Drainpipe installation

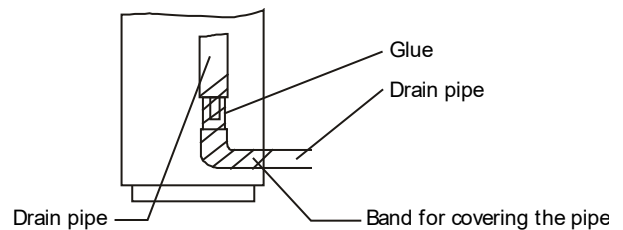
The drainpipe is used to drain water from the unit. Improper installation may cause unit and property damage.

CAUTION:

- Insulate all piping to prevent condensation, which could lead to water damage.
- If the drainpipe is bent or installed incorrectly, water may leak and cause a malfunction of the water-level switch.
- In HEAT mode, the outdoor unit will discharge water. Ensure that the drain hose is placed in an appropriate area to avoid water damage and slippage due to frozen drain water.
- DO NOT pull the drainpipe forcefully as this could cause it to disconnect.

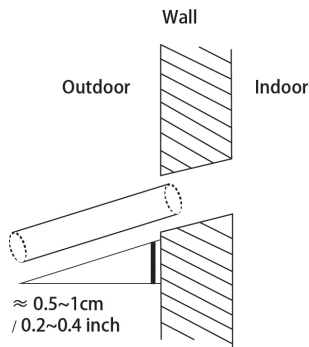
NOTE ON PURCHASING PIPES:

This installation requires a polyethylene tube (outside diameter = 3.7-3.9cm, inside diameter = 3.2cm), which can be obtained at your local hardware store or from your dealer.



1. Make sure the drain pipe is connected to the outdoor side downward.
2. The hard polyvinyl chloride(PVC)plastic pipe (external diameter 26 mm) sold in the market is suitable for the attached soft drain pipe.
3. Please connect the Soft Drain Pipe with the Drain Pipe, then fix it with band; if you have to connect the Drain Pipe indoors, to avoid condensing caused by air intake, you must cover the pipe with heat-insulation material (polyethylene with Specific Gravity of 0.03, at least 9 mm in thickness), and use Glue Band to fix it.
4. After the Drain Pipe has been connected, please check if the water drains out of the pipe efficiently and has no leakage.
5. Refrigerant Pipe and Drain Pipe should be heat-insulated to avoid condensing and water-dropping later on.
6. Using a 65-mm (2.5") core drill, drill a hole in the wall. Make sure that the hole is drilled at a slight downward angle, so that the outdoor end of the hole is lower than the indoor end by about 1cm (0.4"). This will ensure proper water drainage. Place the protective wall cuff in

the hole. This protects the edges of the hole and will help seal it when you finish the installation process.



NOTE: When drilling the wall hole, make sure to avoid wires, plumbing, and other sensitive components.

7. Pass the drain hose through the wall hole. Make sure the water drains to a safe location where it will not cause water damage or a slipping hazard.

NOTE: The drainpipe outlet should be at least 5cm (1.9") above the ground. If it touches the ground, the unit may become blocked and malfunction. If you discharge the water directly into a sewer, make sure that the drain has a U or S pipe to catch odors that might otherwise come back into the house.

6. Refrigerant Pipe Installation

6.1 Maximum length and drop height

Ensure that the length of the refrigerant pipe, the number of bends, and the drop height between the indoor and outdoor units meets the requirements shown in the following table.

Capacity(kBtu/h)	Max. Length (m)	Max. Elevation (m)
24	25	15

Caution:

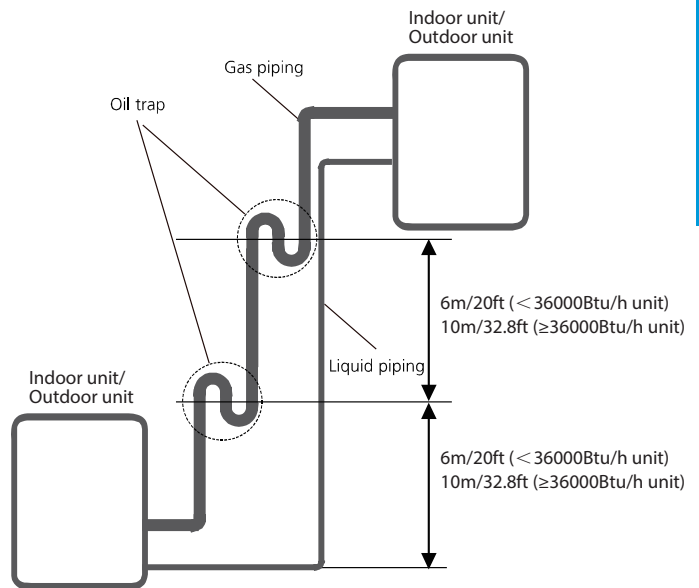
1. The capacity test is based on the standard length and the maximum permissible length is based on the system reliability.

