R410A/R32

Commercial Air Conditioners

Engineering Data

Small Airflow Rate Fresh Air Processing VRF IDU

MIH90FASHN18

MIH140FASHN18

MIH160FASHN18

MIH224FASHN18

MIH280FASHN18

Small Airflow Rate Fresh Air Processing

1 Specifications

MIH90FASHN18 / MIH140FASHN18 / MIH160FASHN18

Table 1.1: MIH90(140, 160)FASHN18 specifications

Model name			MIH90FASHN18	MIH140FASHN18	MIH160FASHN18
Power supply			1-phase, 220-240V, 50/60Hz		
Cooling[1]	Capacity	kW	9.0	14.0	16.0
		kBut/h	30.7	47.8	54.6
	Input	W	80	165	185
Heating[2]	Capacity	kW	8.1	12.5	14.0
		kBut/h	27.6	42.7	47.8
	Input	W	80	165	185
Fan motor	Type		DC		
	Quantity		1		
Indoor Coil	Number of rows		3	3	3
	Tube pitch×row	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	Mm	850×360×32.16	850×360×32.16	850×360×32.16
	Number of circuits		10	10	10
Airflow rate[3]		m^3/h	690/633/575/518/460/403/345	1100/1008/917/825/733/642/550	1230/1128/1025/923/820/718/615
External static pressure[4]		Pa	100 (0~300)	150 (0~300)	150 (0~300)
Sound pressure level[5]		dB(A)	39/37.5/36/34/32.5/30.5/29	44.5/42.5/40/37/35/33/32	44.5/43/41/38/36/34/32.5
Sound power level		dB(A)	61/59/56/53/51/48/45	66/64/61/57/55/53/51	67/65/62/58/56/54/52
Unit	Net dimensions (W×H×D)	mm	1095×310×773	1095×310×773	1095×310×773
	Packed dimensions (W×H×D)	mm	1215×360×885	1215×360×885	1215×360×885
	Net/Gross weight	kg	37/41.5	40/43.5	
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		
Operating temperature range		°C	Heating: -10 to 16; Cooling: 20 to 52; Fan only: 5 to 48		

Notes:

1. Outdoor air temperature 33°C DB, 28°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Outdoor air temperature 0°C DB, -2.9°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 in a semi-anechoic chamber.

MIH224FASHN18 / MIH280FASHN18

Table 1.2: MIH224(280)FASHN18 specifications

Model name			MIH224FASHN18	MIH280FASHN18
Power supply			1-phase, 220-240V, 50/60Hz	
Cooling[1]	Capacity	kW	22.4	28.0
		kBut/h	76.5	95.6
	Input	W	320	400
Heating[2]	Capacity	kW	20.0	25.0
		kBut/h	68.3	85.3
	Input	W	320	400
Fan motor	Type		DC	
	Quantity		1	
Indoor Coil	Number of rows		3	3
	Tube pitch×row pitch	mm	18×10.72	18×10.72
	Fin spacing	Mm	1.35	1.35
	Fin type		Hydrophilic aluminum	
	Tube OD and type	Mm	Φ5 Inner groove	
	Dimensions (L×H×W)	Mm	1200×360×32.16	1200×360×32.16
	Number of circuits		10	10
Airflow rate[3]		m^3/h	1740/1595/1450/1305/1160/1015/870	2160/1980/1800/1620/1440/1260/1080
External static pressure[4]		Pa	200 (0~300)	200 (0~300)
Sound pressure level[5]		dB(A)	49/47/45/43/40/38/36	51/49/47/44/42/39/37
Sound power level		dB(A)	70/68/65/62/59/57/54	71/69/66/63/60/58/55
Unit	Net dimensions (W×H×D)	mm	1445×310×773	1445×310×773
	Packed dimensions (W×H×D)	mm	1645×360×885	1645×360×885
	Net/Gross weight	kg	54/59	54/59
Refrigerant type			R410A/R32	
Design pressure(H/L)		MPa	4.4/2.6	
Pipe connections	Liquid/Gas pipe	mm	Φ9.52/Φ19.1	Φ12.7/Φ22.2
	Drain pipe	mm	OD Φ25	
Operating temperature range		°C	Heating: -10 to 16; Cooling: 20 to 52; Fan only: 5 to 48	

Notes:

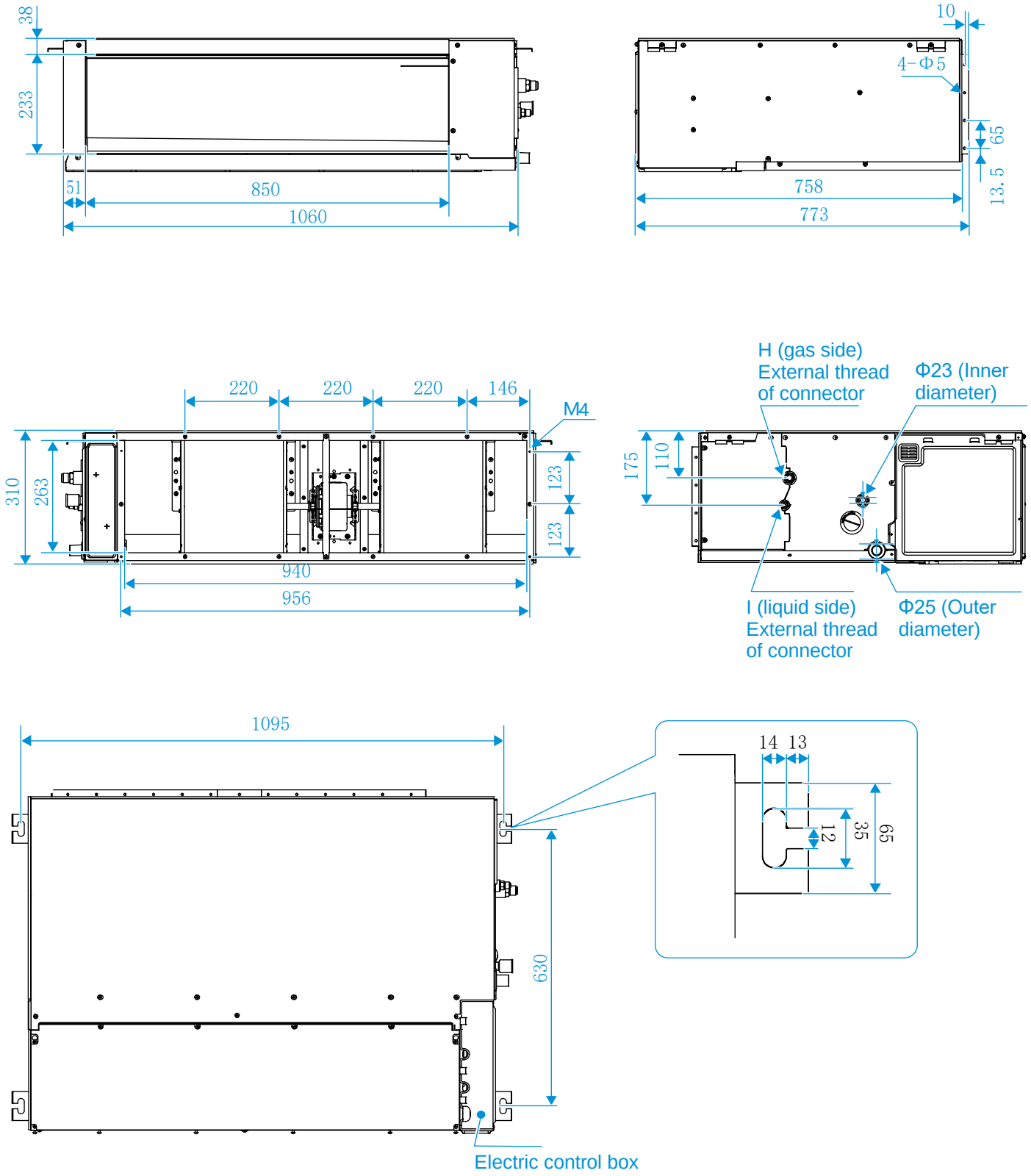
1. Outdoor air temperature 33°C DB, 28°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
2. Outdoor air temperature 0°C DB, -2.9°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Fan motor speed and air flow rate are from the highest speed to the 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 in a semi-anechoic chamber.

