

Engineering Data Book



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1-WAY CASSETTE BASIC INFORMATION

Specifications

Table 1 —Data Table

MODEL			40VMI005---3	40VMI007---3
Power supply		V/Ph/Hz	208/230-1-60	
Cooling capacity *1		Btu/h	5,070	7,100
Heating capacity *1		Btu/h	6,000	8,000
MCA		A	0.29	0.29
MOCP		A	15	
Panel / Grille			40VMI001----	
Filter			Installed in Panel / Grille	
Dimensions of unit (W x H x D)		in.	42 x 6 x 16-3/4	
Dimensions of panel / grille (W x H x D)		in.	46-1/2 x 1 x 18-1/4	
Net weight of unit		lbs	27.1	28.0
Net weight of panel		lbs	7.75	
Heat Exchanger			Inner Groove Copper Tube and Hydrophilic Aluminum fin	
Blower / Motor	Fan Type		Centrifugal	
	Motor Type		DC motor	
	Air Flow Rate (H/M/L)	CFM	198/174/143	227/181/143
	Sound Pressure Level (H/M/L)*2	dBA	31.7/29.6/28.5	35.4/32.0/29.4
	Motor Input	W	10	
External Static Pressure		in. WG	0	
Piping connections	Gas (Low) Pressure	in.	1/2	
	Liquid (High) Pressure	in.	1/4	
	Condensate	in.	1	
Condensate Lift		in.	27-1/2	
Refrigerant Control			Electronic Expansion Valve	
Connectable Outdoor Unit			38VMH – Heat Pump 38VMR – Heat Recovery 38VMH-1P – Single Phase Heat Pump	
Wiring	Power Wiring	AWG	Sized per NEC and Local Codes based on Nameplate Electrical Data	
	Control Wiring	AWG	2-core shielded twisted pair cable 18AWG	

NOTES:

*1 Rated per AHRI (Air Conditioning, Heating, and Refrigeration Institute) 1230 Standard

Cooling: Indoor 80°F (27°C) db / 67°F (20°C) wb; Outdoor 95°F (35°C) db

Heating: Indoor 70°F (21°C) db; Outdoor 47°F (8°C) db / 43°F (6°C) wb

*2 These values are measured in anechoic chamber at a distance of 4.6 feet below the unit.

Table 2 —Data Table

MODEL			40VMI009---3	40VMI012---3
Power supply		V/Ph/Hz	208/230-1-60	
Cooling capacity *1		Btu/h	9,130	12,170
Heating capacity *1		Btu/h	10,000	13,500
MCA		A	0.29	0.37
MOCP		A	15	
Panel / Grille			40VMI001----	
Filter			Installed in Panel / Grille	
Dimensions of unit (W x H x D)		in.	42 x 6 x 16-3/4	
Dimensions of panel / grille (W x H x D)		in.	46-1/2 x 1 x 18-1/4	
Net Weight of unit		lbs	29.1	
Net Weight of panel		lbs	7.75	
Heat Exchanger			Inner Groove Copper Tube and Hydrophilic Aluminum fin	
Blower / Motor	Fan Type		Centrifugal	
	Motor Type		DC motor	
	Air Flow Rate (H/M/L)	CFM	273/226/180	310/226/213
	Sound Pressure Level (H/M/L)*2	dBA	41.5/36.0/32.5	45.0/41.0/36.1
	Motor Input	W	10	15
External Static Pressure		in. WG	0	
Piping connections	Gas (Low) Pressure	in.	1/2	
	Liquid (High) Pressure	in.	1/4	
	Condensate	in.	1	
Condensate Lift		in.	27-1/2	
Refrigerant Control			Electronic Expansion Valve	
Connectable Outdoor Unit			38VMH – Heat Pump 38VMR – Heat Recovery 38VMH-1P – Single Phase Heat Pump	
Wiring	Power Wiring	AWG	Sized per NEC and Local Codes based on Nameplate Electrical Data	
	Control Wiring	AWG	2-core shielded twisted pair cable 18AWG	

NOTES:

*1 Rated per AHRI (Air Conditioning, Heating, and Refrigeration Institute) 1230 Standard

Cooling: Indoor 80°F (27°C) db / 67°F (20°C) wb; Outdoor 95°F (35°C) db

Heating: Indoor 70°F (21°C) db; Outdoor 47°F (8°C) db / 43°F (6°C) wb

*2 These values are measured in anechoic chamber at a distance of 4.6 feet below the unit.

Table 3 —Data Table

MODEL			40VMI015---3	40VMI018---3
Power supply		V/Ph/Hz	208/230-1-60	
Cooling capacity *1		Btu/h	15,210	18,250
Heating capacity *1		Btu/h	17,000	21,000
MCA		A	0.44	0.58
MOCP		A	15	
Panel / Grille			40VMI002----	
Filter			Installed in Panel / Grille	
Dimensions of unit (W x H x D)		in.	51-1/2 x 7-1/2 x 18	
Dimensions of panel / grille (W x H x D)		in.	53 x 1 x 19-3/4	
Net Weight of unit		lbs	38.8	
Net Weight of panel		lbs	8.82	
Heat Exchanger			Inner Groove Copper Tube and Hydrophilic Aluminum fin	
Blower / Motor	Fan Type		Centrifugal	
	Motor Type		DC motor	
	Air Flow Rate (H/M/L)	CFM	379/345/309	472/429/387
	Sound Pressure Level (H/M/L)*2	dBA	40.7/38.1/36.3	45.5/43.1/40.8
	Motor Input	W	20	30
External Static Pressure		in. WG	0	
Piping connections	Gas (Low) Pressure	in.	1/2	5/8
	Liquid (High) Pressure	in.	1/4	3/8
	Condensate	in.	1	
Condensate Lift		in.	27-1/2	
Refrigerant Control			Electronic Expansion Valve	
Connectable Outdoor Unit			38VMH – Heat Pump 38VMR – Heat Recovery 38VMH-1P – Single Phase Heat Pump	
Wiring	Power Wiring	AWG	Sized per NEC and Local Codes based on Nameplate Electrical Data	
	Control Wiring	AWG	2-core shielded twisted pair cable 18AWG	

NOTES:

*1 Rated per AHRI (Air Conditioning, Heating, and Refrigeration Institute) 1230 Standard

Cooling: Indoor 80°F (27°C) db / 67°F (20°C) wb; Outdoor 95°F (35°C) db

Heating: Indoor 70°F (21°C) db; Outdoor 47°F (8°C) db / 43°F (6°C) wb

*2 These values are measured in anechoic chamber at a distance of 4.6 feet below the unit.

Table 4 —Data Table

MODEL			40VMI024---3
Power supply		V/Ph/Hz	208/230-1-60
Cooling capacity *1		Btu/h	24,340
Heating capacity *1		Btu/h	27,000
MCA		A	0.58
MOCP		A	15
Panel / Grille			40VMI002----
Filter			Installed in Panel / Grille
Dimensions of unit (W x H x D)		in.	51-1/2 x 7-1/2 x 18
Dimensions of Panel / Grille (W x H x D)		in.	53 x 1 x 19-3/4
Net Weight of unit		lbs	41.0
Net weight of panel		lbs	8.82
Heat Exchanger			Inner Groove Copper Tube and Hydrophilic Aluminum fin
Blower / Motor	Fan Type		Centrifugal
	Motor Type		DC motor
	Air Flow Rate (H/M/L)	CFM	517/472/408
	Sound Pressure Level (H/M/L) *2	dBA	46.2/43.6/42.2
	Motor Input	W	31
External Static Pressure		in. WG	0
Piping connections	Gas (Low) Pressure	in.	5/8
	Liquid (High) Pressure	in.	3/8
	Condensate	in.	1
Condensate Lift		in.	27-1/2
Refrigerant Control			Electronic Expansion Valve
Connectable Outdoor Unit			38VMH – Heat Pump 38VMR – Heat Recovery 38VMH-1P – Single Phase Heat Pump
Wiring	Power Wiring	AWG	Sized per NEC and Local Codes based on Nameplate Electrical Data
	Control Wiring	AWG	2-core shielded twisted pair cable 18AWG

NOTES:

*1 Rated per AHRI (Air Conditioning, Heating, and Refrigeration Institute) 1230 Standard

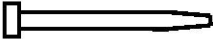
Cooling: Indoor 80°F (27°C) db / 67°F (20°C) wb; Outdoor 95°F (35°C) db

Heating: Indoor 70°F (21°C) db; Outdoor 47°F (8°C) db / 43°F (6°C) wb

*2 These values are measured in anechoic chamber at a distance of 4.6 feet below the unit.

