OMEGA

OTEC™

VEFB Series

Underside Air Intake Floor Standing Indoor Unit
Technical Manual

220~240V/1/50-60Hz

Floor Standing

1 Specifications 4

2 Dimensions..... 8

3 Unit Placement..... 10

4 Piping Diagram 12

5 Wiring Diagram 13

6 Capacity Tables..... 15

7 Electrical Characteristics 17

8 Set external static pressure parameters..... 18

9 Fan Performance 19

10 Sound Levels..... 23

11 Temperature and Airflow Distributions 26

OMEGA Indoor Units

1 Specifications

Table 1.1: VEFB008(010,012,015)T0A specifications

Model			VEFB008T0A-DWV022	VEFB010T0A-DWV028	VEFB012T0A-DWV036	VEFB015T0A-DWV045
Power supply			1 phase, 220-240V, 50/60Hz			
Cooling[1]	Capacity	kW	2.2	2.8	3.6	4.5
		kBtu/h	7.5	9.6	12.3	15.4
	Power input	W	35	35	40	44
Heating[2]	Capacity	kW	2.4	3.2	4	5
		kBtu/h	8.2	10.9	13.7	17.1
	Power input	W	35	35	41	46
External static pressure		Pa(F4)	0-10			
		Pa(F5)	0-10			
Fan motor	Type		DC			
	Number		1			
Indoor coil	Number of rows		2	2	3	3
	Tube pitch × row pitch	mm	22×19.05			
	Fin spacing	mm	1.6			
	Fin type		Hydrophilic aluminum			
	Tube OD and type	mm	Φ8 Inner-groove			
	Dimensions (L×H×W)	mm	580×38.1×176	580×38.1×176	580×57.2×176	800×57.2×176
	Number of circuits		2	2	4	4
Air flow rate[3]		m^3/h	498/486/475/464/453/441/430		508/491/474/458/441/424/407	692/665/637/610/582/555/528
Sound pressure level[4]		dB(A)	32.5/32/31.5/31/30.5/30/29		35/34/33/32/31/30/29	38/37/36/35/34/32.5/31.5
Unit	Net dimensions[5] (W×H×D)	in(mm)	40 1/8 x 19 1/2 x 7 7/8 (1020×495×200)			48 7/8 x19 1/2 x7 7/8 (1240×495×200)
	Packed dimensions (W×H×D)	in(mm)	44 1/21 x 23 1/2 x 11 1/21 (1125×595×285)			52 7/8 x23 3/8 x11 1/21 (1345×595×285)
	Net/Gross weight	lbs(kg)	46.52 (21.1)/59.08 (26.8)		48.28(21.9)/60.85(27.6)	57.98(26.3)/60.85(32.4)
Refrigerant type			R410A/R32			
Design pressure (H/L)		Mpa	4.4/2.6			
Refrigerant piping	Liquid/Gas side	mm	Φ6.35/Φ12.7			
Drain piping		mm	OD Φ18.5			

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 to the lowest, total 7 rates for each model.
4. Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured at 1m in front of the unit and at a height of 1.5m in a anechoic chamber.
5. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

Table 1.2: VEFB019(024,027)T0A specifications

Model			VEFB019T0A-DWV056	VEFB024T0A-DWV071	VEFB027T0A-DWV080
Power supply			1 phase, 220-240V, 50/60Hz		
Cooling[1]	Capacity	kW	5.6	7.1	8.0
		kBtu/h	19.1	24.2	27.3
	Power input	W	45	53	62
Heating[2]	Capacity	kW	6.3	8.0	9.0
		kBtu/h	21.5	27.3	30.7
	Power input	W	47	57	64
External static pressure		Pa(F4)	0~10		
		Pa(F5)	0~10		
Fan motor	Type		DC		
	Number		1		
Indoor coil	Number of rows		2	3	3
	Tube pitch × row pitch	mm	22×19.05		
	Fin spacing	mm	1.6		
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ8 Inner-groove		
	Dimensions (L×H×W)	mm	920×38.1×264	920×57.2×264	920×57.2×264
	Number of circuits		3	5	5
Air flow rate[3]		m^3/h	811/785/759/732/706/680/653	930/895/860/825/790/755/721	
Sound pressure level[4]		dB(A)	35/34.5/34/33/32.5/32/31	39.5/39/38/37/36/35/34	
Unit	Net dimensions[5] (W×H×D)	in(mm)	53 1/2 x23 1/21 x 7 7/8 (1360×591×200)		
	Packed dimensions (W×H×D)	in(mm)	57 5/8 x 27 3/8 x 11 1/21 (1465×695×285)		
	Net/Gross weight	lbs(kg)	70.77 (32.1)/86.86 (39.4)	73.41 (33.3)/90.61 (41.1)	73.41 (33.3)/90.61 (41.1)
Refrigerant type			R410A/R32		
Design pressure (H/L)		Mpa	4.4/2.6		
Refrigerant piping	Liquid/Gas side	mm	Φ6.35/Φ12.7	Φ9.52/Φ15.9	
Drain piping		mm	OD Φ18.5		

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 to the lowest, total 7 rates for each model.
4. Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured at 1m in front of the unit and at a height of 1.5m in a anechoic chamber.
5. Unit body dimensions given are the largest external dimensions of the unit, including hanger attachments.

2 Dimensions

2.1 Unit Dimensions

Figure 2.1: VEFB008(010,012,015,019,024,027)T0A Exposed Floor Standing dimensions

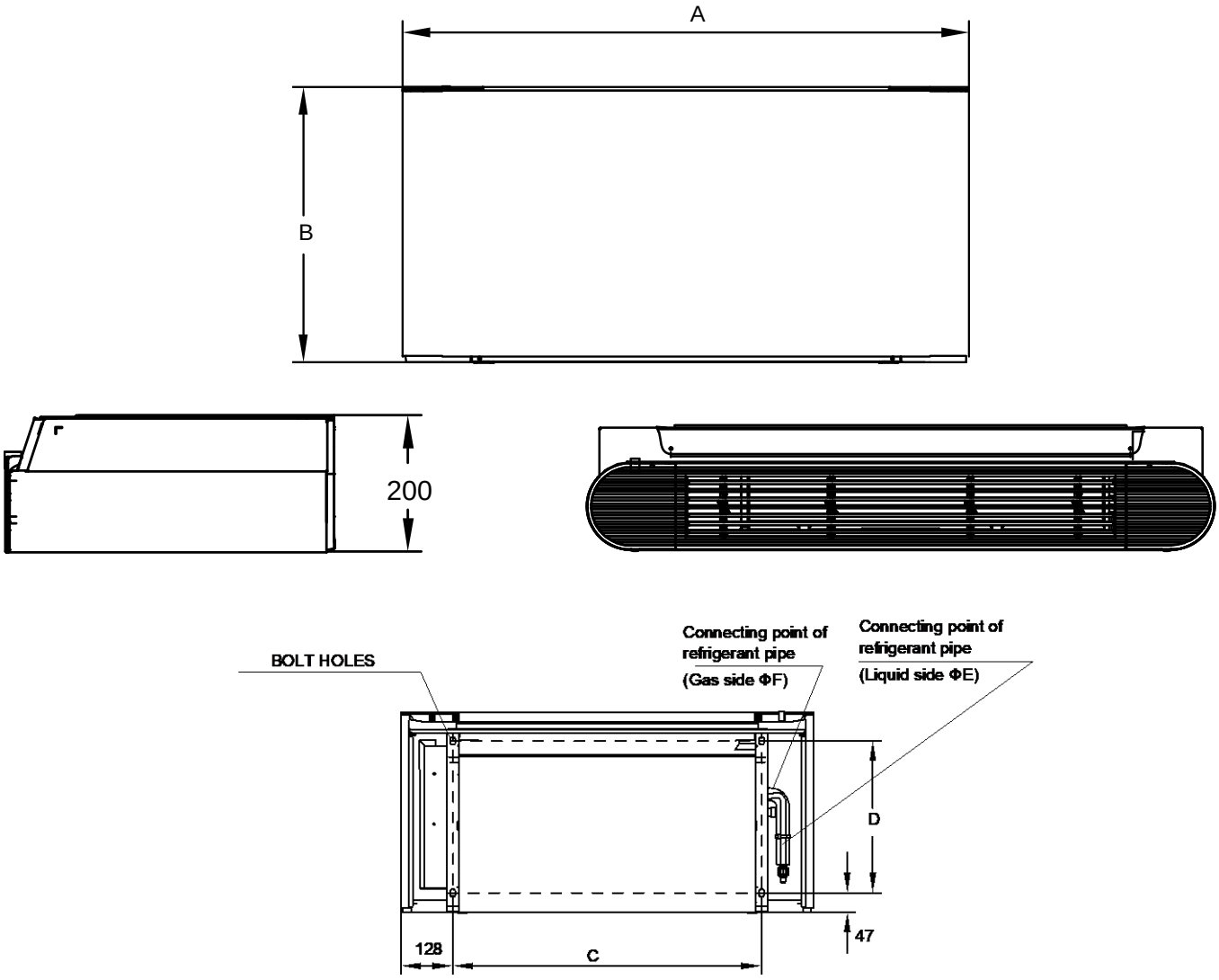


Table 2.1: VEFB008(010,012,015,019,024,027)T0A series Exposed Floor Standing dimensions

Model	Dimensions(mm)			
	A	B	C	D
VEFB008T0A-DWV022 VEFB010T0A-DWV028 VEFB012T0A-DWV036	1020	495	764	375
VEFB015T0A-DWV045	1240	495	984	375
VEFB019T0A-DWV056 VEFB024T0A-DWV071 VEFB027T0A-DWV080	1360	591	1104	391