2. Oil traps

-If oil flows back into the outdoor unit's compressor, this might cause liquid compression or deterioration of oil return. Oil traps in the rising gas piping can prevent this.

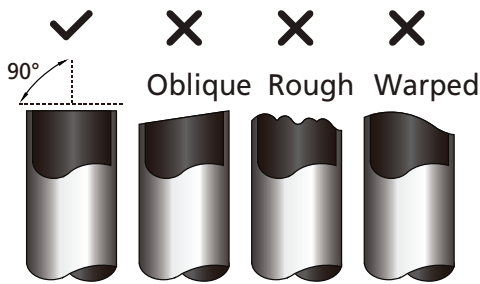
-An oil trap should be installed every 6m(20ft) of vertical suction line riser (<36000Btu/h unit).

-An oil trap should be installed every 10m(32.8ft) of vertical suction line riser (≥36000Btu/h unit).



6.2 The procedure of connecting pipes

1. Choose the pipe size according to the specification table.
2. Confirm the cross way of the pipes.
3. Measure the necessary pipe length.
4. Cut the selected pipe with pipe cutter
 - Make the section flat and smooth.



- Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the bellmouthing, and too small torque may cause leakage. Refer the following table for different pipe connection.

Pipe Diameter	Torque	Sketch map
	N.m(lb.ft)	
1/4" (6.35)	18~20 (13.3~14.8)	
3/8" (9.52)	32~39 (23.6~28.8)	
1/2" (12.7)	49~59 (36.1~43.5)	
5/8" (15.9)	57~71 (42~52.4)	
3/4" (19)	67~101 (49.4~74.5)	
7/8" (22)	85~110	
	(62.7-81.1)	

5. Insulate the copper pipe

- Before test operation, the joint parts should not be heat insulated.

6. Flare the pipe

- Insert a flare nut into the pipe before flaring the pipe
- According to the following table to flare the pipe.

Pipe diameter (inch(mm))	Flare dimension A (mm/inch)		Flare shape
	Min	Max	
1/4" (6.35)	8.4/0.33	8.7/0.34	
3/8" (9.52)	13.2/0.52	13.5/0.53	
1/2" (12.7)	16.2/0.64	16.5/0.65	
5/8" (15.9)	19.2/0.76	19.7/0.78	
3/4" (19)	23.2/0.91	23.7/0.93	
7/8" (22)	26.4/1.04	26.9/1.06	

- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.

7. Drill holes if the pipes need to pass the wall.

8. According to the field condition to bend the pipes so that it can pass the wall smoothly.

9. Bind and wrap the wire together with the insulated pipe if necessary.

10. Set the wall conduit

11. Set the supporter for the pipe.

12. Locate the pipe and fix it by supporter

- For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.

13. Connect the pipe to indoor unit and outdoor unit by using two spanners.

7. Vacuum Drying and Leakage Checking

7.1 Purpose of vacuum drying

- Eliminating moisture in system to prevent the phenomena of ice-blockage and copper oxidation.
Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage compressor.
- Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

7.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -756mmHg or above.
- Precision of vacuum pump shall reach 0.02mmHg or above.

7.3 Operation procedure for vacuum drying

Due to different construction environment, two kinds of vacuum drying ways could be chosen, namely ordinary vacuum drying and special vacuum drying.

7.3.1 Ordinary vacuum drying

1. When conduct first vacuum drying, connect pressure gauge to the infusing mouth of gas pipe and liquid pipe, and keep vacuum pump running for 1 hour (vacuum degree of vacuum pump shall be reached -755mmHg).
2. If the vacuum degree of vacuum pump could not reach -755mmHg after 1 hour of drying, it indicates that there is moisture or leakage in pipeline system and need to go on with drying for half an hour.
3. If the vacuum degree of vacuum pump still could not reach -755mmHg after 1.5 hours of drying, check whether there is leakage source.
4. Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

7.3.2 Special vacuum drying

The special vacuum drying method shall be adopted when:

1. Finding moisture during flushing refrigerant pipe.
2. Conducting construction on rainy day, because rain water might penetrated into pipeline.
3. Construction period is long, and rain water might penetrated into pipeline.

4. Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:

1. Vacuum drying for 1 hour.
2. Vacuum damage, filling nitrogen to reach 0.5Kgf/cm² .

Because nitrogen is dry gas, vacuum damage could achieve the effect of vacuum drying, but this method could not achieve drying thoroughly when there is too much moisture. Therefore, special attention shall be drawn to prevent the entering of water and the formation of condensate water.

