R410A/R32

Commercial Air Conditioners

Engineering Data

Two-way Cassette VRF IDU

MIH22Q2HN18

MIH28Q2HN18

MIH36Q2HN18

MIH45Q2HN18

MIH56Q2HN18

MIH71Q2HN18

Two-way Cassette

1 Specifications

Table 1.1: MIH22(28,36)Q2HN18 specifications

Model name			MIH22Q2HN18	MIH28Q2HN18	MIH36Q2HN18
Power supply			1-phase, 220-240V, 50/60Hz		
Cooling[1]	Capacity	kW	2.2	2.8	3.6
		kBtu/h	7.5	9.6	12.3
	Power input	W	35	40	40
Heating[2]	Capacity	kW	2.6	3.2	4
		kBtu/h	8.9	10.9	13.6
	Power input	W	35	40	40
Fan motor	Type		DC		
	Number		1		
Coil	Number of rows		1		
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5		
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ7 Inner-groove		
	Dimensions (L×H ×W)	mm	882×210×13.37		
	Number of circuits		4		
Air flow rate[3]		m^3/h	654/612/571/530/488/449/410		725/679/641/591/554/509/458
Sound pressure level[4]		dB(A)	33/31/30/29/27/25/24		35/33/32/30/29/27/25
Sound power level[4]		dB(A)	49/47/46/45/43/41/40		51/49/48/46/45/43/41
Indoor unit	Net dimensions[5] (WxHxD)	mm	1172×299×591		
	Packed dimensions (WxHxD)	mm	1355×400×675		
	Net/Gross weight	kg	29.7/36.3		
Panel	Net dimensions (W×H×D)	mm	1430×53×680		
	Packed dimensions (W×H×D)	mm	1525×130×765		
	Net/Gross weight	kg	11/15		
Refrigerant type			R410A/R32		
Design pressure (H/L)		MPa	4.4/2.6		
Pipe connections	Liquid/Gas pipe	mm	Φ6.35/Φ12.7		
	Drain pipe	mm	OD Φ32		

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. Fan motor speed and 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 anechoic chamber.
5. The dimension is only the body size, excluding the size of the installation lug, connecting copper pipe, etc. For detailed dimensions, please refer to the installation manual.

Table 1.2: MIH45(56,71)Q2HN18 specifications

Model name			MIH45Q2HN18	MIH56Q2HN18	MIH71Q2HN18
Power supply			1-phase, 220-240V, 50/60Hz		
Cooling[1]	Capacity	kW	4.5	5.6	7.1
		kBtu/h	15.4	19.1	24.2
	Power input	W	50	69	98
Heating[2]	Capacity	kW	5	6.3	8
		kBtu/h	17.1	21.5	27.3
	Power input	W	50	69	98
Fan motor	Type		DC		
	Number		1		
Coil	Number of rows		2		
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5		
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ7 Inner-groove		
	Dimensions (L×H ×W)	mm	882×210×26.74		
	Number of circuits		6		
Air flow rate[3]		m^3/h	850/792/731/670/631/592/550	980/925/855/800/755/702/670	1200/1115/1068/1000/921/808/770
Sound pressure level[4]		dB(A)	37/36/35/34/32/31/30	39/37/36/35/33/31/30	44/42/41/40/38/36/34
Sound power level[4]		dB(A)	53/52/51/50/48/47/46	55/53/52/51/49/47/46	60/58/57/56/54/52/50
Main body	Net dimensions[5] (WxHxD)	mm	1172×299×591		
	Packed dimensions (WxHxD)	mm	1355×400×675		
	Net/Gross weight	kg	31.6/38.2		
Panel	Net dimensions (W×H×D)	mm	1430×53×680		
	Packed dimensions (W×H×D)	mm	1525×130×765		
	Net/Gross weight	kg	11/15		
Refrigerant type			R410A/R32		
Design pressure (H/L)		MPa	4.4/2.6		
Pipe connections	Liquid/Gas pipe	mm	Φ6.35/Φ12.7		Φ9.52/Φ15.9
	Drain pipe	mm	OD Φ32		

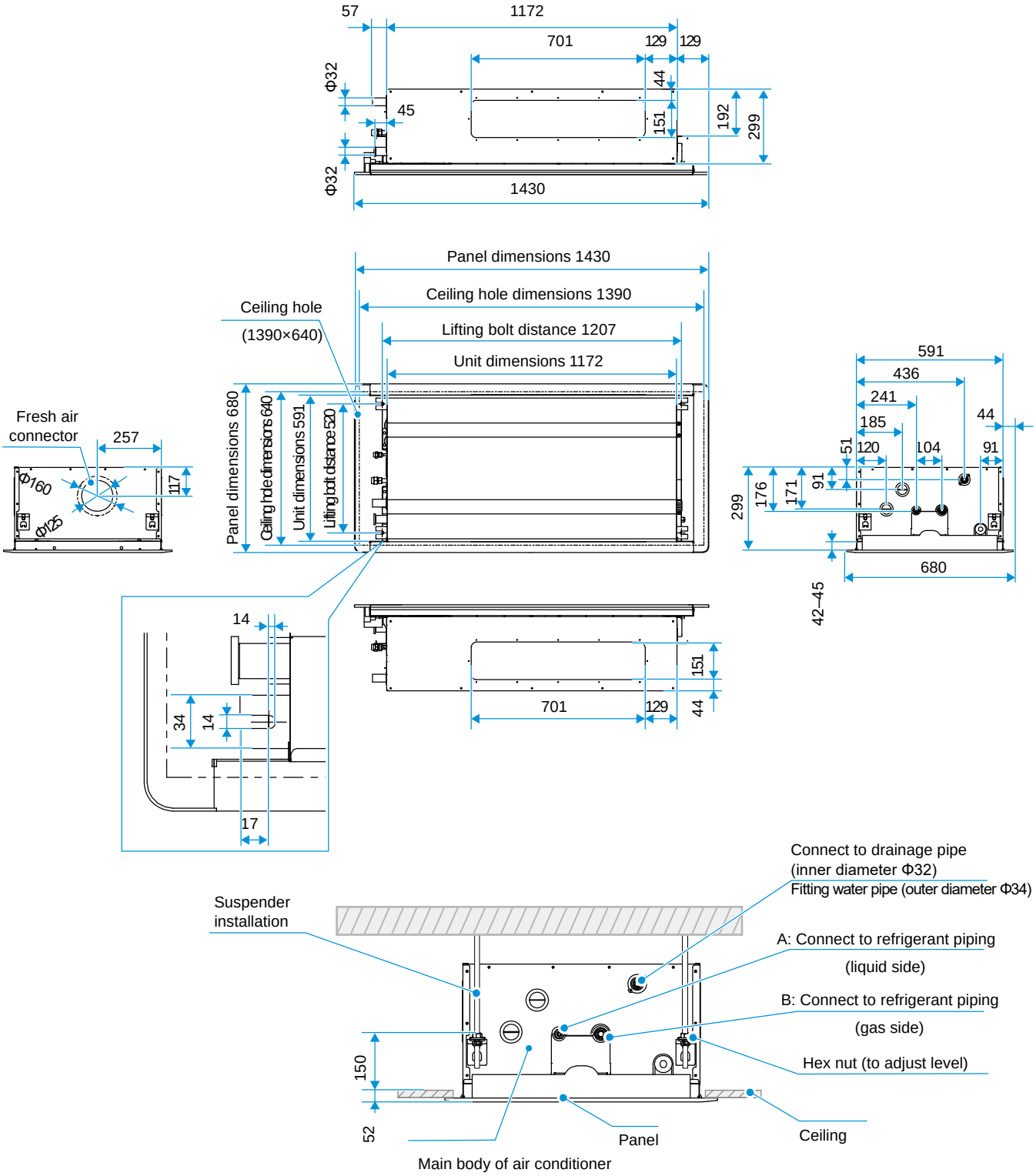
Notes:

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. Fan motor speed and 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 anechoic chamber.
5. The dimension is only the body size, excluding the size of the installation lug, connecting copper pipe, etc. For detailed dimensions, please refer to the installation manual.

2 Dimensions

2.1 Unit Dimensions

Figure 2.1: Two-way Cassette dimensions (unit: mm)



Model(kW)	A	B
kW≤3.6	Φ12.7	Φ6.35
3.6<kW≤5.6	Φ12.7	Φ6.35
5.6<kW≤7.1	Φ15.9	Φ9.52

3 Unit Placement

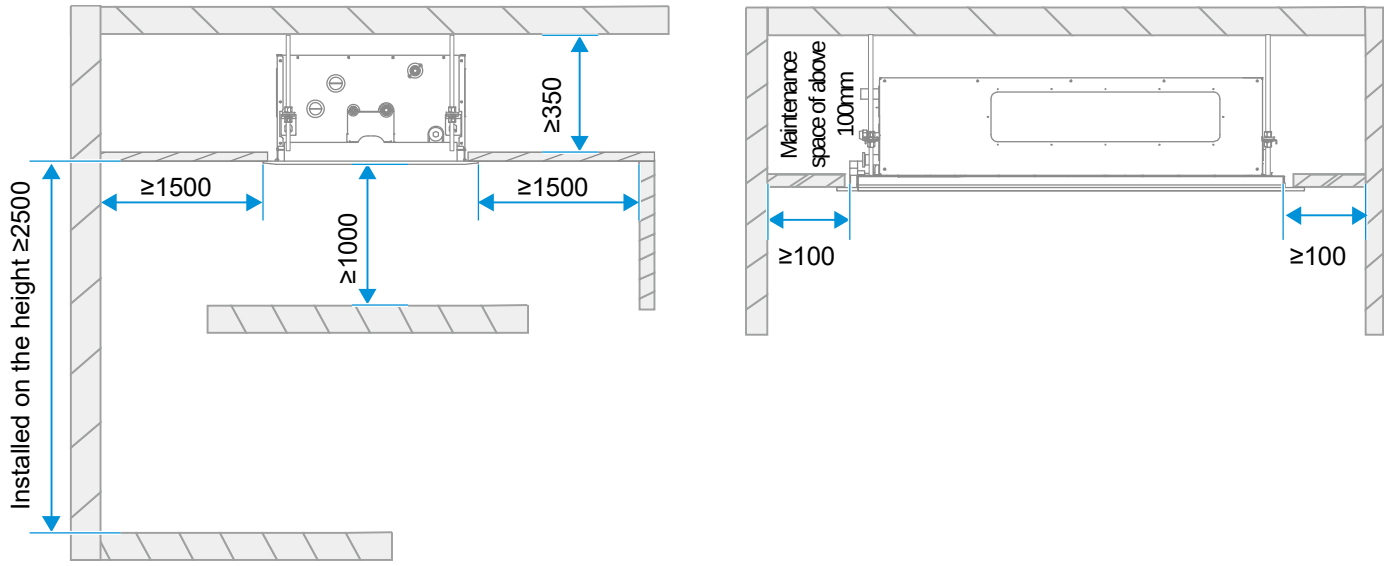
3.1 Placement Considerations

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: Two-way Cassette space requirements (unit: mm)

