HITACHI

Modular Air Handling Unit

Hitachi-MBD series
Hitachi-MFD series for compact configuration



Cooling & Heating

INDEX

02 Products Overview

03 Features

05 Air Flow Chart

06 Dimensions of Modular Air Handling Sections Modular Air

08 Handling Sections Illustration

20 Combination choices of modular air handling units

22 Weight of the Modular Sections

23 Weight of each section(part)

24 Unit installation

25 Wiring diagram

28 Operation and maintenance

PRODUCTS OVERVIEW

Hitachi MBD modular air handling units are robust structured double skin units engineered to meet special requirements through the application of modules for the various design space conditions required. MBD Air Handling Units are based on design flexibility with different modular sections available:

- Fan section
- Coiling coil section
- Mixing section
- Heat reclaim section
- Humidifier section
- Spraying section
- Noise elimination section
- Filter sections

Coils, fan motors and filters are packaged within the unit modules.

Nomination

MBD 27 25 E L F

- F: Designing reference
- L: Pipe connection L: left, R-right
- E: Casing thickness(mm): E:25mm, S:35mm, W:50mm
- 25: Unit's height modules of interior casing (interior casing's height: modulus x100 mm)
- 27: Unit's width modules of interior casing (interior casing's height: modulus x100 mm)

Compact series of AHU

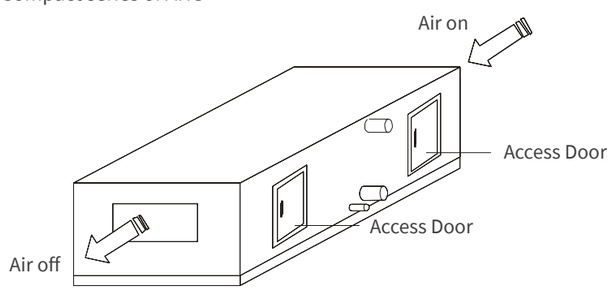
MFD 060 D C B 4 S A F S L E

- E: Design code
- L: Pipe connection: L-Left, R-Right
- S: ESP for belt driven: S-Standard(I) H-Medium(II) P-High(III)
- F: Air Inlet: Nil for return air; F-Freshi air
- A: Discharge direction: A, B-Horizontal; C, D-Vertical; (Nil for hanging type)
- S: S: Jet diffuser, Nil for standard
- 4: Coil row: 4, 6, 8
- B: Frameless
- C: Configuration: C-Hanging; H-Floor mounted; V-Vertical floor mounted
- D: Transmission: D-Belt driven, B-Direct driven, Voltage 380V
- 060: Airflow: x 100m/h^3
- MFD: Compact series of AHU

Pipe Connection Location

Units are available with your choice of pipes on left side or right side of the unit.

Below is the left side pipe (with the access panel) version.



FEATURES

Modular Design, and Flexible Combination

MBD series are designed as per the standard modulization specifications as listed in this manual. The width and height can be increased in proportion as per the modulus, to suit the requirements of width and height on site.

Patented Framework Structure Double Skin

The patented casing design has an overall structure that assures casing strength and durability as well as the prevention of cold or heat leakage around the perimeter to achieve a high level of thermal efficiency. The unique design help increased the thermal performance of the profile when in the presence of a temperature gradient.

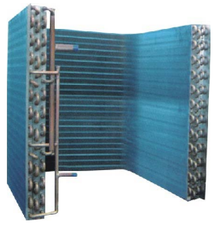
The internal metal casing is isolated from the outside metal casing by polyurethane foam and rubber sealing strips i.e. The panels are fixed directly with polyurethane expanding foam internally (density: 50kg/m3)
Standard configuration
*Colorbond outer panel
*Galvanized steel inner panel
*25mm thick polyurethane, 35mm and 50mm also available.

Every module has a sub pressure access door which opens outwards and a positive access door which opens inwards. This assures there is no cold bridge and air leakage of positive pressure and sub pressure sections.

To prevent panel surface scratches during transportation and installation, the external rush proof color bond outer panel is covered by a protective film.

Rippled Fin Heat Exchanger/ Copper Tubing

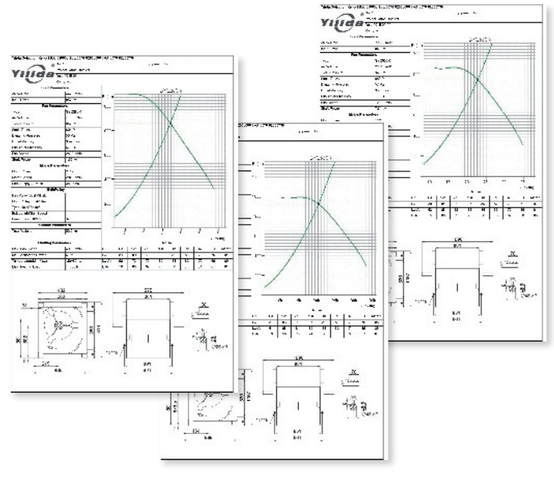
MBD series Air handling units utilise red copper tubing, specially designed Fins, processed by OAK company (USA) Heat Exchanger equipment for high efficiency heat transmission and low thermal contact resistance.



Dynamically Balanced Fans

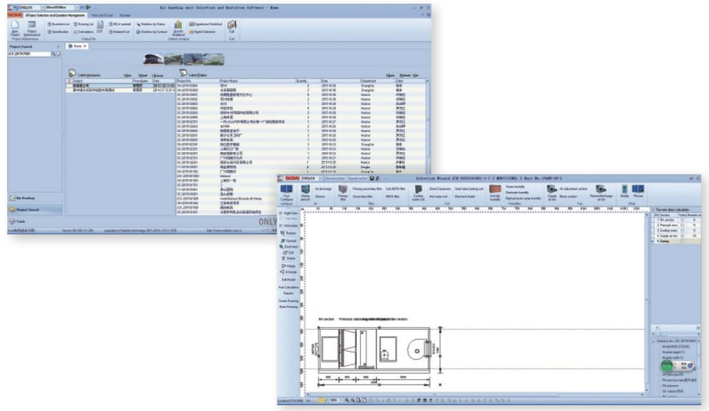
Utilizing our engineering software selection programs, low noise Fans are selected to ensure the fans effectively operate in accordance to the space and efficiency required in the given conditions.Centrifugal Forward, Centrifugal Backward and Plug fan are available.

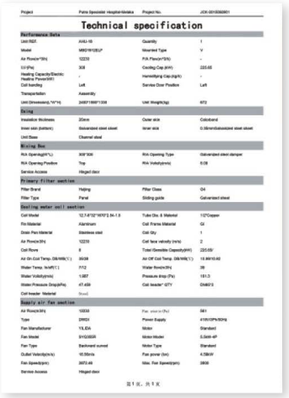
- Fan housing and fixings are galvanized. Anti-static belt drives are provided.
- The motor is totally enclosed.
- The motor is installed on the side rail, enabling convenient belt adjustment.
- Fan and motor are located on the same base
- The base is connected with casing through anti-vibration mounts
- The fan air outlet adopts flexible connections, to isolate the fan noise and vibration from casing.



Professional Software

ONLY is a powerful software package that Hitachi developed to offer a quick and comprehensive service for the customer in order to make the proper technical choice and economic evaluation of each AHU. It is a complete tool that can configure any type of product and respond exactly to the strictest design needs. ONLY can generate a comprehensive economic offer including all the technical data and drawings, as well as the fan performance curves.





AIR FLOW CHART

Model		Air flow rate m^3/h								
Width modular	Height modular	Coil face velocity m/s								
		2	2.25	2.5	2.75	2.85	3	3.5	4	4.5
09	06	2176	2448	2720	2992	3101	3264	3808	4353	4897
12	06	3136	3528	3920	4313	4469	4705	5489	6273	7057
09	09	3420	3847	4275	4702	4873	5130	5985	6840	7695
12	09	4929	5545	6161	6777	7023	7393	8625	9857	11089
15	09	6437	7242	8047	8851	9173	9656	11265	12875	14484
12	12	7169	8065	8961	9857	10216	10753	12546	14338	16130
15	12	9363	10534	11704	12875	13343	14045	16386	18727	21068
18	12	11558	13003	14448	15892	16470	17337	20227	23116	26006
21	12	13753	15472	17191	18910	19597	20629	24067	27505	30943
15	15	12290	13826	15362	16898	17513	18434	21507	24579	27651
18	15	15170	17066	18962	20859	21617	22755	26547	30340	34132
21	15	18050	20307	22563	24819	25722	27075	31588	36101	40613
24	15	20931	23547	26163	28780	29826	31396	36629	41861	47094
19	19	19970	22467	24963	27459	28458	29956	34948	39941	44934
21	19	22348	25141	27935	30728	31846	33522	39109	44696	50283
24	19	25914	29153	32393	35632	36928	38871	45350	51828	58307
27	19	29480	33165	36850	40535	42009	44220	51590	58961	66331
22	22	28063	31571	35079	38587	38587	39990	49110	56126	63142
24	22	30898	34760	38622	42484	44029	46346	54071	61795	69520
27	22	35150	39543	43937	48331	50088	52724	61512	70299	79086
30	22	39401	44327	49252	54177	56147	59102	68953	78803	88653
25	25	36485	41045	45606	50166	51990	54727	63848	72969	82090
27	25	39685	44646	49606	54567	56551	59527	69449	79370	89291
30	25	44486	50046	55607	61168	63392	66728	77850	88971	100093
33	25	49286	55447	61608	67768	70233	73929	86251	98572	110894
36	25	54087	60848	67608	74369	77074	81130	94652	108174	121695
36	28	63359	71279	79198	87118	90286	95038	110878	126718	142557
39	28	68982	77605	86228	94851	98300	103474	120719	137965	155210
45	30	82186	92460	102733	113006	117115	123279	143826	164373	184919
48	30	87947	98940	109934	120927	125324	131920	153907	175894	197881
45	33	91970	103467	114963	126459	131058	137956	160948	183941	206933
48	33	98417	110719	123021	135323	140244	147625	172230	196834	221438
45	35	91970	103467	114963	126459	131058	137956	160948	183941	206933
48	35	104699	117786	130874	143961	149196	157048	183223	209398	235572
51	35	111557	125501	139446	153391	158968	167335	195224	223114	251003
54	35	118415	133217	148019	162820	168741	177622	207226	236830	266433
57	36	129333	145499	161666	177833	184299	193999	226332	258665	290999
60	36		153523	170581	187639	194463	204698	238814	272930	307046

