KENTATSU

R410A

Engineering Data

Four-way Cassette VRF IDU

AC 50Hz

KTVA30HQAN1

KTVA40HQAN1

KTVA50HQAN1

KTVA60HQAN1

KTVA72HQAN1

KTVA80HQAN1

KTVA90HQAN1

KTVA100HQAN1

KTVA115HQAN1

KTVA140HQAN1

Four-way Cassette

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VRF Indoor Units

1 Specifications

KTVA30HQAN1 / KTVA40HQAN1 / KTVA50HQAN1

Table 1.1: KTVA30(40,50)HQAN1 specifications

Model			KTVA30HQAN1	KTVA40HQAN1	KTVA50HQAN1
Power supply			1 phase, 220-240V, 50Hz		
Cooling[1]	Capacity	kW	2.8	3.6	4.5
	Input	W	80	80	88
Heating[2]	Capacity	kW	3.2	4.0	5.0
	Input	W	80	80	88
Indoor fan motor	Type		AC		
	Quantity		1		
Indoor coil	Number of rows		1	1	2
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5		
	Fin type		Hydrophilic aluminum		
	Diameter & type	mm	Φ7, inner-groove		
	Dimensions (L×H ×W)	mm	2033×168×13.37		2051×168×26.74
	Number of circuits		4		8
Indoor air flow (H/M/L)		m^3/h	764/638/554		905/740/651
Sound pressure level (H/M/L)[3]		dB(A)	32/31/30		36/34/33
Indoor unit	Dimensions[4] (W×H×D)	mm	840×230×840		
	Packing (W×H×D)	mm	955×260×955		
	Net/Gross weight	kg	21.5/26.7		23.7/28.9
Panel	Dimensions (W×H×D)	mm	950×70×950		
	Packing(W×H×D)	mm	1035×89×1035		
	Net/Gross weight	kg	5.8/7.9		
Refrigerant type			R410A		
Pipe connections	Liquid pipe	mm	Φ6.35		
	Gas pipe	mm	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. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

VRF Indoor Units

KTVA60HQAN1/ KTVA72HQAN1 / KTVA80HQAN1

Table 1.2: KTVA60(72,80)HQAN1 specifications

Model			KTVA60HQAN1	KTVA72HQAN1	KTVA80HQAN1
Power supply			1 phase, 220-240V, 50Hz		
Cooling[1]	Capacity	kW	5.6	7.1	8.0
	Input	W	88	88	110
Heating[2]	Capacity	kW	6.3	8.0	9.0
	Input	W	88	88	110
Indoor fan motor	Type		AC		
	Quantity		1		
Indoor coil	Number of rows		2		
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5		
	Fin type		Hydrophilic aluminum		
	Diameter & type	mm	Φ7, inner-groove		
	Dimensions (L×H×W)	mm	2051×168×26.74		
	Number of circuits		8		
Indoor air flow (H/M/L)		m^3/h	905/740/651	950/767/663	1200/1021/789
Sound pressure level (H/M/L)[3]		dB(A)	36/34/33	38/36/35	42/39/37
Indoor unit	Dimensions[4] (W×H×D)	mm	840×230×840		
	Packing (W×H×D)	mm	955×260×955		
	Net/Gross weight	kg	23.7/28.9		
Panel	Dimensions (W×H×D)	mm	950×70×950		
	Packing (W×H×D)	mm	1035×89×1035		
	Net/Gross weight	kg	5.8/7.9		
Refrigerant type			R410A		
Pipe connections	Liquid pipe	mm	Φ9.53		
	Gas pipe	mm	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. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

VRF Indoor Units

KTVA90HQAN1 / KTVA100HQAN1

Table 1.3: KTVA90(100)HQAN1 specifications

Model			KTVA90HQAN1	KTVA100HQAN1
Power supply			1 phase, 220-240V, 50Hz	
Cooling[1]	Capacity	kW	9.0	10.0
	Input	W	140	165
Heating[2]	Capacity	kW	10.0	11.0
	Input	W	140	165
Indoor fan motor	Type		AC motor	
	Number		1	
Indoor coil	Number of rows		2	2
	Tube pitch × row pitch	mm	21×13.37	
	Fin spacing	mm	1.5	
	Fin type		Hydrophilic aluminum	
	Diameter & type	mm	Φ7, inner-groove	
	Dimensions (L×H×W)	mm	2051×252×26.74	
	Number of circuits		8	
Indoor air flow (H/M/L)		m^3/h	1332/1129/908	1651/1304/1127
Sound pressure level (H/M/L)[3]		dB(A)	43/39/38	45/42/40
Indoor unit	Dimensions[4] (W×H×D)	mm	840×300×840	
	Packing (W×H×D)	mm	955×330×955	
	Net/Gross weight	kg	28.7/34.1	
Panel	Dimensions (W×H×D)	mm	950×70×950	
	Packing (W×H×D)	mm	1035×89×1035	
	Net/Gross weight	kg	5.8/7.9	
Refrigerant type			R410A	
Pipe connections	Liquid pipe	mm	Φ9.53	
	Gas pipe	mm	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. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

