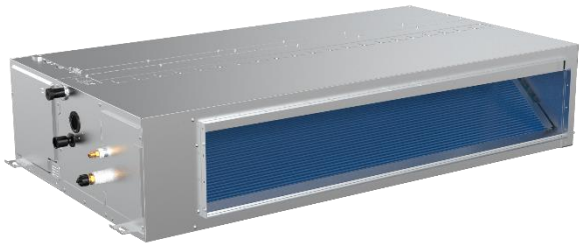
R410A/R32

Commercial Air Conditioners

Engineering Data

High Static Pressure Duct VRF IDU



MIH56T1HN18

MIH71T1HN18

MIH80T1HN18

MIH90T1HN18

MIH112T1HN18

MIH125T1HN18

MIH140T1HN18

MIH160T1HN18

High Static Pressure Duct

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1 Specifications

MIH56T1HN18 / MIH71T1HN18 / MIH80T1HN18/ MIH90T1HN18

Table 1.1: MIH56(71,80,90)T1HN18 specifications

Model name			MIH56T1HN18	MIH71T1HN18	MIH80T1HN18	MIH90T1HN18
Power supply			1-phase, 220-240V, 50/60Hz			
Cooling[1]	Capacity	kW	5.6	7.1	8.0	9.0
		kBut/h	19.1	24.2	27.3	30.7
	Input	W	159	159	159	196
Heating[2]	Capacity	kW	6.3	8.0	9.0	10.0
		kBut/h	21.5	27.3	30.7	34.1
	Input	W	159	159	159	196
Fan motor	Type		DC			
	Number		1			
Coil	Number of rows		3	3	3	3
	Tube pitch × row pitch	mm	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	850×360×32.16	850×360×32.16	850×360×32.16	850×360×32.16
	Number of circuits		10	10	10	10
Airflow rate[3]		m^3/h	1360/1281/1201/ 1122/1043/963/884	1360/1281/1201/ 1122/1043/963/884	1360/1281/1201/ 1122/1043/963/884	1500/1413/1325/ 1238/1150/1063/975
External static pressure[4]		Pa	80 (0-250)			
Sound pressure level[5]		dB(A)	39/38/36/35/33/32/30	39/38/36/35/33/32/30	39/38/36/35/33/32/30	40/39/37/36/34/33/31
Unit	Net dimensions[6] (W×H×D)	mm	1135×299×770			
	Packed dimensions (W×H×D)	mm	1215×359×890			
	Net/Gross weight	kg	35/38.5	35/38.5	35/38.5	35/38.5
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 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. Stable operation external static pressure range. (Note: setting external static pressure outside the unit's optimal static pressure range may lead to higher noise levels and lower airflow rate. For the optimal external static pressure range refer to the unit's installation manual.)
5. 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 an anechoic chamber.
6. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

All specifications are measured at standard external static pressure

MIH112T1HN18 / MIH125T1HN18/ MIH140T1HN18 / MIH160T1HN18

Table 1.1: MIH112(125,140,160)T1HN18 specifications

Model name			MIH112T1HN18	MIH125T1HN18	MIH140T1HN18	MIH160T1HN18
Power supply			1-phase, 220-240V, 50/60Hz			
Cooling[1]	Capacity	kW	11.2	12.5	14.0	16.0
		kBut/h	38.2	42.7	47.8	54.6
	Input	W	248	252	284	339
Heating[2]	Capacity	kW	12.5	14.0	16.0	18.0
		kBut/h	42.7	47.8	54.6	61.4
	Input	W	248	252	284	339
Fan motor	Type		DC			
	Number		1			
Coil	Number of rows		2	3	3	3
	Tube pitch × row pitch	mm	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	1200×360×21.44	1200×360×32.16	1200×360×32.16	1200×360×32.16
	Number of circuits		10	10	10	10
Airflow rate[3]		m^3/h	2140/2015/1890/1766/1641/1516/1391	2150/2025/1899/1774/1649/1523/1398	2400/2260/2120/1980/1840/1700/1560	2600/2448/2297/2145/1993/1842/1690
External static pressure[4]		Pa	80 (0-250)	100 (0-250)		
Sound pressure level[5]		dB(A)	41/40/38/37/35/34/32	41/40/38/37/36/34/33	43/42/40/39/37/36/34	44/43/41/40/38/37/35
Unit	Net dimensions[6] (W×H×D)	mm	1485×299×770			
	Packed dimensions (W×H×D)	mm	1565×359×890			
	Net/Gross weight	kg	44.5/48.5	46.5/50.5	46.5/50.5	46.5/50.5
Refrigerant type			R410A/R32			
Design pressure (H/L)		MPa	4.4/2.6			
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. Stable operation external static pressure range. (Note: setting external static pressure outside the unit's optimal static pressure range may lead to higher noise levels and lower airflow rate. For the optimal external static pressure range refer to the unit's installation manual.)
5. 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 an anechoic chamber.
6. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

