R410A/R32

Commercial Air Conditioners

Engineering Data

Ceiling&Floor VRF IDU



MIH36DLN18	MIH90DLN18
MIH45DLN18	MIH100DLN18
MIH56DLN18	MIH112DLN18
MIH71DLN18	MIH125DLN18
MIH80DLN18	MIH140DLN18

Ceiling&Floor

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1 Specifications

MIH36DLN18 / MIH45DLN18 / MIH56DLN18

Model			MIH36DLN18	MIH45DLN18	MIH56DLN18
Power supply			1 phase, 220-240V, 50Hz		
Cooling[1]	Capacity	kW	3.6	4.5	5.6
		kBtu/h	12.3	15.4	19.1
	Power input	W	16	24	40
Heating[2]	Capacity	kW	4	5	6.3
		kBtu/h	13.7	17.1	21.5
	Power input	W	16	24	40
Fan motor	Model		ZKSN-50-8-5L-4	ZKSN-50-8-5L-4	ZKSN-50-8-5L-4
	Type		DC		
Indoor coil	Number of rows		3	3	3
	Tube pitch × row pitch	**mm**	18×10.72	18×10.72	18×10.72
	Fin spacing	mm	1.35	1.35	1.35
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ5 Inner-groove		
	Dimensions (L×H×W)	mm	730×21.44×288	730×21.44×288	730×21.44×288
	Number of circuits		8	8	8
Air flow rate[3]		m^3/h	564/539/514/492 /467/445/424	712/674/637/603 /565/531/500	927/883/840/794 /751/707/665
Sound pressure level[4]		dB(A)	32/30/29/28/27/26 /25	36/35/34/33/32/31 /30	43/41/40/38/36/34 /33
Sound power level		dB(A)	43/42/40/39/38/38 /37	47/45/45/43/42/41 /40	54/53/51/50/48/47 /45
Unit	Net dimensions[5] (WxHxD)	mm	1069×674×234		
	Packed dimensions (WxHxD)	mm	1190×755×313		
	Net/Gross weight	kg	24.7/29.5	24.7/29.5	24.7/29.5
Refrigerant type			R410A/R32		
Throttle		Type	Electronic expansion valve		
Design pressure (H/L)		MPa	4.4/1.5		
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. 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 in an 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.

MIH71DLN18 / MIH80DLN18 / MIH90DLN18

Model			MIH71DLN18	MIH80DLN18	MIH90DLN18
Power supply			1 phase, 220-240V, 50Hz		
Cooling[1]	Capacity	kW	7.1	8	9
		kBtu/h	24.2	27.3	30.7
	Power input	W	42	56	75
Heating[2]	Capacity	kW	8	9	10
		kBtu/h	27.3	30.7	34.1
	Power input	W	42	56	75
Fan motor	Model		ZKSN-60-8-7-3	ZKSN-60-8-7-3	ZKSN-60-8-7-3
	Type		DC		
Indoor coil	Number of rows		3	3	3
	Tube pitch × row pitch	mm	18×10.72	18×10.72	18×10.72
	Fin spacing	mm	1.35	1.35	1.35
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ5 Inner-groove		
	Dimensions (L×H×W)	mm	930×21.44×288	930×21.44×288	930×21.44×288
	Number of circuits		8	8	8
Air flow rate[3]		m3/h	1128/1062/1024/926/860/791/729	1300/1218/1138/1057/982/904/824	1480/1397/1302/1218/1138/1056/979
Sound pressure level[4]		dB(A)	43/40/39/37/35/34/33	45/44/42/40/38/36/34	48/47/46/44/42/40/37
Sound power level		dB(A)	54/53/52/51/49/48/48	55/53/51/50/49/46/44	58/57/55/54/52/50/49
Unit	Net dimensions[5] (WxHxD)	mm	1284×674×234		
	Packed dimensions (WxHxD)	mm	1405×755×323		
	Net/Gross weight	kg	29.8/34.8	29.8/34.8	29.8/34.8
Refrigerant type			R410A/R32		
Throttle		Type	Electronic expansion valve		
Design pressure (H/L)		MPa	4.4/1.5		
Pipe connections	Liquid/Gas pipe	mm	Φ9.52/Φ15.9		
	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. 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 in an 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.

MIH100DLN18 / MIH112DLN18 / MIH125DLN18 / MIH140DLN18

Model			MIH100DLN18	MIH112DLN18	MIH125DLN18	MIH140DLN18
Power supply			1 phase, 220-240V, 50Hz			
Cooling[1]	Capacity	kW	10	11.2	12.5	14
		kBtu/h	34.1	38.2	42.7	47.8
	Power input	W	50	65	95	140
Heating[2]	Capacity	kW	11.2	12.5	14	16
		kBtu/h	38.2	42.7	47.8	54.6
	Power input	W	50	65	95	140
Fan motor	Model		ZKSN-60-8-7-3	ZKSN-60-8-7-3	ZKSN-60-8-7-3	ZKSN-60-8-7-3
	Type		DC			
Indoor coil	Number of rows		3	3	3	3
	Tube pitch × row pitch	mm	18×10.72	18×10.72	18×10.72	18×10.72
	Fin spacing	mm	1.35	1.35	1.35	1.35
	Fin type		Hydrophilic aluminum			
	Tube OD and type	mm	Φ5 Inner-groove			
	Dimensions (L×H×W)	mm	1305×21.44×288	1305×21.44×288	1305×21.44×288	1305×21.44×288
	Number of circuits		8	8	8	8
Air flow rate[3]		m3/h	1497/1469/1296/1200/1104/1015/918	1648/1530/1469/1292/1178/1067/956	2012/1879/1772/1649/1531/1469/1285	2206/2070/1937/1810/1677/1516/1402
Sound pressure level[4]		dB(A)	42/40/39/37/35/33/32	44/42/41/39/37/35/33	49/48/46/44/42/40/38	51.5/50/48/46/44/42/40
Sound power level		dB(A)	54/53/51/50/48/46/44	56/54/53/51/49/47/45	60/59/58/56/54/53/51	63/62/60/58/56/54/53
Unit	Net dimensions[5] (WxHxD)	mm	1649×674×234			
	Packed dimensions (WxHxD)	mm	1770×755×323			
	Net/Gross weight	kg	36.4/42.7	36.4/42.7	36.4/42.7	36.4/42.7
Refrigerant type			R410A/R32			
Throttle		Type	Electronic expansion valve			
Design pressure (H/L)		MPa	4.4/1.5			
Pipe connections	Liquid/Gas pipe	mm	Φ9.52/Φ15.9			
	Drain pipe	mm	OD Φ25			

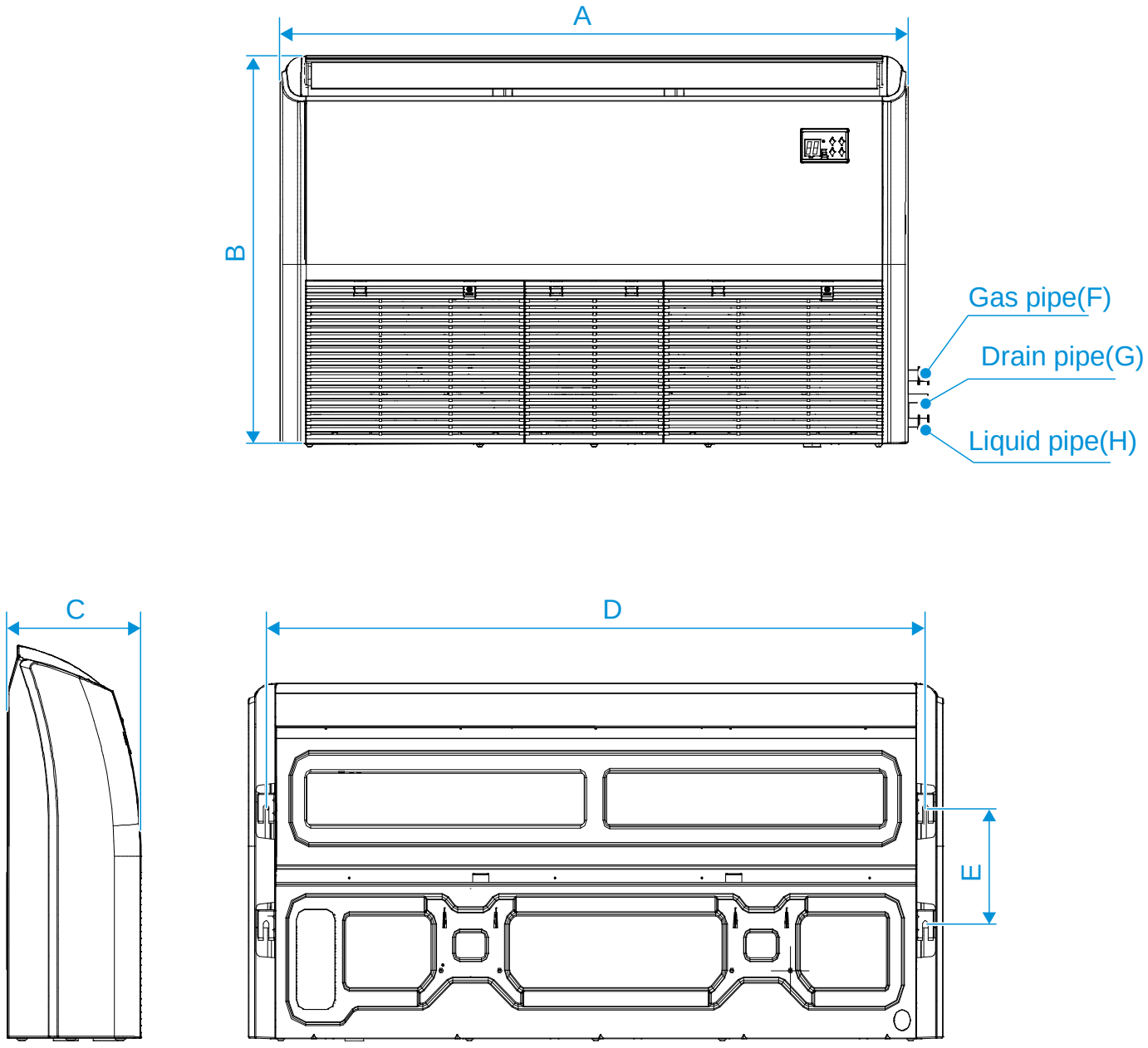
Notes:

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. 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 in an 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: Ceiling&Floor dimensions (unit: mm)



Capacity(kW)	A	B	C	D	E	F	G	H
kW≤5.6	1069	674	234	984	221	Φ12.7	Φ25	Φ6.35
5.6<kW≤9.0	1284	674	234	1199	221	Φ15.9	Φ25	Φ9.52
9.0<kW≤14.0	1649	674	234	1565	221	Φ15.9	Φ25	Φ9.52

3 Unit Placement

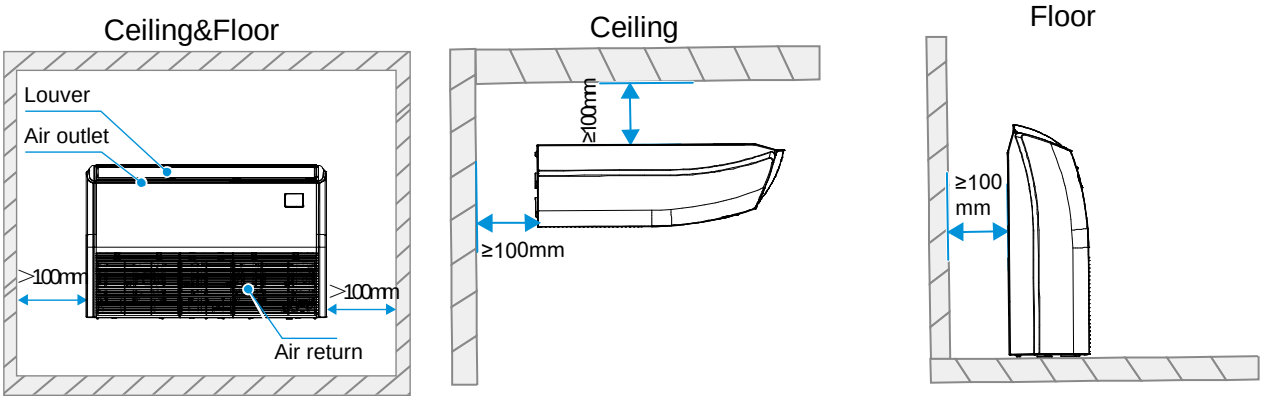
3.1 Placement Considerations

Unit placement should take account of the following considerations:

- Units should not be installed in the following locations:
  - A place filled with mineral oil, fumes or mist, like a kitchen.
  - A place where there are corrosive gases, such as acid or alkaline gases..
  - A place exposed to combustible gases and using volatile combustible gases such as diluent or gasoline.
  - A place where there is equipment emitting electromagnetic radiation.
  - A place where there is a high salt content in the air like a coast.
  - Do not use the air conditioner in an environment where an explosion may occur.
  - Places like in vehicles or cabin rooms.
  - Factories with major voltage fluctuations in the power supplies.
  - Other special environmental conditions.
- Units should be installed in positions where:
  - Ensure that the airflow in and out of the IDU is reasonably organized to form an air circulation in the room.
  - Ensure IDU maintenance space.
  - The nearer the drainage pipe and copper pipe are to the ODU, the lower the pipe cost is.
  - Prevent the air conditioner from blowing directly to the human body.
  - The closer the wiring to the power cabinet, the lower the wiring cost is.
  - Keep the air-conditioning return air away from the setting sun of the room.
  - Be careful not to interfere with the light tank, fire pipe, gas pipe and other facilities.
  - The IDU should not be lifted in the places like load-bearing beam and columns that affect the structural safety of the house.
  - The wired controller and the IDU should be in the same installation space; otherwise, the sampling point setting of the wired controller need to be changed.

3.2 Space Requirements

Figure 3.1: Ceiling&Floor space requirements (unit: mm)



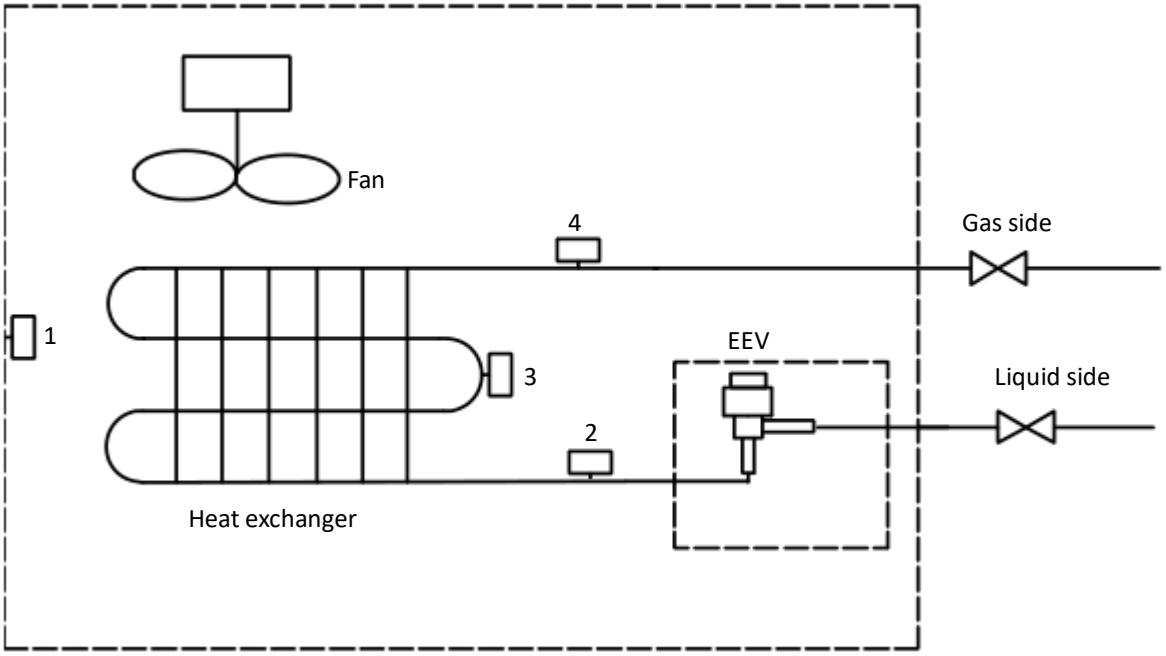
Installation distance from both sides of the indoor unit to the wall