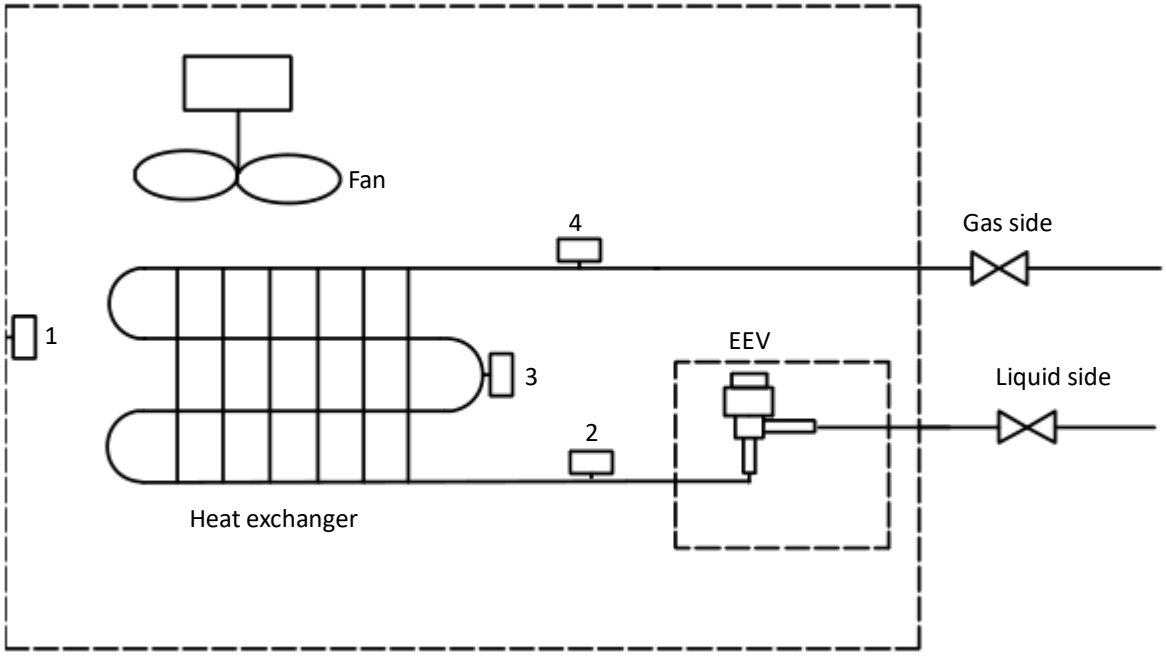


Notes:

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

4 Piping Diagram

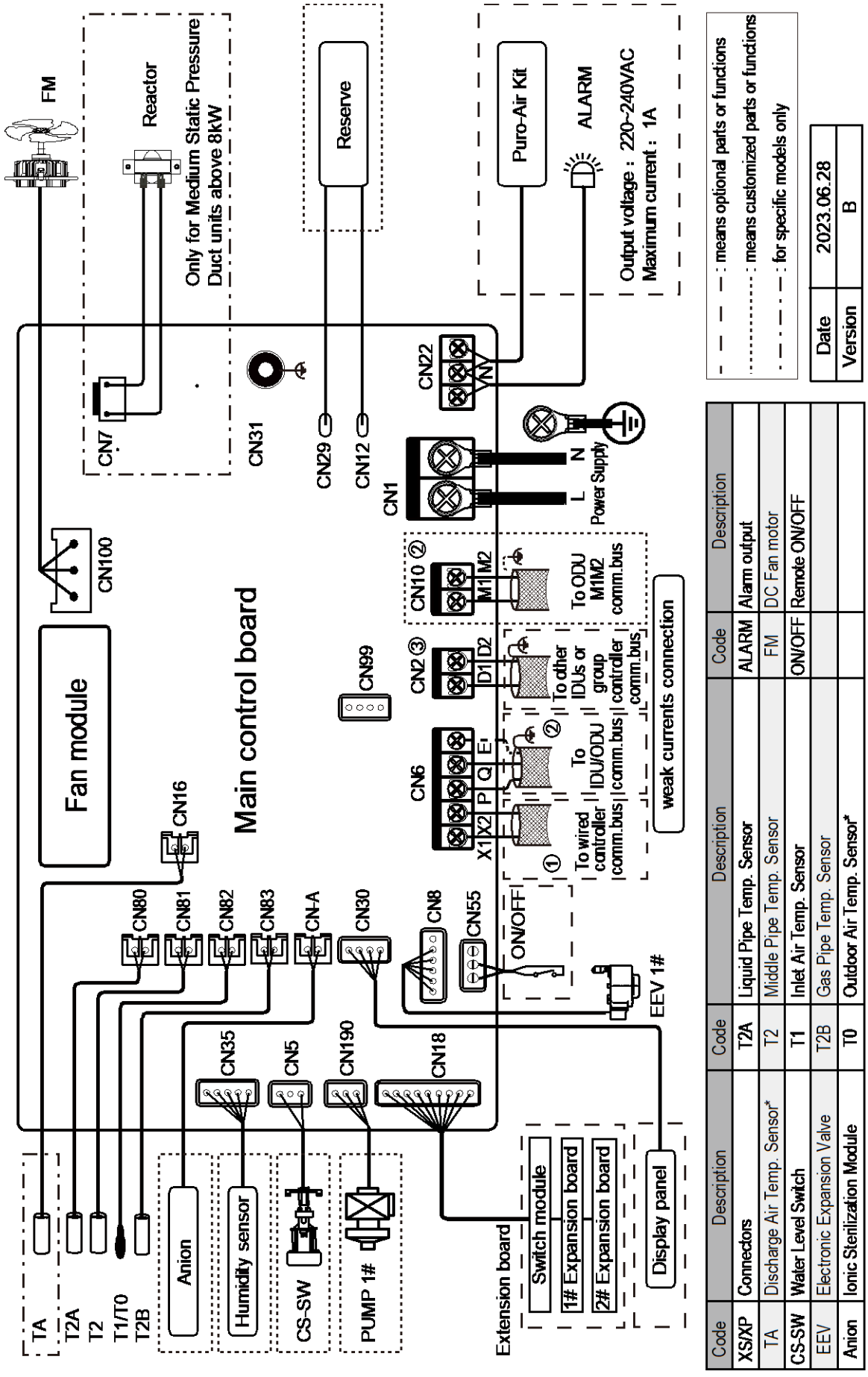
Figure 4.1: Two-way Cassette piping diagram



Legend		
1	T1	Inlet Air Temp. Sensor
2	T2A	Liquid Pipe Temp. Sensor
3	T2	Middle Pipe Temp. Sensor
4	T2B	Gas Pipe Temp. Sensor
5	EEV	Electronic Expansion Valve
6	FAN	DC Fan motor

5 Wiring Diagram

Figure 5.1: Two-way Cassette wiring diagram



Code	Description	Code	Description	Code	Description
XS/XP	Connectors	T2A	Liquid Pipe Temp. Sensor	ALARM	Alarm output
TA	Discharge Air Temp. Sensor*	T2	Middle Pipe Temp. Sensor	FM	DC Fan motor
CS-SW	Water Level Switch	T1	Inlet Air Temp. Sensor	ON/OFF	Remote ON/OFF
EEV	Electronic Expansion Valve	T2B	Gas Pipe Temp. Sensor		
Anion	Ionic Sterilization Module	T0	Outdoor Air Temp. Sensor*		

* Indicates that this sensor is only available for Fresh Air Processing Unit

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.
- The dotted lines indicate the field wiring or optional function.
- PQ and M1M2 communication ports both are used for indoor and outdoor communication, and only one of them can be used at a time. Meanwhile, be sure to connect the same communication ports (PQ to PQ; M1M2 to M1M2) in case of damage of the main control board.
- D1D2 communication ports are used for group control communication. When connecting the group controller, the D1D2 port of the indoor units that are to be group controlled must be connected in daisy chain, and the group controller must be connected to the X1X2 port of one of the indoor units in the group control, and set to group control mode. In addition, D1D2 communication ports can also be connected to the central controller.

