MIDEA LCAC
50Hz R410A ON/OFF

Service Manual

2011

SPSKLIMA
Strategic Products and Services

※The specifications, designs, and information in this book are subject to change without notice for product improvement.

Part 1
General Information

1. Model Names of Indoor/Outdoor Units

1.1 Indoor Units

R410A (capacity multiplied by 1000Btu/h)

Type	Function	12	18	24	30	36	42	48	60
Four-way cassette (compact)	Cooling only(old)	√	√						
	Cooling and heating(new)	√	√						
Four-way cassette	Cooling only			√	√	√		√	√
	Cooling and heating			√	√	√		√	√
Ceiling & floor	Cooling only	√	√	√	√	√		√	√
	Cooling and heating	√	√	√	√	√		√	√
Duct	Cooling and heating	√(Compact)	√	√	√	√	√	√	√

1.2 Outdoor Units

Model of outdoor unit and corresponding indoor unit

Universal Outdoor unit Model	Compressor type	Compressor Brand	Matched indoor units
Cooling Only			
MOU-12CN1(220075100120)	Rotary	GMCC	MCA-12CRN1 MUB-12CRN1
MOU-12CN1(220037401500)	Rotary	GMCC	MUB-12CRN1(φ7)
MOU-18CN1	Rotary	GMCC	MCA-18CRN1 MUB-18CRN1
MOU-24CN1	Rotary	GMCC	MCC-24CRN1 MUB-24CRN1
MOU-30CN1(1 Phase)	SCROLL	SANYO	MCC-30CRN1 MUB-30CRN1(1 Phase)
MOU-30CN1(3 Phase)	SCROLL	SANYO	MCC-30CRN1-R MUB-30CRN1(3 Phase)
MOU-36CN1(1 Phase)	SCROLL	SANYO	MCC-36CRN1 MUB-36CRN1(1 Phase)
MOU-36CN1(3 Phase)	SCROLL	SANYO	MCC-36CRN1-R MUB-36CRN1(3 Phase)
MOU-48CN1	SCROLL	SANYO	MCC-48CRN1-R MUB-48CRN1
MOU-60CN1	SCROLL	SANYO	MCC-60CRN1 MUB-60CRN1
Heat Pump			
MOU-12HN1(220075100110)	Rotary	GMCC	MCA2-12HRN1-Q MUB-12HRN1
MOU-12HN1(220037401510)	Rotary	GMCC	MCA2-12HRN1-Q MTB1-12HWN1-Q MUB-12HRN1(φ7)
MOU-18HN1-Q	Rotary	GMCC	MCA2-18HRN1-Q MUB-18HRN1-Q MTB-18HWN1-Q
MOU-24HN1-Q	Rotary	GMCC	MCC-24HRN1 MUB-24HRN1-Q MTB-24HWN1-Q
MOU-30HN1	SCROLL	SANYO	MCC-30HRN1 MUB-30HRN1(1 Phase) MTB-30HWN1-Q
MOU-30HN1-R	SCROLL	SANYO	MCC-30HRN1-R MUB-30HRN1(3 Phase) MTB-30HWN1-R
MOU-36HN1-Q	SCROLL	SANYO	MCC-36HRN1 MUB-36HRN1-Q MTB-36HWN1-Q
MOU-36HN1-R	SCROLL	SANYO	MCC-36HRN1-R MUB-36HRN1-R MTB-36HWN1-R
MOU-42HN1-Q	SCROLL	SANYO	MTB-42HWN1-Q
MOU-48HN1-R	SCROLL	SANYO	MCC-48HRN1-R MUB-48HRN1-R MTB-48HWN1-R
MOUA-60HN1-R	SCROLL	SANYO	MCC-60HRN1 MUB-60HRN1-R MTB-60HWN1-R

2. External Appearance

2.1 Indoor Units

Duct 	Ceiling & Floor 
Four-way Cassette 	Compact Four-way cassette 

2.2 Outdoor Units

 Single fan outdoor unit	 Double fan outdoor unit

3. Nomenclature

3.1 Indoor Unit

M U B T- 36 H R D N1- R

Power Supply
Q 220~240V,1N, 50Hz
R 380~420V, 3N, 50Hz
N 220~230V, 1N, 60Hz
D 220V~, 3N, 60Hz
C 380~420V,3N,60Hz

Refrigerant
N1 R410A -- R22

D DC Inverter -- On-Off
F Full DC

Control Mode
W Wired Control **E** Electric Control
M Mechanical Control **R** Remote Control

Function Code
C Cooling Only **H** Cooling & Heating
A Cooling & Heating+PTC

Capacity (¡ Á000Btu/h)

T Tropical Condition
-- T1 Condition

Designed Time
A Time A Designed **B** Time B Designed
C Time C Designed **D** Time D Designed

Product Category
C Cassette Type **V** AHU Type
T Duct Type **F** Console Type
U Ceiling & Floor Type
H High Static Pressure Duct Type

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3.2 Outdoor Unit

M O U T- 36 H D N1- R

Power Supply
Q 220~240V,1N, 50HZ
R 380~420V, 3N, 50Hz
N 220~230V, 1N, 60Hz
D 220V~, 3N, 60Hz
C 380~420v,3N,60HZ

Refrigerant
N1 R410A -- R22

D DC Inverter -- On-Off
F Full DC

Function Code
C Cooling Only **H** Cooling & Heating
A Cooling & Heating+PTC

Capacity (¡ Á000Btu/h)

T Tropical Condition
-- T1 Condition

U Side Discharge Outdoor Unit
V Top Discharge Outdoor Unit
S Centrifugal Fan Outdoor Unit

O Outdoor unit

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4. Features

4.1 High quality coils:

The coil is constructed of advanced inner grooved copper tube and aluminum fins.

4.2 Anti-rust, 500 hours salt spray test.

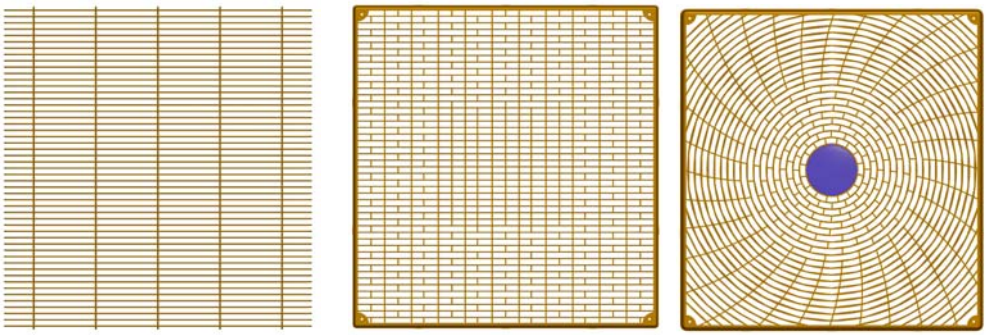
4.3 Low operation sound level: Well-known stable and quiet running fan motor.

4.4 Well-known compressor.

4.5 Compact design: Smaller dimension and larger stuffing capacity.

4.6 Universal outdoor unit design.

4.7 Optional air outlet grille: plastic type and wire type.



Wire type Plastic type Plastic type

4.8 Optional low temperature cooling module.

4.9 R410A environment friendly refrigerant.

Part 2
Indoor Units

Four-way Cassette Type (Compact)

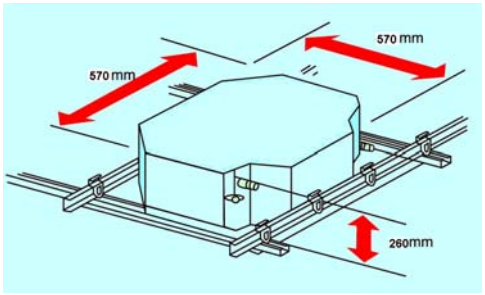
1. Features

(1) Low operation noise
---Streamline plate ensures quietness
---Creates natural and comfortable environment

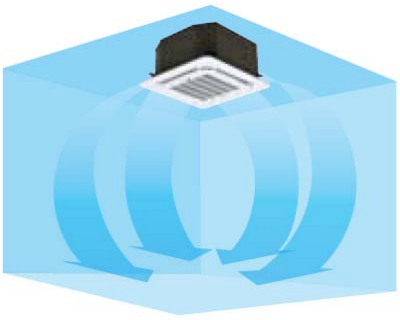
(2) Efficient cooling
---Equal, fast and wide—range cooling

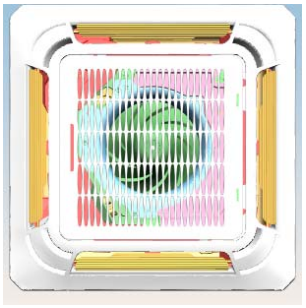
(3) The adoption of the most advanced 3- Dimensional Screw fan
---Reduces the air resistance passing through
---Smoothes the air flow
---Makes air speed distribution to the heat exchange uniform

(4) Improvement for easy installation and maintenance
---Little space is required for installation into a shallow ceiling
---Because of the compactness and weight reduction of the main unit and panel, all models can be installed without a hoist



(5) 360^0 Air Flow Panel
360^0 air outlet makes equal,fast ad wide range cooling





(6) Inside E-box design
The E-box is simply and safely build inside tge indoor unit, of witch ceiling side is 600mm*600mm. It is convenient to install and maintain. Checking the control part is easy, you only need to open the air return grille.

2. Specifications

Model			MCA2-12HRN1-Q	MCA2-18HRN1-Q
Code			220042300140	220042400510
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	12000	18000
	Input	W	1085	1834
	EER		2.95	2.89
Heating	Capacity	Btu/h	13000	20000
	Input	W	1235	1881
	COP		3.24	3.19
Indoor fan motor	Model		YDK15-6P	YDK37-4P
	Qty		1	1
	Input	W	47.1/31.1/26.9	80/65/46
	Capacitor	uF	1.5 /450V	2UF/400-450V
	Speed(Hi/Mi/Lo)	r/min	780/540/430	1000/875/710
Indoor coil	Number of rows		1	2
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7Inner grooved copper tube	φ7Inner grooved copper tube
	Coil length × height × width	mm	1380×210×13.37	1370×210×26.74
	Number of circuits		2	4
Indoor air flow (Hi/Mi/Lo)		m^3/h	680/600/400	860/760/500
Indoor noise level (sound pressure)		dB(A)	41/38/35	44/41/38
Indoor unit	Dimension (W×H×D)(body)	mm	570×260×570	570×260×570
	Packing (W×H×D)(body)	mm	655×290×655	655×290×655
	Dimension (W×H×D)(panel)	mm	647×50×647	647×50×647
	Packing (W×H×D)(panel)	mm	715 x123x715	715 x123x715
	Net/Gross weight(body)	kg	16/20	19/21
	Net/Gross weight(panel)	kg	2.5/4.5	2.5/4.5
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			RG51Q1/BGE	RG51Q1/BGE
Operation temperature		℃	17-30	17-30

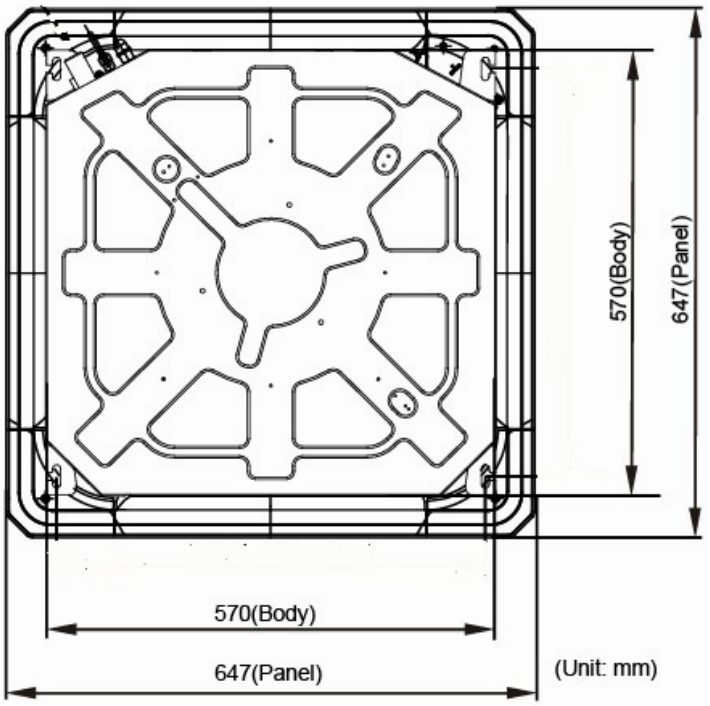
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

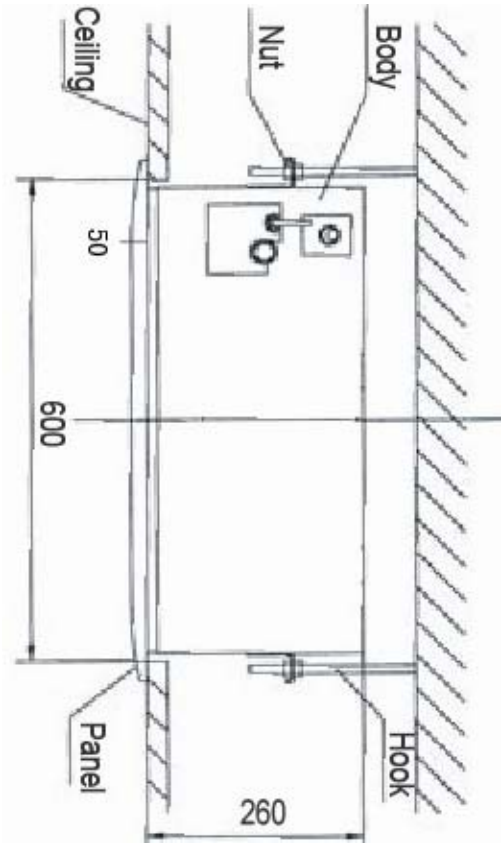
Model			MCA-12CRN1	MCA-18CRN1
Code			220042300100	220042400210
Power supply		V-Ph-Hz	220-240-1-50	220-240-1-50
Cooling	Capacity	Btu/h	12000	18000
	Input	W	1200	1900
	EER		2.67	2.79
Indoor fan motor	Model		YDK45-4F	YDK45-4F
	Qty		1	1
	Input	W	56.7/51.5/44.4	56.7/51.5/44.4
	Capacitor	μF	1.5uF/450V	1.5uF/450V
	Speed(hi/mi/lo)	r/min	930/845/680	930/845/680
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.4	1.4
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 Inner grooved copper tube	Φ7 Inner grooved copper tube
	Coil length x height x width	mm	1247 x210 x26.74	1247 x210 x26.74
	Number of circuits		5	5
Indoor air flow (Hi/Mi/Lo)		m^3/h	680/600/400	860/760/500
Indoor noise level(Hi/Mi/Lo)		dB(A)	41/38/35	44/41/38
Indoor unit	Dimension (W*H*D)	Body(mm)	580×254×580	580×254×580
		Panel(mm)	750×340×745	750×340×745
	Packing (W*H*D)	Body(mm)	650×30×650	650×30×650
		Panel(mm)	715×115×715	715×115×715
	Net/Gross weight	Body (kg)	20/26	20/26
		Panel (kg)	2.5/4.5	2.5/4.5
Refrigerant type			R410A	R410A
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.4/Φ12.7	Φ6.4/Φ12.7
Drainage water pipe diameter		mm	ODΦ25	ODΦ25
Controller			RG51M3/CE (standard)	RG51M3/CE (standard)
Operation temp		°C	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

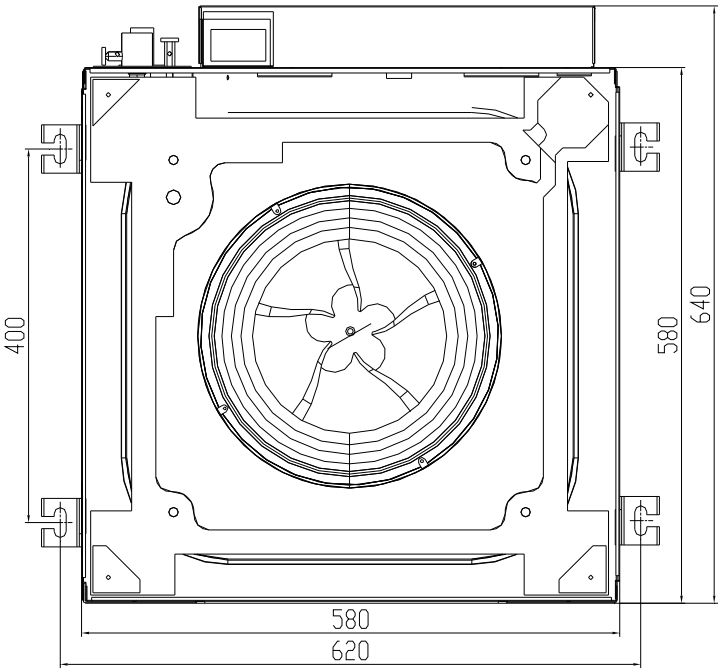
3. Dimensions

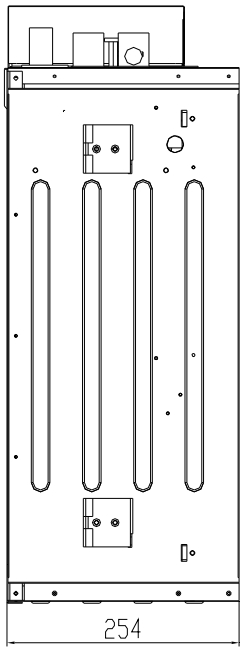
MCA2-12HRN1-Q MCA2-18HRN1-Q



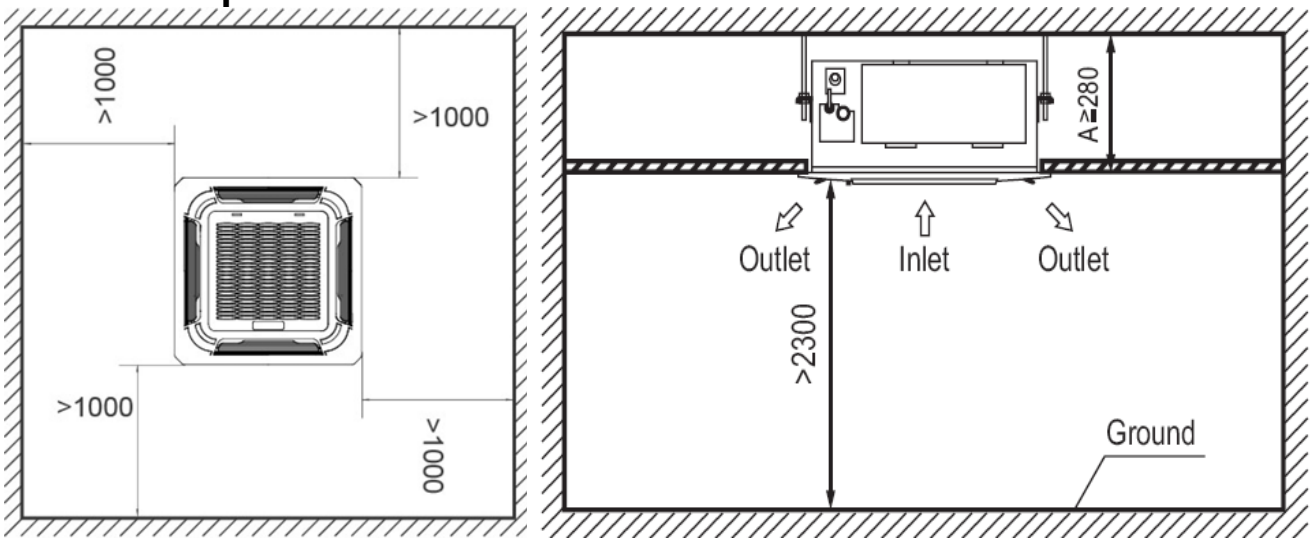


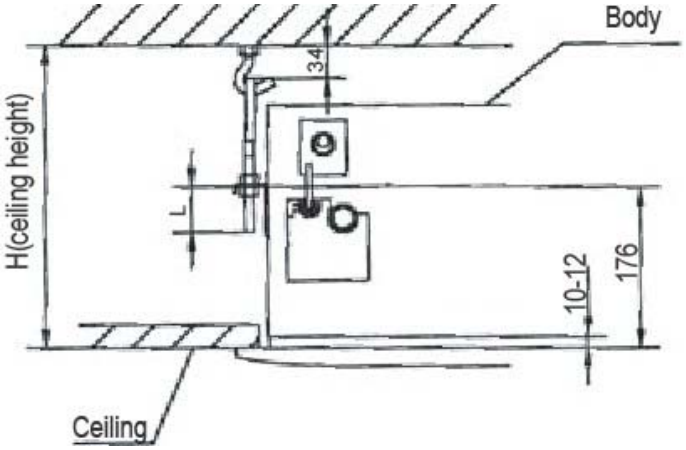
MCA-12CRN1 MCA-18CRN1





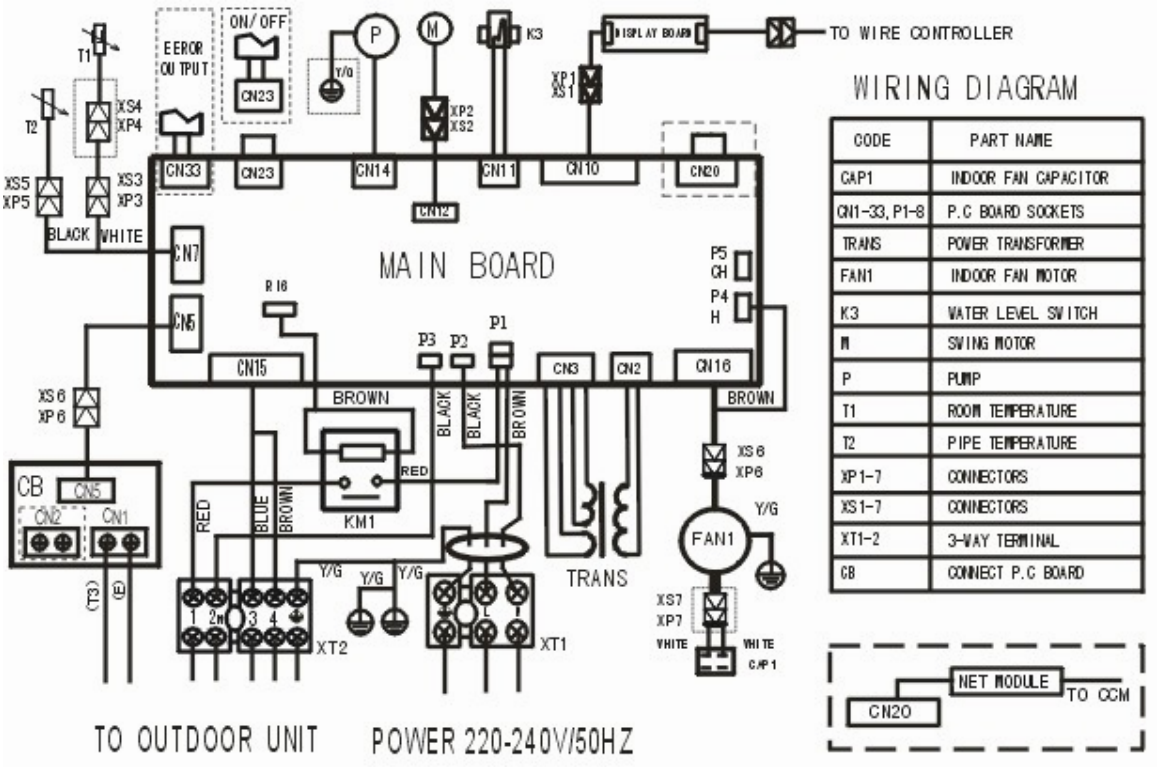
4. Service Space





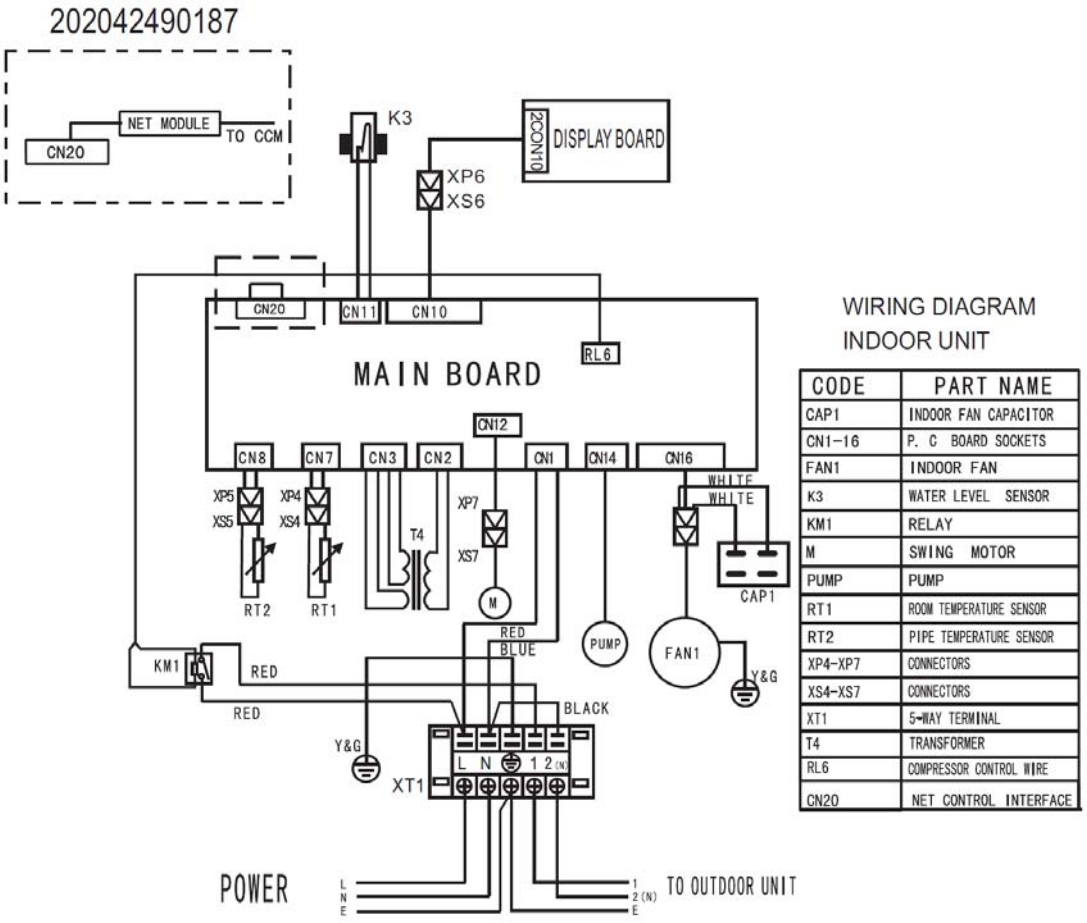
5. Wiring Diagrams

MCA2-12HRN1-Q MCA2-18HRN1-Q



CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-33, P1-8	P.C BOARD SOCKETS
TRANS	POWER TRANSFORMER
FAN1	INDOOR FAN MOTOR
K3	WATER LEVEL SWITCH
M	SWING MOTOR
P	PUMP
T1	ROOM TEMPERATURE
T2	PIPE TEMPERATURE
XP1-7	CONNECTORS
XS1-7	CONNECTORS
XT1-2	3-WAY TERMINAL
CB	CONNECT P.C BOARD

MCA-12CRN1 MCA-18CRN1

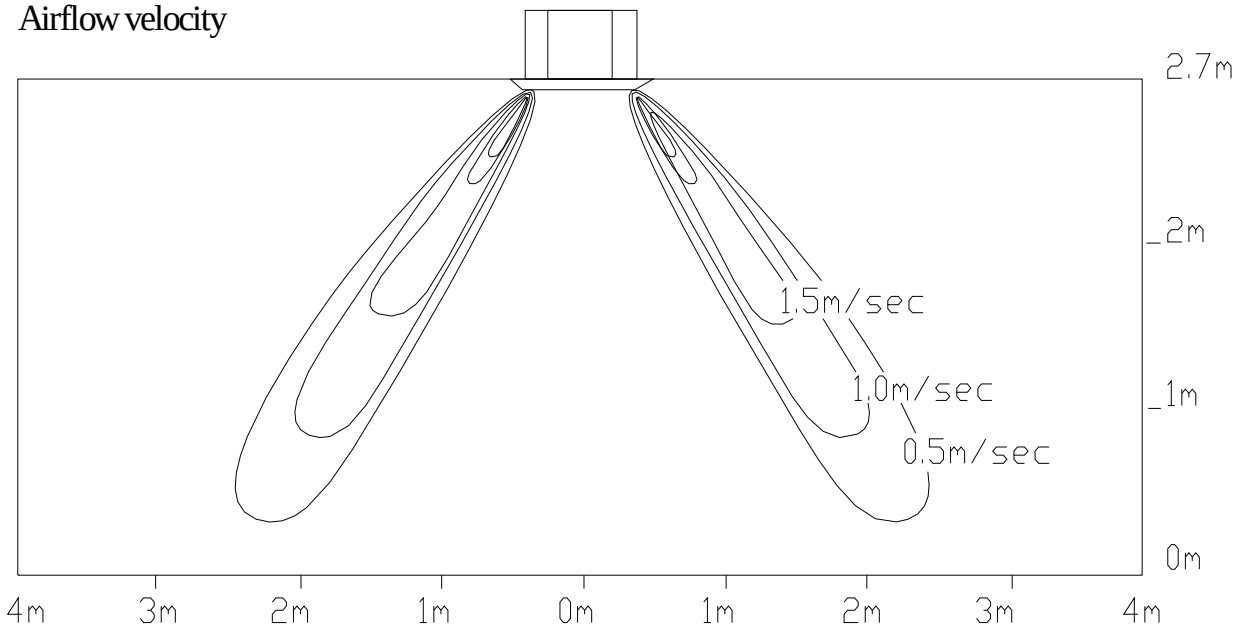


WIRING DIAGRAM
INDOOR UNIT

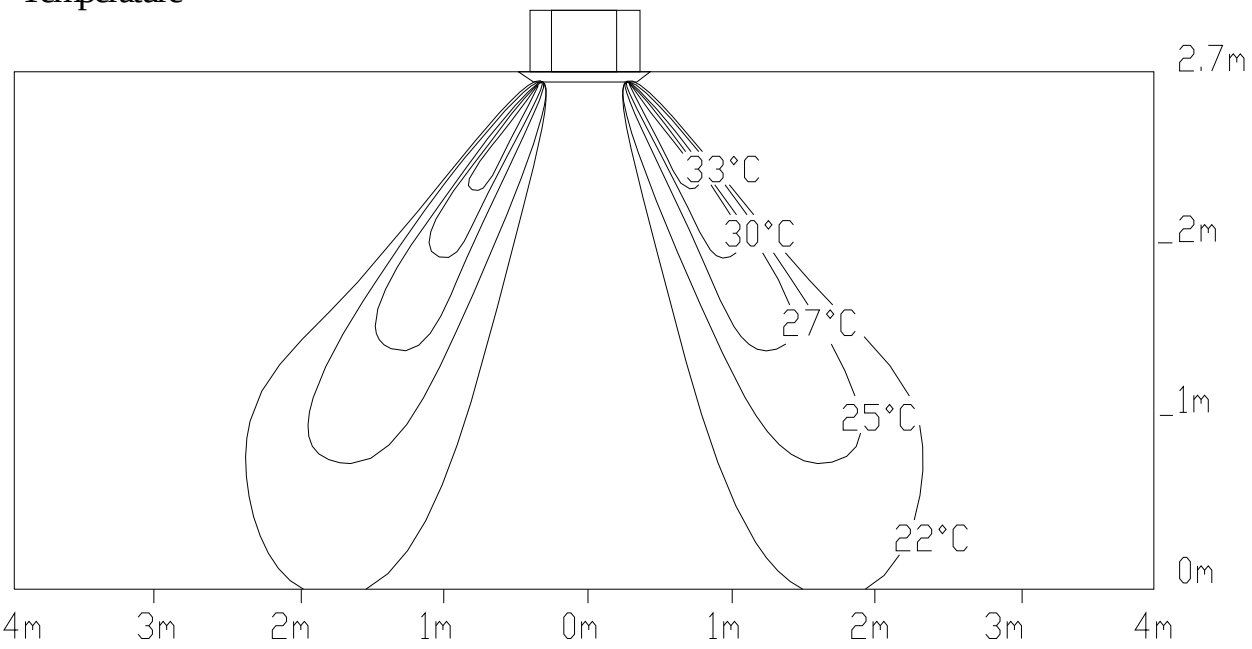
CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-16	P. C BOARD SOCKETS
FAN1	INDOOR FAN
K3	WATER LEVEL SENSOR
KM1	RELAY
M	SWING MOTOR
PUMP	PUMP
RT1	ROOM TEMPERATURE SENSOR
RT2	PIPE TEMPERATURE SENSOR
XP4-XP7	CONNECTORS
XS4-XS7	CONNECTORS
XT1	5-WAY TERMINAL
T4	TRANSFORMER
RL6	COMPRESSOR CONTROL WIRE
CN20	NET CONTROL INTERFACE

6. Air Velocity and Temperature Distributions

Airflow velocity



Temperature

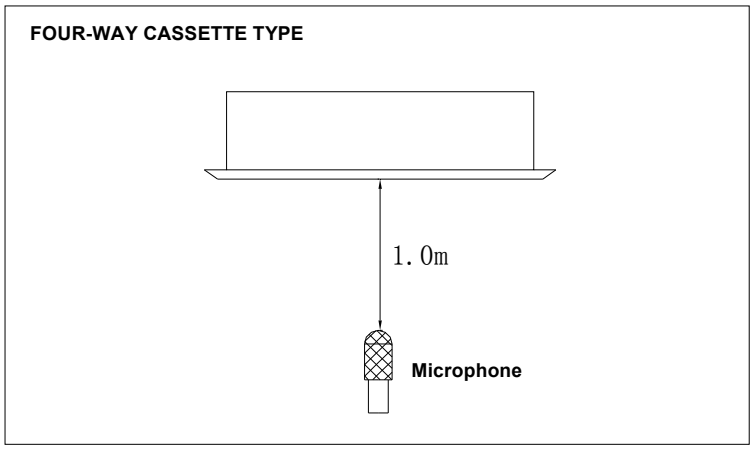


7. Electric Characteristics

Model	Indoor Units				Power Supply
	Hz	Voltage	Min.	Max.	MFA
MCA2-12HRN1-Q	50	220-240V	198V	254V	25
MCA2-18HRN1-Q	50	220-240V	198V	254V	25
MCA-12CRN1	50	220-240V	198V	254V	25
MCA-18CRN1	50	220-240V	198V	254V	25

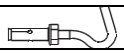
Remark:
MFA: Max. Fuse Amps. (A)

8. Sound Levels



Model	Noise level dB(A)		
	H	M	L
MCA2-12HRDN1-Q	41	38	35
MCA-12CRN1	41	38	35
MCA2-18HRDN1-Q	44	41	38
MCA-18CRN1	44	41	38

9. Accessories

	Name	Shape	Quantity
Installation fittings	1. Expansible hook		4
	2. Installation hook		4
	3. Installation paper board		1
Drainpipe Fittings	4. Out-let pipe sheath		1
	5. Out-let pipe clasp		1
	6. Tightening band		20
	7. Drain joint		1
Remote controller & Its holder	8. Remote controller		1
	9. Remote controller holder		1
	10. Mounting screw(ST2.9×10-C-H)		2
	11. Alkaline dry batteries (AM4)		2
Others	12. Owner's manual		1
	13. Installation manual		1

10. The Specification of Power

Type		MCA2-12HRN1-Q	MCA2-18HRN1-Q
Power	Phase	1-phase	1-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz
Circuit Breaker/ Fuse (A)		40/25	40/25
Indoor Unit Power Wiring (mm^2)		3×2.5	3×2.5
Indoor/Outdoor Connecting Wiring	Ground wire(mm^2)	2.5	2.5
	Outdoor Unit Power Wiring	———	———
	Strong Electric Signal	5×2.5	5×2.5
	Weak Electric Signal (mm^2)	2-core shield wire 2×0.75	2-core shield wire 2×0.75

Type		MCA-12CRN1	MCA-18CRN1
Power	Phase	1-phase	1-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz
Circuit Breaker/ Fuse (A)		40/25	40/25
Indoor Unit Power Wiring (mm^2)		3×2.5	3×2.5
Indoor/Outdoor Connecting Wiring	Ground Wiring	2.5	2.5
	Outdoor Unit Power Wiring	———	———
	Strong Electric Signal	3×2.5	3×2.5
	Weak Electric Signal	———	———

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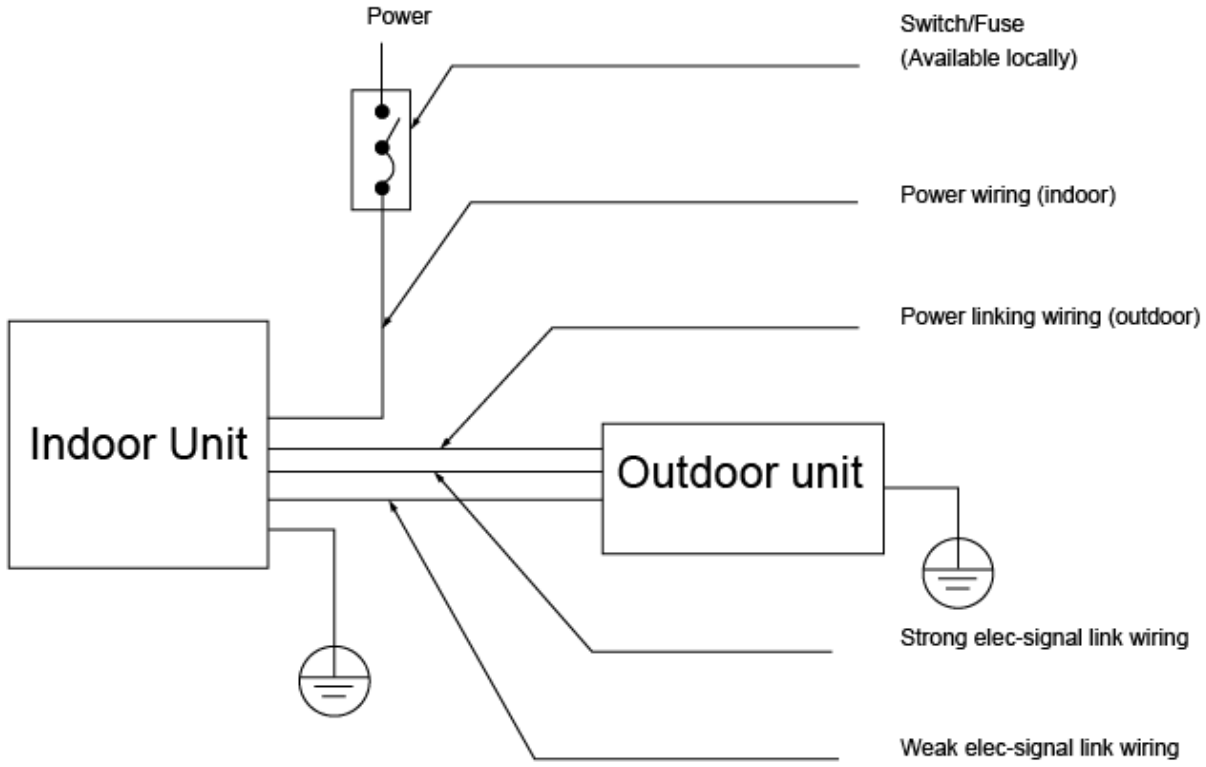
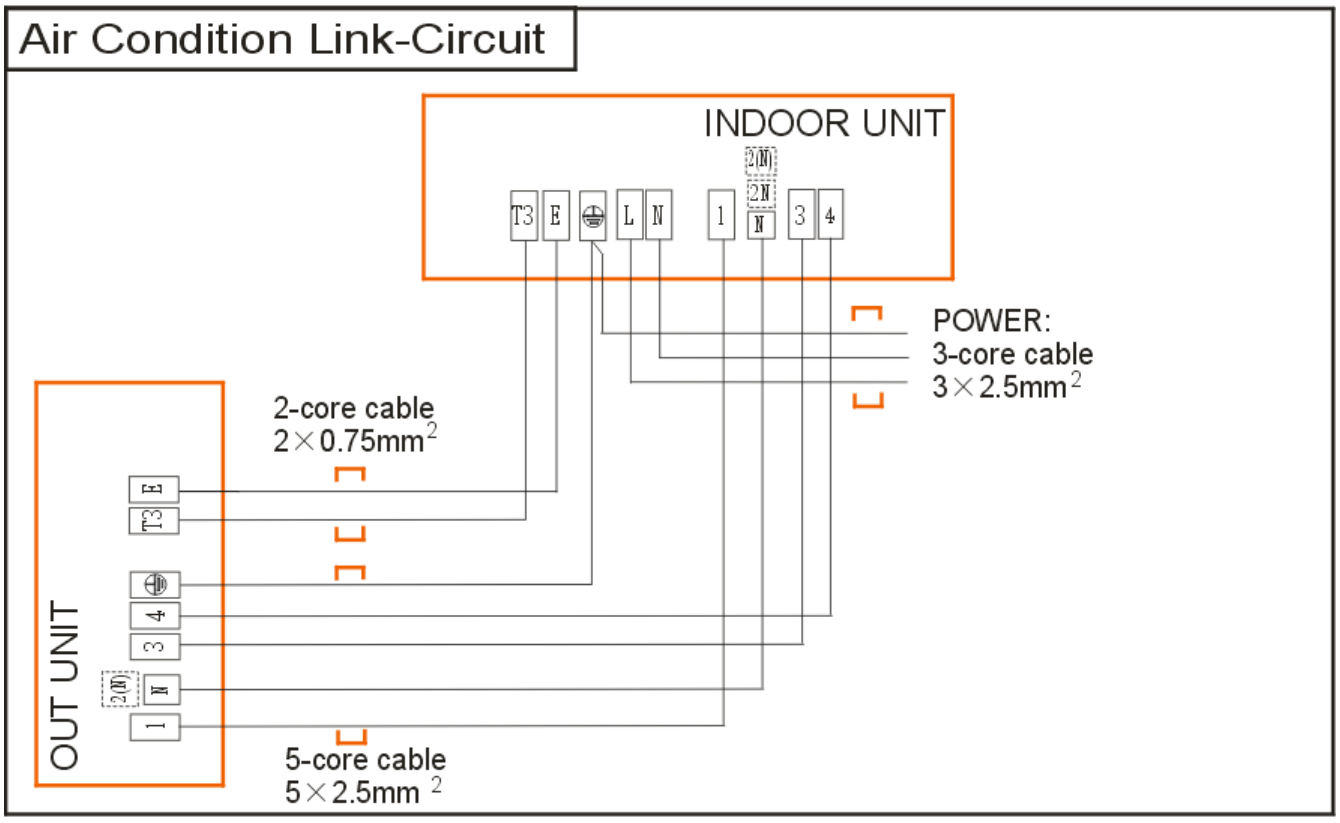
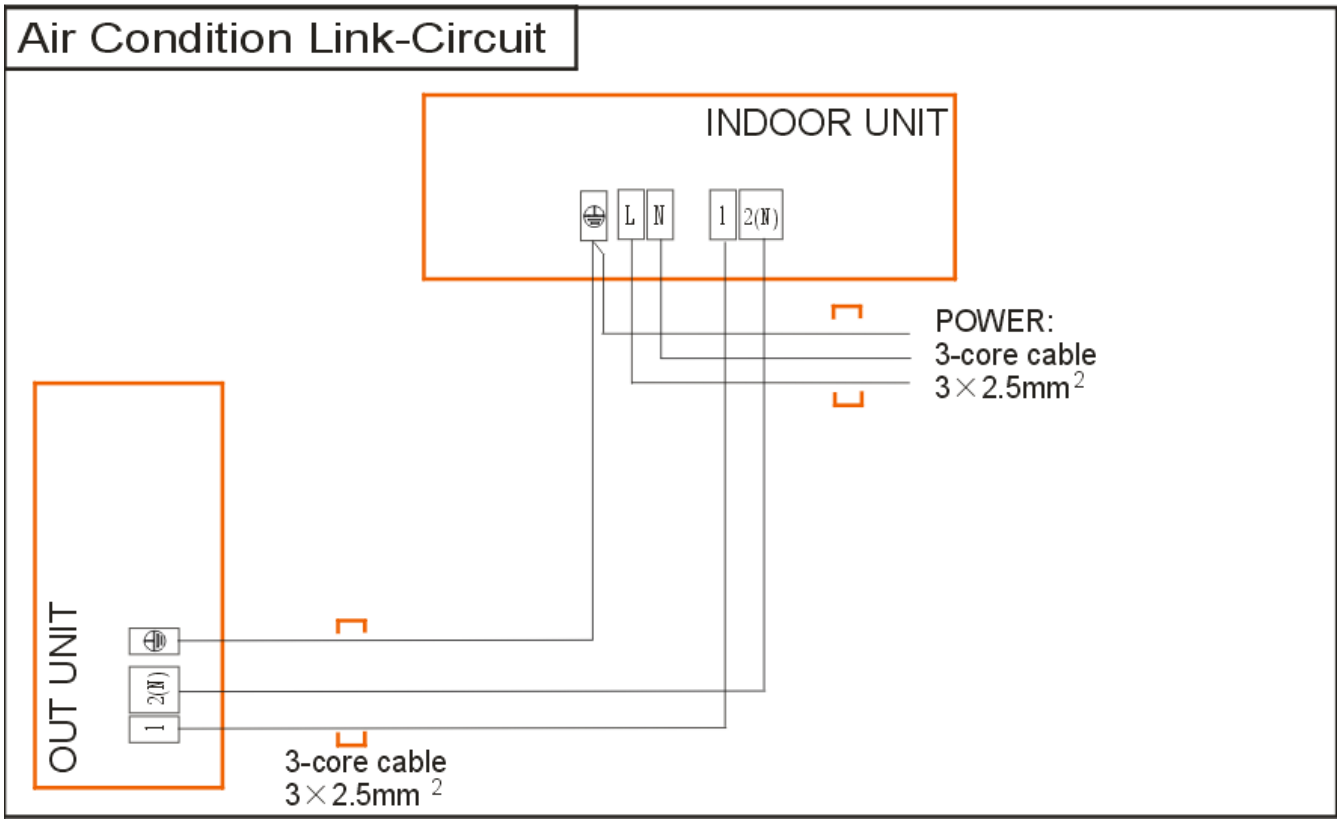
11. Field Wiring



MCA2-12HRN1-Q MCA2-18HRN1-Q



MCA-12CRN1 MCA-18CRN1

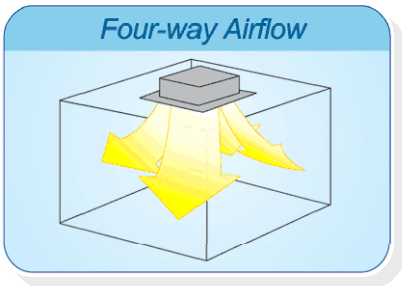


Four-way Cassette Type

1. Features

(1) Low operation noise
—Streamline plate ensures quietness
—Creates natural and comfortable environment

(2) Efficient cooling——Equal, fast and wide range cooling

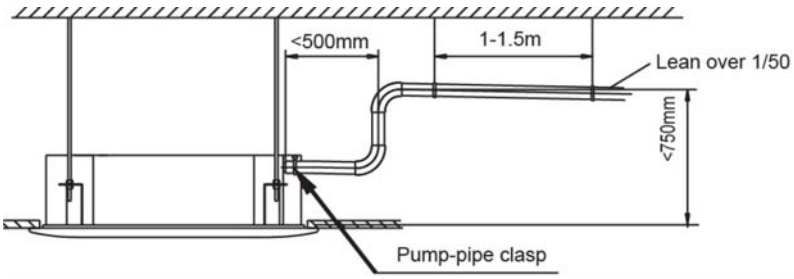


(3) Excellent performance. The optimal evaporator & sufficient airflow volume guarantees the excellent capacity

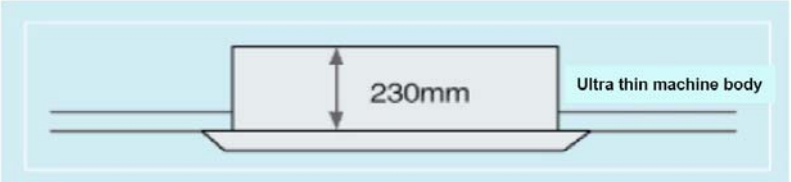
(4) The adoption of the most advanced 3- Dimensional Screw fan
—Reduces the air resistance passing through
—Smoothes the air flow
—Makes air speed distribution to the heat exchange uniform

(5) Fresh air makes life healthier and more comfortable.

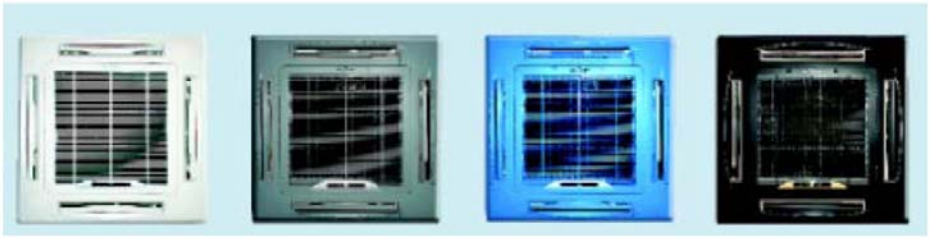
(6) Drainage pump can take up the condenser water to750mm.



(7) Ultra thin machine body to easy installation and maintenance. 18K~24K:230mm, 36~48K:300mm.



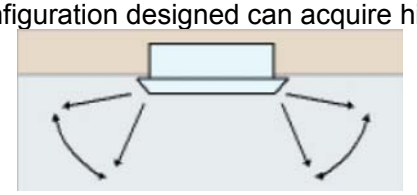
(8) Different color panels for choose: White、Gray、Blue、Black



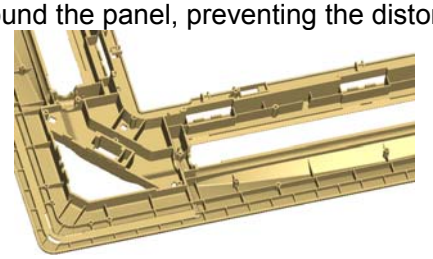
White Gray (optional) Blue (optional) Black (optional)

(9) Swing angle of louver

1) Add one more swing motor, one motor driving two louvers. Controlling the interspace of each part, minimizing the angle loss.
2) The swing angle of the first louver are 40~42 degrees and the second louver are 37~38 degrees. New evaporator and inner configuration designed can acquire high heat-exchanger effect.

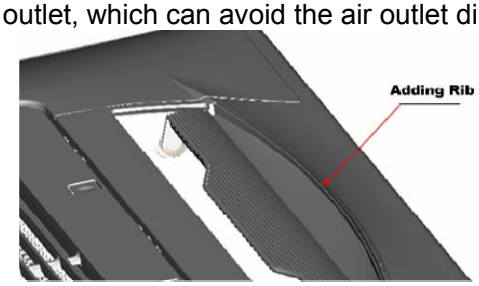


(10) More strengthening rib design around the panel, preventing the distortion for the panel.

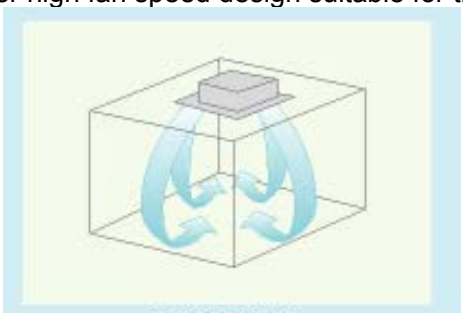


(11) New outlet frame design to make the phenomena of coagulation great improvement: prevent the condensing water from damaging the air guide strip.

(12) Adding rib on the panel of fan outlet, which can avoid the air outlet direct flow to people.

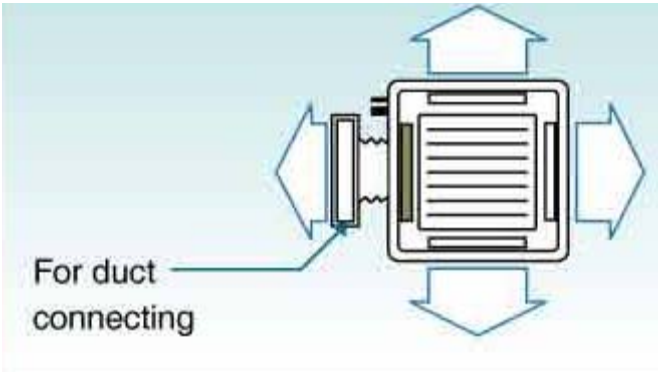


(13) 4 speeds available, optional super high fan speed design suitable for the large building over 3m high.



(14) Adding digital tube displaying on the display board. LED can display the Error Code to make the malfunction checking easier.

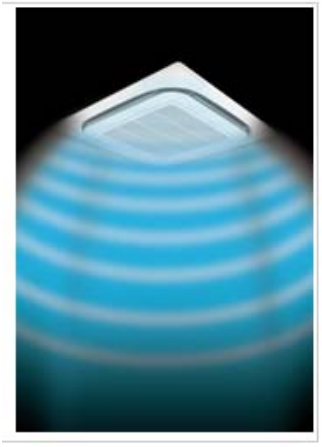
(15) Reserve spaces for air side-outlet, it is available to connect duct pipe hence air supplying from the four sides to nearby small room..



(16) The connecting pipe and drop height is higher. Max. pipe length up to 50m（refer to ①）, and Max. drop height up to 30m（refer to ②）.

(17) Optimal design, smaller Control Box, Space saving and convenient for wiring,
Using fire resistance galvanized steel for E-box material. Metal box make the control part more stable and prevent damaging.

(18) 360° air flow panel : 360° air flow delivery ensures uniform airflow distribution. 60K is standard, the others are optional.



