

ALDAMED



HYGIENIC COMPACT SPLIT DX AIR CONDITIONING UNIT

HEALTHCARE SECTOR, HOSPITALS, CLEAN ROOMS, BIOTECHNOLOGY LABORATORIES,
PRIVATE MEDICAL CENTERS, PHARMACEUTICAL AND CHEMICAL INDUSTRY,
FOOD AND BEVERAGE INDUSTRY

**ALDAĞ**
HVAC Systems

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HYGIENIC COMPACT-SPLIT DX AIR CONDITIONING UNIT

All hospitals and clean rooms should be hygienic beginning from the main entrance. Where there is no air-conditioning and ventilation, it is impossible to create a hygienic environment, since there is a constant breeding of particles and microorganisms. Aldamed Hygienic DX Air-Conditioning Units are specifically designed for healthcare sector and clean room applications. They can be used wherever hygiene conditions are required such as operating rooms, intensive care rooms, clean rooms, biotechnology laboratories, pharmaceutical and chemical industry, food & beverage industry, information technology rooms, sterilization rooms,...etc. The intake fresh air is made hygienic through conditioning and filtering and then supplied to the location. The hygiene conditions are achieved by exhausting the stale indoor air which contains dust, microorganisms, odor and anesthetic gases. At the same time, Aldamed keeps indoor parameters such as temperature, humidity and negative&positive pressure under control. Aldamed units are manufactured in 2 types with 3 different air flow capacity range from 2500m³/h up to 7500m³/h.



HYGIENIC COMPACT-SPLIT DX AIR CONDITIONING UNIT



TECHNICAL SPECIFICATIONS

1 - CASING AND PANELS

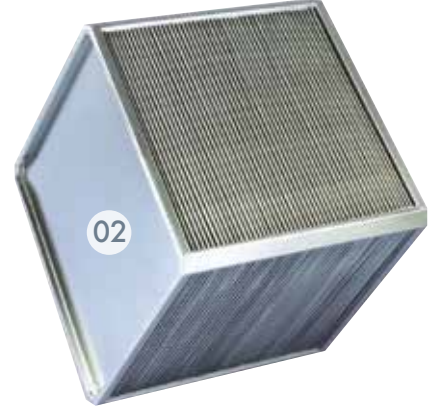
The casing is made of electrostatic powder coated galvanized steel profiles. The inner surface of double layered decorative panels are covered with stainless steel sheet (Quality 304) in compliance with the hygiene standards. The outer surface of the panels are made of electrostatic powder coated galvanized steel sheets. The panels are rockwool insulated with 50 mm thickness. Special hygienic seal materials are used to assure tightness at the panels and the service access doors. The inner surface of the unit is completely smooth with no sharp edges to keep dust and dirt. The unit can easily be washed and cleaned for disinfection. The sight glasses and the service lamps allow easy monitoring of the parts in the unit. The accessible service doors ensure easy maintenance.





2 - HEAT RECOVERY UNIT

Aldamed units are equipped with air-to-air plate heat exchangers with high tightness. The heat exchanger is made of aluminium plates. With the cross air movement of the fresh air and the exhaust air, the exhaust air heats the intake fresh air which results in energy saving from 50% up to 60%. The plate heat exchanger is used only in compact type of Aldamed units.



3 - FAN AND MOTORS

Aldamed units are equipped with highly efficient compact EC plug fans. The fan motor has the electronic control feature to keep the air flow and pressure stable as requested. The high performance fans are specifically selected to meet the internal and external static pressure as well as the hepa filter pressure.



03



4 - AIR FILTER

Aldamed units are equipped with multi-stage and high - efficiency filtration system to remove the particles from the conditioned fresh air to be supplied to the location. The fresh air filters are comprised of G4 and G5 filters and F9 rigid bag filters respectively. Additionally, G4 level filters are placed at the exhaust air outlet. They provide from 95% up to 99% dust freeness in the location. Tightness tests are performed in compliance with DIN 1946 / 04 : 2008 hygiene principles. The filters together with their stainless steel frames, can easily be removed from stainless steel rails.



04



5 - HUMIDIFIER

Aldamed units are equipped with O.E.M type steam humidifiers. It keeps the humidity rate of the location between 45% - 55% RH, according to the proportional control signal coming from the microprocessor. Water and defrost connections are mounted on the side of the unit. The supply water for the humidifier must be clean and low lime - rated.