2 Dimensions

2.1 Unit Dimensions

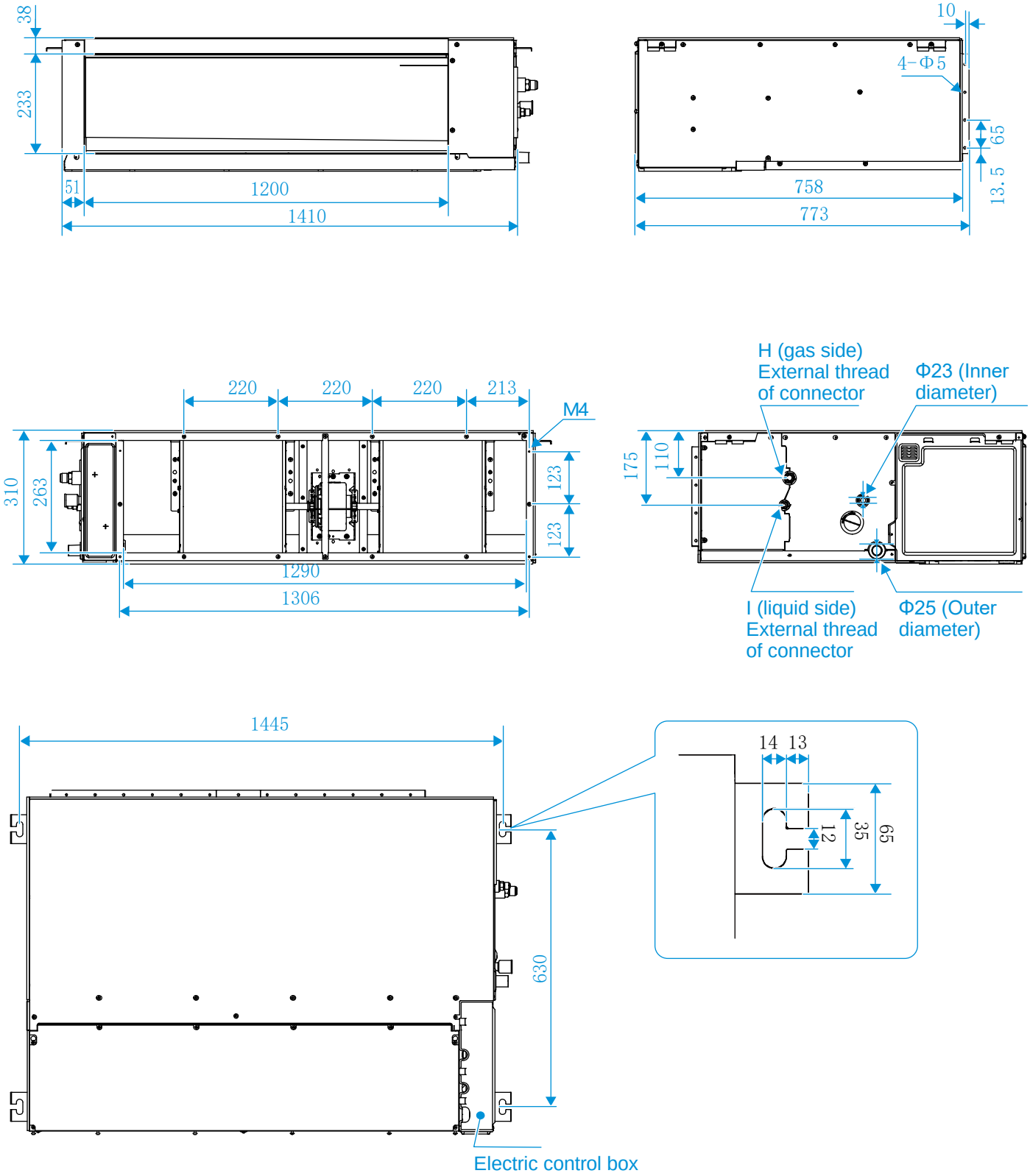
MIH90FASHN18/MIH140FASHN18/MIH160FASHN18

Figure2.1: MIH90(140, 160)FASHN18 dimensions (unit: mm)



MIH224FASHN18 / MIH280FASHN18

Figure 2.2: MIH224(280)FASHN18 dimensions (unit: mm)



3 Unit Placement

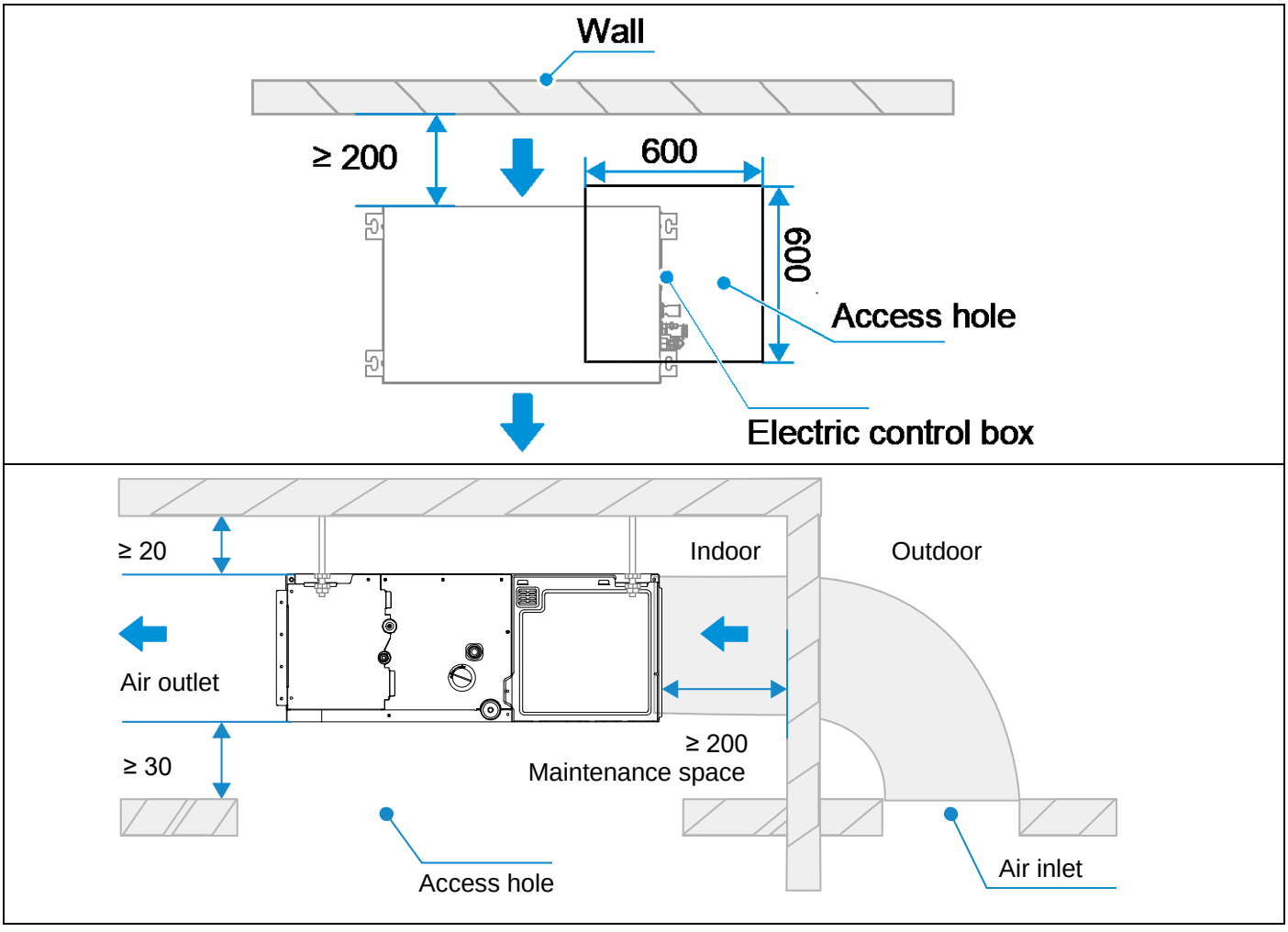
3.1 Placement Considerations

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

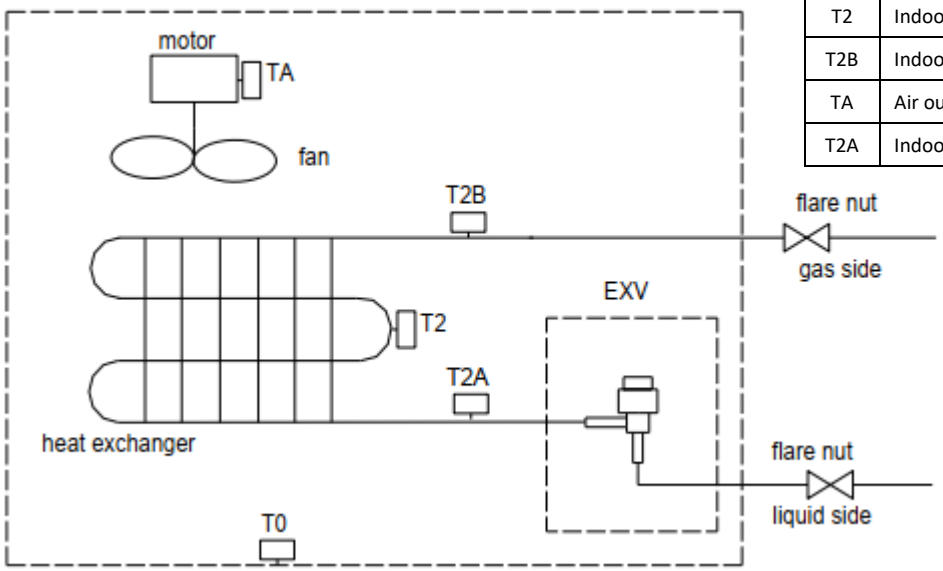
Figure 3.1: Fresh Air Processing Unit space requirements (unit: mm)