Installation distance from the top and back of the indoor unit to the wall

Installation distance from the back of the indoor unit to the wall

4 Piping Diagram

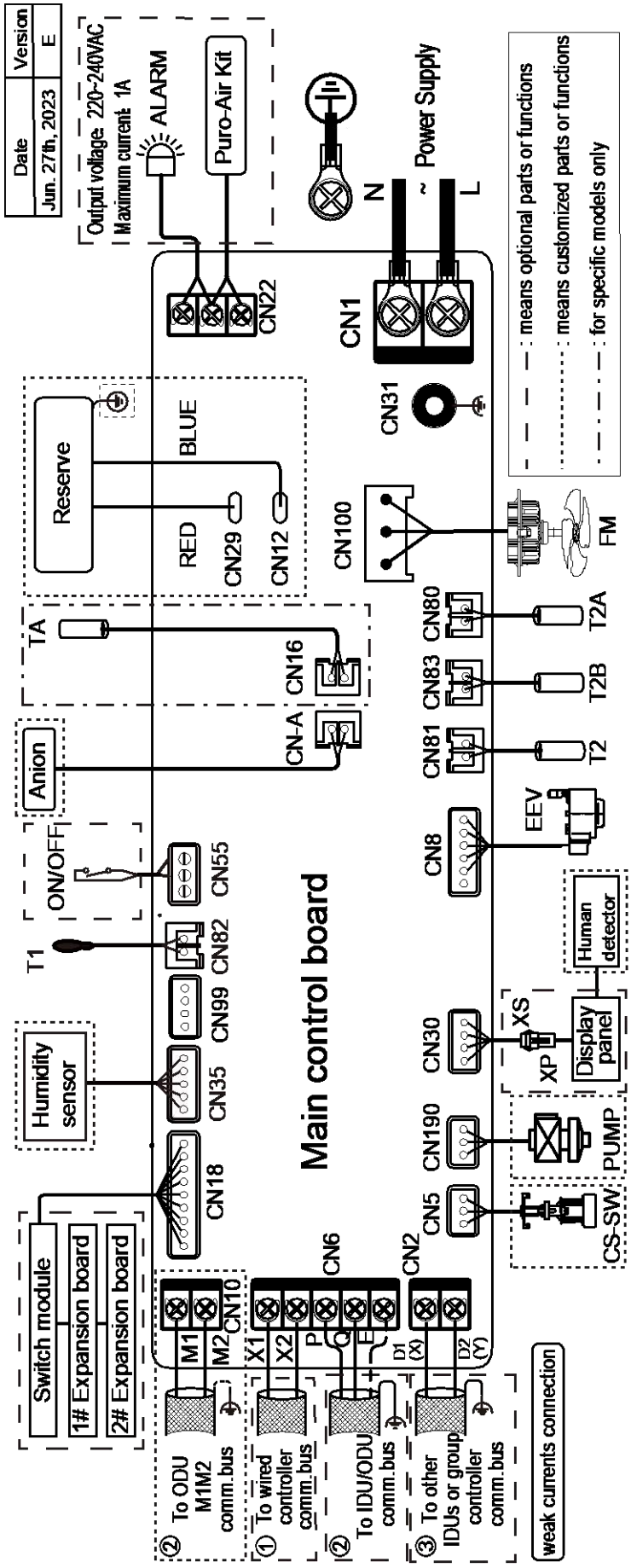
Figure 4.1: Ceiling&Floor piping diagram



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 Wiring Diagram

Figure 5.1: Ceiling&Floor wiring diagram



Code	Description	Code	Description
ALARM	Alarm Output	T2	Middle Pipe Temp. Sensor
Anion	Ionic Sterilization Module	T2A	Liquid Pipe Temp. Sensor
CS-SW	Water Level Switch	T2B	Gas Pipe Temp. Sensor
EEV	Electronic Expansion Valve	TA	Discharge Air Temp. Sensor*
FM	DC Fan Motor	ON/OFF	Remote ON/OFF
T0	Outdoor Air Temp. Sensor*	XS/XP	Connectors
T1	Inlet 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.
- 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: Ceiling&Floor 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
MIH36DLN18	3.2	3.0	3.4	3.0	3.6	3.1	3.6	3.0	3.7	2.9	3.8	2.8	3.9	2.7
MIH45DLN18	4.0	3.6	4.3	3.8	4.5	3.8	4.5	3.7	4.6	3.6	4.7	3.4	4.8	3.3
MIH56DLN18	5.0	4.5	5.3	4.6	5.6	4.7	5.6	4.6	5.7	4.5	5.8	4.2	6.0	4.1
MIH71DLN18	6.3	5.7	6.7	5.8	7.0	5.9	7.1	5.8	7.2	5.6	7.4	5.4	7.6	5.2
MIH80DLN18	7.1	6.4	7.6	6.6	7.9	6.7	8.0	6.5	8.1	6.3	8.3	6.0	8.5	5.8
MIH90DLN18	8.0	7.2	8.5	7.4	8.9	7.5	9.0	7.3	9.1	7.1	9.4	6.8	9.6	6.5
MIH100DLN18	8.9	8.1	9.5	8.3	9.9	8.4	10.0	8.2	10.1	8.0	10.4	7.6	10.7	7.3
MIH112DLN18	9.9	9.1	10.6	9.3	11.1	9.4	11.2	9.2	11.3	8.9	11.6	8.4	11.9	8.1
MIH125DLN18	11.0	10.1	11.7	10.3	12.3	10.4	12.5	10.2	12.6	9.9	12.9	9.3	13.2	9.0
MIH140DLN18	12.4	11.3	13.2	11.6	13.8	11.7	14.0	11.4	14.2	11.1	14.5	10.5	14.9	10.1

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

Notes:
1.Shaded cells indicate rating condition

6.2 Heating Capacity Table

Table 6.2: Ceiling&Floor heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	SHC	SHC	SHC	SHC	SHC	SHC
MIH36DLN18	4.2	4.2	4.0	3.8	3.8	3.5
MIH45DLN18	5.3	5.3	5.0	4.8	4.7	4.4
MIH56DLN18	6.7	6.6	6.3	6.1	5.9	5.5
MIH71DLN18	8.5	8.4	8.0	7.8	7.5	7.0
MIH80DLN18	9.5	9.5	9.0	8.7	8.5	7.8
MIH90DLN18	10.6	10.5	10.0	9.7	9.4	8.8
MIH100DLN18	11.9	11.8	11.2	10.9	10.5	9.8
MIH112DLN18	13.3	13.1	12.5	12.1	11.8	10.9
MIH125DLN18	14.8	14.7	14.0	13.6	13.2	12.2
MIH140DLN18	17.0	16.7	16.0	15.6	15.0	14.0

Abbreviations:
SHC: Sensible Heat Capacity

Notes:
1.Shaded cells indicate rating condition

7 Electrical Characteristics

Table 7.1: Ceiling&Floor electrical characteristics

Model	Power supply						Indoor Fan Motor	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (W)	FLA
MIH36DLN18	50	220-240	198	264	0.20	15	50	0.16
MIH45DLN18	50	220-240	198	264	0.28	15	50	0.22
MIH56DLN18	50	220-240	198	264	0.43	15	50	0.34
MIH71DLN18	50	220-240	198	264	0.45	15	50	0.36
MIH80DLN18	50	220-240	198	264	0.60	15	60	0.48
MIH90DLN18	50	220-240	198	264	0.75	15	60	0.60
MIH100DLN18	50	220-240	198	264	0.63	15	60	0.50
MIH112DLN18	50	220-240	198	264	0.75	15	60	0.60
MIH125DLN18	50	220-240	198	264	1.00	15	60	0.80
MIH140DLN18	50	220-240	198	264	1.25	15	60	1.00

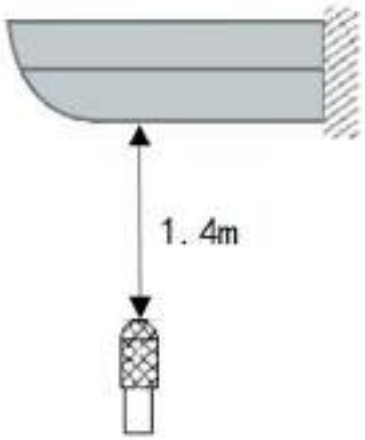
Abbreviations:
MCA: Min. Circuit Amps. (A), which is used to select the minimum circuit size to ensure safe operation over a long period of time. s
MFA: Max. Fuse Amps. (A), which is used to select the circuit breaker.
FLA: Full Load Amps. (A), which is the full load current of the indoor fan motor (reliable operation at the fastest speed setting).