DIMENSIONS OF MODULAR AIR HANDLING SECTIONS

Model		Rated Air flow rate m^3/h	Length mm						
Width modular	Height modular		O/A,R/A mixing plenum and discharge air	Panel Filter Section	Bag filter section	Mini-plated filter section	Air adjustment section	Cooling coil section 1-6rows	Cooling coil section 8-12rows
09	06	2720	700	100	500	400	1300	600	800
12	06	3920	700	100	500	400	1300	600	800
09	09	4275	600	100	500	400	1200	600	800
12	09	6161	600	100	500	400	1200	600	800
15	09	8047	600	100	500	400	1200	600	800
12	12	8961	600	100	500	400	1200	600	800
15	12	11704	600	100	500	400	1200	600	800
18	12	14448	600	100	500	400	1200	600	800
21	12	17191	600	100	500	400	1200	600	800
15	15	15362	600	100	500	400	1200	600	800
18	15	18962	600	100	500	400	1200	600	800
21	15	22563	600	100	500	400	1200	600	800
24	15	26163	600	100	500	400	1200	600	800
19	19	24963	800	100	500	400	1200	800	900
21	19	27935	800	100	500	400	1200	800	900
24	19	32393	800	100	500	400	1200	800	900
27	19	36850	800	100	500	400	1200	800	900
22	22	35079	800	100	500	400	1500	800	900
24	22	38622	800	100	500	400	1500	800	900
27	22	43937	800	100	500	400	1500	800	900
30	22	49252	800	100	500	400	1500	800	900
25	25	45606	1000	100	500	400	1500	800	900
27	25	49606	1000	100	500	400	1500	800	900
30	25	55607	1000	100	500	400	1500	800	900
33	25	61608	1000	100	500	400	1500	800	900
36	25	67608	1200	100	500	400	1500	800	900
36	28	79198	1200	100	500	400	1500	800	900
39	28	83120	1200	100	500	400	1500	800	900
45	30	101772	1200	100	500	400	1500	1000	1200
48	30	108973	1200	100	500	400	1500	1000	1200
45	33	113888	1200	100	500	400	1800	1000	1200
48	33	121946	1200	100	500	400	1800	1000	1200
45	35	121158	1200	100	500	400	1800	1000	1200
48	35	129730	1200	100	500	400	1800	1000	1200
51	35	138303	1200	100	500	400	1800	1000	1200
54	35	146875	1200	100	500	400	1800	1000	1200
57	36	161665	1200	100	500	400	1800	1000	1200
60	36	200000	1200	100	500	400	1800	1000	1200

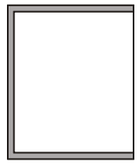
Model		Rated Air flow rate m^3/h	Length mm					
Width modular	Height modular		Steam, hot water heating coil section 1-4rows	Humidifying section	Blank section	Muffler section	Fan section (fan typeA)	Fan section (fan type B)
09	06	2720	300	600	700	900	900(200)	1100(225)
12	06	3920	300	600	700	900	1100(225)	1100(250)
09	09	4275	300	600	600	900	1100(250)	1200(280)
12	09	6161	300	600	600	900	900(280)	900(315)
15	09	8047	300	600	600	900	900(315)	900(355)
12	12	8961	300	600	600	900	900(315)	1400(355)
15	12	11704	300	600	600	900	900(355)	1000(400)
18	12	14448	300	600	600	900	1000(400)	1100(450)
21	12	17191	300	600	600	900	1100(450)	1200(500)
15	15	15362	300	600	600	900	1700(450)	1800(500)
18	15	18962	300	600	600	900	1200(500)	2000(560)
21	15	22563	300	600	600	900	1200(500)	1300(560)
24	15	26163	300	600	600	900	1300(560)	1500(630)
19	19	24963	300	600	600	900	1300(560)	2300(630)
21	19	27935	300	600	600	900	2300(630)	2400(710)
24	19	32393	300	600	600	900	1500(630)	1700(710)
27	19	36850	300	600	600	900	1700(710)	1800(800)
22	22	35079	300	600	600	900	2400(710)	2600(800)
24	22	38622	300	600	600	900	1700(710)	2600(800)
27	22	43937	300	600	600	900	1800(800)	2100(900)
30	22	49252	300	600	600	900	1800(800)	2100(900)
25	25	45606	300	600	600	900	1800(800)	2700(900)
27	25	49606	300	600	600	900	1800(800)	2100(800)
30	25	55607	300	600	600	900	2100(900)	2200(1000)
33	25	61608	300	600	600	900	2100(900)	2200(1000)
36	25	67608	300	600	600	900	2100(900)	2200(1000)
36	28	79198	300	600	600	900	2400(800*2)	
39	28	83120	300	600	600	900	2400(800*2)	
45	30	101772	600	600	600	900	2400(800*2)	
48	30	108973	600	600	600	900	2700(900*2)	
45	33	113888	600	600	600	900	2700(900*2)	
48	33	121946	600	600	600	900	3000(1000*2)	
45	35	121158	600	600	600	900	3000(1000*2)	
48	35	129730	600	600	600	900	3000(1000*2)	
51	35	138303	600	600	600	900	3000(1000*2)	
54	35	146875	600	600	600	900	3000(1000*2)	
57	36	161665	600	600	600	900	3550(1120*2)	
60	36	200000	600	600	600	900	3750(1250*2)	

REMARK:

1. The dimension of the Mixing plenum and the Air discharge section are standard.
2. Special requirements of air opening size and locations can be catered for.
3. The length of the humidifying section can be adjusted as per the actual humidifier requirements and humidifier methods.
4. No blank section is needed. If the wet film humidifier is installed after the cooling coil . Another 600mm is needed if the wet film humidifiers are placed separately.
5. For Access manitance, a Blank Section is essential before the filter section, Coil section, Heating section and Noise Elimination Section.
6. The length of the Heat reclaim section and the dehumidifed section need to be designed as per the actual requirements. The length of the active Carbon Filter section is 900mm.
7. The data in the above table is for reference,the final design will add or minus functional sections according to detail requirement. The actual design of the modules can be adjusted to suit the project design/ specification requirements.

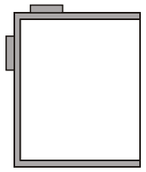
MODULAR AIR HANDLING SECTIONS ILLUSTRATION

Casing



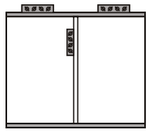
Includes color bond outer panel and galvanized inner panel (stainless as option) with anti-fire polyurethane expanding foam.
Three options of panel thickness: 25mm, 35mm, 50mm

Mixing plenum/ Air discharge Section



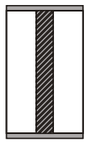
Fresh air and return air mixed fully in the space. The locations and sizes of the fresh air inlet and the return air inlet, and also the length of mixing section can be specified as per specific requirements. Fresh air dampers and return air dampers are available as options; to adjust the fresh air and return air.

Air flow adjustment section

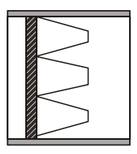


To control the percentage of fresh air, return air and air discharge through the air dampers; to enable maximum efficiency.

Filter section



The quality, resistance, mechanical property, anti-static property, hygroscopicity, frame resistance and filter efficiency; all meet the GB/T 14295-93 standard. The uniformity of the air flow rate on air entering cross-section is more than 80%. The filters adopt a frame and access door/panel, for easy filter replacement.
---panel filter as pre-filter(bag filter as option)
---bag filter as medium-filter (panel filter as option)
---The HEPA is of mini-pleated type.



The active carbon filter is made from various carbon fibers, and is mainly used to clear away any pollutants such as odours, and gases, therefore ensuring clean air quality inside the room (IAQ).

Regular filters need to be added next to the active carbon filter.

Self-clearing filter cartridge HEPA is mainly used in locations where dust can be an issue. With the increase of dust the filter-cartridge surface, when the differential pressure reaches the settings, the differential pressure controller transmits a signal to release the compressed air; to expel the dust in the filter cartridge.

Filters Specification Table: Panel, Bag, Pleated

Unit model		0906	1206	0909	1209	1509	1212	1512	1812	2112	1515	1815	2115	2415
Specification of filter	24"*24"				1	1	1	2	2	3	4	4	6	6
	12"*24"	2	2	1		1						2		2
	20"*24"			1	1	1	2	2	3	3				

Unit model		1919	2119	2419	2719	2222	2422	2722	3022	2525	2725	3025	3325	3625
Specification of filter	24"*24"	9	9	9	12	9	9	12	12	16	16	16	20	20
	12"*24"			3		6	6	4	7			4		4
	20"*24"													

Unit model		3628	3928	4530	4830	4533	4833	4535	4835	5135	5435	5736	6036	
Specification of filter	24"*24"	20	24	28	28	35	35	35	35	40	40	45	45	
	12"*24"	9	6	7	11		5	7	12	8	13	9	14	
	20"*24"													

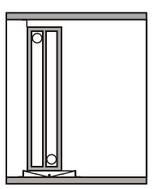
REMARK:
1. Listed table is just for mini-plated filter;
2. Corresponding to the filter of nominal size 24"*24" 12"*24" 20"*24",actual size(length*width*thickness,mm) is:592*592*292 287*592*292 480*592*292.
3. The data in the table is for part models.

The Filter Efficiency Comparison Table between China, the USA, and Europe.