6 Capacity Tables

6.1 Cooling Capacity Table

Table 6.1: Two-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
MIH22Q2HN18	2.0	1.9	2.1	2.0	2.2	2.0	2.2	1.9	2.3	1.9	2.3	1.7	2.4	1.7
MIH28Q2HN18	2.5	2.4	2.7	2.6	2.8	2.5	2.8	2.4	2.9	2.4	2.9	2.2	3.0	2.1
MIH36Q2HN18	3.2	3.1	3.4	3.2	3.6	3.3	3.6	3.1	3.7	3.0	3.8	2.9	3.9	2.7
MIH45Q2HN18	4.0	3.8	4.3	3.9	4.5	3.9	4.5	3.8	4.6	3.7	4.7	3.5	4.8	3.3
MIH56Q2HN18	5.0	4.8	5.3	4.8	5.6	4.9	5.6	4.7	5.7	4.6	5.8	4.3	6.0	4.1
MIH71Q2HN18	6.3	6.0	6.7	6.1	7.0	6.2	7.1	6.0	7.2	5.8	7.4	5.5	7.6	5.2

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

Notes:
1.Shaded cells indicate rating condition

6.2 Heating Capacity Table

Table 6.2: Two-way Cassette heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	SHC	SHC	SHC	SHC	SHC	SHC
MIH22Q2HN18	2.8	2.8	2.6	2.5	2.4	2.3
MIH28Q2HN18	3.4	3.4	3.2	3.1	3.0	2.8
MIH36Q2HN18	4.2	4.2	4.0	3.8	3.8	3.5
MIH45Q2HN18	5.3	5.3	5.0	4.8	4.7	4.4
MIH56Q2HN18	6.7	6.6	6.3	6.1	5.9	5.5
MIH71Q2HN18	8.5	8.4	8.0	7.8	7.5	7.0

Abbreviations:
SHC: Sensible heating capacity(kW)

Notes:
1.Shaded cells indicate rating condition

7 Electrical Characteristics

Table 7.1: Two-way Cassette electrical characteristics

Model name	Power supply						Indoor fan motors	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated power output (W)	FLA
MIH22Q2HN18	50/60	220-240	198	242	0.47	15	50	0.38
MIH28Q2HN18	50/60	220-240	198	242	0.47	15	50	0.38
MIH36Q2HN18	50/60	220-240	198	242	0.52	15	50	0.42
MIH45Q2HN18	50/60	220-240	198	242	0.59	15	50	0.47
MIH56Q2HN18	50/60	220-240	198	242	0.9	15	50	0.72
MIH71Q2HN18	50/60	220-240	198	242	1.3	15	50	1.04

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

8 Sound Levels

8.1 Overall

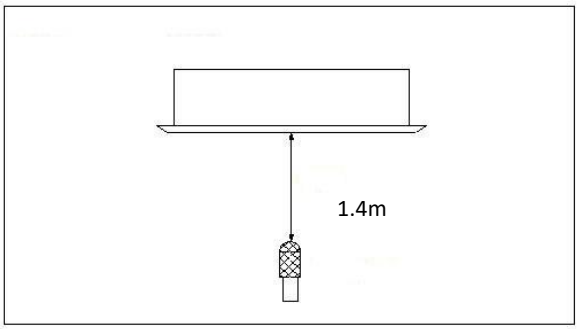
Table 8.1: Two-way Cassette sound pressure levels[1]

Model name	Sound pressure levels dB(A)						
	SSH	SH	H	M	L	SL	SSL
MIH22Q2HN18	33	31	30	29	27	25	24
MIH28Q2HN18	33	31	30	29	27	25	24
MIH36Q2HN18	35	33	32	30	29	27	25
MIH45Q2HN18	37	36	35	34	32	31	30
MIH56Q2HN18	39	37	36	35	33	31	30
MIH71Q2HN18	44	42	41	40	38	36	34

Notes:

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

Figure 8.1: Two-way Cassette sound pressure level measurement



8.2 Octave Band Levels

Figure 8.2: MIH22(28)Q2HN18 octave band levels

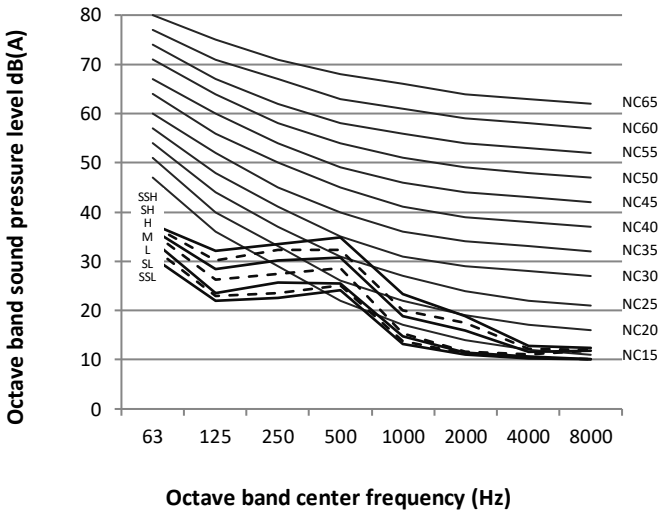


Figure 8.3: MIH36Q2HN18 *octave band levels*

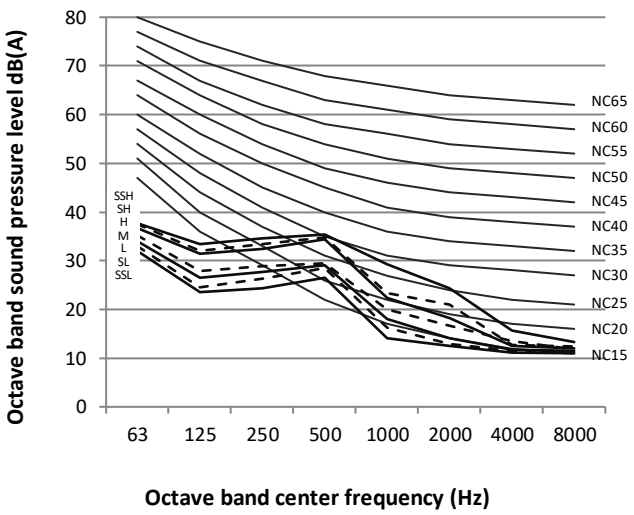


Figure 8.4: MIH45Q2HN18 octave band levels

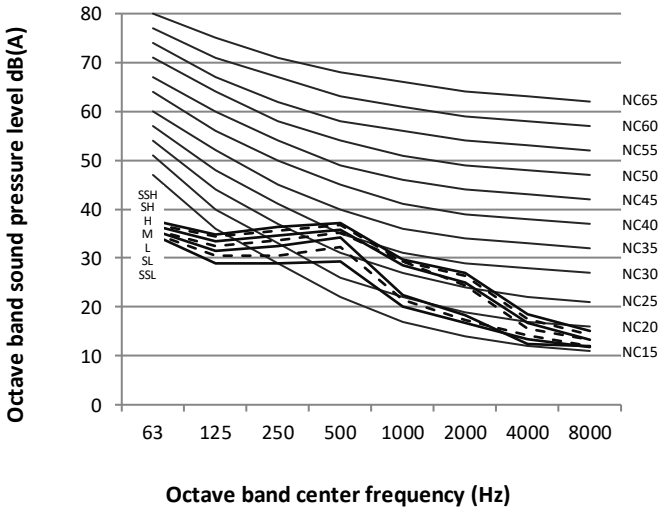


Figure 8.5: MIH56Q2HN18 *octave band levels*

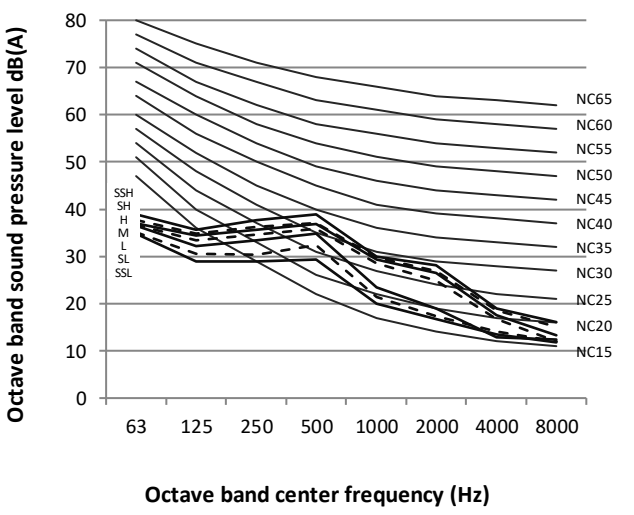
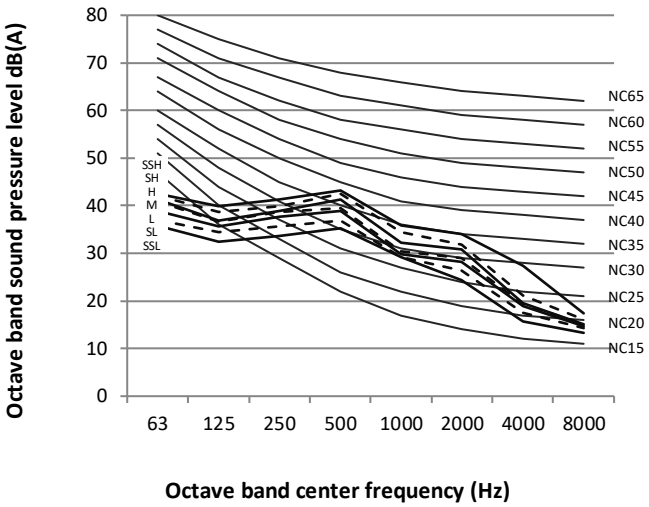


Figure 8.6: MIH71Q2HN18 octave band levels



9 Temperature and Airflow Distributions

9.1 Simulate condition

Table 9.1: Two-way Cassette simulate condition

Model name	Room size (m)	Ceiling height (m)	Flow angle (Cooling/Heating)	Placing
MIH22Q2HN18	6*6	2.7	35° /55°	Cassette
MIH28Q2HN18	6*6	2.7	35° /55°	Cassette
MIH36Q2HN18	6*6	2.7	35° /55°	Cassette
MIH45Q2HN18	8*8	2.7	35° /55°	Cassette
MIH56Q2HN18	8*8	2.7	35° /55°	Cassette
MIH71Q2HN18	8*8	2.7	35° /55°	Cassette

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 (unit: m/s)