4 Piping Diagram

MIH90FASHN18/MIH140FASHN18/MIH160FASHN18/MIH224FASHN18 / MIH280FASHN18

Figure 4.1: MIH90(140, 160, 224, 280)FASHN18 piping diagram

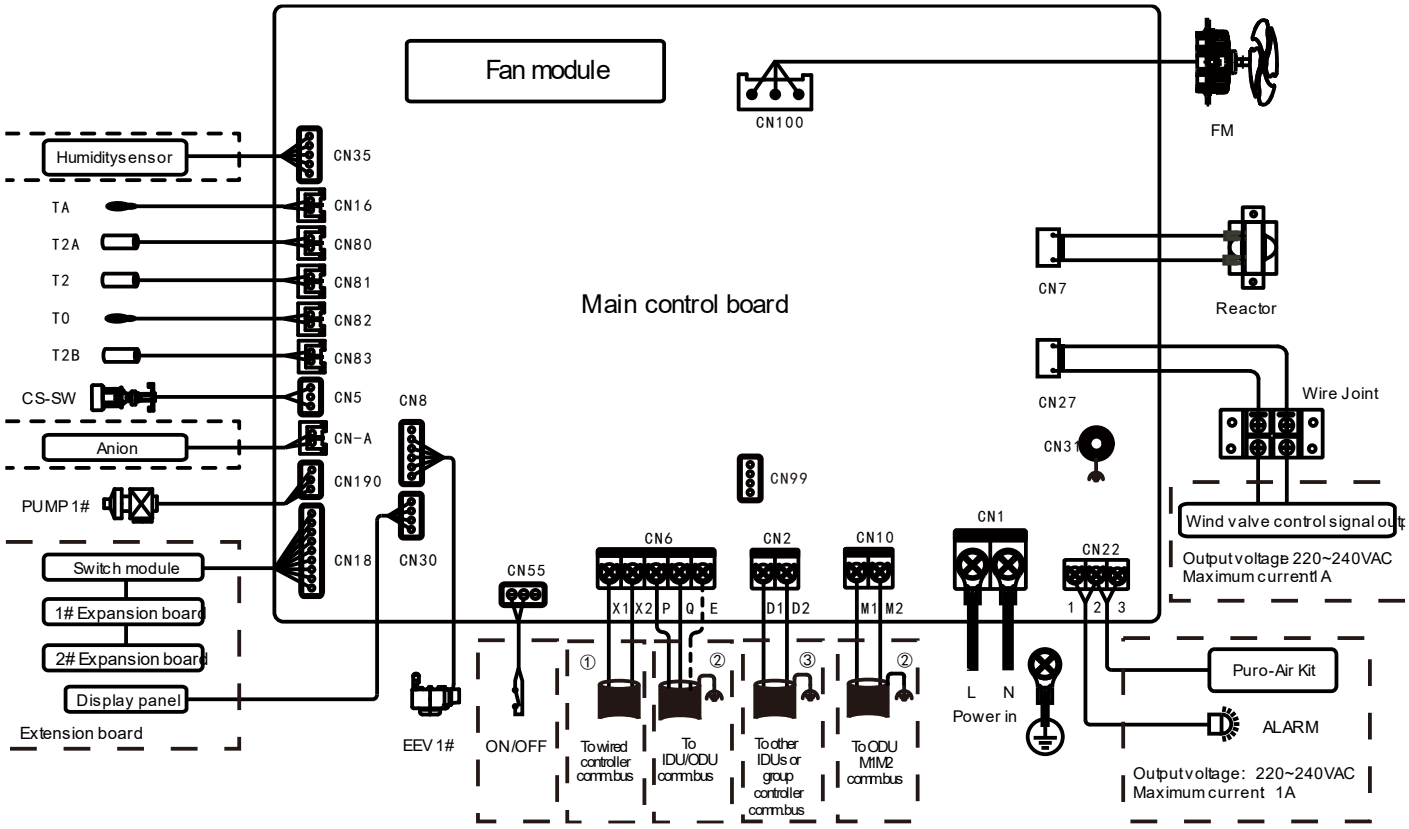


Legend	
T0	Outdoor fresh air temperature sensor
T2	Indoor heat exchanger mid-point temperature sensor
T2B	Indoor heat exchanger outlet temperature sensor
TA	Air outlet temperature sensor
T2A	Indoor heat exchanger inlet temperature sensor

5 Wiring Diagrams

MIH90(140, 160, 224, 280)FASHN18

Figure 5.1: MIH90(140, 160, 224, 280)FASHN18 wiring diagram



Code	Title
FM	Indoor fan motor
XT1-2	Terminal
CS	Water level switch
EEV	Electronic expansion valve

6 Capacity Tables

6.1 CoolingCapacity Table

Table 7.1: Fresh Air Processing Unit cooling capacity

Capacity (kW)	Outdoor air temperature (°C DB)	Outdoor air temperature (°C WB)								
		15.0	17.0	20.0	23.0	26.0	28.0	30.0	32.0	35.0
		TC	TC	TC	TC	TC	TC	TC	TC	TC
		kW	kW	kW	kW	kW	kW	kW	kW	kW
9.0	20.0	2.5	3.4							
	22.0	2.6	3.4	4.8						
	25.0	2.7	3.4	4.7						
	27.0		3.4	4.7	6.2					
	29.0			4.7	6.2	7.8				
	31.0			4.7	6.2	7.8	9.0			
	33.0				6.1	7.8	9.0	10.2		
	35.0				5.4	7.1	8.3	9.6	10.9	
	37.0					7.0	8.3	9.6	10.9	12.9
	39.0					6.6	7.8	9.1	10.5	12.7
	41.0					6.6	7.7	9.0	10.4	12.7
	43.0					5.8	7.0	8.3	9.7	12.0
	46.0					5.8	7.0	8.2	9.6	11.9
	48.0					5.1	6.2	7.5	8.8	11.1
	52.0						6.1	7.4	8.7	11.0
14.0	20.0	4.2	5.4							
	22.0	4.2	5.4	7.5						
	25.0	4.4	5.4	7.5						
	27.0		5.4	7.4	9.7					
	29.0			7.4	9.7	12.3				
	31.0			7.4	9.6	12.2	14.0			
	33.0				9.6	12.2	14.0	15.9		
	35.0				8.6	11.1	12.9	14.9	17.0	
	37.0					11.0	12.9	14.9	17.0	20.2
	39.0					10.2	12.1	14.1	16.2	19.7
	41.0					10.2	12.0	14.0	16.2	19.7
	43.0					9.1	10.9	12.8	15.0	18.5
	46.0					9.0	10.8	12.7	14.9	18.4
	48.0					8.1	9.6	11.6	13.6	17.1
	52.0						9.6	11.4	13.5	16.9
16.0	20.0	4.8	6.2							
	22.0	4.8	6.2	8.6						
	25.0	5.1	6.2	8.5						
	27.0		6.2	8.5	11.1					
	29.0			8.5	11.1	14.0				
	31.0			8.5	11.0	13.9	16.1			
	33.0				11.0	13.9	16.0	17.6		
	35.0				9.8	12.6	14.8	17.0	19.4	
	37.0					12.6	14.7	17.0	19.4	23.1
	39.0					11.7	13.8	16.1	18.5	22.5
	41.0					11.7	13.7	16.0	18.4	22.4
	43.0					10.4	12.4	14.6	17.1	21.1
	46.0					10.4	12.4	14.5	16.9	20.9
	48.0					9.4	11.0	13.2	15.5	19.5
	52.0						11.1	13.1	15.4	19.3

Abbreviations:
TC: Total capacity

Notes:
Shaded cells indicate rating condition.

Table 7.1: Fresh Air Processing Unit cooling capacity

Capacity (kW)	Outdoor air temperature (°C DB)	Outdoor air temperature (°C WB)								
		15.0	17.0	20.0	23.0	26.0	28.0	30.0	32.0	35.0
		TC	TC	TC	TC	TC	TC	TC	TC	TC
		kW	kW	kW	kW	kW	kW	kW	kW	kW
22.4	20.0	7.0	9.0							
	22.0	7.1	9.0	12.3						
	25.0	7.5	9.0	12.2						
	27.0		9.1	12.2	15.8					
	29.0			12.1	15.7	19.7				
	31.0			12.1	15.6	19.6	22.5			
	33.0				15.6	19.5	22.4	25.4		
	35.0				14.0	17.9	20.8	23.9	27.1	
	37.0					17.8	20.7	23.8	27.0	32.2
	39.0					16.6	19.4	22.5	25.8	31.2
	41.0					16.5	19.4	22.4	25.7	31.1
	43.0					14.8	17.6	20.7	24.0	29.4
	46.0					14.9	17.5	20.5	23.8	29.2
	48.0					13.7	15.8	18.7	22.0	27.3
	52.0						16.0	18.6	21.8	27.1
28.0	20.0	9.0	11.4							
	22.0	9.0	11.4	15.5						
	25.0	9.8	11.4	15.4						
	27.0		11.6	15.3	19.8					
	29.0			15.3	19.7	24.6				
	31.0			15.3	19.6	24.5	28.0			
	33.0				19.6	24.4	28.0	31.7		
	35.0				17.6	22.5	26.0	29.8	33.8	
	37.0					22.4	25.9	29.7	33.7	40.2
	39.0					20.8	24.3	28.2	32.2	38.7
	41.0					20.8	24.3	28.0	32.1	38.7
	43.0					18.8	22.1	25.9	30.0	36.5
	46.0					19.1	22.1	25.7	29.8	36.3
	48.0					17.8	20.1	23.5	27.5	34.1
	52.0						20.6	23.6	27.3	33.8

Abbreviations:
TC: Total capacity

Notes:

Shaded cells indicate rating condition.