8 Sound Levels

8.1 Overall

Model name	Sound pressure levels dB(A)						
	SSH	SH	H	M	L	SL	SSL
MIH36DLN18	32	30	29	28	27	26	25
MIH45DLN18	36	35	34	33	32	31	30
MIH56DLN18	43	41	40	38	36	34	33
MIH71DLN18	43	40	39	37	35	34	33
MIH80DLN18	45	44	42	40	38	36	34
MIH90DLN18	48	47	46	44	42	40	37
MIH100DLN18	42	40	39	37	35	33	32
MIH112DLN18	44	42	41	39	37	35	33
MIH125DLN18	49	48	46	44	42	40	38
MIH140DLN18	51.5	50	48	46	44	42	40

Figure 8.1: Ceiling&Floor sound pressure level measurement



8.2 Octave Band Levels

Figure 8.2: MIH36DLN18 *octave band levels*

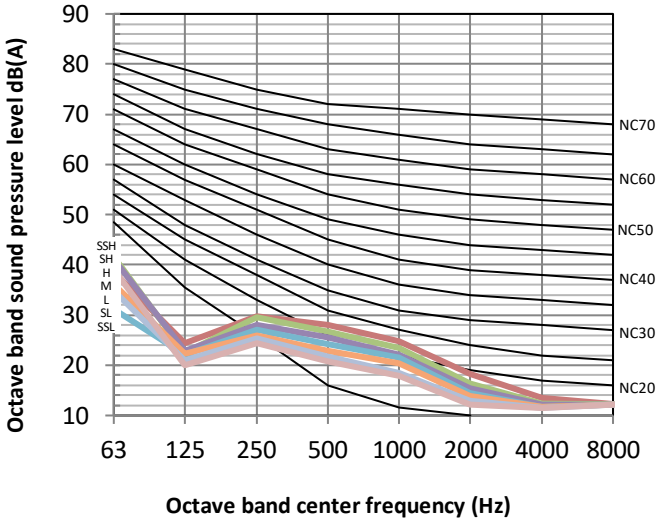


Figure 8.3: MIH45DLN18 *octave band levels*

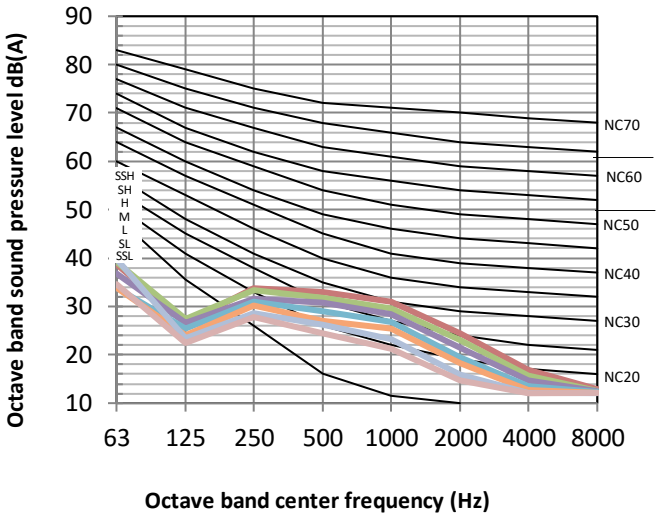


Figure 8.4: MIH56DLN18 *octave band levels*

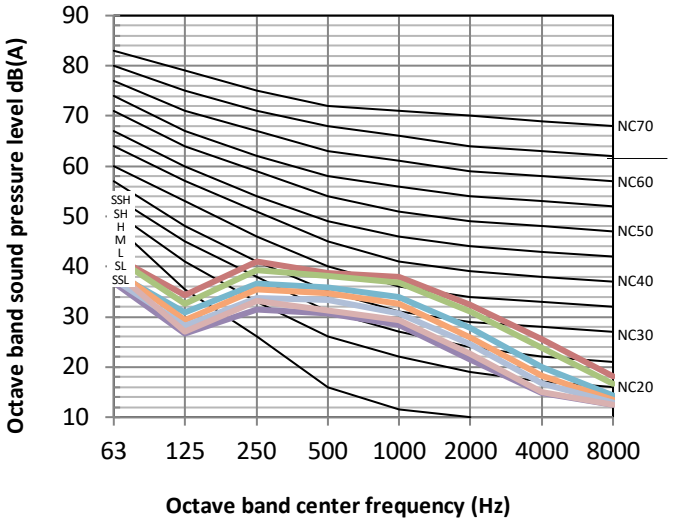


Figure 8.5: MIH71DLN18 *octave band levels*

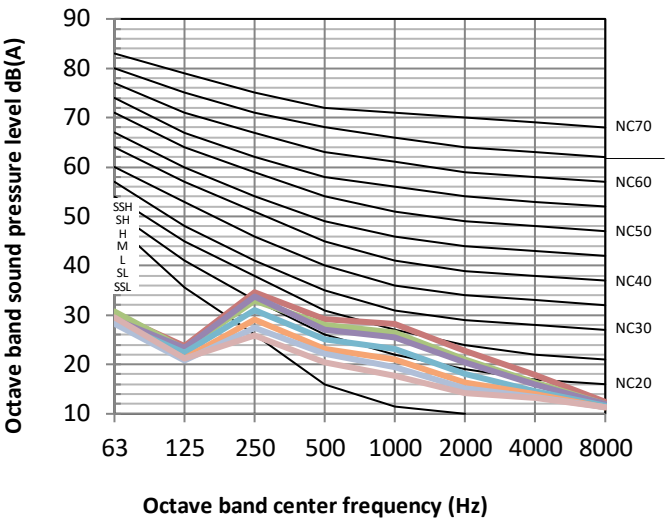


Figure 8.6: MIH80DLN18 *octave band levels*

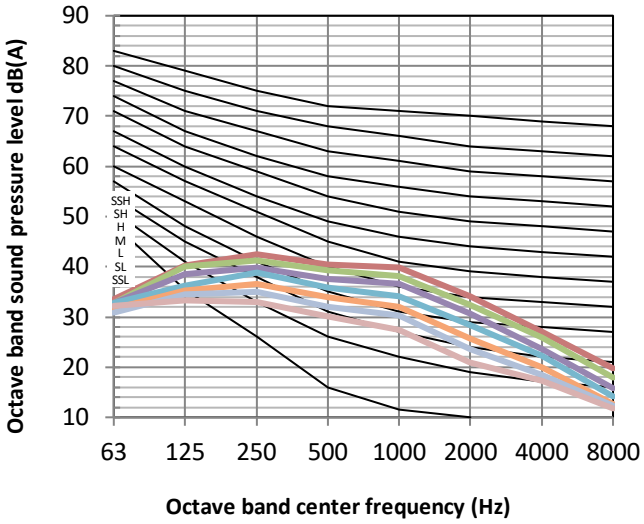


Figure 8.7: MIH90DLN18 *octave band levels*

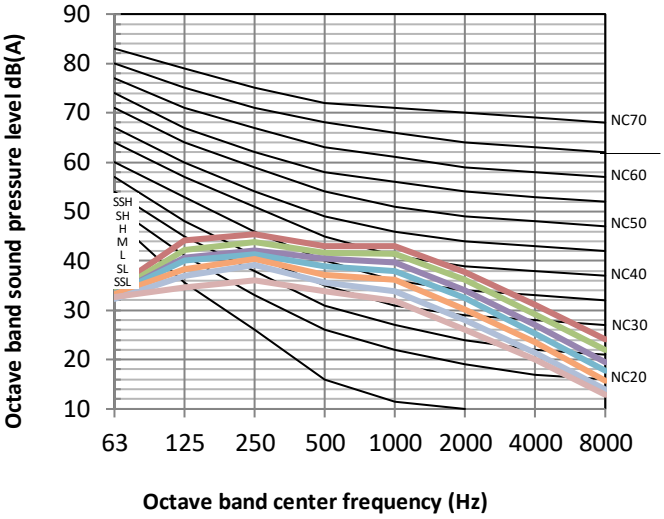


Figure 8.8: MIH100DLN18 *octave band levels*

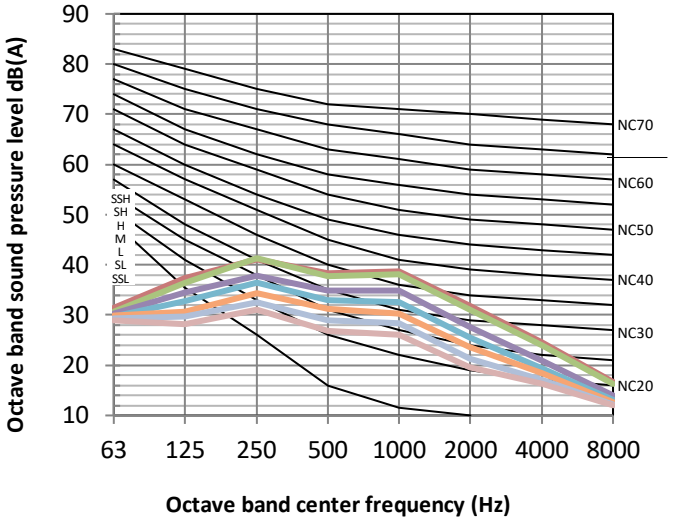


Figure 8.9: MIH112DLN18 *octave band levels*

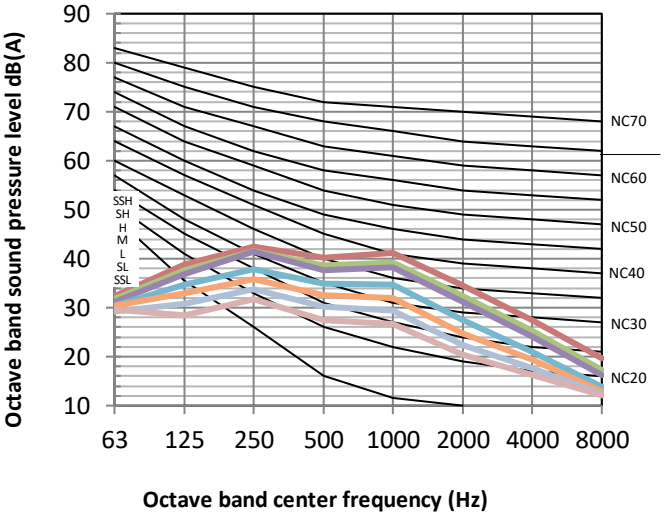


Figure 8.10: MIH125DLN18 *octave band levels*

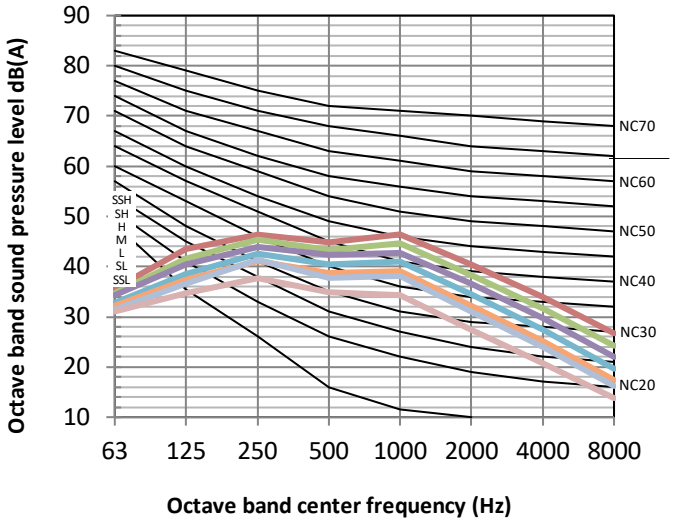
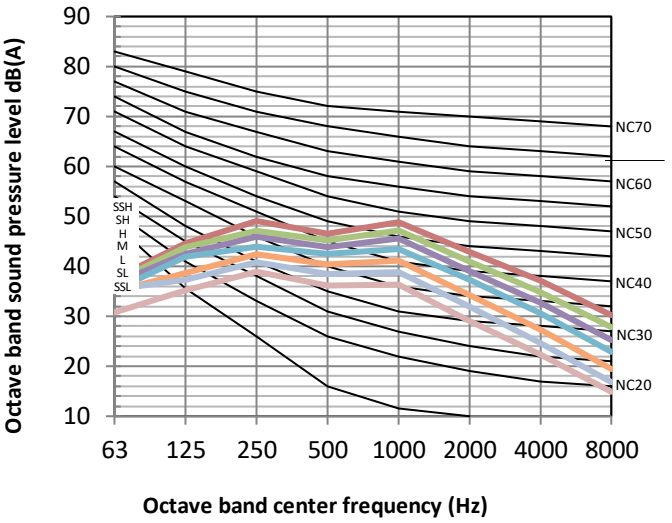


Figure 8.11: MIH140DLN18 *octave band levels*



9 Temperature and Airflow Distributions

9.1 Simulate condition

Table 9.1: Ceiling&Floor simulate condition

Model name	Room size (m)	Ceiling height (m)	Flow angle (Cooling/Heating)	Placing
MIH36DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH45DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH56DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH71DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH80DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH90DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH100DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH112DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH125DLN18	10×10	4	12°/52°	Ceiling&Floor
MIH140DLN18	10×10	4	12°/52°	Ceiling&Floor

Note:

1. These figures 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 under the influence of air temperature conditions, ceiling height, cooling/heating load, obstacles, etc.