Table 2.2: VEFB008(010,012,015,019,024,027)T0A Exposed Floor Standing piping connections

Model	E(mm)	F(mm)
VEFB008T0A-DWV022 VEFB010T0A-DWV028 VEFB012T0A-DWV036 VEFB015T0A-DWV045 VEFB019T0A-DWV056	6.35	12.7
VEFB024T0A-DWV071 VEFB027T0A-DWV080	9.52	15.9

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 3.2: VEFB008(010,012,015,019,024,027)T0A (air inlet from bottom) Exposed Floor Standing space requirements (unit: mm)

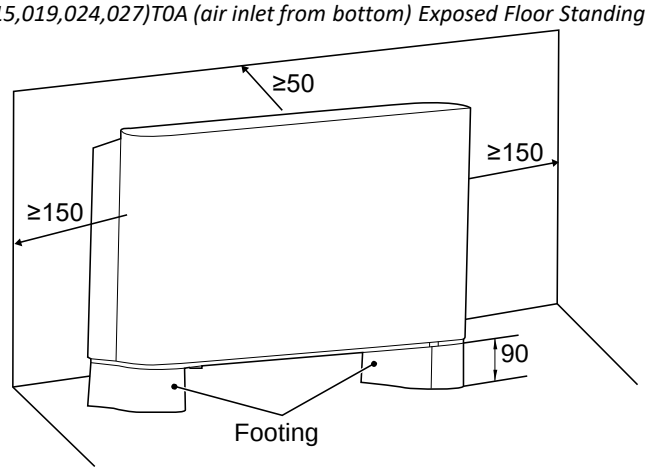


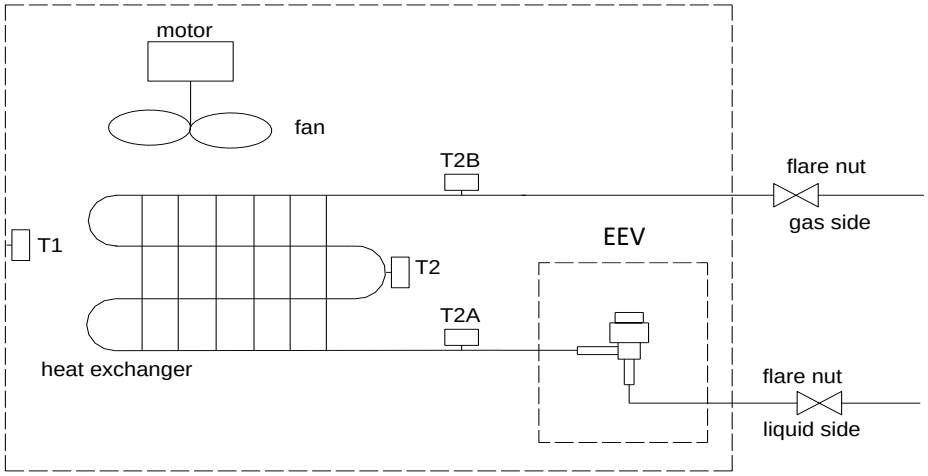
Fig.4-2 Uncovered product

Notes:

1. Vertical unit with casing, with air intake from below and air outlet on top, for installation on a wall or on feet on the floor.
2. Additionally, it is required to keep 50mm between the rear and wall; 600mm between the front face and the obstacle. 1700mm vertical distance between the top of unit (outlet) and the upper obstacle.
3. The footings are optional. You can purchase them separately.

4 Piping Diagram

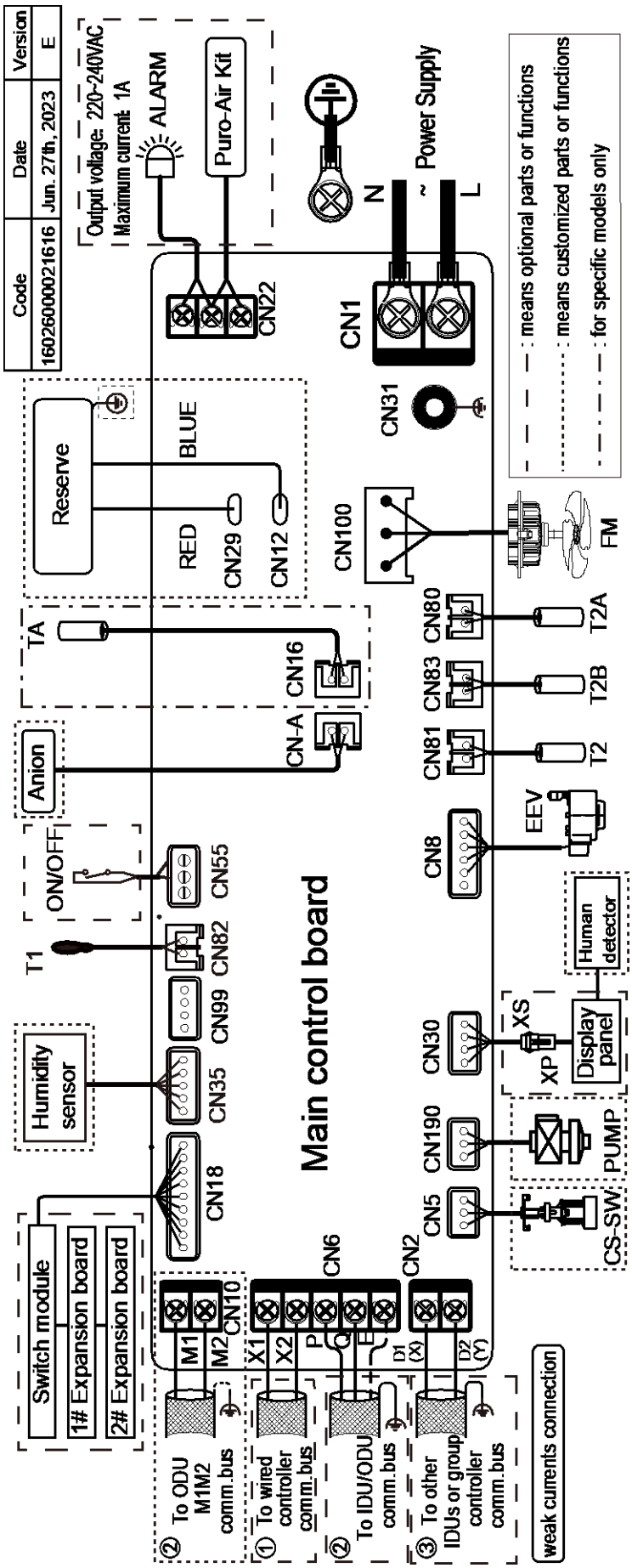
Figure 4.1: VEFB008(010,012,015,019,024,027)T0A Floor Standing piping diagram



Legend	
T1	Inlet Air Temp. Sensor
T2A	Liquid Pipe Temp. Sensor
T2	Middle Pipe Temp. Sensor
T2B	Gas Pipe Temp. Sensor
EEV	Electronic Expansion Valve
FAN	DC Fan Motor

5 Wiring Diagram

Figure 5.1: VEFB008(010,012,015,019,024,027)T0A Floor Standing wiring diagram



Code	Description	Code	Description
ALARM	Alarm Output	T2	Middle Pipe Temp. Sensor
Anion	Ionic Sterilization Module	T2A	Liquid Pipe Temp. Sensor
CS-SW	Water Level Switch	T2B	Gas Pipe Temp. Sensor
EEV	Electronic Expansion Valve	TA	Discharge Air Temp. Sensor*
FM	DC Fan Motor	ON/OFF	Remote ON/OFF
T0	Outdoor Air Temp. Sensor*	XS/XP	Connectors
T1	Inlet Air 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.
- 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: VEFB008(010,012,015,019,024,027)T0A Floor Standing 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
VEFB008T0A-DWV022	2.0	1.9	2.1	1.9	2.2	1.9	2.2	1.8	2.3	1.8	2.3	1.7	2.4	1.7
VEFB010T0A-DWV028	2.5	2.3	2.7	2.4	2.8	2.4	2.8	2.3	2.9	2.3	2.9	2.2	3.0	2.1
VEFB012T0A-DWV036	3.2	3.0	3.4	3.1	3.6	3.1	3.6	3.0	3.7	3.0	3.8	2.8	3.9	2.7
VEFB015T0A-DWV045	4.0	3.7	4.3	3.8	4.5	3.9	4.5	3.7	4.6	3.6	4.7	3.5	4.8	3.3
VEFB019T0A-DWV056	5.0	4.6	5.3	4.7	5.6	4.8	5.6	4.6	5.7	4.5	5.8	4.3	6.0	4.1
VEFB024T0A-DWV071	6.3	5.8	6.7	5.9	7.0	6.0	7.1	5.8	7.2	5.7	7.4	5.4	7.6	5.2
VEFB027T0A-DWV080	7.1	6.3	7.6	6.5	7.9	6.6	8.0	6.5	8.1	6.3	8.3	6.0	8.5	5.8

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

Notes:
1.Shaded cells indicate rating condition

6.2 Heating Capacity Table

Table 6.2: VEFB008(010,012,015,019,024,027)T0A Floor Standing heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	SHC	SHC	SHC	SHC	SHC	SHC
VEFB008T0A-DWV022	2.6	2.6	2.4	2.3	2.3	2.1
VEFB010T0A-DWV028	3.4	3.4	3.2	3.1	3.0	2.8
VEFB012T0A-DWV036	4.2	4.2	4.0	3.8	3.8	3.5
VEFB015T0A-DWV045	5.3	5.3	5.0	4.8	4.7	4.4
VEFB019T0A-DWV056	6.7	6.6	6.3	6.1	5.9	5.5
VEFB024T0A-DWV071	8.5	8.4	8.0	7.8	7.5	7.0
VEFB027T0A-DWV080	9.5	9.5	9.0	8.7	8.5	7.8

