R410A

Commercial Air Conditioners

Engineering Data

Compact Four-way Cassette VRF IDU

MI2-22Q4CDHN1

MI2-28Q4CDHN1

MI2-36Q4CDHN1

MI2-45Q4CDHN1

Compact Four-way Cassette

1 Specifications

Table 1.1: MI2-22(28,36,45)Q4CDHN1 specifications

Model			MI2-22Q4CDHN1	MI2-28Q4CDHN1	MI2-36Q4CDHN1	MI2-45Q4CDHN1
Power supply			1-phase, 220-240V, 50/60Hz			
Cooling[1]	Capacity	kW	2.2	2.8	3.6	4.5
		kBtu/h	7.5	9.6	12.3	15.4
	Power input	W	35	35	40	50
Heating[2]	Capacity	kW	2.4	3.2	4.0	5.0
		kBtu/h	8.2	10.9	13.6	17.1
	Power input	W	35	35	40	50
Fan motor type			DC			
Indoor coil	Number of rows		1		2	
	Tube pitch × row pitch	mm	21×13.37		21×13.37	
	Fin spacing	mm	1.3		1.3	
	Fin type		Hydrophilic aluminum			
	Tube OD and type	mm	Φ7 Inner-groove			
	Dimensions (L×H×W)	mm	1310×210×13.37		1310×210×26.74	
	Number of circuits		2		4	
Air flow rate[3]		m^3/h	414/380/345/313/288/268/238		521/485/450/409/380/350/314	
Sound pressure level[4]		dB(A)	35/34/33/29/26/23/22		41/38/35/32/30/29/28	
Main body	Net dimensions[5] (W×H×D)	mm	630×260×570			
	Packed dimensions (W×H×D)	mm	700×345×660			
	Net/Gross weight	kg	18/23.8		19.2/25.0	
Panel	Net dimensions (W×H×D)	mm	647×50×647			
	Packed dimensions (W×H×D)	mm	715×123×715			
	Net/Gross weight	kg	2.5/4.5			
Refrigerant type			R410A			
Design pressure (H/L)		MPa	4.4/2.6			
Pipe connections	Liquid/Gas pipe	mm	Φ6.35/Φ12.7			
	Drain pipe	mm	OD Φ25			

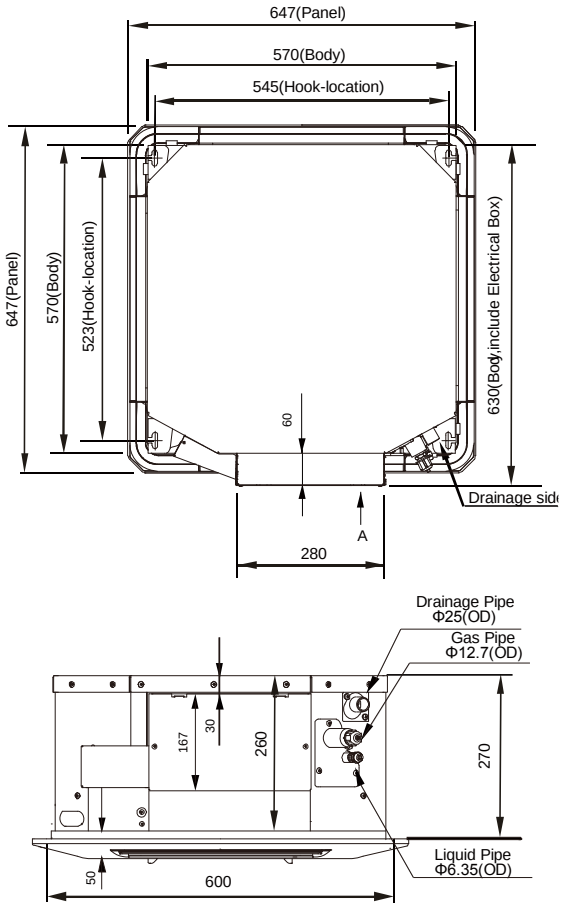
Notes:

1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Air flow rate are from the highest speed to the lowest speed, total 7 rates for each model.
4. Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
5. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

2 Dimensions

2.1 Unit Dimensions

Figure 2.1: Compact Four-way Cassette dimensions (unit: mm)



