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首批荣获国家质检总局颁发全国工业产品生产许可证

First got the refrigeration equipment production permit

Issued by National Quality Testing Bureau

AIRCONDITIONING TERMINALS 空调末端系列

B1

Combination Air-handling Units

组合式空调机组



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德州亚太集团是国内大型中央空调制冷系统集成供应商。

集多年潜心研究，博采众长自成体系，打造出一流的中央空调全套设备和众多精品工程。国内以中央电视台新址、酒泉卫星发射中心、国家质检总局、三峡工程及近二十个北京奥运场馆等为代表，国外以巴基斯坦乌奇电厂、柬埔寨金边市大都会广场、印度帕帕多拉工程等为代表的重点项目，采用了亚太中央空调设备，长期稳定，节能环保，获得了广泛的赞誉。

ISO9001、14001、3C、UL、CE、CRAA 等一系列认证；主机列入节能产品政府采购清单、数十项国家专利、国家级高新技术企业、中国驰名商标，充分标明了亚太集团的管理水平和产品水平。

与荷兰阿波罗合资，以欧洲标准制造的洁净设备全部返销发达国家、中央空调设备相继进入十几个国家和地区，展示亚太集团已经步出国门，与国际接轨。

植根齐鲁大地，秉持“以人为本”的经营理念，崇尚“以德待人”的儒家文化，亚太集团愿与您共同开创明天的辉煌。

Dezhou Yatai Group is a supplier of large central air conditioning and refrigeration system in China.

Yatai has developed whole set of advanced central air conditioner and lots of wonderful projects based on long-term research and features of the others. Many famous projects adopted Yatai central air conditioners that run smoothly, save energy, protect environment and won good reputation widely like the New CCTV, the Jiuquan Satellite Launching Center, the General Bureau of National Quality Inspection, Three-gorge Engineering Project, over 20 Beijing Olympic Stadiums and others in China; the UCH Power Plant in Pakistan, the Phnom Penh Capital Squire in Cambodia, the Priyadarshini Jurala Project in India and others across the world.

Yatai has certified by ISO9001, 14001, 3C, UL, CE, CRAA and others; its chiller names have been put on the government purchasing list as energy saving products and obtained dozens of national patents, National High-technology Enterprise and Chinese Famous Trademark, which show the managements and product qualities of Yatai Group.

The filtering equipment made by the joint venture, co-invested with Dutch Afro Company, according to the European Standards air exported fully to the developed countries; the central air conditioners have exported to over 10 countries or regions, which show that Yatai Group has stepped into oversea markets and been in the line with the international.

Located at Shandong Province, insisting on business idea of "humanism" and advocating the Confucianism of "getting along with people by morality" Yatai Group wishes to create a brilliant future with you.



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Honorable Qualification



AIRCONDITIONING TERMINALS

空调末端系列

Combination air-handling units

组合式空调机组

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组合式空调机组
Combination air-handling units



吊顶式空调机组KD(X)系列
Computer-controlled fiber-glass winding pipes



风机盘管机组
Fan-coils

空调部件系列
Parts of air-conditioners

Combination air-handling units

组合式空调机组



ZK 系列组合式空调机组是我公司在积累多年生产经验的基础上，吸取国内外先进技术而开发的一种空气处理设备，多种规格可供选择，覆盖风量从 3000~250000m³/h，亦可根据客户要求量身定制。广泛应用于商场、体育馆、地铁、医院等场合以及纺织、机械制造、精密电子、精细化工、制药等行业。

ZK series combined air conditioning unit is a kind of air treatment equipment developed by our company on the basis of long-term accumulated production experience and absorbing advanced technology from home and abroad. There are a variety of specifications for you to choose. Its air volume ranges from 3000 to 250000m³/h. It can also be tailor-made according to customers' requirements. It is widely used in places like shopping malls, stadiums, subways, hospitals and industries such as the textile, machinery manufacturing, precision electronics, fine chemical, pharmaceutical, etc.



产品特点

Characteristics

- 模块化设计，各模块之间任意组合，通用性强，安装方便。
 - 自带刚性底座，方便运输，大型机组可现场组装。
 - 采用无框架或倾角防冷桥铝合金型材，0.4–1mm 双层面板，先进工艺防腐处理。夹层内填充矿物棉或 PU 发泡材料，保温性能好，确保机组无冷桥、凝漏现象。
 - 机组的所有部件都经过严格测试，可在温度 $-15^{\circ}\text{C} \leq T \leq 45^{\circ}\text{C}$ ，相对湿度 $10\% \leq \phi \leq 90\%$ 的条件下正常运行。
 - 可配置自控系统，实现机组的自动化控制及节能运行。
 - 下排水设计（2% 斜度），保证冷凝水顺畅排出。
 - 可根据用户需求量身定制。
- Modular design, combinations at will, universality and easy assembly.
 ● With steel base and easy transportation, field assembly on large unit.
 ● Adopt frameless or dip angle anti-cold bridge profiles, double 0.4–1mm plate panel, its surface is painted for anti-corrosion, its interlayer material is mineral wool or PU foam to guarantee its good heat-insulation and no cold bridge or dew.
 ● All parts of the unit have been strictly tested and can operate normally under the conditions of temperature $-15^{\circ}\text{C} \leq T \leq 45^{\circ}\text{C}$ and relative humidity $10\% \leq \phi \leq 90\%$.
 ● Can connect with automatic system to control automatically and save energy.
 ● Drain at bottom (slope is 2%) to make sure the condensed water drain smoothly.
 ● Can tailor-made for customers.

型号标注方法

Model explanation

例1: ZK W 50



例2: ZK L 20



例3: ZK 20 -X



例4: ZK W 20 -X



例5: ZK L 20 -X



例6: ZK 20 -J



快速选型

Quick selection

组合卧(立)式空调机组

Combined horizontal (vertical) air handling unit

组合卧(立)式空调机组由外挂式板式过滤(全铝制网、尼龙网或无纺布)表冷段和风机段组成。机组进风口处可留法兰以便用户连接管道，也可配风帽。

可选项:送风温度自动控制、变风量调节(多速或无级变速)、湿膜加湿、干蒸汽加湿、高压喷雾加湿、高压微雾加湿、电极加湿、电热加湿。

Combined horizontal (vertical) AHU consists of outside hung plate primary efficiency filtering surface cooler (aluminum mesh, nylon mesh or non-woven cloth) and fan sections. Flange can be reserved at air inlet to connect the unit with air duct. The cowl is optional.

Optional functions: automatic control of air supply temperature, variable air volume regulation (multi-speed or stepless speed regulation), wet film humidification, dry steam humidification, high pressure spray humidification, high pressure mist humidification, electrode humidification, and electric heating humidification.



ZKW(L)系列组合卧(立)式空调机组性能参数表

Performance parameters table of ZKW(L) series combined horizontal (vertical) air handling units

参数 Data	额定风量 m³/h Rated air flow	机外静压 Pa External static pressure	电机功率 kW Motor power	管排数 Tube row No. of heat exchanger	供冷量 kW Cooling capacity	冷冻水流量 m³/h Chilled water flow	水阻力 Kpa Water resistance	风阻 Pa Air resistance	供热量 kW Heating capacity	热水流量 m³/h Hot water flow	进出水管径 in Diameter of water in/out tube	冷凝水管径 in Tube diameter of condensed water	整机重量 kg Whole weight	机组噪声 dB(A) Noise
ZKW(L)3	3000	60★	0.55	4	16.7	2.9	8.2	98	24.9	2.1	1.5	1	235	55
		120	0.55	6	22.8	3.9	12.7	155	34.4	3.0		1		61
		260	1.1	8	29.5	5.1	15.6	196	44.4	3.8		1		68
ZKW(L)4	4000	60★	0.75	4	22.1	3.8	9.2	96	33.2	2.9	1.5	1	280	57
		150	0.75	6	30.2	5.2	13.4	146	45.8	3.9		1		64
		300	0.75	8	39.4	6.8	18.2	192	58.1	5.0		1		72
ZKW(L)5	5000	60★	0.8	4	27.6	4.8	9.8	101	41.5	3.6	1.5	1	320	59
		200	1.1	6	37.8	6.5	13.9	150	57.2	4.9		1		66
		350	1.5	8	49.1	8.4	19.9	198	73.8	6.4		1		74
ZKW(L)6	6000	60★	1.1	4	33.3	5.7	10.5	93	50.2	4.3	2	1	350	62
		200	1.5	6	45.4	7.8	16.3	155	68.6	5.9		1		68
		350	1.8	8	50.9	8.8	23.3	196	88.4	7.6		1		75
ZKW(L)7	7000	80★	1.1	4	38.7	6.7	10.9	91	58	5.0	2	1	400	63
		200	1.8	6	52.9	9.1	18.1	146	80.1	6.9		1		70
		350	2.2	8	68.8	11.8	25.9	185	103	8.9		1		76
ZKW(L)8	8000	80★	2×0.55	4	44.2	7.6	12.9	105	65.4	5.6	2	1	440	64
		260	2×0.8	6	60.5	10.4	20.4	166	90.9	7.8		1		66
		400	3	8	78.6	13.5	29.1	210	116.3	10.0		1		73
ZKW(L)9	9000	80★	2×0.8	4	52.1	9.0	15	102	77.1	6.6	2	1	480	65
		300	2×1.5	6	70.1	12.1	21.2	158	103.8	8.9		1		67
		400	4	8	88.4	15.2	30.3	205	137.1	11.8		1		75
ZKW(L)10	10000	80★	2×0.8	4	59.5	10.2	15.4	108	88.2	7.6	2	1	525	65
		300	2×1.5	6	80.2	13.8	21.7	150	112.2	9.6		1		71
		450	4	8	98.3	16.9	30.8	210	156.9	13.5		1		78
ZKW(L)15	15000	100★	2×1.5	4	90.6	15.6	17.2	110	134.2	11.5	2	1	585	71
		350	2×2.2	6	122.1	21.0	25.5	160	170.9	14.7		1		73
		450	7.5	8	161.2	27.7	34.8	205	238.7	20.5		1		77
ZKW(L)20	20000	200	2×2.2	4	122.5	21.1	19.3	110	180.4	15.5	2	1	820	71
		300	2×3	6	165.1	28.4	23.8	166	244.2	21.0		1		76
		350	11	8	217.9	37.5	29.9	215	320.9	27.6		1		78
ZKW(L)25	25000	200	2×3	4	153.1	26.3	23	105	226.8	19.5	2	1	910	78
		350	2×4	6	206.4	35.5	26.2	161	304.7	26.2		1		80
		500	15	8	272.4	46.8	32.6	210	403.5	34.7		1		83
ZKW(L)30	30000	250	2×4	4	180.9	31.1	23.2	108	262.9	22.6	2	1	1020	79
		400	2×5.5	6	247.7	42.6	28.6	156	366.3	31.5		1		81
		500	18.5	8	321.9	55.4	34.4	210	476.7	41.0		1		83
ZKW(L)40	40000	300	2×5.5	4	241.2	41.5	26.5	115	357.1	30.7	2.5	1	1260	78
		400	2×7.5	6	330.2	56.8	31.2	160	487.3	41.9		1		80
		550	18.5	8	429.2	73.8	38.4	212	635.4	54.6		1		84

备注:

- 标准供冷工况: 进风干球温度27℃, 湿球温度19.5℃; 冷冻水进水温度7℃, 进出水温差5℃;
- 标准供热工况: 进风干球温度15℃, 热水进水温度60℃, 进出水温差10℃;
- 表冷器形式: 铜管串高效铝翅片;
- 初效过滤器: 全铝制网、尼龙网或无纺布;
- 整机重量系6排表冷器时的机组重量;
- 风机采用高效双进风离心风机;
- 订货时须注明机外静压, 即机组全静压减去机组自身阻力后的剩余压力;
- 机组左右式判定方法: 顺气流方向看接管位置, 在左侧为左式, 反之为右式;
- ★表示组合立式的带风帽空调机组;
- 机组机外静压可按用户要求进行优化设计, 电机功率需作相应调整。

- Standard cooling condition: Entering air dry bulb temp is 27℃, its wet bulb 19.5℃. Entering chilled water temp is 7℃, the temp difference of entering and leaving is 5℃.
- Standard heating condition: Entering air dry bulb temp is 15℃, entering hot water temp is 60℃, the temp difference of entering and leaving water is 10℃.
- Cooling coil type: copper tubes and high-efficiency aluminum fins.
- Primary filters: Multi-layered aluminum plate mesh, nylon mesh or non-woven cloth.
- The whole weight is that of 6 rows of tube coil AHU.
- High efficient double air intake centrifugal fan.
- When ordering, please indicate the external static pressure, that is, the residual pressure after the total static pressure of the unit minus its own resistance.
- Judgment of right type or left type: Watch the pipe connection position at the same direction with flow. If in left, left type. If in right, right type.
- ★Indicate the combined air handling unit with funnel cap.
- The external residual pressure can be optimized when designing in terms of customer requirements, the electric machinery power shall be adjusted correspondingly.


