



Product Catalog

www.airplus.com.tr



Air Handling Units
DX Air Handling Units
Indoor Swimming Pool Dehumidification Units
Ceiling Type Heat Recovery Units
DX Ceiling Type Heat Recovery Units
Vertical Type Heat Recovery Units
Extractor Hood Stations
Cell Type Aspirators, Cell Type Ventilators
Cell Type Kitchen Aspirators
Air Heater Units
Floor Type Convectors
Shelter Air Handling Units
Duct Type Electrical Heaters



Table of Contents

| | |
|---|------------|
| AHU Plus Air Handling Units | 5 |
| AHU Plus DX Air Handling Units | 39 |
| APHS Indoor Swimming Pool Dehumidification Units | 47 |
| AP-DIGK Vertical Type Heat Recovery Units | 57 |
| HRV Plus Ceiling Type Heat Recovery Units | 61 |
| HRV-DX Plus DX Ceiling Type Heat Recovery Units | 73 |
| AP-MESF Extractor Hood Stations | 79 |
| AP Cell Type Aspirators | 89 |
| AP-SS Shelter Air Handling Units | 97 |
| AP Series Floor Type Convectors | 101 |
| AP-HA Air Heater Units | 113 |
| AP-KEI Duct Type Electrical Heaters | 121 |

AHU Plus

Air Handling Units



AHU Plus

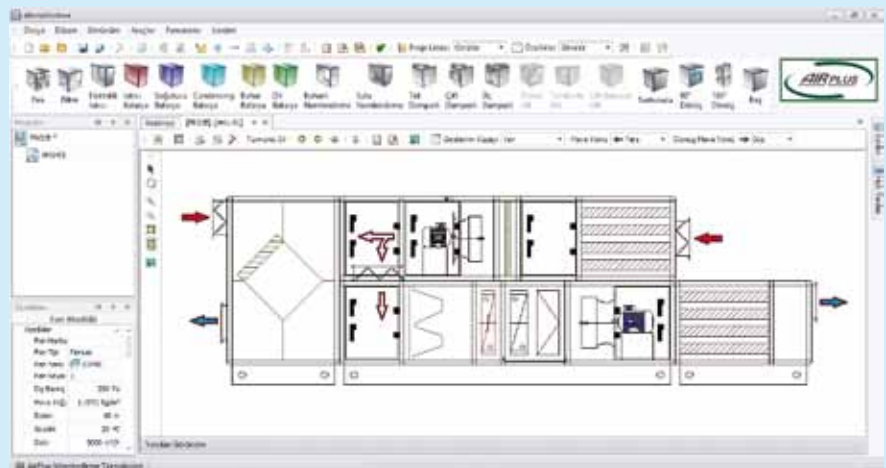
Air Handling Units

Air Handling Units are shortly named as AHU. Air Handling Unit is general name for devices, which pass indoor or outdoor air from different conditions to provide desired climate conditions and distribute conditioned air to required places. Air Handling Units can be manufactured in various models and features according to the structure of process and specifications of project.

Section Construction Structure

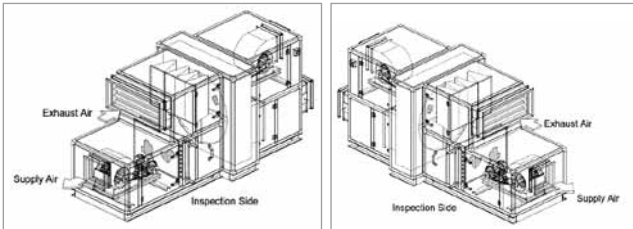
Frame of our Air Handling Units are manufactured from natural anodized aluminum profile and plastic corner connection elements. Thickness of section panel is 42 mm, outer wall is electrostatic powder coated and inner wall is manufactured from galvanized sheet (for hygienic units inner wall is manufactured from 304 quality stainless sheet). AHUPlus Air Handling Units are indispensable at central ventilation and air conditioning applications due to its high efficiency and energy saving provided by its 70 kg/m³ dense Rockwool filled panels, modern frame structure, statically and dynamically balanced, quiet and efficient radial or plug fans. The values of our standard electrical motors are 380V-50Hz. All double-walled panels are mounted to the aluminum frame by special torch tipped M6 bolts. Double-walled rigid standard inspection doors have gapless rigid hinge, lock mechanism that will not create protrusion inside of the section and will not allow air leakage. Inspection doors are rigid double-walled and there is no friction to the casing. There are 180 mm high, full-length chassis feet manufactured from 2 or 3 mm galvanized sheet. There are slots and holes at the corner of the chassis feet for handling it with crane or forklift. All of the holes required for

automation (differential pressure switch, NTC temperature sensor, frost thermostat etc.) are opened on Air Handling Unit at the production stage. Motor connection cables are taken to the junction box. On demand, the unit can be delivered as all automation placed, adjusted and collected at the panel. Section connection elements are manufactured from aluminum alloy material. They have high structural strength for connecting the sections from outside. The total number of use between sections varies according to the size of the model. There is interior lighting and sight glass at fan and filter sections. Thanks to these accessories, sections can be checked without disabling the system.



Features

The main features sought at Air Handling Units can be listed as; operating efficiently while consuming low energy, air tightness, having construction that minimizes thermal bridges, not having vibration caused by dynamic forces, wide service network, ease of installation and transportation. At AHUPlus series Air Handling Units, designs and selections are made to provide low operating costs and high efficiency. We can list the following features in order to support these priorities; energy-saving fans, efficient heat recovery exchangers and coils, internal unit structure that provides optimized airflow. With our optional automation system, this efficiency can be taken to a higher level. AIRPLUS AHU designing software interface is software developed to support air handling unit selection and design. This software offers many superior features to customers such as psychometric diagram, heat recovery selection, fan selection, electrical motor selection, coil selection, heat exchanger selection and outputs in pdf format.



Supply Air: Inspection from left side
Exhaust Air: Inspection from right side

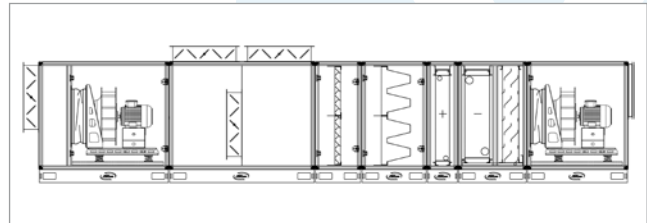
Supply Air: Inspection from right side
Exhaust Air: Inspection from left side

Coil connections, inspection doors and electrical connections (automation panel if requested) are at the inspection side.

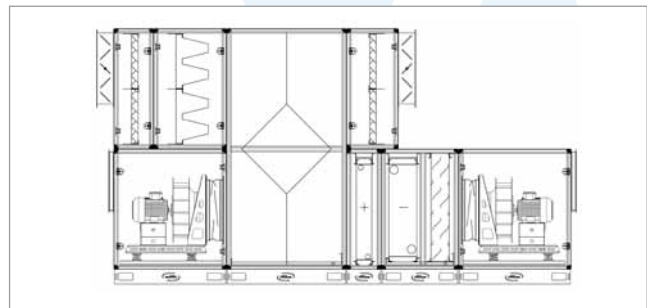
Unit Selection Template

| AHUPlus - Version | Panel Thickness | Unit Type | Airflow | Section Module |
|-------------------|-----------------|-----------|---------|--|
| | | | | HG1: Air Inlet Section HG2: Air Inlet Section K1: Mixing Section BS: Empty Section PF: Panel Filter Section |
| | | | | Y: Horizontal Airflow D: Vertical Airflow |
| | | | | 20-40-60-80-...-800-960: Unit Type |
| | | | | 42: Panel Thickness 42 mm |
| | | | | AHUPlus: Standard Air Handling Unit AHUPlus-H: Hygienic Type Air Handling Unit |

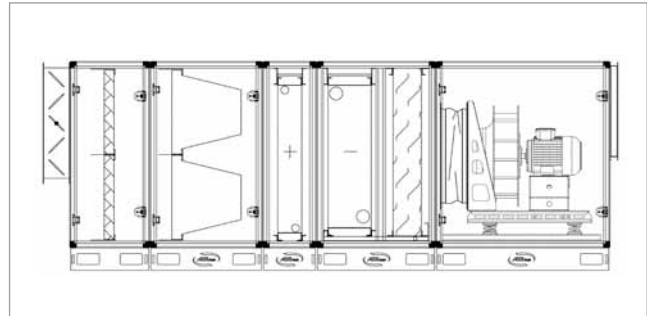
Air Handling Unit with Mixing Section



Air Handling Unit with Heat Recovery Section



100% Fresh Air, Air Handling Unit





Details of AHU Plus Air Handling Units

Casing

Extruded main and interim muntin aluminum profiles are resistant to high pressures. Manufactured as natural anodized coated in order not to be corroded at outside conditions. For main muntin connections and interim muntin caps, leak proof, durable plastic connection pieces with hygienic properties are used.



Panel

70 kg/m³ dense Rockwool insulation is placed between 0,9 mm galvanized sheet (Internal wall is manufactured from 304 quality stainless sheet at Hygienic Air Handling Units). Outer wall is electrostatic powder coated in order not to be corroded at outside conditions. Panel thickness is 42 mm. Panels are made with cast gasket in order to achieve air tightness.

Panels are detachable from outside thanks to torch tipped bolts.

The construction of unit is designed not to have any protrusion inside.

Inspection Door

42 mm thick, double walled inspection doors are installed to filter, fan, humidifier and empty sections requested for maintenance. There is gapless rigid hinge and air handling unit door handles with lock mechanism that will not create protrusion inside of the section and will not allow air leakage. In order to provide air tightness, specially formed cast gaskets are used.

Hygienic sight glass and lighting can be used at the door optionally.



Details of AHU Plus Air Handling Units



Damper

Manufactured from aluminum anodized, durable blades in aerofoil structure running in opposite direction and natural anodized profiled aluminum casing. Gasket is used at blade edges and casing in order to provide tightness. Plastic gears that provide the movement of blades are concealed inside the casing and there are blade support pieces to ensure tightness. Dampers can be controlled manually or by servomotor. Optionally, servomotors can be used for automation.

Section Connections

Section connection elements are manufactured from corrosion-resistant aluminum alloy material.

It has high structural strength for connecting the section from outside. The total number of use between sections varies according to the size of the model.



Filters

In terms of efficiency of the filter, it is important that the airflow rate of filters indicated in its technical catalog is equal or higher than the airflow rate of air handling unit. At AIRPLUS Air Handling Units the cross section of the sections are determined considering this criteria.

Filters are cassette type and easy to mount and dismount (compression fitting). The casing of filter slot have cast gasket to ensure air tightness.

There is inspection door at filter sections. Requested filter types are used, filter types generally used are; bag filters, metal filters, active carbon filters, compact filters and HEPA filters.

Details of AHU Plus Air Handling Units

Chasis

There are full-length chasis feet from 3 mm galvanized sheet with 180 mm height flagged from inside under the sections.

There are slots at the corner of the chasis feet for handling it with crane or forklift.



Electrical Panel and Automation

MCC and DDC panels are made as standard for AIRPLUS DX air handling units and on demand for other air handling units. Two types of automatic control can be applied. Basic application covers temperature and humidity control, electronic control panel, duct type temperature and humidity sensors, differential pressure switches, valve and damper servomotors. Frequency converter can be used on demand. For applications that need more precise control, an advanced microprocessor system with custom-made software in accordance with the requirements and a touch screen panel are used. Ambient and unit information such as airflow rate, temperature, humidity, filter pollution, pressure difference between different ambient etc. can be controlled via microprocessor. This control system can be integrated with building management system.

Accessories

Differential pressure switch, temperature and humidity sensors, frost thermostat, air quality sensor, limit switch, motorized valve, servomotor, maintenance switch, siphon, rain protection hood and air louver etc.

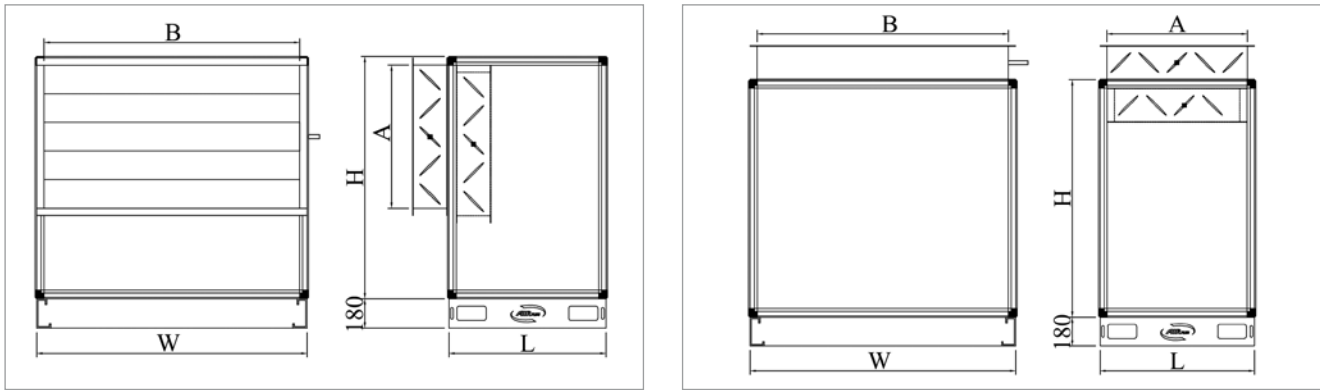


Section Modules of Air Handling Units

HG1

Air Inlet Section (HG1)

Damper's casing and all of the blades at the air inlet section are manufactured from extruded aluminum profile. Blades (running in opposite direction) of the damper has aerodynamic structure in order to reduce the frictional resistance of air. Damper's blade mechanism is made from highly resistant plastic gearwheels. Damper's on-off status can be controlled manually or with servomotor. As a standard, damper is outside of the section as seen on the figure, but on customer demand, it can also be manufactured inside the section.



