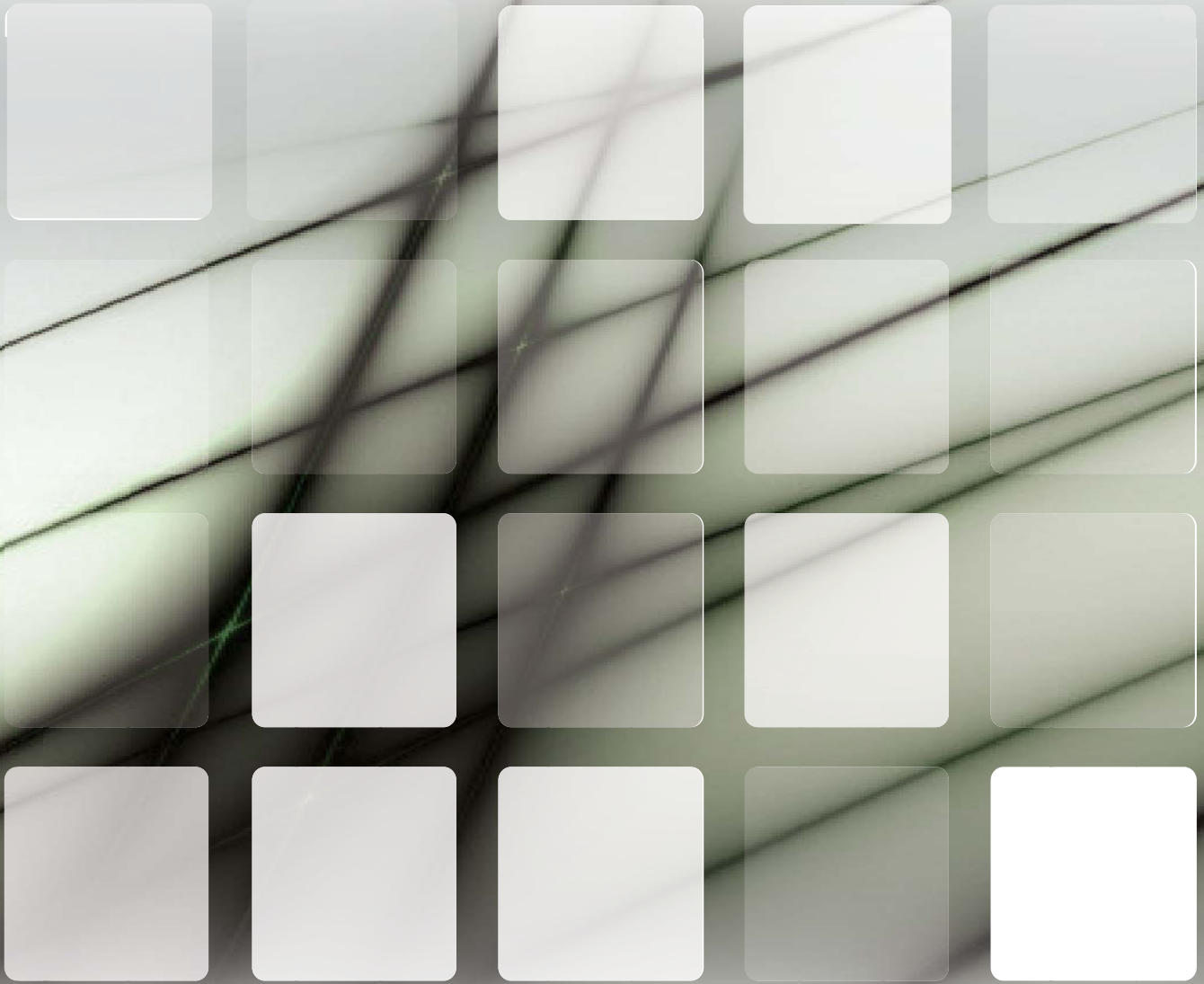


VEFA Series

Fresh Air Processing VRF Indoor Unit

Technical Manual



Fresh Air Processing Unit

- 1 Specifications 4**
- 2 Dimensions 7**
- 3 Unit Placement 11**
- 4 Piping Diagram 12**
- 5 Wiring Diagrams..... 13**
- 6 Fan Performance 16**
- 7 Capacity Tables..... 19**
- 8 Electrical Characteristics..... 22**
- 9 Sound Levels 23**

VRF Indoor Units

1 Specifications

VEFA043Q0A-DCV125 / VEFA048Q0A-DCV140

Table 1.1: VEFA-043(048)Q0A-DCV125(140) specifications

Model name			VEFA043Q0A-DCV125	VEFA048Q0A-DCV140
Power supply			1-phase, 220-240V, 50/60Hz	
Cooling ¹	Capacity	kW	12.5	14.0
	Input	W	480	480
Heating ²	Capacity	kW	10.5	12.0
	Input	W	480	480
Fan motor	Model		WZDK750-38GS-W	
	Type		DC	
	Brand		Panasonic/Welling	
	Input(H/M/L)	W	360	
Coil	Number of rows		4	
	Tube pitch×row pitch	mm	25.4×22	
	Fin spacing	mm	1.6	
	Fin type		Hydrophilic aluminum	
	Tube OD and type	mm	Φ9.53 Inner groove	
	Dimensions (L×H ×W)	mm	996×355.6×88	
	Number of circuits		7	
Airflow rate (H/M/L)		m ³ /h	2000/1917/1833/1750/1667/1583/1500	
External static pressure ³		Pa	150 (100~250)	
Sound pressure level ⁴ (H/M/L)		dB(A)	48/47/46/45/44/43/42	
Unit	Net dimensions (W×H×D)		1322×423×691	
	Packed dimensions (W×H×D)		1436×450×768	
	Net/Gross weight		68/76	
Refrigerant type			R410A	
Throttle	Type		Electronic expansion valve	
	Model		BD24FKS(L)	
Design pressure(H/L)		MPa	4.4/2.6	
Refrigerant piping	Liquid/Gas side	mm	Φ9.53/Φ15.9	
Drainpiping		mm	OD Φ25	
Operating temperature range		°C	Heating: -5 to 16; Cooling: 20 to 43; Fan only: 16 to 20	

Notes:

1. Outdoor air temperature 33°C DB, 28°C WB; equivalent refrigerant piping length 8m with zero level difference.
2. Outdoor air temperature 0°C DB, -2.9°C WB; equivalent refrigerant piping length 8m with zero level difference.
3. 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.)
4. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.

VRF Indoor Units

VEFA070Q0A-DCV200 / VEFA085Q0A-DCV250 / VEFA096Q0A-DCV280

Table 1.2: VEFA-070(085,096)Q0A-DCV200(250,280) specifications

Model name			VEFA070Q0A-DCV200	VEFA085Q0A-DCV250	VEFA096Q0A-DCV280
Power supply			1-phase, 220-240V, 50/60Hz		
Cooling ¹	Capacity	kW	20.0	25.0	28.0
	Input	W	850	850	850
Heating ²	Capacity	kW	12.8	16.0	18.0
	Input	W	850	850	850
Fan motor	Model		WZDK750-38GS-W		
	Type		DC		
	Brand		Panasonic/Welling		
	Input	W	600	650	
Coil	Number of rows		4		
	Tube pitch×row pitch	mm	25.4×22		
	Fin spacing	mm	1.8		
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ9.53 Inner groove		
	Dimensions (L×H ×W)	mm	1125×512×88		
	Number of circuits		20		
Airflow rate (H/M/L)		m ³ /h	3000/2833/2667/2500/2333/2167/2000		
External static pressure ³		Pa	200 (100~400)		
Sound pressure level ⁴ (H/M/L)		dB(A)	50/49/48/47/46/44/43		
Unit	Net dimensions (W×H×D)		mm 1454×515×931		
	Packed dimensions (W×H×D)		mm 1509×550×990		
	Net/Gross weight		kg 130/142		
Refrigerant type			R410A		
Throttle	Type		Electronic expansion valve		
	Model		BD24FKS(L)		
Design pressure(H/L)		MPa	4.4/2.6		
Refrigerant piping	Liquid/Gas side	mm	Φ12.7/Φ22.2		
Drainpiping		mm	OD Φ32		
Operating temperature range		°C	Heating: -5 to 16; Cooling: 20 to 43; Fan only: 16 to 20		

Notes:

1. Outdoor air temperature 33°C DB, 28°C WB; equivalent refrigerant piping length 8m with zero level difference.
2. Outdoor air temperature 0°C DB, -2.9°C WB; equivalent refrigerant piping length 8m with zero level difference.
3. 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.)
4. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.