Accessories

Table 5 —Table of Accessories

NAME	APPEARANCE	QUANTITY	PURPOSE
Template		1	For drop ceiling cutout
Insulation		2	For piping connections
Rope Tie		10	For fastening and tightening
Condensate connection		1	For drain connection
Clamp		1	For connecting the drain
Washer		8	To secure suspended unit
Nut		8	To secure suspended unit
Screw		7	For securing panel / grille
Copper Nut		2	Connect piping
Copper Pipe		2	For connecting refrigerant pipe

PIPING DIAGRAM

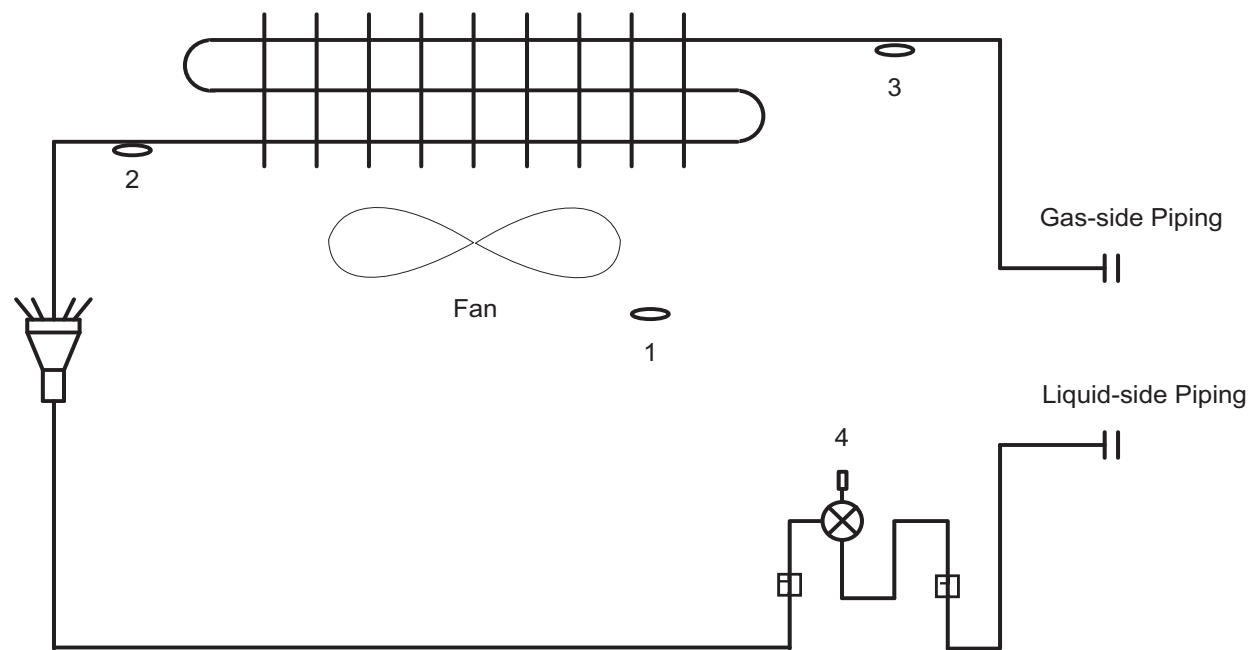


Fig. 1 —Piping

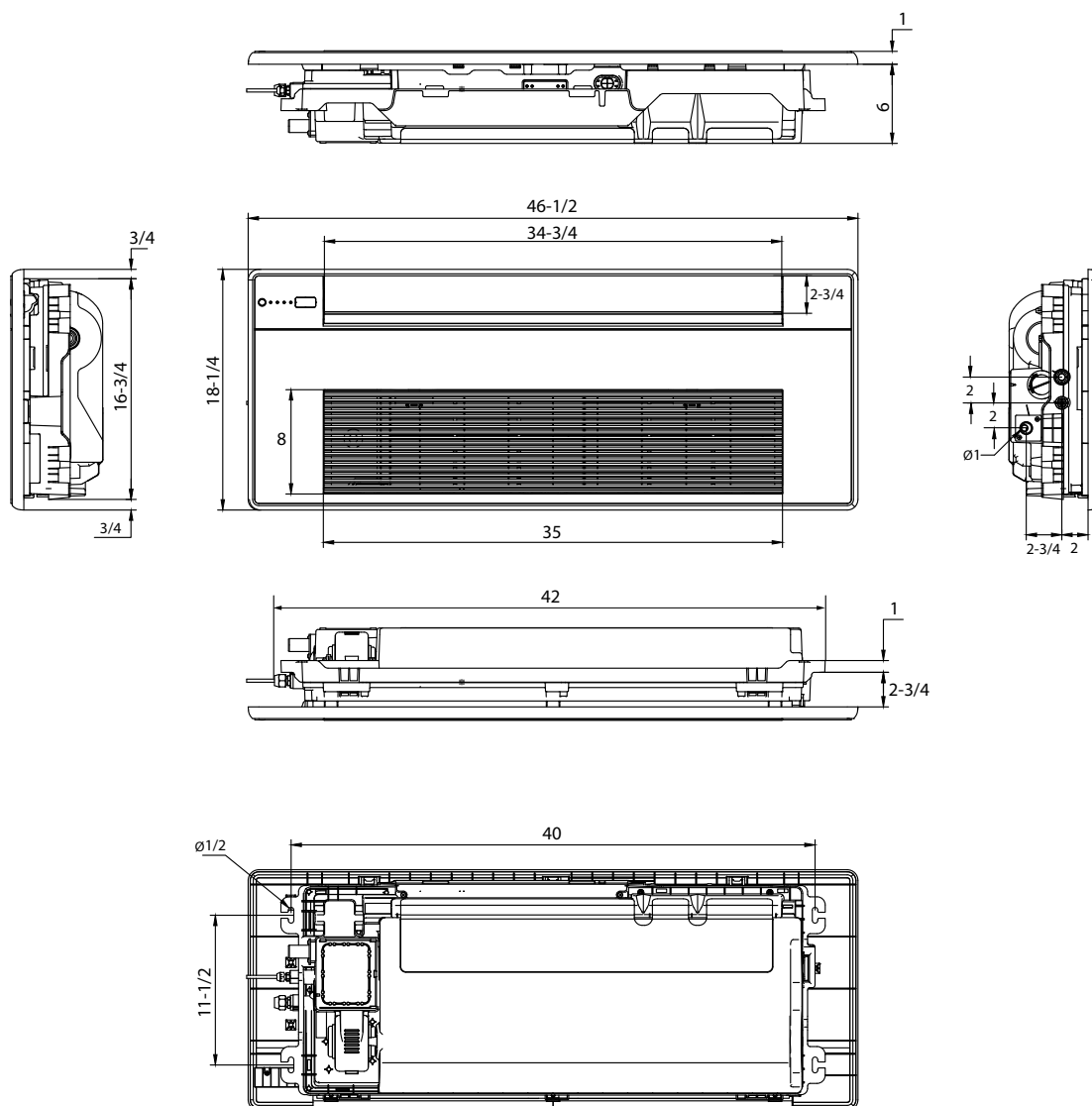
Table 6 —Piping

NUMBER	SYMBOL	NAME
1	T1	Room temperature sensor
2	T2A	Inlet pipe temperature sensor
3	T2B	Outlet pipe temperature sensor
4	EEV	Electronic expansion valve