3 Unit Placement

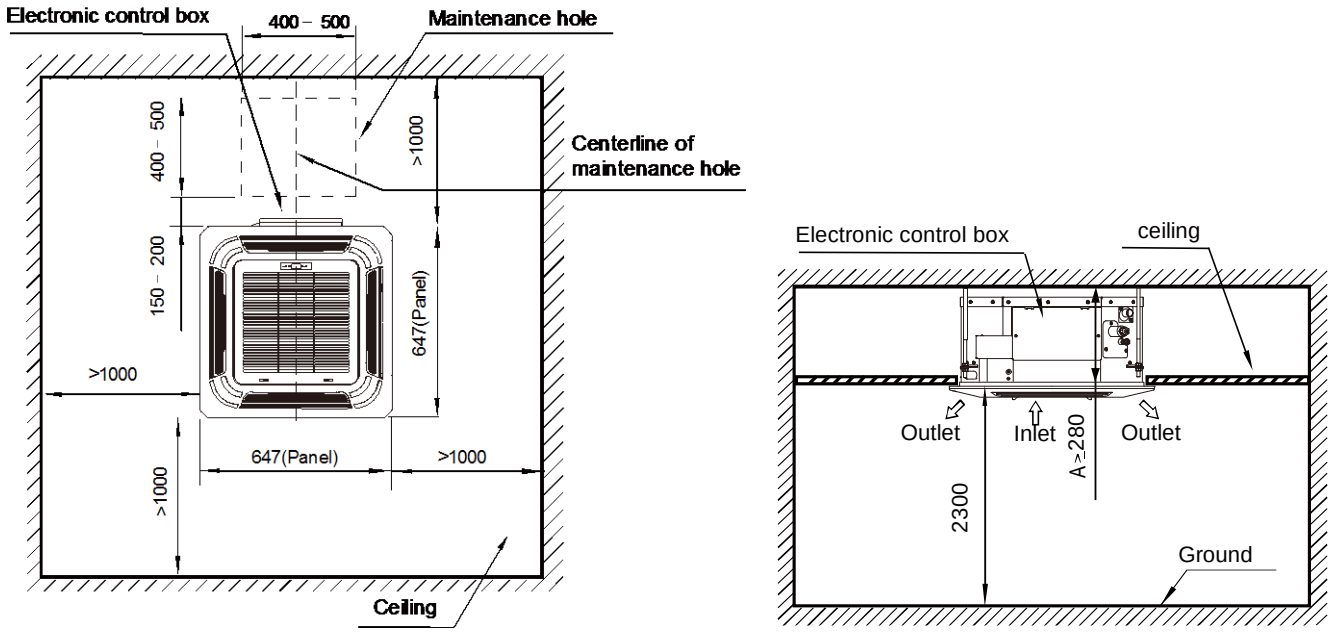
3.1 Placement Considerations

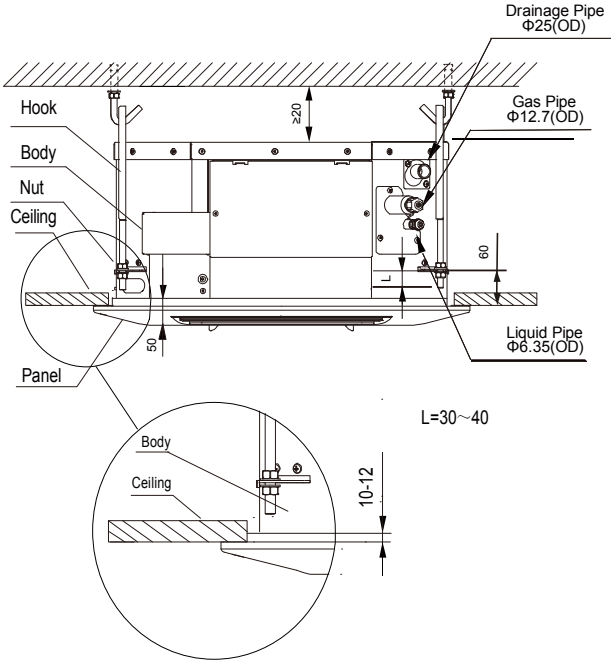
Unit placement should take account of the following considerations:

- Units should not be installed in the following locations:
  - Where exposure to direct radiation from a high-temperature heat source or to interference from a source of electromagnetic radiation may occur.
  - Where dust or dirt may affect heat exchangers.
  - Where exposure to oil or to corrosive or harmful gases, such as acidic or alkaline gases, may occur.
  - Where exposure to salinity may occur, such as seaside locations.
  - Where highly flammable materials are present.
  - Where exposure to oily air may occur, such as a kitchen.
  - Where exposure to very high humidity may occur, such as a laundry.
- Units should be installed in positions where:
  - The ceiling is horizontal and is able to bear the unit's weight.
  - There are no obstructions that could impede the airflow into and out of the unit.
  - The airflow out of the unit can reach throughout the room.
  - There is sufficient space for access during installation, servicing and maintenance.
  - The refrigerant piping and drain piping can be easily connected to the refrigerant piping and drain piping systems.
  - Short-circuit ventilation (where outlet air returns quickly to a unit's air inlet) will not occur.