ZKW(L)-X系列组合卧(立)式新风空调机组性能参数表

Performance parameters table of ZKW(L)-X series combined horizontal (vertical) fresh air handling units

参数 Data 型号 Model	额定风量 m³/h Rated air flow	机外静压 Pa External static pressure	电机功率 kW Motor power	管排数 Tube row No. of heat exchanger	供冷量 kW Cooling capacity	冷冻水流量 m³/h Chilled water flow	水阻力 Kpa Water resistance	风阻 Pa Air resistance	供热量 kW Heating capacity	热水流量 m³/h Hot water flow	进出水管径 in Diameter of water in/out tube	冷凝水管径 in Tube diameter of condensed water	整机重量 kg Whole weight	机组噪声 dB(A) Noise
ZKW(L)-X	3000	80	0.55	4	24.5	4.2	4.2	123	32.5	2.8	1.5	1	235	55
		150	0.75	6	33.6	5.8	5.8	180	44.1	3.8		1		61
		300	0.75	8	43.6	7.5	7.5	221	57.9	5.0		1		68
ZKW(L)-X	4000	80	0.75	4	32.4	5.6	9.2	121	42.8	3.7	1.5	1	280	57
		150	0.75	6	43.7	7.5	13.4	171	58.7	5.1		1		64
		300	1.1	8	57.6	9.9	18.2	217	76.3	6.6		1		72
ZKW(L)-X	5000	100	0.8	4	40.8	7.0	9.8	126	53.6	4.6	1.5	1	320	59
		200	1.1	6	55.7	9.6	13.9	175	73.4	6.3		1		66
		350	1.8	8	72.7	12.5	19.9	223	95.4	8.2		1		74
ZKW(L)-X	6000	150	1.1	4	49	8.4	10.5	118	63.5	5.5	2	1	350	62
		300	1.5	6	60.9	11.5	26.3	180	87.9	7.6		1		68
		400	1.8	8	87.2	15.0	23.3	221	113.3	9.7		1		75
ZKW(L)-X	7000	150	1.5	4	57.2	9.8	10.9	116	74.5	6.4	2	1	400	63
		300	2.2	6	78.4	13.5	18.1	171	117.3	10.1		1		70
		400	3	8	102	17.5	25.9	210	152.3	13.1		1		76
ZKW(L)-X	8000	150	2×0.8	4	65.4	11.2	12.9	130	85.6	7.4	2	1	440	64
		300	2×1.5	6	90.9	15.6	20.4	191	123.2	11.5		1		66
		400	3	8	116.3	20.0	29.1	235	159.9	15.0		1		73
ZKW(L)-X	9000	150	2×1.1	4	77.1	13.3	15	127	95.4	8.2	2	1	480	65
		350	2×1.5	6	103.8	17.8	21.2	183	131.4	12.9		1		67
		450	4	8	137.1	23.6	30.3	230	169.8	16.9		1		75
ZKW(L)-X	10000	150	2×1.1	4	88.2	15.2	15.4	133	107.2	9.1	2	1	525	65
		350	2×1.8	6	112.2	19.3	21.7	175	146.7	14.3		1		71
		450	4	8	156.9	27.0	30.8	235	190.7	18.8		1		78
ZKW(L)-X	15000	150	2×1.5	4	134.2	23.1	17.2	135	160.7	13.8	2	1	585	71
		350	2×2.2	6	170.9	29.4	25.5	185	220.1	18.9		1		73
		450	7.5	8	238.7	41.0	34.8	230	286	24.6		1		77
ZKW(L)-X	20000	200	2×3	4	180.4	31.0	19.3	135	211.7	18.2	2	1	820	71
		400	2×4	6	244.2	42.0	23.8	191	293.1	25.2		1		76
		450	11	8	320.9	55.2	29.9	240	376.7	32.4		1		78
ZKW(L)-X	25000	250	2×3	4	226.8	39.0	23	130	264.7	22.8	2	1	910	78
		450	2×4	6	304.7	52.4	26.2	186	366.3	31.5		1		80
		550	11	8	403.5	69.4	32.6	235	470.9	40.5		1		83
ZKW(L)-X	30000	250	11	4	262.9	45.2	23.2	133	318.3	27.4	2	1	1020	79
		450	2×5.5	6	366.3	63.0	28.6	181	438.3	37.7		1		81
		550	2×7.5	8	476.7	82.0	34.4	235	566.3	48.7		1		83
ZKW(L)-X	40000	300	15	4	357.1	61.4	26.5	140	423.5	36.4	2.5	1	1260	78
		400	15	6	487.3	83.8	31.2	185	584	50.2		1		80
		600	18.5	8	635.4	109.3	38.4	237	753.5	64.8				84

备注：

- 标准供冷工况：进风干球温度35℃，湿球温度28℃；冷冻水进水温度7℃，进出水温差5℃；
- 标准供热工况：进风干球温度7℃，热水进水温度60℃，进出水温差10℃；
- 表冷器形式：铜管串高效铝翅片；
- 初效过滤器：全铝制网、尼龙网或无纺布；
- 整机重量系6排表冷器时的机组重量；
- 风机采用高效双进风离心风机；
- 订货时须注明机外静压，即机组全静压减去机组自身阻力后的剩余压力；
- 机组左右式判定方法：顺气流方向看接管位置，在左侧为左式，反之为右式；
- 机组机外静压可按用户要求进行优化设计，电机功率需作相应调整。

- Standard cooling condition: Entering air dry bulb temp is 35°C, its wet bulb 28°C. Entering chilled water temp is 7°C, the temp difference of entering and leaving is 5°C.
- Standard heating condition: Entering air dry bulb temp is 15°C, entering hot water temp is 60°C, the temp difference of entering and leaving is 5°C.
- Cooling coil type: copper tubes and high-efficiency aluminum fins.
- Primary filters: Multi-layered aluminum plate mesh, nylon mesh or non-woven cloth.
- The whole weight is that of 6 rows of tube coil AHU.
- High efficient double air intake centrifugal fan.
- When ordering, please indicate the external static pressure, that is, the residual pressure after the total static pressure of the unit minus its own resistance.
- Judgment of right type or left type: Watch the pipe connection position at the same direction with flow. If in left, right type. If in right, right type.
- The external residual pressure can be optimized when designing in terms of customer requirements, the electric machinery power shall be adjusted correspondingly

**ZKW(-X)系列组合卧式空调机组外形尺寸图**

Outline dimension diagram of ZKW(-X) series combined horizontal air handling unit

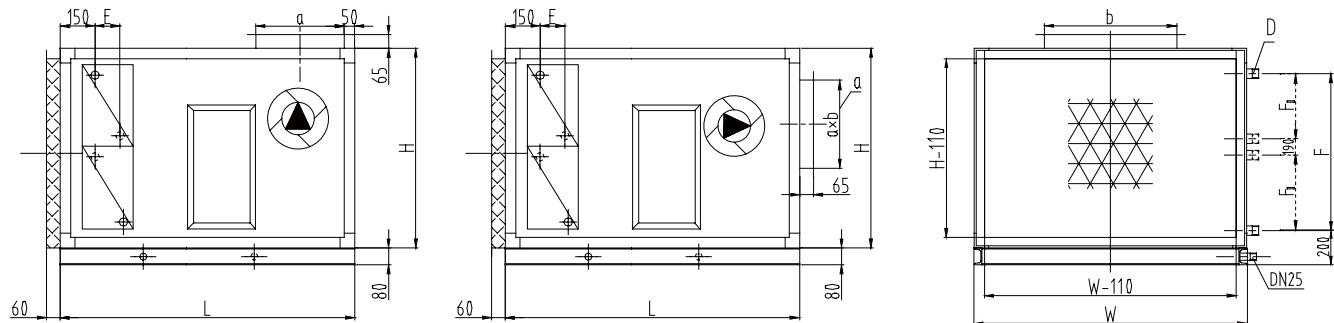


表 1

Table1

单位 : mm

Unit: mm

型号 Model	ZKW3(-X)	ZKW4(-X)	ZKW5(-X)	ZKW6(-X)	ZKW7(-X)	ZKW8(-X)	ZKW9(-X)
L	1310	1310	1310	1310	1310	1310	1310
W	710	870	1020	1170	1330	1360	1500
H	1000	1000	1000	1000	1000	1000	1080
E	4排: E=83, 6排: E=138, 8排: E=193 4Rows; E=83, 6Rows; E=138, 8Rows; E=193						
F	730	730	730	730	730	730	785
a	320	320	400	400	500	500	500
b	400	500	500	630	630	630	800
D(in)	1.5	1.5	1.5	2	2	2	2

表 2

Table2

单位 : mm

Unit: mm

型号 Model	ZKW10(-X)	ZKW15(-X)	ZKW20(-X)	ZKW25(-X)	ZKW30(-X)	ZKW40(-X)	
L	1310	1625	1625	1850	2160	2160	
W	1500	1750	1750	1750	2010	2280	
H	1240	1520	1800	2100	2100	2380	
E	4排: E=83, 6排: E=138, 8排: E=193 4Rows; E=83, 6Rows; E=138, 8Rows; E=193						
F	940	1100	690	850	850	980	
F0							
a	500	630	800	800	800	1000	
b	800	800	800	1000	1250	1250	
D(in)	2	2	2	2	2	2.5	



ZKL(-X)系列组合立式空调机组外形尺寸图

Outline dimension diagram of ZKL(-X) series combined vertical air handling units

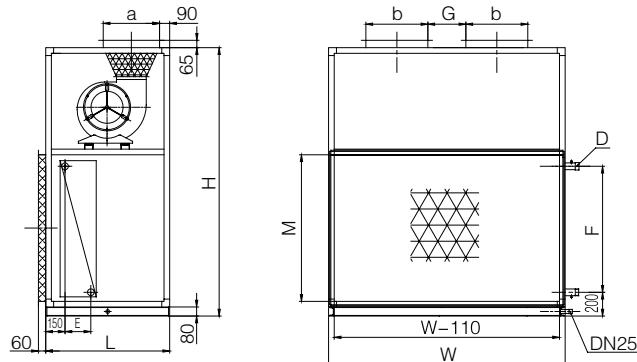


表 1

Table1

单位 : mm

Unit: mm

型号 Model	ZKL3(-X)	ZKL4(-X)	ZKL5(-X)	ZKL6(-X)	ZKL7(-X)	ZKL8(-X)	ZKL9(-X)
L	650	750	750	750	850	850	850
W	780	910	1050	1210	1350	1430	1580
H	1230	1530	1630	1630	1630	1750	1750
E	4排: E=83, 6排: E=138, 8排: E=193 4Rows: E=83, 6Rows: E=138, 8Rows: E=193						
a	320	320	400	400	400	320	400
b	320	400	400	500	630	400	400
F	625	625	625	625	625	690	690
G						280	280
M	760	760	760	760	760	840	840
N	680	810	950	1110	1250	1330	1480
D(in)	1.5	1.5	1.5	2	2	2	2

表 2

Table2

单位 : mm

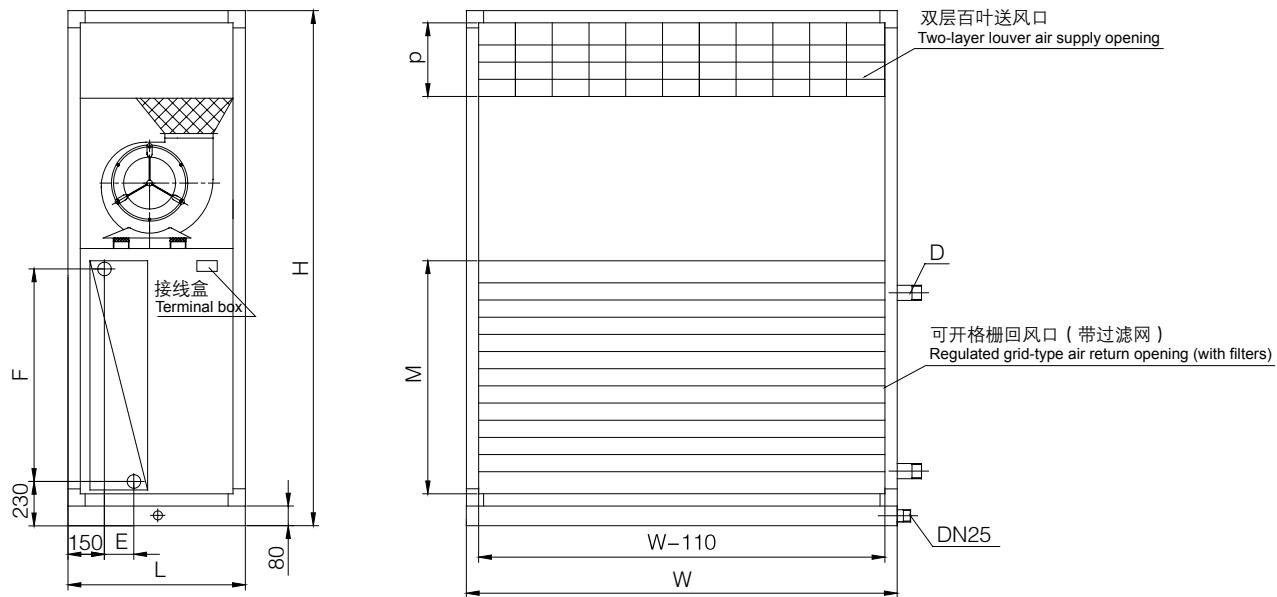
Unit: mm

型号 Model	ZKL10(-X)	ZKL15(-X)	ZKL20(-X)	ZKL25(-X)	ZKL30(-X)	ZKL40(-X)	
L	850	1150	1150	1150	1150	1150	
W	1730	1950	2090	2450	2570	3180	
H	1750	2080	2260	2260	2480	2650	
E	4排: E=83, 6排: E=138, 8排: E=193 4Rows: E=83, 6Rows: E=138, 8Rows: E=193						
a	400	400	500	630	630	630	
b	500	630	630	630	800	1000	
F	690	910	1070	1070	1230	1290	
G	320	320	350	400	450	450	
M	840	1060	1220	1220	1370	1440	
D(in)	2	2	2	2	2	2.5	



ZKL系列组合立式的带风帽机组外形尺寸图

Outline dimension diagram of ZKL series combined vertical air handling unit with funnel cap

表 1
Table1单位 : mm
Unit: mm

型号 Model	ZKL3	ZKL4	ZKL5	ZKL6	ZKL7
L	650	750	750	750	850
W	780	910	1050	1210	1350
H	1850	1850	1950	1950	1950
E	4排: E=83, 6排: E=138, 8排: E=193 4Rows; E=83, 6Rows; E=138, 8Rows; E=193				
F	625	625	625	625	625
M	760	760	760	760	760
P	200	200	250	250	250
D(in)	1.5	1.5	1.5	2	2

表 2
Table2单位 : mm
Unit: mm

型号 Model	ZKL8	ZKL9	ZKL10	ZKL15	ZKL20
L	850	850	850	1150	1150
W	1430	1580	1730	1950	2090
H	2100	2100	2100	2450	2650
E	4排: E=83, 6排: E=138, 8排: E=193 4Rows; E=83, 6Rows; E=138, 8Rows; E=193				
F	690	690	690	910	1070
M	840	840	840	1060	1220
P	250	250	250	350	400
D(in)	2	2	2	2	2



组合空调机组

Combined air handling unit

机组模数和尺寸

机组高度 = 高度模数 × 100+105+80/100(底座)

机组宽度 = 宽度模数 × 100+105

Modulus and size

Unit height = Height modulus × 100+105+80 / 100 (Base)