VRF Indoor Units

VEFA153Q0A-DCV450 / VEFA191Q0A-DCV560

Table 1.2: VEFA-153(191)Q0A-DCV450(560) specifications

Model name			VEFA153Q0A-DCV450	VEFA191Q0A-DCV560
Power supply			1-phase, 220-240V, 50/60Hz	
Cooling ¹	Capacity	kW	45	56
	Input	W	1080	2272
Heating ²	Capacity	kW	28	39.0
	Input	W	1080	2272
Fan motor	Model		ZKSN-920-8-12-1	
	Type		DC	
	Brand		Nidec/Yongan	
	Input	W	920	
Coil	Number of rows		4	5
	Tube pitch × row	mm	21×13.37	21×13.37
	Fin spacing	mm	1.5	1.5
	Fin type		Hydrophilic aluminum	
	Tube OD and	mm	Φ7 Inner groove	Φ7 Inner groove
	Dimensions (L×H)	mm	1602×588×47	1602×588×53.84
	Number of circuits		28	28
Airflow rate (H/M/L)		m ³ /h	4200/3967/3733/3500/3267/3033/2800	6000/5665/5330/5000/4665/4330/4000
External static pressure ³		Pa	300 (100~400)	
Sound pressure level ⁴ (H/M/L)		dB(A)	58/56/55/53/51/49/48	59/57/56/55/53/51/50
Unit	Net dimensions	mm	2010×905×680	2010×905×680
	Packed	mm	2095×929×689	2095×929×689
	Net/Gross	kg	195/215	218/248
Refrigerant type			R410A	
Throttle	Type	Electronic expansion valve		
	Model	DPF(TS2)4.5C-02		
Design pressure (H/L)		MPa	4.4/2.6	
Refrigerant	Liquid/Gas side	mm	Φ15.9/Φ28.6	
Drain piping		mm	OD Φ32	
Operating temperature range		°C	Heating: -5 to 16; Cooling: 20 to 43; Fan only: 16 to 20	

Notes:

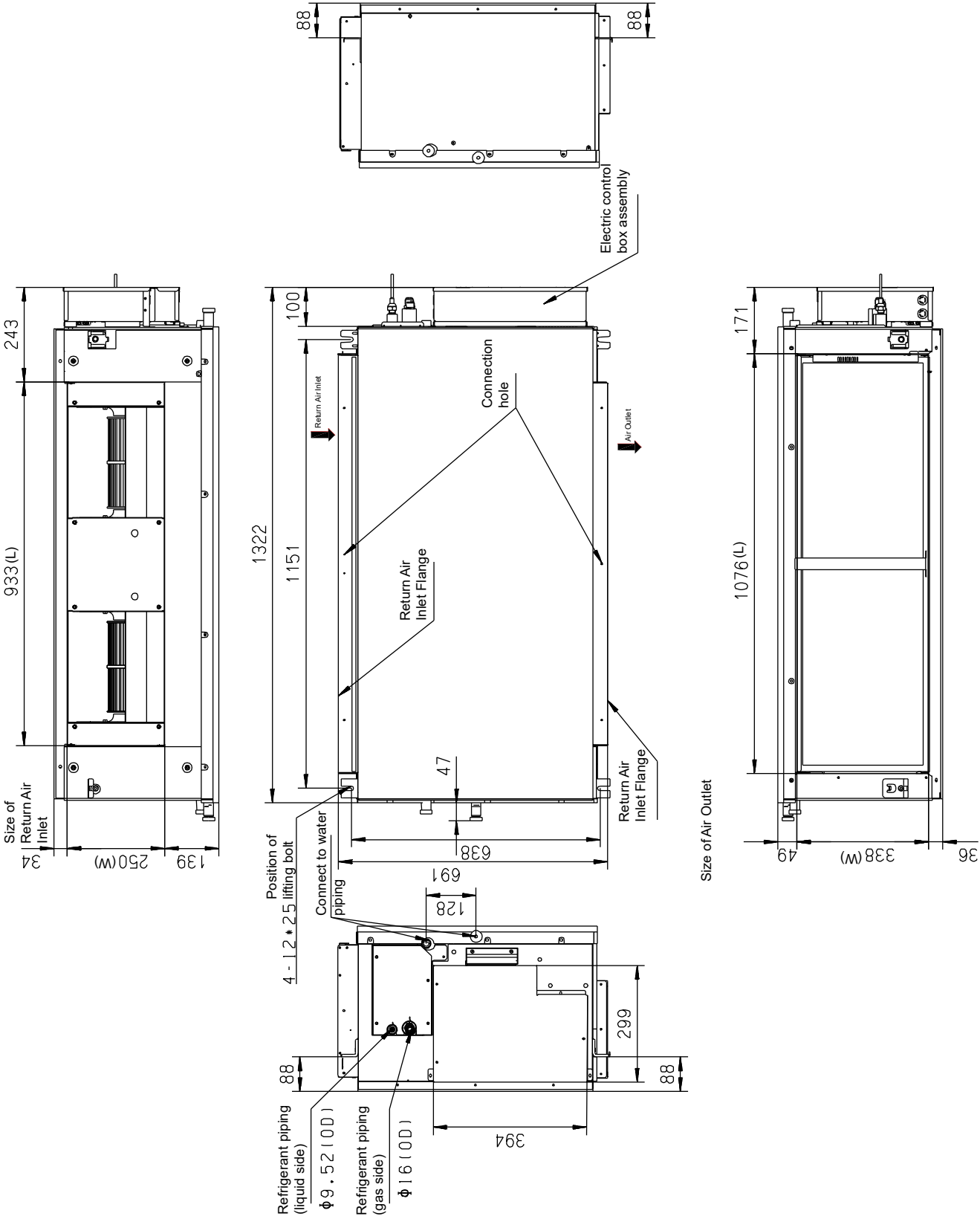
1. Outdoor air temperature 33°C DB, 28°C WB; equivalent refrigerant piping length 8m with zero level difference.
2. Outdoor air temperature 0°C DB, -2.9°C WB; equivalent refrigerant piping length 8m with zero level difference.
3. Stable operation external static pressure range. (Note: setting external 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.)
4. Sound pressure level is measured 1.4m below the unit in a semi-anechoic chamber.

2 Dimensions

2.1 Unit Dimensions

VEFA043Q0A-DCV125 / VEFA048Q0A-DCV140

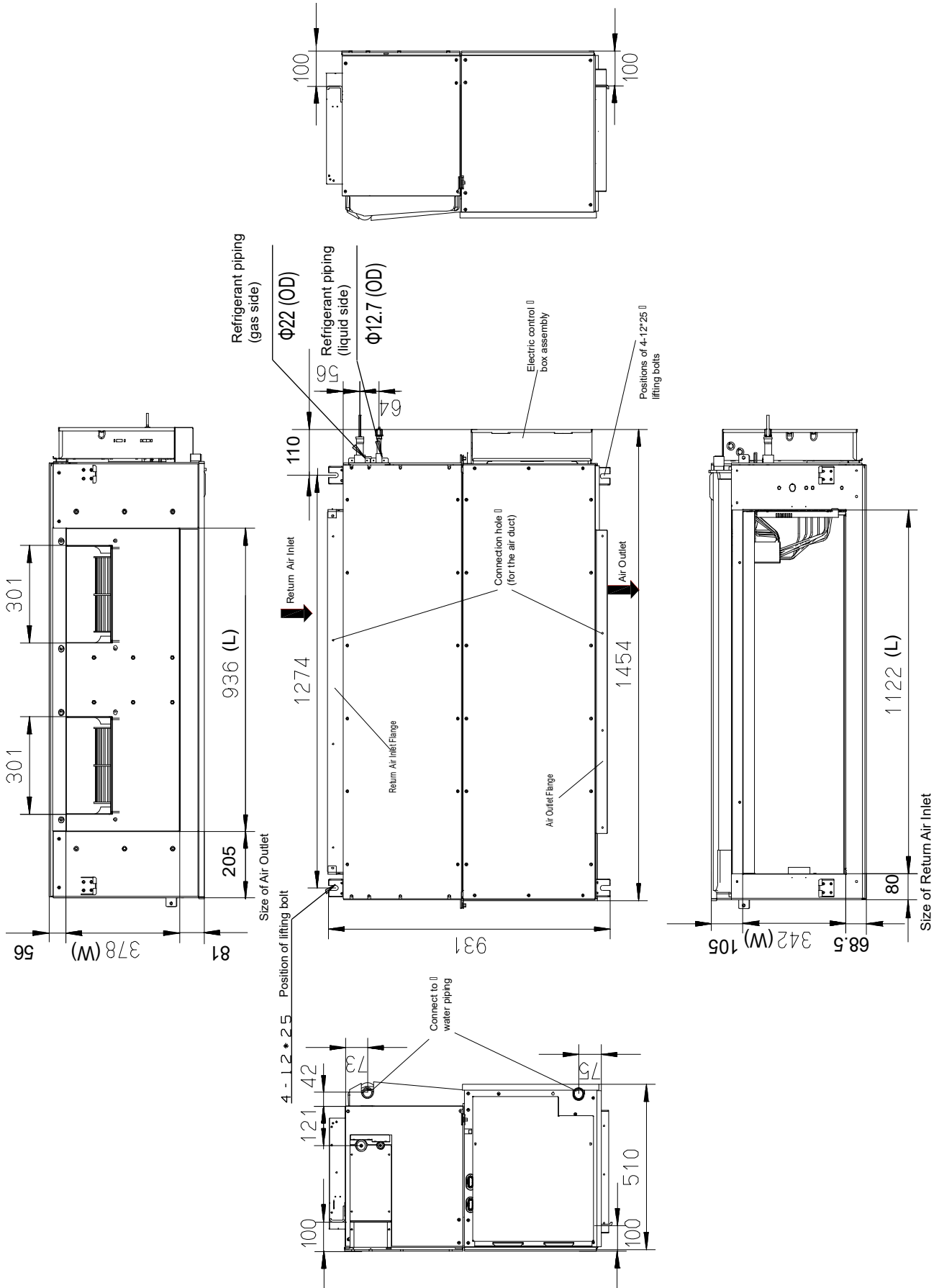
Figure 2.1: VEFA-043(048)Q0A-DCV125(140) dimensions (unit: mm)