VRF Indoor Units

KTVA115HQAN1/ KTVA140HQAN1

Table 1.4: KTVA115(140)HQAN1 specifications

Model			KTVA115HQAN1	KTVA140HQAN1
Power supply			1 phase, 220-240V, 50Hz	
Cooling[1]	Capacity	kW	11.2	14.0
	Input	W	165	176
Heating[2]	Capacity	kW	12.5	16.0
	Input	W	165	176
Indoor fan motor	Type		AC motor	
	Number		1	
Indoor coil	Number of rows		2	3
	Tube pitch × row pitch	mm	21×13.37	
	Fin spacing	mm	1.5	
	Fin type		Hydrophilic aluminum	
	Diameter & type	mm	Φ7, inner-groove	
	Dimensions (L×H×W)	mm	2051×252×26.74	2007×252×40.11
	Number of circuits		8	12
Indoor air flow (H/M/L)		m^3/h	1651/1304/1127	1658/1335/1130
Sound pressure level (H/M/L)[3]		dB(A)	45/42/40	46/41/39
Indoor unit	Dimensions[4] (W×H×D)	mm	840×300×840	
	Packing (W×H×D)	mm	955×330×955	
	Net/Gross weight	kg	28.7/34.1	30.9/36.3
Panel	Dimensions (W×H×D)	mm	950×70×950	
	Packing (W×H×D)	mm	1035×89×1035	
	Net/Gross weight	kg	5.8/7.9	
Refrigerant type			R410A	
Pipe connections	Liquid pipe	mm	Φ9.53	
	Gas pipe	mm	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. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.
4. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

2 Dimensions

2.1 Unit Dimensions

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

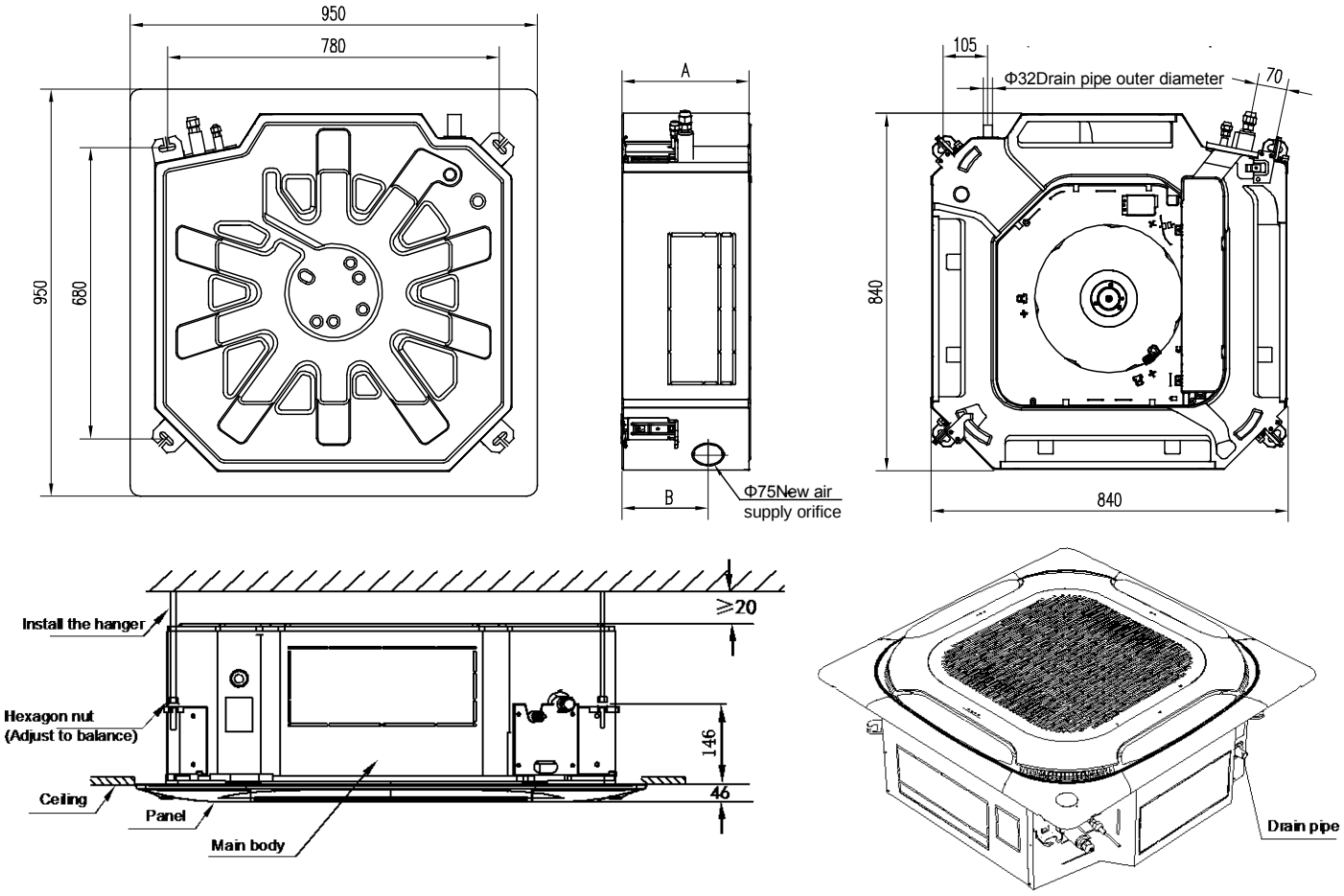


Table 2.1: Four-way Cassette dimensions

Model names	Dimensions (mm)	
	A	B
KTVA30HQAN1 KTVA40HQAN1 KTVA50HQAN1 KTVA60HQAN1 KTVA72HQAN1 KTVA80HQAN1	230	126
KTVA90HQAN1 KTVA100HQAN1 KTVA115HQAN1 KTVA140HQAN1	300	197

