

VECT Series

Two Way Cassete VRF

Technical Manual

220-240V/1/50-60Hz



Two-way Cassette

1 Specifications	4
2 Dimensions.....	6
3 Unit Placement.....	7
4 Piping Diagram	8
5 Wiring Diagram	9
6 Capacity Tables.....	11
7 Electrical Characteristics	12
8 Sound Levels	13
9 Temperature and Airflow Distributions	15

OMEGA Indoor Units

1 Specifications

Table 1.1: VECT008(010,012)TOA specifications

Model name			VECT008T0A-DWV022	VECT010T0A-DWV028	VECT012T0A-DWV036
Power supply			1-phase, 220-240V, 50/60Hz		
Cooling ¹	Capacity	kW	2.2	2.8	3.6
		kBtu/h	7.5	9.6	12.3
	Power input	W	35	40	40
Heating ²	Capacity	kW	2.6	3.2	4
		kBtu/h	8.9	10.9	13.6
	Power input	W	35	40	40
Fan motor	Type		DC		
	Number		1		
Coil	Number of rows		1		
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5		
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ7 Inner-groove		
	Dimensions (L×H ×W)	mm	882×210×13.37		
	Number of circuits		4		
Air flow rate ³		m ³ /h	654/612/571/530/488/449/410		725/679/641/591/554/509/458
Sound pressure level ⁴		dB(A)	33/31/30/29/27/25/24		35/33/32/30/29/27/25
Sound power level ⁴		dB(A)	49/47/46/45/43/41/40		51/49/48/46/45/43/41
Indoor unit	Net dimensions ⁵ (W×H×D)	in(mm)	46 1/8 x 11 3/4 x 23 1/4 (1172×299×591)		
	Packed dimensions (W×H×D)	in(mm)	53 3/8 x 15 3/4 x 26 5/8 (1355×400×675)		
	Net/Gross weight	lbs(kg)	65.48(29.7)/80.03(36.3)		
Panel	Net dimensions (W×H×D)	in(mm)	56 3/8 x 2 1/8 x 26 3/4 (1430×53×680)		
	Packed dimensions (W×H×D)	in(mm)	60 1/8 x 5 1/8 x 30 1/8 (1525×130×765)		
	Net/Gross weight	lbs(kg)	24.25(11)/33.07(15)		
Refrigerant type			R410A/R32		
Design pressure (H/L)		MPa	4.4/2.6		
Pipe	Liquid/Gas pipe	mm	Φ6.35/Φ12.7		
connections	Drain pipe	mm	OD Φ32		

Notes:

- Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
- Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
- Fan motor speed and air flow rate are from the highest speed to the lowest speed, total 7 rates for each model.
- 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 a anechoic chamber.
- 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.

Table 1.2: VECT015(019,024)T0A specifications

Model name			VECT015T0A-DWV045	VECT019T0A-DWV056	VECT024T0A-DWV071
Power supply			1-phase, 220-240V, 50/60Hz		
Cooling ¹	Capacity	kW	4.5	5.6	7.1
		kBtu/h	15.4	19.1	24.2
	Power input	W	50	69	98
Heating ²	Capacity	kW	5	6.3	8
		kBtu/h	17.1	21.5	27.3
	Power input	W	50	69	98
Fan motor	Type		DC		
	Number		1		
Coil	Number of rows		2		
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5		
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ7 Inner-groove		
	Dimensions (L×H ×W)	mm	882×210×26.74		
	Number of circuits		6		
Air flow rate ³		m ³ /h	850/792/731/670/631 /592/550	980/925/855/800/755 /702/670	1200/1115/1068/1000 /921/808/770
Sound pressure level ⁴		dB(A)	37/36/35/34/32/31/30	39/37/36/35/33/31/30	44/42/41/40/38/36/34
Sound power level ⁴		dB(A)	53/52/51/50/48/47/46	55/53/52/51/49/47/46	60/58/57/56/54/52/50
Main body	Net dimensions ⁵ (W×H×D)	in(mm)	46 1/8 x 11 3/4 x 23 1/21 (1172×299×591)		
	Packed dimensions (W×H×D)	in(mm)	53 3/8 x 15 3/4 x 26 5/8 (1355×400×675)		
	Net/Gross weight	lbs(kg)	69.67(31.6)/84.22(38.2)		
Panel	Net dimensions (W×H×D)	in(mm)	56 3/8 x 2 1/8 x 26 3/4 (1430×53×680)		
	Packed dimensions (W×H×D)	in(mm)	60 1/8 x 5 1/8 x 30 1/8 (1525×130×765)		
	Net/Gross weight	kg	24.25(11)/33.07(15)		
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 Φ32		

Notes:

