BEMP (HP) Series

Medium Static Pressure Duct VRF Indoor Unit

Technical Manual

220-240V/1/50-60Hz

Medium Static Pressure Duct

BEMP028N0A-DCV080

BEMP031N0A-DCV090

BEMP038N0A-DCV112

BEMP042N0A-DCV125

BEMP048N0A-DCV140

BEHP060N0A-DCV160

1 Specifications

Table 1.1: BEMP028 *(031,038) specifications*

Model			BEMP028N0A-DCV080	BEMP031N0A-DCV090	BEMP038N0A-DCV112
Power supply			1-phase, 220-240V, 50/60Hz		
Cooling[1]	Capacity	kW	8	9	11.2
		kBtu/h	27.3	30.7	38.2
	Power input	W	106	108	115
Heating[2]	Capacity	kW	9	10	12.5
		kBtu/h	30.7	34.1	42.7
	Power input	W	106	108	115
Fan motor type			DC		
Indoor coil	Number of rows		2	2	3
	Tube pitch	mm	18×10.72		
	Fin spacing and type	mm	1.35 Hydrophilic aluminum		
	Tube OD and type	mm	Φ5 Inner-groove		
	Dimensions (L×H×W)	mm	850×21.44×360	850×21.44×360	1200×32.16×360
	Number of circuits		10	10	10
Air flow rate[3]		m^3/h	1457/1344/1233/1121/ 1088/896/785	1585/1465/1348/1231/ 1113/996/878	1656/1536/1418/1300 /1180/1062/945
External static pressure[4]		Pa	40 (10-160)	40 (10-160)	40 (10-160)
Sound pressure level[5]		dB(A)	38/36/34/33/31/29/28	40/38/36/34/32/30/28	41/39/37/35/33/31/29
Unit	Net dimensions[6] (W×H×D)	mm	1050×245×750	1050×245×750	1050×245×750
	Packed dimensions (W×H×D)	mm	1215×305×885	1215×305×885	1215×305×885
	Net/Gross weight	kg	30/33	30/33	31/34.5
Refrigerant type			R410A		
Throttle type			Electronic expansion valve		
Design pressure (H/L)		MPa	4.4/2.6		
Pipe connections	Liquid/Gas pipe	mm	Φ9.52/Φ15.9		
	Drain pipe	mm	OD Φ25		

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 speed to the lowest speed, total 7 rates for each model.
4. 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.)
5. Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured 1.5m below the unit in an anechoic chamber.
6. 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.
7. All specifications are measured at standard external static pressure
8. G1 air filter is standard for Medium Static Pressure Duct.

Table 1.2: BEMP042 *(048,060) specifications*

Model			**BEMP042N0A-DCV125**	**BEMP048N0A-DCV140**	**BEHP060N0A-DCV160**
Power supply			1-phase, 220-240V, 50/60Hz		
Cooling[1]	Capacity	kW	12.5	14	16
		kBtu/h	42.7	47.8	54.6
	Power input	W	170	172	210
Heating[2]	Capacity	kW	14	16	18
		kBtu/h	47.8	54.6	61.4
	Power input	W	170	172	210
Fan motor type			DC		
Indoor coil	Number of rows		2	3	3
	Tube pitch	mm	18×10.72		
	Fin spacing and type	mm	1.35 Hydrophilic aluminum		
	Tube OD and type	mm	Φ5 Inner-groove		
	Dimensions (L×H×W)	mm	1200×32.16×360	1200×32.16×360	1200×32.16×360
	Number of circuits		10		
Air flow rate[3]		m^3/h	2177/2020/1866/1711/ 1554/1400/1246	2098/1948/1798/1649/ 1499/1349/1199	2350/2160/2015/1871/ 1776/1533/1400
External static pressure[4]		Pa	50 (10-160)		
Sound pressure level[5]		dB(A)	44/42/40/38/36/34/32	42/40/38/36/34/32/31	42/40/38/36/34/33/31
Unit	Net dimensions[6] (W×H×D)	mm	1400×245×750	1400×245×750	1400×245×750
	Packed dimensions (W×H×D)	mm	1565×305×885	1565×305×885	1565×305×885
	Net/Gross weight	kg	37/41	37/41	37/41
Refrigerant type			R410A		
Throttle type			Electronic expansion valve		
Design pressure (H/L)		MPa	4.4/2.6		
Pipe connections	Liquid/Gas pipe	mm	Φ9.52/Φ15.9		
	Drain pipe	mm	OD Φ25		

Notes:

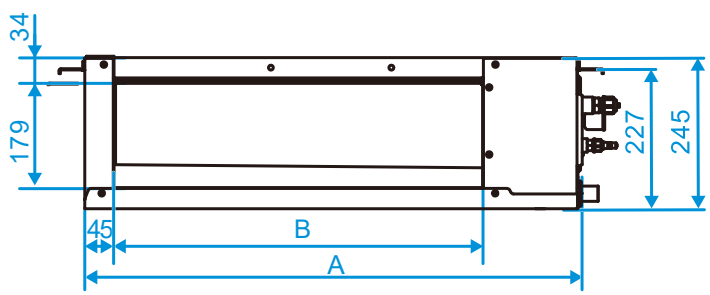
1. Indoor temperature 27°C DB, 19°C WB; outdoor temperature 35°C DB; equivalent refrigerant piping length 7.5m with zero level difference
2. Indoor temperature 20°C DB; outdoor temperature 7°C DB, 6°C WB; equivalent refrigerant piping length 7.5m with zero level difference.
3. Fan motor speed and air flow rate are from the highest speed to the lowest speed, total 7 rates for each model.
4. 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.)
5. Sound pressure level is from highest level to lowest level, total 7 levels for each model. Sound pressure level is measured 1.5m below the unit in an anechoic chamber.
6. 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.
7. All specifications are measured at standard external static pressure
8. G1 air filter is standard for Medium Static Pressure Duct.