6 - COILS

EVAPORATOR : The evaporator is copper tube gold epoxy coated aluminium finned. It has stainless steel side plates.

HEATING COIL : The heating coil is optional. It has similar features with evaporator coil. 90/70°C hot water is used for heating coils.

ELECTRIC HEATER : The electric heater can have either 1, 2 or 3 stages according to the heating capacity. It is made of Cr - Ni resistances in compliance with DIN 1946 / 04 : 2008 hygiene principles. It is equipped with a safety limit thermostat. The electric heater is also used in dehumidifying process. If the unit is equipped with a heating coil, resistance capacity is only used for dehumidification function and it is single-stage.



7 - COOLING COMPRESSOR

Aldamed units are equipped with reliable, long - lasting and silent running hermetic scroll compressors. Compressor cooling capacity is selected according to 100% fresh air and the compressors operate proportionally in stages. Compressors turn on and off depending on cooling requirement. Each compressor has a crankcase heater, discharge and suction valves and overload relay for protection from overcurrent. Cooling compressors work with environmentally friendly refrigerant R -407C.



8 - REFRIGERANT CIRCUIT

The refrigerant circuit components are as follows: sight glass, dryer (Dehydrator Filter), thermostatic - expansion valve, electronic expansion valve, superheat thermostat, low pressure pressostat, high pressure pressostat and liquid valve. All of these components are placed away from hygienic air stream.



9 - ELECTRIC CONTROL and AUTOMATION PANEL (DDC + MCC)

Control and management is provided by pCO3 Carel microprocessor which keeps the location temperature between $18 - 24^{\circ}\text{C} \pm 1$ and humidity at $50\% \text{ Rh} \pm 5$. Optionally, RS485 serial board can be used to connect the unit to the building management system. An additional remote control display can be used for the distances up to 150m. Humidity, temperature, pressure, air flow and filter dirtiness can be controlled by microprocessor.

Following information is available on the microprocessor display.

- High Pressure
- Low Pressure
- Filter dirtiness
- Insufficient air flow
- Heater element
- Supply Air Temperature
- Humidifier
- Low temperature
- High temperature
- Low humidification
- High humidification
- Compressor overload
- Fan overload
- Power failure
- Time
- Compressor maintenance time
- Fan maintenance time
- Air flow and pressure





10 - CONDENSER

The condenser is air – cooled. The condenser coil has similar technical specifications with the DX evaporator coil. The condenser coil has high heat transfer efficiency. The operation of condenser fans can easily be adjusted automatically by controlling the pressure via pressostat.

The compact type condenser comes within the Aldamed unit and the exhaust air is discharged over the condenser coil. Thus, high EER value is achieved with the low exhaust air temperature. In case the return air flow is insufficient, additional condenser fans are activated by high pressure alarm. The compact type condensers are equipped with either axial or radial condenser fans depending on the unit capacity.

The split type air-cooled condensers are separate and placed externally. They can be manufactured in vertical or horizontal types. The split type condensers are equipped with silent axial fans. Each compressor has an individual cooling circuit. Secondary condenser fans keep the condensation temperature stable by running proportional to high pressure.

