

AKS



MODULAR AIR HANDLING UNITS

CONSTRUCTION AND BUILDING TRADE, SHOPPING CENTERS, TOURISM SECTOR,
EDUCATIONAL FACILITIES, SPECIFIC PROCESS SYSTEMS, INDUSTRIAL PLANTS

 **ALDAĞ**
HVAC Systems

ALDAG | AKS

AKS 600



H:1.80m



AKS MODULAR AIR HANDLING UNITS

Aldag Air Handling Units (AHU) are designed to meet the customer's specific air conditioning requirements. Aldag Air Handling Units are available with airflow range from 1500 m³/h up to 90.000 m³/h. AHU conditions the air to achieve the desired indoor temperature and humidity. Aldag Air Handling Units are rapidly designed and delivered to the customer. Air Handling Units are made of the following main cells : 1. Exhaust Fan Cell, 2. Mixing Box Cell, 3. Bag Filter Cell, 4. Heating-Cooling Cell, 5. Heat Recovery Cell, 6- Humidifier Cell, 7. Supply Fan Cell, 8. Sound Attenuator Cell



MODULAR AIR HANDLING UNITS



1 - CASING

Aldag AKS Air Handling Units are EUROVENT certified and tested in accordance with EN 1751: 1988, DIN 1946 /4 : 2008, DIN EN ISO 5167 Standard.

- Maximum deflection for mechanical strength of the casing is compatible with EN 1886 Standard. The positive and negative pressure is compatible with D1(M) Class. Maximum Leakage between -400 Pa and + 700 Pa is compatible with L2 Class.

Filter By-Pass Leakage is compatible with F9 Class. Thermal conductivity resistance is compatible with T3 Class.

Thermal Bridge is compatible with TBC Class.

- The panels are made of submersion galvanized steel sheets. The outer steel sheets are RAL 9002 polyester powder coated.
- The panels and service doors are double skinned. The steel thickness is minimum 1mm for outer sheets and 0,8mm for inner sheets.
- All the interior surfaces of the casing is suitable for washing and cleaning and completely smooth without any welding at the joints.
- 50 mm rockwool insulation is used between the inner and the outer steel sheets of the panels.
- Mounting and dismantling the panels are handled totally externally.
- The air handling unit cells are connected externally by mechanical fasteners.
- On the casing of the air handling units are labels which include the technical specifications of the unit. In addition, on each cell casing, there is an identification label which is long lasting and resistant to humidity and water.
- In case air handling unit cells are partially delivered to the installation place, in order to provide easy and accurate onsite assembly, another identification label is placed on each cell which includes the information of cell name and cell number.

2 - SUPPLY FAN - EXHAUST FAN CELLS

AHU units are equipped with double inlet forward curved or double inlet backward curved energy efficient centrifugal fans and plug fans. The supply fans and exhaust fans are dynamically and statically balanced and made of galvanized steel. The fan type is selected according to the air flow, pressure and efficiency curves. The centrifugal fans and plug fans are selected within energy efficiency range 60% and 80%. The fan base is specially determined to increase the lifetime of the fan bearing. In case the total pressure is over 1000 Pascal, it is recommended to use double inlet backward curved fans. The fan speed is selected compatible with the motor speed. The fan - motor group is fastened on the base so as to enable belt tensioning arrangement. The fan - motor group is fastened to the main casing with the rubber vibration elements which prevent floor vibration problems. The belt - pulley system transmits the power from motor to the fan. The fan bearings are easily removed and replaced. The electric motors are IP55,IE2-IE3-IE4, 380 Volt 50 Hz. The electric motor power is selected so as to be 15% or 20% more than fan shaft power. The fan outlet is connected flexibly to the cell so that no vibration is transmitted to the casing or duct. The position of fan inlet and fan outlet can be changed upon request. The plug fans are direct coupled to the motor. Depending on the pressure, the desired fan speed can be arranged by motor drivers.



3 - MIXING BOX CELL

Mixing Box Cell consists of 3 dampers and a cassette filter from G2 – G4 filtration class. Some stale indoor air is exhausted through the exhaust damper on this cell and same amount of fresh air is supplied through the other damper. The fresh air is mixed with the stale indoor air and the conditioned air is supplied to the location. The amounts of the stale indoor air and fresh air to be mixed can be arranged at the desired rate using damper motor. The dampers have aluminium aerodynamic blades. Damper blades are equipped with plastic seals to assure tightness. The G4 filter is placed in galvanized steel frames. The filter is protected on both sides by perforated steel sheets. The filter frames, sliding on the rails, can easily be removed and cleaned.