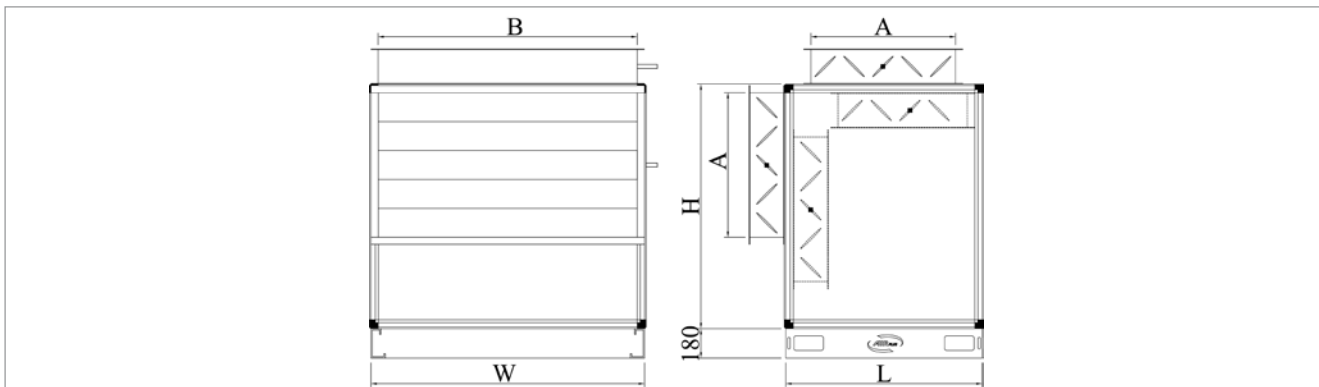
| MODEL | HG1 Section Dimensions | | | | |
|---------------|------------------------|-------------|-------------|--------|--------|
| | Width (mm) | Height (mm) | Length (mm) | A (mm) | B (mm) |
| AHUPlus42-20 | 750 | 450 | 280 | 200 | 670 |
| AHUPlus42-40 | 750 | 750 | 380 | 300 | 670 |
| AHUPlus42-60 | 1050 | 750 | 480 | 400 | 970 |
| AHUPlus42-80 | 1350 | 750 | 480 | 400 | 1270 |
| AHUPlus42-90 | 1050 | 1050 | 580 | 500 | 970 |
| AHUPlus42-120 | 1350 | 1050 | 580 | 500 | 1270 |
| AHUPlus42-150 | 1650 | 1050 | 580 | 500 | 1570 |
| AHUPlus42-160 | 1350 | 1350 | 780 | 700 | 1270 |
| AHUPlus42-200 | 1650 | 1350 | 780 | 700 | 1570 |
| AHUPlus42-240 | 1950 | 1350 | 780 | 700 | 1870 |
| AHUPlus42-250 | 1650 | 1650 | 880 | 800 | 1570 |
| AHUPlus42-280 | 2300 | 1350 | 680 | 600 | 2220 |
| AHUPlus42-300 | 1950 | 1650 | 880 | 800 | 1870 |
| AHUPlus42-360 | 1950 | 1950 | 980 | 900 | 1870 |
| AHUPlus42-420 | 2300 | 1950 | 980 | 900 | 2220 |
| AHUPlus42-480 | 2600 | 1950 | 980 | 900 | 2520 |
| AHUPlus42-490 | 2300 | 2300 | 1080 | 1000 | 2220 |
| AHUPlus42-560 | 2600 | 2300 | 1080 | 1000 | 2520 |
| AHUPlus42-600 | 3200 | 1950 | 1080 | 1000 | 3120 |
| AHUPlus42-640 | 2600 | 2600 | 1280 | 1200 | 2520 |
| AHUPlus42-700 | 3200 | 2300 | 1280 | 1200 | 3120 |
| AHUPlus42-800 | 3200 | 2600 | 1480 | 1400 | 3120 |
| AHUPlus42-960 | 3800 | 2600 | 1480 | 1400 | 3720 |

Section Modules of Air Handling Units

HG2

Air Inlet Section (HG2)

Two dampers' casing and all of the blades at the air inlet section are manufactured from extruded aluminum profile. Blades (running in opposite direction) of the damper has aerodynamic structure in order to reduce the frictional resistance of air. Damper's blade mechanism is made from highly resistant plastic gearwheels. Damper's on-off interim status can be controlled manually or with modulating servomotor. In this way, it is possible to mix fresh air and ambient air at the desired degree. As a standard, damper is outside of the section as seen on the figure, but on customer demand, it can also be manufactured inside the section.



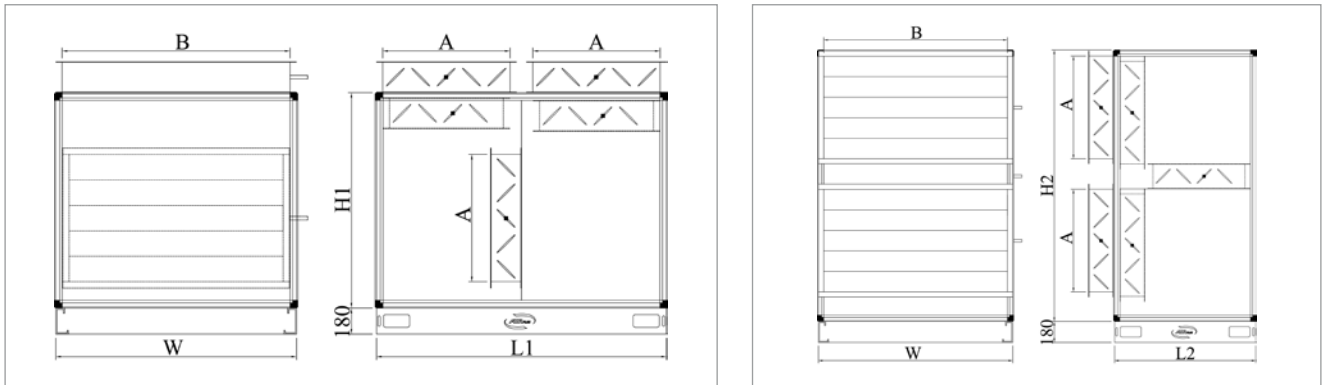
| MODEL | HG2 Section Dimensions | | | | |
|---------------|------------------------|-------------|-------------|--------|--------|
| | Width (mm) | Height (mm) | Length (mm) | A (mm) | B (mm) |
| AHUPlus42-20 | 750 | 450 | 280 | 200 | 670 |
| AHUPlus42-40 | 750 | 750 | 380 | 300 | 670 |
| AHUPlus42-60 | 1050 | 750 | 480 | 400 | 970 |
| AHUPlus42-80 | 1350 | 750 | 480 | 400 | 1270 |
| AHUPlus42-90 | 1050 | 1050 | 580 | 500 | 970 |
| AHUPlus42-120 | 1350 | 1050 | 580 | 500 | 1270 |
| AHUPlus42-150 | 1650 | 1050 | 580 | 500 | 1570 |
| AHUPlus42-160 | 1350 | 1350 | 780 | 700 | 1270 |
| AHUPlus42-200 | 1650 | 1350 | 780 | 700 | 1570 |
| AHUPlus42-240 | 1950 | 1350 | 780 | 700 | 1870 |
| AHUPlus42-250 | 1650 | 1650 | 880 | 800 | 1570 |
| AHUPlus42-280 | 2300 | 1350 | 680 | 600 | 2220 |
| AHUPlus42-300 | 1950 | 1650 | 880 | 800 | 1870 |
| AHUPlus42-360 | 1950 | 1950 | 980 | 900 | 1870 |
| AHUPlus42-420 | 2300 | 1950 | 980 | 900 | 2220 |
| AHUPlus42-480 | 2600 | 1950 | 980 | 900 | 2520 |
| AHUPlus42-490 | 2300 | 2300 | 1080 | 1000 | 2220 |
| AHUPlus42-560 | 2600 | 2300 | 1080 | 1000 | 2520 |
| AHUPlus42-600 | 3200 | 1950 | 1080 | 1000 | 3120 |
| AHUPlus42-640 | 2600 | 2600 | 1280 | 1200 | 2520 |
| AHUPlus42-700 | 3200 | 2300 | 1280 | 1200 | 3120 |
| AHUPlus42-800 | 3200 | 2600 | 1480 | 1400 | 3120 |
| AHUPlus42-960 | 3800 | 2600 | 1480 | 1400 | 3720 |

Section Modules of Air Handling Units

K1-K2

Mixing Section (K1 and K2)

Damper's casing and all of the blades at the air inlet section are manufactured from extruded aluminum profile. Blades (running in opposite direction) of the damper has aerodynamic structure in order to reduce the frictional resistance of air. Damper's blade mechanism is made from highly resistant plastic gear wheels. Damper's on-off interim status can be controlled manually or with modulating servomotors. In this way, required fresh air and ambient air mixture is provided homogeneously at mixing section. As a standard, dampers are outside of the section as seen on the figure, but on customer demand, it can also be manufactured inside the section.



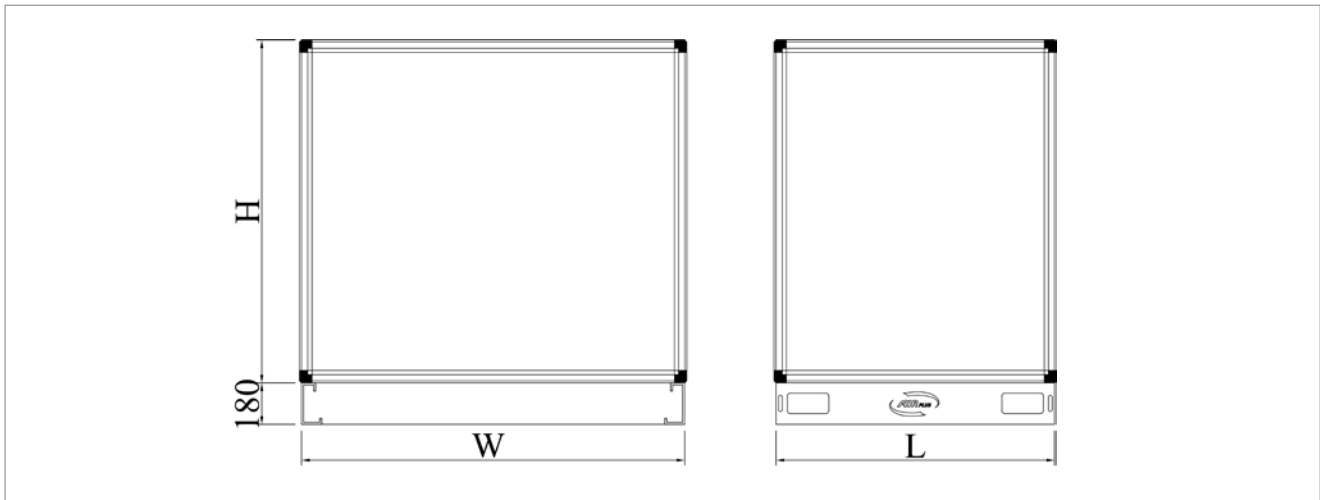
| MODEL | K1 and K2 Section Dimensions | | | | | | |
|---------------|------------------------------|---------|---------|--------|--------|---------|---------|
| | W (mm) | H1 (mm) | L1 (mm) | A (mm) | B (mm) | L2 (mm) | H2 (mm) |
| AHUPlus42-20 | 750 | 450 | 660 | 200 | 670 | 500 | 820 |
| AHUPlus42-40 | 750 | 750 | 860 | 300 | 670 | 600 | 1420 |
| AHUPlus42-60 | 1050 | 750 | 1060 | 400 | 970 | 700 | 1420 |
| AHUPlus42-80 | 1350 | 750 | 1060 | 400 | 1270 | 700 | 1420 |
| AHUPlus42-90 | 1050 | 1050 | 1260 | 500 | 970 | 800 | 2020 |
| AHUPlus42-120 | 1350 | 1050 | 1260 | 500 | 1270 | 800 | 2020 |
| AHUPlus42-150 | 1650 | 1050 | 1260 | 500 | 1570 | 800 | 2020 |
| AHUPlus42-160 | 1350 | 1350 | 1660 | 700 | 1270 | 1000 | 2620 |
| AHUPlus42-200 | 1650 | 1350 | 1660 | 700 | 1570 | 1000 | 2620 |
| AHUPlus42-240 | 1950 | 1350 | 1660 | 700 | 1870 | 1000 | 2620 |
| AHUPlus42-250 | 1650 | 1650 | 1860 | 800 | 1570 | 1100 | 3220 |
| AHUPlus42-280 | 2300 | 1350 | 1460 | 600 | 2220 | 900 | 2620 |
| AHUPlus42-300 | 1950 | 1650 | 1860 | 800 | 1870 | 1100 | 3220 |
| AHUPlus42-360 | 1950 | 1950 | 2060 | 900 | 1870 | 1200 | 3820 |
| AHUPlus42-420 | 2300 | 1950 | 2060 | 900 | 2220 | 1200 | 3820 |
| AHUPlus42-480 | 2600 | 1950 | 2060 | 900 | 2520 | 1200 | 3820 |
| AHUPlus42-490 | 2300 | 2300 | 2260 | 1000 | 2220 | 1300 | 4520 |
| AHUPlus42-560 | 2600 | 2300 | 2260 | 1000 | 2520 | 1300 | 4520 |
| AHUPlus42-600 | 3200 | 1950 | 2260 | 1000 | 3120 | 1300 | 3820 |
| AHUPlus42-640 | 2600 | 2600 | 2660 | 1200 | 2520 | 1500 | 5120 |
| AHUPlus42-700 | 3200 | 2300 | 2660 | 1200 | 3120 | 1500 | 4520 |
| AHUPlus42-800 | 3200 | 2600 | 3060 | 1400 | 3120 | 1700 | 5120 |
| AHUPlus42-960 | 3800 | 2600 | 3060 | 1400 | 3720 | 1700 | 5120 |

Section Modules of Air Handling Units

BS

Empty Section (BS)

Empty sections are located at the beginning and at the end of the Air Handling Units. Empty sections are used as separator when the Air Handling Unit is divided into appropriate sized modules.