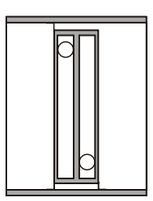
China GB/T14295	Low Efficiency					Middle Efficiency				High and Middle Efficiency		
America ASHRAE	C1	C2,3,4	L5	L6	L7	L8	M9	M10	M11	M12	M13	M14
Europe CEN	G1	G2	G3		G4		F4		F6		F7	F8
Europe EUROVENT	EU1	EU2	EU3		EU4		EU4		EU6		EU7	EU8

China GB/T14295	Sub-High Efficiency				High Efficiency			
America ASHRAE	H15	H16			UH17	UH18	UH19	UH20
Europe CEN	F9	F10	F11	F12			F14	F15-17
Europe EUROVENT	EU9	EU10	EU11		EU12	EU13	EU14	

Cooling Coil Section/ Heating Section



Using red copper tubing, specially designed fins and OAK Company (USA) heat exchanger production equipment, the heat exchangers achieve high efficiency heat transmission and the lowest thermal contact resistance. There are 9-13 fins per inch. Seamless tubes are used. The drip tray is galvanized, with anti-flame insulation externally. Condensate water is discharged by a sloping drip tray.



Available as option
-copper fins and hydrophilic fins
-stainless steel coil end plate and drip tray.
-S/S tube or copper tubes for water supply pipes and water return pipes.
The heating coil can be provided with a number of different options, there are as follows:
Steel tube with steel fins, stainless tube with stainless fins, stainless tube with aluminum fins, steel tubes with aluminum fins.

Cooling Capacity: Fresh Air

Unit Model		Rated Air flow rate m^3/h	Fresh Air Condition											
			4 Rows				6 Rows				8 Rows			
Width modular	Height modular		Sensible Cooling kW	Total Cooling kW	Water Flow L/S	Water Resistance kPa	Sensible Cooling kW	Total Cooling kW	Water Flow L/S	Water Resistance kPa	Sensible Cooling kW	Total Cooling kW	Water Flow L/S	Water Resistance kPa
09	06	2720	14.7	34.8	1.67	40.5	17.8	42.6	2.04	28.2	20.3	48.6	2.33	48
12	06	3920	21.1	49.9	2.39	31.6	26	62	2.97	31.6	29.5	70.6	3.38	53.4
09	09	4275	23.2	54.9	2.62	40.5	28.1	66.9	3.2	28.2	32	76.5	3.66	48
12	09	6161	33.2	78.5	3.76	31.6	40.8	97.5	4.66	31.6	46.4	104.9	5.31	53.4
15	09	8047	43	102.2	4.89	27.6	52.4	124.9	5.97	19.3	59.9	143.2	6.85	33.1
12	12	8961	48.4	114.2	5.46	31.6	59.4	141.8	6.78	31.6	67.5	161.4	7.72	53.4
15	12	11704	63	148.7	7.11	27.6	76.3	181.6	8.68	19.3	87.2	208.3	9.96	33.1
18	12	14448	79.9	190	9.09	50.5	96.6	230.8	11.03	34.9	109.5	261.7	12.51	58.7
21	12	17191	92.3	217.5	10.4	23.8	117	279.9	13.38	56.8	129.2	308.6	14.75	40.7
15	15	15362	82.7	195.1	9.33	27.6	100.1	238.4	11.4	19.3	114.5	273.4	13.07	33.1
18	15	18962	104.9	249.4	11.92	50.5	126.8	302.9	14.48	34.9	143.7	343.4	16.42	58.7
21	15	22563	121.1	285.5	13.65	23.8	153.6	367.4	17.57	56.8	169.6	405.1	19.36	40.7
24	15	26163	143.3	339.8	16.24	36.9	166.5	395.1	20.06	36.5	198.8	475.1	22.71	59.9
19	19	24963	131.7	308.7	14.76	17	168.1	401.7	19.2	41.5	185.8	443.7	21.21	29.8
21	19	27935	150	353.5	16.9	23.8	190.1	454.9	21.75	56.8	209.9	501.5	23.97	40.7
24	19	32393	177.4	420.7	20.11	36.9	206.2	489.1	23.38	10.5	246.2	588.2	28.12	59.5
27	19	36850	205	488	23.33	53.7	239.2	569.1	28.66	52.7	282.5	674.8	32.26	59.8
22	22	35079	189.7	448.1	21.42	27.8	232.7	557.4	26.58	27.7	258.8	618.8	29.64	24.3
24	22	38622	211.6	501.6	23.98	36.9	245.9	583.2	27.88	10.5	293.5	701.3	33.52	59.6
27	22	43937	244.4	581.8	27.81	53.7	285.2	678.6	32.44	15.4	336.8	804.6	37.28	26.7
30	22	49252	268.3	634.9	30.35	31	324.6	773.8	36.99	21.6	380	907.9	43.4	59.8
25	25	45606	251.2	596.5	28.51	42.1	292.4	694.4	33.19	12	347.7	830.7	39.71	59.5
27	25	49606	276	656.9	31.4	53.7	322	766.1	36.62	15.4	380.2	908.4	43.42	59.7
30	25	55607	302.9	716.8	34.27	31	366.5	873.7	41.76	21.6	429.1	1025.1	49	59.5
33	25	61608	-	-	-	-	-	-	-	-	-	-	-	-
36	25	67608	-	-	-	-	-	-	-	-	-	-	-	-
36	28	79198	-	-	-	-	-	-	-	-	-	-	-	-
39	28	83120	-	-	-	-	-	-	-	-	-	-	-	-
45	30	101772	-	-	-	-	-	-	-	-	-	-	-	-
48	30	108973	-	-	-	-	-	-	-	-	-	-	-	-
45	33	1138888	-	-	-	-	-	-	-	-	-	-	-	-
48	33	121946	-	-	-	-	-	-	-	-	-	-	-	-
45	35	121158	-	-	-	-	-	-	-	-	-	-	-	-
48	35	129730	-	-	-	-	-	-	-	-	-	-	-	-
51	35	138303	-	-	-	-	-	-	-	-	-	-	-	-
54	35	146875	-	-	-	-	-	-	-	-	-	-	-	-
57	36	161665	-	-	-	-	-	-	-	-	-	-	-	-
60	36	20000	-	-	-	-	-	-	-	-	-	-	-	-

REMARK:
1. Chilled water inlet & outlet temp 7℃ /12℃
2. Return air condition:air on temp.27℃(DB)/19.5℃(WB);Fresh air condition:air on temp.35℃(DB)/28℃(WB)
3. The data in the above table is for reference only. Once the air condition changes, the capacity would change accordingly.

Cooling Capacity: Return Air

Unit Model		Rated Air flow rate m^3/h	Return Air Condition											
			4 Rows				6 Rows				8 Rows			
Width modular	Height modular		Sensible Cooling kW	Total Cooling kW	Water Flow L/S	Water Resistance kPa	Sensible Cooling kW	Total Cooling kW	Water Flow L/S	Water Resistance kPa	Sensible Cooling kW	Total Cooling kW	Water Flow L/S	Water Resistance kPa
09	06	2720	11.1	14.9	0.71	9.1	13.8	20.5	0.98	24.4	15.4	23.9	1.14	42.8
12	06	3920	16.9	23.7	0.88	16.8	19.9	29.4	1.41	19.1	22.2	34.3	1.64	33.7
09	09	4275	18.2	24.6	1.02	21.1	21.8	32.3	1.55	24.4	24.3	37.6	1.8	42.8
12	09	6161	26.7	37.3	1.79	26.8	31.3	46.2	2.21	19.1	34.9	54.1	2.58	33.7
15	09	8047	35.8	51.3	2.45	57.2	41.9	63	3.01	40.3	45.6	70.3	3.36	29.6
12	12	8961	38.8	54.3	2.6	26.8	45.5	67.2	3.22	19.1	50.8	78.5	3.76	33.7
15	12	11704	52.1	74.6	3.57	57.2	61	91.6	4.38	40.3	66.3	102.3	4.89	29.6
18	12	14448	63.1	89	4.25	29.9	74.8	111.9	5.35	30.5	83	129	6.17	52.6
21	12	17191	76.4	109.2	5.22	49.6	90.4	136.2	6.51	49.9	97.2	150	7.17	25.7
15	15	15362	68.4	97.9	4.68	57.2	80.1	120.3	5.75	40.3	87	134.3	6.42	29.6
18	15	18962	82.8	116.8	5.58	29.9	98.3	146.9	7.02	30.5	109	169.3	8.1	52.6
21	15	22563	100.3	143.3	6.85	49.6	118.6	178.8	8.55	49.9	127.6	196.8	9.41	25.7
24	15	26163	114.7	162.2	7.75	31.4	134.5	200.1	9.57	22.3	149.6	231.9	11.09	38.9
19	19	24963	109.7	155.5	7.44	35.8	130.1	195	9.32	36.3	139.9	214.7	10.27	18.7
21	19	27935	124.1	177.5	8.48	49.6	146.9	221.4	10.59	49.9	158	246.7	11.65	25.7
24	19	32393	142	200.8	9.6	31.4	165.6	247.7	11.84	22.3	185.2	287.1	13.72	38.9
27	19	36850	163.6	233.7	11.17	46	191.8	287.3	13.73	32.5	212.4	330.4	15.8	55.8
22	22	35079	146.9	204.4	9.77	21.9	180.5	270.9	12.95	54.5	195.5	300.2	14.17	12.5
24	22	38622	169.3	239.4	11.45	31.4	198.6	295.4	14.12	22.3	220.8	342.3	16.36	38.9
27	22	43937	195.1	278.7	13.32	46	228.6	342.6	16.38	32.5	253.2	394	18.83	55.8
30	22	49252	212	295.2	14.11	18.2	258.7	389.7	18.63	45.1	280.8	434.6	20.78	33
25	25	45606	200.9	285.1	13.63	35.9	235.5	351.2	16.79	25.4	261.5	405.9	19.41	44.1
27	25	49606	220.3	314.6	15.04	46	258.2	386.8	18.49	32.5	285.9	444.8	21.26	55.8
30	25	55607	239.4	333.3	15.94	18.2	292.1	440	21.04	45.1	317	490.7	23.46	33
33	25	61608	268.4	377.5	18.05	24.9	326.1	493.3	23.58	59.8	353.6	549.1	26.25	44.1
36	25	67608	297.5	421.8	20.16	32.9	360.1	546.6	25.27	33.4	390.2	607.4	29.03	57.3
36	28	79198	340	482	23.04	32.9	411.5	624.7	28.89	33.4	445.9	694.2	33.18	57.3
39	28	83120	368.8	525.8	25.14	45.2	436.4	657	31.4	45.5	469.4	723.2	34.58	23.4
45	30	101772	455	627.6	30	28.9	521.8	774.8	37.04	20.6	580.8	899.6	43	36
48	30	108973	479.8	680.8	32.54	35.4	562.6	838.8	40.1	25.1	624.8	969.6	46.36	43.6
45	33	1138888	498	702.4	33.58	28.9	584	867	41.44	20.6	650	1007	48.12	36
48	33	121946	537	761.8	36.42	28.9	629.6	938.6	44.1	20.6	699.2	1085	51.2	36
45	35	121158	529.6	747.2	35.72	28.9	621.2	922.4	44.1	20.6	691.4	1071	51.2	36
48	35	129730	571.2	810.4	38.74	35.4	669.8	998.6	47.74	25	743.8	1154	55.9	44
51	35	138303	612.8	873.6	41.76	42.8	718.2	1075	51.38	30	796	1238	59.16	52
54	35	146875	654.4	937	44.78	51.1	766.8	1151	55	36	848.4	1321	61.44	26
57	36	161665	694	964.2	48.68	57	847.8	1276	59.74	40	920.2	1423	66	29
60	36	20000	830.6	1136	52.84	22.7	1022	1522	64.78	49.4	1117	1715	72.18	36.1