9.2 Airflow distributions (unit: m/s)

Figure 9.1: MIH36DLN18 *cooling at 300S*

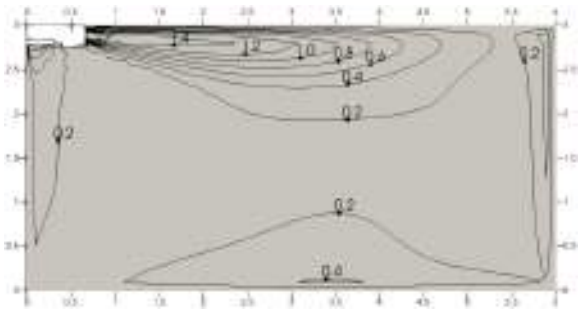


Figure 9.2: MIH36DLN18 *heating at 300S*

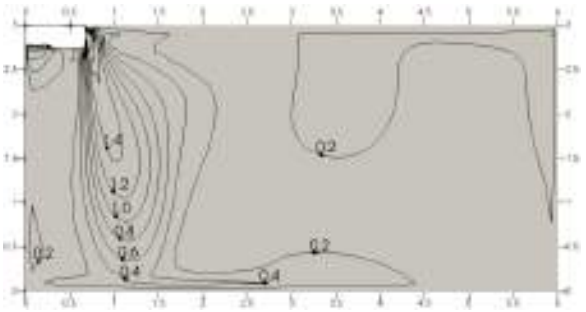


Figure 9.3: MIH45DLN18 *cooling at 300S*

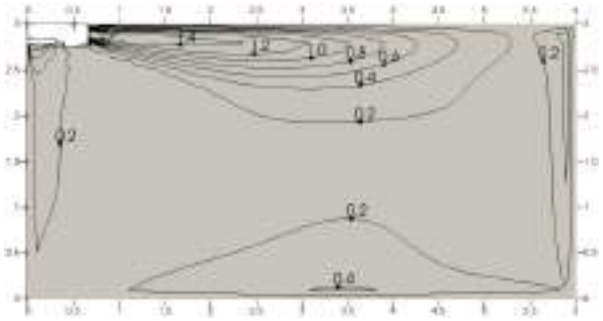


Figure 9.4: MIH45DLN18 *heating at 300S*

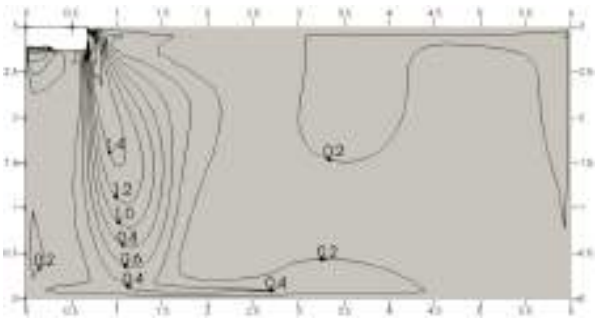


Figure 9.5: MIH56DLN18 *cooling at 300S*

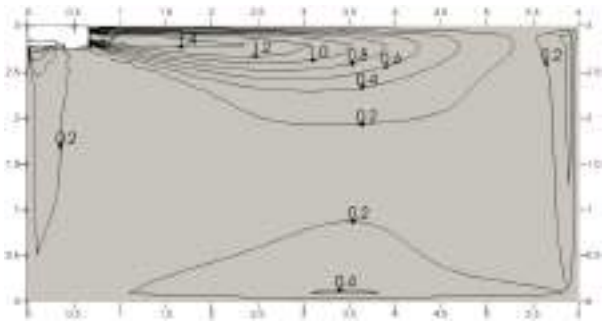


Figure 9.6: MIH56DLN18 *heating at 300S*

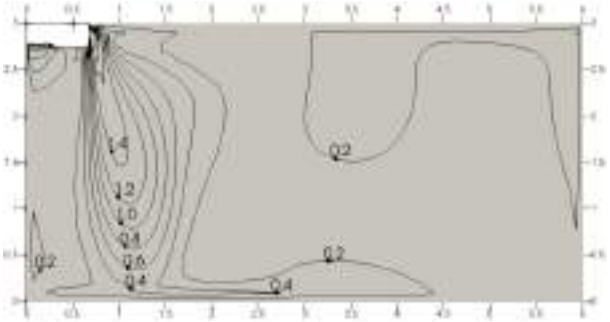


Figure 9.7: MIH71DLN18 *cooling at 300S*

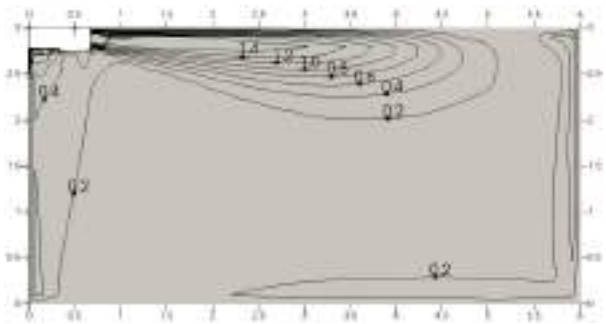


Figure 9.8: MIH71DLN18 *heating at 300S*

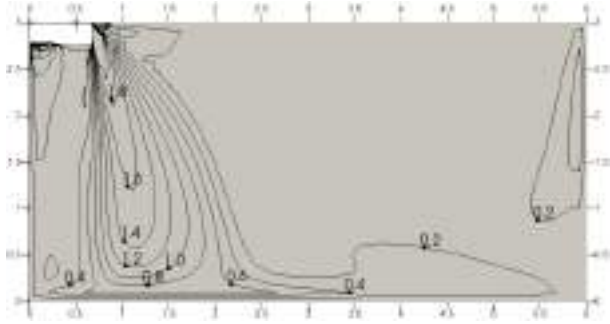


Figure 9.9: MIH80DLN18 *cooling at 300S*

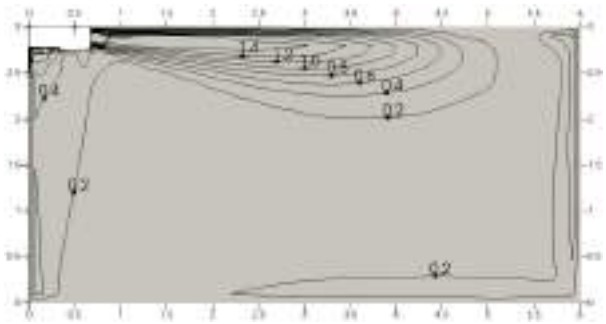


Figure 9.10: MIH80DLN18 *heating at 300S*