VRF Indoor Units

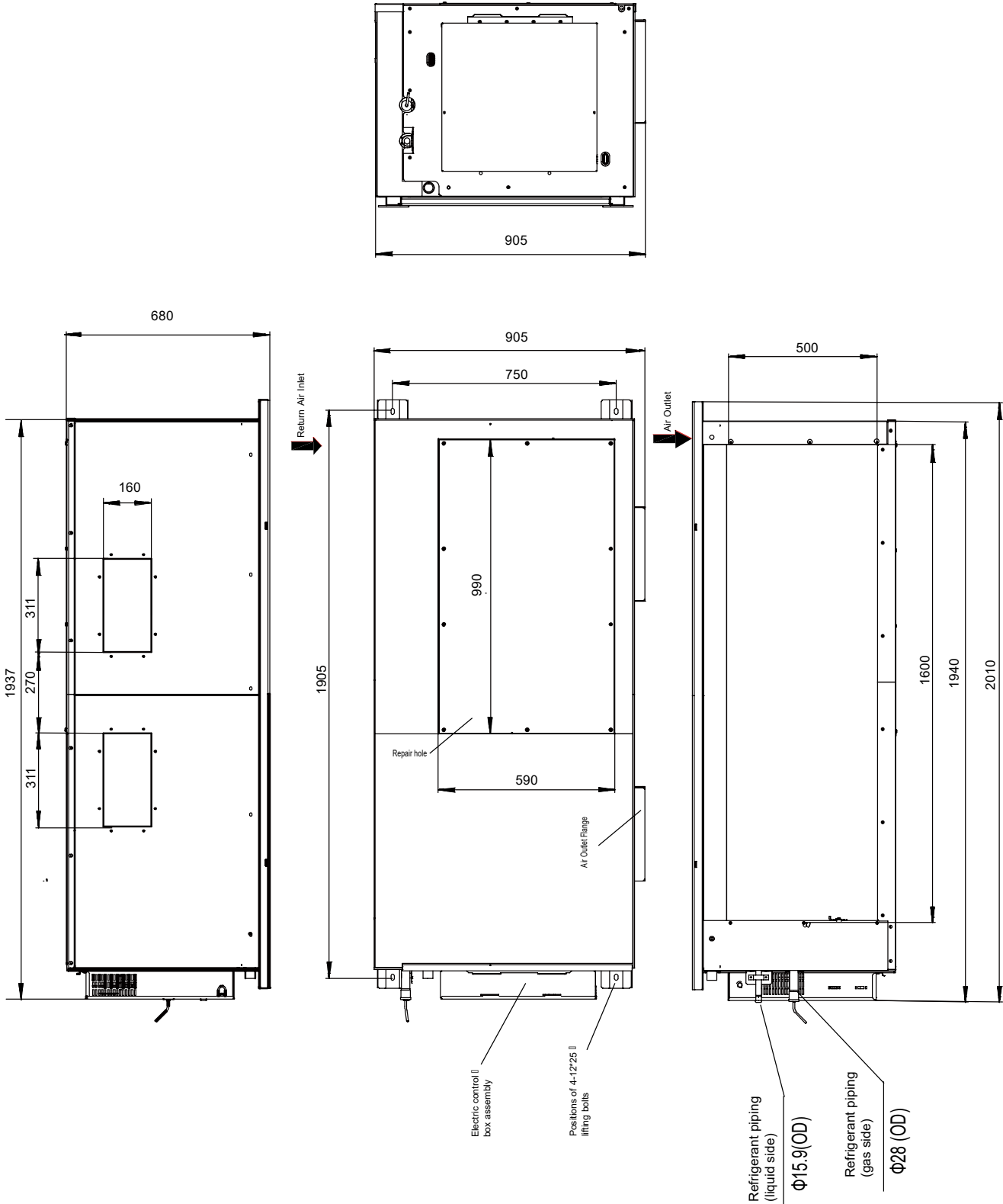
VEFA070Q0A-DCV200 / VEFA085Q0A-DCV250 / VEFA096Q0A-DCV280

Figure 2.2: VEFA-070(085,096)Q0A-DCV200(250,280) dimensions (unit: mm)



VEFA153Q0A-DCV450

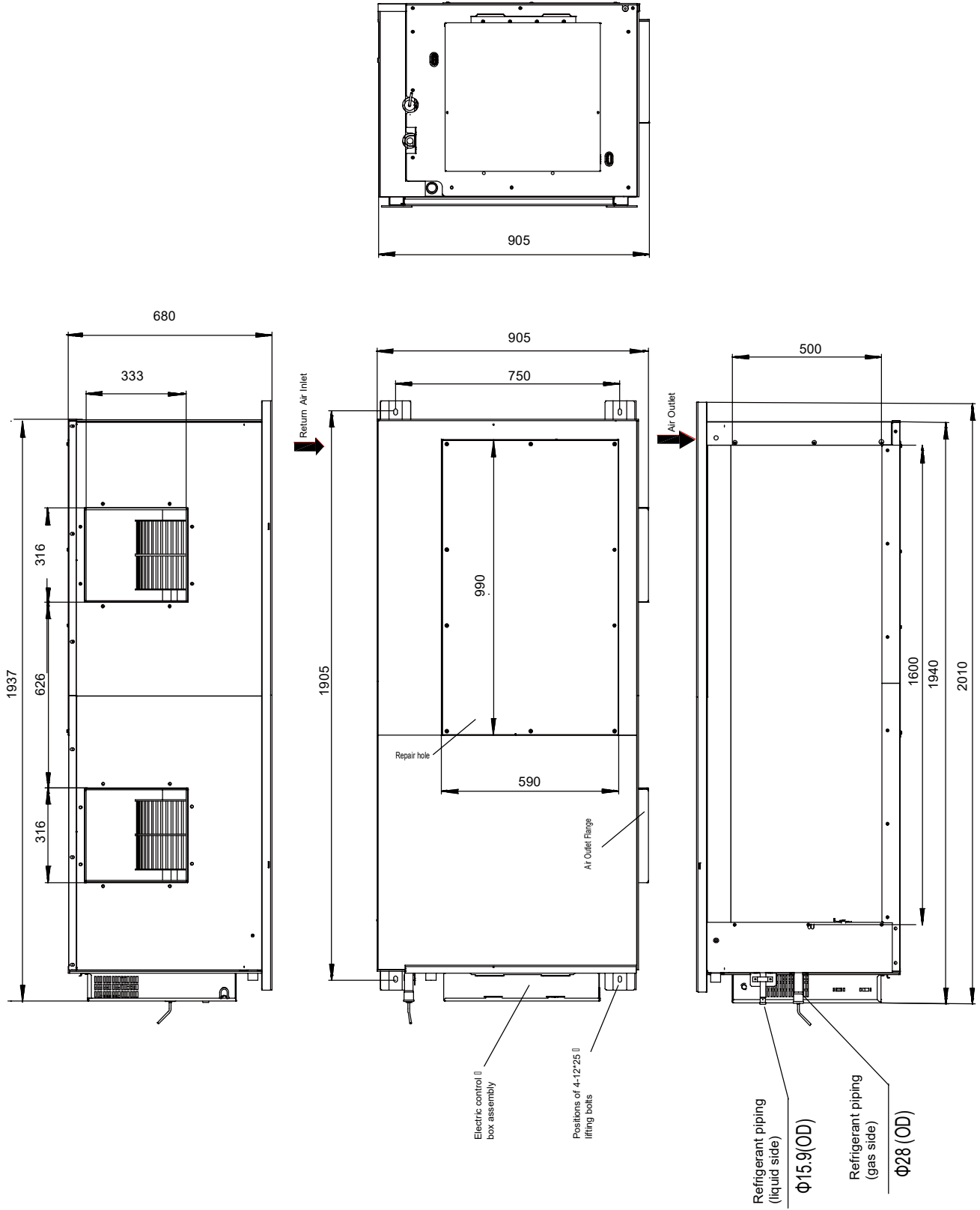
Figure 2.3: VEFA153Q0A-DCV450 dimensions (unit: mm)



VRF Indoor Units

VEFA191Q0A-DCV560

Figure 2.4: VEFA191Q0A-DCV560 dimensions (unit: mm)