3.2 Space Requirements

Figure 3.1: Compact Four-way Cassette space requirements (unit: mm)



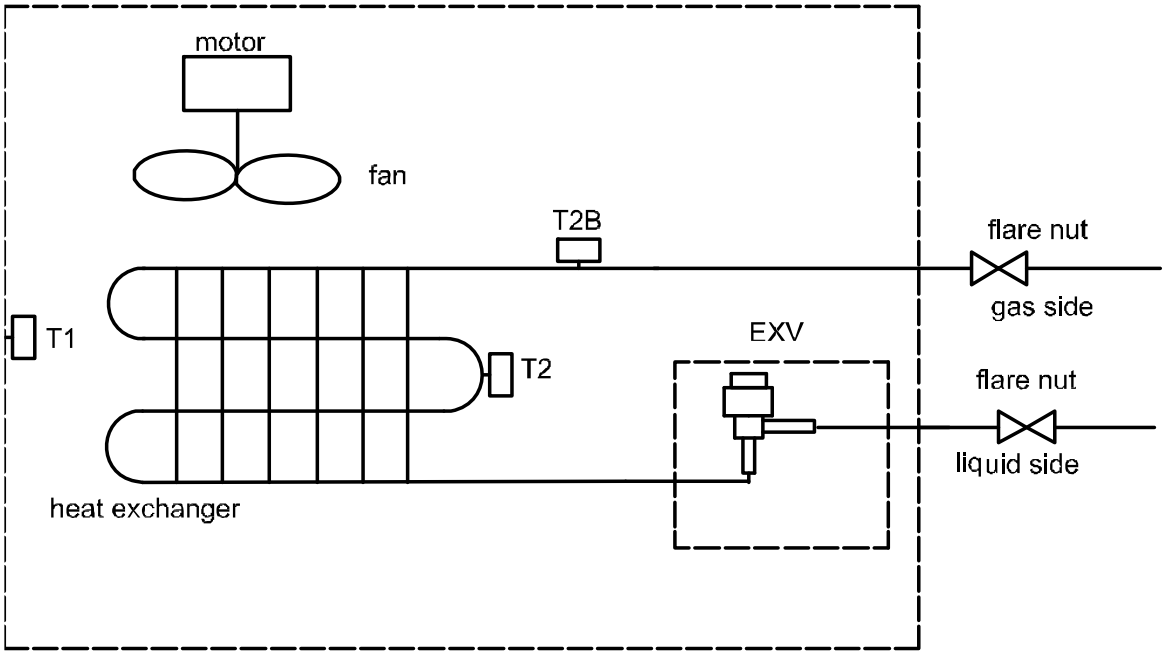


Notes:

1. The centerline of the maintenance hole should be in the same position as the centerline of the indoor unit.

4 Piping Diagram

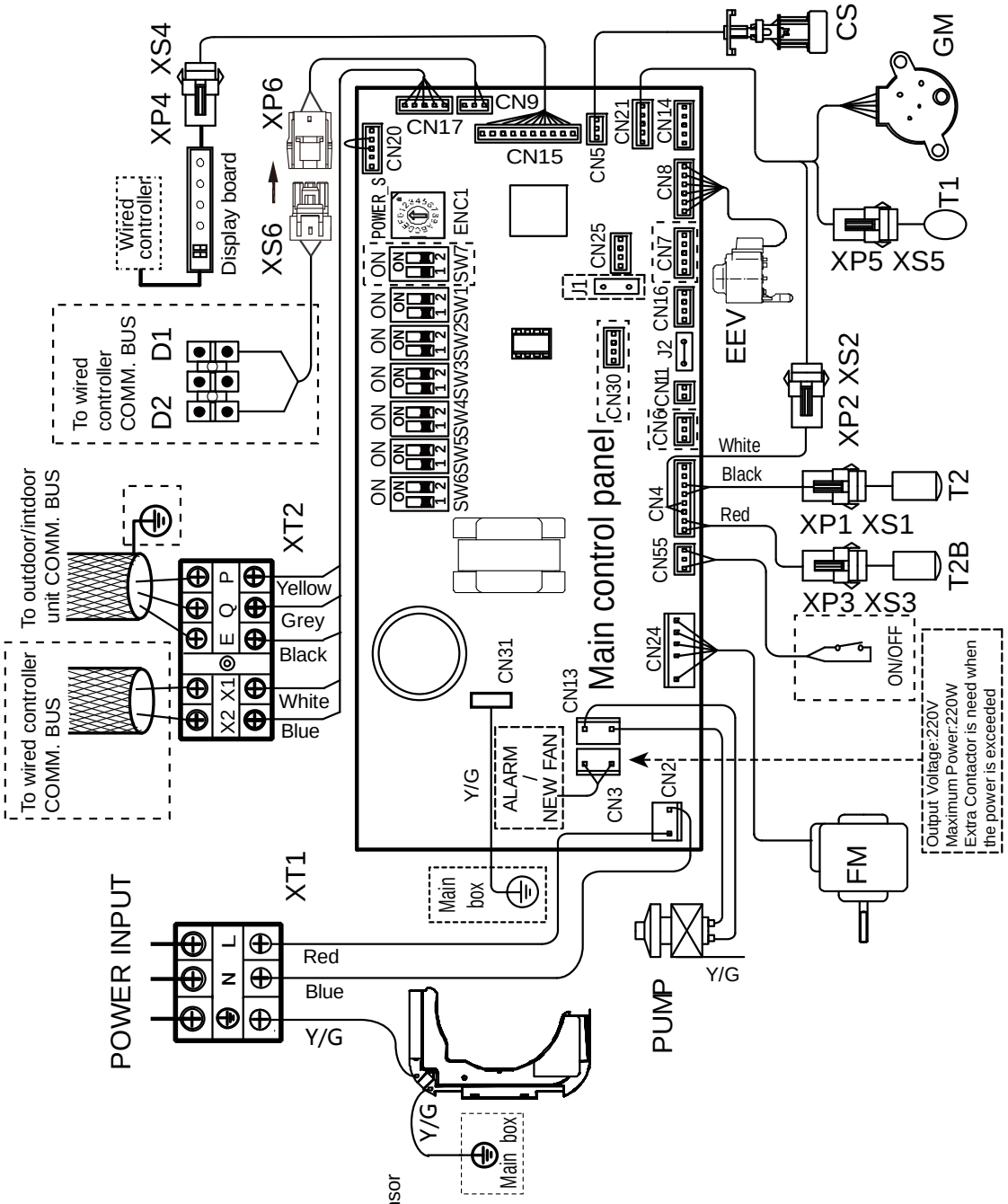
Figure 4.1: Compact Four-way Cassette piping diagram