Unit width = Width modulus × 100+105

机组型号 Model	额定风量 m ³ /h Rated air flow	机组外形尺寸mm Outside dimension		表冷器迎面风速m/s Coil approach air velocity			机外静压 Pa External static pressure
				2.25	2.5	2.75	
		宽 W Width	高 H High	风量 m ³ /h Air flow			
ZK3(-X)	3050	805	885	2745	3050	3355	200~800
ZK4(-X)	4016	905	885	3614	4016	4418	200~800
ZK5(-X)	5020	1005	985	4518	5020	5522	200~800
ZK6(-X)	6186	1005	1085	5567	6186	6805	200~800
ZK8(-X)	8025	1205	1185	7223	8025	8828	200~800
ZK10(-X)	10068	1205	1285	9061	10068	11075	200~800
ZK12(-X)	12134	1405	1285	10921	12134	13347	200~800
ZK15(-X)	15075	1505	1485	13568	15075	16583	200~800
ZK20(-X)	20082	1605	1885	18074	20082	22090	200~800
ZK25(-X)	25025	1805	1885	22523	25025	27528	200~800
ZK30(-X)	30060	1805	2185	27054	30060	33066	200~800
ZK35(-X)	35350	2005	2285	31815	35350	38885	200~800
ZK40(-X)	40156	2105	2405	36140	40156	44172	200~800
ZK50	50562	2505	2505	45506	50562	55618	200~800
ZK60	60280	2905	2505	54252	60280	66308	200~800
ZK80	80156	3205	3005	72140	80156	88172	200~800
ZK100	100260	3605	3505	90234	100260	110286	200~800
ZK120	121056	4305	3505	108950	121056	133162	200~800
ZK140	140862	4505	3805	126776	140862	154948	200~800
ZK160	161236	4805	4105	14112	161236	177360	200~800
ZK180	180650	5205	4505	162585	180650	198715	200~800
ZK200	201260	5705	4505	181134	201260	221386	200~800
ZK220	222152	5905	4505	199937	222152	244367	200~800
ZK250	251882	6005	4905	226694	251882	277070	200~800

注:

- 1、表中机组高度不包括底座尺寸。
- 2、表中灰色部分建议配置挡水板，以防表冷器漏水。
- 3、额定风量、外形尺寸不在上表参数范围内的，可按用户要求非标设计。

Note:

1. The heights in this table do not include that of base and top grill.
2. The yellow area means unit should be with eliminator in case water drifts at coil.
3. If rated air flow and outside dimension are not within this table, we can design specially according to customer requirements



功能示意图

Function diagrams

序号 No.	名称 Name	简图 Sketch	长度尺寸 (N: 标准模数值) Length (N: Modulus)	备注 Remarks
1	混合段 Mixture		ZK3-(X)~ZK10-(X) 6N ZK12-(X)~ZK40-(X) 9N ZK50~ZK80 10N ZK100~ZK180 16N ZK200~ZK250 18N	
2	新排风段 Air discharge		ZK3-(X)~ZK15-(X) 10N ZK20-(X)~ZK40-(X) 12N ZK50~ZK80 16N ZK100~ZK180 18N ZK200~ZK250 22N	
3	板式过滤段 Plate filters		2N	该功能段前建议设置检修段 Inspection should be ahead
4	袋式过滤段 Bag filters		5N	该功能段前建议设置检修段 Inspection should be ahead
5	综合过滤段 General filters		5N	该功能段前建议设置检修段 Inspection should be ahead
6	表冷挡水段 Cooling		8N	
7	加热段 Heating		3N	
8	电加热段 Electric heater		3N	
9	干蒸汽加湿段 Dry steam humidifier		6N	
10	湿膜加湿段 Wet film humidifier			与盘管组合安装不单独占用空间 Combined with coil
11	高压喷(微)雾加湿段 Spray humidifier		6N	需配置湿膜挡水板 Eliminator is available
12	风机段 Fan		见风机段 Refer to fan section	该功能段前建议设置检修段 Inspection should be ahead
13	消声段 Sound reduction		回风: 8N 送风: 13N Air return: 8N Air supply: 13N	
14	均流段 Flow equalization		6N	
15	中间段 Inspectin		6N	

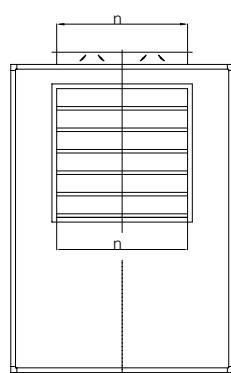
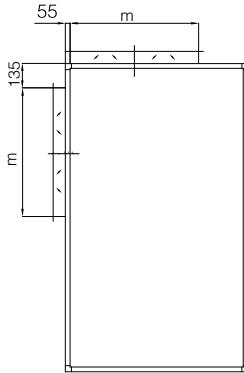


新回风混合段

Fresh air mixing section

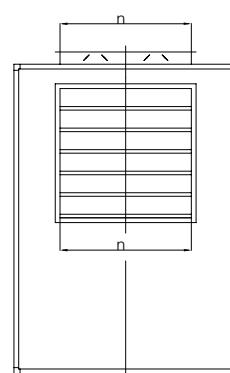
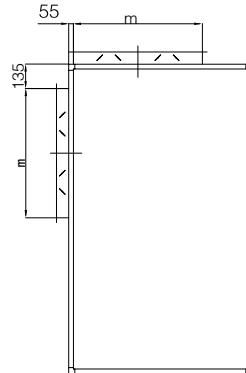
30mm 面板

30mm Panel



50mm 面板

50mm Panel



型号 Model	m	n
ZK3(-X)	320	400
ZK4(-X)	400	400
ZK5(-X)	400	500
ZK6(-X)	400	630
ZK8(-X)	500	630
ZK10(-X)	500	800
ZK12(-X)	630	800
ZK15(-X)	800	800
ZK20(-X)	800	1000
ZK25(-X)	800	1250
ZK30(-X)	800	1500
ZK35(-X)	800	1500

注：风量调节阀为可选项，分手动、电动和气动三种形式。

型号 Model	m	n
ZK40(-X)	800	1600
ZK50	900	1800
ZK60	900	2200
ZK80	900	2700
ZK100	1000	3000
ZK120	1200	3000
ZK140	1500	3000
ZK160	1500	3300
ZK180	1500	4000
ZK200	1600	4000
ZK220	1800	4000
ZK250	2000	4000

Note: Air flow damper is an option, there are 3 kinds namely manual, electric and pneumatic.

过滤段

初效过滤器：分板式和袋式，过滤介质采用无纺布、静电棉或热粘化纤滤料及金属孔网，过滤效率 G3（计重效率 80~90%），容尘量 800g/m²。

中效过滤器：分板式和袋式，过滤介质采用超细纤维滤料和有机合成纤维与微纤维，并呈递增结构（即往纯净空气方向的纤维层的密度逐渐增大）。

过滤效率为 F5~F8（比色法 40%~95%），容尘量 230g/m²。

亚高效过滤器：采用超细玻璃纤维滤料密褶而成，过滤效率为 F9~H11（大气尘计数法 0.5um 95% 以上）。

高效过滤器：采用超细玻璃纤维滤料密褶而成，过滤效率 H12~H14（钠焰法 99.9% 以上）。

活性炭过滤器：采用多层结构的高强度无纺布，同时在涂料中加入特殊活性炭，既能使过滤效果达到 F7，同时又能去除空气异味。

化学过滤器：一级化学过滤器采用浸渍活性氢氧化钾，二级化学过滤器采用活性氢氧化铝浸渍高锰酸钾。

可选项：铝板网过滤器、不锈钢网过滤器、卷绕式过滤器及自洁式过滤器。

Filter section

Primary efficiency filters: Plate and bag 2 types, filtering media are non-woven, static electricity wool or heat bondable fiber and metal mesh. Their efficiency is G3 (weighing efficiency is 80 ~ 90%), their dust holding capacity is 800g / m².

Middle efficiency filters: Plate and bag 2 kinds, their filtering media are super fine fiber and organic synthetic fiber and micro-fiber, and are arranged in increasing sequence (namely fiber density increases along the air purified trend). Their filtering efficiency is F5~F8 (colorimetric method 40%~95%), their dust holding capacity is 230g / m².

High-middle/sub-high efficiency filters: Made and pleated by super fine glass fiber, their filtering efficiency is F9~H11 (Particles counter method 0.5um, more than 95%).

High efficiency filter: it is densely folded by super-fine glass fiber; filtering efficiency is H12~H14 (filtering efficiency is 99.9% when tested by sodium flame method).

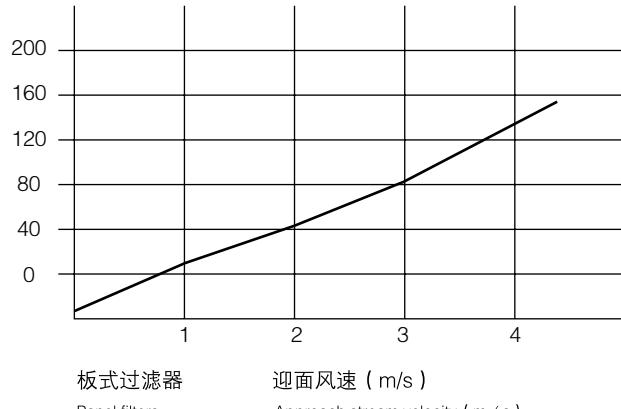
Active carbon filters: Use multi-layers high strength non-woven cloth and sandwich special active carbon. Not only make their filtering efficiency up to F7, but also remove air off-flavor.

Chemical filter: grade one chemical filter is impregnated with active potassium hydroxide, and grade two chemical filter is impregnated with active aluminum hydroxide and potassium permanganate.

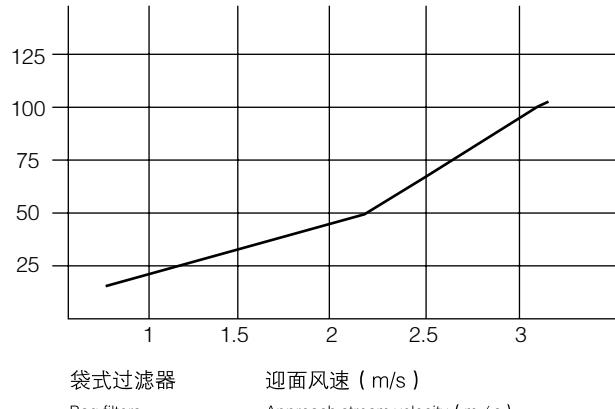
Options: Aluminum plate mesh filter, stainless steel mesh filters, winding type filters and cleaning on its own filters.



空气阻力 (Pa) Air resistance (Pa)



空气阻力 (Pa) Air resistance (Pa)



过滤器规格及数量

Specifications and number of filters

机组型号 Model	板式、袋式过滤器规格 Specifications of panel, bag filters					
	592×592	592×490	490×490	592×393	490×393	393×393
ZK3(-X)	1					
ZK4(-X)				2		
ZK5(-X)					2	2
ZK6(-X)			2		2	
ZK8(-X)		2	2			
ZK10(-X)		4				
ZK12(-X)	4					
ZK15(-X)		2		4		
ZK20(-X)		9				
ZK25(-X)	6	3				
ZK30(-X)		8	4			
ZK35(-X)	6	6				
ZK40(-X)		12	4			
ZK50	16					
ZK60	8	12				
ZK80	20	5				
ZK100	20	10				
ZK120		32	16			
ZK140	18	30				
ZK160		36	27			
ZK180		40	40			
ZK200		44	44			
ZK220	28	35				
ZK250		54	36			



中国、美国、欧洲过滤效率规格对照表

Filtering efficiency comparison in China, US, and Europe

中国GB/T14295 Chinese GB/T 14295	初效≥5 μm 80% > 效率≥20% Primary efficiency≥5 μm 80% > Efficiency≥20%				中效≥1 μm 70% > 效率≥20% efficiency≥1 μm 70% > Efficiency≥20%				高中效≥1 μm 99% > 效率≥70% High-middle efficiency≥1 μm 99% > Efficiency≥70%				亚高效≥0.5 μm 99.9% > 效率≥95% Sub-high efficiency≥0.5 μm 99.9% > Efficiency≥95%				高效≥0.5 μm 效率≥95% High efficiency≥0.5 μm Efficiency≥95%				
美国ASHRAE US. ASHRAE	C1	C2-C4	L5	L6	L7	L8	M9	M10	M11	M12	M13					H12-H16	VH17	VH18	VH19	VH20	
欧洲新标准 Europe New standard	G1 65%	G2 80%	G3 80-90%		G4 >90%		F5 40%		F6 60%		F7 80%	F8 90%	F9 85%	H10 95%	H11 99%	H12 99.9%	H13 90.95%		H14 99.985%	V15-V17 99.9995%	
欧洲旧标准 Europe Old standard	EU1	EU2	EU3		EU4		EU5		EU6		EU7	EU8	EU9	EU10		EU11	EU12	EU13	EU14		

ZK 系列机组冷却、加热盘管

机组配有冷热水共用盘管和加热盘管。冷热水共用盘管冬夏两季轮换使用，加热盘管专用热水加热，或可选用蒸汽盘管。

冷热水盘管采用二次翻边高效铝翅片有机械胀管法胀结于钢管上，换热效果显著。蒸汽换热器采用钢管绕铝片或钢（铜）铝复合换热器。

Cooling or heating coils of ZK series air handling units

The unit is fixed with cold hot water common coil and heating coil. The cold hot water common coil runs by turns in summer and winter. The heating coil is used specially for heating water, or the steam coil is available.

The cold hot water coil is made by the copper tubes passing through the flanged two times of fine aluminum fin and then expanded and jointed together by machinery. Its heat exchanging efficiency is remarkable. The steam heat exchanger is made by the aluminum fins going around the steel tubes or steel (copper) compound aluminum heat exchanger.