3 Unit Placement

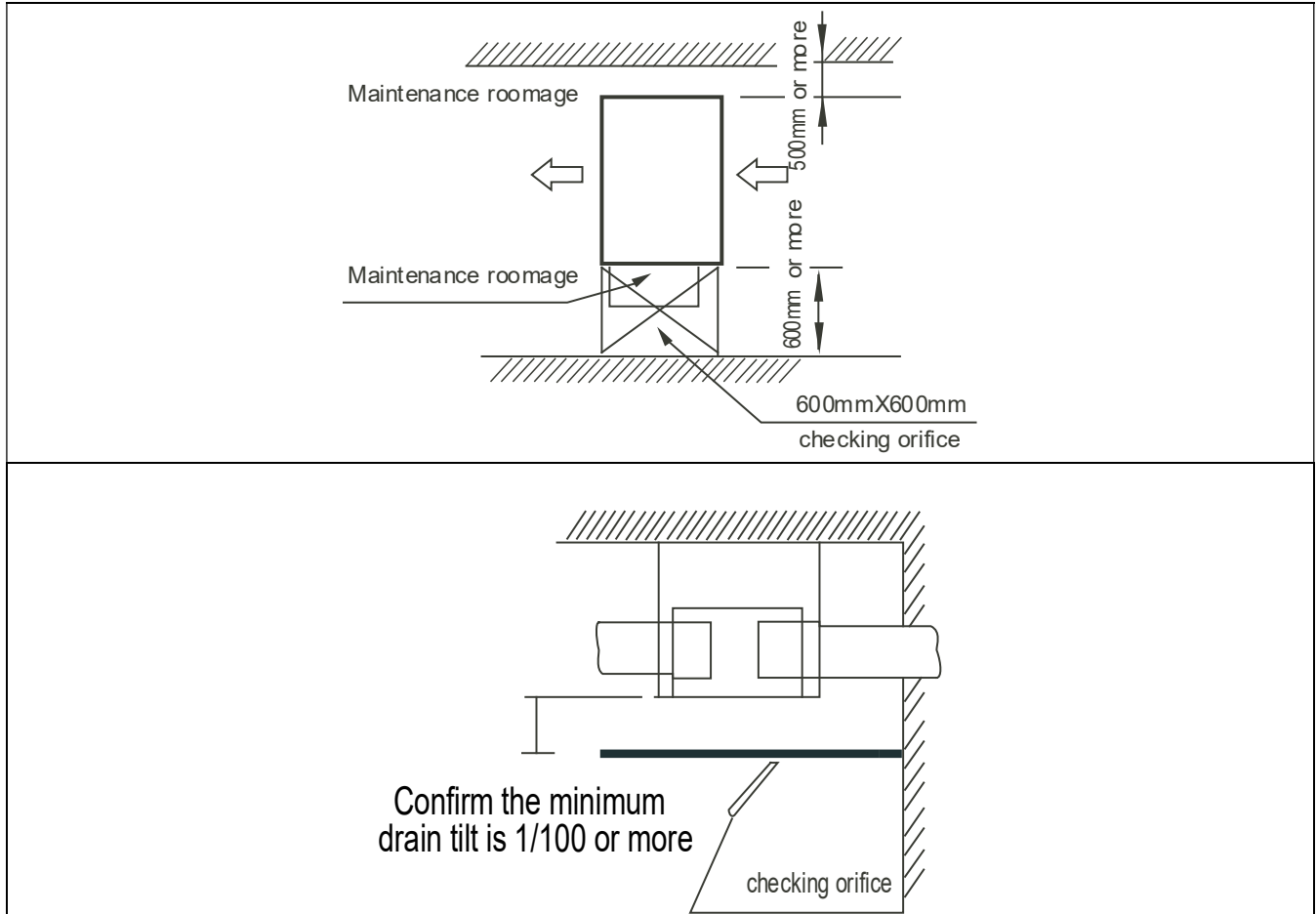
3.1 Placement Considerations

Unit placement should take into account 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 Unitspace requirements (unit: mm)

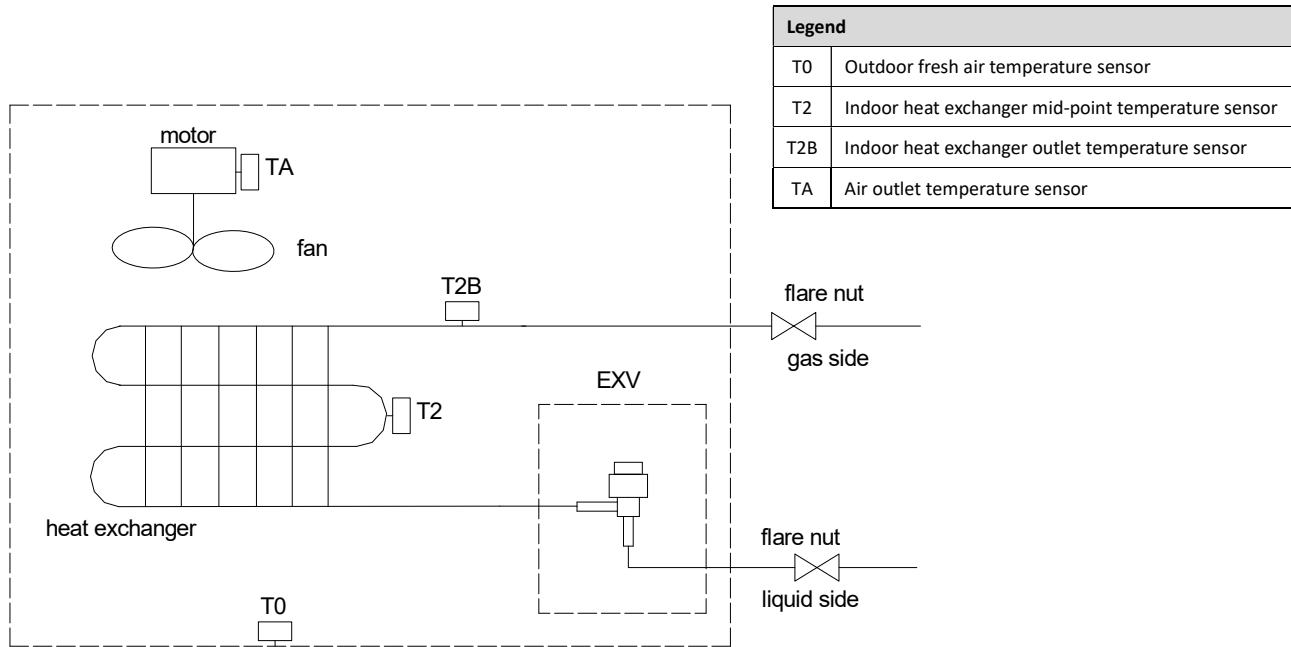


VRF Indoor Units

4 Piping Diagram

VEFA043Q0A-DCV125/VEFA048Q0A-DCV140/VEFA070Q0A-DCV200/VEFA085Q0A-DCV250/VEFA096Q0A-DCV280/VEFA153Q0A-DCV450/VEFA191Q0A-DCV560

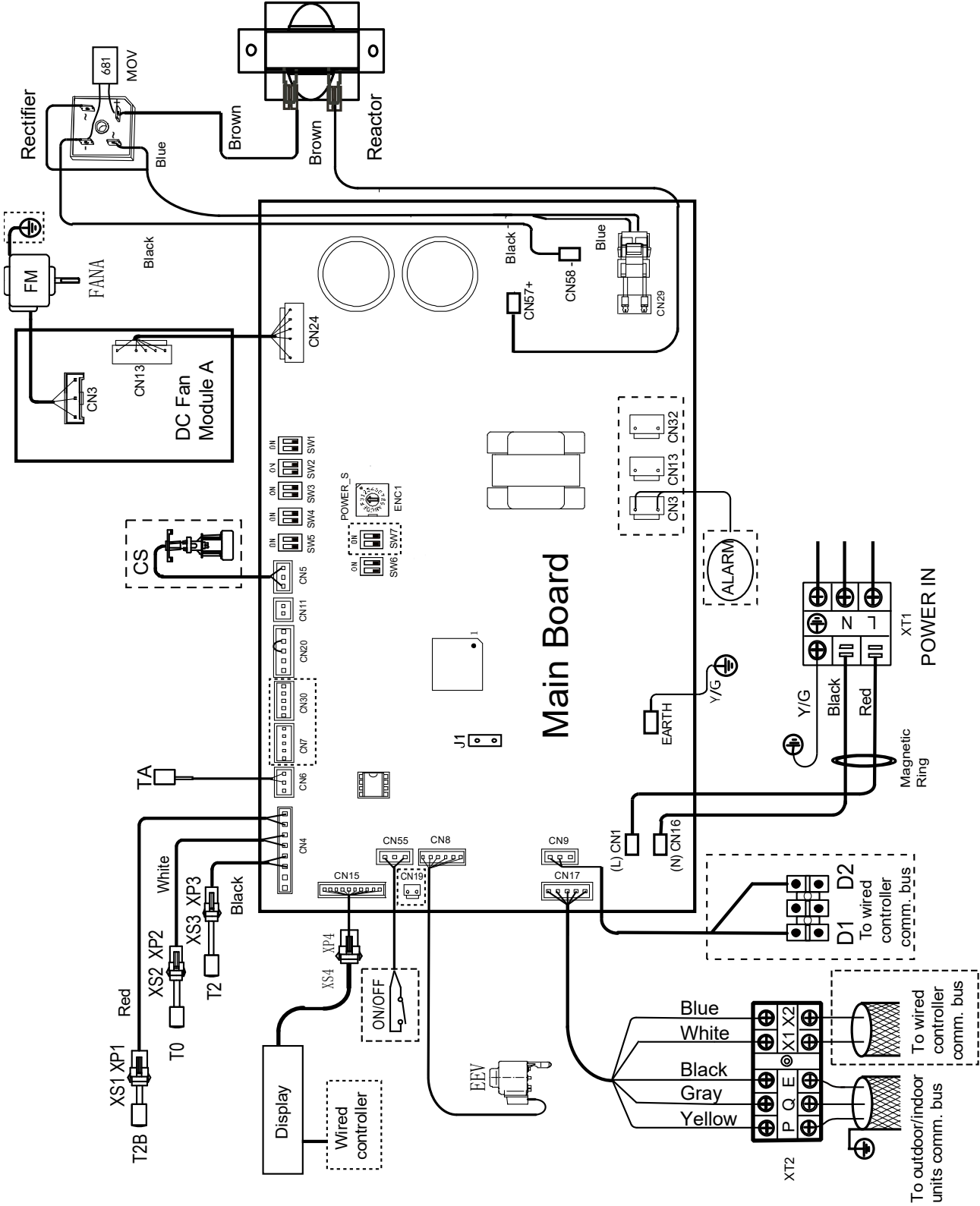
Figure 4.1: VEFA-043(048,070,085,096,153,191)Q0A-DCV125(140,200,250,280,450,560) piping diagram



