GD Midea Refrigeration Equipment Co.,Ltd

MULTI SPLIT TYPE, HEAT PUMP AIR CONDITIONERS

Technical service manual

R410A Multi DC inverter Indoor Unit

220~240V-1Ph-50Hz

Indoor Models

Cassette: MSQ4I-07/09/12HRDN1, MSQ4I-18HRIN1
MCA2I-07/09/12/18HRDN1
Ceiling&Floor: MUBI-12/18HRDN1
Console: MFF-07/09/12/18HRDN1
A5 Duct：MTBI-07/09/12/18HWDN1-Q

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SPSKLIMA
Strategic Products and Services

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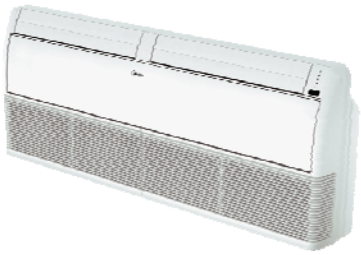
※The specifications, designs, and information in this book are subject to change without notice for product improvement.

1. General information of Indoor Units

Four-way cassette (compact) 	A5 Duct 
New Four-way cassette (compact) 	Console 
Ceiling & Floor 	Ceiling & Floor 

Model name	Dimension (mm)	Net/Gross weight (kg)
MSQ4I-07HRDN1	580x254x580	18/25
MSQ4I-09HRDN1	580x254x580	18/25
MSQ4I-12HRDN1	580x254x580	18/25
MSQ4I-18HRIN1	580x254x580	21/28
MCA2I-07HRDN1	570x260x570	16/19
MCA2I-09HRDN1	570x260x570	16/19
MCA2I-12HRDN1	570x260x570	16/19
MCA2I-18HRDN1	570x260x570	18/21
MUBI-12HRDN1	990x203x660	24/30
MUBI-18HRDN1	990x203x660	24/30
MFF-07HRDN1	700×210×600	13/19
MFF-09HRDN1	700×210×600	13/19
MFF-12HRDN1	700×210×600	15/20
MFF-18HRDN1	700×210×600	15/20
MTBI-07HWDN1-Q	700×210×635	19/25
MTBI-09HWDN1-Q	700×210×635	20/25
MTBI-12HWDN1-Q	700×210×635	19/25
MTBI-18HWDN1-Q	920×210×635	23/29

2. Features

2.1 New Four-way cassette type(compact)

(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

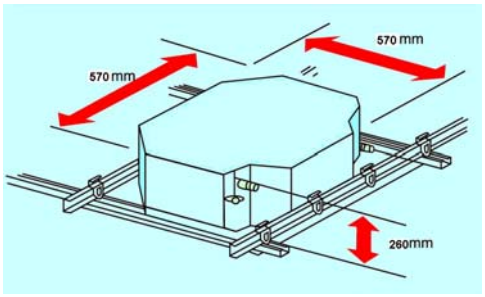
---Smoothes the air flow

---Makes air speed distribution to the heat exchange uniform

(4) Improvement for easy installation and maintenance

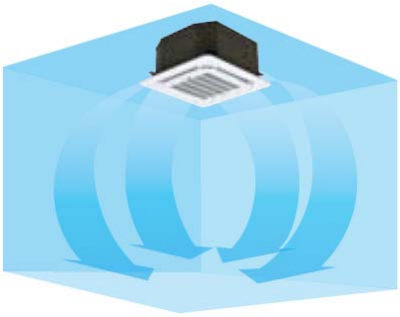
---Little space is required for installation into a shallow ceiling

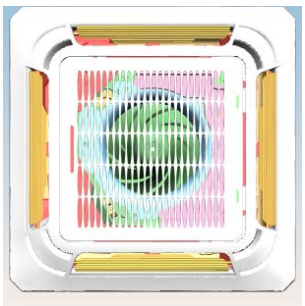
---Because of the compactness and weight reduction of the main unit and panel, all models can be installed without a hoist



(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.

2.2 Ceiling & Floor type

(1) New design, more modern and elegant appearance.

(2) Convenient installation

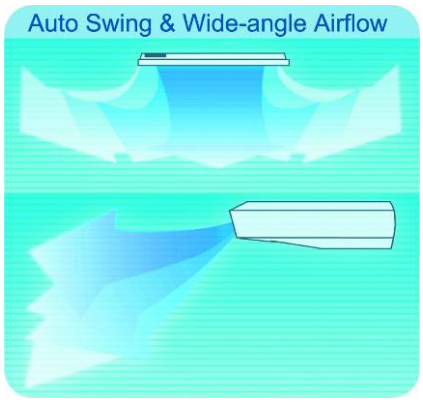
--The ceiling type can be easily installed into a corner of the ceiling even if the ceiling is very narrow

--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.

(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



(4) Three level fan speed, more humanism design, meets different air-supply requirement.

(5) Water proof by utilizing the absorbing plastic film on water collector

(6) Easy operation. Auto-restart function, remote control and optional wire control method.

(7) Low noise level plus compact size

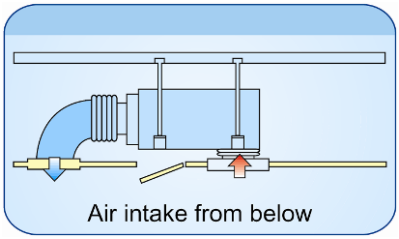
--Shape of the blades has been improved to prevent noise caused by turbulence.

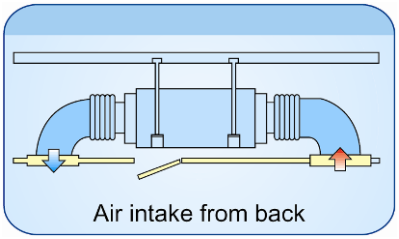
2.3 A5 Duct

(1) New structure design.

(2) Built-in drainage pump (Optical).

(3) Two air intake ways: from below or back (standard).





(4) Wire controller is standard.

(5) Three speeds indoor unit.

(6) Fresh air inlet hole is reserved.

(7) Optional Accessories

Front boar

Panel

Canvas air passage

Filter

2.4 Console

(1) Consumes up to 30% less energy than non-inverter units

——DC inverter compressor

——indoor fan motor adopts DC motor

(2) Achieves set temperature more quickly

——air supplying from top and bottom or from top only

——air inlet from four directions

(3) Compact unit body, space saving

——this unit body is very thin and harmonious with room. It is beautiful, elegant and space saving.

——lightweight and compact.

(4) Flexible installation.

——can be used for floor standing or lower wall applications

——as a floor standing floor model, it can be semi or fully recessed without loss of capacity.

(5) High efficiency filter

——built in Formaldehyde nemesis filter

——active-carbon and biological anti-virus filter is optional.

(6) Comfort

——flexible air blow: vertical auto swing and wide angle louvers ensure that warm air reaches the furthest corners of the room and increase the air flow coverage

——Low noise operation, lowest to 23Db

——Low starting power and precise room temperature adjustment

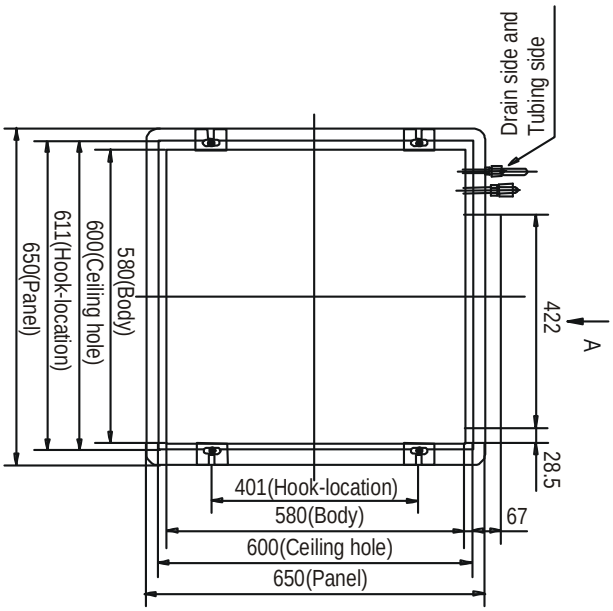
(7) Powerful mode can be selected for rapid cooling or heating.

(8) Easy cleaning grille and maintenance

(9) Indoor unit adopts DC motor, it has five level fan speed meet different requirements.

