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EUROKLIMAT®

EKDM1009-AB

Modulus Air Handling Unit

Model: EKDM0304~EKDM3652
Air flow: 1000m^3/h~400000m^3/h

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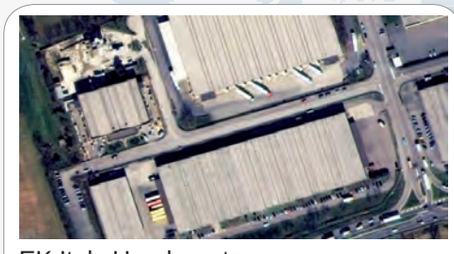
EUROKLIMAT Air Conditioner, Environmental & Energy-saving Technology from Europe.



EK Italy Headquarters

EUROKLIMAT (EK) was established in 1963 in Italy. For the past half a century, it has become famous as an energy-saving air-conditioning manufacturer in Italy and globally. Continuous innovation, new product development and top manufacturing quality are the driving force behind this growth.

EUROKLIMAT (EK) pursues the ideals of protecting the environment, providing physical comfort and adopting energy-saving into the whole process of product R&D, manufacturing and service. Our products covering residential, commercial and close control air-conditioner are manufactured according to the global generally accepted standards.

Overview and Nomenclature

Overview

Thanks to its leading-edge technology from Europe, EUROKLIMAT has been manufacturing quality air handling systems of various types for more than half a century, and has earned a good standing in Europe and even the whole world. Based on the characteristics of market and by strictly following European standard (EN1886), EUROKLIMAT has launched EKDM series modulus air handling units manufactured using high-precision tools. Units of this series feature standard modulus design, outstanding performance, simple structure and flexible assembly. They can be widely used in places requiring central air handling, such as shopping malls, hotels and office buildings; as well as places requiring clean air conditioning, such as operation rooms, dust free rooms for pharmaceutics and IC, and precision instrument manufacturing workshops.

EKDM air flow range is from 1000m^3/h to 400000m3/h. Available functional sections include fresh/return air mixing section, cooling section, heating section, primary/medium/high efficiency filter section, electric heating section, humidifying section, sound attenuation section, heat recovery section, secondary air-return section, fan section, air diffuser section etc. Different combinations can meet different air handling requirements.

Nomenclature

EKDM	08	10	H	30
1	2	3	4	5

1.	EKDM	EK Modulus Air Handling Unit		
2.	08	Height modulus		
3.	10	Width modulus		
4.	H	Unit layout	H: horizontal unit	V: vertical unit
5.	30	Panel thickness	30: 30mm panel;	50: 50mm panel

European Industry Standard for Air Handling Units

The European standard EVROVENT is widely recognized as the most professional standard for air conditioning units throughout the world. The EN1886 certification sets detailed specifications and grades for various mechanical properties of air conditioning units. EKDM units are designed, developed and manufactured by strictly following relevant European standards.

Cabinet mechanical strength			Thermal bridge coefficient		Air leakage	
Cabinet grade	Max. relative deformation ($mm.m^2$)	Bearing maximum fan pressure or not	Class TB1	0.75 < k b ≤ 1	Leakage class Max.	leakage $l/s.m^2$
1	10	No	Class TB2	0.6 < kb ≤ 0.75	3A	5.70
1A	10	Yes	Class TB3	0.45 < kb ≤ 0.6	A	1.90
2	4	No	Class TB4	0.3 < kb ≤ 0.45	B	0.63
2A	4	Yes	Class TB5	No requirement	C	0.21

Filter Efficiency Definition in China, USA and Europe

China		Primary efficiency 5μm				Medium efficiency 1μm			Medium high efficiency 1μm			Sub-high efficiency 0.5μm				High efficiency 0.5μm			
GB/T14295		50% > Efficiency > 20%				70% > Efficiency > 20%			99% > Efficiency > 70%			99.9% > Efficiency > 95%				Efficiency > 99.99%			
USA ASHRAE		C1	C2~C4	L5	L6	L7	L8	M9	M10	M11	M12	M13	M14	H12-H16				VH17	VH18	VH19	VH20
Europe	New standard	G1	G2	G3		G4	F5		F6		F7	F8		F9	H10	H11	H12	H13		H14	V15, V17
	efficiency	65%	80%	80-90%		> 90%	40%		60%		80%	90%		85%	95%	99%	99.9%	99.995%		99.995%	99.9995%
	Old specification	EU1	EU2	EU3		EU4	EU5		EU6		EU7	EU8		EU9	EU10	EU11		EU12	EU13	EU14	

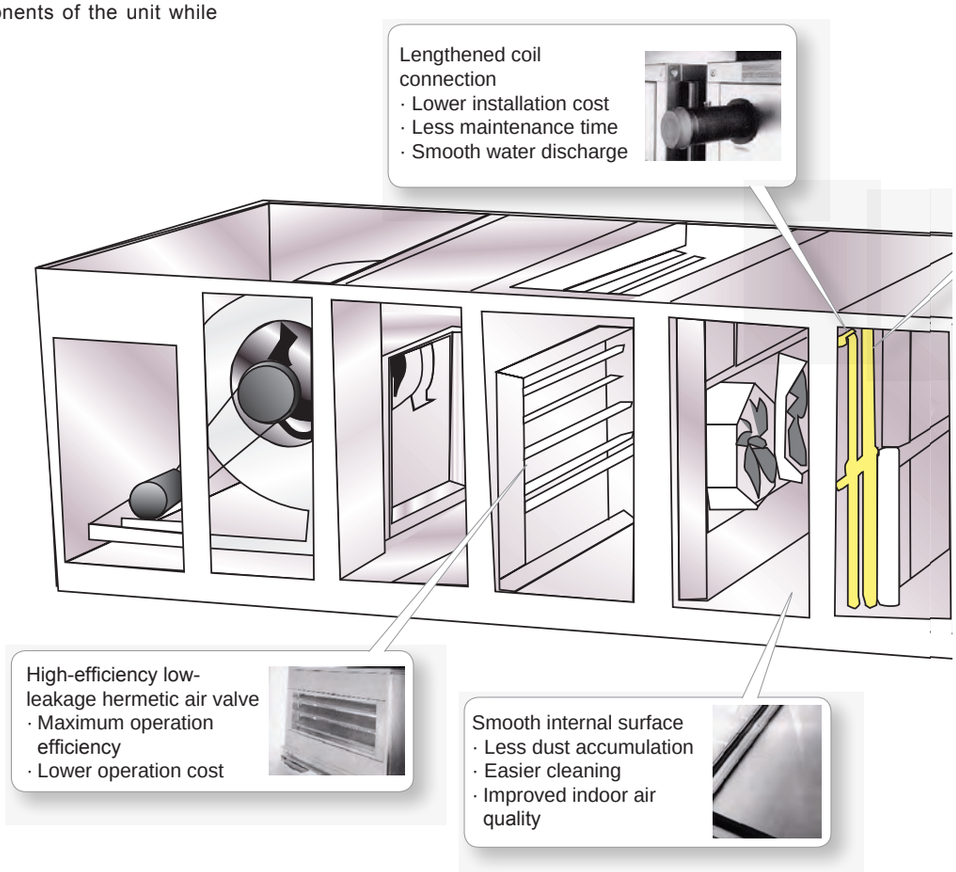
Features

High-standard Design

- High-standard Design
  A standard modulus design is introduced while tuning the width and height of the unit proportionally to meet on-site conditions. This makes unit selection more flexible.
- Equipped with double inlet forward/backward pitched centrifugal fans of international name brands and impellers and belt pulleys with motion/rest strictly rectified, the unit works more stably, quietly and efficiently.
- The coil features a new type of specially processed antirust fins which can greatly reduce air resistance and motor power consumption. Multiple circuit designs are available for different working conditions to reduce water resistance and improve heat-exchange efficiency.
- The water trap of the coil has two valves for water and air discharge, with a test pressure of 3.3MPa and maximum working pressure of 1.7MPa. A Pitched design for the heat-insulated condensed water collector ensures smooth discharge of condensed water, leaving the circuit dry all the time.
- Each functional section has a specially-designed airtight access door sealed by quality sealing strips. This makes it very convenient to service internal components of the unit while maintaining airtightness of the system.

Robust Structure

- The surface of the unit is made of quality color steel, which can resist corrosion, scratch and ultraviolet radiation.
- Internal panels are made of steel plates galvanized with aluminum and zinc, with an assured service life of more than 15 years. All panels feature end-to-end joints and smooth surfaces, without any bur or corroded point.
- The internal panels feature reinforced design, which is strong enough to support the largest air handling unit.
- The unit panel has two thicknesses, namely 30mm and 50mm.Inside the panel, hermetically foamed polyurethane (no fluorine) with a density of 48kg/m3 is used as the heat-insulating material. The heat conductivity factor is less than 0.02W/m°C.
- Each functional section of the unit is equipped with a steel trough base, thus ensuring it is well supported, easy to transport and assemble. The overall robustness of the unit meets the standard of CEN2.

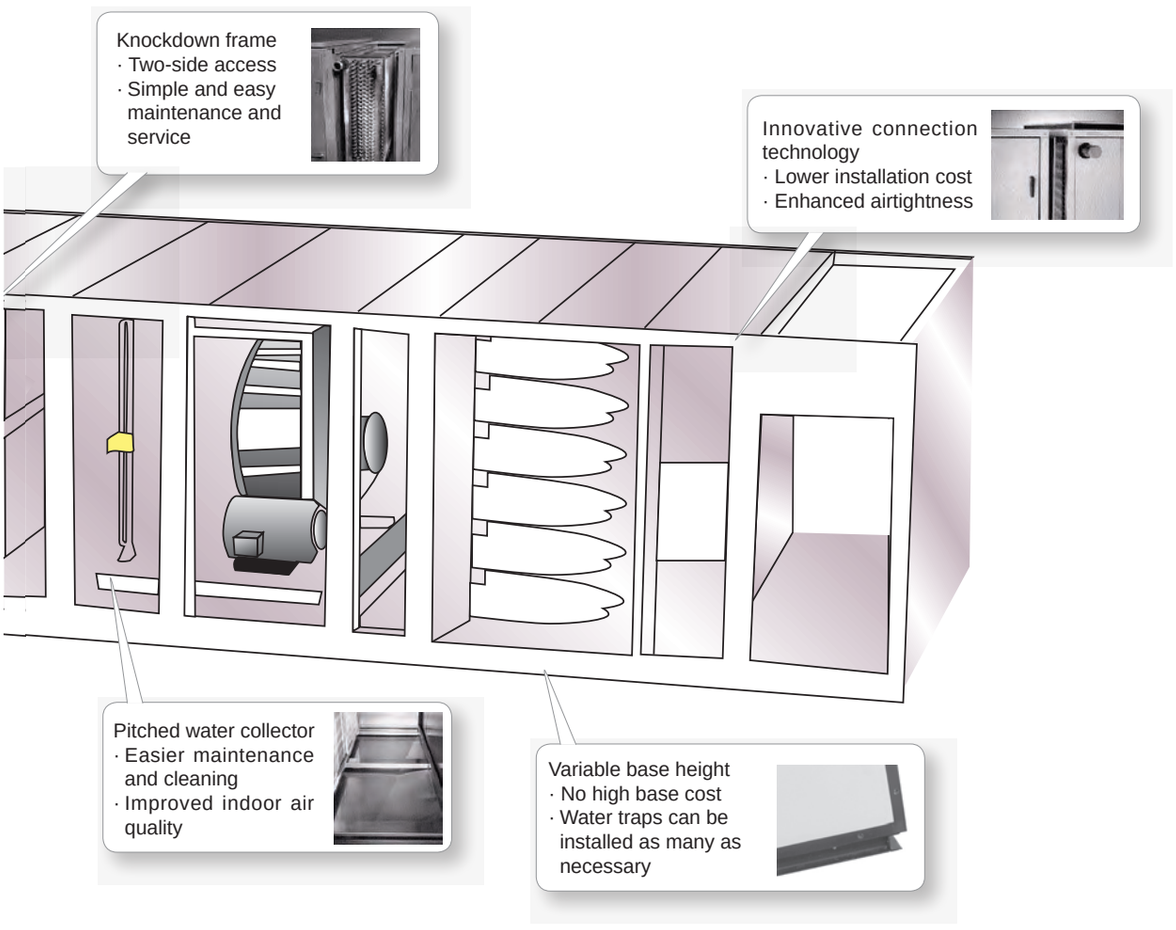


Effective Thermal Bridge Elimination

- The unit features a special clamp structure, facilitating disassembly and maintenance as well as ensuring low air leakage. When the internal negative pressure is 1000Pa, the air leakage is below 1% (level B air leakage of European standard EN1886).
- The unit panels are coated with strong and heat-insulating UPVC plastics, thus avoiding direct contact between heat-conductive parts. With a heat-insulation grade of T1 (European standard), thermal bridge and cooling capacity loss are completely eliminated.

