

FULL DC INVERTER SYSTEMS ENGINEERING DATA BOOK

SIDH-XXXAI

COMMERCIAL AIR CONDITIONERS SDV6



High Static Pressure Duct

1 Specifications	2
2 Dimensions	4
3 Unit Placement	6
4 Piping Diagrams	8
5 Wiring Diagrams.....	9
6 Capacity Tables.....	11
7 Electrical Characteristics.....	12
8 Sound Levels	13
9 Fan Performance	15

High Static Pressure Duct

1 Specifications

SIDH-200AI / SIDH-224AI / SIDH-280AI

Model name			SIDH-200AI	SIDH-224AI	SIDH-280AI	SIDH-335AI
Power supply			1-phase, 220-240V, 50Hz			
Cooling ¹	Capacity	kW	20.0	22.4	28.0	33.5
		kBut/h	68.3	76.5	95.6	114.3
	Input	W	780	780	780	810
Heating ²	Capacity	kW	22.5	25.0	31.5	38.0
		kBut/h	76.8	85.3	107.5	129.7
	Input	W	780	780	780	810
Fan motor	Type		DC			
	Number		1			
Coil	Number of rows		3	3	3	3
	Tube pitch × row pitch	mm	21×13.37			
	Fin spacing	mm	1.5	1.5	1.5	1.5
	Fin type		Hydrophilic aluminum			
	Tube OD and type	mm	Φ7 Inner groove			
	Dimensions (L×H ×W)	mm	1050×588×40.1	1050×588×40.1	1050×588×40.1	1050×588×42.7
	Number of circuits		14	14	14	14
Airflow rate ³	m ³ /h	4700/4387/4073/3760/ 3447/3133/2820	4700/4387/4073/3760/ 3447/3133/2820	4700/4387/4073/3760/ 3447/3133/2820	4700/4387/4073/3760/ 3447/3133/2820	
External static pressure ⁴	Pa	200(0-400)				
Sound pressure level ⁵	dB(A)	51/50/48/46/44/43/42	51/50/48/46/44/43/42	51/50/48/46/44/43/42	52/51/49/48/46/44/43	
Sound power level	dB(A)	74/72/70/68/66/64/62	74/72/70/68/66/64/62	74/72/70/68/66/64/62	74/72/70/68/66/63/61	
Unit	Net dimensions ⁶ (W×H×D)	mm	1300×580×900			
	Packed dimensions (W×H×D)	mm	1530×730×1060			
	Net/Gross weight	kg	125/150	125/150	125/150	128/153
Refrigerant type			R410A			
Design pressure (H/L)		MPa	4.4/2.6			
Pipe connections	Liquid/Gas pipe	mm	Φ9.52/Φ19.1		Φ12.7/Φ22.2	Φ12.7/Φ25.4
	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.
- 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.)
- 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 an 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.

All specifications are measured at standard external static pressure

High Static Pressure Duct

SIDH-400AI/ SIDH-450AI / SIDH-560AI

Model name			SIDH-400AI	SIDH-450AI	SIDH-560AI
Power supply			1-phase, 220-240V, 50Hz		
Cooling ¹	Capacity	kW	40.0	45.0	56.0
		kBut/h	136.5	153.6	191.1
	Input	W	1850	1850	2030
Heating ²	Capacity	kW	45.0	56.0	63.0
		kBut/h	153.6	191.1	215.0
	Input	W	1850	1850	2030
Fan motor	Type		DC		
	Number		1		
Coil	Number of rows		3	3	4
	Tube pitch × row pitch	mm	21×13.37		
	Fin spacing	mm	1.5	1.5	1.5
	Fin type		Hydrophilic aluminum		
	Tube OD and type	mm	Φ7 Inner groove		
	Dimensions (L×H ×W)	mm	1600×588×40.1	1600×588×40.1	1600×588×42.7
	Number of circuits		14	14	14
Airflow rate ³		m ³ /h	7500/7000/6500/6000/5500/5000/4500	7500/7000/6500/6000/5500/5000/4500	8400/7840/7280/6720/6160/5600/5040
External static pressure ⁴		Pa	300 (0-400)		
Sound pressure level ⁵		dB(A)	58/56/54/52/50/49/48	58/56/54/52/50/49/48	59/58/56/54/53/51/49
Sound power level		dB(A)	79/78/76/74/72/70/67	79/78/76/74/72/70/67	81/80/77/75/73/71/69
Unit	Net dimensions ⁶ (W×H×D)	mm	1850×580×900		
	Packed dimensions (W×H×D)	mm	2080×730×1060		
	Net/Gross weight	kg	166/204	166/204	170/208
Refrigerant type			R410A		
Design pressure (H/L)		MPa	4.4/2.6		
Pipe connections	Liquid/Gas pipe	mm	Φ12.7/Φ25.4	Φ15.9/Φ28.6	
	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.
- 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.)
- 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 an 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.

All specifications are measured at standard external static pressure

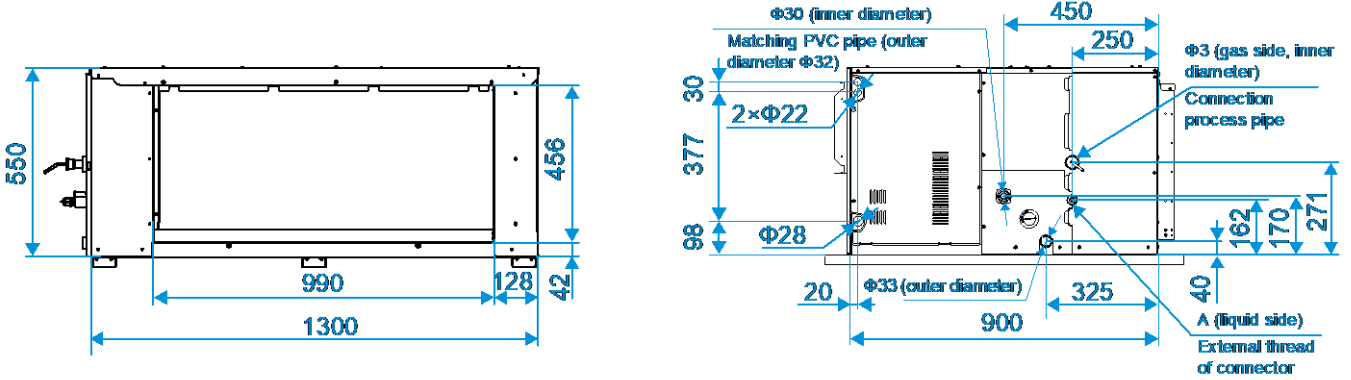
High Static Pressure Duct

2 Dimensions

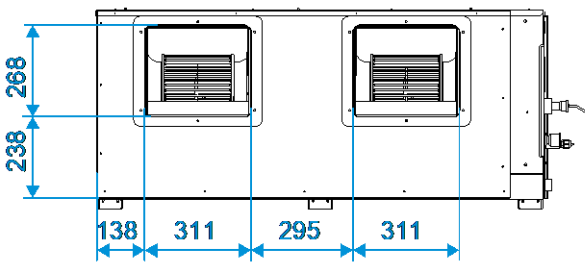
SIDH-200AI / SIDH-224AI / SIDH-280AI/ SIDH-335AI

Dimensions (unit: mm)

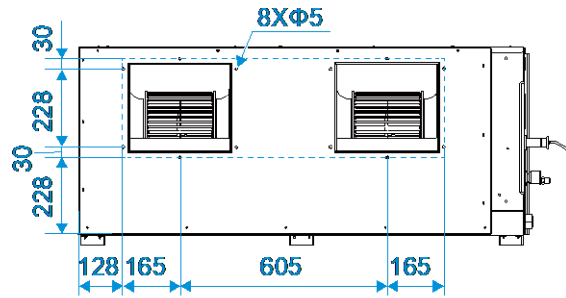
Appearance and dimensions of the air inlets, piping, drain pipes, power cable hole and communication wire hole:



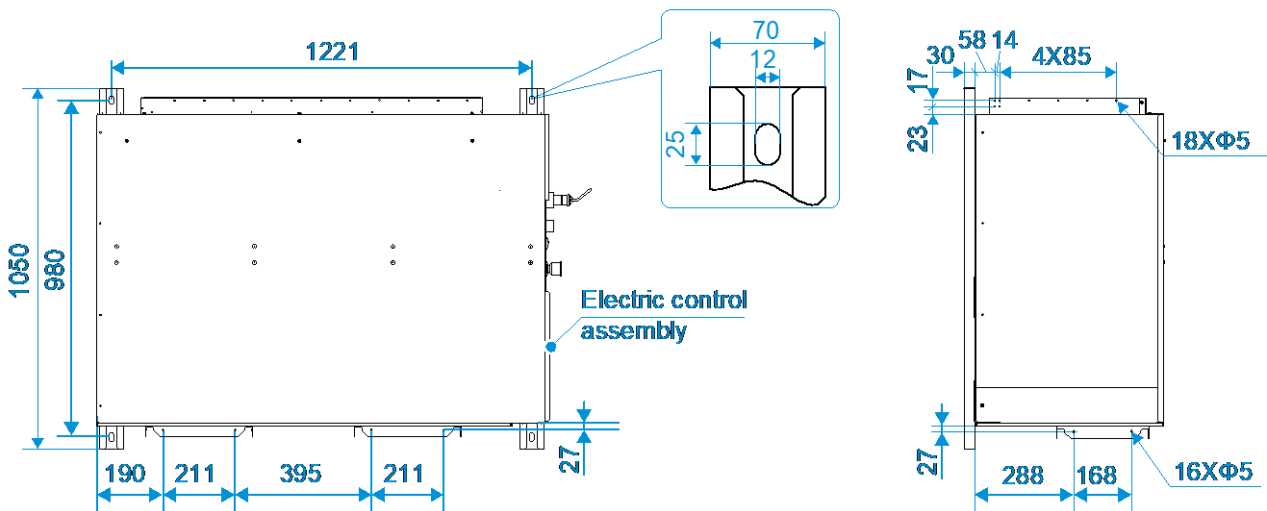
Dimensions of the air outlets:



Dimensions of the air duct installation hole after the air outlet flange is removed:



Dimensions of lugs and the screw hole of air outlet/inlet flange:



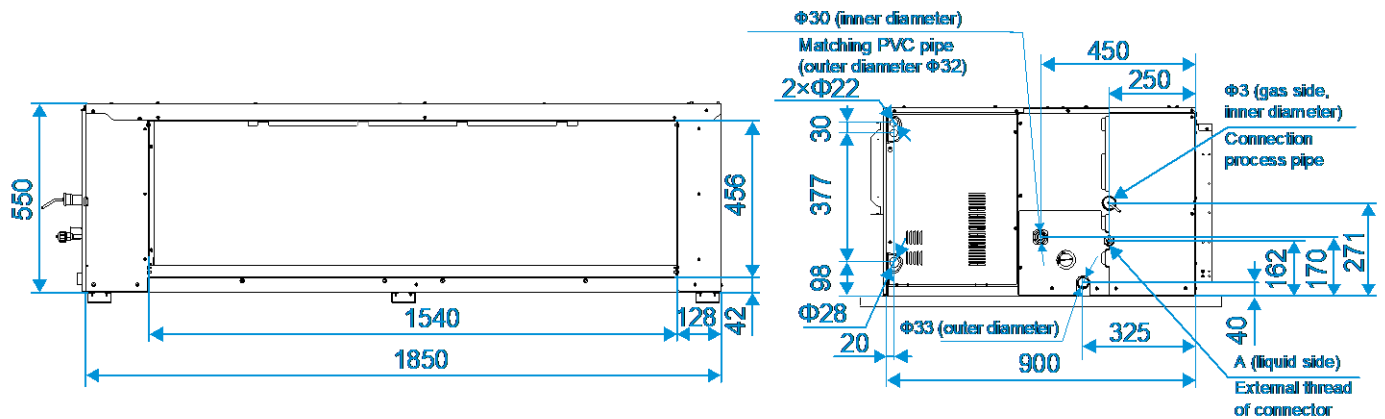
Capacity (kW)	A
$20.0 \leq kW \leq 22.4$	5/8-18 UNF
$22.4 < kW \leq 33.5$	3/4-16 UNF

High Static Pressure Duct

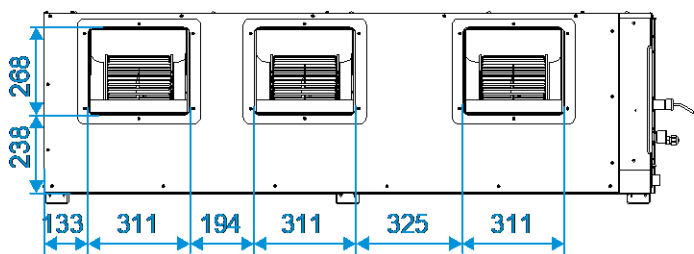
SIDH-400AI / SIDH-450AI / SIDH-560AI

Dimensions (unit: mm)

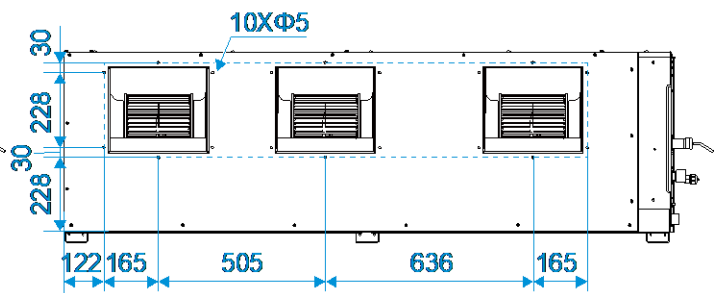
Appearance and dimensions of the air inlets, piping, drain pipes, power cable hole and communication wire hole:



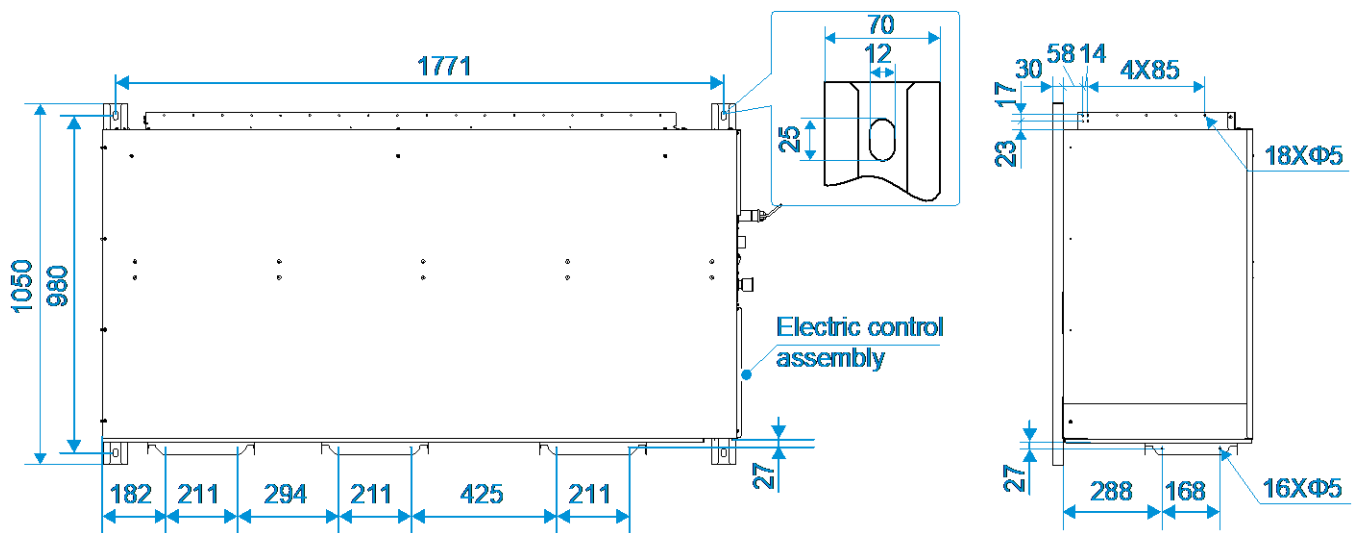
Dimensions of the air outlets:



Dimensions of the air duct installation hole after the air outlet flange is removed:



Dimensions of lugs and the screw hole of air outlet/inlet flange:



Capacity (kW)	A
$33.5 < kW \leq 40.0$	3/4-16 UNF
$40.0 < kW \leq 56.0$	7/8-14 UNF

High Static Pressure Duct

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

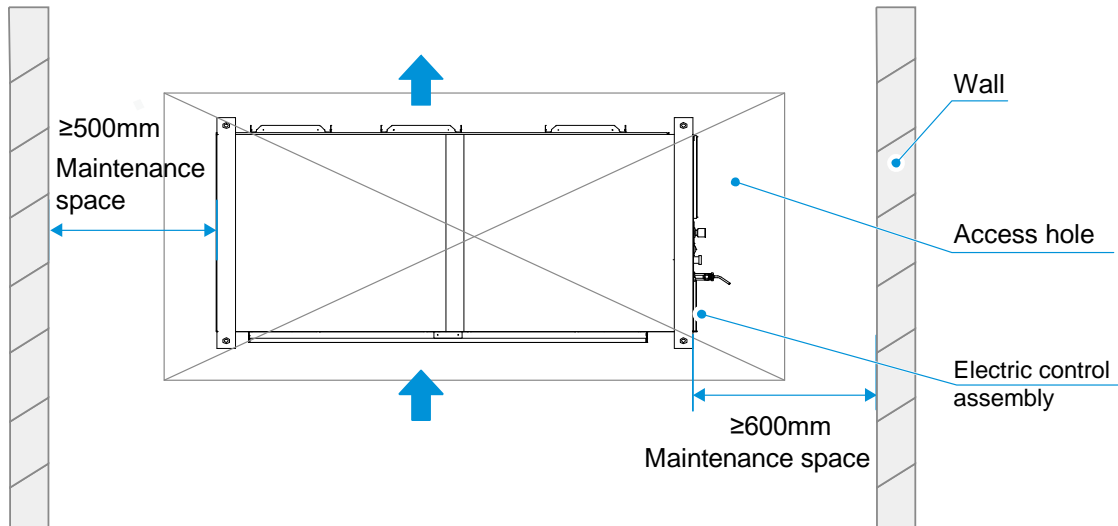
SIDH-200AI / SIDH-224AI / SIDH-280AI

SIDH-335AI / SIDH-400AI / SIDH-450AI / SIDH-560AI

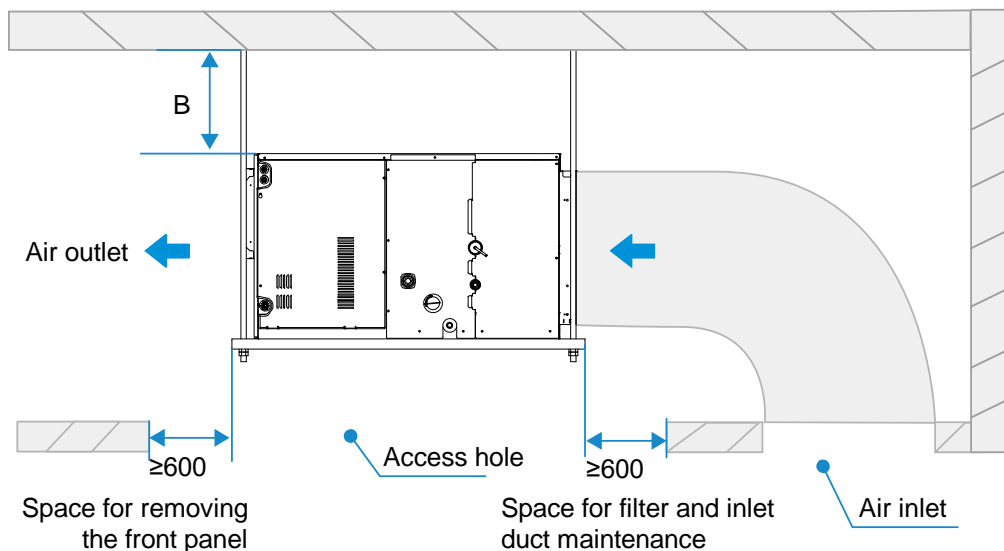
High Static Pressure Duct space requirements (unit: mm)

Bottom view

(Unit: mm)



Side view

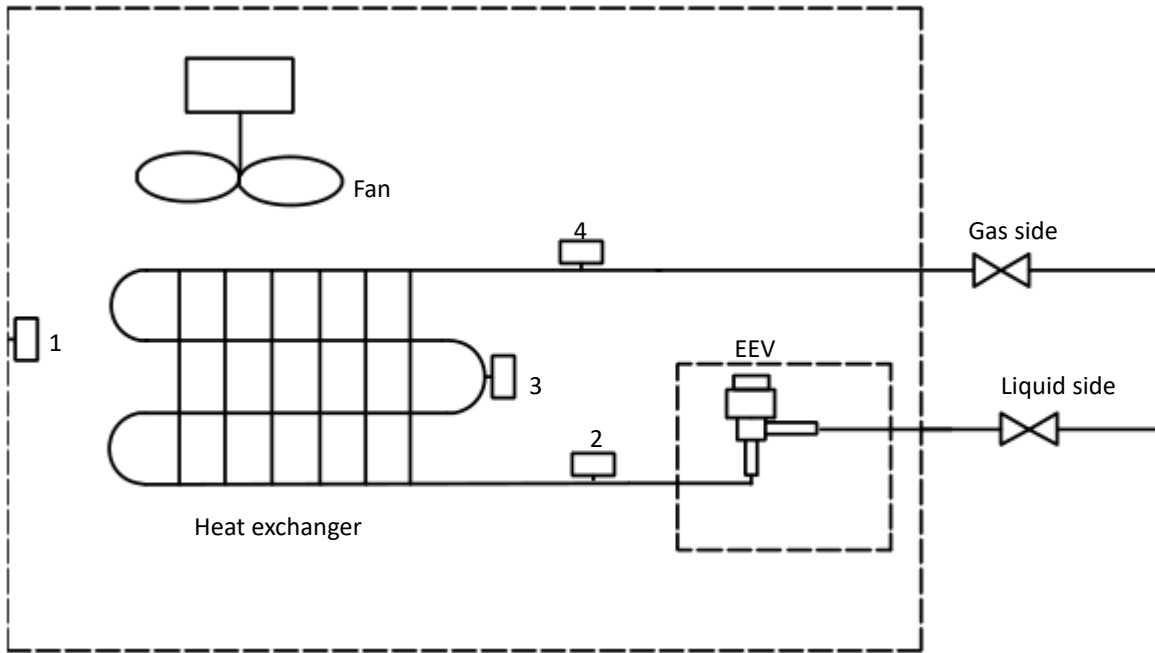


Notes for installers and service engineers

1. The distance between the indoor unit and the roof (B) shall be greater than 50mm to install the air duct.
2. The motor and fan can be maintained from the indoor unit top or the air outlet. If maintenance is performed from the indoor unit top, the distance between the indoor unit and the roof must be larger than 600mm. If maintenance is performed from the air outlet, the distance between the indoor unit and the roof must be larger than 50mm, with a minimum distance of 600mm allowed for removing the front panel.