All specifications are measured at standard external static pressure

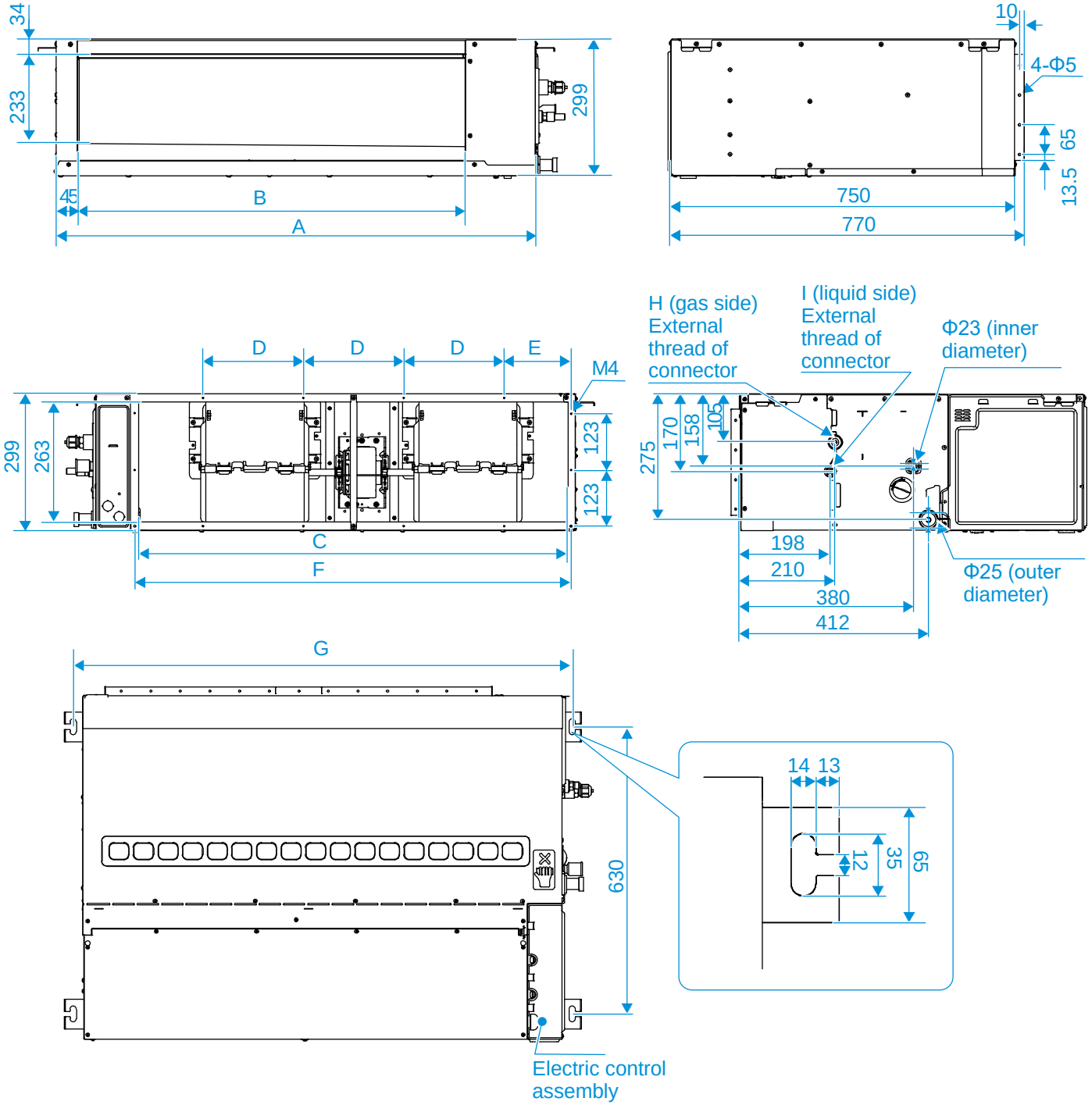
2 Dimensions

2.1 Unit Dimensions

MIH56T1HN18 / MIH71T1HN18 / MIH80T1HN18/ MIH90T1HN18

MIH112T1HN18 / MIH125T1HN18/ MIH140T1HN18 / MIH160T1HN18

Figure 2.1: MIH56(71,80,90,112,125,140,160)T1HN18 dimensions (unit: mm)



Model (kW)	A	B	C	D	E	F	G	H	I
kW≤5.6	1050	850	940	220	146	956	1095	3/4-16 UNF	7/16-20 UNF
5.6＜kW≤9.0	1050	850	940	220	146	956	1095	7/8-14 UNF	5/8-18 UNF
9.0＜kW≤16.0	1400	1200	1290	220	213	1306	1445	7/8-14 UNF	5/8-18 UNF

3 Unit Placement

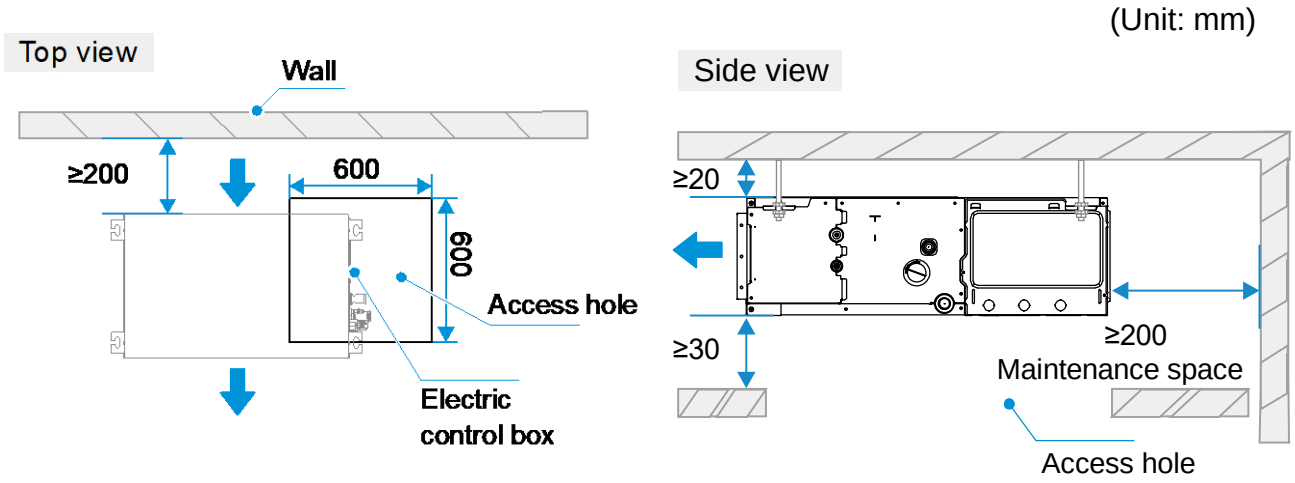
3.1 Placement Considerations

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: High Static Pressure Duct space requirements (unit: mm)