3. Dimensions

3.1 Four-way cassette type(compact) (7000Btu/h/9000Btu/h /12000Btu/h /18000Btu/h) :



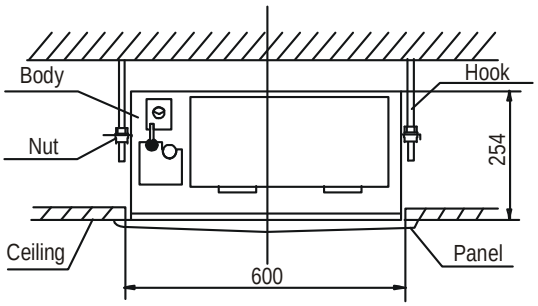
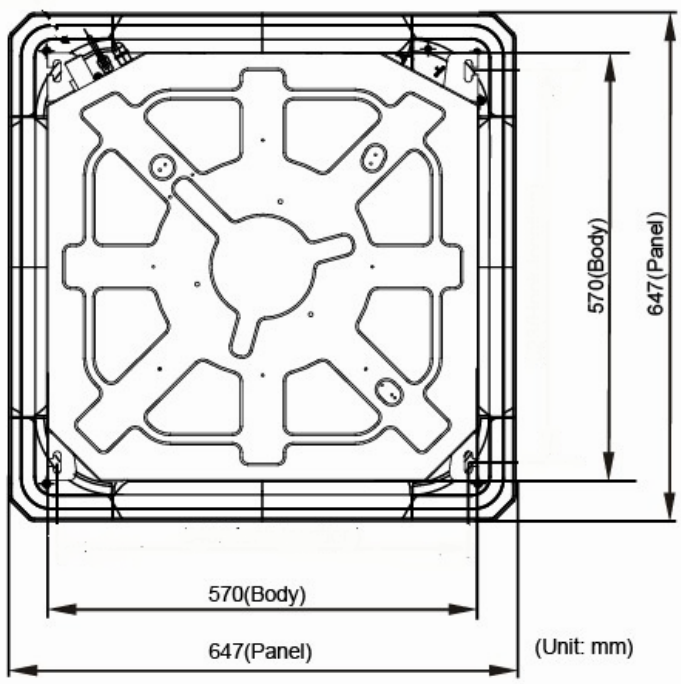
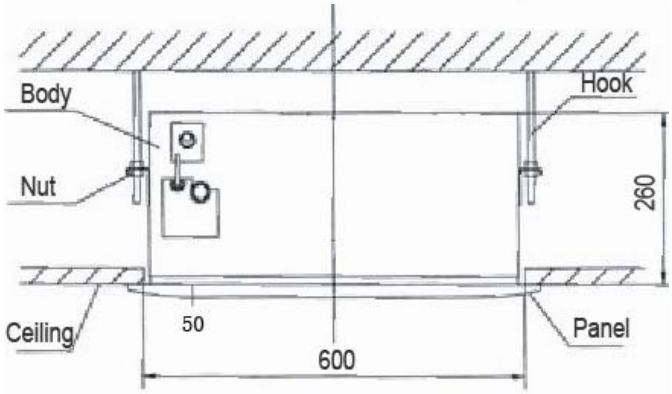


Chart 4

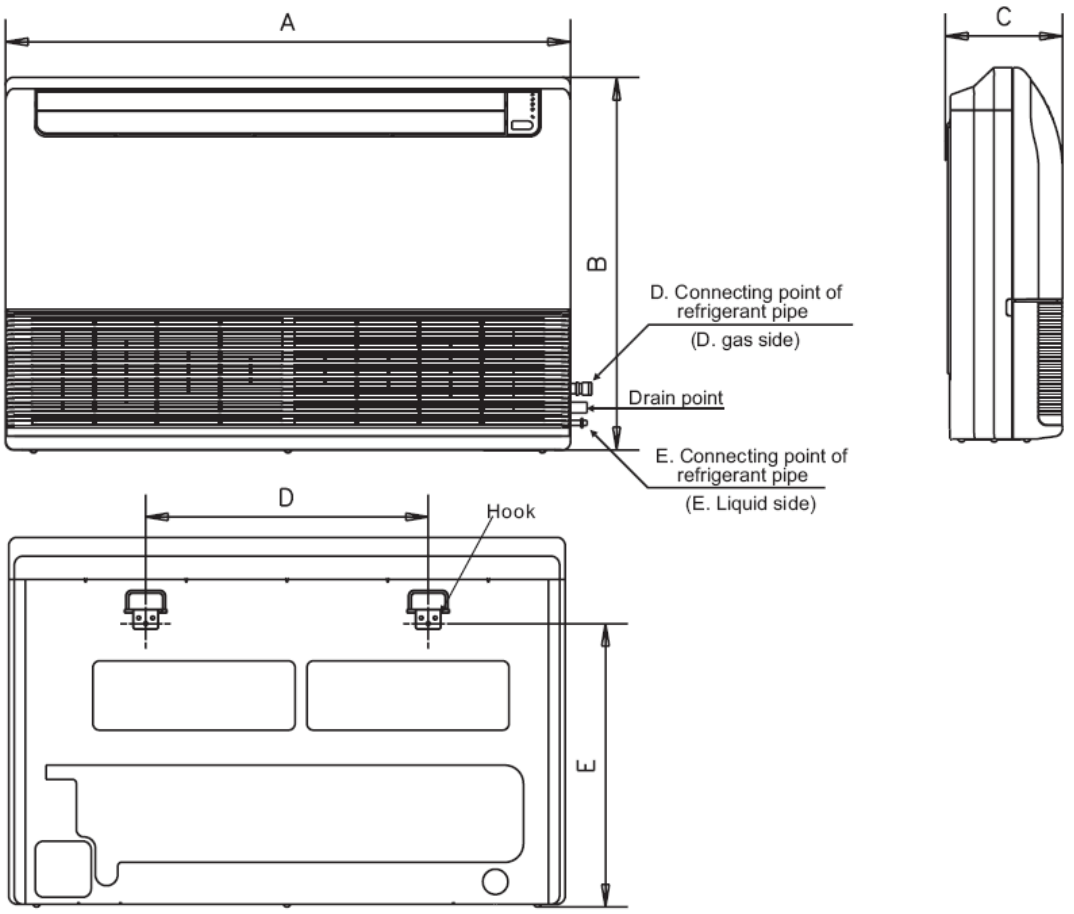
3.2 New Four-way cassette type(compact) (7000Btu/h/9000Btu/h /12000Btu/h /18000Btu/h) :



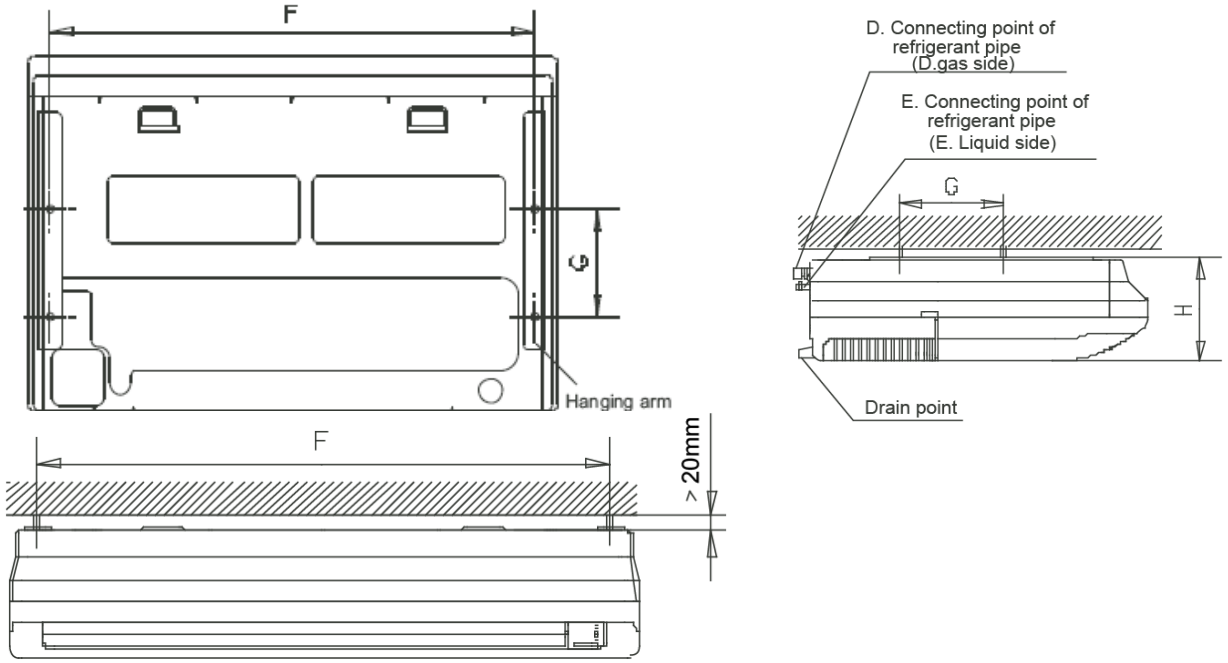


3.3 Ceiling & Floor (12000Btu/h/18000Btu/h):

a. Wall mounting installation



b. Ceiling installation

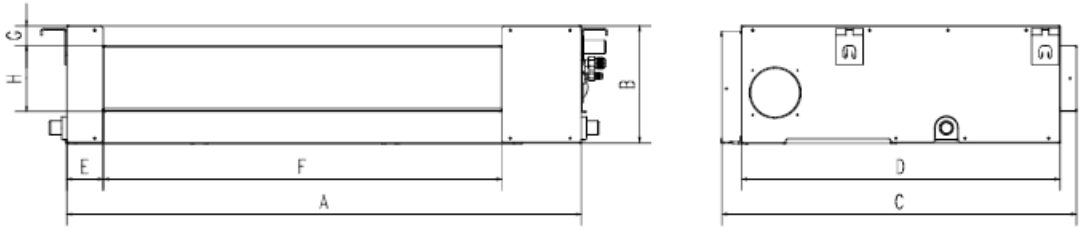


Mode \ Dimension	A	B	C	D	E	F	G	H
MUBI-12HRDN1	990	660	206	505	506	907	200	203
MUBI-18HRDN1	990	660	206	505	506	907	200	203