Figure 9.1: MIH22Q2HN18 cooling at 300S

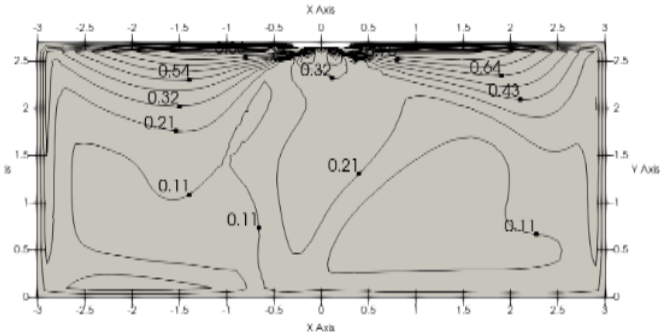


Figure 9.2: MIH22Q2HN18 heating at 300S

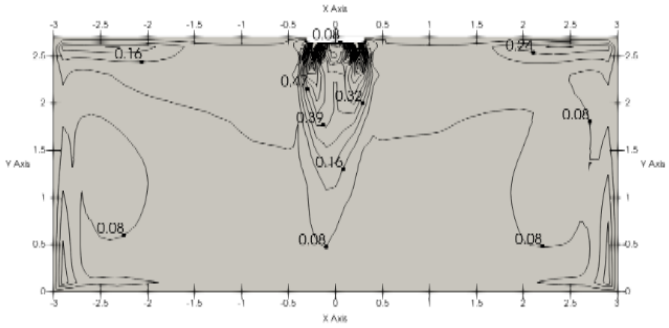


Figure 9.3: MIH28Q2HN18 cooling at 300S

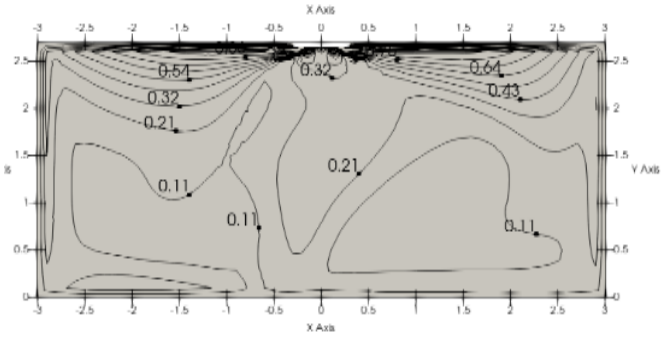


Figure 9.4: MIH28Q2HN18 heating at 300S

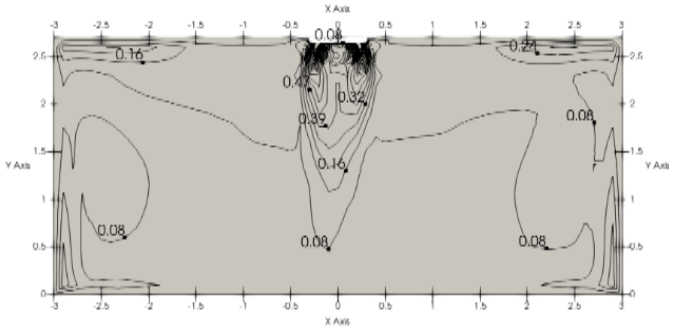


Figure 9.5: MIH36Q2HN18 cooling at 300S

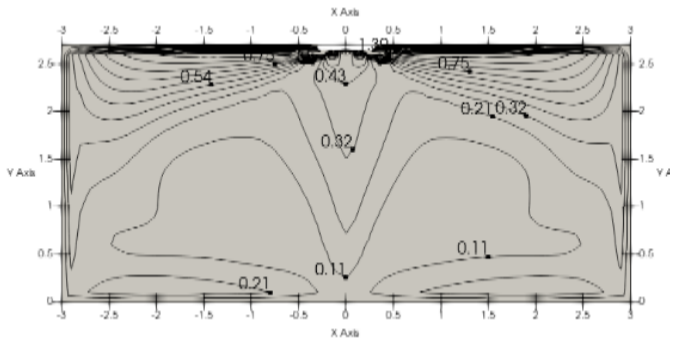


Figure 9.6: MIH36Q2HN18 heating at 300S

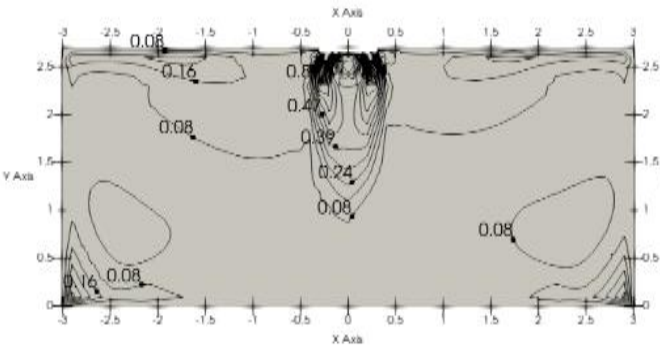


Figure 9.7: MIH45Q2HN18 cooling at 300S

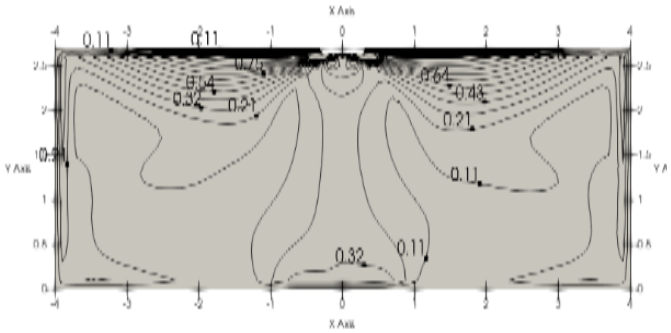


Figure 9.8: MIH45Q2HN18 heating at 300S

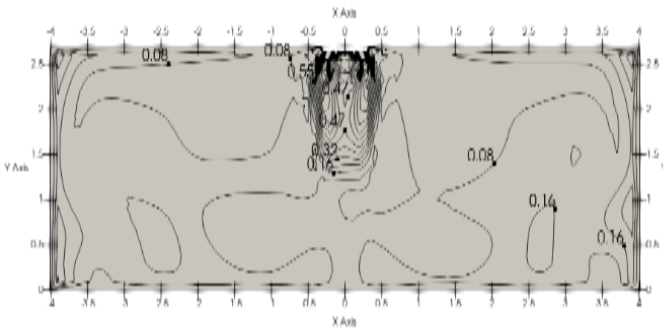


Figure 9.9: MIH56Q2HN18 cooling at 300S

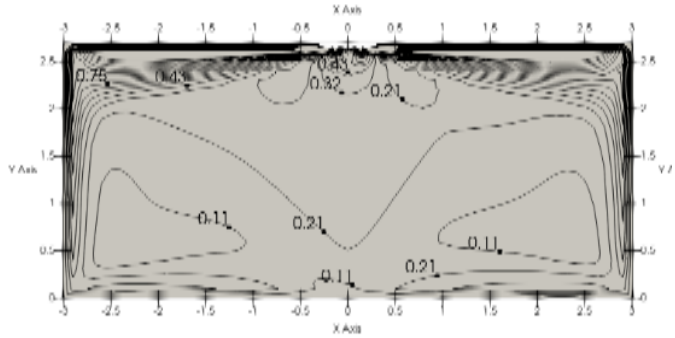


Figure 9.10: MIH56Q2HN18 heating at 300S

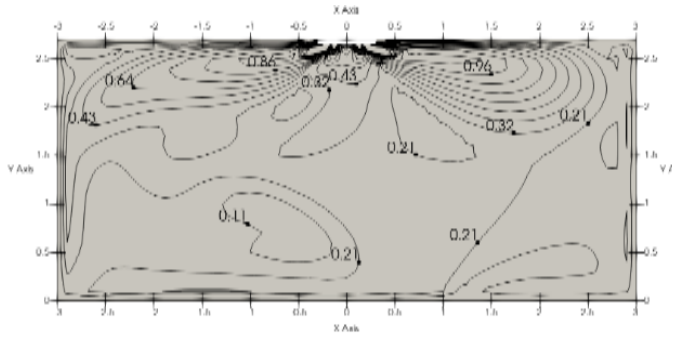


Figure 9.11: MIH71Q2HN18 cooling at 300S

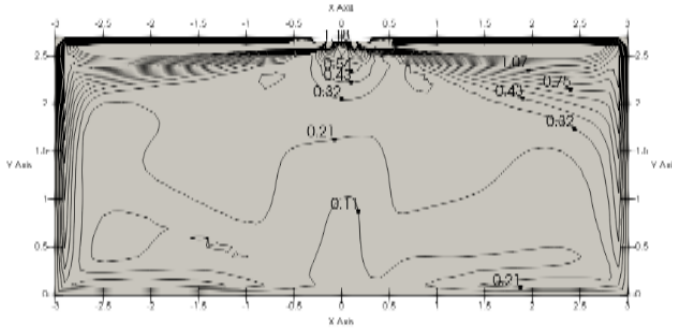
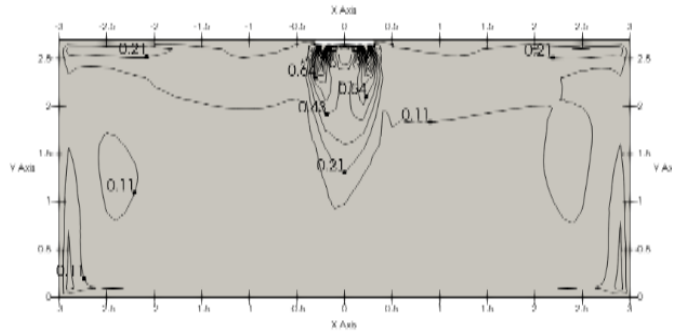