机组冷量

Cooling capacity

标准工况

Standard working condition

机型型号 Model	额定风量 m³/h Rated air flow	4排 4 Rows					6排 6 Rows					8排 8 Rows				
		额定供冷 量 kW Amount of cooling	显热冷量 kW Sensible cooling capacity	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	额定供冷 量 kW Amount of cooling	显热冷量 kW Sensible cooling capacity	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	额定供冷 量 kW Amount of cooling	显热冷量 kW Sensible cooling capacity	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow
ZK3	3050	16.9	12.6	103	6.0	2.9	23.0	15.4	179	7.3	4.0	26.5	16.4	225	8.1	4.6
ZK4	4016	22.6	16.9	104	7.9	3.9	30.8	20.6	178	11.4	5.3	34.8	21.6	246	8.1	6.0
ZK5	5020	28.3	21.2	98	10.7	4.9	38.5	25.8	192	13.9	6.6	43.5	27.0	245	10.1	7.5
ZK6	6186	33.8	25.4	100	11.5	5.8	46.2	30.9	196	12.1	7.9	53.7	33.3	257	11.3	9.2
ZK8	8025	45.0	33.8	101	12.9	7.7	61.5	41.2	188	14.2	10.6	69.6	43.2	258	10.5	12.0
ZK10	10068	56.4	42.3	111	14.0	9.7	77.0	51.6	198	15.7	13.2	87.3	54.1	260	12.9	15.0
ZK12	12134	67.7	50.8	106	17.6	11.6	92.3	61.8	201	16.2	15.9	105.2	65.3	257	12.1	18.0
ZK15	15075	85.3	64.0	106	18.0	14.7	115.4	77.3	196	20.2	19.8	130.8	81.1	255	15.1	22.5
ZK20	20082	112.4	84.3	108	18.3	19.3	153.5	102.8	200	18.8	26.4	174.2	108.0	258	17.5	30.0
ZK25	25025	140.7	105.5	118	18.5	24.2	191.9	128.5	208	21.4	33.0	217.1	134.6	257	18.9	37.3
ZK30	30060	169.8	127.3	115	20.2	29.2	200.3	134.2	196	22.0	34.4	260.7	161.6	257	16.3	44.8
ZK35	35350	198.1	148.6	115	21.0	34.1	235.5	157.8	201	20.0	40.5	306.8	190.1	254	17.8	52.7
ZK40	40156	224.9	168.7	105	21.9	38.7	267.5	179.2	192	22.8	46.0	348.3	215.9	256	19.2	59.9
ZK50	50562	282.6	211.9	119	23.0	48.6	336.9	225.7	198	24.6	57.9	438.5	271.9	264	16.8	75.4
ZK60	60280	338.4	253.8	118	21.9	58.2	401.6	269.1	195	26.4	69.1	522.8	324.2	259	16.8	89.9
ZK80	80156	448.8	336.6	119	27.1	77.2	534.0	357.8	211	28.6	91.8	695.2	431.0	256	18.9	119.6
ZK100	100260	576.2	432.2	116	32.4	99.1	668.0	447.5	201	33.7	114.9	869.6	539.1	259	19.5	149.5
ZK120	121056	694.3	520.7	119	35.4	119.4	806.5	540.4	193	37.4	138.7	1050.0	651.0	264	18.9	180.6
ZK140	140862	808.8	606.6	120	40.3	139.1	938.5	628.8	198	42.2	161.4	1221.7	757.5	254	21.2	210.1
ZK160	161236	923.4	692.6	115	46.8	158.8	1074.2	719.7	192	49.4	184.7	1398.5	867.0	261	23.5	240.5
ZK180	180650	1034.2	775.7	112	52.3	177.9	1203.5	806.4	201	57.4	207.0	1566.8	971.4	259	23.6	269.4
ZK200	201260	1108.1	831.1	112	62.1	190.6	1340.9	898.4	201	69.1	230.6	1745.6	1082.3	258	27.8	300.2
ZK220	222152	1218.9	914.2	115	65.2	209.6	1480.0	991.6	193	76.0	254.5	1926.8	1194.6	262	26.9	331.3
ZK250	251882	1385.1	1038.8	118	69.5	238.2	1678.1	1124.3	200	86.4	288.6	2184.7	1354.5	264	35.4	375.7

注：1、标准工况：进风干温度27°C，温球温度19.5°C。2、冷冻水进出水温度7°C/12°C。

Note: 1. Standard working condition: Entering air dry bulb temp is 27°C, its wet bulb 19.5°C. 2. Chilled waer entering/leaving temp is 7°C / 12°C.



机组供冷量

Cooling capacity

新风工况

Fresh air working condition

机组型号 Model	额定风量 m³/h Rated air flow	4排 4 Rows				6排 6 Rows				8排 8 Rows						
		额定供冷量 kW Amount of cooling	显热冷量 kW Sensible cooling capacity	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	供冷量 kW Amount of cooling	显热冷量 kW Sensible cooling capacity	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	供冷量 kW Amount of cooling	显热冷量 kW Sensible cooling capacity	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow
ZK3-X	3050	24.5	18.4	113	12.8	4.2	33.6	22.5	189	16.2	5.8	43.6	27.0	235	18.8	7.5
ZK4-X	4016	32.4	24.3	114	13.1	5.6	43.7	29.3	188	21.5	7.5	57.6	35.7	256	21.9	9.9
ZK5-X	5020	40.8	30.6	108	14.8	7.0	55.7	37.3	202	22.3	9.6	72.7	45.1	255	23.7	12.5
ZK6-X	6186	49.0	36.8	110	13.2	8.4	67.0	44.9	206	25.1	11.5	87.2	54.1	267	28.3	15.0
ZK8-X	8025	65.4	49.1	111	16.3	11.2	90.9	60.9	198	30.7	15.6	116.3	72.1	268	31.9	20.0
ZK10-X	10068	88.2	66.2	121	18.4	15.2	112.2	75.2	208	34.5	19.3	156.9	97.3	270	37.7	27.0
ZK12-X	12134	105.8	79.4	116	19.6	18.2	134.6	90.2	211	37.3	23.2	188.3	116.7	267	40.3	32.4
ZK15-X	15075	134.2	100.7	116	20.2	23.1	170.9	114.5	206	40.8	29.4	238.7	148.0	265	44.5	41.1
ZK20-X	20082	180.4	135.3	118	20.2	31.0	244.2	163.6	210	23.7	42.0	320.9	199.0	268	25.9	55.2
ZK25-X	25025	226.8	170.1	128	22.5	39.0	304.7	204.1	218	31.1	52.4	403.5	250.2	267	33.9	69.4
ZK30-X	30060	262.9	197.2	125	24.8	45.2	366.3	245.4	206	36.5	63.0	476.7	295.6	267	39.8	82.0
ZK35-X	35350	306.7	230.0	125	25.4	52.7	427.4	286.3	211	36.5	73.5	556.2	344.8	264	39.6	95.6
ZK40-X	40156	357.1	267.8	115	26.9	61.4	487.3	326.5	202	36.8	83.8	635.4	393.9	266	39.5	109.3

注：1、新风工况：进风干球温度35℃，湿球温度28℃。

2、冷冻水进出水温度7℃/12℃。

Note: 1、Fresh air working condition: Entering air dry bulb temp is 35℃, its wet bulb 28℃.

2、Chilled waer entering/leaving temp is 7℃ / 12℃.

机组供热量

Cooling capacity

标准工况

Standard working condition

机组型号 Model	额定风量 m³/h Rated air flow	4排 4 Rows				6排 6 Rows				8排 8 Rows			
		供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow
ZK3	3050	25.5	93	5.5	2.2	34.8	159	6.7	3.0	39.9	200	7.4	3.4
ZK4	4016	34.1	94	7.3	2.9	46.5	158	10.4	4.0	52.6	221	7.4	4.5
ZK5	5020	42.7	88	9.8	3.7	58.1	172	12.8	5.0	65.7	220	9.6	5.7
ZK6	6186	51.1	90	9.8	4.4	69.7	176	11.1	6.0	81.0	232	10.4	7.0
ZK8	8025	68.0	91	11.8	5.8	92.9	168	13.1	8.0	105.1	233	9.6	9.0
ZK10	10068	85.2	101	12.8	7.3	116.2	178	14.4	10.0	131.9	235	11.8	11.3
ZK12	12134	102.2	96	16.2	8.8	139.3	181	14.9	12.0	158.9	232	11.1	13.7
ZK15	15075	128.9	96	15.8	11.1	174.2	176	18.5	15.0	197.4	230	13.9	17.0
ZK20	20082	169.8	98	13.9	14.6	231.8	180	17.3	19.9	263.0	233	16.1	22.6
ZK25	25025	212.5	108	17.0	18.3	289.7	188	19.6	24.9	327.7	232	17.4	28.2
ZK30	30060	256.4	105	18.5	22.0	302.4	176	20.2	26.0	393.7	232	15.0	33.8
ZK35	35350	299.1	105	17.3	25.7	355.6	181	18.3	30.6	463.0	229	16.3	39.8
ZK40	40156	339.6	95	20.1	29.2	404.0	172	20.9	34.7	525.9	231	17.6	45.2
ZK50	50562	426.7	109	21.3	36.7	508.7	178	22.6	43.7	662.2	239	15.4	56.9
ZK60	60280	510.9	108	20.1	43.9	606.4	175	24.2	52.1	789.5	234	15.4	67.8
ZK80	80156	677.7	109	24.8	58.2	806.4	191	26.3	69.3	1049.8	231	17.4	90.2
ZK100	100260	870.1	106	29.7	74.8	1008.6	181	31.0	86.7	1313.1	234	17.9	112.8
ZK120	121056	1048.4	109	32.5	90.1	1217.8	173	34.3	104.6	1585.4	239	17.4	136.2
ZK140	140862	1221.3	110	37.0	104.9	1417.1	178	38.8	121.8	1844.8	229	19.5	158.5
ZK160	161236	1394.3	105	42.9	119.8	1622.0	172	45.3	139.4	2111.7	236	21.6	181.4
ZK180	180650	1561.6	102	48.1	134.2	1817.4	181	52.7	156.1	2365.9	234	21.7	203.3
ZK200	201260	1673.2	102	57.0	143.8	2024.7	181	63.5	174.0	2635.8	233	25.5	226.5
ZK220	222152	1840.5	105	57.0	158.1	2234.9	173	69.8	192.0	2909.5	237	24.7	250.0
ZK250	251882	2091.5	108	63.8	179.7	2534.0	180	79.3	217.7	3298.8	239	32.5	283.4

注：1、标准工况：进风干球温度15℃。

2、进口水温60℃，进出口水温差10℃。

Note: 1、Standard working condition: Entering air dry bulb temp is 15℃.

2、Inlet water temp is 60℃, temp difference between inlet and outlet is 10℃.



机组热量

Heating capacity

新风工况

Fresh air working condition

机组型号 Model	额定风量 m³/h Rated air flow	4排 4 Rows				6排 6 Rows				8排 8 Rows			
		供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow
ZK3-X	3050	29.8	93	6.5	2.6	40.7	159	7.9	3.5	46.7	200	7.6	4.1
ZK4-X	4016	39.9	94	8.7	3.4	54.5	158	12.4	4.7	61.5	221	8.8	5.3
ZK5-X	5020	49.9	88	11.7	4.3	68.0	172	15.2	5.8	76.9	220	11.4	6.6
ZK6-X	6186	59.8	90	11.7	5.1	81.6	176	13.2	7.0	94.8	232	12.3	8.1
ZK8-X	8025	79.5	91	14.0	6.8	108.7	168	15.5	9.3	123.0	233	11.5	10.6
ZK10-X	10068	99.6	101	16.3	8.6	136.0	178	17.1	11.7	154.3	235	14.1	13.3
ZK12-X	12134	119.6	96	19.2	10.3	163.0	181	17.7	14.0	185.9	232	13.2	16.0
ZK15-X	15075	150.8	96	18.9	13.0	203.8	176	22.1	17.5	231.0	230	16.5	19.9
ZK20-X	20082	198.6	98	16.5	17.1	271.2	180	20.6	23.3	307.7	233	19.1	26.4
ZK25-X	25025	248.6	108	20.2	21.4	339.0	188	23.4	29.1	383.5	232	20.7	33.0
ZK30-X	30060	299.0	105	22.1	25.8	353.8	176	24.0	30.4	460.6	232	17.8	39.9
ZK35-X	35350	350.0	105	20.5	30.1	416.1	181	21.8	35.8	541.7	229	19.5	46.5
ZK40-X	40156	397.3	95	23.9	34.1	472.6	172	24.9	40.6	615.3	231	21.0	52.9

注：1、新风工况：进风干球温度7℃。

2、进口水温度60℃，进出口水温差10℃。

Note: 1. Fresh air working condition: Entering air dry bulb temp is 7°C.

2. Inlet water temp is 60°C, temp difference between inlet and outlet is 10°C.

机组蒸汽供热量

The steam heating capacity of unit

标准工况

Standard working condition

机组型号 Model	额定风量 m³/h Rated air flow	1排 1 Rows			2排 2 Rows		
		供热量 kW Heating load	风阻 Pa Air resistance	蒸汽耗量 kg/h Steam consumption	供热量 kW Heating load	风阻 Pa Air resistance	蒸汽耗量 kg/h Steam consumption
ZK3	3050	20.4	21	35.5	40.9	42	71.1
ZK4	4016	26.9	20	46.8	53.8	40	93.6
ZK5	5020	33.6	18	58.5	67.3	36	117.0
ZK6	6186	41.4	22	72.1	82.9	44	144.1
ZK8	8025	53.8	19	93.5	107.3	38	187.0
ZK10	10068	67.5	19	117.3	134.9	38	234.6
ZK12	12134	81.3	20	141.4	162.6	40	282.7
ZK15	15075	101.0	22	175.6	202.0	44	351.3
ZK20	20082	134.5	22	234.0	269.1	44	467.9
ZK25	25025	167.7	21	291.6	335.3	42	583.1
ZK30	30060	201.4	18	350.2	402.8	36	700.4
ZK35	35350	236.8	22	411.8	473.7	44	823.7
ZK40	40156	269.0	21	467.8	538.1	42	935.7
ZK50	50562	338.8	26	589.1	677.5	52	1178.2
ZK60	60280	403.9	21	702.3	807.8	42	1404.6
ZK80	80156	537.0	29	933.9	1074.1	58	1867.7
ZK100	100260	671.7	28	1168.1	1343.5	56	2336.2
ZK120	121056	811.1	26	1410.4	1622.2	52	2820.7
ZK140	140862	943.8	24	1641.1	1887.6	48	3282.2
ZK160	161236	1080.3	25	1878.5	2160.6	50	3757.0
ZK180	180650	1210.4	26	2104.7	2420.7	52	4209.3
ZK200	201260	1348.4	28	2344.8	2696.9	56	4689.6
ZK220	222152	1488.4	25	2588.2	2976.8	50	5176.4
ZK250	251882	1687.6	24	2934.6	3375.2	48	5869.1

注：1、标准工况：进风干球温度15℃。

2、进口蒸汽压力0.2MPa。

Note: 1. Standard working condition: The dry-bulb temperature of intake air is 15°C.