4 - BAG FILTER CELL

Bag filters are classified as F5- F9 according to the dust holding capacities. F5-F9 filters with the efficiency from 90% up to 99% are used in the bag filter cell. The filters are easily removable from the frames. It covers the whole cross sectional area of the cell.



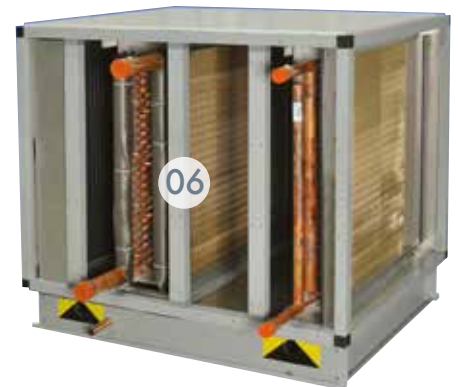
5 - HEAT RECOVERY CELL

100% fresh air is used. The sorption rotor in the air handling unit substantially reduces the need for humidification in winter conditions and dehumidification in summer conditions by sensible and latent heat transfer. Thus, it provides significant saving in energy consumption during all four seasons. The efficiency rate is between 70% and 85%. Special heat recovery cell applications can also be made using rotary heat exchangers which makes only sensible heat transfer.



6 - HEATING - COOLING CELL

The heating coil and cooling coil is determined according to the type of the fluid used in the system. The heating - cooling cell can be equipped with cold-hot-overheated water coil, steam coil, direct expansion (DX) coil or a electric heater. The coils are copper tube aluminium finned. The aluminium fins are fastened on the copper tubes by mechanical expansion method. Thus, maximum thermal efficiency is achieved. The cross sectional area of the cell is determined according to the air velocity over the coil. The average air velocity is around 2,5-3 m/s. For the cooling coils, the condensed water is collected and discharged through the stainless steel epoxy coated and insulated drain pan. If the air velocity is over 3 m/s, the heating-cooling cell is also equipped with aluminium or PVC eliminators.





7 - HUMIDIFIER CELL

If air humidification is requested, air handling units can also be equipped with a humidifier cell as an option. The air passing through the AHU is humidified when coming into contact with pulverized water. There is a leakproof water pool under the cell. Water is pumped to the injectors for pulverization. The humidifier cell is equipped with aluminium air diffusers at the air intake which enable uniform air distribution. PVC eliminators are placed at the cell outlet to prevent water drifting. Optionally, if steam humidifier is requested, the humidifier cell is equipped with a steam generator.



8 - SOUND ATTENUATOR

If requested, the air handling unit can also be equipped with sound attenuator for the supply fan cell and the exhaust fan cell. The sound attenuator cell consists of sound absorbing baffles. The sound absorbing baffles are made of galvanized steel panels with rockwool and perforated steel sheets. The size of the baffles are determined depending on the sound absorption coefficients.



TECHNICAL SPECIFICATIONS

CODE	TYPE	AHU vertical section view dimensions		Coil section area of air passageway m ²	Air velocity on the coil (m/sn)					
					2	2,5	3	3,25	3,5	4
	AKS	H	W	Air Flow (m ³ /h)						
1	600	715	715	0.22	1567	1958	2350	2546	2743	3133
2	609	715	1020	0.37	2673	3341	4009	4343	4677	5345
3	699	715	1325	0.52	3779	4723	5668	6140	6612	7557
4	900	1020	1020	0.60	4343	5429	6515	7057	7600	8686
5	901	1020	1325	0.85	6140	7675	9210	9978	10745	12280
6	911	1020	1630	1.10	7907	9884	11861	12849	13838	15815
7	1206	1325	1630	1.52	10949	13686	16423	17791	19160	21897
8	1216	1325	1935	1.84	13271	16589	19907	21565	23224	26542
9	1609	1630	1935	2.36	16957	21197	25437	27556	29676	33915
10	1902	1935	1935	2.87	20644	25805	30966	33546	36127	41288
11	1922	1935	2240	3.40	24515	30643	36772	39836	42900	49029
12	2205	1935	2545	3.94	28385	35482	42578	46126	49674	56771
13	2252	2240	2545	4.51	32440	40550	48660	52716	56771	64881
14	2255	2545	2545	5.15	37083	46354	55624	60260	64895	74166
15	2500	2545	3155	6.57	47313	59141	70969	76883	82797	94625
16	2535	2545	3460	7.28	52428	65534	78641	85195	91748	104855