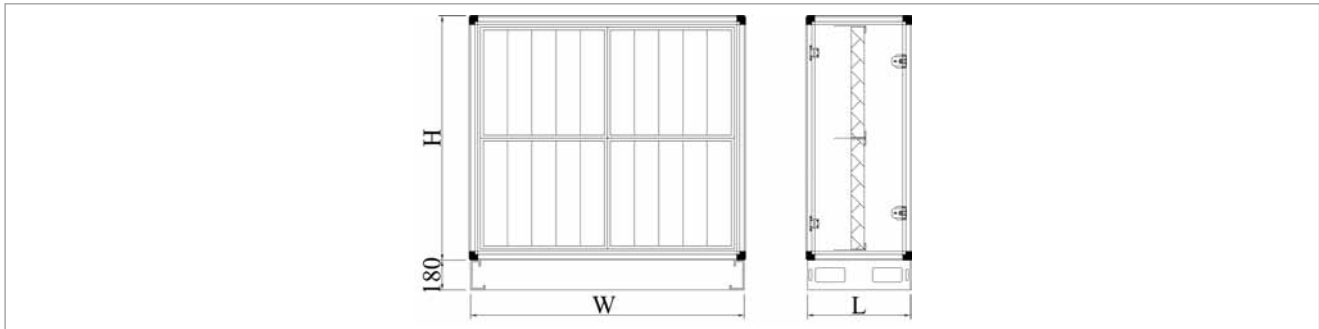
| MODEL | BS Section Dimensions | | |
|---------------|-----------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 500 |
| AHUPlus42-40 | 750 | 750 | 500 |
| AHUPlus42-60 | 1050 | 750 | 500 |
| AHUPlus42-80 | 1350 | 750 | 500 |
| AHUPlus42-90 | 1050 | 1050 | 500 |
| AHUPlus42-120 | 1350 | 1050 | 500 |
| AHUPlus42-150 | 1650 | 1050 | 500 |
| AHUPlus42-160 | 1350 | 1350 | 500 |
| AHUPlus42-200 | 1650 | 1350 | 500 |
| AHUPlus42-240 | 1950 | 1350 | 500 |
| AHUPlus42-250 | 1650 | 1650 | 500 |
| AHUPlus42-280 | 2300 | 1350 | 500 |
| AHUPlus42-300 | 1950 | 1650 | 500 |
| AHUPlus42-360 | 1950 | 1950 | 500 |
| AHUPlus42-420 | 2300 | 1950 | 500 |
| AHUPlus42-480 | 2600 | 1950 | 500 |
| AHUPlus42-490 | 2300 | 2300 | 500 |
| AHUPlus42-560 | 2600 | 2300 | 500 |
| AHUPlus42-600 | 3200 | 1950 | 500 |
| AHUPlus42-640 | 2600 | 2600 | 500 |
| AHUPlus42-700 | 3200 | 2300 | 500 |
| AHUPlus42-800 | 3200 | 2600 | 500 |
| AHUPlus42-960 | 3800 | 2600 | 500 |

Section Modules of Air Handling Units

PF

Panel Filter Section (PF)

Filtering at Air Handling Units starts with coarse filters (G3 or G4). Filters have slide or casing construction that allows them to be attached or removed easily to the Air Handling Units through inspection doors. The surface that filters going to be fit have gasket that provides air tightness. Filter cassettes are seated on these gaskets. Standard filter dimensions like 592x592x48 mm, 287x592x48 mm and 287x287x48 mm are used. Holes, that are required to connect hoses of manometers that measure the differential pressure of filter group, are made properly at the factory. Differential pressure switches can be mounted to the section on customer demand.



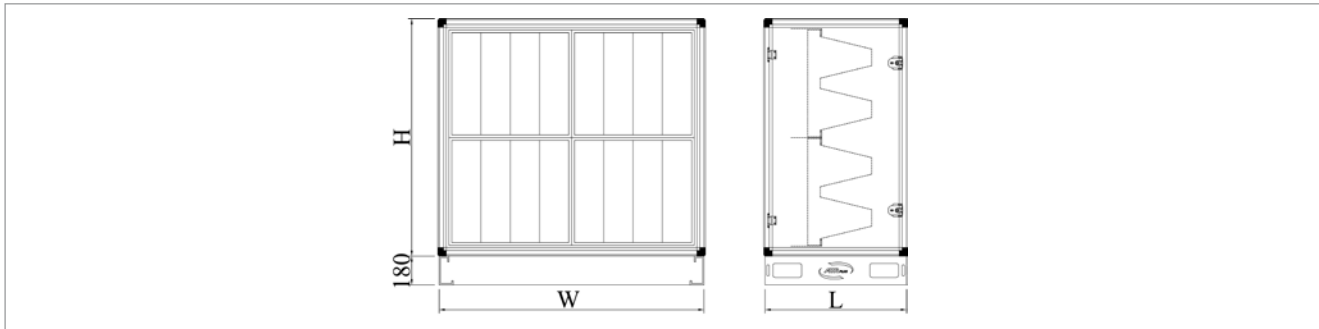
| MODEL | PF Section Dimensions | | | | | |
|---------------|-----------------------|-------------|-------------|--------------|--------------|--------------|
| | Width (mm) | Height (mm) | Length (mm) | EU4 Filter | | |
| | | | | 592x592 (mm) | 287x592 (mm) | 287x287 (mm) |
| AHUPlus42-20 | 750 | 450 | 200 | | 1 | |
| AHUPlus42-40 | 750 | 750 | 200 | 1 | | |
| AHUPlus42-60 | 1050 | 750 | 200 | 1 | 1 | |
| AHUPlus42-80 | 1350 | 750 | 200 | 2 | | |
| AHUPlus42-90 | 1050 | 1050 | 200 | 1 | 2 | 1 |
| AHUPlus42-120 | 1350 | 1050 | 200 | 2 | 2 | |
| AHUPlus42-150 | 1650 | 1050 | 200 | 2 | 3 | 1 |
| AHUPlus42-160 | 1350 | 1350 | 200 | 4 | | |
| AHUPlus42-200 | 1650 | 1350 | 200 | 4 | 2 | |
| AHUPlus42-240 | 1950 | 1350 | 200 | 6 | | |
| AHUPlus42-250 | 1650 | 1650 | 200 | 4 | 4 | 1 |
| AHUPlus42-280 | 2300 | 1350 | 200 | 6 | 2 | |
| AHUPlus42-300 | 1950 | 1650 | 200 | 6 | 3 | |
| AHUPlus42-360 | 1950 | 1950 | 200 | 9 | | |
| AHUPlus42-420 | 2300 | 1950 | 200 | 9 | 3 | |
| AHUPlus42-480 | 2600 | 1950 | 200 | 12 | | |
| AHUPlus42-490 | 2300 | 2300 | 200 | 9 | 6 | 1 |
| AHUPlus42-560 | 2600 | 2300 | 200 | 12 | 4 | |
| AHUPlus42-600 | 3200 | 1950 | 200 | 15 | | |
| AHUPlus42-640 | 2600 | 2600 | 200 | 16 | | |
| AHUPlus42-700 | 3200 | 2300 | 200 | 15 | 5 | |
| AHUPlus42-800 | 3200 | 2600 | 200 | 20 | | |
| AHUPlus42-960 | 3800 | 2600 | 200 | 24 | | |

Section Modules of Air Handling Units

KF

Compact Filter Section (KF)

Compact filters are manufactured at F7-F8-F9 efficiency level using fiberglass material. These filters are ideal for high airflow rates and durable for long time. They are used in Air Handling Units in order to achieve precise filtering at high efficient filtration systems. Filters have sled or casing construction that allows them to be attached or removed easily to the Air Handling Units through inspection doors. The surface that filters going to be fit have gasket that provides air tightness. Holes, that are required to connect hoses of manometers that measure the differential pressure of filter group, are made properly at the factory. Differential pressure switches can be mounted to the section on customer demand.



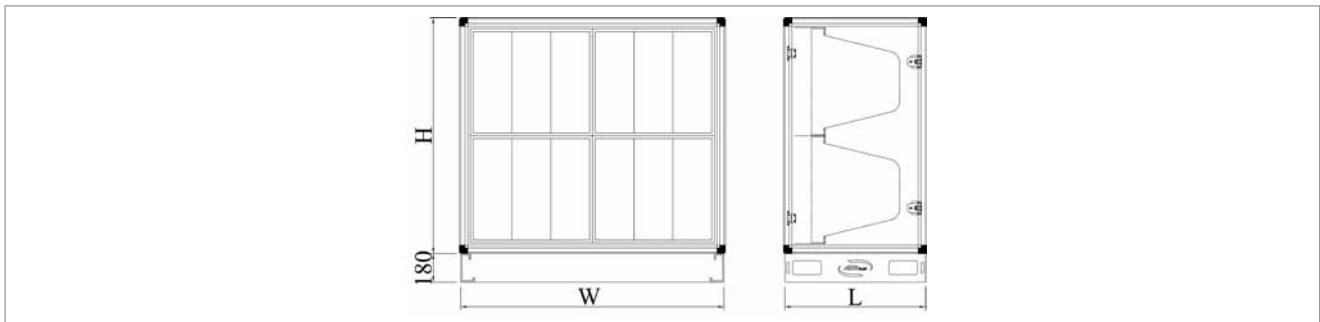
| MODEL | KF Section Dimensions | | | | |
|---------------|-----------------------|-------------|-------------|----------------|--------------|
| | Width (mm) | Height (mm) | Length (mm) | Compact Filter | |
| | | | | 592x592 (mm) | 287x592 (mm) |
| AHUPlus42-20 | 750 | 450 | 400 | | 1 |
| AHUPlus42-40 | 750 | 750 | 400 | 1 | |
| AHUPlus42-60 | 1050 | 750 | 400 | 1 | 1 |
| AHUPlus42-80 | 1350 | 750 | 400 | 2 | |
| AHUPlus42-90 | 1050 | 1050 | 400 | 1 | 2 |
| AHUPlus42-120 | 1350 | 1050 | 400 | 2 | 2 |
| AHUPlus42-150 | 1650 | 1050 | 400 | 2 | 3 |
| AHUPlus42-160 | 1350 | 1350 | 400 | 4 | |
| AHUPlus42-200 | 1650 | 1350 | 400 | 4 | 2 |
| AHUPlus42-240 | 1950 | 1350 | 400 | 6 | |
| AHUPlus42-250 | 1650 | 1650 | 400 | 4 | 4 |
| AHUPlus42-280 | 2300 | 1350 | 400 | 6 | 2 |
| AHUPlus42-300 | 1950 | 1650 | 400 | 6 | 3 |
| AHUPlus42-360 | 1950 | 1950 | 400 | 9 | |
| AHUPlus42-420 | 2300 | 1950 | 400 | 9 | 3 |
| AHUPlus42-480 | 2600 | 1950 | 400 | 12 | |
| AHUPlus42-490 | 2300 | 2300 | 400 | 9 | 6 |
| AHUPlus42-560 | 2600 | 2300 | 400 | 12 | 4 |
| AHUPlus42-600 | 3200 | 1950 | 400 | 15 | |
| AHUPlus42-640 | 2600 | 2600 | 400 | 16 | |
| AHUPlus42-700 | 3200 | 2300 | 400 | 15 | 5 |
| AHUPlus42-800 | 3200 | 2600 | 400 | 20 | |
| AHUPlus42-960 | 3800 | 2600 | 400 | 24 | |

Section Modules of Air Handling Units

TF

Bag Filter Section (TF)

Bag filters are manufactured at M5-M6-F7-F8 efficiency level using synthetic fiber material. They are manufactured with galvanized or plastic frame. They are used in Air Handling Units, after pre-filter in order to achieve precise filtering at high efficient filtration systems. Filters have sled or casing construction that allows them to be attached or removed easily to the Air Handling Units through inspection doors. The surface that filters going to be fit have gasket that provides air tightness. Holes, that are required to connect hoses of manometers that measure the differential pressure of filter group, are made properly at the factory. Differential pressure switches can be mounted to the section for automation, on customer demand.