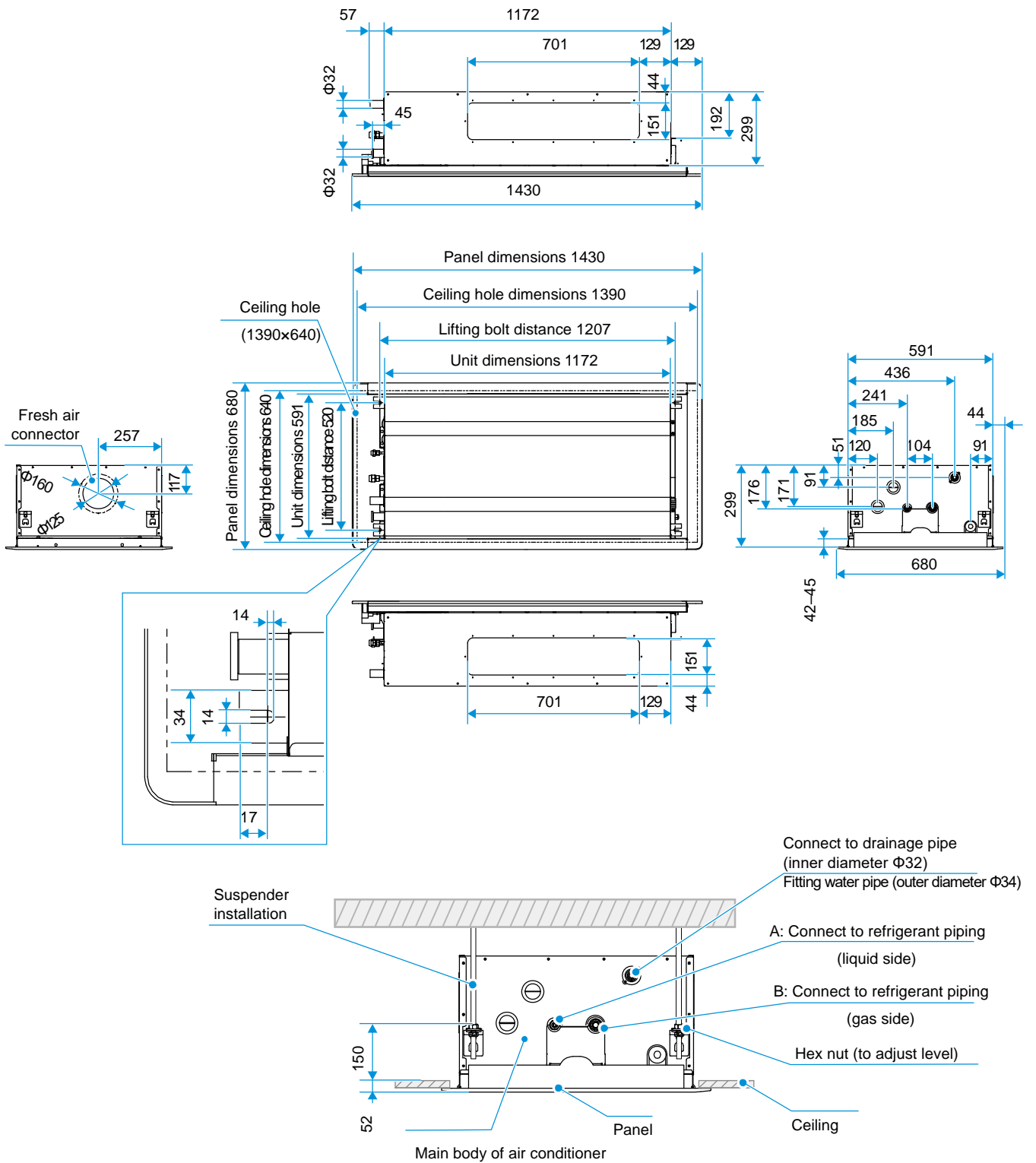
- Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference.
- Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
- Fan motor speed and air flow rate are from the highest speed to the lowest speed, total 7 rates for each model.
- 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 a anechoic chamber.
- 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.

OMEGA Indoor Units

2 Dimensions

2.1 Unit Dimensions

Figure 2.1: VECT008(010,012,015,019,024)T0A Two-way Cassette dimensions (unit: mm)



Model(kW)	A	B
VECT008T0A	$\Phi 12.7$	$\Phi 6.35$
VECT010(012,015,019)T0A	$\Phi 12.7$	$\Phi 6.35$
VECT024T0A	$\Phi 15.9$	$\Phi 9.52$

3 Unit Placement

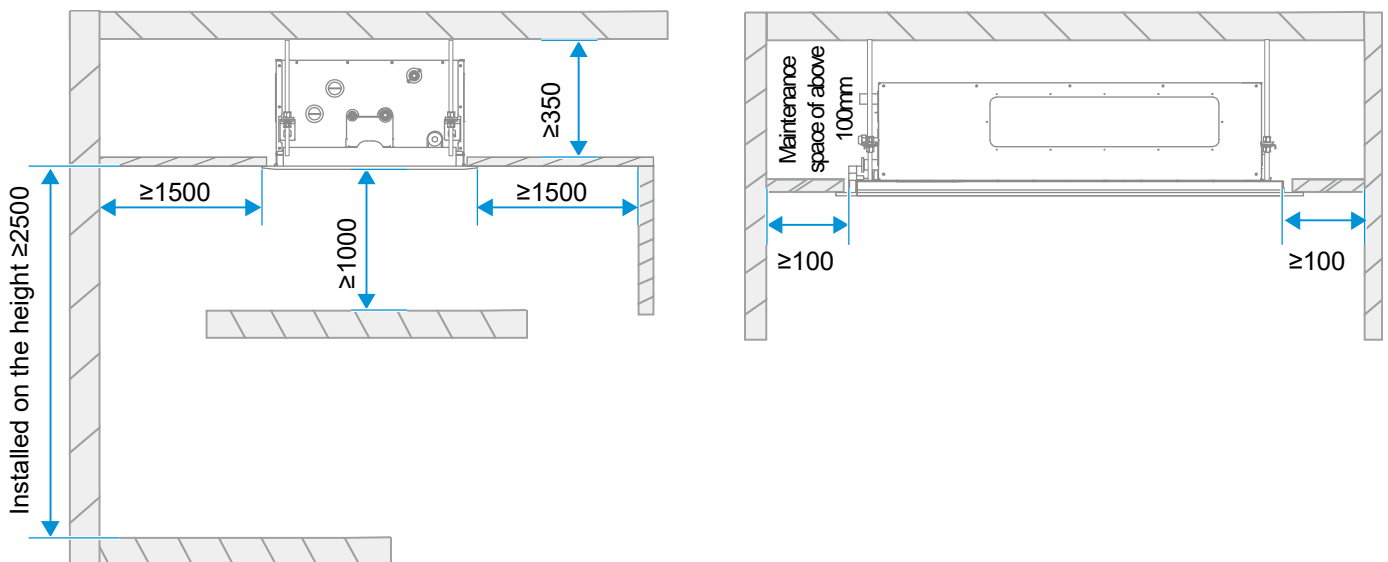
3.1 Placement Considerations

Unit placement should take account of the following considerations:

- Units should not be installed in the following locations:
 - 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: VECT008(010,012,015,019,024)T0A Two-way Cassette space requirements (unit: mm)