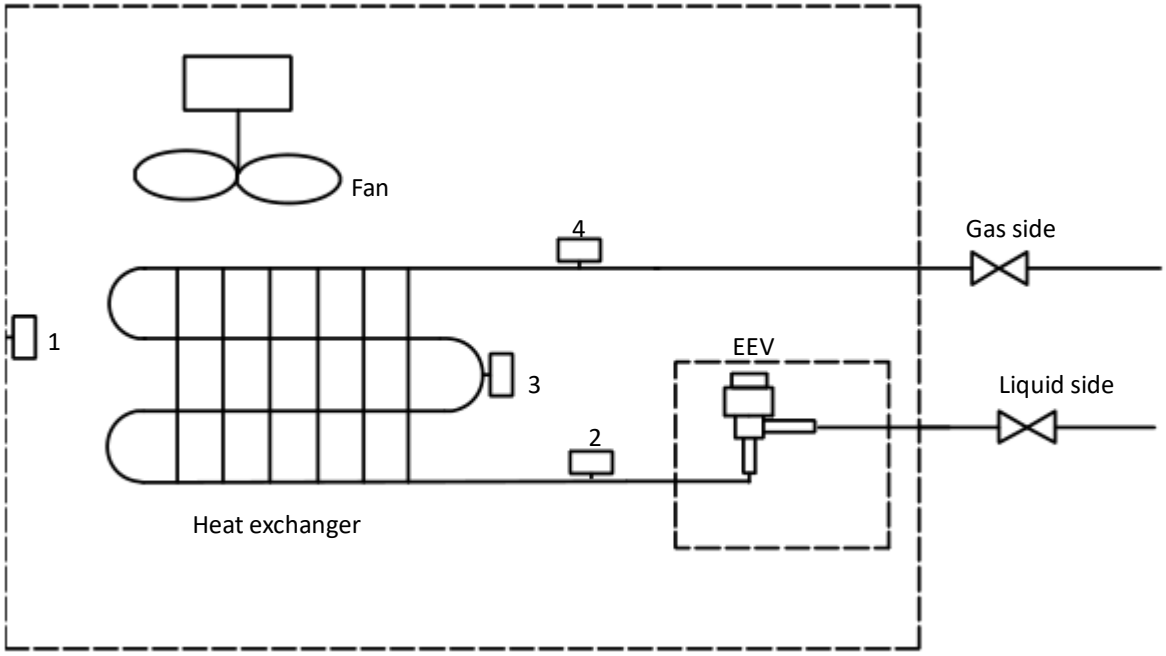


4 Piping Diagrams

MIH56T1HN18 / MIH71T1HN18 / MIH80T1HN18/ MIH90T1HN18

MIH112T1HN18 / MIH125T1HN18 / MIH140T1HN18 / MIH160T1HN18

Figure 4.1: MIH56(71,80,90,112,125,140,160)T1HN18 piping diagram



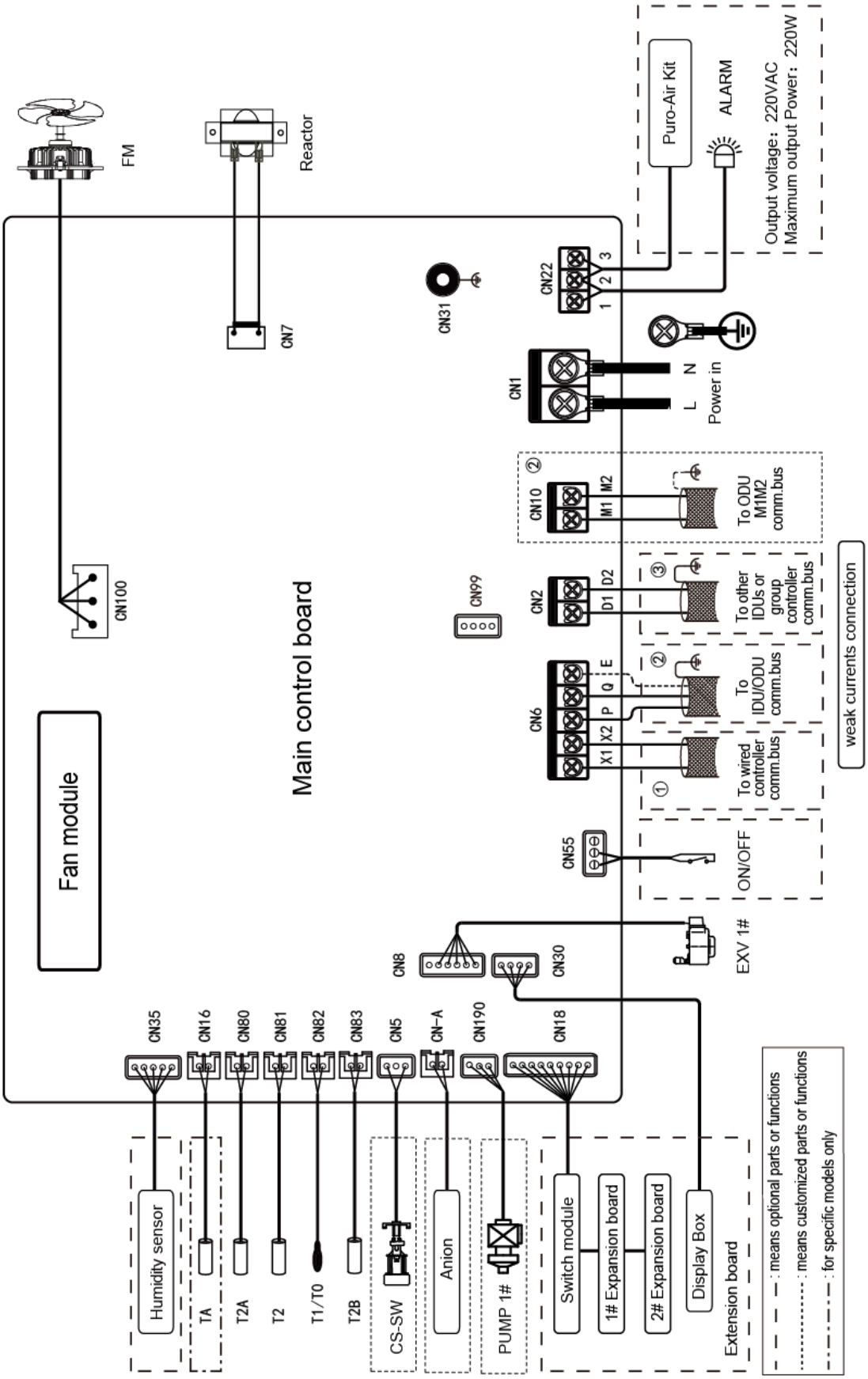
Legend		
1	T1	Indoor ambient temperature sensor
2	T2A	Indoor heat exchanger liquid side temperature sensor
3	T2	Indoor heat exchanger mid-point temperature sensor
4	T2B	Indoor heat exchanger gas side temperature sensor
5	EEV	Electronic expansion valve
6	FAN	Fan motor