Table 7 —Gas/Liquid Line Sizes

MODEL	GAS	LIQUID
40VMI005/007/009/012/015---3	1/2	1/4
40VMI018/024---3	5/8	3/8

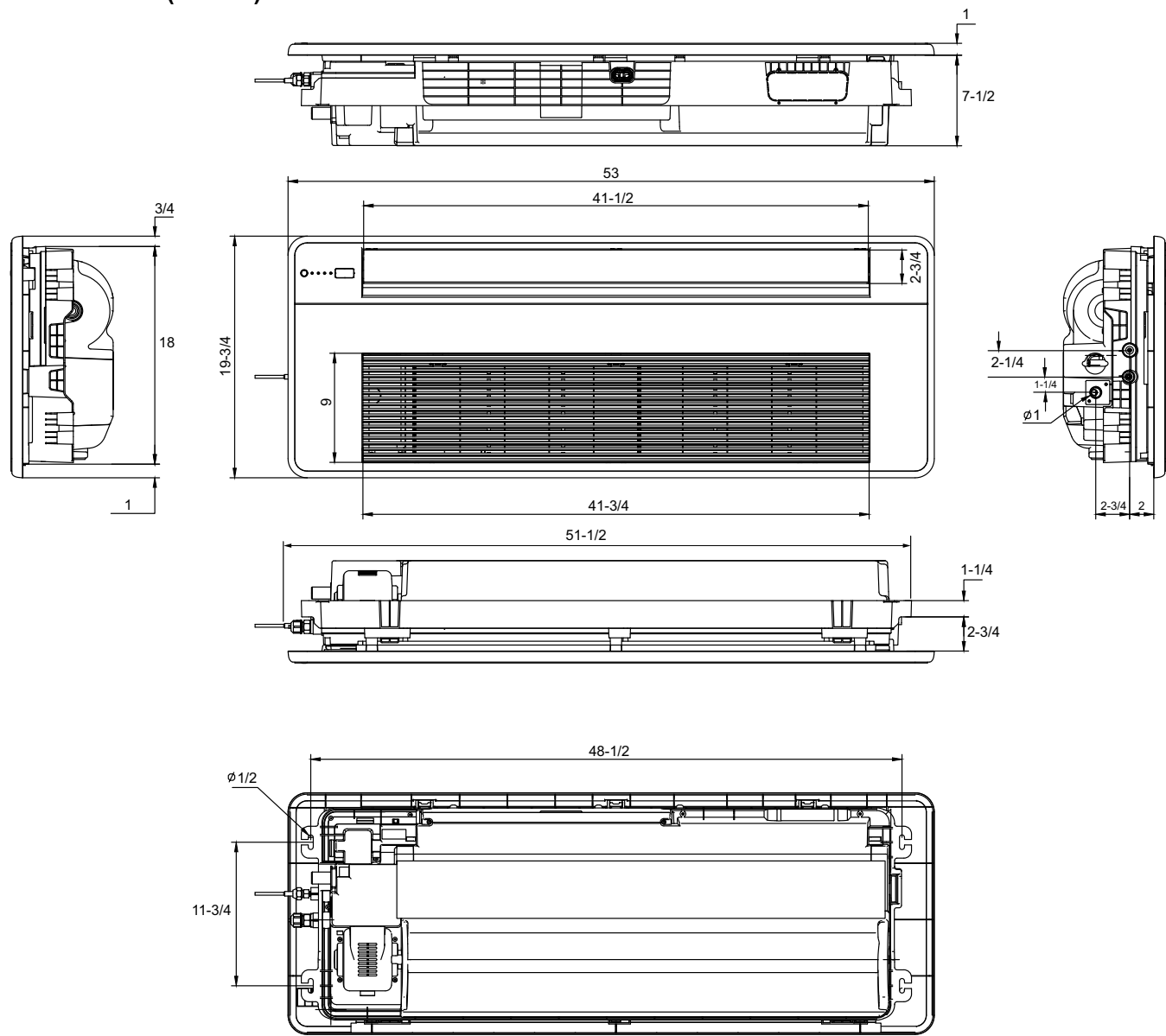
DIMENSIONS



NOTE: All dimensions are shown in inches.

Fig. 2 —40VMI005 to 012

DIMENSIONS (CONT.)



NOTE: All dimensions are shown in inches.

Fig. 3 —40VMI015 to 024

WIRING DIAGRAM

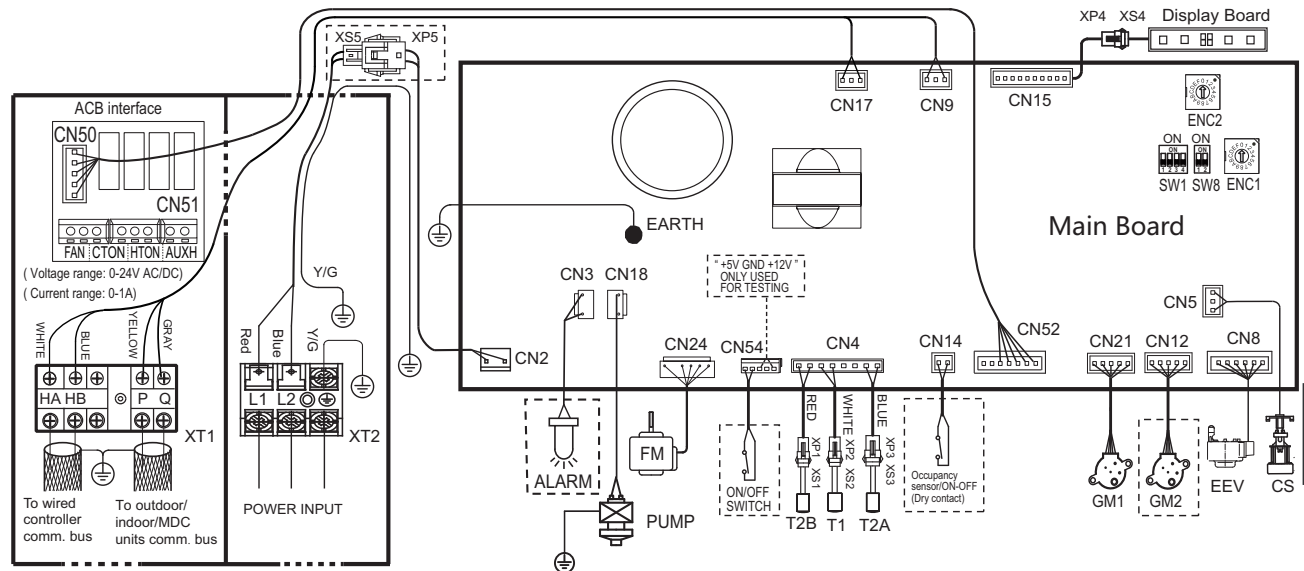


Fig. 4 —40VM1009 to 40VM1024--3

Legend

FM	-	Indoor Fan Motor	T1	-	Room Temperature Sensor	XP5	-	Connectors
Alarm	-	Warning Lamp	EEV	-	Electronic Expansion Valve	XS5	-	Connectors
GM1-2	-	Swing Motor	XT1-2	-	Terminal	XP1-5	-	Connectors
T2A	-	Inlet Pipe Temperature Sensor	T2B	-	Outlet Pipe Temperature Sensor	XS1-5	-	Connectors
Pump	-	Pump Motor	CS	-	Water Level Switch			

Wiring Diagram Definitions and Settings (40VMI005 to 024---3)

Table 8 —Code / Title

CODE	TITLE
FM	Indoor Fan Motor
T1	Room Temperature Sensor
T2A	Inlet Pipe Temperature Sensor
T2B	Outlet Pipe Temperature Sensor
ALARM	Warning Lamp
EEV	Electronic Extension Valve
XP1-8	Connectors
Code / TitleXS1-6	
XT1	Terminal
PUMP	Pump Motor
CS	Condensate Switch
GM	Swing Motor

Table 9 —SW1 Definition

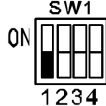
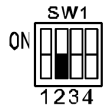
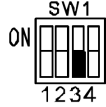
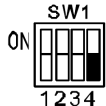
	0 means auto addressing mode (Default)
	1 means factory test mode
	0 means normal mode (Default)
	1 means factory self-checking mode (Reserved)
	Reserved
	0 means standard indoor unit (Default)
	1 means main indoor unit (must be addressed #63)

Table 10 —ENC1 / ENC2

 ENC1	Reserved	 ENC2	Reserved
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Table 11 —J1 Definition

 J1	Without jumper J1 for auto restart function
 J1	With jumper J1 for manual restart function

Table 12 —SW8 Definition

	Reserved
	Reserved

Table 13 —0/1 Definition

	Means 0
	Means 1

Table 14 —Error Code / Content

dd	Heating / Cooling Conflict
E1	Communication Error with Outdoor Unit
E2	Temperature Sensor (T1) Error
E4	Temperature Sensor (T2B) Error
E5	Temperature Sensor (T2A) Error
E6	DC Fan Error
E7	EEPROM Error (Data Storage)
UU	MDC Error in Auto System-Check Mode
E9	Communication Error with Wired Controller
Eb	EEV Error
EC	Indoor Fan Error in Auto System-Check Mode
Ed	Outdoor Unit Error
EE	Condensate Error
FE	No Address when Powered On for the First Time