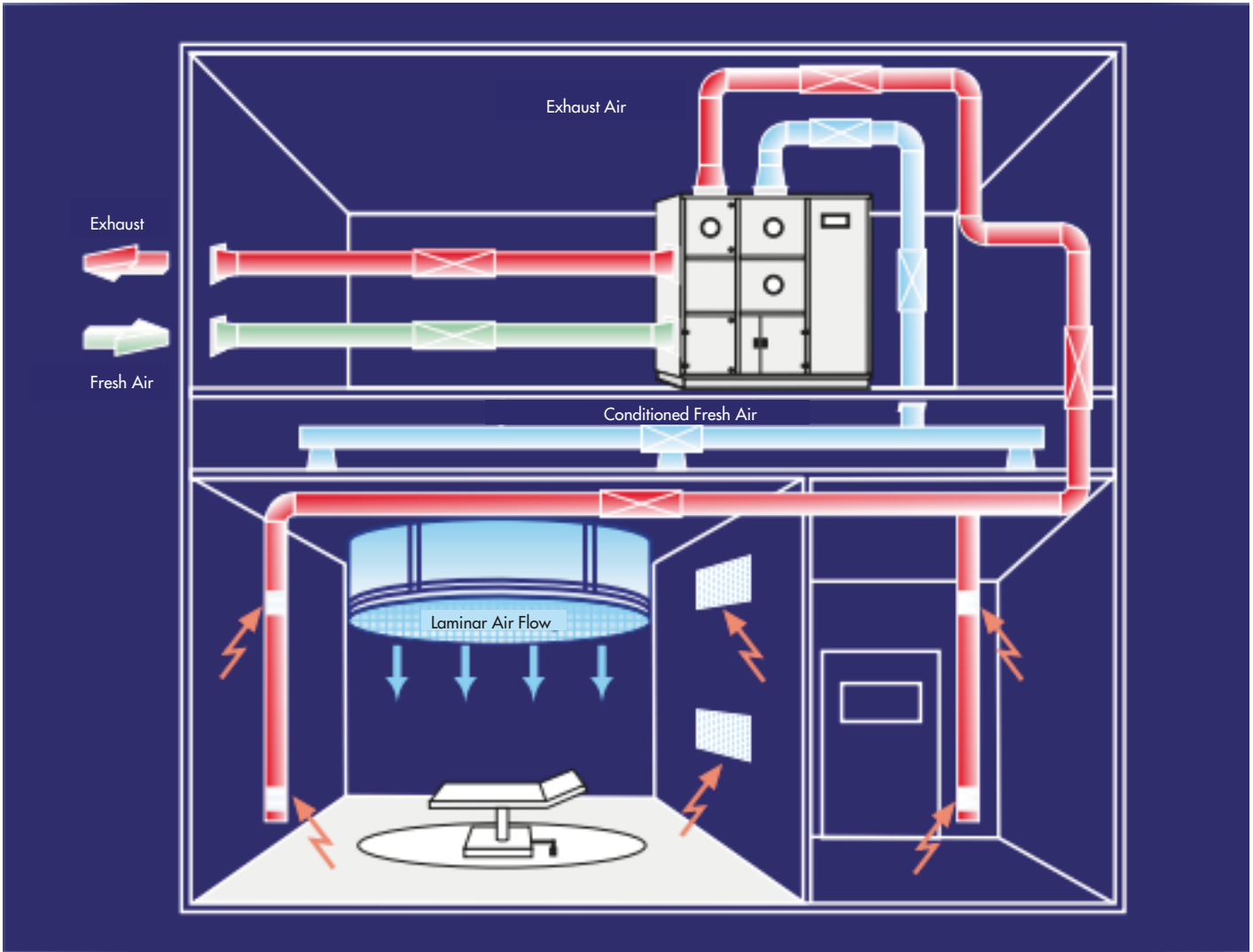


Vertical Type



Horizontal Type





The foremost mission of the air conditioning system in the operating rooms is to bring the number of particles in the room to standard figures, to prevent the patient being operated on from acquiring an infection, and to maintain the thermal comfort of the patient and the surgery team. The air conditioning systems in clean and sterile locations should be planned totally independent from air conditioning systems of other locations to ensure that it blows air that is freed of particles, reduces the number of microorganisms, takes away the heat caused by human and equipments, meets the fresh air requirements of the patient and the personnel and exhausts the stale indoor air, with the least operating costs.

Generally, if no other criteria is present, the temperature of a clean room is 22°C (18-24°C) and relative humidity is 45% (40-55)Rh. To prevent the rapid multiplication of mold, fungi and microorganisms, it is imperative to keep the temperature at ± 0.3 and the humidity at $\pm 2\%$ tolerance in the rooms where accuracy is required.

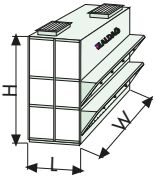
Aldamed Hygienic Dx Air Conditioning Units are designed specifically for healthcare sector and clean room applications. THEY ARE TESTED IN COMPLIANCE WITH EN 1751; 1988 DIN 1946 -4; 2008 DIN EN ISO 5167 STANDARDS.