5 Wiring Diagrams

VEFA043Q0A-DCV125/ VEFA048Q0A-DCV140

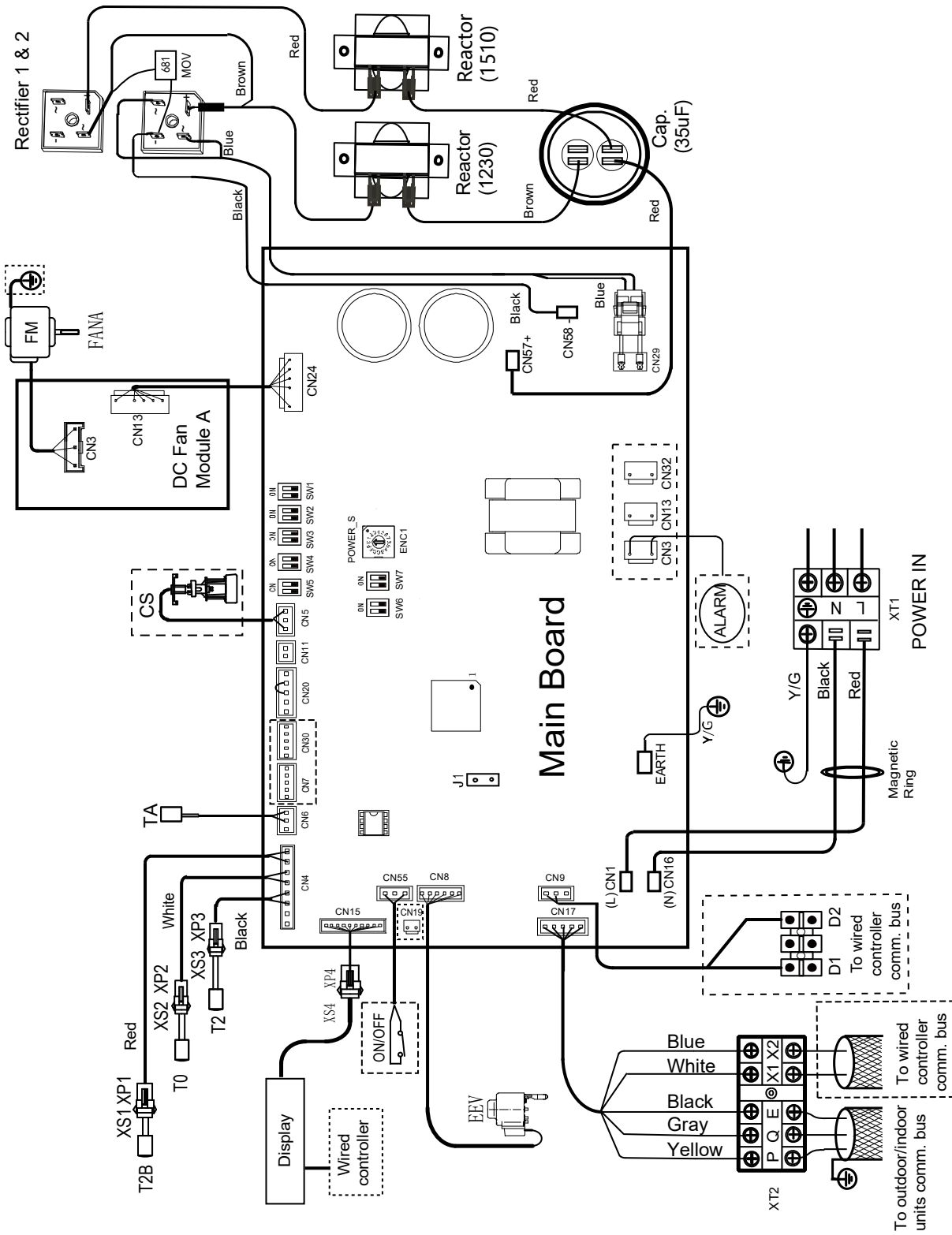
Figure 5.1: VEFA-043(048)Q0A-DCV125(140) wiring diagram



VRF Indoor Units

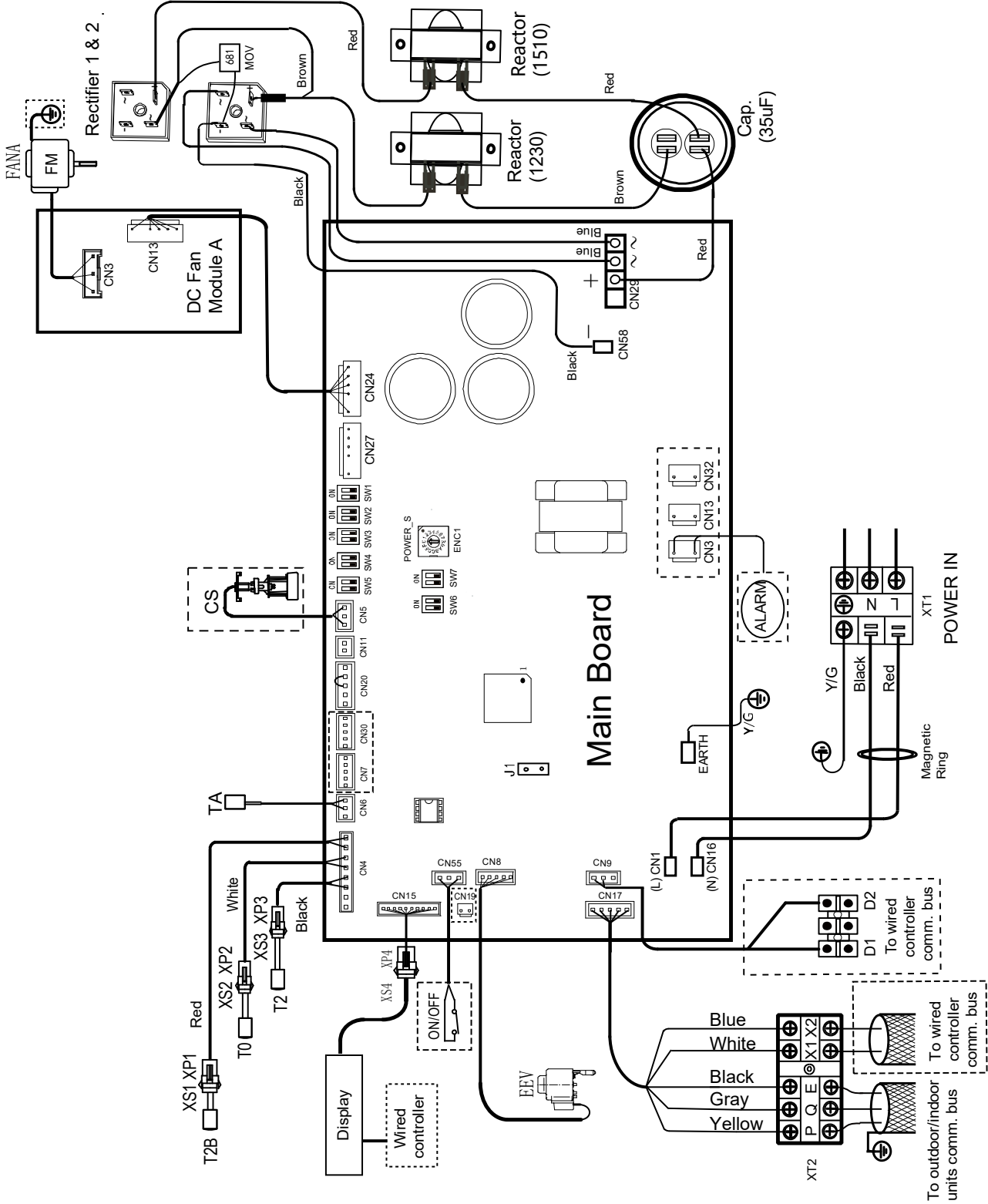
VEFA070Q0A-DCV200 / VEFA085Q0A-DCV250 / VEFA096Q0A-DCV280