5 Wiring Diagrams

MIH56T1HN18 / MIH71T1HN18 / MIH80T1HN18/ MIH90T1HN18

MIH112T1HN18 / MIH125T1HN18 / MIH140T1HN18 / MIH160T1HN18

Figure 5.1: MIH56(71,80,90,112,125,140,160)T1HN18 Duct wiring diagram



Legend				
Code	**Name**		**Code**	**Name**
XS XP	connectors		T1	Indoor ambient temp. sensor
TA	Steam pipe temperature sensor*		T2B	Evaporator outlet temperature sensor
CS-SW	Water level switch		T0	Fresh air inlet temperature sensor*
EXV	Electronic expansion valve		ALARM	Alarm output
Anion	Net ion sterilization module		FM	DC Fan motor
T2A	Evaporator inlet temperature sensor		ON/OFF	Remote on/off
T2	Indoor heat exchanger mid-point 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.
- X1X2 communication ports can be connected to the wired controller.
- 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

6 Capacity Tables

6.1 Cooling Capacity Table

Table 6.1: High Static Pressure Duct 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
MIH56T1HN18	5	4.4	5.3	4.3	5.6	4.2	5.6	4.0	5.7	3.8	5.8	3.5	6	3.4
MIH71T1HN18	6.3	5.5	6.7	5.4	7	5.3	7.1	5.0	7.2	4.8	7.4	4.5	7.6	4.2
MIH80T1HN18	7.1	6.2	7.6	6.1	7.9	5.9	8	5.7	8.1	5.4	8.3	5.0	8.5	4.7
MIH90T1HN18	8	7.0	8.5	6.9	8.9	6.7	9	6.4	9.1	6.2	9.4	5.7	9.6	5.5
MIH112T1HN18	9.9	9.1	10.6	9.2	11.1	9.1	11.2	8.6	11.3	8.2	11.6	7.6	11.9	7.4
MIH125T1HN18	11.1	9.7	11.8	9.6	12.4	9.5	12.5	9.2	12.7	8.9	13	8.5	13.3	8.0
MIH140T1HN18	12.4	10.9	13.2	10.8	13.8	10.8	14	10.5	14.2	10.2	14.5	9.6	14.9	9.1
MIH160T1HN18	14.2	12.6	15.1	12.5	15.8	12.6	16	12.2	16.2	11.8	16.6	11.2	17	10.5

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

Notes:
1.Shaded cells indicate rating condition

6.2 Heating Capacity Table

Table 7.2: High Static Pressure Duct heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	TC	TC	TC	TC	TC	TC
MIH56T1HN18	6.6	6.6	6.3	6.1	5.9	5.5
MIH71T1HN18	8.4	8.4	8.0	7.8	7.5	7.0
MIH80T1HN18	9.5	9.5	9.0	8.7	8.5	7.8
MIH90T1HN18	10.5	10.5	10.0	9.7	9.4	8.8
MIH112T1HN18	13.1	13.1	12.5	12.1	11.8	16.0
MIH125T1HN18	14.7	14.7	14.0	13.6	13.2	16.0
MIH140T1HN18	16.8	16.8	16.0	15.5	15.0	16.0
MIH160T1HN18	18.9	18.9	18.0	17.5	16.9	15.7

Abbreviations:
TC: Total capacity (kW)

Notes:
1.Shaded cells indicate rating condition

7 Electrical Characteristics

Table 8.1: High Static Pressure Duct electrical characteristics

Model	Power supply						Indoor fan motors	
	Hz	Volts (V)	Min. volts	Max. volts	MCA (A)	MFA (A)	Power input (W)	FLA (A)
MIH56T1HN18	50/60	220-240	198	264	2.33	15	240	1.86
MIH71T1HN18	50/60	220-240	198	264	2.33		240	1.86
MIH80T1HN18	50/60	220-240	198	264	2.33		240	1.86
MIH90T1HN18	50/60	220-240	198	264	2.46		240	1.97
MIH112T1HN18	50/60	220-240	198	264	3.34		560	2.67
MIH125T1HN18	50/60	220-240	198	264	3.38		560	2.70
MIH140T1HN18	50/60	220-240	198	264	3.75		560	3.00
MIH160T1HN18	50/60	220-240	198	264	4.13		560	3.30

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.
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).
Indoor fan motors power input: full load power input of the indoor fan motor (reliable operation at the fastest speed setting).

8 Sound Levels

8.1 Overall

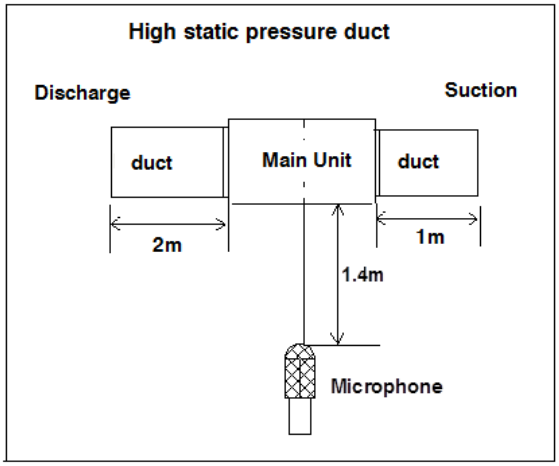
Table 8.1: High Static Pressure Duct sound pressure levels[1]

Model name	Sound pressure levels dB(A)						
	SSH	SH	H	M	L	SL	SSL
MIH56T1HN18	42	41	40	40	39	39	38
MIH71T1HN18	42	41	40	40	39	39	38
MIH80T1HN18	45	44	43	42	41	40	39
MIH90T1HN18	48	47	46	45	43	42	41
MIH112T1HN18	45	44	43	42	41	40	40
MIH125T1HN18	46	45	44	43	42	41	40
MIH140T1HN18	51	50	50	49	49	48	47
MIH160T1HN18	51	50	50	49	49	48	47

Notes:

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

Figure 8.1: High Static Pressure Duct sound pressure level measurement



8.2 Octave Band Levels

Figure 8.2: MIH56(71,80)T1HN18 octave band levels

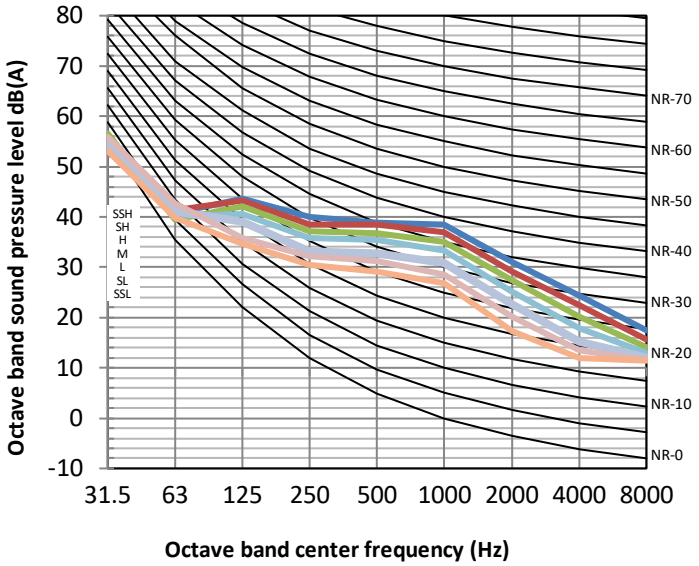


Figure 8.3: MIH90T1HN18 octave band levels

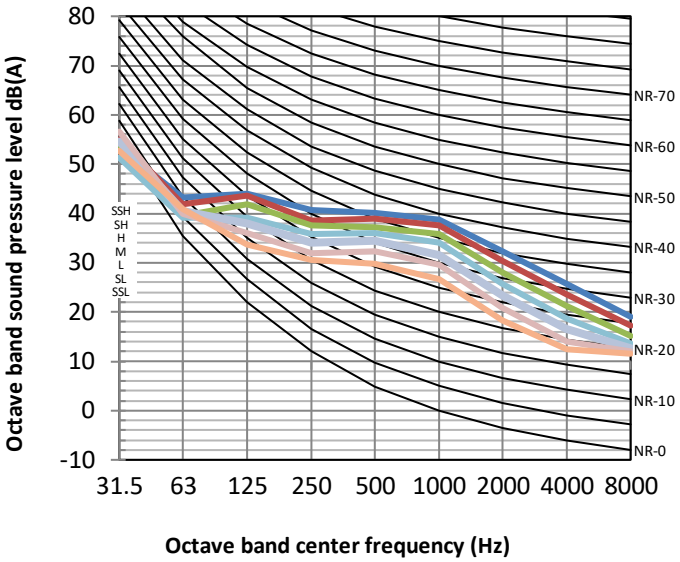


Figure 8.4: MIH112T1HN18 octave band levels

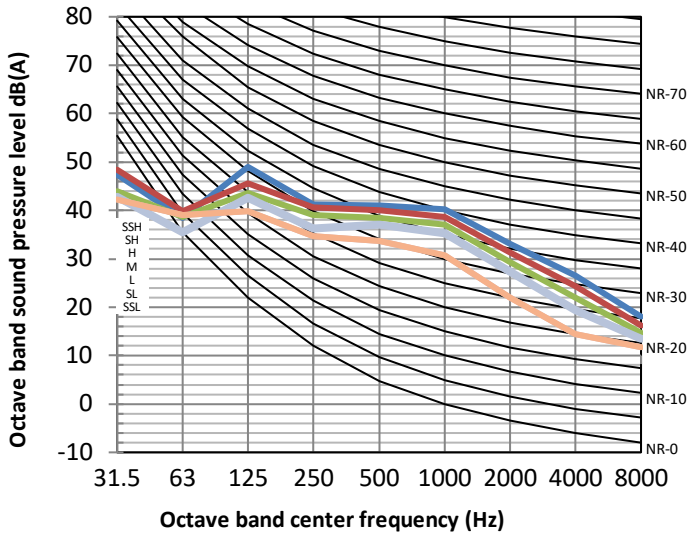


Figure 8.5: MIH125T1HN18 octave band levels

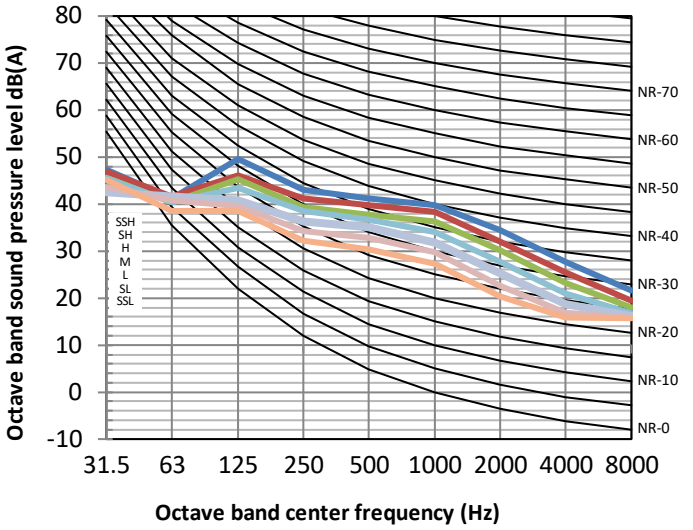


Figure 8.6: MIH140T1HN18 octave band levels

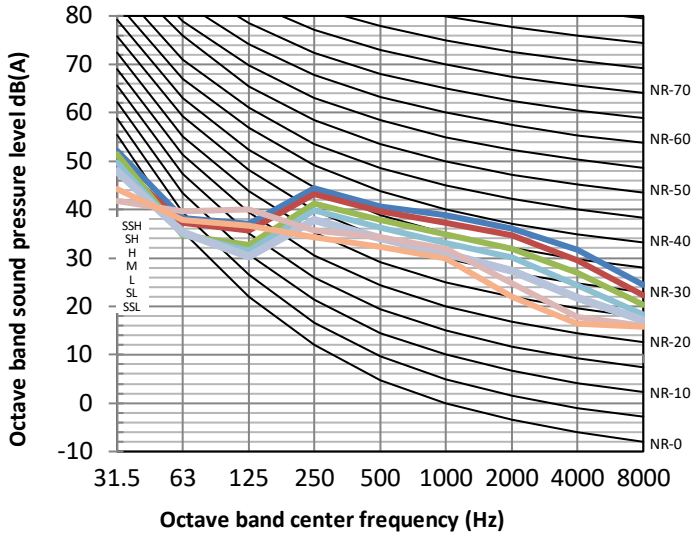
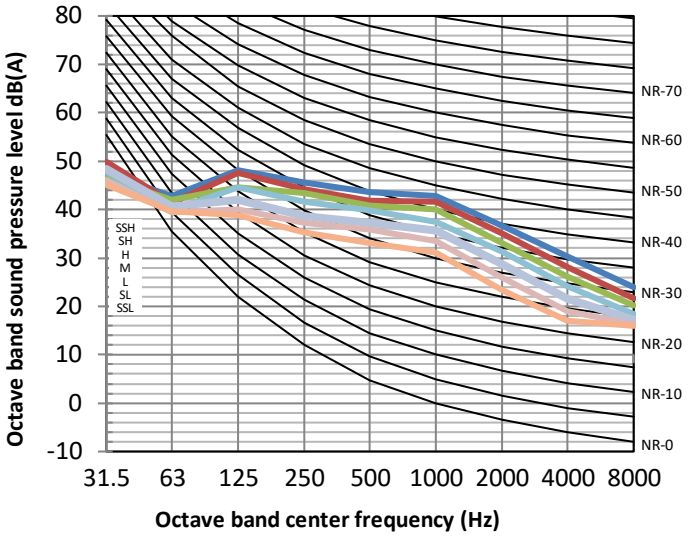


Figure 8.7: MIH160T1HN18 octave band levels



9 Fan Performance

9.1 How to switch between Constant Airflow mode and Constant Speed mode