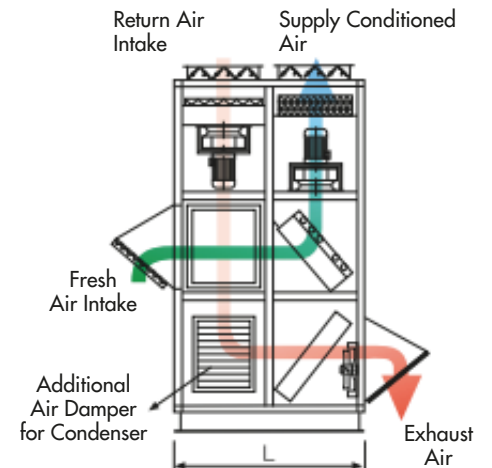
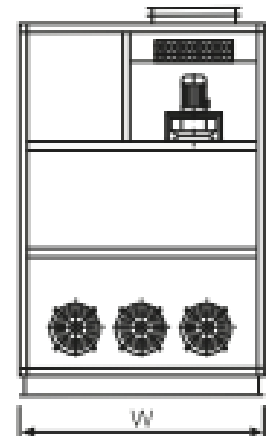
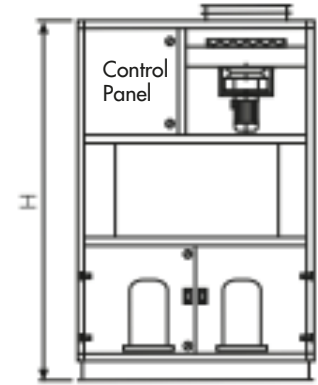
They can be used in every location where hygienic conditions are required such as operating rooms, intensive care rooms, clean rooms, biotechnology laboratories, pharmaceutical and chemical industry, food & beverage industry, information technology rooms, sterilization rooms ..etc. The intake fresh air is made hygienic through conditioning and filtering and then supplied to the location. The hygiene conditions are achieved by exhausting the stale indoor air which contains dust, microorganisms, odor and anesthetic gases. At the same time, Aldamed keeps indoor parameters such as temperature, humidity and negative&positive pressure values under control.

HYGIENIC COMPACT-SPLIT DX AIR CONDITIONING UNIT



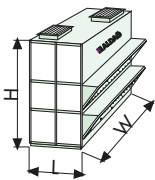
TECHNICAL SPECIFICATIONS (COMPACT TYPE)

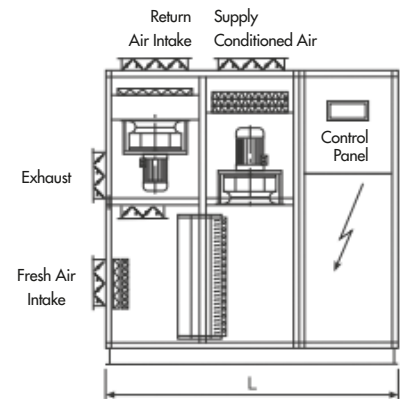
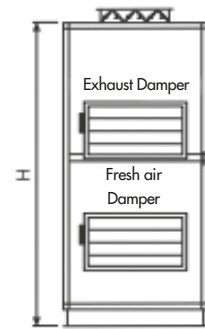
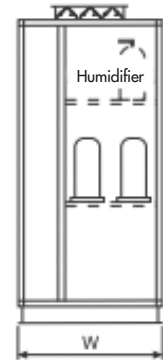
TYPE			ALDAMED 5/10	ALDAMED 7.5/15	ALDAMED 10/20	
SUPPLY FAN	Nominal Air Flow	m ³ /h	2500	5000	7500	
	Total Pressure	Pa	1250	1250	1310	
	External Static Pressure	Pa	750	750	700	
	Power consumption	kW/h	2.2	2.2	5	
EXHAUST FAN	Total Pressure	Pa	750	700	750	
	External Static Pressure	Pa	550	500	500	
	Power consumption	kW/h	2.2	2.5	2	
COOLING CAPACITY	1. stg 24 °C KT - 19 °C WB (Fresh air)	kW/h	15	30	43	
	2. stg 33 °C KT - 24 °C WB (Fresh air)	kW/h	30	60	86	
Indoor temperature - Outlet temperature (Summer & Winter modes)			22°C % 50Rh - SUMMER / WINTER 15°C / 32°C			
REFRIGERANT			R 407 C			
COMPRESSOR	Quantity	pc	2	2	2	
	Power consumption	kW/h x pc	4.5 x 2	8.6 x 2	13 x 2	
CONDENSER FAN POWER CONSUMPTION		kW/h x pc	2 * 0.77	2 * 1.5	3 * 2.3	
HEATING	Heating Capacity 90 / 70 °C Hot Water (Optional)	kW	30.5	61.0	91.5	
	Electric Heater (n) Stage	kW/h x pc	2 * 15	2 * 30	3 * 30	
HEAT RECOVERY EFFICIENCY			56 - 60 %			
AIR FILTER TYPES	Inlet prefilter		G4 + G5	G4 + G5	G4 + G5	
	Outlet filter		F9	F9	F9	
	Exhaust + Return air filter		G4	G4	G4	
HUMIDIFIER	Steam capacity	Kg/h	15	35	45	
	Power consumption	kW/h	11.25	26.25	33.75	
	DIMENSIONS	L	mm	1610	1610	1850
		W	mm	1675	1675	2300
		H	mm	2675	2675	2980
		Weight	kg	1200	1400	2100
	FLANGE DIMENSIONS	Fresh Air Intake	mm	600x1290	600x1290	600x1800
		Return Air	mm	500x500	500x500	600x600
		Supply Air	mm	500x500	500x500	600x600
		Condenser Outlet Air	mm	855x1530	855x1530	855x2220
		Condenser Fresh Air Intake	mm	2x(615x615)	2x(615x615)	2x(855x855)