REMARK:
1. Chilled water inlet & outlet temp 7℃ /12℃
2. Return air condition:air on temp.27℃ (DB)/19.5℃(WB);Fresh air condition:air on temp.35℃(DB)/28℃(WB)
3. The data in the above table is for reference only. Once the air condition changes, the capacity would change accordingly.

Heating Capacity: Fresh Air

Unit Model		Rated Air flow rate m^3/h	Fresh Air Condition											
			1 Rows			2 Rows			3 Rows			4 Rows		
Width modular	Height modular		Heating Capacity kW	Water Flow L/S	Water Resistance kPa	Heating Capacity kW	Water Flow L/S	Water Resistance kPa	Heating Capacity kW	Water Flow L/S	Water Resistance kPa	Heating Capacity kW	Water Flow L/S	Water Resistance kPa
09	06	2720	11.3	0.28	5.4	21.9	0.53	24.5	27.7	0.68	9.4	34.4	0.84	16.1
12	06	3920	17.5	0.43	12.9	32.7	0.8	57.7	41.6	1.01	21.9	44.3	1.1	25
09	09	4275	17.9	0.44	5.4	34.5	0.84	24.6	43.6	1.06	9.4	54.1	1.32	16.2
12	09	6161	27.5	0.67	12.9	51.4	1.25	57.8	65.4	1.59	22	80.1	1.95	37.5
15	09	8047	37.2	0.91	24.3	68.3	1.67	21.2	87.2	2.12	41.2	103.7	2.52	25.7
12	12	8961	40	0.97	13	74.7	1.82	58	95.1	2.31	22.1	116.6	2.83	37.9
15	12	11704	54.2	1.32	24.4	99.4	2.29	19.3	126.9	3.09	41.5	159	3.67	26
18	12	14448	68.4	1.66	40.4	118.4	2.88	31.7	154.3	3.75	25.1	188.7	4.59	42.6
21	12	17191	76.3	1.86	11.1	143	3.48	48.1	186.1	4.79	9.2	223.1	5.42	31.9
15	15	15362	71.1	1.74	24.5	130.4	3	19.4	166.5	4.05	41.7	198	4.82	26.3
18	15	18962	89.7	2.28	40.5	155.5	3.78	32	202.5	4.92	25.5	247.7	6.02	43.1
21	15	22563	100.2	2.44	11.2	187.6	4.56	48.4	244.2	59.4	38.4	292.8	7.12	32.5
24	15	26163	118.7	2.89	15.9	212.9	5.18	25.7	286	6.95	54.7	342.5	8.33	46.1
19	19	24963	111.2	2.89	47.1	205.8	5	37.3	268	6.52	29.8	327.3	7.96	50.4
21	19	27935	124.1	3.02	11.3	232.3	5.65	48.8	302.4	7.35	38.9	362.5	8.81	33.1
24	19	32393	147	3.57	16.1	255.4	6.21	13.4	337.7	8.44	28	424.1	10.31	47
27	19	36850	170	4.13	21.9	294.9	7.17	18.2	398.6	9.69	38	485.7	11.53	25.2
22	22	35079	157	3.82	13	277.3	6.64	11	364.1	9.06	22.9	439.8	10.78	15.7
24	22	38622	175.2	4.26	16.3	304.5	7.64	26.6	422.2	10.27	56.2	505.6	12.29	47.9
27	22	43937	202.7	5.47	26.6	351.7	9.57	22.8	475.3	12.59	19.8	565.3	15.52	34.2
30	22	49252	230.1	5.6	29.1	399	9.7	24.4	537	13.05	50.9	638.6	15.52	27.2
25	25	45606	208.2	5.06	18.3	361.5	8.79	15.7	490.3	11.92	32.5	598.5	14.55	54.2
27	25	49606	228.8	5.56	22.4	397.1	9.93	36.6	536.6	13.05	39.6	638.2	17.15	19.4
30	25	55607	259.8	6.32	29.4	450.5	10.95	25	606.2	14.74	51.8	721	17.16	20.1
33	25	61608	290.9	7.07	37.5	504	12.25	31.7	675.9	16.43	27.4	803.8	19.34	44.8
36	25	67608	322.1	7.83	46.9	557.6	13.38	39.5	756.2	17.65	33.9	886.8	21.56	55.5
36	28	79198	368.1	8.95	47.4	637.3	15.49	40.6	864.2	20.18	35.5	1013.4	24.64	57.8
39	28	83120	399	9.7	57.7	690.4	16.78	46.4	898.8	21.84	37.7	1077.6	26.2	32.8
45	30	101772	460	11.18	15.7	799.6	19.44	13.9	1110.9	27	54.4	1330.4	32.34	47.2
48	30	108973	497.2	12.08	18.3	863.4	21	16.3	1171.2	28.48	23.4	1429.8	34.76	55.4
45	33	1138888	514.8	12.52	15.9	894.8	21.76	14.4	1217.4	29.6	29.4	1488.6	36.2	48.5
48	33	121946	566.4	13.52	18.7	966.2	24.22	31.2	1336.6	31.86	34.4	1600	38.9	36.8
45	35	121158	547.8	13.22	16.1	951.8	24.72	58.5	1322.4	32.14	56	1583.8	38.5	49.3
48	35	129730	591.8	14.38	18.9	1027.8	25.6	31.6	1421.8	33.9	35	1702.2	40.32	25.8
51	35	138303	636	15.46	22	1104	26.84	20	1521.6	36.3	40.6	1776.2	43.18	29.8
54	35	146875	680.4	16.54	25.3	1180.2	29.48	42.2	1621.2	38.72	46.7	1894.4	46.06	34
57	36	161665	753.6	18.32	29.1	1306.8	31.76	26.5	1789.8	41.44	24.6	2093.2	49.8	24.5
60	36	20000	836.6	19.44	33.1	1476.6	33.7	29.9	2056	43.94	27.7	2432	52.78	27.5

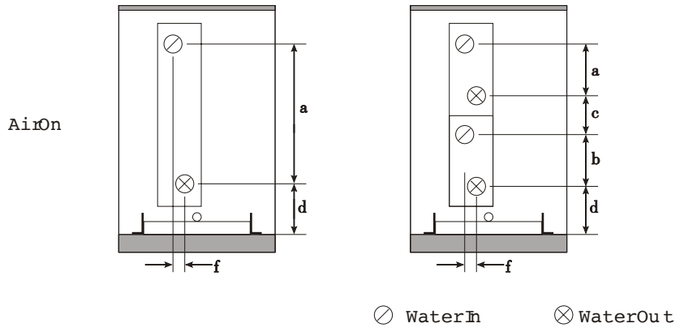
REMARK:
1. Hot water inlet & outlet temp 60℃/50℃
2. Return air condition:air on temp.15℃(DB);fresh air condition:air on temp.7℃(DB);
3. The data in the above table is for reference only. Once the air condition changes, the capacity would change accordingly.