Smart Control

- Auto control can be easily realized by adding various sensors and actuators according to customer requirements.
- EK can provide leading-edge auto control solutions from Europe for air conditioners according to specific needs from customers, so as to ensure each unit features cost effective, reliable and energy-saving operation, while meeting requirements on both comfort and decoration.



Specifications

Quick Model Selection for Typical Units

Model EKDM	Rated air flow m^3/h	Windward area of coil (m^2)	Air flow (m^3/h)				Diameter of fan impeller mm	Fan performance	
			2.25	2.50	2.75	3.00		Max. total pressure of fan Pa	Max. motor power kW
			m/s	m/s	m/s	m/s			
0306	2000	0.23	1863	2070	2277	2484	160	1300	2.2
0406	3000	0.34	2754	3060	3366	3672	200	1300	3
0407	4000	0.41	3321	3690	4059	4428	225	1500	3
0408	5000	0.48	3888	4320	4752	5184	250	1800	5.5
0508	6000	0.65	5265	5850	6435	7020	280	1800	7.5
0607	7000	0.69	5589	6210	6831	7452	280	1800	7.5
0608	8000	0.81	6561	7290	8019	8748	315	1800	7.5
0511	9000	0.94	7614	8460	9306	10152	315	1800	11
0610	10000	1.05	8505	9450	10395	11340	355	2000	11
0611	12000	1.17	9477	10530	11583	12636	400	2000	15
0712	15000	1.55	12555	13950	15345	16740	450	2000	15
0812	18000	1.81	14661	16290	17919	19548	500	2000	18.5
0813	20000	1.98	16038	17820	19602	21384	500	2000	18.5
0915	25000	2.66	21546	23940	26334	28728	560	2000	22
1015	30000	2.99	24219	26910	29601	32292	630	2000	30
1313	35000	3.40	27540	30600	33660	36720	630	2000	30
1315	40000	3.99	32319	35910	39501	43092	710	2000	30
1515	45000	4.65	37665	41850	46035	50220	800	2000	37
1417	50000	4.95	40095	44550	49005	53460	800	2000	45
1520	60000	6.36	51516	57240	62964	68688	900	2000	45
1720	70000	7.27	58887	65430	71973	78516	900	2000	55
1722	80000	8.05	65205	72450	79695	86940	1000	2000	75
1626	90000	9.01	72981	81090	89199	97308	1000	2000	75
1826	100000	10.21	82701	91890	101079	110268	1120	2000	110
1852	2000000	20.42	165402	183780	202158	220536	1120x2	2000	110x2
3652	4000000	40.84	330804	367560	404316	441072	1120x4	2000	110x4

Note:
- This table only lists some typical models among many models for quick model selection.
- Total fan pressures listed above are tested on standard fans with rated air flow.
- External residual pressure = Total fan pressure - Internal resistance. For internal resistance of EKDM units, please refer to Page 23.

Typical Unit Performance Parameters - Cooling with Return Air

Unit model EKDM	Rated air flow m^3/h	4 rows				6 rows				8 rows			
		Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN	Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN	Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN
0306	2000	12	0.5	6	40	16	0.7	15	40	18	0.8	26	40
0406	3000	17	0.8	7	40	23	1.1	16	40	27	1.3	27	40
0407	4000	23	1.1	13	40	31	1.5	32	40	36	1.7	51	40
0408	5000	29	1.4	20	40	38	1.8	48	40	42	2.0	29	40
0508	6000	36	1.7	20	40	48	2.3	48	40	52	2.5	23	50
0607	7000	39	1.9	17	40	53	2.5	38	40	61	2.8	58	50
0608	8000	47	2.2	24	40	62	3.0	58	40	68	3.2	26	50
0511	9000	57	2.7	57	40	70	3.3	37	40	78	3.8	31	50
0610	10000	64	3.1	51	40	76	3.6	29	50	89	4.3	51	50
0611	12000	70	3.4	20	40	92	4.4	44	50	103	5.0	38	50
0712	15000	90	4.3	23	50	119	5.8	55	65	131	6.3	44	65
0812	18000	107	5.2	27	65	141	6.8	60	65	157	7.6	51	65
0813	20000	121	5.8	34	65	151	7.3	40	65	167	8.2	31	65
0915	25000	158	7.5	51	65	196	9.3	53	65	214	10.2	38	80
1015	30000	188	9.0	47	50	232	11.2	53	65	254	12.0	30	80
1313	35000	208	10.0	32	65	262	12.6	37	65	304	14.4	59	65
1315	40000	250	12.0	49	65	310	14.8	54	65	338	16.0	37	65
1515	45000	286	14.0	53	65	352	17.0	58	65	386	18.6	41	65
1417	50000	300	14.4	38	65	368	17.4	36	65	430	20.4	56	65
1520	60000	380	18.0	49	80	464	22.4	38	65	516	25.2	33	65
1720	70000	440	21.2	55	80	536	26.0	42	65	596	28.8	33	80
1722	80000	464	22.0	25	80	616	29.2	55	65	688	33.2	45	80
1626	90000	544	26.0	40	80	684	33.2	44	80	752	36.8	32	80
1826	100000	608	28.8	42	80	760	36.4	45	80	832	40.0	33	80
1852	200000	1216	57.6	40	80	1368	66.4	44	80	1504	73.6	32	80
3652	400000	2432	115.2	40	80	2736	132.8	44	80	3008	147.2	32	80

Note:
- Temperature of cooled inlet water: 7°C; temperature drop 5°C.
- Return air conditions for standard cooling operation: dry/wet bulb temperature of inlet air: 27°C/19.5°C.
- Coils are copper pipes with aluminum fins (12 fins/inch). EK can provide coils with 8~14 fins/inch.
- This table only lists the performance parameters of some typical models among many models.

Specifications

Typical Unit Performance Parameters - Cooling with Fresh Air

Unit model EKDM	Rated air flow m^3/h	4 rows				6 rows				8 rows			
		Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN	Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN	Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN
0306	2000	29	1.3	30	40	34	1.6	23	40	39	1.8	38	40
0406	3000	42	2.0	34	40	50	2.4	28	40	57	2.8	46	40
0407	4000	53	2.6	27	40	68	3.2	52	40	74	3.5	44	40
0408	5000	67	3.2	43	40	82	4.0	51	50	89	4.2	18	50
0508	6000	82	3.9	29	50	101	4.9	34	50	114	5.5	51	50
0607	7000	90	4.3	25	50	116	5.5	51	65	129	6.2	45	50
0608	8000	107	5.1	36	65	132	6.3	41	65	143	7.0	26	50
0511	9000	124	6.0	44	65	149	7.2	34	65	169	8.0	49	65
0610	10000	137	6.7	41	65	163	8.0	32	65	187	9.0	46	65
0611	12000	162	7.7	55	65	194	9.2	43	65	216	10.5	44	65
0712	15000	195	9.6	36	65	242	11.8	45	65	276	13.2	60	65
0812	18000	231	11.2	43	65	285	13.5	53	65	329	15.6	75	65
0813	20000	261	12.8	57	65	320	15.4	69	80	369	17.5	95	65
0915	25000	320	15.2	49	80	418	20.0	91	80	473	22.6	124	80
1015	30000	402	19.0	47	65	496	24.0	61	65	564	27.4	88	80
1313	35000	450	21.6	46	65	558	26.4	57	65	642	30.6	82	65
1315	40000	508	24.8	47	65	662	32.0	85	80	750	35.8	115	65
1515	45000	570	27.0	51	65	748	35.6	94	80	852	41.6	137	65
1417	50000	646	30.6	69	80	836	40.0	128	80	946	45.0	174	65
1520	60000	816	38.8	50	80	984	48.0	53	80	1084	52.0	51	65
1720	70000	948	46.4	55	80	1144	56.0	55	80	1252	60.0	52	80
1722	80000	996	48.0	37	80	1248	59.2	48	80	1448	68.8	69	80
1626	90000	1168	55.6	54	80	1444	68.8	69	80	1664	79.2	98	80
1826	100000	1300	61.2	60	80	1620	77.2	80	80	1852	88.0	110	80
1852	200000	2600	122.4	54	80	2888	137.6	69	80	3704	176	98	80
3652	400000	5200	244.8	54	80	5776	275.2	69	80	7408	352	98	80

Note:
- Temperature of cooled inlet water: 7°C; temperature drop 5°C.
- Fresh air conditions for standard cooling operation: dry/wet bulb temperature of inlet air: 34°C/28°C.
- Coils are copper pipes with aluminum fins (12 fins/inch). EK can provide coils with 8~14 fins/inch.

Heating Performance Parameters of Typical Units

Unit model EKDM	Rated air flow m^3/h	1 row								2 row							
		Return air conditions				Fresh air conditions				Return air conditions				Fresh air conditions			
		Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN	Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN	Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN	Total cooling capacity kW	Water flow l/s	Water resistance kPa	Pipe diameter DN
0306	2000	7	0.16	1	40	12	0.28	2	40	11	0.27	1	65	19	0.46	2	65
0406	3000	10	0.23	1	40	17	0.41	3	40	16	0.4	1	65	29	0.7	2	65
0407	4000	13	0.31	2	40	23	0.55	5	40	22	0.53	1	65	38	0.9	4	65
0408	5000	16	0.40	3	40	28	0.68	8	40	27	0.67	2	65	47	1.17	6	65
0508	6000	20	0.50	3	40	35	0.85	9	40	34	0.82	2	65	59	1.4	6	65
0607	7000	22	0.55	3	40	39	0.95	8	40	37	0.9	2	65	65	1.6	6	65
0608	8000	27	0.65	4	40	46	1.1	11	40	45	1.1	3	65	76	1.83	8	65
0511	9000	32	0.80	9	40	54	1.3	23	40	53	1.3	7	65	90	2.2	18	65
0610	10000	35	0.85	7	40	60	1.5	22	40	58	1.4	5	65	99	2.4	15	65
0611	12000	41	1.00	11	40	70	1.7	29	40	69	1.67	8	65	116	2.8	21	65
0712	15000	53	1.30	15	40	90	2.2	40	40	89	2.2	11	65	150	3.6	28	65
0812	18000	63	1.50	16	40	107	2.6	46	40	105	2.5	12	65	178	4.3	33	65
0813	20000	70	1.70	21	40	119	2.9	59	40	117	2.8	15	65	199	5	46	65
0915	25000	92	2.20	22	50	154	3.7	59	50	153	3.7	17	50	256	6.2	43	80
1015	30000	108	2.60	24	40	172	4.22	15	40	180	4.4	18	65	300	7.4	48	65
1313	35000	122	3.00	20	40	206	5.1	55	40	204	5	15	65	344	8.4	39	65
1315	40000	142	3.40	27	40	228	5.6	19	40	238	5.8	21	65	402	10	59	65
1515	45000	164	4.00	30	40	260	6.2	20	40	272	6.6	22	65	456	11	59	65
1417	50000	180	4.40	43	40	288	7	28	40	302	7.4	32	65	484	12	20	65
1520	60000	212	5.20	11	40	360	8.8	32	40	352	8.8	9	65	596	14.8	24	65
1720	70000	244	6.00	9	40	416	10.2	24	50	408	10	7	50	688	16.8	17	80
1722	80000	276	6.80	12	40	472	11.6	32	50	468	11.6	9	50	784	19.2	23	80
1626	90000	292	7.20	3	50	504	12.4	8	50	532	13.2	14	50	888	21.2	33	80
1826	100000	324	7.84	3	50	568	14	9	50	592	14.4	14	50	1000	24.8	38	80
1852	200000	648	15.68	3	50	1136	28	9	50	1184	28.8	14	50	2000	49.6	38	80
3652	400000	1296	31.36	3	50	2272	56	9	50	2368	57.6	14	50	4000	99.2	38	80

Note:
- Temperature of heated inlet water: 60°C; temperature drop 10°C.
- Fresh air conditions for heating operation: inlet air temperature 0°C; return air temperature 21°C.
- Coils are copper pipes with aluminum fins (12 fins/inch). EK can provide coils with 8~14 fins/inch.