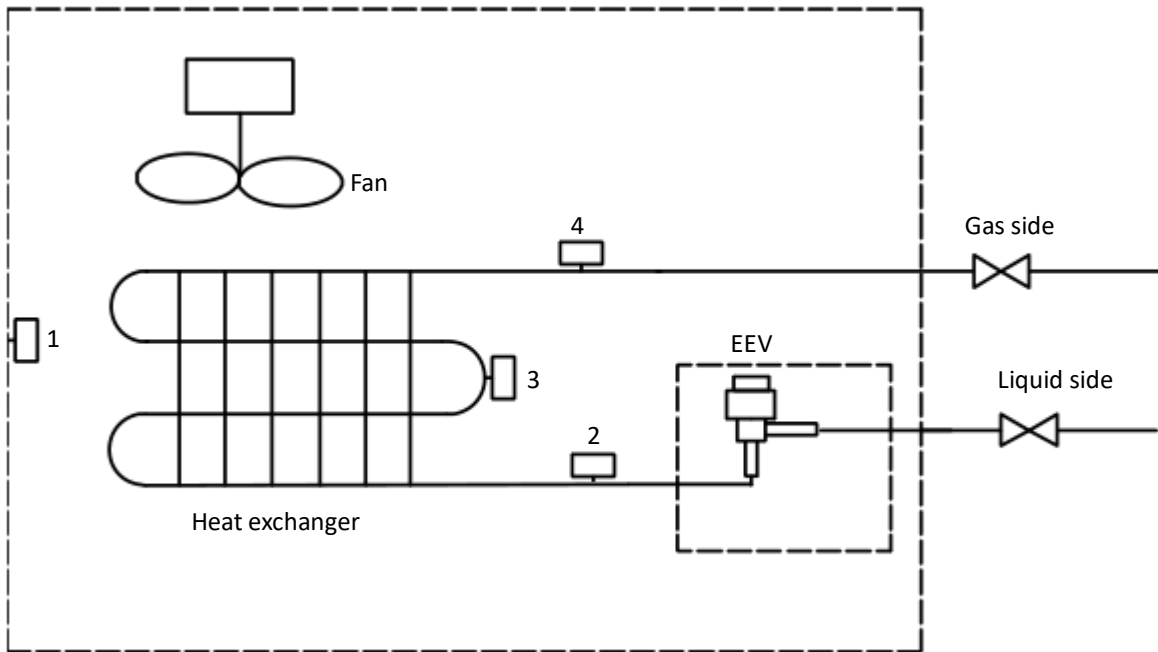
Notes:

1. The centerline of the maintenance hole should be in the same position as the centerline of the indoor unit.

OMEGA Indoor Units

4 Piping Diagram

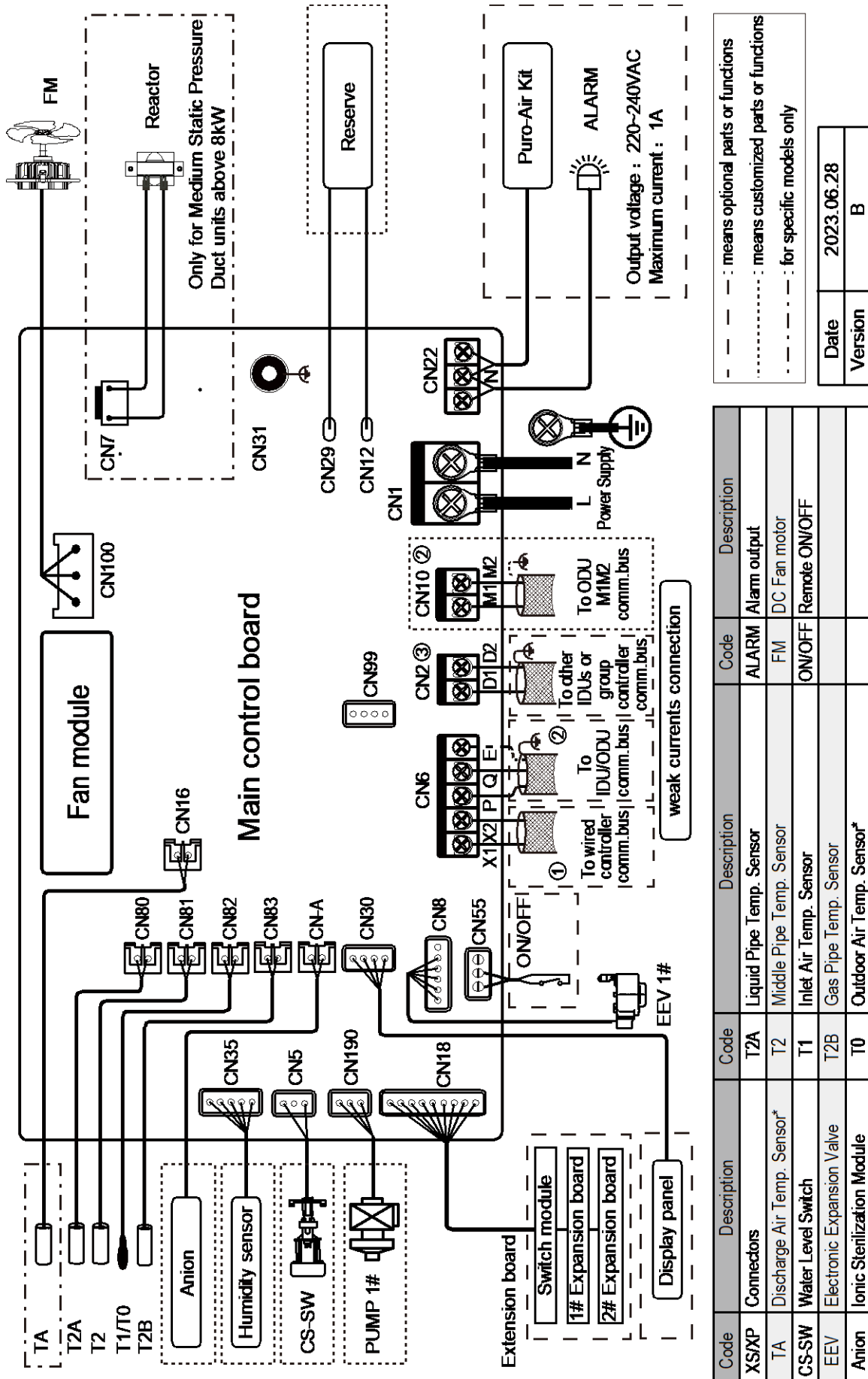
Figure 4.1: VECT008(010,012,015,019,024)TOA Two-way Cassette piping diagram



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	EEV	Electronic Expansion Valve
6	FAN	DC Fan motor