• Coil selection criteria: "cooling 2-2.5m/s", "cooling+heating 2.5-3.25m/s", "heating 3-4m/s"

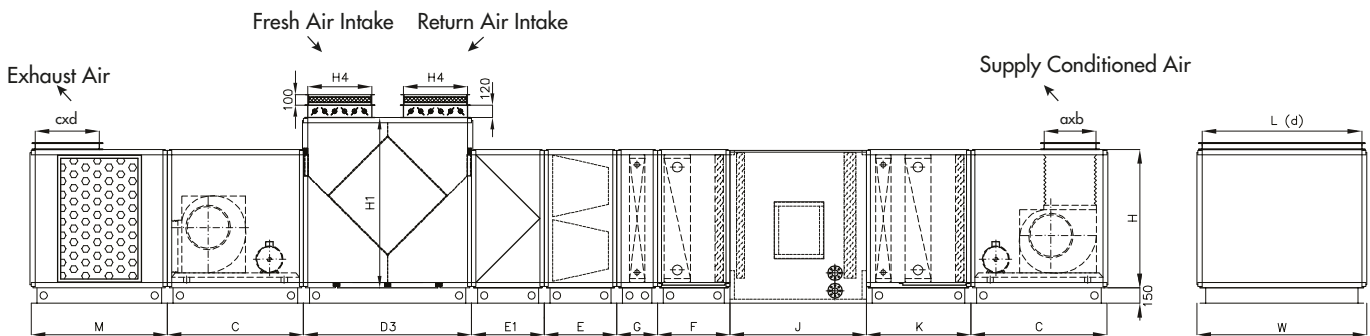
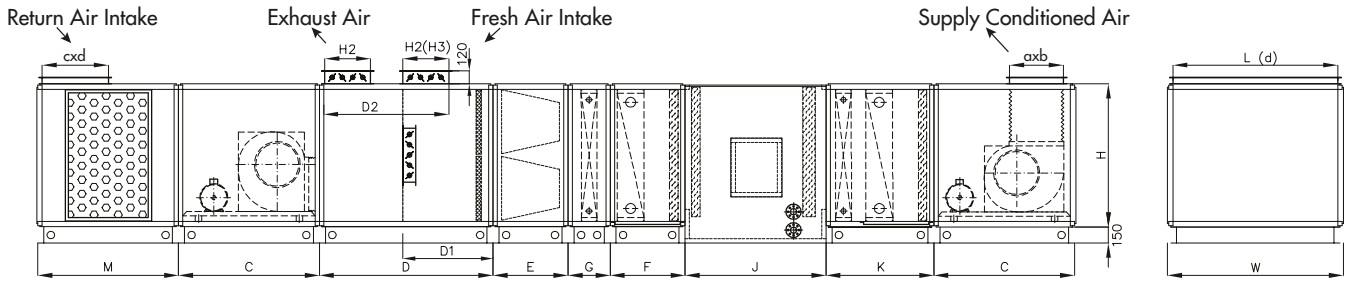


AHU CELL DIMENSIONS CHART (mm)