Legend	
T1	Indoor ambient temperature sensor
T2	Indoor heat exchanger mid-point temperature sensor
T2B	Indoor heat exchanger outlet temperature sensor

5 Wiring Diagram

Figure 5.1: Compact Four-way Cassette piping diagram wiring diagram



Code	Name
FM	Indoor fan motor
EEV	Electronic expansion valve
GM	Swinging motor
PUMP	Water drainage pump
CS	Water level sensor
T1	Indoor ambient temp. sensor
T2	Indoor heat exchanger mid-point temp. sensor
T2B	Indoor heat exchanger outlet temp. sensor
XP1-6	Connectors
XS1-6	Connectors
XT1-2	Terminal

ENC1	Toggle switch	Set horsepower
	Code	Capacity
	0	2200W
	1	2800W
	2	3600W
	3	4500W

Notes for installers and service engineers

Caution

- All installation, servicing and maintenance must be carried out by competent and suitably qualified, certified and accredited professionals and in accordance with all applicable legislation.
- Units should be grounded in accordance with all applicable legislation. Metal and other conductive components should be insulated in accordance with all applicable legislation.
- Power supply wiring should be securely fastened at the power supply terminals – loose power supply wiring would represent a fire risk.
- After installation, servicing or maintenance, the electric control box cover should be closed. Failing to close the electric control box cover risks fire or electric shock.
- Switch ENC1 (indoor unit capacity setting) is factory-set and its setting should normally not be changed. The only circumstances in which a switch ENC1 might need to be set in the field is when replacing a main PCB. When replacing a main PCB, ensure that the capacity setting on switch ENC1 on the new PCB is consistent with the unit capacity given on the unit's nameplate.

6 Capacity Tables

6.1 Cooling Capacity Table

Table 6.1: Compact Four-way Cassette cooling capacity

Model	Indoor air temperature (°C WB/DB)													
	14/20		16/23		18/26		19/27		20/28		22/30		24/32	
	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
MI2-22Q4CDHN1	2.0	2.0	2.1	1.9	2.2	1.9	2.2	1.8	2.3	1.8	2.3	1.7	2.4	1.7
MI2-28Q4CDHN1	2.5	2.5	2.7	2.5	2.8	2.4	2.8	2.3	2.9	2.3	2.9	2.2	3.0	2.1
MI2-36Q4CDHN1	3.2	3.0	3.4	3.0	3.6	3.1	3.6	2.9	3.7	2.9	3.8	2.8	3.9	2.7
MI2-45Q4CDHN1	4.0	3.8	4.3	3.8	4.5	3.8	4.5	3.7	4.6	3.6	4.7	3.4	4.8	3.3

Abbreviations:
TC: Total capacity (kW)
SC: Sensible capacity(kW)

Notes:
1.Shaded cells indicate rating condition.

6.2 Heating Capacity Table

Table 6.2: Compact Four-way Cassette heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	TC	TC	TC	TC	TC	TC
MI2-22Q4CDHN1	2.6	2.6	2.4	2.3	2.3	2.1
MI2-28Q4CDHN1	3.4	3.4	3.2	3.1	3.0	2.8
MI2-36Q4CDHN1	4.2	4.2	4.0	3.8	3.8	3.5
MI2-45Q4CDHN1	5.3	5.3	5.0	4.8	4.7	4.4

Abbreviations:
TC: Total capacity (kW)

Notes:
1.Shaded cells indicate rating condition.