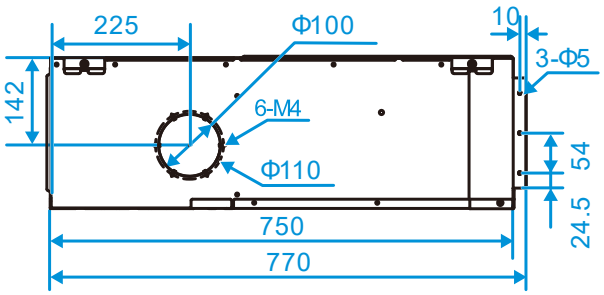
2 Dimensions

2.1 Unit Dimensions

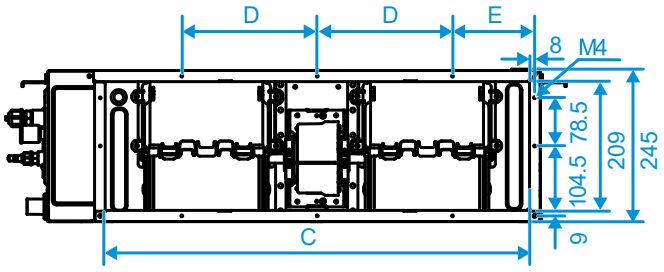
28 ≤ kBtu/h ≤ 48 :

External dimension, air outlet size, and size of fresh air outlet:

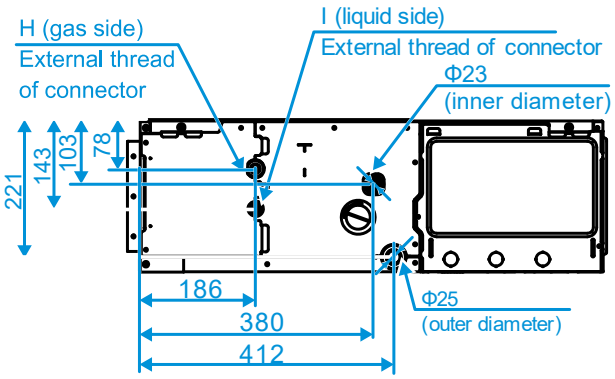




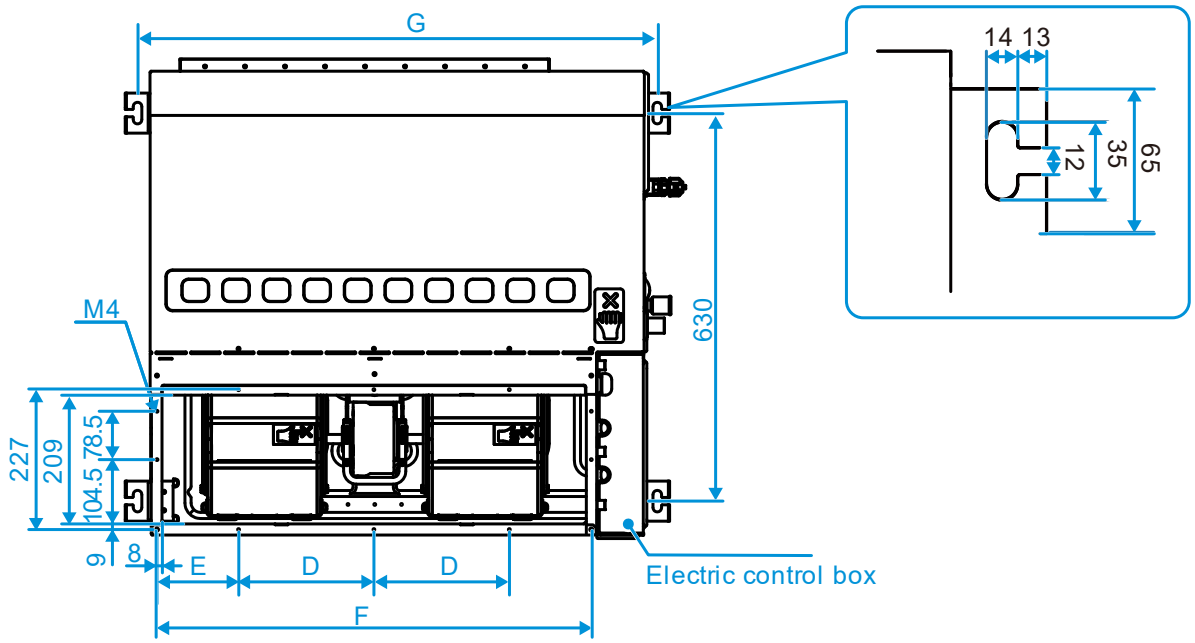
Size of return air inlet (back return air mode):



Dimension of pipe and w ater pipe:



Size of return air inlet (bottom return air mode), and the distance betw een the lugs:



Capacity (kBtu/h)	A	B	C	D	E	F	G	H	I
28 ≤ kBtu/h ≤ 40	1 050	850	940	220	146	956	1 095	7/8-14 UNF	5/8-18 UNF
42 ≤ kBtu/h ≤ 48	1 400	1 200	1 290	220	213	1 306	1 445	7/8-14 UNF	5/8-18 UNF

3 Unit Placement

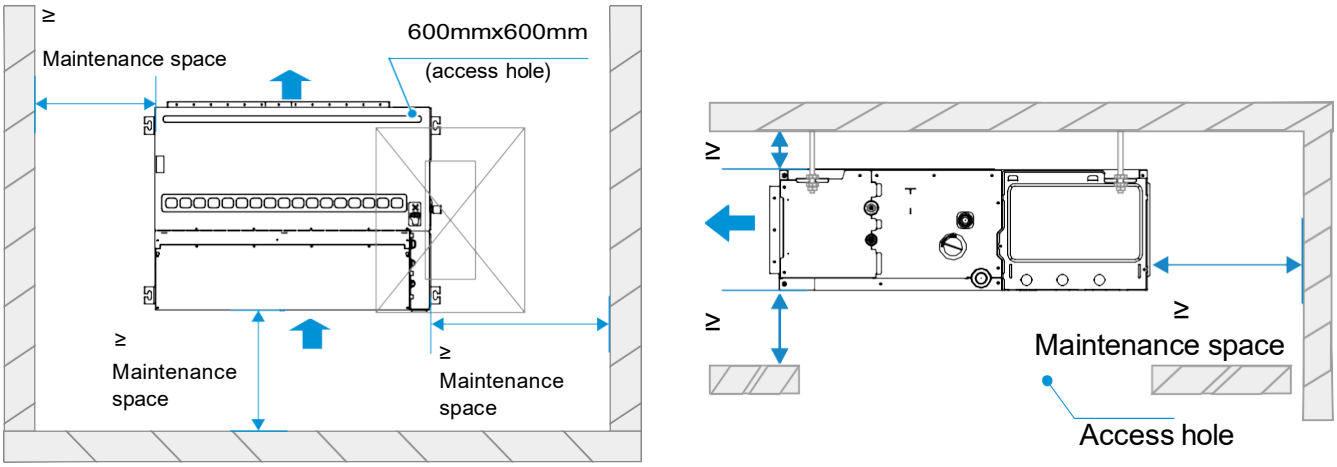
3.1 Placement Considerations

Unit placement should take account of the following considerations:

- Units should not be installed in the following locations:
  - A place filled with mineral oil, fumes or mist, like a kitchen.
  - A place where there are corrosive gases, such as acid or alkaline gases.
  - A place exposed to combustible gases and using volatile combustible gases such as diluent or gasoline.
  - A place where there is equipment emitting electromagnetic radiation.
  - A place where there is a high salt content in the air like a coast.
  - Do not use the air conditioner in an environment where an explosion may occur.
  - Places like in vehicles or cabin rooms.
  - Factories with major voltage fluctuations in the power supplies.
  - Other special environmental conditions.
- Units should be installed in positions where:
  - Ensure that the airflow in and out of the IDU is reasonably organized to form an air circulation in the room.
  - Ensure IDU maintenance space.
  - The nearer the drainage pipe and copper pipe are to the ODU, the lower the pipe cost is.
  - Prevent the air conditioner from blowing directly to the human body.
  - The closer the wiring to the power cabinet, the lower the wiring cost is.
  - Keep the air-conditioning return air away from the setting sun of the room.
  - Be careful not to interfere with the light tank, fire pipe, gas pipe and other facilities.
  - The IDU should not be lifted in the places like load-bearing beam and columns that affect the structural safety of the house.
  - The wired controller and the IDU should be in the same installation space; otherwise, the sampling point setting of the wired controller need to be changed.

3.2 Space Requirements

Figure 3.1: Medium Static Pressure Duct space requirements (unit: mm)

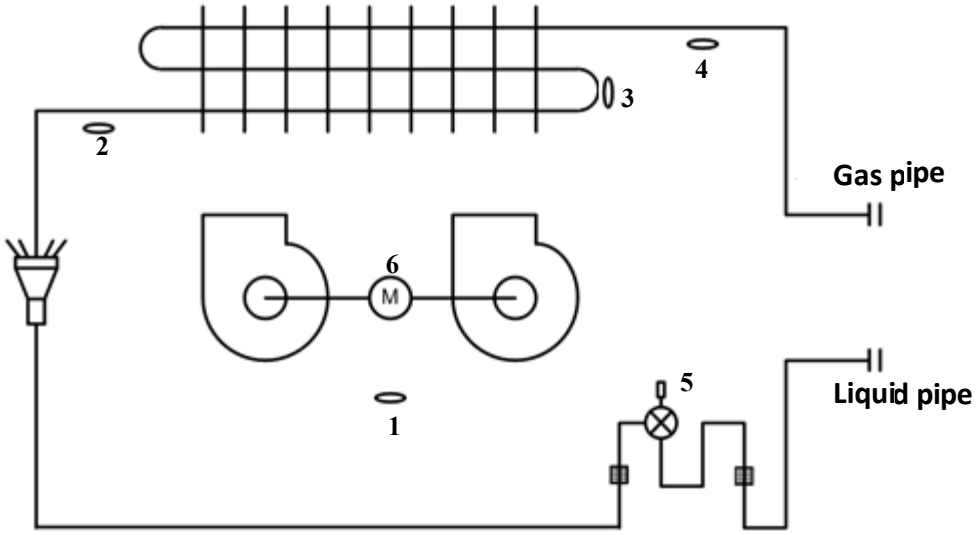


Notes:

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

4 Piping Diagram

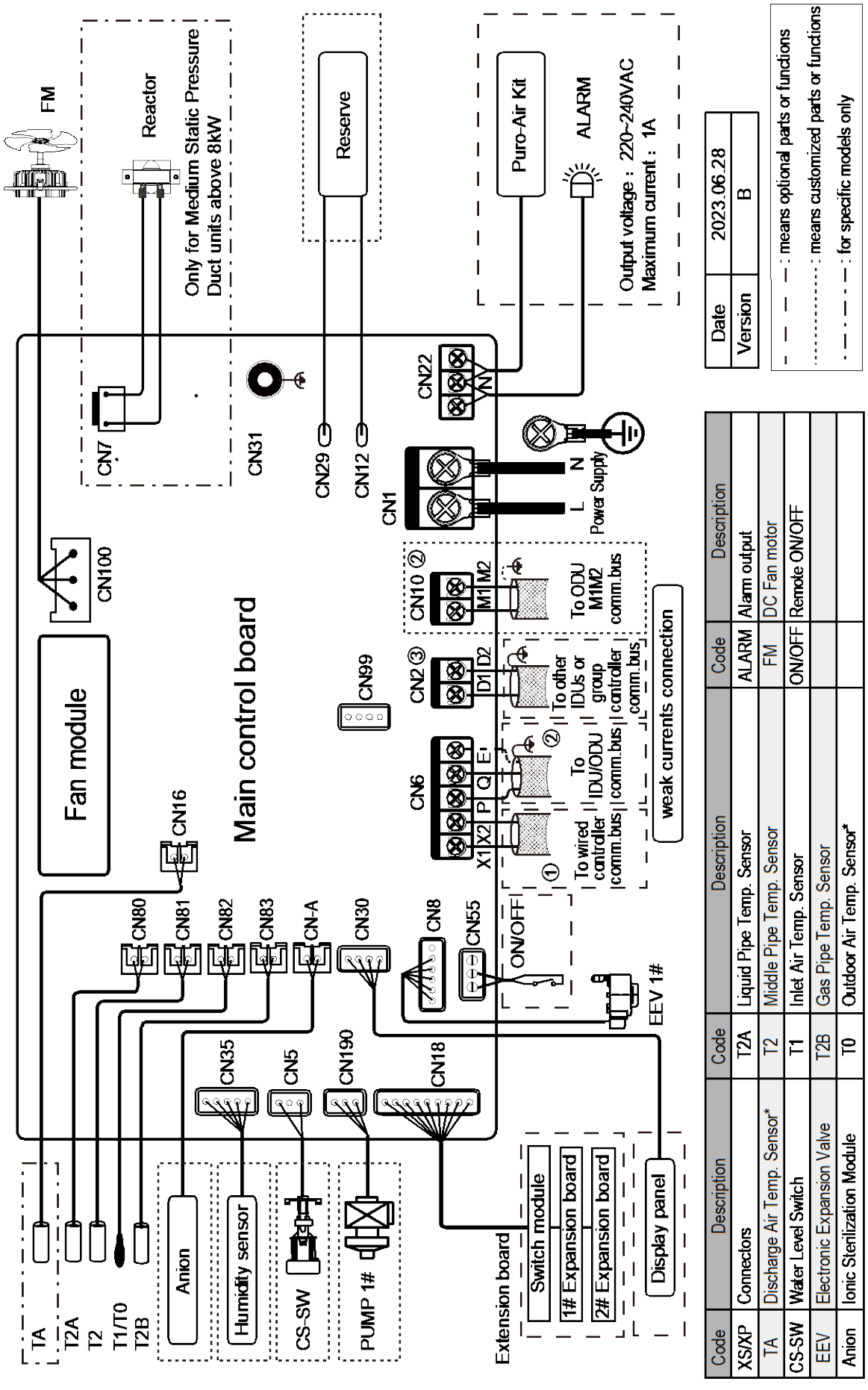
Figure 4.1: Medium Static Pressure Duct piping diagram