2. Specifications

Model			MCC-24HRN1	MCC-30HRN1
Code			220042500390	220042600250
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	24000	30000
	Input	W	2475	3191
	EER		2.87	2.82
Heating	Capacity	Btu/h	26000	32000
	Input	W	2428	3369
	COP		3.13	2.82
Indoor fan motor	Model		YDK80-6E	YDK90-6E
	Qty		1	1
	Input	W	120/100/90	143/116/100
	Capacitor	uF	3.5uF/450V	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	800/550/400	770/640/550
Indoor coil	Number of rows		2	2
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7 Inner grooved copper tube	φ7 Inner grooved copper tube
	Coil length × height × width	mm	1990×168×26.74	1990×252×26.74
	Number of circuits		8	12
Indoor air flow (Hi/Mi/Lo)		m^3/h	1327/1114/871	1545/1354/1187
Indoor noise level (sound pressure)		dB(A)	42/40/39	44/42/41
Indoor unit	Dimension (W×H×D)(body)	mm	840×230×840	840×300×840
	Packing (W×H×D)(body)	mm	900×250×900	900×320×900
	Dimension (W×H×D)(panel)	mm	950×55×950	950×55×950
	Packing (W×H×D)(panel)	mm	1035×90×1035	1035×90×1035
	Net/Gross weight(body)	kg	24/27.9	30/36
	Net/Gross weight(panel)	kg	5/8	5/8
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/Gas side	mm	φ9.5/φ15.9	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ32	ODφ32
Controller			RG51Q1/BGE	RG51Q/BGE
Operation temperature		℃	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MCC-24CRN1	MCC-30CRN1
Code			220042500380	220042600240
Power supply		V-Ph-Hz	220-240-1-50	220-240-1-50
Cooling	Capacity	Btu/h	24000	30000
	Input	W	2600	3450
	EER		2.73	2.61
Indoor fan motor	Model		YDK80-6E	YDK90-6E
	Qty		1	1
	Input	W	110/100/90	143/114/93
	Capacitor	μF	3.5	3.5
	Speed(hi/mi/lo)	r/min	670/550/400	770/640/550
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37
	Fin spacing	mm	1.5	1.5
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 inner grooved copper tube	Φ7 inner grooved copper tube
	Coil length x height x width	mm	1990x168x26.74	1990×252×26.74
	Number of circuits		8	12
Indoor air flow (Hi/Mi/Lo)		m^3/h	1327/1114/871	1545/1354/1187
Indoor noise level(Hi/Mi/Lo)		dB(A)	42/40/39	44/42/41
Indoor unit	Dimension (W*H*D)	Body(mm)	840x230x840	840x300x840
		Panel(mm)	950 x46 x950	950×46×950
	Packing (W*H*D)	Body(mm)	900 x250x 900	900×320×900
		Panel(mm)	1035x90x1035	1035x90x1035
	Net/Gross weight	Body (kg)	24/28	30/36
		Panel (kg)	5/8	5/8
Refrigerant type			R410A	R410A
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9	Φ9.5/Φ15.9
Design pressure		MPa	4.2/1.5	4.2/1.5
Drainage water pipe diameter		mm	ODΦ32	ODΦ32
Controller			RG51Q1/BGE	RG51Q1/BGE
Operation temp		°C	17~30	17~30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			**MCC-30HRN1-R**	**MCC-36HRN1**
Code			220042600270	220042700210
Power supply		V-ph-Hz	380~415-3-50	220~240-1-50
Cooling	Capacity	Btu/h	30000	36000
	Input	W	3200	3780
	EER		2.83	2.73
Heating	Capacity	Btu/h	32000	40000
	Input	W	3381	4250
	Current	A	6.9	18.6
	COP		2.81	2.82
Indoor fan motor	Model		YDK90-6E	YDK90-6E
	Qty		1	1
	Input	W	143/116/100	143/116/100
	Capacitor	uF	3.5uF/450V	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	770/640/550	770/640/550
Indoor coil	Number of rows		2	2
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.4
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7 Inner grooved copper tube	φ7 Inner grooved copper tube
	Coil length × height × width	mm	1990×252×26.74	1990×252×26.74
	Number of circuits		12	12
Indoor air flow (Hi/Mi/Lo)		m^3/h	1545/1354/1187	1545/1354/1187
Indoor noise level (sound pressure)		dB(A)	44/42/41	44/42/41
Indoor unit	Dimension (W×H×D)(body)	mm	840×300×840	840×300×840
	Packing (W×H×D)(body)	mm	900×320×900	900×320×900
	Dimension (W×H×D)(panel)	mm	950×55×950	950×55×950
	Packing (W×H×D)(panel)	mm	1035×90×1035	1035×90×1035
	Net/Gross weight(body)	kg	30/36	28/32
	Net/Gross weight(panel)	kg	5/8	5/8
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/Gas side	mm	φ12.7/φ19	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ32	ODφ32
Controller			RG51Q/BGE	RG51Q1/BGE
Operation temperature		℃	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			**MCC-30CRN1-R**	**MCC-36CRN1**
Code			220042600260	220042700200
Power supply		V-Ph-Hz	380-415-3-50	220-240-1-50
Cooling	Capacity	Btu/h	30000	36000
	Input	W	3500	4610
	EER		2.57	2.28
Indoor fan motor	Model		YDK90-6E	YDK90-6E
	Qty		1	1
	Input	W	143/116/100	143/116/100
	Capacitor	μF	3.5UF/450V	3.5UF/450V
	Speed(hi/mi/lo)	r/min	770/640/550	770/640/550
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37
	Fin spacing	mm	1.5	1.5
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 inner grooved copper tube	Φ7 inner grooved copper tube
	Coil length x height x width	mm	1990x252x26.74	1990x252x26.74
	Number of circuits		12	12
Indoor air flow (Hi/Mi/Lo)		m^3/h	1545/1354/1187	1545/1354/1187
Indoor noise level(Hi/Mi/Lo)		dB(A)	44/42/41	44/42/41
Indoor unit	Dimension (W*H*D)	Body(mm)	840x300x840	840x300x840
		Panel(mm)	950 x46 x950	950 x46 x950
	Packing (W*H*D)	Body(mm)	900×320×900	900×320×900
		Panel(mm)	1035x90x1035	1035x90x1035
	Net/Gross weight	Body (kg)	30/36	30/36
		Panel (kg)	5/8	5/8
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9	Φ9.5/Φ15.9
Drainage water pipe diameter		mm	ODΦ32	ODΦ32
Controller			RG51Q1/BGE	RG51Q1/BGE
Operation temp		°C	17~30	17~30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			**MCC-36HRN1-R**	**MCC-48HRN1-R**
Code			220042700230	220042800310
Power supply		V-ph-Hz	380~415-3-50	380~420-3-50
Cooling	Capacity	Btu/h	36000	48000
	Input	W	3780	4880
	EER		2.78	2.87
Heating	Capacity	Btu/h	40000	52000
	Input	W	4250	5290
	Current	A	6.5	9.1
	COP		2.82	2.83
Indoor fan motor	Model		YDK90-6E	YDK90-6E
	Qty		1	1
	Input	W	143/116/100	143/116/100
	Capacitor	uF	3.5uF/450V	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	770/640/550	770/640/550
Indoor coil	Number of rows		2	2
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	φ7 Inner grooved copper tube	φ7 Inner grooved copper tube
	Coil length × height × width	mm	1990×252×26.74	1990×252×26.74
	Number of circuits		12	12
Indoor air flow (Hi/Mi/Lo)		m^3/h	1545/1354/1187	1545/1354/1187
Indoor noise level (sound pressure)		dB(A)	44/42/41	44/42/41
Indoor unit	Dimension (W×H×D)(body)	mm	840×300×840	840×300×840
	Packing (W×H×D)(body)	mm	900×320×900	900×320×900
	Dimension (W×H×D)(panel)	mm	950×55×950	950×55×950
	Packing (W×H×D)(panel)	mm	1035×90×1035	1035×90×1035
	Net/Gross weight(body)	kg	30/33	28.6/34.7
	Net/Gross weight(panel)	kg	5/8	5/8
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/Gas side	mm	φ12.7/φ19	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ32	ODφ32
Controller			RG51Q1/BGE	RG51Q1/BGE
Operation temperature		℃	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MCC-36CRN1-R	MCC-48CRN1-R
Code			220042700220	220042800300
Power supply		V-Ph-Hz	380-415-3-50	380-415-3-50
Cooling	Capacity	Btu/h	36000	48000
	Input	W	4168	5881
	EER		2.52	2.38
Indoor fan motor	Model		YDK90-6E	YDK90-6E
	Qty		1	1
	Input	W	143/116/100	143/116/100
	Capacitor	μF	3.5UF/450V	3.5UF/450V
	Speed(hi/mi/lo)	r/min	770/640/550	770/640/550
Indoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	21x13.37	21x13.37
	Fin spacing	mm	1.5	1.5
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 Inner grooved copper tube	Φ7 Inner grooved copper tube
	Coil length x height x width	mm	1990x252x26.74	1990x252x26.74
	Number of circuits		12	12
Indoor air flow (Hi/Mi/Lo)		m^3/h	1545/1354/1187	1545/1354/1187
Indoor noise level(Hi/Mi/Lo)		dB(A)	44/42/41	44/42/41
Indoor unit	Dimension (W*H*D)	Body(mm)	840x300x840	840x300x840
		Panel(mm)	950 x46 x950	950x46x950
	Packing (W*H*D)	Body(mm)	900×320×900	900×320×900
		Panel(mm)	1035x90x1035	1035x90x1035
	Net/Gross weight	Body (kg)	30/36	30/36
		Panel (kg)	5/8	5/8
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9	Φ9.5/Φ15.9
Drainage water pipe diameter		mm	ODΦ32	ODΦ32
Controller			RG51Q1/BGE	RG51Q1/BGE
Operation temp		°C	17~30	17~30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

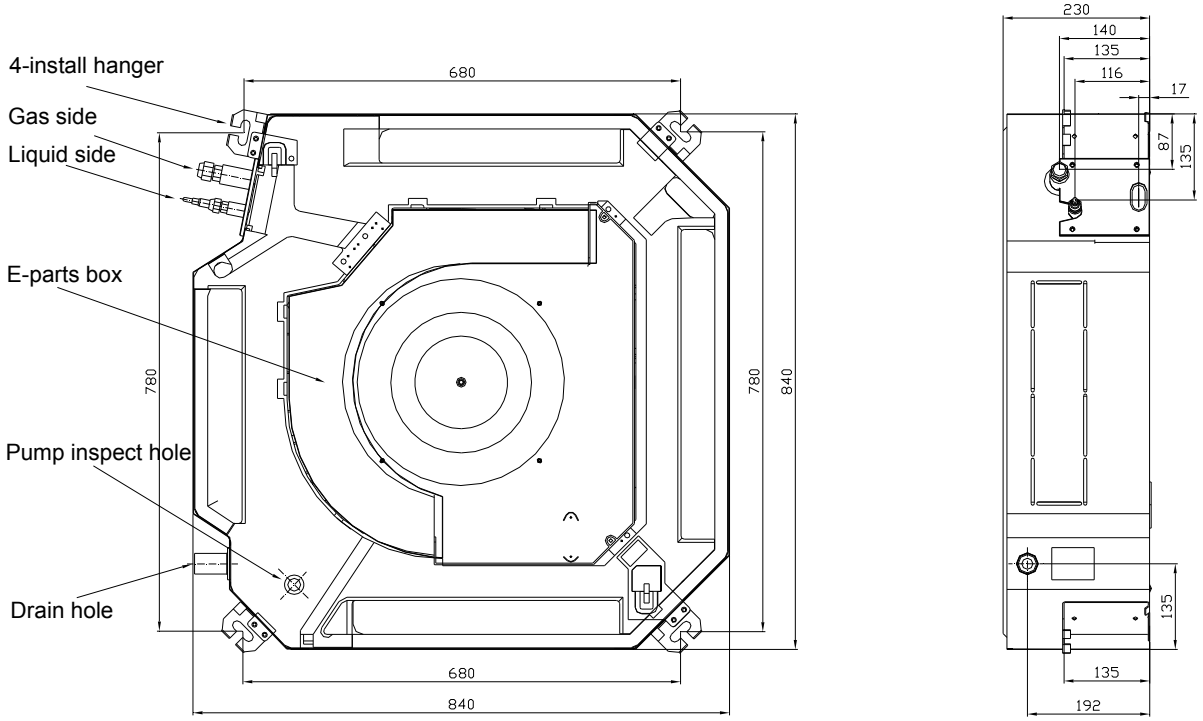
Model	MCC-60HRN1	MCC-60CRN1

Code			220042900040	220042900050
Power supply		V-ph-Hz	380~420-3-50	380-415-3-50
Cooling	Capacity	Btu/h	60000	60000
	Input	W	5904	5948
	EER		2.71	2.69
Heating	Capacity	Btu/h	65000	—
	Input	W	6859	—
	Current	A	10.6	—
	COP		2.77	—
Indoor fan motor	Model		YDK90-6E	YDK90-6E
	Qty		1	1
	Input	W	165/116/100	165/116/100
	Capacitor	uF	4UF/450V	4UF/450V
	Speed(Hi/Mi/Lo)	r/min	840/640/550	840/640/550
Indoor coil	Number of rows		3	3
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	φ7, Inner grooved copper tube	φ7, Inner grooved copper tube
	Coil length × height × width	mm	2080x252x40.11	2080x252x40.11
	Number of circuits		12	12
Indoor air flow (Hi/Mi/Lo)		m^3/h	1800/1480/1280	1800/1480/1280
Indoor noise level (sound pressure)		dB(A)	47/44/43	47/44/43
Indoor unit	Dimension (W×H×D)(body)	mm	840×300×840	840×300×840
	Packing (W×H×D)(body)	mm	900x320x900	900x320x900
	Dimension (W×H×D)(panel)	mm	950×55×950	950×55×950
	Packing (W×H×D)(panel)	mm	1035×90×1035	1035×90×1035
	Net/Gross weight(body)	kg	32/36	32/36
	Net/Gross weight(panel)	kg	6/9	6/9
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/Gas side	mm	φ12.7/φ19	φ9.5/φ19
Drainage water pipe diameter		mm	ODφ32	ODφ32
Controller			RG51Q1/BGE	RG51Q1/BGE
Operation temperature		℃	17-30	17-30

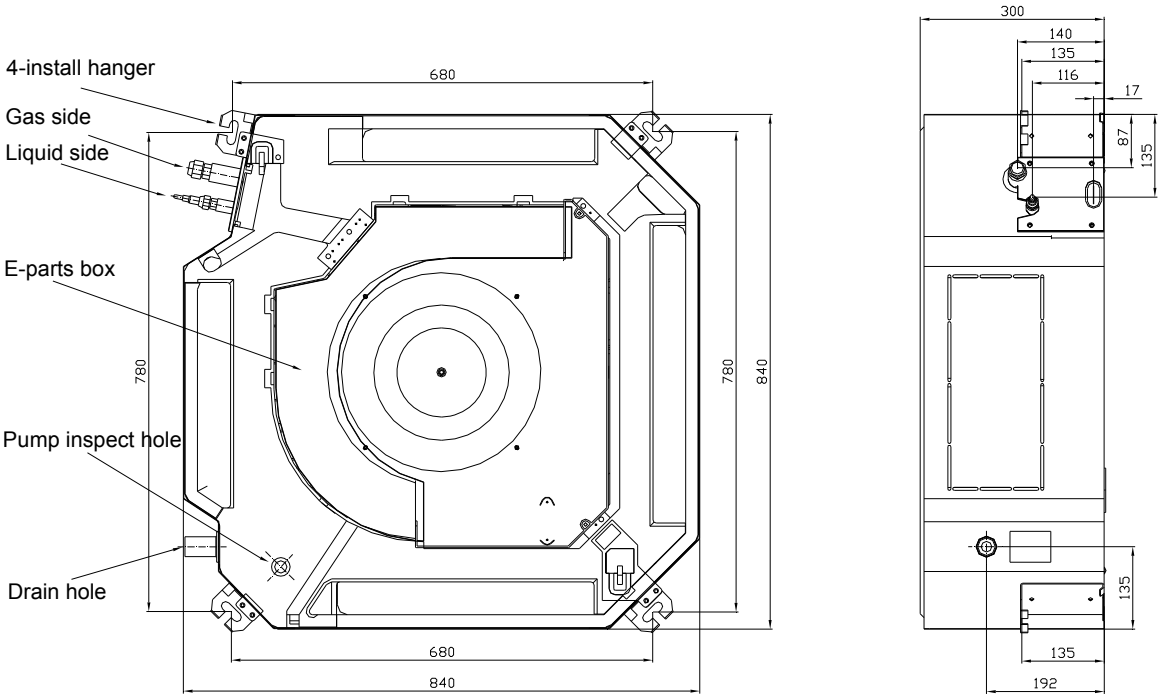
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

3. Dimensions

MCC-24HRN1
MCC-24CRN1



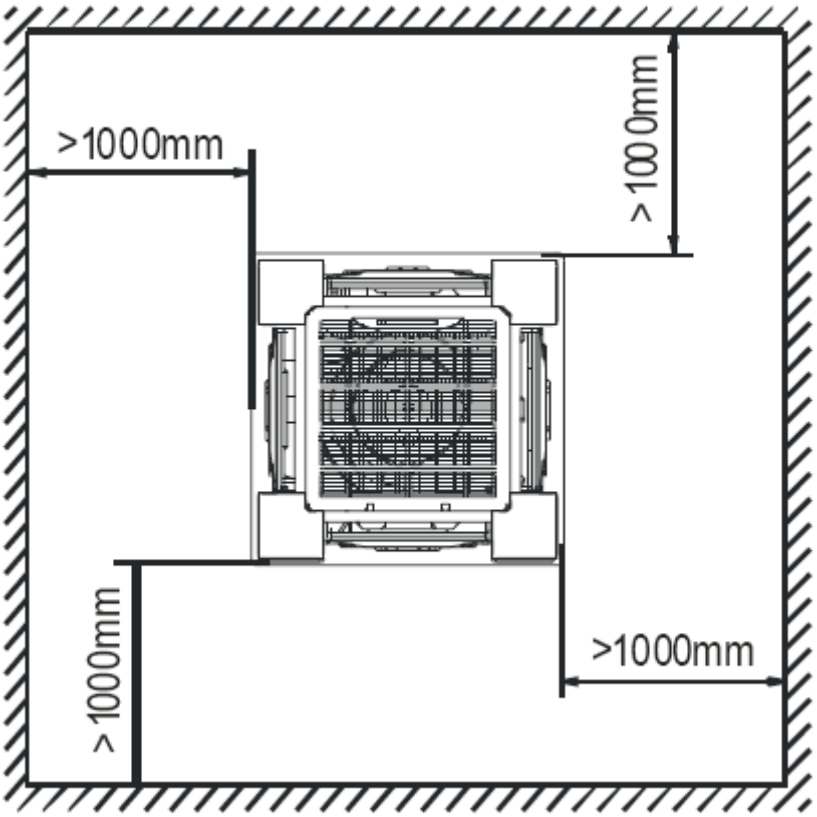
MCC-30HRN1 MCC-30HRN1-R MCC-36HRN1 MCC-36HRN1-R MCC-48HRN1-R MCC-60HRN1 MCC-30CRN1 MCC-30CRN1-R MCC-36CRN1 MCC-36CRN1-R MCC-48CRN1-R MCC-60CRN1



4. Service Space

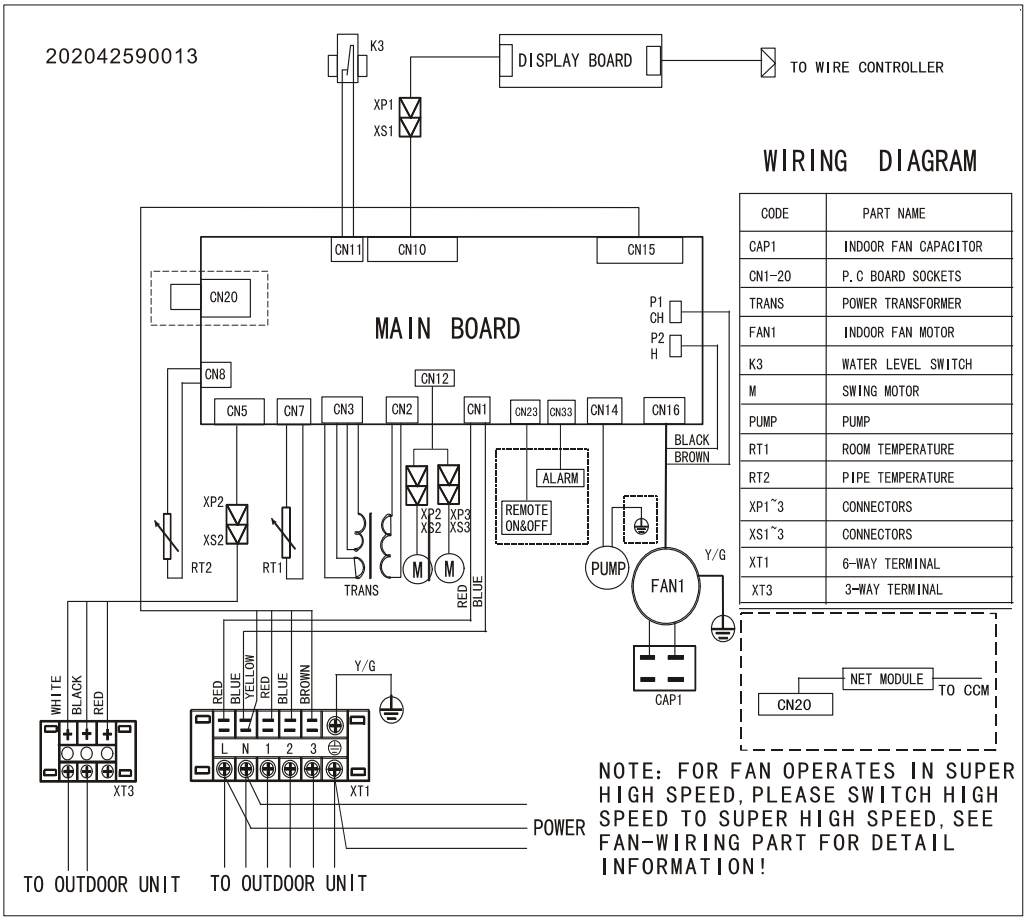
The indoor unit should be installed in a location that meets the following requirements:

- There is enough room for installation and maintenance.
- The ceiling is horizontal, and its structure can endure the weight of the indoor unit.
- The outlet and the inlet are not impeded, and the influence of external air is the least.
- The air flow can reach throughout the room.
- The connecting pipe and drainpipe could be extracted out easily.
- There is no direct radiation from heaters.



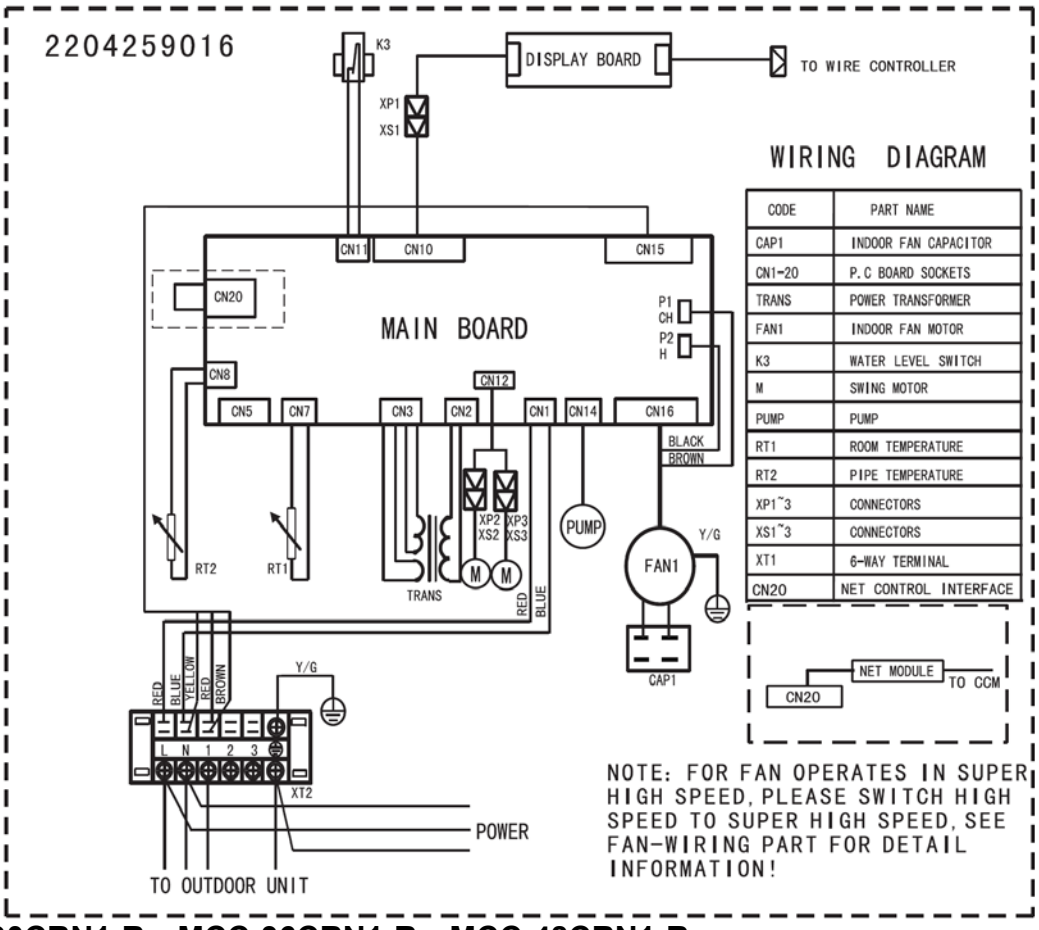
5. Wiring Diagrams

5.1 MCC-24HRN1 MCC-30HRN1 MCC-36HRN1



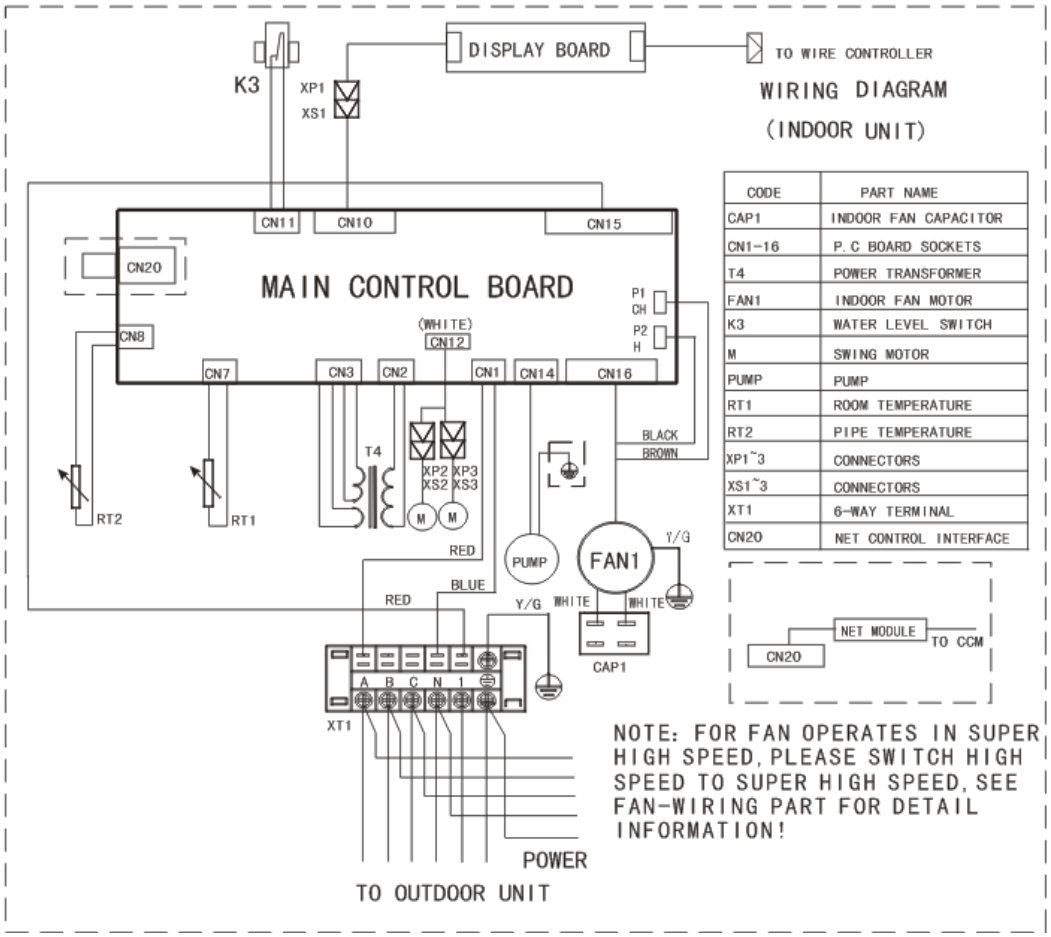
CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-20	P.C BOARD SOCKETS
TRANS	POWER TRANSFORMER
FAN1	INDOOR FAN MOTOR
K3	WATER LEVEL SWITCH
M	SWING MOTOR
PUMP	PUMP
RT1	ROOM TEMPERATURE
RT2	PIPE TEMPERATURE
XP1~3	CONNECTORS
XS1~3	CONNECTORS
XT1	6-WAY TERMINAL
XT3	3-WAY TERMINAL

5.2 MCC-24CRN1 MCC-30CRN1 MCC-36CRN1



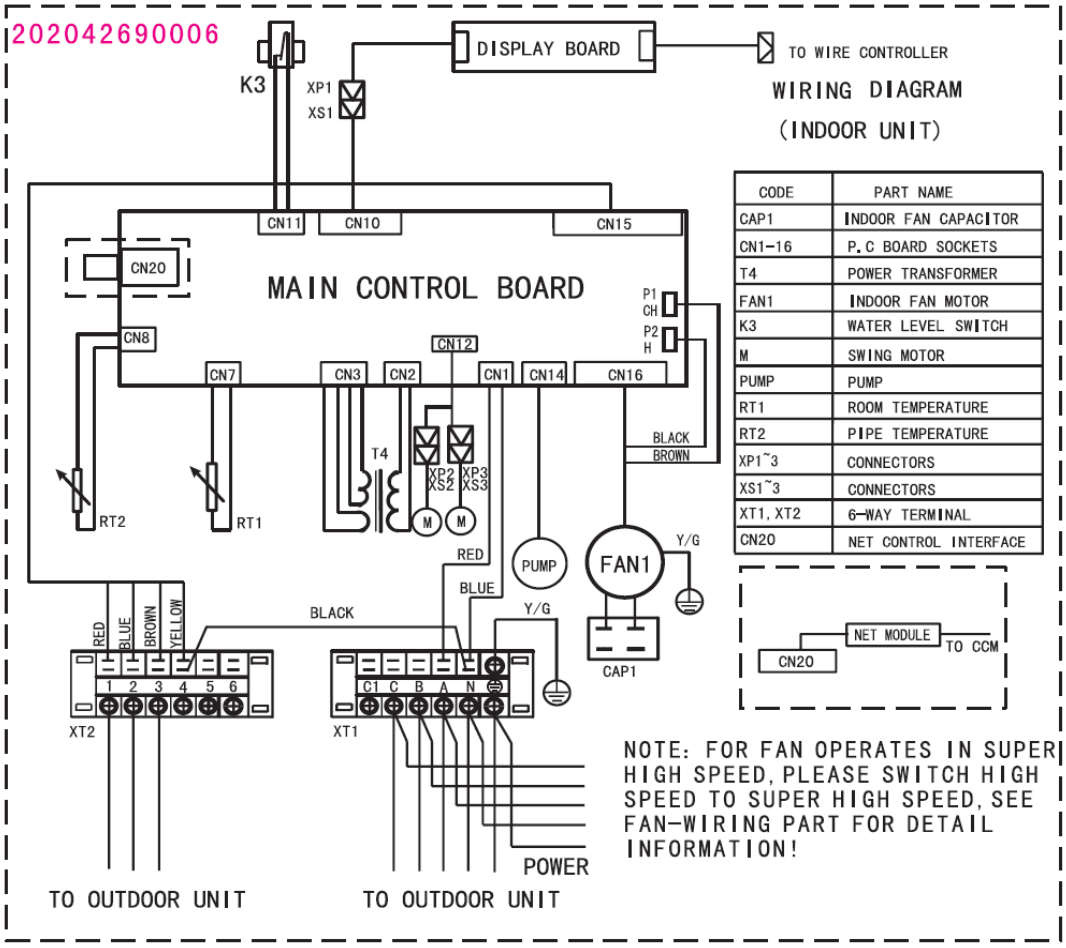
CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-20	P.C BOARD SOCKETS
TRANS	POWER TRANSFORMER
FAN1	INDOOR FAN MOTOR
K3	WATER LEVEL SWITCH
M	SWING MOTOR
PUMP	PUMP
RT1	ROOM TEMPERATURE
RT2	PIPE TEMPERATURE
XP1~3	CONNECTORS
XS1~3	CONNECTORS
XT1	6-WAY TERMINAL
CN20	NET CONTROL INTERFACE

5.3 MCC-30CRN1-R MCC-36CRN1-R MCC-48CRN1-R



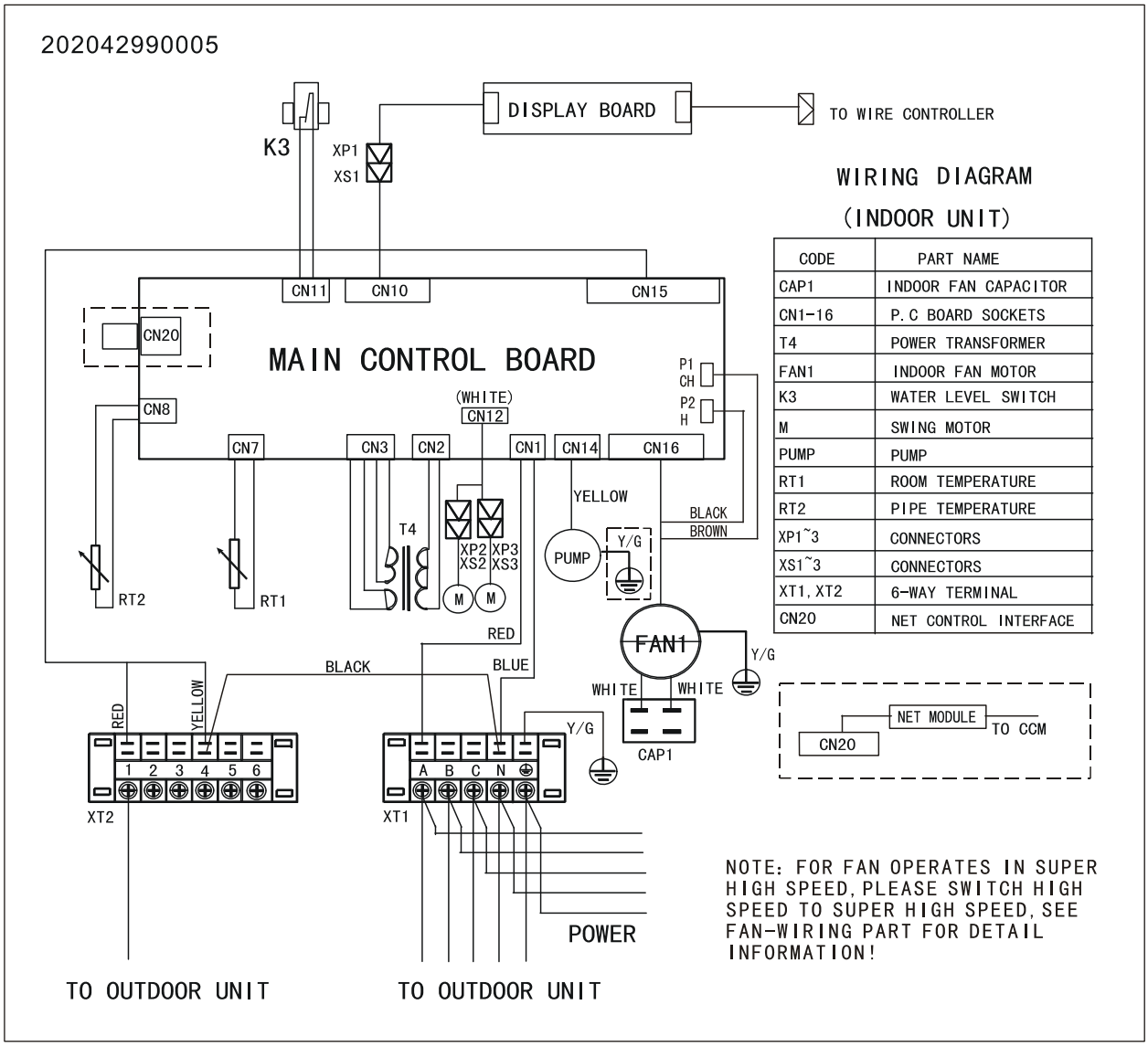
CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-16	P.C BOARD SOCKETS
T4	POWER TRANSFORMER
FAN1	INDOOR FAN MOTOR
K3	WATER LEVEL SWITCH
M	SWING MOTOR
PUMP	PUMP
RT1	ROOM TEMPERATURE
RT2	PIPE TEMPERATURE
XP1~3	CONNECTORS
XS1~3	CONNECTORS
XT1	6-WAY TERMINAL
CN20	NET CONTROL INTERFACE

5.4 MCC-30HRN1-R MCC-36HRN1-R MCC-48HRN1-R



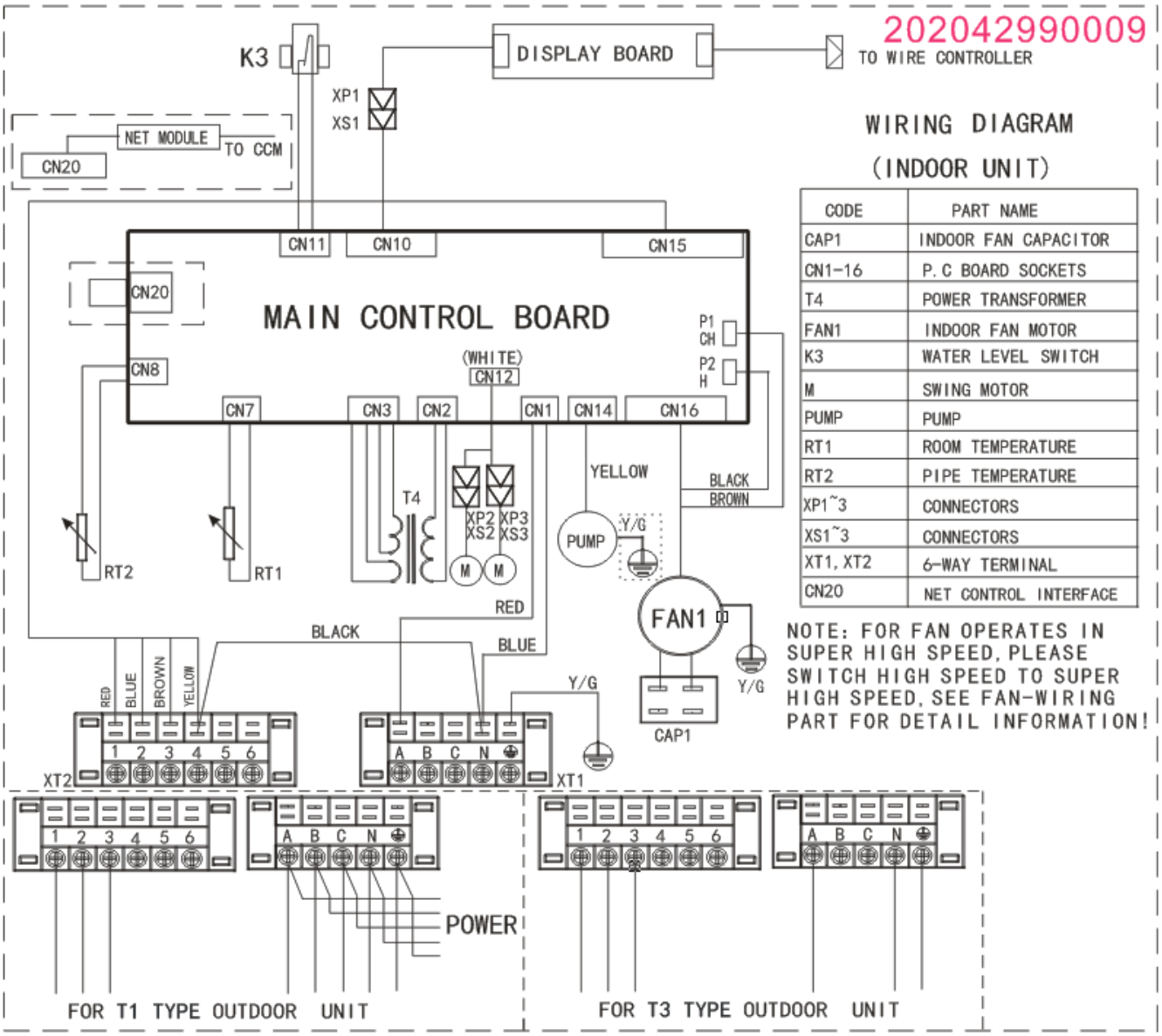
CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-16	P.C BOARD SOCKETS
T4	POWER TRANSFORMER
FAN1	INDOOR FAN MOTOR
K3	WATER LEVEL SWITCH
M	SWING MOTOR
PUMP	PUMP
RT1	ROOM TEMPERATURE
RT2	PIPE TEMPERATURE
XP1~3	CONNECTORS
XS1~3	CONNECTORS
XT1, XT2	6-WAY TERMINAL
CN20	NET CONTROL INTERFACE

5.5 MCC-60CRN1



CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-16	P.C BOARD SOCKETS
T4	POWER TRANSFORMER
FAN1	INDOOR FAN MOTOR
K3	WATER LEVEL SWITCH
M	SWING MOTOR
PUMP	PUMP
RT1	ROOM TEMPERATURE
RT2	PIPE TEMPERATURE
XP1~3	CONNECTORS
XS1~3	CONNECTORS
XT1, XT2	6-WAY TERMINAL
CN20	NET CONTROL INTERFACE

5.6 MCC-60HRN1



WIRING DIAGRAM

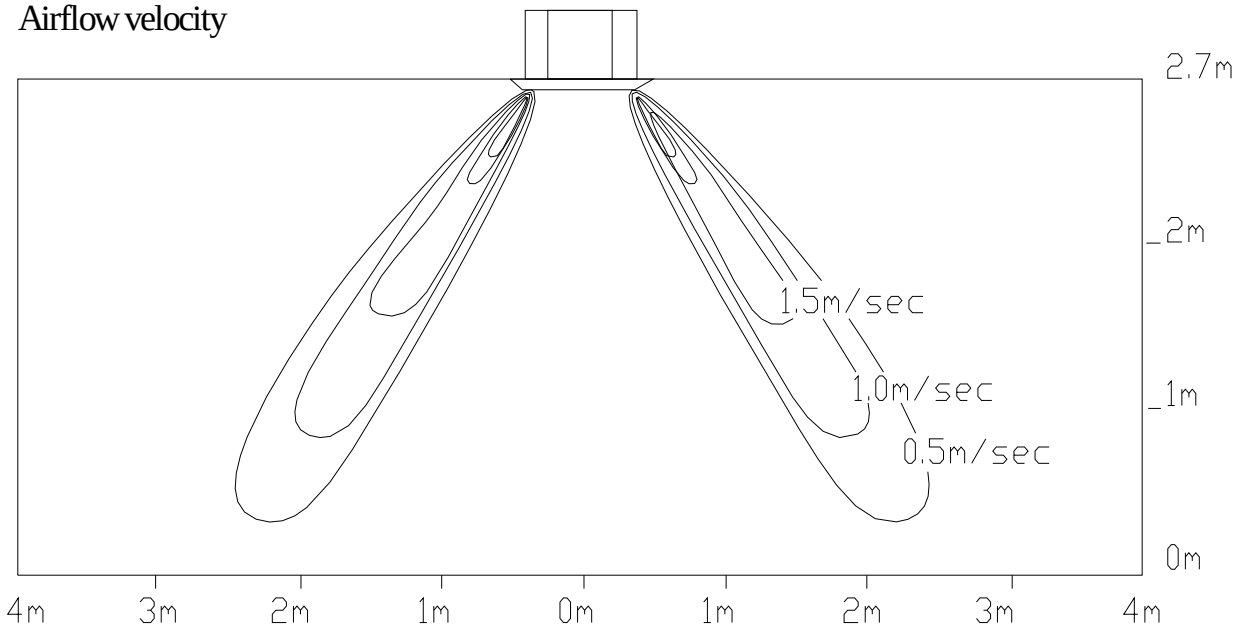
(INDOOR UNIT)

CODE	PART NAME
CAP1	INDOOR FAN CAPACITOR
CN1-16	P.C BOARD SOCKETS
T4	POWER TRANSFORMER
FAN1	INDOOR FAN MOTOR
K3	WATER LEVEL SWITCH
M	SWING MOTOR
PUMP	PUMP
RT1	ROOM TEMPERATURE
RT2	PIPE TEMPERATURE
XP1~3	CONNECTORS
XS1~3	CONNECTORS
XT1, XT2	6-WAY TERMINAL
CN20	NET CONTROL INTERFACE

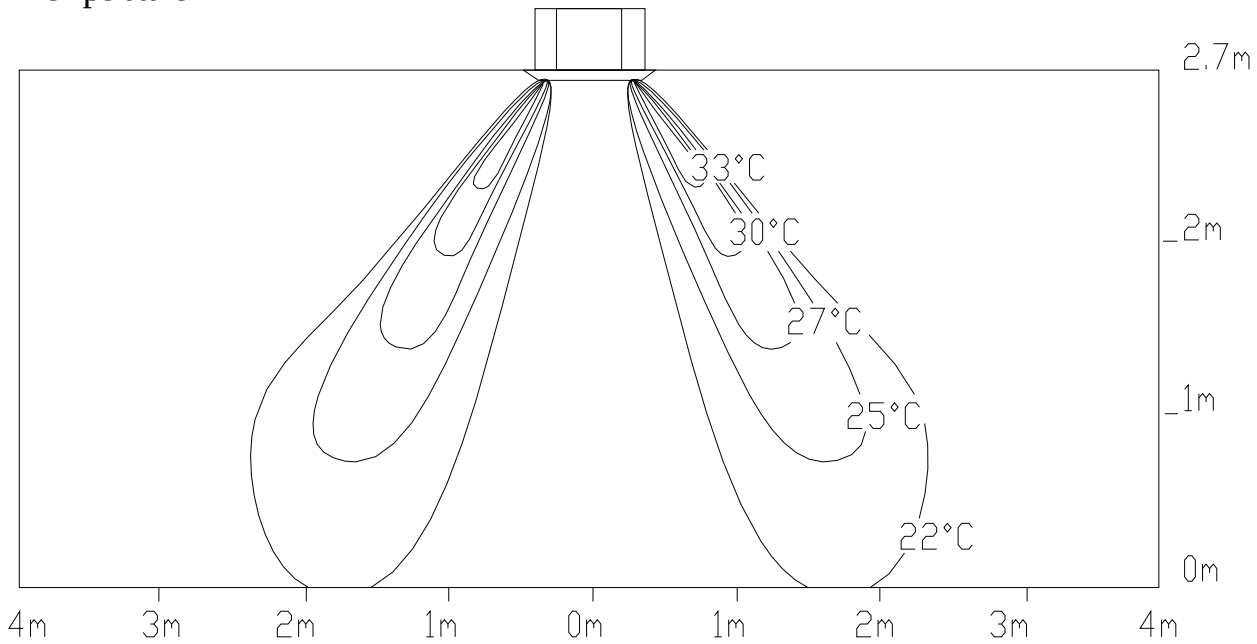
NOTE: FOR FAN OPERATES IN SUPER HIGH SPEED, PLEASE SWITCH HIGH SPEED TO SUPER HIGH SPEED, SEE FAN-WIRING PART FOR DETAIL INFORMATION!

6. Air Velocity and Temperature Distributions

Airflow velocity



Temperature

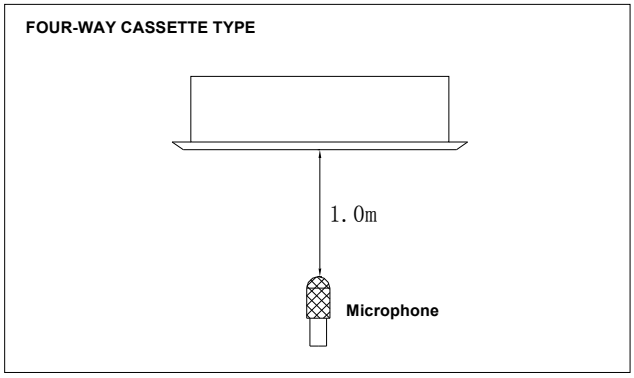


7. Electric Characteristics

Model	Indoor Units				Power Supply
	Hz	Voltage	Min.	Max.	MFA
MCC-24HRN1	50	220-240V	198V	254V	25
MCC-24CRN1	50	220-240V	198V	254V	25
MCC-30HRN1	50	220-240V	198V	254V	25
MCC-30CRN1	50	220-240V	198V	254V	25
MCC-30HRN1-R	50	380-415V	342V	418V	15
MCC-30CRN1-R	50	380-415V	342V	418V	15
MCC-36HRN1	50	220-240V	198V	254V	25
MCC-36CRN1	50	220-240V	198V	254V	25
MCC-36HRN1-R	50	380-415V	342V	418V	15
MCC-36CRN1-R	50	380-415V	342V	418V	15
MCC-48HRN1-R	50	380-420V	342V	440V	15
MCC-48CRN1-R	50	380-415V	342V	418V	15
MCC-60HRN1	50	380-420V	342V	440V	25
MCC-60CRN1	50	380-415V	342V	418V	25

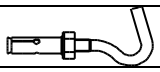
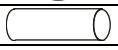
Remark:
MFA: Max. Fuse Amps. (A)

8. Sound Levels



Model	Noise level dB(A)		
	H	M	L
MCC-24HRN1/ MCC-24CRN1	42	40	39
MCC-30HRN1/MCC-30HRN1-R MCC-30CRN1/MCC-30CRN1-R	44	42	41
MCC-36HRN1/MCC-36HRN1-R MCC-36CRN1/MCC-36CRN1-R	44	42	41
MCC-48HRN1-R/ MCC-48CRN1-R	44	42	41
MCC-60HRN1/ MCC-60CRN1	47	44	43

9. Accessories

	Name	Shape	Quantity
Installation Fittings	1. Expansible hook		4
	2. Installation hook		4
	3. Installation paper board		1
	4. Bolt M5		4
Tubing & Fittings	5. Connecting pipe group		1
	6. Binding tape		6
	7.Soundproof/insulation sheath		2
Drainpipe Fittings	8. Out-let pipe sheath		1
	9. Out-let pipe clasp		1
	10. Tightening band		20
	11. Drain joint		1
	12. Seal ring		1
Protect Pipe Fittings	13. Wall conduit		1
	14. Wall conduit cover		1
Remote controller & Its Frame	15. Remote controller		1
	16. Frame		1
	17. Mounting screw(ST2.9×10-C-H)		2
	18. Alkaline dry batteries (AM4)		2
Others	19. Owner's manual		1
	20. Installation manual		1

10. The Specification of Power

Cooling only

Type		24000 Btu/h	30000-36000 Btu/h	30000-36000 Btu/h
Power	Phase	1-phase	1-phase	3-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz	380-415V, 50Hz
Circuit Breaker/ Fuse (A)		40/25	40/25	25/15
Indoor Unit Power Wiring (mm^2)		3×2.5	3×4.0	5×2.0
Indoor/Outdoor Connecting Wiring (mm^2)	Ground Wiring	2.5	4.0	2.5
	Outdoor Unit Power Wiring	3×2.5	3×4.0	5×2.0
	Strong Electric Signal	1×1.0	1×1.0	1×1.0
	Weak Electric Signal	———	———	———

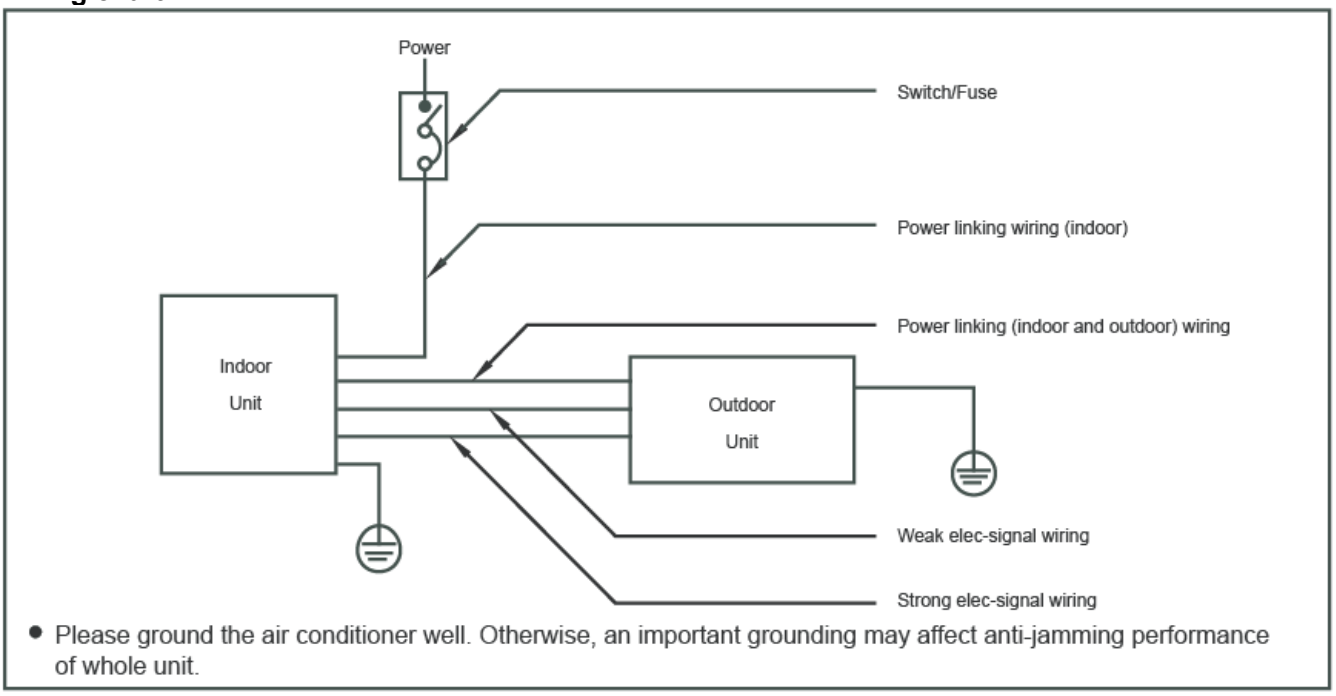
Type		48000 Btu/h	60000 Btu/h
Power	Phase	3-phase	3-phase
	Frequency and Voltage	380-415V, 50Hz	380V, 50Hz
Circuit Breaker/ Fuse (A)		25/15	40/25
Indoor Unit Power Wiring (mm^2)		5×2.5	5×2.5
Indoor/Outdoor Connecting Wiring (mm^2)	Ground Wiring	2.5	2.5
	Outdoor Unit Power Wiring	5×2.5	5×2.5
	Strong Electric Signal	1×1.0	1×1.0
	Weak Electric Signal	———	———

Cooling & heating

Type		24000 Btu/h	30000-36000 Btu/h	30000-48000 Btu/h	60000 Btu/h
Power	Phase	1-phase	1-phase	3-phase	3-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz	380-415V, 50Hz	380-415V, 50Hz
Circuit Breaker/ Fuse (A)		40/25	40/25	25/15	40/25
Indoor Unit Power Wiring (mm^2)		3×2.5	3×4.0	5×2.5	5×2.5
Indoor/Outdoor Connecting Wiring (mm^2)	Ground Wiring	4.0	4.0	2.5	2.5
	Outdoor Unit Power Wiring	3×2.5	3×4.0	5×2.5	5×2.5
	Strong Electric Signal	3×1.5	3×1.0	3×1.0	3×2.5
	Weak Electric Signal	2-core shield wire 2×0.75	2-core shield wire 2×0.75	———	———

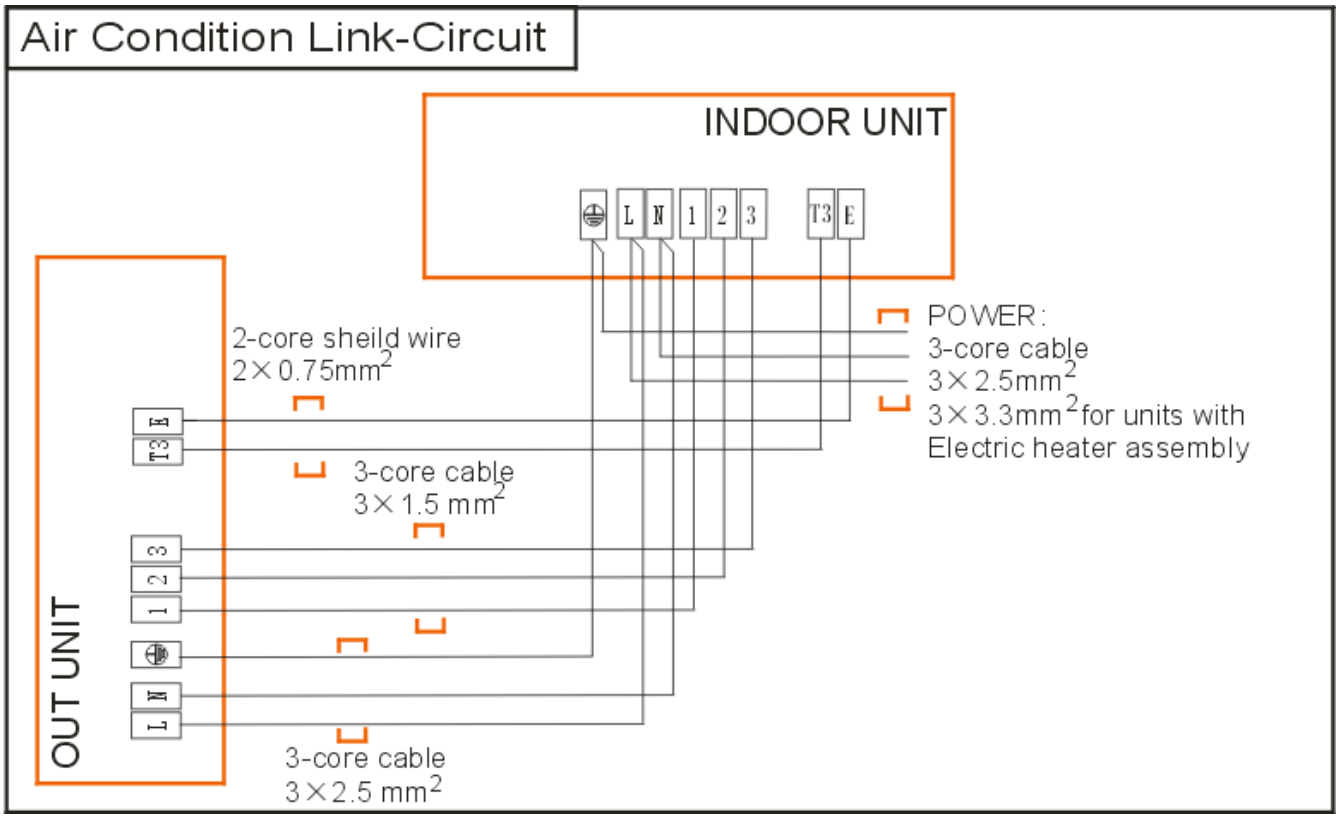
11. Field Wiring

Wiring chart

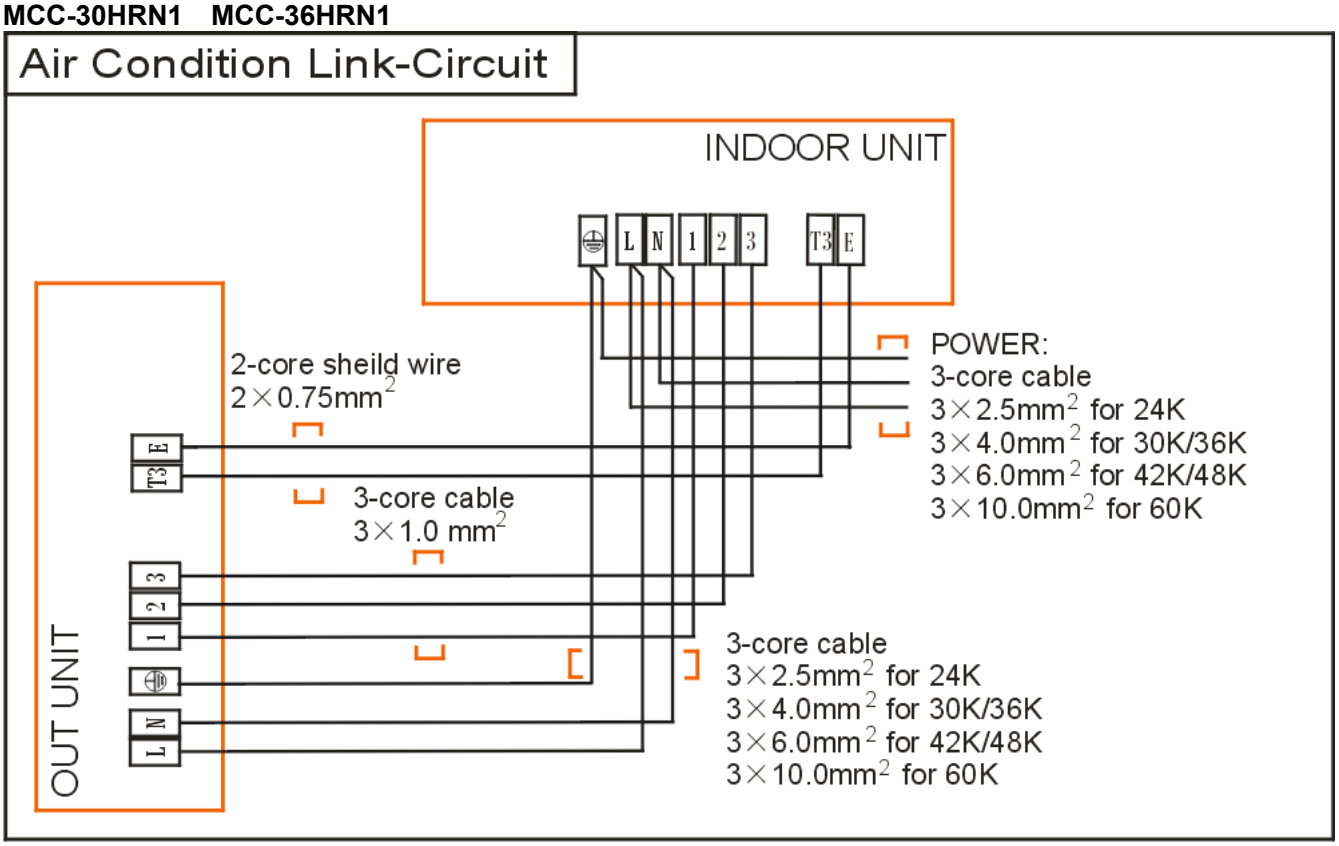


- Please ground the air conditioner well. Otherwise, an important grounding may affect anti-jamming performance of whole unit.