ELECTRICAL CHARACTERISTICS

Table 15 —Electrical Characteristics

MODEL	POWER SUPPLY					IFM	
	Hz	VOLTS	VOLTAGE RANGE	MCA	MOCP	W	FLA
40VMI005---3	60	208/230V	Max.253V Min.187V	0.29	15	20	0.23
40VMI007---3				0.29	15	20	0.23
40VMI009---3				0.29	15	20	0.23
40VMI012---3				0.37	15	20	0.29
40VMI015---3				0.44	15	60	0.35
40VMI018---3				0.58	15	60	0.46
40VMI024---3				0.58	15	60	0.46

MCA: Minimum Circuit Amps (A)

MOCP: Maximum Over Current Protection (A)

Symbols: W: Fan Motor Rated Output (W)

FLA: Full Load Amps (A)

IFM: Indoor Fan Motor

AIR THROW CHARTS

40VMI005-024---3

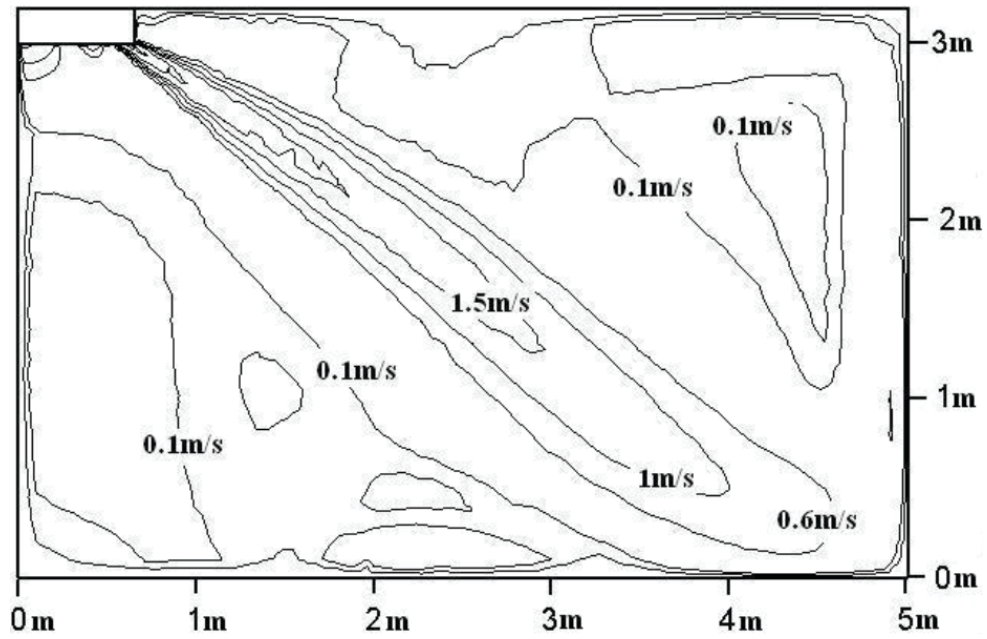