Specifications

Air filter

Model EKDM	Rated air flow m^3/h	Filter specifications (Qty.)			
0306	2000	16" x 16" (1)	16" x 20" (1)	-	-
0406	3000	24" x 16" (1)	24" x 20" (1)	-	-
0407	4000	24" x 20" (2)	-	-	-
0408	5000	24" x 24" (2)	-	-	-
0508	6000	16" x 24" (2)	15" x 24" (2)	-	-
0607	9000	16" x 20" (2)	20" x 20" (2)	-	-
0608	7000	16" x 24" (2)	20" x 24" (2)	-	-
0511	8000	16" x 24" (2)	16" x 20" (1)	15" x 24" (2)	15" x 20" (1)
0610	10000	16" x 20" (3)	20" x 20" (3)	-	-
0611	12000	16" x 24" (2)	16" x 20" (1)	20" x 24" (2)	20" x 20" (1)
0712	15000	20" x 24" (6)	-	-	-
0812	18000	24" x 24" (6)	-	-	

Model EKDM	Rated air flow m^3/h	Filter specifications (Qty.)			
0813	20000	24"x20"(8)	-	-	-
0915	25000	20" x 20" (2)	20" x 24" (6)	16" x 20" (1)	16" x 24" (3)
1015	30000	20" x 20" (3)	20" x 24" (9)	-	-
1313	35000	20" x 20" (16)	-	-	-
1315	40000	20" x 20" (4)	20" x 24" (12)	-	-
1515	50000	24" x 24" (9)	24" x 20" (3)	20" x 24" (3)	20" x 20" (1)
1417	45000	20" x 20" (12)	20" x 24" (3)	24" x 20" (4)	24" x 24" (1)
1520	60000	24" x 24" (3)	20" x 24" (1)	20" x 20" (5)	24" x 20" (15)
1720	70000	20" x 24" (4)	24" x 24" (1)	24" x 20" (5)	20" x 20" (20)
1722	80000	20" x 24" (16)	20" x 20" (8)	24" x 24" (4)	24" x 20" (2)
1626	90000	20" X 24" (25)	20" x 20" (10)	-	-
1826	100000	20" x 24" (10)	20" x 20" (4)	24" x 24" (15)	24" x 20" (6)

Note:

- Primary efficiency filter: folding plate; 2 inch thick; nonwoven fabric filtering screen; G3 filtering efficiency (80-90% Arrestance).
- Medium efficiency filter: bag type; non-woven fabric filtering screen; F5 filtering efficiency (40-60% Dust-spot).
- Medium High/sub-high efficiency filter: super-thin fiberglass filtering screen; F7~F9 filtering efficiency (80-95% Dust-spot).
- High efficiency filter: if you need to installed sub-high or high efficiency filters for your knockdown air conditioning units, please contact EK directly.
- The resistance of the filter is somewhere between the initial resistance and the final resistance. Initial resistance refers to the resistance of a non-contaminated filter. Final resistance refers to the air resistance of a filter which is contaminated and needs to be cleaned or discarded. Final resistance varies depending on the cleanliness the environment and air in which the air conditioner operates.
- Besides standard configuration, EK also provides differential pressure gauges and switches for filters. The differential pressure switch controls the differential pressure alarm of the filter.
- Plate-type filters and bag-type filters have the same sectional area but different thicknesses. Plate-type filters are 2-inch thick; while the frames of bag-type filters are 1-inch thick, with a bag of 15-inch long.

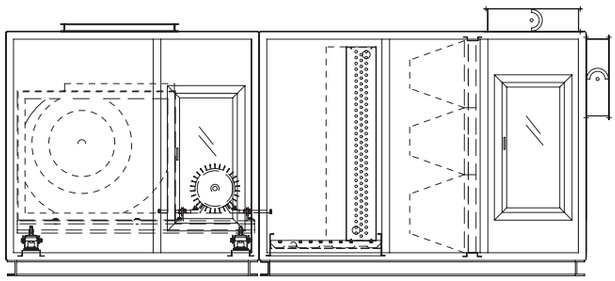
Cleanliness, Ventilation Parameter and Filter Efficiency

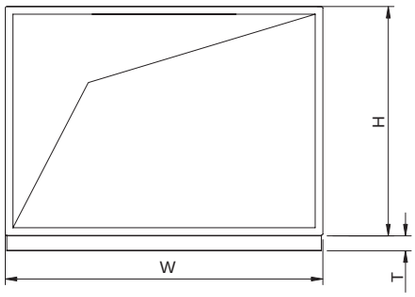
Cleanliness grade	Indoor air current	Air exchange times	Primary filter grade of air handling units	Terminal filter efficiency
100	One-way air flow	>160	H10	V15
1000	One-way air flow	70~160	F9	H12
10000	Mixed air flow	20~70	F9	H11
100000	Non one-way air flow	10~20	F7	H10
300000	Non one-way air flow	10	F7	None

Note:

- Indoor air current and Air exchange times in the above table are based on ISO standards. The Primary filter grade and Terminal filter efficiency of the air handling unit are values recommended by EK.
- The primary filter of the air handling unit are of the highest efficiency grade in EK air conditioning units. A prefilter should be installed before the primary filter.
- Terminal filter efficiency refers to the filtering efficiency grade of the high-efficiency filter installed at the indoor air inlet.

Dimensions of Typical Units





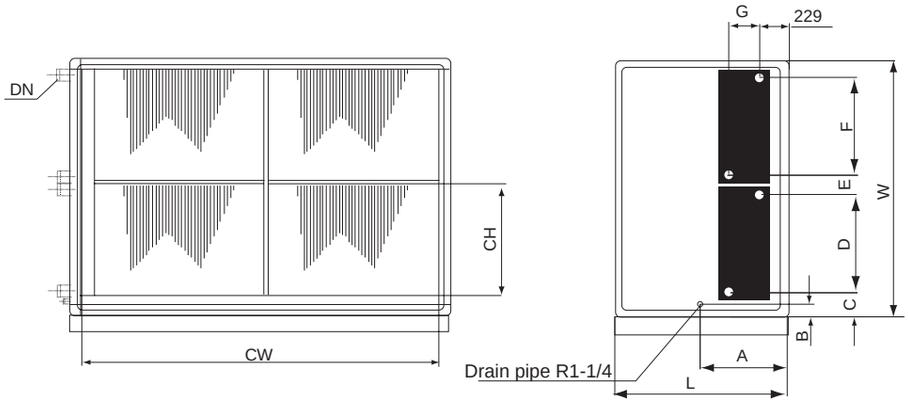
Model EKDM	Rated air flow m^3/h	30mm pane		50mm panel	
		H (mm)	W (mm)	H (mm)	W (mm)
0306	2000	530	1010	570	1050
0406	3000	690	1010	730	1050
0407	4000	690	1170	730	1210
0408	5000	690	1330	730	1370
0508	6000	850	1330	890	1370
0607	7000	1010	1170	1050	1210
0608	8000	1010	1330	1050	1370
0511	9000	850	1810	890	1850
0610	10000	1010	1650	1050	1690
0611	12000	1010	1810	1050	1850
0712	15000	1170	1970	1210	2010
0812	18000	1330	1970	1370	2010
0813	20000	1330	2130	1370	2170
0915	25000	1490	2450	1530	2490
1015	30000	1650	2450	1690	2490
1313	35000	2130	2130	2170	2170
1315	40000	2130	2450	2170	2490
1515	45000	2450	2450	2490	2490
1417	50000	2290	2770	2330	2810
1520	60000	2450	3250	2490	3290
1720	70000	2770	3250	2810	3290
1722	80000	2770	3570	2810	3610
1626	90000	2610	4210	2650	4250
1826	100000	2930	4210	2970	4250
1852	200000	2930	8370	2970	8410
3652	400000	5910	8370	5950	8410

Note:

- The base height T is not accounted in the unit dimensions listed above.
- The base height for hanging units and units with air flow below 25000m^3/h is 50mm thick. For units with air flow above 25000m^3/h, the base height is 100mm.
- EKDM units feature 3-D modulus design. 1M=160mm.
  Unit length = Length modulus *160 + Number of delivered sections * K
  Unit width = Width modulus *160 + K
  Unit Height = Height Modulus *160 + K
  For 30mm units, K = 50mm; for 50mm units, K = 90mm.

Specifications

Size of Inlet/outlet Water Pipe

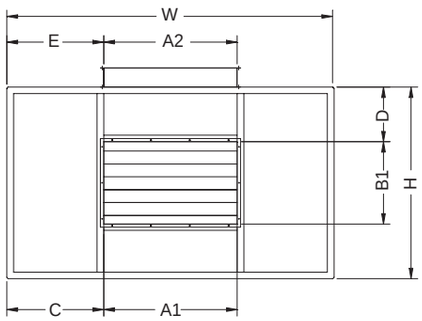


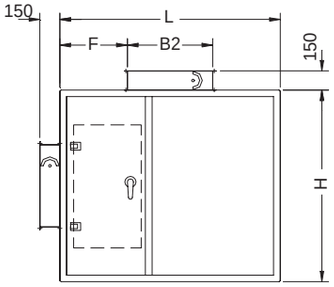
Model EKDM	Rated air flow m^3/h	Coil size (mm)			Position of cooled water pipe							
		CH	CW	Qty.	L	A	B	C	D	E	F	G
0306	2000	304.8	740	1	4M	-	-	182	246	-	-	66 + (n - 3) * 33
0406	3000	457.2	740	1	4M	-	-	182	398	-	-	66 + (n - 3) * 33
0407	4000	457.2	900	1	4M	-	-	182	398	-	-	66 + (n - 3) * 33
0408	5000	457.2	1060	1	4M	-	-	182	398	-	-	66 + (n - 3) * 33
0508	6000	609.6	1060	1	4M	-	-	182	551	-	-	66 + (n - 3) * 33
0607	7000	762	900	1	4M	535	98	182	703	-	-	66 + (n - 3) * 33
0608	8000	762	1060	1	4M	535	98	182	703	-	-	66 + (n - 3) * 33
0511	9000	609.6	1540	1	4M	350	98	182	551	-	-	66 + (n - 3) * 33
0610	10000	762	1380	1	4M	535	98	182	703	-	-	66 + (n - 3) * 33
0611	12000	762	1540	1	4M	535	98	182	703	-	-	66 + (n - 3) * 33
0712	15000	914.4	1700	1	5M	535	98	182	855	-	-	66 + (n - 3) * 33
0812	18000	1066.8	1700	1	5M	627	98	182	1008	-	-	66 + (n - 3) * 33
0813	20000	1066.8	1860	1	5M	627	98	182	1008	-	-	66 + (n - 3) * 33
0915	25000	1219.2	2180	1	5M	627	98	182	1160	-	-	66 + (n - 3) * 33
1015	30000	685.8	2180	2	5M	627	98	202	587	144	587	66 + (n - 3) * 33
1313	35000	914.4	1860	2	5M	627	98	182	855	104	855	66 + (n - 3) * 33
1315	40000	914.4	2180	2	5M	627	98	182	855	104	855	66 + (n - 3) * 33
1515	45000	1066.8	2180	2	5M	627	98	182	1008	104	1008	66 + (n - 3) * 33
1417	50000	990.6	2500	2	5M	627	98	182	932	104	932	66 + (n - 3) * 33
1520	60000	1066.8	2980	2	5M	627	98	182	1008	104	1008	66 + (n - 3) * 33
1720	70000	1219.2	2980	2	5M	627	98	182	1160	104	1160	66 + (n - 3) * 33
1722	80000	1219.2	3300	2	5M	627	98	182	1160	104	1160	66 + (n - 3) * 33
1626	90000	1143	3940	2	5M	627	98	182	1084	104	1084	66 + (n - 3) * 33
1826	100000	1295.4	3940	2	5M	627	98	182	1236	104	1236	66 + (n - 3) * 33
1852	200000	1295.4	3940	4	5M	627	98	-	-	-	-	-
3652	400000	1295.4	3940	8	5M	627	98	-	-	-	-	-

Note:

- All standard coils are mechanically expanded copper pipes plus aluminum fins. The surface cooling section is equipped with a pitched discharge coil to ensure complete discharge of condensed water.
- Coils are galvanized with zinc and coated with electrostatics powder. If you need any other material or have other requirements, please mark out while placing orders.
- For some special applications, we can provide water barriers made from aluminum alloy or stainless steel. If you need it, Please mark out while placing orders.
- G = 99mm (n ≤3); G = 66 + (n - 3) * 33 (n > 3); n represents number of coils.
- DN represents the diameter of inlet/outlet water pipes. Please refer to Page 9, Page 10 and Page 11.