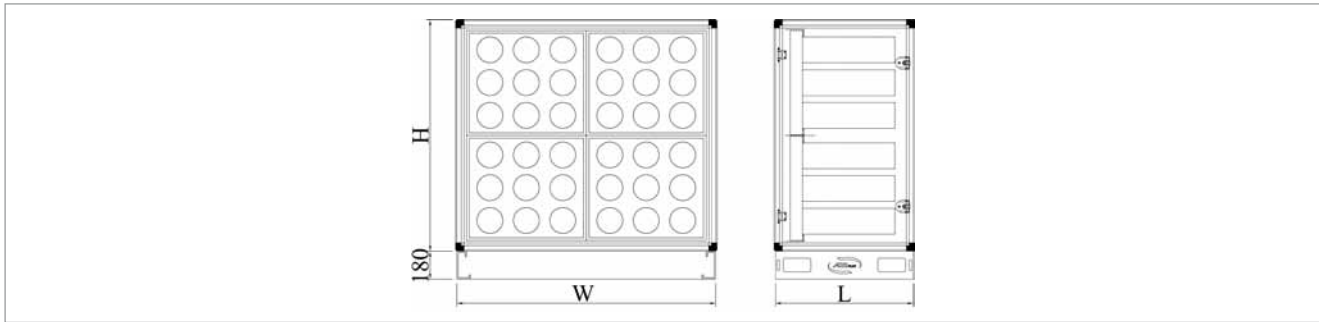
| MODEL | TF Section Dimensions | | | | | |
|---------------|-----------------------|-------------|-------------|--------------|--------------|--------------|
| | Width (mm) | Height (mm) | Length (mm) | Bag Filter | | |
| | | | | 592x592 (mm) | 287x592 (mm) | 287x287 (mm) |
| AHUPlus42-20 | 750 | 450 | 700 | | 1 | |
| AHUPlus42-40 | 750 | 750 | 700 | 1 | | |
| AHUPlus42-60 | 1050 | 750 | 700 | 1 | 1 | |
| AHUPlus42-80 | 1350 | 750 | 700 | 2 | | |
| AHUPlus42-90 | 1050 | 1050 | 700 | 1 | 2 | 1 |
| AHUPlus42-120 | 1350 | 1050 | 700 | 2 | 2 | |
| AHUPlus42-150 | 1650 | 1050 | 700 | 2 | 3 | 1 |
| AHUPlus42-160 | 1350 | 1350 | 700 | 4 | | |
| AHUPlus42-200 | 1650 | 1350 | 700 | 4 | 2 | |
| AHUPlus42-240 | 1950 | 1350 | 700 | 6 | | |
| AHUPlus42-250 | 1650 | 1650 | 700 | 4 | 4 | 1 |
| AHUPlus42-280 | 2300 | 1350 | 700 | 6 | 2 | |
| AHUPlus42-300 | 1950 | 1650 | 700 | 6 | 3 | |
| AHUPlus42-360 | 1950 | 1950 | 700 | 9 | | |
| AHUPlus42-420 | 2300 | 1950 | 700 | 9 | 3 | |
| AHUPlus42-480 | 2600 | 1950 | 700 | 12 | | |
| AHUPlus42-490 | 2300 | 2300 | 700 | 9 | 6 | 1 |
| AHUPlus42-560 | 2600 | 2300 | 700 | 12 | 4 | |
| AHUPlus42-600 | 3200 | 1950 | 700 | 15 | | |
| AHUPlus42-640 | 2600 | 2600 | 700 | 16 | | |
| AHUPlus42-700 | 3200 | 2300 | 700 | 15 | 5 | |
| AHUPlus42-800 | 3200 | 2600 | 700 | 20 | | |
| AHUPlus42-960 | 3800 | 2600 | 700 | 24 | | |

Section Modules of Air Handling Units

CF

Carbon Filter Section (CF)

Active carbon filters are used at Air Handling Units for absorbing odors at ventilation systems. Thanks to its active carbon granule filled cartridges, active carbon filters provide high efficiency and high flow rate in small sizes. According to requirement, number of cartridges can be increased by using 4, 8 or 16 holed plates. Filters can be removed or attached to the casing easily by twisting and the casing has impermeable frame construction. Differential pressure switches can be mounted to the section for automation, on customer demand.



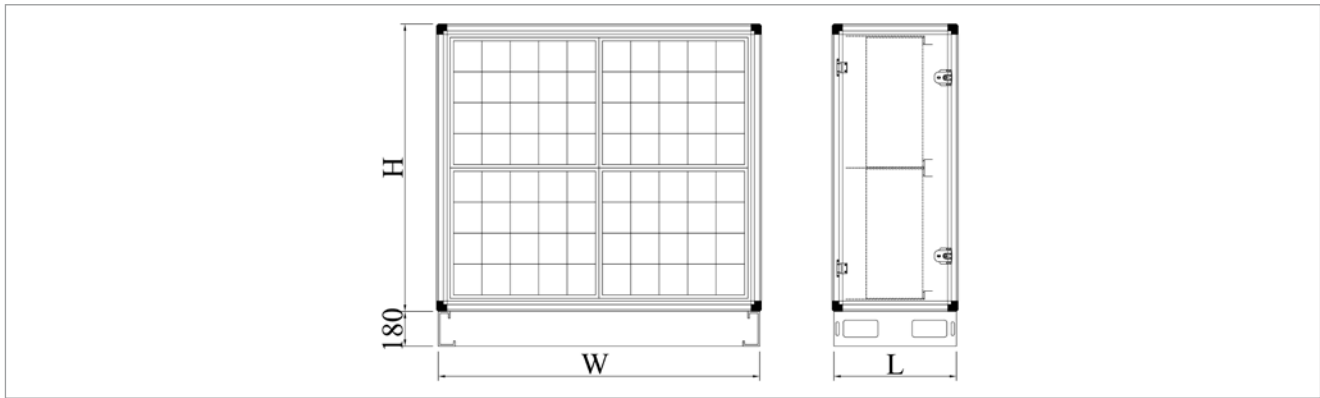
| MODEL | CF Section Dimensions | | | | | |
|---------------|-----------------------|-------------|-------------|---------------|--------------|--------------|
| | Width (mm) | Height (mm) | Length (mm) | Carbon Filter | | |
| | | | | 610x610 (mm) | 305x610 (mm) | 305x305 (mm) |
| AHUPlus42-20 | 750 | 450 | 700 | | 1 | |
| AHUPlus42-40 | 750 | 750 | 700 | 1 | | |
| AHUPlus42-60 | 1050 | 750 | 700 | 1 | 1 | |
| AHUPlus42-80 | 1350 | 750 | 700 | 2 | | |
| AHUPlus42-90 | 1050 | 1050 | 700 | 1 | 2 | 1 |
| AHUPlus42-120 | 1350 | 1050 | 700 | 2 | 2 | |
| AHUPlus42-150 | 1650 | 1050 | 700 | 2 | 3 | 1 |
| AHUPlus42-160 | 1350 | 1350 | 700 | 4 | | |
| AHUPlus42-200 | 1650 | 1350 | 700 | 4 | 2 | |
| AHUPlus42-240 | 1950 | 1350 | 700 | 6 | | |
| AHUPlus42-250 | 1650 | 1650 | 700 | 4 | 4 | 1 |
| AHUPlus42-280 | 2300 | 1350 | 700 | 6 | 2 | |
| AHUPlus42-300 | 1950 | 1650 | 700 | 6 | 3 | |
| AHUPlus42-360 | 1950 | 1950 | 700 | 9 | | |
| AHUPlus42-420 | 2300 | 1950 | 700 | 9 | 3 | |
| AHUPlus42-480 | 2600 | 1950 | 700 | 12 | | |
| AHUPlus42-490 | 2300 | 2300 | 700 | 9 | 6 | 1 |
| AHUPlus42-560 | 2600 | 2300 | 700 | 12 | 4 | |
| AHUPlus42-600 | 3200 | 1950 | 700 | 15 | | |
| AHUPlus42-640 | 2600 | 2600 | 700 | 16 | | |
| AHUPlus42-700 | 3200 | 2300 | 700 | 15 | 5 | |
| AHUPlus42-800 | 3200 | 2600 | 700 | 20 | | |
| AHUPlus42-960 | 3800 | 2600 | 700 | 24 | | |

Section Modules of Air Handling Units

HF

Hepa Filter Section (HF)

Hepa filters are manufactured at H11-H12-H13-H14 efficiency level using high quality synthetic fiber material. They are used in Air Handling Units at clean room applications and at supply and exhaust ventilation systems of pharmaceutical and nuclear facilities. Filters have special, impermeable frame construction that can be attached or removed easily through inspection doors. Differential pressure switches can be mounted to the section for automation, on customer demand.



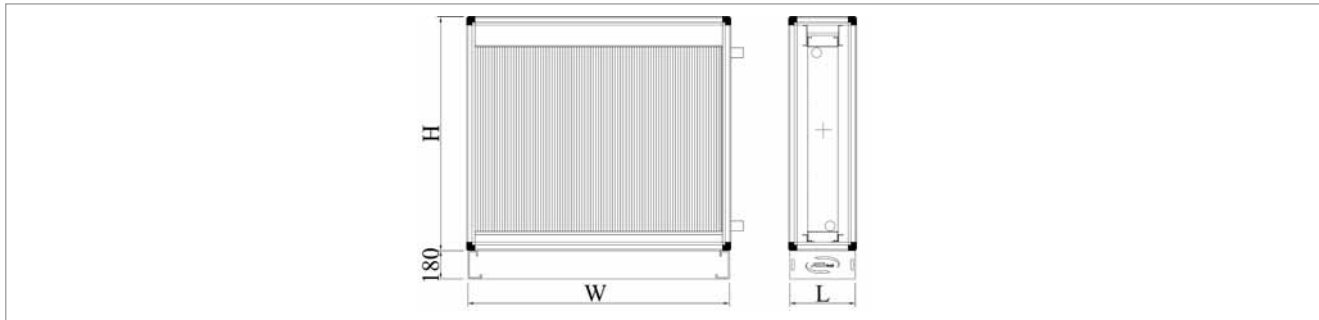
| MODEL | HF Section Dimensions | | | | | |
|---------------|-----------------------|-------------|-------------|--------------|--------------|--------------|
| | Width (mm) | Height (mm) | Length (mm) | Hepa Filter | | |
| | | | | 610x610 (mm) | 305x610 (mm) | 305x305 (mm) |
| AHUPlus42-20 | 750 | 450 | 400 | | 1 | |
| AHUPlus42-40 | 750 | 750 | 400 | 1 | | |
| AHUPlus42-60 | 1050 | 750 | 400 | 1 | 1 | |
| AHUPlus42-80 | 1350 | 750 | 400 | 2 | | |
| AHUPlus42-90 | 1050 | 1050 | 400 | 1 | 2 | 1 |
| AHUPlus42-120 | 1350 | 1050 | 400 | 2 | 2 | |
| AHUPlus42-150 | 1650 | 1050 | 400 | 2 | 3 | 1 |
| AHUPlus42-160 | 1350 | 1350 | 400 | 4 | | |
| AHUPlus42-200 | 1650 | 1350 | 400 | 4 | 2 | |
| AHUPlus42-240 | 1950 | 1350 | 400 | 6 | | |
| AHUPlus42-250 | 1650 | 1650 | 400 | 4 | 4 | 1 |
| AHUPlus42-280 | 2300 | 1350 | 400 | 6 | 2 | |
| AHUPlus42-300 | 1950 | 1650 | 400 | 6 | 3 | |
| AHUPlus42-360 | 1950 | 1950 | 400 | 9 | | |
| AHUPlus42-420 | 2300 | 1950 | 400 | 9 | 3 | |
| AHUPlus42-480 | 2600 | 1950 | 400 | 12 | | |
| AHUPlus42-490 | 2300 | 2300 | 400 | 9 | 6 | 1 |
| AHUPlus42-560 | 2600 | 2300 | 400 | 12 | 4 | |
| AHUPlus42-600 | 3200 | 1950 | 400 | 15 | | |
| AHUPlus42-640 | 2600 | 2600 | 400 | 16 | | |
| AHUPlus42-700 | 3200 | 2300 | 400 | 15 | 5 | |
| AHUPlus42-800 | 3200 | 2600 | 400 | 20 | | |
| AHUPlus42-960 | 3800 | 2600 | 400 | 24 | | |

Section Modules of Air Handling Units

IB

Heating Coil Section (IB)

Standard heating coils are made of copper coil and aluminum lamellas, with galvanized sheet frame and steel collector. While manufacturing the heating coils, 1/2" and 5/8" diameter copper coils are inflated mechanically and tight contacts with lamellas are ensured. Coil mouths are extended out of the body and the impermeability is provided with rubber gasket. Coils have discharge and air relief cocks for discharging. Coils are mounted on to sleds in order to be removed from the side of the Air Handling Unit after the side panel is dismantled. Our standard coil selection principles are; maximum 3 m/s air velocity on the surface of coil, minimum 2,1 mm pitch gap, maximum 25 kPa water pressure loss. Selection is made under control of selection software in accordance with these principles. Temperature sensor can be mounted to the section for automation, on customer demand.