5 Wiring Diagram

Figure 5.1: VECT008(010,012,015,019,024)TOA Two-way Cassette wiring diagram



Date	2023.06.28
Version	B

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.
- 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: VECT008(010,012,015,019,024)TOA Two-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
VECT008TOA-DWV022	2.0	1.9	2.1	2.0	2.2	2.0	2.2	1.9	2.3	1.9	2.3	1.7	2.4	1.7
VECT010TOA-DWV028	2.5	2.4	2.7	2.6	2.8	2.5	2.8	2.4	2.9	2.4	2.9	2.2	3.0	2.1
VECT012TOA-DWV036	3.2	3.1	3.4	3.2	3.6	3.3	3.6	3.1	3.7	3.0	3.8	2.9	3.9	2.7
VECT015TOA-DWV045	4.0	3.8	4.3	3.9	4.5	3.9	4.5	3.8	4.6	3.7	4.7	3.5	4.8	3.3
VECT019TOA-DWV056	5.0	4.8	5.3	4.8	5.6	4.9	5.6	4.7	5.7	4.6	5.8	4.3	6.0	4.1
VECT024TOA-DWV071	6.3	6.0	6.7	6.1	7.0	6.2	7.1	6.0	7.2	5.8	7.4	5.5	7.6	5.2

Abbreviations:

TC: Total capacity (kW)

SC: Sensible capacity(kW)

Notes:

1. Shaded cells indicate rating condition

6.2 Heating Capacity Table

Table 6.2: VECT008(010,012,015,019,024)TOA Two-way Cassette heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	SHC	SHC	SHC	SHC	SHC	SHC
VECT008TOA-DWV022	2.8	2.8	2.6	2.5	2.4	2.3
VECT010TOA-DWV028	3.4	3.4	3.2	3.1	3.0	2.8
VECT012TOA-DWV036	4.2	4.2	4.0	3.8	3.8	3.5
VECT015TOA-DWV045	5.3	5.3	5.0	4.8	4.7	4.4
VECT019TOA-DWV056	6.7	6.6	6.3	6.1	5.9	5.5
VECT024TOA-DWV071	8.5	8.4	8.0	7.8	7.5	7.0

Abbreviations:

SHC: Sensible heating capacity(kW)

Notes:

1. Shaded cells indicate rating condition

OMEGA Indoor Units

7 Electrical Characteristics

Table 7.1: VECT008(010,012,015,019,024)T0A Two-way Cassette electrical characteristics

Model name	Power supply						Indoor fan motors	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated power output (W)	FLA
VECT008T0A-DWV022	50/60	220-240	198	242	0.47	15	50	0.38
VECT010T0A-DWV028	50/60	220-240	198	242	0.47	15	50	0.38
VECT012T0A-DWV036	50/60	220-240	198	242	0.52	15	50	0.42
VECT015T0A-DWV045	50/60	220-240	198	242	0.59	15	50	0.47
VECT019T0A-DWV056	50/60	220-240	198	242	0.9	15	50	0.72
VECT024T0A-DWV071	50/60	220-240	198	242	1.3	15	50	1.04

Abbreviations:

MCA: Minimum Circuit Amps

MFA: Maximum Fuse Amps

FLA: Full Load Amps

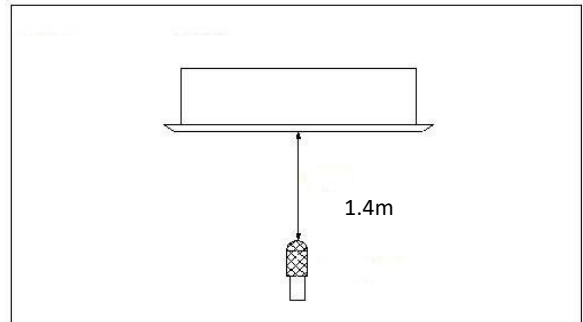
8 Sound Levels

8.1 Overall

Table 8.1: VECT008(010,012,015,019,024)TOA Two-way Cassette sound pressure levels¹

Model name	Sound pressure levels dB(A)						
	SSH	SH	H	M	L	SL	SSL
VECT008TOA-DWV022	33	31	30	29	27	25	24
VECT010TOA-DWV028	33	31	30	29	27	25	24
VECT012TOA-DWV036	35	33	32	30	29	27	25
VECT015TOA-DWV045	37	36	35	34	32	31	30
VECT019TOA-DWV056	39	37	36	35	33	31	30
VECT024TOA-DWV071	44	42	41	40	38	36	34

Figure 8.1: Two-way Cassette sound pressure level measurement



Notes:

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

8.2 Octave Band Levels

Figure 8.2: VECT008(010)TOA octave band levels

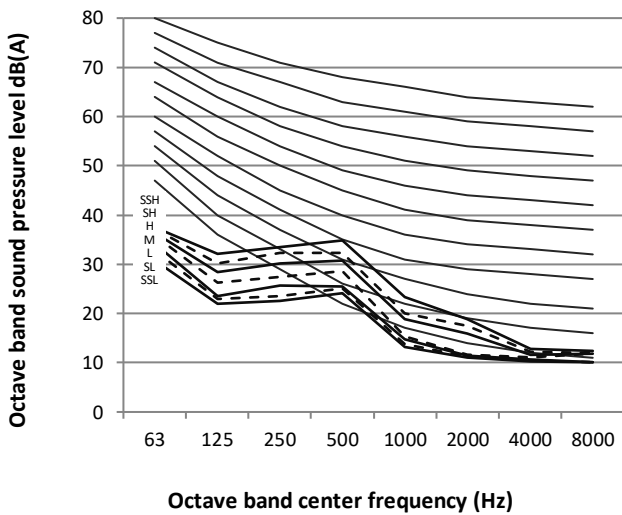


Figure 8.3: VECT012TOA-DWV036 octave band levels

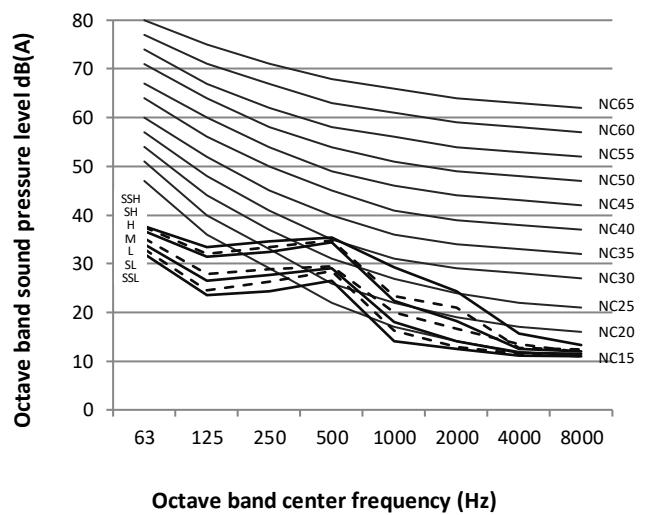


Figure 8.4: VECT015TOA-DWV045 octave band levels

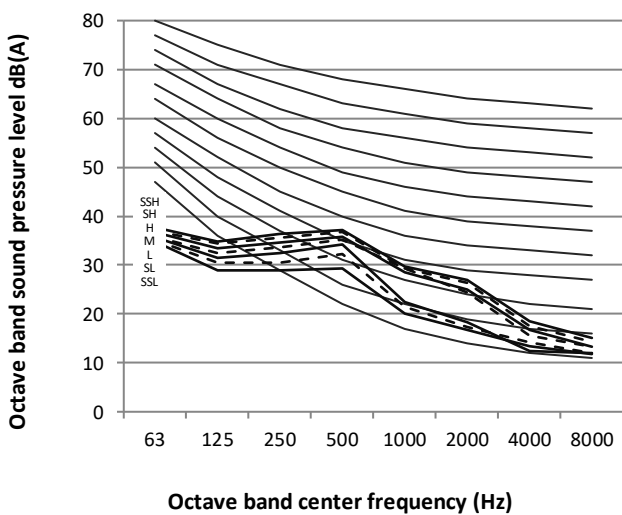
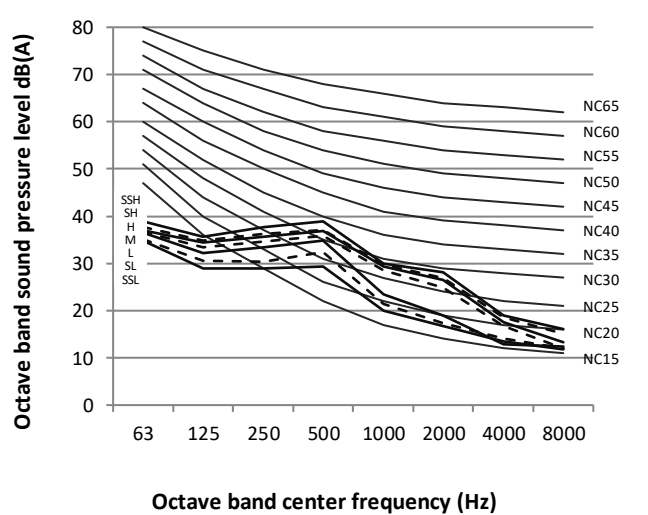
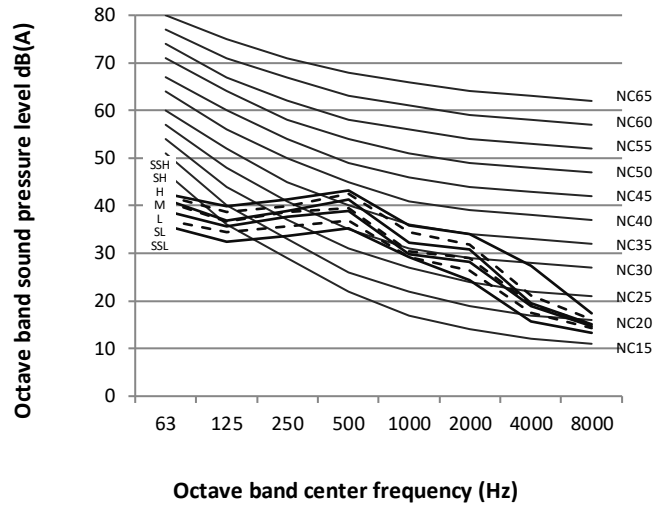


Figure 8.5: VECT019TOA-DWV056 octave band levels



OMEGA Indoor Units

Figure 8.6: VECT024T0A-DWV071 octave band levels



9 Temperature and Airflow Distributions

9.1 Simulate condition

Table 9.1: VECT008(010,012,015,019,024)TOA Two-way Cassette simulate condition

Model name	Room size (m)	Ceiling height (m)	Flow angle (Cooling/Heating)	Placing
VECT008TOA-DWV022	6*6	2.7	35° /55°	Cassette
VECT010TOA-DWV028	6*6	2.7	35° /55°	Cassette
VECT012TOA-DWV036	6*6	2.7	35° /55°	Cassette
VECT015TOA-DWV045	8*8	2.7	35° /55°	Cassette
VECT019TOA-DWV056	8*8	2.7	35° /55°	Cassette
VECT024TOA-DWV071	8*8	2.7	35° /55°	Cassette

Note:

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

9.2 Airflow distributions (unit: m/s)

Figure 9.1: VECT008TOA-DWV022 cooling at 300S

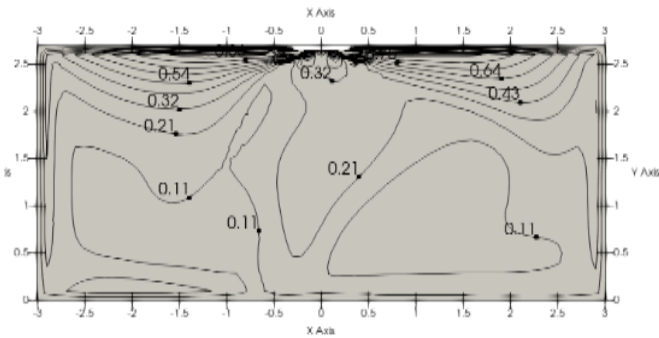


Figure 9.2: VECT008TOA-DWV022 heating at 300S

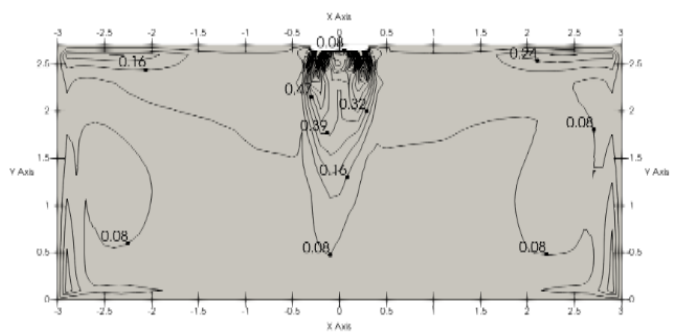


Figure 9.3: VECT010TOA-DWV028 cooling at 300S

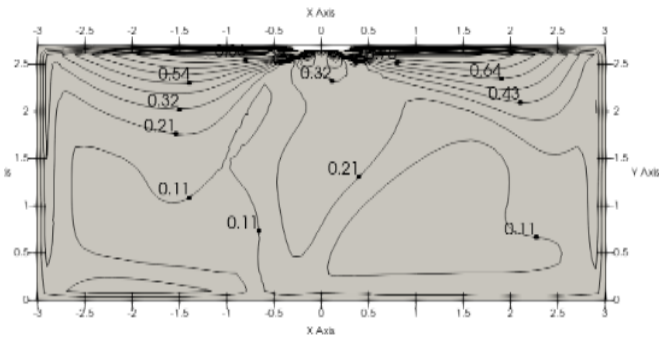


Figure 9.4: VECT010TOA-DWV028 heating at 300S

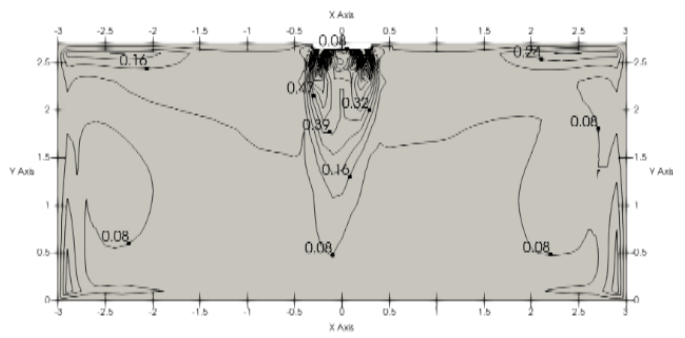


Figure 9.5: VECT012TOA-DWV036 cooling at 300S

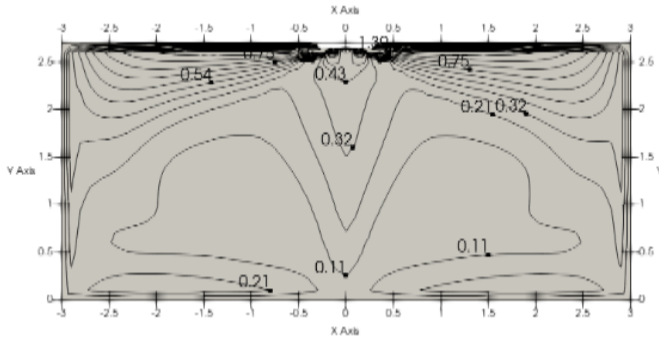
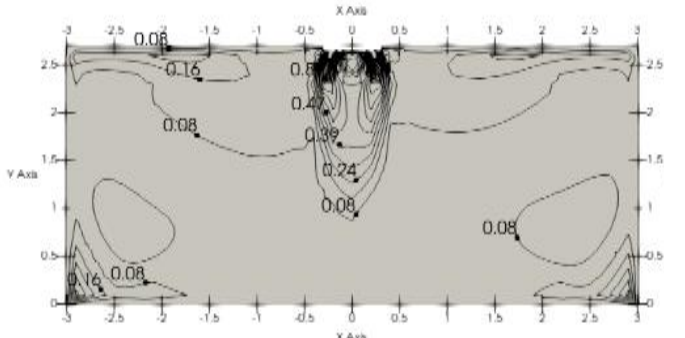