7 Electrical Characteristics

Table 7.1: Compact Four-way Cassette electrical characteristics

Model name	Power supply						Indoor fan motors	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (kW)	FLA
MI2-22Q4CDHN1	50/60	220-240	198	264	0.43	15	0.037	0.344
MI2-28Q4CDHN1	50/60	220-240	198	264	0.43	15	0.037	0.344
MI2-36Q4CDHN1	50/60	220-240	198	264	0.48	15	0.037	0.344
MI2-45Q4CDHN1	50/60	220-240	198	264	0.48	15	0.037	0.384

Abbreviations:
MCA: Minimum Circuit Amps
MFA: Maximum Fuse Amps
FLA: Full Load Amps

8 Sound Levels

8.1 Overall

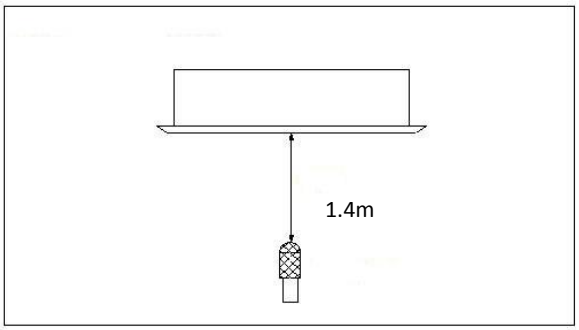
Table 8.1: Compact Four-way Cassette sound pressure levels[1]

Model name	Sound pressure levels dB(A)						
	SSH	SH	H	M	L	SL	SSL
MI2-22Q4CDHN1	35	34	33	29	26	23	22
MI2-28Q4CDHN1	35	34	33	29	26	23	22
MI2-36Q4CDHN1	41	38	35	32	30	29	28
MI2-45Q4CDHN1	41	38	35	32	30	29	28

Notes:

1. Sound pressure levels are measured 1.4m below the unit in a semi-anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.

Figure 8.1: Compact Four-way Cassette sound pressure level measurement



8.2 Octave Band Levels

Figure 8.2: MI2-22(28)Q4CDHN1 octave band levels

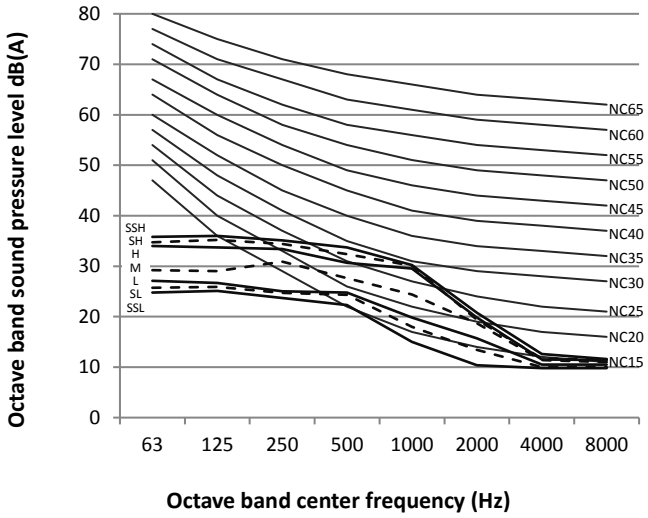
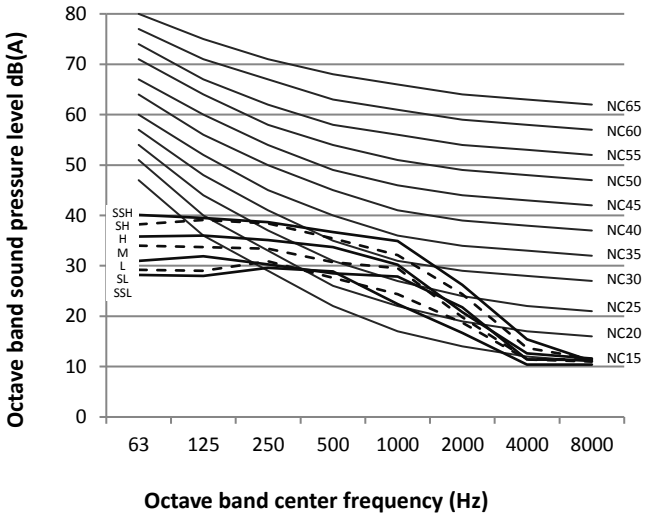


Figure 8.3: MI2-36(45)Q4CDHN1 octave band levels



9 Temperature and Airflow Distributions

9.1 Simulate condition

Table 9.1: Compact Four-way Cassette simulate condition

Model name	Room size (m)	Ceiling height (m)	Flow angle (Cooling/Heating)	Placing
MI2-22Q4CDHN1	5*5	2.7	15° /50°	Center
MI2-28Q4CDHN1	6*6	2.7	15° /50°	Center
MI2-36Q4CDHN1	6*6	2.7	15° /50°	Center
MI2-45Q4CDHN1	8*8	2.7	15° /50°	Center

Note:

1. These figures and videos are based on software simulation. They show typical temperature and airflow distributions in the conditions above. In the actual installation, they may differ from these figures and videos under the influence of air temperature conditions, ceiling height, cooling/heating load, obstacles, etc.