2. The steam pressure at inlet is 0.2Mpa.



机组加热量

unit heating capacity

新风工况

Fresh air working condition

机组型号 Model	额定风量 m³/h Rated air flow	蒸汽压力0.2MPa Steam pressure 0.2Mpa						热水进水温度90℃ Water intake temperature 90℃							
		1排 1 Rows			2排 2 Rows			2排 2 Rows			4排 4 Rows				
		供热量 kW Heating load	风阻 Pa Air resistance	蒸汽耗量 kg/h Steam energy consumption	供热量 kW Heating load	风阻 Pa Air resistance	蒸汽耗量 kg/h Steam energy consumption	供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow
ZK3-X	3050	24.5	21	42.6	42.9	42	74.6	27.6	32	7.5	2.4	46.0	55	20	4.0
ZK4-X	4016	32.3	20	56.1	56.5	40	98.3	36.3	32	8.5	3.1	60.5	55	20	5.2
ZK5-X	5020	40.4	18	70.2	70.5	36	122.8	45.4	32	8.9	3.9	75.7	55	18	6.5
ZK6-X	6186	49.7	22	86.5	87.0	44	151.3	56.0	32	10.2	4.8	93.3	55	22	8.0
ZK8-X	8025	64.5	19	112.2	112.9	38	196.3	72.6	32	10.2	6.2	121.0	55	25	10.4
ZK10-X	10068	80.9	19	140.8	141.7	38	246.3	91.1	32	8.5	7.8	151.8	55	22	13.0
ZK12-X	12134	97.6	20	169.6	170.7	40	296.9	109.8	32	8.9	9.4	182.9	55	28	15.7
ZK15-X	15075	121.2	22	210.8	212.1	44	368.8	136.4	32	12.1	11.7	227.3	55	26	19.5
ZK20-X	20082	161.5	22	280.8	282.6	44	491.3	181.6	32	12.8	15.6	302.7	55	29	26.0
ZK25-X	25025	201.2	21	349.9	352.1	42	612.3	226.4	36	14.8	19.5	377.3	80	28	32.4
ZK30-X	30060	241.7	18	420.3	422.9	36	735.5	271.9	38	12.5	23.4	453.2	79	30	38.9
ZK35-X	35350	284.2	22	494.2	497.4	44	864.9	319.7	40	15.1	27.5	532.9	78	30	45.8
ZK40-X	40156	322.9	22	561.4	565.0	44	982.5	363.2	45	16.8	31.2	605.4	80	32	52.0

注：进风干球温度7℃。

Note: Entering air dry bulb temp is 7°C.

机组预热器加热量

Pre-heater heating capacity of unit

新风工况

Fresh air working condition

机组型号 Model	额定风量 m³/h Rated air flow	蒸汽压力0.2MPa Steam pressure 0.2Mpa						热水进水温度90℃ Water intake temperature 90℃							
		1排 1 Rows			2排 2 Rows			2排 2 Rows			2排 2 Rows				
		供热量 kW Heating load	风阻 Pa Air resistance	蒸汽耗量 kg/h Steam energy consumption	供热量 kW Heating load	风阻 Pa Air resistance	蒸汽耗量 kg/h Steam energy consumption	供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow	供热量 kW Heating load	风阻 Pa Air resistance	水阻 KPa Water resistance	水量 m³/h Water flow
ZK3-X	3050	27.6	21	48.0	48.0	42	83.5	32.7	32	13.5	2.8				
ZK4-X	4016	36.3	20	63.2	63.2	40	110.0	43.1	32	15.3	3.7				
ZK5-X	5020	45.4	18	79.0	79.0	36	137.4	53.8	32	16.0	4.6				
ZK6-X	6186	56.0	22	97.3	97.4	44	169.4	66.3	32	18.4	5.7				
ZK8-X	8025	72.6	19	126.2	126.4	38	219.7	86.0	32	18.4	7.4				
ZK10-X	10068	91.1	19	158.4	158.5	38	275.7	107.9	32	15.3	9.3				
ZK12-X	12134	109.8	20	190.8	191.0	40	332.2	130.1	32	16.0	11.2				
ZK15-X	15075	136.4	22	237.1	237.4	44	412.7	161.6	32	21.8	13.9				
ZK20-X	20082	181.6	22	315.9	316.2	44	549.8	215.3	32	23.0	18.5				
ZK25-X	25025	226.4	21	393.6	394.0	42	685.2	251.5	36	26.5	21.6				
ZK30-X	30060	271.9	18	472.8	473.3	36	823.0	302.1	38	22.5	26.0				
ZK35-X	35350	319.7	22	556.0	556.6	44	967.8	355.3	40	27.2	30.5				
ZK40-X	40156	363.2	22	631.6	632.3	44	1099.4	403.6	45	30.2	34.7				

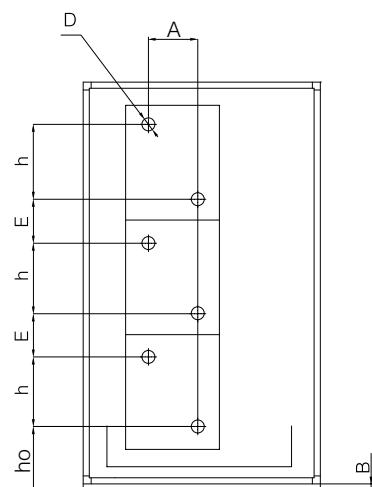
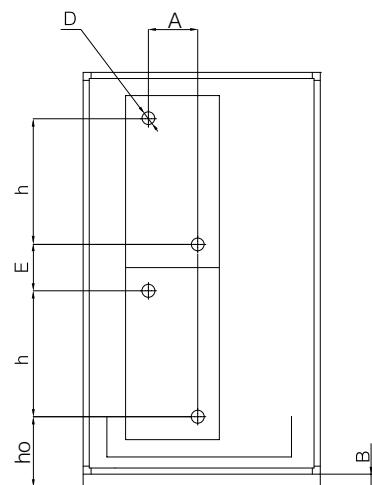
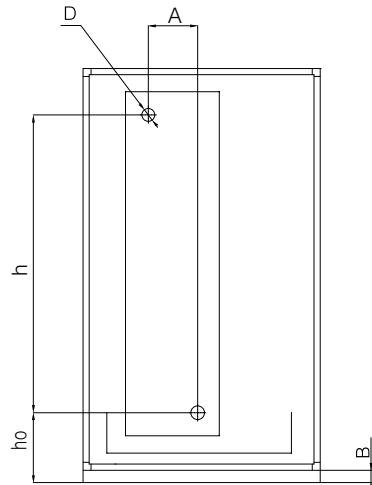
注：1、新风工况：进风干球温度-12℃。

Note: Entering air dry bulb temp is -12°C.



换热器接管图

Diagram of heat exchanger piping



机组型号 Model	h	ho	E	B	D(in)
ZK3(-X)	595	200		80	40
ZK4(-X)	595	200		80	40
ZK5(-X)	690	200		80	40
ZK6(-X)	785	200		80	50
ZK8(-X)	880	200		80	50
ZK10(-X)	975	200		80	50
ZK12(-X)	975	200		80	50
ZK15(-X)	1120	200		80	50
ZK20(-X)	725	200	120	80	50
ZK25(-X)	725	200	120	80	50
ZK30(-X)	880	200	120	80	50
ZK35(-X)	915	200	120	80	50
ZK40(-X)	975	200	120	80	65

机组型号 Model	h	ho	E	B	D(in)
ZK50	1025	220	120	100	65
ZK60	1025	220	120	100	65
ZK80	1290	220	120	100	65
ZK100	975	240	150	120	80
ZK120	975	240	150	120	80
ZK140	1050	240	150	120	80
ZK160	1135	260	150	140	100
ZK180	1250	260	150	140	100
ZK200	1250	260	150	140	100
ZK220	1250	260	150	140	100
ZK250	1400	260	150	140	100

机组型号 Model	表冷器排数 Rows of coil	A		
		4	6	8
ZK3(-X)~ZK40(-X)		83	138	193
ZK50~ZK250		99	165	231



电加热段

电加热装置采用优质 316L 管外缠波纹式不锈钢带，另配有温控器、熔断器，确保电加热器工作安全可靠。电加热器分 1~3 级控制（与风机联动），可满足不同的加热功率要求。

加温段

- 湿膜加湿：加湿效率高，安装方便，不占用机组空间。
- 干蒸汽加湿：由蒸发器、进气管、法兰、喷管及控制阀等组成。体积小、重量轻、安装方便。
- 高压喷雾加湿：主要零部件有电磁阀、水压控制器、加湿泵、电机等。单排、双排或多排喷雾，喷嘴材质为陶瓷。

消声段

消声段分回风和送风消声，ZK3 ~ ZK60 采用片式消声器，ZK80 ~ ZK250 采用蜂窝式消声器，材质为镀锌孔板，内衬超细消声棉毡外包玻璃丝布，用镀锌铅丝网覆盖。

Electric heater

This device adopts high quality 316L pipe and wended by wave type stainless steel strip outside, and is with temperature controller and fuse protector to make sure the electric heater can work safely. It can heat at 1,2,3 capacities (chained with fan) to meet different heating requirements.

Humidifying section

- Wet film humidifier: High humidifying efficiency, easy assembly and save unit space.
- Dry steam humidifier: Consists of evaporator, steam entering pipe, flange, nozzle and valve. Small, light and easily-assembled.
- High pressure spray humidifier: Main components include solenoid, water pressure controller, humidifying pump, electric motor and etc. 1,2 or multi-rows of ceramic nozzles.

Muffler section

Muffler section is divided into air return and air supply sound reduction. ZK3 ~ ZK60 adopts plate sound reducer; ZK80 ~ ZK250 adopts honeycomb type sound reducer, their material is galvanized orifice plate and take super fine felt as liner and wrap it by glass fiber cloth then is covered by galvanized lead meshes.

片式消声器的频带消声量

Frequency band sound reducing capacity of laminated sound reducer

节数 Section No.	气流速度 (m/s) Air speed	阻损 (Pa) Resistance	下述频率 (Hz) 的衰减量/dB (A) Reducing dB(A) at the following frequency (Hz)					
			110	200	400	800	1600	3150
1	5	90	110	22	32	38	32	22
2			14	29	40	47	43	27

蜂窝式消声器的频带消声量

Frequency band sound reducing capacity of honeycomb sound reducer

节数 Section No.	气流速度 (m/s) Air speed	阻损 (Pa) Resistance	下述频率 (Hz) 的衰减量/dB (A) Reducing dB(A) at the following frequency (Hz)					
			125	250	500	1000	2000	4000
1	5~6	18	12.5	15.4	26.7	34.0	37.4	33.8
			12.7	16.4	28.0	36.0	39.2	35.8
2	5~6	31	19.0	23.6	38.7	47.6	49.3	46.8
			21.6	26.9	43.8	54.2	57.2	51.8

注：1、消声器风阻计算公式： $P=1/2 * \rho * V^2 * K$ (Pa)。

ρ ：空气密度，取 $\rho = 1.2\text{kg/m}^3$ 。

V：通过消声器断面风速m/s。

K：消声器的阻力系数，回风为0.4，送风为1.1。

2、回风消声段消声量减少3dB (A)。

Note: 1. Sound reducer air resistance calculation formula: $P = 1/2 * \rho * v^2 * K$ (Pa).

ρ : air density, $\rho = 1.2\text{kg/m}^3$

v: Air velocity in section

K: Resistance coefficient, that of air return is 0.4, that of air supply is 1.1.

2. Decreased sound reducing capacity in air return section is 3dB (A).

风机段

ZK 系列空调机组采用双进风、前倾或后倾型离心风机。机壳采用优质钢板经机械咬合自成一体，风机可制成 0°、90°、180°、270° 四种，皮带轮可左右调向，因此不受左右方向限制。锥套自锁式快换皮带轮，更为风机的调试和维护带来极大的方便。

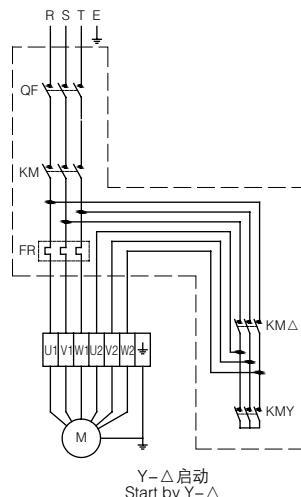
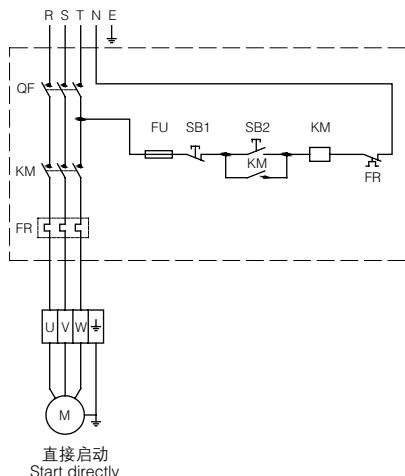
Fan section

ZK series of AHU adopts double air intake, forward or backward lean and centrifugal fan. Its house is made by high quality steel plate and bitten together. Fan blade can be made in 0°, 90°, 180° and 270° four kinds. Fan belt pulley can be adjusted in right or left, so there is no right or left limit. The taper sleeve self-locked quick-change belt pulley is benefit for adjustment and maintenance.



电气接线图

Electric wiring diagram



注：1、图1适用于15kw（含15kw）以下电机接线，图2适用于15kw以上及双速电机接线。

2、以上接线图仅供参考，虚线框内接线示意根据实际情况酌定，标准产品不含启动柜，若用户需要订货时注明。

3、用户自接电控设备，应设过载、过热、缺相等保护。

4、亚太可为用户设计自耦降压启动柜、变频启动柜等电控设备。

Note: 1. Diagram 1 is suitable for less than 15kw motor. Diagram 2 is suitable for more than 15kw (include 15kw) and double speeds motor.

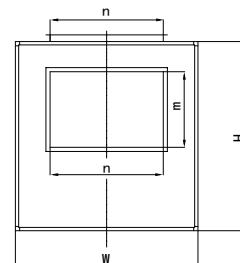
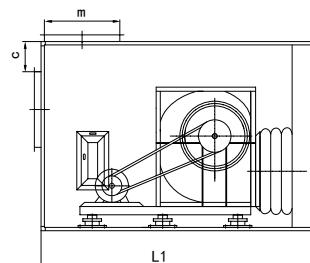
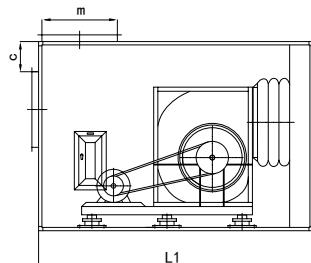
2. These diagrams are only reference. The standard is not with start cabinet, if need, please let us know when ordering.