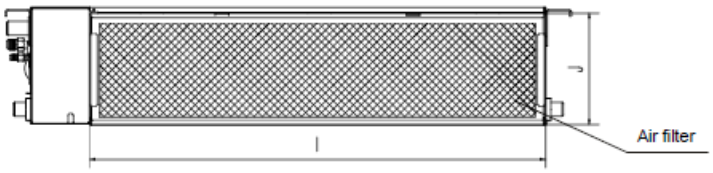
3.4 A5 Duct

Outline dimension and air outlet opening size

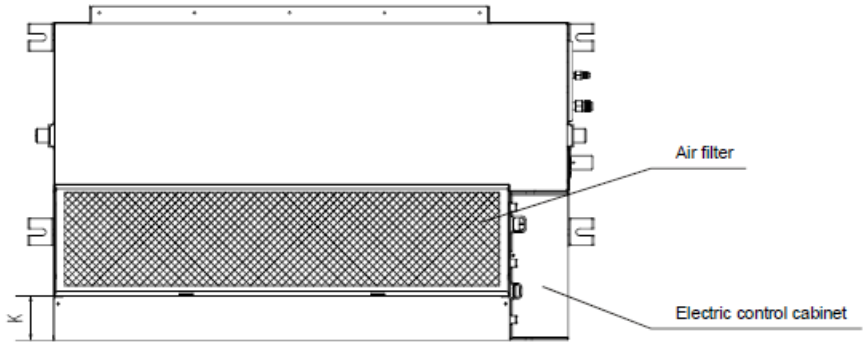
Unit: mm



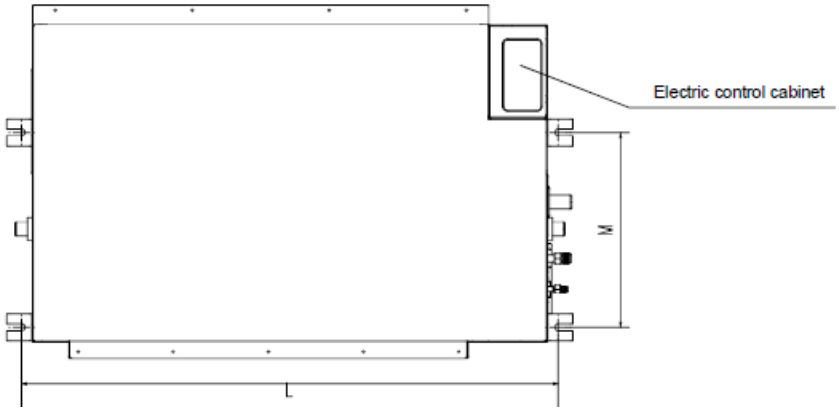
Air return opening size



Position size of descensional ventilation opening

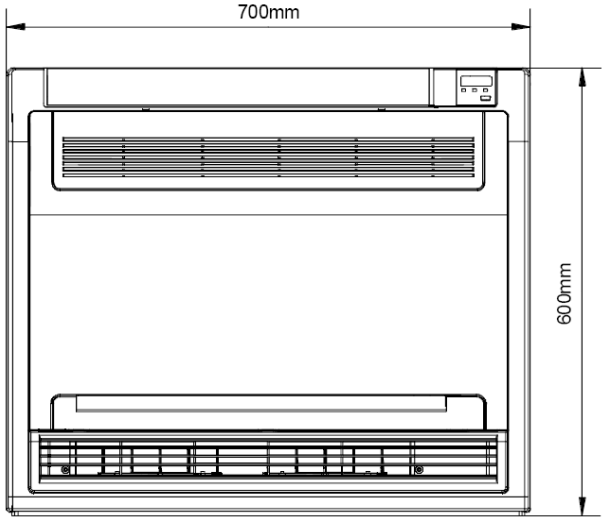


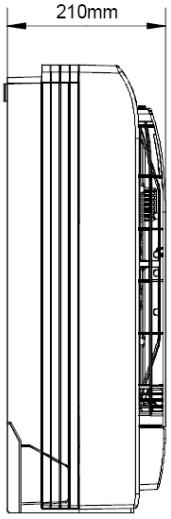
Size of mounted lug

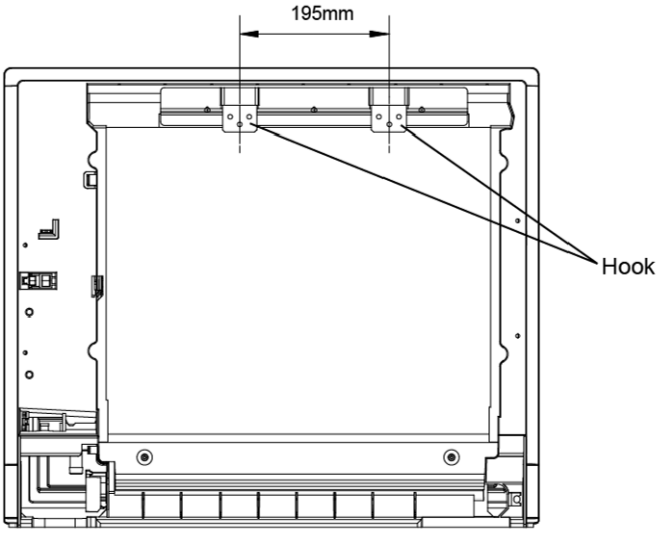


Capacity (KBtu)	Outline dimension(mm)				Air outlet opening size				Air return opening size			Size of outline dimension mounted plug	
	A	B	C	D	E	F	G	H	I	J	K	L	M
MTBI-07HWDN1-Q MTBI-09HWDN1-Q MTBI-12HWDN1-Q	700	210	635	570	65	493	35	119	595	200	80	740	350
MTBI-18HWDN1-Q	920	210	635	570	65	713	35	119	815	200	80	960	350