Figure 5.2: VEFA-070(085,096)Q0A-DCV200(250,280) wiring diagram



VEFA153Q0A-DCV450/VEFA191Q0A-DCV560

Figure 5.3: VEFA-153(191)Q0A-DCV450(560) wiring diagram



6 Fan Performance

Figure 6.1: VEFA-043(048)Q0A-DCV125(140) fan performance

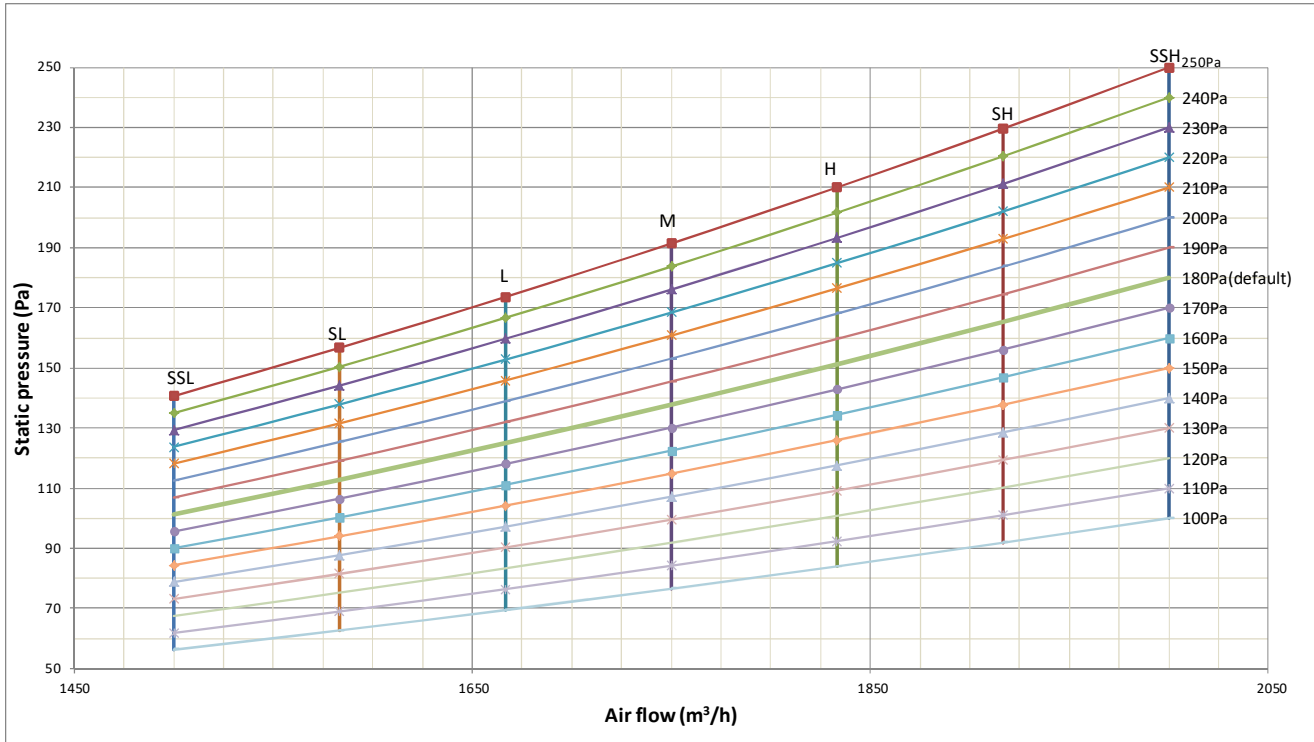
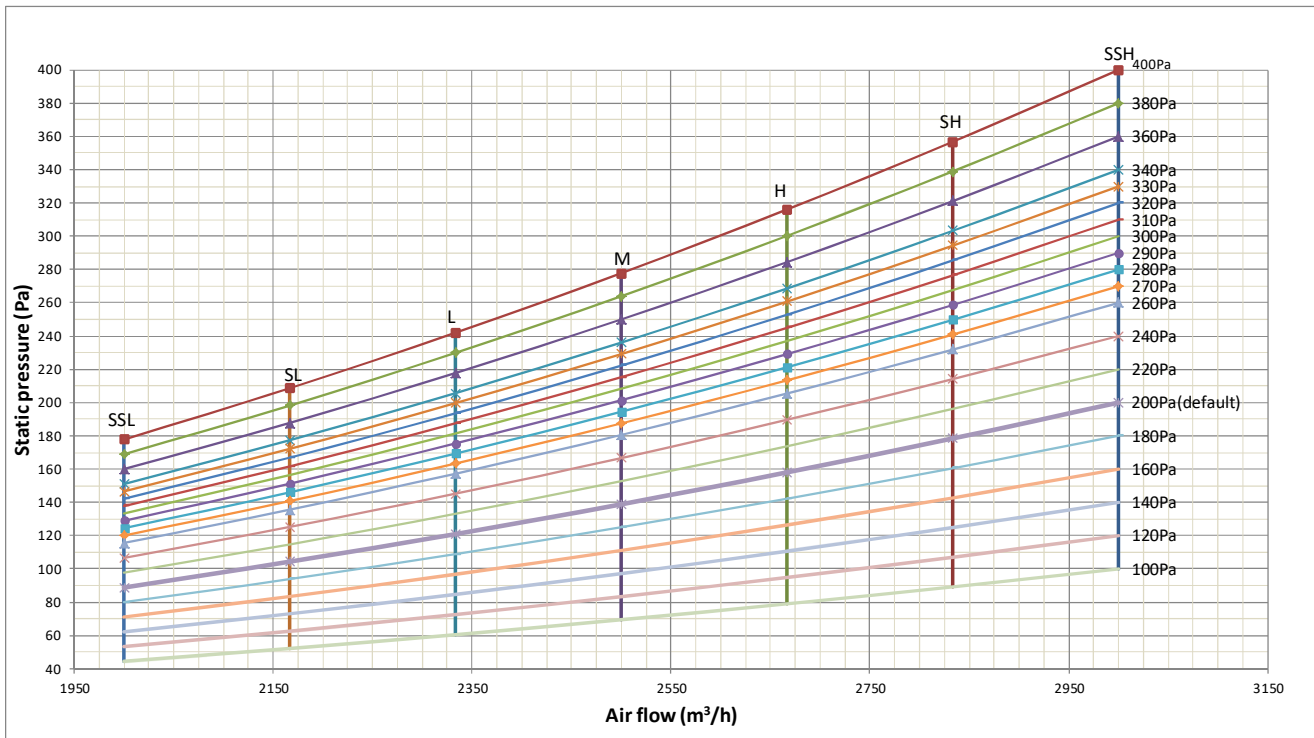