3. If customer connect with electric controller by himself, shall set up overload, over-heat, phase-lack protections.

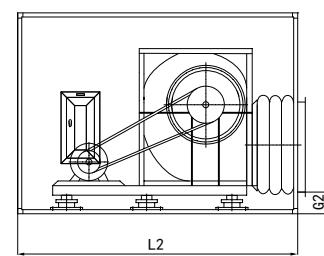
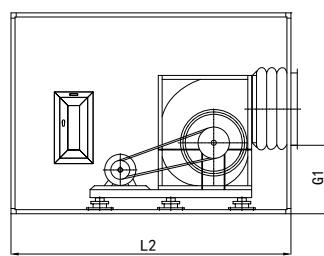
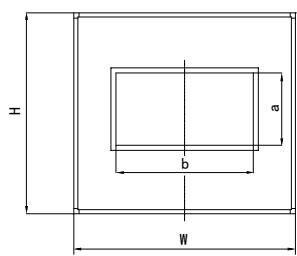
4. Yatai can design compensator starter and frequency conversion starter and other electric controller for customers.

ZK(-X)系列机组送(回)风外形图

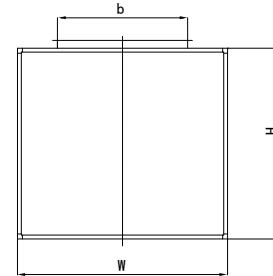
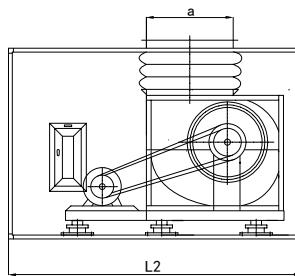
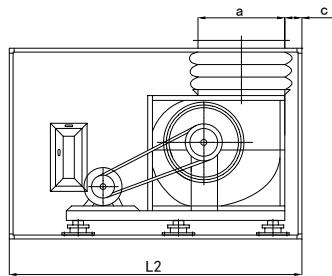
Outside views of air supply/return of the ZK(-X) combined



0°、180° 回风机段外形图 Outside view of 0°、180° air return fan section



0°、180° 送风机段外形图 Outside view of 0°、180° air supply fan section



90° 送风机段外形图 Outside view of 90° air supply fan section



ZK (-X) 系列机组风机段外形尺寸及重量

Outside size and weight of fan section of ZK(-X) series unit

机组型号 Model	L1	L2	W	H	m	n	a	b	c	G1	G2	重量(kg) Weight
ZK3(-X)	1500	1300	805	885	320	400	320	320	135	395	241	150
ZK4(-X)	1500	1300	905	885	400	400	320	400	135	395	241	200
ZK5(-X)	1500	1300	1005	985	400	500	400	400	135	395	241	240
ZK6(-X)	1500	1300	1005	1085	400	630	400	500	135	428	241	290
ZK8(-X)	1500	1300	1205	1185	500	630	500	500	135	505	256	320
ZK10(-X)	1600	1400	1205	1285	500	800	500	630	135	551	266	380
ZK12(-X)	1600	1400	1405	1285	630	800	630	630	135	551	266	420
ZK15(-X)	1800	1600	1505	1485	800	800	630	800	135	589	266	500
ZK20(-X)	1800	1600	1605	1885	800	1000	800	800	135	623	266	660
ZK25(-X)	2000	1800	1805	1885	800	1250	800	1000	135	665	266	715
ZK30(-X)	2000	1800	1805	2185	800	1500	800	1250	135	717	279	830
ZK35(-X)	2000	1800	2005	2285	800	1500	800	1250	135	770	296	1165
ZK40(-X)	2500	2300	2105	2405	800	1600	800	1400	135	857	296	1500
ZK50	2800	2600	2505	2505	900	1800	900	1500	135	876	315	1870
ZK60	2800	2600	2905	2505	900	2200	900	1700	135	952	315	2090
ZK80	2900	2700	3205	3005	900	2700	1250	2000	135	1056	335	2600
ZK100	3200	3000	3605	3505	1000	3000	1250	2500	135	1216	355	3500
ZK120	3300	3100	4305	3505	1200	3000	1250	2500	135	1216	355	4030
ZK140	3300	3100	4505	3805	1500	3000	1500	2500	135	1336	375	4890
ZK160	3800	3600	4805	4105	1500	3300	1500	3000	135	1460	395	5760
ZK180	3800	3600	5205	4505	1500	4000	1500	3200	135	1460	395	6040
ZK200	3800	3600	5705	4505	1600	4000	1600	3500	135	1460	395	6220
ZK220	4100	3900	5905	4505	1800	4000	1800	3500	135	1644	420	6410
ZK250	4100	3900	6005	4905	2000	4000	2000	4000	135	1168	420	7850

注：风机重量和风机的风量及风机全压有关，表中风机段重量是按相同外形尺寸时配最大电机之重量给定。

Note: Fan weight is connected with its air flow and total pressure. The weights in this table are figured out in terms of the maximal motor weight with the same outside size.


ZK (-X) 系列机组风机段风机功率参考值

The power referential data of fan inside the ZK(-X) series air handling unit

风机全压单位 : Pa 功率单位 : kW

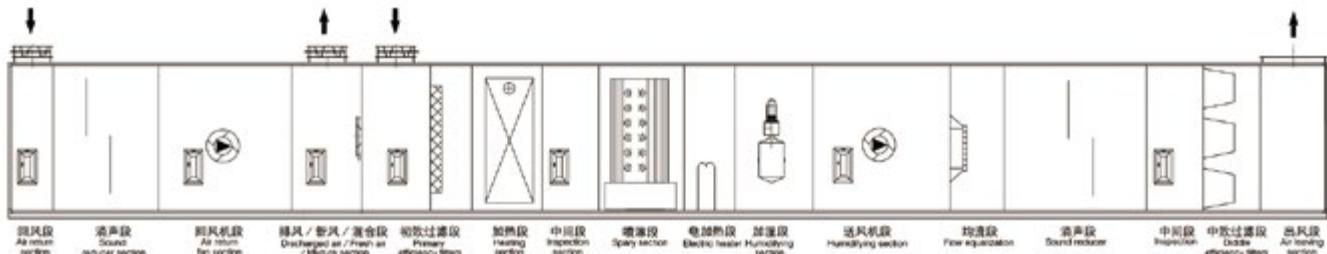
Unit of total fan pressure: Pa power unit:kW

型号 Model	风机全压 Total pressure of fan	<300	300-400	400-500	500-600	600-700	700-800	800-900	900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	>1800
ZK3(-X)	0.75	0.75	1.1	1.1	1.5	2.2	2.2	2.2	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0	4.0	5.5
ZK4(-X)	0.75	1.1	1.5	2.2	2.2	3.0	3.0	3.0	4.0	4.0	4.0	4.0	4.0	5.5	5.5	5.5	5.5	5.5
ZK5(-X)	1.5	1.5	2.2	3.0	3.0	3.0	4.0	4.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
ZK6(-X)	1.5	1.5	2.2	3.0	3.0	3.0	4.0	4.0	4.0	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
ZK8(-X)	1.5	2.2	2.2	3.0	3.0	4.0	4.0	4.0	5.5	5.5	7.5	7.5	11	11	11	11	11	11
ZK10(-X)	2.2	3.0	4.0	4.0	5.5	5.5	5.5	7.5	7.5	7.5	7.5	11	11	11	11	11	11	11
ZK12(-X)	2.2	3.0	4.0	5.5	5.5	5.5	7.5	7.5	7.5	7.5	11	11	11	11	11	11	11	11
ZK15(-X)	3.0	4.0	5.5	5.5	7.5	7.5	7.5	11	11	11	11	15	15	15	15	15	15	15
ZK20(-X)	4.0	5.5	5.5	7.5	7.5	11	11	11	15	15	15	15	15	18.5	18.5	18.5	18.5	18.5
ZK25(-X)	5.5	7.5	11	11	11	15	15	15	18.5	18.5	18.5	18.5	22	22	22	22	22	22
ZK30(-X)	7.5	7.5	11	11	11	15	15	15	18.5	18.5	18.5	22	30	30	30	30	30	30
ZK35(-X)	7.5	11	11	15	15	18.5	22	22	22	30	30	30	30	30	30	30	30	30
ZK40(-X)	7.5	11	11	15	15	18.5	22	22	30	30	30	30	30	37	37	37	37	37
ZK50	11	11	15	18.5	18.5	22	22	30	30	30	37	37	45	45	45	45	45	45
ZK60	11	15	15	18.5	22	30	30	30	37	37	45	45	45	45	55	55	55	55
ZK80	15	18.5	18.5	22	22	30	30	37	37	45	45	45	45	55	75	75	75	75
ZK100	15	18.5	22	30	30	30	37	37	45	45	55	55	55	75	75	75	75	75
ZK120	22	30	30	37	37	45	45	55	55	55	75	75	75	75	90	90	90	90
ZK140	22	30	37	37	45	55	75	75	75	75	90	90	90	110	110	110	110	110
ZK160		37	45	45	75	75	75	75	90	90	90	90	110	110	132	132	132	132
ZK180			45	55	75	75	75	90	90	90	90	110	110	132	132	132	132	160
ZK200				75	75	75	90	110	110	110	110	132	132	132	160	160	160	160
ZK220					90	90	110	110	110	132	132	132	160	160				
ZK250							132	132	160	160	160							



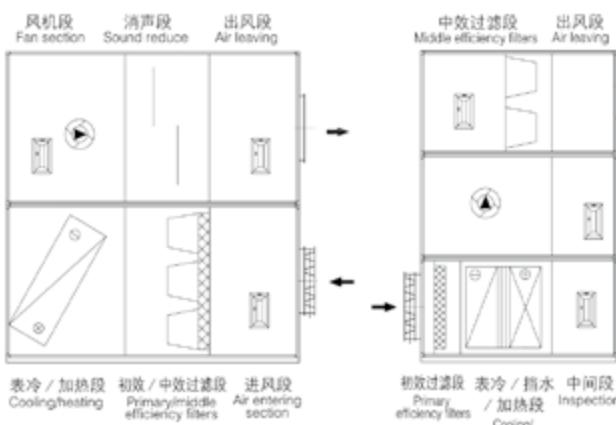
组合卧式空调机组示意图

Sketch diagram of combined horizontal air handling unit



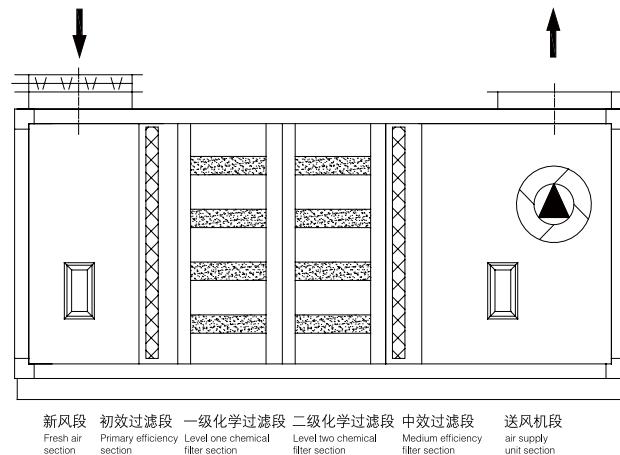
组合立式空调机组示意图

Sketch diagram of combined vertical air handling unit



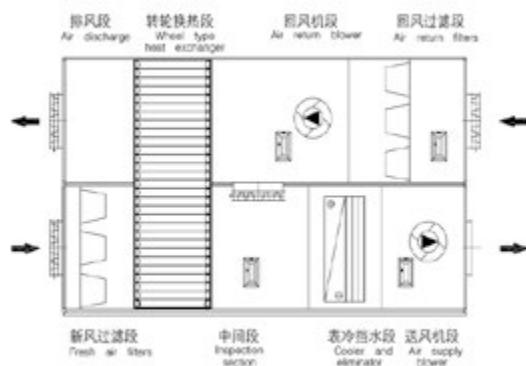
化学过滤机组

Chemical filter unit



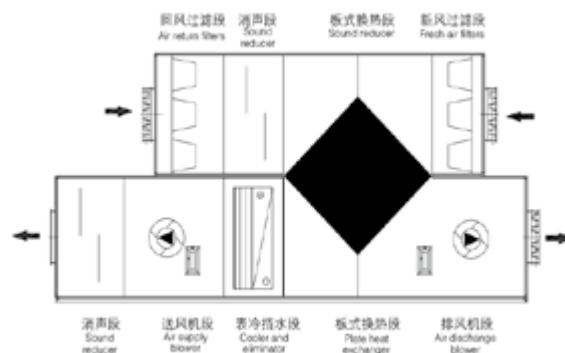
组合式空调机组 (转轮式换热机组)

Combination air-handling units(Wheel type heat exchanger AHU)



组合式空调机组 (板式换热机组)

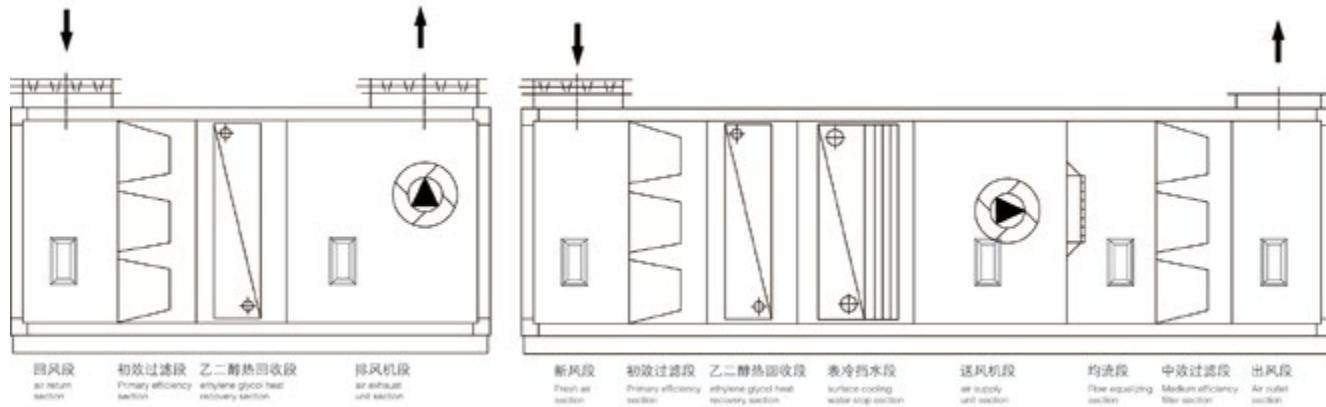
Combination air-handling units(Panel heat exchange unit)