TYPE AKS	Height	Recuperator Cell height	Width	Supply fan Cell	Mixing Box Cell	Fresh Air Inlet Filter Cell	Mixing Box Cell Without Filter	Recuperator Cell	Bog Filter cell	Service Cell	Cooling Cell	Heating Cell	Humidifier Cell	Cooling & Heating Cell	Sound Attenuator Cell	Damper Dimensions				Inlet – Outlet Flange Dimensions			
	H	H1	W	C	D	D1	D2	D3	E	E1	F	G	J	K	M	H2	H3	H4	L	a	b	c	d
600	715	1020	715	1000	1000	695	1000	1000	695	695	695	390	1305	1000	1000 1305	190	310	310	615	260	260	310	615
609	715	1020	1020	1000	1000	695	1000	1000	695	695	695	390	1305	1000	1000 1305	190	310	310	920	330	330	310	920
699	715	1020	1325	1000	1000	695	1000	1000	695	695	695	390	1305	1000	1000 1305	190	310	310	1225	360	360	310	1225
900	1020	1325	1020	1305	1305	1000	1000	1610	695	695	695	390	1305	1000	1000 1305 1610	310	550	615	920	400	400	550	920
901	1020	1325	1325	1305	1305	1000	1000	1610	695	695	695	390	1305	1000	1000 1305 1610	310	550	615	1225	470	470	550	1225
911	1020	1325	1630	1305	1305	1000	1000	1610	695	695	695	390	1305	1000	1305 1610 1905	310	550	615	1530	500	500	550	1530
1206	1325	1325	1630	1610	1610	1000	1305	1610	695	695	695	390	1305	1000	1305 1610 1905	425	615	615	1530	570	570	615	1530
1216	1325	1630	1935	1610	1610	1000	1305	1610	695	695	695	390	1305	1000	1305 1610 1905	425	615	615	1835	640	640	615	1835
1609	1630	1630	1935	1915	1610	1305	1610	1610	695	695	695	390	1305	1000	1305 1610 1905	490	920	615	1835	715	715	920	1835
1902	1935	1935	1935	1915	1915	1305	1610	1915	695	695	695	390	1305	1000	1305 1610 1905	615	920	765	1835	800	800	920	1835
1922	1935	1935	2240	2220	1915	1305	1610	1915	695	695	695	390	1305	1000	1305 1610 1905	615	920	765	2140	900	900	920	2140
2205	1935	1935	2545	2525	1915	1305	1610	1915	695	695	695	390	1305	1000	1305 1610 1905	615	920	765	2445	1000	1000	920	2445
2252	2240	-	2545	2525	2220	1610	1915	---	695	695	695	390	1305	1000	1305 1610 1905	760	1225	---	2445	1000	1000	1225	2445
2255	2545	-	2545	2525	2220	1610	1915	---	695	695	695	390	1305	1000	1305 1610 1905	760	1225	---	2445	1130	1130	1225	2445
2500	2545	-	3155	2830	2220	1610	1915	---	695	695	695	390	1305	1000	1305 1610 1905	760	1225	---	3055	1130	1130	1225	3055
2535	2545	-	3460	2830	2220	1610	1915	---	695	695	695	390	1305	1000	1305 1610 1905	760	1225	---	3360	1265	1265	1225	3360

AHU CELL WEIGHT CHART (kg)

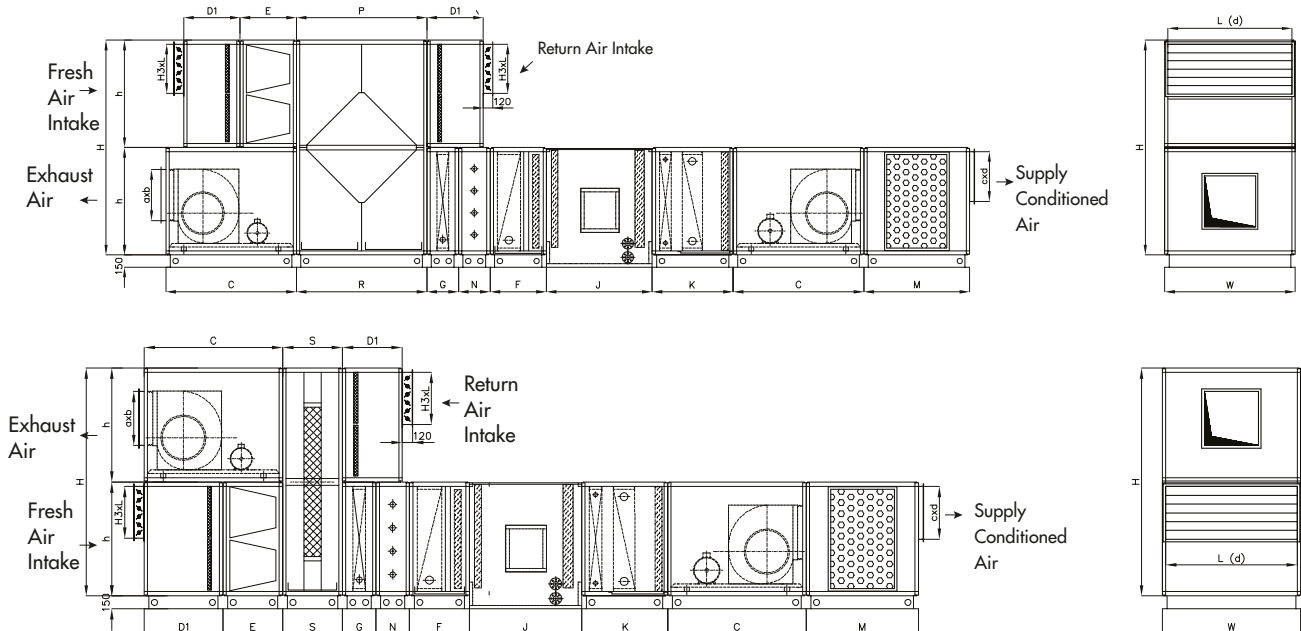
TYPE AKS	Supply Fan Cell	Mixing Box Cell	Fresh air inlet filter cell	Bag filter cell	Cooling cell	Heating cell	Humidifier Cell	Cooling & heating cell	Sound Attenuator cell	Recuperator Cell	Rotary Heat Exchanger cell
600	137	125	95	75	103	57	160	138	139 198	348	315
609	161	158	116	90	137	72	198	182	178 250	360	333
699	200	200	136	103	170	87	227	226	196 275	390	386
900	251	228	172	105	167	84	222	222	193 273 337	590	452
901	303	277	198	120	210	102	258	278	234 329 406	625	517
911	361	342	237	144	260	125	306	344	283 397 492	666	542
1206	448	422	283	158	308	142	340	408	465 575 671	950	867
1216	573	479	316	174	361	164	381	476	533 660 771	1050	891
1609	665	518	417	194	418	183	416	551	602 749 878	1196	1069
1902	822	597	459	207	475	203	452	627	682 846 995	1335	1180
1922	931	677	508	232	548	230	494	721	769 956 1124	1619	1282
2205	1012	747	552	250	620	256	543	814	856 1065 1254	1662	1307
2252	1317	907	689	273	687	280	584	903	943 1176 1389	1823	1998
2255	1372	951	742	289	759	304	624	998	1053 1310 1546	1984	2127
2500	1656	1143	861	335	938	368	727	1230	1192 1481 1746	2700	2308
2535	1792	1240	924	362	1029	400	778	1347	1224 1518 1786	2850	2338