Figure 9.12: MIH71Q2HN18 heating at 300S



9.3 Temperature distributions (unit: °C)

Figure 9.13: MIH22Q2HN18 cooling at 300S

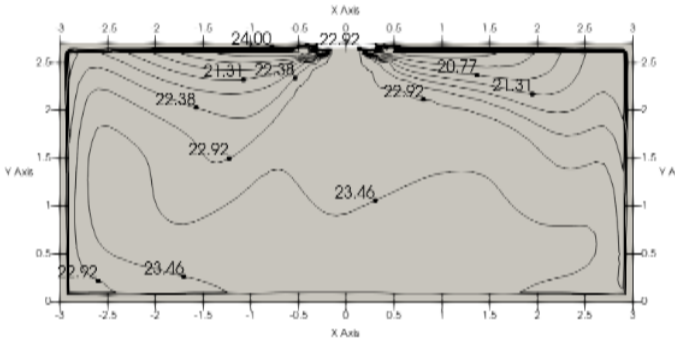


Figure 9.14: MIH22Q2HN18 heating at 300S

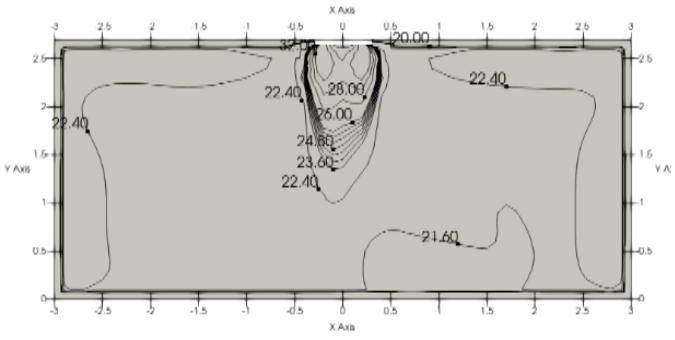


Figure 9.15: MIH28Q2HN18 cooling at 300S

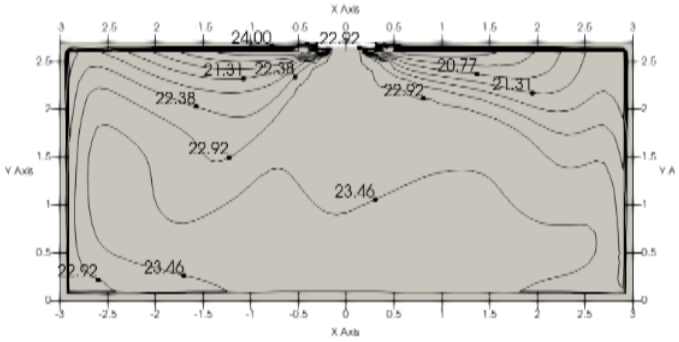


Figure 9.16: MIH28Q2HN18 heating at 300S

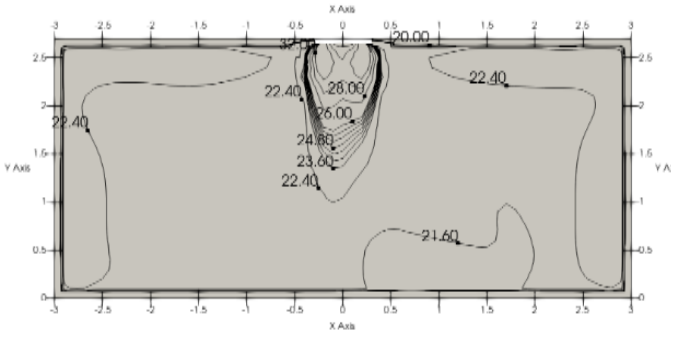


Figure 9.17: MIH36Q2HN18 cooling at 300S

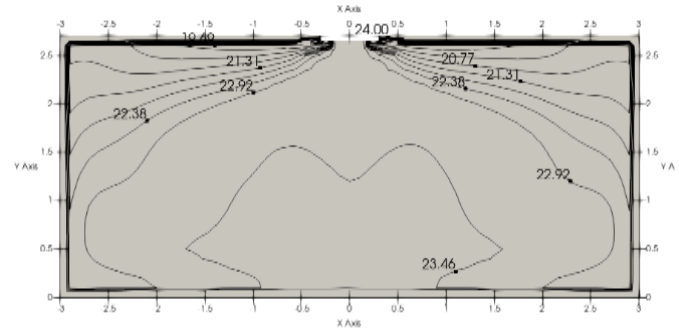


Figure 9.18: MIH36Q2HN18 heating at 300S

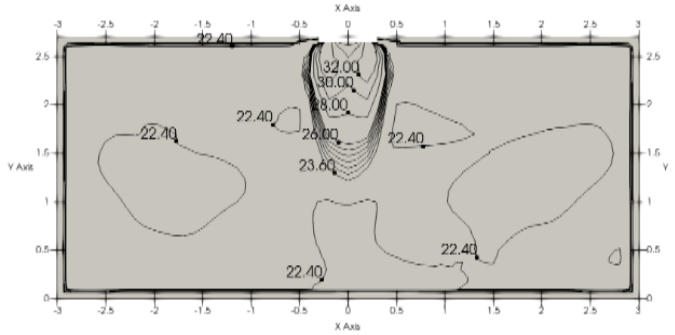