3.5 Console

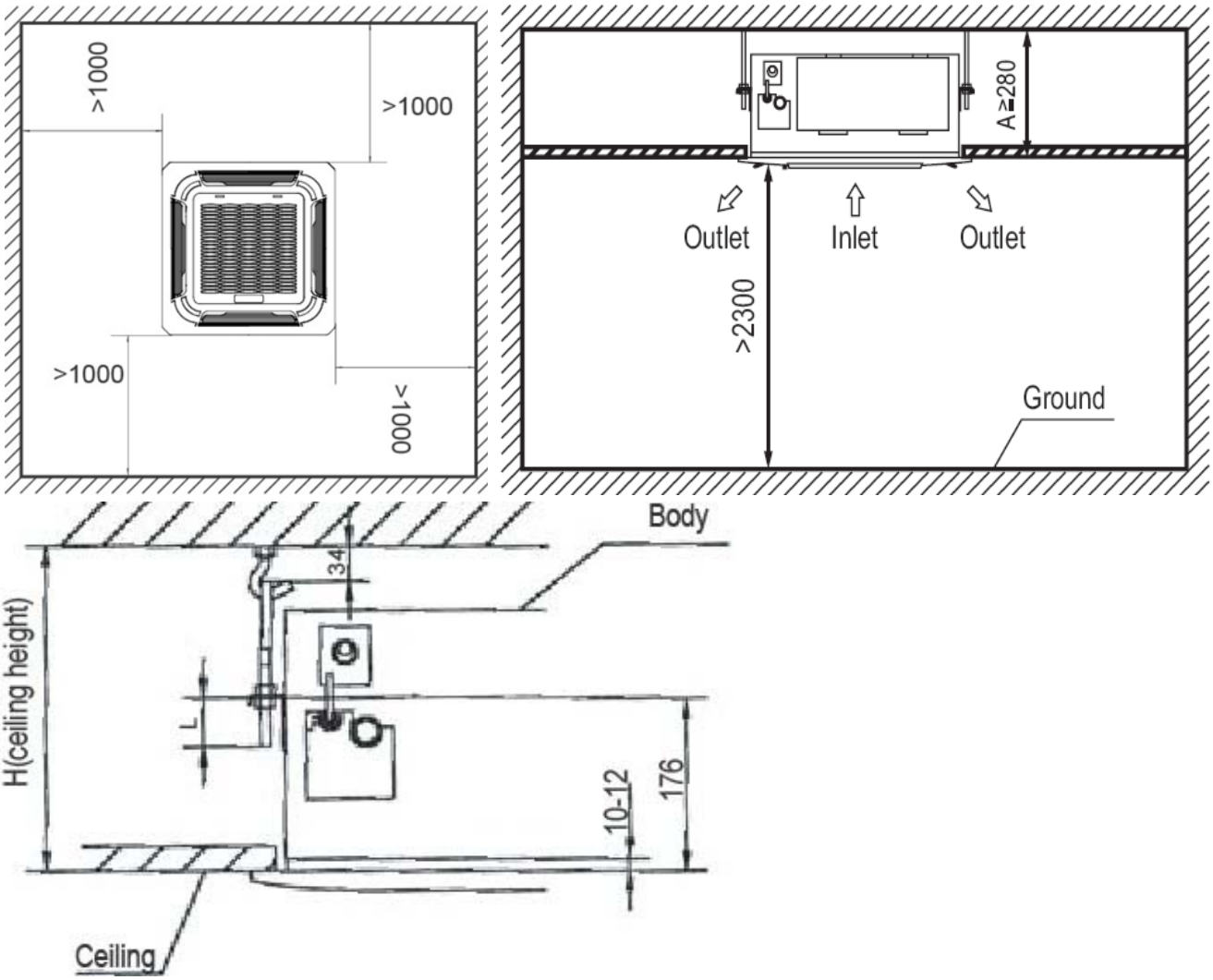




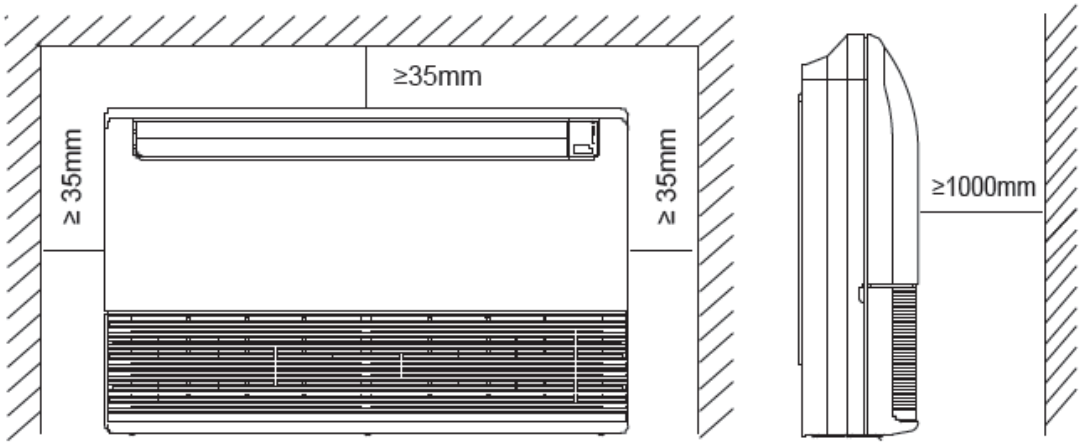


4. Service Space (unit: mm)

4.1 Four-way cassette(compact)

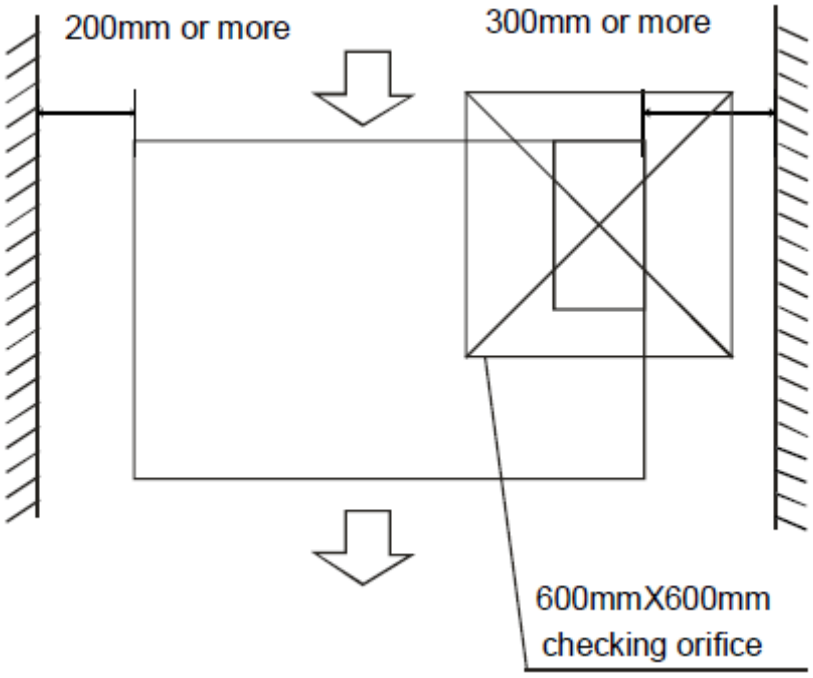


4.2 Ceiling & Floor

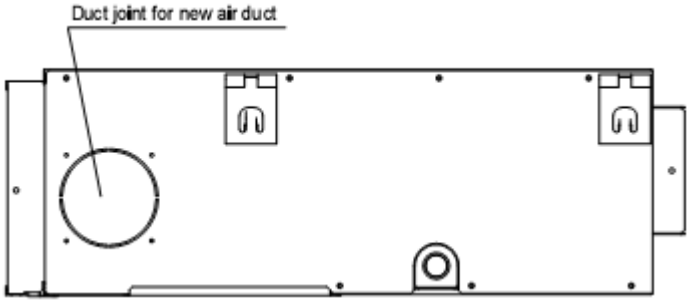


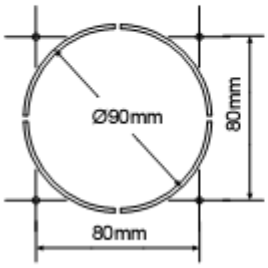
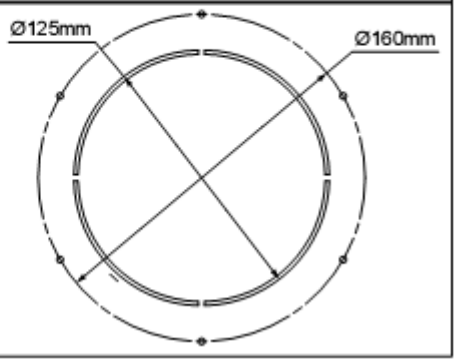
4.3 A5 Duct

Ensure enough space required for installation and maintenance.

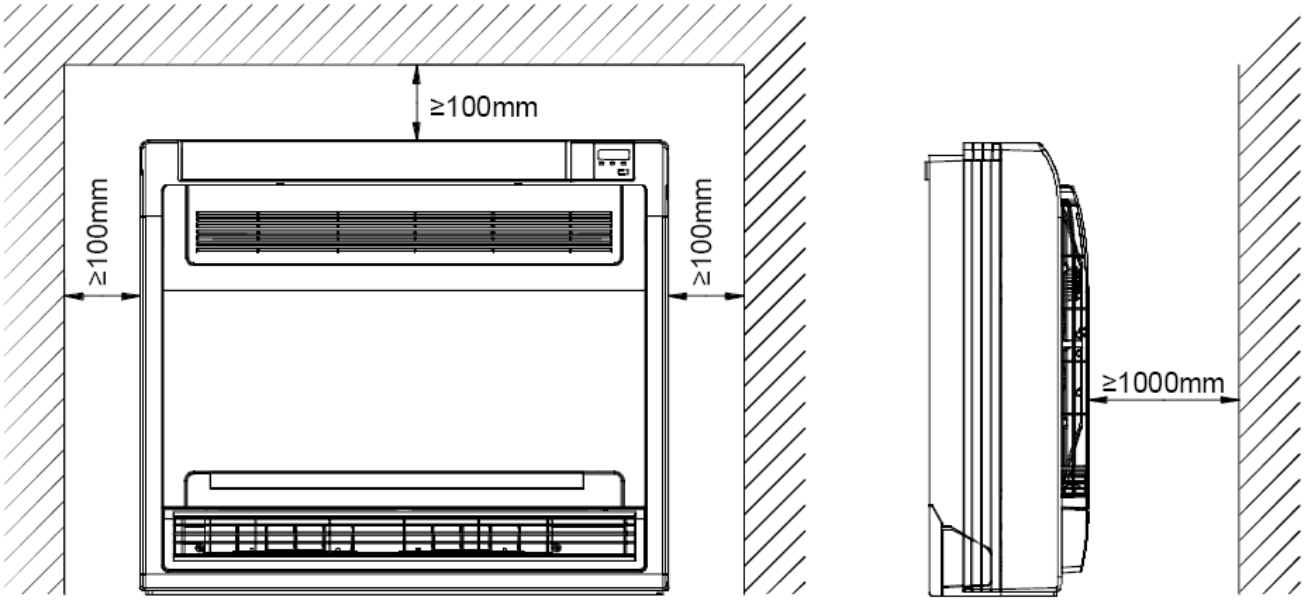


All the indoor units reserve the hole to joint the fresh air pipe. The hole size as following:



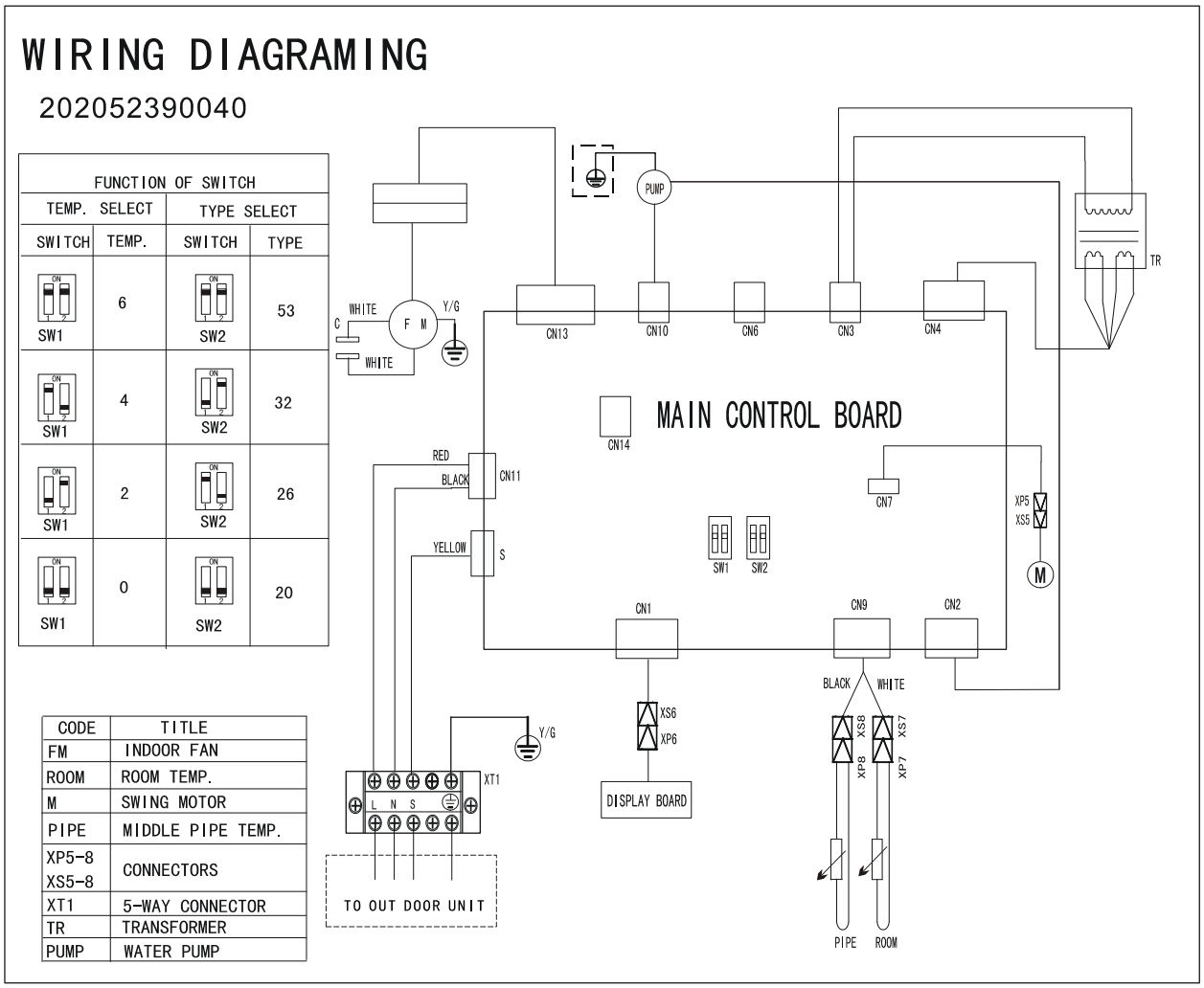
MODLE	
12-24	30-60
	

4.4 Console

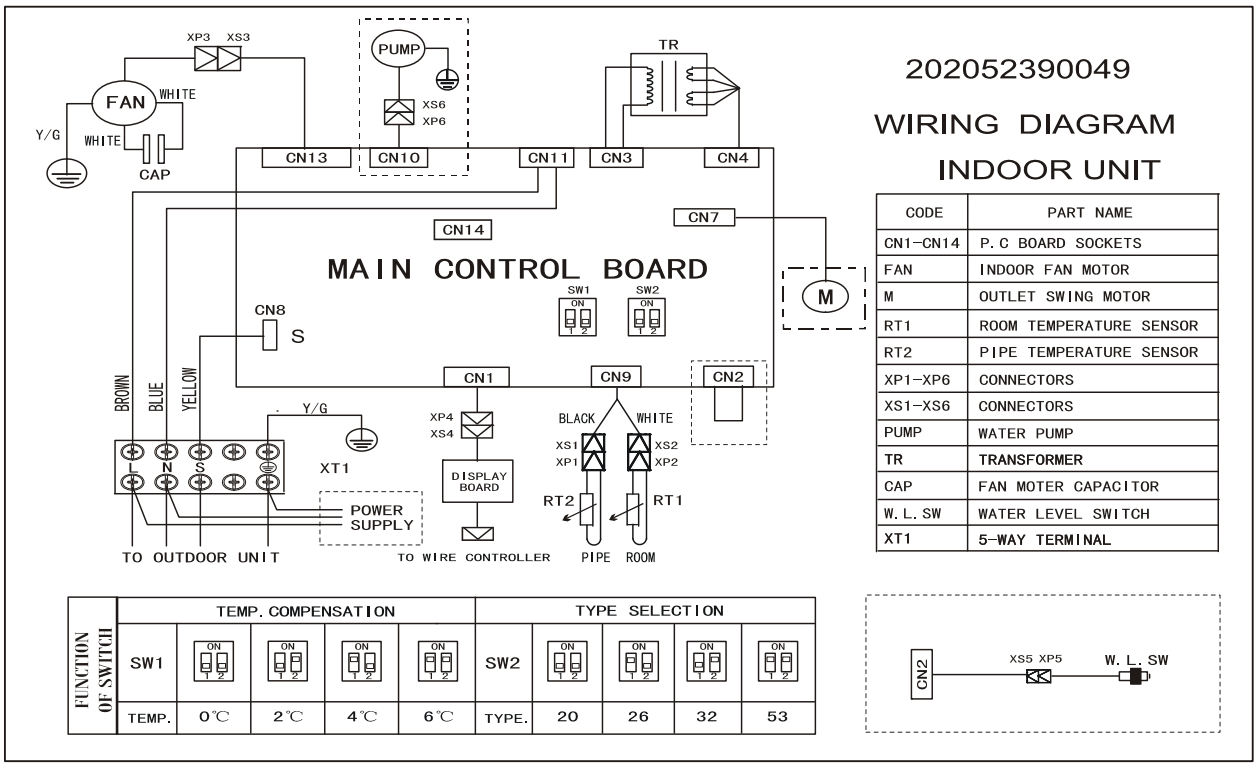


5. Wiring Diagram

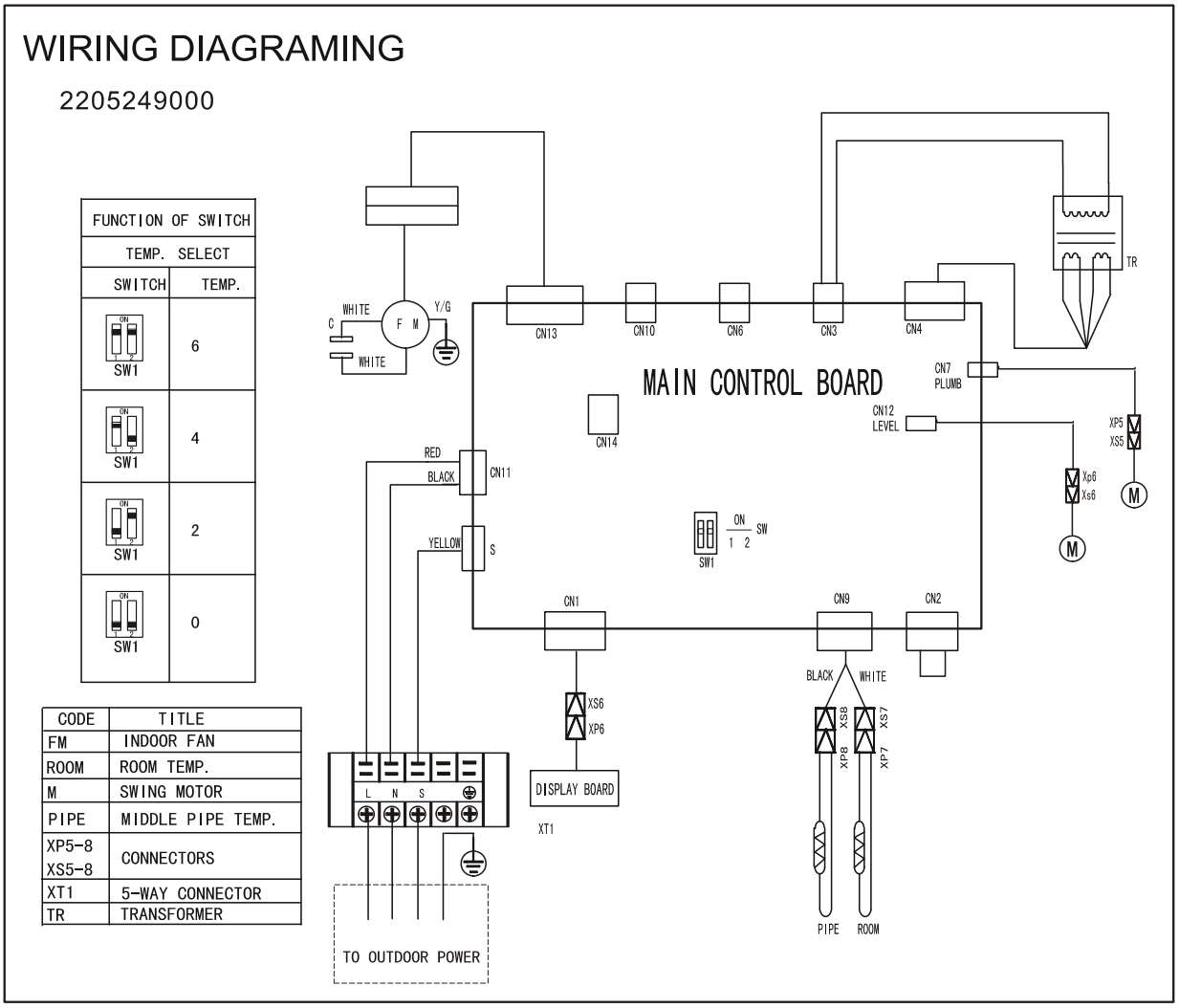
5.1 MSQ4I-07HRDN1, MSQ4I-09HRDN1, MSQ4I-12HRDN1, MSQ4I-18HRIN1



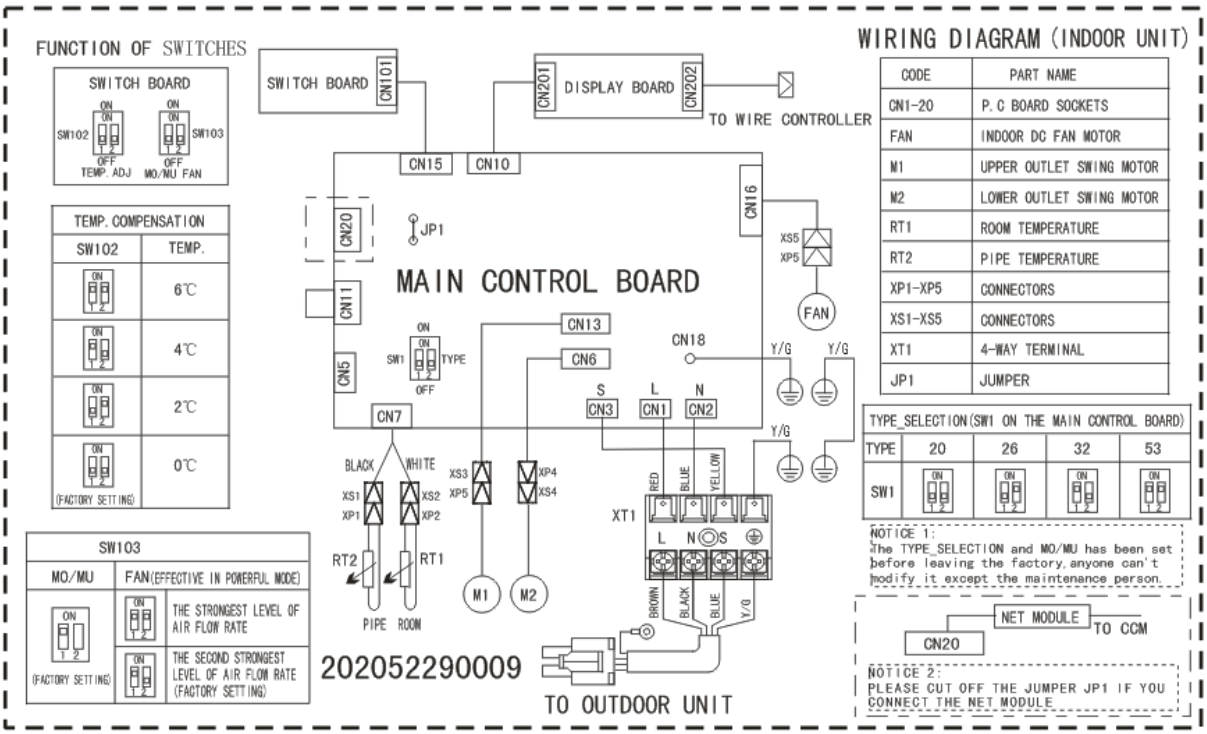
5.2 MCA2I-07HRDN1、MCA2I-09HRDN1、MCA2I-12HRDN1、MCA2I-18HRDN1