3. Vacuum drying again for half an hour.

If the pressure reached -755mmHg, start to pressure leakage test. If it cannot reached the value, repeat vacuum damage and vacuum drying again for 1 hour.

4. Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

8. Additional Refrigerant Charge

- After the vacuum drying process is carried out, the additional refrigerant charge process need to be performed.
- The outdoor unit is factory charged with refrigerant. The additional refrigerant charge volume is decided by the diameter and length of the liquid pipe between indoor and outdoor unit. Refer the following formula to calculate the charge volume.

Diameter of liquid pipe (mm)	Formula
6.35	$V=15g/m \times (L-5)$
9.52	$V=30g/m \times (L-5)$
12.7	$V=65g/m \times (L-5)$

V: Additional refrigerant charge volume (g).

L : The length of the liquid pipe (m).

Note:

- Refrigerant may only be charged after performed the vacuum drying process.
- Always use gloves and glasses to protect your hands and eyes during the charge work.
- Use electronic scale or fluid infusion apparatus to weight refrigerant to be recharged. Be sure to avoid extra refrigerant charged, it may cause liquid hammer of the compressor or protections.
- Use supplementing flexible pipe to connect refrigerant cylinder, pressure gauge and outdoor unit. And The refrigerant should be charged in liquid state. Before recharging, The air in the flexible pipe and manifold gauge should be exhausted.
- After finished refrigerant recharge process, check whether there is refrigerant leakage at the connection joint part.(Using gas leakage detector or soap water to detect).

9. Engineering of Electrical Wiring

1. Highlights of electrical wiring installation

- All field wiring construction should be finished by qualified electrician.
- Air conditioning equipment should be grounded according to the local electrical regulations.
- Current leakage protection switch should be installed.
- Do not connect the power wire to the terminal of signal wire.
- When power wire is parallel with signal wire, put wires to their own wire tube and remain at least 300mm gap.
- According to table in indoor part named "the specification of the power" to choose the wiring, make sure the selected wiring not small than the date showing in the table.
- Select different colors for different wire according to relevant regulations.
- Do not use metal wire tube at the place with acid or alkali corrosion, adopt plastic wire tube to replace it.
- There must be not wire connect joint in the wire tube If joint is a must, set a connection box at the place.
- The wiring with different voltage should not be in one wire tube.
- Ensure that the color of the wires of outdoor and the terminal No. are same as those of indoor unit respectively.

Table: Minimum Cross-Sectional Area able of Power and Signal Cables

Rated Current of Appliance (A)	Nominal Cross-Sectional Area(mm ²)
≤ 6	0.75
6 - 10	1
10 - 16	1.5
16 - 25	2.5
25 - 32	4
32 - 45	6

10. Test Operation

1. The test operation must be carried out after the entire installation has been completed.

2. Please confirm the following points before the test operation.

- The indoor unit and outdoor unit are installed properly.
- Piping and wiring are properly connected.
- Ensure that there are no obstacles near the inlet and outlet of the unit that might cause poor performance or product malfunction.
- The refrigeration system does not leak.
- The drainage system is unimpeded and draining to a safe location.
- The heating insulation is properly installed.
- The grounding wires are properly connected
- The length of the piping and the added refrigerant stow capacity have been recorded.
- The power voltage is the correct voltage for the air conditioner.

CAUTION: Failure to perform the test run may result in unit damage, property damage or personal injury.

3. Test Run Instructions

1. Open both the liquid and gas stop valves.
2. Turn on the main power switch and allow the unit to warm up.
3. Set the air conditioner to COOL mode, and check the following points.

Indoor unit

- Ensure the remote control and its buttons work properly.
- Ensure the louvers move properly and can be changed using the remote control.
- Double check to see if the room temperature is being registered correctly.
- Ensure the indicators on the remote control and the display panel on the indoor unit work properly.
- Ensure the manual buttons on the indoor unit works properly.
- Check to see that the drainage system is unimpeded and draining smoothly.
- Ensure there is no vibration or abnormal noise during operation.

Outdoor unit

- Check to see if the refrigeration system is leaking.
- Make sure there is no vibration or abnormal noise during operation.
- Ensure the wind, noise, and water generated by the

unit do not disturb your neighbors or pose a safety hazard.

3. Drainage Test

- a. Ensure the drainpipe flows smoothly. New buildings should perform this test before finishing the ceiling.
- b. Remove the test cover. Add 2000ml of water to the tank through the attached tube.
- c. Turn on the main power switch and run the air conditioner in COOL mode.
- d. Listen to the sound of the drain pump to see if it makes any unusual noises.
- e. Check to see that the water is discharged. It may take up to one minute before the unit begins to drain depending on the drainpipe.
- f. Make sure that there are no leaks in any of the piping.
- g. Stop the air conditioner. Turn off the main power switch and reinstall the test cover.