①In the main interface, press "☰" +"⇗" for 3 seconds at the same time, and the main interface will display "CC". Press the "▲" and "▼" to select the indoor unit ("n00-n63" is displayed, and the last two digits are the indoor unit addresses). Press the "⇗" to enter the parameter setting interface, and "n00" will be displayed.

②Press the "▲" and "▼" until "N30" is displayed on the page, and then press the "⇗" to enter the mode setting. Use the "▲" and "▼" keys to adjust to the demand mode parameter values, and press the "⇗" to confirm.

③Press the "🕒" button to return to the previous menu and exit the parameter setting. Parameter setting will also exit after 60 s of no operation

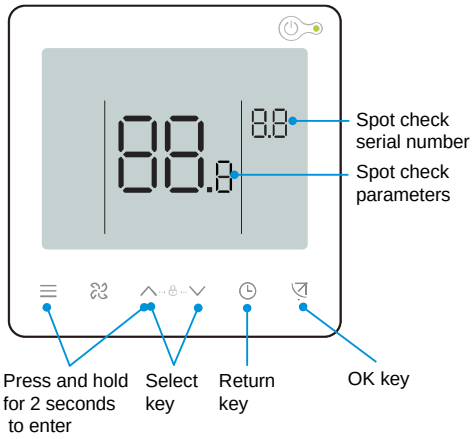


Table 9.1: Arc Duct mode setting

First level menu	Second level menu	Description	Default
n30	00	Constant Speed	-
	01	Constant Airflow	√

Notes:

1. The above is only an example. If you choose other controllers, please refer to their instructions for setting.

9.2 Constant Airflow mode

9.2.1 Fan performance diagram

Figure 9.1: MIH56(71,80)T1HN18

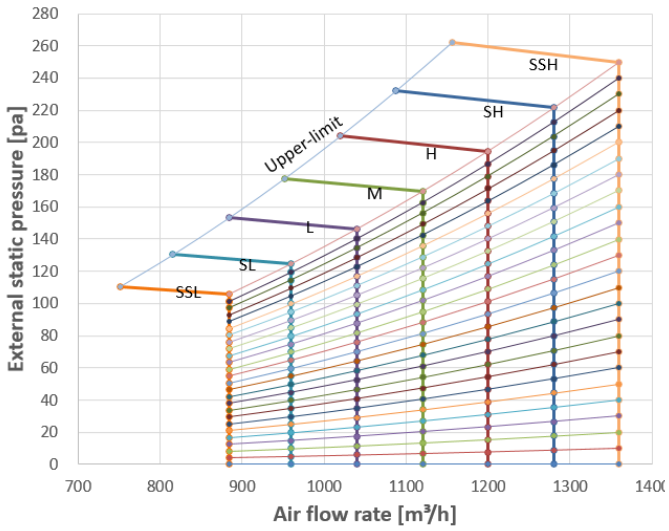


Figure 9.2: MIH90T1HN18

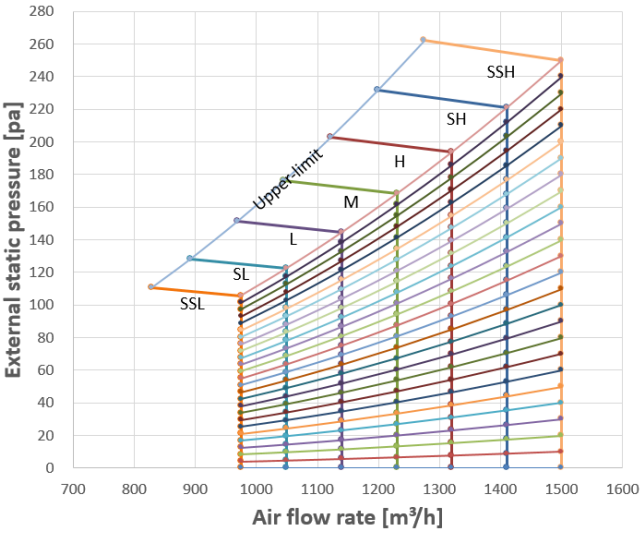


Figure 9.3: MIH112T1HN18

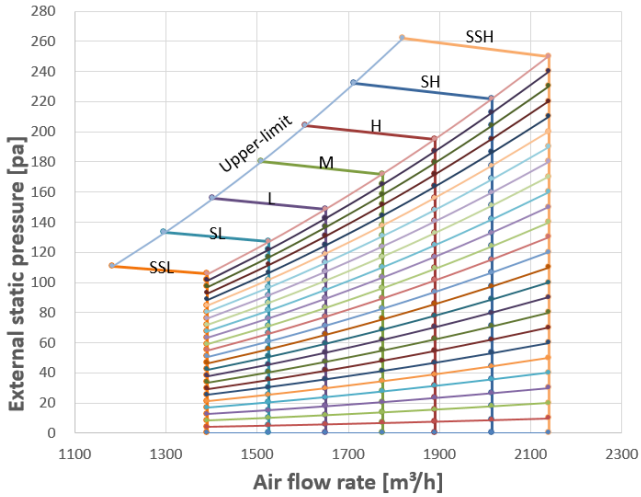


Figure 9.4: MIH125T1HN18

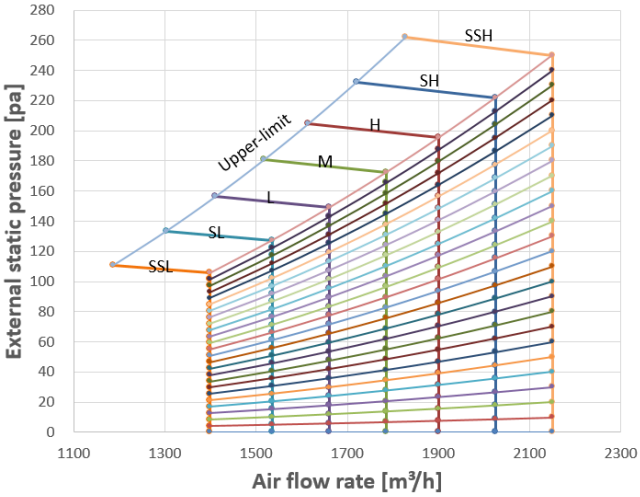


Figure 9.5: MIH140T1HN18

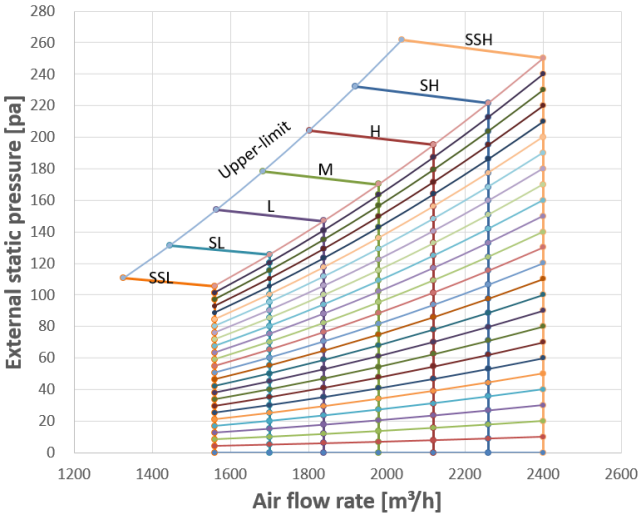
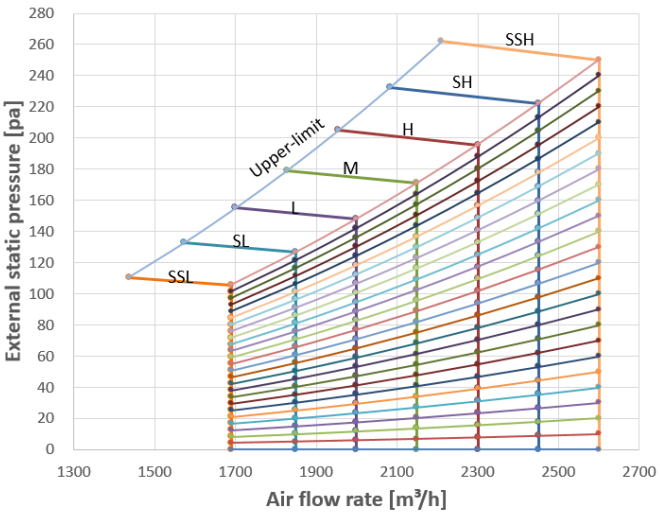


Figure 9.6: MIH160T1HN18



9.2.2 How to Read the Diagram (Constant Airflow mode)

The vertical axis is the External Static Pressure (Pa) while the horizontal axis represents the Air Flow (m^3/h). The characteristic curve for the “SSH”,“SH”, “H”, “M”, “L”,”SL” and “SSL” fan speed control.

For MIH140T1HN18, in “H” windshield, when the external static pressure is less than 195 Pa, the air flow keeps 2120 m3/h, but when the externa static pressure is greater than 195 Pa, the air flow begins to decline, and the allowable maximum external static pressure is 204 Pa.

9.3 Constant Speed mode

9.3.1 Set external static pressure parameters

①In the main interface, press "☰" +"⧉" for 3 seconds at the same time, and the main interface will display "CC". Press the "▲" and "▼" to select the indoor unit ("n00-n63" is displayed, and the last two digits are the indoor unit addresses). Press the "⧉" to enter the parameter setting interface, and "n00" will be displayed.

②When "n00" is displayed, press the "⧉" to enter the static pressure setting. Use the "▲" and "▼" keys to adjust to the demand parameter values, and press the "⧉" to confirm.

③Press the "🕒" button to return to the previous menu and exit the parameter setting. Parameter setting will also exit after 60 s of no operation

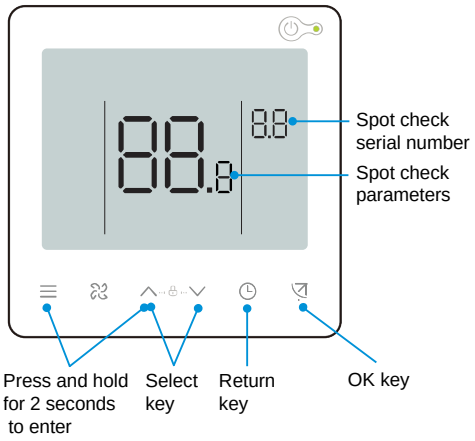


Table 9.1: External static pressure setting

First level menu	Second level menu	Description	Default
N00	00/01/02/03/04/05/~/19	Static pressure level	08(5.6-11.2kW) 10(12.5-16.0kW)

Level	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
Static pressure(Pa)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	160	180	200	220	250

Notes:

1. The above is only an example of 86S wired controller. If you choose other controllers, please refer to their manuals for setting.