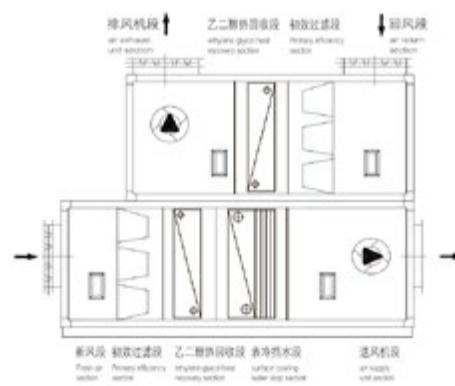
组合式空调机组（乙二醇热回收机组）

Modular air handling unit(ethylene glycol heat recovery unit)



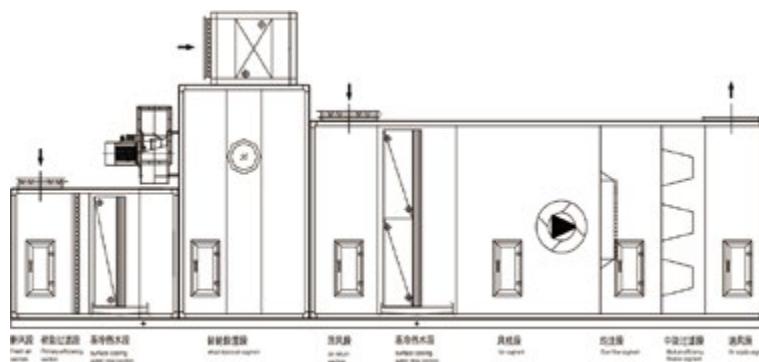
组合式空调机组（乙二醇热回收机组）

Modular air handling unit(ethylene glycol heat recovery unit)



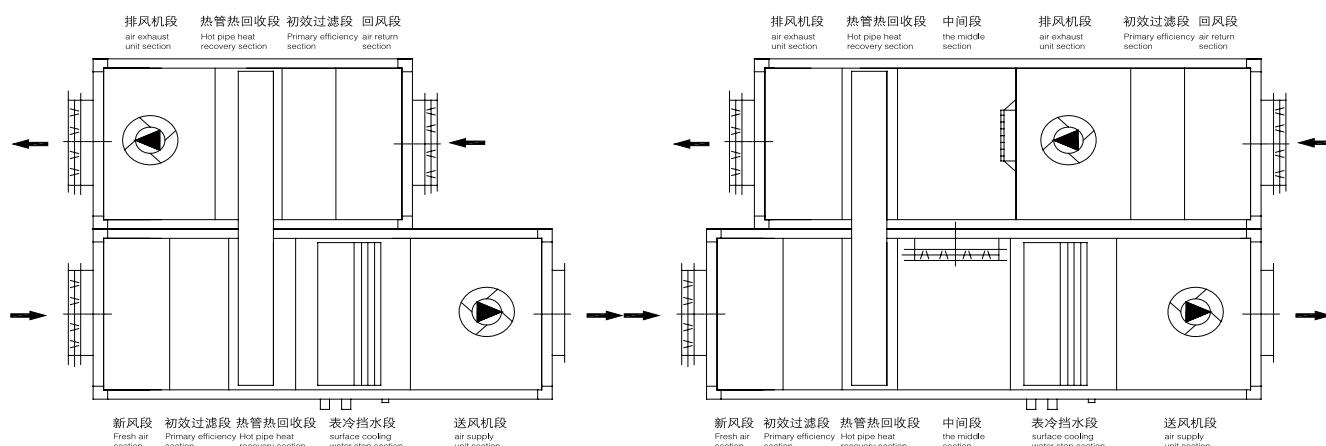
组合式空调机组（转轮除湿机组）

Modular air handling unit(Chemical filter unit)



组合式空调机组（热管热回收机组）

Modular air handling unit(hot pipe heat recovery unit)





ZK (-X) 系列机组各功能段模数、重量表

Module sizes and weights of each function section of ZK(-X) combined AHU

模数
Modular

100mm/模

重量 (kg)

100mm/Modular

Weight (kg)

功能段 Function sections	ZK3(-X)	ZK4(-X)	ZK5(-X)	ZK6(-X)	ZK8(-X)	ZK10(-X)	ZK12(-X)	ZK15(-X)	ZK20(-X)	ZK25(-X)	ZK30(-X)	ZK35(-X)
混合段 Mixture section	6	6	6	6	6	6	9	9	9	9	9	9
	62	66	73	76	87	95	115	121	146	165	190	210
新风预热混合段(热水预热) Fresh air preheating and mixing (hot water preheating)	8	8	8	8	8	8	8	9	9	9	9	9
	133	142	157	163	187	204	247	260	314	355	409	452
新风预热混合段(蒸汽预热) Fresh air preheating and mixing (steam preheating)	8	8	8	8	8	8	8	9	9	9	9	9
	104	111	123	128	146	160	193	203	245	277	319	353
新风段 Fresh air section	5	5	5	5	5	5	5	5	6	6	6	6
	62	66	73	76	87	95	115	125	98	111	127	141
排风段 Air discharge	5	5	5	5	5	5	5	5	6	6	6	6
	62	66	73	76	87	95	115	125	210	238	274	303
二次回风段 Air second return	6	6	6	6	6	6	6	6	8	8	9	9
	62	66	73	76	87	95	115	121	146	165	190	210
表冷(6P)挡水段 Cooler (6rows) & eliminator	6	6	6	6	6	6	6	6	8	8	8	8
	194	207	230	245	283	286	328	371	519	707	795	893
冷热共用盘管(8P)湿膜加湿段 Cooling heating shared coil (8rows) wet film humidifier section	6	6	6	6	6	6	6	6	8	8	8	8
	231	246	274	291	336	341	390	441	617	842	946	1062
热水加热段 Hot water heater section	5	5	5	5	5	5	5	5	5	5	5	5
	93	99	110	114	131	143	173	182	219	248	285	315
蒸汽加热段(1排) Steam heater section (1row)	3	3	3	3	3	3	3	3	3	3	3	3
	98	104	112	118	137	150	181	191	230	260	299	331
蒸汽加热段(2排)(带干蒸加湿器) Steam heater (2rows) (with dry steam humidifier)	6	6	6	6	6	6	6	6	6	6	6	6
	121	129	139	146	170	186	225	236	285	322	371	410
中间段 Inspection section	6	6	6	6	6	6	6	6	6	6	6	6
	63	67	74	78	89	97	117	123	149	168	194	214
进口消声段 Inlet sound reducer section	8	8	8	8	8	8	8	8	8	8	8	8
	114	121	134	140	160	203	246	259	263	286	329	364
出口消声段 Outlet sound reducer section	11	11	11	11	11	11	11	11	13	13	13	13
	142	151	168	200	235	254	308	324	337	358	412	455
板式初效段 Panel primary efficiency filters	2	2	2	2	2	2	2	2	2	2	2	2
	40	43	47	53	57	62	75	79	95	107	124	137
袋式初效段 Bag primary efficiency filters	5	5	5	5	5	5	5	5	5	5	5	5
	71	76	84	96	100	109	132	139	168	190	219	242


ZK (-X) 系列机组各功能段模数、重量表

Module sizes and weights of each function section of ZK(-X) combined AHU

 模数
Modular
重量 (kg)
Weight (kg)
100mm/模
100mm/Modular

型号 Model 功能段 Function sections	ZK40(-X)	ZK50(-X)	ZK60(-X)	ZK80(-X)	ZK100(-X)	ZK120(-X)	ZK140(-X)	ZK160(-X)	ZK180(-X)	ZK200(-X)	ZK220(-X)	ZK250(-X)
混合段 Mixture section	9	10	10	10	16	16	16	16	16	18	18	18
	260	312	358	516	601	681	857	938	1015	1122	1298	1358
新风预热混合段(热水预热) Fresh air preheating and mixing (hot water preheating)	9	10	10	10	16	16	16	16	16	18	18	18
	559	671	770	1109	1292	1464	1843	2017	2182	2412	2791	2920
新风预热混合段(蒸汽预热) Fresh air preheating and mixing (steam preheating)	9	10	10	10	16	16	16	16	16	18	18	18
	437	524	601	867	1010	1144	1440	1576	1705	1885	2181	2281
新风段 Fresh air section	6	8	8	8	9	9	9	9	9	11	11	11
	174	209	240	346	403	456	574	628	680	752	870	910
排风段 Air discharge	6	8	8	8	9	9	9	9	9	11	11	11
	375	449	516	743	866	981	1235	1351	1462	1616	1870	1956
二次回风段 Air second return	9	9	9	13	13	13	13	13	13	13	13	13
	140	312	358	516	391	398	501	549	660	729	844	883
表冷 (6P) 挡水段 Cooler (6rows) & eliminator	8	8	8	8	8	8	8	8	8	8	8	8
	1080	1234	1400	1799	2112	2533	3086	3360	3580	3820	4050	4310
冷热共用盘管(BP)湿膜加湿段 Cooling heating shared coil (Brows) wet film humidifier section	8	8	8	8	8	8	8	8	8	8	8	8
	1285	1468	1666	2141	2513	3014	3672	3998	4260	4546	4820	5129
热水加热段 Hot water heater section	5	5	5	5	6	6	6	6	6	6	6	6
	390	468	537	674	721	817	1028	1126	1218	1346	1558	1630
蒸汽加热段 (1排) Steam heater section (1row)	3	5	5	5	5	5	5	5	6	6	6	6
	410	491	564	613	757	858	1080	1182	1279	1414	1635	1711
蒸汽加热段(2排)(带干蒸加湿器) Steam heater (2rows) (with dry steam humidifier)	6	6	6	6	6	6	6	6	8	8	8	8
	508	609	699	853	939	1064	1339	1466	1586	1753	2028	2122
中间段 Inspection section	6	6	6	6	6	6	6	6	6	6	6	6
	265	318	365	526	613	695	874	957	1035	1144	1324	1485
进口消声段 Inlet sound reducer section	8	8	8	8	8	8	8	8	10	10	10	10
	451	541	621	895	1042	1181	1486	1626	1760	1946	2251	2355
出口消声段 Outlet sound reducer section	13	13	13	13	13	13	13	13	13	13	13	13
	564	676	776	1118	1303	1467	1858	2033	2200	2432	2813	2943
板式初效段 Panel primary efficiency filters	2	2	2	2	2	2	2	2	2	2	2	2
	169	203	233	335	391	443	557	610	660	729	844	883
袋式初效段 Bag primary efficiency filters	5	5	5	5	5	5	5	5	5	5	5	5
	299	359	412	593	691	783	986	1079	1167	1290	1493	1562



ZK (-X) 系列机组电气及自动控制系统

Electric appliances and automatic control of the ZK(-X) AHU

● 标准配置

ZK (X) 系列机组标准配置不带电控系统，机组只留接线盒。

● 启停型

配置机组启动柜，控制风机的启停，具有过载、过热、缺相保护。

● 可编程控制

DDC 数字控制器与 PLC 控制器现场集中控制实现机电一体化。可对机组各功能段的运行参数和状态进行检测，通过特定的逻辑计算，DDC 输出相应的 PI 调节信号，对每个执行机构实施开关量或模拟量控制。

● 集中和远程监控

在可编控制系统的基础上，通过标准的 RS485、RS422、RS232 接口，将现场控制器、各类仪表组成系统的控制中心、由通讯线路与中央控制室的上位计算机相连，从而构成工业控制网。根据现场状态、参数、系统命令及中央控制室的远控，调节系统高效、安全、节能运行。除了以上的控制系统外，亚太集团可根据用户需求，设计各种自动控制系统。

● Standard configuration

The standard ZK(X) AHU is not with electric control system and only with junction box.

● Start/stop type

The start cabinet is allocated, it can start or stop the fan and has over-load, overheat and phase-lack protection.

● Programmable controller

The DDC digital controller and PLC controller are capable of field centralized control and realize mechatronics. It can detect the running parameters and modes of each function section, DDC will put out the corresponded PI regulation signals by special logic calculation and control the switching value or analog quantity of each actuator.

● Centralized and remote monitor

Connect the field controller and every kind of instruments and form a control center based on the programmable controller and through the standard RS485, RS422 and RS232 interface, and then wire the superior computer in the centralized control chamber by communication circuit, thus form a industrial control net. The AHU will run at the modes of high efficiency, safety and energy saving according to the field condition, parameters, orders control from the centralized control chamber. Except the above control system, Yatai Group can design other kinds of automatic control system in terms of user requirements.

机组安装

Installation

- 安装机组的混凝土基础应保持平整，基础高度不小于 150mm，长度和宽度可按机组的外形尺寸向外各放大 100mm；基础也可用 16# 槽钢焊制，尺寸和机组外尺寸相同。机组底座与基础之间需垫 5mm 厚工业橡胶板。
- 基础四周应留排水明沟或地漏，在明沟的最低处设排水口，并与排水管道相连。
- 机组四周应留有足够的操作空间，以便检修机组或更换空气过滤器。
- 换热器接水管为下进上出，在进水口处应加装截止阀，最高点加装排气阀，最低点加装泄水阀，管路须有单独支架，重量不可由机组承受。进水管处需装水过滤器，以防止污物堵塞换热器。
- 机组的冷凝水管需安装水封（U型存水弯），水封高度为 80~100mm，具体做法见下图：

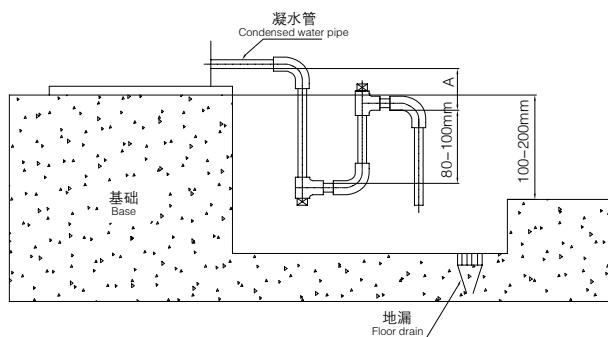
● The AHU concrete base shall be flat and its height shall be more than 150mm, its length and width shall be 100mm longer than the AHU outside dimensions. The base can be welded by 16# channel steel, its sizes are the same with that of AHU. 5mm thickness of industrial rubber cushion shall be added between AHU bed and the base.