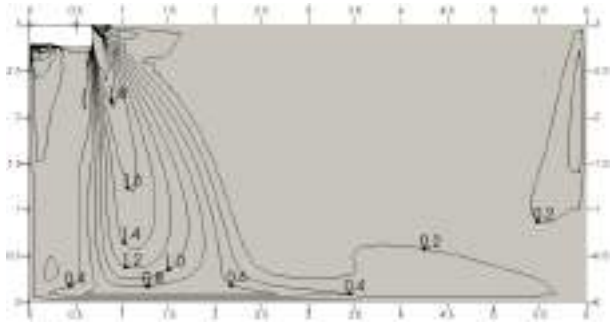


Figure 9.11: MIH90DLN18 *cooling at 300S*

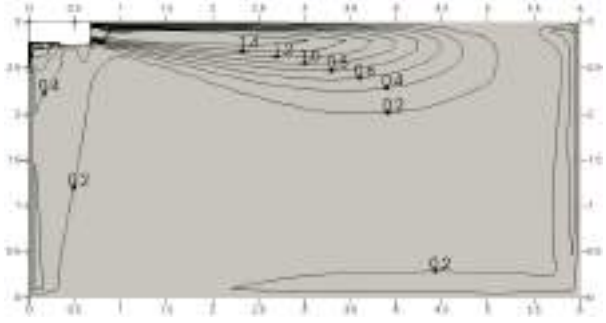


Figure 9.12: MIH90DLN18 *heating at 300S*

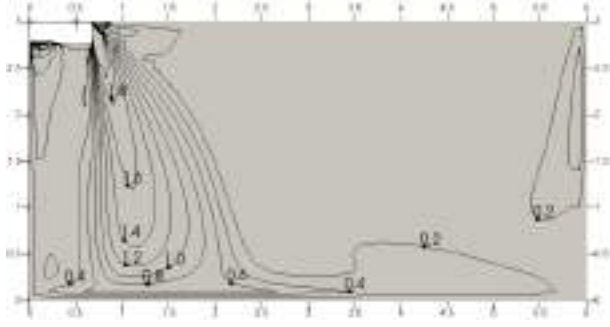


Figure 9.13: MIH100DLN18 *cooling at 300S*

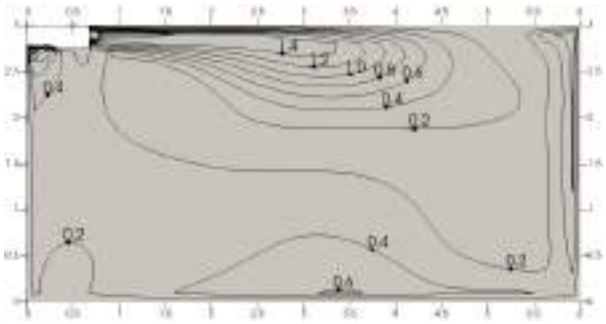


Figure 9.14: MIH100DLN18 *heating at 300S*

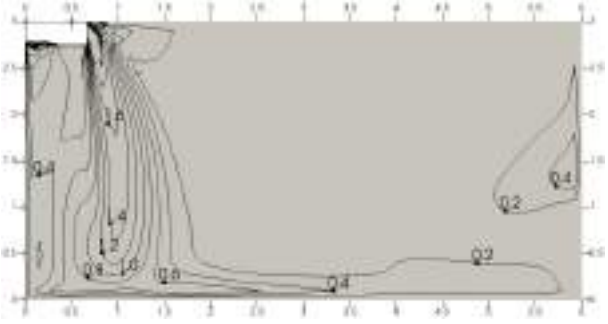


Figure 9.15: MIH112DLN18 *cooling at 300S*

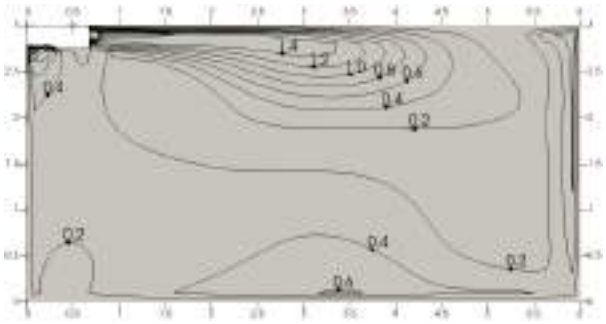


Figure 9.16: MIH112DLN18 *heating at 300S*

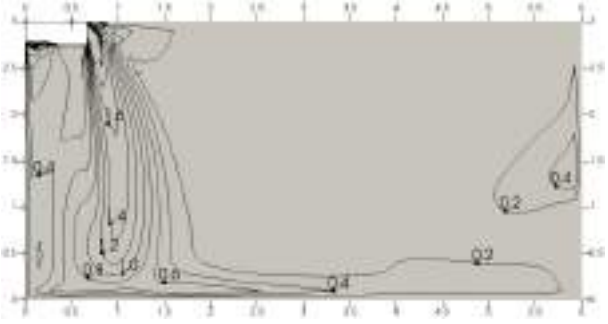


Figure 9.17: MIH125DLN18 *cooling at 300S*

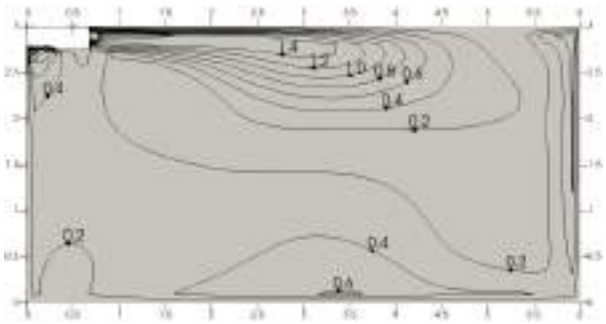


Figure 9.18: MIH125DLN18 *heating at 300S*

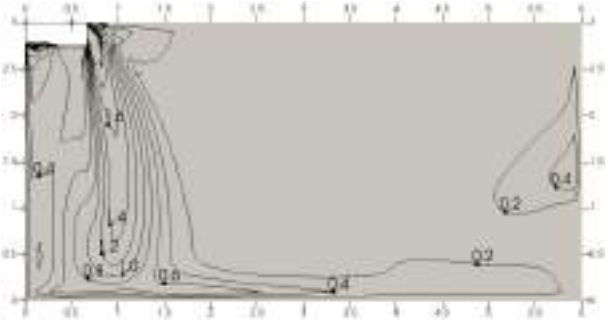


Figure 9.19: MIH140DLN18 *cooling at 300S*

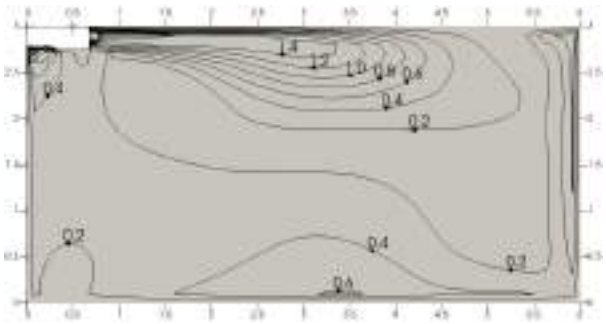
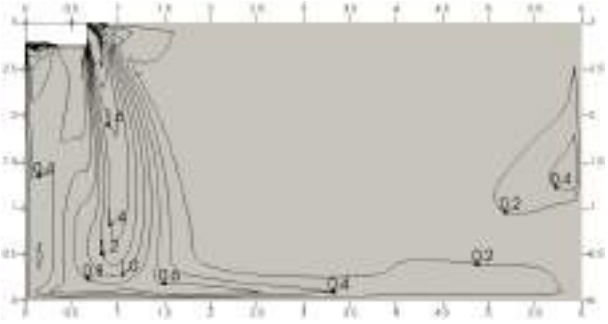