Table 2.2: Four-way Cassette piping connections

Model names	Gas pipe (mm)	Liquid pipe (mm)
KTVA30HQAN1 KTVA40HQAN1 KTVA50HQAN1	Φ12.7	Φ6.35
KTVA60HQAN1 KTVA72HQAN1 KTVA80HQAN1 KTVA90HQAN1 KTVA100HQAN1 KTVA115HQAN1 KTVA160HQAN1	Φ15.9	Φ9.53

3 Unit Placement

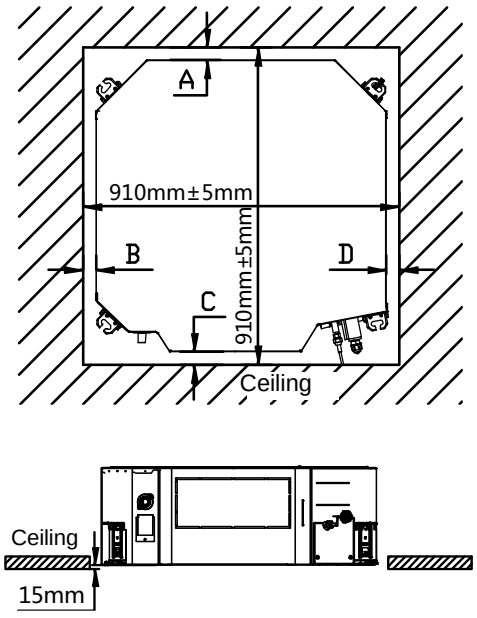
3.1 Placement Considerations

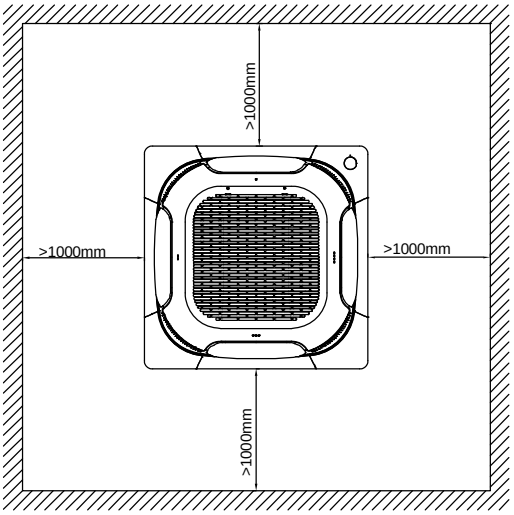
Unit placement should take account of the following considerations:

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





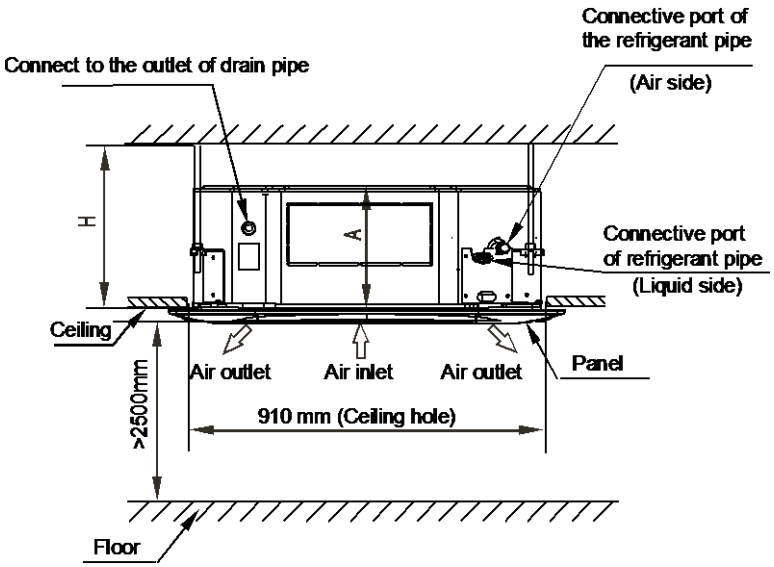
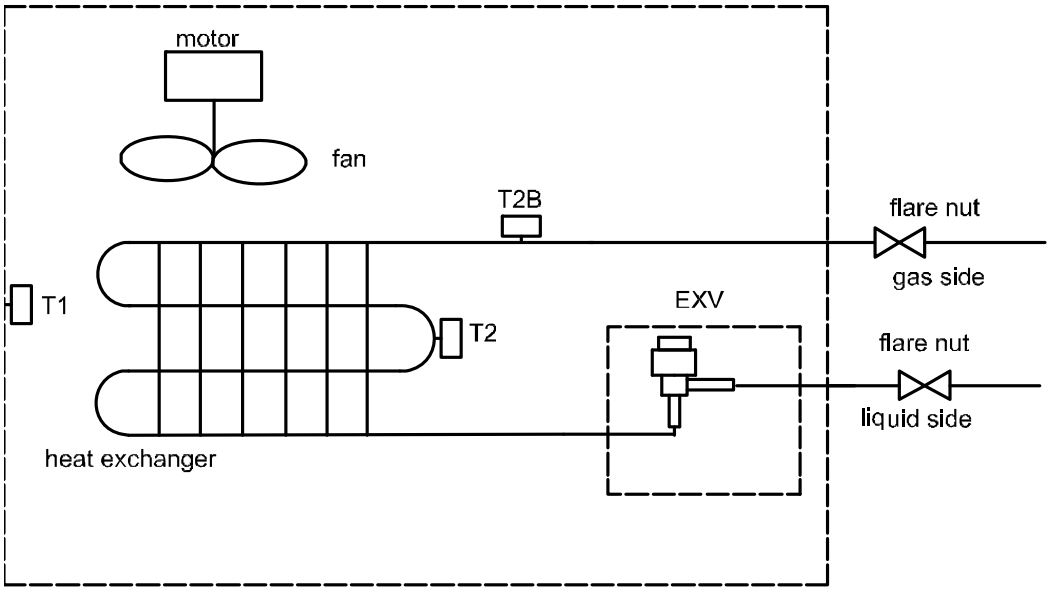