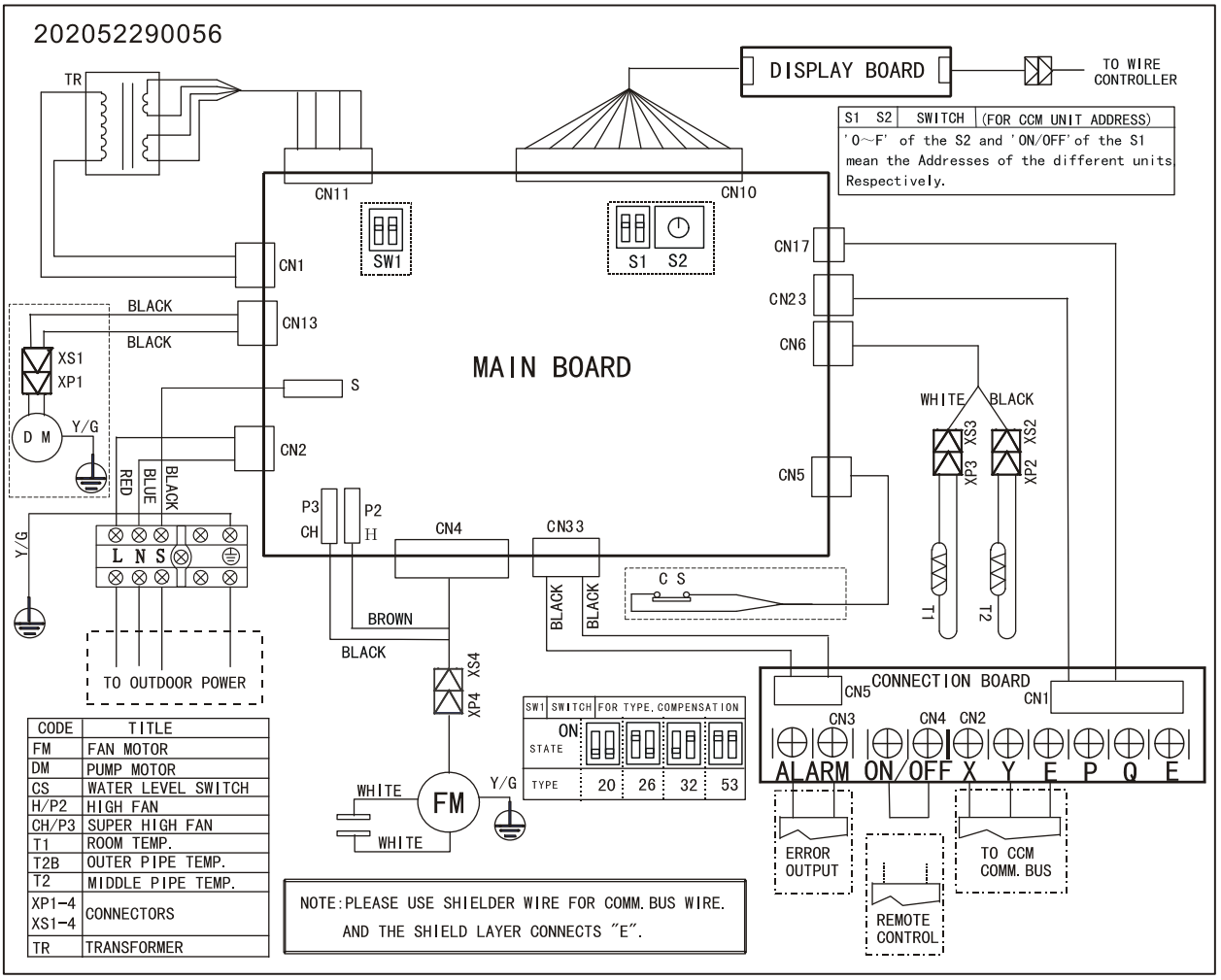
5.3 MUBI-12HRDN1、MUBI-18HRDN1



5.4 MFF-07HRDN1、MFF-09HRDN1、MFF-12HRDN1、MFF-18HRDN1



5.5 MTBI-07HWDN1-Q、MTBI-09HWDN1-Q、MTBI-12HWDN1-Q、MTBI-18HWDN1-Q



CODE	TITLE
FM	FAN MOTOR
DM	PUMP MOTOR
CS	WATER LEVEL SWITCH
H/P2	HIGH FAN
CH/P3	SUPER HIGH FAN
T1	ROOM TEMP.
T2B	OUTER PIPE TEMP.
T2	MIDDLE PIPE TEMP.
XP1-4 XS1-4	CONNECTORS
TR	TRANSFORMER

6. Operation temperature range

Cooling mode	Indoor temperature	⩾17℃
	Outdoor temperature	0℃～50℃
Heating mode	Indoor temperature	<=30
	Outdoor temperature	-15℃～24℃
Dry mode	Indoor temperature	＞10℃
	Outdoor temperature	0□～50□

7. Electronic function

7.1 Abbreviation

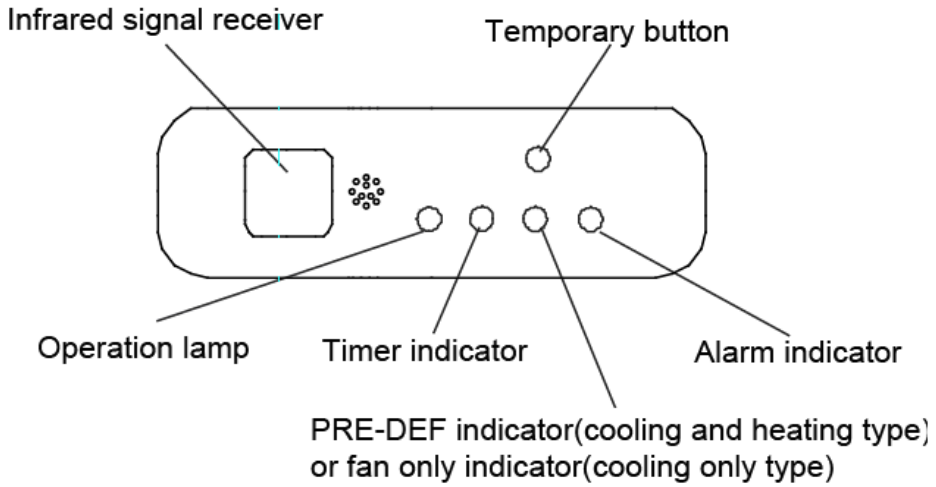
T1: Indoor room temperature

T2: Indoor evaporator temperature

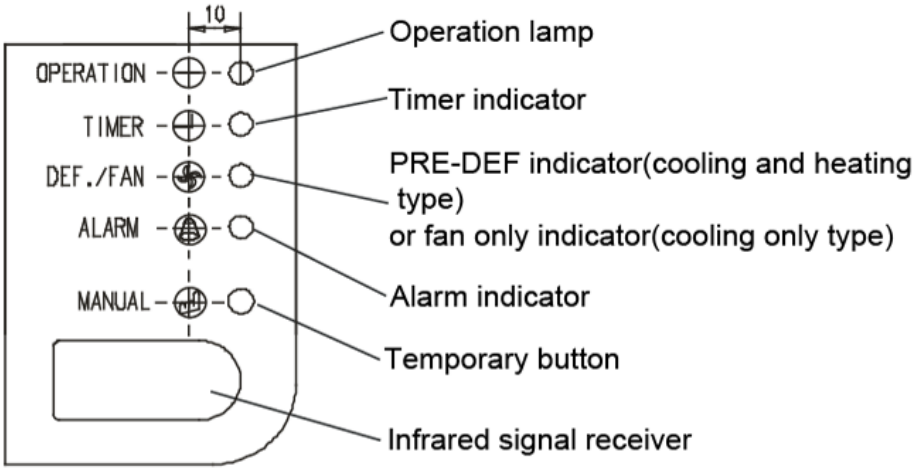
TS: Setting temperature through the remote controller