Heating Capacity: Return Air

Unit Model		Rated Air flow rate m^3/h	Return Air Condition											
			1 Rows			2 Rows			3 Rows			4 Rows		
Width modular	Height modular		Heating Capacity kW	Water Flow L/S	Water Resistance kPa	Heating Capacity kW	Water Flow L/S	Water Resistance kPa	Heating Capacity kW	Water Flow L/S	Water Resistance kPa	Heating Capacity kW	Water Flow L/S	Water Resistance kPa
09	06	2720	8.9	0.28	5.4	17.5	0.53	24.5	23.8	0.68	9.4	27.8	0.84	16.1
12	06	3920	13.8	0.43	12.9	26.3	0.8	57.7	33.4	1.01	21.9	41.4	1.1	25
09	09	4275	14.9	0.44	5.4	29.2	0.84	24.6	36.5	1.06	9.4	45.5	1.32	16.2
12	09	6161	21.7	0.67	12.9	41.3	1.25	57.8	52.5	1.59	22	65.1	1.95	37.5
15	09	8047	29.6	0.91	24.3	55.1	1.67	21.2	70.3	2.12	41.2	86.5	2.52	25.7
12	12	8961	31.6	0.97	13	60.1	1.82	58	76.3	2.31	22.1	94.6	2.83	37.9
15	12	11704	42	1.32	24.4	75	2.29	19.3	102.2	3.09	41.5	125.8	3.67	26
18	12	14448	54.6	1.66	40.4	95	2.88	31.7	128.2	3.75	25.1	153.4	4.59	42.6
21	12	17191	66.1	1.86	11.1	114.9	3.48	48.1	149.9	4.79	9.2	184.5	5.42	31.9
15	15	15362	56.5	1.74	24.5	105.2	3	19.4	134.2	4.05	41.7	165.1	4.82	26.3
18	15	18962	71.6	2.28	40.5	124.6	3.78	32	168.3	4.92	25.5	201.3	6.02	43.1
21	15	22563	86.8	2.44	11.2	150.9	4.56	48.4	196.8	59.4	38.4	242.2	7.12	32.5
24	15	26163	102.1	2.89	15.9	177.2	5.18	25.7	230.8	6.95	54.7	278.5	8.33	46.1
19	19	24963	95	2.89	47.1	165.1	5	37.3	222.5	6.52	29.8	260.6	7.96	50.4
21	19	27935	107.5	3.02	11.3	186.8	5.65	48.8	243.6	7.35	38.9	299.9	8.81	33.1
24	19	32393	126.4	3.57	16.1	219.3	6.21	13.4	285.8	8.44	28	344.8	10.31	47
27	19	36850	135	4.13	21.9	235.4	7.17	18.2	321.1	9.69	38	395.4	11.53	25.2
22	22	35079	126.9	3.82	13	223	6.64	11	293.5	9.06	22.9	363.7	10.78	15.7
24	22	38622	150.7	4.26	16.3	261.5	7.64	26.6	340.8	10.27	56.2	332.7	12.29	47.9
27	22	43937	160.9	5.47	26.6	280.7	9.57	22.8	391.2	12.59	19.8	471.4	15.52	34.2
30	22	49252	183.2	5.6	29.1	319.2	9.7	24.4	433.2	13.05	50.9	531.8	15.52	27.2
25	25	45606	165	5.06	18.3	309.9	8.79	15.7	403.7	11.92	32.5	486.8	14.55	54.2
27	25	49606	181.7	5.56	22.4	339.2	9.93	36.6	441.7	13.05	39.6	532.2	17.15	19.4
30	25	55607	206.9	6.32	29.4	360.4	10.95	25	489.1	14.74	51.8	585.1	17.16	20.1
33	25	61608	232.1	7.07	37.5	403.9	12.25	31.7	545.9	16.43	27.4	653.1	19.34	44.8
36	25	67608	257.4	7.83	46.9	447.6	13.38	39.5	612.8	17.65	33.9	721.2	21.56	55.5
36	28	79198	294.2	8.95	47.4	511.6	15.49	40.6	700.3	20.18	35.5	824.2	24.64	57.8
39	28	83120	319.2	9.7	57.7	554.8	16.78	46.4	723.8	21.84	37.7	891.6	26.2	32.8
45	30	101772	396.2	11.18	15.7	687.6	19.44	13.9	896.2	27	54.4	1081.2	32.34	47.2
48	30	108973	426.6	12.08	18.3	740.4	21	16.3	964.4	28.48	23.4	1163	34.76	55.4
45	33	1138888	443.4	12.52	15.9	769.6	21.76	14.4	1003	29.6	29.4	1210	36.2	48.5
48	33	121946	477.6	13.52	18.7	828.4	24.22	31.2	1079.2	31.86	34.4	1301.4	38.9	36.8
45	35	121158	471.6	13.22	16.1	818.6	24.72	58.5	1067	32.14	56	1287.2	38.5	49.3
48	35	129730	508	14.38	18.9	881.4	25.6	31.6	1148.2	33.9	35	1384.4	40.32	25.8
51	35	138303	544.4	15.46	22	944	26.84	20	1229.4	36.3	40.6	1481.8	43.18	29.8
54	35	146875	580.8	16.54	25.3	1006.8	29.48	42.2	1310.8	38.72	46.7	1579.2	46.06	34
57	36	161665	642	18.32	29.1	1112.6	31.76	26.5	1447.8	41.44	24.6	1698.4	49.8	24.5
60	36	20000	735.6	19.44	33.1	1258.4	33.7	29.9	1662	43.94	27.7	2013	52.78	27.5

REMARK:
1. Hot water inlet & outlet temp 60℃/50℃
2. Return air condition:air on temp.15℃(DB);fresh air condition:air on temp.7℃(DB);
3. The data in the above table is for reference only. Once the air condition changes, the capacity would change accordingly.

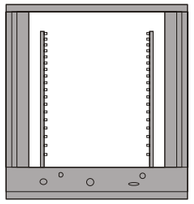
Water Pipe Diameter



specification		A	B	C	d			pipe size of water inlet/outlet(DN)					f				pipe size of condensate water(DN)
width	height				25mm panel	35mm panel	50mm panel	1/2/3 rows	4 rows	5 rows	6 rows	8 rows	1 rows	2/3/4 rows	5 rows	8 rows	
XX	06	418	-	-	147	157	162	40	40	40	40	40	66	83	110	193	unit height module 06-25, DN 32; unit height module 26-36 or air flow>40000m³/h, DN 50.
XX	09	672	-	-	147	157	162	40	40	40	40	40	66	83	110	193	
XX	12	912	-	-	161	171	186	40	65	65	65	65	66	83	110	193	
XX	15	1230	-	-	161	171	186	40	65	65	65	65	66	83	110	193	
XX	19	722	722	154	176	186	201	40	50	50	50	50	66	83	110	193	
XX	22	849	913	154	176	186	201	40	65	65	65	65	66	83	110	193	
XX	25	976	1040	154	176	186	201	40	65	65	65	65	66	83	110	193	

REMARK:
1. The data in the above table is for reference only. Water pipe location and size will be different if there pipe size of water in/out change, please contact Hitachi for detailed data.

Spraying Section



The spraying section will improve the air handling process, which including:

Enthalpy Drop/Enthaply Increase/Dehumidify/Humidify
Temperature Decrease/ Temperature Increase
The spray in the enterclose of air flow will improve the air quality.

Option for single row, two rows and three rows spraying.

HUMIDIFIER SECTION

Introduction of Humidifier Type as Option

Method	Isothermal humidification			Iso-enthalph wetting	
Humidifier Type	Dry steam humidification	Electrode humidification	Electric heating humidification	High pressure spraying humidification	Wet film humidification
Humidification Theory	Bring in the steam directly	Amps:Water to steam through heating	Adopt electrical heating for water boiling-to become steam	The pressurized water is pulverized through nozzle, and evaporates	Infiltrate the wetfilm through water.Air passes through the wet film and the water evaporates.
Condition	Steam pressure: ≤0.4MPa	Waterquality: clean tap water or soft water	Waterquality: clean tap water or other equivalent water	Waterquality: clean tap water or other equivalent water	Waterquality: clean tap water or other equivalent water
Range of Usage	Cleansing of air conditiong system	All kinds of air conditioning system	All kinds of air conditioning system	All kinds of air conditioning system	Non-cleansing conditioning system

Electrode Humidification Sheet

Model	434	834	1534	2364	3264	4564	6464	9064
Humidification amount	4	8	15	23	32	45	64	90

Dry steam humidification Amount Sheet

Humidification Amount(kg/h)	Model	133			159			219			273	
	Orifice bore diameter	Φ2	Φ3	Φ4	Φ6	Φ7	Φ8	Φ9	Φ10	Φ12	Φ14	Φ16
Steam Pressure Mpa	0.1	2	9	22	48	61	70	75	102	139	192	240
	0.2	3.5	14	35	68	105	120	140	160	215	310	390
	0.3	4.5	18	40	95	153	188	200	217	293	445	560
	0.4	6	24	58	120	196	228	245	274	374	585	750

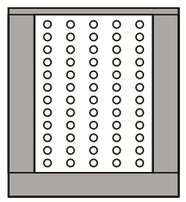
Wet Film Humidification Amount Sheet

Unit Model	Wet Film HumidificationAmount kg/h				
	Efficiency 40%	Efficiency 60%	Efficiency 75%	Efficiency 85%	
09	06	7	11	14	15
12	06	10	16	19	22
09	09	12	18	22	24
12	09	17	25	31	34
15	09	22	34	41	46
12	12	25	37	45	50
15	12	33	49	59	66
18	12	41	60	74	82
21	12	49	72	88	98
15	15	43	64	78	87
18	15	54	79	97	109
21	15	64	94	116	130
24	15	74	110	134	150
19	19	79	118	144	161
21	19	82	122	150	167
24	19	97	142	174	195
27	19	110	162	198	222
22	22	110	162	198	221
24	22	114	169	207	231
27	22	130	192	235	263
30	22	146	215	264	295
25	25	141	207	254	284
27	25	146	215	264	295
30	25	164	242	296	331

REMARK:

1. Humidification amounts correspond to the condition before being humidified:28℃ DB,relative humidity level:10%
2. When the humidification efficiency of wet film is 40%,60%,75%,80%,the thickness is 50,100,150,200mm;
3. The data above is for reference only. Specification for product improvement changes, without prior notice.

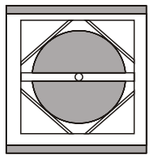
Noise Elimination Section



The noise elimination section will refuce the noise of the air outlet fan or return opening and is therefore located at the supply air section or return air section. A chip dissipative muffler is used inside this section,to eliminate the noise utilising acoustic material. Extra-fine glass wool with high sound absorption efficiency is adopted as the acoustic material. This material is anti-fire, antisepsis, and damp proof. The dissipative muffler is extremely effective in eliminating medium and high frequency noise, especially for air conditioning eliminating.

