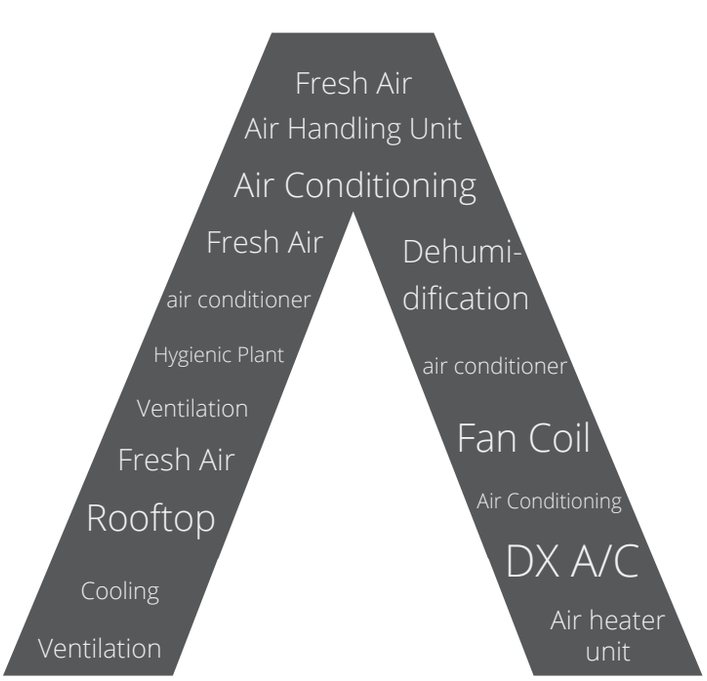

AIR+PLUS

Air Conditioning Technologies

AP-HRT Modular Hygienic
Air Handling Unit

35

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Plug & Play

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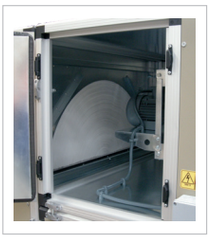
Hygienic fresh air in the operating room is a very important vital element

AP-HRT Modular Hygienic Air Handling Unit

The casing of AP-HRT series are manufactured from natural anodized aluminum profile and rockwool with a thickness of 40 mm and a density of 70 kg/m³, galvanized sheet panels with 304 grade stainless sheet on interior of the device and powder paint film coated on the exterior of the device. In all the series, there are eyebolts for crane transport and frame feet made of painted galvanized sheet for forklift transport. The devices have been designed to operate outdoors.
Ensuring that the temperature, humidity and variable flow rate are controlled, the fact that the body composition details have a completerly cleanable structure, which prevents bacteria growth, it carries out sterile air circulation, positive or negative pressurisation, and the fact that sensitive device is selected according to special conditions, it has a compact structure, and offers ease of service and maintenance increases the efficiency of the device. The lighting, the sight glass, the damper motor, the slanted condensation pan made of AISI 304 stainless sheet, and the drainage siphons are standard, and have hygienic character.



In all access doors, the air handling unit door handles with lock are used, with spaceless rigid hinge and having compression feature in a way it will not allow air leakage, and not forming a protrusion in the cell. Special-shaped cast gaskets having hygienic characteristics are used to ensure leaktightness. The sight glass having hygienic character, and lighting inside the cell are being used in the doors.

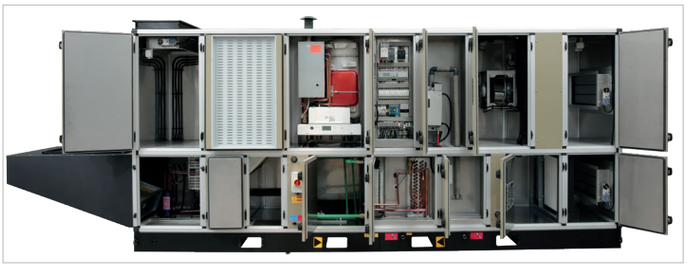
▶ Usage Features

AP-HRT series AIRPLUS Compact Type Hygienic Air Handling Units are the devices designed to be used in hospital and clean room applications requiring sensitive and sterile conditions. These devices are used in operating rooms and intensive care units where hygienic conditions are required, in clean rooms, in the pharmaceuticals and chemicals industry, in the food sector, and special industrial applications, in defense industry, and the aeronautics and space industries.

AIRPLUS Compact Type Hygienic Air Handling Units are used for the purpose of preventing bacteria growth and viruses from entering sterile environment in the health and food sectors, creating fresh air having correct temperature and humidity required in the environment, and maintaining the positive and negative pressure stability required by the sterile environment.