Abbreviations:
SHC: Sensible heating capacity(kW)

Notes:
1.Shaded cells indicate rating condition

7 Electrical Characteristics

Table 7.1: VEFB008(010,012,015,019,024,027)T0A Floor Standing electrical characteristics

Model	Power supply						Indoor fan motors	
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated motor output (W)	FLA
VEFB008T0A-DWV022	50/60	220-240	198	264	0.3	15	50	0.5
VEFB010T0A-DWV028	50/60	220-240	198	264	0.3	15	50	0.5
VEFB012T0A-DWV036	50/60	220-240	198	264	0.3	15	50	0.5
VEFB015T0A-DWV045	50/60	220-240	198	264	0.3	15	50	0.5
VEFB019T0A-DWV056	50/60	220-240	198	264	0.4	15	60	0.6
VEFB024T0A-DWV071	50/60	220-240	198	264	0.4	15	60	0.6
VEFB027T0A-DWV080	50/60	220-240	198	264	0.4	15	60	0.6

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

8 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

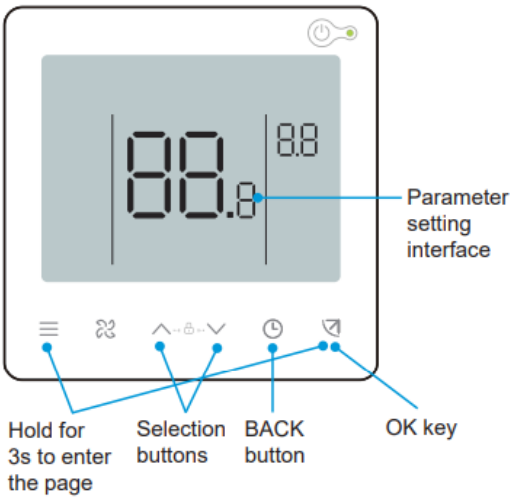


Table 8.2: VEFB008(010,012,015,019,024,027)T0A External static pressure setting (Exposed)- VEFB

First level menu	Second level menu	Description	Default
N00	02/04/06/07/08/09/10	Static pressure level	02