Table 3.1: Four-way Cassette dimensions and space requirements

Model name	Dimensions / Requirements (mm)	
	A	H
KTVA30HQAN1 KTVA40HQAN1 KTVA50HQAN1 KTVA60HQAN1 KTVA72HQAN1 KTVA80HQAN1	230	≥260
KTVA90HQAN1 KTVA100HQAN1 KTVA115HQAN1 KTVA140HQAN1	300	≥330

4 Piping Diagram

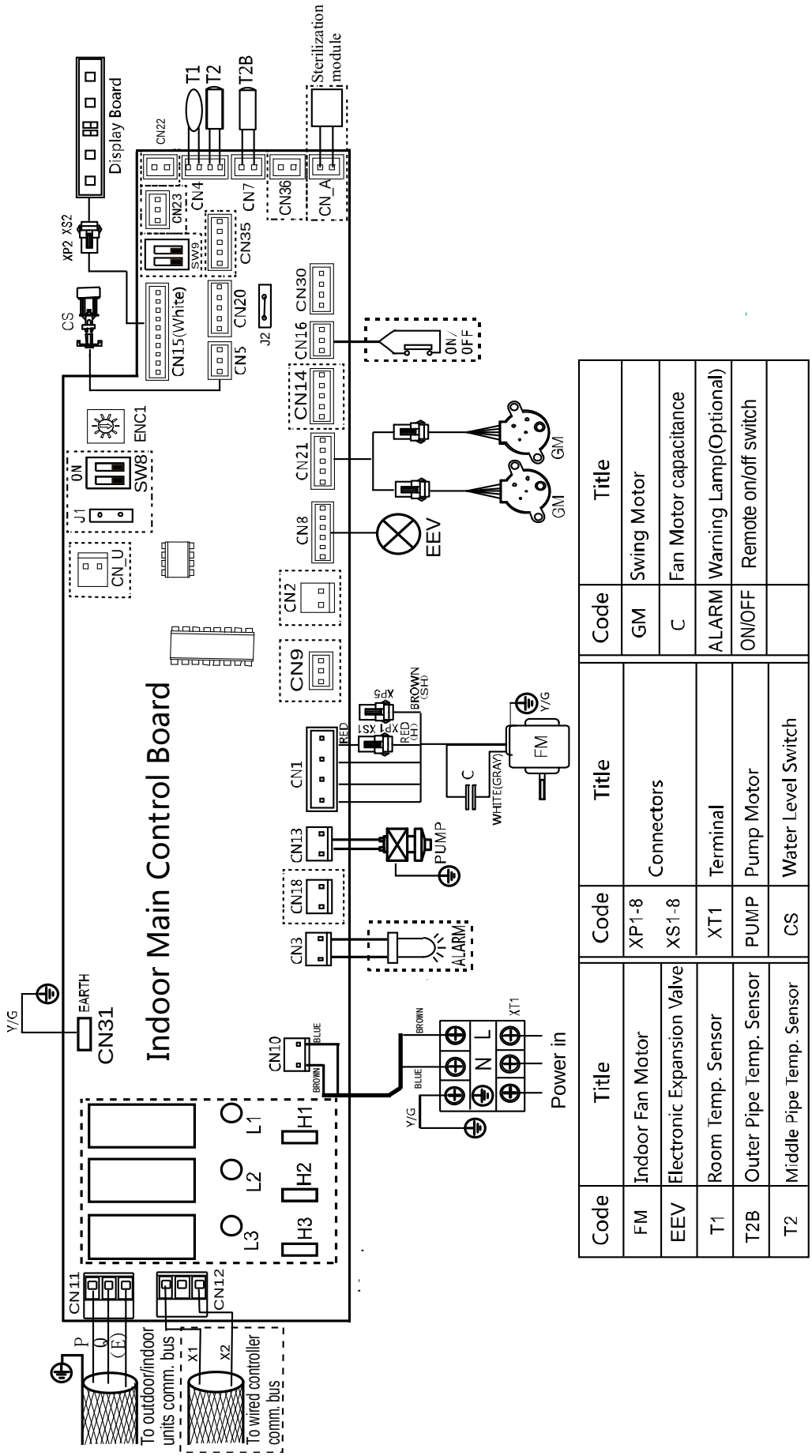
Figure 4.1: Four-way Cassette piping diagram