CELL DIMENSIONS CHART FOR THE AHU WITH HEAT RECOVERY (mm)

TYPE AKS	AHU height	Cell height	width	Supply fan	Fresh air inlet filter	Recuperator	Rotary Heat Exchanger	steam Humidifier	Cooling	Heating	Humidifier	Cooling and Heating	Bag filter	Sound Attenuator	Damper	Outlet Flange		Inlet Flange		
	(H)	(h)	(W)	(C)	(D1)	(R)	(S)	(N)	(F)	(G)	(J)	(K)	(E)	(M)	(H3)	(L)	(a)	(b)	(c)	(d)
600	1430	715	715	1000	695	1000	695	390	695	390	1305	1000	695	1000 1305	310	615	260	260	310	615
609	1430	715	1020	1000	695	1000	695	390	695	390	1305	1000	695	1000 1305	310	920	330	330	310	920
699	1430	715	1325	1000	695	1000	695	390	695	390	1305	1000	695	1000 1305	310	1225	360	360	310	1225
900	2040	1020	1020	1305	695	1305	695	390	695	390	1305	1000	695	1000 1305 1610	550	920	400	400	550	920
901	2040	1020	1325	1305	695	1305	695	390	695	390	1305	1000	695	1000 1305 1610	550	1225	470	470	550	1225
911	2040	1020	1630	1305	695	1305	695	390	695	390	1305	1000	695	1305 1610 1905	550	1530	500	500	550	1530
1206	2650	1325	1630	1610	695	1305	695	390	695	390	1305	1000	695	1305 1610 1905	615	1530	570	570	615	1530
1216	2650	1325	1935	1610	695	1610	695	390	695	390	1305	1000	695	1305 1610 1905	615	1835	640	640	615	1835
1609	3260	1630	1935	1915	695	1610	695	390	695	390	1305	1000	695	1305 1610 1905	920	1835	715	715	920	1835
1902	3870	1935	1935	1915	695	1610	695	390	695	390	1305	1000	695	1305 1610 1905	920	1835	800	800	920	1835
1922	3870	1935	2240	2220	695	1915	695	390	695	390	1305	1000	695	1305 1610 1905	920	2140	900	900	920	2140
2205	3870	1935	2545	2525	695	1915	1000	390	695	390	1305	1000	695	1305 1610 1905	920	2445	1000	1000	920	2445
2252	4480	2240	2545	2525	695	1915	1000	390	695	390	1305	1000	695	1305 1610 1905	1225	2445	1000	1000	1225	2445
2255	5090	2545	2545	2525	695	1915	1000	390	695	390	1305	1000	695	1305 1610 1905	1225	2445	1130	1130	1225	2445
2500	5090	2545	3155	2830	695	2525	1000	390	695	390	1305	1000	695	1305 1610 1905	1225	3055	1130	1130	1225	3055
2535	5090	2545	3460	2830	695	2525	1000	390	695	390	1305	1000	695	1305 1610 1905	1225	3360	1265	1265	1225	3360





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