Level	02	04	06	07	08	09	10
Static pressure(Pa)	0	10	10	10	10	10	10

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 Fan Performance

Figure 9.1: VEFR008T0A-DWV022 fan performance

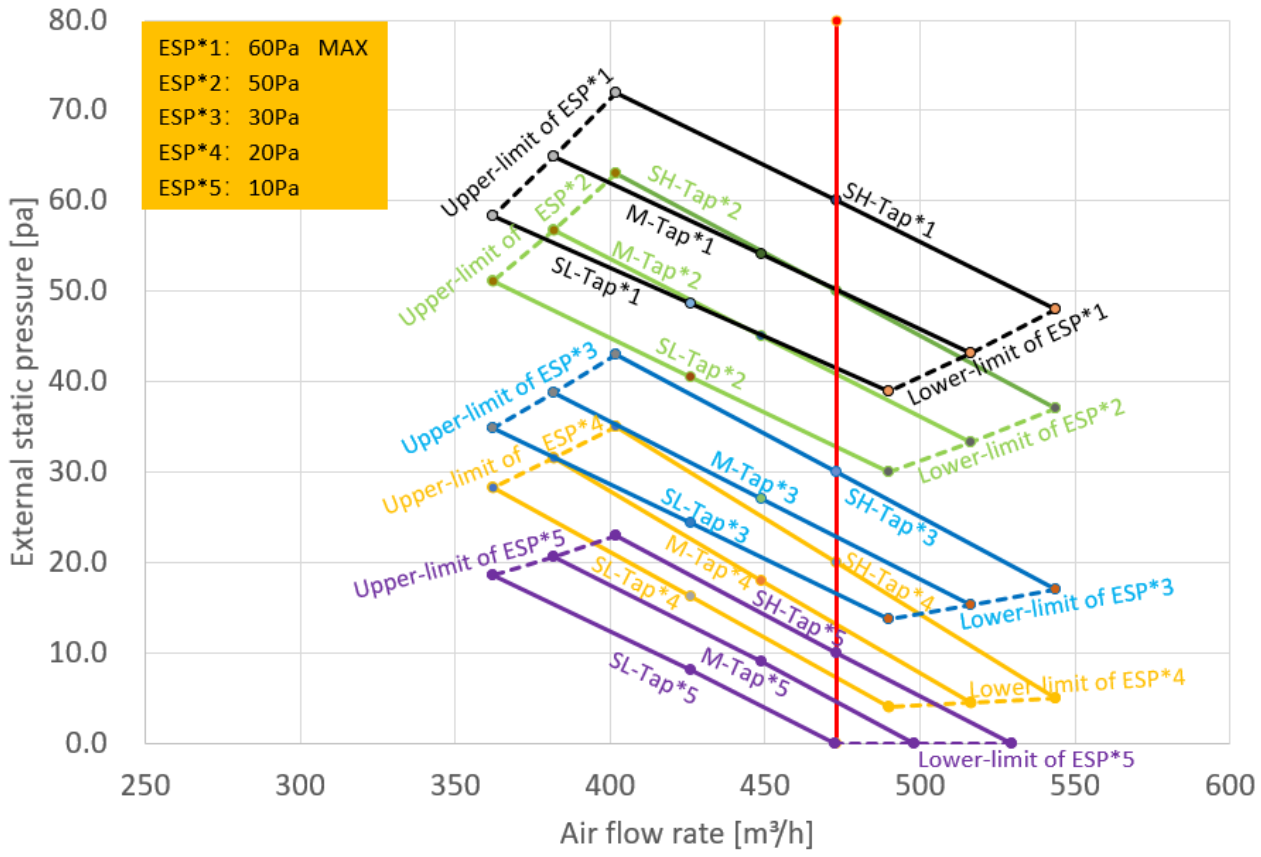


Figure 9.2: VEFR010T0A-DWV028 fan performance

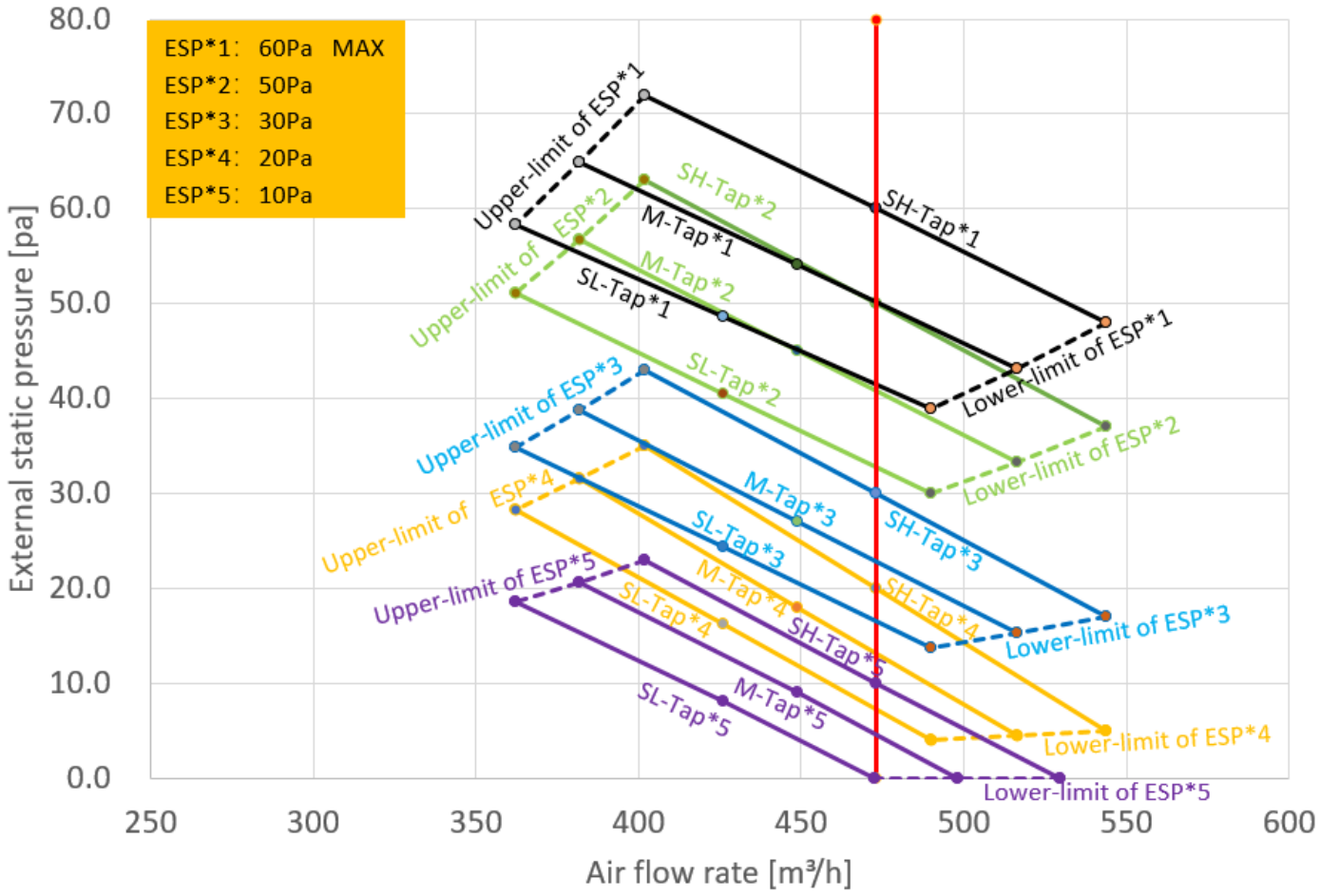


Figure 9.3: VEFR012T0A-DWV036 fan performance