6.2 Heating Capacity Table

Table 7.2: Fresh Air Processing Unit heating capacity

Capacity (kW)	Outdoor air temperature (°C DB)	Outdoor air temperature (°C WB)									
		-11.0	-7.0	-5.2	-2.9	0.0	2.0	4.0	6.0	10.0	14.0
		TC	TC	TC	TC	TC	TC	TC	TC	TC	TC
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
9.0	-10.0	10.6									
	-5.0		9.2	9.2							
	0.0				**8.1**						
	3.0				7.5	7.5	7.5				
	7.0						6.6	6.6	6.6		
	11.0							5.8	5.8	5.8	
	16.0								4.7	4.7	4.8
14.0	-10.0	16.3									
	-5.0		14.2	14.2							
	0.0				**12.5**						
	3.0				11.5	11.5	11.5				
	7.0						10.2	10.2	10.2		
	11.0							8.9	8.9	8.9	
	16.0								7.3	7.3	7.3
16.0	-10.0	18.3									
	-5.0		15.9	15.9							
	0.0				**14.0**						
	3.0				12.9	12.9	12.9				
	7.0						11.4	11.4	11.4		
	11.0							10.0	10.0	10.0	
	16.0								8.2	8.2	8.2
22.4	-10.0	25.5									
	-5.0		22.7	22.7							
	0.0				**20.0**						
	3.0				18.4	18.4	18.4				
	7.0						16.3	16.3	16.3		
	11.0							14.3	14.3	14.3	
	16.0								11.7	11.7	11.7
28.0	-10.0	31.8									
	-5.0		28.4	28.4							
	0.0				25.0						
	3.0				23.0	23.0	23.0				
	7.0						20.4	20.4	20.4		
	11.0							17.8	17.8	17.9	
	16.0								14.7	14.7	14.7

Abbreviations:
TC: Total capacity

Notes:

1. Shaded cells indicate rating condition.

7 Electrical Characteristics

Table 8.1: Fresh Air Processing Unit electrical characteristics

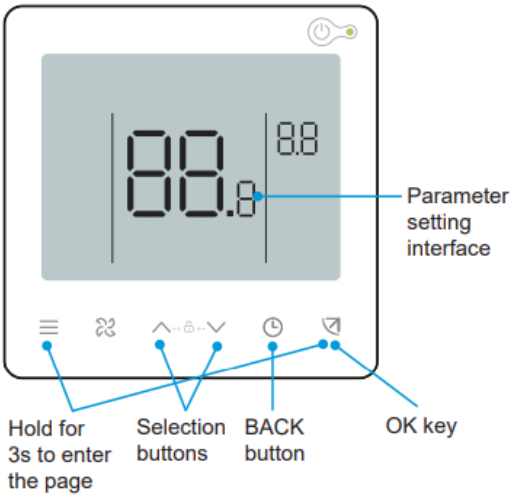
Model name	Power supply						Indoor fan motors	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (kW)	FLA
MIH90FASHN18	50/60	220-240	198	264	1.82	15	0.24	1.46
MIH140FASHN18	50/60	220-240	198	264	2.91	15	0.24	2.33
MIH160FASHN18	50/60	220-240	198	264	3.25	15	0.24	2.60
MIH224FASHN18	50/60	220-240	198	264	4.96	15	0.56	3.97
MIH280FASHN18	50/60	220-240	198	264	6.16	15	0.56	4.93

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

8 Fan Performance

8.1 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 8.1: 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.