Legend	Code	Description
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: Medium Static Pressure Duct wiring diagram



Code	Description
XS/XP	Connectors
TA	Discharge Air Temp. Sensor*
CS-SW	Water Level Switch
EEV	Electronic Expansion Valve
Anion	Ionic Sterilization Module

Code	Description
T2A	Liquid Pipe Temp. Sensor
T2	Middle Pipe Temp. Sensor
T1	Inlet Air Temp. Sensor
T2B	Gas Pipe Temp. Sensor
T0	Outdoor Air Temp. Sensor*

Code	Description
ALARM	Alarm output
FM	DC Fan motor
ON/OFF	Remote ON/OFF

Date	2023.06.28
Version	B

- – – – : means optional parts or functions
- ..... : means customized parts or functions
- – – · – – : for specific models only

* 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: Medium Static Pressure Duct cooling capacity

Model	Indoor air temperature (°C WB/DB)													
	14/20		16/23		18/26		19/27		20/28		22/30		24/32	
	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC	TC	SHC
BEMP028N0A-DCV080	7.1	7.0	7.6	7.0	7.9	6.9	8.0	6.6	8.1	6.4	8.3	6.1	8.5	5.8
BEMP031N0A-DCV090	8.0	7.9	8.5	7.9	8.9	7.8	9.0	7.5	9.1	7.2	9.4	6.9	9.6	6.6
BEMP038N0A-DCV112	9.9	9.5	10.6	9.5	11.1	9.5	11.2	9.1	11.3	8.8	11.6	8.4	11.9	8.1
BEMP042N0A-DCV125	11.1	10.9	11.8	10.9	12.4	10.8	12.5	10.4	12.7	10.1	13.0	9.5	13.3	9.1
BEMP048N0A-DCV140	12.4	11.9	13.2	11.9	13.8	11.8	14.0	11.4	14.2	11.1	14.5	10.5	14.9	10.1
BEHP060N0A-DCV160	14.2	13.6	15.1	13.6	15.8	13.5	16.0	13.0	16.2	12.7	16.6	12.0	17.0	11.5

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

Notes:
1.Shaded cells indicate rating condition.

6.2 Heating Capacity Table

Table 6.2: Medium Static Pressure Duct heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	SHC	SHC	SHC	SHC	SHC	SHC
BEMP028N0A-DCV080	9.5	9.5	9.0	8.7	8.5	7.8
BEMP031N0A-DCV090	10.6	10.5	10.0	9.7	9.4	8.8
BEMP038N0A-DCV112	13.3	13.1	12.5	12.1	11.8	10.9
BEMP042N0A-DCV125	15.9	15.7	15.0	14.6	14.1	13.1
BEMP048N0A-DCV140	17.0	16.8	16.0	15.5	15.0	13.9
BEHP060N0A-DCV160	18.0	17.9	17.0	16.5	16.0	14.8

Abbreviations:
SHC: Sensible Heat Capacity

Notes:
1.Shaded cells indicate rating condition.

7 Electrical Characteristics

Model name	Power supply						Indoor Fan Motor
	Hz	Volts	Min. volts	Max. volts	MCA	MFA	Rated power output (W)
BEMP028N0A-DCV080	50/60	220-240	198	264	1.50	15	240
BEMP031N0A-DCV090	50/60	220-240	198	264	1.63	15	240
BEMP038N0A-DCV112	50/60	220-240	198	264	2.29	15	240
BEMP042N0A-DCV125	50/60	220-240	198	264	2.29	15	240
BEMP048N0A-DCV140	50/60	220-240	198	264	2.31	15	240
BEHP060N0A-DCV160	50/60	220-240	198	264	2.76	15	240

8 Sound Levels

8.1 Overall

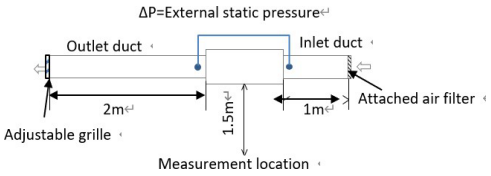
Table 8.1: Medium Static Pressure Duct sound pressure levels[1]

Model name	Sound pressure levels dB						
	SSH	SH	H	M	L	SL	SSL
BEMP028N0A-DCV080	38	36	34	33	31	29	28
BEMP031N0A-DCV090	40	38	36	34	32	30	28
BEMP038N0A-DCV112	41	39	37	35	33	31	29
BEMP042N0A-DCV125	44	42	40	38	36	34	32
BEMP048N0A-DCV140	42	40	38	36	34	32	31
BEHP060N0A-DCV160	42	40	38	36	34	33	31

Notes:

1. The sound pressure level is measured in an anechoic chamber at a distance of 1.5m below the unit, under the default static pressure setting at the factory. During on-site operation, the sound pressure level may be higher due to the influence of environmental noise

Figure 8.2: Medium Static Pressure Duc sound pressure level measurement



Connected to a top-discharge outdoor unit and measured in anechoic room. Adjusting the outlet grille to make the ΔP is equal to the rated static pressure, the data was recorded at 1.5m below the unit.