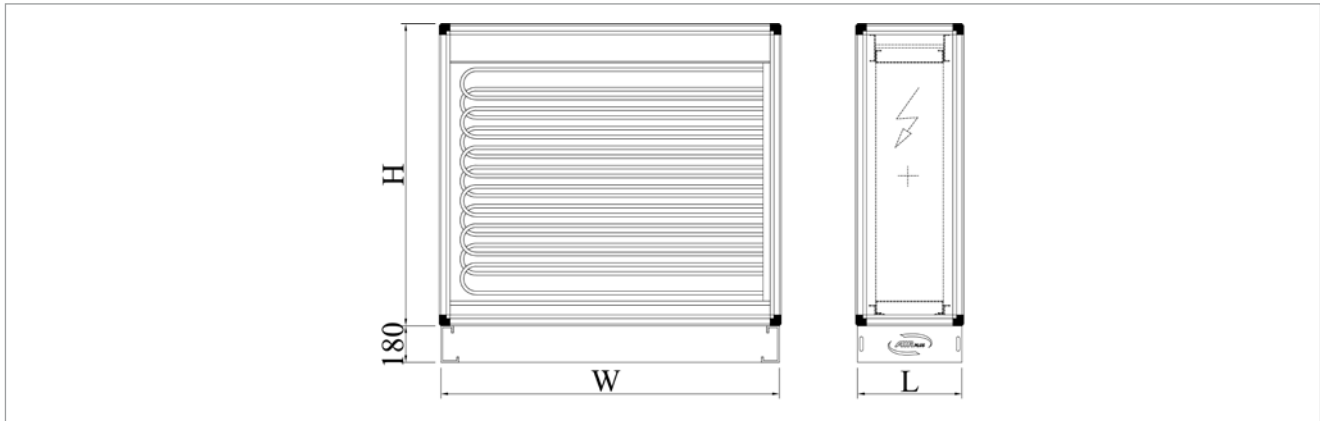
| MODEL | IB Section Dimensions | | |
|---------------|-----------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 250 |
| AHUPlus42-40 | 750 | 750 | 250 |
| AHUPlus42-60 | 1050 | 750 | 250 |
| AHUPlus42-80 | 1350 | 750 | 250 |
| AHUPlus42-90 | 1050 | 1050 | 250 |
| AHUPlus42-120 | 1350 | 1050 | 250 |
| AHUPlus42-150 | 1650 | 1050 | 250 |
| AHUPlus42-160 | 1350 | 1350 | 250 |
| AHUPlus42-200 | 1650 | 1350 | 250 |
| AHUPlus42-240 | 1950 | 1350 | 250 |
| AHUPlus42-250 | 1650 | 1650 | 250 |
| AHUPlus42-280 | 2300 | 1350 | 250 |
| AHUPlus42-300 | 1950 | 1650 | 250 |
| AHUPlus42-360 | 1950 | 1950 | 250 |
| AHUPlus42-420 | 2300 | 1950 | 250 |
| AHUPlus42-480 | 2600 | 1950 | 250 |
| AHUPlus42-490 | 2300 | 2300 | 250 |
| AHUPlus42-560 | 2600 | 2300 | 250 |
| AHUPlus42-600 | 3200 | 1950 | 250 |
| AHUPlus42-640 | 2600 | 2600 | 250 |
| AHUPlus42-700 | 3200 | 2300 | 250 |
| AHUPlus42-800 | 3200 | 2600 | 250 |
| AHUPlus42-960 | 3800 | 2600 | 250 |

Section Modules of Air Handling Units

EB

Electrical Heater Section (EB)

Electrical heaters used in Air Handling Units in order to heat ambient in cold climates. Standard electrical heaters are manufactured with galvanized casing and 304 quality stainless tube coils. Heaters have special frame construction in order to remove and attach easily through inspection doors. Electrical heater can be manufactured as gradually controlled. Temperature sensor and limit thermostat for automation can be mounted to section on customer demand.



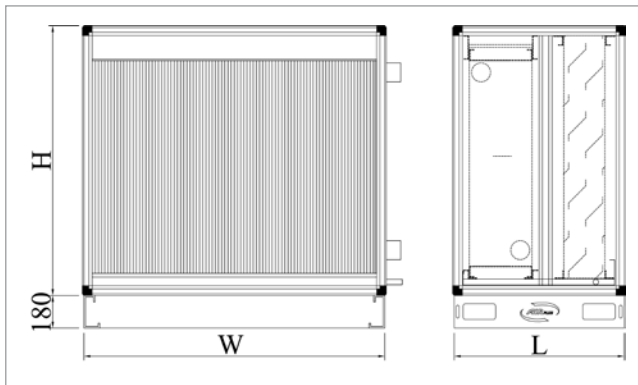
| MODEL | EB Section Dimensions | | |
|---------------|-----------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 300 |
| AHUPlus42-40 | 750 | 750 | 300 |
| AHUPlus42-60 | 1050 | 750 | 300 |
| AHUPlus42-80 | 1350 | 750 | 300 |
| AHUPlus42-90 | 1050 | 1050 | 400 |
| AHUPlus42-120 | 1350 | 1050 | 400 |
| AHUPlus42-150 | 1650 | 1050 | 400 |
| AHUPlus42-160 | 1350 | 1350 | 400 |
| AHUPlus42-200 | 1650 | 1350 | 400 |
| AHUPlus42-240 | 1950 | 1350 | 500 |
| AHUPlus42-250 | 1650 | 1650 | 500 |
| AHUPlus42-280 | 2300 | 1350 | 500 |
| AHUPlus42-300 | 1950 | 1650 | 500 |
| AHUPlus42-360 | 1950 | 1950 | 500 |
| AHUPlus42-420 | 2300 | 1950 | 500 |
| AHUPlus42-480 | 2600 | 1950 | 600 |
| AHUPlus42-490 | 2300 | 2300 | 600 |
| AHUPlus42-560 | 2600 | 2300 | 600 |
| AHUPlus42-600 | 3200 | 1950 | 600 |
| AHUPlus42-640 | 2600 | 2600 | 600 |
| AHUPlus42-700 | 3200 | 2300 | 600 |
| AHUPlus42-800 | 3200 | 2600 | 600 |
| AHUPlus42-960 | 3800 | 2600 | 600 |

Section Modules of Air Handling Units

SB

Cooling Coil Section (SB)

Cold-water coils and direct expansion (DX) coils are used at Air Handling Units for cooling. Standard cold-water coils are made of copper coil and aluminum lamellas, with galvanized sheet frame and steel collector. While manufacturing the cooling coils, 1/2" and 5/8" diameter copper coils are inflated mechanically and tight contacts with lamellas are ensured. Coil mouths are extended out of the body and the impermeability is provided with rubber gasket.



Coils have discharge and air relief cocks. Coils are mounted on to sleds in order to be removed from the side of the Air Handling Unit after the side panel is dismantled. There is inclined condensation pan made of 304-quality stainless steel under the cooling coils. Stainless steel, threaded drainage pipe with 1" external diameter is extended out of the body in an airtight way. Drainage siphon is provided with the unit. In Air Handling Units that have cooling coil, a drift eliminator is placed at the air outlet side of the cooling coil in order to prevent condensed air to be drifted along with the air. Drift eliminators are made of polypropylene or aluminum profile. These profiles are arranged on a stainless comb that designed to prevent passage of the water particles. Our standard cooling coil selection principles are; maximum 2,7 m/s air velocity on the surface of coil, minimum 2,5 mm pitch gap, maximum 40 kPa water pressure loss. Selection is made under control of selection software in accordance with these principles. Temperature sensor and/or frost thermostat can be mounted to the section for automation, on customer demand.

| MODEL | SB Section Dimensions | | |
|---------------|-----------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 650 |
| AHUPlus42-40 | 750 | 750 | 650 |
| AHUPlus42-60 | 1050 | 750 | 650 |
| AHUPlus42-80 | 1350 | 750 | 650 |
| AHUPlus42-90 | 1050 | 1050 | 650 |
| AHUPlus42-120 | 1350 | 1050 | 650 |
| AHUPlus42-150 | 1650 | 1050 | 650 |
| AHUPlus42-160 | 1350 | 1350 | 650 |
| AHUPlus42-200 | 1650 | 1350 | 650 |
| AHUPlus42-240 | 1950 | 1350 | 650 |
| AHUPlus42-250 | 1650 | 1650 | 650 |
| AHUPlus42-280 | 2300 | 1350 | 650 |
| AHUPlus42-300 | 1950 | 1650 | 650 |
| AHUPlus42-360 | 1950 | 1950 | 650 |
| AHUPlus42-420 | 2300 | 1950 | 650 |
| AHUPlus42-480 | 2600 | 1950 | 650 |
| AHUPlus42-490 | 2300 | 2300 | 650 |
| AHUPlus42-560 | 2600 | 2300 | 650 |
| AHUPlus42-600 | 3200 | 1950 | 650 |
| AHUPlus42-640 | 2600 | 2600 | 650 |
| AHUPlus42-700 | 3200 | 2300 | 650 |
| AHUPlus42-800 | 3200 | 2600 | 650 |
| AHUPlus42-960 | 3800 | 2600 | 650 |

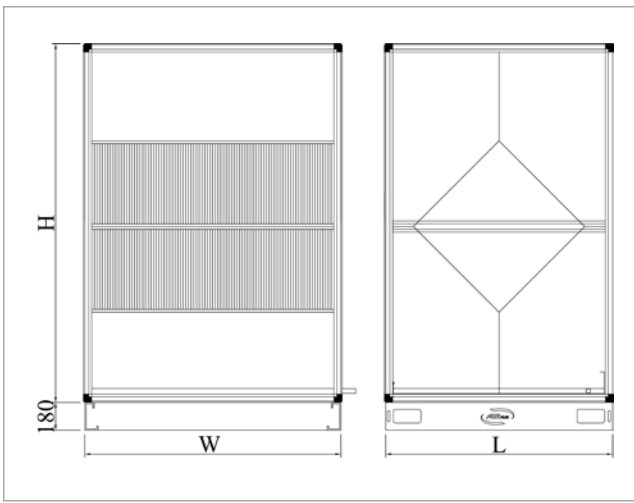
Section Modules of Air Handling Units

P-IGK

Plate Type Heat Recovery Section (P-IGK)

Fixed plate heat recovery units that are used at cross flow plate system are usually made of formed aluminum sheet. Exhaust and fresh air passes through separate sections so

they are not mixed. Thanks to plate type heat exchangers, 45-65% efficiency (according to outside air and ambient air conditions) is achieved.



Therefore, by the energy provided from wasted energy, operating costs are minimized. There is inclined condensation pan made of 304-quality stainless steel under the plate type heat exchanger. Stainless steel, threaded drainage pipe with 3/4" external diameter is extended out of the body in an airtight way. Drainage siphon is provided with the unit. There is G3 type cassette filter before plate type heat exchanger on both supply and return circuits. By-pass applications with by-pass damper can be made, on customer demand.

Temperature sensor and/or frost thermostat can be mounted to the section for automation, on customer demand.