9.3.2 Fan performance diagram

Figure 9.7: MIH56(71,80)T1HN18

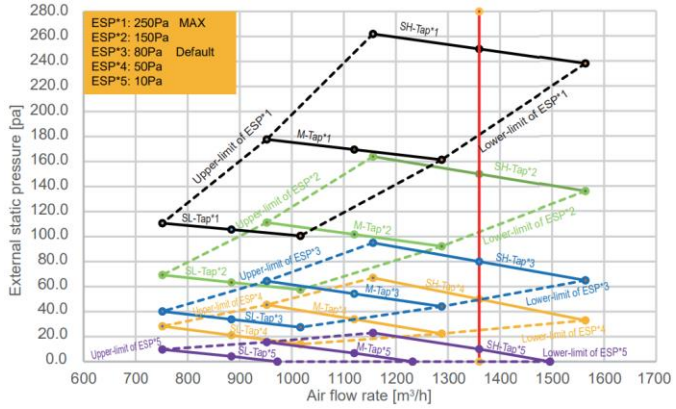


Figure 9.8: MIH90T1HN18

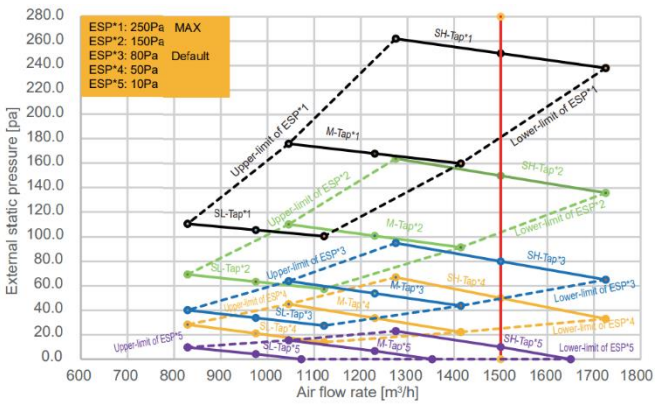


Figure 9.9: MIH112T1HN18

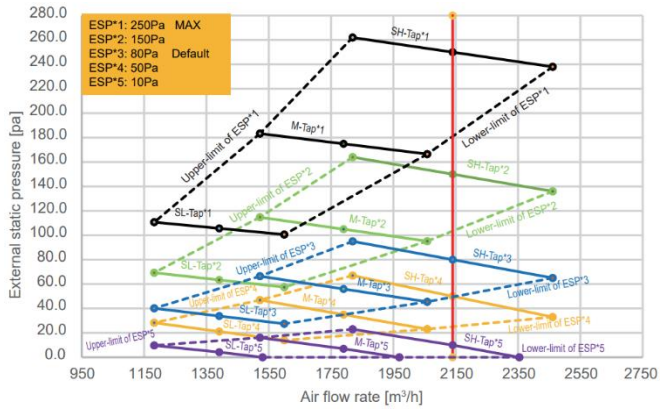


Figure 9.10: MIH125T1HN18

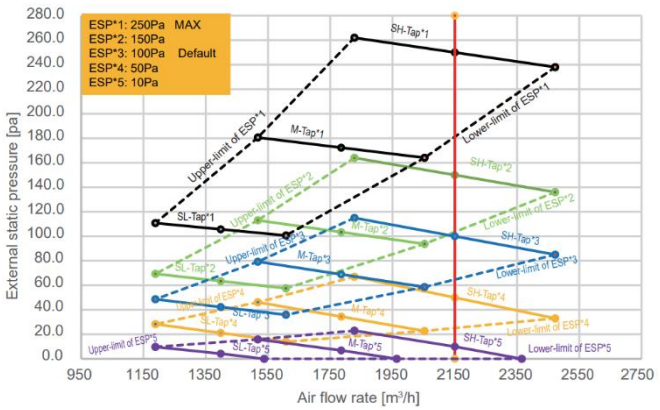


Figure 9.11: MIH140T1HN18

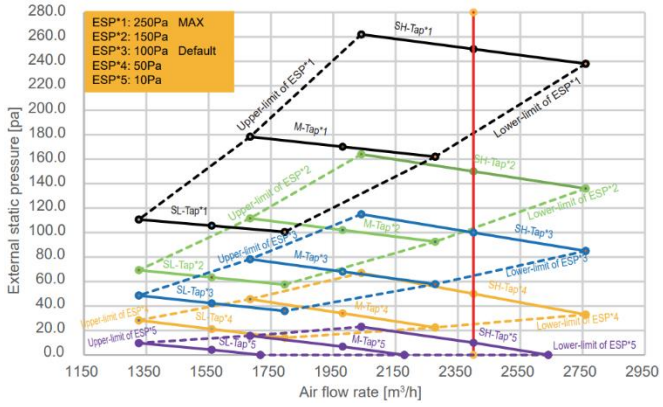
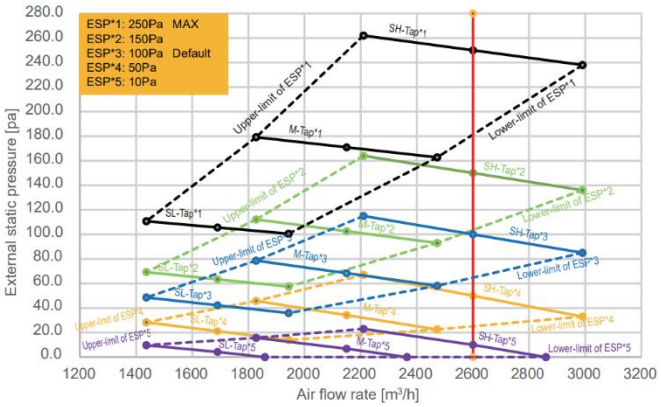


Figure 9.12: MIH160T1HN18



9.3.3 How to Read the Diagram (Constant Speed mode)

The vertical axis is the External Static Pressure (Pa) while the horizontal axis represents the Air Flow (m^3/h). The characteristic curve for the “SH”, “M” and “SL” fan speed control.

The Air Flow decreases with the increase of the external static pressure. For MIH140T1HN18, in “SH” windshield and “100Pa” setting static pressure, when the externa static pressure is 100Pa, the air flow is 2400 m3/h, and the allowable externa static pressure range is 85Pa to 115Pa.

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