Figure 6.2: VEFA-070(085,096)Q0A-DCV200(250,280) fan performance



VRF Indoor Units

Figure 6.3: VEFA153Q0A-DCV450 fan performance

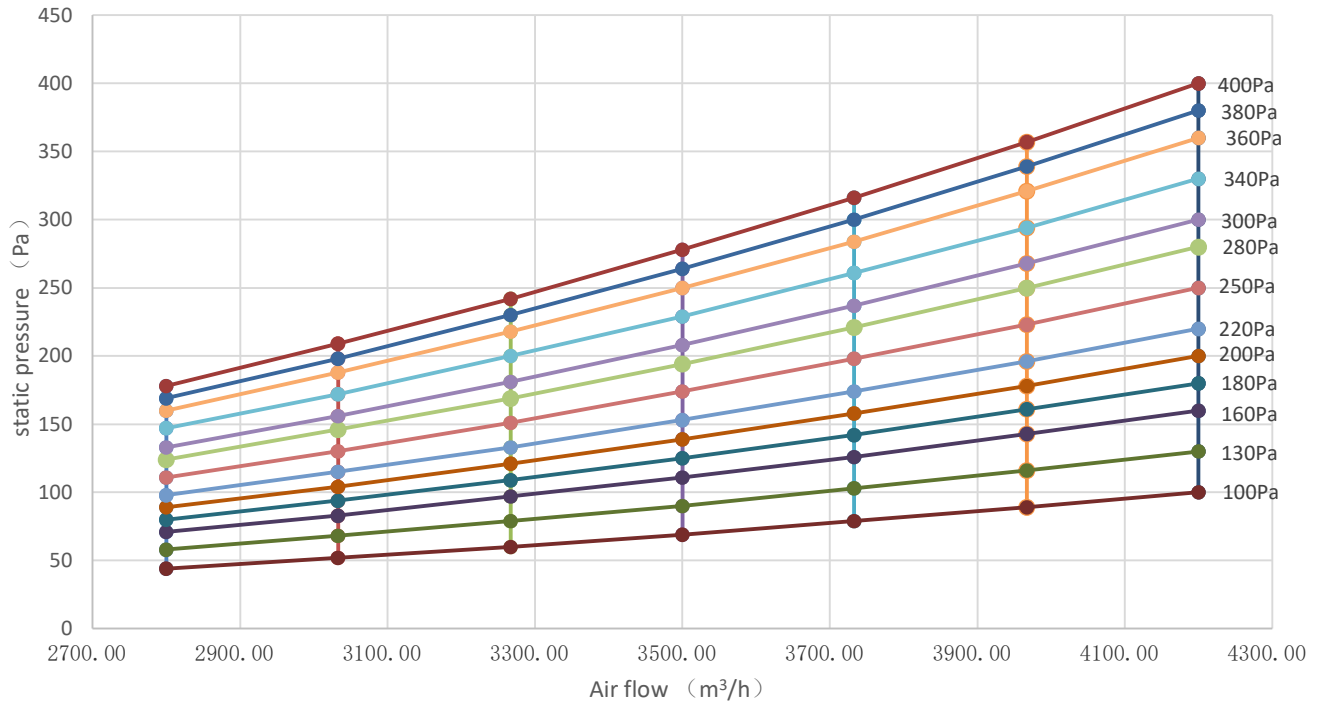
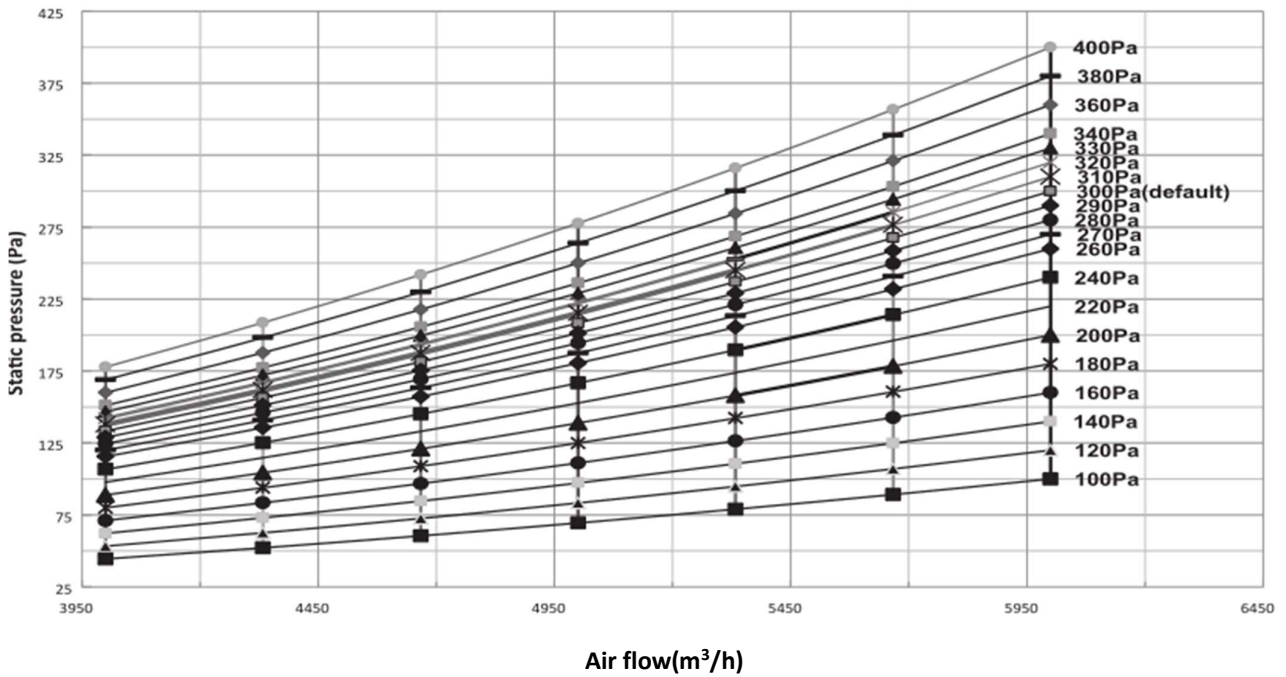


Figure 6.4: VEFA191Q0A-DCV560 fan performance



VRF Indoor Units

Table 6.1:ESP settings through DIP switch SW2

Capacity	ESP1	ESP2	ESP3	ESP4
12.5-14.0kW	150Pa	100Pa	200Pa	250Pa
20.0-28.0kW	200Pa	100Pa	300Pa	400Pa
40.0-56.0kW	300Pa	100Pa	200Pa	400Pa

Table 6.2:ESP settings through the new wired controller

Capacity	00	01	02	03	04	05	06	07	08	09
12.5-14.0kW	100Pa	110Pa	120Pa	130Pa	140Pa	150Pa	160Pa	170Pa	180Pa	190Pa
20.0-56.0kW	100Pa	120Pa	140Pa	160Pa	180Pa	200Pa	220Pa	240Pa	260Pa	270Pa
Capacity	10	11	12	13	14	15	16	17	18	19
12.5-14.0kW	200Pa	210Pa	220Pa	230Pa	240Pa	250Pa	250Pa	250Pa	250Pa	250Pa
20.0-56.0kW	280Pa	290Pa	300Pa	310Pa	320Pa	330Pa	340Pa	360Pa	380Pa	400Pa

7 Capacity Tables

7.1 Cooling Capacity 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	
		TC	TC	TC	TC	TC	TC	TC	TC	
		kW	kW	kW	kW	kW	kW	kW	kW	
12.5	20.0	5.6	6.1							
	22.0	6.3	6.9	7.5						
	25.0	6.8	7.5	8.3	8.9					
	27.0		8.0	8.8	9.5					
	29.0			9.2	10.0	10.8				
	31.0			9.6	10.5	11.3	12.0			
	33.0			9.9	10.9	11.8	12.5	13.3		
	35.0				11.1	12.2	13.1	13.8	14.4	
	38.0					12.8	13.7	14.4	15.1	
	43.0					13.4	14.3	15.0	15.8	
14.0	20.0	6.3	6.8							
	22.0	7.0	7.8	8.4						
	25.0	7.6	8.4	9.2	10.0					
	27.0		8.9	9.8	10.7					
	29.0			10.3	11.2	12.1				
	31.0			10.7	11.7	12.6	13.5			
	33.0			11.1	12.2	13.2	14.0	14.8		
	35.0				12.5	13.7	14.6	15.4	16.2	
	38.0					14.3	15.3	16.1	16.9	
	43.0					15.0	16.0	16.8	17.7	
20.0	20.0	9.0	9.7							
	22.0	10.0	11.1	12.0						
	25.0	10.8	12.0	13.2	14.3					
	27.0		12.7	14.0	15.3					
	29.0			14.7	16.0	17.3				
	31.0			15.3	16.7	18.0	19.3			
	33.0			15.8	17.4	18.8	20.0	21.2		
	35.0				17.8	19.6	20.9	22.0	23.1	
	38.0					20.5	21.8	23.0	24.1	
	43.0					21.4	22.8	24.0	25.2	
25.0	20.0	11.2	12.1							
	22.0	12.5	13.9	15.0						
	25.0	13.5	15.0	16.5	17.9					
	27.0		15.9	17.5	19.1					
	29.0			18.4	20.0	21.6				
	31.0			19.1	20.9	22.5	24.1			
	33.0			19.8	21.8	23.5	25.0	26.5		
	35.0				22.3	24.5	26.1	27.5	28.9	
	38.0					25.6	27.3	28.7	30.2	
	43.0					26.7	28.5	30.0	31.5	

Abbreviations:
TC: Total capacity

Notes:

1. Shaded cells indicate rating condition.

Table continued on next page ...

VRF Indoor Units

Table 7.1: Fresh Air Processing Unit cooling capacity (continued)

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	
		TC	TC	TC	TC	TC	TC	TC	TC	
		kW	kW	kW	kW	kW	kW	kW	kW	
28.0	20.0	12.5	13.6							
	22.0	14.0	15.5	16.8						
	25.0	15.1	16.8	18.5	20.0					
	27.0		17.8	19.6	21.4					
	29.0			20.6	22.4	24.2				
	31.0			21.4	23.4	25.2	27.0			
	33.0			22.1	24.4	26.3	28.0	29.7		
	35.0				24.9	27.4	29.3	30.8	32.3	
	38.0					28.6	30.6	32.2	33.8	
43.0					29.9	32.0	33.6	35.3		
45.0	20.0	20.1	21.9							
	22.0	22.5	24.9	27.0						
	25.0	24.3	27.0	29.7	32.1					
	27.0		28.6	31.5	34.4					
	29.0			33.1	36.0	38.9				
	31.0			34.4	37.6	40.5	43.4			
	33.0			35.5	39.2	42.3	45	47.7		
	35.0				40.0	44.0	47.1	49.5	51.9	
	38.0					46.0	49.2	51.8	54.3	
43.0					48.1	51.4	54.0	56.7		
56.0	20.0	25.0	27.2							
	22.0	28.0	31.0	33.6						
	25.0	30.2	33.6	37.0	40.0					
	27.0		35.6	39.2	42.8					
	29.0			41.2	44.8	48.4				
	31.0			42.8	46.8	50.4	54.0			
	33.0			44.2	48.8	52.6	56	59.4		
	35.0				49.8	54.8	58.6	61.6	64.6	
	38.0					57.2	61.2	64.4	67.6	
43.0					59.8	64.0	67.2	70.6		

Abbreviations:
TC: Total capacity

Notes:
Shaded cells indicate rating condition.