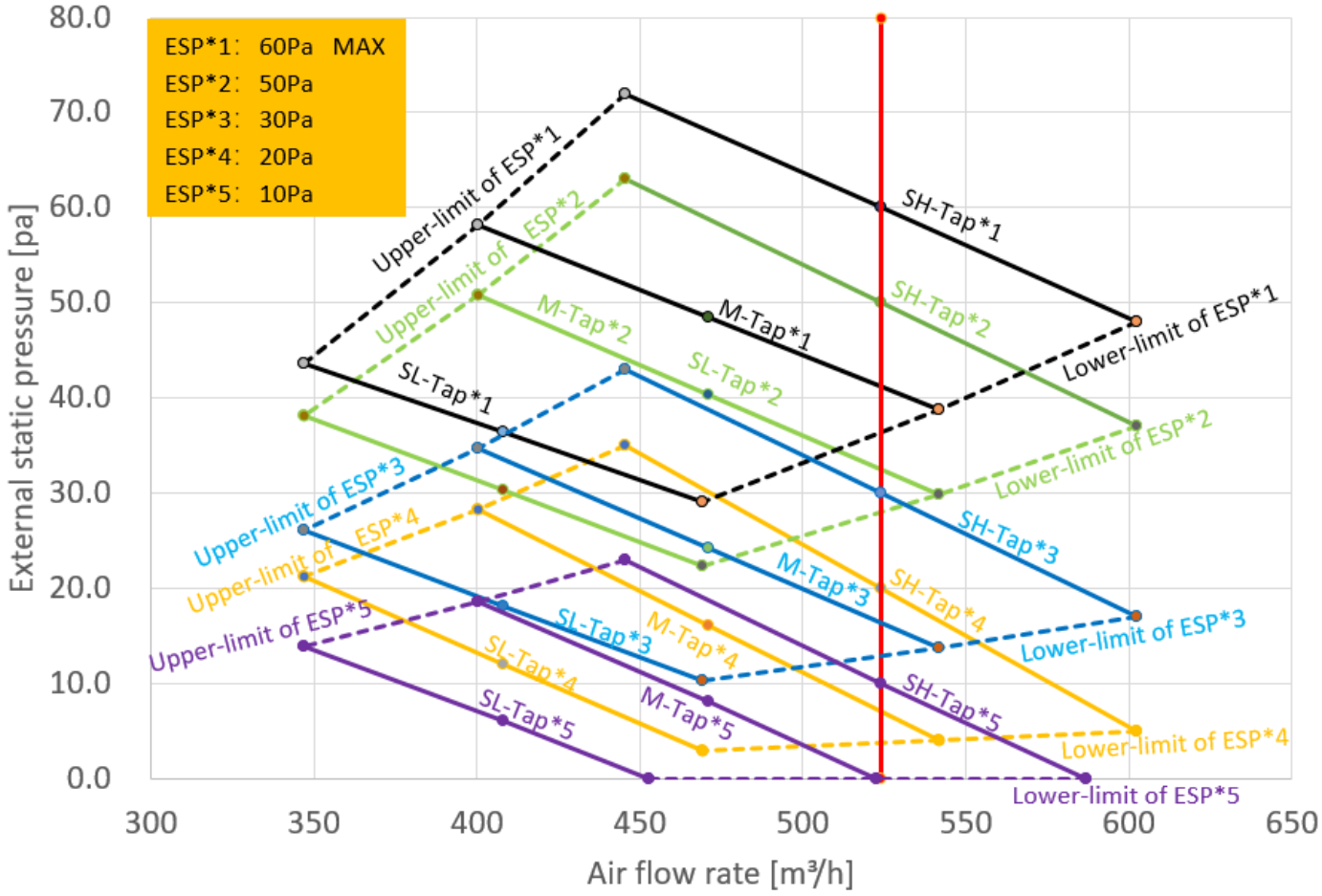


Figure 9.4: VEFR015T0A-DWV045 fan performance

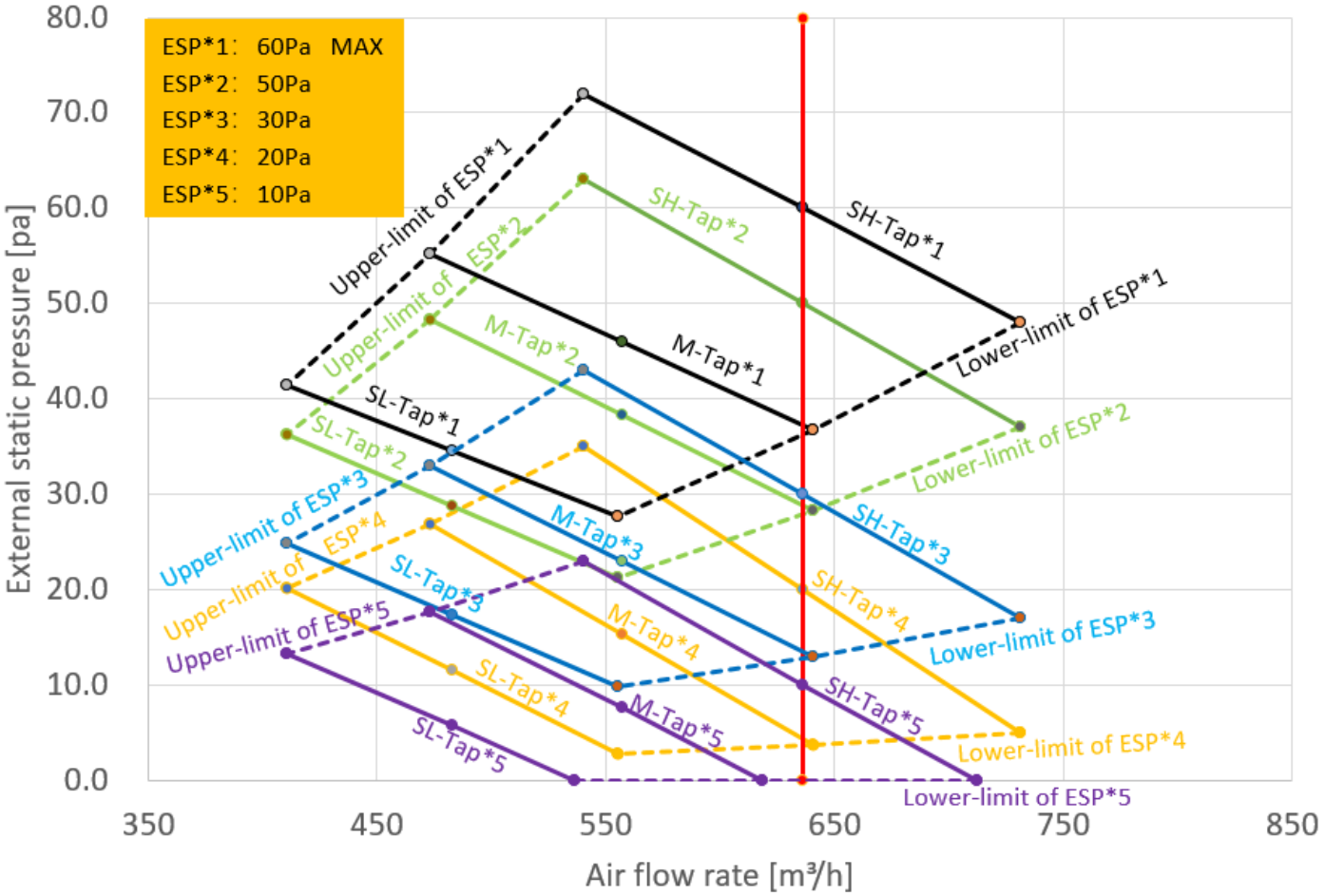


Figure 9.5: VEFR019T0A-DWV056 fan performance

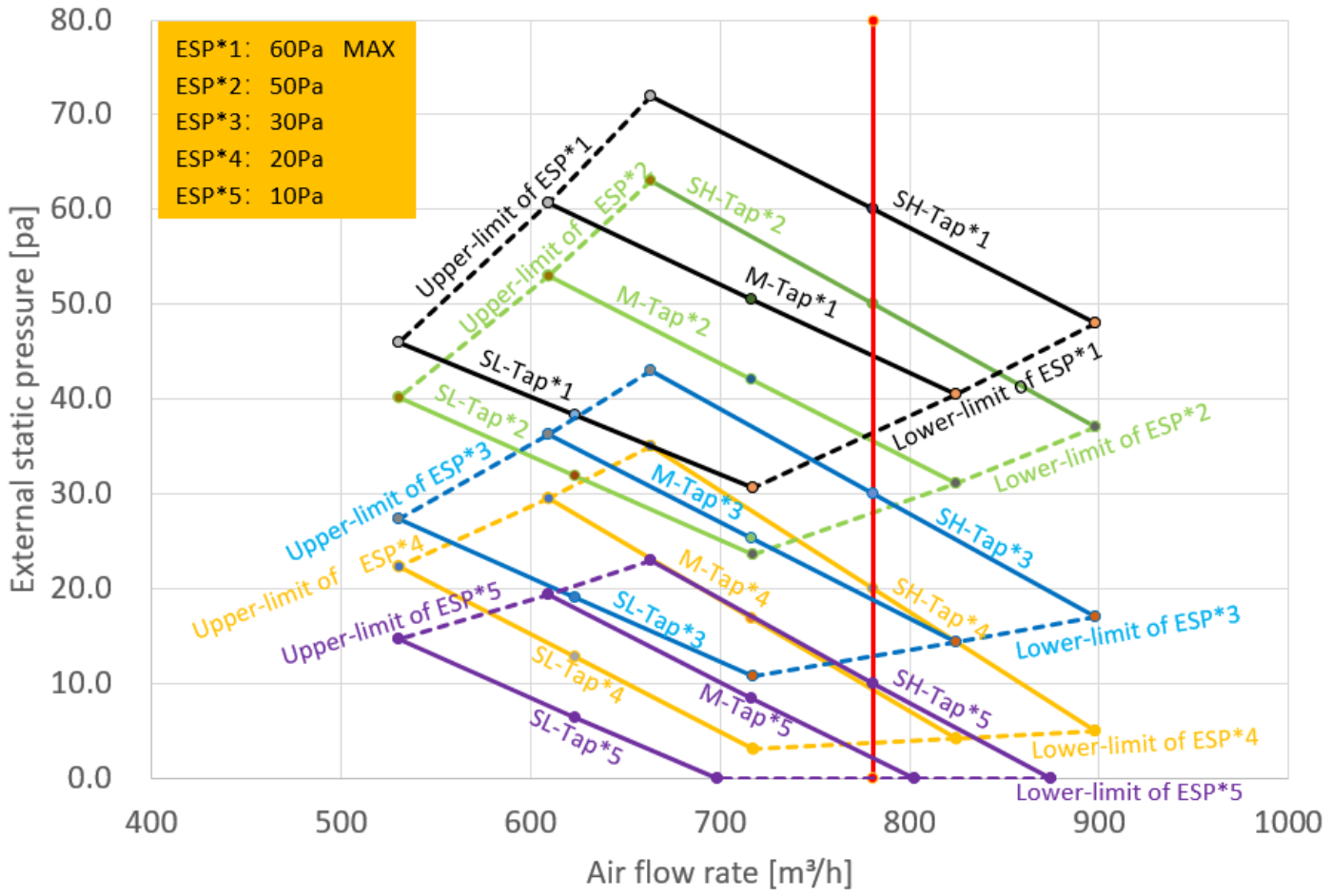


Figure 9.6: VEFR024Q0A-DWV071 fan performance

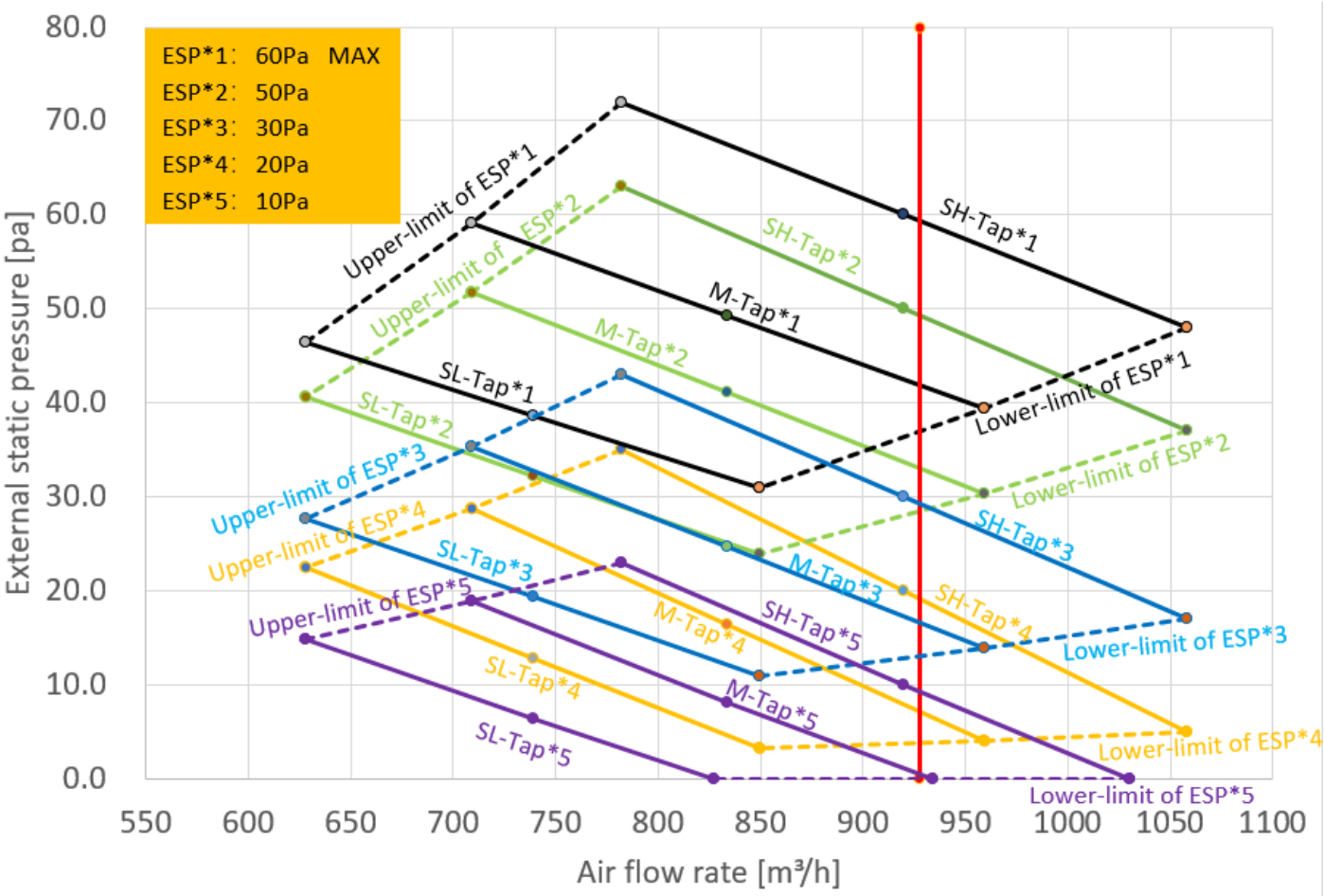
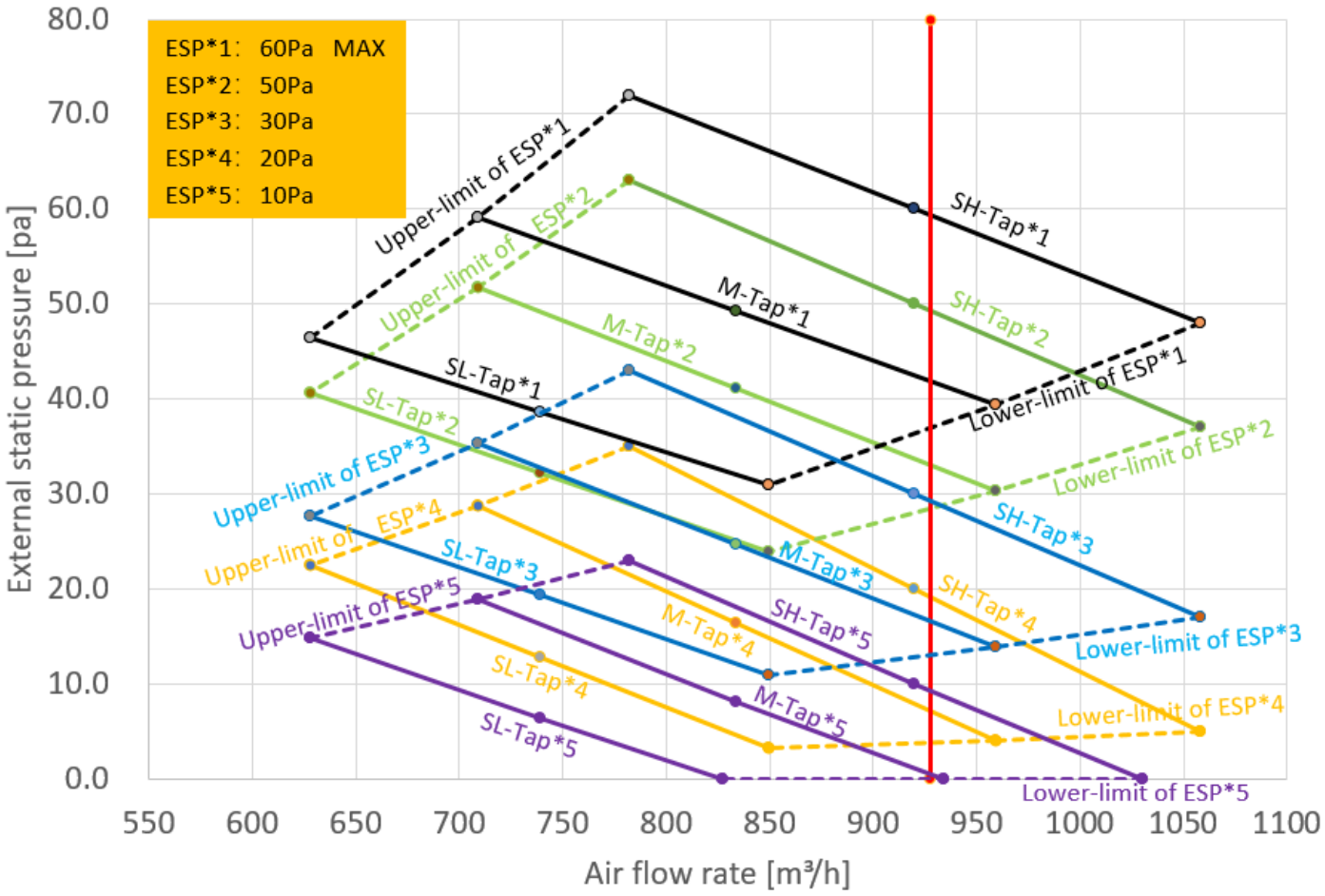