Fig. 5 —Cooling Velocity

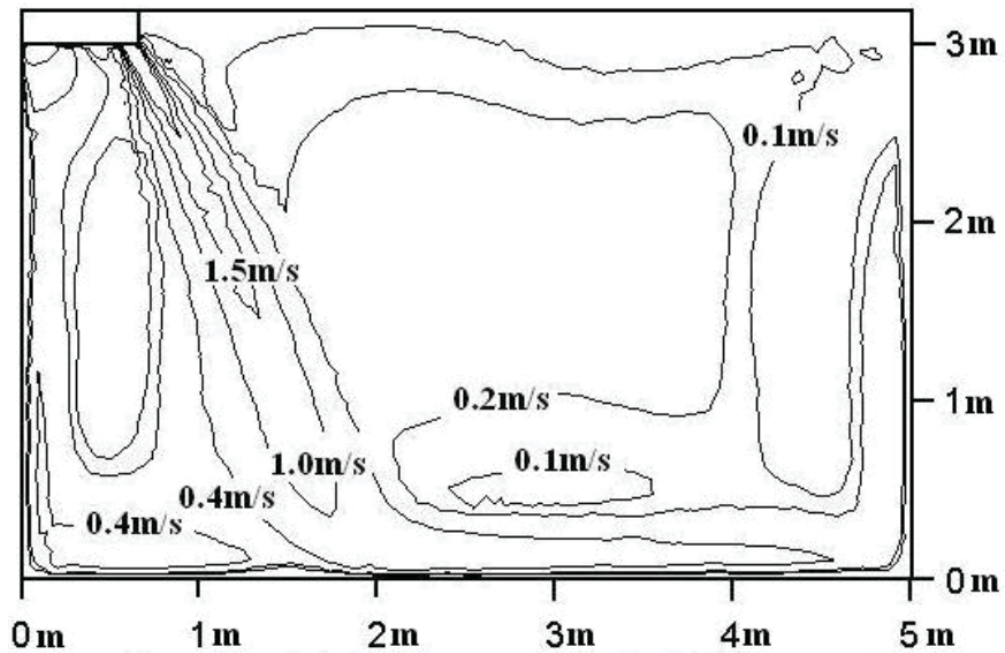


Fig. 6 —Heating Velocity

SOUND DATA

Sound Pressure Levels

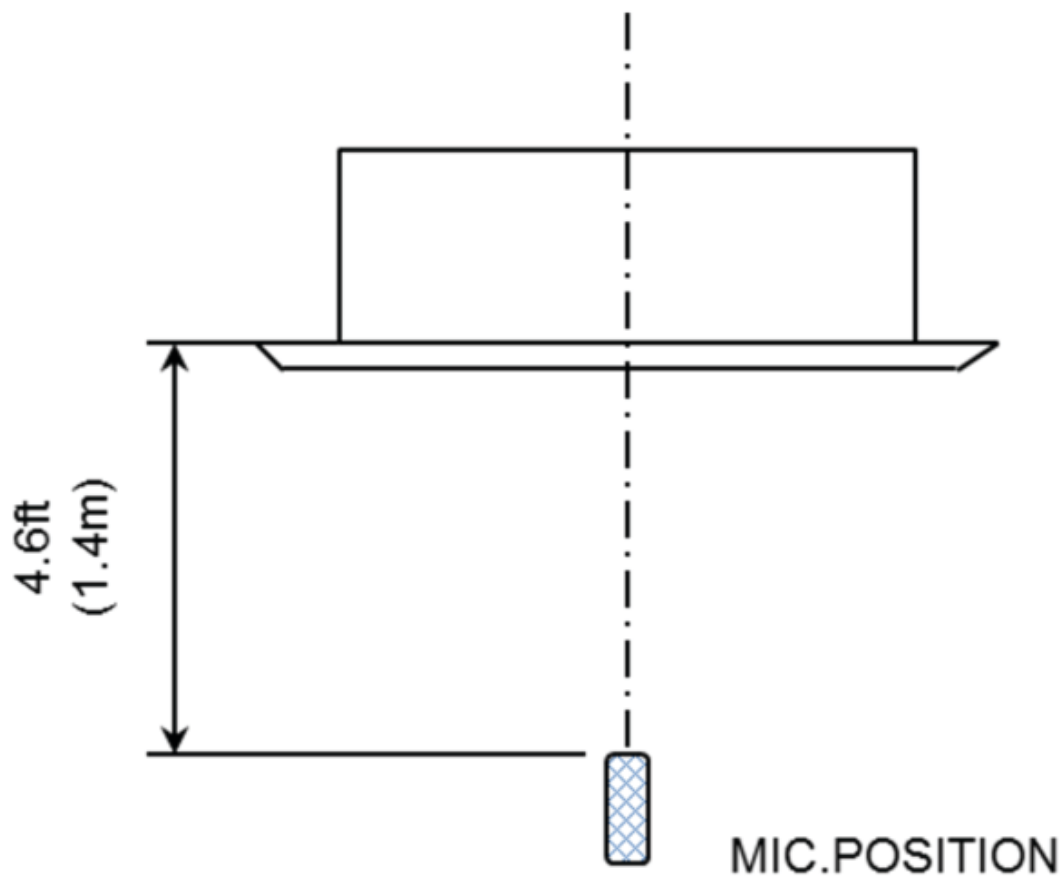


Fig. 7 —Overall Sound Levels

Table 16 —Sound Pressure

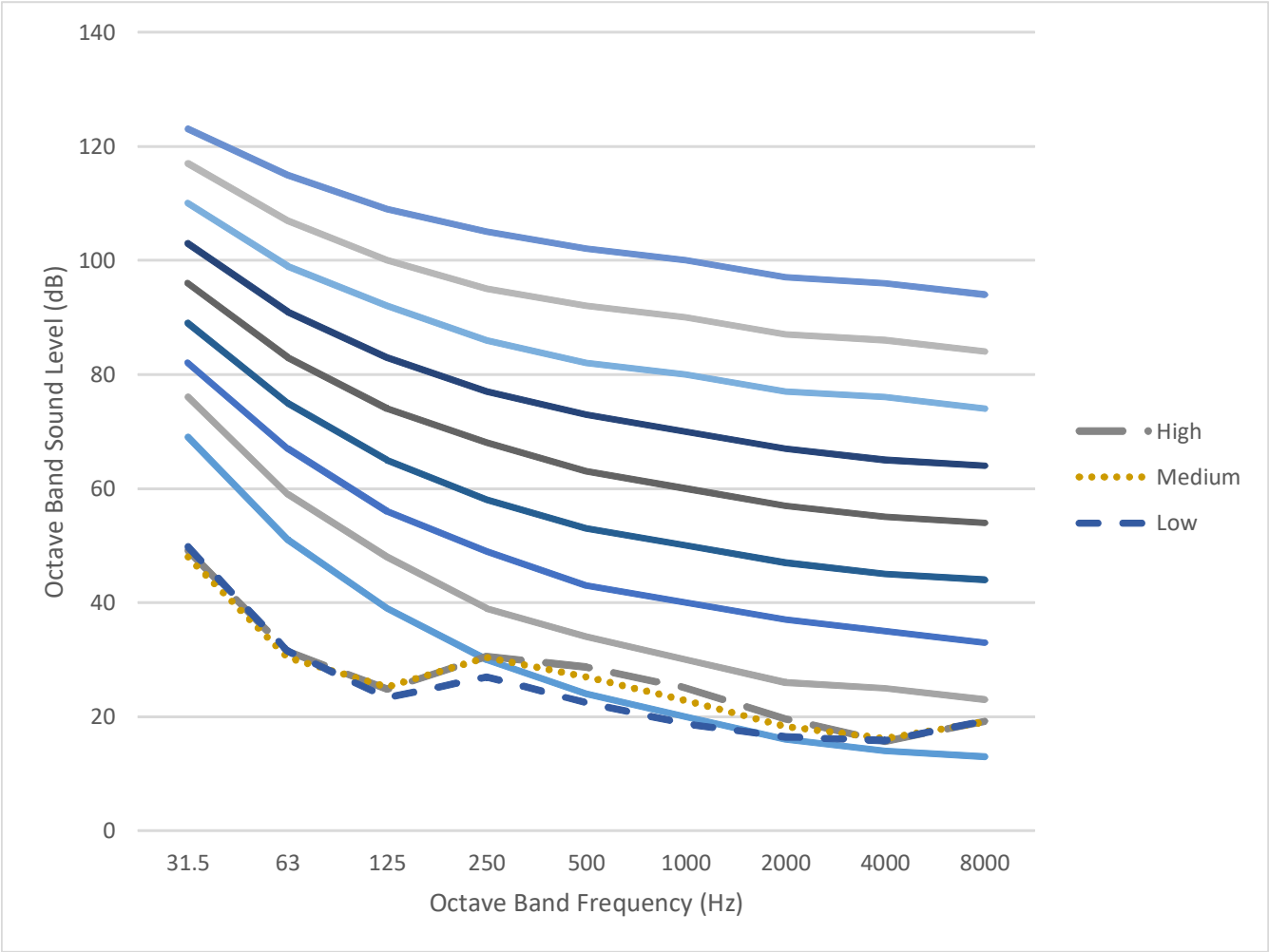
MODEL	H	M	L
40VMI005---3	31.7	29.6	28.5
40VMI007---3	35.4	32.0	29.4
40VMI009---3	41.5	36.0	32.5
40VMI012---3	45.0	41.0	36.1
40VMI015---3	40.7	38.1	36.3
40VMI018---3	45.5	43.1	40.8
40VMI024---3	46.2	43.6	42.2

NOTE: Units are in dBA

NC Curves

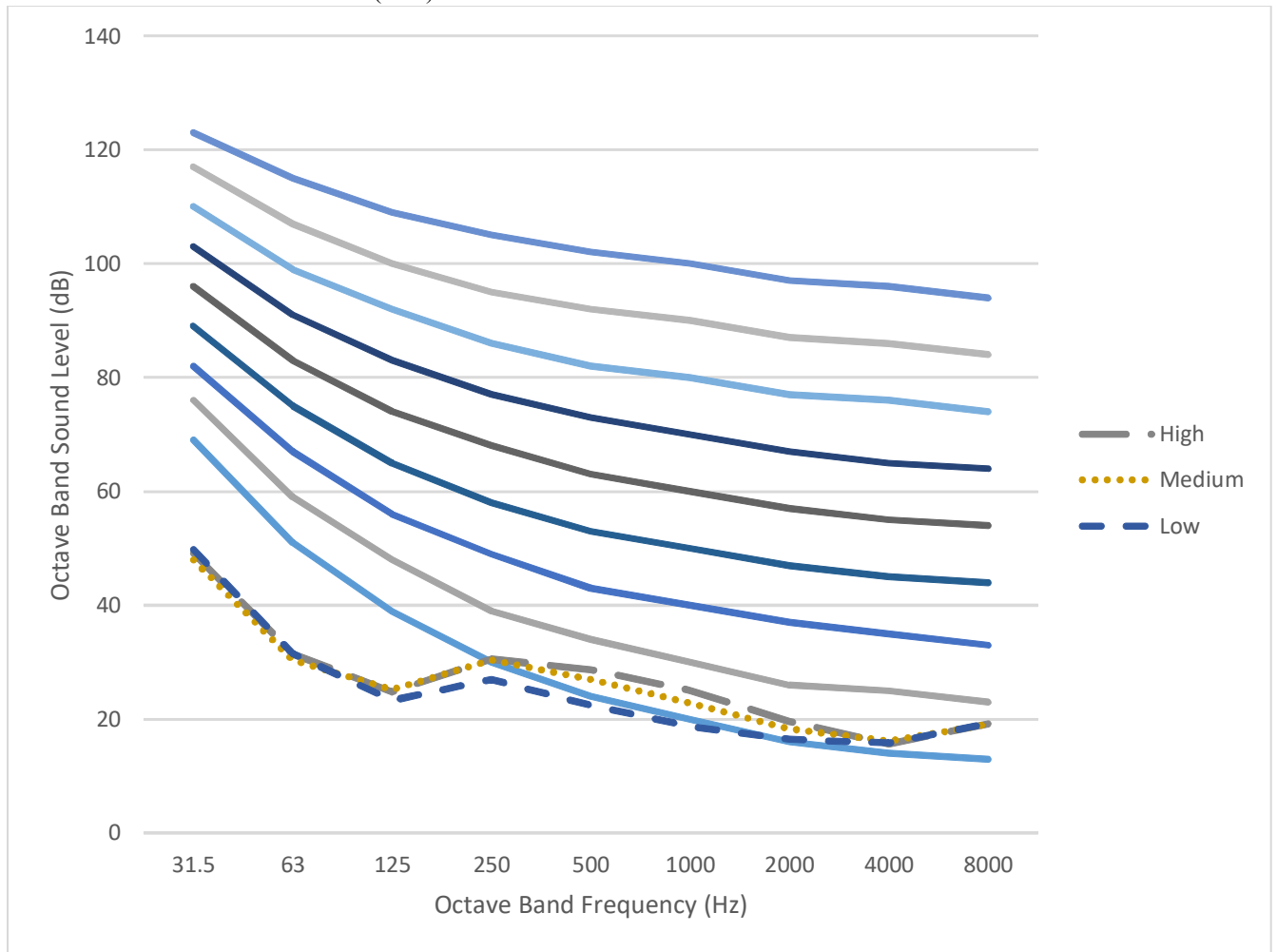
40VMI005---3

NOTE: External Static Pressure: 0 in. (0 Pa)