8.2 Octave Band Levels

Figure 8.9: BEMP028N0A-DCV080 octave band levels

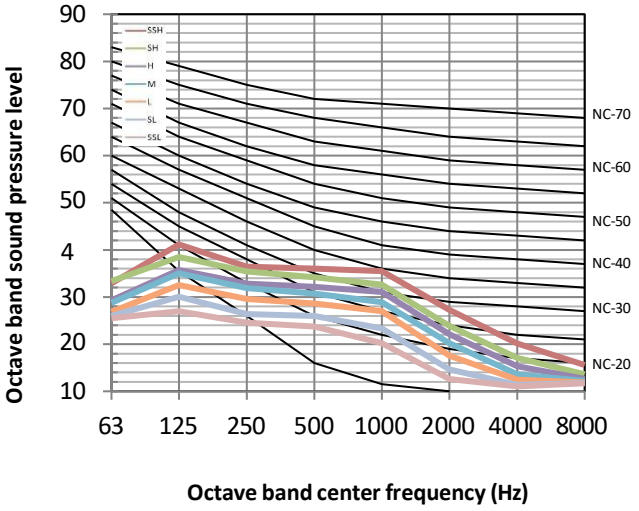


Figure 8.10: BEMP031N0A-DCV090 octave band levels

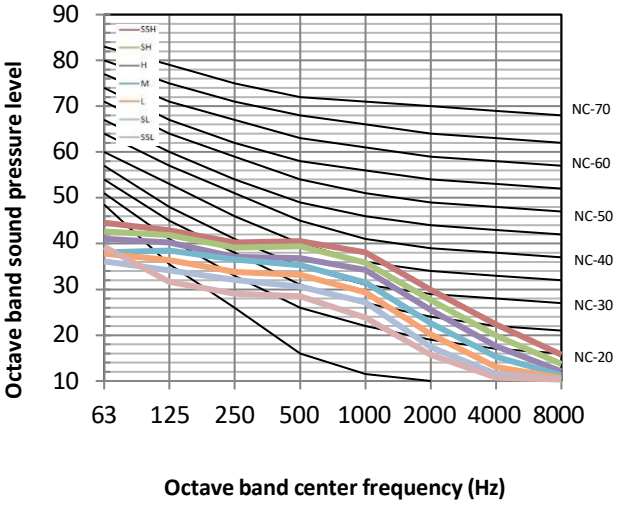


Figure 8.11: BEMP038N0A-DCV112 octave band levels

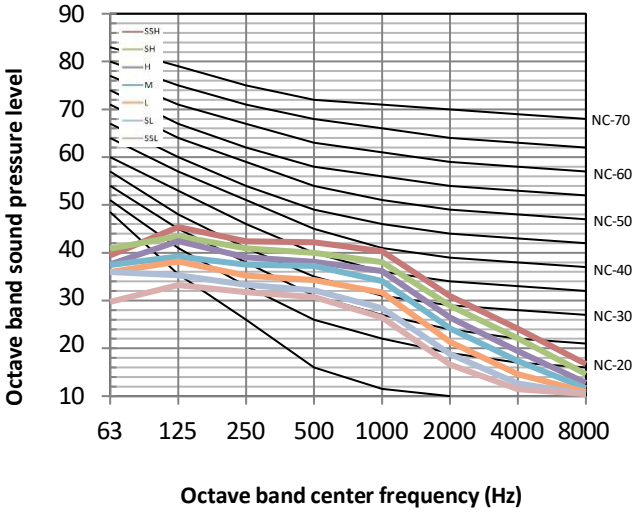


Figure 8.12: BEMP042N0A-DCV125 octave band levels

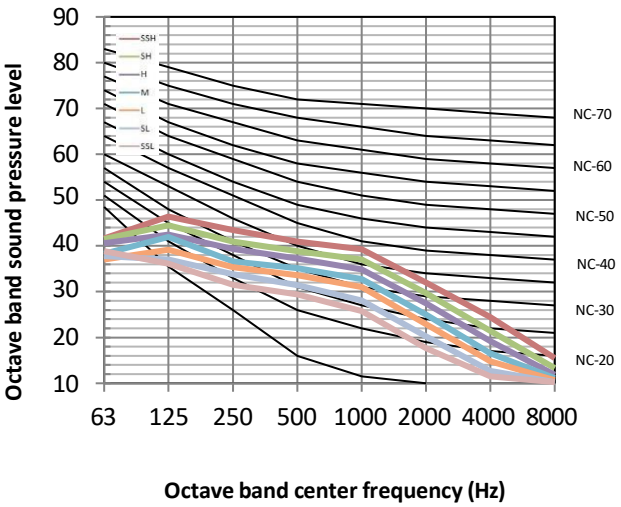


Figure 8.13: BEMP048N0A-DCV140 octave band levels

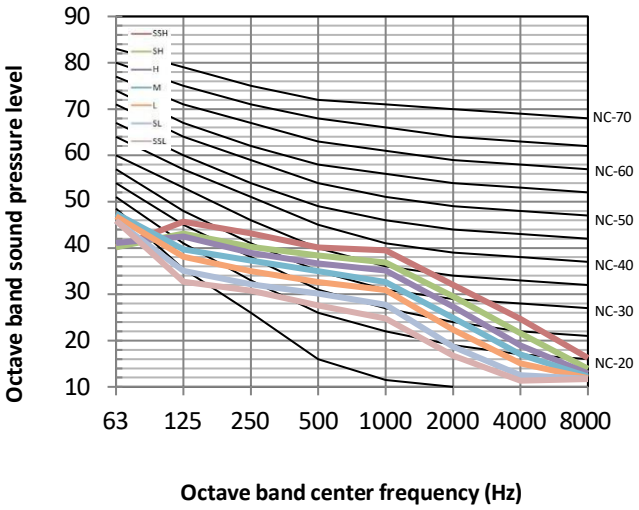
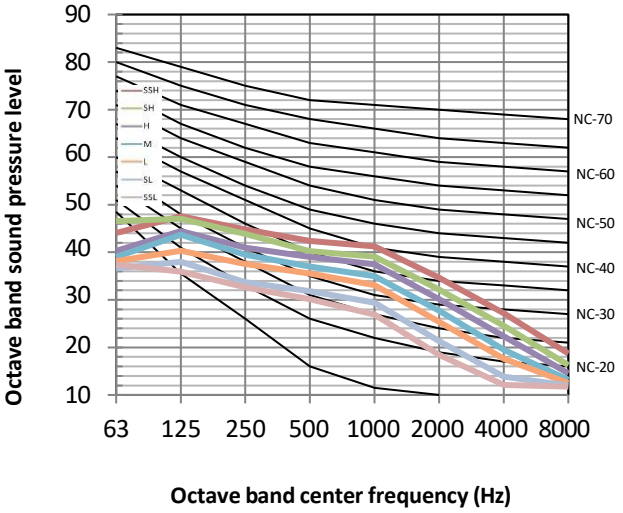


Figure 8.14: BEHP060N0A-DCV160 octave band levels



9 Fan Performance

9.1 How to switch between Constant Airflow mode and Constant Speed mode

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.