8.2 Constant Airflow mode

8.2.1 Fan performance diagram

Figure 8.2: MIH90FASHN18 fan performance

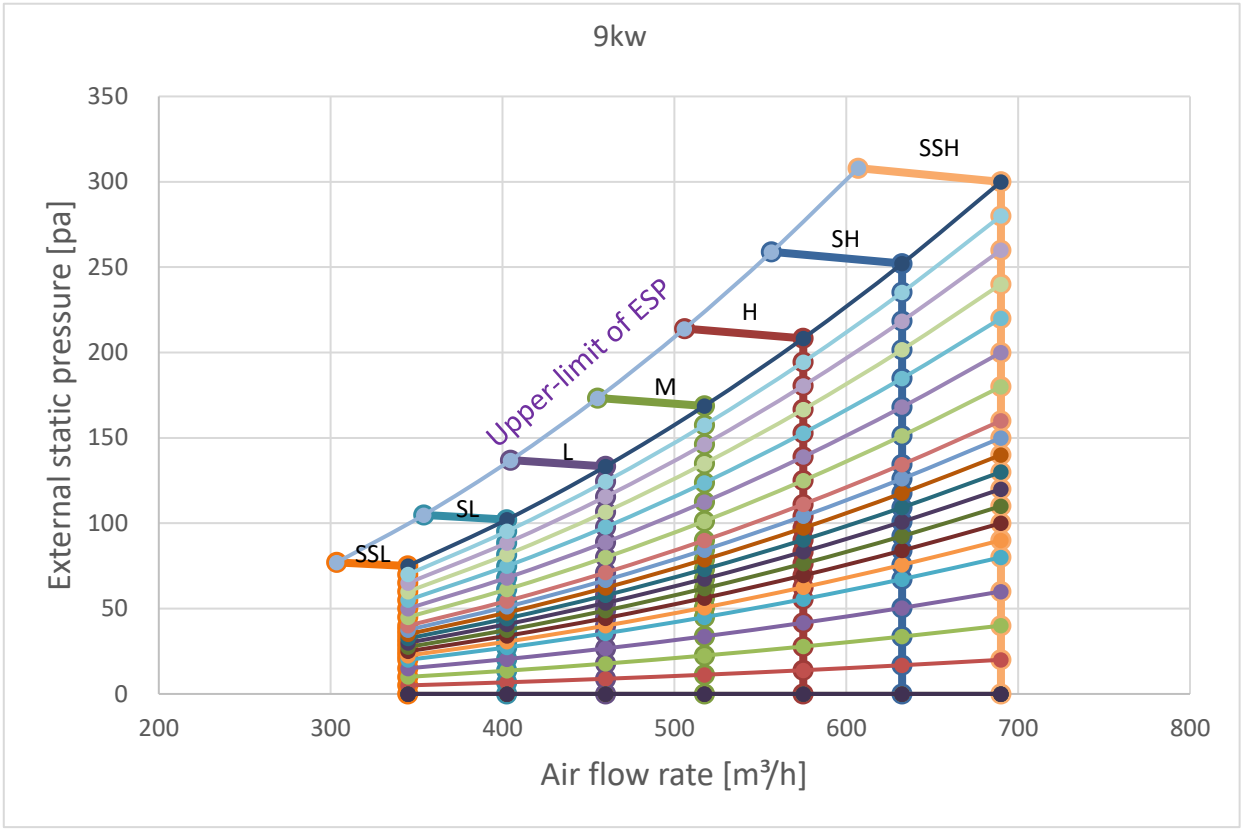


Figure 8.3: MIH140FASHN18 fan performance

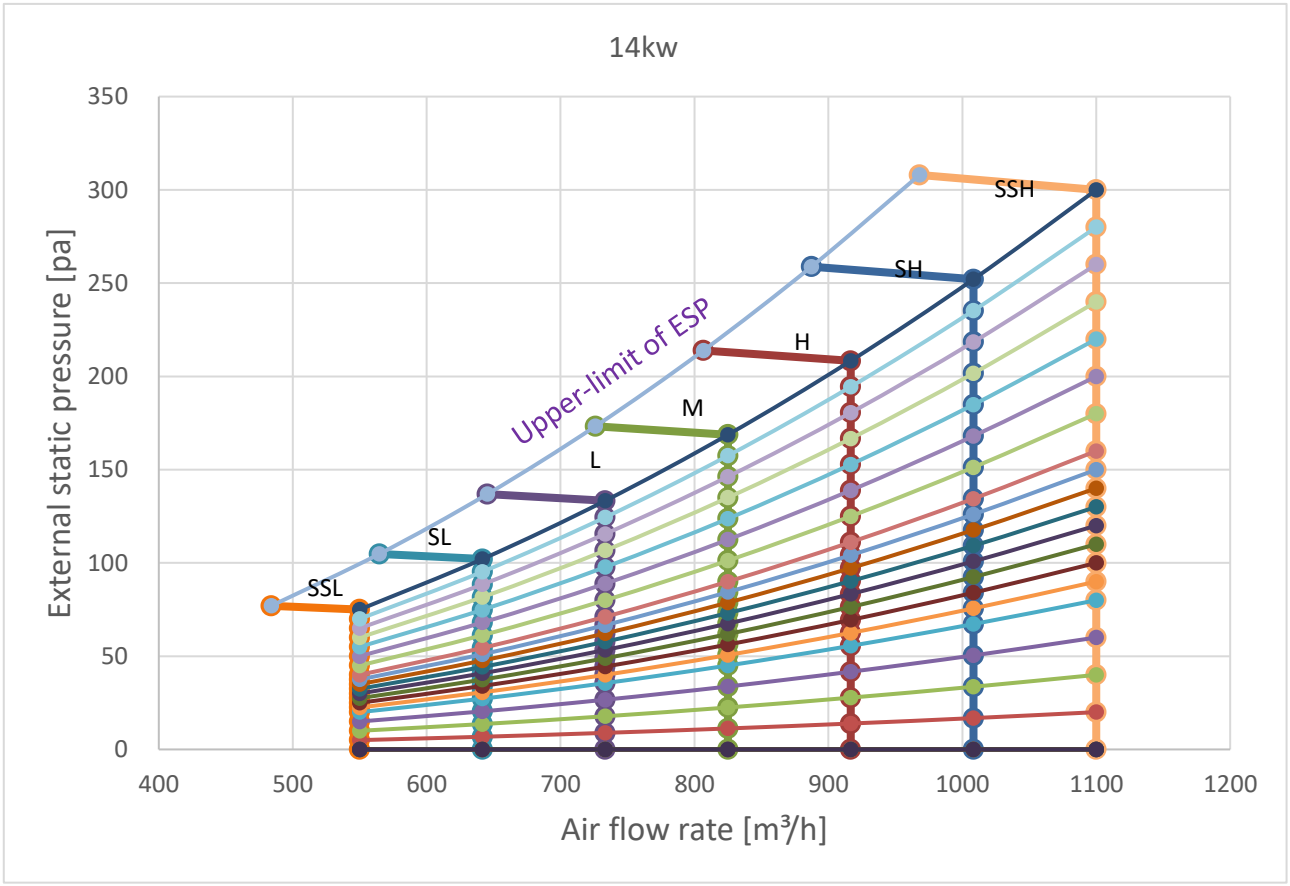


Figure 8.4: MIH160FASHN18 fan performance

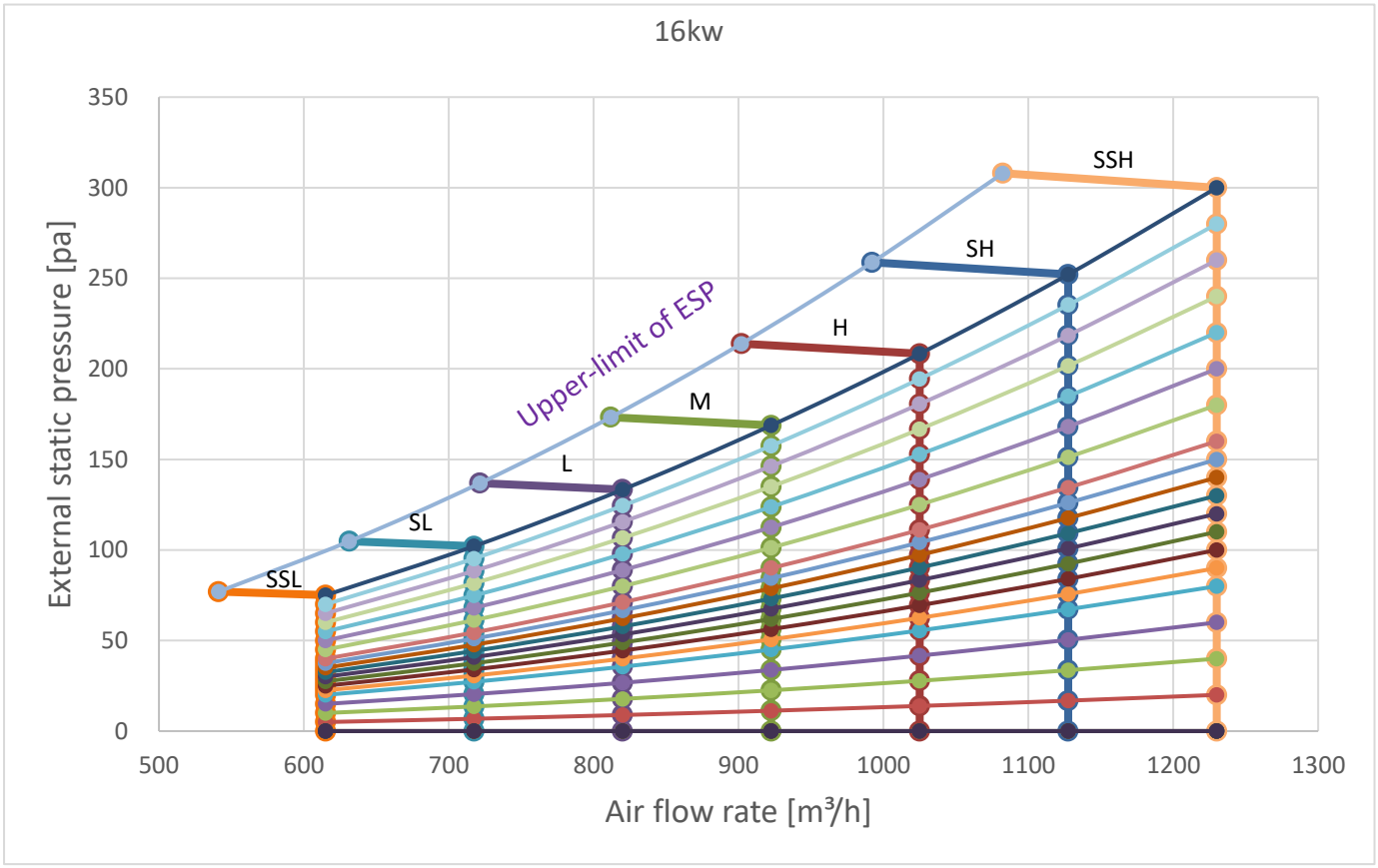


Figure 8.5: MIH224FASHN18 fan performance

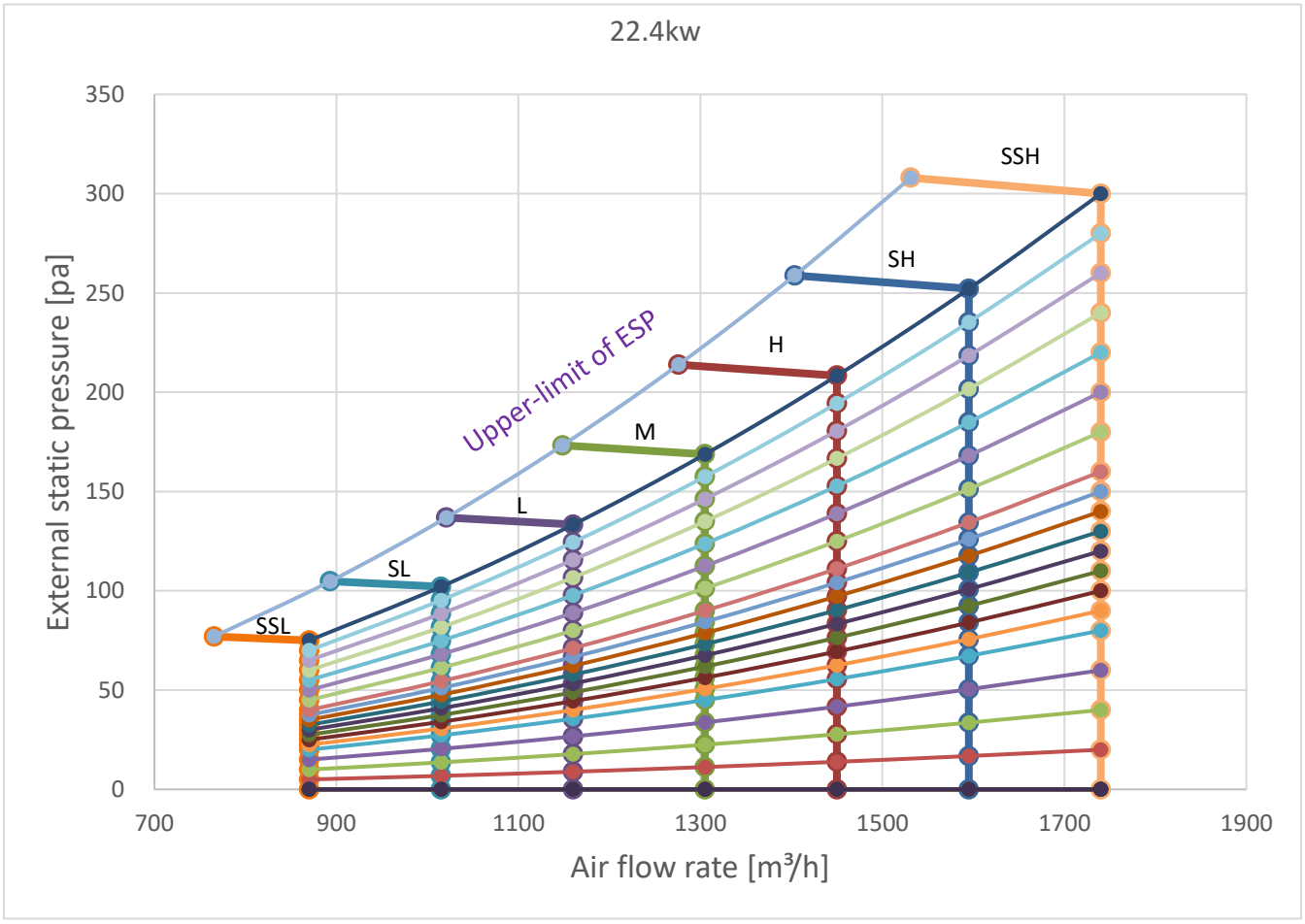
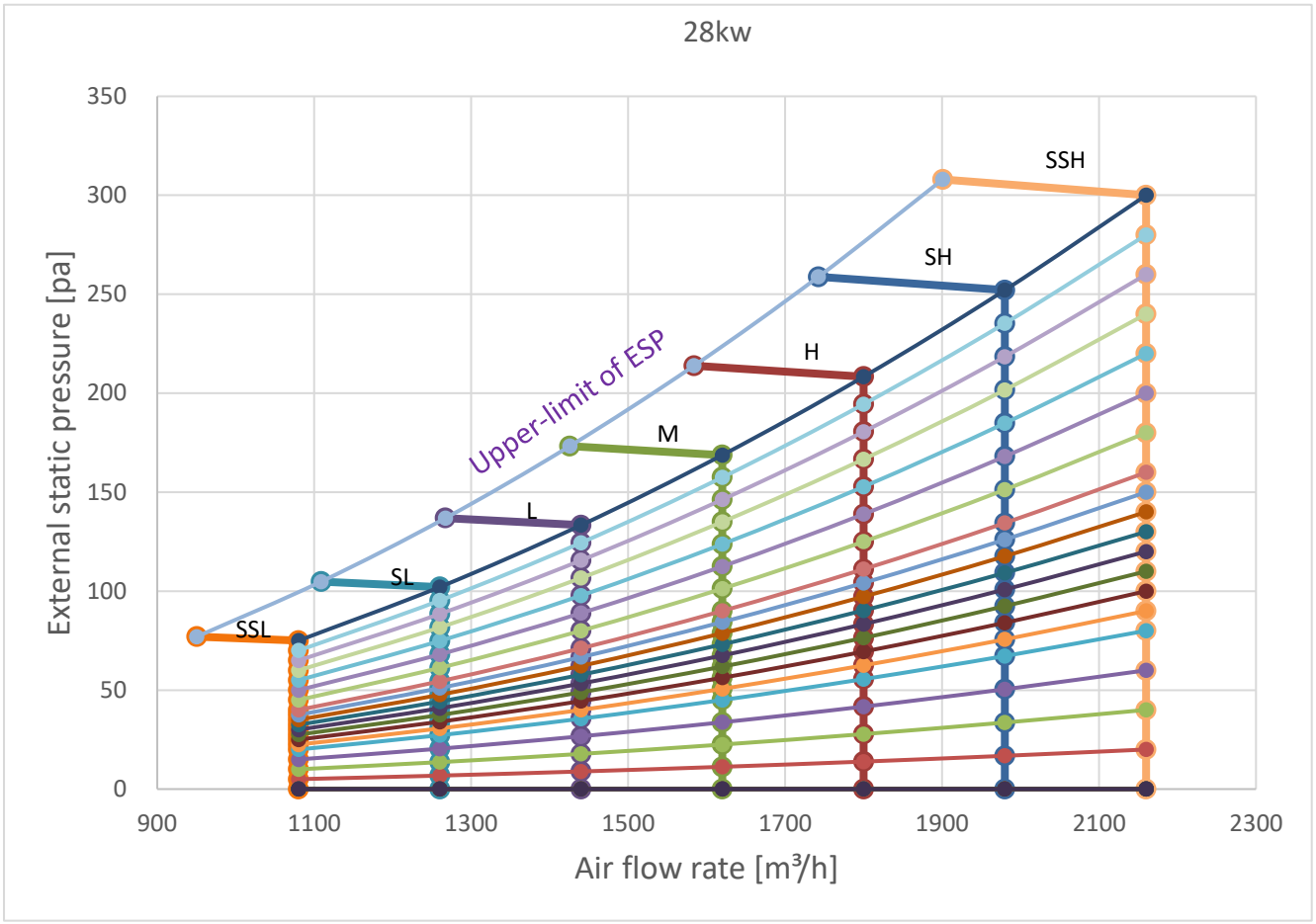