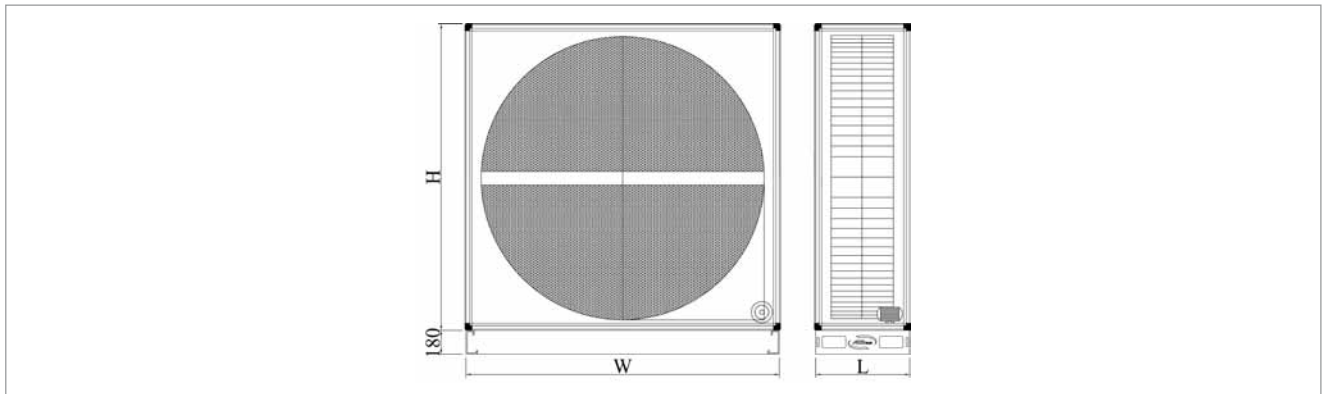
| MODEL | P-IGK Section Dimensions | | |
|---------------|--------------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 820 | 800 |
| AHUPlus42-40 | 750 | 1420 | 1100 |
| AHUPlus42-60 | 1050 | 1420 | 1100 |
| AHUPlus42-80 | 1350 | 1420 | 1100 |
| AHUPlus42-90 | 1050 | 2020 | 1500 |
| AHUPlus42-120 | 1350 | 2020 | 1500 |
| AHUPlus42-150 | 1650 | 2020 | 1700 |
| AHUPlus42-160 | 1350 | 2620 | 1800 |
| AHUPlus42-200 | 1650 | 2620 | 1800 |
| AHUPlus42-240 | 1950 | 2620 | 2000 |
| AHUPlus42-250 | 1650 | 3220 | 2200 |
| AHUPlus42-280 | 2300 | 2620 | 2200 |
| AHUPlus42-300 | 1950 | 3220 | 2200 |
| AHUPlus42-360 | 1950 | 3820 | 2700 |
| AHUPlus42-420 | 2300 | 3820 | 2700 |
| AHUPlus42-480 | 2600 | 3820 | 2700 |
| AHUPlus42-490 | 2300 | 4520 | 3000 |
| AHUPlus42-560 | 2600 | 4520 | 3100 |
| AHUPlus42-600 | 3200 | 3820 | 3100 |
| AHUPlus42-640 | 2600 | 5120 | 3100 |
| AHUPlus42-700 | 3200 | 4520 | 3100 |
| AHUPlus42-800 | 3200 | 5120 | 3100 |
| AHUPlus42-960 | 3800 | 5120 | 3200 |

Section Modules of Air Handling Units

R-IGK

Rotary Type Heat Recovery Section (R-IGK)

At rotary systems, heat recovery is provided by rotating heat exchanger wheel. At rotary systems, rotating wheel's cylinders are filled with permeable material with wide internal surface area. While the heat exchanger rotary turns, it carries the temperature and humidity of ambient air and this temperature and humidity are absorbed by cold air. Heat recovery efficiency is not under 75%. Beside heat transfer made at winter, energy transfer and dehumidification processes can be done also at summer. Rotary is driven by a small motor in order to turn it at proper speed.



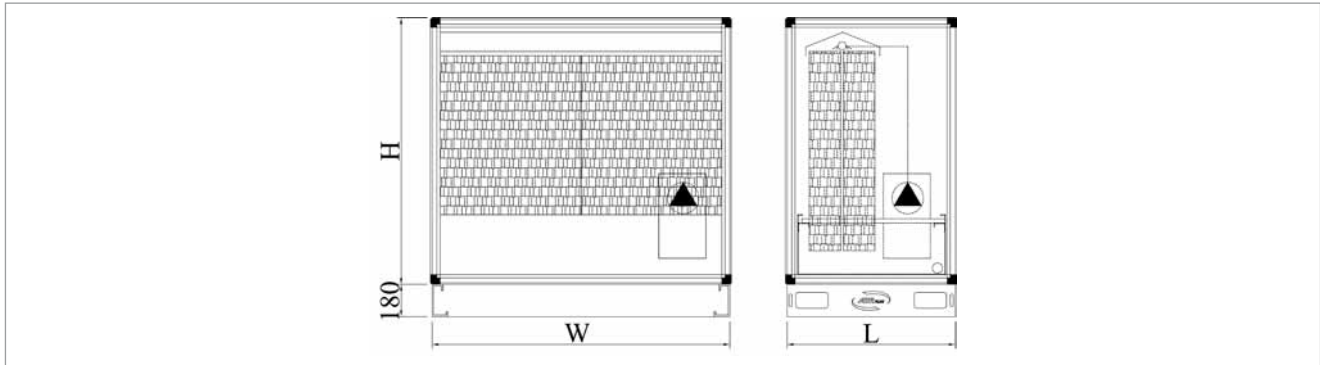
| MODEL | R-IGK Section Dimensions | | |
|---------------|--------------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 820 | 600 |
| AHUPlus42-40 | 750 | 1420 | 600 |
| AHUPlus42-60 | 1050 | 1420 | 600 |
| AHUPlus42-80 | 1350 | 1420 | 600 |
| AHUPlus42-90 | 1050 | 2020 | 600 |
| AHUPlus42-120 | 1350 | 2020 | 600 |
| AHUPlus42-150 | 1650 | 2020 | 600 |
| AHUPlus42-160 | 1350 | 2620 | 600 |
| AHUPlus42-200 | 1650 | 2620 | 600 |
| AHUPlus42-240 | 1950 | 2620 | 600 |
| AHUPlus42-250 | 1650 | 3220 | 600 |
| AHUPlus42-280 | 2300 | 2620 | 600 |
| AHUPlus42-300 | 1950 | 3220 | 600 |
| AHUPlus42-360 | 1950 | 3820 | 600 |
| AHUPlus42-420 | 2300 | 3820 | 900 |
| AHUPlus42-480 | 2600 | 3820 | 900 |
| AHUPlus42-490 | 2300 | 4520 | 900 |
| AHUPlus42-560 | 2600 | 4520 | 900 |
| AHUPlus42-600 | 3200 | 3820 | 900 |
| AHUPlus42-640 | 2600 | 5120 | 900 |
| AHUPlus42-700 | 3200 | 4520 | 900 |
| AHUPlus42-800 | 3200 | 5120 | 900 |
| AHUPlus42-960 | 3800 | 5120 | 900 |

Section Modules of Air Handling Units

PN

Evaporative Humidifier Section (PN)

The humidifier pads on the stainless steel pool located in the standard double-walled section structure humidifies dry air by evaporating. Humidifier pads are in different thickness due to their humidification efficiency. When the air velocity on the pads is 2 m/s, at 65% efficiency, pad thickness is 100 mm at 85% efficiency pad thickness is 200 mm; at 95% efficiency pad thickness is 300 mm. In this type of humidification applications, drift eliminators are (as standard) used if the air velocity is above 3,5 m/s. Circulation pump used in this humidifier, which is working as a closed water circuit, has a very low capacity comparing to other applications. In this section, in order to control and access to the pump and other circuit equipment, sight glass and inspection door are standard.



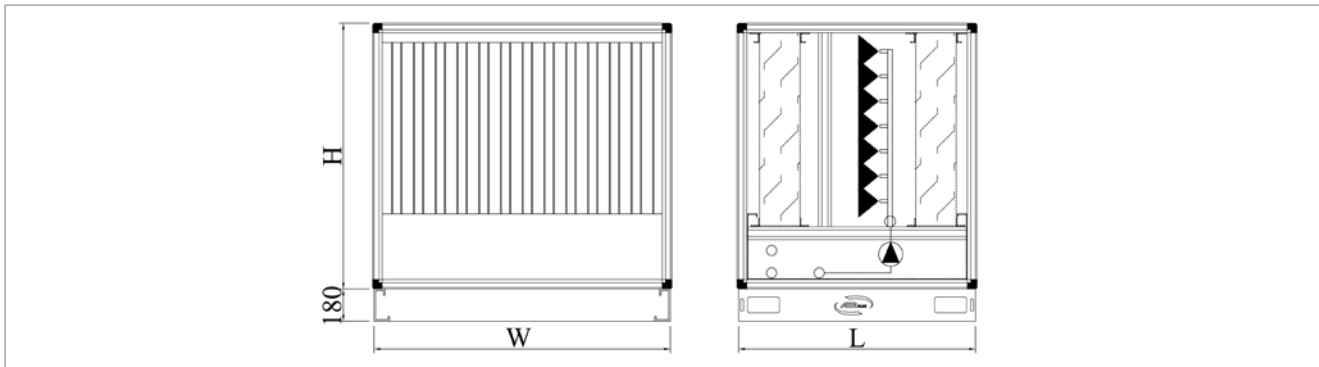
| MODEL | PN Section Dimensions | | |
|---------------|-----------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 1000 |
| AHUPlus42-40 | 750 | 750 | 1000 |
| AHUPlus42-60 | 1050 | 750 | 1000 |
| AHUPlus42-80 | 1350 | 750 | 1000 |
| AHUPlus42-90 | 1050 | 1050 | 1000 |
| AHUPlus42-120 | 1350 | 1050 | 1000 |
| AHUPlus42-150 | 1650 | 1050 | 1000 |
| AHUPlus42-160 | 1350 | 1350 | 1000 |
| AHUPlus42-200 | 1650 | 1350 | 1000 |
| AHUPlus42-240 | 1950 | 1350 | 1000 |
| AHUPlus42-250 | 1650 | 1650 | 1000 |
| AHUPlus42-280 | 2300 | 1350 | 1000 |
| AHUPlus42-300 | 1950 | 1650 | 1000 |
| AHUPlus42-360 | 1950 | 1950 | 1000 |
| AHUPlus42-420 | 2300 | 1950 | 1000 |
| AHUPlus42-480 | 2600 | 1950 | 1000 |
| AHUPlus42-490 | 2300 | 2300 | 1000 |
| AHUPlus42-560 | 2600 | 2300 | 1000 |
| AHUPlus42-600 | 3200 | 1950 | 1000 |
| AHUPlus42-640 | 2600 | 2600 | 1000 |
| AHUPlus42-700 | 3200 | 2300 | 1000 |
| AHUPlus42-800 | 3200 | 2600 | 1000 |
| AHUPlus42-960 | 3800 | 2600 | 1000 |

Section Modules of Air Handling Units

SN

Water Type Humidifier Section (SN)

Water type humidifiers are designed to block dust and similar particles in the air, to meet humidification requirements and to serve evaporative cooling purposes. There is 304-quality stainless sheet section construction that is watertight inside of standard double-walled section structure. There is air and watertight inspection door and sight glass in order to access to the section. According to airflow direction, there are, in sequence; water retaining blades and drop eliminator at the air outlet. Thanks to sprinklers, water is pulverized in the section and dry air is humidified. Pump and other parts are located outside the section.



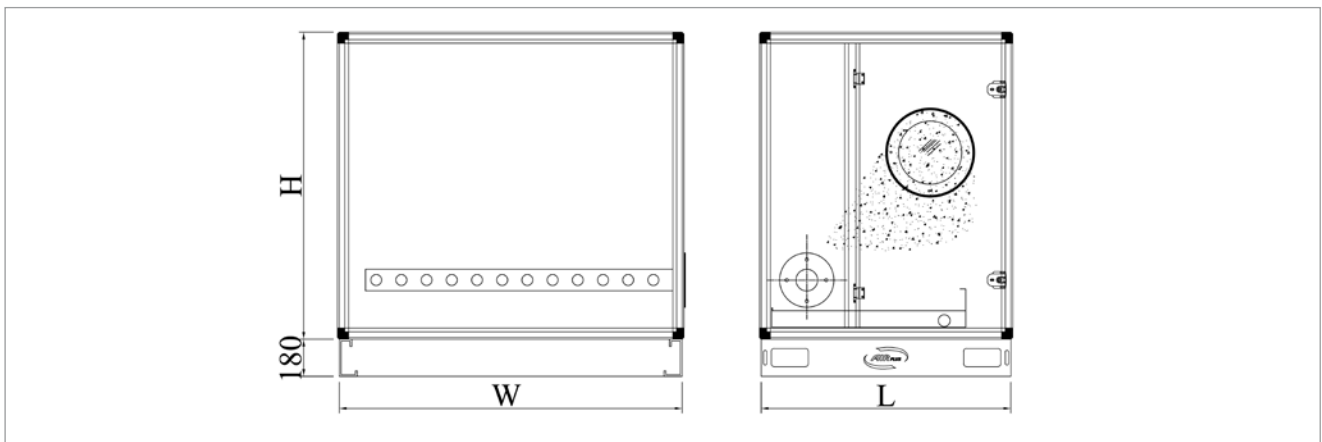
| MODEL | SN Section Dimensions | | |
|---------------|-----------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 1300 |
| AHUPlus42-40 | 750 | 750 | 1300 |
| AHUPlus42-60 | 1050 | 750 | 1300 |
| AHUPlus42-80 | 1350 | 750 | 1300 |
| AHUPlus42-90 | 1050 | 1050 | 1300 |
| AHUPlus42-120 | 1350 | 1050 | 1300 |
| AHUPlus42-150 | 1650 | 1050 | 1300 |
| AHUPlus42-160 | 1350 | 1350 | 1300 |
| AHUPlus42-200 | 1650 | 1350 | 1300 |
| AHUPlus42-240 | 1950 | 1350 | 1300 |
| AHUPlus42-250 | 1650 | 1650 | 1300 |
| AHUPlus42-280 | 2300 | 1350 | 1300 |
| AHUPlus42-300 | 1950 | 1650 | 1300 |
| AHUPlus42-360 | 1950 | 1950 | 1300 |
| AHUPlus42-420 | 2300 | 1950 | 1300 |
| AHUPlus42-480 | 2600 | 1950 | 1300 |
| AHUPlus42-490 | 2300 | 2300 | 1300 |
| AHUPlus42-560 | 2600 | 2300 | 1300 |
| AHUPlus42-600 | 3200 | 1950 | 1300 |
| AHUPlus42-640 | 2600 | 2600 | 1300 |
| AHUPlus42-700 | 3200 | 2300 | 1300 |
| AHUPlus42-800 | 3200 | 2600 | 1300 |
| AHUPlus42-960 | 3800 | 2600 | 1300 |