High Static Pressure Duct

4 Piping Diagrams

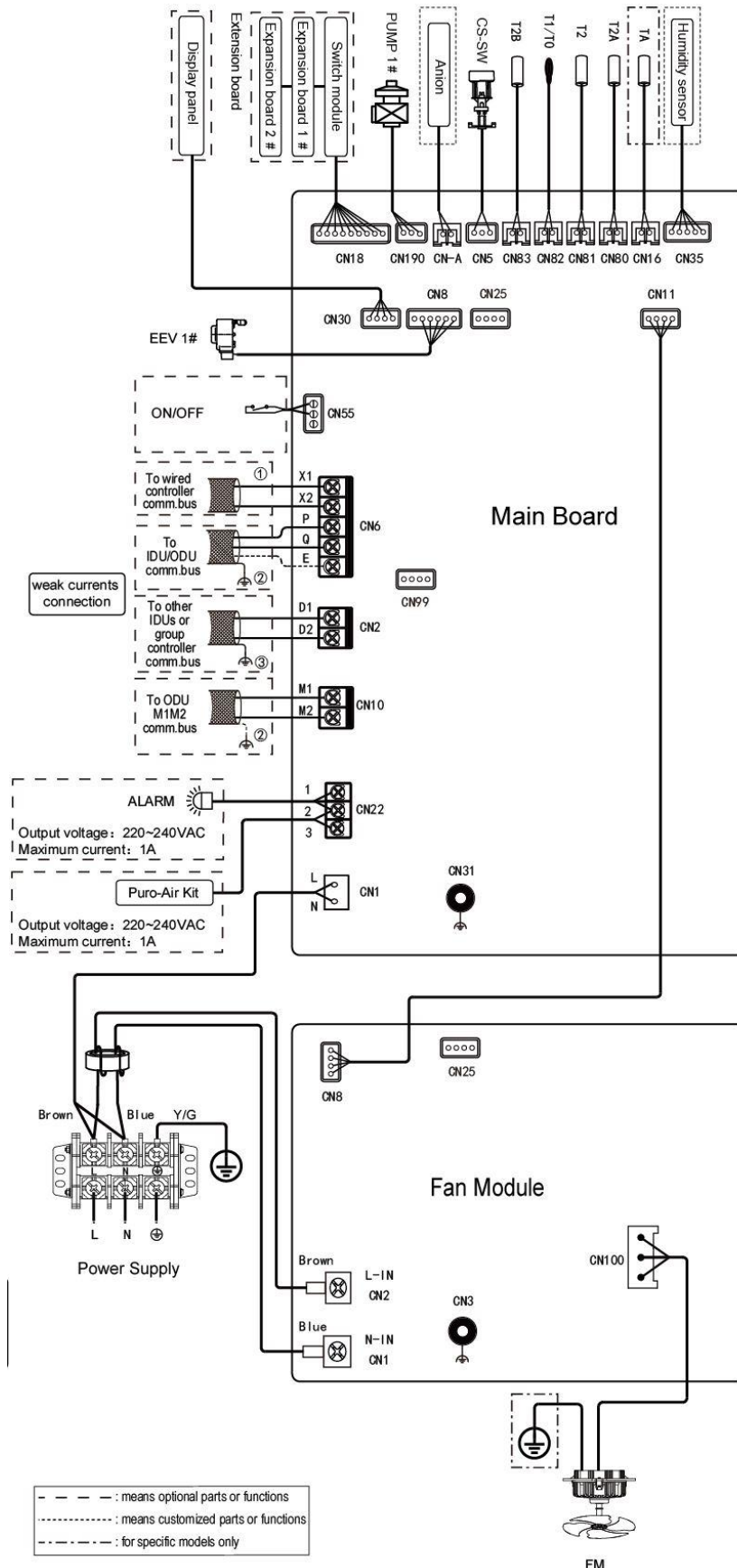


Legend		
1	T1	Inlet Air Temp. Sensor
2	T2A	Liquid Pipe Temp. Sensor
3	T2	Middle Pipe Temp. Sensor
4	T2B	Gas Pipe Temp. Sensor
5	EEV	Electronic expansion valve
6	FAN	Fan motor

5 Wiring Diagrams

SIDH-200AI / SIDH-224AI / SIDH-280AI

SIDH-335AI / SIDH-400AI/ SIDH-450AI / SIDH-560AI



High Static Pressure Duct

Legend				
Code	Name		Code	Name
XS XP	connectors		T1	Inlet Air Temp. Sensor
TA	Steam pipe temperature sensor*		T2B	Gas Pipe Temp. Sensor
CS-SW	Water level switch		T0	Fresh air inlet temperature sensor*
EEV	Electronic expansion valve		ALARM	Alarm output
Anion	Sterilization module		FM	DC Fan motor
T2A	Liquid Pipe Temp. Sensor		ON/OFF	Remote on/off
T2	Middle Pipe 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.
- X1X2 communication ports can be connected to the wired controller.
- 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

High 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	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC	TC	SC
SIDH-200AI	17.7	16.1	18.9	16.5	19.8	16.8	20.0	16.3	20.2	15.8	20.8	15.1	21.2	14.4
SIDH-224AI	19.8	18.0	21.1	18.5	22.1	18.7	22.4	18.3	22.6	17.7	23.2	16.8	23.7	16.1
SIDH-280AI	24.8	22.6	26.4	23.1	27.6	23.4	28.0	22.8	28.3	22.1	29.0	21.0	29.7	20.1
SIDH-335AI	29.6	26.9	31.6	27.6	33.1	28.0	33.5	27.3	33.8	26.4	34.7	25.1	35.5	24.1
SIDH-400AI	35.4	32.1	37.7	32.9	39.5	33.4	40.0	32.5	40.4	31.5	41.5	30.0	42.4	28.7
SIDH-450AI	39.8	36.1	42.4	37.0	44.4	37.5	45.0	36.6	45.4	35.4	46.6	33.7	47.6	32.2
SIDH-560AI	49.5	45.5	52.8	46.5	55.2	47.0	56.0	45.8	56.5	44.3	58.0	42.1	59.3	40.8

Abbreviations:

TC: Total capacity (kW)

SC: Sensible capacity (kW)

Notes:

1. Shaded cells indicate rating condition

6.2 Heating Capacity Table

High Static Pressure Duct heating capacity

Model	Indoor air temperature (°C DB)					
	16	18	20	21	22	24
	SHC	SHC	SHC	SHC	SHC	SHC
SIDH-200AI	23.9	23.6	22.5	21.8	21.2	19.6
SIDH-224AI	26.5	26.3	25.0	24.3	23.5	21.8
SIDH-280AI	33.4	33.1	31.5	30.6	29.6	27.4
SIDH-335AI	40.3	39.9	38.0	36.9	35.7	33.1
SIDH-400AI	47.7	47.3	45.0	43.7	42.3	39.2
SIDH-450AI	59.4	58.8	56.0	54.3	52.6	48.7
SIDH-560AI	66.8	66.2	63.0	61.1	59.2	54.8

Abbreviations:

SHC: Sensible Heat Capacity (kW)

Notes:

1. Shaded cells indicate rating condition

High Static Pressure Duct

7 Electrical Characteristics

High Static Pressure Duct electrical characteristics

Model	Power supply						Indoor Fan Motor	
	Hz	Volts (V)	Min. volts	Max. volts	MCA (A)	MFA (A)	Rated power output (W)	FLA (A)
SIDH-200AI	50	220-240	198	264	8.19	30	920	6.55
SIDH-224AI	50	220-240	198	264	8.19		920	6.55
SIDH-280AI	50	220-240	198	264	8.19		920	6.55
SIDH-335AI	50	220-240	198	264	8.31		920	6.65
SIDH-400AI	50	220-240	198	264	12.98		2300	10.38
SIDH-450AI	50	220-240	198	264	12.98		2300	10.38
SIDH-560AI	50	220-240	198	264	15.49		2300	12.39

Abbreviations:

MCA: Min. Circuit Amps. (A), which is used to select the minimum circuit size to ensure safe operation over a long period of time.