▶ AIRPLUS Compact Type Hygienic Air Handling Unit Features

AIRPLUS Compact Type Hygienic Air Handling Units fulfill by themselves all the comfort and hygiene condtions of sterile areas, take up a small amount of space, and provide operation, installation, service and maintenance convenience. They make sure the particles, bacteria and viruses, which obliterate the sterilization in hygienic environments are removed from the environment, and transfer the fresh air taken from outdoors to the environment in required temperature, humidity and hygiene conditions. Unit, cooling and software of the devices are completely designed and manufactured by AIRPLUS. AIRPLUS Compact Type Hygienic Air Handling Units are designed for cooling and heat pump heating. There is an electrical pre-heater in the device as the standard. There is a heat recovery cell with aluminum plate having hygienic character with cross-flow, and epoxy-coated for energy efficiency. And humidity control is carried out with the steam humidifier cell. The devices have the efficient plug-in fans in the ventilator and aspirator line, the R410A gas-powered scroll compressors, the hydrophilic coated condenser, the axial fans with directly coupled motor for the condenser, the epoxy-coated evaporator, G4 panel filter, F7 compact filter and F9 compact filter the cooling system equipment operating with the heat pump, and control unit. The modular hygienic air handling units, which are assembled in a solid body and shipped with R410A refrigerant, provide great ease of installation to the customer.



Heat Recovery Cell with Plate

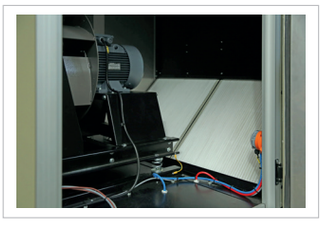
There are epoxy-coated aluminum plates having hygienic character in the cross-flow plate systems used in the device. The exhaust and fresh air pass through different sections so that they will not mix together, thus ensuring the heat flow. Thanks to the plate heat exchangers, energy efficiency in the rates of 45-65% (according to the outdoor air and indoor air conditions) is provided. For this reason, the operational costs are minimized thanks to this energy efficiency obtained from waste energy. There is a slanted condensation water pan manufactured from 304 grade stainless steel underneath the plate heat exchanger, and the stainless drain pipe of this pan with 3/4" external thread is taken hermetically to outside of the body. In the supply circuit and the return air circuit, a G4 class cassette filter is placed as the standard before the heat exchanger.

Electric Pre-Heater Cell

It is used to increase the temperature of the air entering in the coil at outdoor temperatures where freezing risk is high. In electric heaters, the body and resistances consist of 304 grade stainless sheet, and 304 grade stainless pipe, respectively. There is an insulator between the body and the rezistances. The heaters have a unique framework construction which is easily dismantled and installed via access covers. There are a temperature sensor and a limit thermostat.

Compact Filter Cells

The compact filters are manufactured from fibre glass material having F7-F9 efficiency. They are ideal for high air flow rate and make sure a long service life. In the highly productive filtration systems, they are used for the purpose of fine filtration. The filters can be easily dismantled and installed via access covers. They have 304 grade stainless body construction. The surfaces, onto which the filters will seat have leak-proof seals, and the filter cassettes seat on these seals.



Evaporator Cell

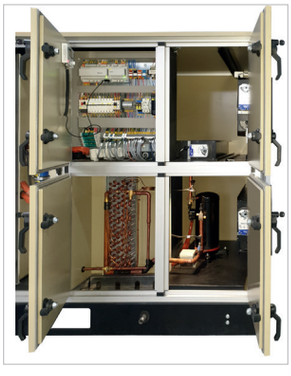
This cell includes a highly thermal efficient evaporator coil with copper pipe and aluminum blade, expansion valve, drift eliminator, and highly efficient plug-in evaporator fan. There is a slanted condensation water pan manufactured from 304 grade stainless steel underneath the cooler coils, and the stainless drain pipe of this pan with 1" external thread is taken hermetically to outside of the body. The Draining Siphon is supplied with the device.

Condenser Cell

In this cell, there are a condenser coil with high thermal efficiency having a copper pipe and hydrophilic coated aluminum blade, an axial fan together with directly coupled motor, which provides airflow over the coil, and R410A gas-powered scroll compressor. Besides, there are cooling circuit elements (four-way valve, expansion valve, duplex drier, check valve, suction accumulator, low-high pressure pressurestat, etc.). Condenser fans is driven by the frequency inverter.

Optional Equipment

- H12 or H13 hepa filter
- The cold-water coil
- The hot-water coil
- The gas-fired boiler having integrated storeroom boiler, which feeds the hot-water coil, and and provides hot water usage for people.
- UV Light
- The Silencer Cell
- Ability to connect to building management system via remote command and control.
- The smoke detector
- Flexibility in design and manufacture suitable for special projects.
- Models suitable for lower and higher outdoor air temperatures.



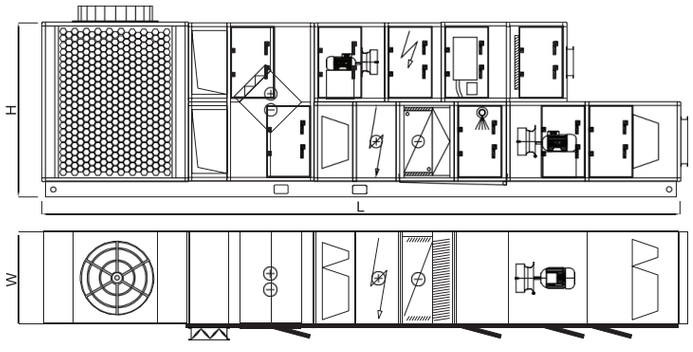
Steam Type Humidifier Cell

There are a standard steam hose, and a stainless steel steam nozzle application in the cell. The steam humidifier device is in a separate cell, and integrated into the unit.