Section Modules of Air Handling Units

BN

Steam Type Humidifier Section (BN)

There is sight glass at the section. There is standard steam hose and stainless steel steam nozzle application. Steam humidification diffusers produced by different brands can be used.



| MODEL | BN Section Dimensions | | |
|---------------|-----------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 1000 |
| AHUPlus42-40 | 750 | 750 | 1000 |
| AHUPlus42-60 | 1050 | 750 | 1000 |
| AHUPlus42-80 | 1350 | 750 | 1000 |
| AHUPlus42-90 | 1050 | 1050 | 1000 |
| AHUPlus42-120 | 1350 | 1050 | 1000 |
| AHUPlus42-150 | 1650 | 1050 | 1000 |
| AHUPlus42-160 | 1350 | 1350 | 1000 |
| AHUPlus42-200 | 1650 | 1350 | 1000 |
| AHUPlus42-240 | 1950 | 1350 | 1000 |
| AHUPlus42-250 | 1650 | 1650 | 1000 |
| AHUPlus42-280 | 2300 | 1350 | 1000 |
| AHUPlus42-300 | 1950 | 1650 | 1000 |
| AHUPlus42-360 | 1950 | 1950 | 1000 |
| AHUPlus42-420 | 2300 | 1950 | 1000 |
| AHUPlus42-480 | 2600 | 1950 | 1000 |
| AHUPlus42-490 | 2300 | 2300 | 1000 |
| AHUPlus42-560 | 2600 | 2300 | 1000 |
| AHUPlus42-600 | 3200 | 1950 | 1000 |
| AHUPlus42-640 | 2600 | 2600 | 1000 |
| AHUPlus42-700 | 3200 | 2300 | 1000 |
| AHUPlus42-800 | 3200 | 2600 | 1000 |
| AHUPlus42-960 | 3800 | 2600 | 1000 |

Section Modules of Air Handling Units

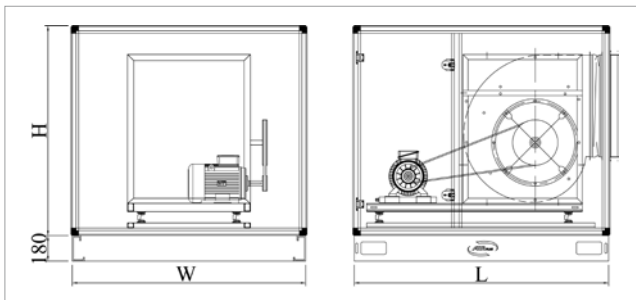
FH1

Fan Section (FH)

With Double Inlet Centrifugal Fan (FH1)

Power transmission of double inlet centrifugal fan and electric motor used at ventilator and aspirator sections of our Air Handling Units are made by belt and pulley system. Thanks to this system, rotation speed of fan can be set as intended and optimal flow rate and pressure settings can be made. When the differential pressure between exhaust and supply mouths are below 900 Pa, forward curved fans are selected as standard and when the total pressure is

above 900 Pa backward curved fans are selected as standard controlled by computer. At the fan section, fan, electric motor and belt-pulley system are attached to reinforced C profile chassis and the whole system is placed onto castermid-based sound and vibration absorbing springs. Electric motor is placed on belt stretching fixings which is special, strengthened sheet construction for belt stretching and these fixings contains standard feet holes for one step higher and one step lower motor power. There is leak proof flexible connection (connector) with sheet flanges on both ends between fan section outlet and fan blowing mouth. Galvanized sheet flanges are used at the fan section outlet as standard. Inspection doors with gapless hinge and Air Handling Unit lock which does not form any protrusion inside the section, is placed to allow easy access to fan and motor and provides easy interference. Double glass, sealed sight window is placed to the inspection door and moisture proof lighting is placed into the fan section.



| MODEL | FH1 Section Dimensions | | |
|---------------|------------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 900 |
| AHUPlus42-40 | 750 | 750 | 1000 |
| AHUPlus42-60 | 1050 | 750 | 1000 |
| AHUPlus42-80 | 1350 | 750 | 1300 |
| AHUPlus42-90 | 1050 | 1050 | 1300 |
| AHUPlus42-120 | 1350 | 1050 | 1300 |
| AHUPlus42-150 | 1650 | 1050 | 1500 |
| AHUPlus42-160 | 1350 | 1350 | 1500 |
| AHUPlus42-200 | 1650 | 1350 | 1600 |
| AHUPlus42-240 | 1950 | 1350 | 1600 |
| AHUPlus42-250 | 1650 | 1650 | 1600 |
| AHUPlus42-280 | 2300 | 1350 | 1800 |
| AHUPlus42-300 | 1950 | 1650 | 1800 |
| AHUPlus42-360 | 1950 | 1950 | 2000 |
| AHUPlus42-420 | 2300 | 1950 | 2000 |
| AHUPlus42-480 | 2600 | 1950 | 2200 |
| AHUPlus42-490 | 2300 | 2300 | 2200 |
| AHUPlus42-560 | 2600 | 2300 | 2200 |
| AHUPlus42-600 | 3200 | 1950 | 2400 |
| AHUPlus42-640 | 2600 | 2600 | 2400 |
| AHUPlus42-700 | 3200 | 2300 | 2400 |
| AHUPlus42-800 | 3200 | 2600 | 2400 |
| AHUPlus42-960 | 3800 | 2600 | 2400 |

Section Modules of Air Handling Units

FH2

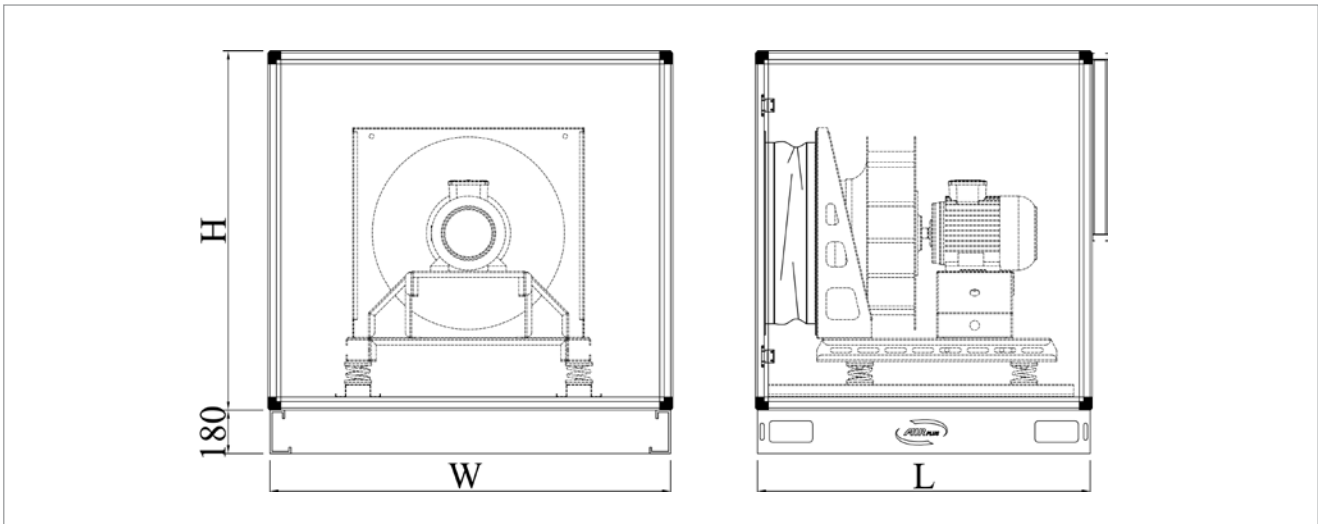
Fan Section (FH)

With Plug Fan (FH2)

At plug fan applications, motor shaft is connected directly to fan hub without any interconnect components.

Motor rotation speed is equal to fan rotation speed, and

precise rotation adjustment, hence flow rate/pressure adjustment can be made by using frequency inverter. Electric motors are IP54 protection class, 2-4 pole, 380 V, 50 Hz and surface cooled. Terminal box is IP55 protection class and the motors with accordance to IEC 34-6 requirements are used.



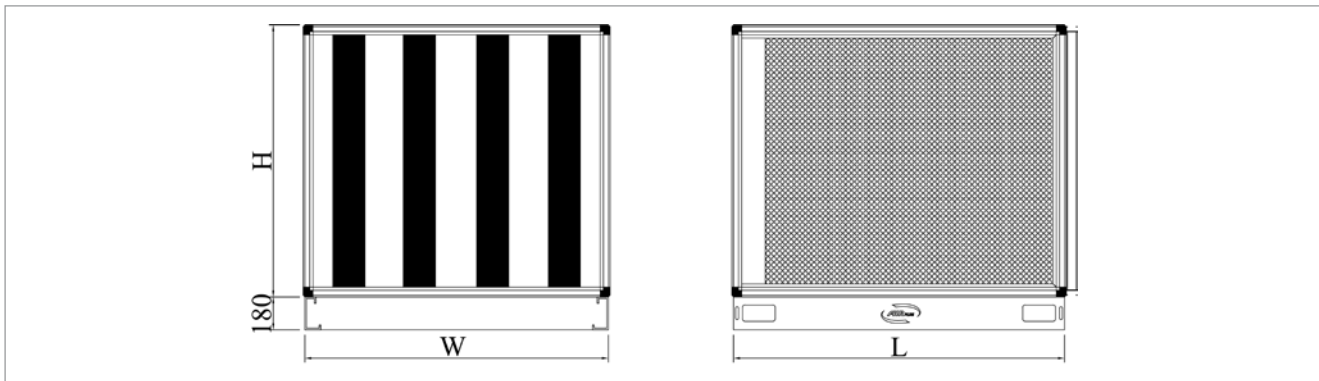
| MODEL | FH2 Section Dimensions | | |
|---------------|------------------------|-------------|-------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 600 |
| AHUPlus42-40 | 750 | 750 | 650 |
| AHUPlus42-60 | 1050 | 750 | 650 |
| AHUPlus42-80 | 1350 | 750 | 850 |
| AHUPlus42-90 | 1050 | 1050 | 850 |
| AHUPlus42-120 | 1350 | 1050 | 1000 |
| AHUPlus42-150 | 1650 | 1050 | 1000 |
| AHUPlus42-160 | 1350 | 1350 | 1000 |
| AHUPlus42-200 | 1650 | 1350 | 1200 |
| AHUPlus42-240 | 1950 | 1350 | 1200 |
| AHUPlus42-250 | 1650 | 1650 | 1200 |
| AHUPlus42-280 | 2300 | 1350 | 1200 |
| AHUPlus42-300 | 1950 | 1650 | 1200 |
| AHUPlus42-360 | 1950 | 1950 | 1400 |
| AHUPlus42-420 | 2300 | 1950 | 1400 |
| AHUPlus42-480 | 2600 | 1950 | 1400 |
| AHUPlus42-490 | 2300 | 2300 | 1400 |

Section Modules of Air Handling Units

SH

Sound Attenuating Section (SH)

Sound absorption splitters are installed vertically into the section. Rockwool panels resistant to 650 °C temperature that do not absorb moisture are used as sound absorption material. Splitter frames are manufactured from galvanized sheet. Surface of the sound absorption material is covered with fiberglass and erosion of sound absorption material is prevented. Distance between splitters and air velocity is determined as optimal in order to provide maximum sound attenuation. Unless otherwise stated, maximum pressure loss at sound attenuator section is determined as 50 Pa.



| MODEL | SH Section Dimensions | | |
|---------------|-----------------------|-------------|--------------------|
| | Width (mm) | Height (mm) | Length (mm) |
| AHUPlus42-20 | 750 | 450 | 1000 - 1500 |
| AHUPlus42-40 | 750 | 750 | 1000 - 1500 |
| AHUPlus42-60 | 1050 | 750 | 1000 - 1500 |
| AHUPlus42-80 | 1350 | 750 | 1000 - 1500 |
| AHUPlus42-90 | 1050 | 1050 | 1000 - 1500 |
| AHUPlus42-120 | 1350 | 1050 | 1000 - 1500 |
| AHUPlus42-150 | 1650 | 1050 | 1000 - 1500 |
| AHUPlus42-160 | 1350 | 1350 | 1000 - 1500 |
| AHUPlus42-200 | 1650 | 1350 | 1000 - 1500 |
| AHUPlus42-240 | 1950 | 1350 | 1000 - 1500 |
| AHUPlus42-250 | 1650 | 1650 | 1000 - 1500 - 2000 |
| AHUPlus42-280 | 2300 | 1350 | 1000 - 1500 - 2000 |
| AHUPlus42-300 | 1950 | 1650 | 1000 - 1500 - 2000 |
| AHUPlus42-360 | 1950 | 1950 | 1000 - 1500 - 2000 |
| AHUPlus42-420 | 2300 | 1950 | 1000 - 1500 - 2000 |
| AHUPlus42-480 | 2600 | 1950 | 1000 - 1500 - 2000 |
| AHUPlus42-490 | 2300 | 2300 | 1000 - 1500 - 2000 |
| AHUPlus42-560 | 2600 | 2300 | 1000 - 1500 - 2000 |
| AHUPlus42-600 | 3200 | 1950 | 1000 - 1500 - 2000 |
| AHUPlus42-640 | 2600 | 2600 | 1000 - 1500 - 2000 |
| AHUPlus42-700 | 3200 | 2300 | 1000 - 1500 - 2000 |
| AHUPlus42-800 | 3200 | 2600 | 1000 - 1500 - 2000 |
| AHUPlus42-960 | 3800 | 2600 | 1000 - 1500 - 2000 |