7.2 Icon explanation on indoor display board

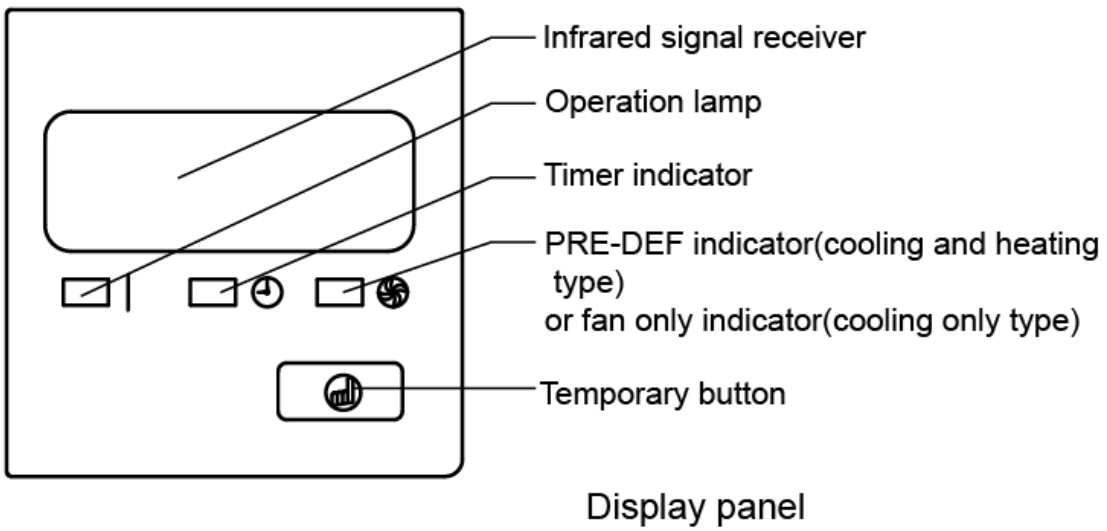
7.2.1 Four-way cassette (compact)



7.2.2 Ceiling & floor

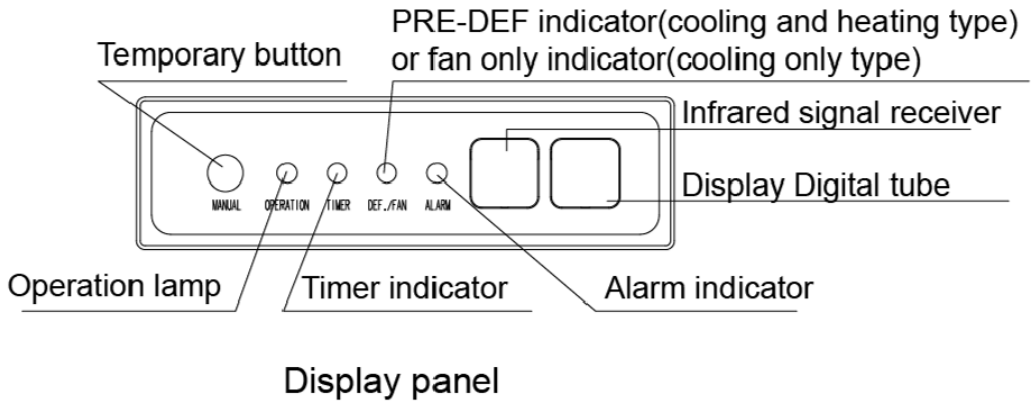


7.2.3 Console



Display panel

7.2.4 A5 Duct



Display panel

7.3 Main Protection

7.3.1 Sensor protection at open circuit and breaking disconnection.

7.3.2 The malfunction of correspondence in CMOS chip with EEPROM indication.

---- When the CMOS chip and EEPROM can't communicate during the time of using EEPROM to select parameter, the LED shows information of the malfunction (when use jump to select parameter, it doesn't have this function). After the showing, the unit can't go right to work except turning off.

7.3.3 Inverter module Protection (Only for Console)

---- If inverter module protection happened, indoor unit gives an alarm. Voltage protection function doesn't action.

7.3.4 Indoor fan delayed open function (Only for Console)

----When system starts up, the louver will be active immediately and the indoor fan will open when the top louver opens 15°.

----If the system runs in heating mode, the anti-cold wind function has priority.

7.4 Operation Modes and Functions

7.4.1 Fan-only mode

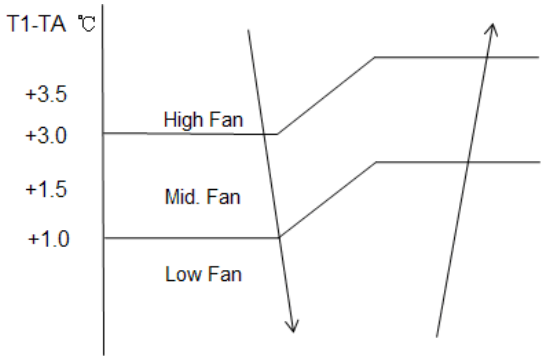
(1) Outdoor fan and compressor stop.

(2) Indoor fan can be set to high/med/low/auto.

(3) The louver operates same as in cooling mode.

(4) Auto fan in fan-only mode acts as follow:

For Console：



When T1-TA≤3□, transfer high to medium speed,

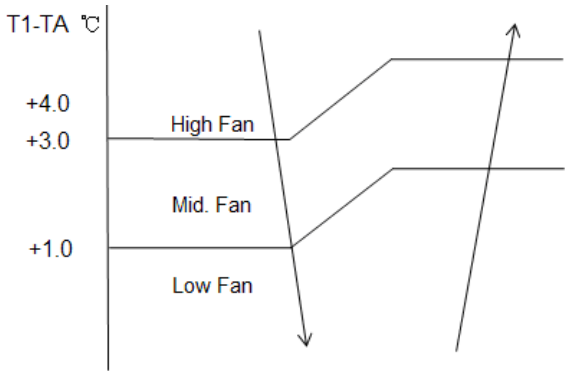
When T1-TA≤1□, transfer medium speed to low.

When T1-TA >1.5□, transfer low to medium speed,

When T1-TA >3.5□, transfer medium speed to high.

TA=24

For the other types：



When T1-TA≤3□, transfer high to medium speed,

When T1-TA≤1□, transfer medium speed to low.

When T1-TA >1□, transfer low to medium speed,

When T1-TA >4□, transfer medium speed to high.

For Four-way cassette (compact)、Ceiling & floor：TA=23

For New four-way cassette (compact)&A5 Duct：TA=24

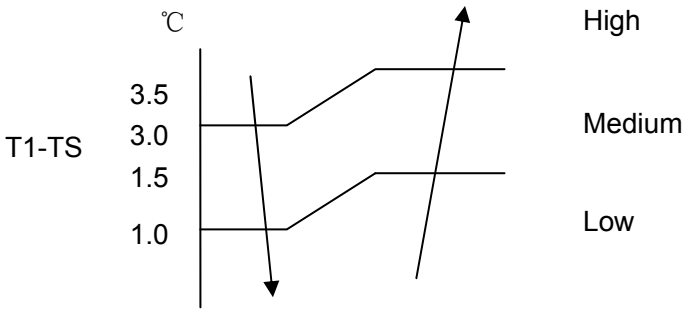
(5) PTC function and sleep mode are invalid.

7.4.2 Cooling mode

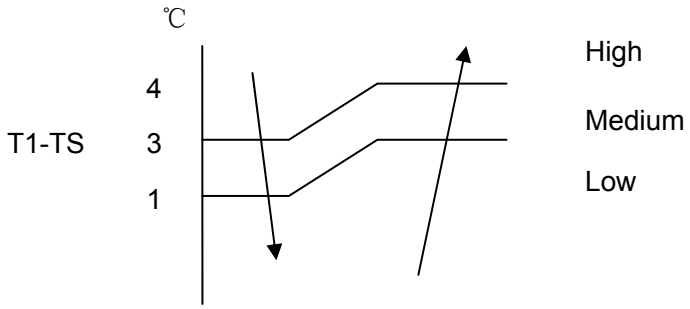
(1) Indoor fan keeps running, fan speed can be set in high/mid/low/ Auto by using a remote controller:

(2) Auto fan in cooling mode acts as follow:

For Console：



For the other types：



(3) Anti-freezing control to indoor evaporator in cooling mode

	Evaporator Temp.	Compressor
Console	T2≤ 4□	Off(After 3 minutes)
	T2> 8□	On
The other types	T2≤ 3□	Off(After 3 minutes)
	T2> 7□	On

(4) PTC function is invalid and sleep mode can be set by using a remote controller.

7.4.3 Dehumidifying mode

(1) Indoor fan speed is fixed in low speed and can't be changed.

(2) In dehumidifying mode, the anti-freezing function of the indoor heat exchanger is the same as that of cooling mode.

(3) PTC function and sleep mode are invalid.

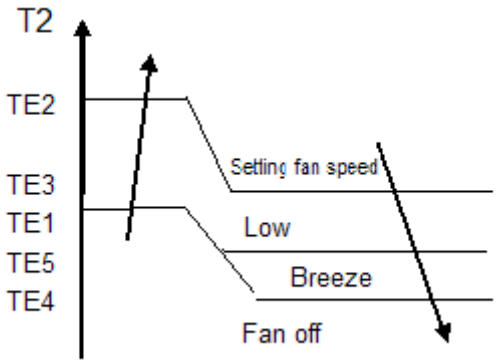
7.4.4 Heating mode

(1) Indoor Fan actions in heating mode

Indoor Fan can be set at HIGH/MID/LOW/AUTO by using a remote controller, but Anti-cold wind function prevails.