MFA: Max. Fuse Amps. (A), which is used to select the circuit breaker.

FLA: Full Load Amps. (A), which is the full load current of the indoor fan motor (reliable operation at the fastest speed setting).

High Static Pressure Duct

8 Sound Levels

8.1 Overall

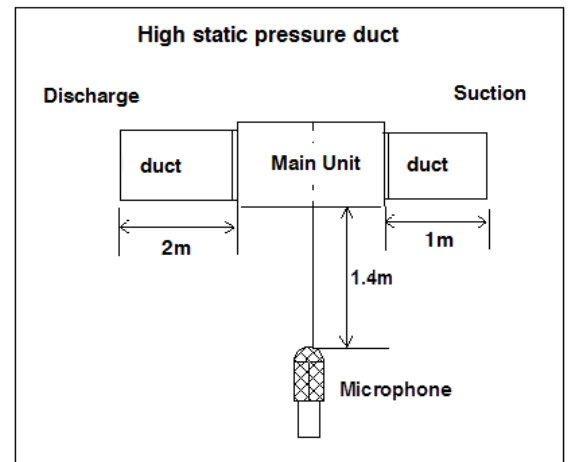
High Static Pressure Duct sound pressure levels¹

Model name	Sound pressure levels dB(A)						
	SSH	SH	H	M	L	SL	SSL
SIDH-200AI	51	50	48	46	44	43	42
SIDH-224AI	51	50	48	46	44	43	42
SIDH-280AI	51	50	48	46	44	43	42
SIDH-335AI	52	51	49	48	46	44	43
SIDH-400AI	58	56	54	52	50	49	48
SIDH-450AI	58	56	54	52	50	49	48
SIDH-560AI	59	58	56	54	53	51	49

Notes:

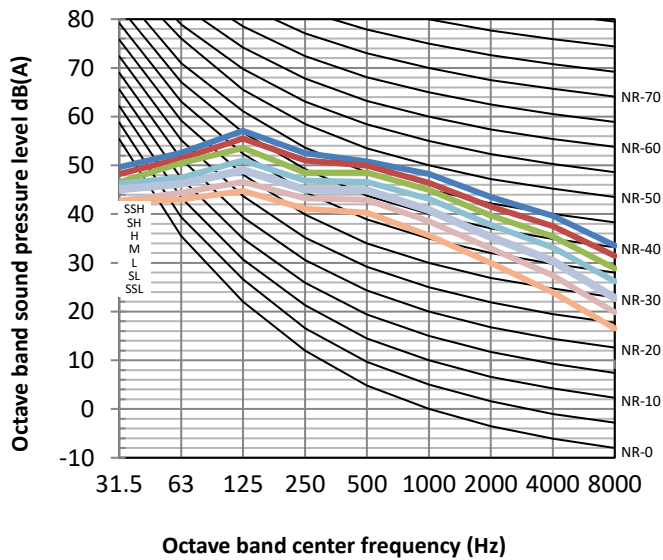
1. Sound pressure levels are measured 1.4m below the unit in an anechoic chamber. During in-situ operation, sound pressure levels may be higher as a result of ambient noise.