● Open ditch drainage and floor grain shall be reserved around the base. At the lowest position of open ditch shall have a drainage outlet that shall connect with the drainage pipeline.

● The space around the AHU shall be large enough to maintain or replace air filters.

● The water leaving is from the top of the heat exchanger, entering from its bottom. At the water inlet shall be add a stop valve, at the top add air escape valve, at the bottom add drainage valve. The pipeline shall be supported by its own supporting frames and mustn't be born by the AHU. Water filter shall be add at water inlet to keep the heat exchanger from blocking up.

● In the condensed water pipeline shall be fixed a water seal (U type water trap), its height is from 80mm to 100mm, about the detail see the following drawing.



当功能段处于负压时： $A = P/10+20$ (mm)

当功能段处于正压时： $A \geq 30$ mm

双风机时： $P = (0.7+0.8) \times (P_1+P_2)$

P_1 : 送风机压力, P_2 : 回风机压力

P : 机组内最大负压 (Pa)

When function section is at suction pressure condition: $A = P/10+20$ (mm)

When function section is at positive pressure condition: $A \geq 30$ mm

If double blowers: $P = (0.7 \sim 0.8) \times (P_1+P_2)$

P_1 : Pressure of air supply blower, P_2 : Pressure of air return blower

P : the maximal suction pressure inside the AHU (Pa)



- 蒸汽加热段配管需按采暖专业有关规范，上部为进气口，下部为出水口，进出口处应装设截止阀、蒸汽压力表、温度计、疏水器、泄水阀等。
- 机组送风口和管道连接须用柔性接头，管道应有单独支架，其重量不得由机组承受。
- 新风机组当进口空气温度低于 5℃ 时，开机前先预热或采取其他措施，以防机组内换热器冻坏。
- 接管时注意：冷热水用盘管，设计工作压力为 1.6Mpa；蒸汽盘管的最高使用压力不得超过 0.4Mpa。
- 机组送风温度不应超过 80℃（加热时），若超过此温度，订货时须说明，以便采用高温轴承及较高配置之电机。
- 机组供电电源为 380V、50Hz。电源符合要求方可与电机相连，电源接通后，检查风机旋向是否正确，如反转，应停机将电源相序改变。
- 机组电控装置应有良好的接地及可靠保护，如过载保护、过热保护、缺相保护等等。当电机功率 > 15KW 时，应采用 Y-△ 启动装置或其他降压启动装置。

机组使用

Operation

- 机组夏季运行供冷水温不低于 5℃，冬季供热水温不宜高于 80℃，要求水质清洁软化，且水温 25℃时 PH 值为 6.8 ~ 8（参照：GB50050-2007）。禁止使用蒸汽及 80℃以上的热水，否则温度过高，影响换热器的使用寿命。
- 空调机组启动前，应检查水、电系统是否正常，检查紧固件是否拧紧，各阀门是否启闭自如。
- 风机启动前，首先检查风机蜗壳内是否有异物，然后用手转动风机叶轮，查看风机叶轮与蜗壳是否有碰撞、磨擦现象，轴承是否损坏而发出异响。如无异常，可启动风机正常运行。
- 机组不得在全开风阀的状况下启动，以免启动电流过大而烧毁电机。机组不接负载运行时，应将出风口堵住 3/4，以防烧毁电机。
- 开机时应先开风机，后开加热器、表冷器、加湿器；关机时，先关冷水、热水和蒸汽管路，后停风机。如果是喷水室的喷水系统，则应先开风机，后开喷水管路，先关风机后关喷水室。
- 严禁在空调机组送、回风机正常运行时突然关闭送、回风阀，否则容易造成超压，破坏箱体结构。
- 如机组运行中突然停电，应立即关闭热媒管道，以免箱体内温度过高使相关零件发生变形。

机组维护

Maintenance

- 新机组运行一个月后，应检查皮带松紧程度及紧固件是否有松动现象，如有以上现象可将电机及叶轮轴承固定螺栓重新调整坚固。
- 表冷器、加热器、喷水室和加湿器的水管路和蒸汽管路应保持畅通。在设备停用季节，应使换热器内充满水（停机时先关出水阀门，后关进水阀门）以减少管路锈蚀。
- 停机时，当换热器环境温度低于 5℃ 时，须排尽换热器管内残留水。如不能排尽残留水，应在管内加入防冻液，以免冻坏盘管。
- 应经常开启换热器的放气阀，以排除换热器内部的空气，使冷、热媒水在换热管内保持正常循环流动。

- The piping of steam heating section shall be arranged according to the relative heating standards. The steam supply port shall be at the top, the water exhaust port shall be at the bottom. Stop valve, steam pressure meter, temperature meter, moisture trap, wash-out valve and so on shall be available at the supply ports and the exhaust ports.
- Flexible connection shall be available between AHU air supply port and pipeline. The pipeline shall be supported by its own supporting frames and mustn't be born by the AHU.
- If the fresh air temperature at supply port is less than 5 °C , pre-heating or other measurements shall be taken before running the AHU, in case interior heat exchanger would be damaged.
- Cautions when piping: The design running pressure of cold/hot water coils is 1.6 Mpa; The maximal running pressure of the steam coils should be less than 0.4Mpa.
- The air supply temperature of the AHU should be less than 80 °C , when heating, if more than that, please let us know when placing the order, we will equip with hightemperature bearing and electric motors.
- The AHU power supply is 380V, 50Hz. When the power supply meets the requirements, connect with the electric motor. After powering, check the fan rotating direction, if backrun, shall change the power phase order.
- Reliable protections like over-load, over-heating, phase-lacking and so on and perfect earthy should be available at the electric control devices. If electric motor power is more than 15KW, Y-△ starting device or other voltage-decreasing starting device shall be used.

- If running in summer the water feed temperature should be more than 5°C , in winter less than 80 °C , the water shall be soft-treated and if the water temperature is 25 °C , the PH value should be 6.8-8 (Refer to GB50050-2007). Over 85°C water or steam are forbidden, or else the temperature is too high and could shorten the heat exchanger service life.
- Before starting the AHU. Shall check the water system and electricity system, fasteners and all valves are normal or not.
- Before starting the fan, first check whether there are sundries inside its house or nor, then turn its blade by hand check whether the blade touches the house or not and the bearing is damaged and sound strange noise or not. If normal, start the fan.
- The AHU mustn't be started if all the dampers are opened fully, or else the motor would be ruined due to the strong electric current. If no load, shall block 3/4 of the air opening in case the motor is damaged.
- When starting the AHU, first turn on the fan, then heater, cooler, humidifier. When stopping the AHU, first turn off cold water, hot water and steam pipeline, then the fan. As for the sprayer system, first turn on the fan, then water spraying pipeline; first stop the fan, then the sprayer room.
- Mustn't close the air supply or air return dampers suddenly when the air supply and air return fans are running normally, or else would damage the AHU house due to extra-pressure.
- If cut off the electric power suddenly when the AHU running normally, shall close the hot media pipeline at once in case the relative parts deformation due to too high temp inside the house.

- After the AHU running for a month, check the belt and fastener fastening degree, if loosen, adjust and fasten the screws of the electric motor and impeller.
- The water and steam pipeline of cooler, heater, sprayer and humidifier shall be smooth. At the dead season, shall water the heat exchanger fully (first close the water leaving valve then water entering valve when stopping the AHU) to resist the corrosion of the pipeline.
- When stopping the AHU and the ambient temp of the heat exchanger is below 0°C , shall drain out all the residual water inside the heat exchanger. If incompletely drainage, charge anti-freeze liquid in case the coil damages.
- Open the air escape valve frequently to discharge the air inside the heat exchanger and make the cold/hot medium water flow smoothly.



- 对喷水室（段），水槽的水位应与溢水器的溢水口平齐，浮球阀要保持灵活、补水正常。溢水器的滤水器的滤水网应1-2个月清洗1次，以防纤维状杂物堵塞滤孔。应经常检查喷嘴是否堵塞，若有堵塞现象应及时清理。
- 初当、中效过滤段的阻力达到初阻力的2倍时（即终阻力），需要清洗或更换滤料。对于常用的无纺布滤料，先进行拍打或用压缩空气反吹后，再用肥皂水或清洗剂清洗干净，方能重新使用。清洗时注意不要拉伸纤维组织，尽量保持原孔隙度不变。通常滤料的重复使用率最多不超过3次。
- 空调机组运行2-3年后应进行全面保养。用化学方法清除换热器水管内的水垢，用压缩空气或水冲洗换热器的翅片，以清除换热器表面的污垢和积尘，保证换热器的换热效率。
- 对于装有微穿孔板消声器的消声段，每季度应当用压缩空气吹扫一次，防止表面上的灰尘和污垢堵塞小孔，降低消声效果。
- 定期检查各功能段壁板的密封性，若密封材料老化应及时更换，以确保空调机组的气密性。
- 定期检查机组的电气设备，严禁有漏电现象发生。
- 风机正常运转时，轴承温升应小于40℃。风机轴承运行1500-2000小时后需注一次润滑油。

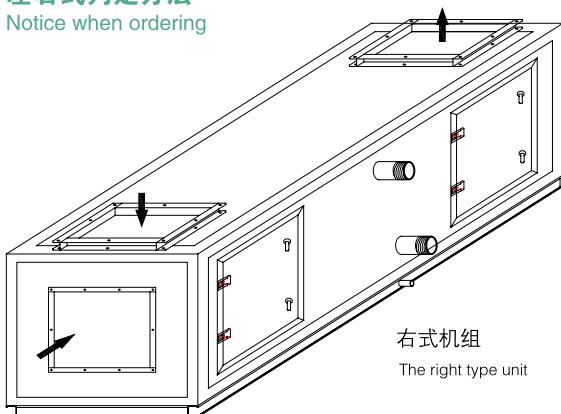
订货须知

Notice when ordering

- 订货时需说明机组的型号、机外静压或机组全静压、功能段组合序列、送回风方向、供冷/热量、冷热源状况、左右式。
- 一般情况下回风机风量为送风机风量的80%，回风机静压为送风机全压的50%。如用户有要求须注明，风机静压、电机功率按实际情况计算确定。
- 机组带加湿的，需注明加湿量及加湿方式。常用的加湿方式有：干蒸汽加湿、高压喷（微）雾加湿、湿膜加湿等。干蒸汽加湿需注明蒸汽压力和控制方式，如未注明，则按蒸汽压力0.2Mpa，手动控制设计。湿膜加湿需注明湿膜材料（无机、有机、铝合金、不锈钢），未注明则按无机湿膜材料设计。
- 蒸汽加热器需提供蒸汽压力，未注明按0.2Mpa；热水加热器需提供热水温度，未注明按90℃；冷热盘管共用按60℃。
- 空调机组均不配风阀，若需要请在订货时注明，并注明是手动控制还是电动控制，未注明的按手动控制设计。

左右式判定方法

Notice when ordering



- The water channel is flush with the overflow of the spiller. The ball float valve shall be flexible and water shall be made up properly. The spiller filter shall be cleaned once per 1-2 months in case fiber shaped sundries block the filter holes. Shall check the nozzles frequently, if blocked, clear it in time.
- If the resistance of primary or middle efficiency filters is up to 2 times of their primary resistance (namely final resistance), cleaning or replacing is necessary. As for the ordinary non-woven cloth, first pat against it or back blow it by compressed air, then clean it by soap or abluent. Do not draw the fiber organization when washing and keep their former porosity from changing. Generally, the repetitive use ratio of filter material is less than 3 times.
- All-round maintenance shall be done after running for 2-3 years. Clean the scales inside the heat exchanger chemically, and wash the heat exchanger fins by compressed air and water to remove the filth and dusts on the heat exchanger surface to guarantee its efficiency.
- As for the sound reducer made of micro-punched plates, blow and sweep it by compressed air once per season to prevent the dusts and filth to block the holes and reducing its efficiency.
- Check the panel air tightness periodically, if the seal material is aged, replace it at once to ensure the AHU's air tightness.
- Exam the electrical appliances periodically, electrical leakage is forbidden.
- When the fan running normally, the elevated temp of bearing shall be less than 40℃. Charge lubricant oil into the bearing once per 1,500-2,000 hours of running.

- Shall let us know the model, Static Pressure of Unit or Full Static Pressure of Unit, the lay-out of function sections, directions of air supply and return, cooling/heating capacity, cooling/heating resource, right/left connections.
- Generally, the air flow of air return fan is 80% of that of air supply fan. The total pressure of air return fan is 50% of that of air supply fan. If user has special demands, please tell us. The fan total pressure and motor power will be calculated out according to the realities.
- If the AHU is with humidifier, shall let us know the humidifying capacity and principle. The ordinary humidifiers consist of dry steam, high pressure sprayer (micro), wet film and etc.. As for the dry steam humidifier, shall remark its steam pressure and the control ways, if not, we will design in terms of 0.2Mpa steam pressure and manual control. As for the wet film humidifier, shall remark the wet film material (inorganic, organic, aluminum alloy, stainless steel), if not, we will design in terms of inorganic film.
- The steam pressure shall be quoted to the steam humidifier, if not, 0.2Mpa will be adopted. The hot water temp shall be quoted for the hot water humidifier, if not, 90℃ will be adopted. As for the cooling/heating shared coil, 60℃ will be adopted.
- All the dampers are not available, if needed, please tell us which kind of, manual or electrical, when ordering. If not, manual one will be adopted when designing.

- 机组左右式以顺着气流方向看接管位置为判定依据，接管在左侧为左式，接管在右侧为右式（立式机组以下层机组左右式为准，下层没有盘管时以上层接管位置为准）。

- Follow the direction of air flow to decide the types of the unit. If the connecting pipe is on the left side, it is left type. Otherwise, it is right type. (Types of the vertical unit are decided by the types of its lower-layer units. If the lower layer has no coils, the position of upper layer connecting pipe shall decide the types of the unit).



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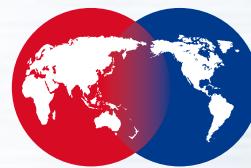
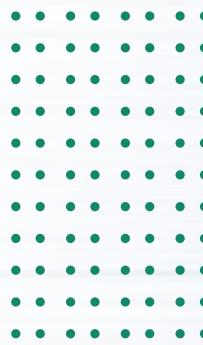
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