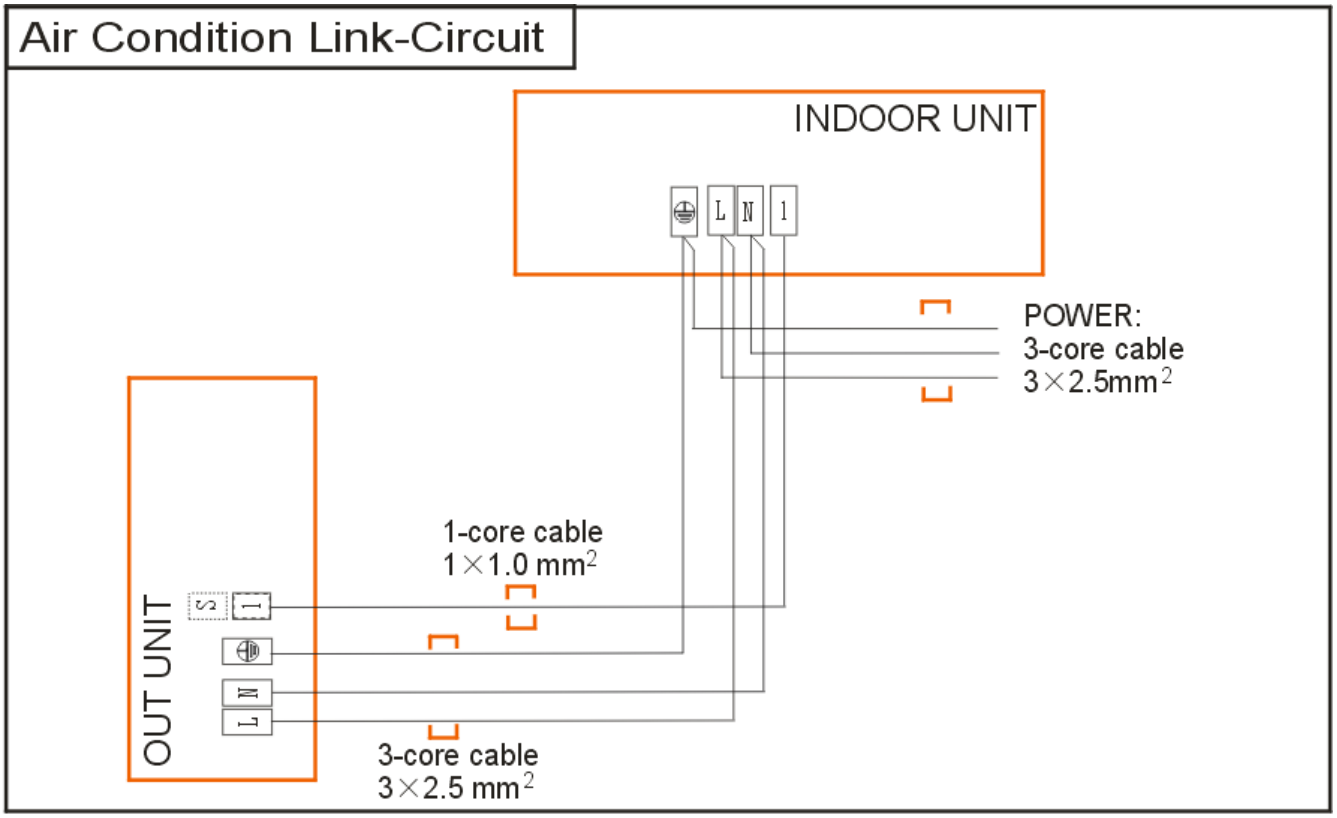
MCC-24HRN1



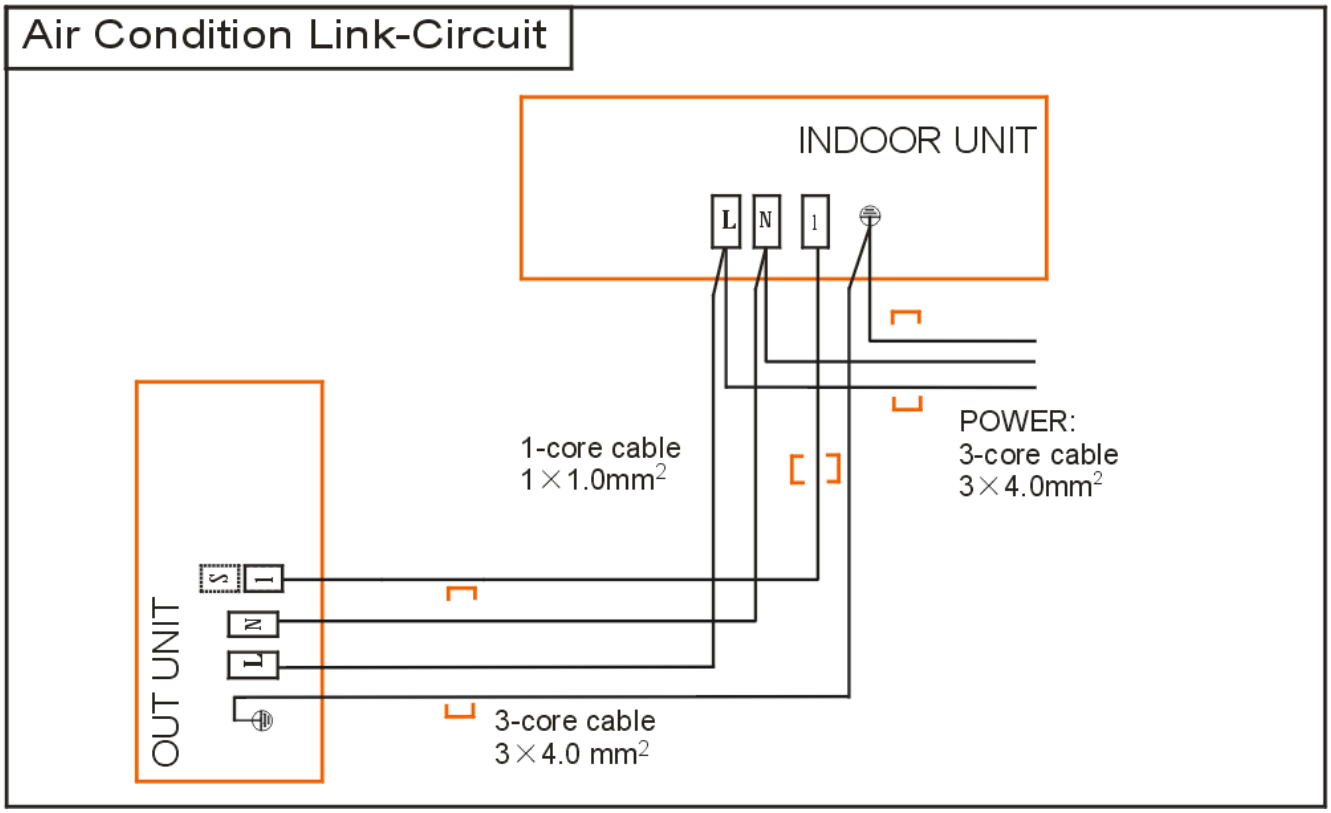
MCC-30HRN1 MCC-36HRN1



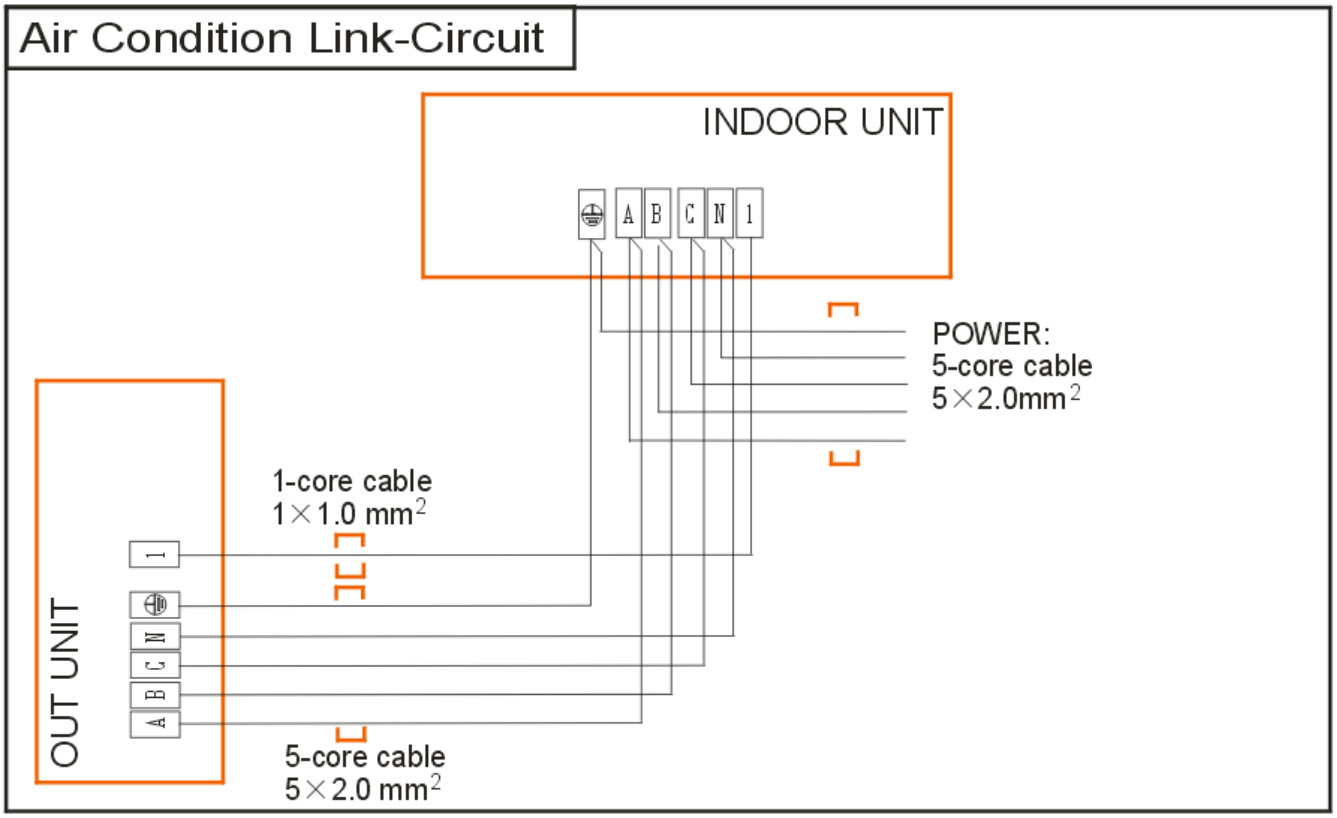
MCC-24CRN1



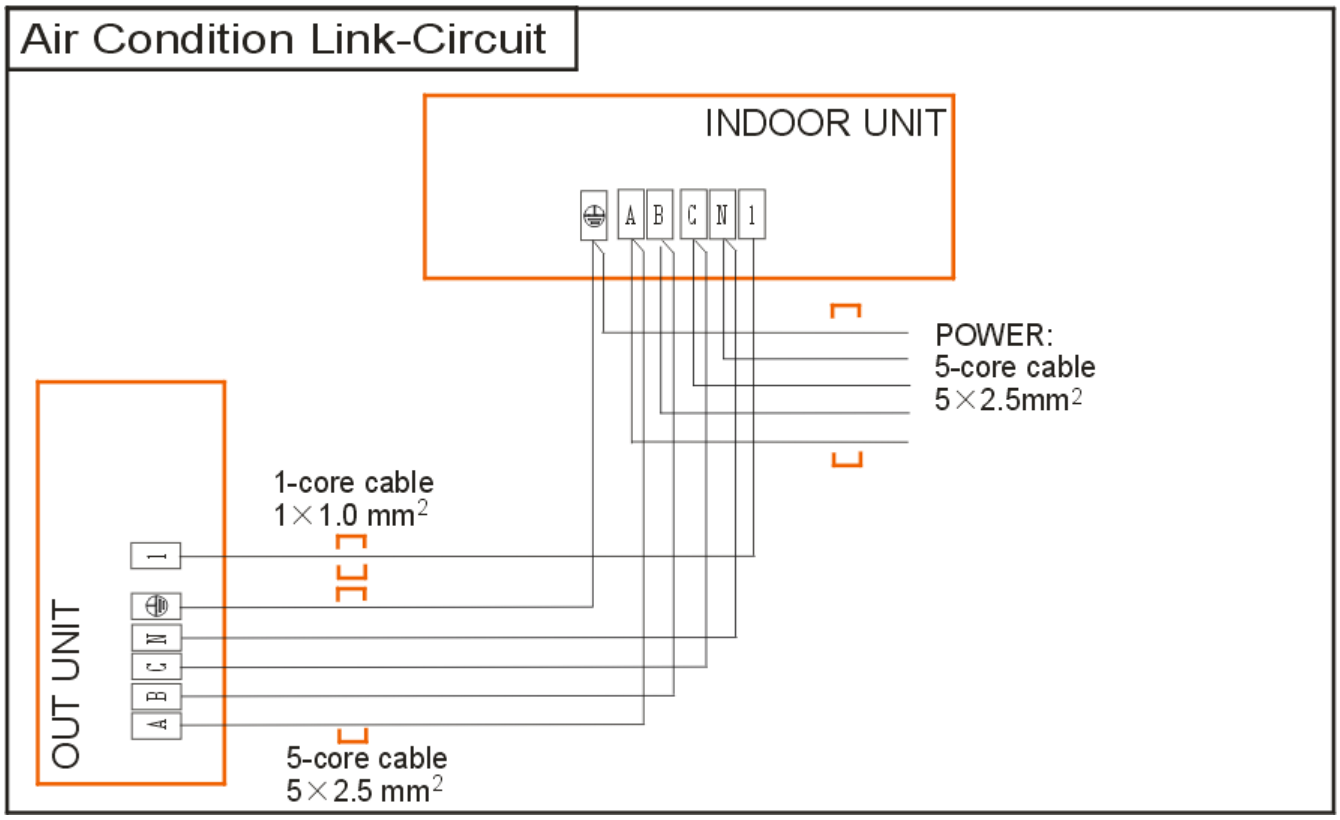
MCC-30CRN1 MCC-36CRN1



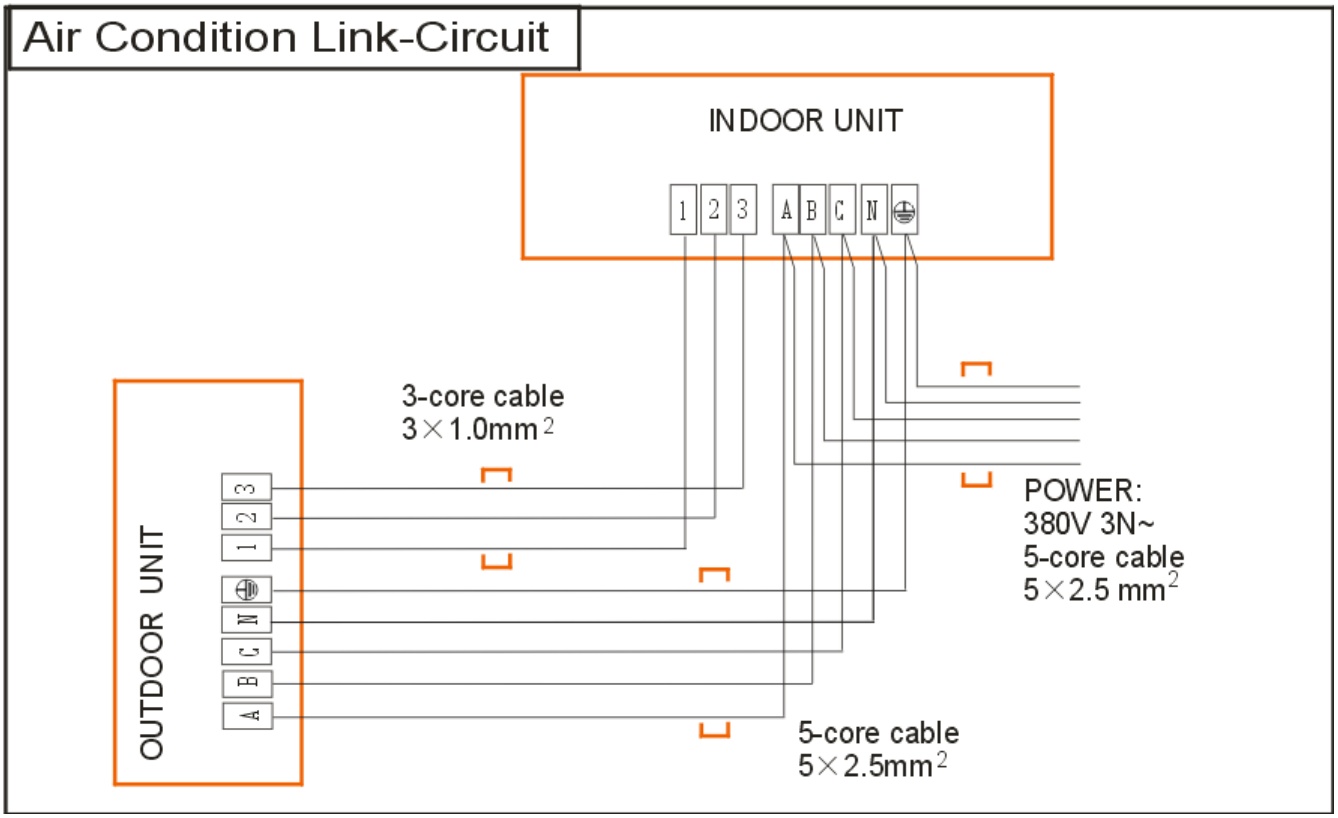
MCC-30CRN1-R MCC-36CRN1-R



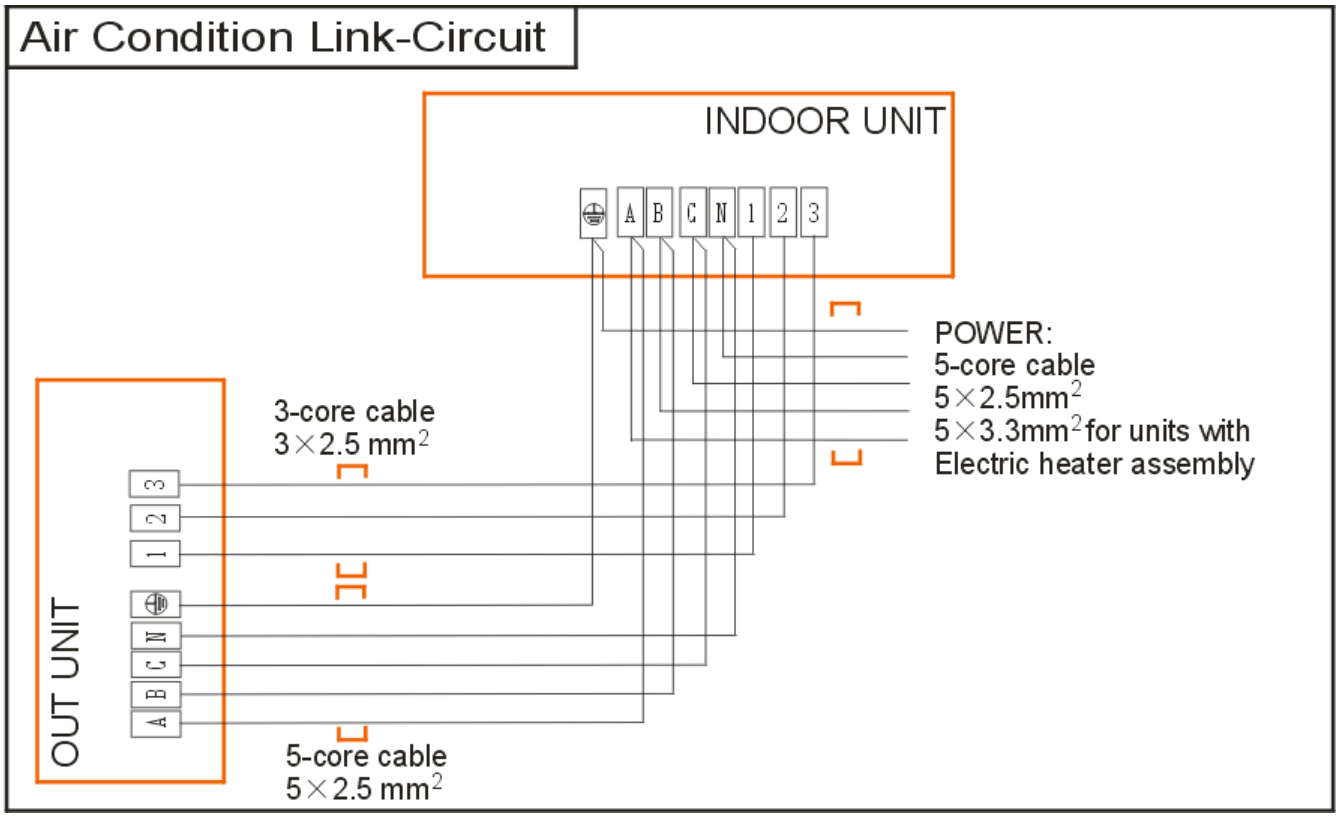
MCC-48CRN1-R MCC-60CRN1



MCC-30HRN1-R MCC-36HRN1-R MCC-48HRN1-R



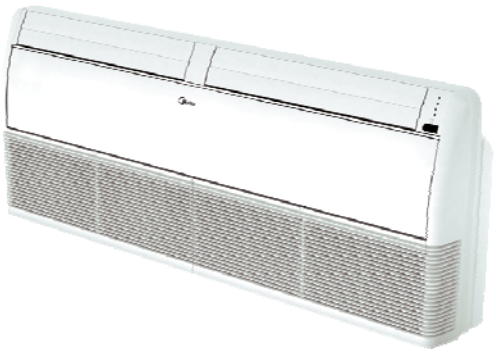
MCC-60HRN1



Ceiling & Floor Type

1. Features

1.1. New design, more modern and elegant appearance.



1.2. Convenient installation

--The ceiling type can be easily installed into a corner of the ceiling even if the ceiling is very narrow

--It is especially useful when installation of an air conditioner in the center of the ceiling is impossible due to a structure such as one lighting.

1.3. Two direction auto swing (vertical & horizontal) and wide angle air flow,

--Air flow directional control minimizes the air resistance and produces wilder air flow to vertical direction.

--The range of horizontal air discharge is widened which secures wider air flow distribution to provide more comfortable air circulation no matter where the unit is set up

1.4. Three level fan speed, more humanism design, meets different air-supply requirement.

1.5. Water proof by utilizing the absorbing plastic film on water collector

1.6. Easy operation. Auto-restart function, remote control and optional wire control method.

1.7. Low noise level plus compact size

--Shape of the blades has been improved to prevent noise caused by turbulence.

2. Specifications

Model			**MUB-12HRN1**	**MUB-12HRN1**(φ7)	**MUB-18HRN1-Q**
Code			220042101900	220044000170	220044100340
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	12000	12000	18000
	Input	W	1022	1022	1726
	EER		3.13	3.13	3.07
Heating	Capacity	Btu/h	13000	13000	20000
	Input	W	1220	1220	1863
	COP		3.28	3.28	3.22
Indoor fan motor	Model		YSK25-6L	YSK25-6L	YSK55-4L
	Qty		1	1	1
	Input	W	33.4/31.1/29.5	33.4/31.1/29.5	125/105/85
	Capacitor	uF	1.2uF/450V	1.2uF/450V	2.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	756/666/592	756/666/592	1310/1190/1040
Indoor coil	Number of rows		2	2	2
	Tube pitch(a)×row pitch(b)	mm	25.4×22	21×13.37	21×13.37
	Fin spacing	mm	1.7	1.3	1.3
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ9.5 Inner grooved copper tube	Φ7 Inner grooved copper tube	Φ7 Inner grooved copper tube
	Coil length× height× width	mm	804×254×44	804×252×26.74	804×252×26.74
	Number of circuits		3	3	3
Indoor air flow(Hi/Mi/Lo)		m^3/h	600/480/400	600/480/400	800/600/500
Indoor noise level (sound pressure)		dB(A)	43/41/38	43/41/38	43/41/38
Indoor unit	Dimension (W×D×H)	mm	990x660x203	990x660x203	990x660x203
	Packing (W×D×H)	mm	1090x745x297	1090x745x297	1090x745x297
	Net/Gross weight	kg	23/30	24/28.5	24/30
Refrigerant type			R410A	R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7	φ6.4/φ12.7
Drainage water pipe diameter		mm	ODφ25	ODφ25	ODφ25
Controller			RG51Q1/BGE	RG51Q1/BGE	RG51Q1/BGE
Operation temperature		℃	17-30	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			**MUB-12CRN1**	**MUB-12CRN1**(φ7)	**MUB-18CRN1**
Code			220044000030	220044000160	220044100130
Power supply		V-Ph-Hz	220-240-1-50	220-240-1-50	220-240-1-50
Cooling	Capacity	Btu/h	12000	12000	18000
	Input	W	1200	1200	1900
	EER		2.67	2.67	2.79
Indoor fan motor	Model		YSK25-6L	YSK25-6L	YSK55-4L
	Qty		1	1	1
	Input	W	33.4/31.1/29.5	33.4/31.1/29.5	125/105/85
	Capacitor	μF	1.2uF/450V	1.2uF/450V	2.5uF/450V
	Speed(hi/mi/lo)	r/min	756/666/592	756/666/592	1310/1190/1040
Indoor coil	Number of rows		2	2	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	21×13.37	25.4×22
	Fin spacing	mm	1.7	1.3	1.7
	Fin type		Hydrophilic aluminum		
	Tube outside dia. and type	mm	Φ9.5	Φ7	Φ9.5
			Inner grooved copper tube		
	Coil length x height x width	mm	804×254×44	804×252×26.74	804×254×66
	Number of circuits		3	3	3
Indoor air flow (Hi/Mi/Lo)		m^3/h	600/480/400	600/480/400	800/600/500
Indoor noise level(Hi/Mi/Lo)		dB(A)	43/41/38	43/41/38	43/41/38
Indoor unit	Dimension (W×D×H)	mm	990x660x203	990x660x203	990x660x203
	Packing (W×D×H)	mm	1090x745x297	1090x745x297	1090x745x297
	Net/Gross weight	kg	26/33	24/28.5	25/30.5
Refrigerant type			R410A	R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ6.4/Φ12.7	Φ6.4/Φ12.7	Φ6.4/Φ12.7
Drainage water pipe diameter		mm	ODΦ25	ODΦ25	ODΦ25
Controller			RG51Q1/BGE	RG51Q1/BGE	RG51Q1/BGE
Operation temp		°C	17-30	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MUB-24HRN1-Q	MUB-30HRN1
Code			220044200460	220044300050
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	24000	30000
	Input	W	2423	3180
	EER		2.93	2.83
Heating	Capacity	Btu/h	26000	32000
	Input	W	2415	3345
	COP		3.15	2.84
Indoor fan motor	Model		YSK55-4L	YSK80-4A-2
	Qty		1	1
	Input	W	125/105/85	159/142/130
	Capacitor	uF	2.5uF/450V	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	1310/1190/1040	1290/1170/1060
Indoor coil	Number of rows		3	3
	Tube pitch(a)×row pitch(b)	mm	21×13.37	25.4×22
	Fin spacing	mm	1.3	1.7
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7 Inner grooved copper tube	φ9.5 Inner grooved copper tube
	Coil length× height×width	mm	804×252×40.11	1094×254×66
	Number of circuits		4	5
Indoor air flow(Hi/Mi/Lo)		m^3/h	1200/900/700	1400/1200/1000
Indoor noise level (sound pressure)		dB(A)	45/43/40	45/43/40
Indoor unit	Dimension (W×D×H)	mm	990x660x203	1280x660x203
	Packing (W×D×H)	mm	1090x745x297	1380x745x297
	Net/Gross weight	kg	24/30	31/37
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/Gas side	mm	φ9.5/φ15.9	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			RG51Q1/BGE	R05/BGE
Operation temperature		˚C	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MUB-24CRN1	MUB-30CRN1
Code			220044200250	220044300100
Power supply		V-Ph-Hz	220-240-1-50	220-240-1-50
Cooling	Capacity	Btu/h	24000	30000
	Input	W	2600	3450
	EER		2.73	2.61
Indoor fan motor	Model		YSK55-4L	YSK80-4A-2
	Qty		1	1
	Input	W	125/105/85	159/142/130
	Capacitor	μF	2.5uF/450V	3.5uF/450V
	Speed(hi/mi/lo)	r/min	1310/1190/1040	1290/1170/1060
Indoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.5 Inner grooved copper tube	Φ9.5 Inner grooved copper tube
	Coil length x height x width	mm	804×254×66	1094×254×66
	Number of circuits		3	5
Indoor air flow (Hi/Mi/Lo)		m^3/h	1200/900/700	1600/1200/1000
Indoor noise level(Hi/Mi/Lo)		dB(A)	45/43/40	45/43/40
Indoor unit	Dimension (W×D×H)	mm	990x660x203	1280x660x203
	Packing (W×D×H)	mm	1090x745x297	1380x745x297
	Net/Gross weight	kg	25/30.5	35/37
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9	Φ9.5/Φ15.9
Drainage water pipe diameter		mm	ODΦ25	ODΦ25
Controller			RG51Q1/BGE	RG51Q1/BGE
Operation temp		°C	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MUB-30HRN1	MUB-36HRN1-Q
Code			220042102000	220044400161
Power supply		V-ph-Hz	380-415-3-50	220~240-1-50
Cooling	Capacity	Btu/h	30000	36000
	Input	W	3169	3740
	EER		2.84	2.81
Heating	Capacity	Btu/h	32000	40000
	Input	W	3428	4286
	COP		2.83	2.8
Indoor fan motor	Model		YSK80-4A-2	YSK80-4A
	Qty		1	1
	Input	W	159/142/130	143/122/110
	Capacitor	uF	3.5uF/450V	3.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	1290/1170/1060	1310/1210/1115
Indoor coil	Number of rows		3	3
	Tube pitch(a)×row pitch(b)	mm	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	φ9.5 Inner grooved copper tube	φ9.5 Inner grooved copper tube
	Coil length×height×width	mm	1094×254×66	1094×254×66
	Number of circuits		5	5
Indoor air flow(Hi/Mi/Lo)		m^3/h	1400/1200/1000	1400/1200/1000
Indoor noise level (sound pressure)		dB(A)	45/43/40	45/43/40
Indoor unit	Dimension (W×D×H)	mm	1280x660x203	1280x660x203
	Packing (W×D×H)	mm	1380x745x297	1380x745x297
	Net/Gross weight	kg	31/37	35/42
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/Gas side	mm	φ12.7/φ19	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			R05/BGE	RG51Q1/BGE
Operation temperature		˚C	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model	MUB-30CRN1	MUB-36CRN1

Code			220044300110	220044400320
Power supply		V-Ph-Hz	380-415-3-50	220-240-1-50
Cooling	Capacity	Btu/h	30000	36000
	Input	W	3450	3800
	EER		2.61	2.76
Indoor fan motor	Model		YSK80-4A-2	YSK80-4A-2
	Qty		1	1
	Input	W	159/142/130	159/142/130
	Capacitor	μF	3.5uF/450V	3.5uF/450V
	Speed(hi/mi/lo)	r/min	1290/1170/1060	1290/1170/1060
Indoor coil	Number of rows		3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ9.5 Inner grooved copper tube	Φ9.5 Inner grooved copper tube
	Coil length x height x width	mm	1094×254×66	1094×254×66
	Number of circuits		5	5
Indoor air flow (Hi/Mi/Lo)		m^3/h	1600/1200/1000	1600/1200/1000
Indoor noise level(Hi/Mi/Lo)		dB(A)	45/43/40	45/43/40
Indoor unit	Dimension (W×D×H)	mm	1280x660x203	1280x660x203
	Packing (W×D×H)	mm	1380x745x297	1380x745x297
	Net/Gross weight	kg	35/37	37/41
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9	Φ9.5/Φ15.9
Drainage water pipe diameter		mm	ODΦ25	ODΦ25
Controller			RG51Q1/BGE	RG51Q1/BGE
Operation temp		°C	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MUB-36HRN1-R	MUB-48HRN1-R	MUB-60HRN1-R
Code			220044400571	220042102040	220042102060
Power supply		V-ph-Hz	380~415-3-50	380~420-3-50	380~420-3-50
Cooling	Capacity	Btu/h	36000	48000	60000
	Input	W	3737	5128	5882
	EER		2.81	2.73	2.72
Heating	Capacity	Btu/h	40000	52000	650000
	Input	W	4286	5376	6835
	COP		2.8	2.79	2.78
Indoor fan motor	Model		YSK80-4A-2	YSK59-4D-4	YSK59-4D
	Qty		1	2	2
	Input	W	159/142/130	102/98/96	89.5/81.5/77.5
	Capacitor	uF	3.5uF/450V	2.5uF/450V	2.5uF/450V
	Speed(Hi/Mi/Lo)	r/min	1290/1170/1060	1230/1130/1070	1170/1070/995
Indoor coil	Number of rows		3	3	3
	Tube pitch(a)×row pitch(b)	mm	21×13.37	25.4×22	25.4×22
	Fin spacing	mm	1.3	1.5	1.7
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	Φ7 Inner grooved copper tube	φ9.5 Inner grooved copper tube	φ9.5 Inner grooved copper tube
	Coil length×height×width	mm	1095×252×40.11	1360×254×66	1360×254×66
	Number of circuits		6	5	5
Indoor air flow(Hi/Mi/Lo)		m^3/h	1400/1200/1000	2000/1800/1600	2000/1800/1600
Indoor noise level (sound pressure)		dB(A)	45/43/40	50/47/45	50/49/47
Indoor unit	Dimension (W×D×H)	mm	1280x660x203	1670x680x240	1670x680x240
	Packing (W×D×H)	mm	1380x745x297	1765x761x325	1765x761x325
	Net/Gross weight	kg	35/42	46/53	46/56
Refrigerant type			R410A	R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/Gas side	mm	φ12.7/φ19	φ12.7/φ19	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ25	ODφ25	ODφ25
Controller			RG51Q1/BGE	RG51Q1/BGE	RG51Q1/BGE
Operation temperature		℃	17-30	17-30	17-30

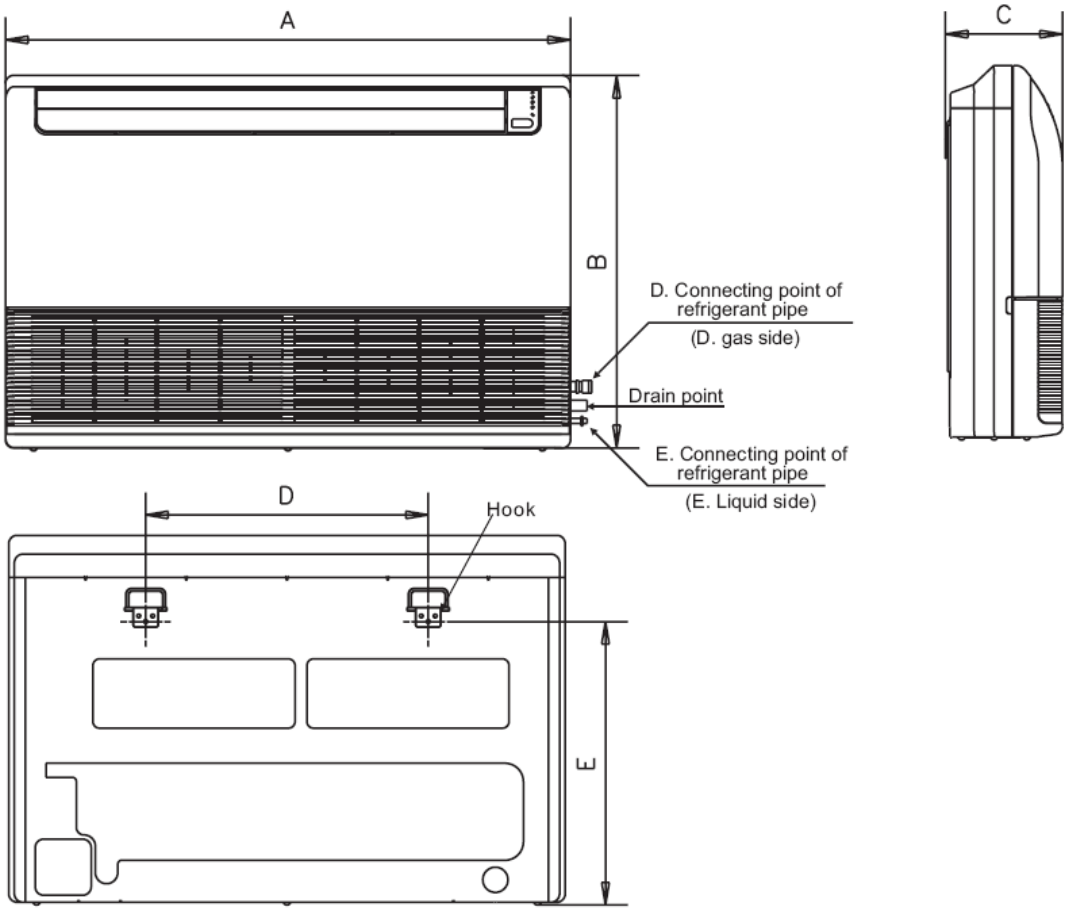
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MUB-36CRN1	MUB-48CRN1	MUB-60CRN1
Code			220044400330	220044600240	220044700220
Power supply		V-Ph-Hz	380-415-3-50	380-415-3-50	380-415-3-50
Cooling	Capacity	Btu/h	36000	48000	60000
	Input	W	3800	4900	5800
	EER		2.76	2.86	2.76
Indoor fan motor	Model		YSK80-4A	YSK59-4D-4	YSK59-4D-4
	Qty		1	2	2
	Input	W	143/122/110	102/98/96	102/98/96
	Capacitor	μF	3.5uF/450V	2.5uF/450V	2.5uF/450V
	Speed(hi/mi/lo)	r/min	1310/1210/1115	1230/1130/1070	1230/1130/1070
Indoor coil	Number of rows		3	3	3
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type		Hydrophilic aluminum		
	Tube outside dia. and type	mm	Φ9.5	Φ9.5	Φ9.5
			Inner grooved copper tube		
	Coil length x height x width	mm	1094×254×66	1360×254×66	1360×254×66
	Number of circuits		5	5	5
Indoor air flow (Hi/Mi/Lo)		m^3/h	1600/1200/1000	2000/1800/1600	2000/1800/1600
Indoor noise level(Hi/Mi/Lo)		dB(A)	45/43/40	47/46/44	47/46/44
Indoor unit	Dimension (W×D×H)	mm	1280x660x203	1670x680x240	1670x680x240
	Packing (W×D×H)	mm	1380x745x297	1765x761x325	1765x761x325
	Net/Gross weight	kg	37/41	52/55	45/55
Refrigerant type			R410A	R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ15.9	Φ9.5/Φ15.9	Φ9.5/Φ15.9
Drainage water pipe diameter		mm	ODΦ25	ODΦ25	ODΦ25
Controller			RG51Q1/BGE	RG51Q1/BGE	RG51Q1/BGE
Operation temp		°C	17-30	17-30	17-30

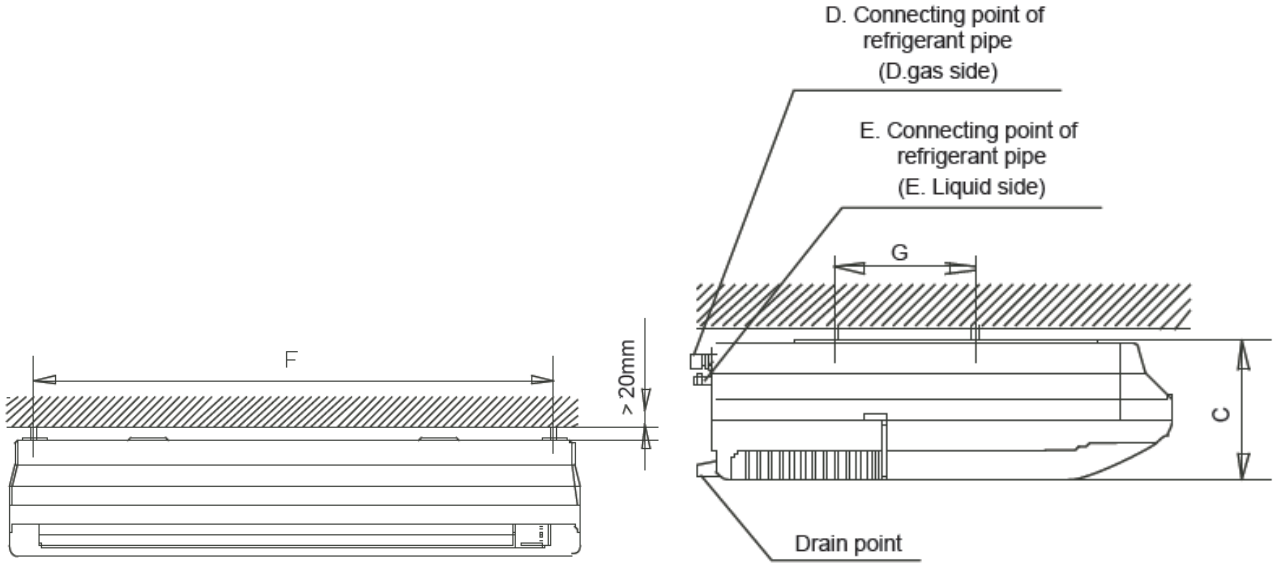
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. Piping: 7.5m(horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. Piping: 7.5m(horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

3. Dimensions

a. Wall mounting installation



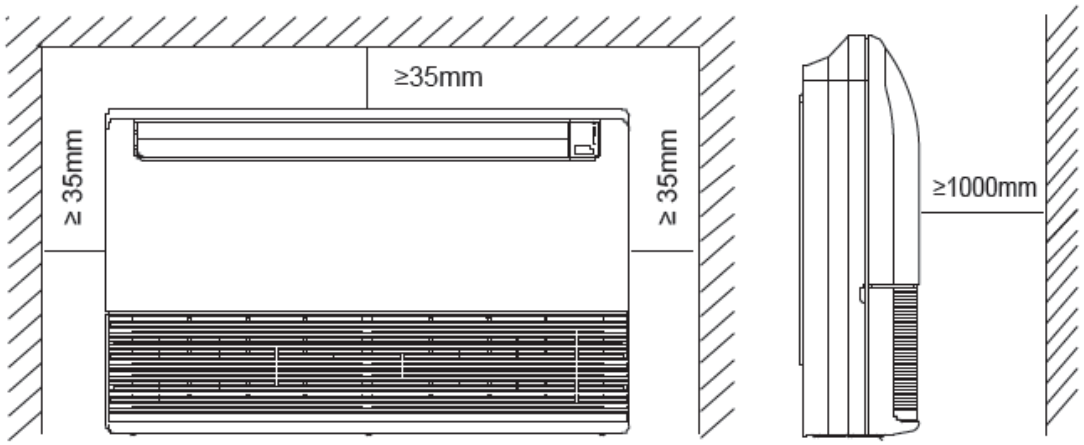
b. Ceiling installation



Capacity (Btu/h)	A	B	C	D	E	F	G
12000-24000	990	660	203	505	506	907	200
30000-36000	1280	660	203	795	506	1195	200
48000-60000	1670	680	240	1070	450	1542	200

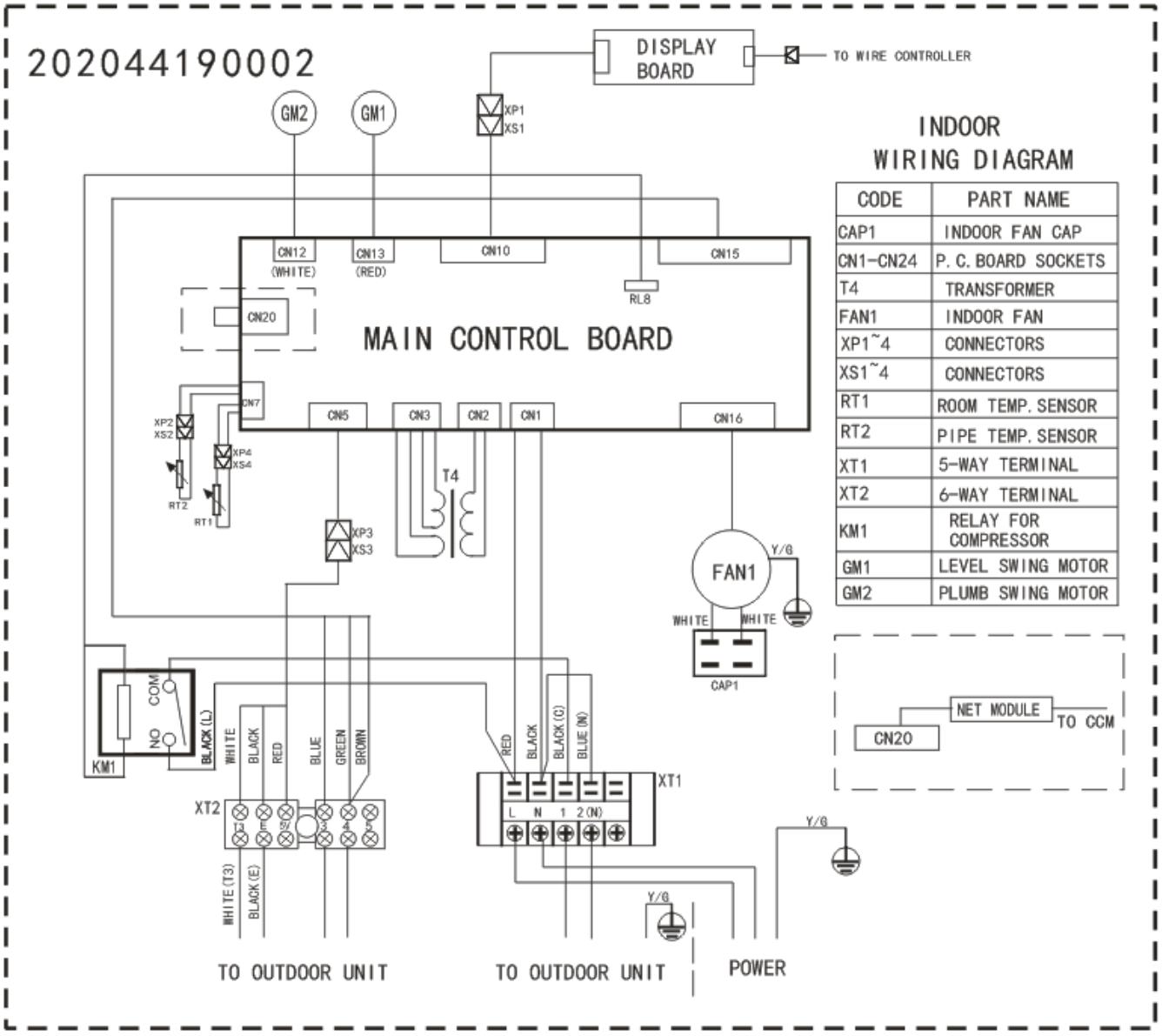
Note: The dimension of 12000Btu/h, 18000Btu/h and 24000Btu/h are the same.
The dimension of 30000Btu/h and 36000Btu/h are the same.
The dimension of 48000Btu/h and 60000Btu/h are the same.

4. Service Space



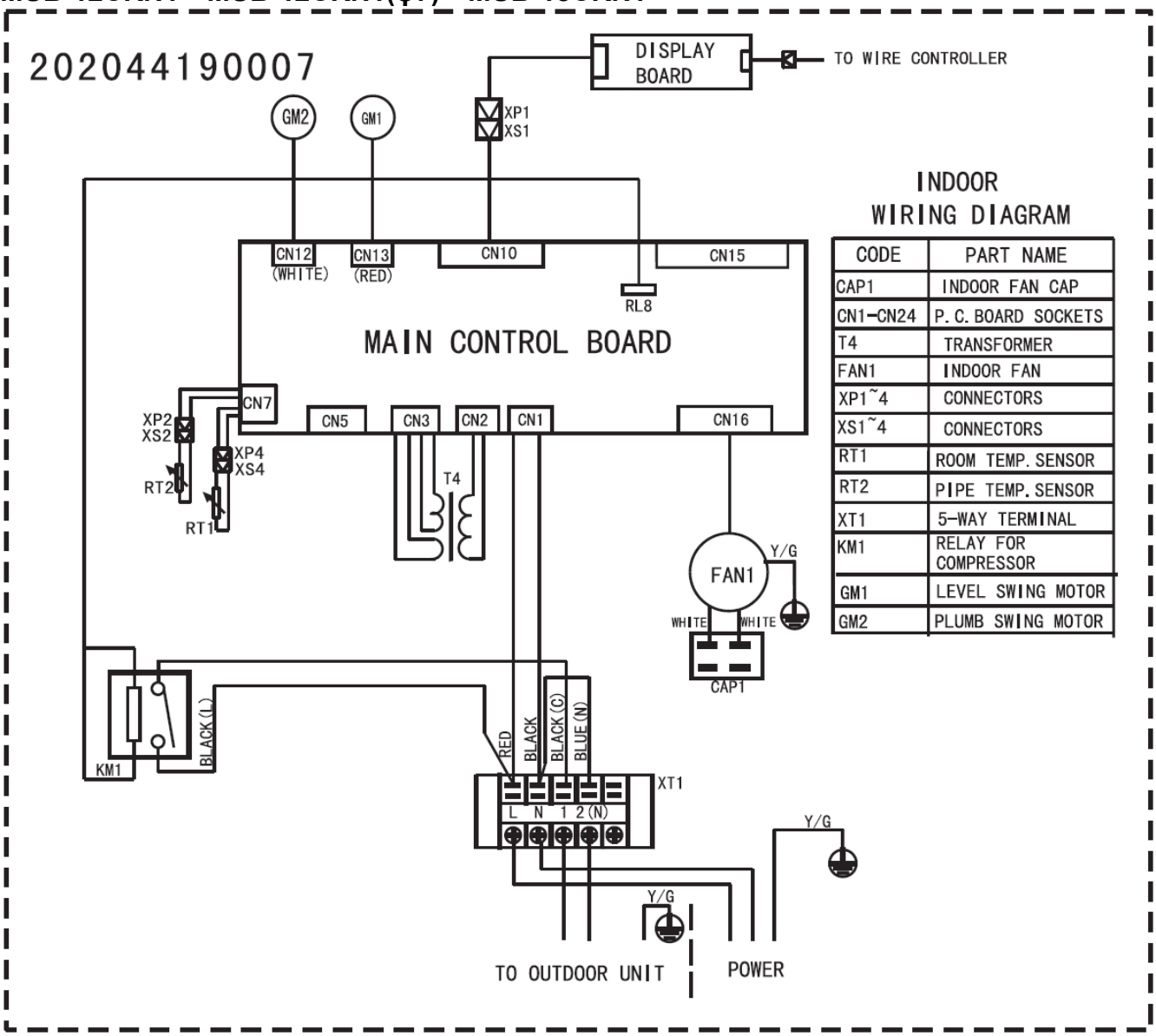
5. Wiring Diagrams

MUB-12HRN1 MUB-12HRN1(φ7) MUB-18HRN1-Q



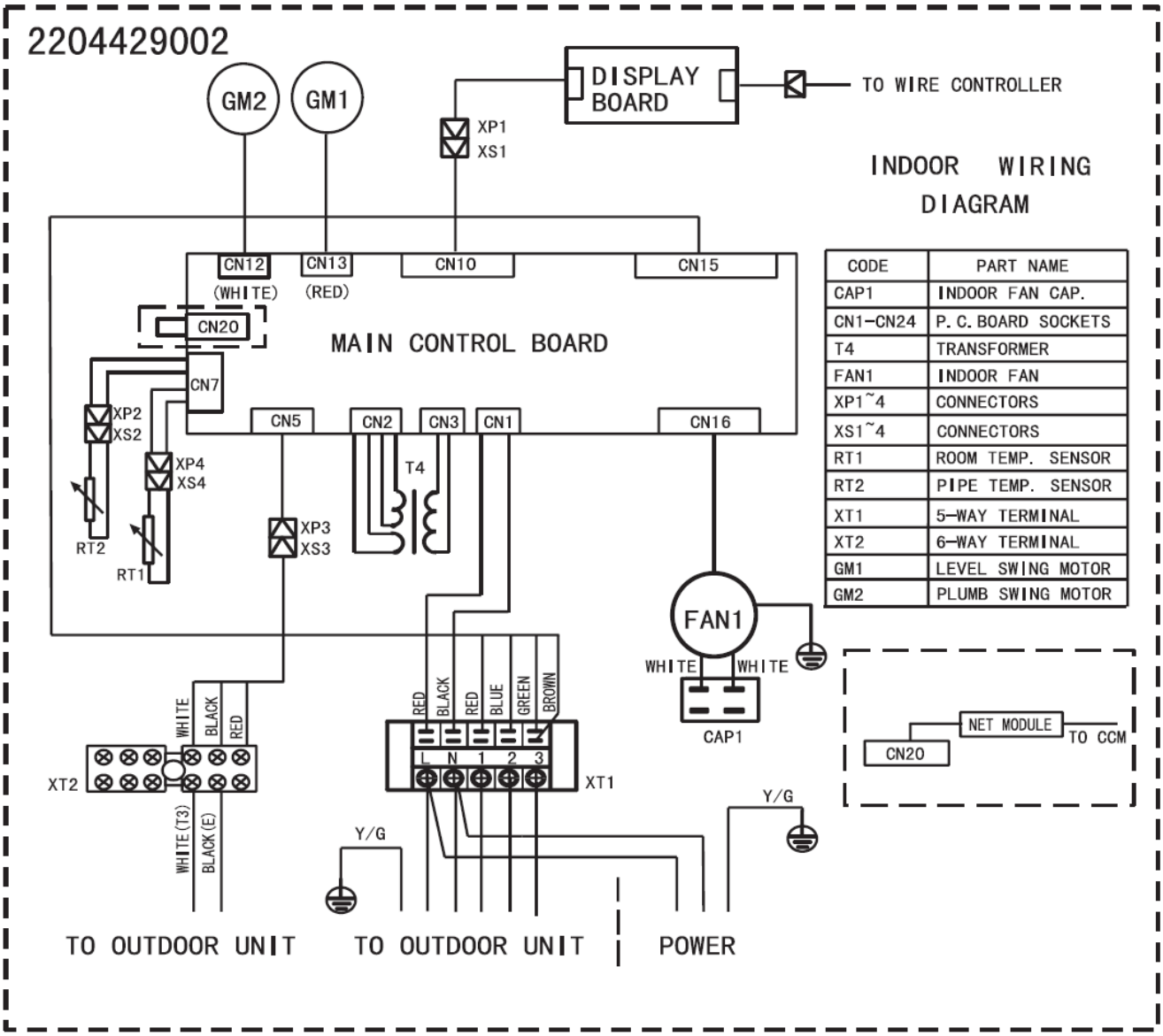
CODE	PART NAME
CAP1	INDOOR FAN CAP
CN1-CN24	P. C. BOARD SOCKETS
T4	TRANSFORMER
FAN1	INDOOR FAN
XP1~4	CONNECTORS
XS1~4	CONNECTORS
RT1	ROOM TEMP. SENSOR
RT2	PIPE TEMP. SENSOR
XT1	5-WAY TERMINAL
XT2	6-WAY TERMINAL
KM1	RELAY FOR COMPRESSOR
GM1	LEVEL SWING MOTOR
GM2	PLUMB SWING MOTOR

MUB-12CRN1 MUB-12CRN1(φ7) MUB-18CRN1



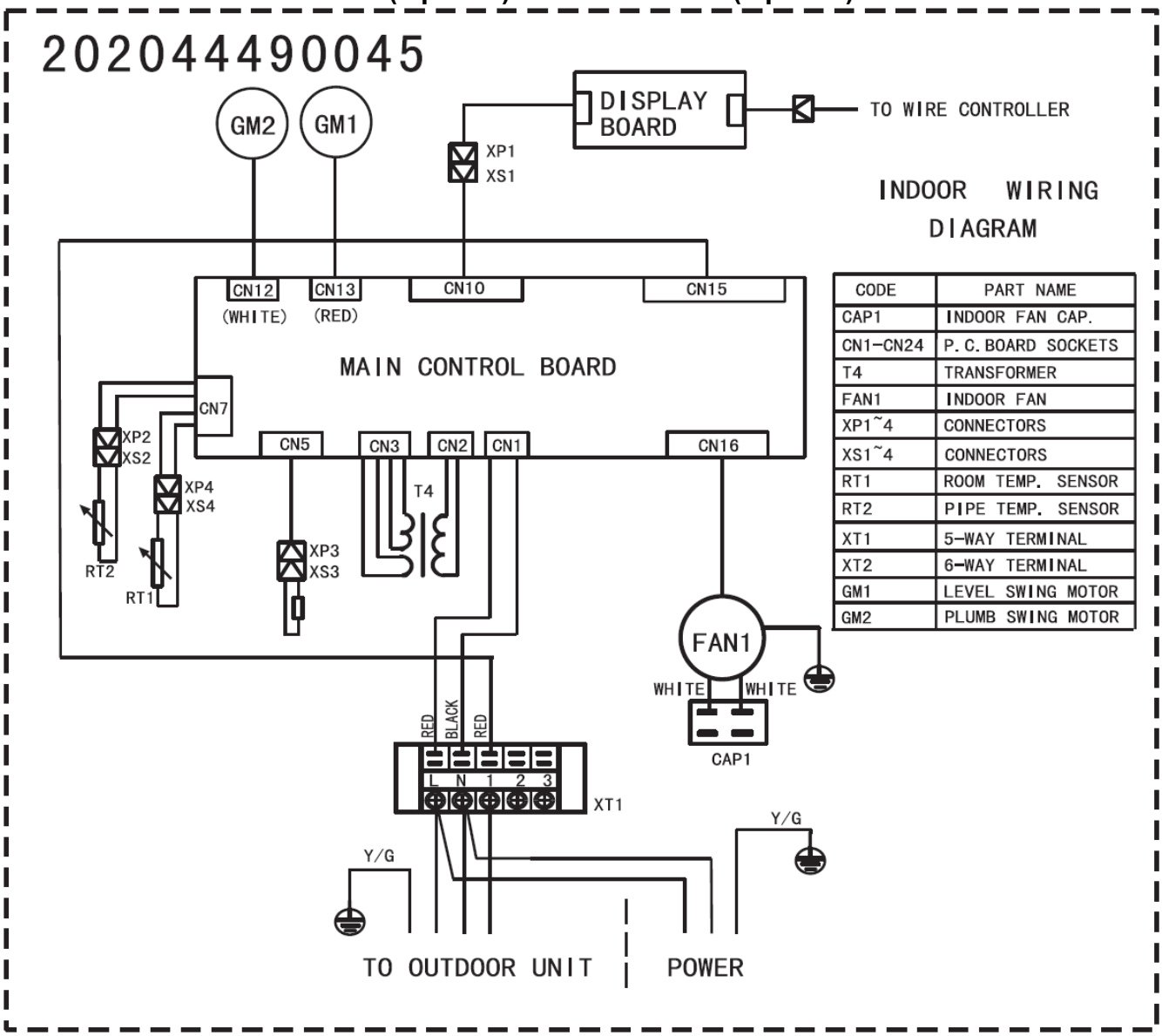
CODE	PART NAME
CAP1	INDOOR FAN CAP
CN1–CN24	P. C. BOARD SOCKETS
T4	TRANSFORMER
FAN1	INDOOR FAN
XP1~4	CONNECTORS
XS1~4	CONNECTORS
RT1	ROOM TEMP. SENSOR
RT2	PIPE TEMP. SENSOR
XT1	5–WAY TERMINAL
KM1	RELAY FOR COMPRESSOR
GM1	LEVEL SWING MOTOR
GM2	PLUMB SWING MOTOR

MUB-24HRN1-Q MUB-30HRN1(1 phase) MUB-36HRN1-Q



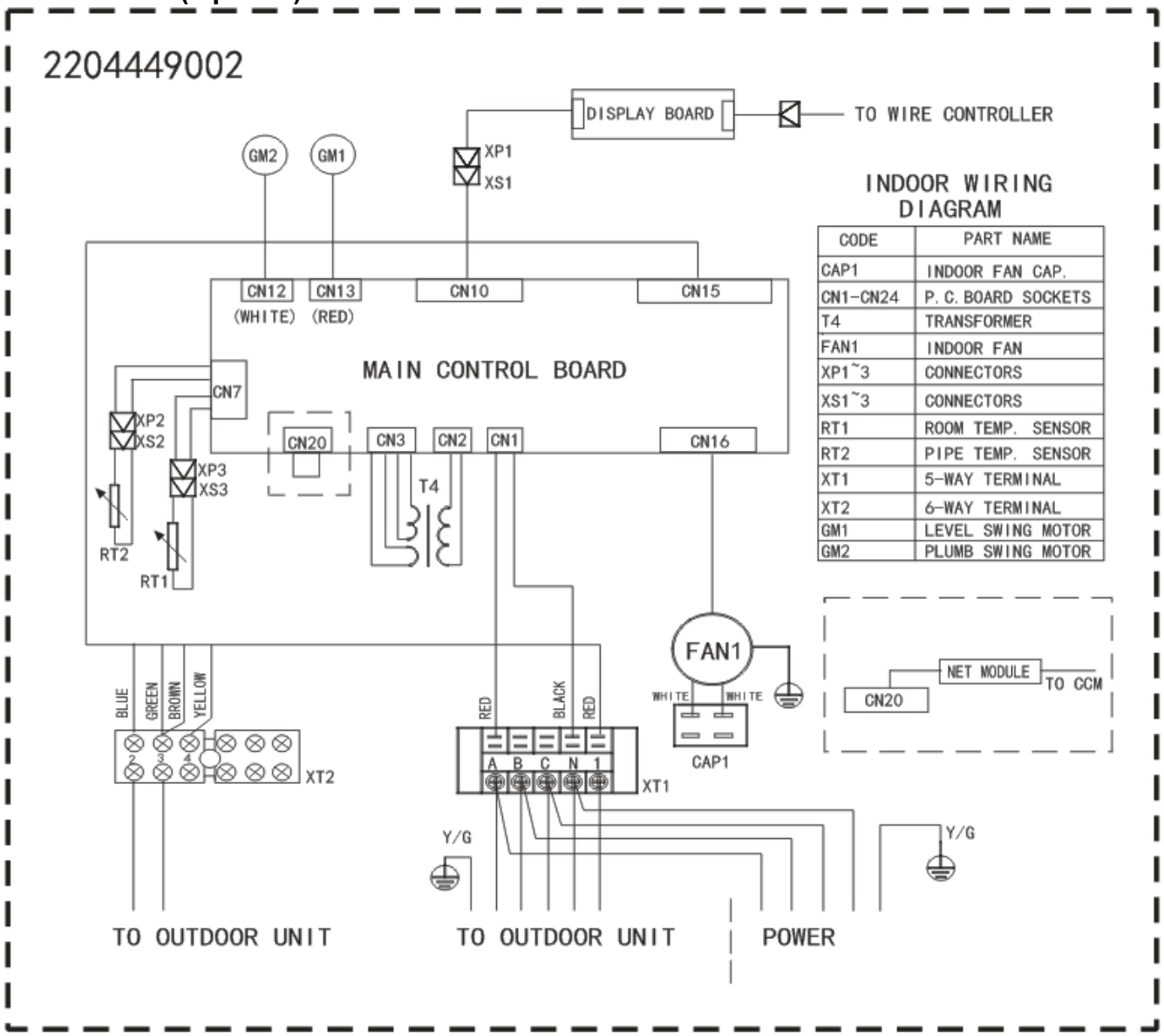
CODE	PART NAME
CAP1	INDOOR FAN CAP.
CN1–CN24	P. C. BOARD SOCKETS
T4	TRANSFORMER
FAN1	INDOOR FAN
XP1~4	CONNECTORS
XS1~4	CONNECTORS
RT1	ROOM TEMP. SENSOR
RT2	PIPE TEMP. SENSOR
XT1	5–WAY TERMINAL
XT2	6–WAY TERMINAL
GM1	LEVEL SWING MOTOR
GM2	PLUMB SWING MOTOR

MUB-24CRN1 MUB-30CRN1(1 phase) MUB-36CRN1(1 phase)



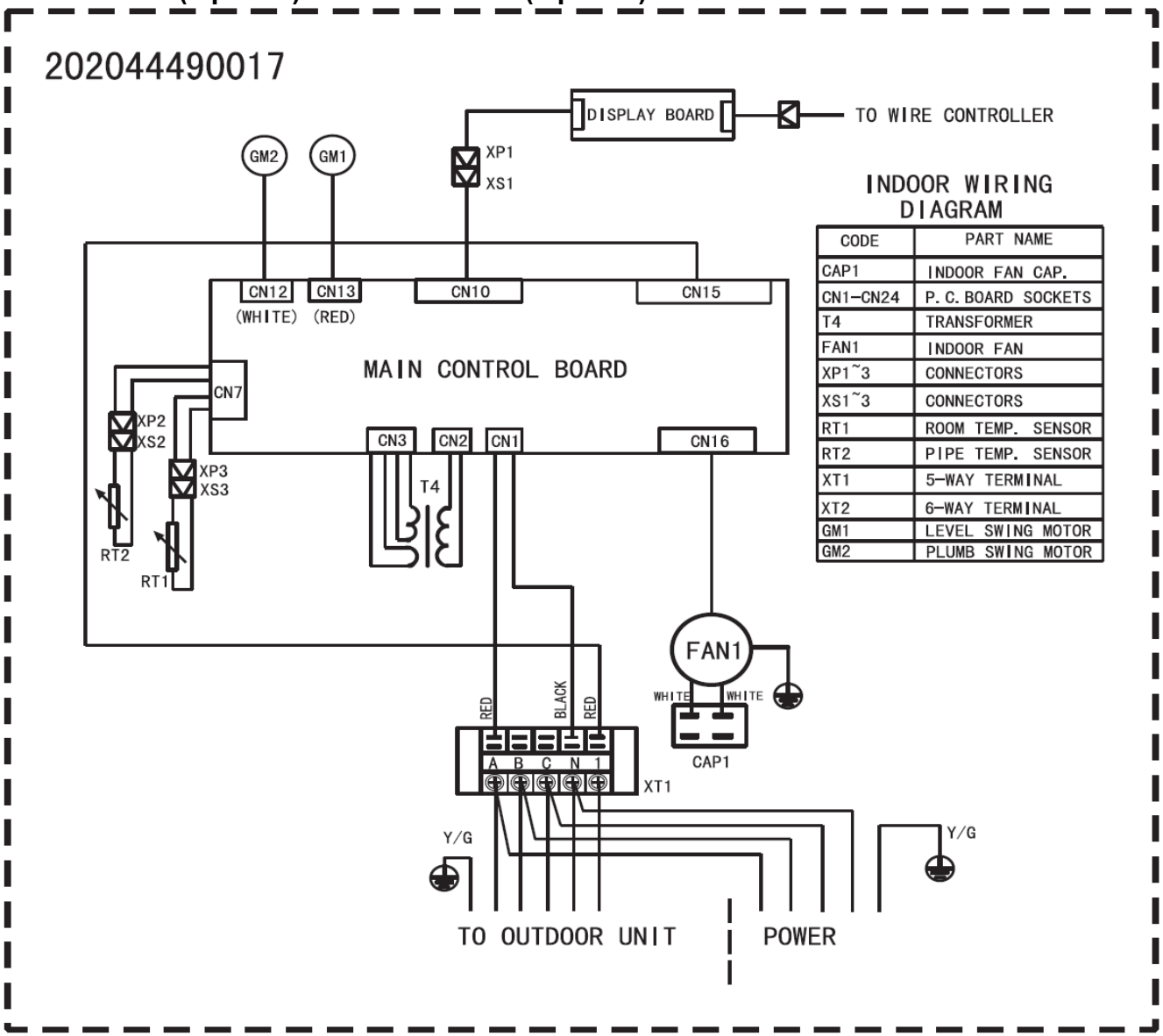
CODE	PART NAME
CAP1	INDOOR FAN CAP.
CN1–CN24	P. C. BOARD SOCKETS
T4	TRANSFORMER
FAN1	INDOOR FAN
XP1~4	CONNECTORS
XS1~4	CONNECTORS
RT1	ROOM TEMP. SENSOR
RT2	PIPE TEMP. SENSOR
XT1	5–WAY TERMINAL
XT2	6–WAY TERMINAL
GM1	LEVEL SWING MOTOR
GM2	PLUMB SWING MOTOR

MUB-30HRN1(3 phase) MUB-36HRN1-R

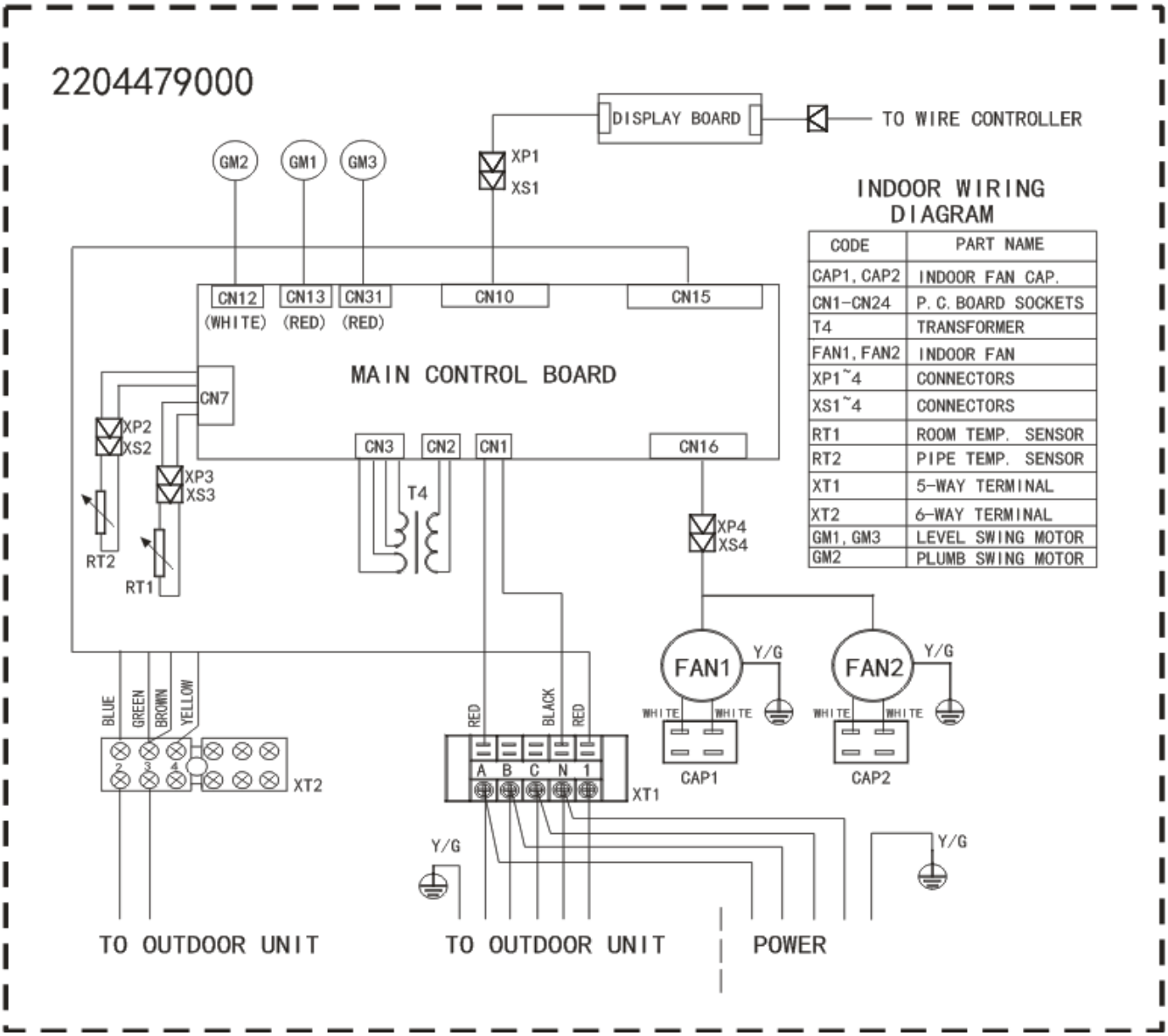


CODE	PART NAME
CAP1	INDOOR FAN CAP.
CN1-CN24	P.C.BOARD SOCKETS
T4	TRANSFORMER
FAN1	INDOOR FAN
XP1~3	CONNECTORS
XS1~3	CONNECTORS
RT1	ROOM TEMP. SENSOR
RT2	PIPE TEMP. SENSOR
XT1	5-WAY TERMINAL
XT2	6-WAY TERMINAL
GM1	LEVEL SWING MOTOR
GM2	PLUMB SWING MOTOR