Dimensions of Mixing Box





Model EKDM	Rated air flow m^3/h	Dimensions (mm)										
		W	H	L	A1	A2	B1	B2	C	D	E	F
0306	2000	1010	530	3M	350	350	300	300	330	115	330	115
0406	3000	1010	690	3M	500	500	300	300	255	195	255	115
0407	4000	1170	690	3M	600	600	300	300	285	195	285	115
0408	5000	1330	690	3M	700	700	300	300	315	195	315	115
0508	6000	1330	850	3M	700	700	430	430	315	50	315	50
0607	7000	1170	1010	3M	600	600	430	430	285	50	285	50
0608	8000	1330	1010	3M	800	800	430	430	265	50	265	50
0511	9000	1810	850	3M	1000	1000	430	430	405	50	405	50
0610	10000	1650	1010	3M	1000	1000	430	430	325	50	325	50
0611	12000	1810	1010	3M	1100	1100	430	430	355	50	355	50
0712	15000	1970	1170	4M	1100	1100	590	590	435	50	435	50
0812	18000	1970	1330	4M	1300	1300	590	590	335	50	335	50
0813	20000	2130	1330	4M	1400	1400	590	590	365	50	365	50
0915	25000	2450	1490	4M	1500	1500	750	590	475	50	475	50
1015	30000	2450	1650	4M	1600	1600	750	590	425	50	425	50
1313	35000	2130	2130	5M	1300	1300	1070	750	415	50	415	50
1315	40000	2450	2130	5M	1500	1500	1070	750	475	50	475	50
1515	45000	2450	2450	6M	1500	1500	1230	910	475	50	475	50
1417	50000	2770	2290	6M	1700	1700	1230	910	535	50	535	50
1520	60000	3250	2450	6M	2000	2000	1230	910	625	50	625	50
1720	70000	3250	2770	7M	2000	2000	1550	1070	625	50	625	50
1722	80000	3570	2770	7M	2200	2200	1550	1070	685	50	685	50
1626	90000	4210	2610	7M	2600	2600	1390	1070	805	50	805	50
1826	100000	4210	2930	7M	2600	2600	1710	1070	805	50	805	50
1852	200000	8370	2610	7M	5200	5200	1710	1070	805	50	805	50
3652	400000	8370	5910	7M	5200	5200	3420	2140	805	50	805	50

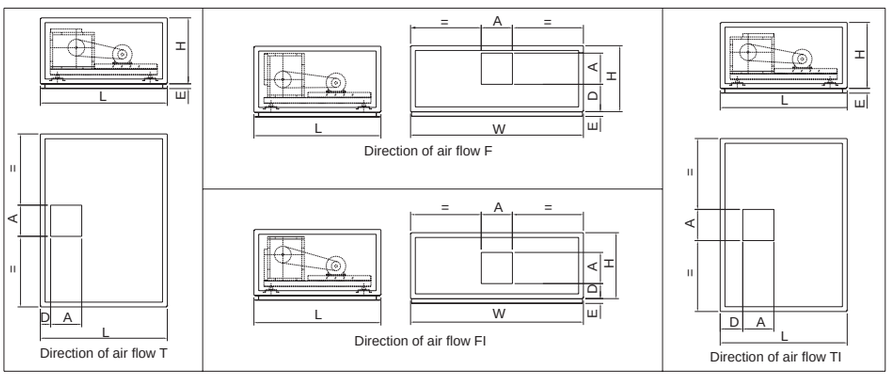
Note:

- The width and height for mixing boxes listed above are for units with a 30mm-thick panel. For units with a 50mm-thick panel, the parameters need a 40mm increase.
- Standard mixing boxes are equipped with manually-divided multi-leaf hermetic air valves. Electric air valves are also available for auto control. Air valves are made from zinc-galvanized plates or aluminum alloy with an optional flange.
- A1 x B1 represents the windward area of return air valve; A2 x B2 represents the windward area of fresh air valve.
- For total return air, the wind speed at the return air valve is 5~6 m/s; for total fresh air, the wind speed at the fresh air valve is no larger than 9m/s.
- The unit height (H) does not include the height of its base.

Specifications

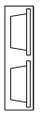
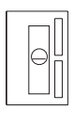
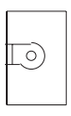
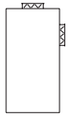
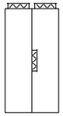
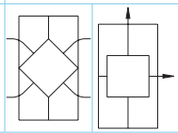
Size of Air Outlet

- The aerodynamic properties and motion/rest performance of the high-efficiency centrifugal fan meet the standard of AMCA (AIR MOVEMENT AND CONTROL ASSOCIATION).
- The fan is driven by pulleys. The bearing for the small-impeller fan is hermetic and needs no lubricant. The large-impeller fan is equipped with a thrust bearing with an auto high-speed journal and a knockdown pillow block for adding lubricant.
- Standard motors are hermetic fan-cooled 4-electrode motors, with an insulation grade of F, a protection grade of IP55, and a power supply of 380V/3N~/50Hz. For some special applications, we can also provide special motors.
- The fan and motor are mounted on a separate rack and cushioned using rubber or spring buffers.
- The fan can supply air in 4 ways, namely top horizontal (F) bottom horizontal (FI), forward (T) and backward (TI) air supply, as shown in the following figure.



Model EKDM	Rated air flow m^3/h	Size or air outlet (air supply direction: F)			Size or air outlet (air supply direction: FI)			Size or air outlet (air supply direction: T)			Size or air outlet (air supply direction: TI)		
		A	D	E	A	D	E	A	D	E	A	D	E
0306	2000	-	-	-	205	209	50	205	120	50	205	158	50
0406	3000	256	272	50	256	182	50	256	120	50	256	184	50
0407	4000	288	285	50	288	181	50	288	120	50	288	197	50
0408	5000	-	-	-	322	182	50	322	120	50	322	208	50
0508	6000	361	316	50	361	183	50	361	120	50	361	228	50
0607	7000	361	316	50	361	181	50	361	120	50	361	228	50
0608	8000	404	332	50	404	181	50	404	120	50	404	244	50
0511	9000	404	332	50	404	181	50	404	120	50	404	244	50
0610	10000	453	442	50	453	266	50	453	120	50	453	272	50
0611	12000	507	470	50	507	265	50	507	120	50	507	300	50
0712	15000	569	499	50	569	265	50	569	120	50	569	329	50
0812	18000	638	540	50	638	285	50	638	120	50	638	350	50
0813	20000	638	540	50	638	285	50	638	120	50	638	350	50
0915	25000	715	576	50	715	287	50	715	120	50	715	386	50
1015	30000	801	617	100	801	286	100	810	120	100	801	427	100
1313	35000	801	617	100	801	286	100	810	120	100	801	427	100
1315	40000	898	684	100	898	307	100	898	120	100	898	474	100
1515	45000	1007	742	100	1007	307	100	1007	260	100	1007	532	100
1417	50000	1007	742	100	1007	307	100	1007	260	100	1007	532	100
1520	60000	1130	798	100	1130	307	100	1130	260	100	1130	588	100
1720	70000	1130	798	100	1130	307	100	1130	260	100	1130	588	100
1722	80000	1267	824	100	1267	309	100	1267	260	100	1267	614	100
1626	90000	1267	824	100	1267	309	100	1267	260	100	1267	614	100
1826	100000	1422	891	100	1422	309	100	1422	260	100	1422	681	100
1852	200000	1422x2	891	100	1422x2	309	100	1422x2	260	100	1422x2	681	100
3652	400000	1422x4	891	100	1422x4	309	100	1422x4	260	100	1422x4	681	100

Length Modulus for Various Functional Sections

Functional section name	Air discharge section	Medium efficiency filtering section	Service section	Muffler section	Flow averaging section	Cooled water coil/preliminary efficiency filtering section	Fan section	Humidifying section	Electric heating section	Heating coil	Blending section	Secondary air-return section	Bypass section	Plate heat recovery section		Impeller heat recovery section
														Plan A	Plan B	
Functional section code	EHS	BF	CHS	SIS	DIS	C	F	HF	EH	WE	MB	SRS	DS	PHR		WHR
Model EKDM																
0306	3M	3M	4M	4M	4M	5M	5M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0406	3M	3M	4M	4M	4M	5M	6M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0407	3M	3M	4M	4M	4M	5M	6M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0408	3M	3M	4M	4M	4M	5M	6M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0508	3M	3M	4M	4M	4M	5M	7M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0607	3M	3M	4M	4M	4M	5M	7M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0608	3M	3M	4M	4M	4M	5M	8M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0511	3M	3M	4M	4M	4M	5M	5M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0610	3M	3M	4M	4M	4M	5M	8M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0611	3M	3M	4M	4M	4M	5M	7M	4~6M	2~4M	2M	3M	3M	7M	8M	6M	4M
0712	4M	3M	4M	4M	4M	6M	7M	4~6M	2~4M	2M	4M	4M	9M	8M	6M	4M
0812	4M	3M	4M	4M	4M	6M	8M	4~6M	2~4M	2M	4M	4M	9M	8M	6M	4M
0813	4M	3M	4M	6M	4M	6M	8M	4~6M	2~4M	2M	4M	4M	9M	8M	6M	4M
0915	4M	3M	4M	6M	4M	6M	9M	4~6M	2~4M	2M	4M	4M	9M	8M	6M	4M
1015	4M	3M	4M	6M	4M	6M	9M	4~6M	2~4M	2M	4M	4M	9M	8M	6M	4M
1313	4M	3M	4M	6M	4M	6M	13M	4~6M	2~4M	2M	5M	5M	11M	-	-	-
1315	4M	3M	4M	6M	4M	6M	14M	4~6M	2~4M	2M	5M	5M	11M	-	-	-
1515	6M	3M	4M	6M	4M	6M	15M	4~6M	2~4M	2M	6M	6M	13M	-	-	-
1417	6M	3M	4M	6M	4M	6M	15M	4~6M	2~4M	2M	6M	6M	13M	-	-	-
1520	6M	3M	4M	8M	4M	6M	12M	4~6M	2~4M	2M	6M	6M	13M	-	-	-
1720	7M	3M	4M	8M	4M	6M	12M	4~6M	2~4M	2M	7M	7M	15M	-	-	-
1722	7M	3M	4M	8M	4M	6M	14M	4~6M	2~4M	2M	7M	7M	15M	-	-	-
1626	7M	3M	4M	8M	4M	6M	14M	4~6M	2~4M	2M	7M	7M	15M	-	-	-
1826	7M	3M	4M	8M	4M	6M	15M	4~6M	2~4M	2M	7M	7M	15M	-	-	-
1852	7M	3M	4M	8M	4M	6M	15M	4~6M	2~4M	2M	7M	7M	15M	-	-	-
3652	7M	3M	4M	8M	4M	6M	15M	4~6M	2~4M	2M	7M	7M	15M	-	-	-

Note:

- M is the design modulus for EK air handling units, 1M = 160mm.
- The electric heating section is designed based on heating capacity.
- Lengths of functional sections listed above are for standard unit configurations. The actual length might be different.
- If you have special requirements on the length of any functional section, please contact EK for a customized manufacture.

Weight of Various Functional Sections

Model EKDM	Rated air flow m^3/h	Blending section	Platetype filtering section	Bagtype filtering section	Surface cooling section	Coil heating section	Muffler section 5M	Flow averaging section	Bypass section	Electric heating section 2M	Humidifying section 4M	Fan section	Coil weight								
													1 row	2 rows	3 rows	4 rows	5 rows	6 rows	8 rows	10 rows	12 rows
0306	2000	127	10	131	127	61	190	122	249	68	132	220	20	22	25	28	30	34	40	50	55
0406	3000	136	10	139	138	67	205	132	263	74	139	260	25	29	33	37	43	49	61	73	86
0407	4000	154	12	158	160	78	220	152	305	82	160	290	28	33	37	42	49	56	71	85	99
0408	5000	172	15	178	181	89	240	173	338	92	182	330	31	36	42	47	56	64	80	96	113
0508	6000	184	17	191	196	98	260	186	359	98	191	390	36	43	51	58	69	79	100	120	141
0607	7000	179	20	185	191	100	290	177	346	93	187	375	38	46	54	62	73	84	105	127	149
0608	8000	199	30	217	215	109	300	197	389	103	205	450	41	51	60	70	82	94	119	144	169
0511	9000	242	27	249	262	134	320	242	474	127	247	430	45	56	66	77	91	106	134	163	191
0610	10000	236	30	253	266	135	340	239	466	125	246	535	48	60	72	84	100	115	147	178	209
0611	12000	257	40	285	289	148	360	260	508	134	264	635	51	65	78	91	109	126	160	195	229
0712	15000	290	44	320	325	166	415	295	570	152	295	850	61	79	96	114	136	158	202	246	290
0812	18000	303	48	336	411	176	455	308	590	160	313	900	68	88	109	130	155	180	230	281	331
0813	20000	475	52	362	441	190	480	479	933	172	333	950	71	94	116	139	166	194	248	303	358
0915	25000	558	56	421	515	224	560	562	1104	204	408	860	86	116	147	177	212	248	319	390	462
1015	30000	581	60	448	540	235	640	585	1157	212	429	1370	155	223	290	358	435	513	667	821	975
1313	35000	582	66	451	541	238	700	586	1149	213	426	1360	168	245	323	400	486	573	746	919	1091
1315	40000	656	70	502	608	270	760	666	1301	240	475	1750	188	279	369	460	560	660	861	1062	1263
1515	45000	702	80	553	652	287	840	712	1398	259	506	2000	210	316	421	527	643	759	991	1223	1455
1417	50000	994	100	617	701	308	890	768	1983	278	547	2140	221	333	445	557	680	804	1050	1297	1543
1520	60000	1198	108	730	1258	363	1030	916	2370	327	644	2170	458	741	1023	1306	1605	1904	2502	3100	3698
1720	70000	1278	112	769	1343	389	1130	981	2537	352	684	2290	513	836	1159	1482	1822	2162	2843	3524	4205
1722	80000	1737	120	839	1462	428	1230	1076	3434	385	746	2710	555	913	1270	1628	2004	2380	3132	3884	4636
1626	90000	1976	140	954	1642	484	1320	1207	3877	434	833	2995	605	1006	1406	1806	2227	2647	3487	4327	5168
1826	100000	2105	175	1055	1750	525	1490	1295	4140	465	885	3790	673	1127	1581	2034	2509	2983	3932	4881	5830

Note:

- The weight of surface cooling/heating section is the weight of the unit itself, not including coils.
- While calculating the weight of surface cooling/heating sections, the weight of coils should also be taken into account.