TECHNICAL SPECIFICATIONS (SPLIT TYPE)

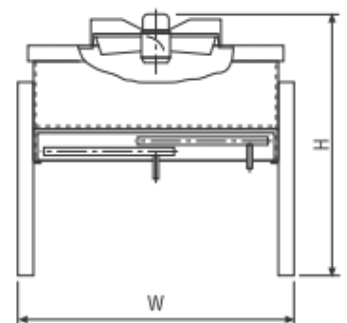
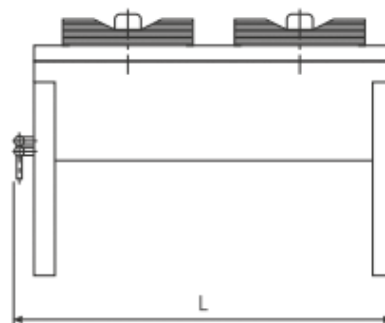
TYPE			ALDAMED 5/10	ALDAMED 7.5/15	ALDAMED 10/20	
SUPPLY FAN	Nominal Air Flow	m ³ /h	2500	5000	7500	
	Total Pressure	Pa	1250	1250	1310	
	External Static Pressure	Pa	750	750	700	
	Power consumption	kW/h	2.2	2.2	5	
EXHAUST FAN	Total Pressure	Pa	750	700	750	
	External Static Pressure	Pa	550	500	500	
	Power consumption	kW/h	2.2	2.5	2	
COOLING CAPACITY	1. stg 24 °C KT - 19 °C WB (Fresh air)	kW/h	15	30	44	
	2. stg 33 °C KT - 24 °C WB (Fresh air)	kW/h	30	60	88	
Indoor temperature - Outlet temperature (Summer & Winter modes)			22°C % 50Rh - SUMMER / WINTER 15°C / 32°C			
REFRIGERANT			R 407 C			
COMPRESSOR	Quantity	pc	2	2	2	
	Power consumption	kW/h x pc	4.5 x 2	8.6 x 2	13 x 2	
CONDENSER FAN POWER CONSUMPTION		kW/h x pc	2 * 0.77	2 * 0.77	2 * 0.77	
HEATING	Heating Capacity 90 / 70 °C Hot Water (Optional)	kW	30.5	61.0	91.5	
	Electric Heater (n) Stage	kW/h x pc	2 * 15	2 * 30	3 * 30	
HEAT RECOVERY EFFICIENCY			56 - 60 %			
AIR FILTER TYPES	Inlet prefilter		G4 + G5	G4 + G5	G4 + G5	
	Outlet filter		F9	F9	F9	
	Exhaust + Return air filter		G4	G4	G4	
HUMIDIFIER	Steam capacity	Kg/h	15	35	45	
	Power consumption	kW/h	11.25	26.25	33.75	
	DIMENSIONS	L	mm	2415	2795	2795
		W	mm	1020	1085	1325
		H	mm	2065	2260	2260
		Weight	kg	1000	1050	1250
	FLANGE DIMENSIONS	Fresh Air Intake	mm	600x600	600x600	600x900
		Return Air	mm	500x500	500x500	600x700
		Supply Air	mm	500x500	500x500	600x700
		Exhaust Air	mm	350x600	350x600	350x900



SPLIT TYPE OUTDOOR UNIT DIMENSIONS

OUTDOOR UNIT DIMENSIONS

MODEL	5 / 10	7.5 / 15	10 / 20	
Quantity	2	2	2	
L	mm	1220	1520	1520
W	mm	760	1060	1060
H	mm	800	800	800
Weight	kg	140	210	250





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- ✓ Saving in energy
- ✓ Quality in production
- ✓ Customer satisfaction in service



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