MUB-30CRN1(3 phase) MUB-36CRN1(3 phase)

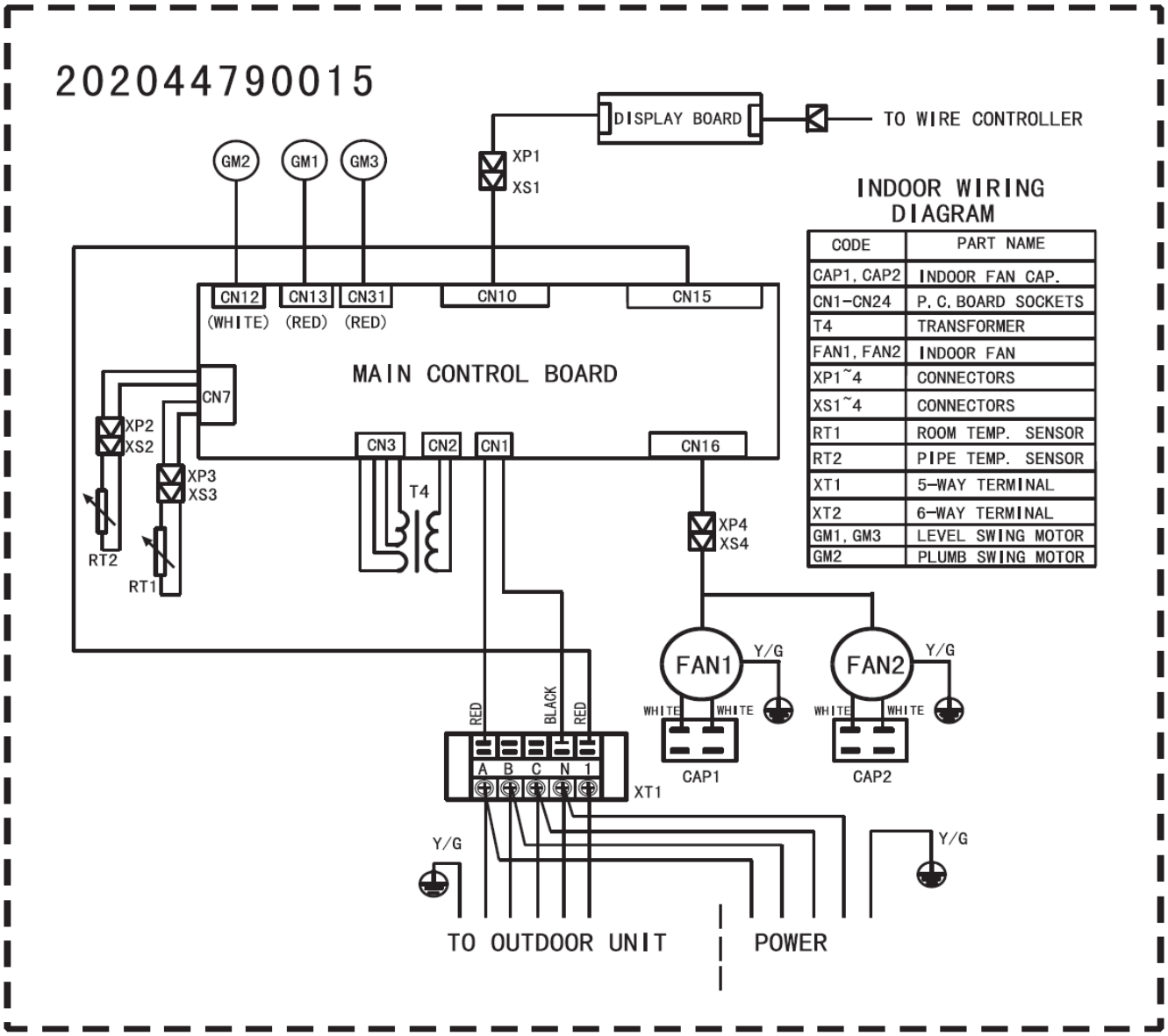


MUB-48HRN1-R MUB-60HRN1-R



CODE	PART NAME
CAP1, CAP2	INDOOR FAN CAP.
CN1-CN24	P. C. BOARD SOCKETS
T4	TRANSFORMER
FAN1, FAN2	INDOOR FAN
XP1~4	CONNECTORS
XS1~4	CONNECTORS
RT1	ROOM TEMP. SENSOR
RT2	PIPE TEMP. SENSOR
XT1	5-WAY TERMINAL
XT2	6-WAY TERMINAL
GM1, GM3	LEVEL SWING MOTOR
GM2	PLUMB SWING MOTOR

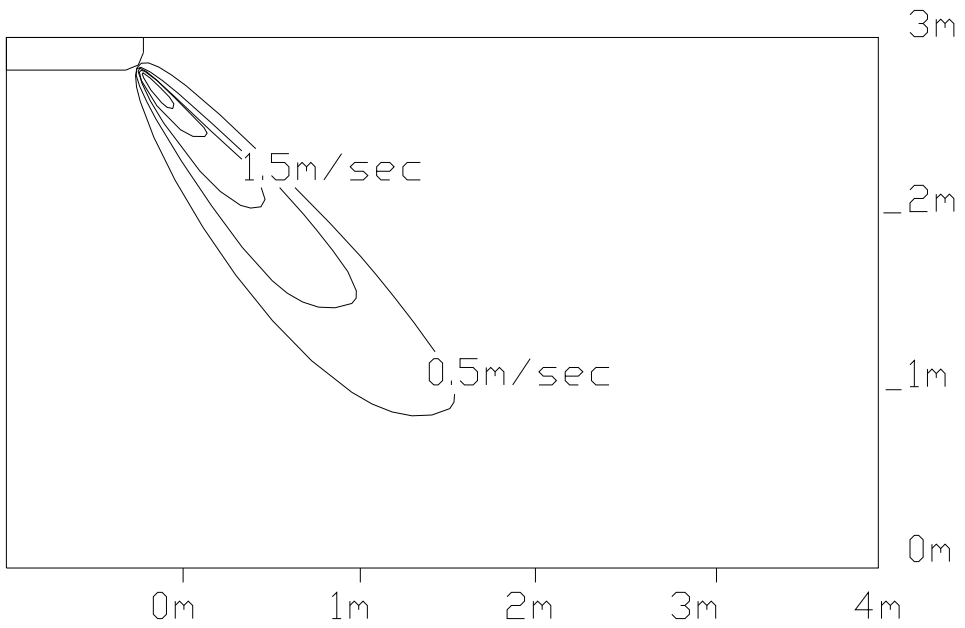
MUB-48CRN1 MUB-60CRN1



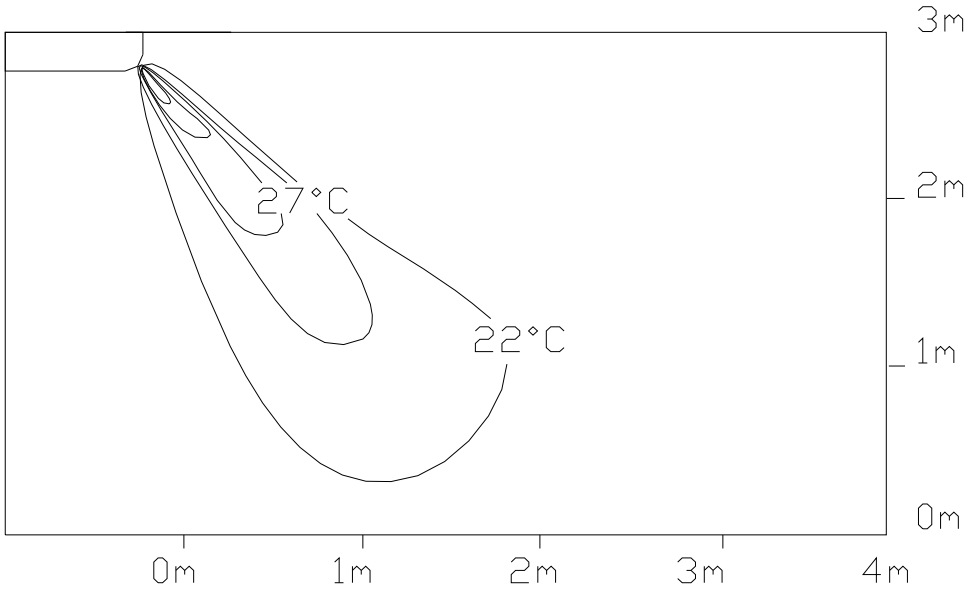
6. Air Velocity and Temperature Distributions

Discharge angle 60° (CEILING)

Airflow velocity

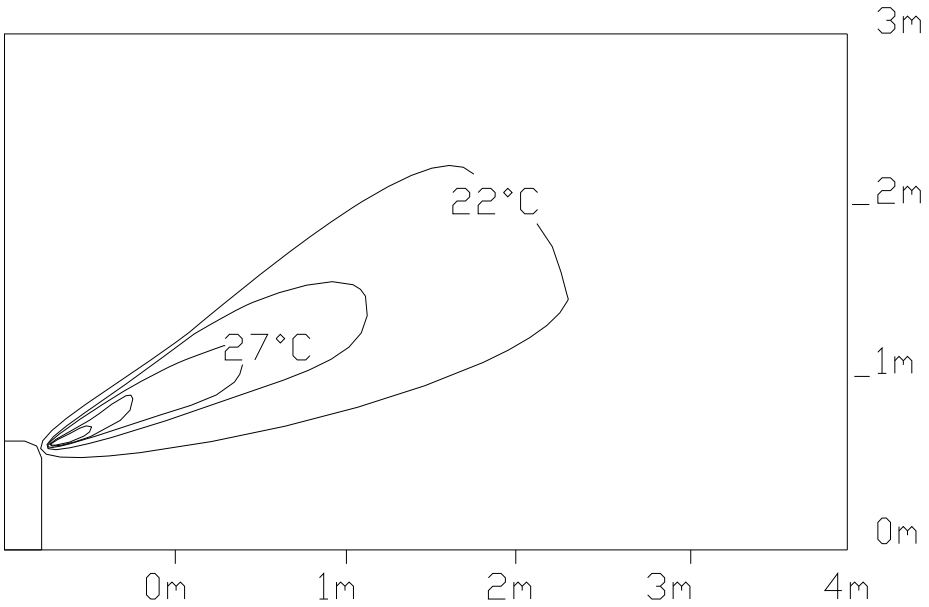


Temperature

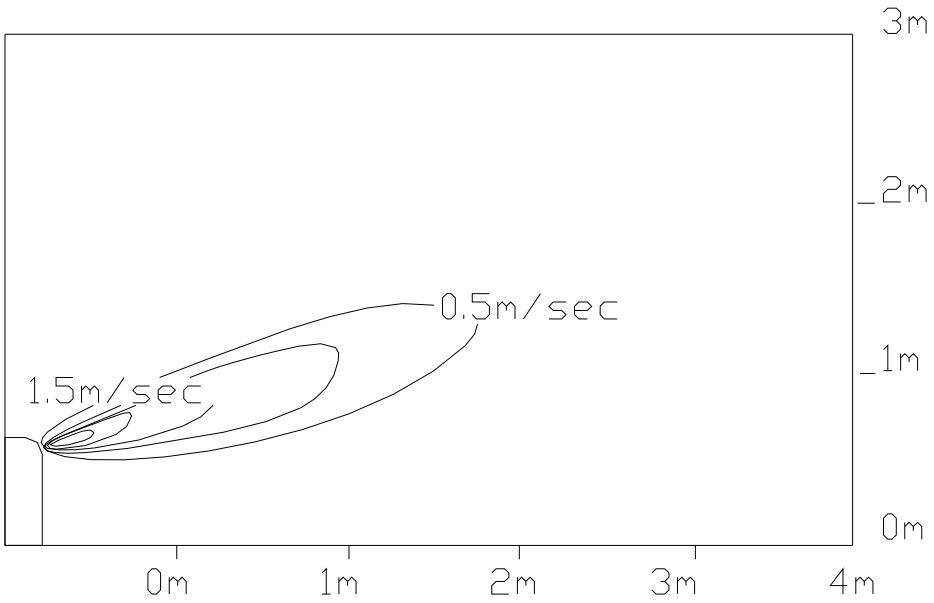


Discharge angle 60°(FLOOR)

Temperature



Airflow velocity

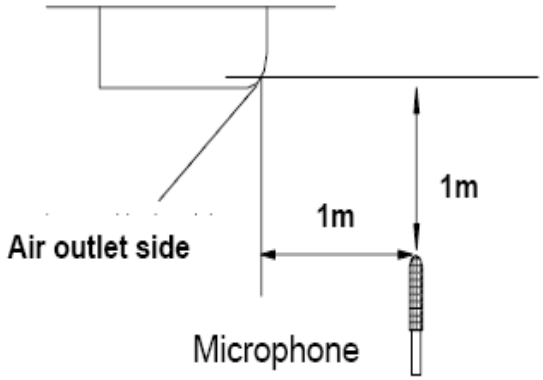


7. Electric Characteristics

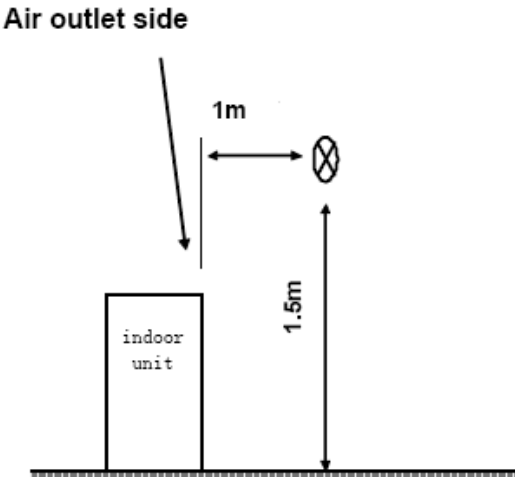
Model	Indoor Units				Power Supply
	Hz	Voltage	Min.	Max.	MFA
MUB-12HRN1 MUB-12HRN1(φ7) MUB-12CRN1 MUB-12CRN1(φ7)	50	220-240V	198V	254V	16
MUB-18HRN1-Q MUB-18CRN1	50	220-240V	198V	254V	16
MUB-24HRN1-Q MUB-24CRN1	50	220-240V	198V	254V	25
MUB-30HRN1 MUB-30CRN1	50	220-240V	198V	254V	25
MUB-30HRN1 MUB-30CRN1	50	380V	342V	418V	20
MUB-36HRN1-Q MUB-36CRN1	50	220-240V	198V	254V	25
MUB-36HRN1-R	50	380-415V	342V	418V	20
MUB-36CRN1	50	380V	342V	418V	20
MUB-48HRN1-R	50	380-420V	342V	440V	20
MUB-48CRN1	50	380V	342V	418V	20
MUB-60HRN1-R	50	380-420V	342V	440V	20
MUB-60CRN1	50	380V	342V	418V	20

Remark:
MFA: Max. Fuse Amps. (A)

8. Sound Levels



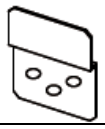
Ceiling



Floor

Model	Noise level dB(A)		
	H	M	L
MUB-12HRN1 MUB-12HRN1(φ7) MUB-12CRN1 MUB-12CRN1(φ7)	43	41	38
MUB-18HRN1-Q MUB-18CRN1	43	41	38
MUB-24HRN1-Q MUB-24CRN1	45	43	40
MUB-30HRN1 (1 phase) MUB-30CRN1 (1 phase)	45	43	40
MUB-30HRN1 (3 phase) MUB-30CRN1 (3 phase)	45	43	40
MUB-36HRN1-Q MUB-36CRN1 (1 phase)	45	43	40
MUB-36HRN1-R MUB-36CRN1 (3 phase)	45	43	40
MUB-48HRN1-R	50	47	45
MUB-48CRN1	47	46	44
MUB-60HRN1-R	50	49	47
MUB-60CRN1	47	46	44

9. Accessories

	Name	Shape	Quantity
Installation fittings	1.Hook		2
	2.Hanging arm		2
Remote controller & Its holder	3. Remote controller		1
	4. Remote controller holder		1
	5. Mounting screw (ST2.9×10-C-H)		2
	6. Alkaline dry batteries (AM4)		2
Others	7. Owner's manual		1
	8. Installation manual		1
	9. Remote controller manual		1

10. The Specification of Power

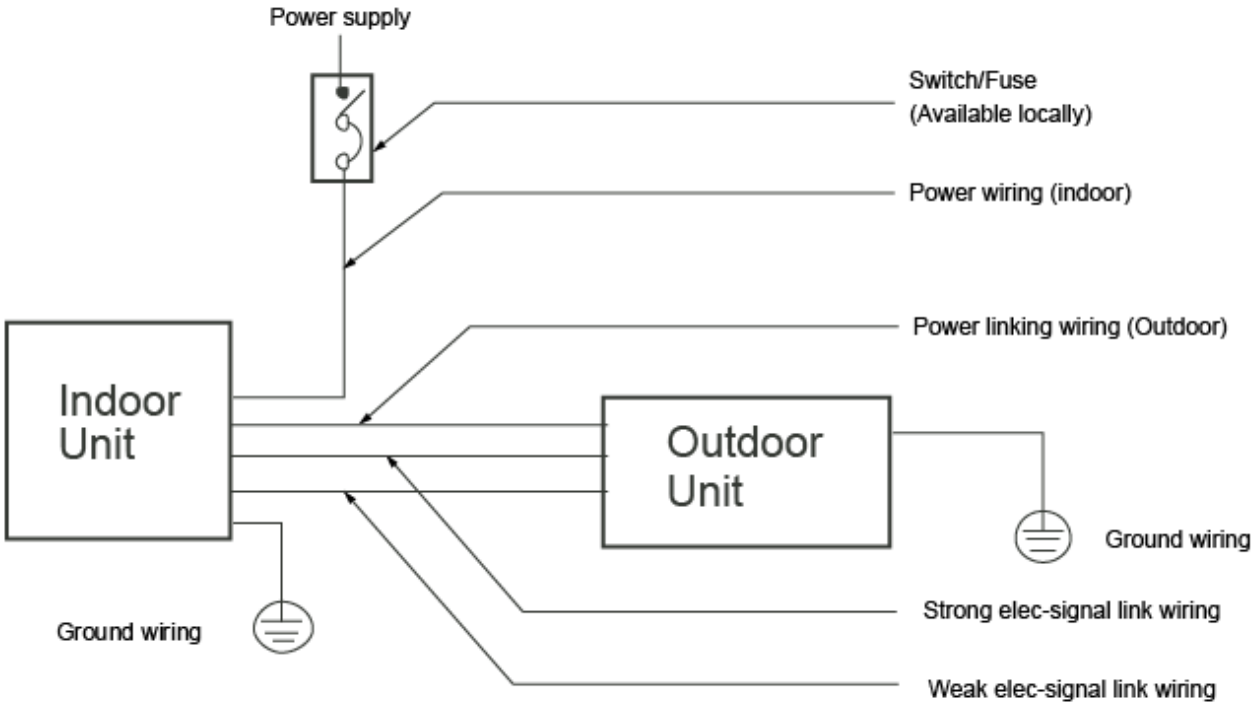
Cooling & Heating

Type		12000-18000 Btu/h	24000Btu/h	30000-36000 Btu/h	30000-60000 Btu/h
Power	Phase	1-phase	1-phase	1-phase	3-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz	220-240V, 50Hz	380-415V, 50Hz
Circuit Breaker/ Fuse (A)		20/16	40/25	40/25	40/20
Indoor Unit Power Wiring (mm^2)		3×2.5	3×2.5	3×4.0	5×2.5
Indoor/Outdoor Connecting Wiring (mm^2)	Ground Wiring	2.5	2.5	2.5	2.5
	Outdoor Unit Power Wiring	———	3×2.5	3×4.0	5×2.5
	Strong Electric Signal	5×2.5	3×1.5	3×1.0	3×1.0
	Weak Electric Signal	2-core shield wire 2×0.75 mm^2	2-core shield wire 2×0.75 mm^2	2-core shield wire 2×0.75 mm^2	———

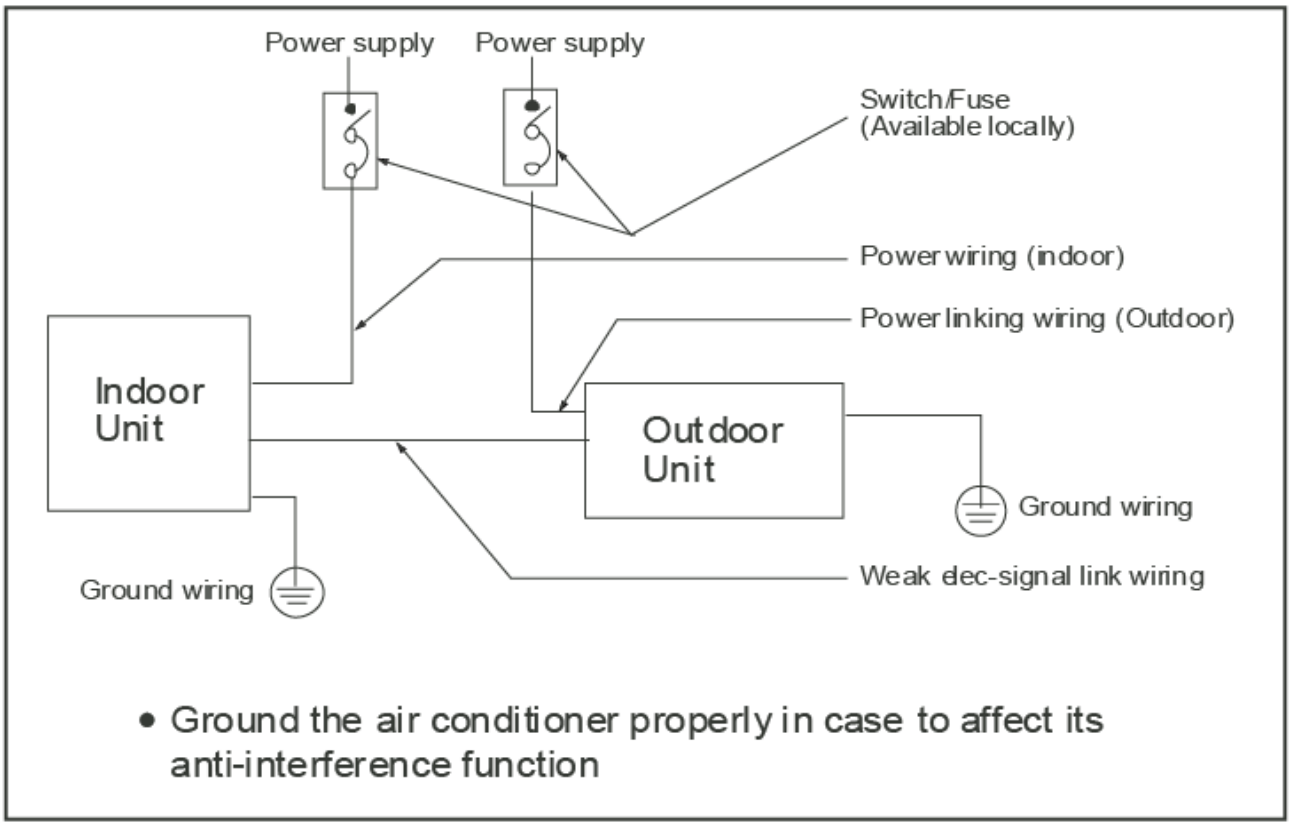
Cooling Only

Type		12000-18000Btu/h	24000-36000Btu/h	30000-60000Btu/h
Power	Phase	1-phase	1-phase	3-phase
	Frequency and Voltage	220-240V, 50Hz	220-240V, 50Hz	380-415V, 50Hz
Circuit Breaker/ Fuse (A)		20/16	40/25	40/20
Indoor Unit Power Wiring (mm^2)		3×2.5	3×2.5	5×2.5
Indoor/Outdoor Connecting Wiring (mm^2)	Ground Wiring	2.5	2.5	2.5
	Outdoor Unit Power Wiring	———	3×2.5	5×2.5
	Strong Electric Signal	3×2.5	1×1.0	1×1.0
	Weak Electric Signal	———	———	———

11. Field Wiring



- **Ground the air conditioner properly in case to affect its anti-interference function**

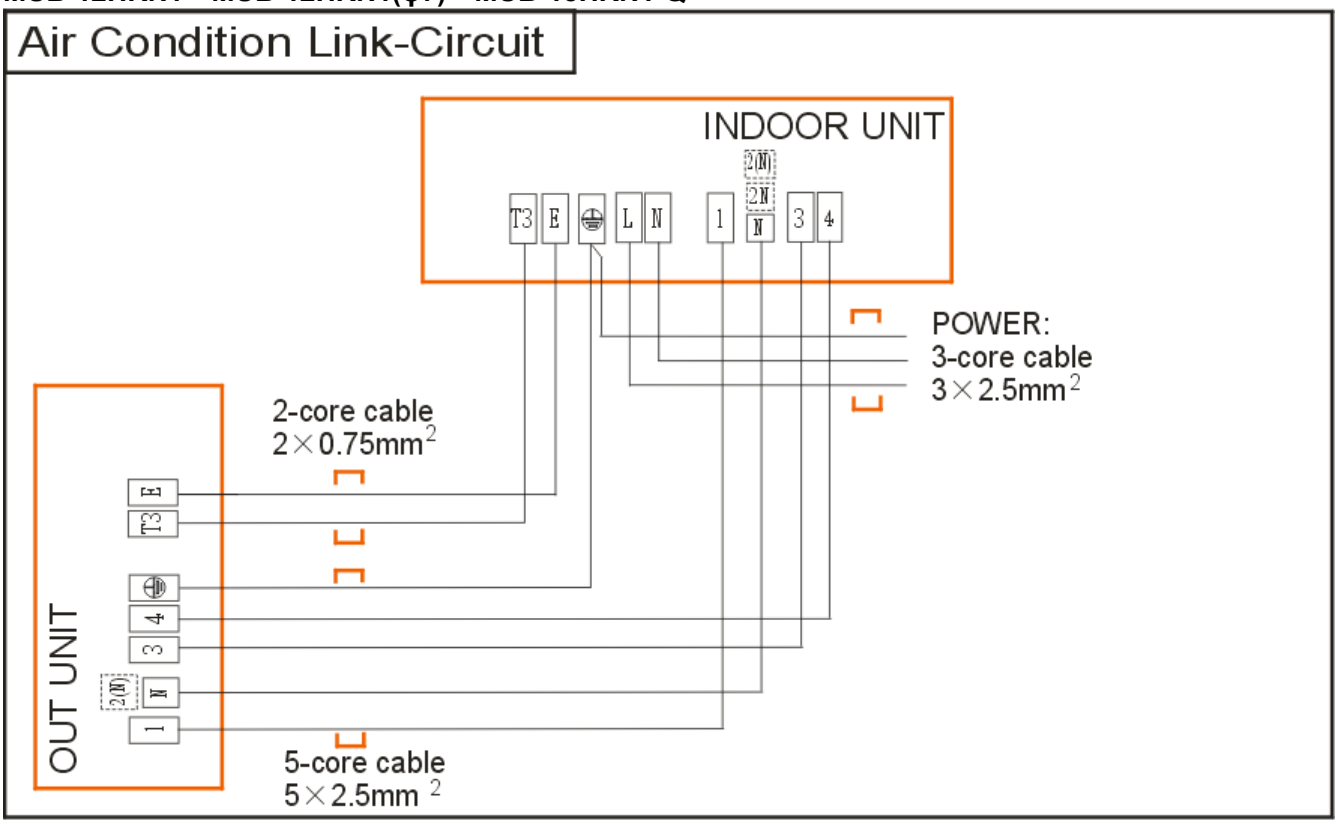


CAUTION

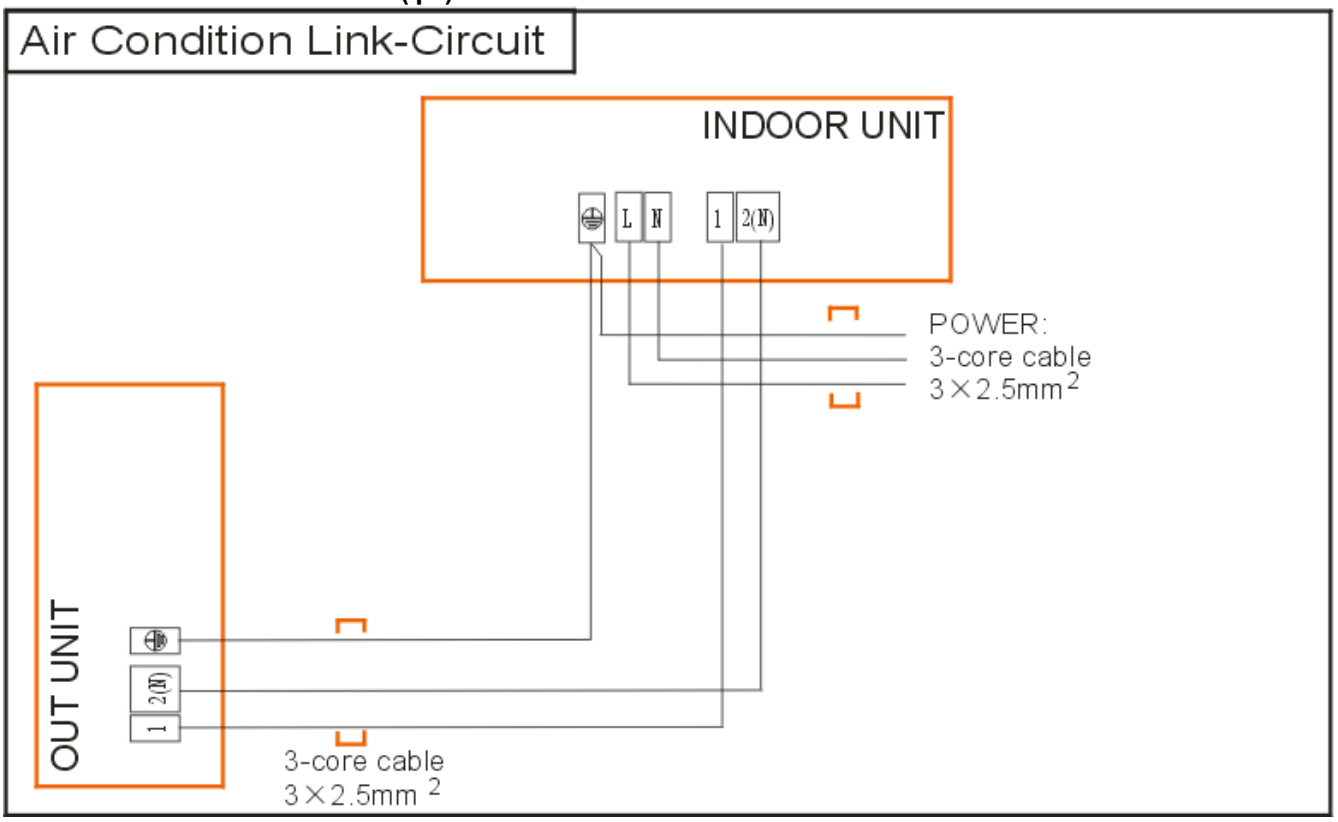
A disconnection device having an air gap contact separation in all active conductors should be incorporated in the fixed wiring according to the National Wiring Regulation.

When wiring, please choose the corresponding chart, or it may cause damage.The signs of the indoor terminal block in the some of following fugures may be replaced by L N L1 N1.

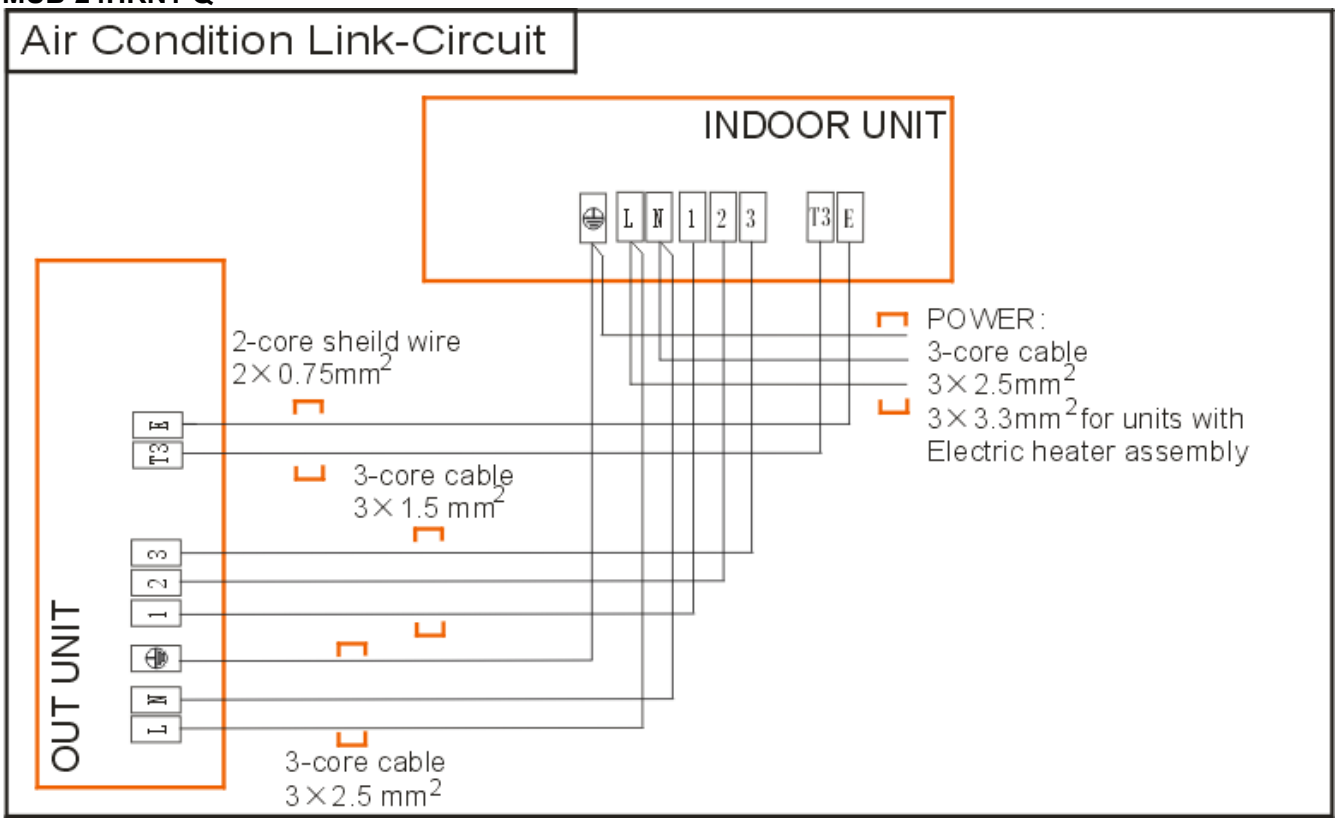
MUB-12HRN1 MUB-12HRN1(φ7) MUB-18HRN1-Q



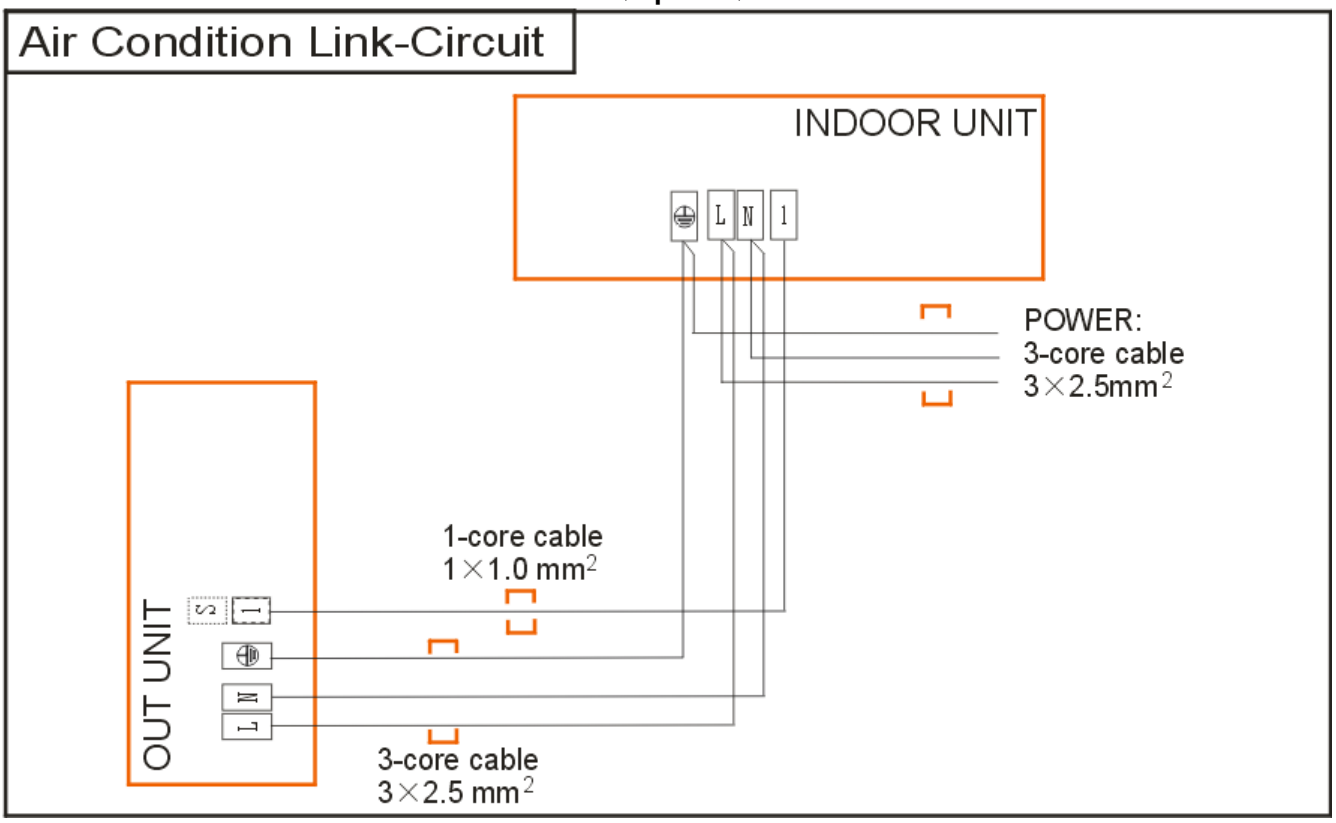
MUB-12CRN1 MUB-12CRN1 (φ7) MUB-18CRN1



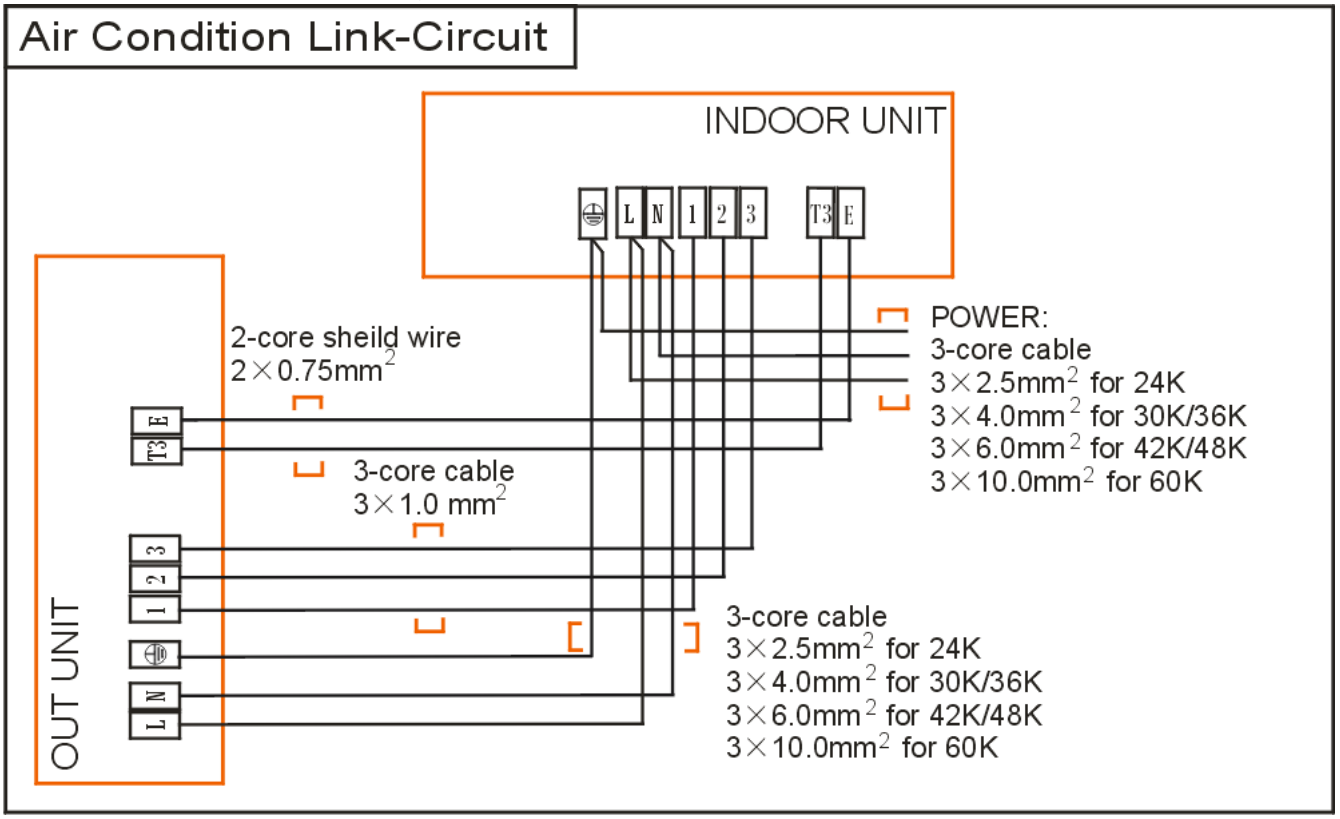
MUB-24HRN1-Q



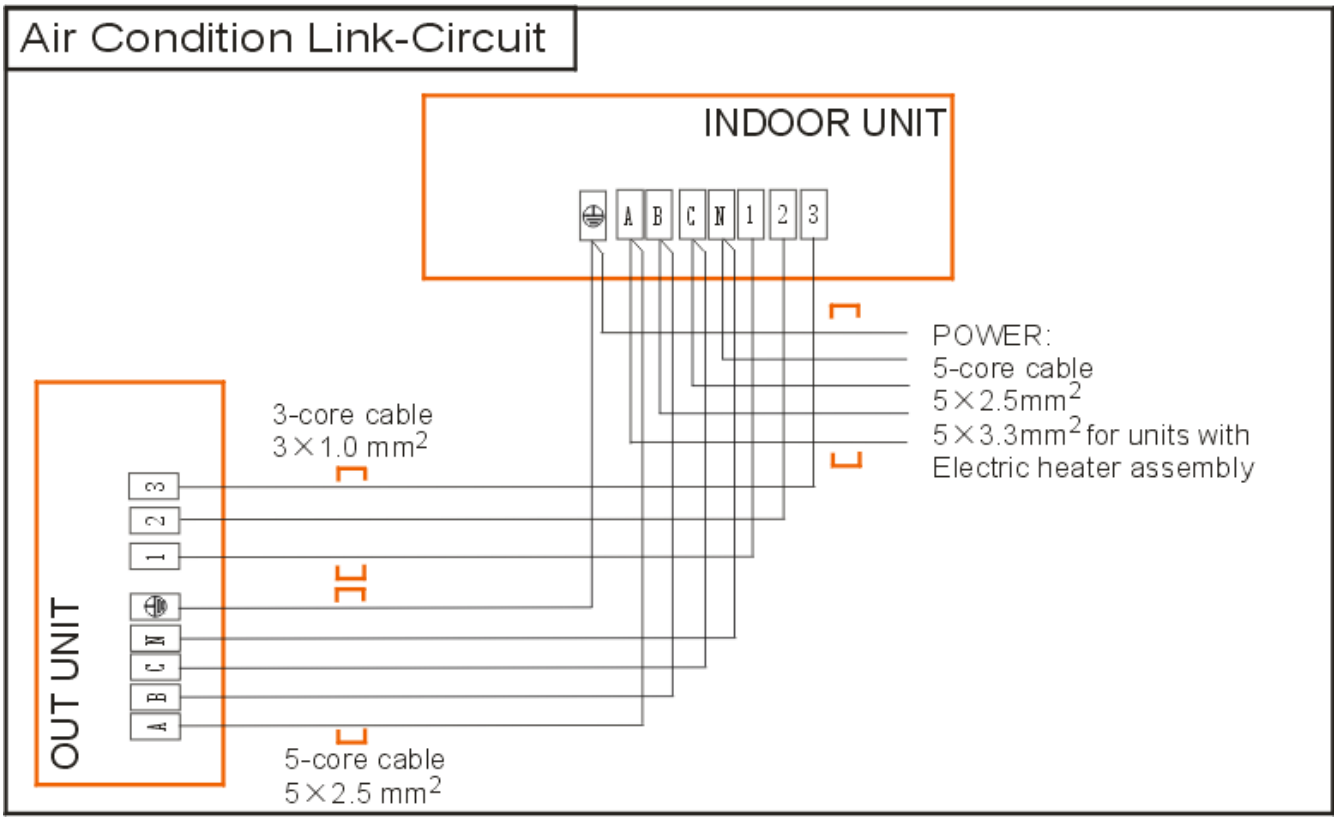
MUB-24CRN1 MUB-30CRN1 MUB-36CRN1（1 phase）



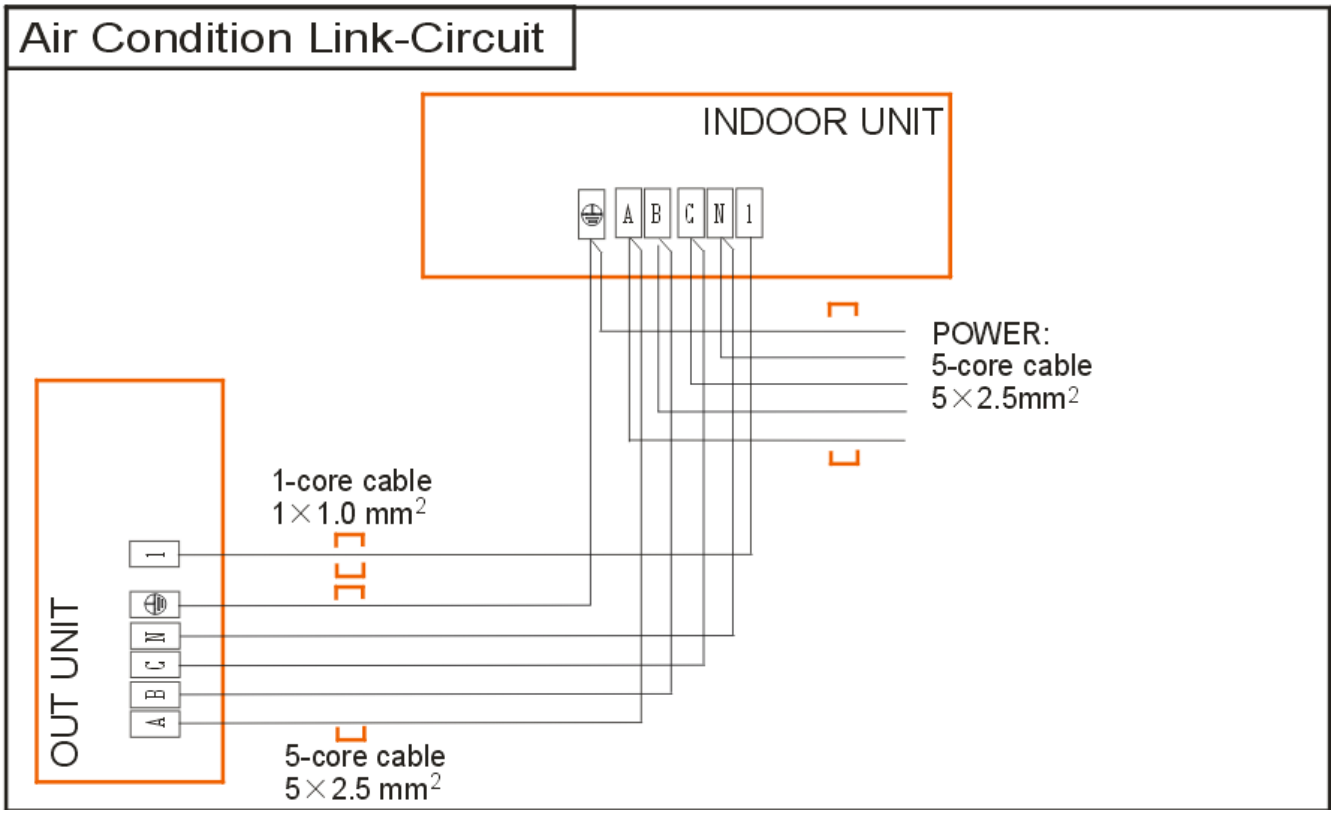
MUB-30HRN1 MUB-36HRN1-Q



MUB-30HRN1 MUB-36HRN1-R MUB-48HRN1-R MUB-60HRN1-R



MUB-30CRN1 MUB-36CRN1（3 phase）MUB-48CRN1 MUB-60CRN1



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Duct Type

1. Features

1. Economic and convenient installation

---Several diffusers branch off from an indoor unit, adjusting the room temperature, which makes many rooms to be air-conditioned with only one indoor unit.

---All models feature thin design making them applicable to ceiling pocket that tends to be shallow

2. Optional accessories

---Including front clapboard, panel, canvas air passage, filter, etc..

Front board

Panel

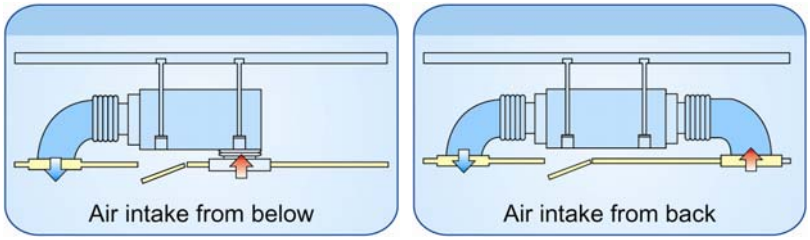
Canvas air passage

Filter

3. A long-life and high-efficiency filter

4. Way of air intake and inserting air filter

---Air intake can be positioned either at the back or below the unit. Similarly, the air filter also can be inserted either from the back or from the bottom of the unit.



2. Specifications

Model			MTB1-12HWN1-Q	MTB-18HWN1-Q	MTB-24HWN1-Q
Code			220070100190	220070201250	220070301330
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50	220~240-1-50
Cooling	Capacity	Btu/h	12000	18000	24000
	Input	W	1060	1755	2415
	EER	W/W	3.02	3.02	2.94
Heating	Capacity	Btu/h	13000	20000	26000
	Input	W	1212	1875	2420
	COP	W/W	3.30	3.2	3.14
Indoor fan motor	Model		YSK27-4C	YSK68-4P	YSK74-4P
	Qty		1	1	1
	Input	W	69/54/48	107/65/52	163/93/75
	Capacitor		2UF/450V	3.5UF/450V	3.5UF/450V
	Speed(Hi/Mi/Lo)	r/min	1200/1010/880	1150/800/700	1000/750/680
Indoor coil	Number of rows		3	3	4
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5	1.5
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	Φ7, Inner grooved copper tube	φ7, Inner grooved copper tube	φ7, Inner grooved copper tube
	Coil length × height × width	mm	515×252×40.11	735×252×40.11	735×252×53.48
	Number of circuits		4	4	6
Indoor air flow(Hi/Mi/Lo)		m^3/h	800/610/520	1170/770/650	1400/1100/1000
Indoor external static pressure (Hi)		Pa	40	70	70
Indoor noise level (sound pressure)		dB(A)	37/30/26	44/36/33	45/43/41
Indoor unit	Dimension (W×H×D)	mm	700x210x635	920x210x635	920x270x635
	Packing (W×H×D)	mm	915x29 x655	1135x290x655	1135x350x655
	Net/Gross weight	kg	20/25	24/28	28/32
Refrigerant type			R410A	R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7	φ9.5/φ15.9
Drainage water pipe diameter		mm	ODφ25	ODφ25	ODφ25
Controller			KJR-10B/DP(T)-E	KJR-10B/DP(T)-E	KJR-10B/DP(T)-E
Operation temperature		℃	17-30	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MTB-30HWN1-Q	MTB-30HWN1-R
Code			220070401150	220070401160
Power supply		V-ph-Hz	220~240-1-50	380~420-3-50
Cooling	Capacity	Btu/h	30000	30000
	Input	W	3169	3167
	EER	W/W	2.84	2.84
Heating	Capacity	Btu/h	32000	32000
	Input	W	3333	3330
	COP	W/W	2.85	2.85
Indoor fan motor	Model		YSK100-4P	YSK100-4P
	Qty		1	1
	Input	W	227/142/115	227/142/115
	Capacitor		10uF/450V	10uF/450V
	Speed(Hi/Mi/Lo)	r/min	935/700/620	935/700/620
Indoor coil	Number of rows		4	4
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7,inner grooved copper tube	φ7,inner grooved copper tube
	Coil length × height × width	mm	955×336×53.48	955×336×53.48
	Number of circuits		8	8
Indoor air flow(Hi/Mi/Lo)		m^3/h	2250/1940/1720	2250/1940/1720
Indoor external static pressure (Hi)		Pa	80	80
Indoor noise level (sound pressure)		dB(A)	46/44/42	46/44/42
Indoor unit	Dimension (W×H×D)	mm	1140 x270x775	1140x270x775
	Packing (W×H×D)	mm	1355x350x795	1355x350x795
	Net/Gross weight	kg	41/46	41/46
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ12.7/φ19	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			KJR-10B/DP(T)-E	KJR-10B/DP(T)-E
Operation temperature		℃	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MTB-36HWN1-Q	MTB-36HWN1-R
Code			220070501580	220070501590
Power supply		V-ph-Hz	220~240-1-50	380~415-3-50
Cooling	Capacity	Btu/h	36000	36000
	Input	W	3737	3737
	EER	W/W	2.81	2.81
Heating	Capacity	Btu/h	40000	40000
	Input	W	4270	4270
	COP	W/W	2.81	2.81
Indoor fan motor	Model		YSK140-4P	YSK140-4P
	Qty		1	1
	Input	W	291/168/138	291/168/138
	Capacitor		10uF/450V	10uF/450V
	Speed(Hi/Mi/Lo)	r/min	1070/790/710	1070/790/710
Indoor coil	Number of rows		4	4
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.4	1.4
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7,inner grooved copper tube	φ7,inner grooved copper tube
	Coil length × height × width	mm	955×336×53.48	955×336×53.48
	Number of circuits		8	8
Indoor air flow(Hi/Mi/Lo)		m^3/h	2270/1890/1650	2270/1890/1650
Indoor external static pressure (Hi)		Pa	80	80
Indoor noise level (sound pressure)		dB(A)	46/44/42	46/44/42
Indoor unit	Dimension (W×H×D)	mm	1140x270x775	1140x270x775
	Packing (W×H×D)	mm	1355x350x795	1355x350x795
	Net/Gross weight	kg	41/49	36/43
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ12.7/φ19	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			KJR-10B/DP(T)-E	KJR-10B/DP(T)-E
Operation temperature		℃	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MTB-42HWN1-Q
Code			220070601200
Power supply		V-ph-Hz	220~240-1-50
Cooling	Capacity	Btu/h	42000
	Input	W	4286
	EER	W/W	2.8
Heating	Capacity	Btu/h	44000
	Input	W	4062
	COP	W/W	3.2
Indoor fan motor	Model		YSK170-4P
	Qty		1
	Input	W	356/201/152
	Capacitor		10uF/450V
	Speed(Hi/Mi/Lo)	r/min	1070/750/650
Indoor coil	Number of rows		4
	Tube pitch(a)×row pitch(b)	mm	21x13.37
	Fin spacing	mm	1.5
	Fin type (code)		Hydrophilic aluminium
	Tube outside dia. and type	mm	Φ7, inner groove tube
	Coil length × height × width	mm	1030x378x53.48
	Number of circuits		8
Indoor air flow(Hi/Mi/Lo)		m^3/h	2950/2390/1920
Indoor external static pressure (Hi)		Pa	100
Indoor noise level (sound pressure)		dB(A)	47/39/36
Indoor unit	Dimension (W×H×D)	mm	1200x300x865
	Packing (W×H×D)	mm	1385x373x920
	Net/Gross weight	kg	50/59
Refrigerant type			R410A
Design pressure		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.52/Φ19
Drainage water pipe diameter		mm	ODφ25
Controller			KJR-10B/DP(T)-E
Operation temperature		℃	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal)
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

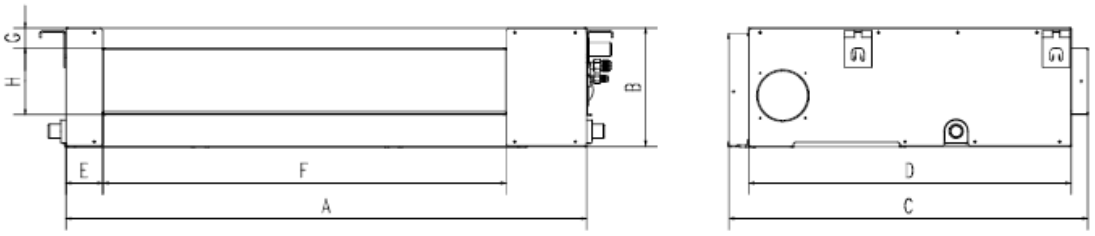
Model			MTB-48HWN1-R	MTB-60HWN1-R
Code			220070701480	220070801580
Power supply		V-ph-Hz	380~420-3-50	380~420-3-50
Cooling	Capacity	Btu/h	48000	60000
	Input	W	5109	5861
	EER	W/W	2.74	2.73
Heating	Capacity	Btu/h	52000	65000
	Input	W	5500	6308
	COP	W/W	2.8	2.79
Indoor fan motor	Model		YSK170-4P	YSK180-4P
	Qty		1	1
	Input	W	356/201/152	355/223/173
	Capacitor		10uF/450V	10uF/450V
	Speed(Hi/Mi/Lo)	r/min	1070/750/650	1080/830/710
Indoor coil	Number of rows		4	4
	Tube pitch(a)×row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.4	1.5
	Fin type (code)		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7,inner grooved copper tube	φ7 Inner grooved copper tube
	Coil length × height × width	mm	1030×378×53.48	1030×378×53.48
	Number of circuits		8	8
Indoor air flow(Hi/Mi/Lo)		m^3/h	3010/2410/1940	3150/2510/1990
Indoor external static pressure (Hi)		Pa	100	100
Indoor noise level (sound pressure)		dB(A)	47/45/43	47/45/43
Indoor unit	Dimension (W×H×D)	mm	1200×300×865	1200×300×865
	Packing (W×H×D)	mm	1385×373×920	1385×373×920
	Net/Gross weight	kg	47/55	47/55
Refrigerant type			R410A	R410A
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ12.7/φ19	φ12.7/φ19
Drainage water pipe diameter		mm	ODφ25	ODφ25
Controller			KJR-10B/DP(T)-E	KJR-10B/DP(T)-E
Operation temperature		℃	17-30	17-30

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB; Equivalent ref. piping: 7.5m (horizontal);
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB; Equivalent ref. piping: 7.5m (horizontal)
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

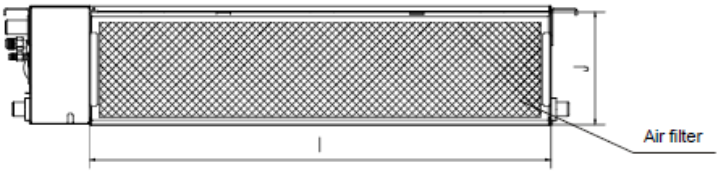
3. Dimensions

Outline dimension and air outlet opening size

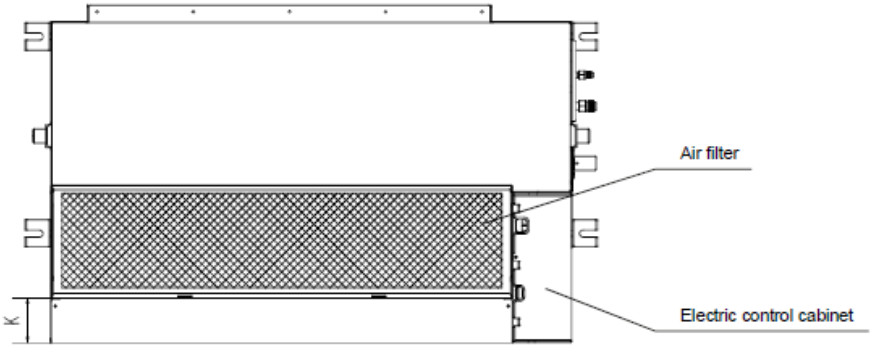
Unit: mm



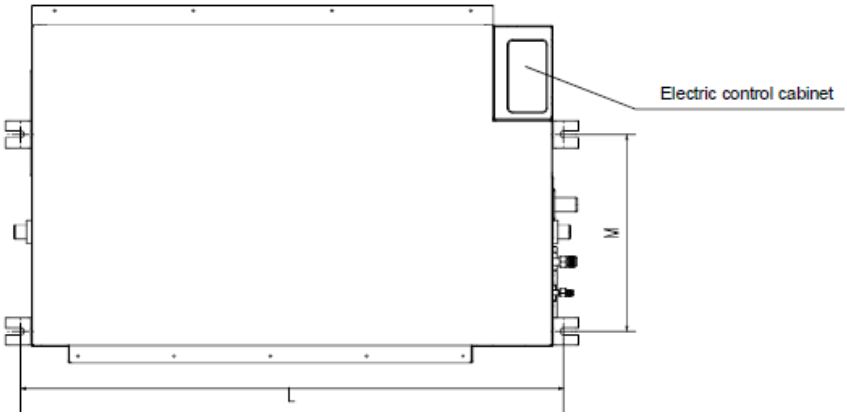
Air return opening size



Position size of descensional ventilation opening



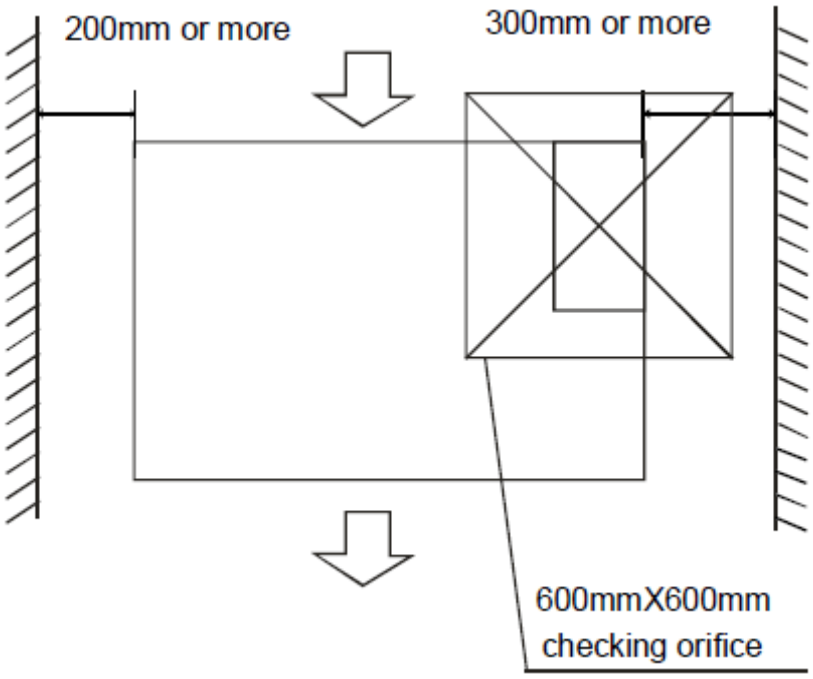
Size of mounted lug



Capacity (KBtu)	Outline dimension(mm)				Air outlet o pening size				Air return opening size			Size of outline dimension mounted plug	
	A	B	C	D	E	F	G	H	I	J	K	L	M
12(compact)	700	210	635	570	65	493	35	119	595	200	80	740	350
18	920	210	635	570	65	713	35	119	815	200	80	960	350
24	920	270	635	570	65	713	35	179	815	260	20	960	350
30/36	1140	270	775	710	65	933	35	179	1035	260	20	1180	490
42/48/60	1200	300	865	800	80	968	40	204	1094	288	45	1240	500

4. Service Space

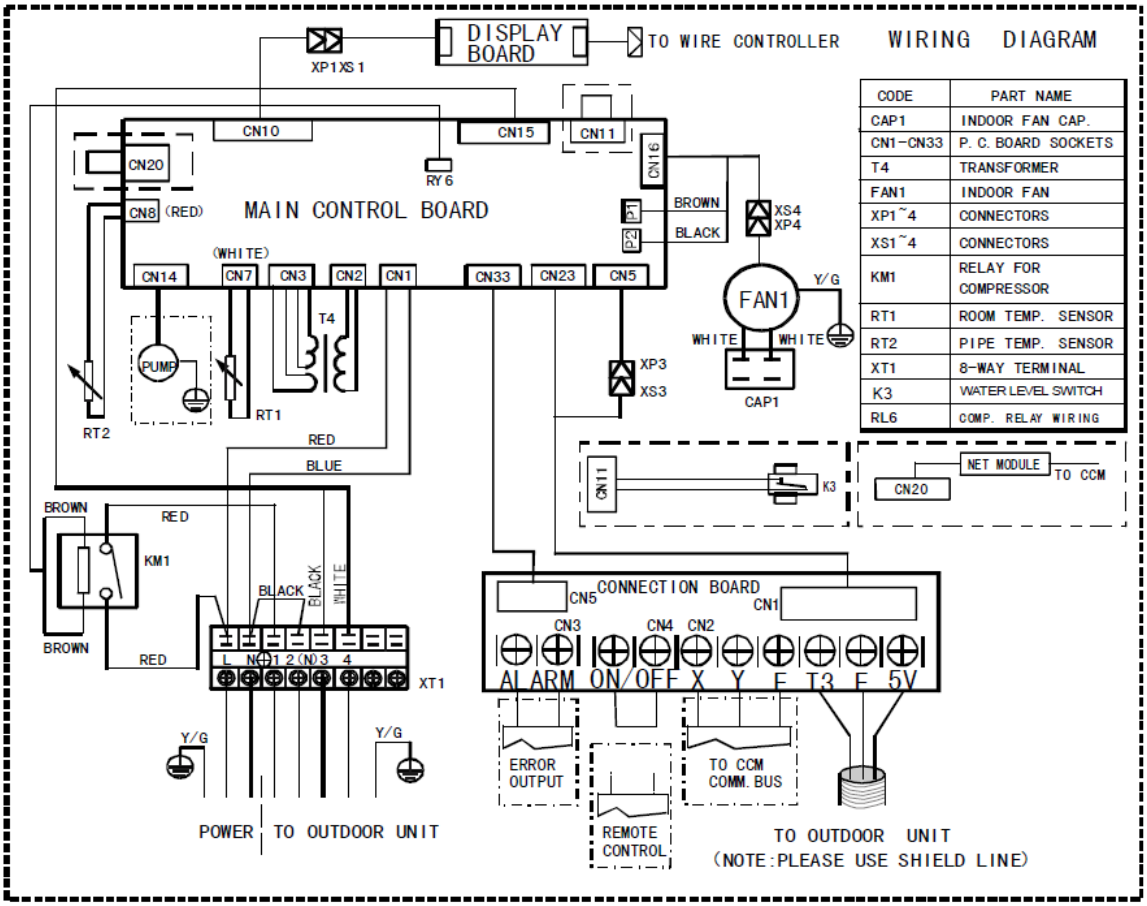
Ensure enough space required for installation and maintenance.