High Static Pressure Duct sound pressure level measurement

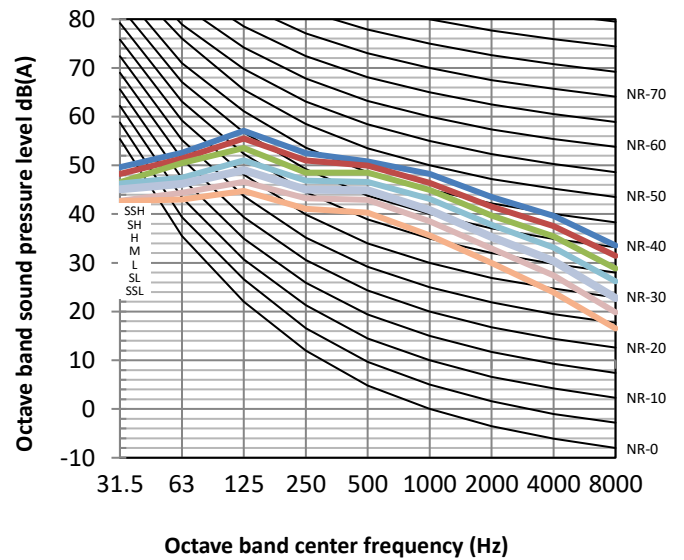


8.2 Octave Band Levels

SIDH-200AI octave band levels

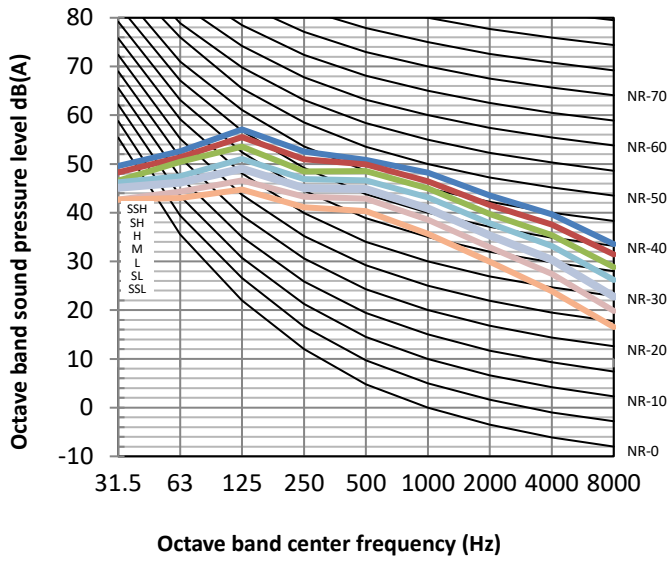


SIDH-224AI octave band levels

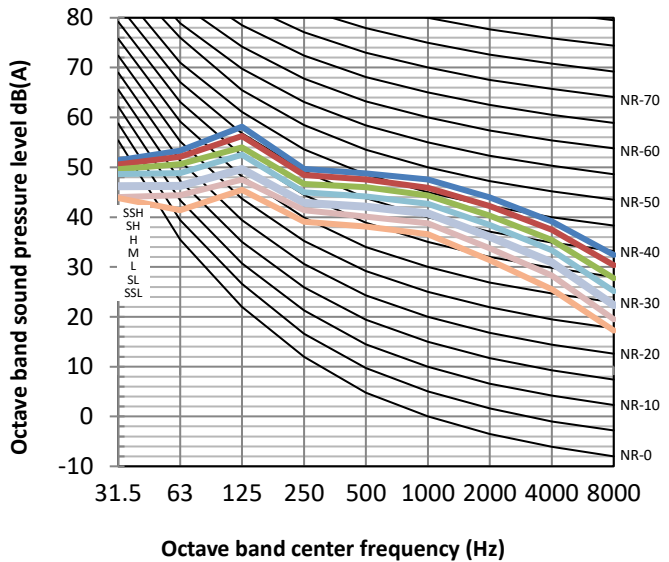


High Static Pressure Duct

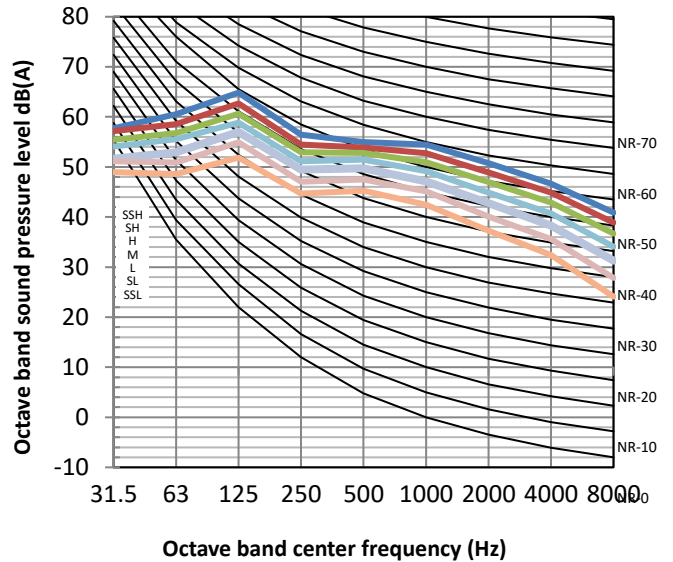
SIDH-280AI octave band levels



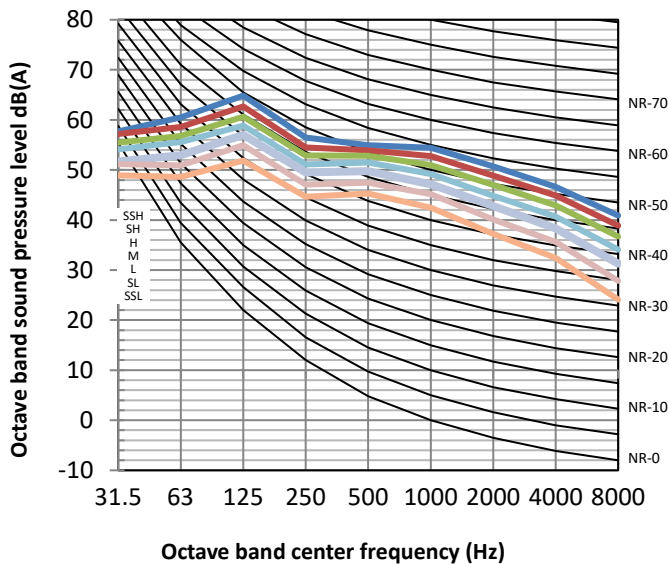
SIDH-335AI octave band levels



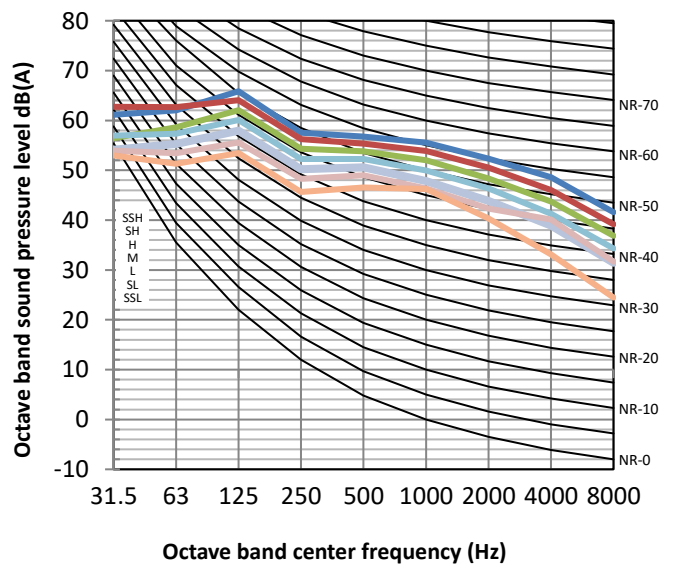
SIDH-400AI octave band levels



SIDH-450AI octave band levels



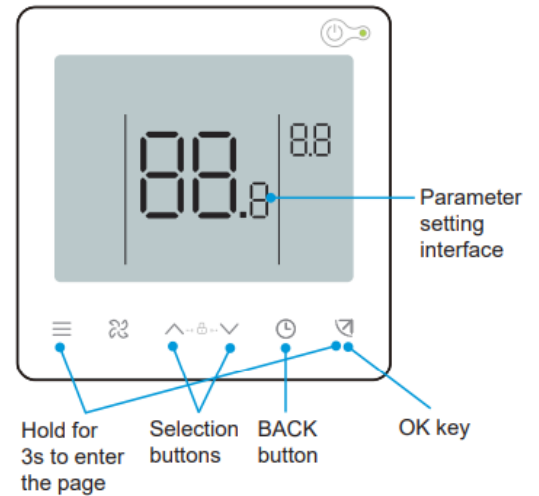
SIDH-560AI octave band levels



9 Fan Performance

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

- ① In 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.
- ② Press 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.
- ③ Press the "⌚" button to return to the previous menu and exit the parameter setting. Parameter setting will also exit after 60 s of no operation



Mode setting

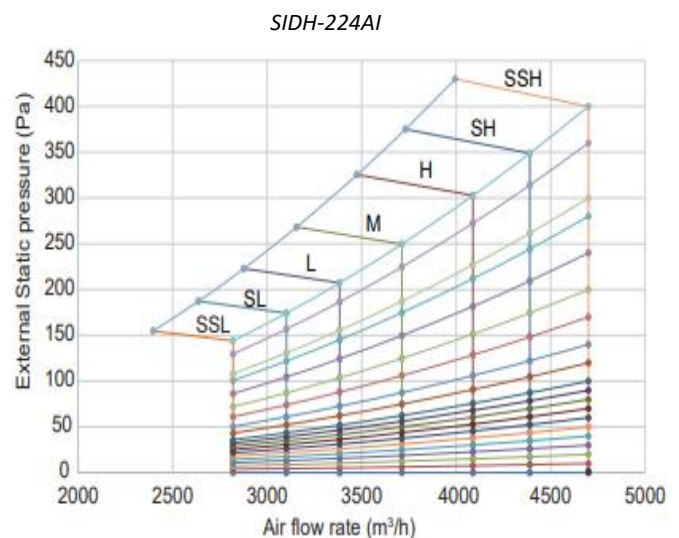
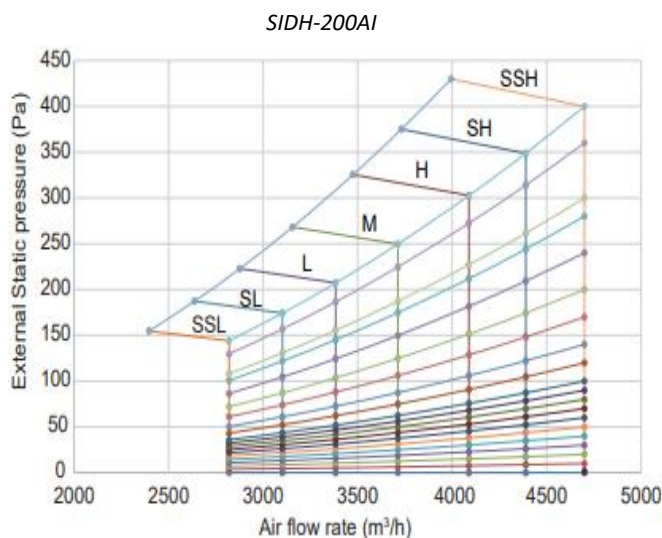
First level menu	Second level menu	Description	Default
n30	00	Constant Speed	-
	01	Constant Airflow	√