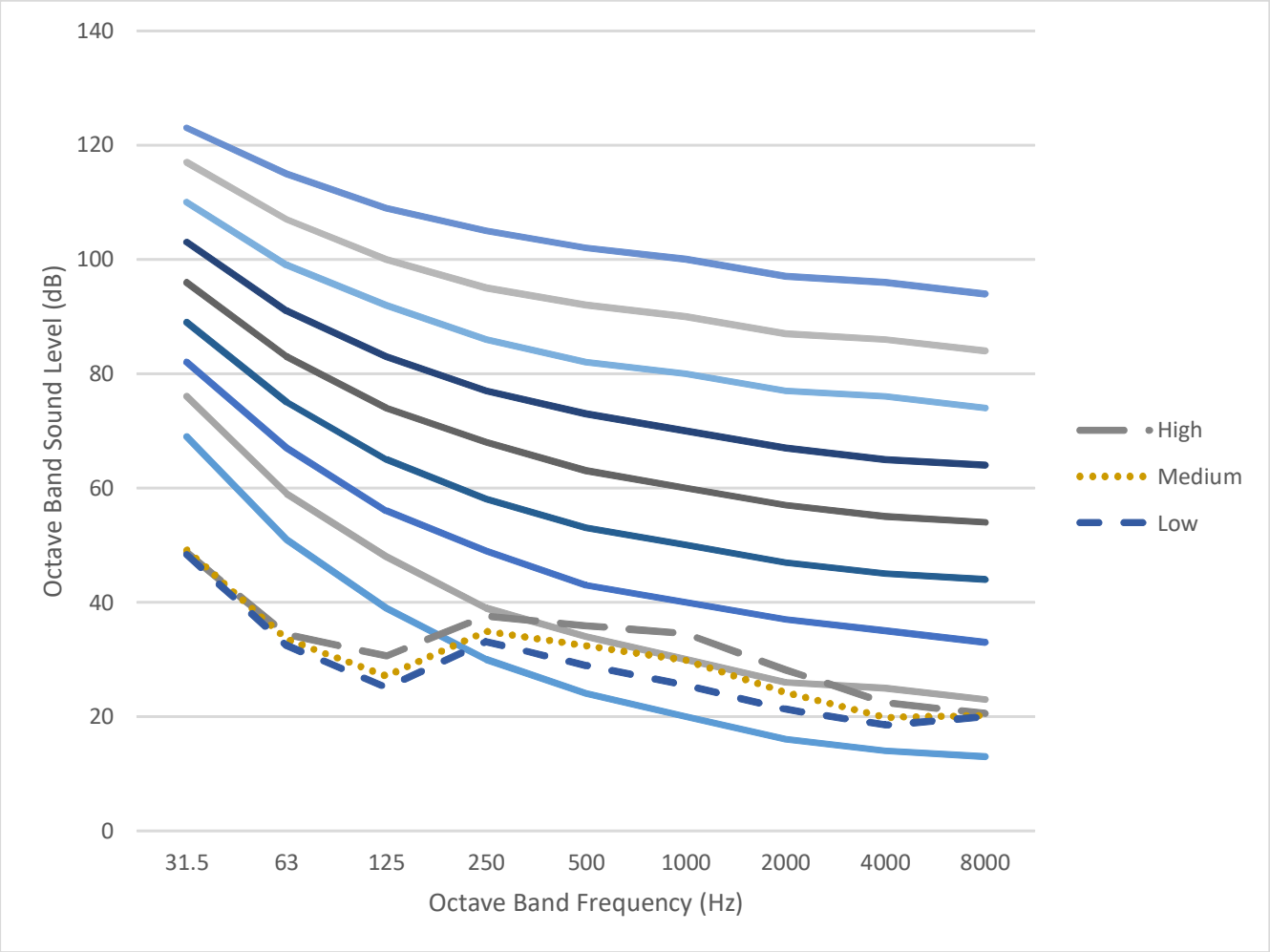
40VMI007---3

NOTE: External Static Pressure: 0 in. (0 Pa)



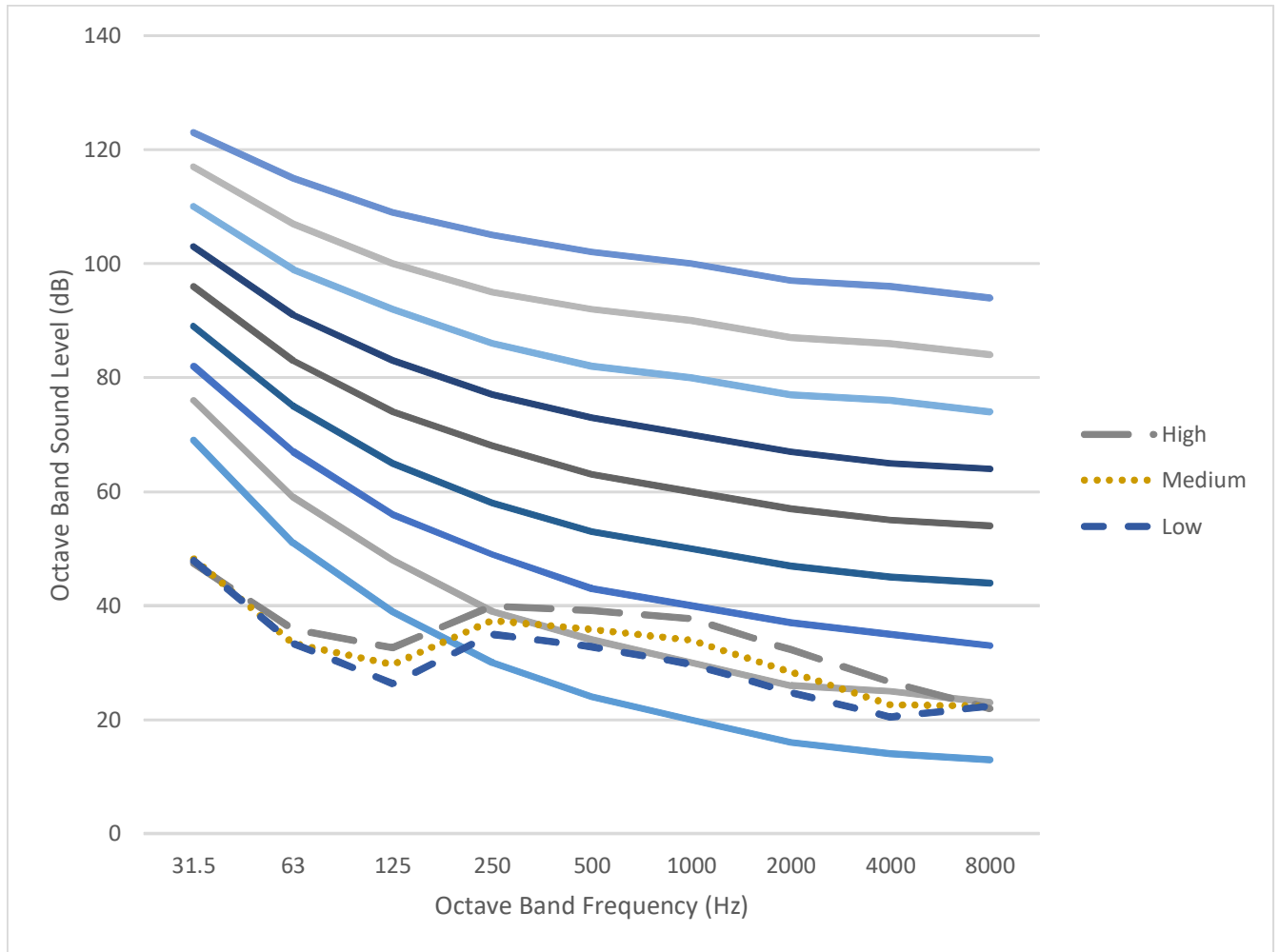
40VMI009---3

External Static Pressure: 0 in. (0 Pa)