Figure 9.7: VEFR027T0A-DWV080 fan performance



10 Sound Levels

10.1 Overall

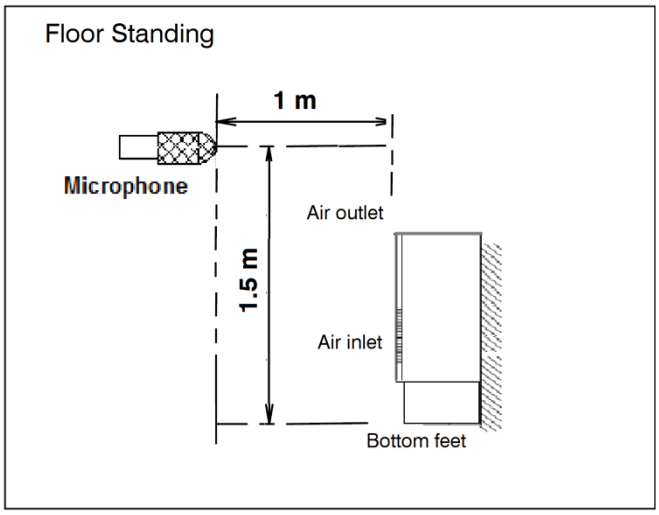
Table 10.1: VEFB008(010,012,015,019,024,027)T0A Floor Standing sound pressure levels[1]

Model name	Sound pressure levels dB(A)						
	SSH	SH	H	M	L	SL	SSL
VEFB008T0A-DWV022	32.5	32	31.5	31	30.5	30	29
VEFB010T0A-DWV028	32.5	32	31.5	31	30.5	30	29
VEFB012T0A-DWV036	35	34	33	32	31	30	29
VEFB015T0A-DWV045	38	37	36	35	34	32.5	31.5
VEFB019T0A-DWV056	35	34.5	34	33	32.5	32	31
VEFB024T0A-DWV071	39.5	39	38	37	36	35	34
VEFB027T0A-DWV080	39.5	39	38	37	36	35	34

Notes:

1. Sound pressure levels are measured at 1m in front of the unit at a height of 1.5m in a anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.

Figure 10.1: Floor Standing sound pressure level measurement



10.2 Octave Band Levels

Figure 10.11: VEFB012T0A-DWV036 octave band levels

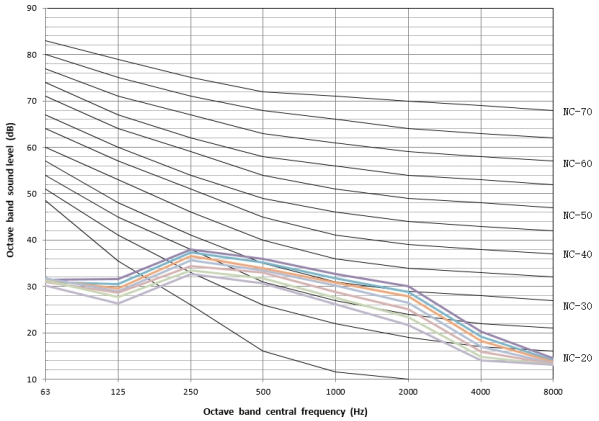


Figure 10.12: VEFB015T0A-DWV045 octave band levels

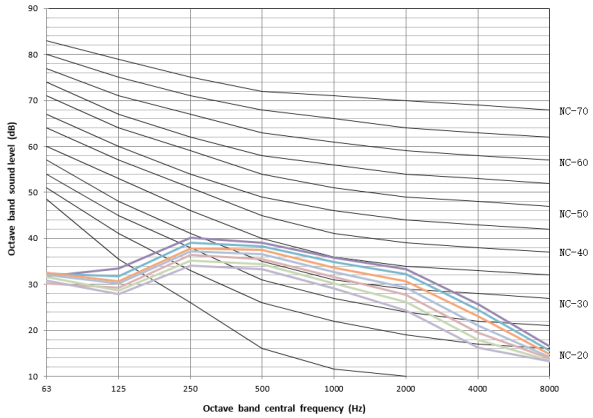


Figure 10.13: VEFB019T0A-DWV056 octave band levels

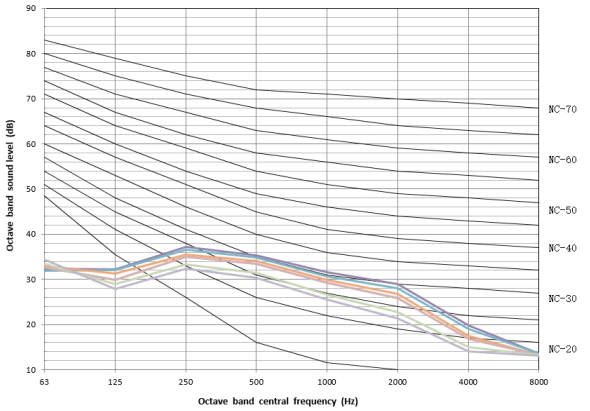


Figure 10.14: VEFB024T0A-DWV071 octave band levels

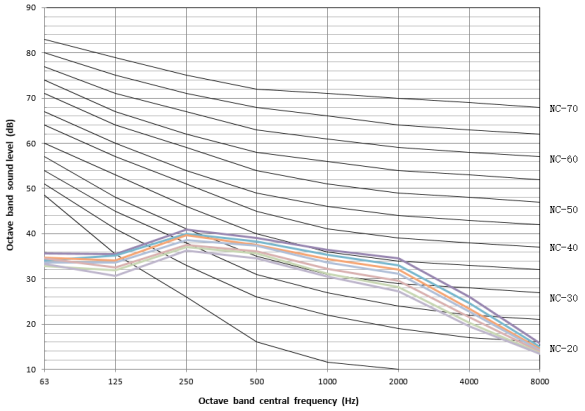
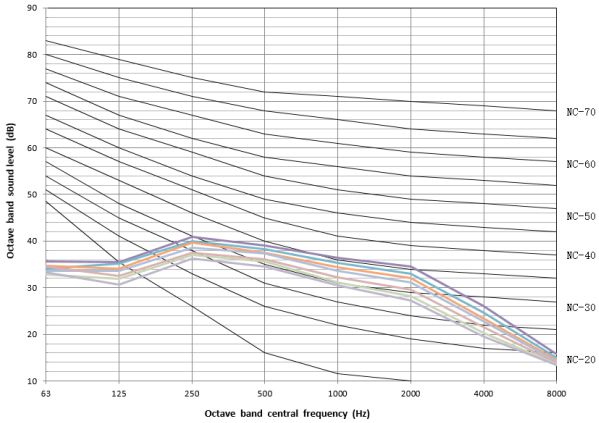


Figure 10.15:VEFB027T0A-DWV080 octave band levels



11 Temperature and Airflow Distributions

11.1 Simulate condition

Table 11.1: VEFB008(010,012,015,019,024,027)T0A Floor standing simulate condition

Model name	Room size (m)	Ceiling height (m)	Flow angle (Cooling/Heating)	Placing
VEFB008T0A-DWV022	6×6	2.4	90° /125°	Standing
VEFB010T0A-DWV028	6×6	2.4	90° /125°	Standing
VEFB012T0A-DWV036	6×6	2.4	90° /125°	Standing
VEFB015T0A-DWV045	6×6	2.4	90° /125°	Standing
VEFB019T0A-DWV056	6×6	2.4	90° /125°	Standing
VEFB024Q0A-DWV071	6×6	2.4	90° /125°	Standing
VEFB027T0A-DWV080	6×6	2.4	90° /125°	Standing

Note:

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

11.2 Airflow distributions (unit: m/s)

Figure 11.1: VEFB008T0A-DWV022 *cooling at 300S*

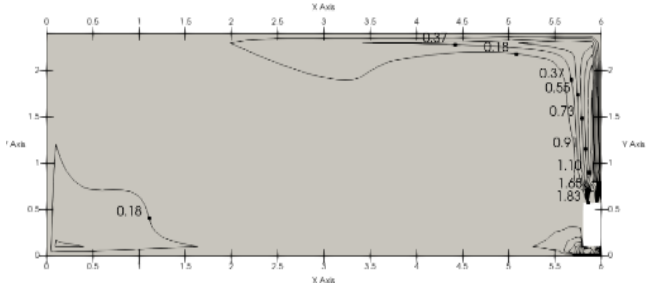


Figure 11.2: VEFB008T0A-DWV022 *heating at 300S*

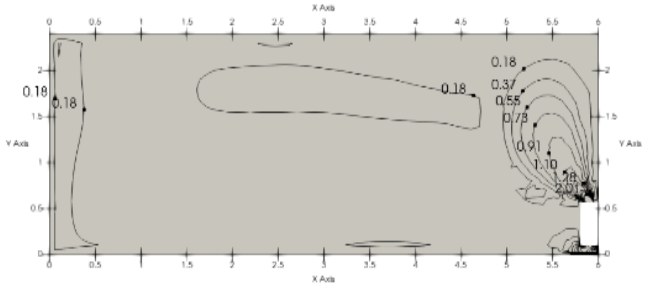


Figure 11.3: VEFB010T0A-DWV028 *cooling at 300S*

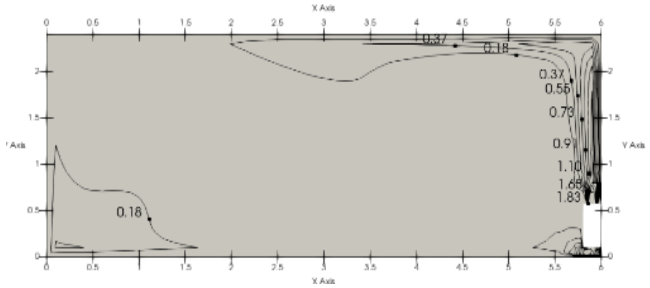


Figure 11.4: VEFB010T0A-DWV028 *heating at 300S*

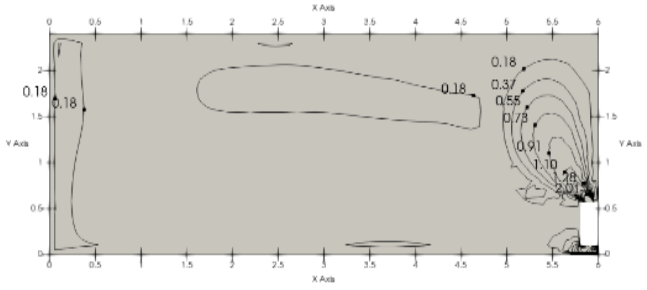


Figure 11.5: VEFB012T0A-DWV036 *cooling at 300S*

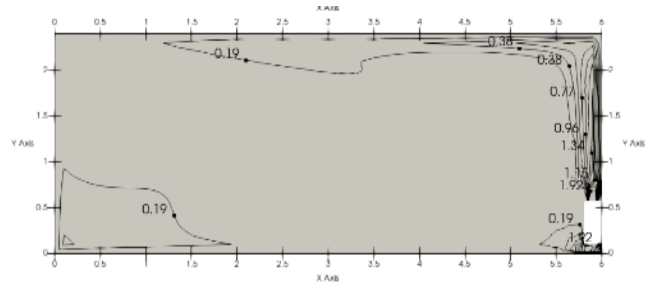


Figure 11.6: VEFB012T0A-DWV036 *heating at 300S*

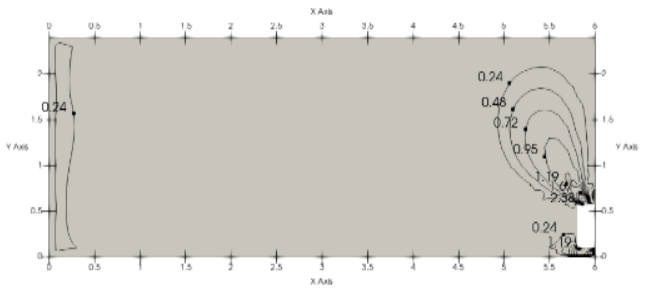


Figure 11.7: VEFB015T0A-DWV045 *cooling at 300S*

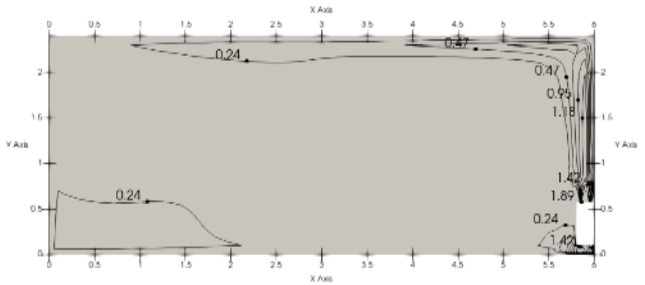


Figure 11.8: VEFB015T0A-DWV045 *heating at 300S*

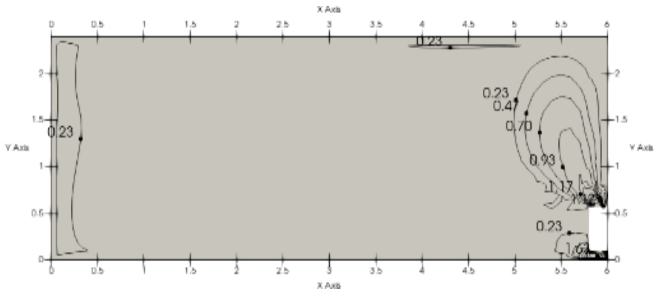


Figure 11.9: VEFB019T0A-DWV056 *cooling at 300S*

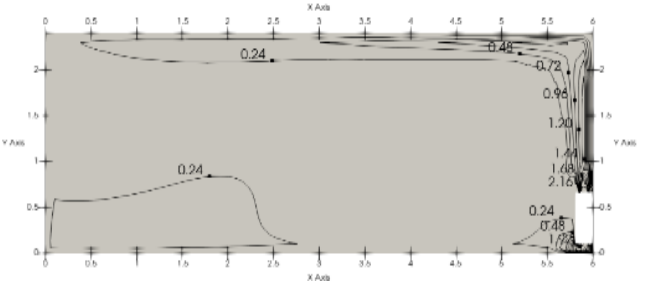


Figure 11.10: VEFB019T0A-DWV056 *heating at 300S*

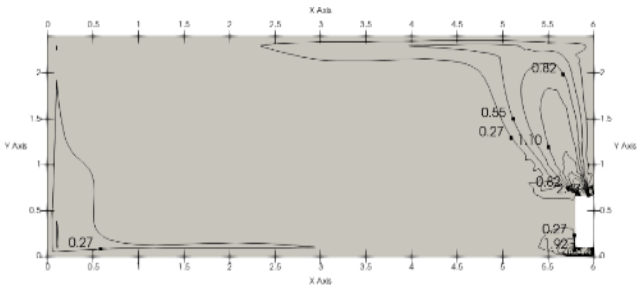


Figure 11.11: VEFB024Q0A-DWV071 *cooling at 300S*

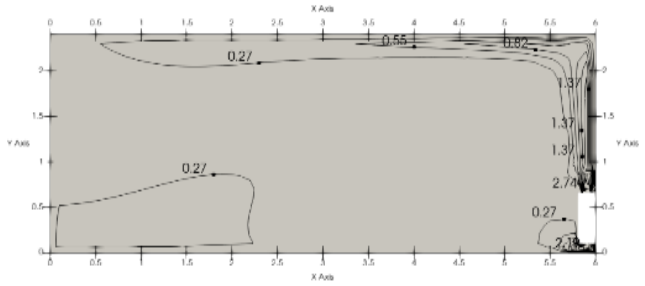


Figure 11.12: VEFB024Q0A-DWV071 *heating at 300S*

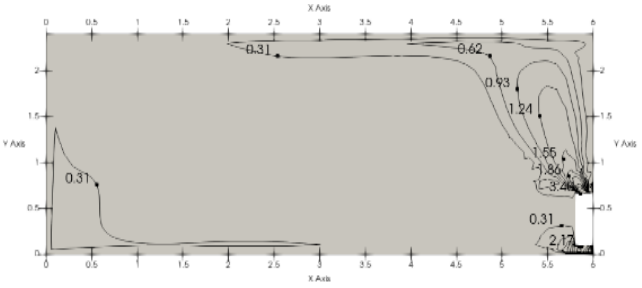


Figure 11.13: VEFB027T0A-DWV080 *cooling at 300S*

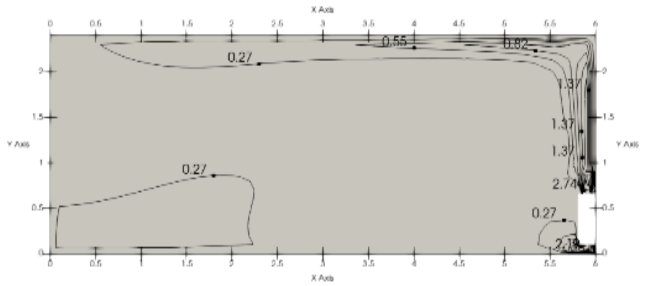
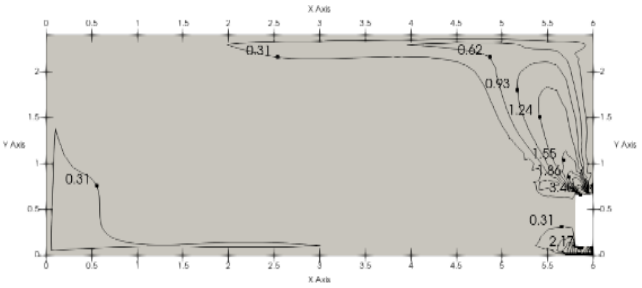