Figure 8.6: MIH224FASHN18 fan performance



8.3 Constant Speed mode

8.3.1 Fan performance diagram

Figure 8.7: MIH90FASHN18

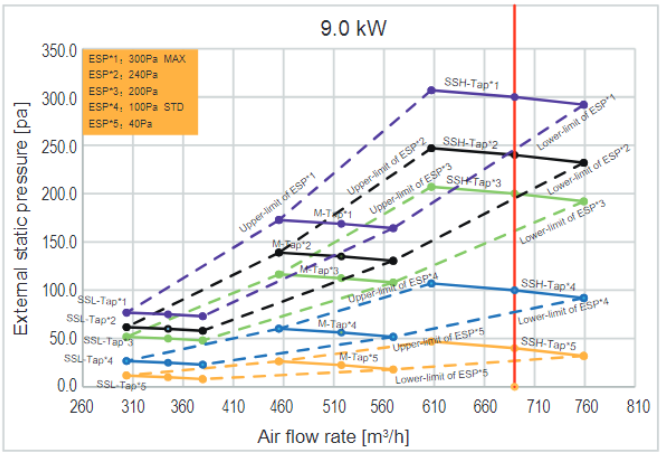


Figure 8.8: MIH140FASHN18

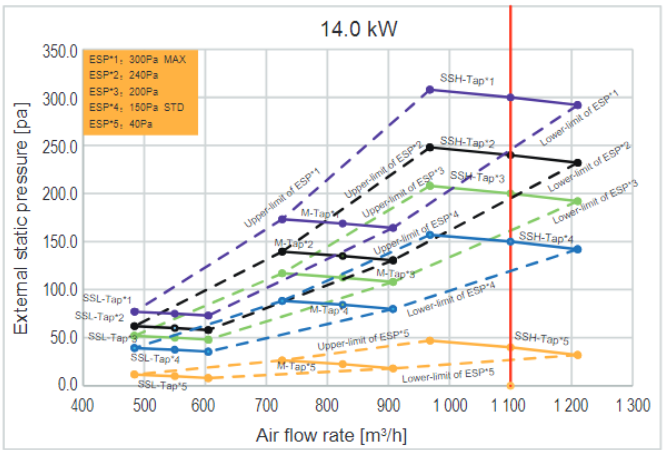
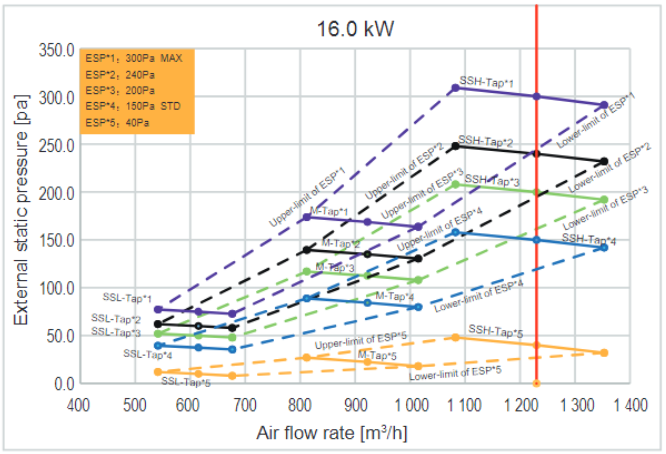


Figure 8.9: MIH160FASHN18

Figure 8.10: MIH224FASHN18



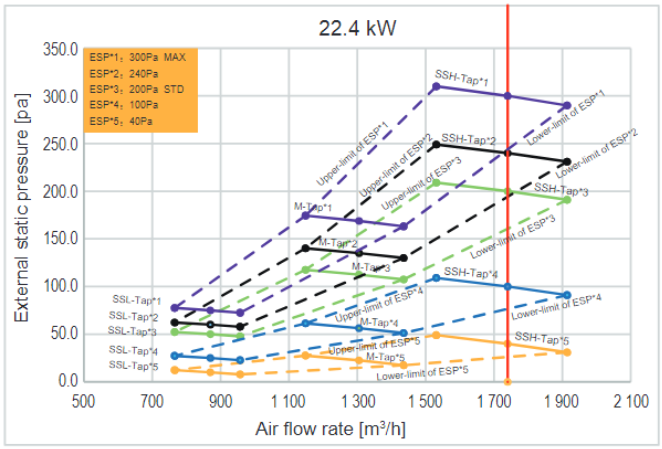


Figure 8.11: MIH280FASHN18

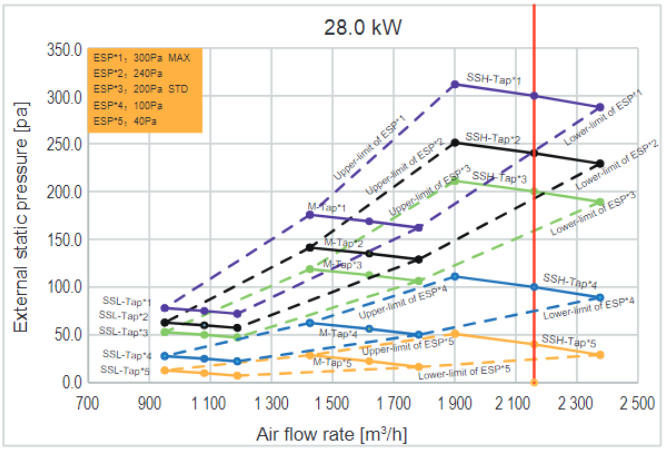


Table 6.2:ESP settings through the new wired controller

Capacity	00	01	02	03	04	05	06	07	08	09
9kW	0Pa	20Pa	40Pa	60Pa	80Pa	90Pa	100Pa	110Pa	120Pa	130Pa
14kW	0Pa	20Pa	40Pa	60Pa	80Pa	90Pa	100Pa	110Pa	120Pa	130Pa
16kW	0Pa	20Pa	40Pa	60Pa	80Pa	90Pa	100Pa	110Pa	120Pa	130Pa
22.4kW	0Pa	20Pa	40Pa	60Pa	80Pa	90Pa	100Pa	110Pa	120Pa	130Pa
28kW	0Pa	20Pa	40Pa	60Pa	80Pa	90Pa	100Pa	110Pa	120Pa	130Pa
Capacity	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
9kW	140Pa	150Pa	160Pa	180Pa	200Pa	220Pa	240Pa	260Pa	280Pa	300Pa
14kW	140Pa	150Pa	160Pa	180Pa	200Pa	220Pa	240Pa	260Pa	280Pa	300Pa
16kW	140Pa	150Pa	160Pa	180Pa	200Pa	220Pa	240Pa	260Pa	280Pa	300Pa
22.4kW	140Pa	150Pa	160Pa	180Pa	200Pa	220Pa	240Pa	260Pa	280Pa	300Pa
28kW	140Pa	150Pa	160Pa	180Pa	200Pa	220Pa	240Pa	260Pa	280Pa	300Pa

9 Sound Levels

9.1 Overall

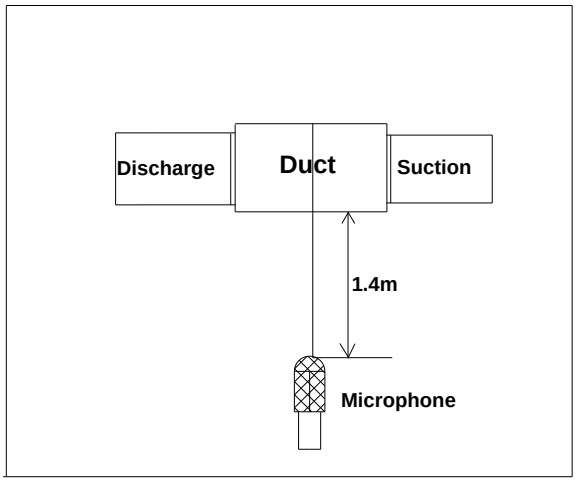
Table 9.1: Fresh Air Processing Unit sound pressure levels[1]

Model name	Sound pressure levelsdB(A)						
	SSH	SH	H	M	L	SL	SSL
MIH90FASHN18	39	37.5	36	34	32.5	30.5	29
MIH140FASHN18	44.5	42.5	40	37	35	33	32
MIH160FASHN18	44.5	43	41	38	36	34	32.5
MIH224FASHN18	49	47	45	43	40	38	36
MIH280FASHN18	51	49	47	44	42	39	37

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 9.1: Fresh Air Processing Unit sound pressure level measurement