7.2 Heating Capacity Table

Table 7.2: Fresh Air Processing Unit heating capacity

Capacity (kW)	Outdoor air temperature (°C DB)	Outdoor air temperature (°C WB)									
		-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	
		kW	kW	kW	kW	kW	kW	kW	kW	kW	
12.5	-5.0	8.9	8.7								
	0.0			10.5							
	3.0			11.1	10.9	9.8					
	7.0					12.1	12.0	11.8			
	11.0						13.7	13.5	13.4		
	15.0							15.8	15.6	15.4	
14.0	-5.0	10.2	10.0								
	0.0			12.0							
	3.0			12.7	12.5	11.2					
	7.0					13.8	13.7	13.5			
	11.0						15.6	15.4	15.3		
	15.0							18.0	17.8	17.6	
20.0	-5.0	10.8	10.6								
	0.0			12.8							
	3.0			13.6	13.3	11.9					
	7.0					14.7	14.6	14.4			
	11.0						16.6	16.5	16.3		
	15.0							19.2	19.0	18.8	
25.0	-5.0	13.5	13.3								
	0.0			16.0							
	3.0			17.0	16.6	15.0					
	7.0					18.4	18.2	18.0			
	11.0						20.8	20.6	20.4		
	15.0							24.0	23.8	23.5	
28.0	-5.0	15.2	15.0								
	0.0			18.0							
	3.0			19.1	18.7	16.9					
	7.0					20.7	20.5	20.3			
	11.0						23.4	23.2	22.9		
	15.0							27.0	26.8	26.4	
45	-5.0	23.5	23.1								
	0.0			27.8							
	3.0			29.4	28.9	26.0					
	7.0					32.0	31.6	31.3			
	11.0						36.1	35.8	35.4		
	15.0							41.7	41.3	40.8	
56	-5.0	33.0	32.4								
	0.0			39.0							
	3.0			41.3	40.6	36.5					
	7.0					44.9	44.3	44.0			
	11.0						50.7	50.2	49.6		
	15.0							58.5	58.0	57.3	

Abbreviations:

TC: Total capacity

Notes:

Shaded cells indicate rating condition.

VRF Indoor Units

8 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
VEFA043Q0A-DCV125	50/60	220-240	198	264	3.5	15	0.31	2.8
VEFA048Q0A-DCV140	50/60	220-240	198	264	3.5	15	0.34	2.8
VEFA070Q0A-DCV200	50/60	220-240	198	264	5.2	15	0.80	4.1
VEFA085Q0A-DCV250	50/60	220-240	198	264	5.2	15	0.96	4.1
VEFA096Q0A-DCV280	50/60	220-240	198	264	5.2	15	0.96	4.1
VEFA153Q0A-DCV450	50/60	220-240	198	264	6.6	30	0.92	4.1
VEFA191Q0A-DCV560	50/60	220-240	198	264	14.5	30	1.84	11.6

Abbreviations:

MCA: Minimum Circuit Amps

MFA: Maximum Fuse Amps

FLA: Full Load Amps

9 Sound Levels

9.1 Overall

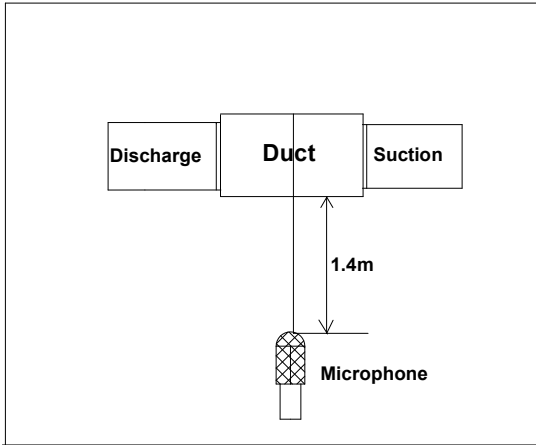
Table 9.1: Fresh Air Processing Unit sound pressure levels¹

Model name	Sound pressure levelsdB(A)						
	SSH	SH	H	M	L	SL	SSL
VEFA043Q0A-DCV125	48	47	46	45	44	43	42
VEFA048Q0A-DCV140	48	47	46	45	44	43	42
VEFA070Q0A-DCV200	50	49	48	47	46	44	43
VEFA085Q0A-DCV250	50	49	48	47	46	44	43
VEFA096Q0A-DCV280	50	49	48	47	46	44	43
VEFA153Q0A-DCV450	58	56	55	53	51	49	48
VEFA191Q0A-DCV560	59	58	57	56	55	53	51

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: VEFA-043(048)Q0A-DCV125(140) octave band levels

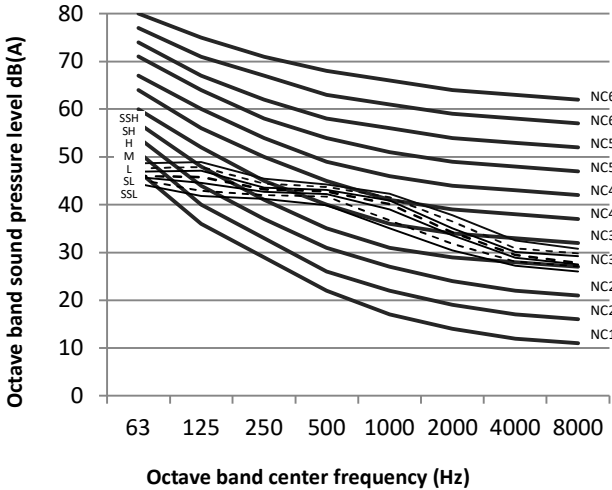


Figure 9.3: VEFA-070(085,096)Q0A-DCV200(250,280) octave band levels

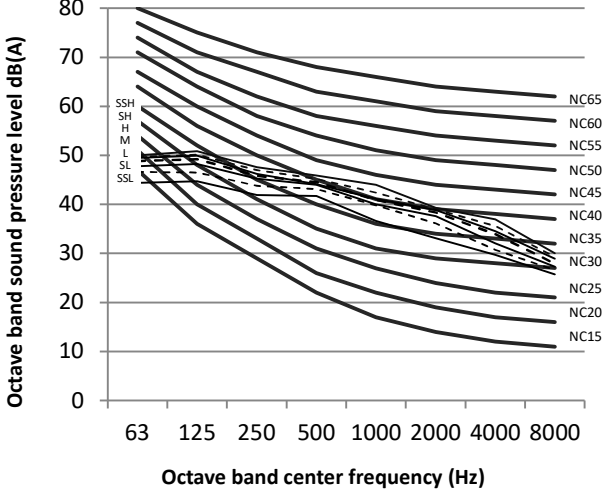


Figure 9.4: VEFA153Q0A-DCV450 octave band levels

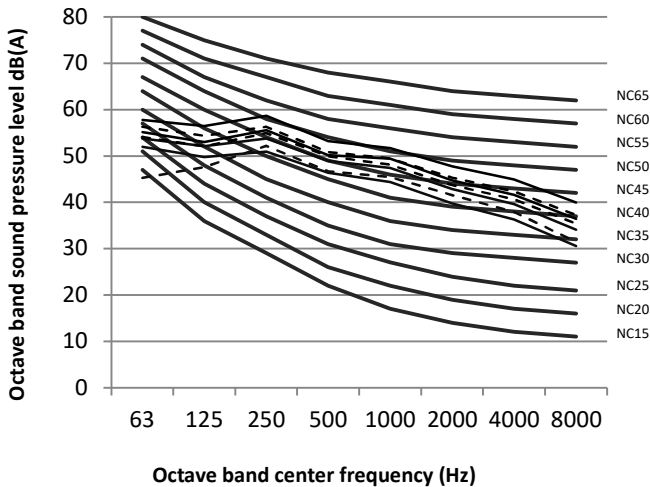
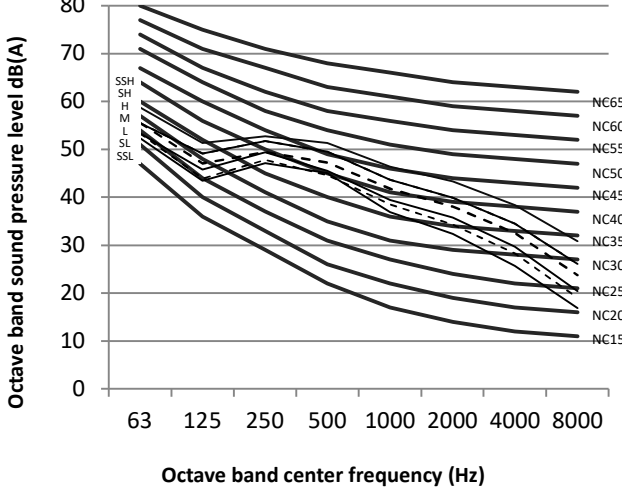


Figure 9.5: VEFA191Q0A-DCV560 octave band levels





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