9.2 Airflow distributions

Figure 9.1: MI2-22Q4CDHN1 cooling at 120S

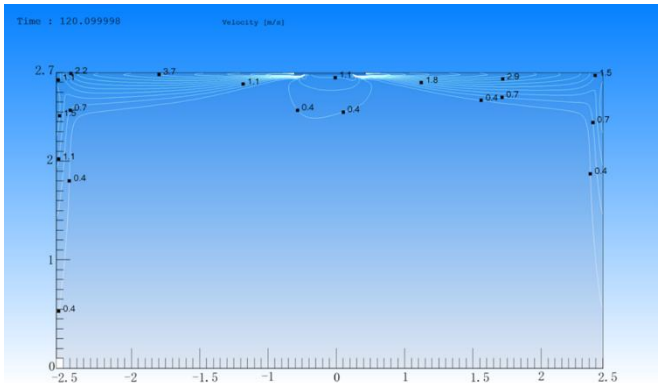


Figure 9.2: MI2-22Q4CDHN1 heating at 120S

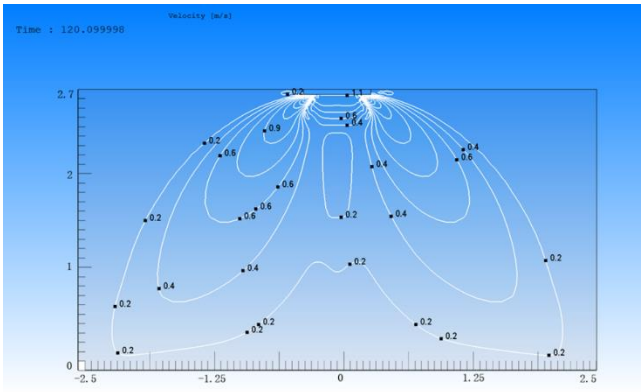


Figure 9.3: MI2-28Q4CDHN1 cooling at 120S

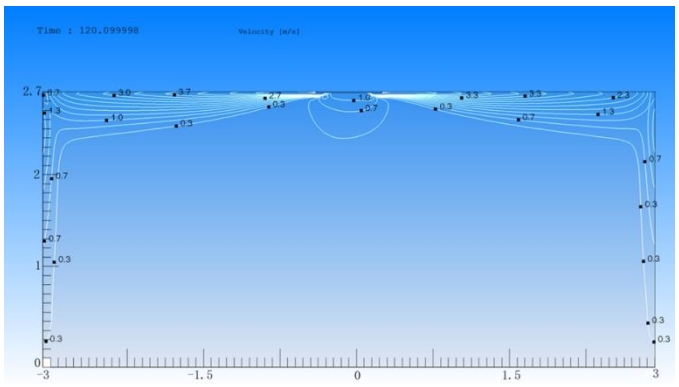


Figure 9.4: MI2-28Q4CDHN1 heating at 120S