Legend	
T1	Indoor ambient temperature sensor
T2	Indoor heat exchanger mid-point temperature sensor
T2B	Indoor heat exchanger outlet temperature sensor

5 Wiring Diagram

Figure 5.1: Four-way Cassette wiring diagram



Code	Title
FM	Indoor Fan Motor
EEV	Electronic Expansion Valve
T1	Room Temp. Sensor
T2B	Outer Pipe Temp. Sensor
T2	Middle Pipe Temp. Sensor

Code	Title
XP1-8	Connectors
XS1-8	
XT1	Terminal
PUMP	Pump Motor
CS	Water Level Switch

Code	Title
GM	Swing Motor
C	Fan Motor capacitance
ALARM	Warning Lamp(Optional)
ON/OFF	Remote on/off switch

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.
- Switch ENC1 (indoor unit capacity setting) is factory-set and its setting should normally not be changed. The only circumstances in which a switch ENC1 might need to be set in the field is when replacing a main PCB. When replacing a main PCB, ensure that the capacity setting on switch ENC1 on the new PCB is consistent with the unit capacity given on the unit's nameplate.

6 Capacity Tables

6.1 Cooling Capacity Table

Table 6.1: Four-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
KTVA30HQAN1	2.5	2.5	2.7	2.5	2.8	2.5	2.8	2.4	2.9	2.3	2.9	2.2	3.0	2.1
KTVA40HQAN1	3.2	3.2	3.4	3.2	3.6	3.2	3.6	3.0	3.7	3.0	3.8	2.8	3.9	2.7
KTVA50HQAN1	4.0	3.8	4.3	3.9	4.5	3.9	4.5	3.7	4.6	3.6	4.7	3.4	4.8	3.3
KTVA60HQAN1	5.0	4.8	5.3	4.8	5.6	4.8	5.6	4.6	5.7	4.5	5.8	4.2	6.0	4.1
KTVA72HQAN1	6.3	6.0	6.7	6.0	7.0	6.0	7.1	5.8	7.2	5.6	7.4	5.4	7.6	5.2
KTVA80HQAN1	7.1	6.9	7.6	6.9	7.9	6.8	8.0	6.6	8.1	6.4	8.3	6.1	8.5	5.8
KTVA90HQAN1	8.0	7.6	8.5	7.6	8.9	7.6	9.0	7.3	9.1	7.1	9.4	6.8	9.6	6.5
KTVA100HQAN1	8.9	8.6	9.5	8.6	9.9	8.5	10.0	8.2	10.1	7.9	10.4	7.6	10.6	7.2
KTVA115HQAN1	9.9	9.5	10.6	9.6	11.1	9.5	11.2	9.2	11.3	8.9	11.6	8.4	11.9	8.1
KTVA140HQAN1	12.4	11.6	13.2	11.7	13.8	11.6	14.0	11.3	14.2	11.0	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: Four-way Cassette heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	TC	TC	TC	TC	TC	TC
KTVA30HQAN1	3.4	3.4	3.2	3.1	3.0	2.8
KTVA40HQAN1	4.2	4.2	4.0	3.8	3.8	3.5
KTVA50HQAN1	5.3	5.3	5.0	4.8	4.7	4.4
KTVA60HQAN1	6.7	6.6	6.3	6.1	5.9	5.5
KTVA72HQAN1	8.5	8.4	8.0	7.8	7.5	7.0
KTVA80HQAN1	9.5	9.5	9.0	8.7	8.5	7.8
KTVA90HQAN1	10.6	10.5	10.0	9.7	9.4	8.8
KTVA100HQAN1	11.8	11.7	11.1	10.8	10.4	9.7
KTVA115HQAN1	13.3	13.1	12.5	12.1	11.8	10.9
KTVA140HQAN1	17.0	16.8	16.0	15.5	15.0	13.9

Abbreviations:
TC: Total capacity (kW)

Notes:
1.Shaded cells indicate rating condition

7 Electrical Characteristics

Table 7.1: Four-way Cassette electrical characteristics

Model	Power supply						Indoor fan motors	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (kW)	FLA
KTVA30HQAN1	50	220-240	198	264	0.3	15	0.026	0.2
KTVA40HQAN1	50	220-240	198	264	0.3	15	0.026	0.2
KTVA50HQAN1	50	220-240	198	264	0.4	15	0.026	0.3
KTVA60HQAN1	50	220-240	198	264	0.4	15	0.026	0.3
KTVA72HQAN1	50	220-240	198	264	0.4	15	0.03	0.3
KTVA80HQAN1	50	220-240	198	264	0.5	15	0.037	0.4
KTVA90HQAN1	50	220-240	198	264	0.7	15	0.05	0.5
KTVA100HQAN1	50	220-240	198	264	0.7	15	0.065	0.6
KTVA115HQAN1	50	220-240	198	264	0.7	15	0.065	0.6
KTVA140HQAN1	50	220-240	198	264	0.8	15	0.065	0.6