Notes:

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

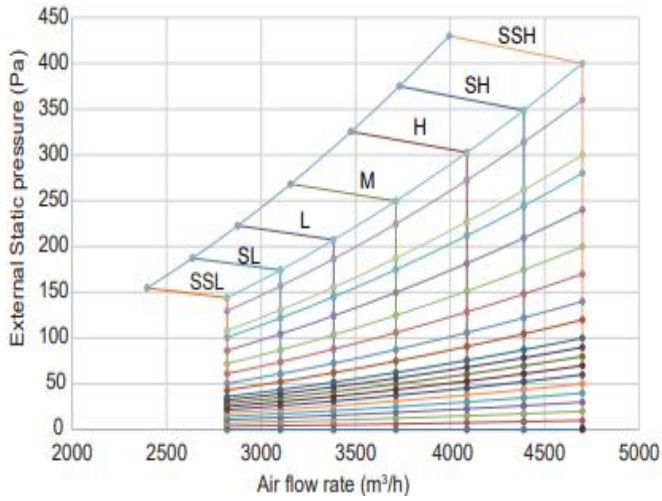
9.2 Constant Airflow mode

9.2.1 Fan performance diagram

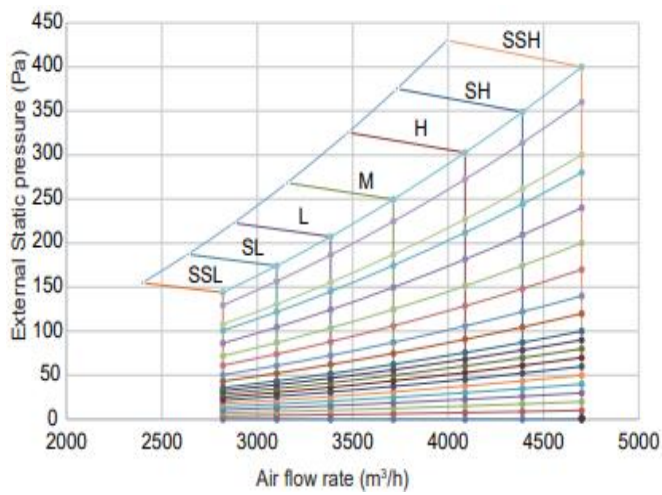


High Static Pressure Duct

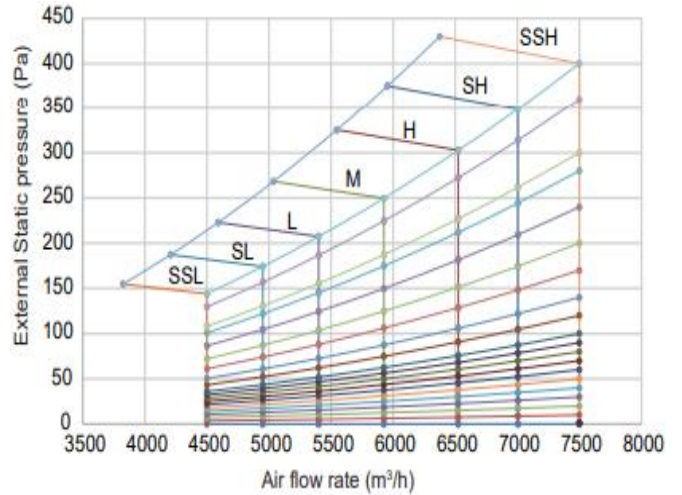
SIDH-280AI



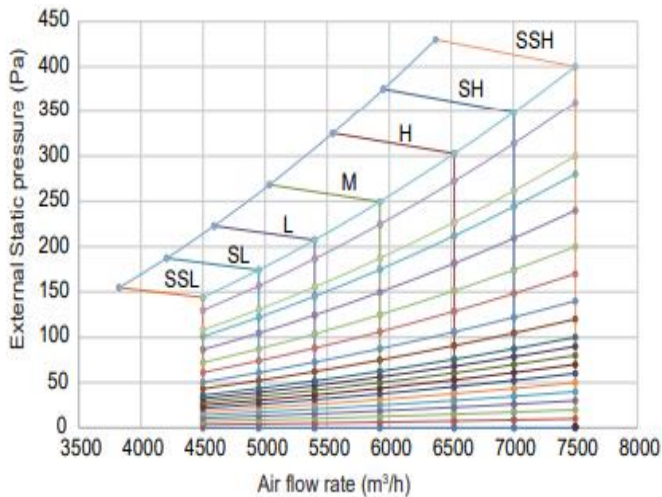
SIDH-335AI



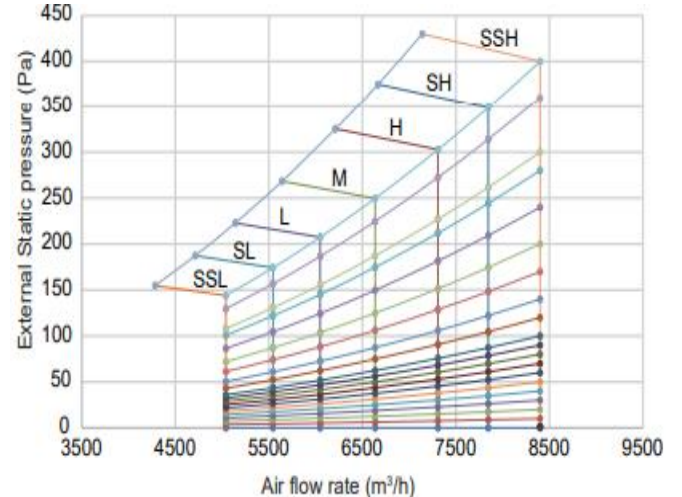
SIDH-400AI



SIDH-450AI



SIDH-560AI



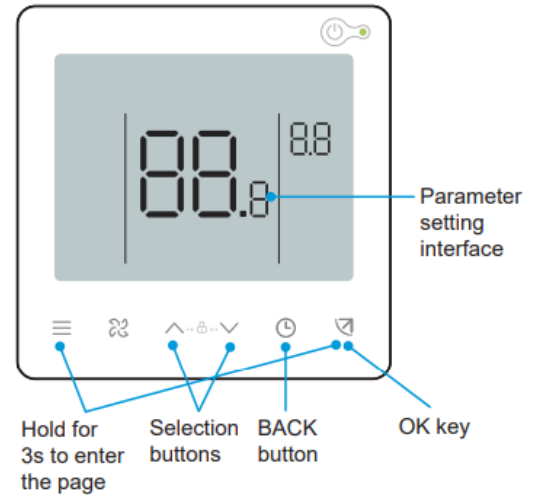
9.3 Constant Speed mode

9.3.1 Set external static pressure parameters

① In 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.

② When "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.