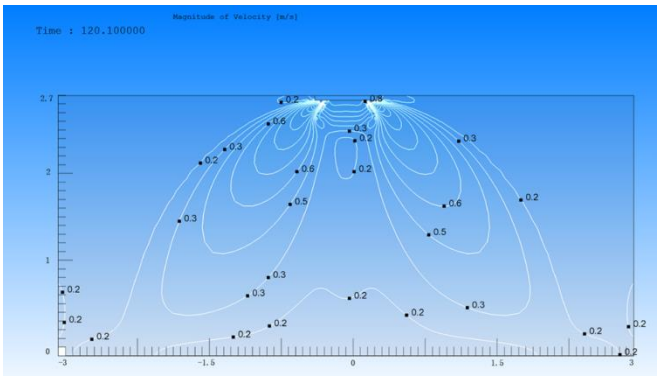


Figure 9.5: MI2-36Q4CDHN1 cooling at 120S

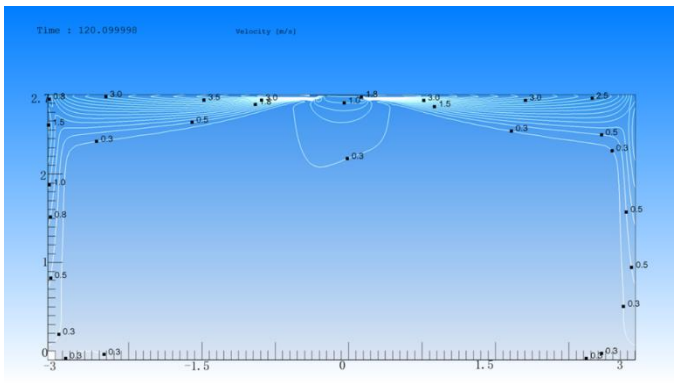


Figure 9.6: MI2-36Q4CDHN1 heating at 120S

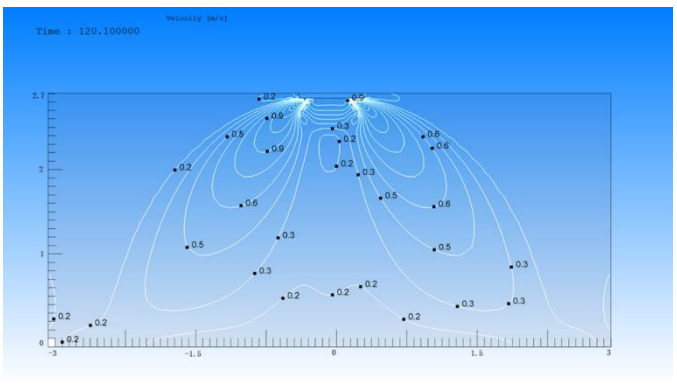


Figure 9.7: MI2-45Q4CDHN1 cooling at 120S

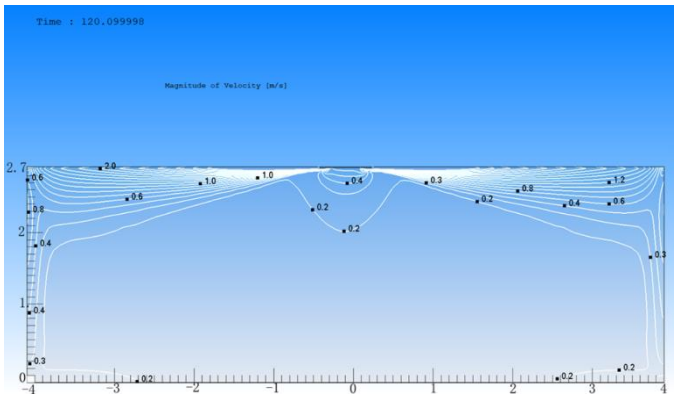
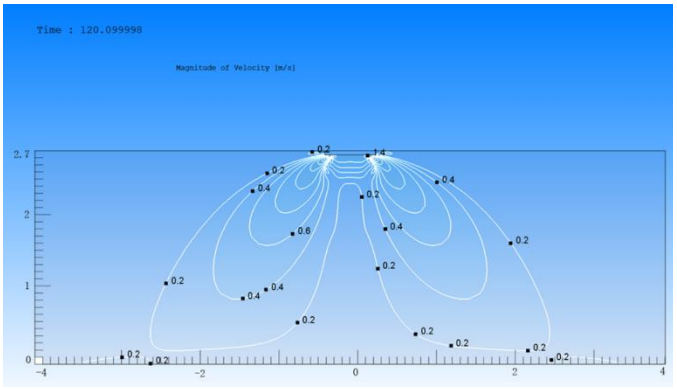