Noise Elimination Section	Space needed mm	Center frequency attenuation data of octave frequency band(dB)							
		63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz
one	900	8	14	18	21	22	20	16	12
two	1500	10	17	25	28	31	28	24	18

Heat Reclaim Section



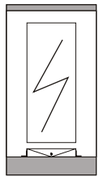
Heat reclaim section will reclaim the sensible heating and the latent heat.
Air Exhaust and Fresh Air distribute through the wheel in reverse direction alternately.
The heat reclaim efficiency is 66-85%.

Intermediate media heat reclaim device: the intermediate is heated when go through the heat exchanger in heat stream, then liquid is sent into the heat exchanger which needs to be heated,after gives off the heat then return to the heat exchanger in the heat stream. Only sensible heat is reclaimed and a circulation pump need to be equipped. The Commonly use water or ethlene glycol as intermediate media.

Intersection heat reclaim: The heat exchange is happened in the fresh air and discharge air mixing plenum. There are sensible heat exchanger and total heat exchanger dut to different heat exchange material, the heat reclaim efficiency is 55-65%.

Heat pipe heat reclaim: heat pipe heat exchanger is a heat exchange component the heat transfer progress of which is a phase transition of work substance (ammonium, Freon).Heat pipe heat exchanger has compact structure,large heat transfer area,high thermal efficiency,each pipe create a system of its own,easy to replace.

Electrical Heater Section

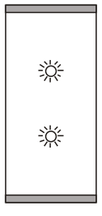


The electrical heating equipment adopts stainless steel spiral fins or PTC heating elements.
The electrical heating elements are fixed on the galvanized frame.

The electrical power is 380v or 220v(per the client's requirements),and can have one or multi wirings to meet the control requirements of various electrical heating power.

The electrical heating connection would lead to the junction box which is outside the casing.
The main control cabinet would be installed by the client themselves.

Ultraviolet Radiation Sterilization Section

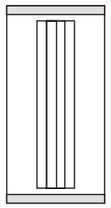


Ultraviolet sterilization damage and change the DNA structure of microorganism through the ultraviolet irradiation, making the bacteria died instantly and cannot reproduce,achieve the purpose of sterilization.

The UVC ultraviolet ray play the real role on sterilization, because the c-band ultraviolet ray can be easily absorbed by the DNA of the organism, especially the UV light around 253.7 nm.

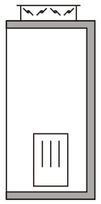
Ultraviolet sterilization is a pure physical disinfection method, simple and convenient, broad spectrum and high efficiency, no secondary pollution, easy to management and automation, etc.

Electronic Purification Section



Using high voltage electrostatic dust removal and photocatalytic disinfection technology to charge all the suspended particulate matter in the air, then quickly absorbed by reverse electronic, by this way the dust filtration effect can be as high as F7 filter or more. Besides, the strong electric field by using high voltage electrostatic technology can rapidly destroy the nucleus of microorganism such as bacteria, viruses and dust mites in the air. The residual material is sintered and absorbed by dust collecting area, at the same time the photocatalysis products can be added as a supplement, the sterilization rate can be as high as 99% and above, therefore completely end the spread of bacteria, viruses, infectious virus, and the cross infection.

Ozone Generating Section

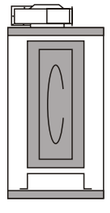


Adopting air and oxygen as raw material, Use the theory of a certain frequency of high voltage corona discharge to produce ozone, ozone a lively oxygen more than oxygen molecules and chemical performance is particularly lively, is a strong oxidizer.

It can be oxidized decomposing bacteria enzyme, must be within can also be directly with bacteria, viruses, destruction of their cells, decompose cellular DNA, cells, parasitic bacterium, virus solubility.

Ozone is one of the world recognized the broad spectrum of efficient sterilization disinfectant, no toxic residue, no second pollution formed, known as "the most clean oxidant and disinfectant".

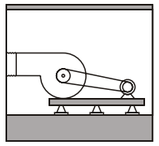
Rotary Wheel Dehumidification Section



The moisture air is absorbed by the moisture absorption surface in the wheel, then delivered to regeneration zone by the deliver device. The moisture in the air is heated in the wheel and turn to be the vapor, then exhaust out by the regenerate fan. The honeycomb wheel continue rotate at the 12~24 turn/ hour speed, processing (moisture), regeneration (drying) process, and continue the cycle, ultimately achieve dehumidification effect. The rotary wheel dehumidification has a wide range of application. And under low temperature condition, the dehumidification effect can reach as high as 100%. The wheel can be clean, and with long service life, easy to operate, reliable, stable operation, easy maintenance.

Widely used in pharmaceutical, chemical, electronics, textiles, food, glass. Shipbuilding, chemical industry, military industry, rubber, Banks, printing industry, aerospace industry, etc

Fan Section



To meet the correct requirement of air flow and static pressure,fans are selected using engineering fan selection software programs.

Fans are dynamically balanced and are available as centrifugal forward,backward or or wing type as options.

Fan housing and fixings are galvanized.Anti-static belt drives are provided.
The motor is of a totally enclosed type and installed on the side rail,enabling convenient belt adjustment. The power is 380V/50HZ.

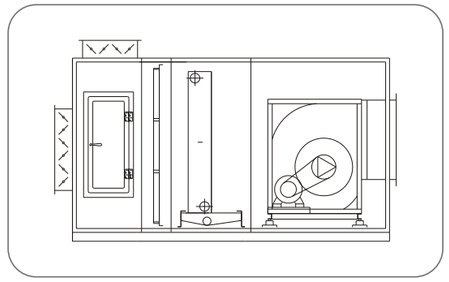
Fan and motor are located on the same base, which is connected with casing through antivibration mounts. The fan outlet adopts flexible connections,to isolate the fan noise and vibration from the casing.

Weight List of Fan, Motor and Driving Medium

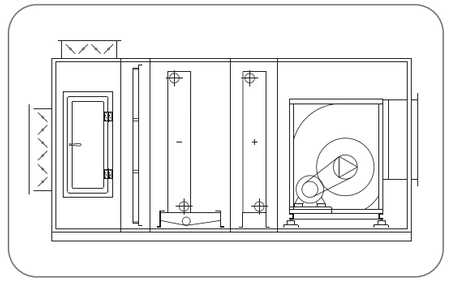
Fan Model	Forward Fan	Backward Fan	Frame of Fan and Motor	Motor Power	Motor Weight	Driving Medium Weight
	kg	kg	kg	KW	kg	kg
180	10	-	11	0.37	11	3
200	11	-	13	0.55	16	3
225	13	-	17	0.75	17	3
250	22	23	17	1.1	21	4
280	25	26	18	1.5	25	5
315	31	32	20	2.2	32	7
355	41	44	21	3	38	8
400	53	59	38	4	49	14
450	57	74	42	5.5	64	20
500	77	84	45	7.5	77	23
560	126	138	46	11	122	35
630	176	177	53	15	140	42
710	220	253	58	18.5	170	56
800	289	326	78	22	186	63
900	384	427	85	30	254	84
1000	450	518	92	37	308	107
-	-	-	-	45	335	124
-	-	-	-	55	450	135
-	-	-	-	75	534	163

COMBINATION CHOICES OF MODULAR AIR HANDLING UNITS

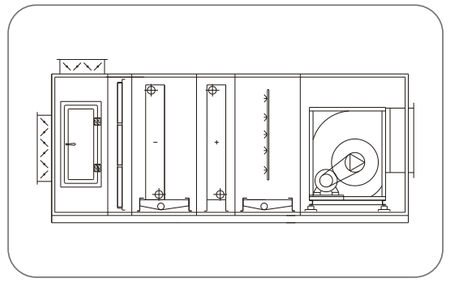
Mixing section+pre-filter section
+coil section+fan section



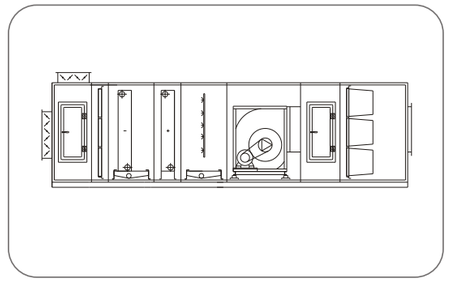
Mixing section+pre-filter section+coil section
+ heating section+fan section



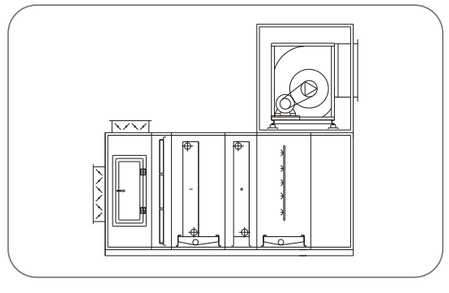
Mixing section+pre-filter section+coil section+
heating section+humidification section+fan section



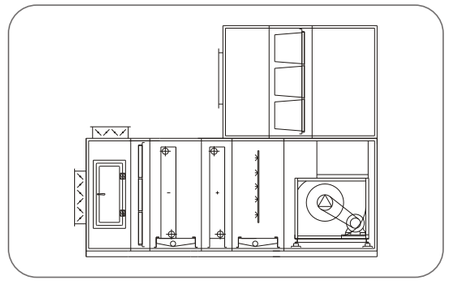
Mixing section+pre-filter section+coil section+
heating section+humidification section+fan
section+uniform section+medium filter section
+air discharge section



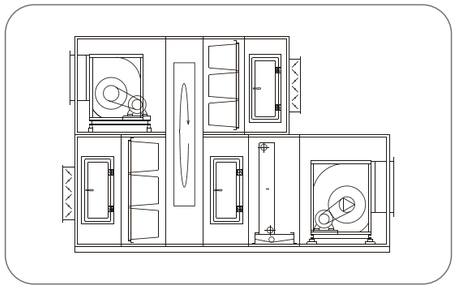
Mixing section+pre-filter section+coil section+
heating section+humidification section+
blank section+fan section