Humidifying section

Function Introduction

The relative humidity of the air changes as areas and seasons change. Different operating conditions have different requirements on humidity. In dry areas and seasons, or in environment that requires high humidity, you may need to install a humidifier. Standard humidifiers for EKDM series units use dry steam. In addition, EK also provides high-pressure spray, wet film humidifying, electrode humidifying etc. If you have any special requirements on humidifying, please contact EK.

Humidifier Introduction

High-pressure spray humidifier—equal-enthalpy humidifying; water distribution pipes and nozzles made from stainless steel; high pressure spray; efficient, safe, reliable and energy saving.
Wet film humidifier—high saturation efficiency; space-saving; reducing total length of the unit; no water handling; safe and reliable.
Dry steam humidifier—equal-temperature humidifying; high humidifying efficiency; made from stainless steel; graceful exterior; and corrosion proof.
Electrode humidifier—high humidifying efficiency; multiple control solutions to choose from.
Electric heating humidifier——efficient and accurate.

Humidifier Comparison

Type of humidifier	Working conditions						
	Environment temp. (°C)	Humidity	Critical wind speed (m/s)	Water quality	Water/steam temp. (°C)	Water/steam pressure (MPa)	Length of humidifying section (mm)
High-pressure spray humidifier	1 ~ 40	≤ 85%	0.5 ~ 3.5	Tap water, purified water or water with similar quality	4 ~ 55	0.1 ~ 0.5	960
Dry steam humidifier	-10 ~ 50	/	0.5 ~ 3.5	Steam	0<150	0.02 ~ 0.4	640
Wet film humidifier	5 ~ 100	< 90%	≤ 4.0	Tap water or water with similar quality	5 ~ 40	0.15 ~ 0.75	Can be installed together with cooling coil
Electrode humidifier	0 ~ 40	< 85%	/	Clean tap water or softened water	4 ~ 35	0.1 ~ 1.0	640
Electric heating humidifier	0 ~ 40	< 85%	/	Clean tap water, softened water or deionized water	4 ~ 35	0.1 ~ 0.3	640

Dry Steam Humidifier

Humidifiers should be chosen according to the control solution, steam pressure, required humidifying capacity and the width of the unit.

Dry Steam Humidifying Capacity Table

model / Nozzle Dia.	GZQ - 15			GZQ -20			GZQ -40			GZQ -50	
Steam pressure	φ2	φ4	φ6	φ8	φ9	φ10	φ10.5	φ12	φ14	φ16	φ18
0.02MPa	1.5	4	9	22.5	27	34	40	55	75	145	187
0.1MPa	2.3	9.4	21.3	49.5	62	75.5	78	102	141	194	246
0.2MPa	3.6	14	35	68.5	106	131	142	160	216	311	397
0.3MPa	4.5	18.3	40	97.5	152	187	205	217	296	448	569
0.4MPa	6.1	24.5	58.5	124	196	227	250	275	375	590	760

Dry Steam Humidifying Capacity Table

Unit width	4M	5M	6M	7M	8M	9M	10M	11M	12M	13M	14M
Spout code	L3	L3	L4	L4	L5	L5	L6	L6	L7	L7	L8
Weight of Model 15 (kg)	10	10	11	11	12	12	13	13	14	14	15
Weight of Model 20 (kg)	12	12	13	13	14	14	15	15	16	16	17
Weight of Model 40 (kg)	13	13	14	14	15	15	16	16	17	17	19
Weight of Model 50 (kg)	14	14	15	15	16.5	16.5	18	18	19	19	21

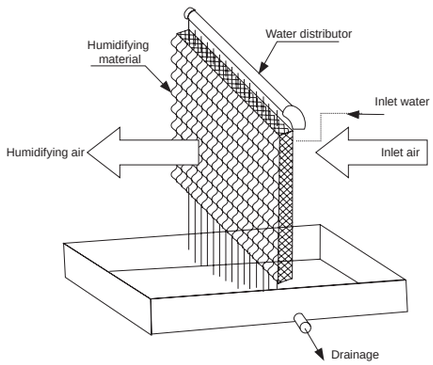
Unit width	15M	16M	17M	18M	19M	20M	21M	22M	23M ~ 26M
Spout code	L8	L9	L9	L10	L10	L11	L11	L12	L13
Weight of Model 15 (kg)	15	16	17	18	19	20	21	22	23
Weight of Model 20 (kg)	17	18	19	20	21	22	23	24	25
Weight of Model 40 (kg)	19	20	21	22	23	24	25	26	27
Weight of Model 50 (kg)	21	22	23	24	25	26	27	28	29

Specifications

Wet film humidifier

Wet film humidifier humidifies the air through natural water evaporation. Its paper-like medium is made of macromolecule inorganic material which is highly hydrophilic. When dry air passes through the medium, water in the medium takes up heat in the air and evaporates to humidify the air. Wet film humidifier can use domestic water or tap water, and has the following advantages:

- Clean humidification—no “white powder” produced during temperature drop
- Humidifying distance—the thickness of the wet film itself
- High saturation efficiency—up to 80%
- Safe and reliable—the film material is mildew and bacteria proof, with a service life up to 8 ~ 10 years
- Excellent cooling performance—cooling through filling-catalyzed direct evaporation; more efficient cooling with less space



Wet-film Humidifying Capacity for Typical Units

Model EKDM	Rated air flow m^3/h	Fresh air conditions (kg/h)				Return air conditions (kg/h)			
		35% efficiency	60% efficiency	75% efficiency	85% efficiency	35% efficiency	60% efficiency	75% efficiency	85% efficiency
0306	2000	4	9	11	12	4	7	9	10
0406	3000	7	13	16	18	5	10	13	15
0407	4000	8	15	20	22	7	13	16	18
0408	5000	9	18	23	26	8	15	19	22
0508	6000	13	24	31	35	10	20	25	29
0607	7000	14	26	33	37	11	21	27	31
0608	8000	16	30	39	44	13	25	32	36
0511	9000	19	35	45	52	15	29	37	42
0610	10000	21	39	50	57	17	32	41	47
0611	12000	23	44	56	64	19	36	46	52
0712	15000	30	58	74	84	25	48	60	69
0812	18000	35	67	86	98	29	55	70	80
0813	20000	39	74	94	107	32	60	77	88
0915	25000	52	99	126	144	42	81	103	118
1015	30000	60	114	145	166	49	93	119	136
1313	35000	67	128	163	187	55	105	134	153
1315	40000	79	150	191	219	64	123	157	179
1515	45000	91	175	222	254	75	143	182	208
1417	50000	97	185	237	271	80	153	194	222
1520	60000	122	233	297	339	100	191	243	278
1720	70000	139	266	338	386	114	218	277	316
1722	80000	154	295	375	429	126	241	307	351
1626	90000	173	332	422	482	142	272	346	395
1826	100000	196	375	477	545	160	307	391	446

Note: standard fresh air conditions: temperature of 28°C and relative humidity of 15%; mixed air conditions: containing 30% of fresh air.

Muffler section

For applications requiring strict noise control, you can install muffler sections for the unit according to the noise level of the fan. Muffler sections are equipped with sound dampers which consist of perforated panel and embedded damping wools. They can significantly reduce the noise level within a large frequency range. The muffler section damps noise of return air and air supply using plate-type dampers which consist of a zinc-galvanized frame, super-thin fiberglass fillings, a glass fabric jacket and an aluminum meshwork cover. The plate is 210mm thick, with a blockage ratio is 0.68.

Model EKDM	Damping capacity of muffler dB (A)			Air resistance of muffler (Pa)		
	Length of muffler (mm)/muffler section			Length of muffler/muffler section		
	600/4M	900/6M	1200/8M	600/4M	900/6M	1200/8M
0306	17	20	23	20	21	22
0406	17	20	23	20	21	22
0407	17	20	23	24	26	27
0408	17	20	23	27	29	30
0508	17	20	23	22	23	25
0607	17	20	23	27	28	30
0608	17	20	23	25	26	28
0511	17	20	23	24	25	26
0610	17	20	23	23	24	26
0611	17	20	23	27	28	30
0712	17	20	23	24	25	26
0812	17	20	23	25	27	28
0813	17	20	23	26	27	29
0915	17	20	23	23	24	25
1015	17	20	23	26	27	29
1313	17	20	23	27	29	30
1315	17	20	23	26	27	29
1515	17	20	23	24	25	27
1417	17	20	23	26	28	29
1520	17	20	23	24	25	27
1720	17	20	23	25	26	28
1722	17	20	23	26	28	29
1626	17	20	23	26	28	29
1826	17	20	23	25	27	28

Live Insertion Loss of Muffler (dB)

Octave / Length of muffler	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
600mm	6	9	12	22	30	29	21	12
900mm	7	12	16	28	35	35	28	17
1200mm	7	15	20	34	40	40	34	21

Note: parameters in the above table are derived when the unit operates with rated water flow rate.

Live Insertion Loss of Muffler (dB)

Length of muffler (mm)	600	900	1200	1500	1800	2100	2400	2700	3000
Resistance coefficient (ζ)	5.531	5.834	6.137	6.440	6.720	7.000	7.280	7.607	7.934

Muffler pressure loss

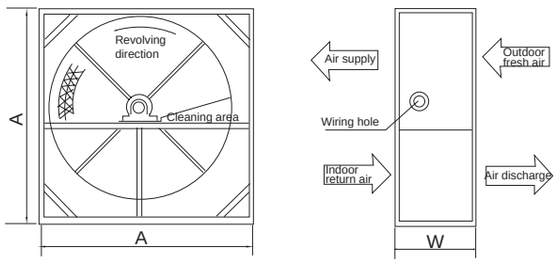
$$\Delta P = \zeta \rho u 2/2$$

ΔP: pressure loss ζ: resistance coefficient ρ: air density u: wind speed at muffler section

Specifications

Heat Recovery Section

The wheel heat recovery is molded using customized alveolate metal template and coated with special desiccant adsorbing material. In typical installations, the wheel is fixed in the middle of the pipe and divided into two half-moons, pumping stagnant indoor air out of one half-moon, and fresh air into the other. Meanwhile, the wheel revolves slowly (approximately 20RPM) to transfer sensible/ latent heat from one half-moon to the other through its metal plates and desiccant absorbing material (heat liberation), condensing vapor from high-humidity side and releasing vapor into low-humidity side by evaporation and heat absorption.



Specifications of Wheel Heat Recovery

Speed	m/s	1.5	2	2.5	3	3.5	4	4.5	5	5.5	Height and Width A mm	Flow depth W mm	Net weight kg
	FPM	300	400	500	600	700	800	900	1000	1100			
efficiency	Winter heating	87	84	81	79	78	76	74	72	70			
	Summer cooling	87	84	81	79	77	75	73	71	69			
Pressure drop	Pa	74	94	114	142	170	201	239	267	300			
	In.w.c.	0.29	0.37	0.45	0.56	0.67	0.79	0.94	1.05	1.18			
HRW500	m^3/h	409	546	682	765	955	1092	1228	1365	1501	700	365	63
HRW600	m^3/h	623	831	1039	1189	1454	1662	1870	2078	2286	800	365	71
HRW700	m^3/h	879	1172	1465	1699	2051	2345	2638	2931	3224	850	365	79
HRW800	m^3/h	1177	1569	1962	2379	2746	3039	3531	3932	4316	950	365	90
HRW900	m^3/h	1517	2022	2528	3059	3539	4044	4550	5055	5561	1030	365	103
HRW1000	m^3/h	1898	2531	3164	3738	4429	5062	5695	6327	6960	1130	365	113
HRW1100	m^3/h	2322	3096	3869	4588	5417	6191	6965	7739	8513	1230	365	153
HRW1200	m^3/h	2730	3640	4550	5438	6371	7281	8191	9101	10011	1330	365	169
HRW1300	m^3/h	3157	4210	5262	6287	7367	8419	9472	10524	11576	1430	365	199
HRW1400	m^3/h	3701	4934	6168	7307	8635	9869	11103	12336	13570	1530	365	221
HRW1500	m^3/h	4286	5715	7144	8666	10002	11430	12859	14288	15717	1630	365	239
HRW1600	m^3/h	4859	6479	8099	9686	11338	12958	14577	16197	17817	1730	395	276
HRW1700	m^3/h	5524	7366	9207	11045	12890	14732	16573	18415	20256	1830	395	318
HRW1800	m^3/h	6232	8309	10386	12574	14540	16617	18695	20772	22849	1930	395	342
HRW1900	m^3/h	6981	9307	11634	13934	16288	18615	20942	23269	25595	2030	395	365
HRW2000	m^3/h	7771	10362	12952	15633	18133	20724	23314	25905	28495	2130	395	392
HRW2200	m^3/h	9532	12709	15887	19031	22241	25419	28596	31773	34951	2400	530	772
HRW2400	m^3/h	11413	15217	19021	22940	26630	30434	34238	38042	41846	2600	530	851
HRW2600	m^3/h	13461	17948	22435	27018	31409	35896	40383	44870	49357	2800	530	932
HRW2800	m^3/h	15677	20902	26128	31436	36579	41805	470303	52256	57481	3000	530	1016
HRW3000	m^3/h	18060	24080	30100	36194	42140	48160	54180	60200	66220	3200	530	1105
HRW3200	m^3/h	20611	27481	34352	41291	48093	54963	61833	68704	75574	3400	584	1453
HRW3400	m^3/h	23330	31106	38883	46729	54436	62213	69989	77766	85542	3600	584	1565
HRW3600	m^3/h	26216	34954	43693	52506	61170	69909	78648	87386	96125	3800	584	1680
HRW3800	m^3/h	29270	39026	48783	58624	68296	78052	87809	97565	107322	4000	584	1799
HRW4000	m^3/h	32491	43321	54152	65081	75812	86643	97473	108303	119134	4200	584	1922
HRW4200	m^3/h	35880	47840	59800	71878	83720	95680	107640	119600	131560	4400	584	2569
HRW4400	m^3/h	39436	52582	65727	79014	92018	105164	118309	131455	144600	4600	584	2722
HRW4600	m^3/h	43161	57547	71934	86321	100708	115095	129482	143869	158256	4800	584	2878
HRW4800	m^3/h	47052	62736	78421	94138	109789	125473	141157	156841	172525	5000	584	3038
HRW5000	m^3/h	51112	68149	85186	102294	119260	136298	153335	170372	187409	5200	584	3175