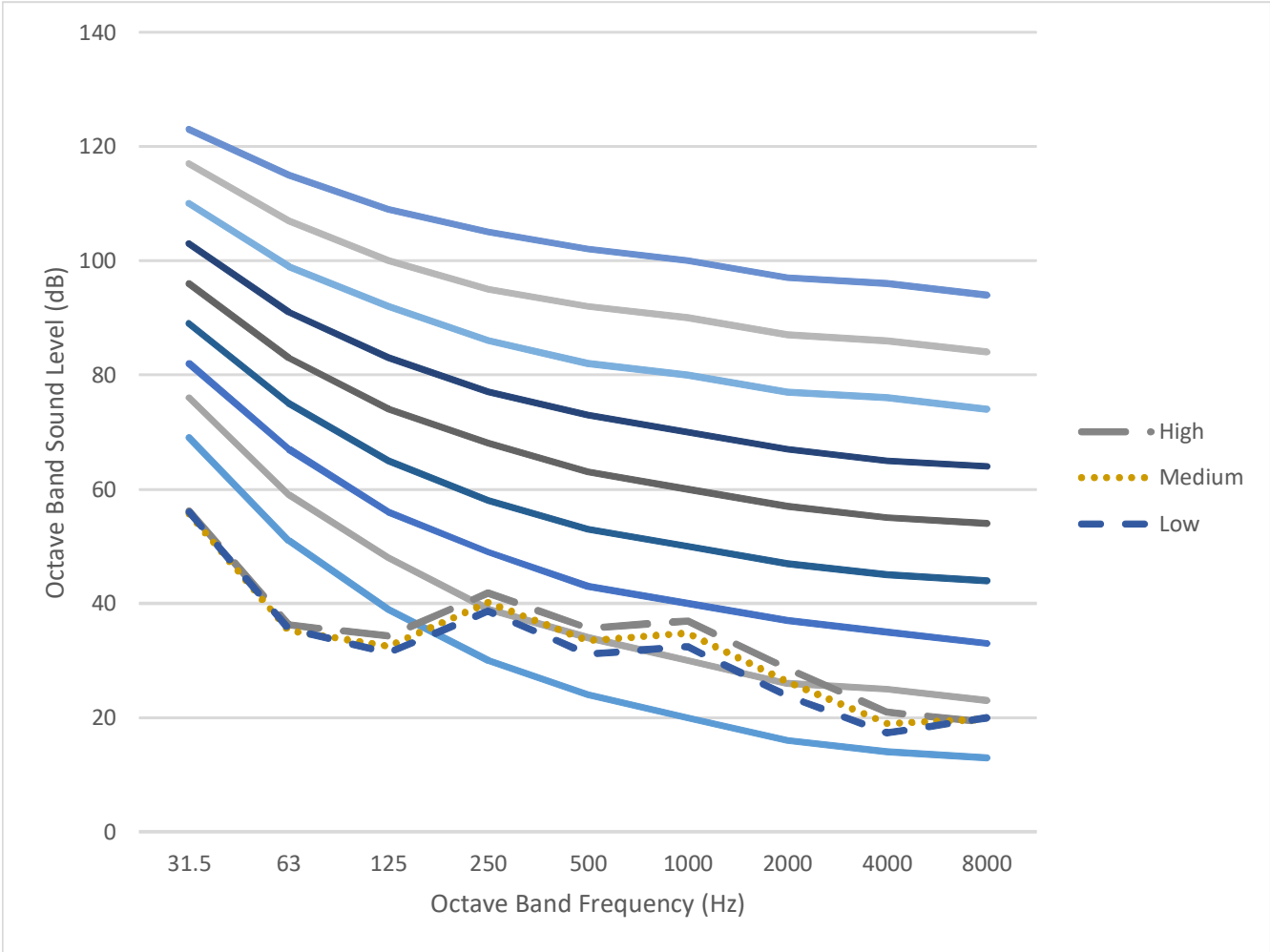
40VMI012---3

External Static Pressure: 0 in. (0 Pa)



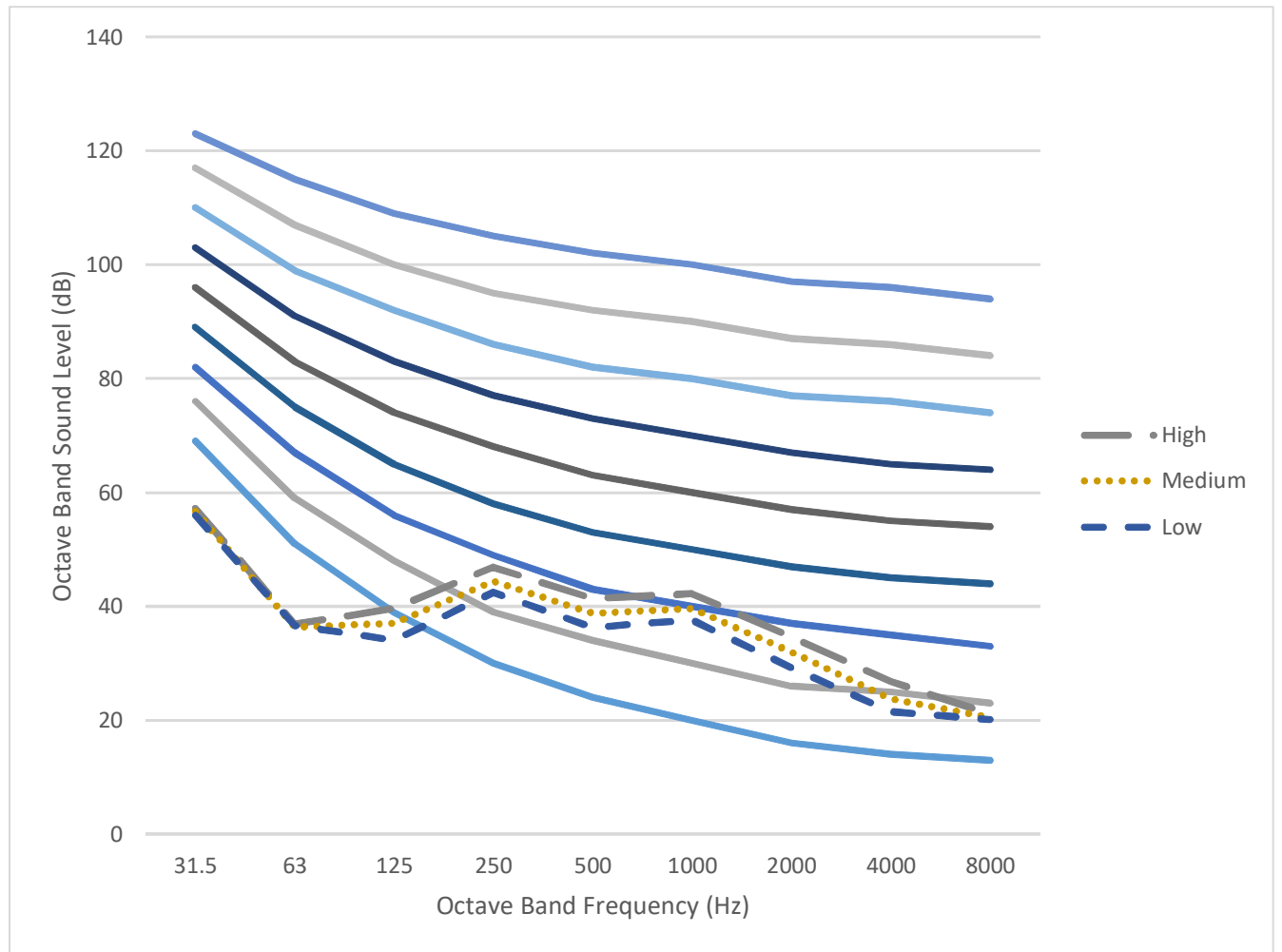
40VMI015---3

NOTE: External Static Pressure: 0 in. (0 Pa)