Figure 9.8: MI2-45Q4CDHN1 heating at 120S



9.3 Temperature distributions

Figure 9.9: MI2-22Q4CDHN1 cooling at 120S

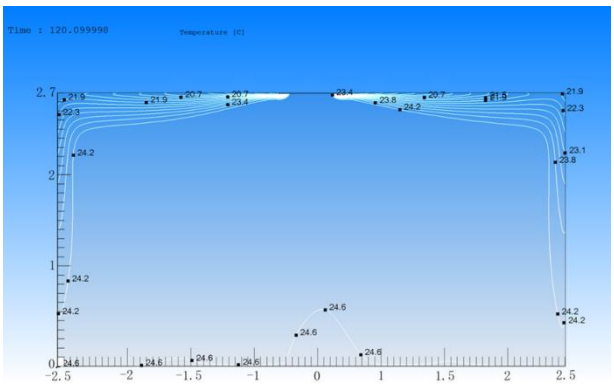


Figure 9.10: MI2-22Q4CDHN1 heating at 120S

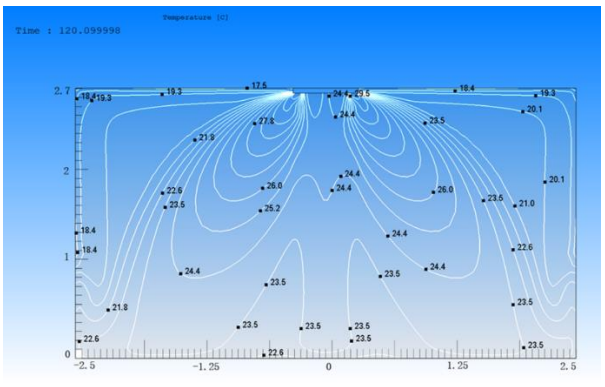


Figure 9.11: MI2-28Q4CDHN1 cooling at 120S

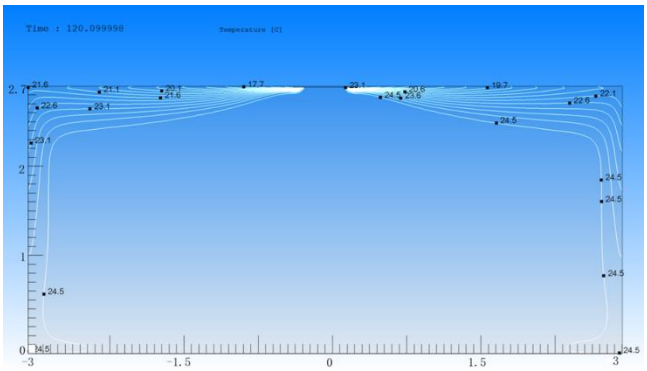


Figure 9.12: MI2-28Q4CDHN1 heating at 120S

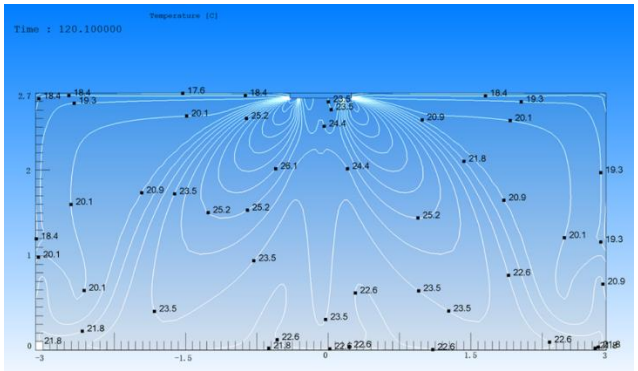


Figure 9.13: MI2-36Q4CDHN1 cooling at 120S

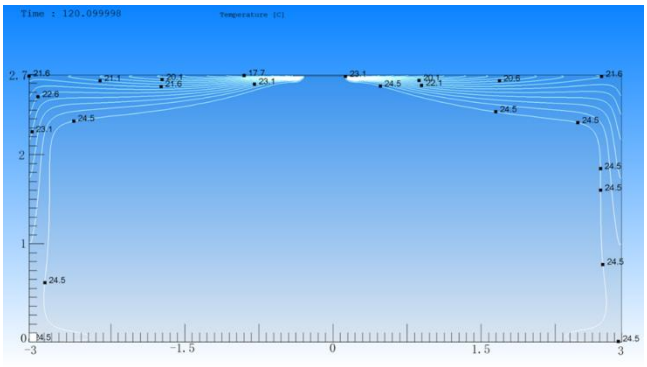


Figure 9.14: MI2-36Q4CDHN1 heating at 120S

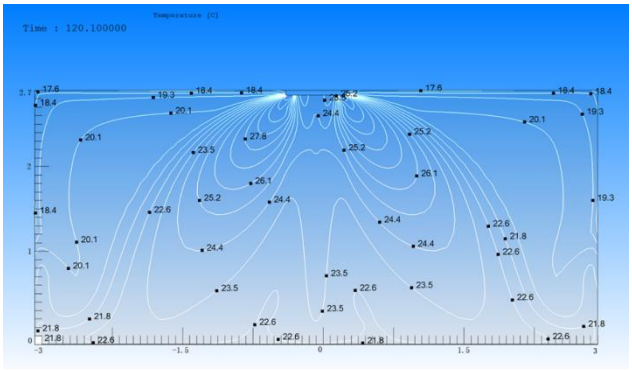


Figure 9.15: MI2-45Q4CDHN1 cooling at 120S

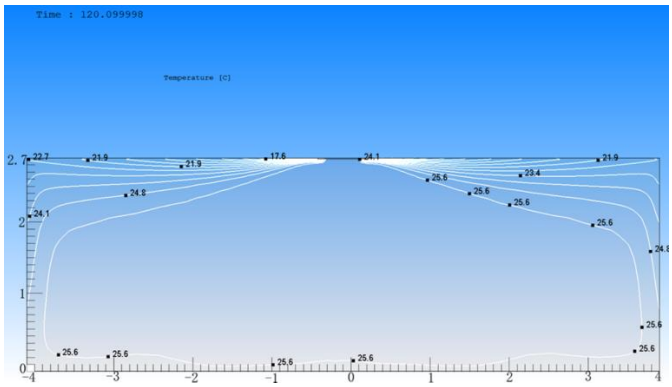
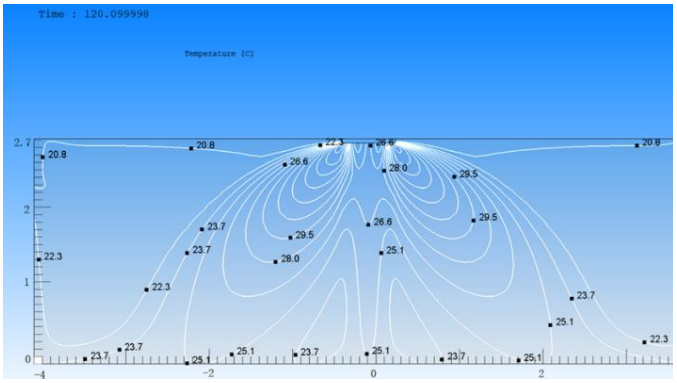


Figure 9.16: MI2-45Q4CDHN1 heating at 120S



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