Figure 11.14: VEFB027T0A-DWV080 *heating at 300S*



11.3 Temperature distributions

Figure 11.15: VEFB008T0A-DWV022 *cooling at 300S*

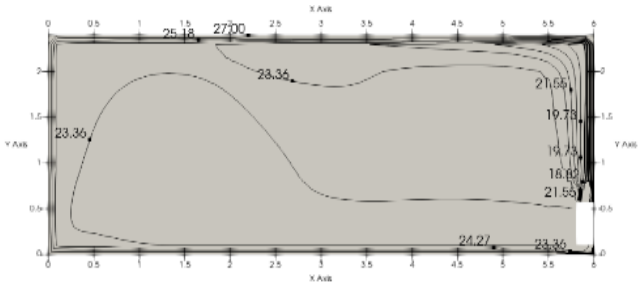


Figure 11.16: VEFB008T0A-DWV022 *heating at 300S*

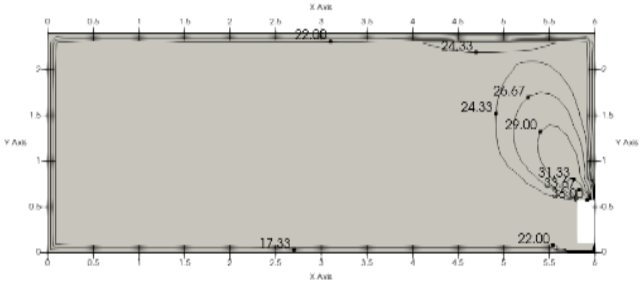


*Figure 11.17:*VEFB010T0A-DWV028 *cooling at 300S*

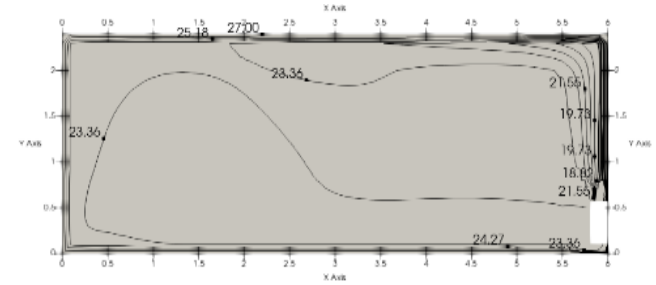


Figure 11.18: VEFB010T0A-DWV028 *heating at 300S*

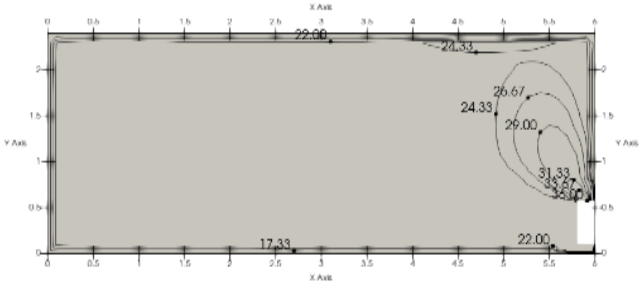


Figure 11.19: VEFB012T0A-DWV036 *cooling at 300S*

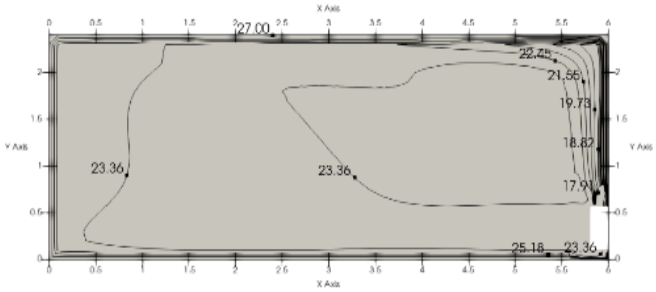


Figure 11.20: VEFB012T0A-DWV036 *heating at 300S*

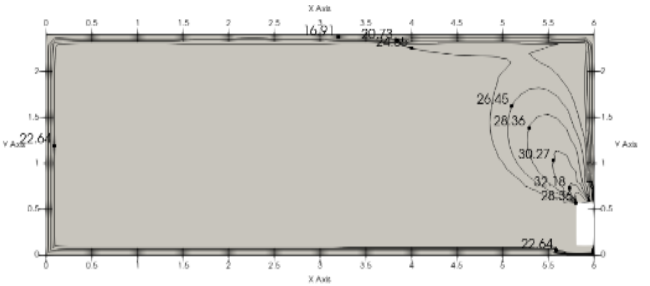


Figure 11.21: VEFB015T0A-DWV045 *cooling at 300S*

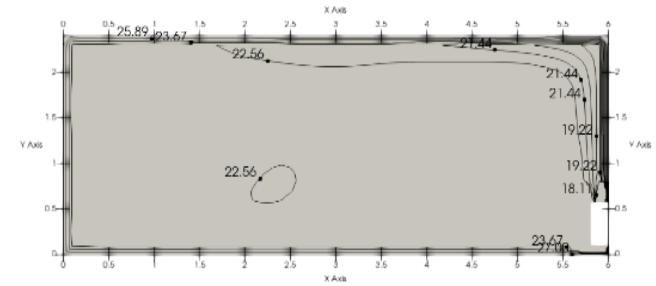


Figure 11.22: VEFB015T0A-DWV045 *heating at 300S*

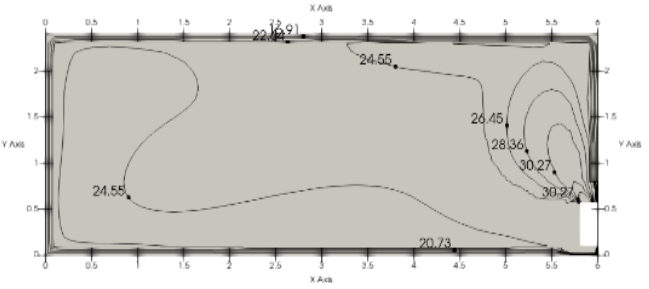


Figure 11.23: VEFB019T0A-DWV056 *cooling at 300S*

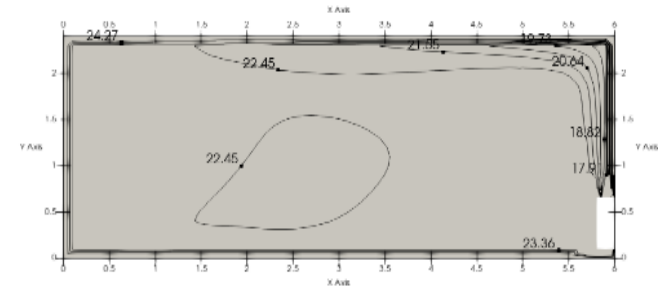


Figure 11.24: VEFB019T0A-DWV056 *heating at 300S*

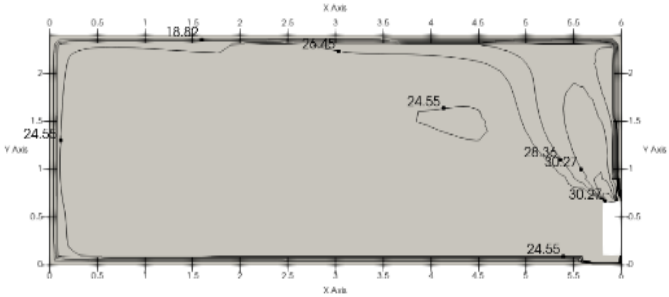


Figure 11.25: VEFB024Q0A-DWV071 *cooling at 300S*

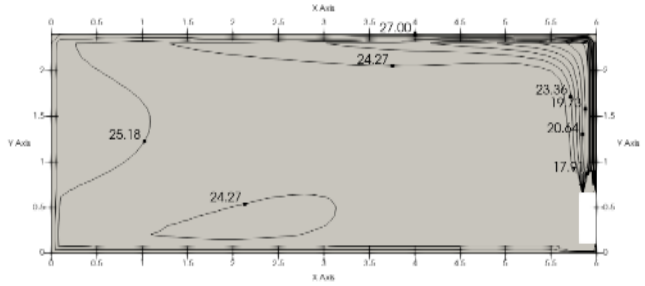


Figure 11.26: VEFB024Q0A-DWV071 *heating at 300S*

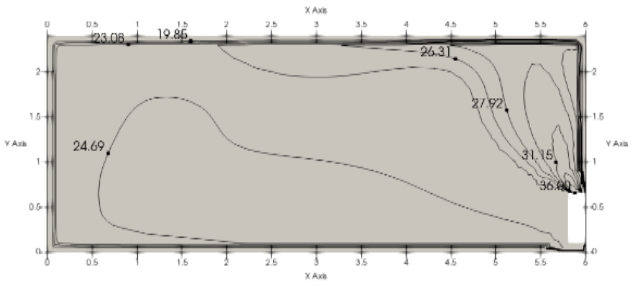


Figure 11.27: VEFB027T0A-DWV080 *cooling at 300S*

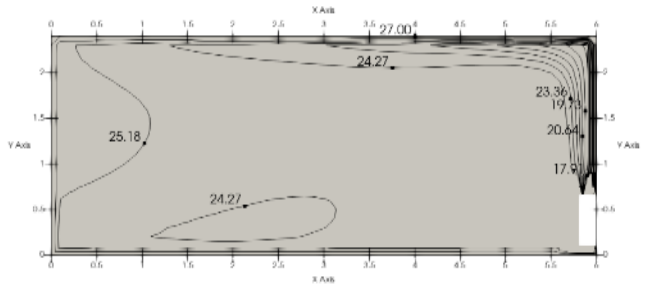
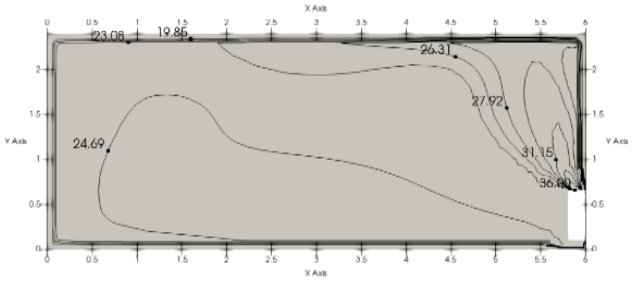


*Figure 11.28:*VEFB027T0A-DWV080 *heating at 300S*



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

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

VEFBT0A-TM1D0823