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

8 Sound Levels

8.1 Overall

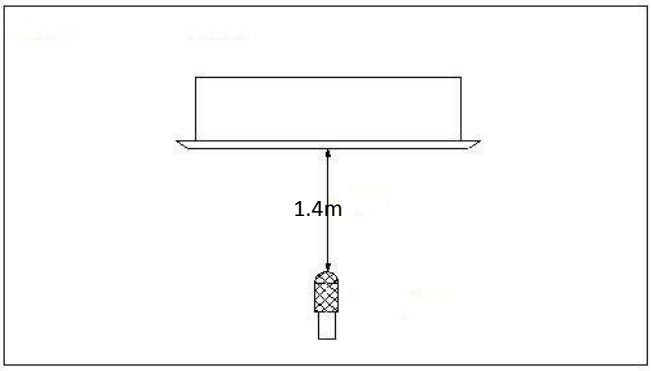
Table 8.1: Four-way Cassette sound pressure levels[1]

Model	Sound pressure levels dB(A)		
	H	M	L
KTVA30HQAN1	32	31	30
KTVA40HQAN1	32	31	30
KTVA50HQAN1	36	34	33
KTVA60HQAN1	36	34	33
KTVA72HQAN1	38	36	35
KTVA80HQAN1	42	39	37
KTVA90HQAN1	43	39	38
KTVA100HQAN1	45	42	40
KTVA115HQAN1	45	42	40
KTVA140HQAN1	46	41	39

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 8.1: Four-way Cassette sound pressure level measurement