Mixing section+pre-filter section+coil section+
heating section+humidification section+fan
section+uniform section+medium filter section
+air discharge section

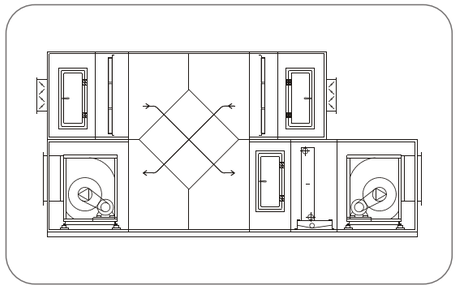


Return air section+pre-filter section+
rotary wheel section+air exhaust section



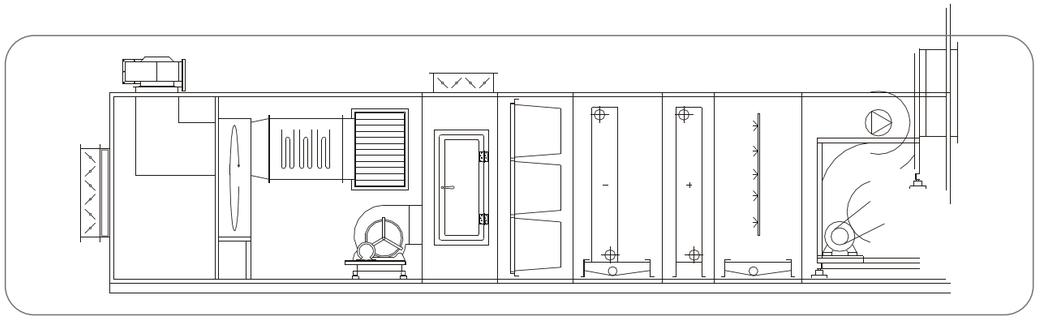
Fresh air section+pre-filter section+rotary wheel section+blank section+coil section+air discharge section

Return air section+pre-filter section+plate heat reclaim section+air exhaust section



Fresh air section+pre-filter section+plate heat reclaim+blank section+coil section+air discharge section

Fresh air section+pre-filter section+electrical heating section+dehumidification rotary wheel+regeneration fan section



Fresh air section+pre-filter section+dehumidification rotary wheel+induced draft fan+return air+medium filter+coil section+heating section+humidification section+air discharge section

WEIGHT OF THE MODULAR SECTIONS

Unit Specification		Blank Casing weight(kg)													
Width Module	Height Module	Panel thickness 25mm					Panel thickness 35mm					Panel thickness 50mm			
		end plate	300	600	900	1200	end plate	300	600	900	1200	end plate	300	600	900
09	06	6	31	49	66	84	7	32	50	68	87	8	34	55	76
12	06	8	33	53	72	91	9	34	54	74	94	10	37	60	83
09	09	9	38	58	77	96	10	39	59	79	99	10	42	65	88
12	09	12	40	62	83	104	13	41	63	85	107	13	45	70	96
15	09	14	43	66	88	111	15	44	67	91	115	16	48	75	103
12	12	15	48	71	93	116	16	49	72	96	120	17	53	81	108
15	12	18	50	75	99	123	19	51	76	102	128	20	56	86	116
18	12	21	52	78	105	131	23	53	81	108	136	24	59	91	123
21	12	25	55	82	110	138	26	56	85	114	144	27	61	96	131
15	15	23	57	84	110	136	23	58	86	113	141	24	64	96	128
18	15	27	60	88	115	143	27	61	90	119	149	29	67	101	136
21	15	31	62	91	121	151	32	63	94	125	156	33	69	106	143
24	15	35	64	95	127	158	36	66	98	131	164	37	72	112	151
19	19	35	70	101	132	162	36	72	104	136	168	37	78	117	155
21	19	38	72	103	135	167	39	73	106	140	174	40	80	120	160
24	19	43	74	107	141	174	44	76	111	146	181	45	83	125	168
27	19	50	76	111	147	182	51	78	115	152	189	56	86	131	175
22	22	47	80	114	148	182	48	81	117	153	189	53	89	132	175
24	22	51	81	116	152	187	52	83	120	157	194	57	91	136	180
27	22	57	84	120	157	194	59	85	124	163	202	64	94	141	188
30	22	63	86	124	163	201	65	88	128	168	210	71	97	146	195
25	25	59	89	127	164	202	61	91	130	170	210	67	100	148	195
27	25	65	91	129	168	206	66	93	133	174	215	72	102	151	200
30	25	72	93	133	174	214	73	95	137	180	223	80	105	156	208
33	25	79	95	137	179	221	81	98	142	185	231	88	108	161	215
36	25	86	98	141	185	228	88	100	146	191	239	96	110	167	223
36	28	95	105	150	196	241	98	107	155	202	251	107	118	177	235
39	28	104	107	154	201	248	106	110	159	208	259	116	121	182	243
45	30	128	117	168	220	271	131	120	174	228	283	143	132	199	266
48	30	135	119	172	225	278	139	122	178	234	291	153	135	205	274
45	33	140	124	177	230	283	144	127	183	239	296	157	140	210	279
48	33	150	126	181	236	291	154	129	187	245	304	168	143	215	286
45	35	149	129	183	237	292	153	132	189	246	305	167	146	216	287
48	35	158	131	187	243	299	162	134	193	252	313	178	149	222	295
51	35	168	134	191	249	306	172	137	197	258	321	189	151	227	302
54	35	178	136	195	254	314	182	139	202	264	328	200	154	232	310
57	36	193	148	209	270	331	197	151	216	280	346	216	167	247	327
60	36	204	150	213	276	338	209	154	220	286	354	229	170	252	335

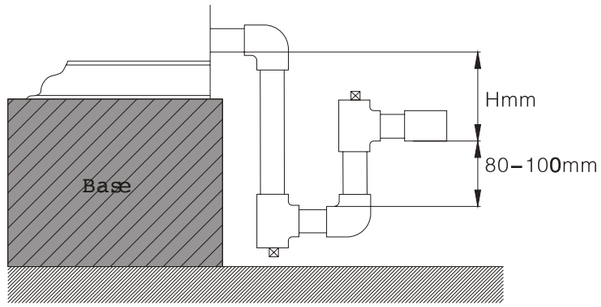
NOTE:
1. Weight of coil section=weight of corresponding casing length module of coil section+weight of coils of corresponding rows
2. Weight of fan section=weight of corresponding casing length module of fan section+fan weight+motor weight+driving medium weight+weight of fan motor base
3. Total weight of unit+calculated weight of each functional section+end plate weight.

WEIGHT OF EACH SECTION (PART)

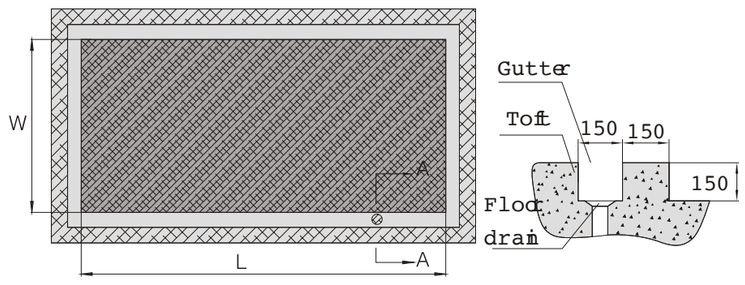
Unit Specification		Weight kg																
Width Module	Height Module	Dampers of mixing section	Primary plate filter section	Primary bag filter section	Water collector	Muffler	Wet film humidifier(dry)				Standard 1/2"coil(without water)							
							Thickness 50mm	Thickness 100mm	Thickness 150mm	Thickness 200mm	1 Rows	2 Rows	3 Rows	4 Rows	5 Rows	8 Rows	10 Rows	12 Rows
09	06	15	5	3	5	20	8	10	11	13	15	18	20	22	25	34	39	45
12	06	22	6	4	7	26	9	11	13	16	16	20	23	26	30	41	48	56
09	09	15	7	4	7	30	K	11	13	15	24	29	32	36	40	54	63	72
12	09	22	9	6	10	40	10	13	15	18	25	32	37	41	47	65	77	89
15	09	29	11	7	13	50	11	14	18	21	27	35	41	47	54	76	91	106
12	12	22	12	8	15	53	11	14	18	22	37	46	53	60	69	94	111	129
15	12	29	15	10	20	66	12	16	21	25	39	50	59	68	79	111	132	153
18	12	51	18	12	24	79	13	18	23	28	41	55	65	76	89	127	153	178
21	12	61	21	14	29	92	14	20	26	31	43	59	72	85	99	144	173	203
15	15	42	19	12	26	83	13	18	24	29	51	66	78	89	103	145	173	201
18	15	51	23	15	32	99	14	20	27	33	53	71	86	100	117	167	200	233
21	15	61	26	17	38	116	16	23	29	36	56	77	94	111	130	188	227	266
24	15	70	30	19	44	132	17	25	32	40	59	82	102	122	144	210	254	298
19	19	54	30	19	42	132	16	24	31	38	68	91	110	129	151	216	260	303
21	19	61	34	21	47	146	17	25	33	41	70	96	117	138	162	234	282	330
24	19	70	38	25	54	167	18	27	36	45	73	102	127	151	179	261	316	370
27	19	80	43	28	61	188	20	30	40	50	77	109	137	165	195	288	349	410
22	22	84	41	26	58	177	19	29	38	48	84	117	143	170	200	290	349	409
24	22	92	44	28	64	194	20	30	41	51	87	122	151	180	213	311	376	441
27	22	105	50	32	73	218	22	33	44	55	91	130	163	196	233	343	416	489
30	22	118	55	35	82	242	23	35	48	60	95	138	175	212	253	375	456	537
25	25	97	52	34	76	229	22	33	45	57	100	141	175	210	248	363	440	517
27	25	105	57	36	83	248	23	35	48	60	103	147	184	222	263	387	470	553
30	25	118	63	40	93	275	24	38	52	65	108	156	198	240	286	423	515	607
33	25	130	69	44	103	303	26	41	55	70	112	165	211	258	308	459	560	661
36	25	177	76	48	113	330	27	43	59	75	117	174	225	276	331	495	605	714
36	28	177	85	54	132	370	30	48	66	84	136	203	263	323	387	579	708	836
39	28	192	92	59	144	400	32	51	70	90	141	214	279	344	413	621	760	899
45	30	224	113	73	171	495	36	58	80	103	156	241	319	396	478	724	888	1052
48	30	239	121	77	183	528	37	61	85	108	162	252	335	418	505	767	942	1117
45	33	224	125	80	192	545	38	62	87	111	175	270	356	443	535	810	993	1177
48	33	239	133	85	205	581	40	66	92	118	181	282	374	467	565	858	1054	1249
45	35	224	132	85	192	578	38	62	87	111	176	271	358	444	536	812	995	1179
48	35	239	141	90	218	626	41	69	96	123	192	300	398	497	601	913	1121	1329
51	35	255	150	96	232	655	43	72	101	130	199	313	418	523	633	964	1185	1406
54	35	270	159	102	247	693	45	75	106	136	205	326	437	548	665	1016	1250	1483
57	36	296	178	117	271	742	50	82	114	146	215	341	459	577	700	1070	1317	1564
60	36	312	186	123	285	780	52	85	119	152	224	354	478	603	732	1122	1381	1641