Figure 9.6: VECT012TOA-DWV036 heating at 300S



OMEGA Indoor Units

Figure 9.7: VECT015T0A-DWV045 cooling at 300S

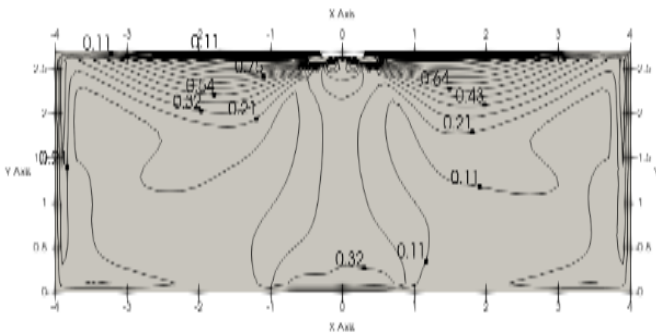


Figure 9.8: VECT015T0A-DWV045 heating at 300S

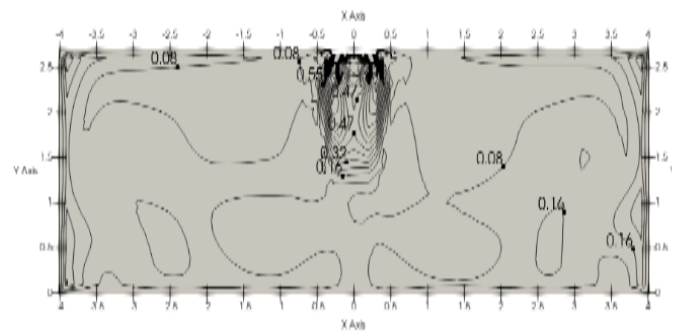


Figure 9.9: VECT019T0A-DWV056 cooling at 300S

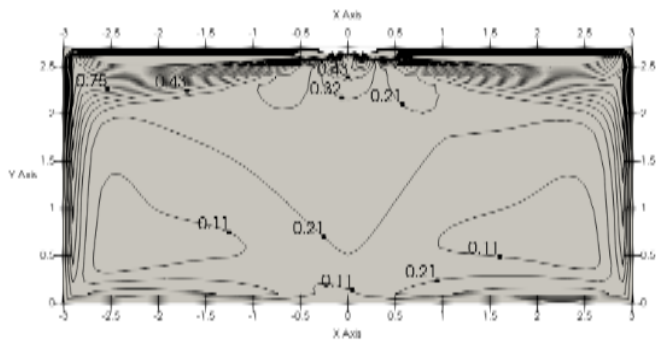


Figure 9.10: VECT019T0A-DWV056 heating at 300S

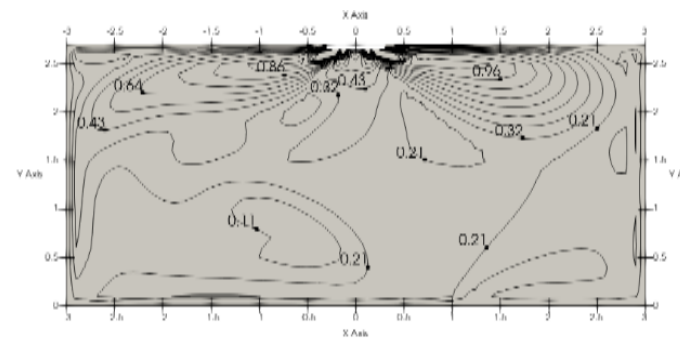


Figure 9.11: VECT024T0A-DWV071 cooling at 300S

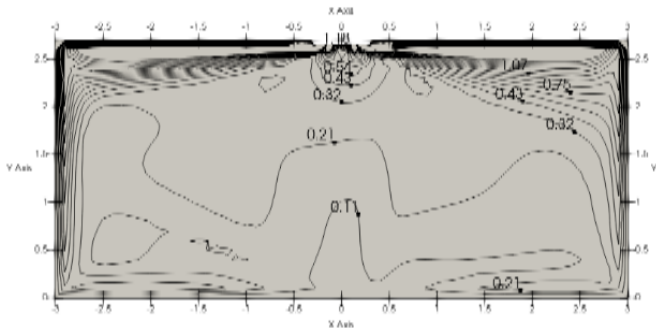
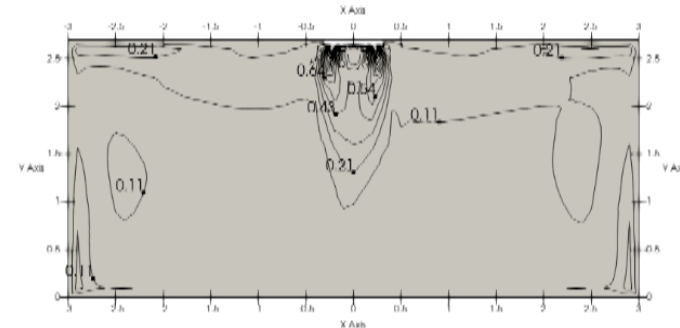