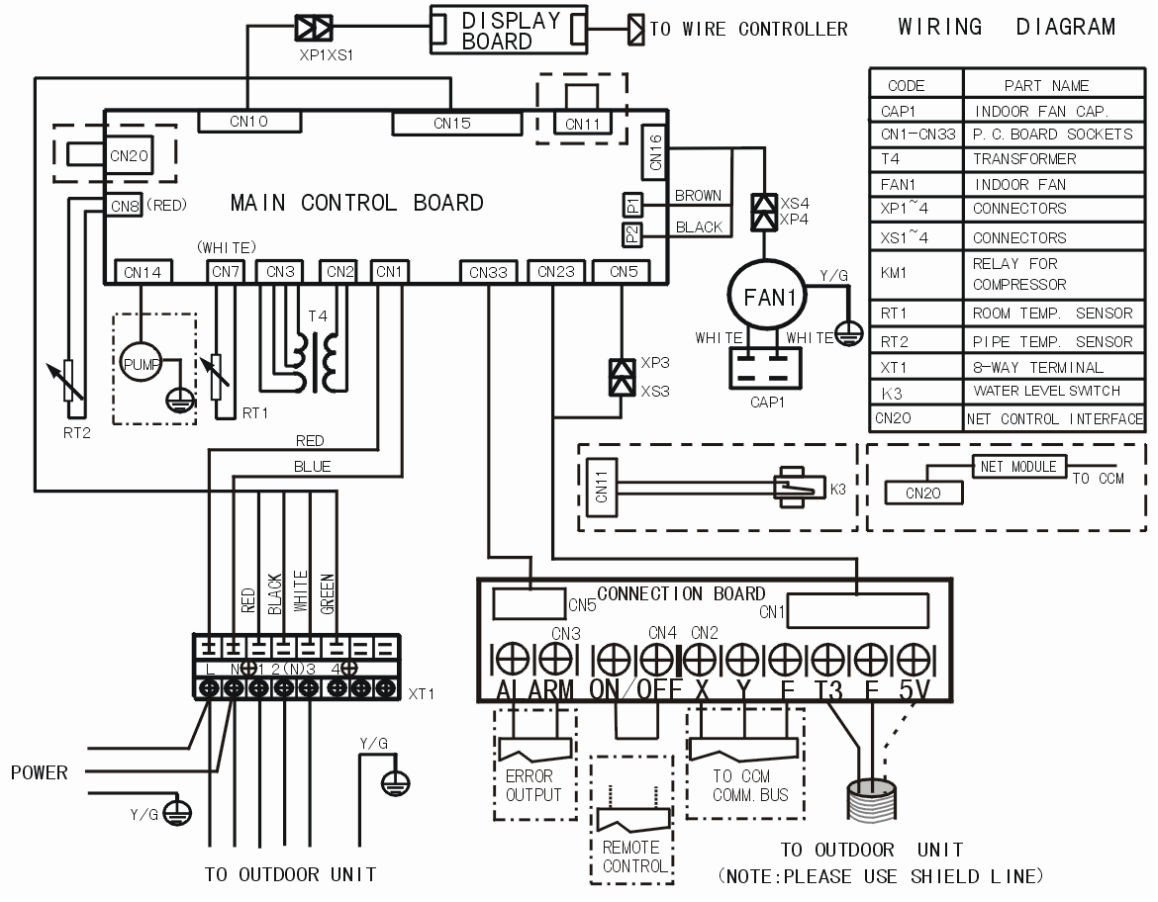
There is enough space for installation and maintenance. The ceiling is horizontal, and its structure can endure the weight of the indoor unit. The outlet and the inlet are not impeded, and the influence of external air is the least. The air flow can reach throughout the room. The connecting pipe and drainpipe could be extracted out easily. There is no direct radiation from heater.

5. Wiring Diagrams

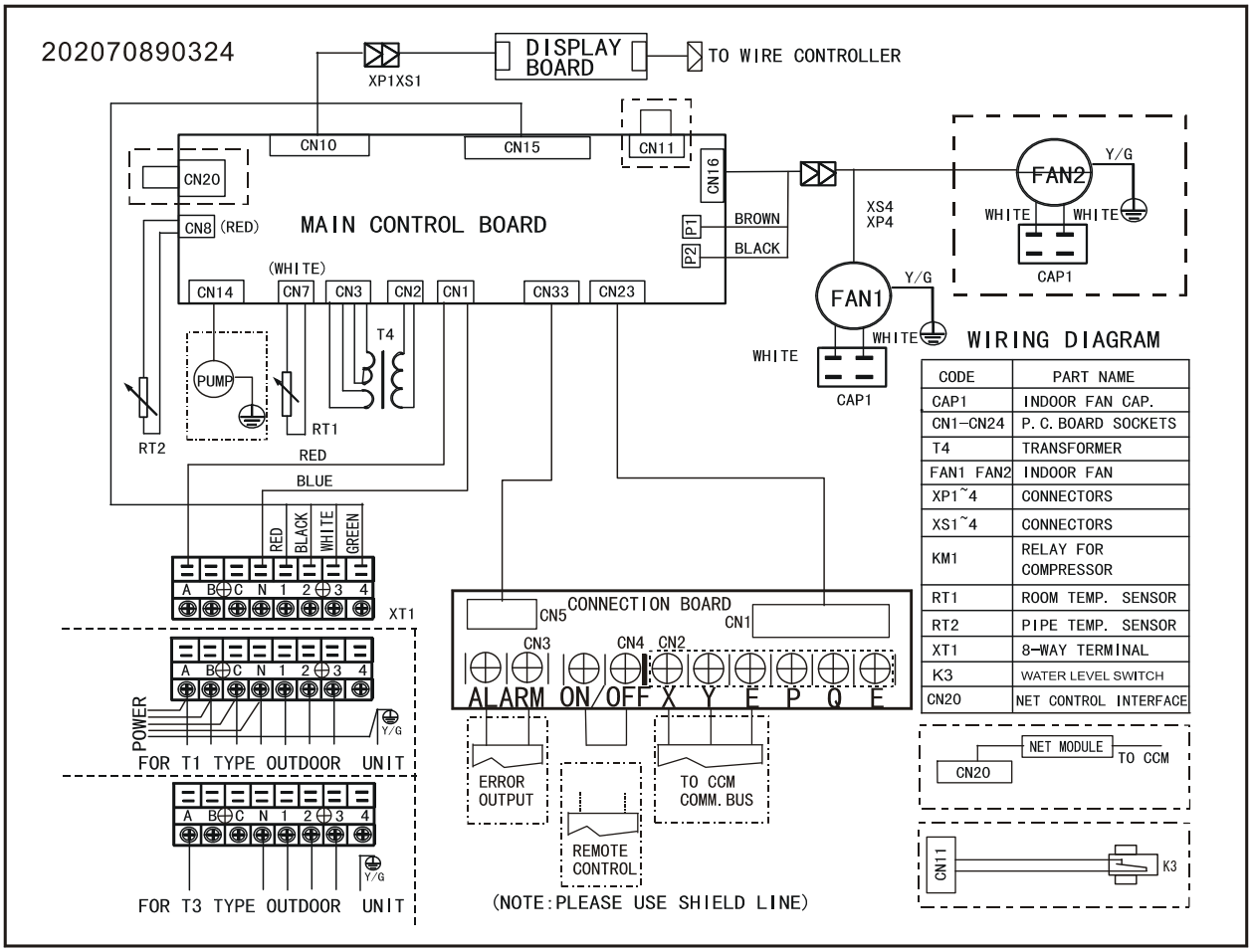
MTB1-12HWN1-Q MTB-18HWN1-Q



MTB-24HWN1-Q MTB-30HWN1-Q MTB-36HWN1-Q MTB-42HWN1-Q



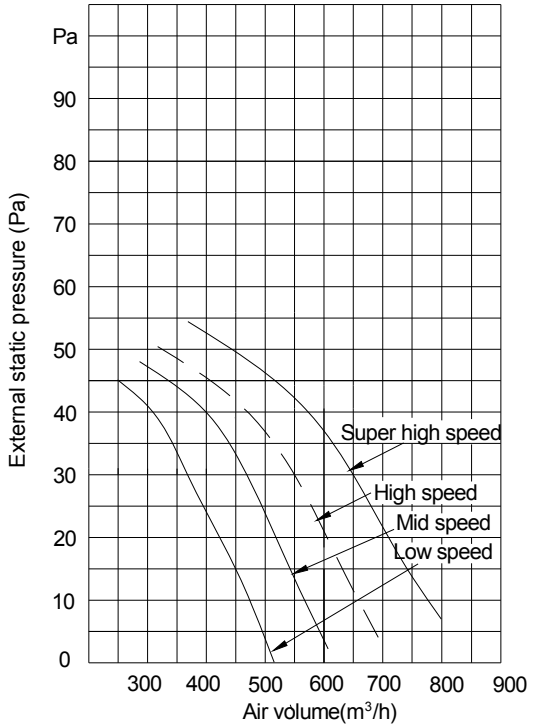
MTB-30HWN1-R MTB-36HWN1-R MTB-48HWN1-R MTB-60HWN1-R



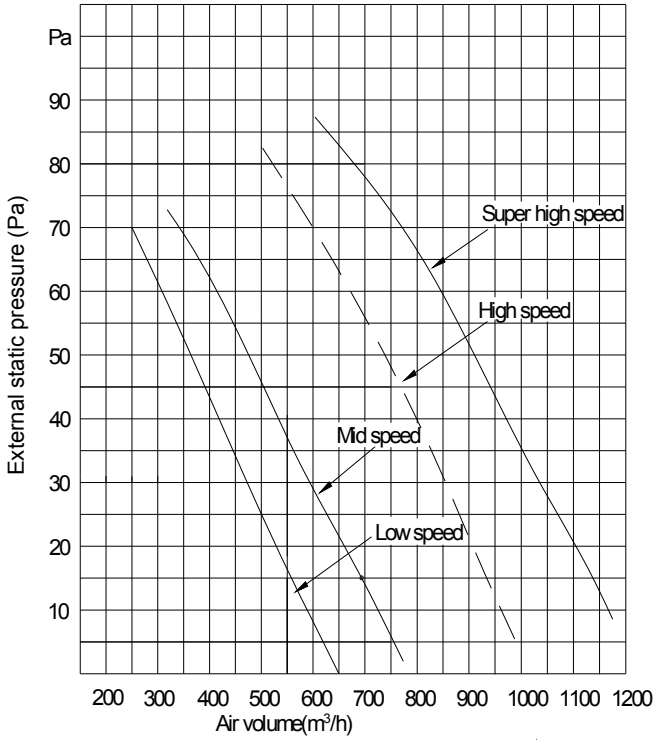
CODE	PART NAME
CAP1	INDOOR FAN CAP.
CN1–CN24	P. C. BOARD SOCKETS
T4	TRANSFORMER
FAN1 FAN2	INDOOR FAN
XP1~4	CONNECTORS
XS1~4	CONNECTORS
KM1	RELAY FOR COMPRESSOR
RT1	ROOM TEMP. SENSOR
RT2	PIPE TEMP. SENSOR
XT1	8-WAY TERMINAL
K3	WATER LEVEL SWITCH
CN20	NET CONTROL INTERFACE

6. Static Pressure

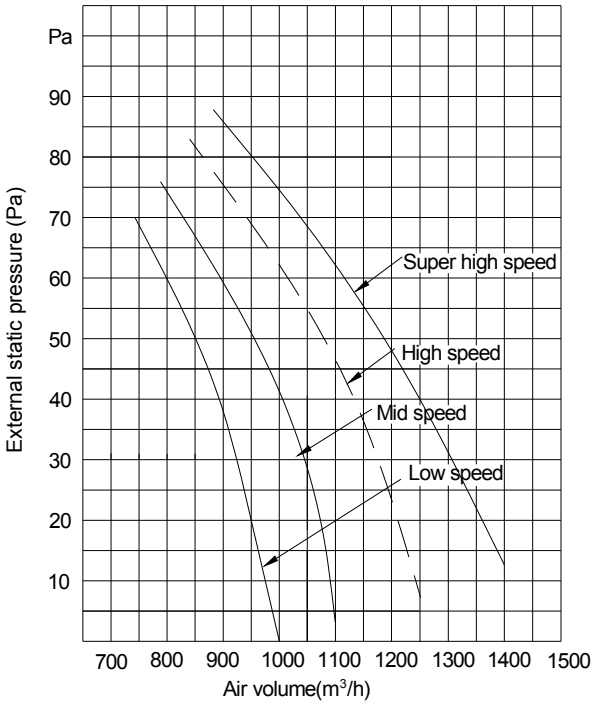
12,000Btu/h



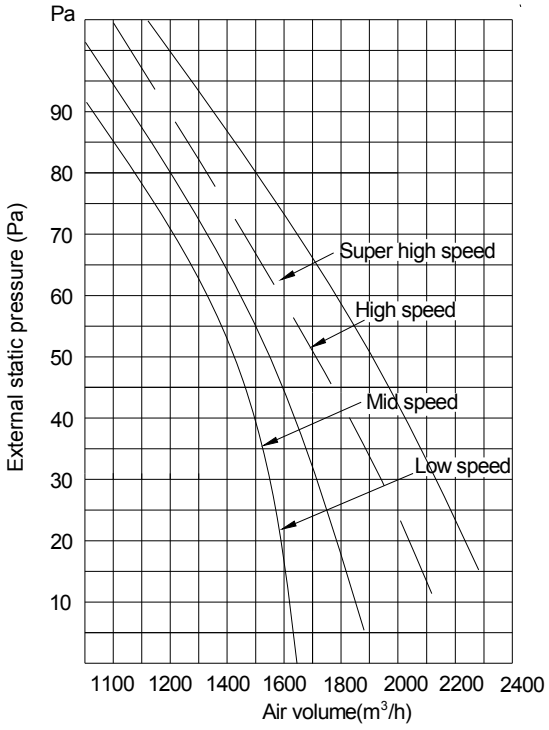
18,000Btu/h



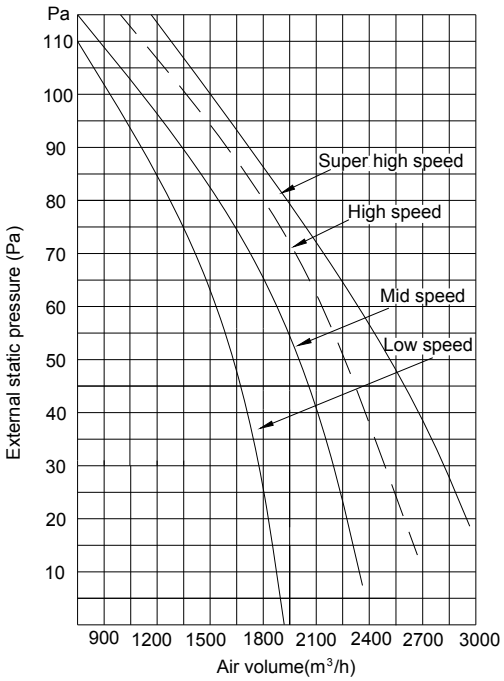
24,000Btu/h



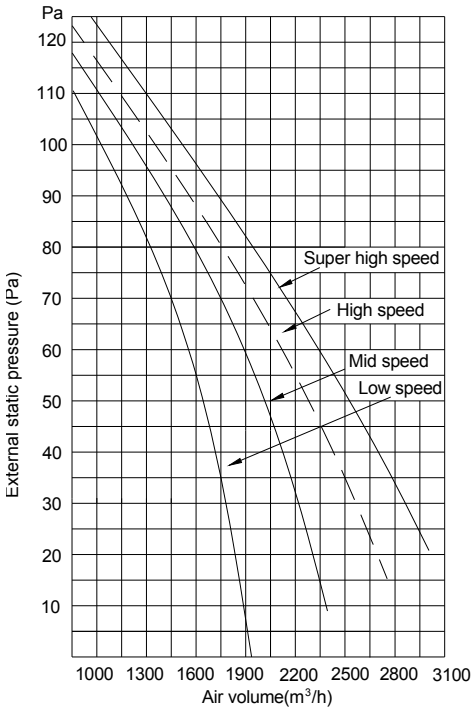
36,000Btu/h



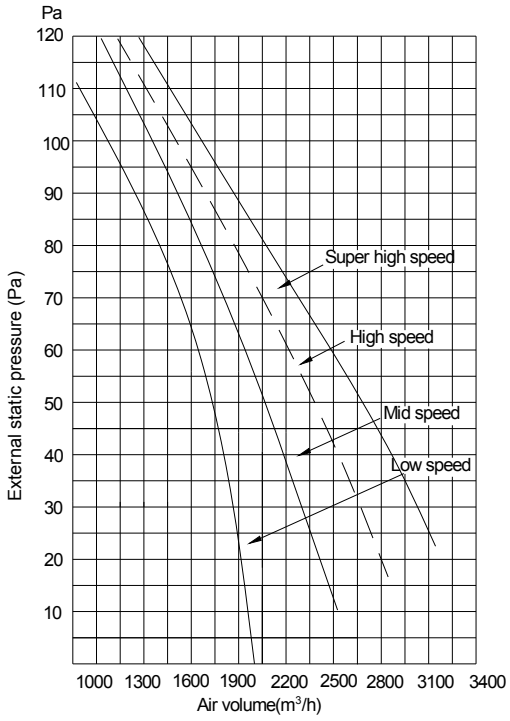
42,000Btu/h



48,000Btu/h



60,000Btu/h

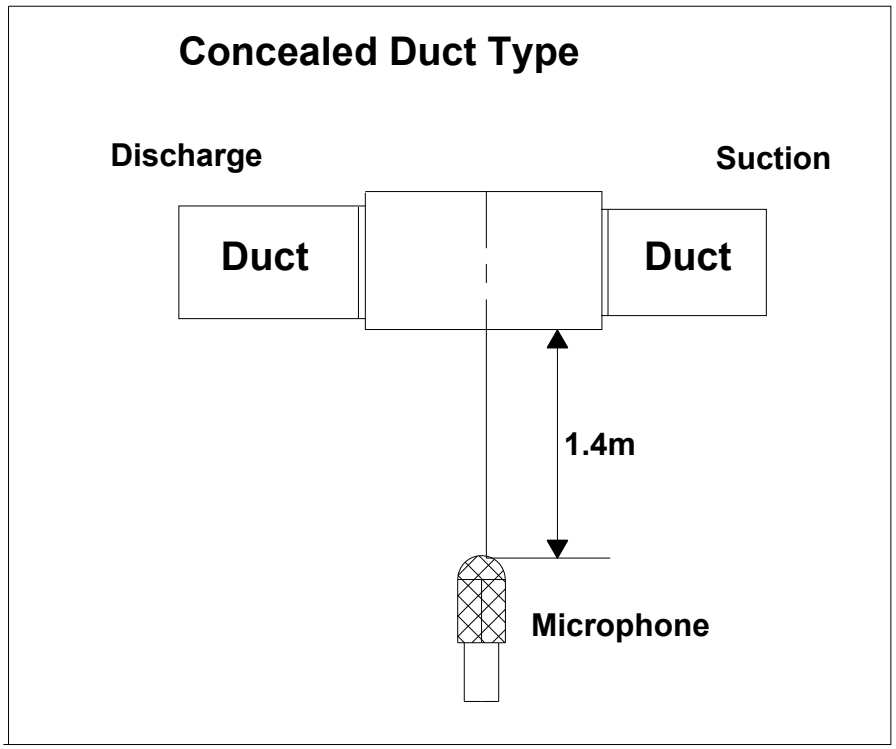


7. Electric Characteristics

Model	Indoor Units				Power Supply
	Hz	Voltage	Min.	Max.	MFA
MTB1-12HWN1-Q	50	220-240V	198V	254V	16
MTB-18HWN1-Q	50	220-240V	198V	254V	16
MTB-24HWN1-Q	50	220-240V	198V	254V	25
MTB-30HWN1-Q	50	220-240V	198V	254V	30
MTB-30HWN1-R	50	380-420V	342V	440V	30
MTB-36HWN1-Q	50	220-240V	198V	254V	30
MTB-36HWN1-R	50	380-415V	342V	418V	30
MTB-42HWN1-Q	50	220-240V	198V	254V	30
MTB-48HWN1-R	50	380-420V	342V	440V	30
MTB-60HWN1-R	50	380-420V	342V	440V	30

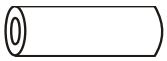
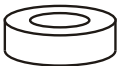
Remark:
MFA: Max. Fuse Amps. (A)

8. Sound Levels



Model	Noise level dB(A)		
	H	M	L
MTB1-12HWN1-Q	37	30	26
MTB-18HWN1-Q	44	36	33
MTB-24HWN1-Q	45	43	41
MTB-30HWN1-Q	46	44	42
MTB-30HWN1-R	46	44	42
MTB-36HWN1-Q	46	44	42
MTB-36HWN1-R	46	44	42
MTB-42HWN1-Q	47	39	36
MTB-48HWN1-R	47	45	43
MTB-60HWN1-R	47	45	43

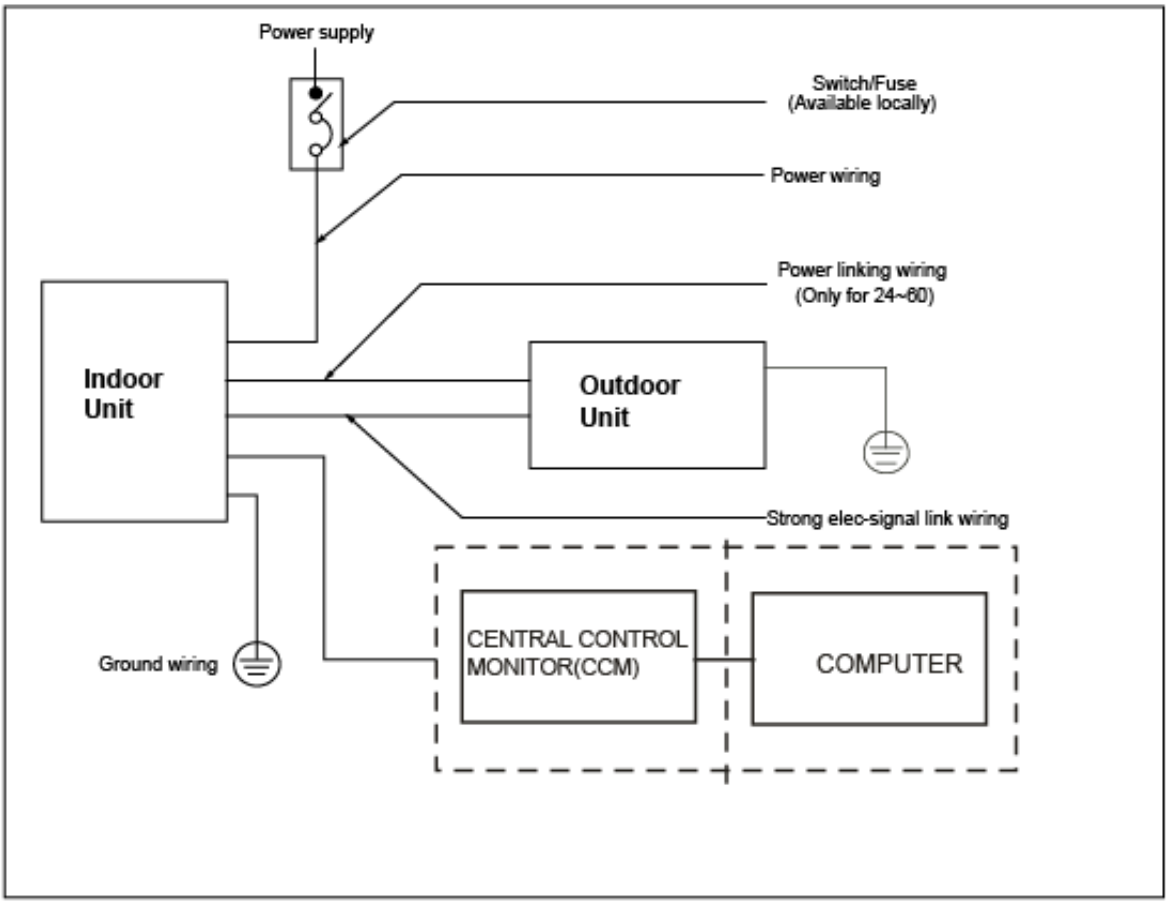
9. Accessories

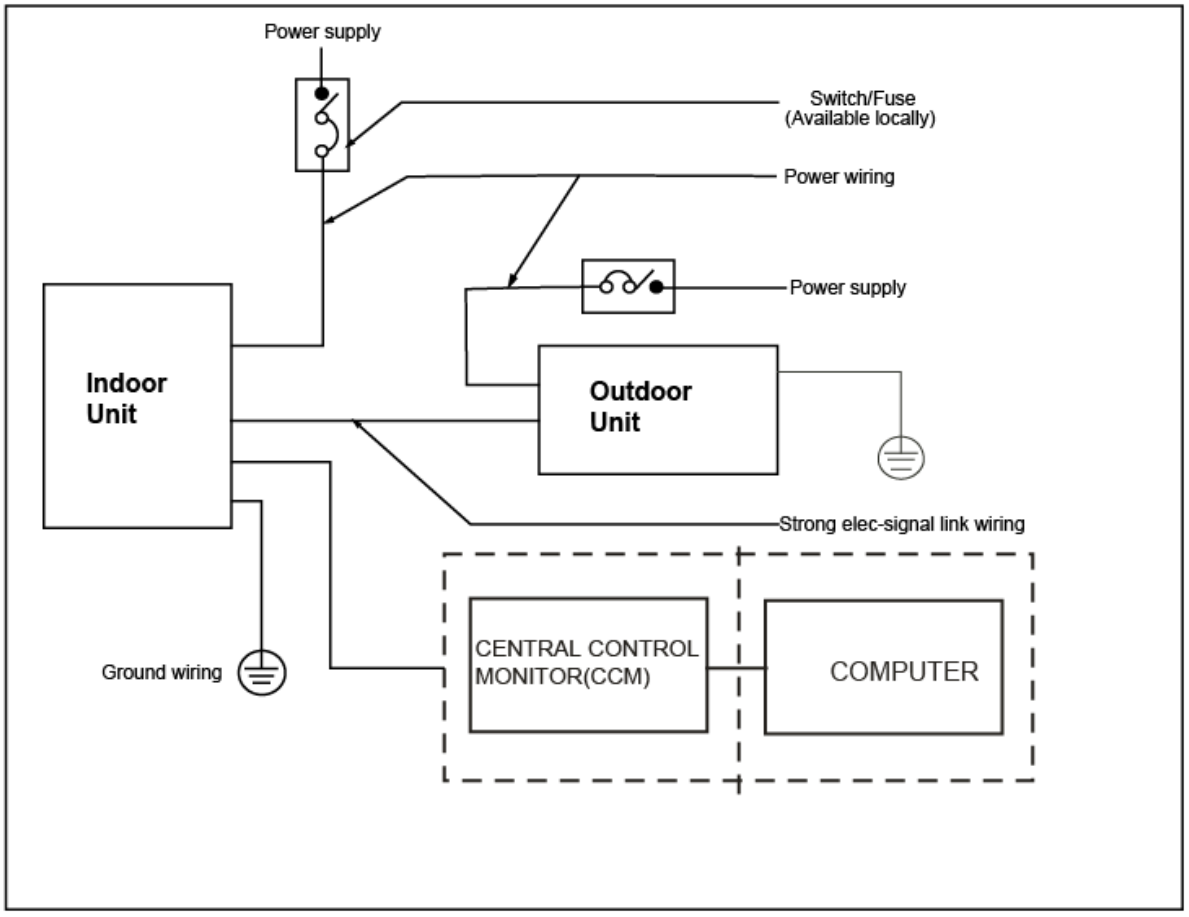
	Name	Shape	Quantity
Tubing & Fittings	Soundproof/insulation sheath		2
	Binding tape		1
	Seal sponge		1
Drainpipe Fittings	Drain joint		1
	Seal ring		1
Wire controller	Wire controller	——	1
others	Owner's manual	——	1
	Installation manual	——	1

10. The Specification of Power

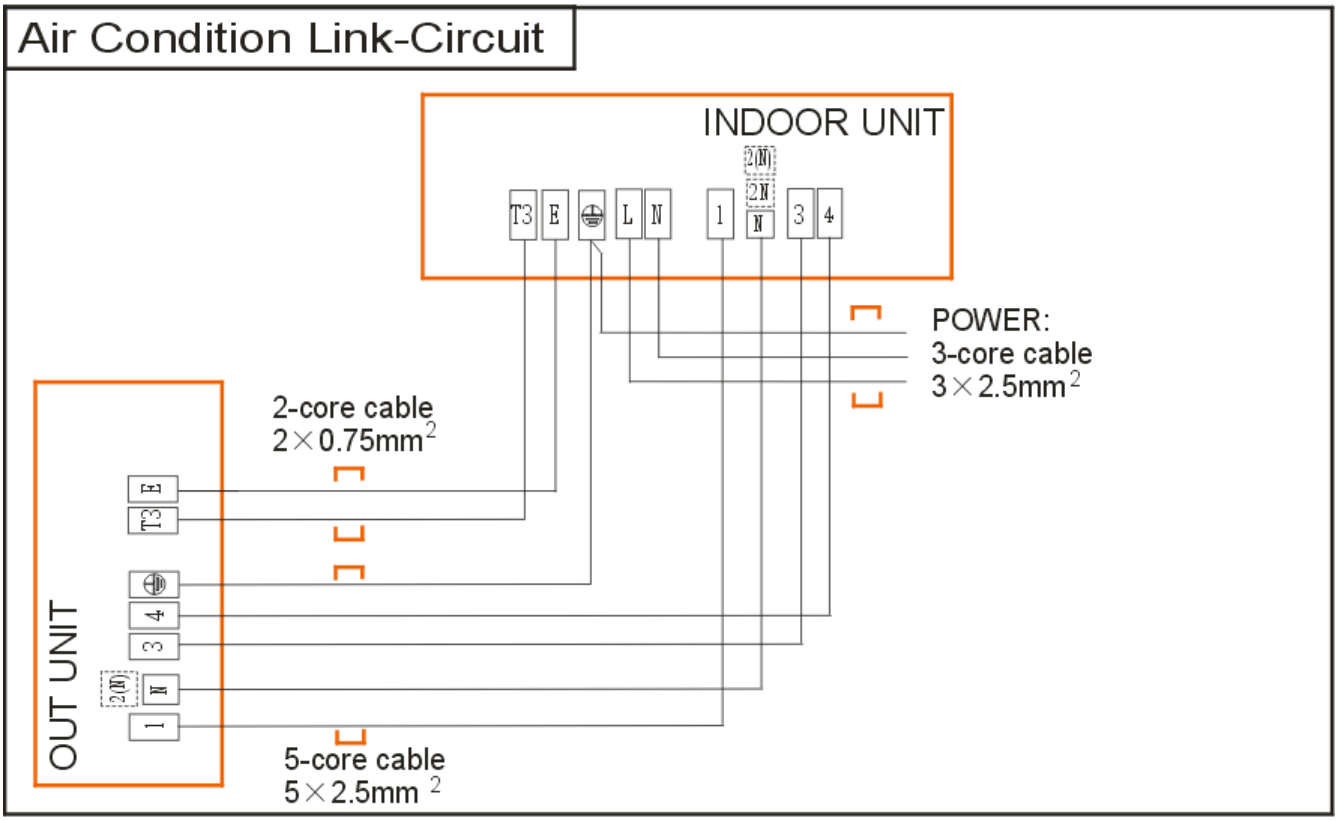
Model		MTB1-12HWN1-Q MTB-18HWN1-Q	MTB-24HWN1-Q	MTB-30HWN1-Q MTB-36HWN1-Q MTB-42HWN1-Q	MTB-30HWN1-R MTB-36HWN1-R MTB-48HWN1-R MTB-60HWN1-R
Power	Phase	1-Phase	1-Phase	1-Phase	3-Phase
	Frequency and Volt	220-240V,50Hz	220-240V,50Hz	220-240V,50Hz	380-415V, 50Hz
Circuit Breaker/Fuse(A)		20/16	30/25	35/30	40/30
Indoor unit power wiring(mm²)		3×2.5	3×2.5	3×4.0	5×2.5
Indoor/out-door connecting wiring(mm²)	Ground wiring	2.5	2.5	4.0	4.0
	Outdoor unit power wiring	————	3×2.5	3×4.0	5×2.5
	Strong electric signal	5×2.5	3×1.5	3×1.0	3×1.0
	Weak electric signal	2×0.75	2×0.75	2×0.75	————

11. Field Wiring

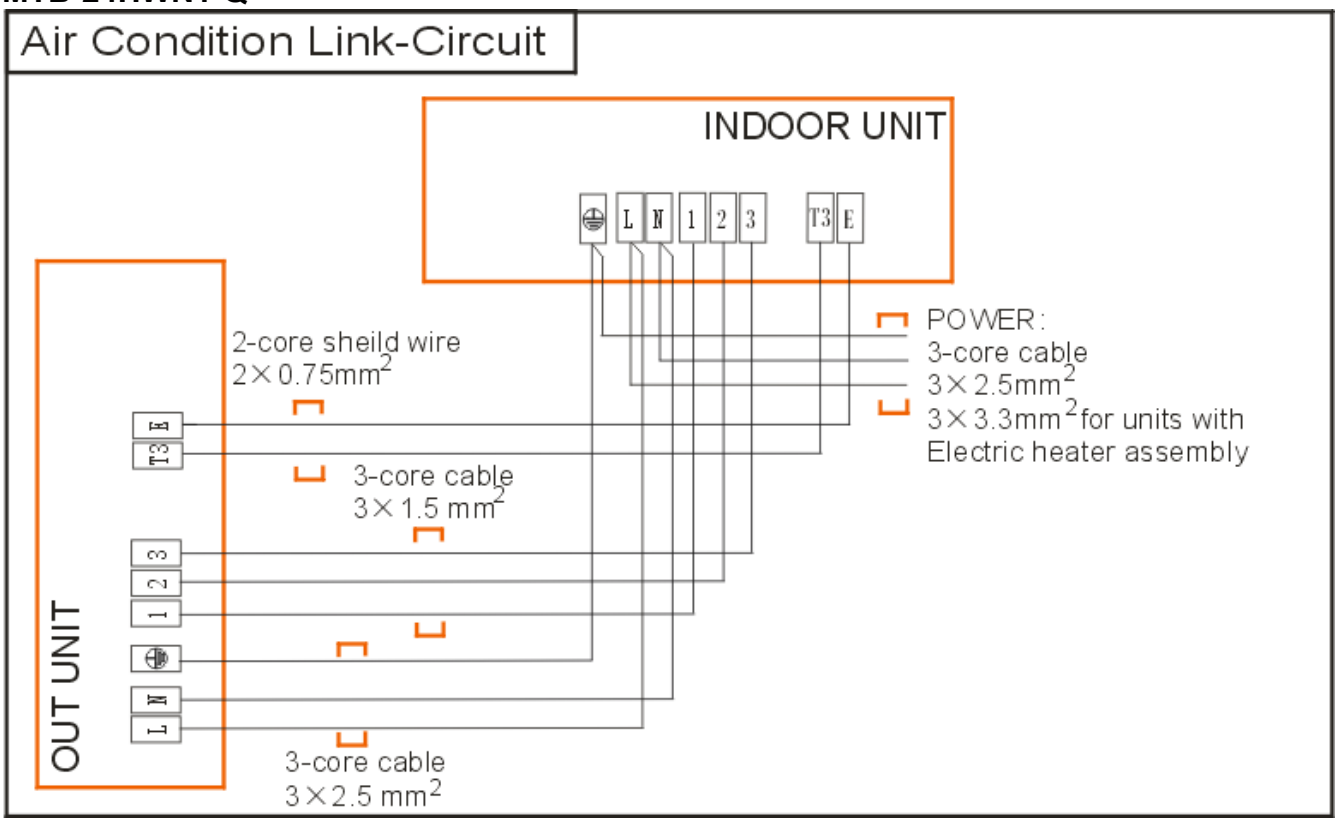




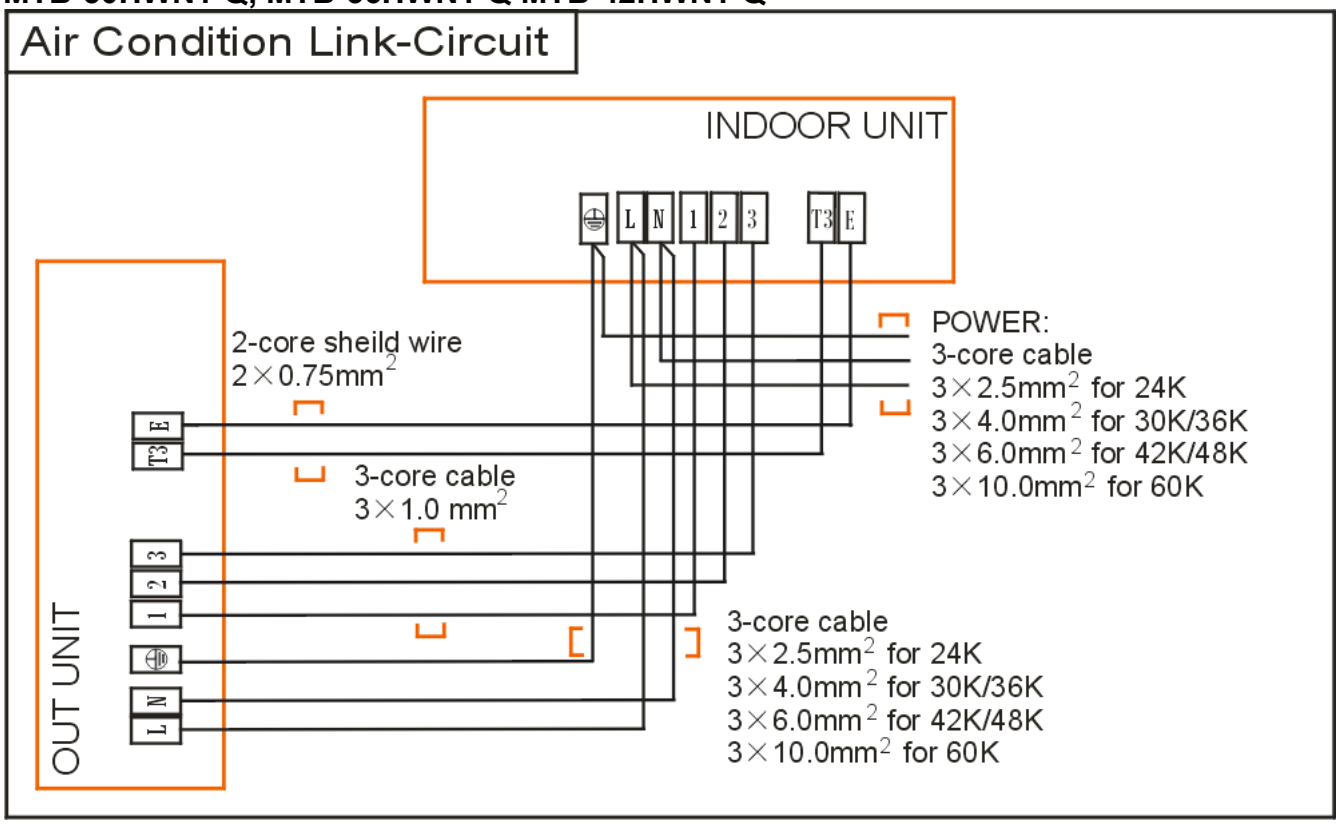
MTB1-12HWN1-Q MTB-18HWN1-Q



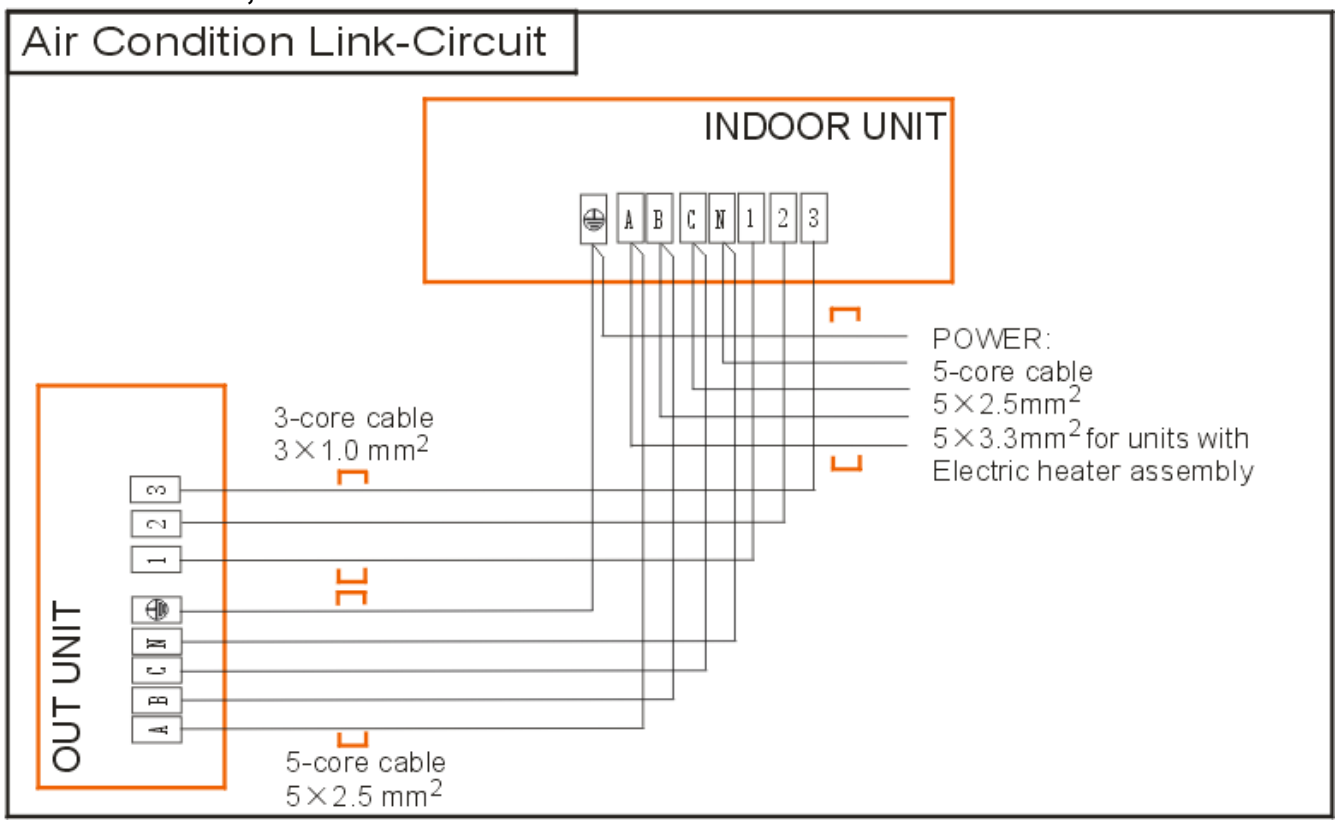
MTB-24HWN1-Q



MTB-30HWN1-Q, MTB-36HWN1-Q MTB-42HWN1-Q



MTB-30HWN1-R, MTB-36HWN1-R MTB-48HWN1-R MTB-60HWN1-R



Part 3
Outdoor Units

1. Specifications

Model			MOU-12HN1	MOU-12HN1
Code			220075100110	220037401510
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50
Max. input consumption		W	1500	1740
Max. input current		A	7.0	8.5
Compressor	Model		PA140X2C-4FT	PA140G1C-4FT1
	Type		Rotary	Rotary
	Brand		GMCC	GMCC
	Capacity	Btu/h	11567	11601
	Input	W	1150	1155
	Rated current(RLA)	A	5.3	5.37
	Locked rotor Amp(LRA)	A	29.9	26.7
	Thermal protector		Internal	Internal
	Capacitor	μF	35μF/440V-450V	35UF/440-450V
	Refrigerant oil	ml	ESTEL OIL VG74, 480	ESTER OLL VG74/400
Outdoor fan motor	Model		YDK24-6F(B)	YDK24-6F(B)
	Qty		1	1
	Input	W	63	63
	Capacitor	μF	2.5μF/450V	2.5UF/450V
	Speed	r/min	800	800
Outdoor coil	Number of rows		2	1
	Tube pitch(a)× row pitch(b)	mm	21×13.37	22×19.05
	Fin spacing	mm	1.5	1.4
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	φ7 Inner grooved copper tube	φ8,inner grooved copper tube
	Coil length × height × width	mm	745×504×26.74	737×506×19.05
	Number of circuits		2	2
Outdoor air flow		m^3/h	2100	2100
Outdoor noise level (sound pressure)		dB(A)	43	43
Outdoor unit	Dimension(W×H×D)	mm	780×547×250	780×547×250
	Packing (W×H×D)	mm	910×575×335	910×575×335
	Net/Gross weight	kg	34/37	30/32
Refrigerant	Type		R410a	R410a
	Charged volume	g	1120	960
Throttle type			Capillary	Capillary
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7
	Max. pipe length	m	15	15
	Max. difference in level	m	8	8
Ambient temp.		℃	cooling:21~43; heating:-5~24	cooling:21~43; heating:-5~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MOU-12CN1	MOU-12CN1
Code			220075100120	220037401500
Power supply		V-Ph-Hz	220~240-1-50	220~240-1-50
Max. input consumption		W	1500	1600
Max. current		A	7	7.5
Compressor	Model		PA140X2C-4FT	PA140G1C-4FT1
	Type		ROTARY	Rotary
	Brand		GMCC	GMCC
	Capacity	Btu/h	11567	11601
	Input	W	1150	1155
	Rated current(RLA)	A	5.3	5.37
	Locked rotor Amp(LRA)	A	29.9	26.7
	Thermal protector		Internal	Internal
	Capacitor	μF	35μF/440-450V	35UF/440-450V
	Refrigerant oil	ml	ESTEL OIL VG74, 480	ESTER OLL VG74/400
Outdoor fan motor	Model		YDK24-6F(B)	YDK24-6F(B)
	Qty		1	1
	Input	W	63	63
	Capacitor	μF	2.5μF/450V	2.5UF/450V
	Speed (hi/lo)	r/min	800	800
Outdoor coil	Number of rows		2	1
	Tube pitch(a)x row pitch(b)	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.4
	Fin type		Unhydrophilic aluminum	Unhydrophilic aluminum
	Tube outside dia.and type	mm	Φ7 Inner grooved copper tube	φ7,inner grooved copper tube
	Coil length x height x width	mm	651x559x26.74	755×504×13.37
	Number of circuits		1	2
Outdoor air flow		m3/h	2100	2100
Outdoor noise level		dB(A)	43	43
Outdoor unit	Dimension(W*H*D)	mm	780×547×250	780x547x250
	Packing (W*H*D)	mm	910×575×335	910x575x335
	Net/Gross weight	kg	35/37	27.5/29.5
Refrigerant	type		R410a	R410a
	Charged volume	g	1100	800
Throttle type			Capillary	Capillary
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ6.4/φ12.7
	Max. pipe length	m	15	15
	Max. difference in level	m	8	8
Ambient temp		°C	21~43	21~43

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model	MOU-18HN1-Q	MOU-24HN1-Q

Code			220037802190	220075301210
Power supply		V-ph-Hz	220~240-1-50	220~240-1-50
Max. input consumption		W	2950	3450
Max. input current		A	15	18
Compressor	Model		PA225X2CS-4KU1	PA290X3CS-4MU1
	Type		Rotary	Rotary
	Brand		GMCC	GMCC
	Capacity	Btu/h	18493/18698	24498
	Input	W	1855/1940	2430
	Rated current(RLA)	A	8.7/8.7	11.4
	Locked rotor Amp(LRA)	A	36.8	61
	Thermal protector		Internal	Internal
	Capacitor	μF	50μF/440V-450V	50μF/440V-450V
	Refrigerant oil	ml	ESTER OIL VG74 750	ESTER OIL VG74/950
Outdoor fan motor	Model		YDK48-6H(A)	YDK100-6D
	Qty		1	1
	Input	W	110	168.7
	Capacitor	μF	3μF/450V	5μF/450V
	Speed	r/min	890	900
Outdoor coil	Number of rows		2	2
	Tube pitch(a)× row pitch(b)	mm	21x13.37	21x13.37
	Fin spacing	mm	1.4	1.4
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	φ7, Inner grooved copper tube	φ7, Inner grooved copper tube
	Coil length × height × width	mm	658x546x26.74	785x651x26.74
	Number of circuits		4	4
Outdoor air flow		m^3/h	2439	3200
Outdoor noise level (sound pressure)		dB(A)	54	55
Outdoor unit	Dimension(W×H×D)	mm	762x593x282	845×695×324
	Packing (W×H×D)	mm	887×645×355	965×755×395
	Net/Gross weight	kg	37/42	51/54.5
Refrigerant	Type		R410a	R410a
	Charged volume	g	1400	1900
Throttle type			Capillary	Capillary
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ9.5/φ15.9
	Max. pipe length	m	25	25
	Max. difference in level	m	15	15
Ambient temp.		℃	cooling:21~43; heating:-5~24	cooling: 21~43; heating:-5~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			**MOU-18CN1**	**MOU-24CN1**
Code			220075200300	220075300100
Power supply		V-Ph-Hz	220~240-1-50	220~240-1-50
Max. input consumption		W	2600	3300
Max. current		A	13	16.5
Compressor	Model		PA225X2CS-4KU1	PA290X3CS-4MU1
	Type		ROTARY	ROTARY
	Brand		GMCC	GMCC
	Capacity	Btu/h	18697	24500
	Input	W	1855	2430
	Rated current(RLA)	A	8.7	11.4
	Locked rotor Amp(LRA)	A	36.8	61
	Thermal protector		Internal	Internal
	Capacitor	μF	50μF/440V-450V	50μF/440-450V
	Refrigerant oil	ml	ESTER OIL VG74, 750	ESTER OIL VG74, 950
Outdoor fan motor	Model		YDK55-6H	YDK53-6H
	Qty		1	1
	Input	W	106	138
	Capacitor	μF	3uF/450V	3μF/450V
	Speed (hi/lo)	r/min	865	800
Outdoor coil	Number of rows		2	2
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22
	Fin spacing	mm	1.6	1.7
	Fin type		Unhydrophilic aluminum	Unhydrophilic aluminum
	Tube outside dia.and type	mm	Φ9.53 Inner grooved copper tube	Φ9.53 Inner grooved copper tube
	Coil length x height x width	mm	766×660×44	741×813×44
	Number of circuits		3	2
Outdoor air flow		m3/h	2400	3000
Outdoor noise level		dB(A)	48	55
Outdoor unit	Dimension(W*H*D)	mm	842×695×324	895×862×313
	Packing (W*H*D)	mm	965×752×399	1043×915×395
	Net/Gross weight	kg	47/51	67/71
Refrigerant	type		R410a	R410a
	Charged volume	g	1700	2600
Throttle type			Capillary	Capillary
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ6.4/φ12.7	φ9.5/φ15.9
	Max. pipe length	m	25	25
	Max. difference in level	m	15	15
Ambient temp		°C	21~43	21~43

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MOU-30HN1	MOU-30HN1-R
Code			220075400010	220075400020
Power supply		V-ph-Hz	220~240-1-50	380~415-3-50
Max. input consumption		W	4620	4620
Max. input current		A	21	7.1
Compressor	Model		C-SBN301H5D	C-SBN303H8D
	Type		SCROLL	SCROLL
	Brand		SANYO	SANYO
	Capacity	Btu/h	33438	33438
	Input	W	3650	3650
	Rated current(RLA)	A	17.65	6.58
	Locked rotor Amp(LRA)	A	97	61
	Thermal protector		Internal	Internal
	Capacitor	μF	60μF /450V+90μF/400V	--
	Refrigerant oil	ml	FV68S,1700	FV68S,1700
Outdoor fan motor	Model		YDK190-6D(B)	YDK190-6D(B)
	Qty		1	1
	Input	W	290	290
	Capacitor	μF	10μF/450V	10μF/450V
	Speed	r/min	830	830
Outdoor coil	Number of rows		2	2
	Tube pitch(a)× row pitch(b)	mm	22×19.05	22×19.05
	Fin spacing	mm	1.6	1.6
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	φ7.94 Inner grooved copper tube	φ7.94 Inner grooved copper tube
	Coil length × height × width	mm	893×880×38.1	893×880×38.1
	Number of circuits		7	7
Outdoor air flow		m^3/h	5000	5000
Outdoor noise level (sound pressure)		dB(A)	57	57
Outdoor unit	Dimension(W×H×D)	mm	990×966×354	990×966×354
	Packing (W×H×D)	mm	1120×1100×435	1120×1100×435
	Net/Gross weight	kg	94/104	99/104
Refrigerant	Type		R410A	R410A
	Charged volume	g	3100	3100
Throttle type			capillary	capillary
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ12.7/φ19	φ12.7/φ19
	Max. pipe length	m	25	25
	Max. difference in level	m	15	15
Ambient temp.		℃	cooling: 21~43; heating:-5~24	cooling: 21~43; heating:-5~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model	MOU-30CN1	MOU-30CN1	MOU-36CN1
Code	220075401050	220075401060	220075500720

Power supply		V-Ph-Hz	220~240-1-50	380-415-3-50	220~240-1-50
Max. input consumption		W	5200	5200	5200
Max. current		A	25	8.8	26.3
Compressor	Model		C-SBN301H5D	C-SBN303H8D	C-SBN301H5D
	Type		SCROLL	SCROLL	SCROLL
	Brand		SANYO	SANYO	SANYO
	Capacity	Btu/h	31902	33438	31902
	Input	W	3750	3650	3750
	Rated current(RLA)	A	18.1	6.6	18.1
	Locked rotor Amp(LRA)	A	97	48	97
	Thermal protector		Internal	Internal	Internal
	Capacitor	μF	60μF/450V+90μF/400V	--	60μF/450V+90μF/400V
	Refrigerant oil	ml	FV68S 1700	FV68S 1700	FV68S 1700
Outdoor fan motor	Model		YDK190-6D(B)	YDK190-6D(B)	YDK190-6D(B)
	Qty		1	1	1
	Input	W	290	290	290
	Capacitor	μF	10μF/ 450V	10μF/ 450V	10μF/ 450V
	Speed (hi/lo)	r/min	830	830	830
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.7	1.7
	Fin type		Unhydrophilic aluminum	Unhydrophilic aluminum	Unhydrophilic aluminum
	Tube outside dia.and type	mm	φ9.5	φ9.5	φ9.5
			Inner grooved copper tube	Inner grooved copper tube	Inner grooved copper tube
	Coil length x height x width	mm	862 x 914.4 x44	862 x 914.4 x44	862 x 914.4 x44
	Number of circuits		4	4	4
Outdoor air flow		m3/h	5000	5000	5000
Outdoor noise level		dB(A)	57	57	58
Outdoor unit	Dimension(W*H*D)	mm	990×966×354	990×966×354	990×966×354
	Packing (W*H*D)	mm	1120×1100×435	1120×1100×435	1120×1100×435
	Net/Gross weight	kg	93/107	96/107	93/103
Refrigerant	type		R410A	R410A	R410A
	Charged volume	g	3000	3000	3000
Throttle type			capillary	capillary	capillary
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ9.5/φ15.9	φ9.5/φ15.9	φ9.5/φ15.9
	Max. pipe length	m	25	25	30
	Max. difference in level	m	15	15	20
Ambient temp		℃	21~43	21~43	21~43