②Press the "▲" and "▼" until "N30" is displayed on the page, and then press the "⧉" to enter the mode setting. Use the "▲" and "▼" keys to adjust to the demand mode 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

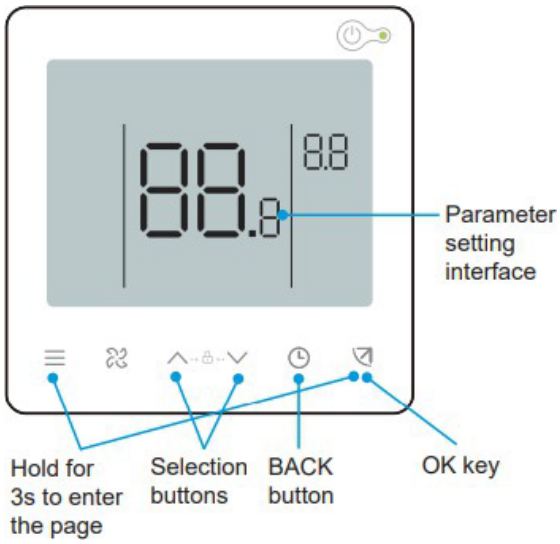


Table 9.1: Medium Static Pressure Duct mode setting

First level menu	Second level menu	Description	Default
N30	00	Constant Speed	-
	01	Constant Airflow	√

Notes:

1. The above is only an example. If you choose other controllers, please refer to their instructions for setting.

9.2 Constant Airflow mode

9.2.1 Fan performance diagram

Figure 9.7: BEMP028N0A-DCV080

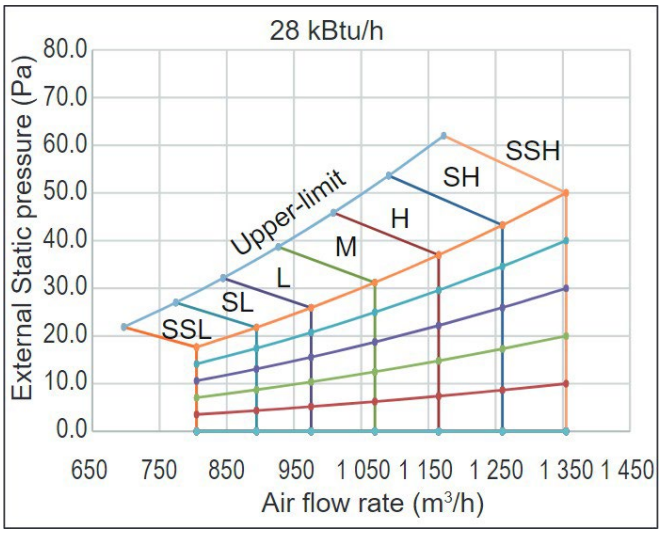


Figure 9.8: BEMP031N0A-DCV090

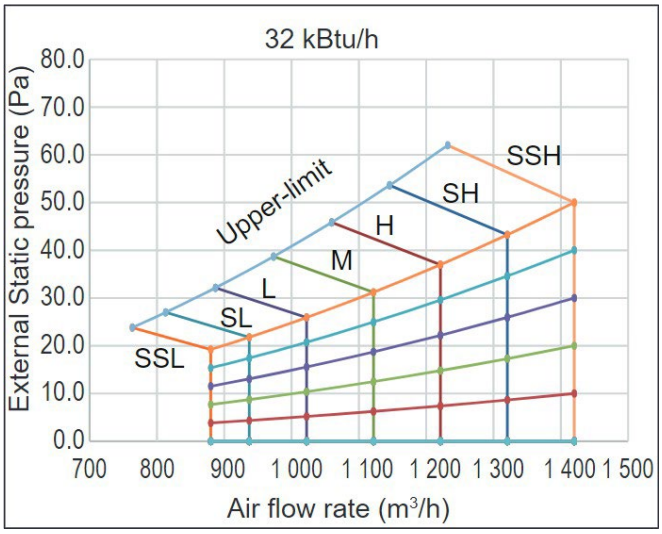


Figure 9.9: BEMP038N0A-DCV112

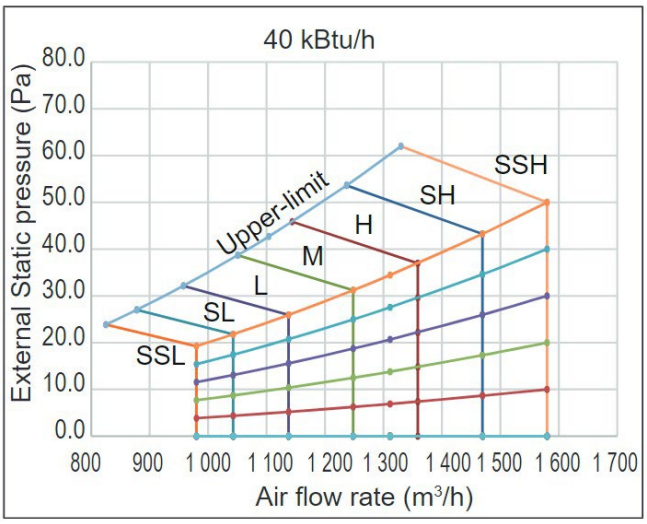


Figure 9.10: BEMP042N0A-DCV125

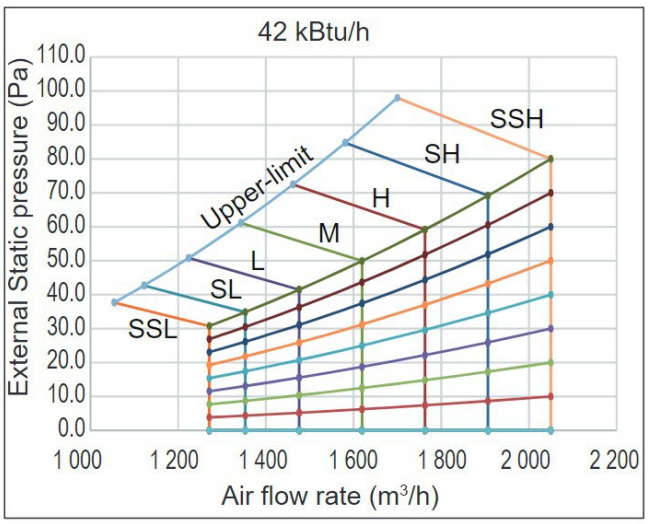


Figure 9.11: BEMP048N0A-DCV140

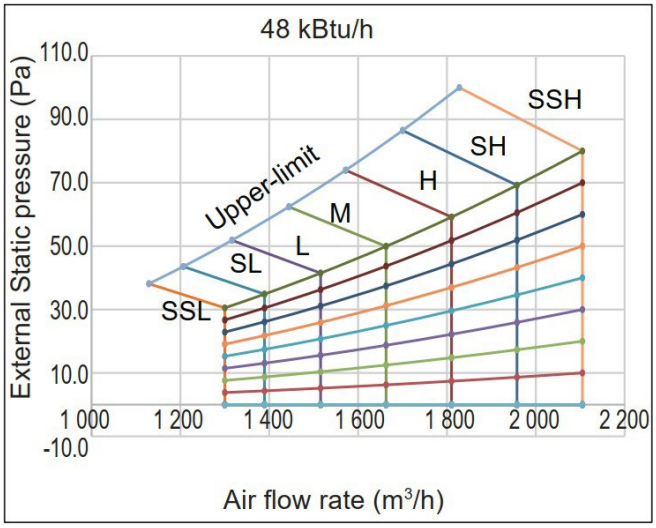
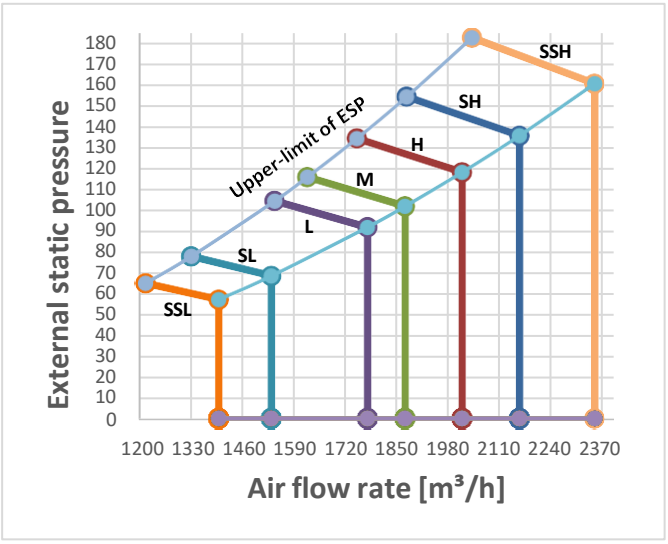


Figure 9.12: BEHP060N0A-DCV160



9.2.2 How to Read the Diagram (Constant Airflow mode)

The vertical axis is the External Static Pressure (Pa) while the horizontal axis represents the Air Flow (m^3/h). The characteristic curve for the “SSH”, “SH”, “H”, “M”, “L”,”SL” and “SSL” fan speed control.

For BEMP048N0A-DCV140, in “H” windshield, when the external static pressure is less than 122 Pa, the air flow keeps 1837 m3/h, but when the externa static pressure is greater than 122 Pa, the air flow begins to decline, and the allowable maximum external static pressure is 137 Pa.

9.3 Constant Speed mode

9.3.1 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

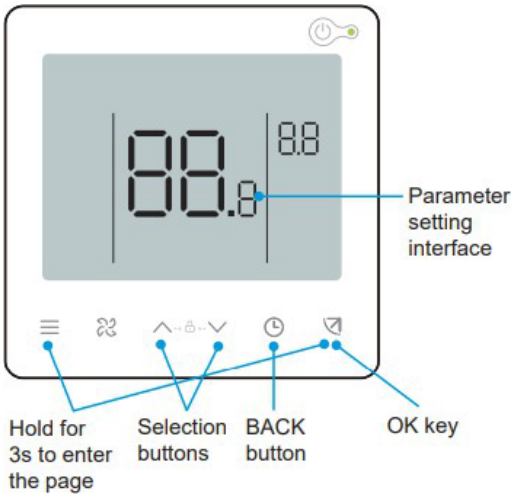


Table 9.1: External static pressure setting

First level menu	Second level menu	Description	Default
N00	00/01/02/03/04/05/~/19	Static pressure level	28≤kBtu/h≤40: 07 42≤kBtu/h≤56: 08

Unit power	Static pressure settings															
(kBtu/h)	02	04	06	07	08	09	10	11	12	13	14	15	16	17	18	19
28	10	20	30	40	50	50	50	50	50	50	50	50	50	50	50	50
32	10	20	30	40	50	50	50	50	50	50	50	50	50	50	50	50
40	10	20	30	40	50	50	50	50	50	50	50	50	50	50	50	50
42	10	20	30	40	50	60	70	80	80	80	80	80	80	80	80	80
48	10	20	30	40	50	60	70	80	80	80	80	80	80	80	80	80
56	10	20	30	40	50	60	70	80	80	80	80	80	80	80	80	80

Notes:

1. The above is only an example of 86S wired controller. If you choose other controllers, please refer to their manuals for setting.