Figure 9.20: MIH140DLN18 *heating at 300S*



9.3 Temperature distributions

Figure 9.21: MIH36DLN18 *cooling at 300S*

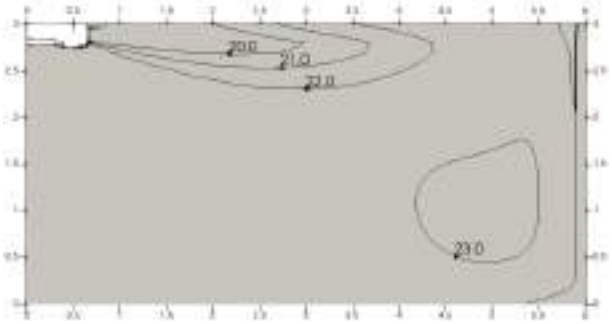


Figure 9.22: MIH36DLN18 *heating at 300S*

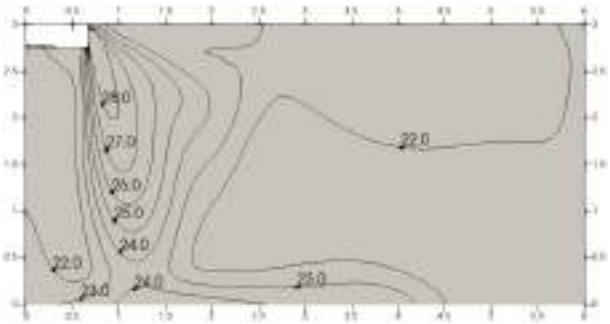


Figure 9.23: MIH45DLN18 *cooling at 300S*

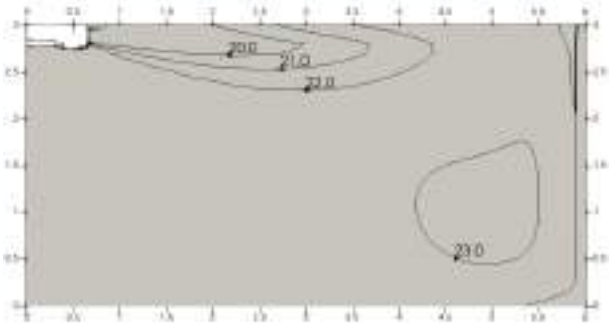


Figure 9.24: MIH45DLN18 *heating at 300S*

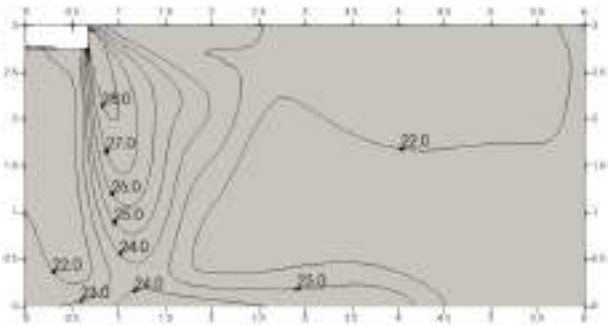


Figure 9.25: MIH56DLN18 *cooling at 300S*

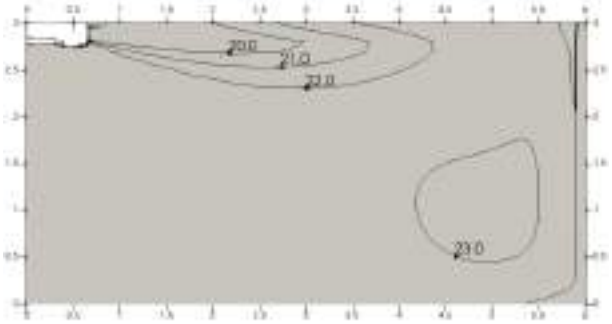


Figure 9.26: MIH56DLN18 *heating at 300S*

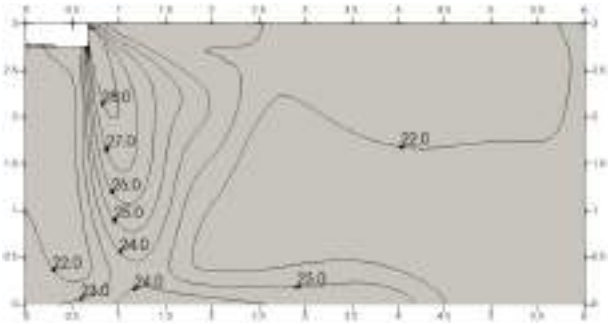


Figure 9.27: MIH71GHN18 *cooling at 300S*

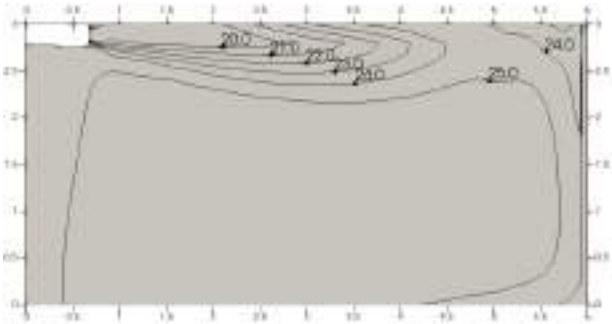


Figure 9.28: MIH71GHN18 *heating at 300S*

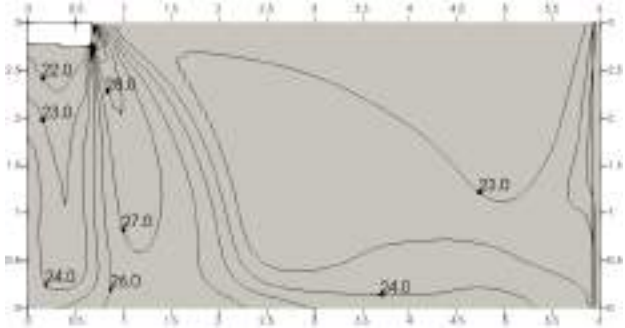


Figure 9.29: MIH80GHN18 *cooling at 300S*

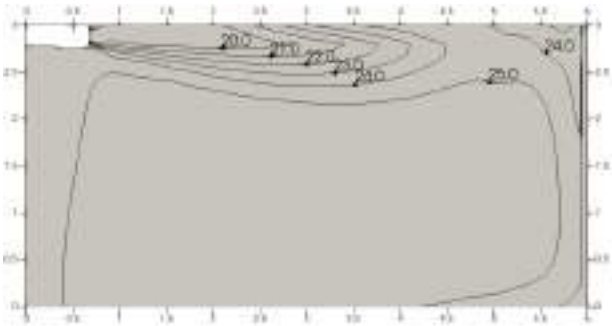


Figure 9.30: MIH80GHN18 *heating at 300S*

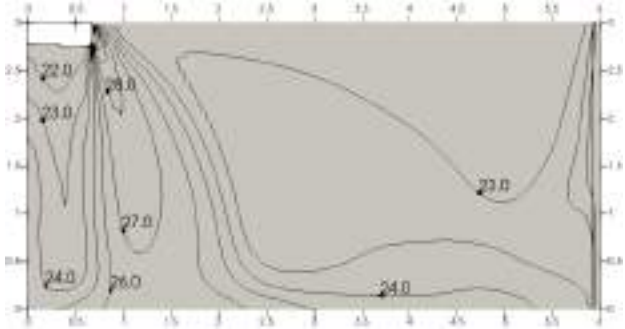