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			MOU-36HN1-Q	MOU-36HN1-R
Code			220075500672	220075500682
Power supply		V-ph-Hz	220~240-1-50	380~420-3-50
Max. input consumption		W	4950	4950
Max. input current		A	30	10
Compressor	Model		C-SBN301H5D	C-SBN303H8D
	Type		SCROLL	SCROLL
	Brand		SANYO	SANYO
	Capacity	Btu/h	31902	33438
	Input	W	3750	3650
	Rated current(RLA)	A	18.1	6.58
	Locked rotor Amp(LRA)	A	97	48
	Thermal protector		Internal	Internal
	Capacitor	μF	60μF/450V+90μF/400V	--
	Refrigerant oil	ml	FV68S/1700	FV68S/1700
Outdoor fan motor	Model		YDK190-6D(B)	YDK190-6D(B)
	Qty		1	1
	Input	W	290	290
	Capacitor	μF	10uF/450V	10μF/450V
	Speed	r/min	830	830
Outdoor coil	Number of rows		2	2
	Tube pitch(a)× row pitch(b)	mm	21x13.37	21x13.37
	Fin spacing	mm	1.4	1.4
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia.and type	mm	φ7, Inner grooved copper tube	φ7, Inner grooved copper tube
	Coil length × height × width	mm	890x903x26.74	890x903x26.74
	Number of circuits		7	7
Outdoor air flow		m^3/h	5000	5000
Outdoor noise level (sound pressure)		dB(A)	57	57
Outdoor unit	Dimension(W×H×D)	mm	990×966×354	990×966×354
	Packing (W×H×D)	mm	1120×1100×435	1120×1100×435
	Net/Gross weight	kg	94/98	85/96
Refrigerant	Type		R410a	R410a
	Charged volume	g	2900	2900
Throttle type			capillary	capillary
Design pressure		MPa	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ12.7/φ19	φ12.7/φ19
	Max. pipe length	m	30	30
	Max. difference in level	m	20	20
Ambient temp.		℃	cooling: 21~43; heating:-5~24	cooling: 21~43; heating:-5~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model	MOU-36CN1	MOU-48CN1	MOU-60CN1

Code			220075500730	220075700560	220075800500
Power supply		V-Ph-Hz	380-415-3-50	380-415-3-50	380-415-3-50
Max. input consumption		W	5200	6100	7200
Max. current		A	8.8	10.3	12.2
Compressor	Model		C-SBN303H8D	C-SBN373H8D	C-SBN453H8D
	Type		SCROLL	SCROLL	SCROLL
	Brand		SANYO	SANYO	SANYO
	Capacity	Btu/h	33438	48109	56000
	Input	W	3650	4750	5750
	Rated current(RLA)	A	6.6	8.22	9.77
	Locked rotor Amp(LRA)	A	48	66	67
	Thermal protector		Internal	Internal	Internal
	Capacitor	μF	--	---	---
	Refrigerant oil	ml	FV68S 1700	FV68S 1700	FV68S 1700
Outdoor fan motor	Model		YDK190-6D(B)	YDK65-6F+YDK65-6	YDK65-6F+YDK65-6
	Qty		1	2	2
	Input	W	290	148×2	148×2
	Capacitor	μF	10μF/ 450V	(3.5μF/ 450V)×2	(3.5μF/ 450V)×2
	Speed (hi/lo)	r/min	830	800	800
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)x row pitch(b)	mm	25.4×22	25.4×22	25.4×22
	Fin spacing	mm	1.7	1.8	1.8
	Fin type		Unhydrophilic aluminum	Unhydrophilic aluminum	Unhydrophilic aluminum
	Tube outside dia. and type	mm	φ9.5	φ9.5	φ9.5
			Inner grooved copper tube	Inner grooved copper tube	Inner grooved copper tube
	Coil length x height x width	mm	862 x 914.4 x44	887 x 1219 x44	887 x 1219 x44
	Number of circuits		4	4	4
Outdoor air flow		m3/h	5000	6000	6000
Outdoor noise level		dB(A)	57	59	59
Outdoor unit	Dimension(W*H*D)	mm	990×966×354	940×1245×360	940×1245×360
	Packing (W*H*D)	mm	1120×1100×435	1058×1380×438	1058×1380×438
	Net/Gross weight	kg	93/103	112/116	111/116
Refrigerant	type		R410A	R410A	R410A
	Charged volume	g	3000	3700	3900
Throttle type			capillary	capillary	capillary
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ9.5/φ15.9	φ9.5/φ15.9	φ9.5/φ15.9
	Max. pipe length	m	30	50	50
	Max. difference in level	m	20	25	25
Ambient temp		°C	21~43	21~43	21~43

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

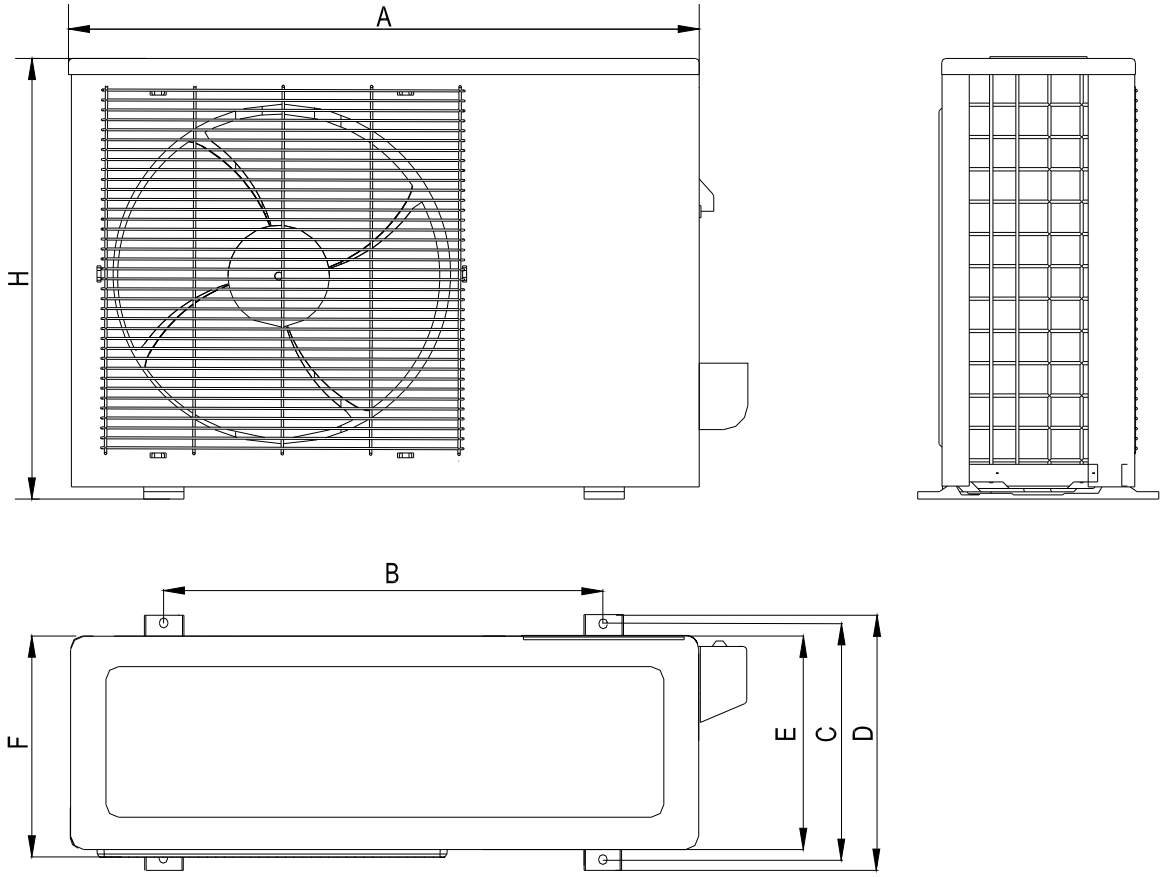
Model			MOU-42HN1-Q	MOU-48HN1-R	MOUA-60HN1-R
Code			220075601250	220075701250	220075800650
Power supply		V-ph-Hz	220~240-1-50	380~420-3-50	380~420-3-50
Max. input consumption		W	6500	6300	7500
Max. input current		A	35	10.5	12.6
Compressor	Model		C-SBP160H15A	C-SBN373H8D	C-SBN453H8D
	Type		Scroll	Scroll	Scroll
	Brand		Sanyo	Sanyo	Sanyo
	Capacity	Btu/h	44356	48109	55956.8
	Input	W	4650	4750	5750
	Rated current(RLA)	A	21.7	8.22	9.77
	Locked rotor Amp(LRA)	A	121	66	67
	Thermal protector		/	Internal	Internal
	Capacitor	μF	70UF/450V	--	---
	Refrigerant oil	ml	1400	FV68S,1700	FV68S, 1700
Outdoor fan motor	Model		YDK190-6D(B)	YDK65-6/YDK65-6F	YDK65-6+YDK65-6F
	Qty		1	2	2
	Input	W	290	148+156	148+140
	Capacitor	μF	10uF/450V	(3.5UF/450V)×2	(3.5μF/450V)×2
	Speed	r/min	830	800	800
Outdoor coil	Number of rows		2	2	2
	Tube pitch(a)× row pitch(b)	mm	22×19.05	21×13.37	22×19.05
	Fin spacing	mm	1.6	1.4	1.6
	Fin type		Hydrophilic aluminum	Hydrophilic aluminum	Hydrophilic aluminum
	Tube outside dia. and type	mm	φ7.94,inner grooved tube	φ7 Inner grooved copper tube	φ7.94 Inner grooved copper tube
	Coil length × height × width	mm	887×880×38.1	840×1113×26.74	837×1100×38.1
	Number of circuits		5	4	8
Outdoor air flow		m^3/h	5000	6800	6850
Outdoor noise level (sound pressure)		dB(A)	57	59	59
Outdoor unit	Dimension(W×H×D)	mm	990x966x354	900×1167×340	900×1167×340
	Packing (W×H×D)	mm	1120x1100x435	1032×1307×443	1032×1307×443
	Net/Gross weight	kg	98/102	96/106	91/111
Refrigerant	Type		R410a	R410a	R410A
	Charged volume	g	3100	3250	3200
Throttle type			capillary	capillary	capillary
Design pressure		MPa	4.2/1.5	4.2/1.5	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	Φ9.5/Φ19	φ12.7/φ19	φ12.7/φ19
	Max. pipe length	m	50	50	50
	Max. difference in level	m	25	25	25
Ambient temp.		℃	cooling:21~43; heating:-5~24	cooling: 21~43; heating:-5~24	cooling: 21~43; heating:-5~24

Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

Model			**MOU-48HN1-R**
Code			220075701990
Power supply		V-ph-Hz	380~420-3-50
Max. input consumption		W	6500
Max. input current		A	11
Compressor	Model		C-SBN373H8D
	Type		Scroll
	Brand		Sanyo
	Capacity	Btu/h	48109
	Input	W	4750
	Rated current(RLA)	A	8.22
	Locked rotor Amp(LRA)	A	66
	Thermal protector		Internal
	Capacitor	μF	/
	Refrigerant oil	ml	1700
Outdoor fan motor	Model		YDK190-6D(B)
	Qty		1
	Input	W	290
	Capacitor	μF	10uF/450V
	Speed	r/min	830
Outdoor coil	Number of rows		2
	Tube pitch(a)× row pitch(b)	mm	22x19.05
	Fin spacing	mm	1.6
	Fin type		Hydrophilic aluminium
	Tube outside dia. and type	mm	Φ7.94, inner groove tube
	Coil length × height × width	mm	887x880x38.1
	Number of circuits		10
Outdoor air flow		m^3/h	5000
Outdoor noise level (sound pressure)		dB(A)	62
Outdoor unit	Dimension(W×H×D)	mm	990x966x354
	Packing (W×H×D)	mm	1120x1100x435
	Net/Gross weight	kg	90/95
Refrigerant	Type		R410a
	Charged volume	g	2800
Throttle type			capillary
Design pressure		MPa	4.2/1.5
Refrigerant piping	Liquid side/ Gas side	mm	φ12.7/φ19
	Max. pipe length	m	50
	Max. difference in level	m	25
Ambient temp.		℃	cooling: 21~43; heating:-5~24

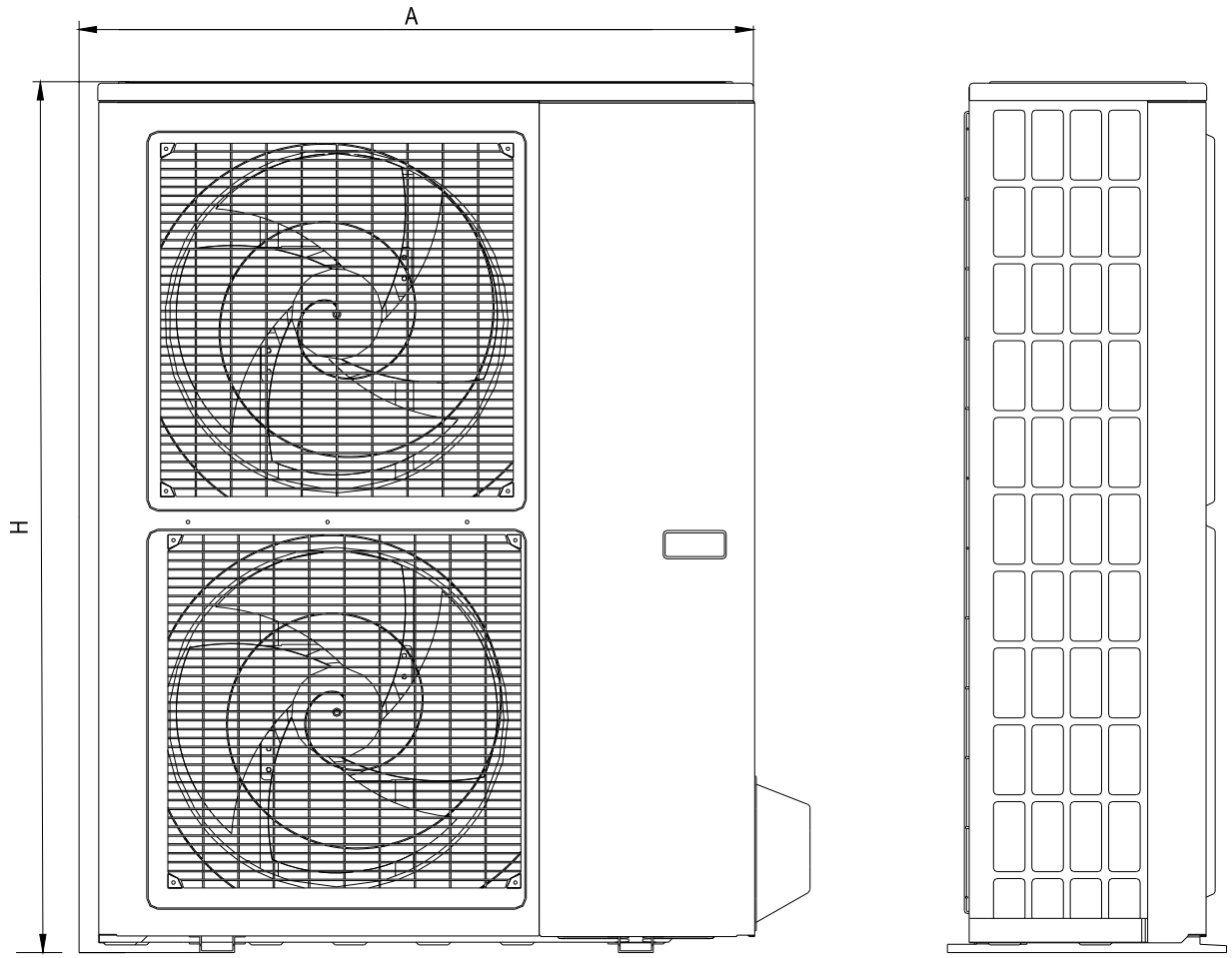
Notes: 1. Nominal cooling capacities are based on the following conditions:
Indoor temp: 27°CDB, 19°CWB; Outdoor temp: 35°CDB;
2. Nominal heating capacities are based on the following conditions:
Indoor temp: 20°CDB; Outdoor temp: 7°CDB, 6°CWB;
3. Actual noise level may differ, depending on the room structure, etc, since these noise values are from an anechoic room.

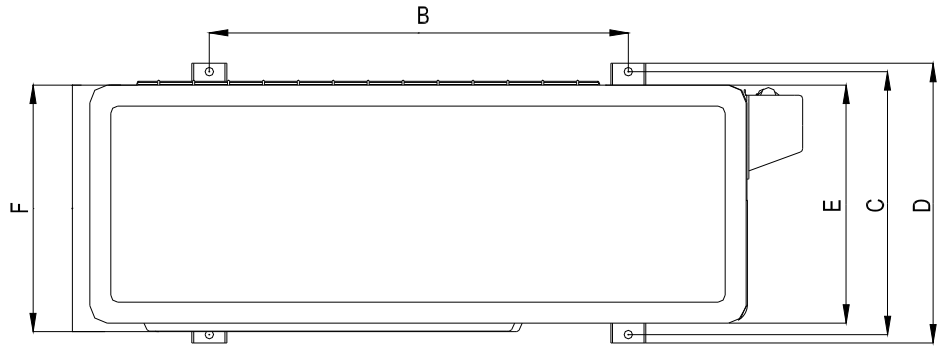
2. Dimensions



mm

Model	A	B	C	D	E	F	H
MOU-12HN1	780	548	266	300	241	250	547
MOU-12CN1	780	548	266	300	241	250	547
MOU-18HN1-Q	762	530	290	315	270	282	593
MOU-18CN1	842	560	335	360	312	324	695
MOU-24HN1-Q	842	560	335	360	312	324	695
MOU-24CN1	895	590	333	355	302	313	862
MOU-30HN1-Q	990	624	366	396	340	354	966
MOU-30HN1-R	990	624	366	396	340	354	966
MOU-30CN1	990	624	366	396	340	354	966
MOU-36HN1-Q	990	624	366	396	340	354	966
MOU-36HN1-R	990	624	366	396	340	354	966
MOU-36CN1	990	624	366	396	340	354	966
MOU-42HN1-Q	990	624	366	396	340	354	966
MOU-48HN1-R (220075701990)	990	624	366	396	340	354	966

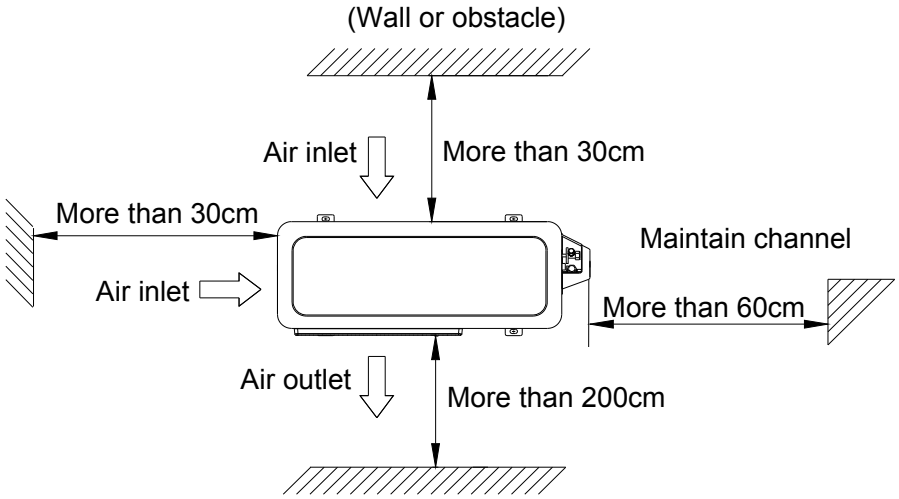


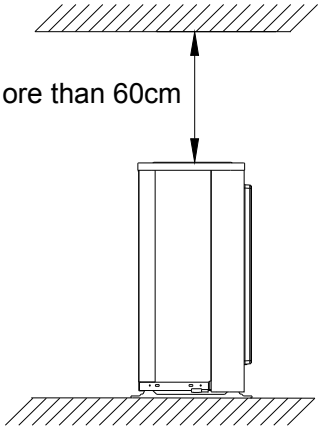


mm

Model	A	B	C	D	E	F	H
MOU-48HN1-R (220075701250)	900	590	378	400	330	340	1167
MOU-48CN1	940	600	376	400	340	360	1245
MOU-60HN1-R	900	590	378	400	330	340	1167
MOU-60CN1	940	600	376	400	340	360	1245

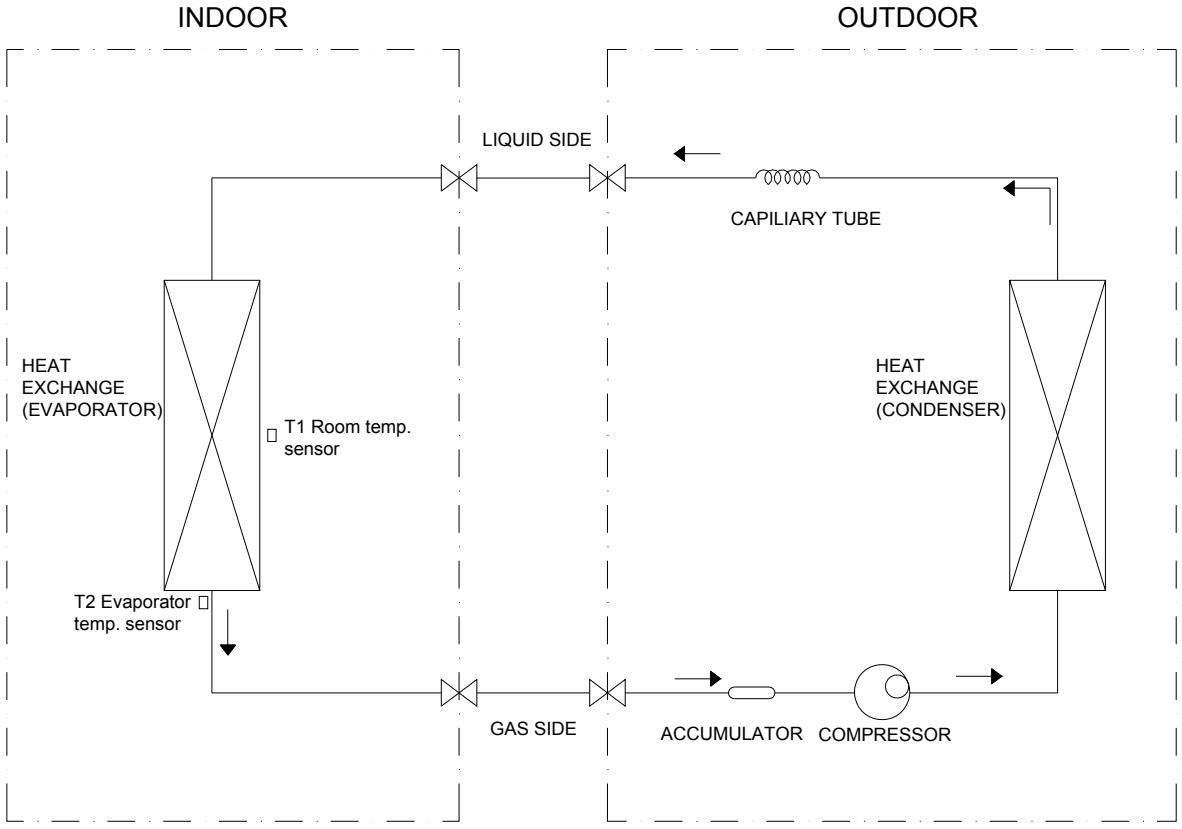
3. Service Space





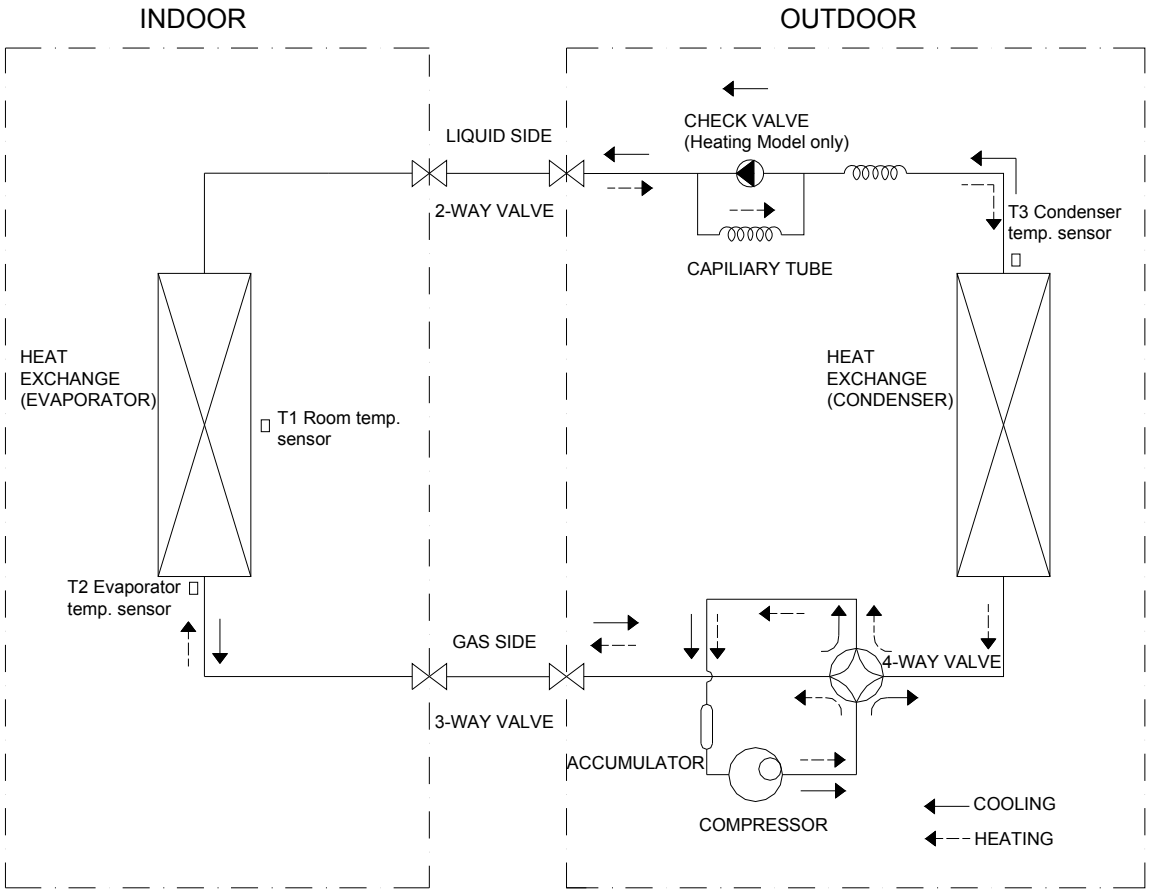
4. Piping Diagrams

MOU-12CN1 MOU-18CN1 MOU-24CN1 MOU-30CN1(1-phase) MOU-36CN1(1-phase)



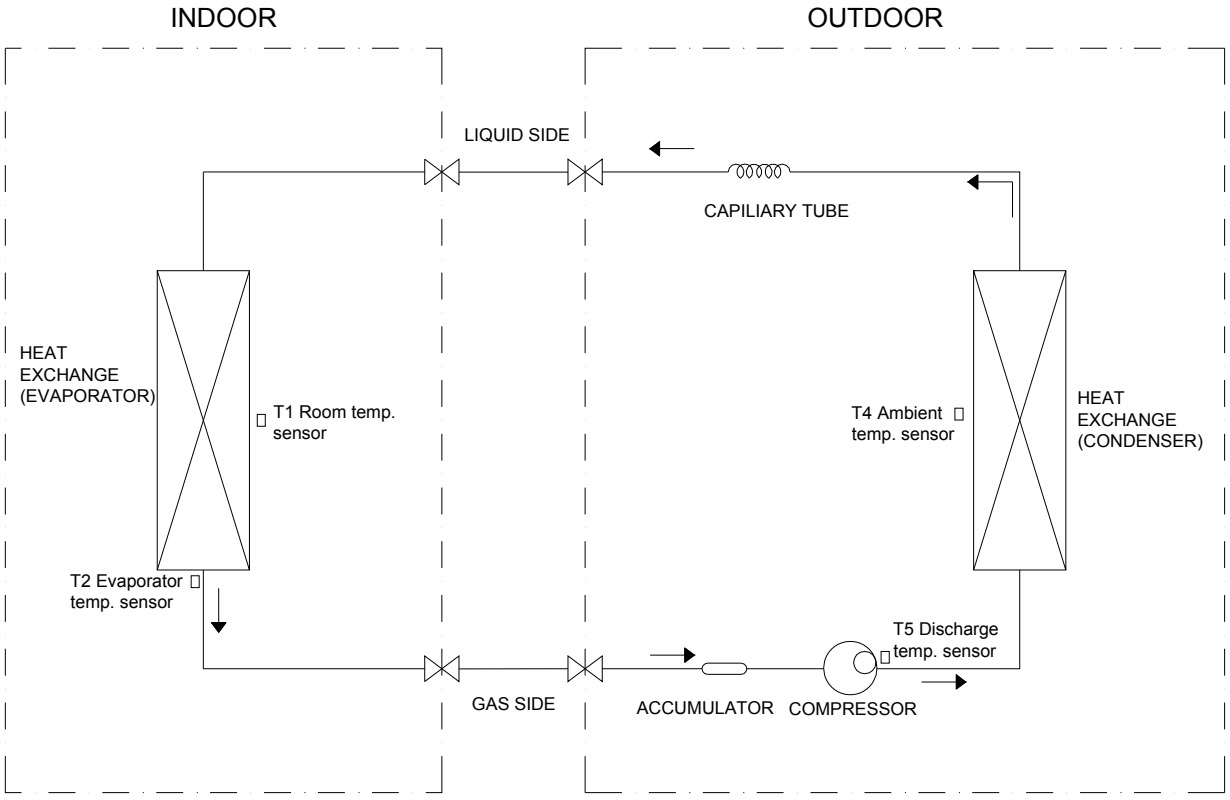
For MOU-12CN1 MOU-18CN1,the accumulator is not included.

MOU-12HN1 MOU-18HN1-Q MOU-24HN1-Q MOU-30HN1 MOU-30HN1-R MOU-36HN1 MOU-42HN1-Q

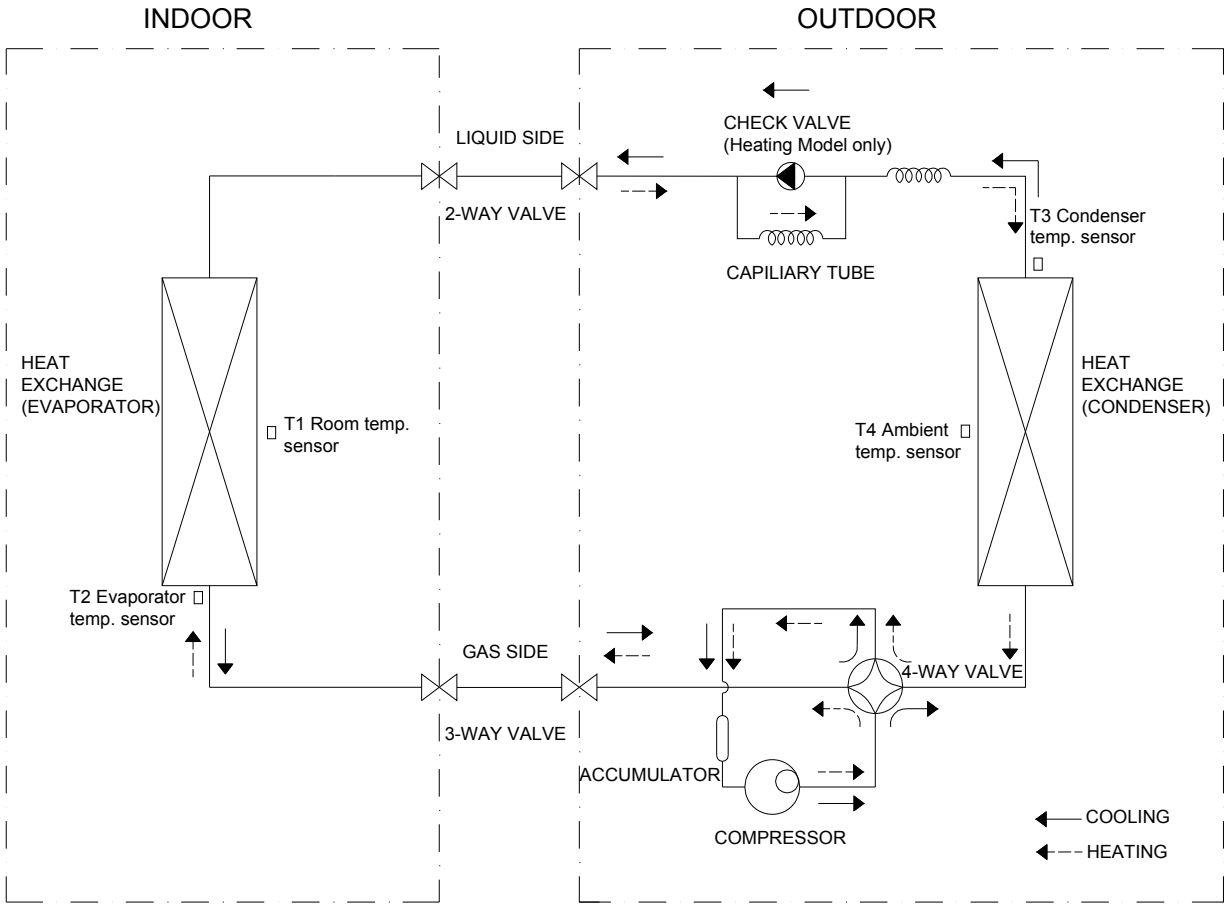


For MOU-12HN1,MOU-18HN1-Q,MOU-24HN1-Q,the accumulator is not included.

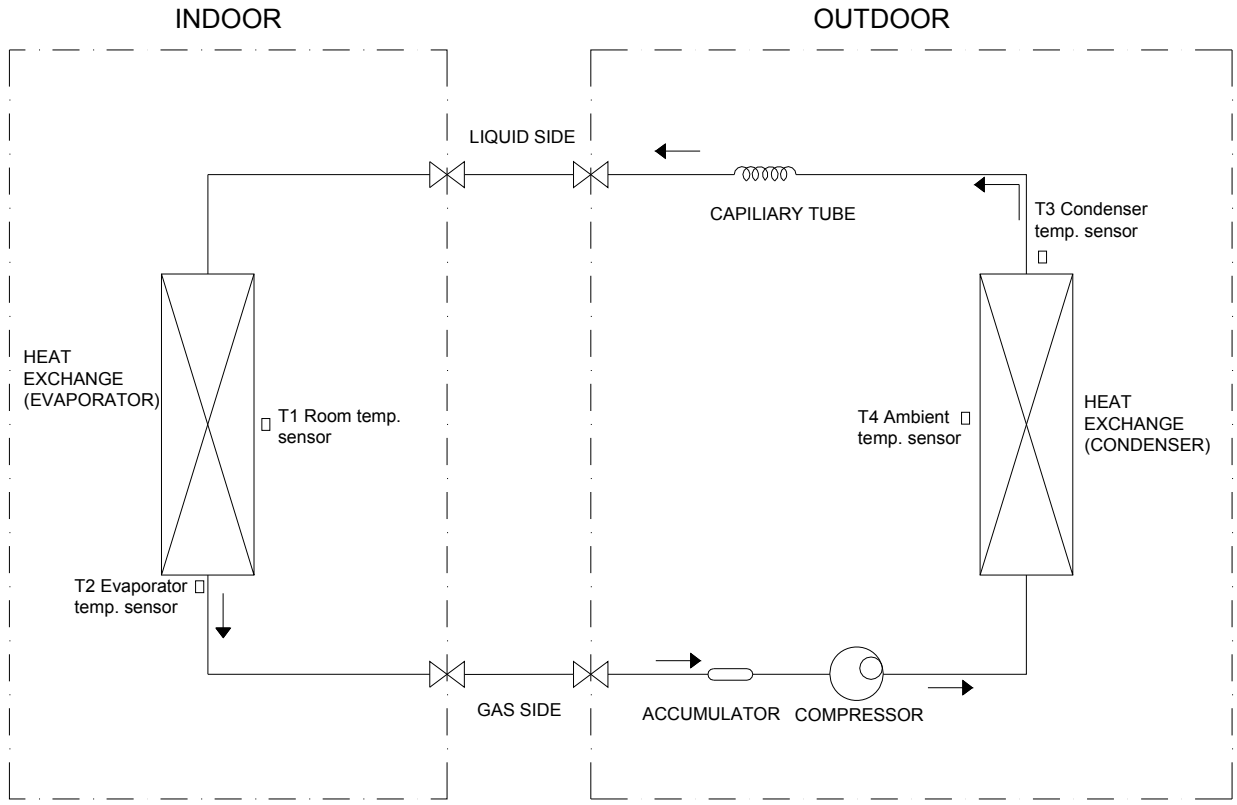
MOU-30CN1(3-phase) MOU-36CN1(3-phase)



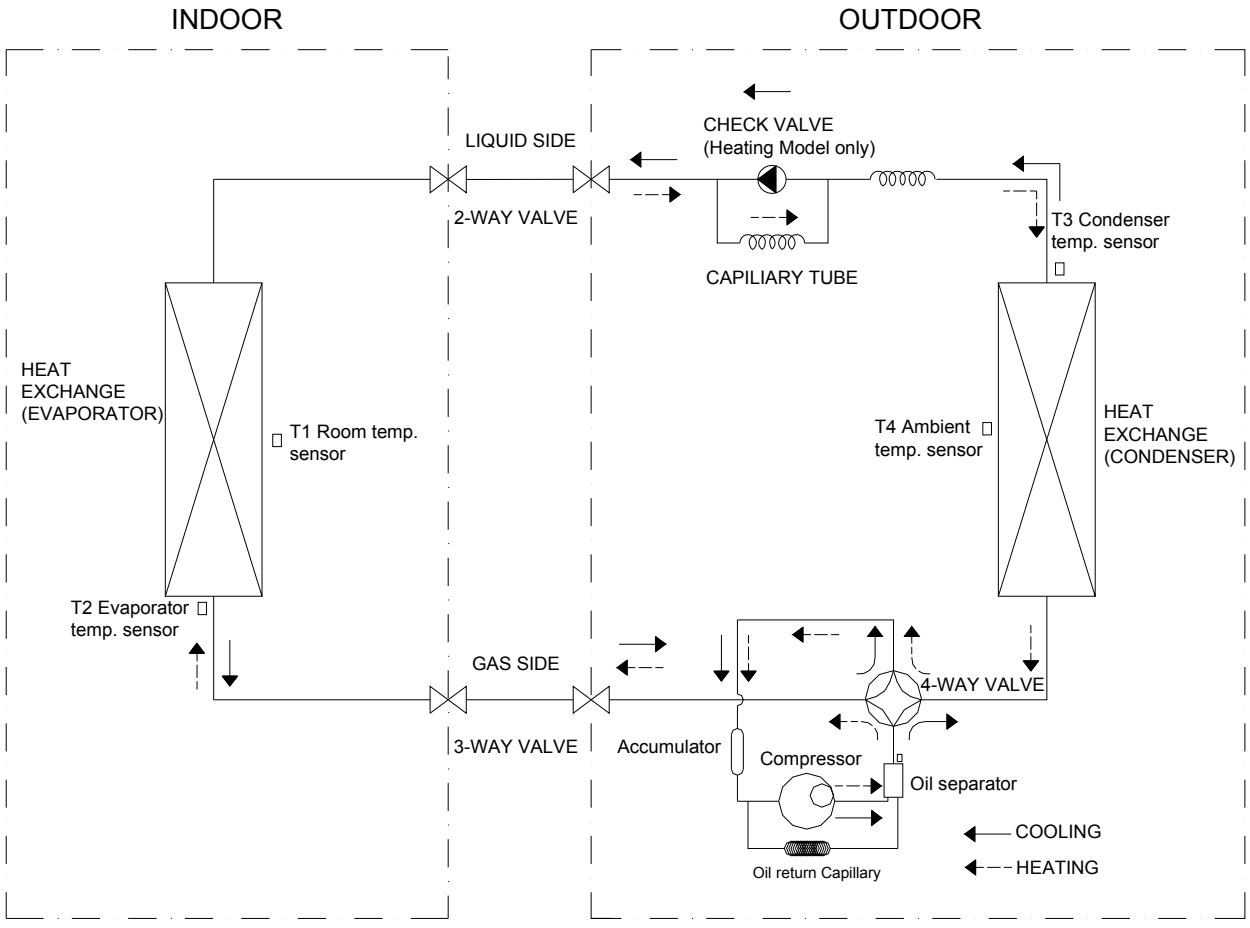
MOU-48HN1-R



MOU-48CN1 MOU-60CN1

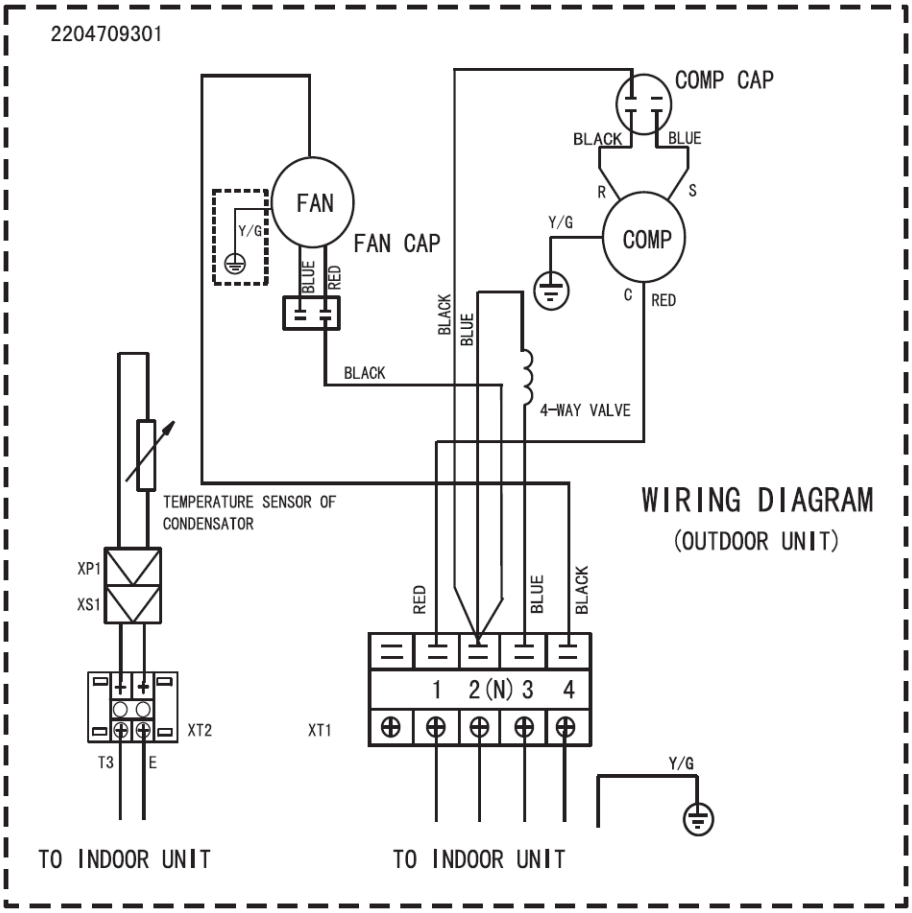


MOUA-60HN1-R

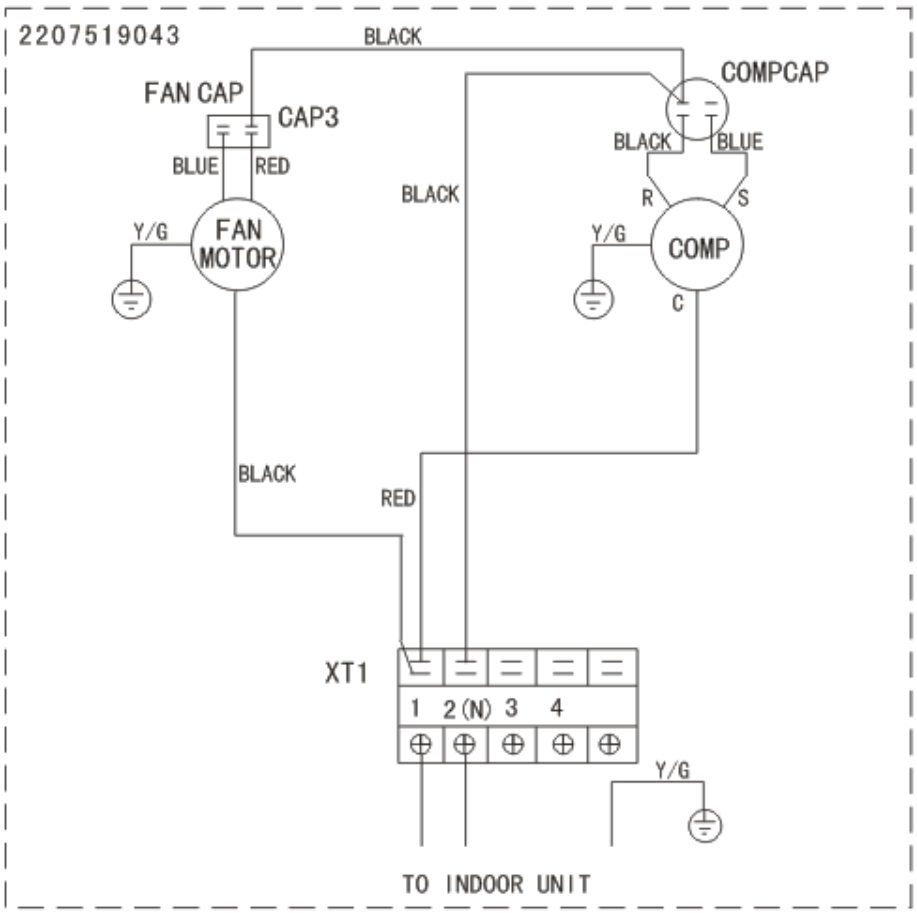


5. Wiring Diagrams

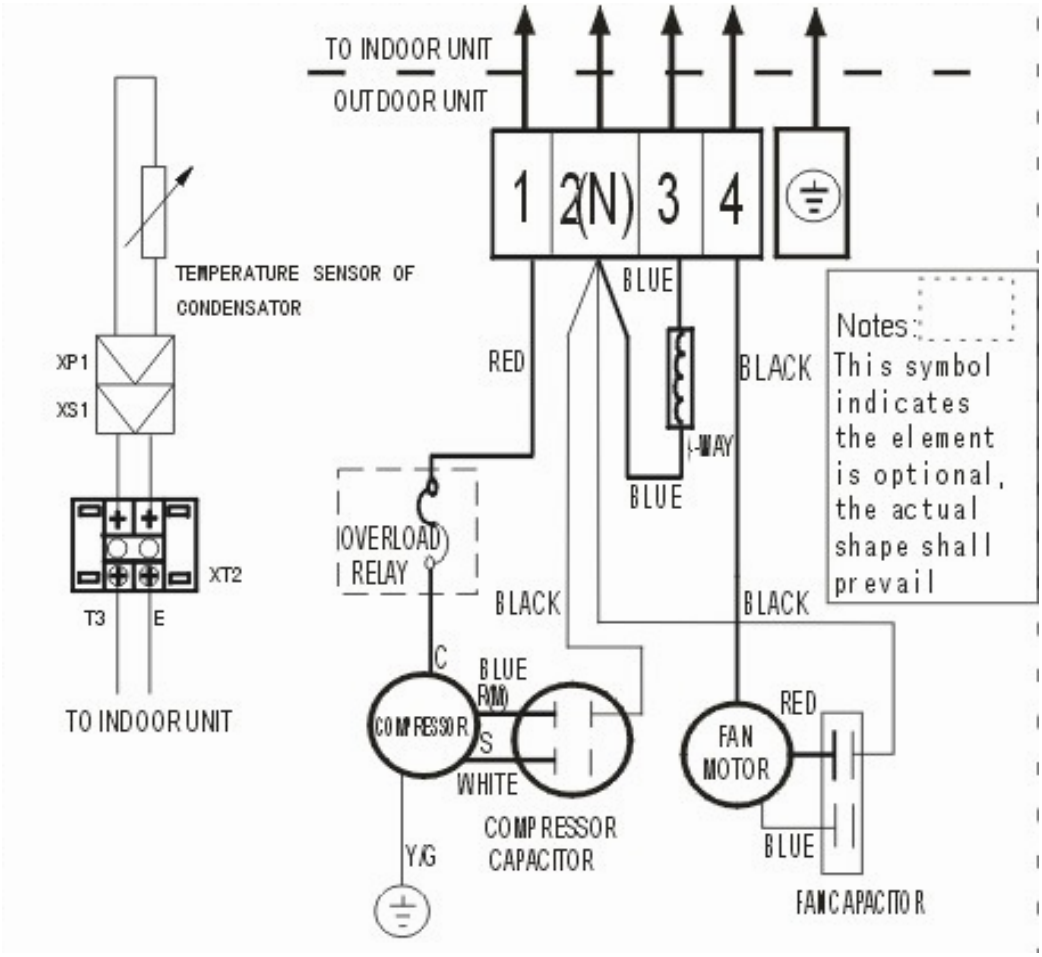
MOU-12HN1



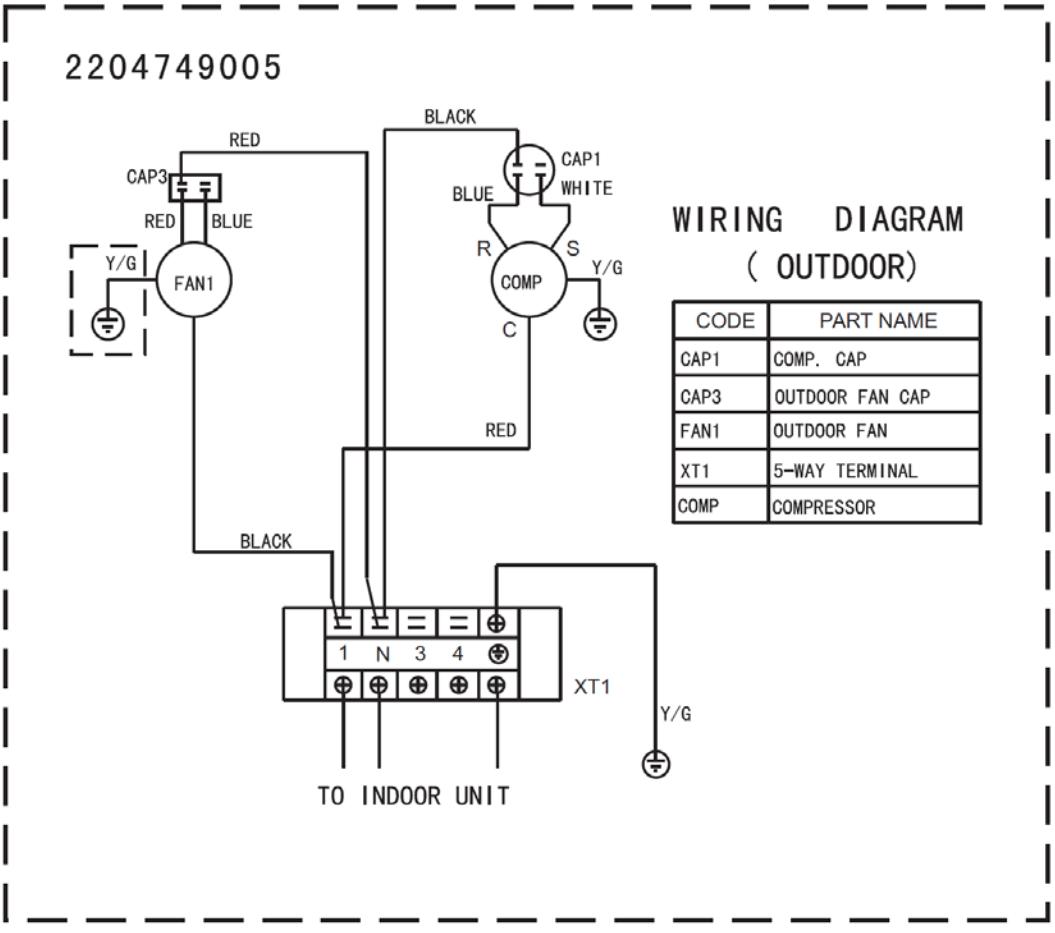
MOU-12CN1



MOU-18HN1-Q

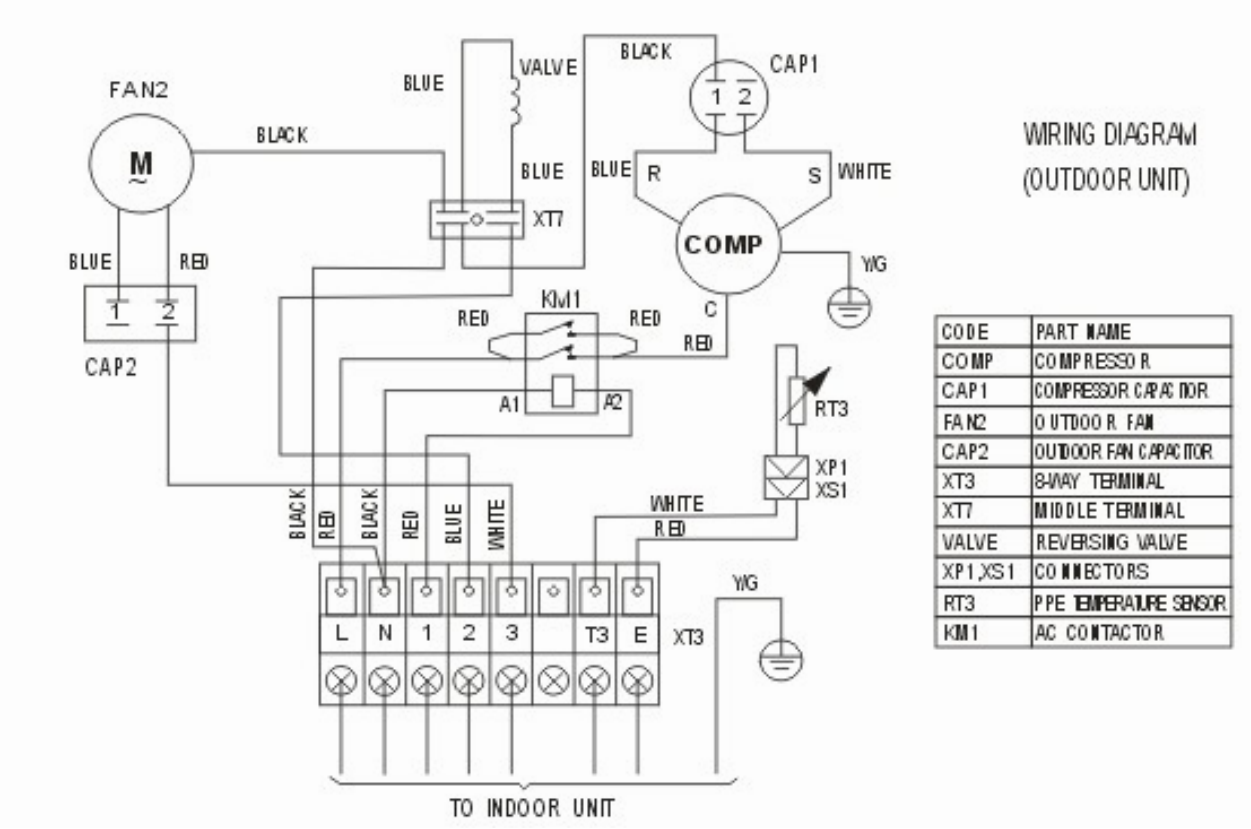


MOUA-18CN1



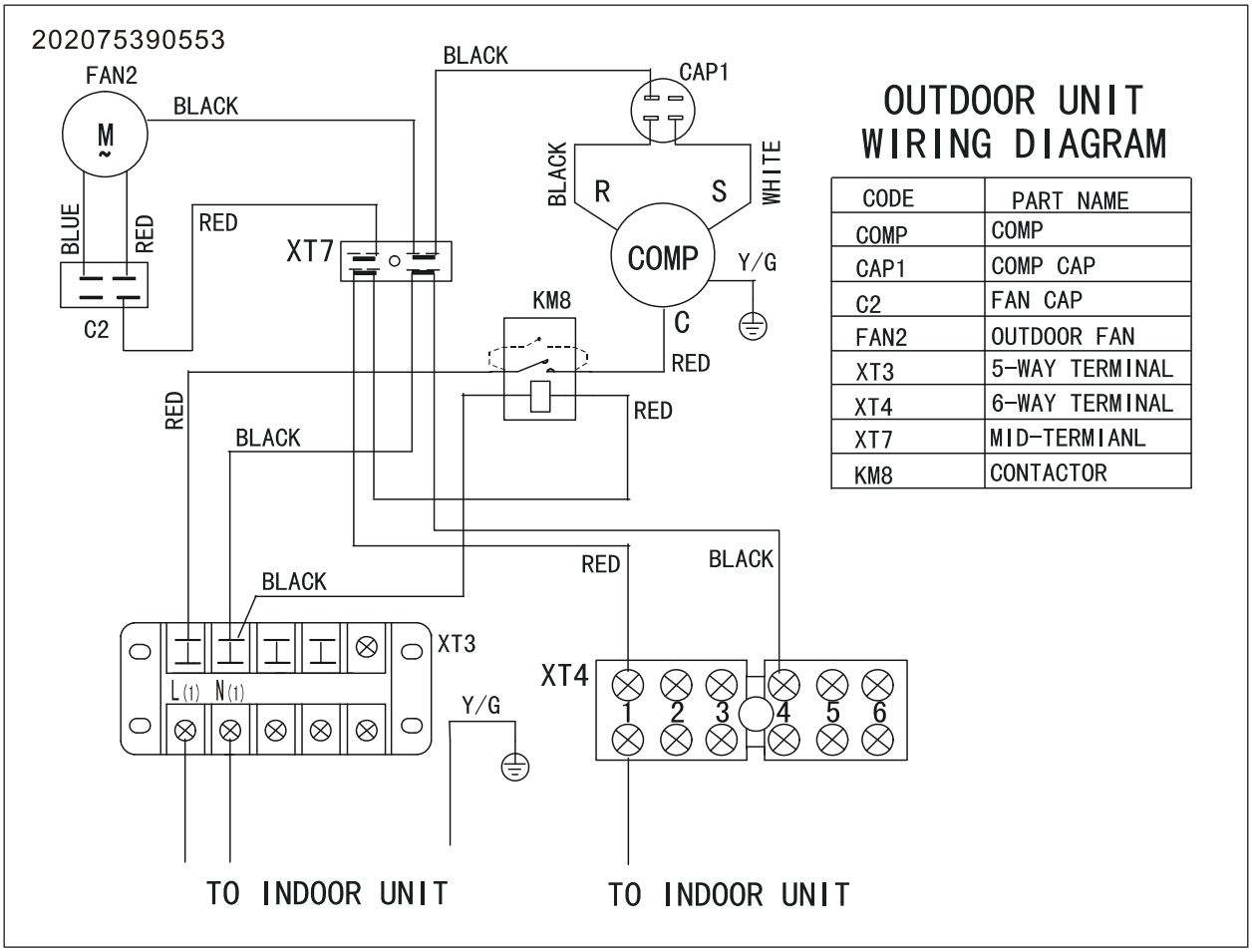
CODE	PART NAME
CAP1	COMP. CAP
CAP3	OUTDOOR FAN CAP
FAN1	OUTDOOR FAN
XT1	5-WAY TERMINAL
COMP	COMPRESSOR

MOU-24HN1-Q



CODE	PART NAME
COMP	COMPRESSOR
CAP1	COMPRESSOR CAPACITOR
FAN2	OUTDOOR FAN
CAP2	OUTDOOR FAN CAPACITOR
XT3	8-WAY TERMINAL
XT7	MIDDLE TERMINAL
VALVE	REVERSING VALVE
XP1,XS1	CONNECTORS
RT3	PIPE TEMPERATURE SENSOR
KM1	AC CONTACTOR