8.2 Octave Band Levels

Figure 8.2: KTVA30(40)HQAN1 octave band levels

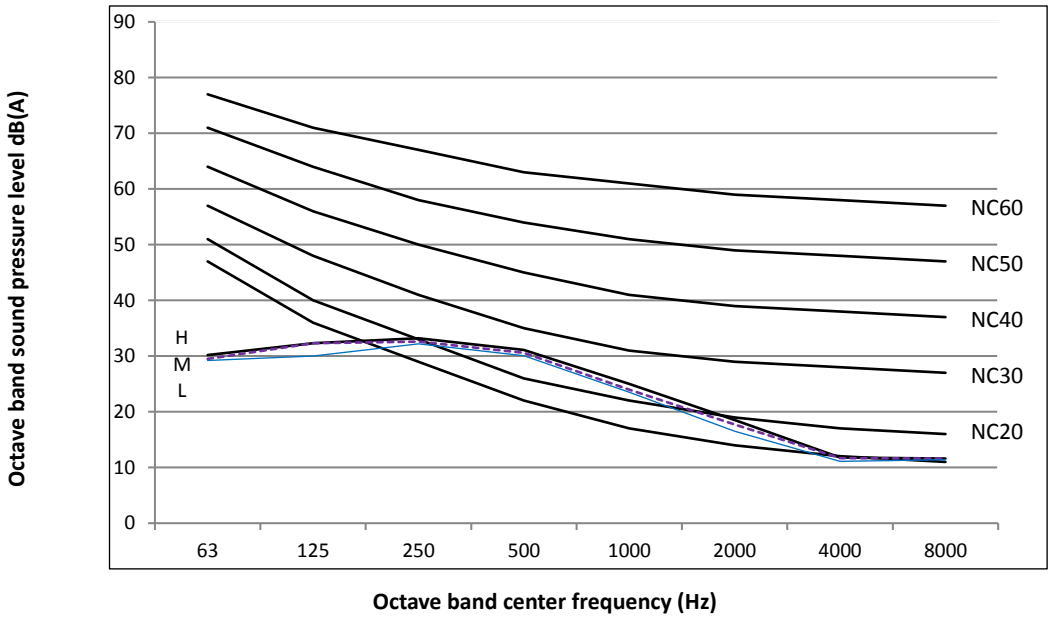


Figure 8.3: KTVA50(60)HQAN1 octave band levels

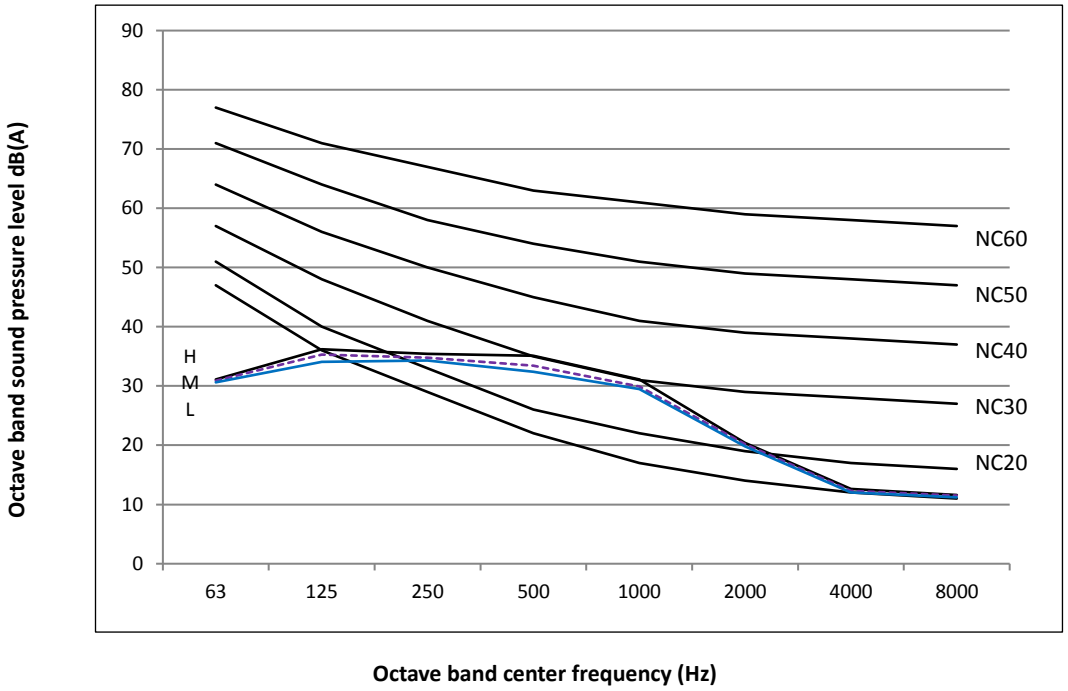


Figure 8.4: KTVA72HQAN1 octave band levels

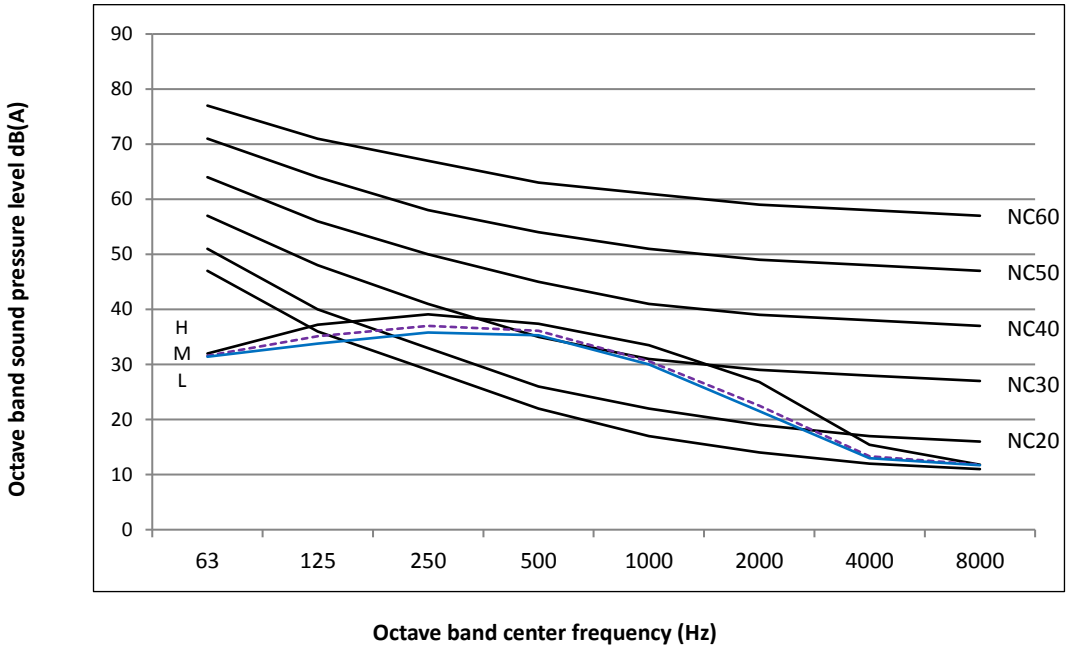