Note: the size and weight listed above are for the wheel heat recovery itself.

Air Resistance of Various Parts of Knockdown Air Handling Units

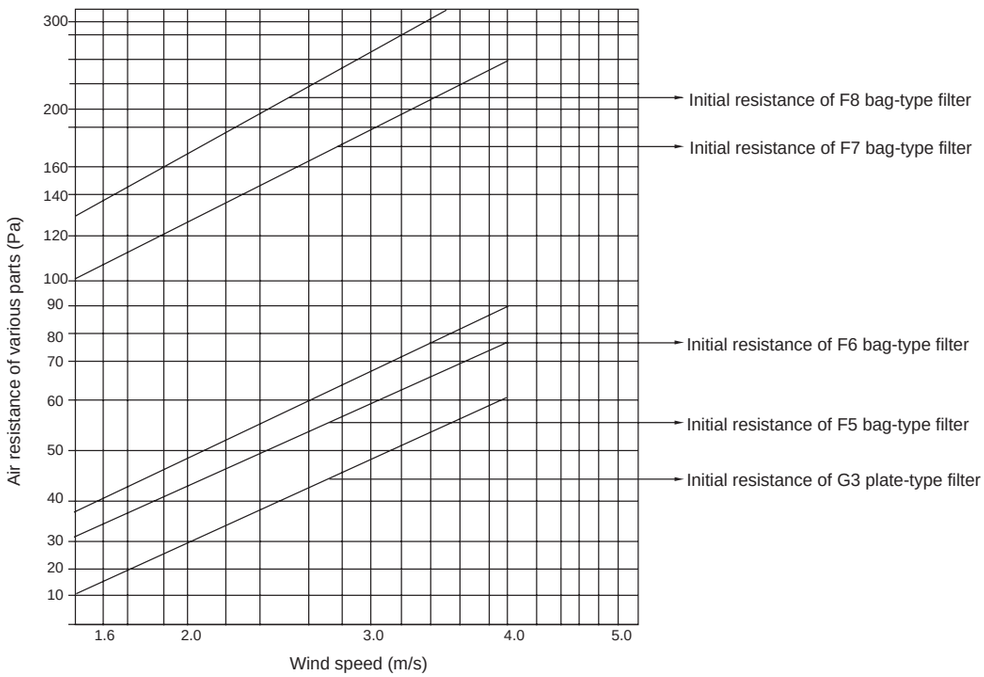
model EKDM	Rated air flow m^3/h	Blending section air valve	G3 primary efficiency filter	F5 medium efficiency filtering section	Flow averaging plate	Water barrier	Coil								
							1 row	2 rows	3 rows	4 rows	5 rows	6 rows	8 rows	10 rows	12 rows
0306	2000	27	39	62	31	45	28	52	90	127	165	202	269	336	403
0406	3000	27	39	62	31	45	28	51	88	125	162	198	264	330	396
0407	4000	29	43	68	39	53	32	60	107	153	191	229	305	381	457
0408	5000	31	46	72	44	59	36	67	118	168	210	251	335	419	503
0508	6000	28	41	64	35	49	30	56	100	143	179	214	285	356	427
0607	7000	30	46	71	43	58	35	65	115	164	205	246	328	410	492
0608	8000	30	44	69	41	55	33	62	110	157	197	236	314	392	470
0511	9000	29	42	67	38	52	32	59	105	150	187	224	299	374	449
0610	10000	29	42	66	37	51	31	58	103	148	185	222	296	370	444
0611	12000	30	46	71	44	58	35	65	115	165	206	247	330	413	496
0712	15000	29	43	67	38	53	32	60	106	151	189	227	303	379	455
0812	18000	30	44	69	41	55	33	62	110	158	198	237	316	395	474
0813	20000	30	45	70	42	57	34	64	113	162	203	243	323	403	483
0915	25000	28	41	65	36	50	30	57	101	145	182	218	290	362	434
1015	30000	29	44	68	40	54	34	63	112	161	201	241	321	401	481
1313	35000	30	46	71	44	59	35	66	117	167	209	250	333	416	499
1315	40000	30	45	70	42	56	34	63	112	161	201	241	321	401	481
1515	45000	29	43	67	39	53	32	60	106	152	190	228	303	378	453
1417	50000	30	45	70	42	57	34	64	113	162	203	243	323	403	483
1520	60000	29	43	67	39	53	32	60	106	152	190	227	303	379	455
1720	70000	30	44	69	40	55	33	62	109	156	195	234	312	390	468
1722	80000	30	45	71	43	57	35	65	115	164	205	245	327	409	491
1626	90000	30	45	71	43	58	35	65	115	164	205	246	328	410	492
1826	100000	30	44	69	41	56	34	63	111	159	199	238	318	398	478
1852	200000	30	44	69	41	56	34	63	111	159	199	238	318	398	478
3652	400000	30	44	69	41	56	34	63	111	159	199	238	318	398	478

Note:

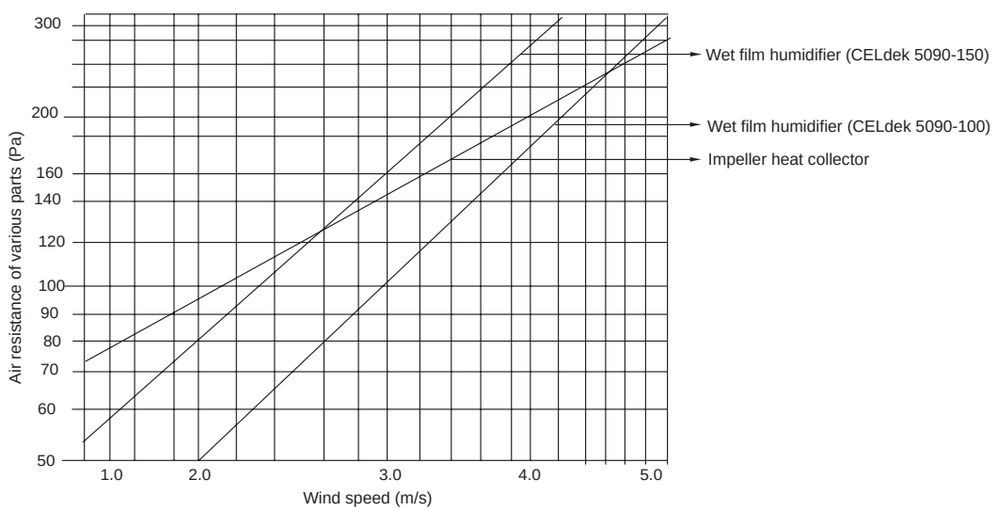
- The resistance of air valve is measured with an opening degree of 300.
- The air resistance of filters (primary efficiency: G3; medium efficiency: F5) represents initial resistance. The operation resistance needs an allowance of 50-60%.
- In Row 1 and Row 2, the coil resistance represents dry air resistance (wet air resistance may increase by 20%-30%). For all other rows, the coil resistance represents wet air resistance.
- Air resistance of all parts is measured at rated air flow. If the air flow changes, the resistance needs to be modified according to the attached diagrams.

Specifications

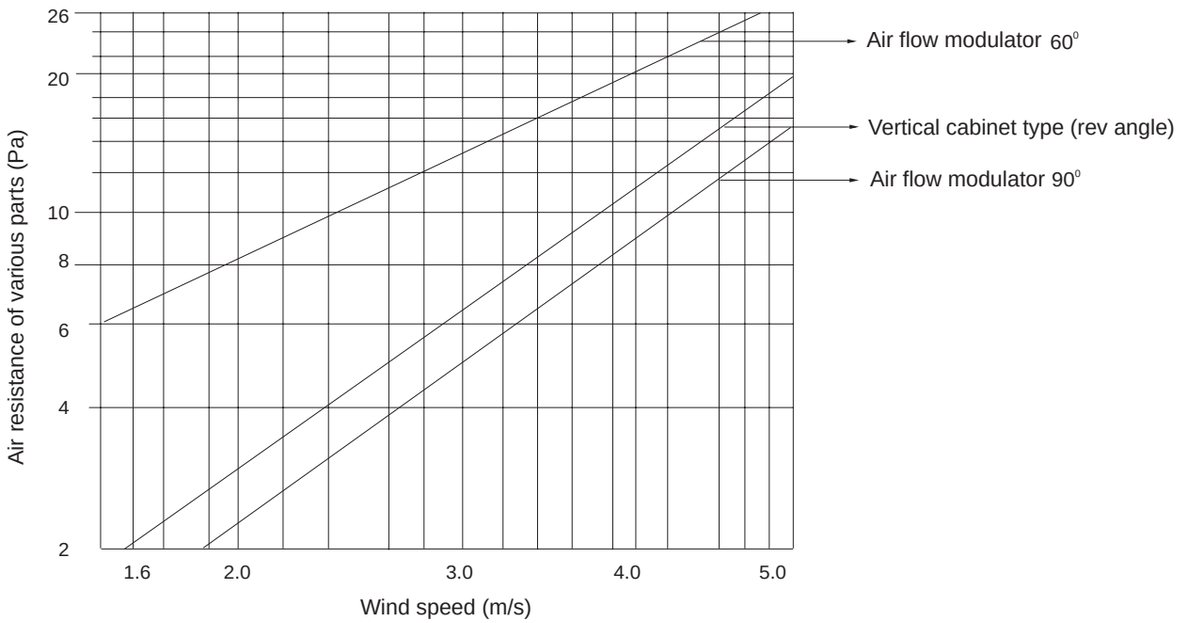
Filter Resistance Diagram



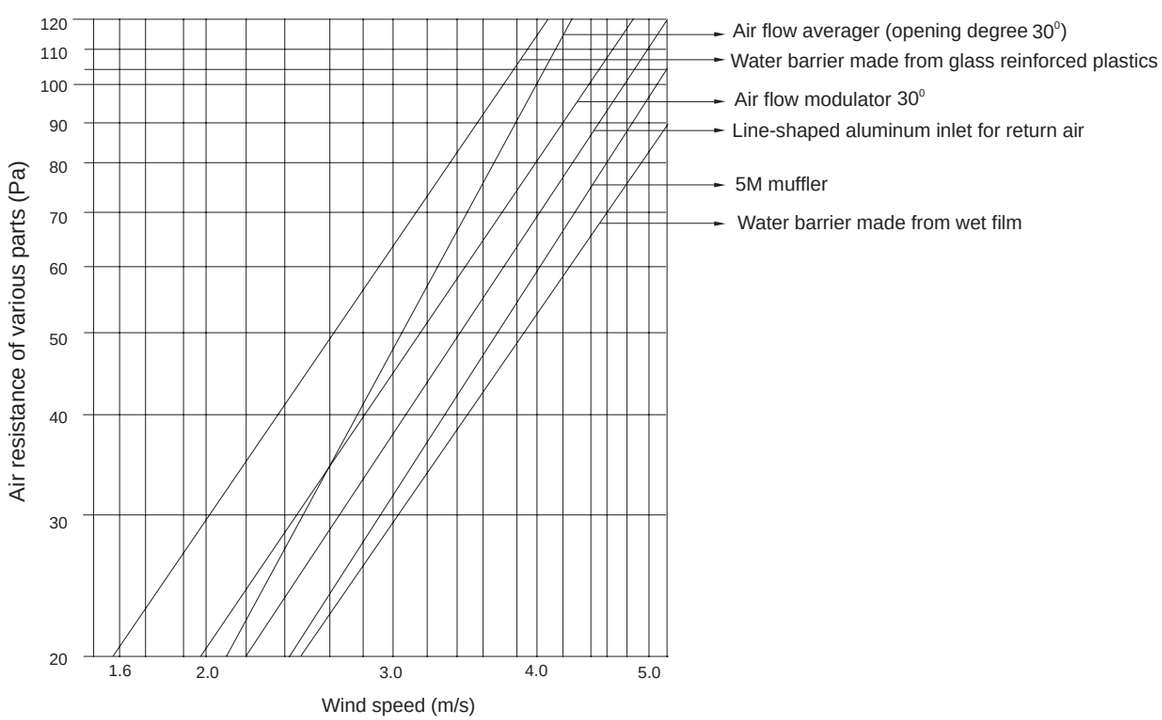
Resistance Diagram for Humidifier/Wheel Heat Recovery



Resistance Diagram for Air Valve



Resistance Diagram for Other Resistive Parts



Installation

EK provides several special electric control solutions for EKDM series knockdown air handling units, mainly including direct startup, star-delta startup, soft startup and variable frequency startup. The electric/electronic components of the control cabinet all come from international name-brands, thus ensuring accurate control and electric safety.