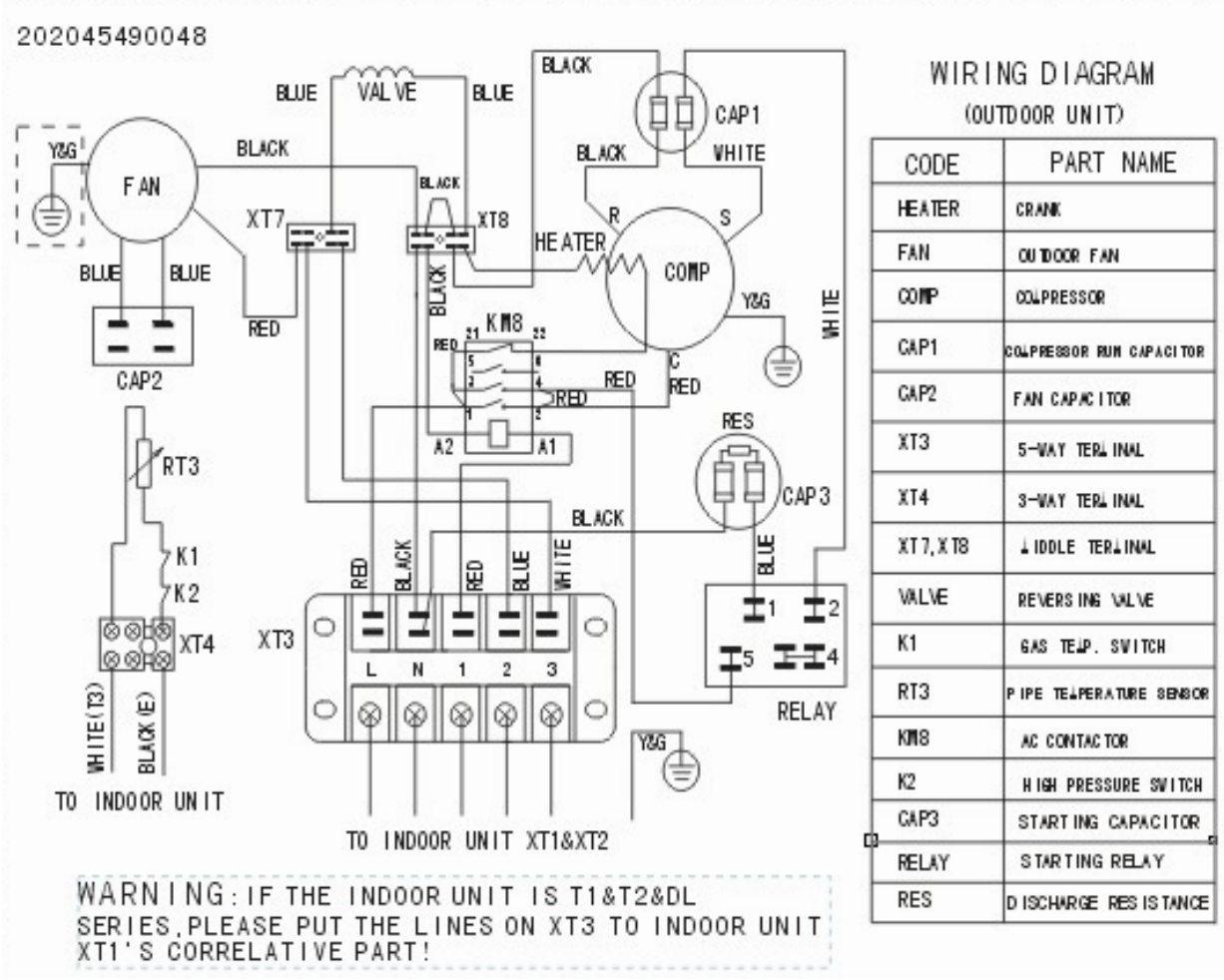
MOU-24CN1



OUTDOOR UNIT
WIRING DIAGRAM

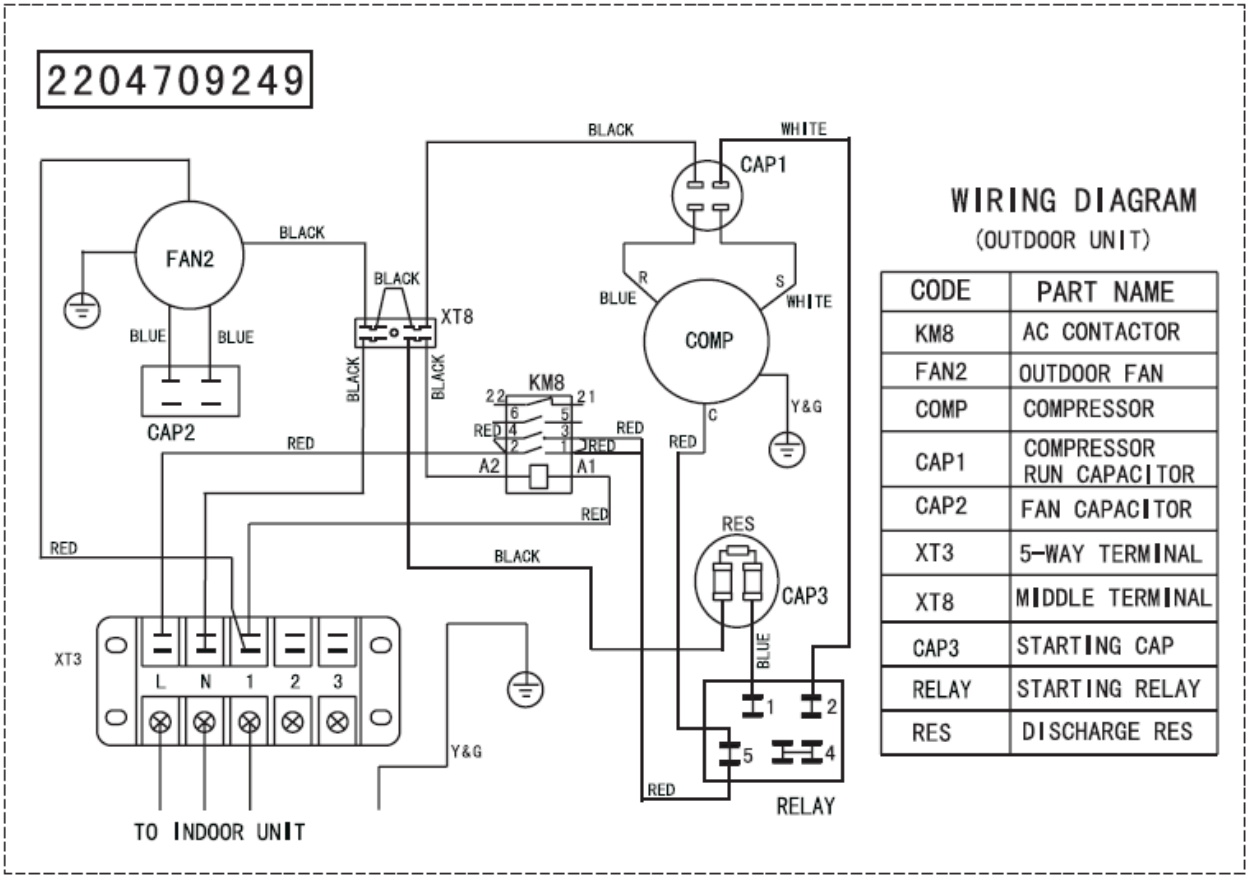
CODE	PART NAME
COMP	COMP
CAP1	COMP CAP
C2	FAN CAP
FAN2	OUTDOOR FAN
XT3	5-WAY TERMINAL
XT4	6-WAY TERMINAL
XT7	MID-TERMIANL
KM8	CONTACTOR

MOU-30HN1 MOU-36HN1-Q



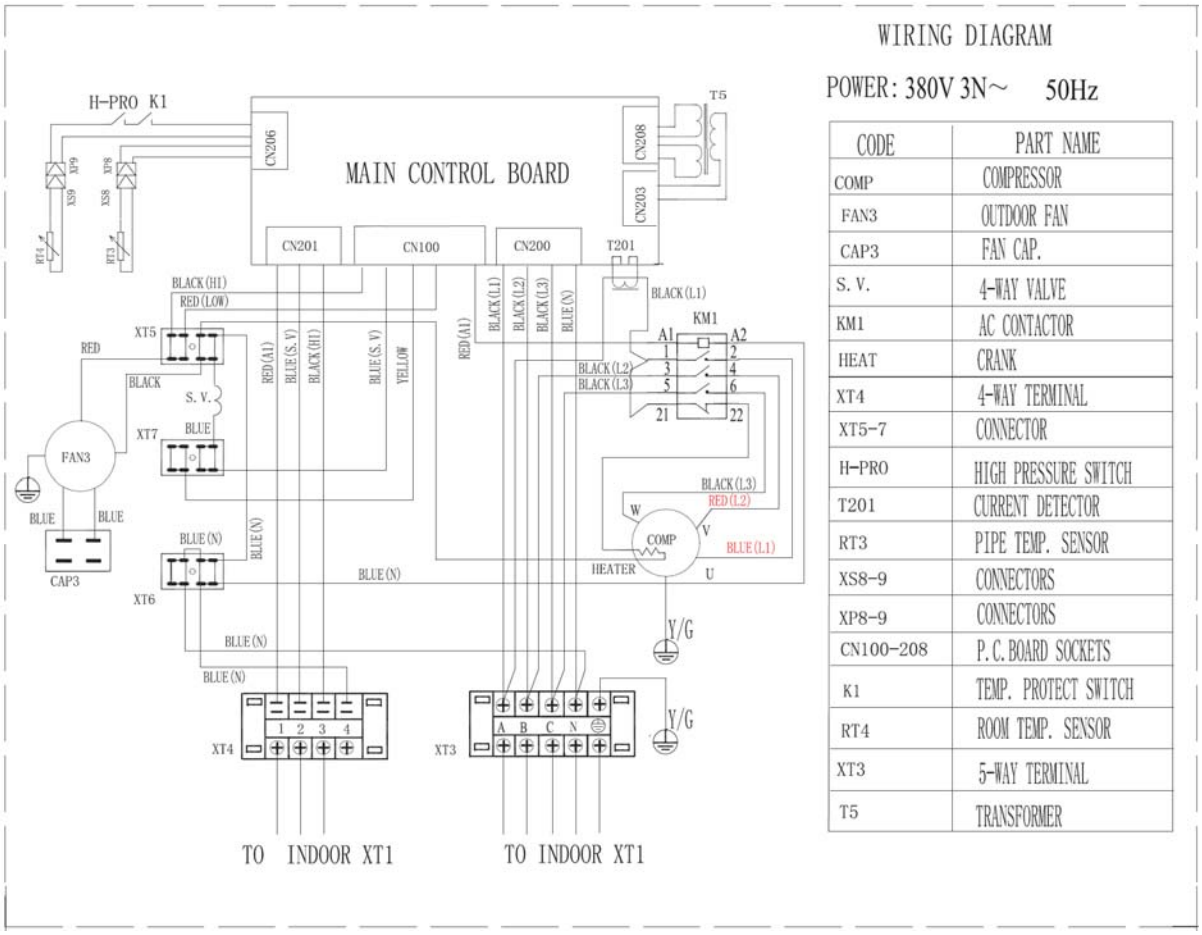
CODE	PART NAME
HEATER	CRANK
FAN	OUTDOOR FAN
COMP	COMPRESSOR
CAP1	COMPRESSOR RUN CAPACITOR
CAP2	FAN CAPACITOR
XT3	5-WAY TERMINAL
XT4	3-WAY TERMINAL
XT7, XT8	MIDDLE TERMINAL
VALVE	REVERSING VALVE
K1	GAS TEMP. SWITCH
RT3	PIPE TEMPERATURE SENSOR
KM8	AC CONTACTOR
K2	HIGH PRESSURE SWITCH
CAP3	STARTING CAPACITOR
RELAY	STARTING RELAY
RES	DISCHARGE RESISTANCE

MOU-30CN1, MOU-36CN1(1 phase)



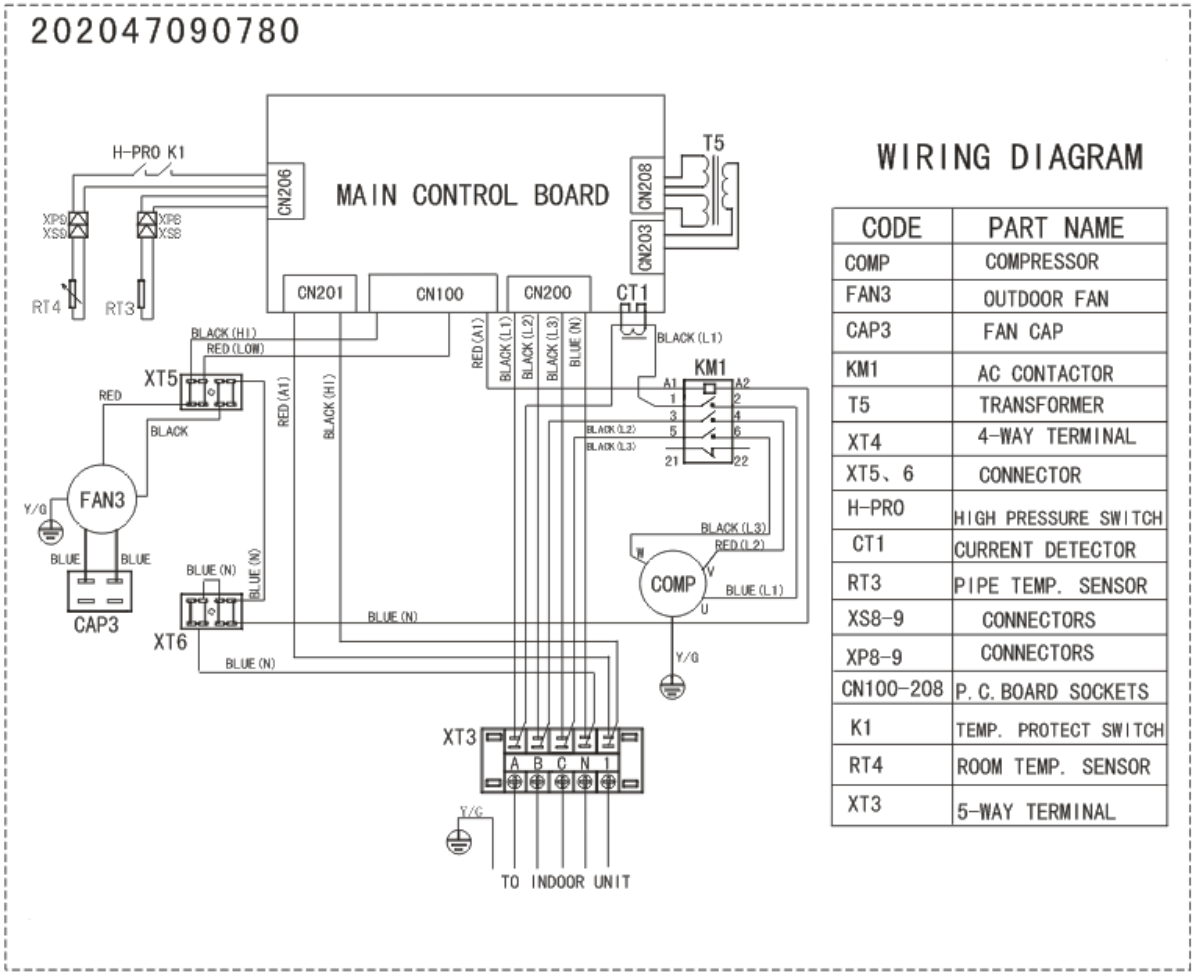
CODE	PART NAME
KM8	AC CONTACTOR
FAN2	OUTDOOR FAN
COMP	COMPRESSOR
CAP1	COMPRESSOR RUN CAPACITOR
CAP2	FAN CAPACITOR
XT3	5-WAY TERMINAL
XT8	MIDDLE TERMINAL
CAP3	STARTING CAP
RELAY	STARTING RELAY
RES	DISCHARGE RES

MOU-30HN1-R MOU-36HN1-R



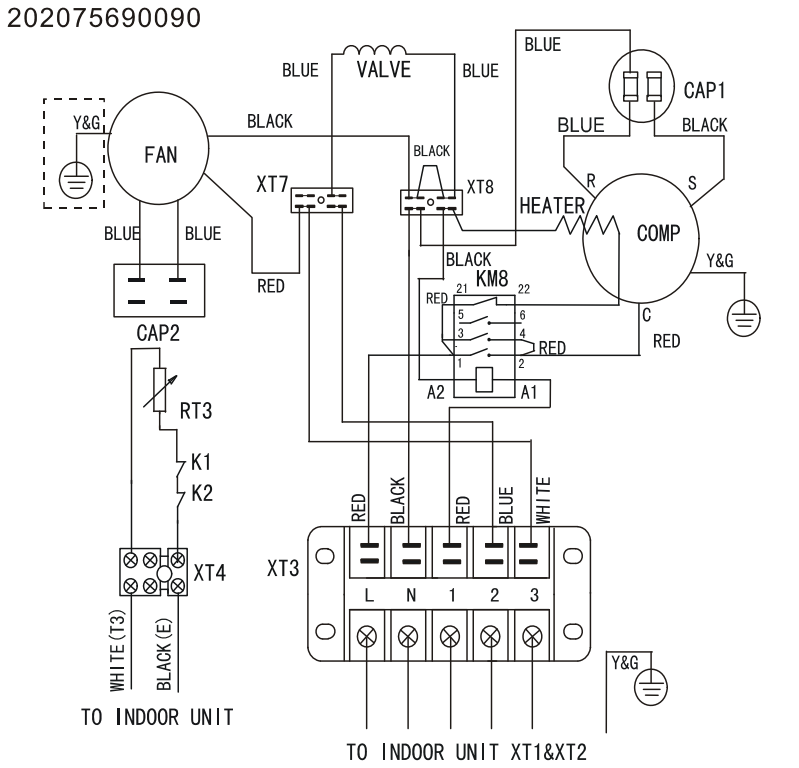
CODE	PART NAME
COMP	COMPRESSOR
FAN3	OUTDOOR FAN
CAP3	FAN CAP.
S. V.	4-WAY VALVE
KM1	AC CONTACTOR
HEAT	CRANK
XT4	4-WAY TERMINAL
XT5-7	CONNECTOR
H-PRO	HIGH PRESSURE SWITCH
T201	CURRENT DETECTOR
RT3	PIPE TEMP. SENSOR
XS8-9	CONNECTORS
XP8-9	CONNECTORS
CN100-208	P.C.BOARD SOCKETS
K1	TEMP. PROTECT SWITCH
RT4	ROOM TEMP. SENSOR
XT3	5-WAY TERMINAL
T5	TRANSFORMER

MOU-30CN1 MOU-36CN1(3 phase)



CODE	PART NAME
COMP	COMPRESSOR
FAN3	OUTDOOR FAN
CAP3	FAN CAP
KM1	AC CONTACTOR
T5	TRANSFORMER
XT4	4-WAY TERMINAL
XT5、6	CONNECTOR
H-PRO	HIGH PRESSURE SWITCH
CT1	CURRENT DETECTOR
RT3	PIPE TEMP. SENSOR
XS8-9	CONNECTORS
XP8-9	CONNECTORS
CN100-208	P. C. BOARD SOCKETS
K1	TEMP. PROTECT SWITCH
RT4	ROOM TEMP. SENSOR
XT3	5-WAY TERMINAL

MOU-42HN1-Q

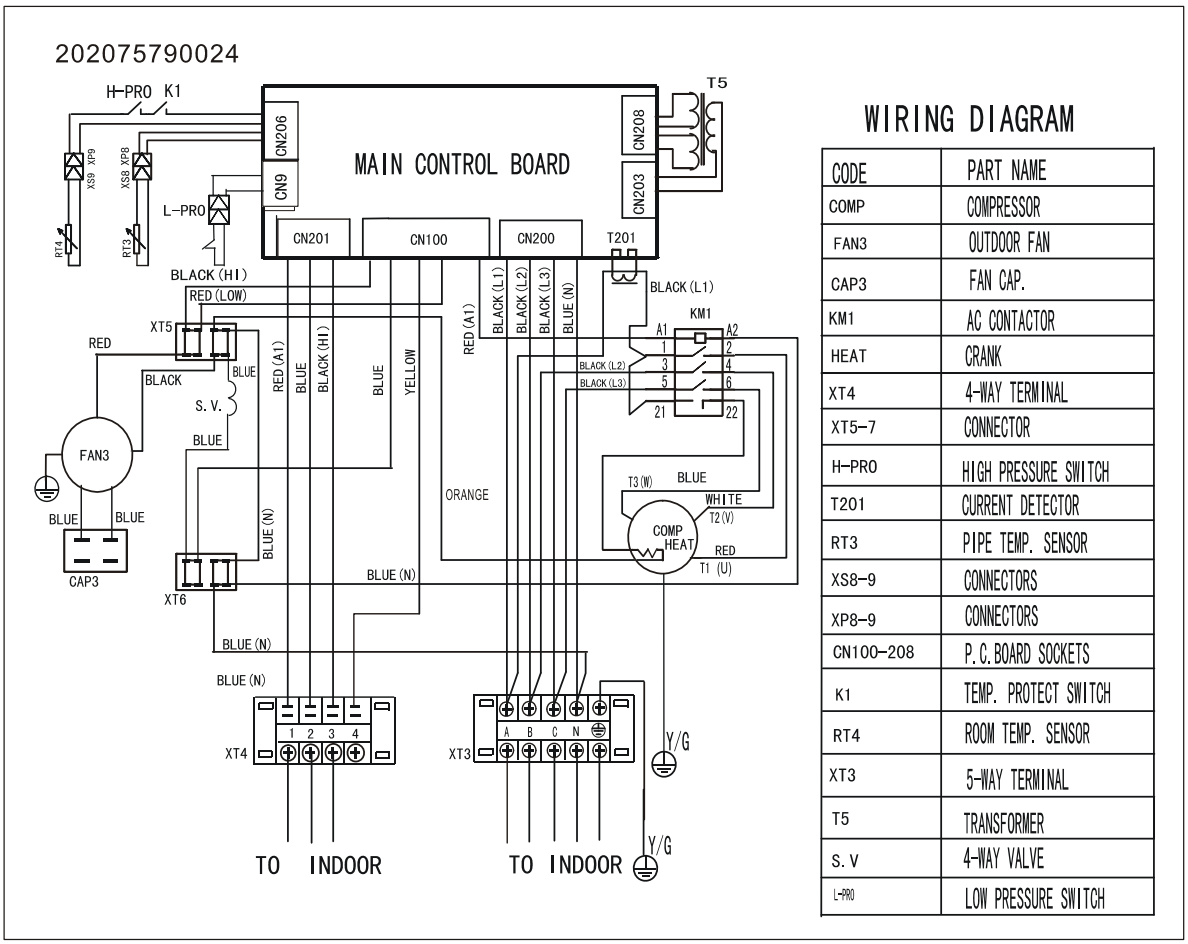


WIRING DIAGRAM

(OUTDOOR UNIT)

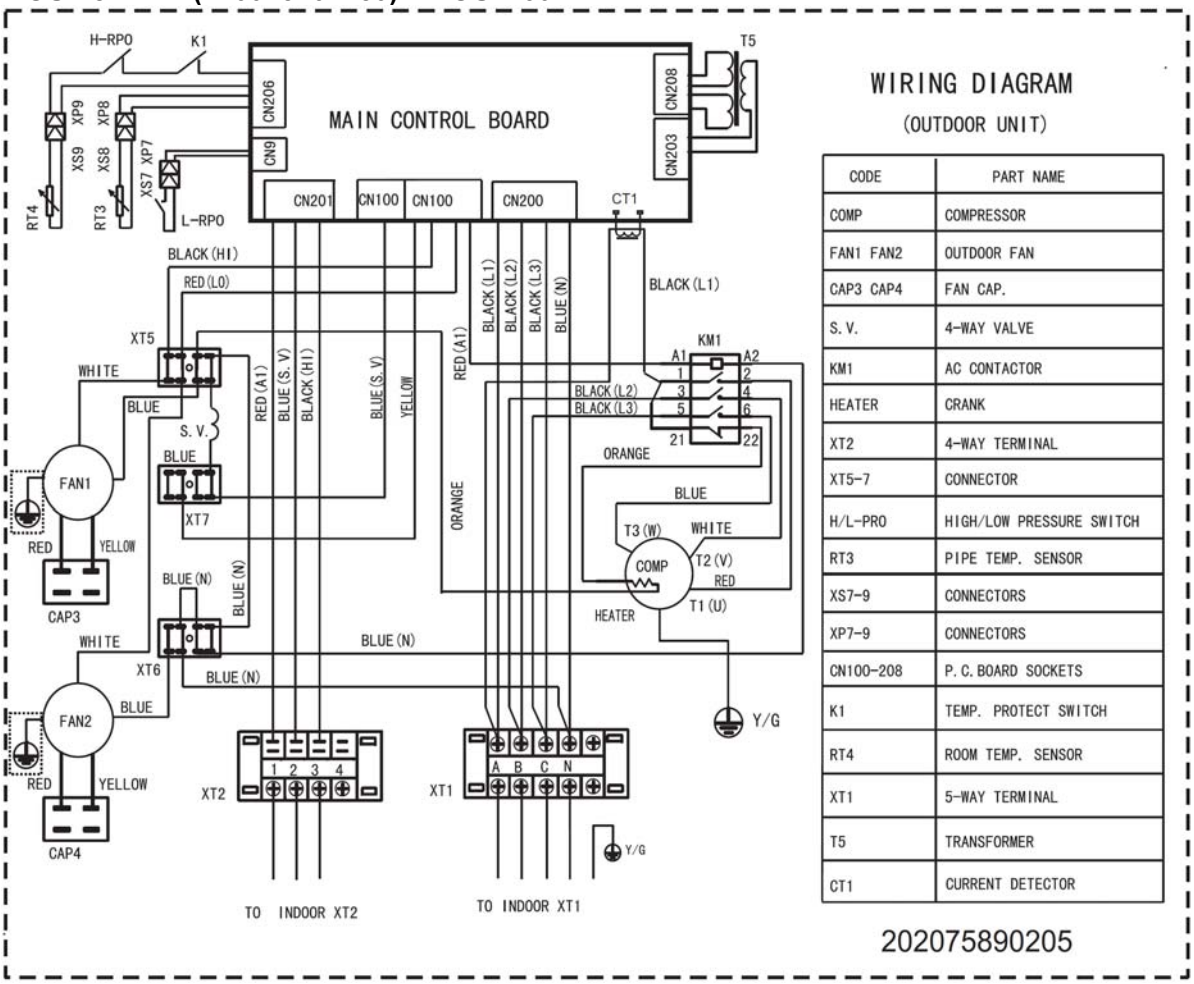
CODE	PART NAME
HEATER	CRANK
FAN	OUTDOOR FAN
COMP	COMPRESSOR
CAP1	COMPRESSOR RUN CAPACITOR
CAP2	FAN CAPACITOR
XT3	5-WAY TERMINAL
XT4	3-WAY TERMINAL
XT7, XT8	MIDDLE TERMINAL
VALVE	REVERSING VALVE
K1	GAS TEMP. SWITCH
RT3	PIPE TEMPERATURE SENSOR
KM8	AC CONTACTOR
K2	HIGH PRESSURE SWITCH

MOU-48HN1-R(220075701990)



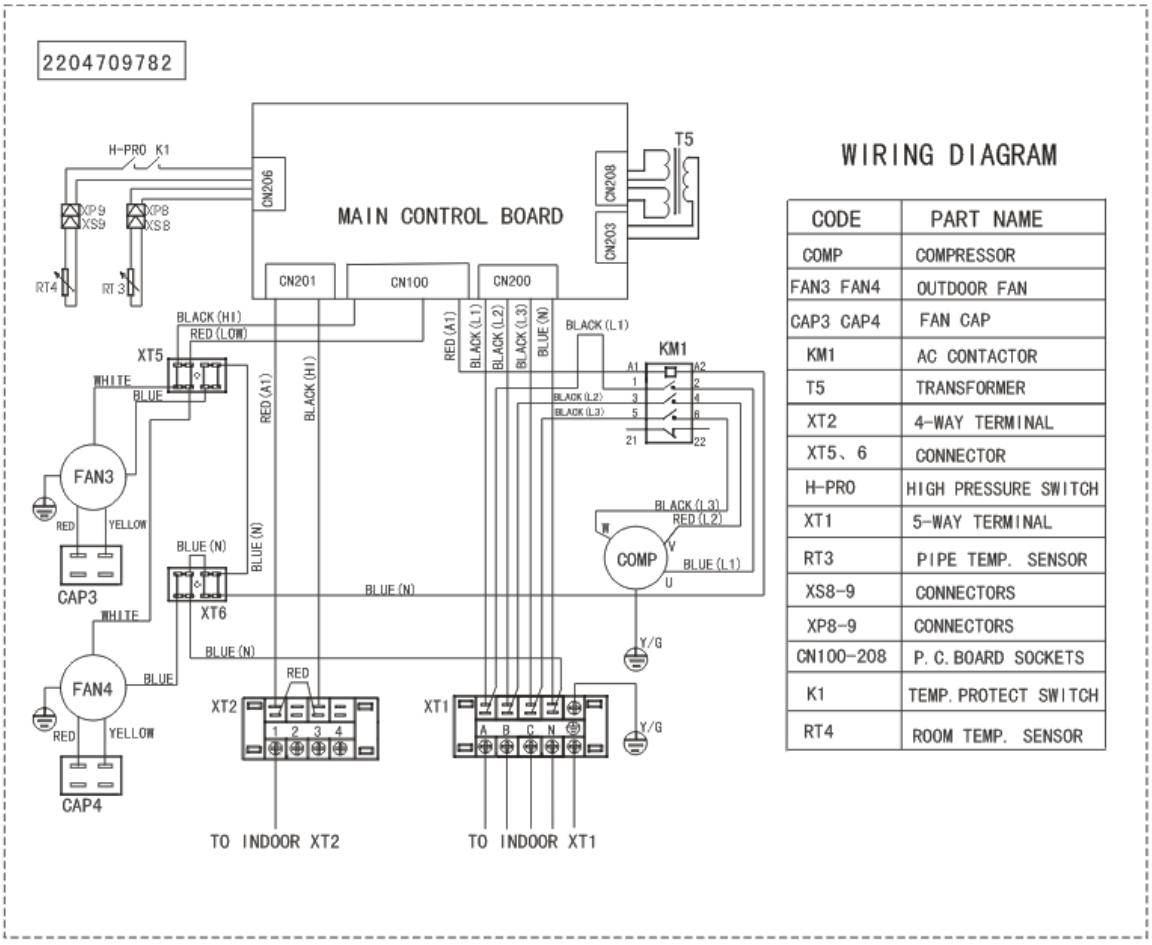
CODE	PART NAME
COMP	COMPRESSOR
FAN3	OUTDOOR FAN
CAP3	FAN CAP.
KM1	AC CONTACTOR
HEAT	CRANK
XT4	4-WAY TERMINAL
XT5-7	CONNECTOR
H-PRO	HIGH PRESSURE SWITCH
T201	CURRENT DETECTOR
RT3	PIPE TEMP. SENSOR
XS8-9	CONNECTORS
XP8-9	CONNECTORS
CN100-208	P.C.BOARD SOCKETS
K1	TEMP. PROTECT SWITCH
RT4	ROOM TEMP. SENSOR
XT3	5-WAY TERMINAL
T5	TRANSFORMER
S.V	4-WAY VALVE
L-PRO	LOW PRESSURE SWITCH

MOU-48HN1-R(220075701250) MOUA-60HN1-R



CODE	PART NAME
COMP	COMPRESSOR
FAN1 FAN2	OUTDOOR FAN
CAP3 CAP4	FAN CAP.
S. V.	4-WAY VALVE
KM1	AC CONTACTOR
HEATER	CRANK
XT2	4-WAY TERMINAL
XT5-7	CONNECTOR
H/L-PRO	HIGH/LOW PRESSURE SWITCH
RT3	PIPE TEMP. SENSOR
XS7-9	CONNECTORS
XP7-9	CONNECTORS
CN100-208	P.C.BOARD SOCKETS
K1	TEMP. PROTECT SWITCH
RT4	ROOM TEMP. SENSOR
XT1	5-WAY TERMINAL
T5	TRANSFORMER
CT1	CURRENT DETECTOR

MOU-48CN1 MOU-60CN1



WIRING DIAGRAM

CODE	PART NAME
COMP	COMPRESSOR
FAN3 FAN4	OUTDOOR FAN
CAP3 CAP4	FAN CAP
KM1	AC CONTACTOR
T5	TRANSFORMER
XT2	4-WAY TERMINAL
XT5、6	CONNECTOR
H-PRO	HIGH PRESSURE SWITCH
XT1	5-WAY TERMINAL
RT3	PIPE TEMP. SENSOR
XS8-9	CONNECTORS
XP8-9	CONNECTORS
CN100-208	P.C.BOARD SOCKETS
K1	TEMP.PROTECT SWITCH
RT4	ROOM TEMP. SENSOR

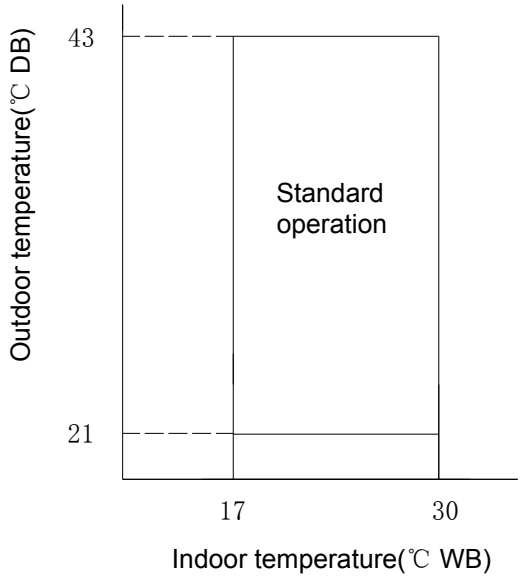
6. Electric Characteristics

Model	Outdoor Unit			
	Hz	Voltage	Min.	Max.
MOU-12HN1	50	220~240V	198V	254V
MOU-12CN1	50	220~240V	198v	254V
MOU-18HN1-Q	50	220~240V	198V	254V
MOU-18CN1	50	220~240V	198V	254V
MOU-24HN1-Q	50	220~240V	198V	254V
MOU-24CN1	50	220~240V	198V	254V
MOU-30HN1	50	220~240V	198V	254V
MOU-30CN1	50	220~240V	198V	254V
MOU-30HN1-R	50	380~415V	342V	418V
MOU-30CN1	50	380V	342V	418V
MOU-36HN1-Q	50	220~240V	198V	254V
MOU-36CN1	50	220~240V	198V	254V
MOU-36HN1-R	50	380~420V	342V	440V
MOU-36CN1	50	380V	342V	418V
MOU-42HN1-Q	50	220~240V	198V	254V
MOU-48HN1-R	50	380~420V	342V	440V
MOU-48CN1	50	380V	342V	418V
MOUA-60HN1-R	50	380~420V	342V	440V
MOU-60CN1	50	380V	342V	418V

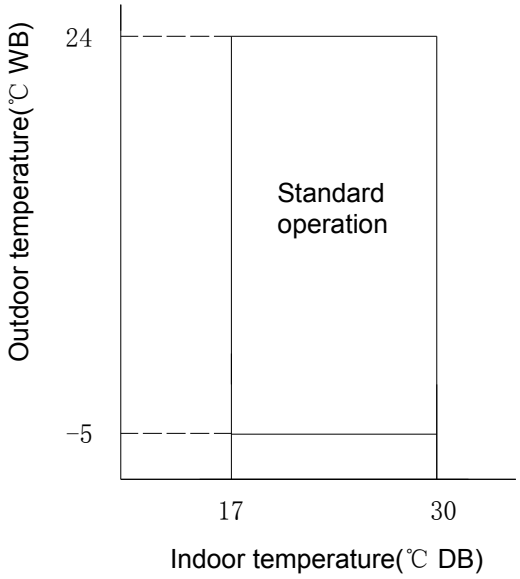
7. Operation Limits

Operation mode	Outdoor temperature(℃)	Room temperature(℃)
Cooling operation	21~43	17~30
Heating operation	-5~24	17~30

Cooling

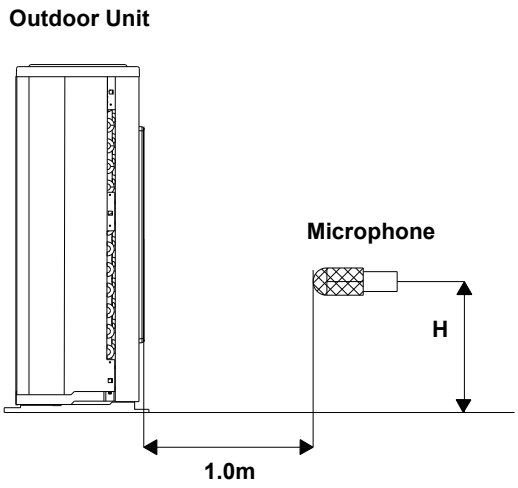


Heating



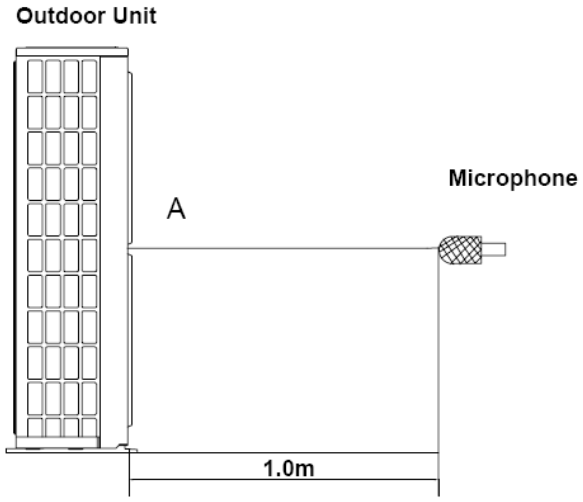
8. Sound Levels

12000Btu/h-48000Btu/h



Note: H= 0.5 × height of outdoor unit

60000Btu/h



Note: The point A is in the middle of the whole outdoor panel.

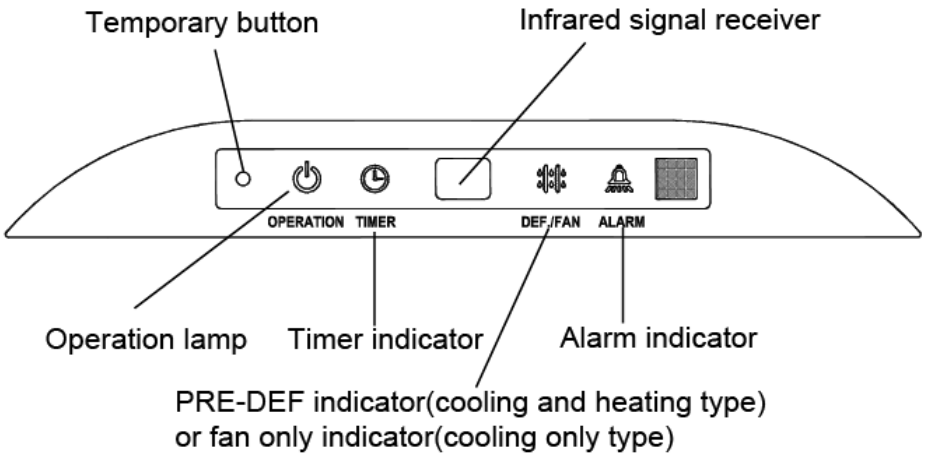
Model	Noise level dB(A)
MOU-12HN1 MOU-12CN1	43
MOU-18CN1	48
MOU-18HN1-Q	54
MOU-24HN1-Q MOU-24CN1	55
MOU-30HN1 MOU-30CN1(1 phase)	57
MOU-30HN1-R MOU-30CN1(3 phase)	57
MOU-36HN1-Q (1 phase)	57
MOU-36CN1(1 phase)	58
MOU-36HN1-R (3 phase)	57
MOU-36CN1(3 phase)	58
MOU-42HN1-Q	57
MOU-48HN1-R(220075701250) MOU-48CN1	59
MOU-48HN1-R(220075701990)	62
MOU-60CN1	59
MOUA-60HN1-R	59

9. Troubleshooting

9.1. Self-diagnosis

Indoor unit's LED indication

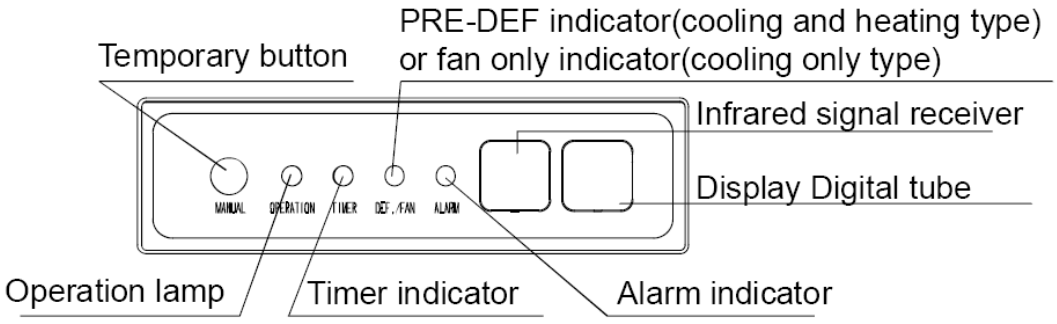
(1) For Big Four-way cassette



NO.	MALFUNCTION & PROTECTION DEFINE	LED1 OPERATION	LED2 TIMER	LED3 DEF.FAN	LED4 ALARM	DISPLAY DIGITAL TUBE
1	Room temperature sensor checking channel is abnormal	●	◎	●	●	E2
2	Pipe temperature sensor checking channel is abnormal	◎	●	●	●	E3
3	Outdoor TEMP. sensor checking channel is abnormal	●	●	◎	●	E4
4	Outdoor malfunction	◎	◎	◎	◎	E6
5	EEPROM malfunction	◎	◎	●	●	E7
6	Water-level alarm malfunction	●	●	●	◎	E8

● Extinguish ◎ Flashing at 5HZ ○ Flashing at 1HZ

(2) For A5 Duct



NO.	MALFUNCTION & PROTECTION DEFINE	LED1 OPERATION	LED2 TIMER	LED3 DEF.FAN	LED4 ALARM	DISPLAY DIGITAL TUBE
1	Room temperature sensor checking channel is abnormal	●	◎	●	●	E2
2	Pipe temperature sensor checking channel is abnormal	◎	●	●	●	E3
3	Outdoor TEMP. sensor checking channel is abnormal	●	●	◎	●	E4
4	Outdoor malfunction	◎	◎	◎	◎	E6
5	EEPROM malfunction	◎	◎	●	●	E7
6	Water-level alarm malfunction	●	●	●	◎	E8

● Extinguish ◎ Flashing at 5HZ ○ Flashing at 1HZ

(3) For AHU indoor unit

The LED on indoor PCB

Type	Contents	LED1	LED2	LED3
ERROR	Pipe Temp sensor error	Quick flash	Off	Off
ERROR	Wire controller input error	Quick flash	Off	Quick flash

(4)For CONSOLE

NO.	running lamp	timer lamp	defrosting lamp	Malfunction for unuit of 12000Btu/h	Malfunction for unuit of 18000Btu/h
1	☆	×	×	Room temperature sensor checking channel is abnormal	Room temperature sensor checking channel is abnormal
2	×	×	☆	Evaporator sensor checking channel is abnormal	Mode impact
3	☆	☆	☆	Condenser sensor checking channel is abnormal	——
4	×	☆	×	Room Circuit malfunction	Room Circuit malfunction
5	×	×	◎	——	Outdoor unit malfunction

（× Extinguish, ☆ Flash at 5Hz, ◎ Flash at 0.5Hz）

(5)For the other types indoor unit

No.	Type	Contents	LED Flashing	Remark
1	Normal	Standing-by	Operation lamp flashes at 0.5Hz	Nothing wrong with the unit when LED indicate these contents.
2	Normal	System Off	All lamps are off	
3	Normal	System startup	Operation lamp on	
4	Normal	Forced cooling	Operation lamp flashes at 5Hz, Timer lamp on	
5	Protection	Over current protection of the compressor occurs 4 times in 1h	Lamps of operation, timer, defrosting (only fan) flashing simultaneously at 5Hz.	Whole unit is shut down. It cannot recover unless power is cut off
6	Protection	Outdoor protection (lack of phase, phase sequence and temperature protection)	All lamps flashing at 5Hz	Recover automatically after errors are eliminated (For T3

7	Error	Room temperature sensor checking channel is abnormal	Timer lamp flashing at 5Hz	malfunction of 5HP, can't recover automatically)
8	Error	Evaporator sensor checking channel is abnormal	Operation lamp flashing at 5Hz	
9	Error	Condenser sensor checking channel is abnormal	Defrosting lamp flashing at 5Hz	
10	Error	Communication of EEPROM malfunction	Operation lamp and timer lamp flashing at 5Hz	
11	Error	Water level alarm/pump sensor malfunction	Alarm lamp flashes at 5Hz	

LEDs' for the indication of outdoor trouble

Type	Contents	LED1	LED2	LED3
Trouble	Phase sequence	Flash	Off	Off
Trouble	Lack of phase(A,B)	Flash	Off	Off
Trouble	Lack of phase(C)	Off	Off	Off
Trouble	Protection of Low pressure	Flash	Flash	Off
Trouble	Overload of current	Off	Off	Flash
Trouble	Communication malfunction	Flash	Off	Flash
Trouble	Open-circuit and short-circuit trouble of T3	Off	Flash	Flash
Trouble	Open-circuit and short-circuit trouble of T4	Off	Flash	Off
Trouble	High temperature protection of condenser	Flash	Flash	Flash

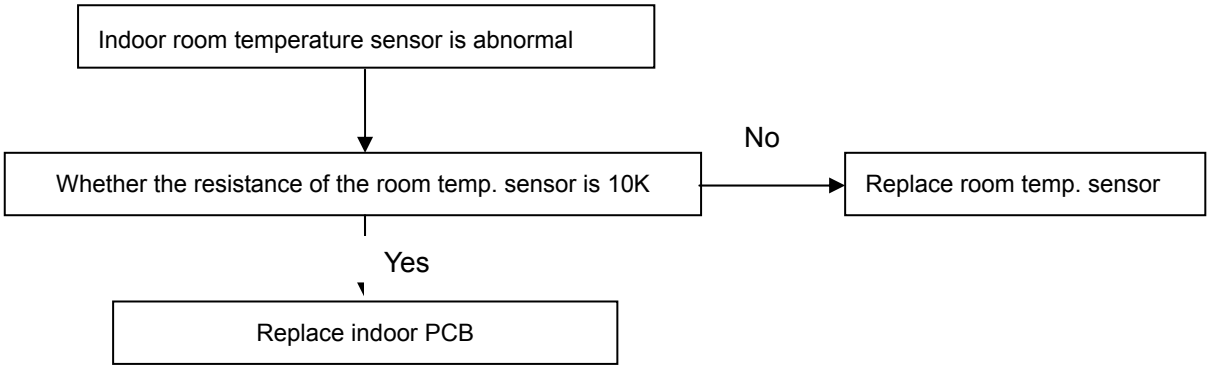
Note:

1. If the LED1-LED3 are flashing slowly,means the system is stand-by.
2. T3: Outdoor condenser temperature sensor
3. T4: Outdoor ambient temperature sensor

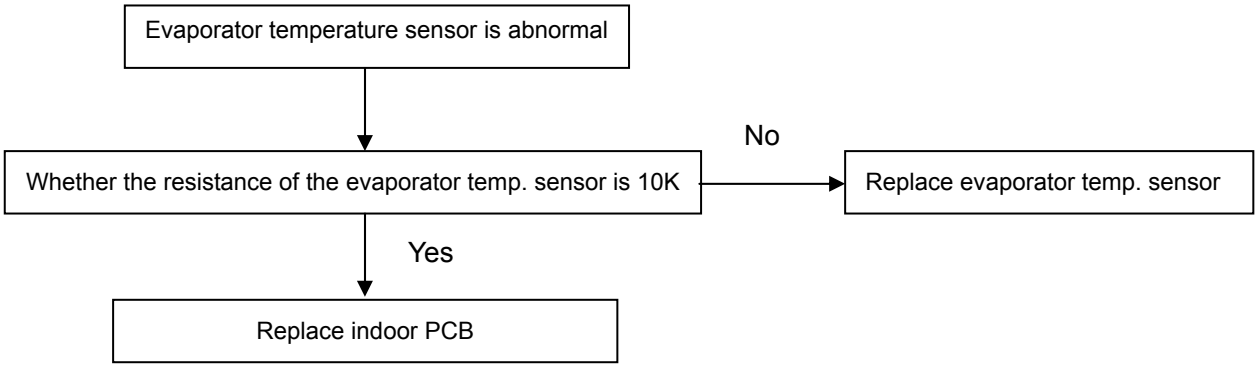
9.2. Solving steps for typical malfunction

(1) For indoor unit

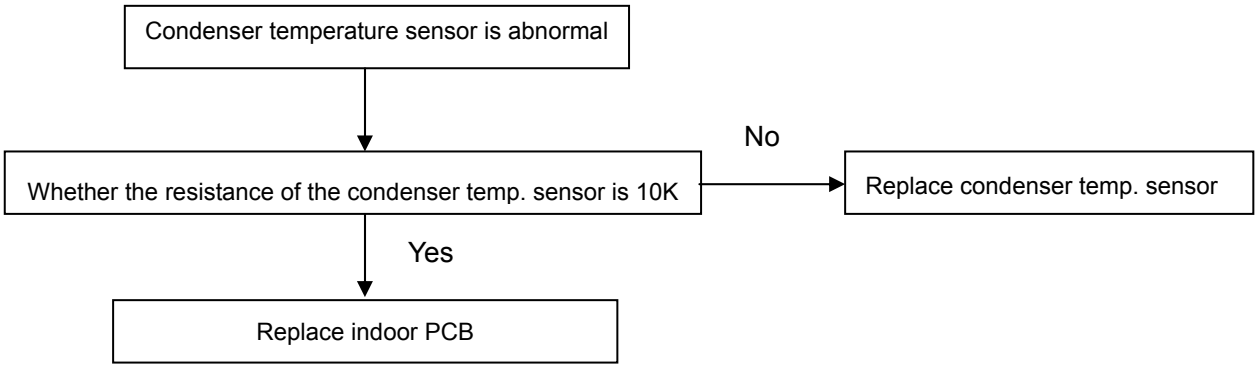
a. Indoor room temperature sensor is abnormal



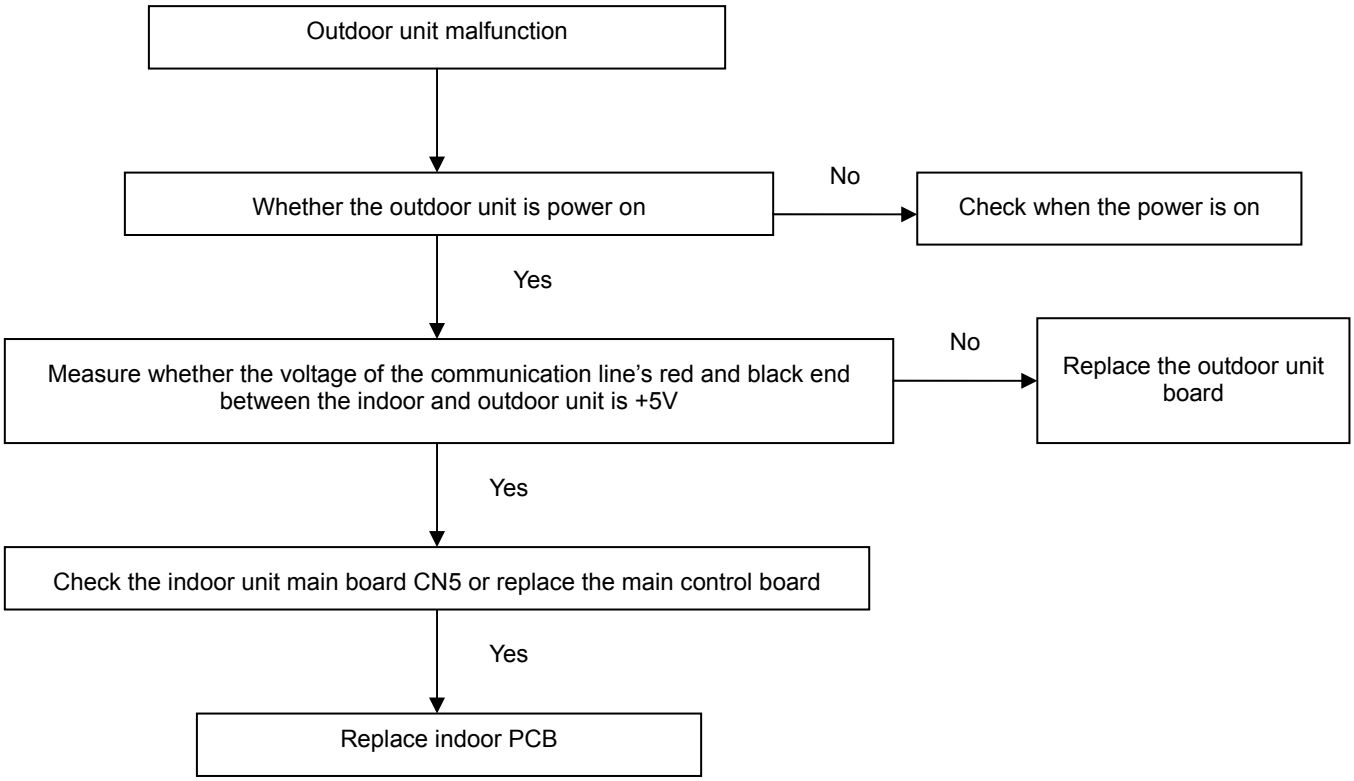
b. Evaporator temperature sensor is abnormal



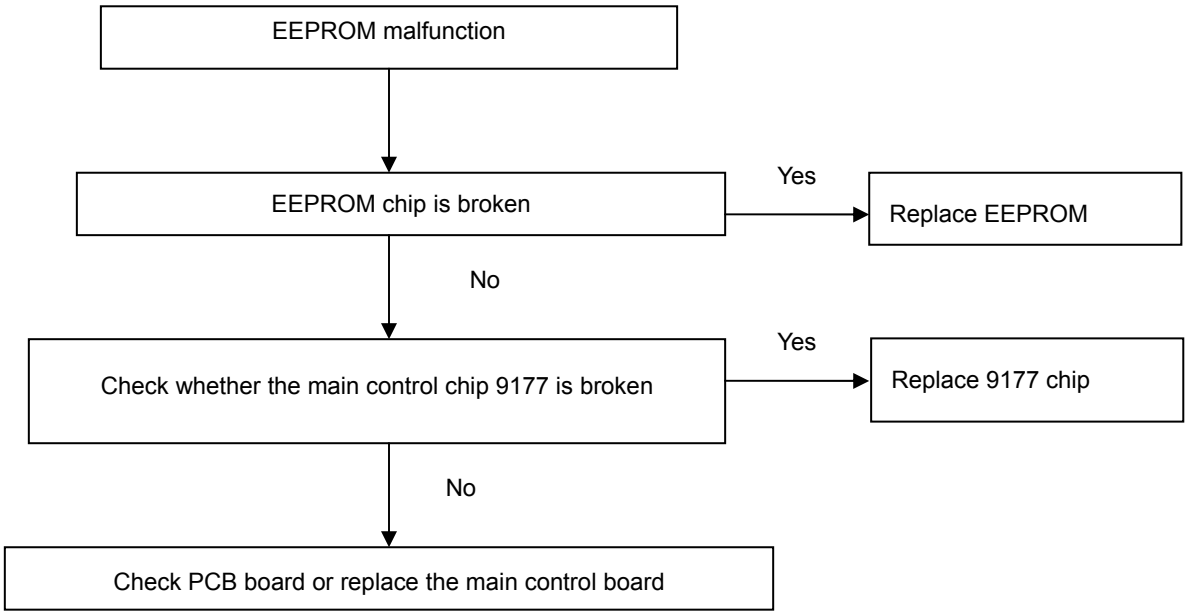
c. Condenser temperature sensor is abnormal



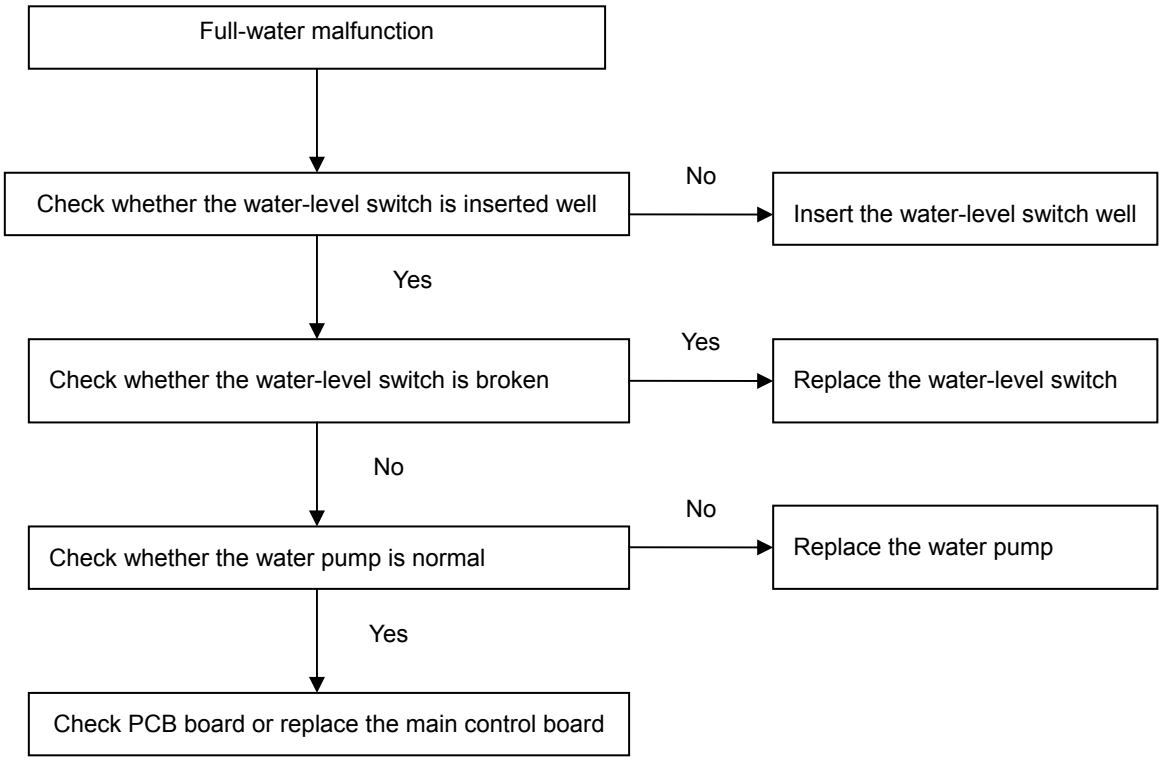
d. Outdoor unit malfunction



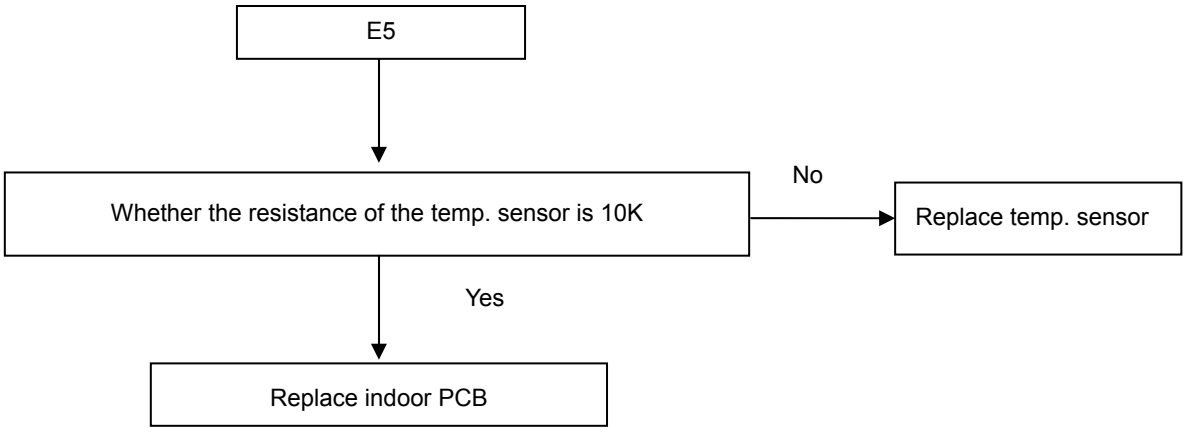
e. EEPROM malfunction



f. Full-water malfunction

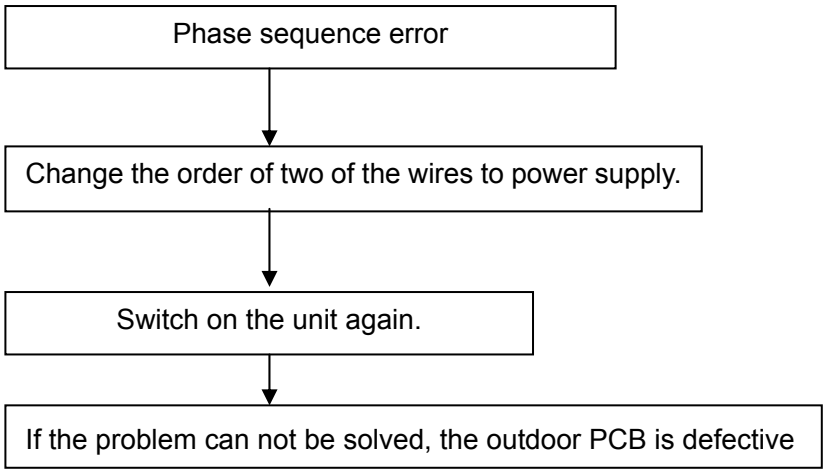


g. Temperature sensor error of water pump

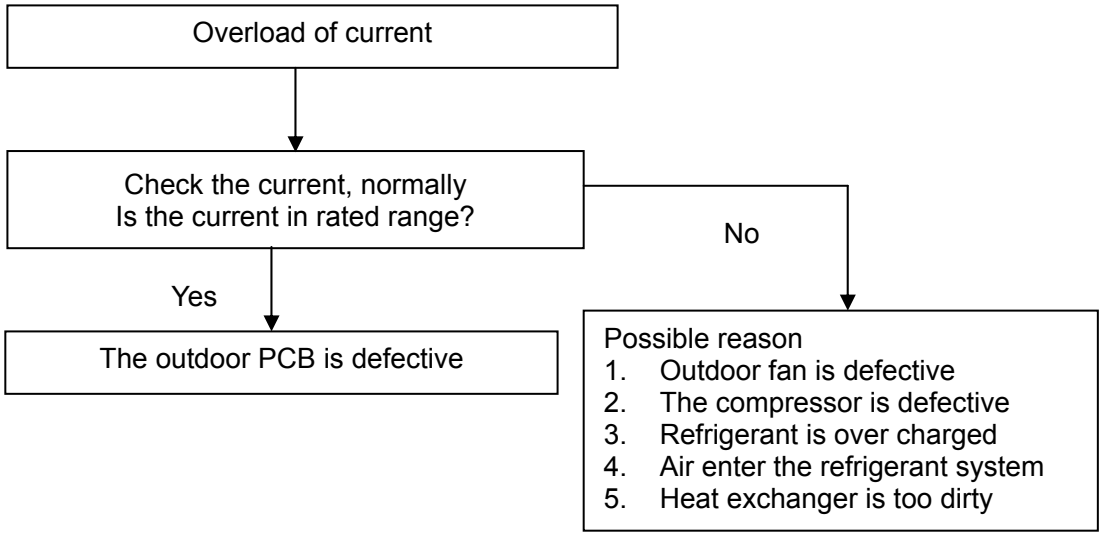


(2) For the outdoor unit

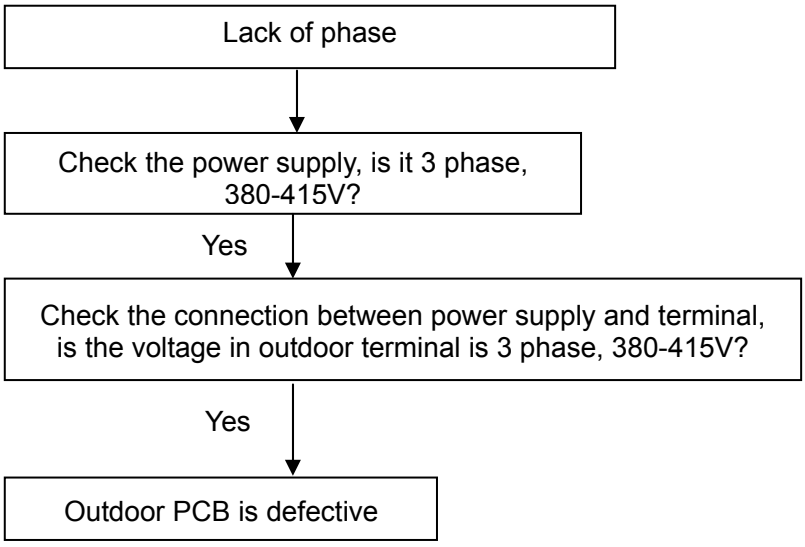
a. Phase sequence error:



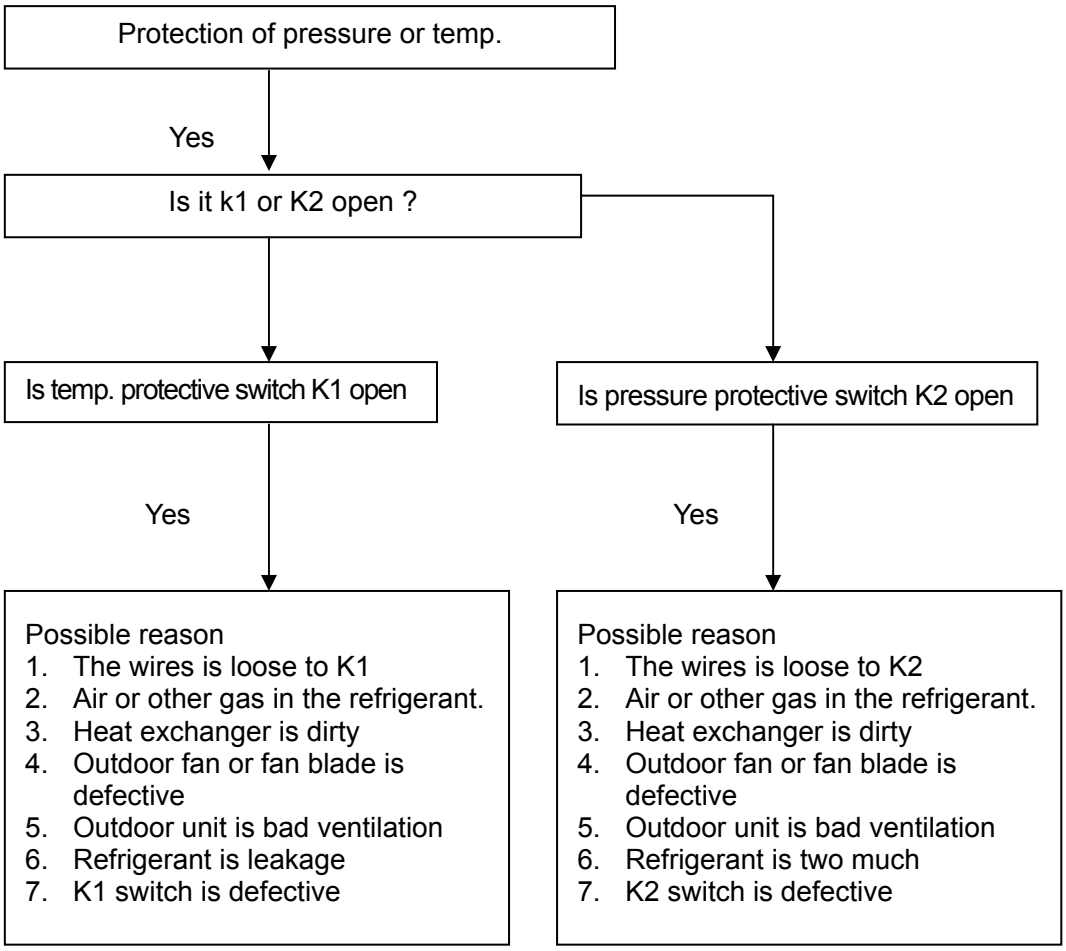
b. Overload of current



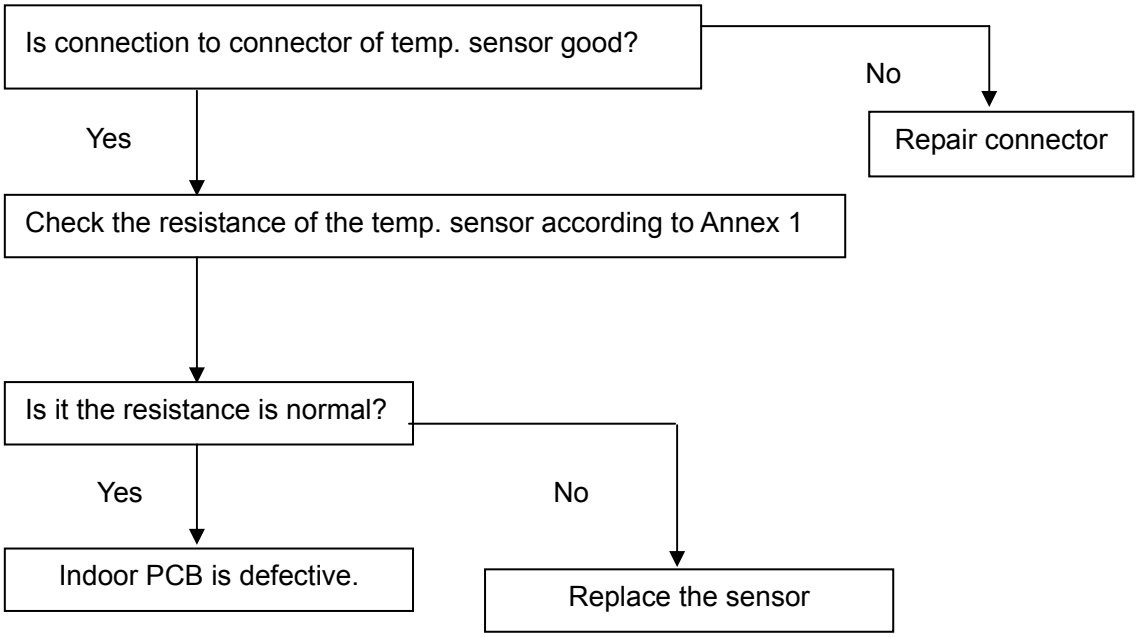
c. Lack of phase



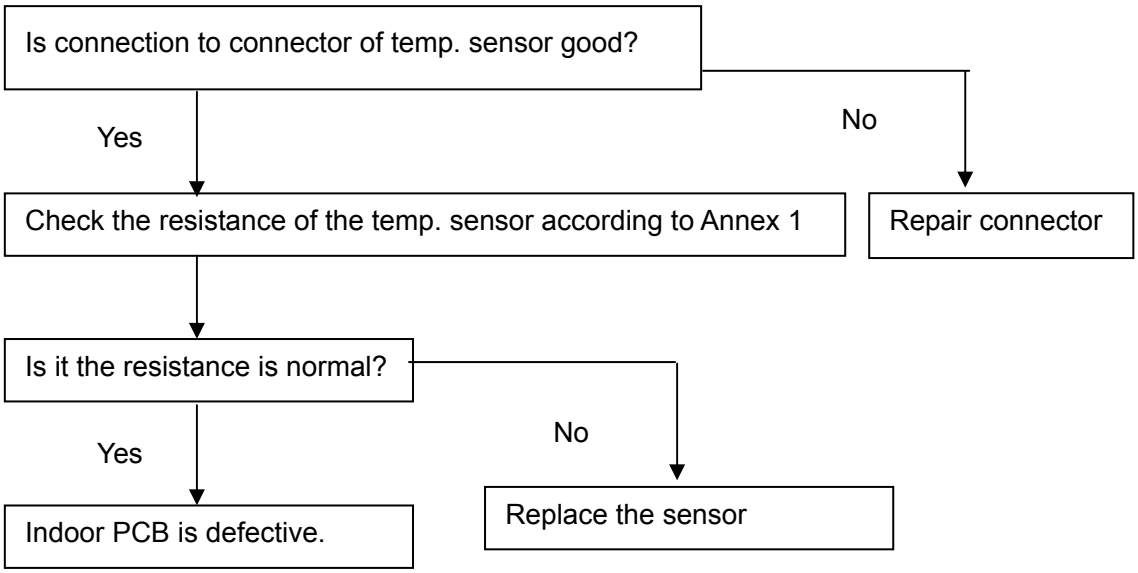
d. Protection of pressure or temp.