Figure 9.12: VECT024T0A-DWV071 heating at 300S



9.3 Temperature distributions (unit: °C)

Figure 9.13: VECT008T0A-DWV022 cooling at 300S

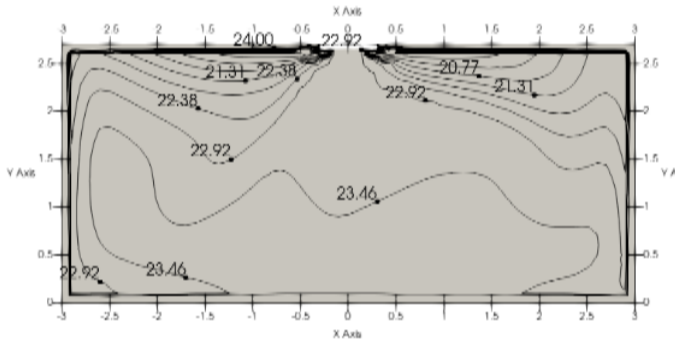


Figure 9.14: VECT008T0A-DWV022 heating at 300S

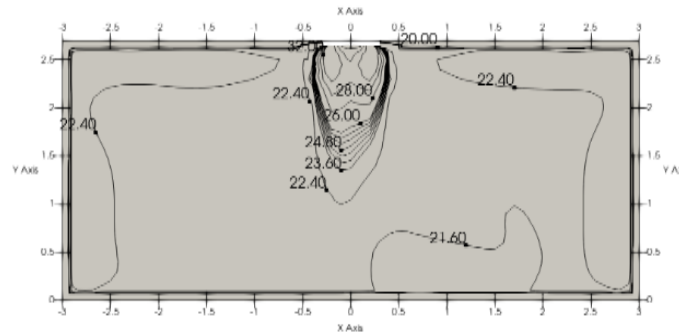


Figure 9.15: VECT010T0A-DWV028 cooling at 300S

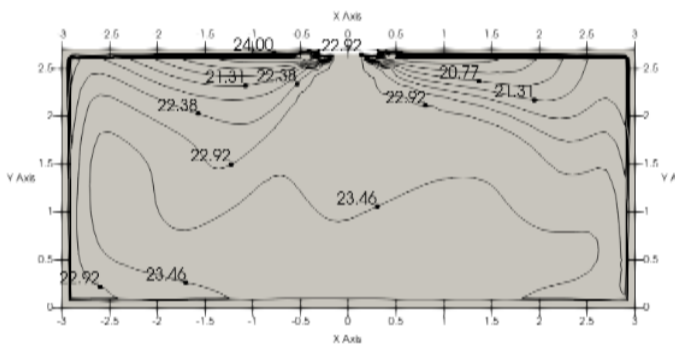


Figure 9.16: VECT010T0A-DWV028 heating at 300S

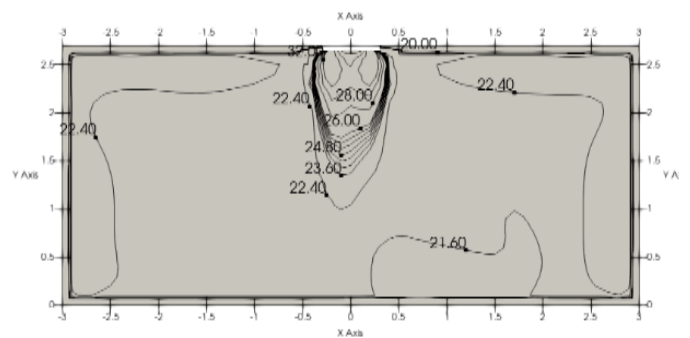


Figure 9.17: VECT012T0A-DWV036 cooling at 300S

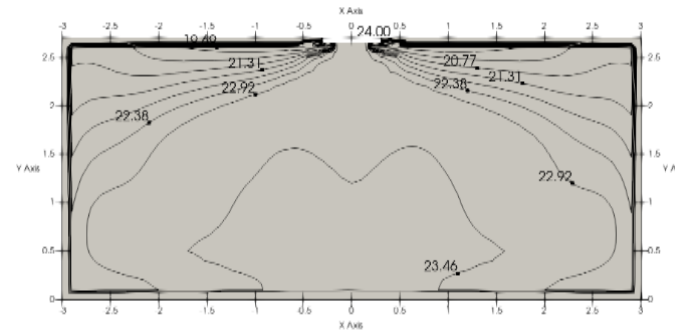


Figure 9.18: VECT012T0A-DWV036 heating at 300S

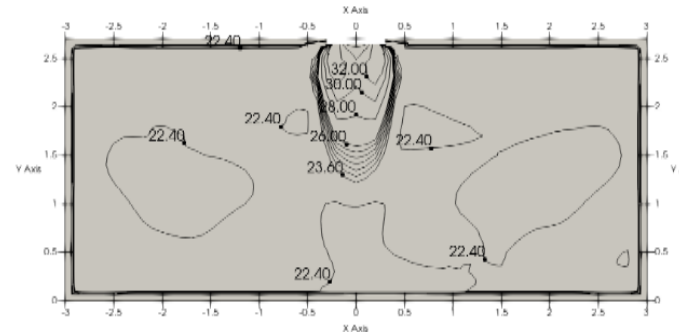


Figure 9.19: VECT015T0A-DWV045 cooling at 300S

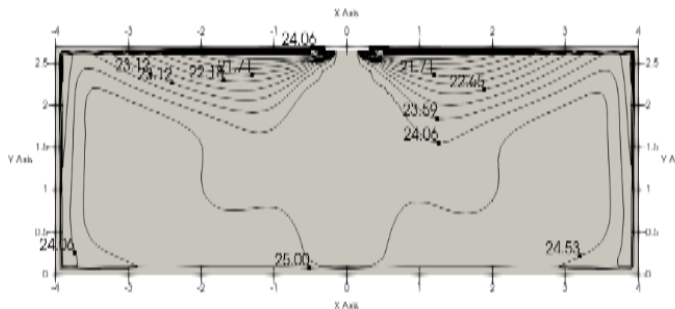
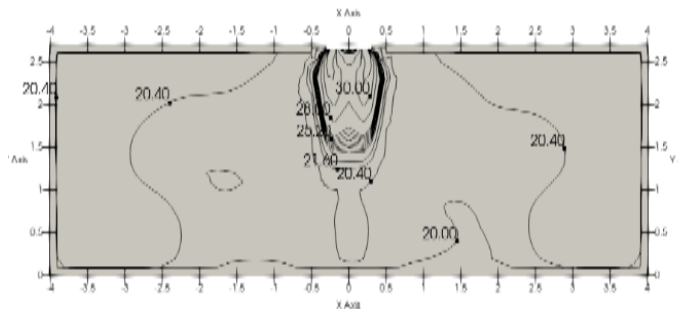


Figure 9.20: VECT015T0A-DWV045 heating at 300S



OMEGA Indoor Units

Figure 9.21: VECT019T0A-DWV056 cooling at 300S

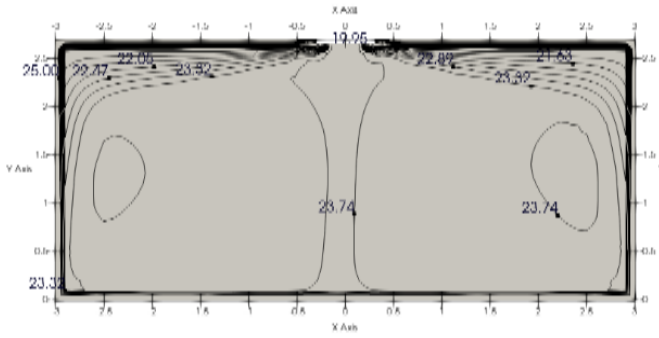


Figure 9.22: VECT019T0A-DWV056 heating at 300S

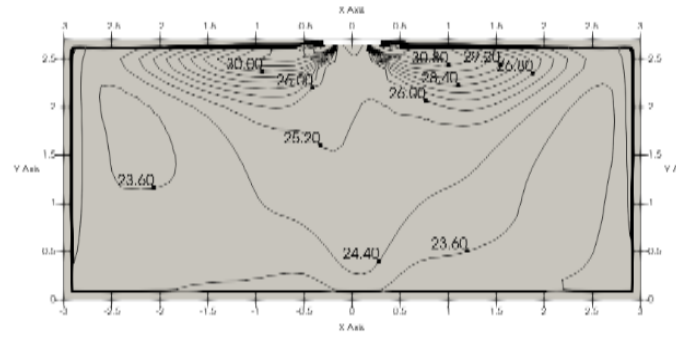


Figure 9.23: VECT024T0A-DWV071 cooling at 300S

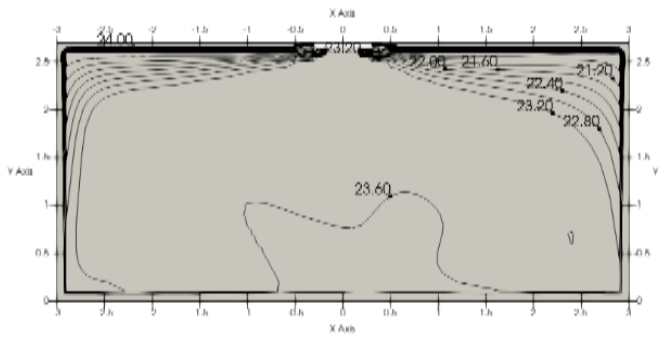
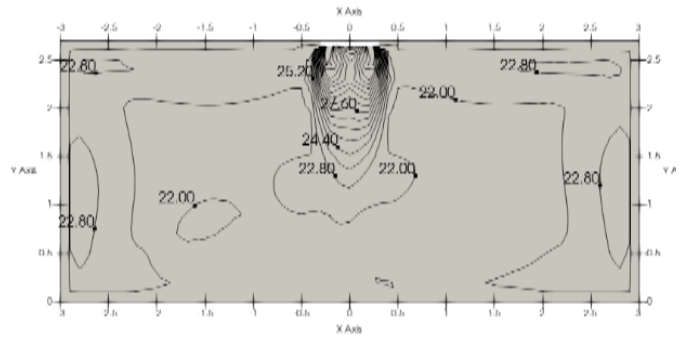


Figure 9.24: VECT024T0A-DWV071 heating at 300S





OMEGA
ENVIRONMENTAL
TECHNOLOGIES LLC.

17702 Mitchell North, #101
Irvine, CA. 92614 .USA
Tel: 714 795 2830
Fax: 714 966 1646
info@omegavrf.com
www.omegavrf.com

OTECTM
AIR CONDITIONING

Showroom & Technology Center
11380 Interchange Circle North
Miramar, FL 33025 .USA
Tel: 305 901 1270
Fax: 954 212 8280
info@otecomega.com
www.otecomega.com

VECT0A-TM1D00823