Figure 9.31: MIH90GHN18 *cooling at 300S*

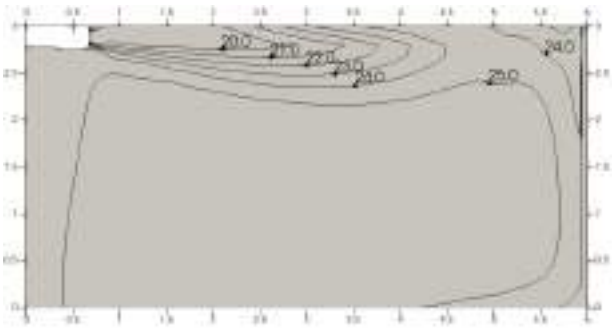


Figure 9.32: MIH90GHN18 *heating at 300S*

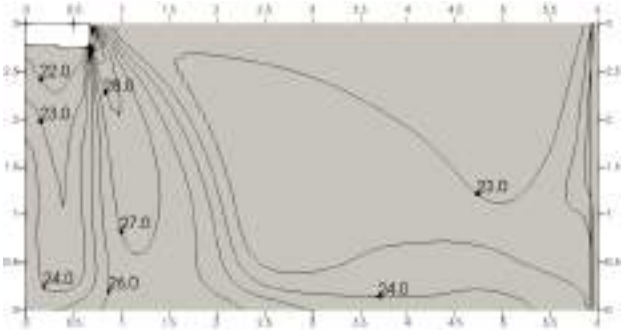


Figure 9.33: MIH100GHN18 cooling at 300S

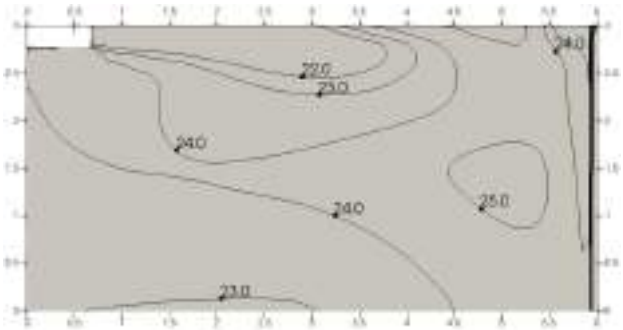


Figure 9.34: MIH100GHN18 *heating at 300S*

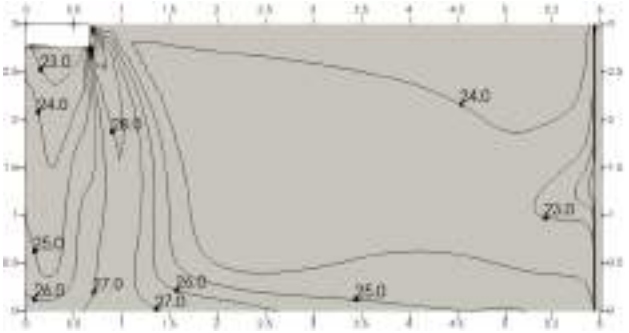


Figure 9.35: MIH112GHN18 cooling at 300S

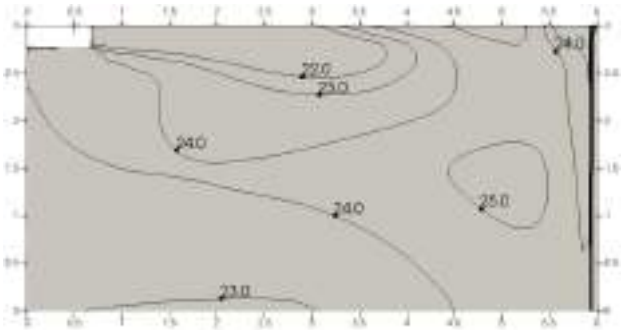


Figure 9.36: MIH112GHN18 *heating at 300S*

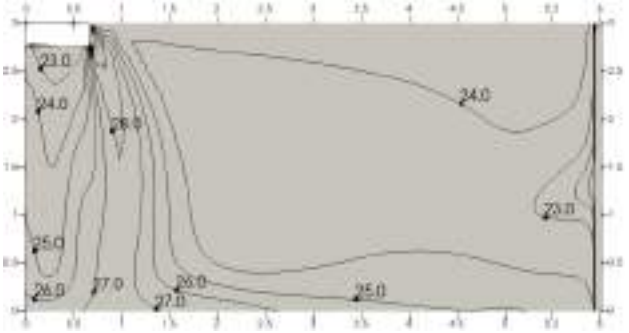


Figure 9.37: MIH125GHN18 cooling at 300S

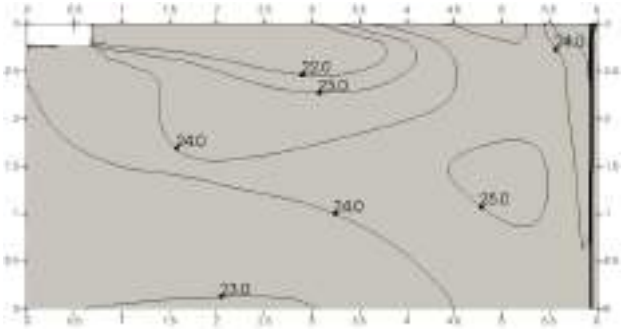


Figure 9.38: MIH125GHN18 *heating at 300S*

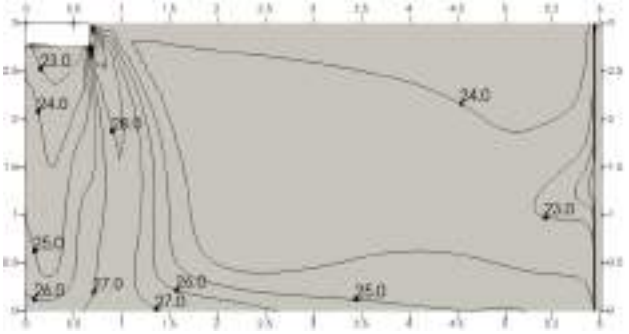


Figure 9.39: MIH140GHN18 cooling at 300S

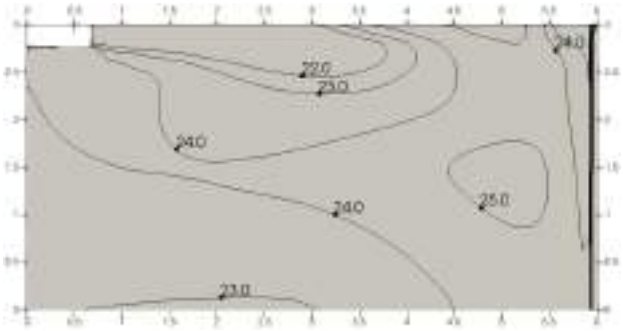
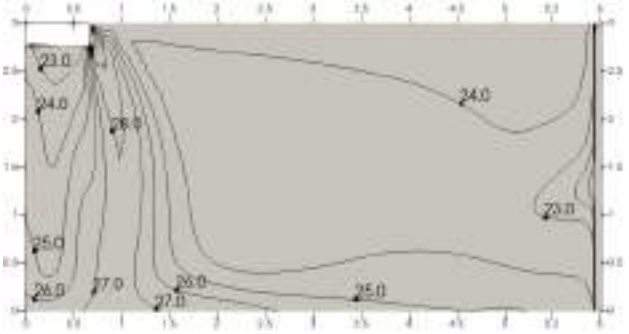


Figure 9.40: MIH140GHN18 *heating at 300S*



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