③ Press the "⌚" button to return to the previous menu and exit the parameter setting. Parameter setting will also exit after 60 s of no operation



External static pressure setting (20-56kW)

First level menu	Second level menu	Description	Default
N00	00/01/02/03/04/05/~ /19	Static pressure level	14(20-33.5kW) 17(40-56kW)

Level	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
Static pressure(Pa)	0	10	20	30	40	50	60	70	80	90	100	120	140	170	200	240	280	300	360	400

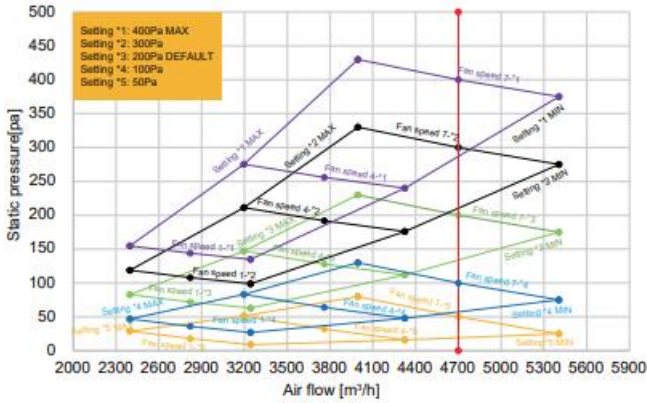
Notes:

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

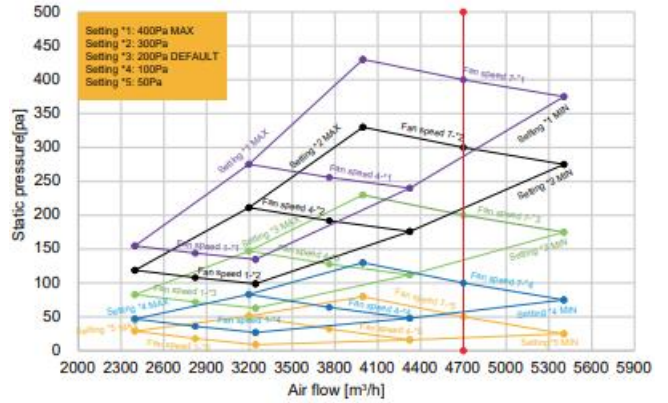
High Static Pressure Duct

9.3.2 Fan performance diagram

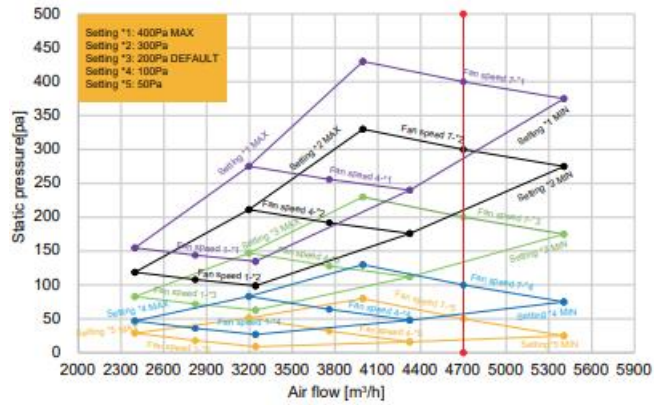
SIDH-200AI



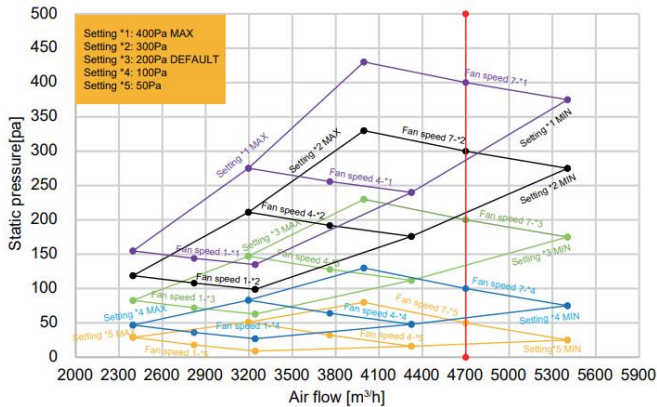
SIDH-224AI



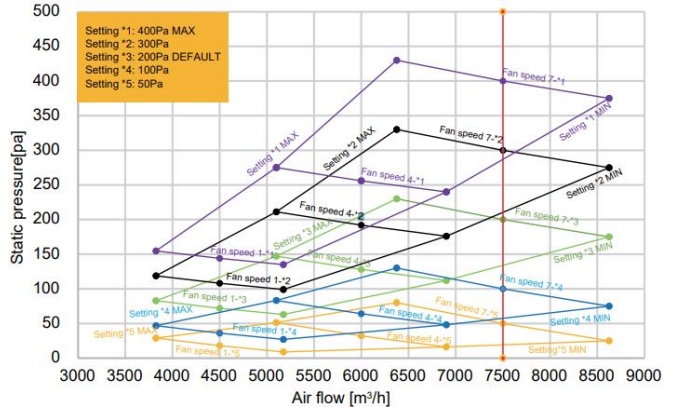
SIDH-280AI



SIDH-335AI

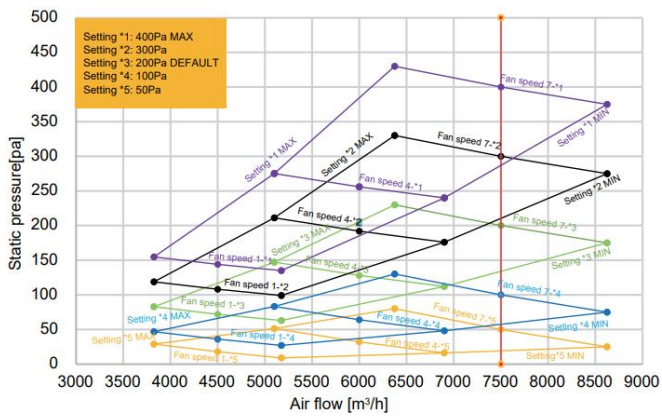


SIDH-400AI

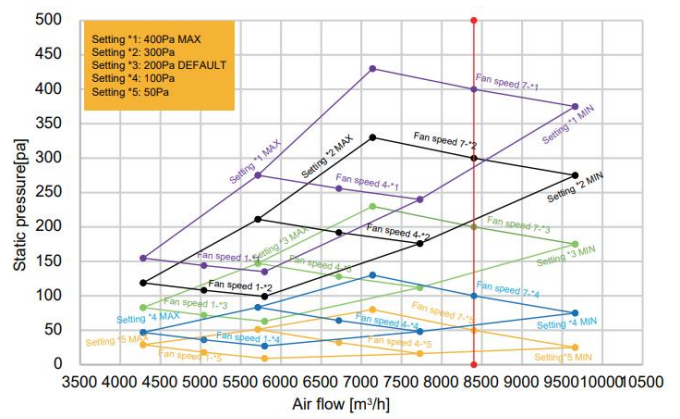


High Static Pressure Duct

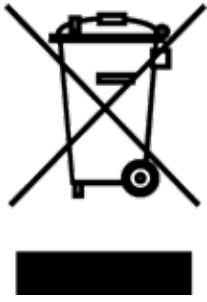
SIDH-450AI



SIDH-560AI



NOTE CONCERNING PROTECTION OF ENVIRONMENT



This product must not be disposed of via normal household waste after its service life, but must be taken to a collection station for the recycling of electrical and electronic devices. The symbol on the product, the operating instructions or the packaging indicate such disposal procedures. The materials are recyclable in accordance with their respective symbols. By means of re-use, material recycling or any other form of recycling old appliances you are making an important contribution to the protection of our environment. Please ask your local council where your nearest disposal station is located.

INFORMATION CONCERNING USED REFRIGERANT MEDIUM

This unit is containing fluorinated gases included in the Kyoto protocol.

The maintenance and the liquidation must be carried out by qualified personnel.

The composition of the cooling medium R410a: (50% HFC-32, 50% HFC-125)

Type of refrigerant: R410a

The quantity of the refrigerant: Please see the unit label.

The value GWP: 2088 (1 kg R410a = 2,088 t CO₂ eq)

GWP = Global Warming Potential

In case of quality problem or other please contact your local supplier or authorized service center.

Emergency number: 112

PRODUCER

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