9.3.2 Fan performance diagram

Figure 9.19: BEMP028N0A-DCV080

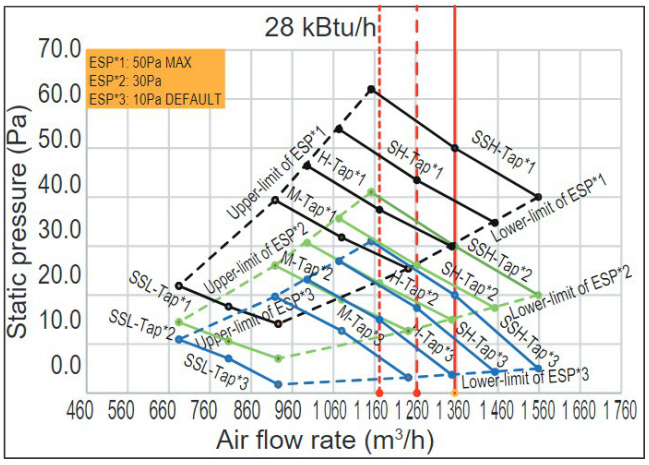


Figure 9.20: BEMP031N0A-DCV090

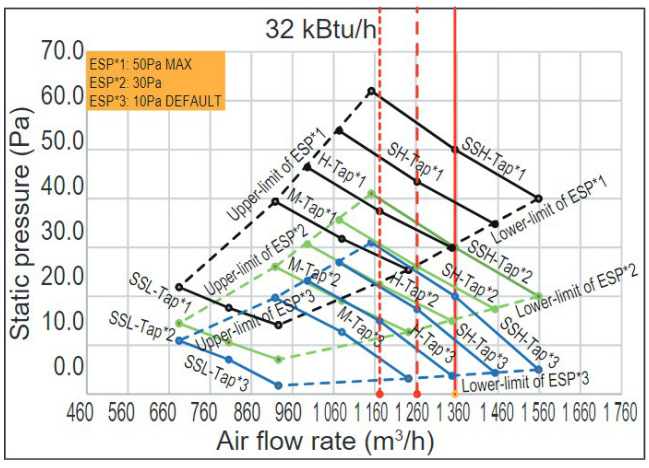


Figure 9.21: BEMP038N0A-DCV112

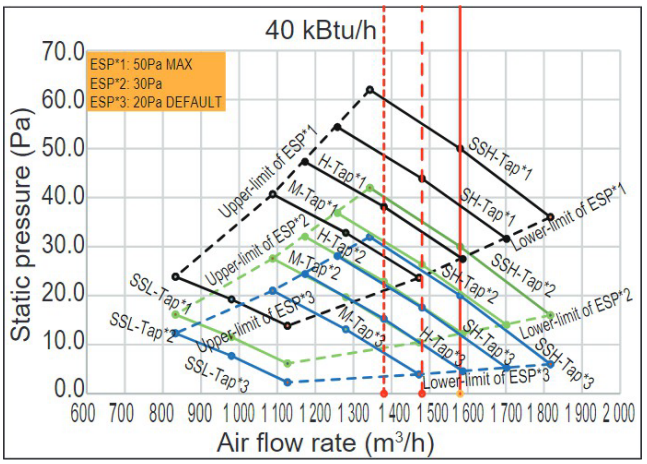


Figure 9.22: BEMP042N0A-DCV125

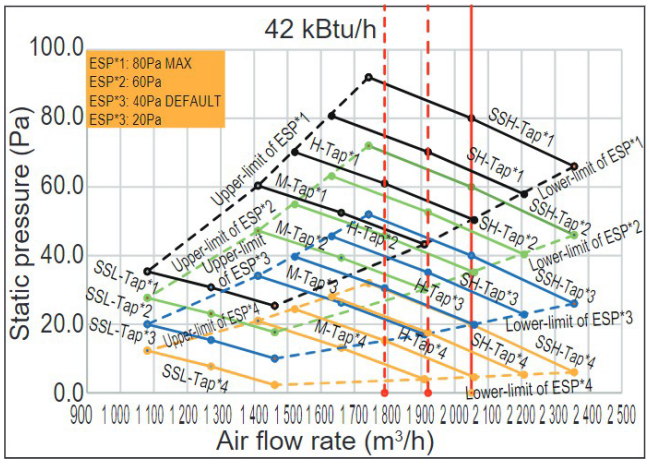


Figure 9.23: BEMP048N0A-DCV140

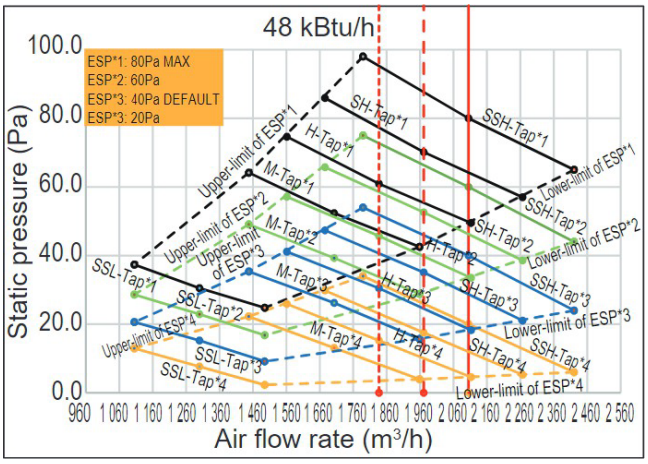
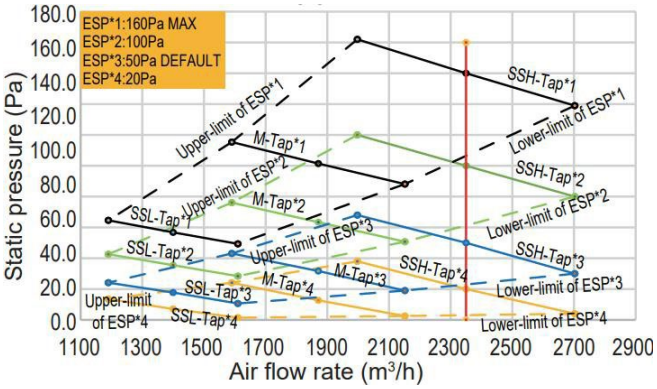


Figure 9.24: BEHP060N0A-DCV160



9.3.3 How to Read the Diagram (Constant Speed mode)

The vertical axis is the External Static Pressure (Pa) while the horizontal axis represents the Air Flow (m^3/h). The characteristic curve for the “SSH”, “M” and “SSL” fan speed control.

The Air Flow decreases with the increase of the external static pressure. For BEMP048N0A-DCV140, in “SSH” windshield and “50Pa” setting static pressure, when the externa static pressure is 50Pa, the air flow is 2105 m3/h, and the allowable externa static pressure range is 34 to 66.

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