9.2 Octave Band Levels

Figure 9.2: MIH90FASHN18 octave band levels

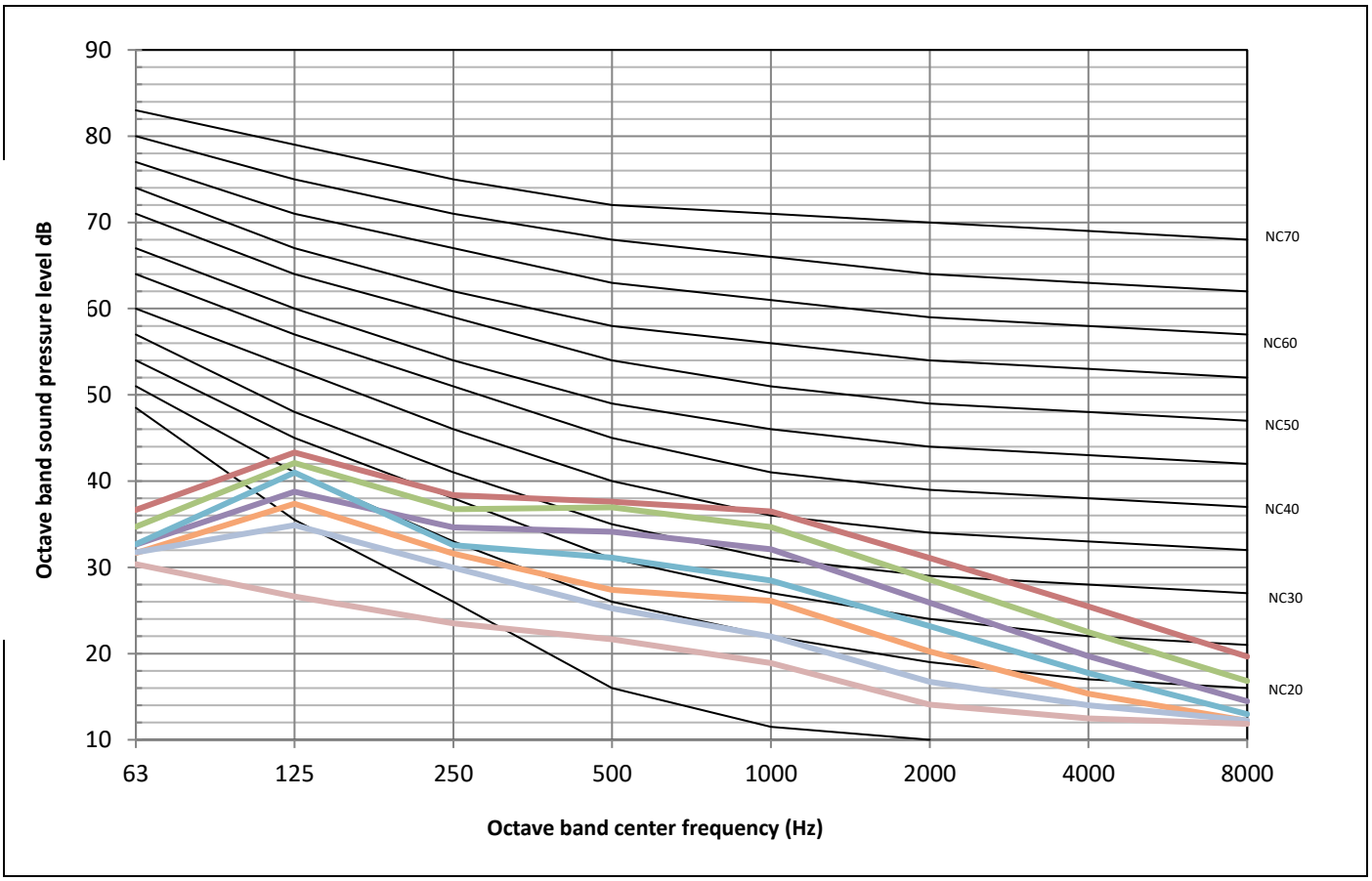


Figure 9.3: MIH140FASHN18 octave band levels

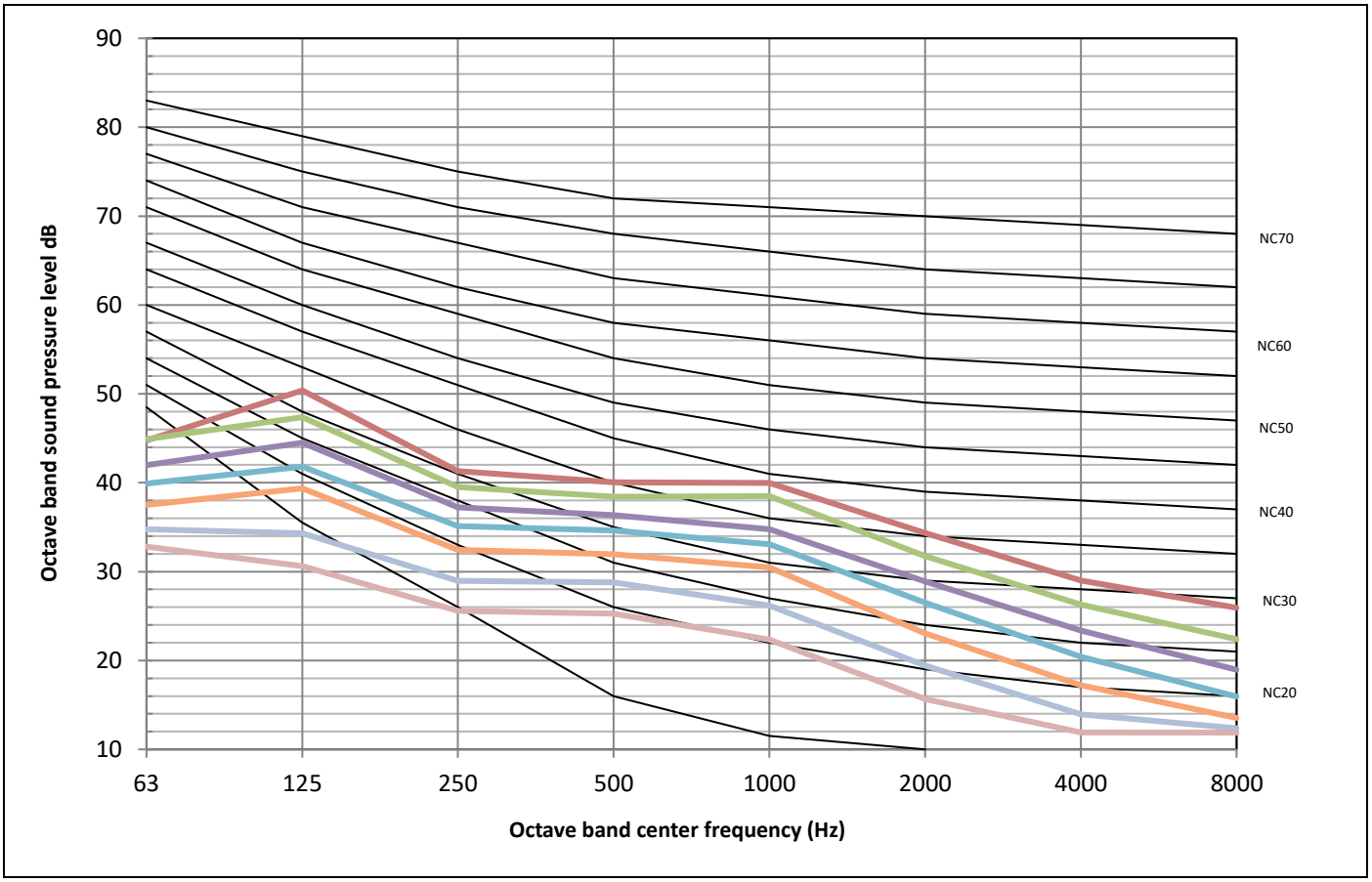


Figure 9.4: MIH160FASHN18 octave band levels

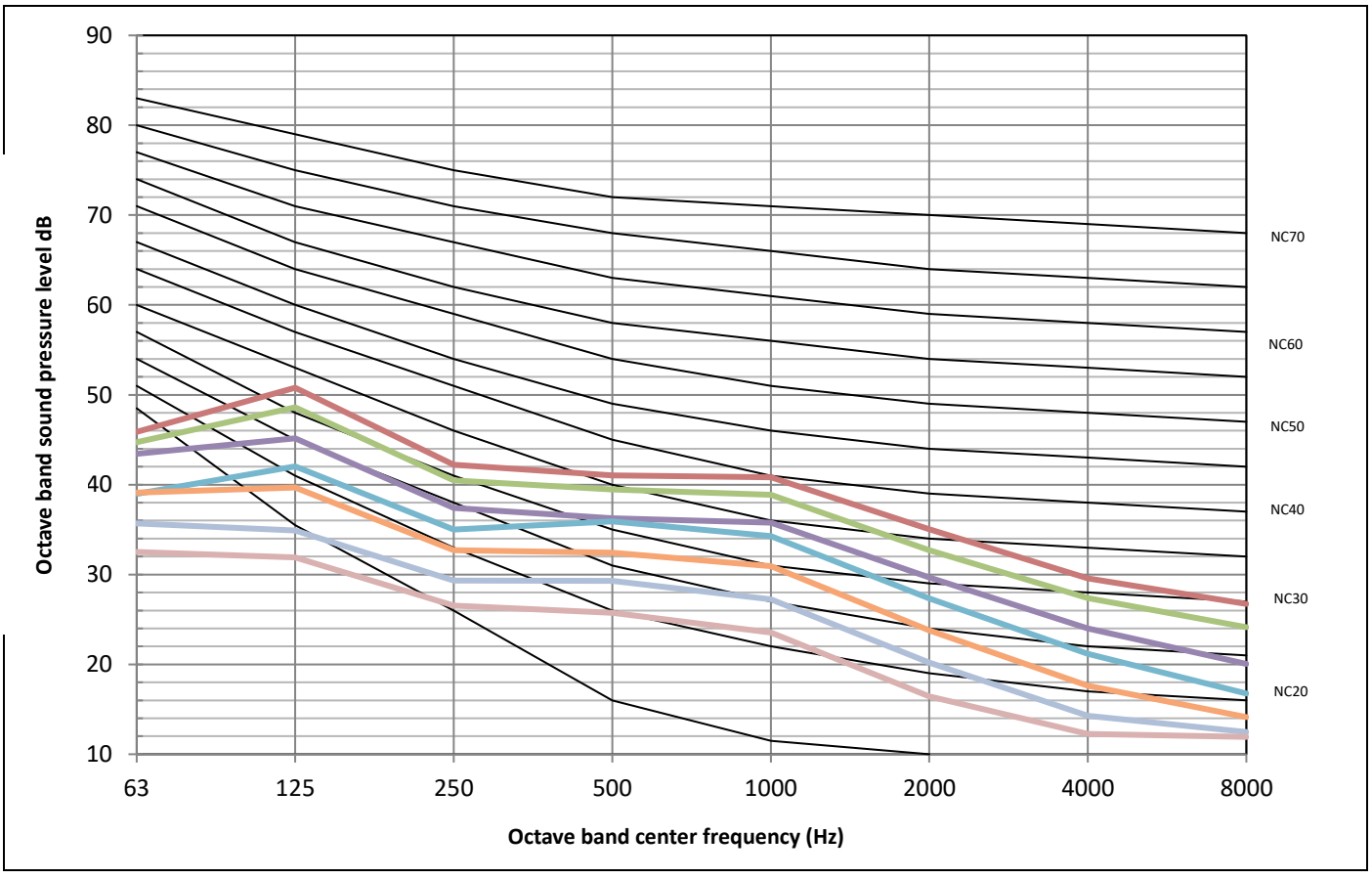


Figure 9.5: MIH224FASHN18 octave band levels