Figure 8.5: KTVA80HQAN1 octave band levels

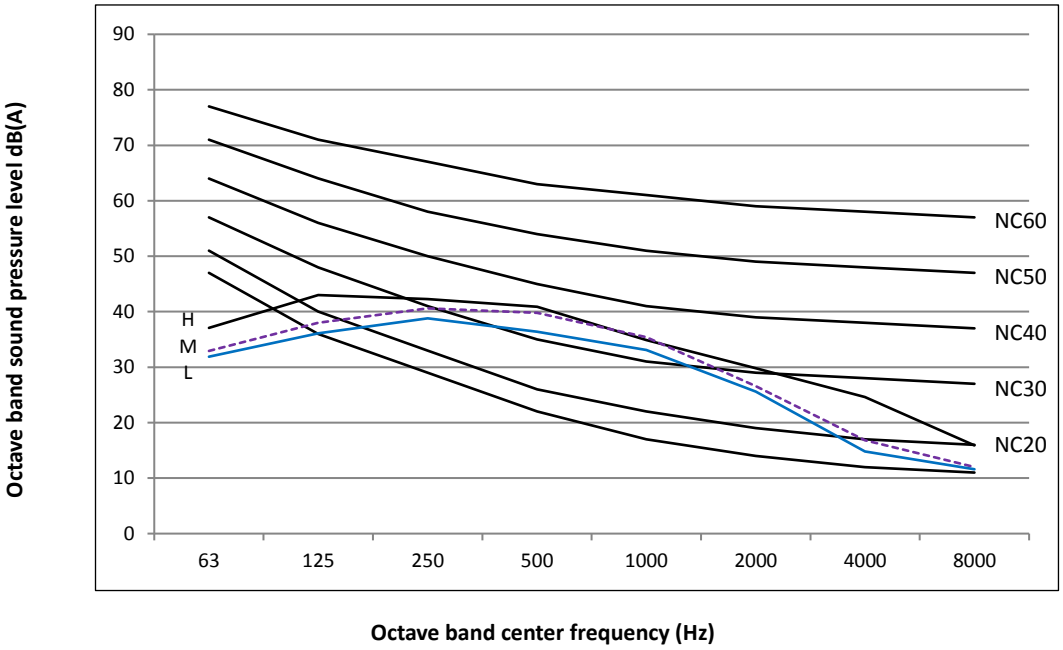


Figure 8.6: KTVA90HQAN1 octave band levels

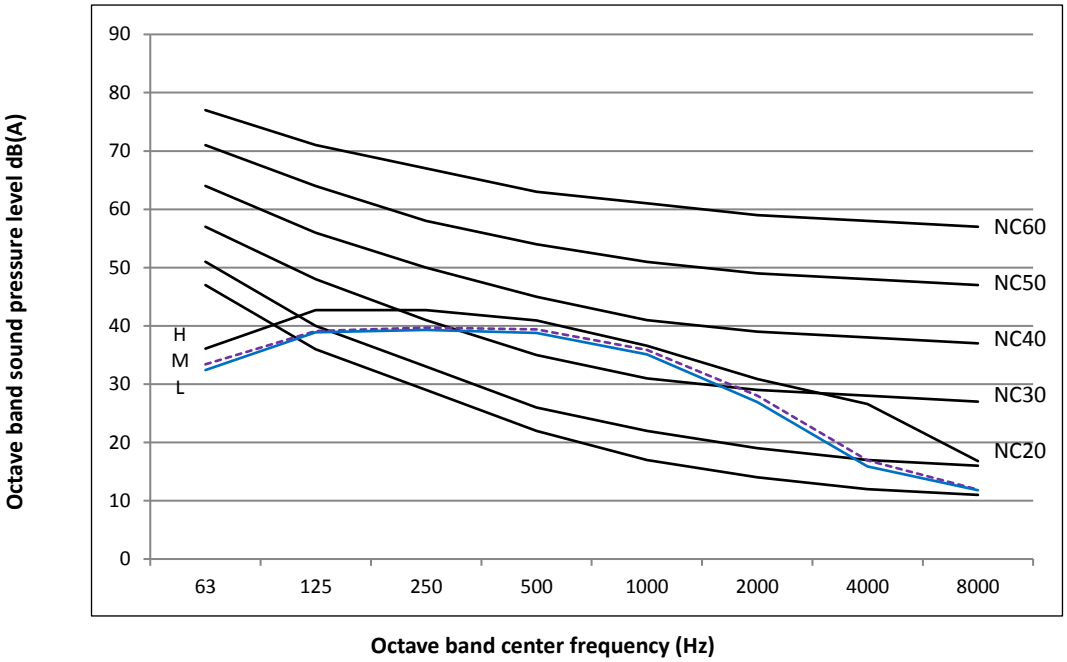


Figure 8.7: KTVA100(115)HQAN1 octave band levels

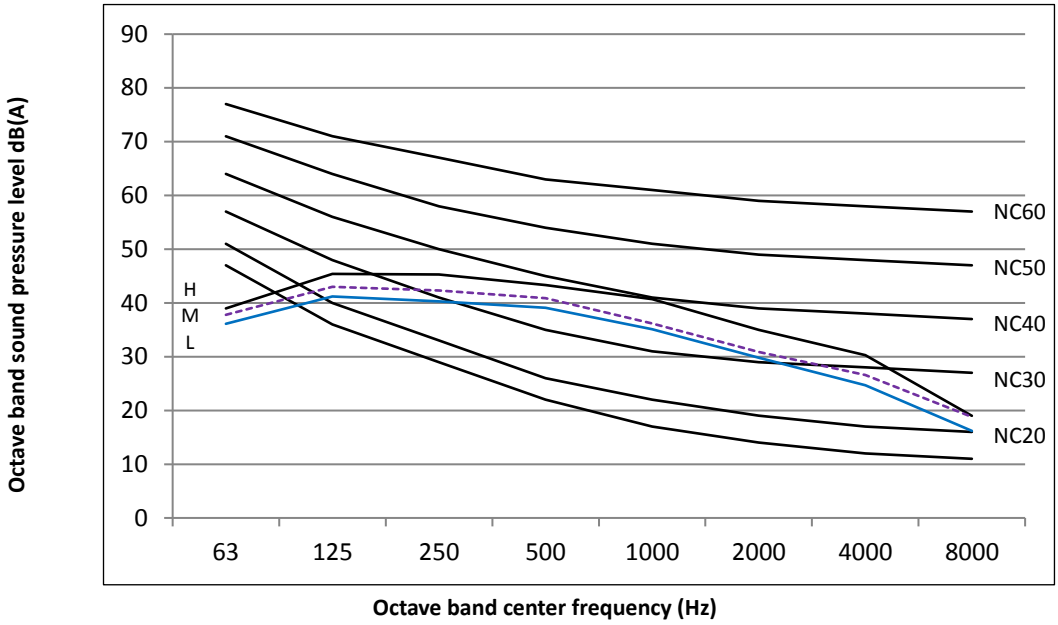


Figure 8.8: KTVA140HQAN1 octave band levels