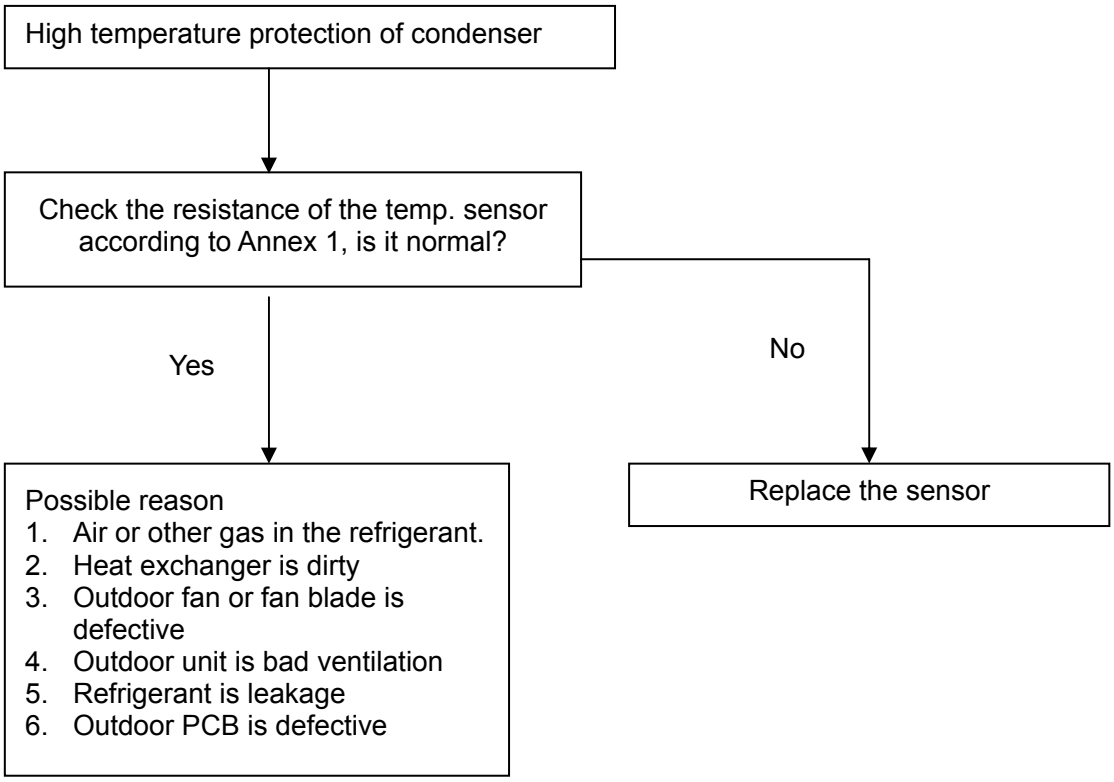
e. Open-circuit and short-circuit trouble of T3



f. Open-circuit and short-circuit trouble of T4



g. High temperature protection of condenser



Appendix Indoor Temp. and Pipe Temp. Sensor Resistance Value Table (℃--K)

℃	K Ohm	℃	K Ohm	℃	K Ohm	℃	K Ohm
-20	115.266	20	12.6431	60	2.35774	100	0.62973
-19	108.146	21	12.0561	61	2.27249	101	0.61148
-18	101.517	22	11.5000	62	2.19073	102	0.59386
-17	96.3423	23	10.9731	63	2.11241	103	0.57683
-16	89.5865	24	10.4736	64	2.03732	104	0.56038
-15	84.2190	25	10.000	65	1.96532	105	0.54448
-14	79.3110	26	9.55074	66	1.89627	106	0.52912
-13	74.5360	27	9.12445	67	1.83003	107	0.51426
-12	70.1698	28	8.71983	68	1.76647	108	0.49989
-11	66.0898	29	8.33566	69	1.70547	109	0.48600
-10	62.2756	30	7.97078	70	1.64691	110	0.47256
-9	58.7079	31	7.62411	71	1.59068	111	0.45957
-8	56.3694	32	7.29464	72	1.53668	112	0.44699
-7	52.2438	33	6.98142	73	1.48481	113	0.43482
-6	49.3161	34	6.68355	74	1.43498	114	0.42304
-5	46.5725	35	6.40021	75	1.38703	115	0.41164
-4	44.0000	36	6.13059	76	1.34105	116	0.40060
-3	41.5878	37	5.87359	77	1.29078	117	0.38991
-2	39.8239	38	5.62961	78	1.25423	118	0.37956
-1	37.1988	39	5.39689	79	1.21330	119	0.36954
0	35.2024	40	5.17519	80	1.17393	120	0.35982
1	33.3269	41	4.96392	81	1.13604	121	0.35042
2	31.5635	42	4.76253	82	1.09958	122	0.3413
3	29.9058	43	4.57050	83	1.06448	123	0.33246
4	28.3459	44	4.38736	84	1.03069	124	0.32390
5	26.8778	45	4.21263	85	0.99815	125	0.31559
6	25.4954	46	4.04589	86	0.96681	126	0.30754
7	24.1932	47	3.88673	87	0.93662	127	0.29974
8	22.5662	48	3.73476	88	0.90753	128	0.29216
9	21.8094	49	3.58962	89	0.87950	129	0.28482
10	20.7184	50	3.45097	90	0.85248	130	0.27770
11	19.6891	51	3.31847	91	0.82643	131	0.27078
12	18.7177	52	3.19183	92	0.80132	132	0.26408
13	17.8005	53	3.07075	93	0.77709	133	0.25757
14	16.9341	54	2.95896	94	0.75373	134	0.25125
15	16.1156	55	2.84421	95	0.73119	135	0.24512
16	15.3418	56	2.73823	96	0.70944	136	0.23916
17	14.6181	57	2.63682	97	0.68844	137	0.23338
18	13.9180	58	2.53973	98	0.66818	138	0.22776
19	13.2631	59	2.44677	99	0.64862	139	0.22231

Part 4
Installation

1. Precaution on Installation

1). Measure the necessary length of the connecting pipe, and make it by the following way.

a. Connect the indoor unit at first, then the outdoor unit.

Bend the tubing in proper way. Do not harm them.

Specially Notice the pipe length/height/dimension of each capacity.

Maximum pipe length

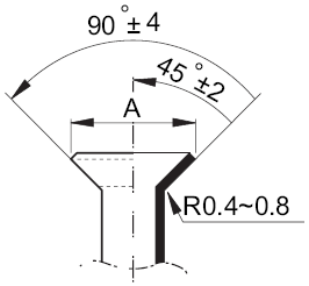
Model	Max. Length	Max. Elevation
12,000Btu/h	15m	8m
18,000Btu/h~30,000Btu/h	25m	15m
36,000Btu/h	30m	20m
42,000Btu/h~60,000Btu/h	50m	25m

Piping sizes

Model	Liquid(mm)	Gas(mm)
12,000Btu/h~18,000Btu/h	6.4	12.7
24,000Btu/h	9.5	15.9
30,000Btu/h~60,000Btu/h(Cooling Only)	9.5	15.9
42,000 Btu/h(Cooling & Heating)	9.5	19
30,000Btu/h~60,000Btu/h(Cooling & Heating)	12.7	19

CAUTIONS

- Daub the surfaces of the flare pipe and the joint nuts with frozen oil, and wrench it for 3~4 rounds
- With hands before fasten the flare nuts.
- Be sure to use two wrenches simultaneously when you connect or disconnect the pipes.

Pipe gauge	Tightening torque	Flare dimension A Min (mm) Max		Flare shape
Φ6.4	15～16N.m (153～163 kgf.cm)	8.3	8.7	
Φ9.5	25～26N.m (255～265kgf.cm)	12.0	12.4	
Φ12.7	35～36N.m (357～367kgf.cm)	15.4	15.8	
Φ15.9	45～47N.m (459～480 kgf.cm)	18.6	19.1	
Φ19.1	65～67N.m (663～684kgf.cm)	22.9	23.3	

b. The stop value of the outdoor unit should be closed absolutely (as original state). Every time you connect it, first loosen the nuts at the part of stop value, then connect the flare pipe immediately (in 5 minutes). If the nuts have been loosened for a long time, dusts and other impurities may enter the pipe system and may cause malfunction later. So please expel the air out of the pipe with refrigerant before connection.

c. Expel the air after connecting the refrigerant pipe with the indoor unit and the outdoor unit. Then fasten the nuts at the repair-points.

2) Locate The Pipe

a. Drill a hole in the wall (suitable just for the size of the wall conduit), then set on the fittings such as the wall conduit and its cover.

b. Bind the connecting pipe and the cables together tightly with binding tapes. Do not let air in, which will cause water leakage by condensation.

c. Pass the bound connecting pipe through the wall conduit from outside. Be careful of the pipe allocation to do no damage to the tubing.

3) Connect the pipes.

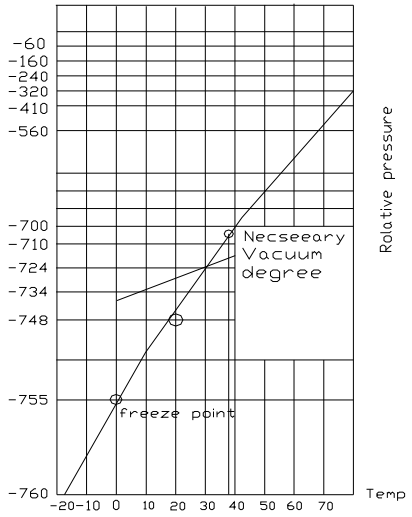
4) Then, open the stem of stop values of the outdoor unit to make the refrigerant pipe connecting the indoor unit with the outdoor unit in fluent flow.

5) Be sure of no leakage by checking it with leak detector or soap water.

6) Cover the joint of the connecting pipe to the indoor unit with the soundproof / insulating sheath (fittings), and bind it well with the tapes to prevent leakage.

2. Vacuum Dry and Leakage Checking

2.1 Vacuum Dry: use vacuum pump to change the moisture (liquid) into steam (gas) in the pipe and discharge it out of the pipe to make the pipe dry. Under one atmospheric pressure, the boiling point of water(steam temperature) is 100□. Use vacuum pump to make the pressure in the pipe near vacuum state, the boiling point of water falls relatively. When it falls under outdoor temperature, the moisture in the pipe will be vaporized.

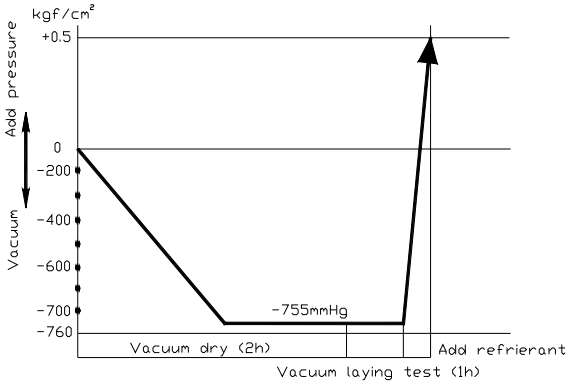


2.2 Vacuum dry procedure

There are two methods of vacuum dry due to different construction environment: common vacuum dry, special vacuum dry.

□. Common vacuum dry procedure

- Vacuum dry (for the first time)---connect the all-purpose detector to the inlet of liquid pipe and gas pipe, and run the vacuum pump more than two hours (the vacuum pump should be below -755mmHg)
- If the pump can't achieve below -755mmHg after pumping 2 hours, moisture or leakage point will still exist in the pipe. At this time, it should be pumped 1 hour more.
- If the pump can't achieve -755mmHg after pumping 3 hours, please check if there are some leakage points.
- Vacuum placement test: place 1 hour when it achieves -755mmHg, pass if the vacuum watch shows no rising. If it rises, it shows there's moisture or leakage point.
- Vacuuming from liquid pipe and gas pipe at the same time.
- Sketch map of common vacuum dry procedure.



□. Special vacuum dry procedure

- This vacuum dry method is used in the following conditions:
- There's moisture when flushing the refrigerant pipe.
- Rainwater may enter into the pipe.
- Vacuum dry for the first time ····· 2h pumping

□. Vacuum destroy for the second time ····· Fill nitrogen to 0.5Kgf/cm^2

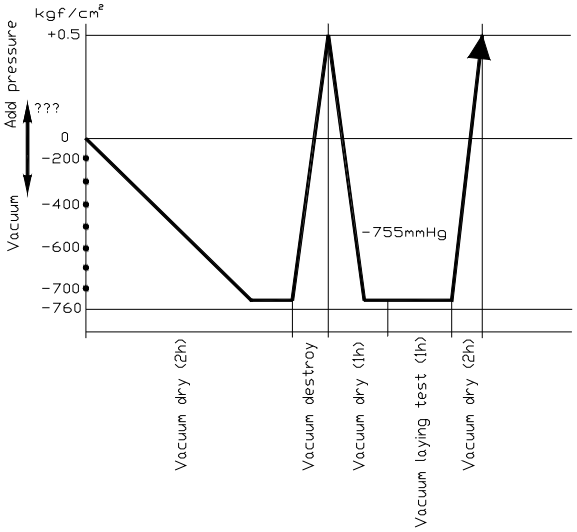
Because nitrogen is for drying gas, it has vacuum drying effect during vacuum destroy. But if the moisture is too much, this method can't dry thoroughly. So, please pay more attention to prevent water entering and forming condensation water.

□. Vacuum dry for the second time·····1h pumping

Determinant: Pass if achieving below -755mmHg. If -755mmHg can't be achieved in 2h, repeat procedure □ and □.

□. Vacuum placing test ····· 1h

□. Sketch map of special vacuum dry procedure



3. Additional Refrigerant Charge

Caution

● Refrigerant cannot be charged until field wiring has been completed.

● Refrigerant may only be charged after performing the leak test and the vacuum pumping.

● When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.

● Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant is charged.

● Refrigerant containers shall be opened slowly.

● Always use protective gloves and protect your eyes when charging refrigerant.

The outdoor unit is factory charged with refrigerant. Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit

R(g) D(mm) / L(m)	φ6.4	Φ9.5	Φ12.7
Less than 5m (One-way)	—	—	—
Added Refrigerant When Over 5m(One-way)	11g/m×(L-5)	30g/m×(L-5)	60g/m×(L-5)

Remark:

R (g): Additional refrigerant to be charged

L (m): The length of the refrigerant pipe (one-way)

D (mm): Liquid side piping diameter

4. Water Drainage

4.1 Gradient and Supporting

4.1.1 Keep the drainpipe sloping downwards at a gradient of at least 1/100. Keep the drainpipe as short as possible and eliminate the air bubble.

4.1.2 The horizontal drainpipe should be short. When the pipe is too long, a prop stand must be installed to keep the gradient of 1/100 and prevent bending. Refer to the following table for the specification of the prop stand.

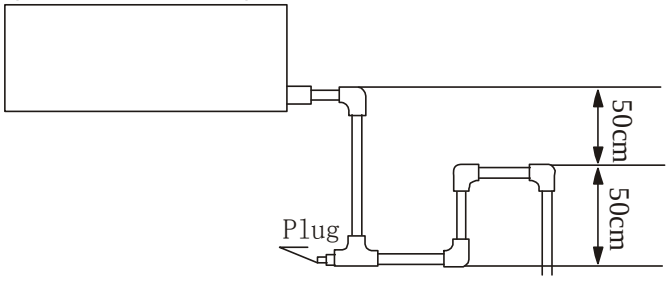
	Diameter	Distance between the prop stands
Hard PVC pipe	25~40mm	1.5~2m

4.1.3. Precautions

- The diameter of drainpipe should meet the drainage requirement at least.
- The drainpipe should be heat-insulated to prevent atomization.
- Drainpipe should be installed before installing indoor unit. After powering on, there is some water in water-receiver plate. Please check if the drain pump can operate correctly.
- All connection should be firm.
- Wipe color on PVC pipe to note connection.
- Climbing, horizontal and bending conditions are prohibited.
- The dimension of drainpipe can't less than the connecting dimension of indoor drainpipe.
- Heat-insulation should be done well to prevent condensation.
- Indoor units with different drainage type can't share one convergent drainpipe.

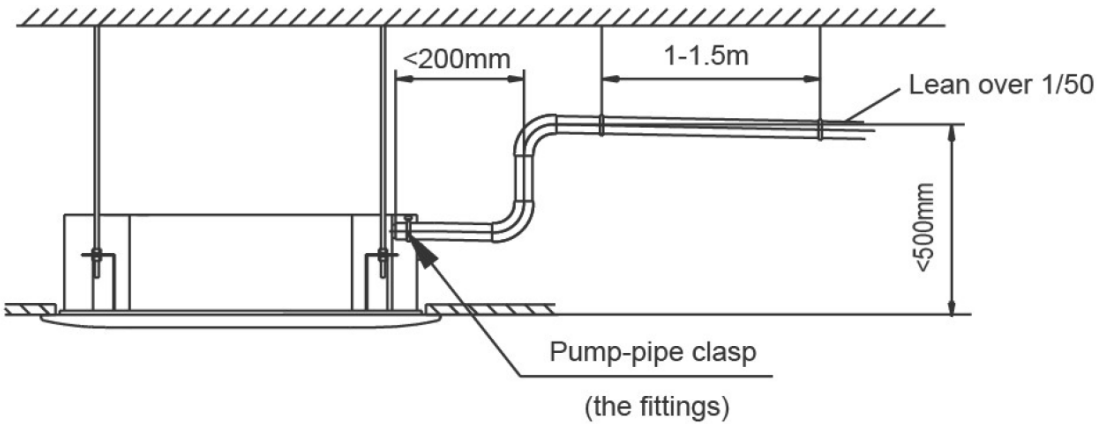
4.2 Drainpipe Trap

4.2.1. If the pressure at the connection of the drainpipe is negative, it needs to design drainpipe trap.
4.2.2. Every indoor unit needs one drainpipe trap.
4.2.3. A plug should be designed to do cleaning.

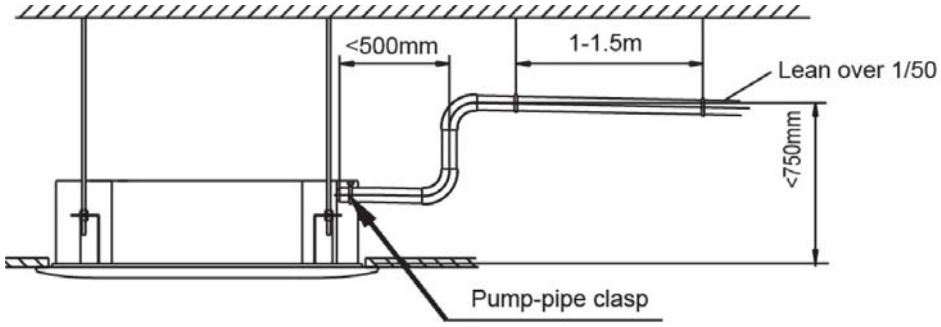


4.3 Upwards drainage (drain pump)

For Four-way cassette(compact)

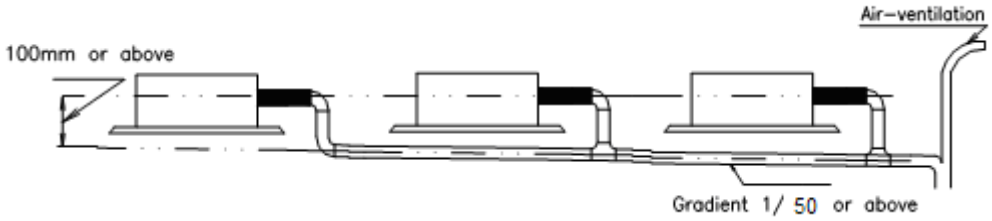


For Four-way cassette



4.4 Convergent drainage

4.4.1. The number of indoor units should be as small as possible to prevent the traverse main pipe overlong.
4.4.2. Indoor unit with drain pump and indoor unit without drain pump should be in different drainage system.



4.4.3. Selecting the diameter

Number of connecting indoor units→Calculate drainage volume→Select the diameter
Calculate allowed volume =Total cooling capacity of indoor units(HP)×2 (l/ hr)

	Allowed volume(lean 1/50) (l/ hr)	I.D. (mm)	Thick
Hard PVC	≤14	Φ25	3.0
Hard PVC	14＜≤88	Φ30	3.5
Hard PVC	88＜≤334	Φ40	4.0
Hard PVC	175＜≤334	Φ50	4.5
Hard PVC	334＜	Φ80	6.0

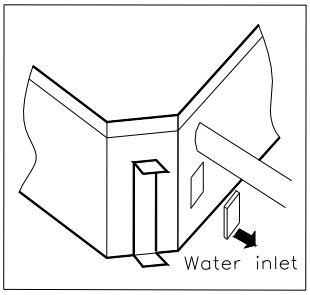
4.5 Drainage test

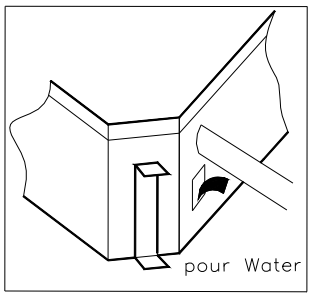
4.5.1Drainage without drain pump

After finishing drainpipe installation, pour some water into the water receiver plate to check if the water flows smoothly.

4.5.2 Drainage with drain pump

 Poke the Water Level Switch, remove the cover, use water pipe to pour 2000ml water into the water receipt plate through the water inlet.





 Turn on the power to Cooling operation. Check the pump's operation and switch on the Water Level Switch. Check the pump's sound and look into the transparent hard pipe in the outlet at the same time to check if the water can discharge normally.

 Stop the air conditioner running, turn off the power, and put back the cover.

- Stop the air conditioner. After 3 minutes, check if it has abnormity. If the collocation of drainpipes is illogical, the water will flow back overfull, which will cause the alarm lamp flashes, even overflow from the water receipt plate.
- Keep on pouring water until it gives an alarm signal for high water level, check if the pump drains water at once. If the water level can't fall below the alarmed water level after 3 minutes, the air conditioner will stop. Turn off the power and drain the remained water, and then turn on the air conditioner.

Note: the drain stuff in the main water receipt plate is for maintenance. Stuff up the drain stuff to prevent water leakage.

5. Insulation Work

5.1 Insulation material and thickness

5.1.1. Insulation material

Insulation material should adopt the material which is able to endure the pipe's temperature: no less than 70□ in the high-pressure side, no less than 120□ in the low-pressure side(For the cooling type machine, no requirements at the low-pressure side.)

◆ Example: Heat pump type----Heat-resistant Polyethylene foam (withstand above 120□)
Cooling only type----Polyethylene foam (withstand above 100□)

5.1.2. Thickness choice for insulation material

Insulation material thickness is as follows:

	Pipe diameter (mm)	Adiabatic material thickness
Refrigerant pipe	Φ6.4—Φ25.4	10mm
	Φ28.6—Φ38.1	15mm
Drainage pipe	Inner diameterΦ20—Φ32	6mm

5.2 Refrigerant pipe insulation

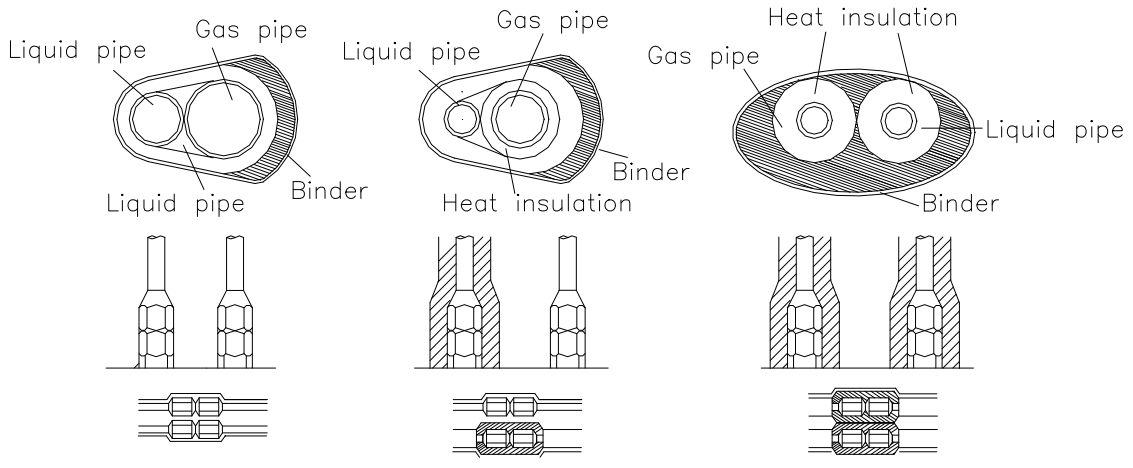
5.2.1. Work Procedure

□ Before laying the pipes, the non-jointing parts and non-connection parts should be heat insulated.

□ When the gas proof test is eligible, the jointing area, expanding area and the flange area should be heat insulated

5.2.2. Insulation for non-jointing parts and non-connection parts

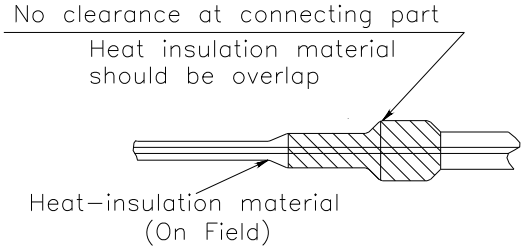
wrong	right	
Gas pipe and liquid pipe should not be put together to insulate	Insulate the gas pipe (cooling only)	Insulate the gas pipe and liquid pipe



For construction convenience, before laying pipes, use insulation material to insulate the pipes to be deal with, at the same time, at two ends of the pipe, remain some length not to be insulated, in order to be welded and check the leakage after laying the pipes.

5.2.3. Insulate for the jointing area, expanding area and the flange area

- Insulate for the jointing area, expanding area and the flange area should be done after checking leakage of the pipes
- Make sure there's no clearance in the joining part of the accessorial insulation material and local preparative insulation material.



5.3 Drainage pipe insulation

The connection part should be insulated, or else water will be condensing at the non-insulation part.

5.4 Note

5.4.1 The jointing area, expanding area and the flange area should be heat insulated after passing the pressure test

5.4.2 The gas and liquid pipe should be heat insulated individually, the connecting part should be heat insulated individually.

5.4.3 Use the attached heat-insulation material to insulate the pipe connections (pipes' tie-in ,expand nut) of the indoor unit

6. Wiring

Please refer to the Wiring Diagram.

7. 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.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop values are both opened.
- The air conditioner is pre-heated by turning on the power.

(3) According to the user's requirement, install the remote controller when the remote controller's signal can reach the indoor unit smoothly.
(4) Test operation
Set the air conditioner under the mode of "COOLING" with the remote controller, and check the following points.
Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

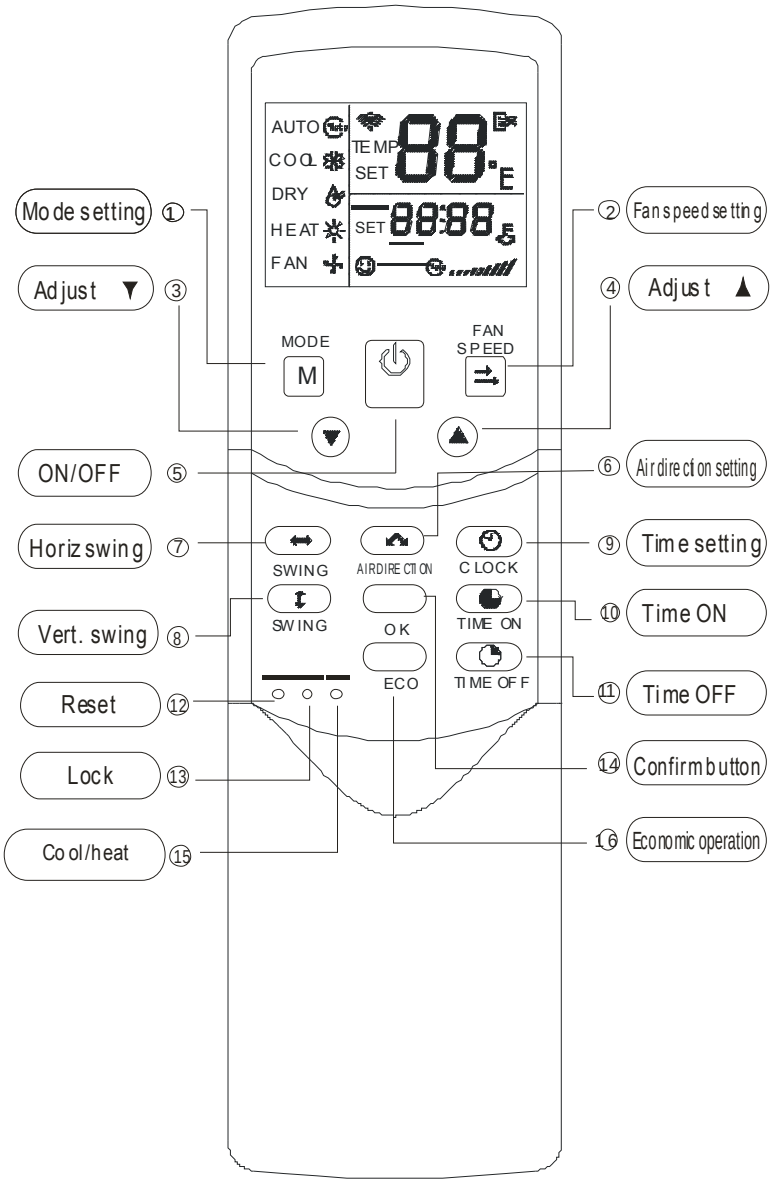
Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

Part 5
Control

1. Controller

1.1 R05/BGE



Visual photo

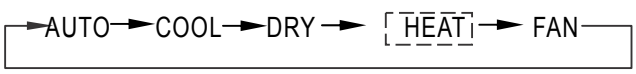
General Function for wireless remote controller:

Model and Specification

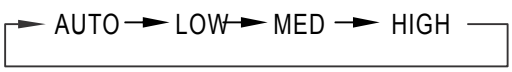
Model	R05/BGE
Rated voltage	3.0V(2pieces of LR03 7 # batteries)
Min voltage for sending signal of CPU	2.4V
Effective receiving distance	8m~11m
Operation condition	-5~60□

Buttons and functions

1. MODE: Once pressing, running mode will be selected in the following sequence:



NOTE: No heating mode for cool only type unit.
2. FAN SPEED: Fan speed will be selected in following sequence once pressing this button:



3. Adjust ▼ : Decrease the set temp. Keeping pressing will decrease the temp with 1□ per 0.5s.

4. Adjust ▲ : Increase the set temp. Keeping pressing will increase the temp with 1□ per 0.5s.

5. ON/OFF: For turning on or turning off the air conditioner.

6. AIR DIRECTION: Activate swing function of air deflector. Once pressing, air deflector will turn 6°. For normal operation and better cooling and heating effect, deflector will not turn to the degree which is the state of deflector when the unit is turned off.(Only available when remote controller is used with corresponding unit.)

7. HORIZ SWING: Activate or turn off horizontal swing function. (Only available when remote controller is used with corresponding unit, i.e. Ceiling & floor type)

8. VERT SWING: Activate or turn off vertical swing function.

(Only available when remote controller is used with corresponding unit.)

9. CLOCK: Display the current time. (12:00 is displayed when resetting or electrifying for the first time.)

Press CLOCK for 5s, icon indicating hour will flash with 0.5s. Press it again; icon indicating minute will flash with 0.5s. ▼and▲are used to adjust the figure. Setting or modification is effective only by pressing OK button to make confirmation.

10. TIME ON: For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.

11. TIME OFF: For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.

Adjust the figure to 0.00 will cancel time ON setting.

12. RESET (inner located): Press this button with a needle of 1mm to cancel the current setting and reset remote controller.

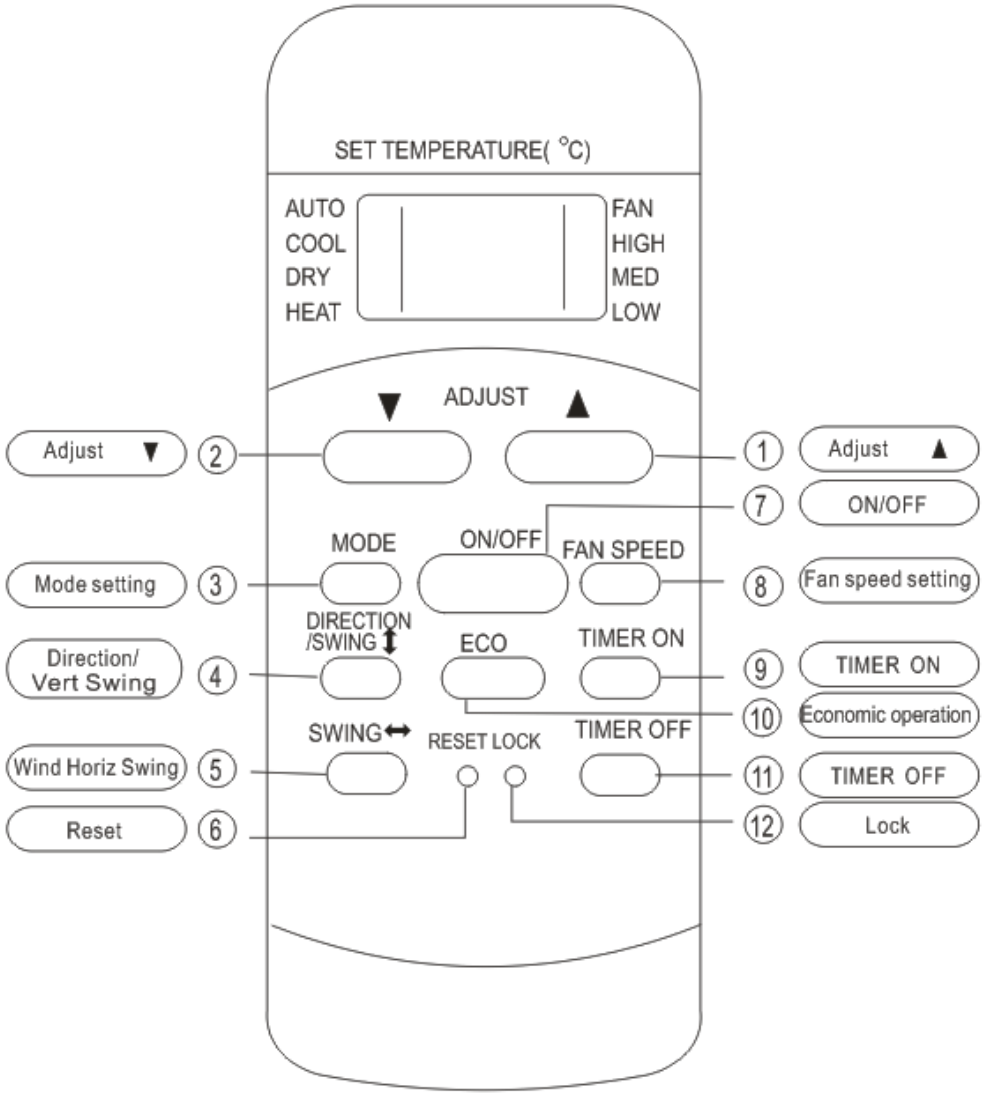
13. LOCK (inner located): Press this button with a needle of 1mm to lock or unlock the current setting.

14. OK: Used to confirm the time setting and modification.

15. COOL/HEAT (inner located): Press this button with a needle of 1mm to shift mode between COOL only and COOL&HEAT. During setting, background light will be lightened. Factory default mode is COOL &HEAT.

16. ECO: Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)

1.2 RG51Q/BG(C)E



General Function for wireless remote controller:

Model and Specification

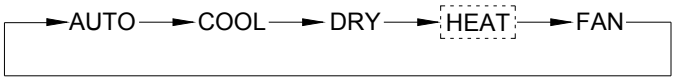
Model	RG51Q/BG(C)E
Rated voltage	3.0V(Dry batteries R03/LR03×2)
Min voltage for sending signal of CPU	2.0V
Effective receiving distance	8m(when using 3.0 voltage, it Gets 11m)
Operation condition	-5~60℃

Buttons and functions

1. Adjust ▼ : Decrease the set temp. Keeping pressing will decrease the temp with 1℃ per 0.5s.

2. Adjust ▲ : Increase the set temp. Keeping pressing will increase the temp with 1℃ per 0.5s.

3. MODE: Once pressing, running mode will be selected in the following sequence:



NOTE: No heating mode for cool only type unit.

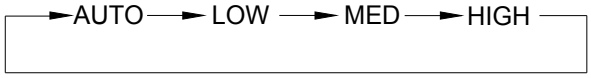
4. DIRECTION/VERT SWING: Used to stop or start horizontal louver movement or set the desired up/down air flow direction. The louver changes 6 degree in angle for each press. If keep pushing more than 2 seconds, the louver will swing up and down automatically.

5. HORIZ SWING: Used to stop or start vertical louver movement.

6. RESET (inner located): Press this button with a needle of 1mm to cancel the current setting and reset remote controller.

7. ON/OFF: For turning on or turning off the air conditioner.

8. FAN SPEED: Fan speed will be selected in following sequence once pressing this button:



9. TIME ON: For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.

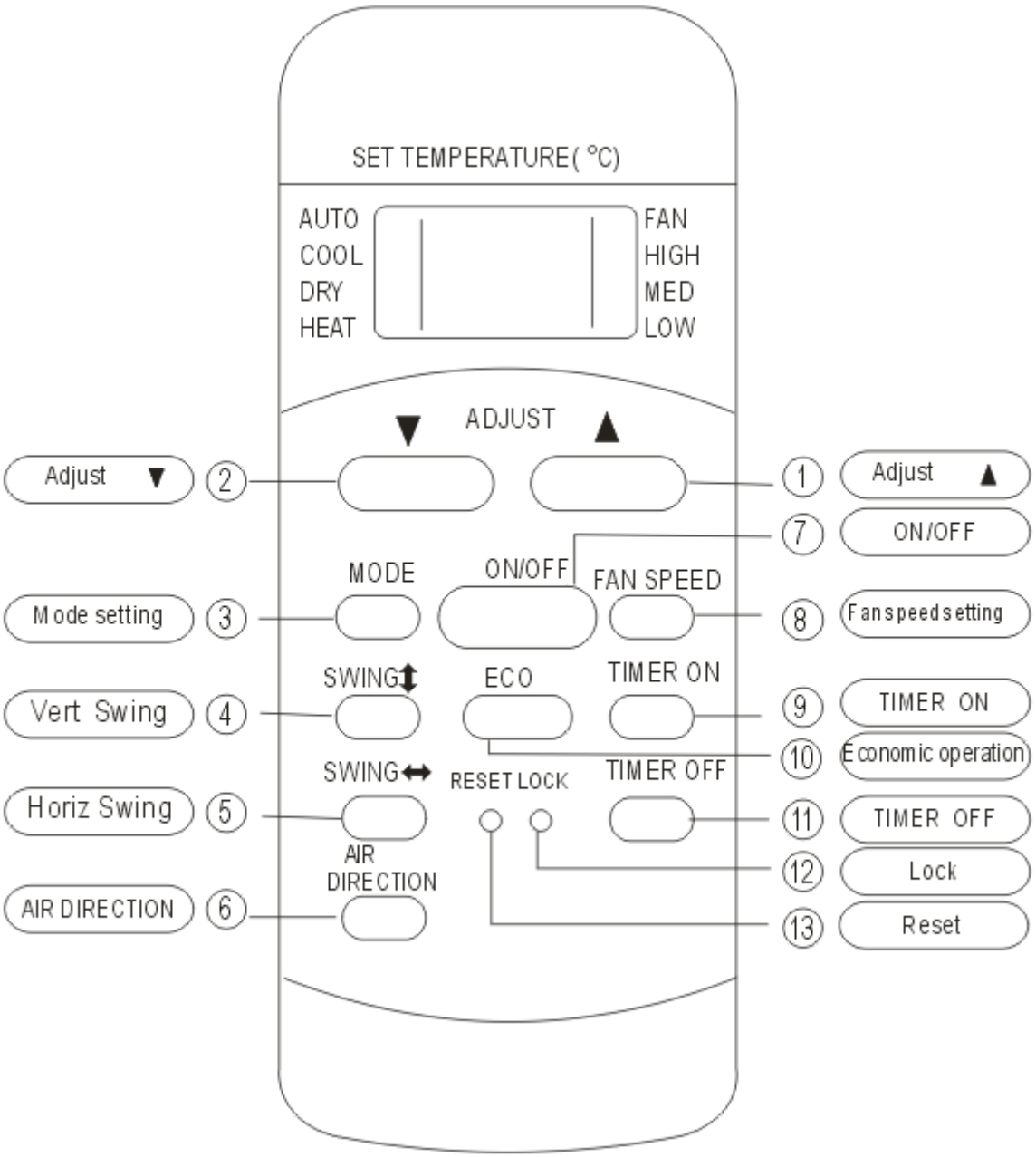
10. ECO: Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)

11. TIME OFF: For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.

Adjust the figure to 0.00 will cancel time ON setting.

12. LOCK (inner located): Press this button with a needle of 1mm to lock or unlock the current setting.

1.3 RG51Q1/BG(C)E



General Function for wireless remote controller:

Model and Specification

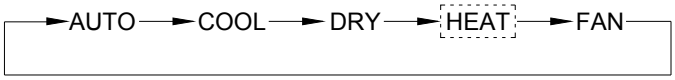
Model	RG51Q1/BG(C)E
Rated voltage	3.0V(Dry batteries R03/LR03×2)
Min voltage for sending signal of CPU	2.0V
Effective receiving distance	8m(when using 3.0 voltage, it Gets 11m)
Operation condition	-5~60℃

Buttons and functions

1. Adjust ▼ : Decrease the set temp. Keeping pressing will decrease the temp with 1℃ per 0.5s.

2. Adjust ▲ : Increase the set temp. Keeping pressing will increase the temp with 1℃ per 0.5s.

3. MODE: Once pressing, running mode will be selected in the following sequence:



NOTE: No heating mode for cool only type unit.

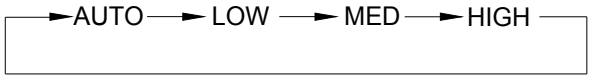
4. VERT SWING: Used to stop or start horizontal louver movement or set the desired up/down air flow direction. The louver changes 6 degree in angle for each press. If keep pushing more than 2 seconds, the louver will swing up and down automatically.

5. HORIZ SWING: Used to stop or start vertical louver movement.

6. AIR DIRECTION: Used to set the desired up/down air flow direction. The louver changes 6 degree in angle for each press.

7. ON/OFF: For turning on or turning off the air conditioner.

8. FAN SPEED: Fan speed will be selected in following sequence once pressing this button:



9. TIME ON: For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.

10. ECO: Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)

11. TIME OFF: For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.

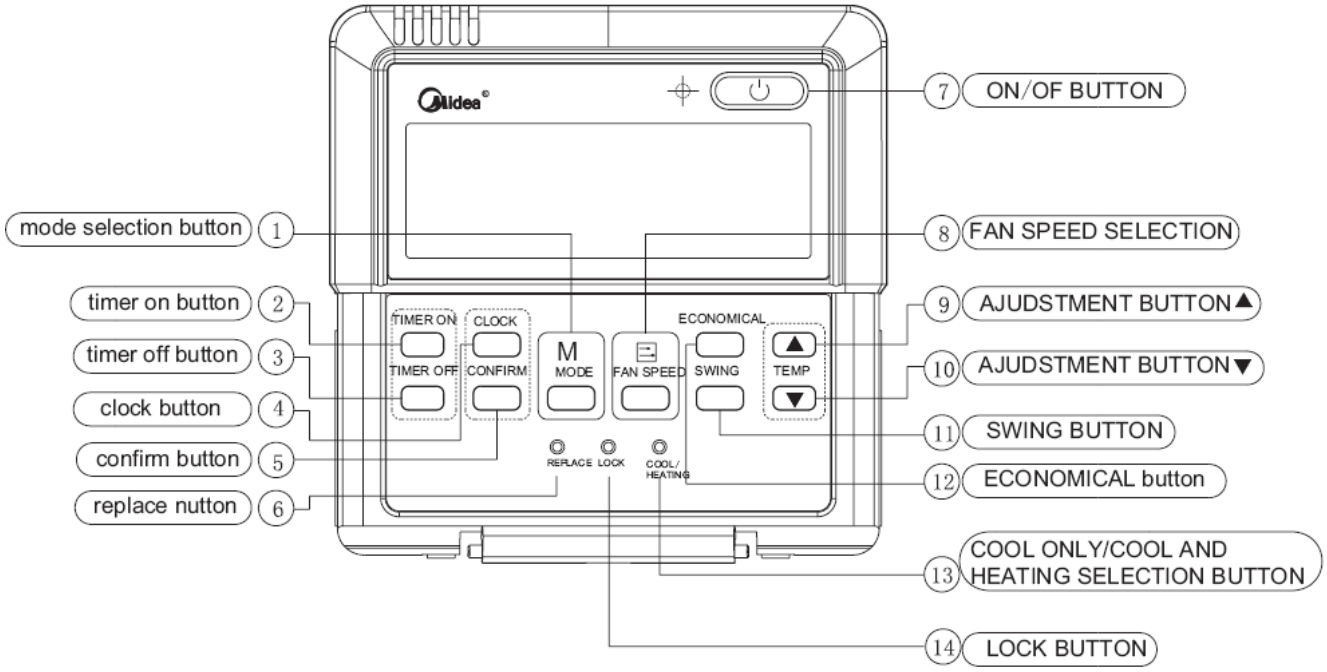
Adjust the figure to 0.00 will cancel time ON setting.

12. LOCK (inner located): Press this button with a needle of 1mm to lock or unlock the current setting.

13.RESET (inner located): Press this button with a needle of 1mm to cancel the current setting and reset remote controller.

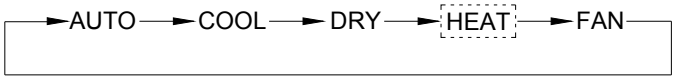
1.4 KJR-10B

Name and functions of buttons on the wire controller



1 mode selection button:

It is used to select mode, push the button one time, then the operation modes will change In turn as follows:



Remark: no heating mode if wire controller is set as the cool only.

2 Timer on button:

Push the button to set TIMER ON, each time you push the button the time moves forward by o.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER ON, then adjust the time of TIMER ON as 0.0

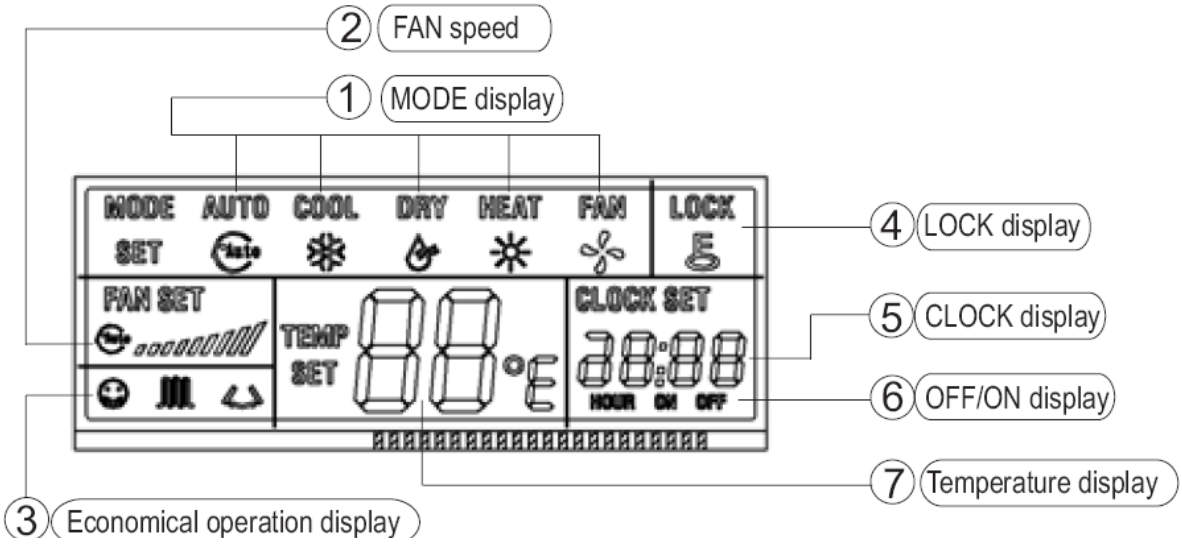
3 Timer off button:

Push the button to set TIMER OFF, each time you push the button the time moves forward by o.5 hours. When the set time is over 10 hours, each time you push the button the time moves forward by 1 hour. If want to cancel the TIMER OFF, then adjust the time of TIMER OFF as 0.0

4 CLOCK button:

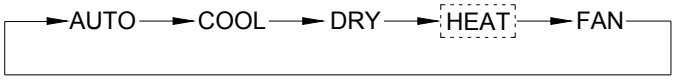
Normally display the clock set currently (display 12:00 for the first electrifying or resetting). When push the button for 4 seconds, the hour part on the clock display flashes every 0.5 seconds, then push button and to adjust hour; push the button CLOCK again, the minute part flashes every 0.5 seconds, then push and button to adjust minute. When set clock or alter clock setting, must push the confirm button to complete the setting

Name and function of LCD on the wire controller



1 Mode select button (MODE):

Press MODE button to select “COOL”, “DRY” , "HEAT", or "FAN ONLY" mode.(HEAT is invalid for COOL ONLY wire controller.)



2 Fan speed button (FAN SPEED)

Press FAN SPEED to select fan speed from "AUTO", "LOW"," MED" , and "HIGH”. NOTE: some air conditioners have no MED fan speed, and then the MED is regarded as HIGH.

3 Economical operation displays:

Press ECONOMICAL to display economical operation, if press ECONOMICAL again then the display disappears

4 Lock display

Press LOCK to display the icon of LOCK. Press the button again then the icon of LOCK disappears. In the mode of LOCK, all the buttons are invalid except for LOCK button.

5 CLOCK display.

Usually display the clock set currently. Press the button CLOCK for 4 seconds, the HOUR part will flash, press button ▲ and ▼ to adjust HOUR. Press the button CLOCK again, the minute part flash, press button▲ or▼ to adjust MINUTE. After clock set or clock operation, it must press CONFIRM to complete the set.

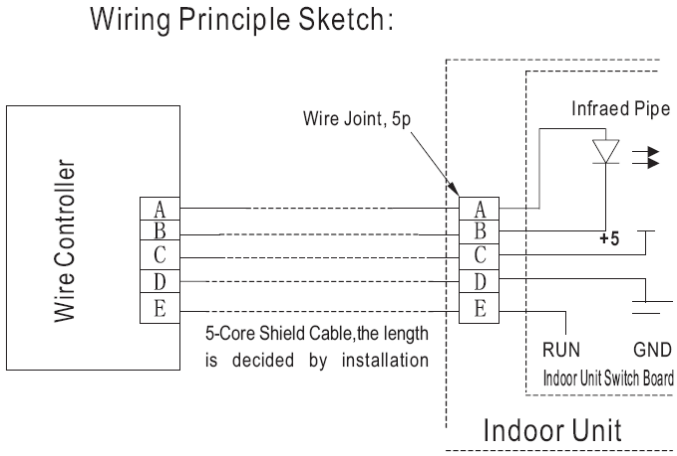
6 TIMER ON/OFF display:

Display ON at the state of TIMER ON adjustment or after only set the TIMER ON; Display OFF at the state of TIMER OFF adjustment or after only set the TIMER OFF; Display ON/OFF if simultaneously set the mode of TIMER ON and TIMER OFF.

7 Temperature display area:

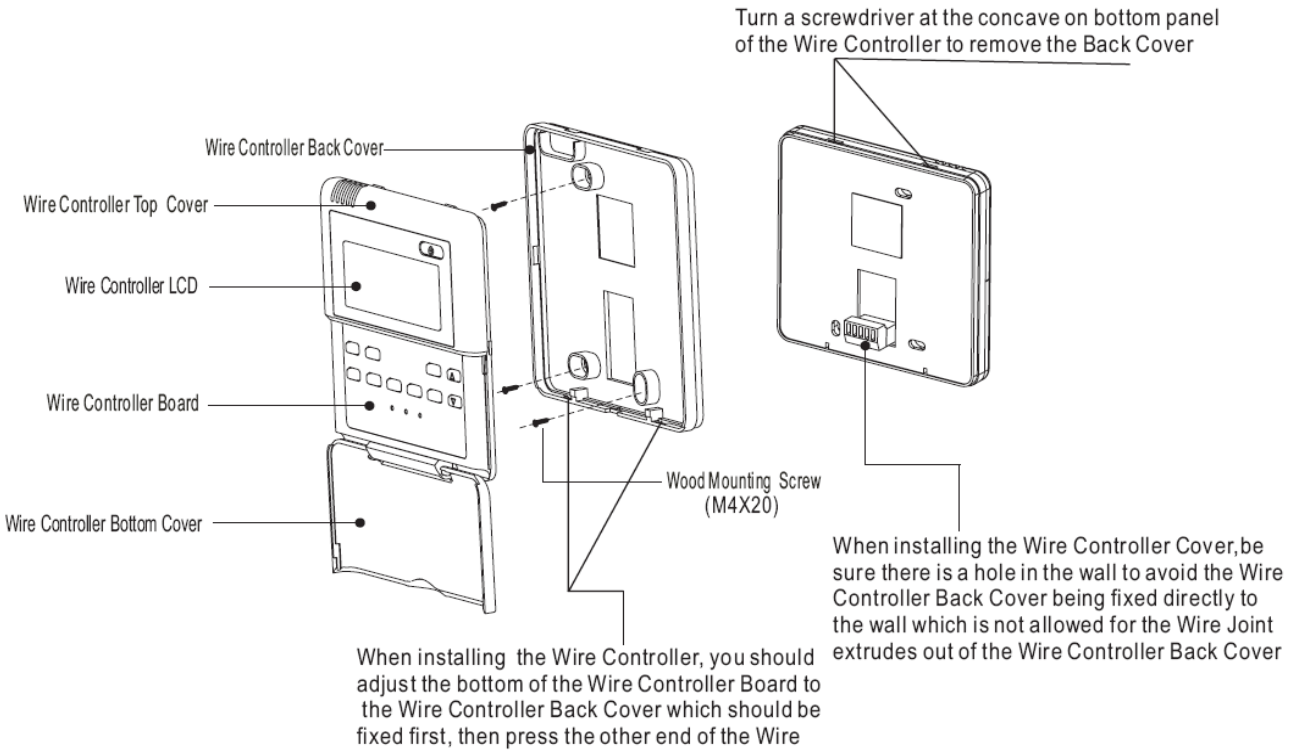
Usually display the set temperature. Press the buttons of and to set temperature, at the mode of FAN, there is no figure display in the area.

Installation



Installation Notice:

When the air conditioner needs the constant frequency wire Controller, be sure adding a Wire Joint with 5 terminal named A, B, C, D, E in indoor unit, and fixing a infrared emitter whose anode and cathode connecting with A and B near the receiver in the Indoor Unit Switch Board, then connecting the terminal +5v, GND, Run in the Switch Board to C,D,E respectively.



NOTE

Never turn screws too tightly, or else the cover would be dented or the Liquid Crystal breaks.

Please leave enough long cable for maintenance of the Wire Controller Board.