Illustration for Direct Startup Cabinet

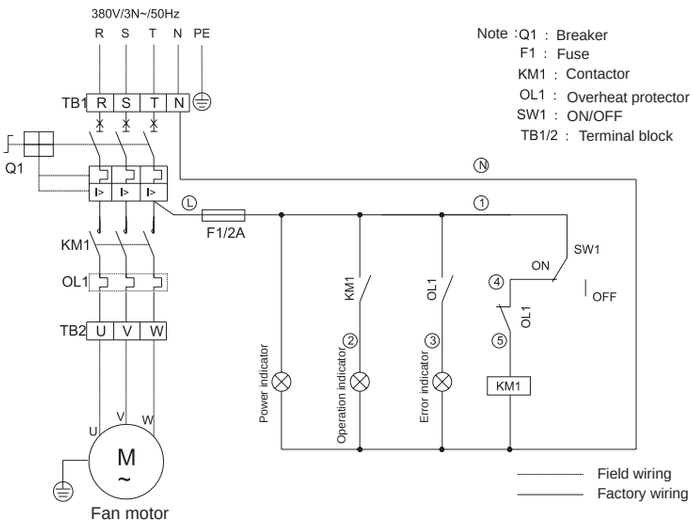
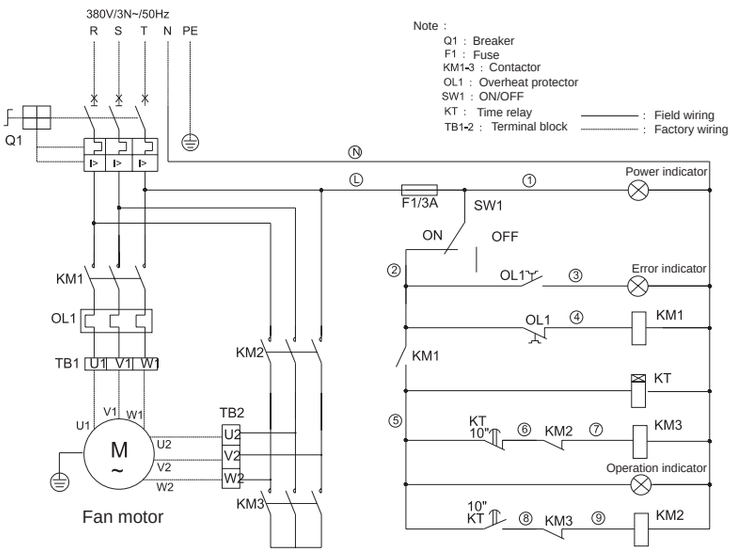


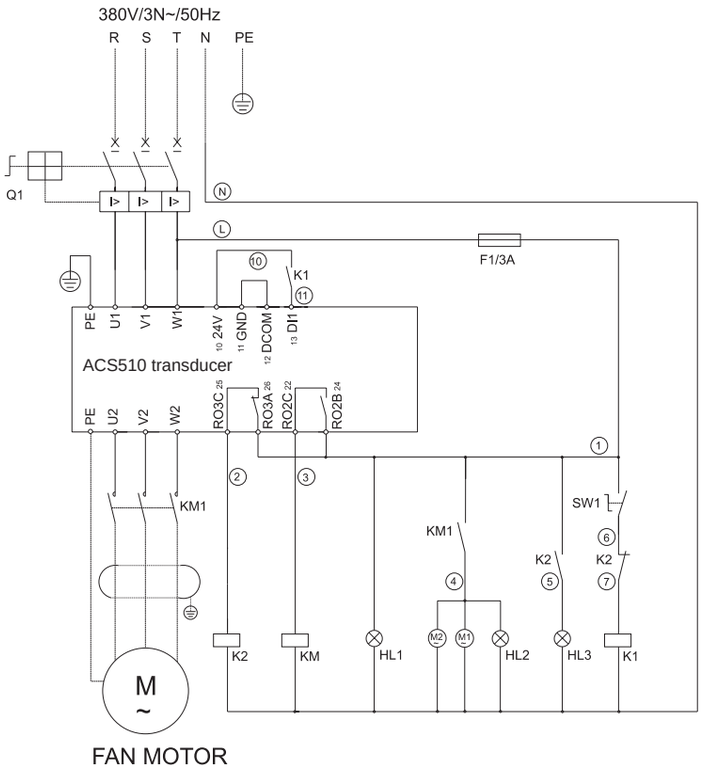
Illustration for Star-delta Startup



Features

- On/off control of fan;
- Output power: direct startup: 0.55 ~ 11kW; star-delta startup: 15 ~ 55kW.
- Power supply, operation mode, error and remote/local status indication;
- Two control solutions: auto (remote) and manual (local);
- Protection against overload, phase shortage, low voltage and short circuit;
- On/off operation: using touch button, both convenient and safe.

Illustration for Variable Frequency Startup



Code	Description
Q1	Main circuit breaker
F1	Transducer 3A
K1-2	Relay (220VAC)
KM1	Contactor
SW1	Startup switch
HL1	Power indicator (red)
HL2	Operation indicator (green)
HL3	Error indicator (yellow)
M1-2	Cooling fan

Factory wiring
Field Wiring

Features

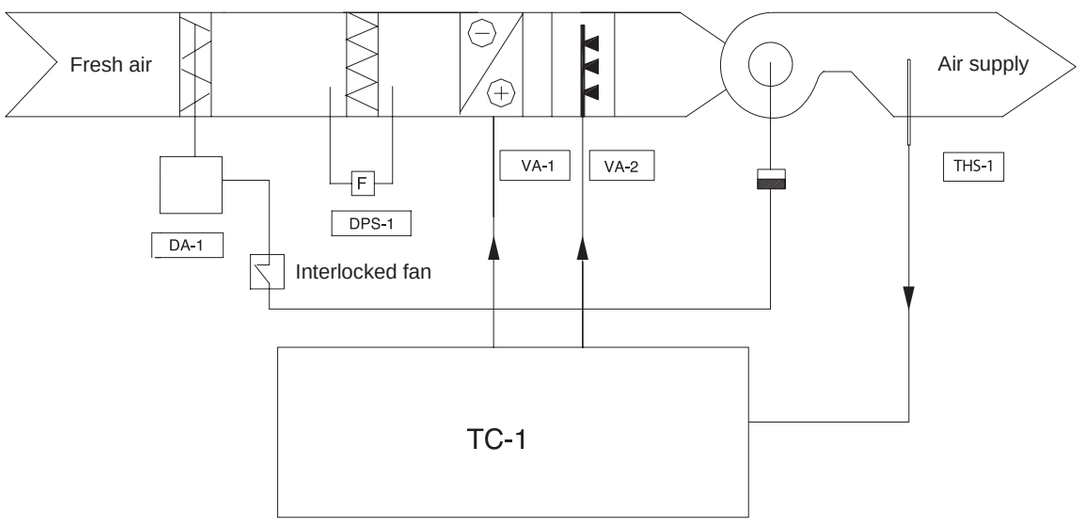
- Using heat/ventilation transducer from internal name brands;
- Using transducer to significantly reduce power consumption and operation cost;
- Modulating air flow when installed on air handling units;
- Variable frequency startup reduces shock to the mains, eliminating power expansion cost.
- Power supply, operation mode, error and remote/local status indication;
- Two control solutions: auto (remote) and manual (local);
- All-round protection against overload, phase shortage, low voltage and short circuit.

Unit Electric Control

Auto Control System for EKDM Knockdown Air Handling Units

EKDM knockdown air handling units are equipped with reliable and accurate auto control mechanisms from international name-brands, and are well matched with the air conditioning/cooling systems for stable and optimum performance. In addition to outstanding process and comfort, they can also minimize energy consumption and operation cost.

Simulate Dashboard for Fresh Air Fan



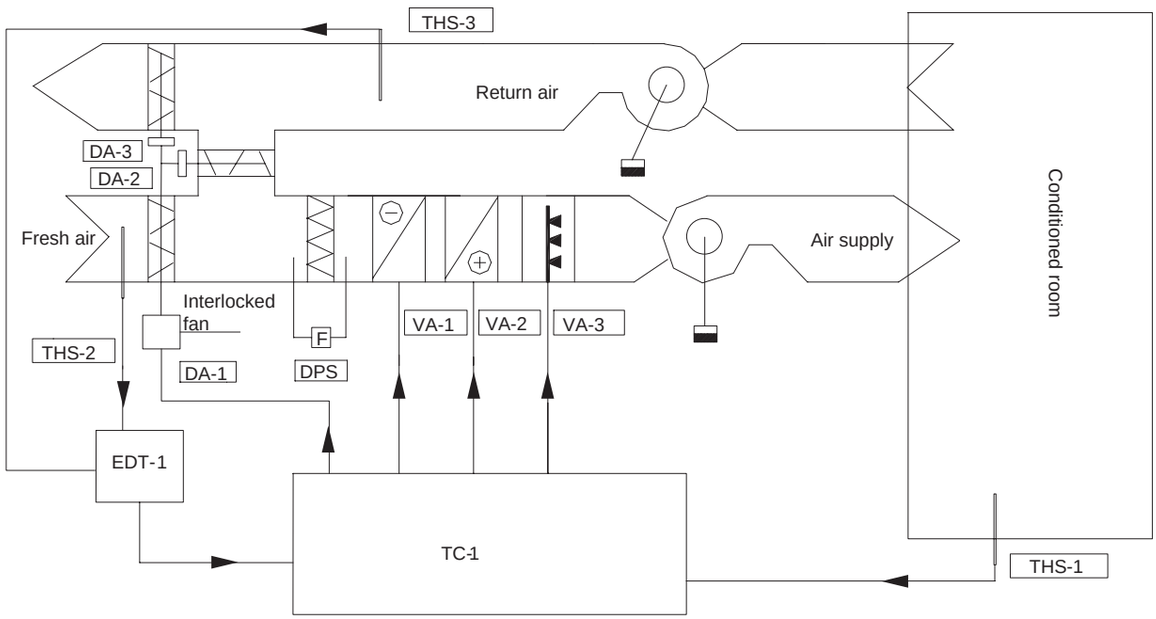
Description for Symbols

Symbols	Name	Remarks
TC-1	Temperature controller with LCD display	With modulated voltage output
VA-1/2	Electric modulating valve	Hydraulic-electric
THS-1	Air duct temperature/humidity sensor	Knockdown
DPS-1	Differential pressure switch	
DA-1	Air valve actuator	3-state control

Features

- Temperature/humidity sensors in the air duct transmit temperature and humidity of supplied air to the controller for comparison with preset values. Based on PI calculation results, the controller sends out signals to modulate the electric valve, heated/cooled water flow of the heat exchanger and the humidifier to ensure that the return air temperature falls between the required range.
- The air valve actuator is interlocked with the fan. When the air supply fan starts up, the air valve opens automatically; and when the fan shuts down, the air valve is automatically closed by a brake.
- The electric modulating valve is interlocked with the fan. When the fan is turned off, the electric valve is closed (for anti-freeze applications, a stroke limiter can be used to keep the hot water valve at a certain opening degree).
- System parameters can be directly entered and modified on the controller with an LCD display.
- The differential pressure switch detects the pressure drop between two sides of the filter. Once the pressure drop has exceeded the preset value, the switch sends out an alarm for the operator to clean or replace the filter.
- The power control cabinet provides protection against fan startup/shutdown, overload and phase shortage; and indication for error, operation status, etc.