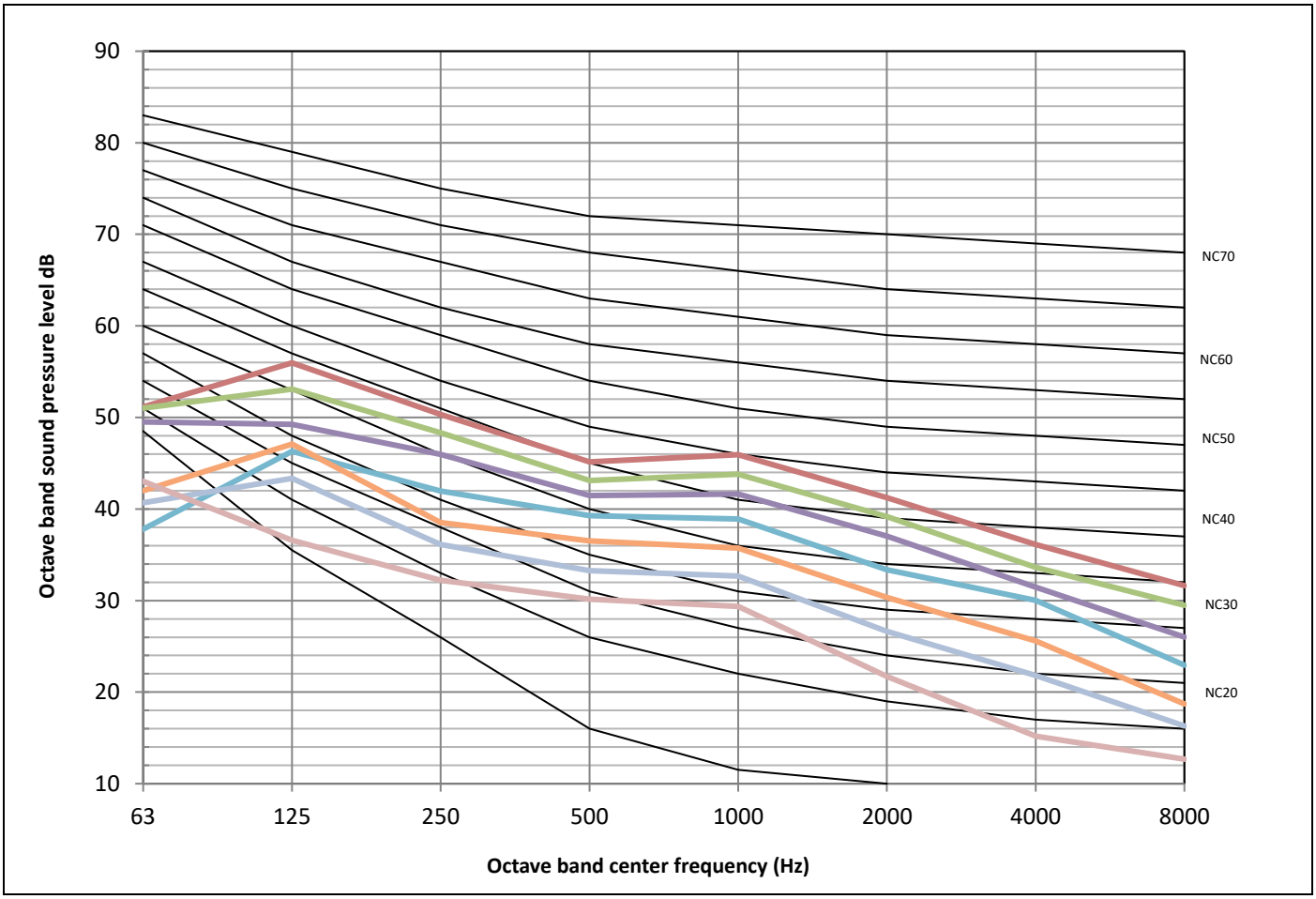
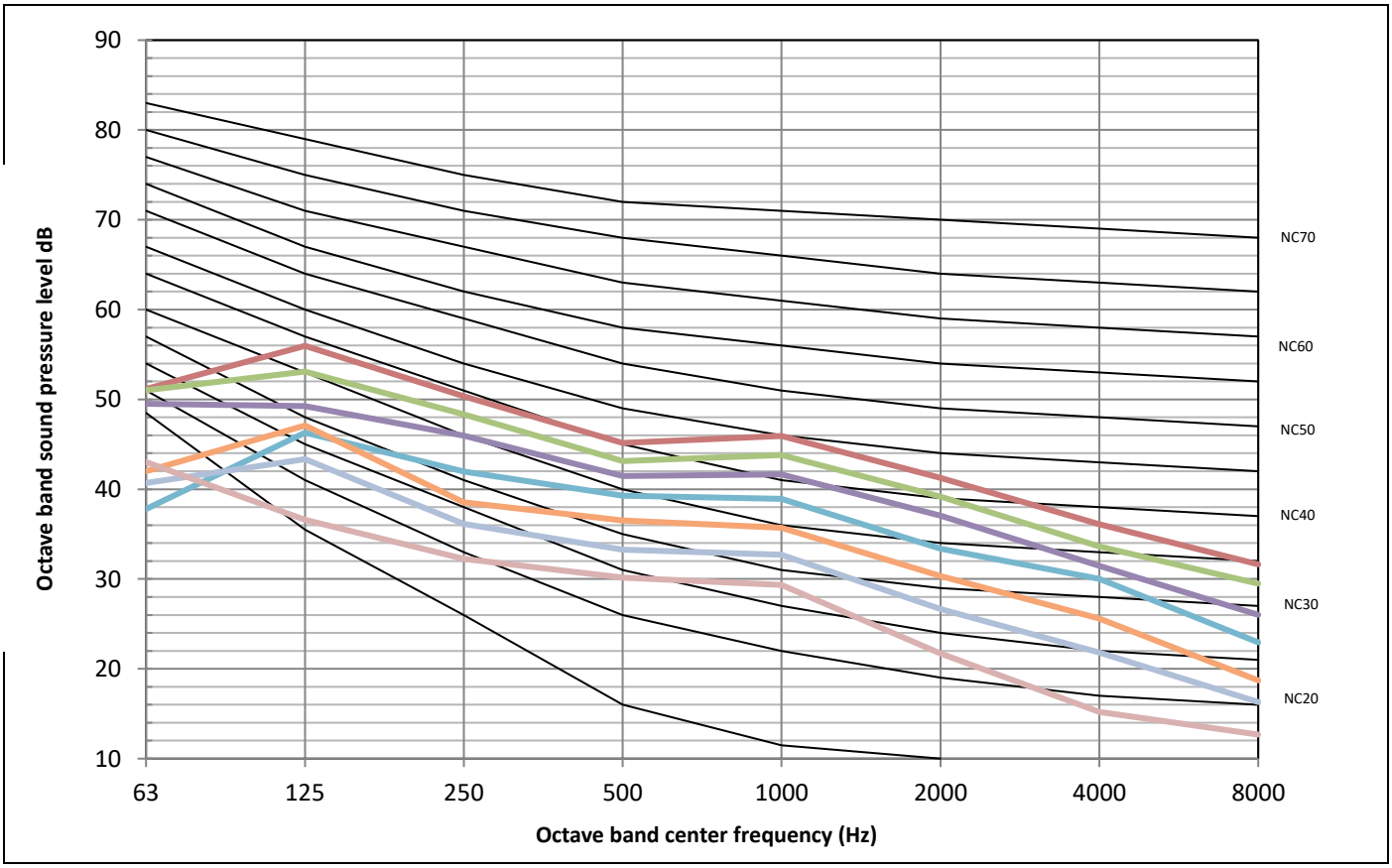


Figure 9.6: MIH280FASHN18 octave band levels



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Note: Product specifications change from time to time as product improvements and developments are released and may vary from those in this document.