UNIT INSTALLATION

- For stable consistent running,install on a level horizontal foundation.
- There should remain enough space(no less than 1m),around the unit, especially around the pipes and access panels,for ease of maintainance.
- Hydroseal must be used in the drain pipe outlet.Drain pipe can then be connected to the external pipes.
- Connect all piping being careful not to exert pressure upon the pipes so as to avoid potential damage to the internal structure of the unit.
- The electrical power is 380V/50Hz,AC. Please check the voltage,frequency and phases before wiring. After wiring, please turn on the motor first, to check the fan direction.
- The motor should be connected to power source that has overload protection.
- Flexible connections should be used.



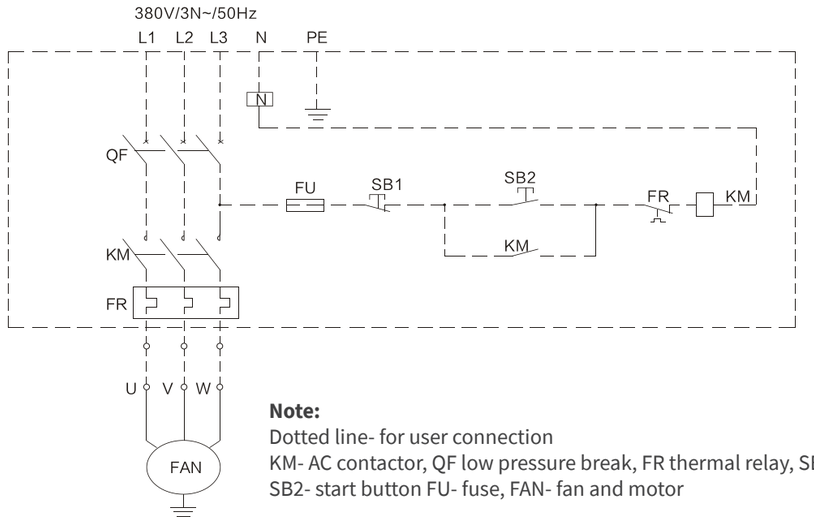
H= negative pressure inside the unit mm H2O +20mm
Note: The negative pressure inside the unit is the negative pressure of the coils.



L-length ofunit,W- width ofunit

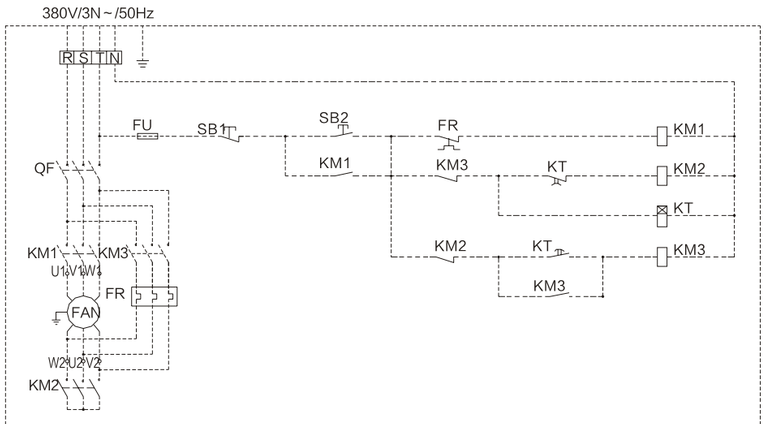
WIRING DIAGRAM

Direct Starting (motor power <11kw)



Note:
Dotted line- for user connection
KM- AC contactor, QF low pressure break, FR thermal relay, SB1 stop button
SB2- start button FU- fuse, FAN- fan and motor

Delta Star Starting (motor power ≥11kw)

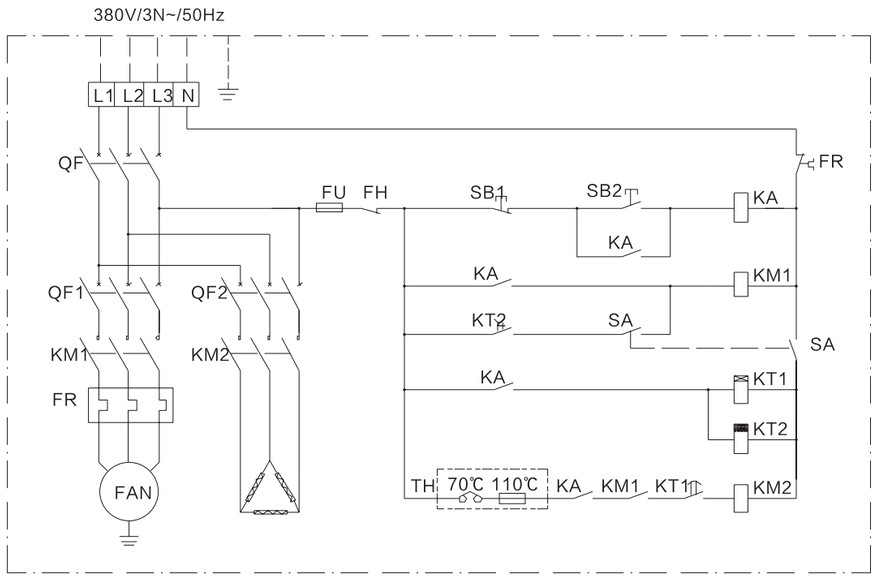


Dotted line- for user connection
KM- AC contactor, QF low pressure break, FR thermal relay, FU- fuse,
SB1 stop button,SB2- start button,KT- timer relay

NOTE:
When motor power 11kw, the unit is equipped with direct starting terminal; when motor power =11kw, unit isn't equipped with terminal, but the user need to direct connect to the motor terminal, and overload, short, and overheat protector shall be used. If have any question, please contact Hitachi. Hitachi can offer direct starting delta-star starting lotus root step-down starting converter and such control cabinet according to user's requirements.

Wiring of Electrical Heating

The electric heater is constructed in the manufacturing plant as an assembled frame.
Wirings are included, connected within, and have a power entrance.
When installing, connect to the electrical power as per the instructions.
Please refer to the following diagram for control wiring.



Note:
SB2-Start Button, KA-Timer Relay , KM1-Fan contactor, KM2-Electrical heater contactor,
TH-Electrical heater protector, FH-Anti-fire valve, KT1-Electrified delay time relay,
KT2-Shut off delay time relay, QF-Low pressure break,
SA-Option Switch(on: ventilation; off- heating)

KT1 delay time relay must be set up with a minimum delay of 30 seconds.
KT2 shut off delay time relay should be set up with a minimum delay of 180 seconds.

WARNING:

To assure there is no short circuiting; the electrical heater temperature protector switch must be connected to the control interlock of the fan and the electrical heater. The electrical heater cannot start up until the fan motor under normal running. When turning off the unit, the electrical heater must be turned off (set for 180 seconds delay) before stopping the fan.

When making the control plan, the wiring of the humidifier and other electrical devices please refer to the wiring diagrams attached with these devices. And please note:

The Humidifier must be interlocked with the fan, which means, the fan must be opened before the humidifer; while the humidifier must be turned off first, then stopping the fan.

If there is motorized dampers on the intake and outlet or in the duct system, the actuator must be open prior to the fan , and when stop, the actuator must be closed after the fan stopped. Which can ensure that the dampers in the duct system is always open during fan operating.

All the electricals must be grounded, and cannot be replaced by 0 connection. Wrong connection may cause sever blaster, fire, human injured.

The steam valves must be closed before the fan stopped. (When start the unit, the fan must be start first, then open the steam valve)

OPERATION AND MAINTENANCE

- Please confirm that all the valves of pipes are in good working condition before starting the unit.
- Periodic inspection is required for connections and running performance of fans, motors, etc.
- The pre-filter should be washed by water or abluent; the frequency of cleaning will depend on the unit.
- Operating usage;therefore filters should be checked regularly.
- The medium filter should be washed or replaced when the resistance becomes twice of the original resistance.
- If unit is out of operation usage for long periods,water should be removed from the coils.
- The chilled water and heating water should be softened clean water.After one year of operation, any scale deposits on the coils should be cleaned by chemical methods. Any scales on the surface of the fins should be cleaned by compressed air or water. The drip tray and the hydroseal elbows also need to be leaned.

NOTE:
For more details of installation, operation and maintenance please refer to the instructions enclosed with units.

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