Figure 9.19: MIH45Q2HN18 cooling at 300S

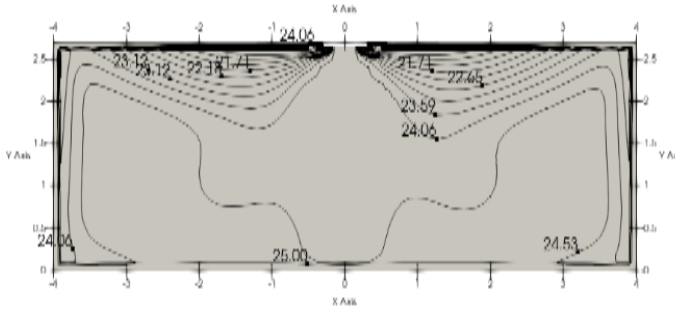


Figure 9.20: MIH45Q2HN18 heating at 300S

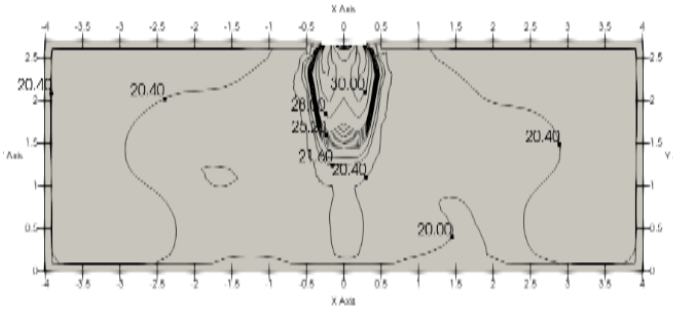


Figure 9.21: MIH56Q2HN18 cooling at 300S

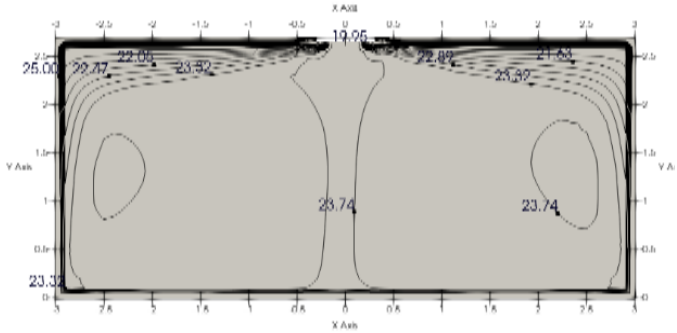


Figure 9.22: MIH56Q2HN18 heating at 300S

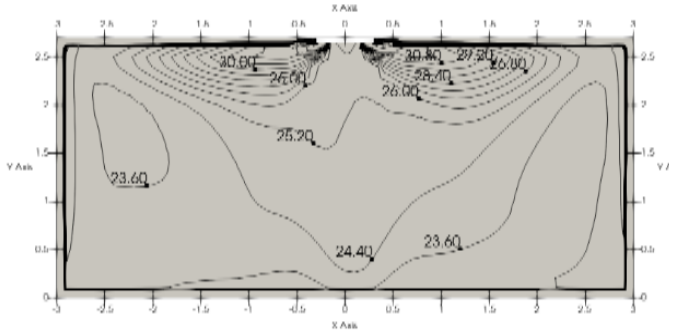


Figure 9.23: MIH71Q2HN18 cooling at 300S

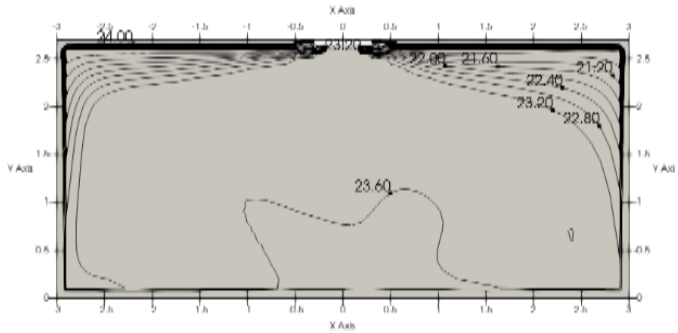
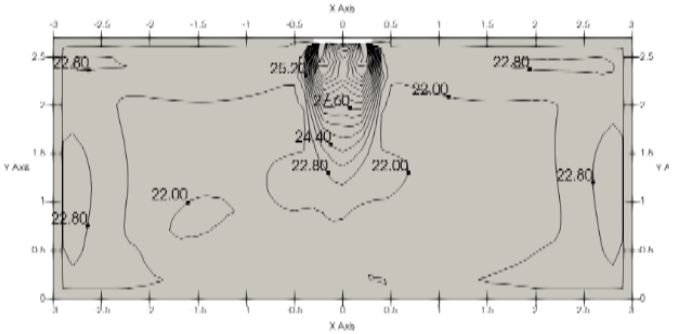


Figure 9.24: MIH71Q2HN18 heating at 300S



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