Distribution Board and Microprocessor Control

In AIRPLUS modular hygienic air handling units, there is a microprocessor control unit having a software system designed to be able to meet the requirement of the system. Temperature, humidity, pressure differences between the components, information of location and unit are controlled via the microprocessor proportionally, or proportionally-integrally. This control system can be integrated with the building management system according to customer demand. The aspirator plug fan, the ventilator plug fan, and the condenser axial fans found in the device are controlled with individual frequency inverters.

General characteristics of AP-HRT Modular Hygienic Air Handling Units



NOTE: Tm °C=Room Temperatur, Td °C=Outdoor Temperature, RH=Relative Humidity

When the Water Heater Coil is Added to the Device Optionally,

The Device Length (L) Increases by 300 mm.

When the Silencer Cell Added to the Device Optionally, the Device Length (L) increases by 1250 mm. When the Gas-Fired Boiler with Integrated Storeroom Boiler is Installed in the Device Optionally, the Device Length (L), Device Width (W) and Device Height (L) Change. Call AIRPLUS for information.

When Hepa Filter is Installed in the Device Optionally, the Device Length (L), Device Width (W) and Device Height (L) Change. Call AIRPLUS for Information.

Model		AP-HRT 2400	AP-HRT 3600	AP-HRT 4800	AP-HRT 6000	AP-HRT 7200	AP-HRT 8400	AP-HRT 9600
Tm ºC-RH	Td ºC-RH	PLATE TYPE HEAT RECOVERY COOLING CAPACITY (kW)						
20 - %50	35 - %50	5,64	8,32	8,71	10,98	12,90	16,89	19,28
Tm ºC-RH	Td ºC-RH	EVAPORATOR COOLING CAPACITY (kW)						
20 - %50	35 - %50	24,00	34,30	47,90	61,70	73,30	82,70	98,40
Tm ºC-RH	Td ºC-RH	TOTAL COOLING CAPACITY (kW)						
20 - %50	35 - %50	29,64	42,62	56,61	72,68	86,20	99,59	117,68
Tm ºC	Td ºC	PLATE TYPE HEAT RECOVERY HEATING CAPACITY (kW)						
20	(-3) - %90	8,56	12,63	13,20	16,65	19,56	25,63	29,25
Tm ºC	Td ºC	TWO-PHASE PRE-ELECTRIC HEATER CAPACITY (kW)						
20	(-3) - %90	5,00	8,00	15,00	19,00	23,00	24,00	26,00
Tm ºC	Td ºC	HEAT PUMP HEATING CAPACITY						
20	(-3) - %90	23,35	33,37	46,61	60,03	71,32	80,47	95,74
Tm ºC	Td ºC	TOTAL HEATING CAPACITY (kW)						
20	(-3) - %90	36,91	54,00	74,81	95,68	113,88	130,10	150,99
Steam Humidifier Capacity (kg/h)		15	30	30	45	45	60	60
Humidifier's Power Consumption (kW)		11,3	22,5	22,5	33,8	33,8	45	45
Ventilator Device Flowrate (m3/h)		2400	3600	4800	6000	7200	8400	9600
V. External Static Pressure Loss (Pa)		750	750	750	750	750	750	750
Ventilator Motor Power (kW)		2,20	3,00	4,00	4,00	5,50	5,50	7,50
Aspirator Device Flowrate (m3/h)		2140	3220	4290	5360	6430	7500	8570
A. External Static Pressure Loss (Pa)		550	550	550	550	550	550	550
Aspirator Motor Power (kW)		0,75	1,10	1,50	2,20	3,00	4,00	4,00
Compressor Power (kW)		7,61	11,16	15,34	18,71	22,60	26,27	16,82 + 14,98
Condenser Fan Power (kW)		0,74	1,91	1,91	3 x 0,7	2 x 1,8	2 x 1,8	4 x 0,68
Installed Device Power (kW)		22,60	39,67	45,25	60,78	68,44	84,31	91,02
Cooler Fluid		R410A	R410A	R410A	R410A	R410A	R410A	R410A
Tm ºC-RH	Td ºC-RH	WATER HEATER HEATING CAPACITY (80-60oC) (kW) (OPTIONAL)						
20 - %50	(-3) - %90	21	31,8	44,5	57,5	69,7	76,7	88,8
Device Width (W) (mm)		850	1100	1100	1350	1350	1400	1550
Device Height (H) (mm)		1680	1680	1980	1980	2120	2280	2280
Device Length (L) (mm)		6380	6730	7250	7730	7920	8050	7810
Device Weight (kg)		1290	1493	1683	2150	2272	2524	2810

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