Direct Digital Control over Enthalpy (Variable) and Temperature/Humidity (Constant)



Description for Symbols

Symbols	Name	Remarks
TC-1	DDC direct digital controller	5AI, 2DI, 3AO and 6DO
VA-1/2/3	Electric modulating valve	Hydraulic-electric
THS-1	Indoor temperature/humidity sensor	Knockdown
THS-2/3	Air duct temperature/humidity sensor	Knockdown
EDT-1	Enthalpy-differentiation transmitter	
DPS-1	Differential pressure switch	
DA-1/2/3	Air valve actuator	3-state control

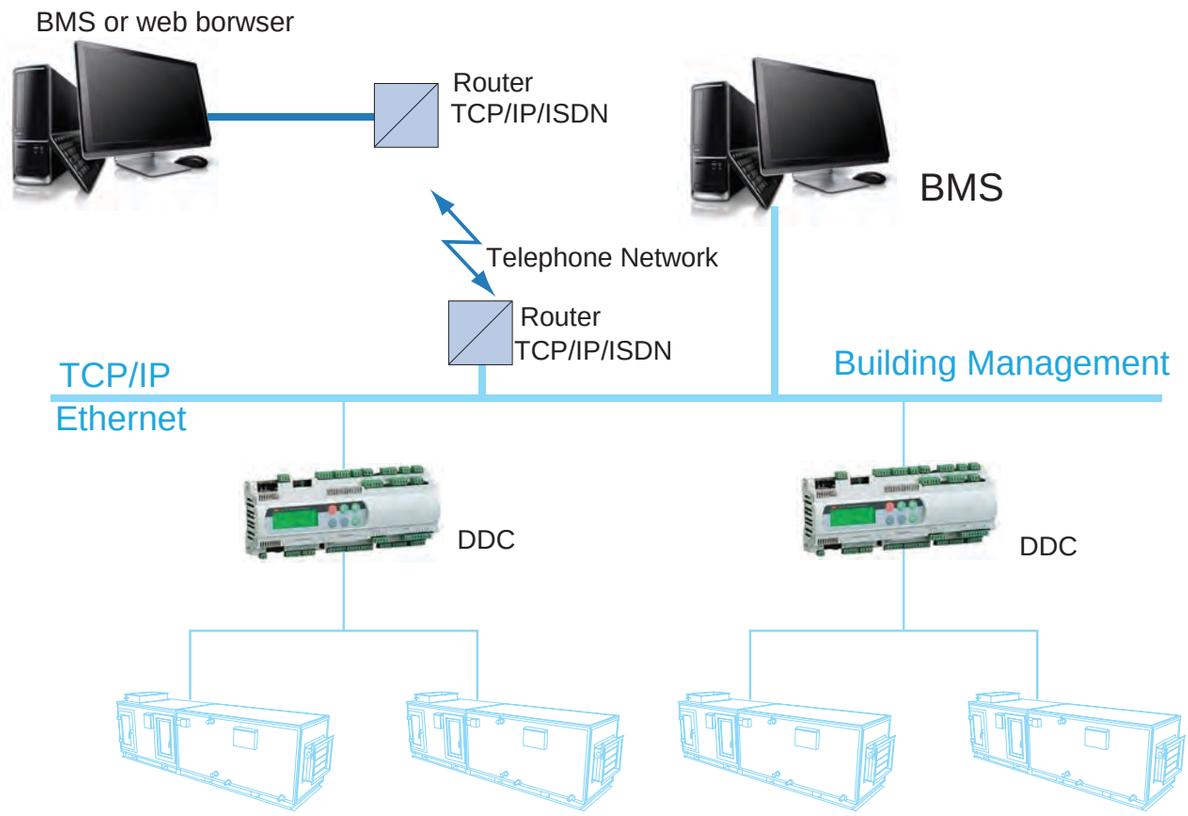
Features

TC-1 is a multi-function direct digital controller with 5AI, 2DI, 3AO and 6DO. It can support up to 3 PID control circuits, each circuit hosting 4 control programs. System parameters, operation modes and process curves can be directly displayed on the controller.

- Temperature control: The knockdown indoor temperature/humidity sensor THS-1 detects indoor temperature, and sends the data to the controller TC-1 for comparison and calculation. The controller then sends out signals to control the cooled water electric valve VA-1 and heating coil VA-2 to modulate air supply temperature.
- Humidity control: The knockdown indoor temperature/humidity sensor THS-1 detects indoor humidity, and sends the data to the controller TC-1 for comparison with the preset value. If the actual humidity is lower/higher than the preset value, TC-1 opens up/closes down the humidifier modulating valve by a proper degree Description for Symbols to boost/reduce humidifying capacity. If the humidity is still too high after the humidifier completely shuts down, TC-1 opens up the cooled water valve VA-1 to help dehumidifying the air by cooling.
- Control of blended air: THS-2 and THS-3 detect the temperature/humidity of fresh air and return air respectively, and send the data to enthalpy-differentiation transmitter EDT-1, which calculates and compares the data and send the enthalpy differentiation signal to TC-1. Based on this signal, TC-1 controls the opening degree of fresh/return/discharge air valves DA-1/-2/-3 to modulate the ratio of fresh/return air. This not only saves more energy, but also improves indoor air quality (minimum fresh air in winter and summer and maximum outdoor fresh air during transitional seasons).

Networking with Building Automation System

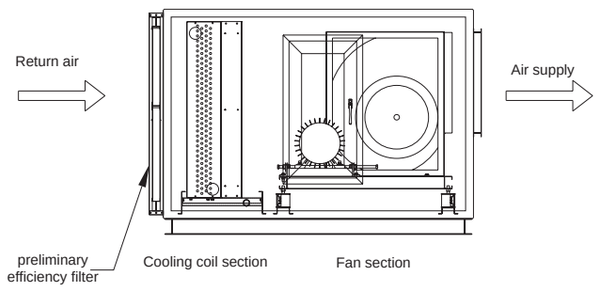
EKDM air handling units can also use DCC controllers with networking features. With a built-in communication module, DCC controllers within the same layer can network with one another for communication and data sharing. They can also be used in distributed systems to work as substation monitors and communicate with the central station or building automation system.



Using an I/O expansion card, DDC controllers can control more data points and air handling units. With a built-in TCP/IP protocol and a WEB SERVER communication card, DCC controllers can network with BMS systems even for remote Web access.

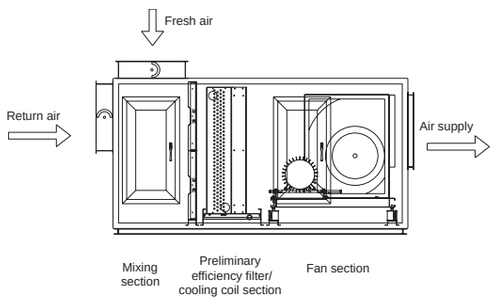
Most Easy Assembly

This solution is suitable for central air conditioning systems with ordinary comfort degree. It is simple and space-saving and requires less investment.



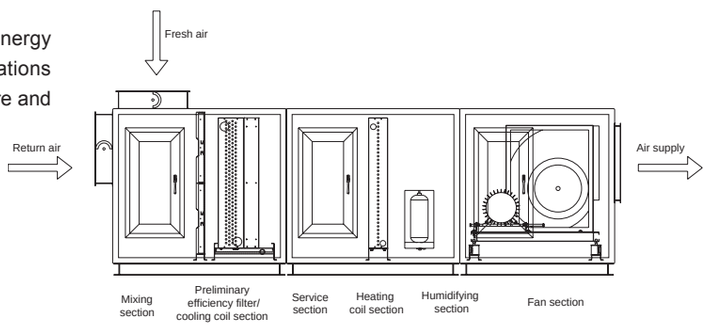
Most Economic Assembly with Preliminary Efficiency Filter

This solution features air blending, and is suitable for applications requiring both comfort and energy efficiency.



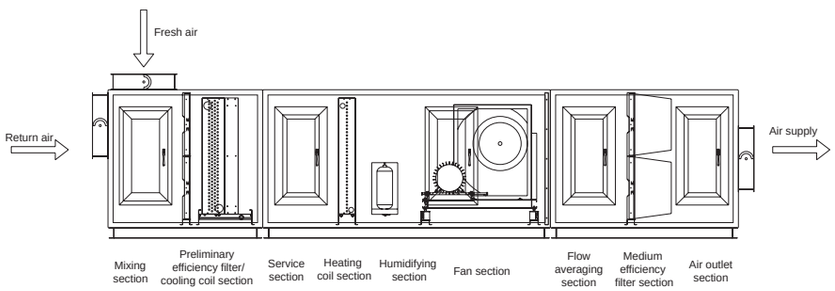
Common Assembly for Industrial Central Air Conditioning

This solution can handle heat & humidity, and saves energy through air blending. It is suitable for industrial applications requiring higher comfort degree and accurate temperature and humidity.



Assembly for Common Clean Room Applications

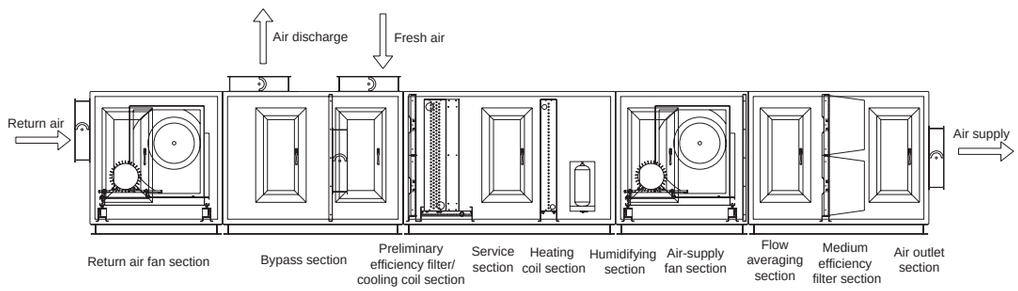
This solution is suitable for applications with requirements on temperature, humidity and air cleanliness, such as hospitals and workshops with moderate requirements on clean air.



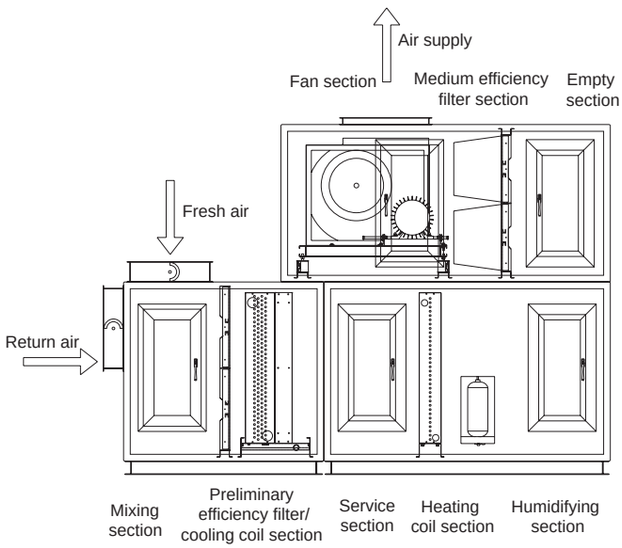
Typical Unit Assembly

Section Combination for Applications Requiring High Static Pressure and Clean Air

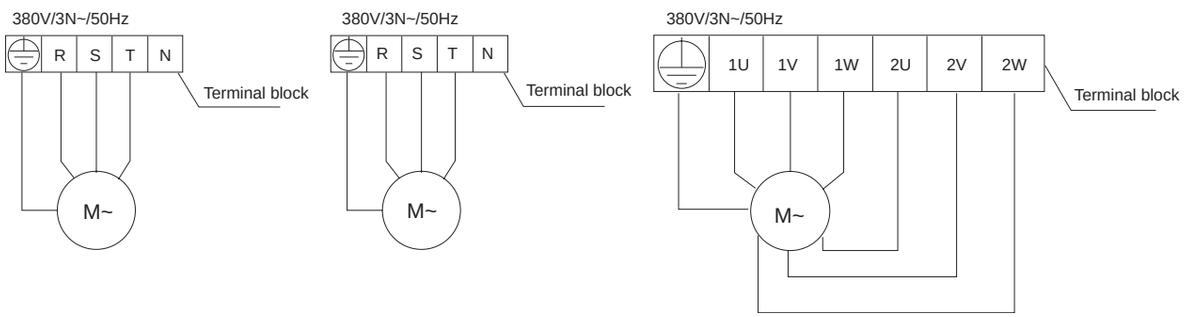
This solution contains basic components of a purifying unit. A return air unit is used to reduce the pressure head of the fan.



Vertical Knockdown Air Handling Unit



Wiring Diagram for Typical Motors



Motors with 3.0 kW or lower power Y wiring

4 ~ 11kW motors
△ Wiring

Wiring diagram for single-speed motors with 15kW or higher power and all double-speed motors

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