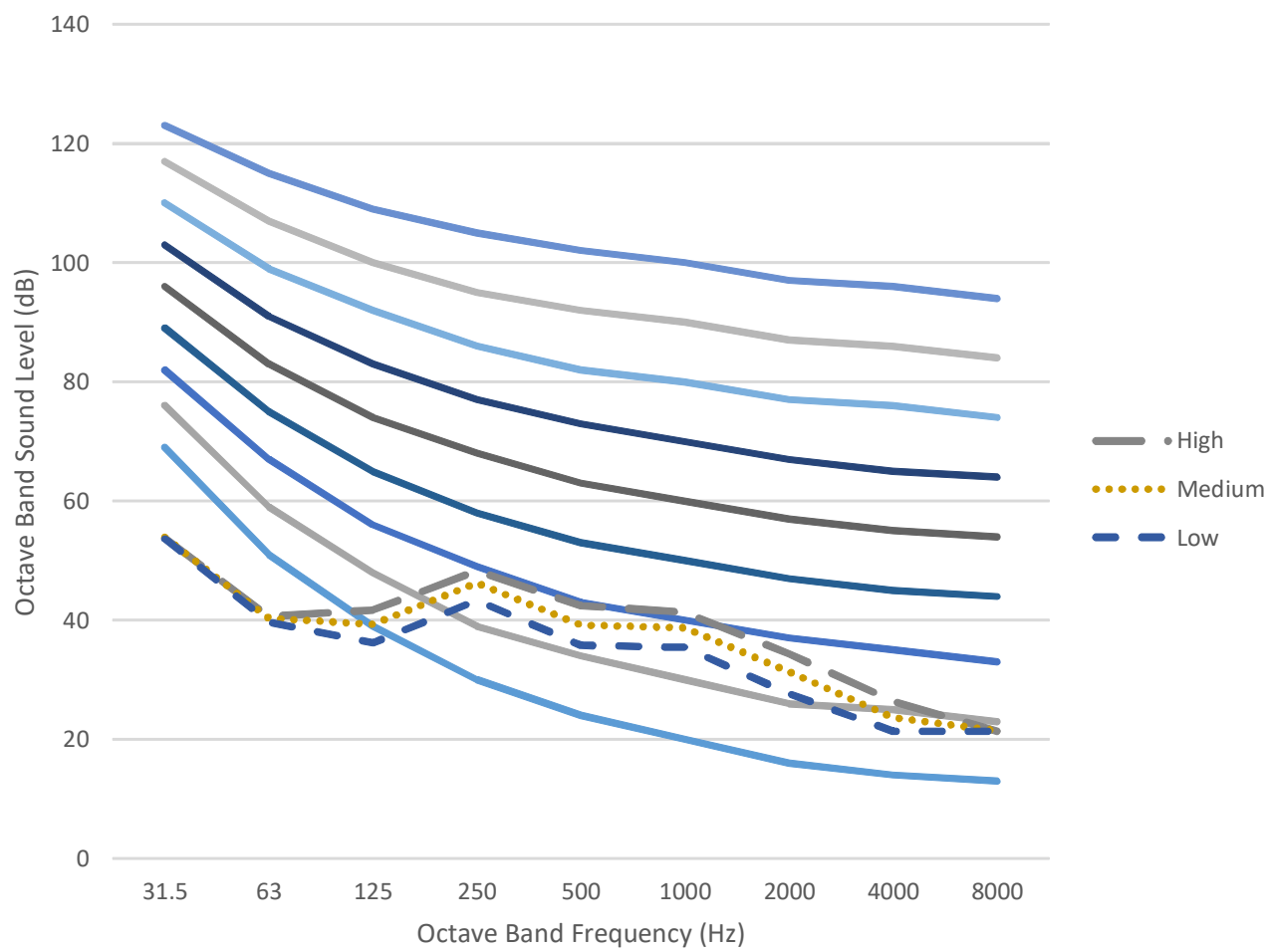
40VMI018---3

NOTE: External Static Pressure: 0 in. (0 Pa)



40VMI024---3

NOTE: External Static Pressure: 0 in. (0 Pa)



CAPACITY DATA TABLES

Table 17 —Cooling Capacity

Indoor Unit Entering Air Conditions		Capacity indication													
		5K		7K		9K		12K		15K		18K		24K	
Drybulb (F)	Wetbulb (F)	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
70	58	3.14	3.14	4.4	4.4	5.65	5.65	7.54	7.03	9.42	8.71	11.31	10.61	15.07	12.96
70	62	3.97	3.97	5.55	3.96	7.14	4.97	9.52	6.28	11.9	7.81	14.28	9.44	19.04	11.98
70	67	5	2.19	7	3.03	9	3.9	12	5.18	15	6.49	18	7.76	24	10.45
70	72	/	/	/	/	/	/	/	/	/	/	/	/	/	/
70	76	/	/	/	/	/	/	/	/	/	/	/	/	/	/
75	58	3.16	3.14	4.43	4.40	5.69	5.65	7.59	7.54	9.49	9.42	11.39	11.31	15.18	15.07
75	62	4.00	3.97	5.59	5.21	7.19	6.47	9.59	7.98	11.98	9.89	14.38	12.04	19.17	14.82
75	67	5.04	3.28	7.05	4.28	9.06	5.40	12.08	6.88	15.11	8.57	18.13	10.35	24.17	13.29
75	72	5.41	2.10	7.58	2.92	9.74	3.76	12.99	5.01	16.24	6.28	19.49	7.50	25.98	10.14
75	76	/	/	/	/	/	/	/	/	/	/	/	/	/	/
80	58	3.18	3.14	4.46	4.40	5.73	5.65	7.65	7.54	9.55	9.42	11.47	11.31	15.28	15.07
80	62	4.03	3.97	5.63	5.55	7.24	7.14	9.65	9.52	12.07	11.90	14.48	14.28	19.31	17.67
80	67	5.07	4.37	7.10	5.53	9.13	6.90	12.17	8.59	15.21	10.66	18.25	12.95	24.34	16.13
80	72	5.45	3.19	7.63	4.18	9.81	5.26	13.08	6.72	16.35	8.37	19.63	10.10	26.16	12.98
80	76	5.74	2.23	8.04	3.06	10.34	3.92	13.79	5.18	17.23	6.48	20.68	7.76	27.57	10.39
85	58	3.21	3.14	4.49	4.40	5.77	5.65	7.70	7.54	9.62	9.42	11.55	11.31	15.39	15.07
85	62	4.05	3.97	5.67	5.55	7.29	7.14	9.72	9.52	12.15	11.90	14.58	14.28	19.44	19.04
85	67	5.11	5.00	7.15	6.79	9.19	8.41	12.25	10.30	15.32	12.75	18.38	15.55	24.51	18.98
85	72	5.49	4.29	7.69	5.43	9.88	6.77	13.17	8.43	16.47	10.46	19.76	12.70	26.34	15.83
85	76	5.78	3.32	8.10	4.31	10.41	5.43	13.89	6.89	17.35	8.57	20.82	10.36	27.76	13.23
90	58	3.23	3.14	4.52	4.40	5.81	5.65	7.75	7.54	9.69	9.42	11.63	11.31	15.50	15.07
90	62	4.08	3.97	5.71	5.55	7.34	7.14	9.79	9.52	12.24	11.90	14.68	14.28	19.58	19.04
90	67	5.14	5.00	7.20	7.00	9.25	9.00	12.34	12.00	15.42	14.85	18.51	18.00	24.68	21.84
90	72	5.52	5.38	7.74	6.68	9.95	8.28	13.26	10.14	16.58	12.55	19.90	15.31	26.53	18.68
90	76	5.82	4.42	8.15	5.57	10.49	6.94	13.98	8.60	17.47	10.66	20.97	12.97	27.96	16.08

Rated Condition: Evaporation temperature is 42.8°F with high speed airflow.

Table 18 —Heating Capacity

Model	Capacity indication	Indoor air temp. heating							
		61°F DB	64°F DB	67°F DB	70°F DB	73°F DB	75°F DB	77°F DB	80°F DB
		TC	TC	TC	TC	TC	TC	TC	TC
One-way cassette	5	6.36	6.24	6.12	6	5.6	5.33	5.06	4.66
	7	8.48	8.32	8.16	8	7.46	7.11	6.75	6.21
	9	10.6	10.4	10.2	10	9.33	8.88	8.44	7.77
	12	14.31	14.04	13.77	13.5	12.6	11.99	11.39	10.49
	15	18.02	17.68	17.34	17	15.86	15.1	14.34	13.21
	18	22.27	21.84	21.42	21	19.59	18.66	17.72	16.31
	24	28.63	28.08	27.54	27	25.19	23.99	22.78	20.97

Rated Condition: Evaporation temperature is 42.8°F with high speed airflow.