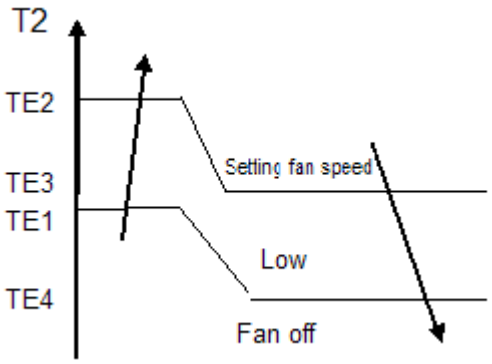
Anti-cold wind control function in heating mode:

For console：



TE1=28□ TE2=32□ TE3=30□ TE4=15□ TE5=20□

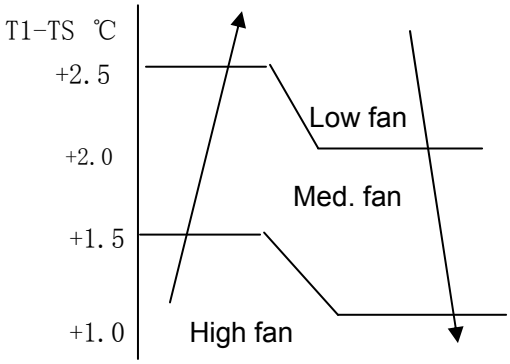
For the other types:



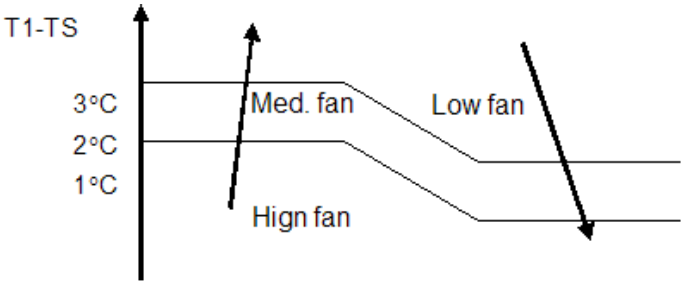
TE1=28□ TE2=32□ TE3=30□ TE4=15□

(2) Auto wind in heating mode

For Console:



For the other types



(3) Indoor evaporator high-temperature protection in heating mode

Condition	Compressor
T2<TE9	On
TE9<T2< TE7	Decrease frequency of compressor
T2>= TE7	Off

For Console&A5 Duct: TE7=63□；TE9=54□

For the other types：TE7=60□；TE9=48□

7.4.5 Prevent Over-Heating(only for console,new four-way cassette (compact) and A5 Duct)

For console: In heating mode, when the indoor unit has no capacity requirement due to indoor room temperature increased, the Indoor fan will run in low .

For new four-way cassette (compact)&A5 Duct: In heating mode, when the indoor unit has no capacity requirement due to indoor room temperature increased, if outdoor fan and compressor stop, the Indoor fan will run in setting fan speed, otherwise, the Indoor fan will run in low. (Anti-cold wind function has the priority)

7.4.6 Defrosting

Defrosting operation (Available for heating only).

Defrosting Actions:

a. Indoor fan switches off, anti-cold wind function is valid.

b. After defrosting ends, indoor fan runs according to anti-cold wind function in heating mode.

7.4.7 Auto-mode

This mode can be chosen by remote controller and the setting temperature can be changed between 17~30℃.

In auto mode, the machine will choose cooling, heating or fan-only mode according to the difference between T1 and TS.

For Console /New four-way cassette (compact)/A5 Duct

T1-TS	Running mode
T1-TS＞1℃	Cooling
-1< T1-TS≤1℃	Fan-only
T1-TS≤-1℃	Heating

For the other types:

T1-TS	Running mode
T1-TS＞2℃	Cooling
-1< T1-TS≤2℃	Fan-only
T1-TS≤-1℃	Heating

Indoor fan will run in auto fan of the relevant mode.

The louver operates the same as in relevant mode.

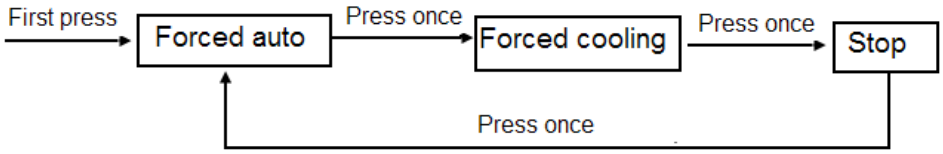
If the machine switches mode between heating and cooling, the compressor will keep stopping for 15 minutes and then rechoose mode according to T1-TS.

If the setting temperature is modified, the machine will rechoose running function.

7.4.8 Forced operation function

(1) Enter forced operation function:

Pressing the touch button once, the machine will transfer into forced auto mode, if pressing the button once again, the machine will turn into forced cooling mode, the third pressing will stop the unit, and the forth pressing is the start of the cycle of forced auto mode, forced cooling mode and stop. Refer the following chart:



(2) In forced operation mode, all general protections and remote control are valid.

(3) Operation rules:

Forced cooling mode:

The indoor fan will work in low speed(for Ceiling & floor the indoor fan will work in high speed), compressor and outdoor fan open unconditionally, after 30mins, the unit will transfer into forced auto mode. All the protections are valid during forced cooling mode (for A5 Duct all the protections are invalid)

When there's one indoor unit running in forced cooling, it is the master forced cooling unit. Other indoor units will run at forced cooling mode too and they will be the slave forced cooling units. The slave forced cooling units can not quit forced cooling mode until the master forced cooling unit quit.

The slave forced cooling units will not be controlled by other signals.

Forced auto mode:

The action of forced auto mode is the same as normal auto mode with 24□ setting temperature.

All the protections are valid during forced auto mode.

7.4.9 Timer Function

(1) Timing range is 24 hours, and the minimum resolution is 30 minutes.

(2) Timer on. After turning off, the machine will turn on automatically when reaching the setting time.

(3) Timer off. After turning on, the machine will turn off automatically when reaching the setting time.

(4) Timer on/off. After turning off, the machine will turn on automatically when reaching the setting "on" time, and then turn off automatically when reaching the setting "off" time.

(5) Timer off/on. After turning on, the machine will turn off automatically when reaching the setting "off" time, and then turn on automatically when reaching the setting "on" time.

(6) The setting time is relative time.

(7) The tolerance of timer is 1 minute per hour.

(8) For New Four-way cassette (compact) and A5 duct, the timer function will not change the AC current operation mode. Suppose AC is off now, it will not start up firstly after setting the "timer off" function. And when reaching the setting time, the timer LED will be off and the AC running mode has not been changed.

7.4.10 Sleep mode

(1) Operation time in sleep mode is 7 hours. After 7 hours the AC quits this mode and turns off.

(2) It is available at cooling, heating or auto mode.

(3) Operation process in sleep mode is as follow:

After pressing ECONOMIC or SLEEP button on controller, the machine will turn into sleep mode.

When cooling, the setting temperature rises 1℃(be lower than 30℃) every one hour, 2 hours later the setting temperature stops rising and indoor fan is fixed as low speed.

When heating, the setting temperature decreases 1℃(be higher than 17℃) every one hour, 2 hours later the setting temperature stops decreasing and indoor fan is fixed as low speed.(Anti-cold wind function has the priority)

When Auto, the sleep mode running function operates in accordance with selected running mode by auto mode.

(4)When user uses timer off function in sleep mode(or sleep function in timer off mode), if the timing is less than 7 hours, sleep function will be cancelled when reaching the setting time. If the timing is more than 7 hours, the machine will not stop until reaches the setting time in sleep mode.(Only for Console)

(5)When sleep function is cancelled, the indoor unit will not stop for new four-way cassette (compact) and A5 duct, for the other types, the indoor unit will stop.

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7.4.11 Auto-Restart function

The indoor unit is equipped with auto-restart function, which is carried out through an auto-restart module. In case of a sudden power failure, the module memorizes the setting conditions before the power failure. The unit will resume the previous operation setting (not including Swing function) automatically after 3 minutes when power returns.

7.4.12 PTC function (except Console)

(1) From stop or not heating mode turn to the heating mode, PTC function opens as default. This function can be closed by remote controller.

(2) If both of the following items are satisfied, the PTC function will be valid.
¬ In heating mode or auto-heating mode
¬ Economic operation closed. If the economic operation is turned on, the PTC function can not be turned on.
(3) If the PTC function is active, the PTC will automatically open or close as following rules

a. Open conditions: (If meet the following conditions, the PTC will open)
¬ Running in heating mode
¬ Compressor is on
¬ Indoor fan is on
¬ Indoor evaporator temperature T2 ≤TE12
¬ T1-TS ≤ -6 ℃
¬ 3 minutes later the PTC the last closed (for New Four-way cassette (compact) and A5 Duct)

b. Close conditions: (If meet one of the following conditions, the PTC will close)
¬ Indoor room temperature T1> TS
¬ No capacity requirement
¬ compressor is off
¬ Indoor fan is off
¬ Indoor evaporator temperature T2 > TE13

(4)If the PTC opens, the indoor fan will be closed 15sec delay. (for A5 Duct it is 10sec)
For Duct/ Four-way cassette (compact)/Ceiling & floor:
TE12=49□ TE13=51□

For New Four-way cassette (compact)/A5 Duct
TE12=40℃ TE13=52℃

7.4.13 Mode conflict

The indoor units can not work cooling mode and heating at same time.

Heating mode has a priority.

(1) Definition

	Cooling mode	Heating Mode	Fan	Off
Cooling mode	No	Yes	No	No
Heating Mode	Yes	No	Yes	No
Fan	No	Yes	No	No
Off	No	No	No	No

No: No mode conflict;

Yes: Mode conflict

(2) Unit action

- In case of one Indoor unit working in cooling mode or fan mode, and another indoor unit is set to heating mode, the indoor unit working in cooling mode or fan mode will change to stand by. The outdoor unit will change to heating mode after compressor stop 3 minutes. .
- In case of one Indoor unit working in heating mode, and another indoor unit is set to cooling mode or fan mode, the indoor unit setting to cooling mode or fan mode will change to stand by. The outdoor unit will continue working in heating mode.

  If heating mode stops (not including the indoor unit in heating mode reaching the set temperature), 3 minutes after the outdoor unit restarts and works in cooling mode or fan-only mode.