Cross-sections and Flow Rate Table of Air Handling Unit Models

| MODEL | Outside | | Inside | | Air Flow (m ³ /h) at Velocity (m/s) | | | | | |
|---------------|------------|-------------|------------|-------------|--|-------|-------|--------|--------|--------|
| | Width (mm) | Height (mm) | Width (mm) | Height (mm) | 1,5 | 2 | 2,5 | 3 | 3,5 | 4 |
| AHUPlus42-20 | 750 | 450 | 670 | 370 | 1339 | 1785 | 2231 | 2677 | 3124 | 3570 |
| AHUPlus42-40 | 750 | 750 | 670 | 670 | 2424 | 3232 | 4040 | 4848 | 5656 | 6464 |
| AHUPlus42-60 | 1050 | 750 | 970 | 670 | 3509 | 4679 | 5849 | 7019 | 8189 | 9359 |
| AHUPlus42-80 | 1350 | 750 | 1270 | 670 | 4595 | 6126 | 7658 | 9190 | 10721 | 12253 |
| AHUPlus42-90 | 1050 | 1050 | 970 | 970 | 5081 | 6774 | 8468 | 10162 | 11855 | 13549 |
| AHUPlus42-120 | 1350 | 1050 | 1270 | 970 | 6652 | 8870 | 11087 | 13305 | 15522 | 17739 |
| AHUPlus42-150 | 1650 | 1050 | 1570 | 970 | 8224 | 10965 | 13706 | 16447 | 19189 | 21930 |
| AHUPlus42-160 | 1350 | 1350 | 1270 | 1270 | 8710 | 11613 | 14516 | 17419 | 20323 | 23226 |
| AHUPlus42-200 | 1650 | 1350 | 1570 | 1270 | 10767 | 14356 | 17945 | 21534 | 25123 | 28712 |
| AHUPlus42-240 | 1950 | 1350 | 1870 | 1270 | 12824 | 17099 | 21374 | 25649 | 29924 | 34199 |
| AHUPlus42-250 | 1650 | 1650 | 1570 | 1570 | 13310 | 17747 | 22184 | 26621 | 31058 | 35495 |
| AHUPlus42-280 | 2300 | 1350 | 2220 | 1270 | 15225 | 20300 | 25375 | 30450 | 35524 | 40599 |
| AHUPlus42-300 | 1950 | 1650 | 1870 | 1570 | 15854 | 21138 | 26423 | 31708 | 36992 | 42277 |
| AHUPlus42-360 | 1950 | 1950 | 1870 | 1870 | 18883 | 25178 | 31472 | 37767 | 44061 | 50355 |
| AHUPlus42-420 | 2300 | 1950 | 2220 | 1870 | 22418 | 29890 | 37363 | 44835 | 52308 | 59780 |
| AHUPlus42-480 | 2600 | 1950 | 2520 | 1870 | 25447 | 33929 | 42412 | 50894 | 59376 | 67859 |
| AHUPlus42-490 | 2300 | 2300 | 2220 | 2220 | 26613 | 35484 | 44356 | 53227 | 62098 | 70969 |
| AHUPlus42-560 | 2600 | 2300 | 2520 | 2220 | 30210 | 40280 | 50350 | 60420 | 70489 | 80559 |
| AHUPlus42-600 | 3200 | 1950 | 3120 | 1870 | 31506 | 42008 | 52510 | 63012 | 73513 | 84015 |
| AHUPlus42-640 | 2600 | 2600 | 2520 | 2520 | 34292 | 45723 | 57154 | 68584 | 80015 | 91446 |
| AHUPlus42-700 | 3200 | 2300 | 3120 | 2220 | 37403 | 49870 | 62338 | 74805 | 87273 | 99740 |
| AHUPlus42-800 | 3200 | 2600 | 3120 | 2520 | 42457 | 56609 | 70762 | 84914 | 99066 | 113219 |
| AHUPlus42-960 | 3800 | 2600 | 3720 | 2520 | 50622 | 67496 | 84370 | 101244 | 118117 | 134991 |

Air Handling Unit Quick Selection Table

| AIRPLUS Air Handling Unit Quick Selection Table | |
|---|--|
| MODEL | Air Flow (m ³ /h x 1000) |
| | 1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99 101 110 |
| AHUPlus42-20 | 1-3 |
| AHUPlus42-40 | 3-7 |
| AHUPlus42-60 | 5-11 |
| AHUPlus42-80 | 7-15 |
| AHUPlus42-90 | 9-17 |
| AHUPlus42-120 | 11-21 |
| AHUPlus42-150 | 15-25 |
| AHUPlus42-160 | 17-27 |
| AHUPlus42-200 | 21-33 |
| AHUPlus42-240 | 27-41 |
| AHUPlus42-250 | 29-43 |
| AHUPlus42-280 | 33-47 |
| AHUPlus42-300 | 35-49 |
| AHUPlus42-360 | 41-57 |
| AHUPlus42-420 | 47-63 |
| AHUPlus42-480 | 53-71 |
| AHUPlus42-490 | 55-73 |
| AHUPlus42-560 | 61-81 |
| AHUPlus42-600 | 67-87 |
| AHUPlus42-640 | 73-93 |
| AHUPlus42-700 | 79-99 |
| AHUPlus42-800 | 87-107 |
| AHUPlus42-960 | 99-110 |

Air Velocity of Cross Sections

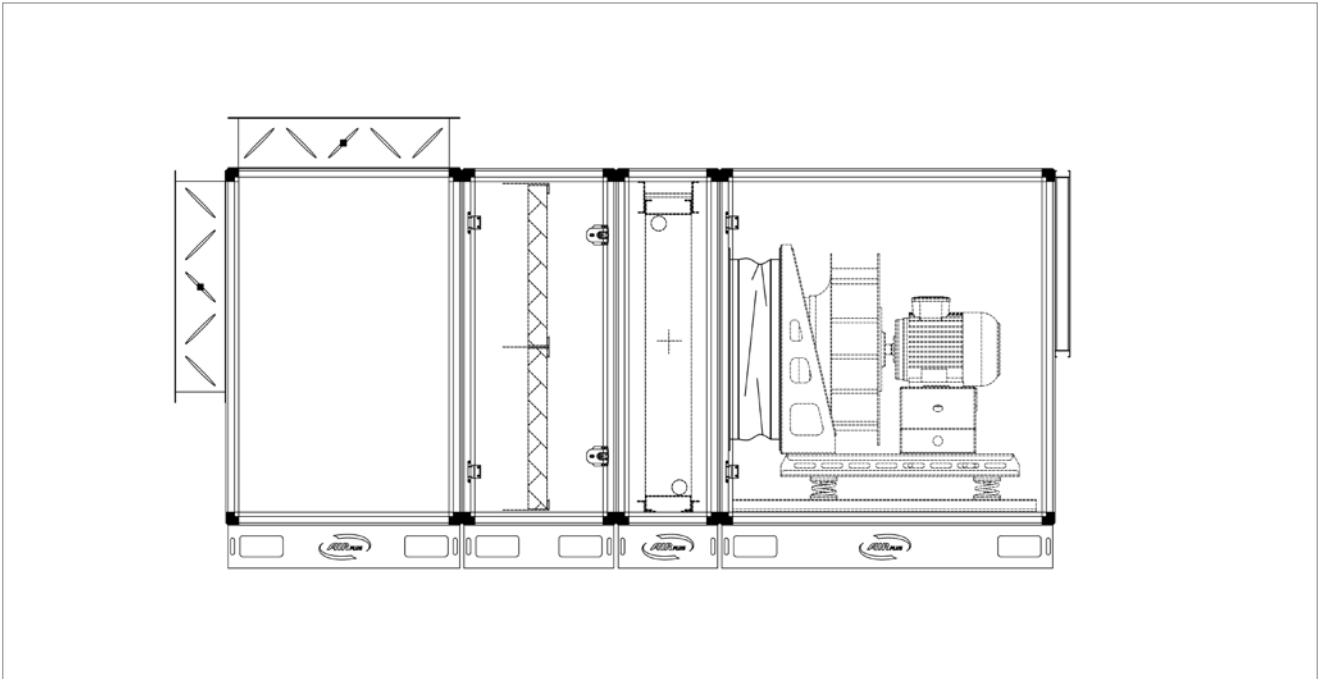
| | |
|-----------------------|--|
| 2,0 m/s ≤ V < 2,5 m/s | |
| 2,5 m/s ≤ V < 3,0 m/s | |
| 3,0 m/s ≤ V < 3,5 m/s | |

Air Handling Unit Section Lengths

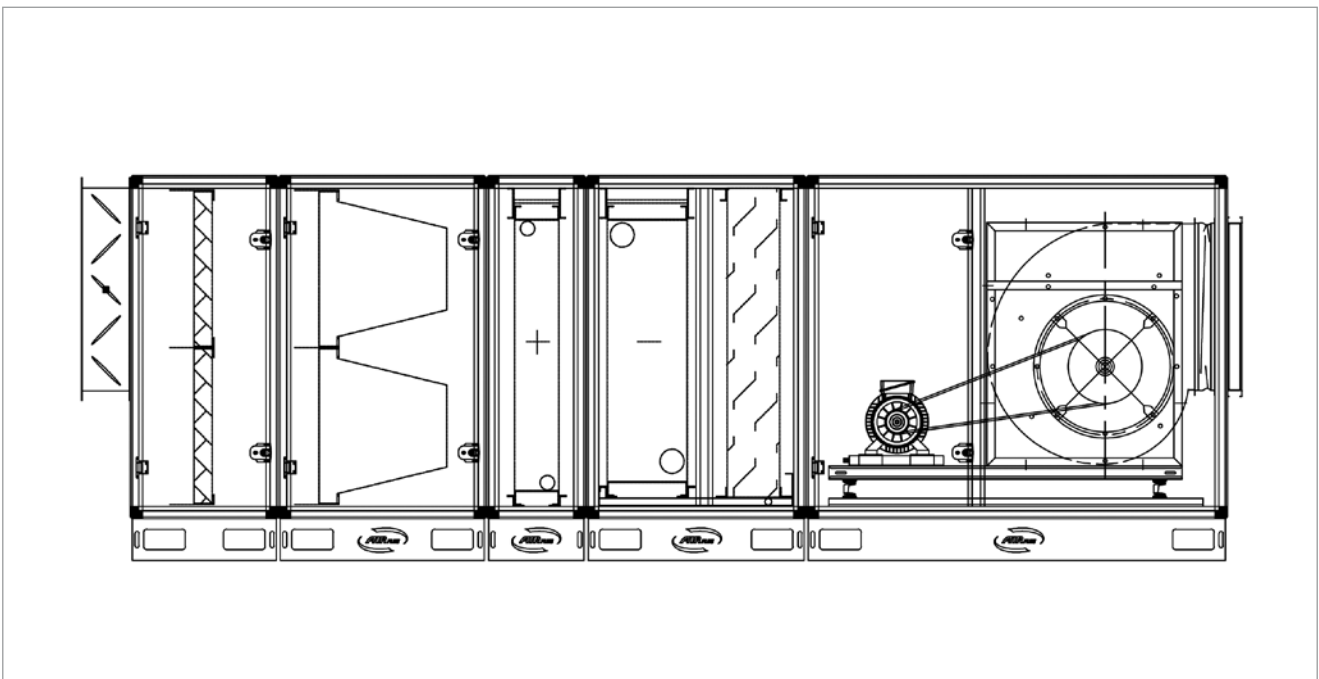
| Section Name | | Air Handling Unit Section Lengths (mm) | | | | | | | | | | | | | | | | | | |
|---------------------------|-------|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | 40 | 60 | 80 | 90 | 120 | 160 | 200 | 240 | 250 | 300 | 360 | 420 | 480 | 490 | 560 | 640 | 700 | 800 | 960 |
| Air Inlet Section 1 | HG1 | 380 | 480 | 480 | 580 | 580 | 780 | 780 | 780 | 880 | 880 | 980 | 980 | 980 | 1080 | 1080 | 1280 | 1280 | 1480 | 1480 |
| Air Inlet Section 2 | HG2 | 380 | 480 | 480 | 580 | 580 | 780 | 780 | 780 | 880 | 880 | 980 | 980 | 980 | 1080 | 1080 | 1280 | 1280 | 1480 | 1480 |
| Mixing Section | K1 | 860 | 1060 | 1060 | 1260 | 1260 | 1660 | 1660 | 1660 | 1860 | 1860 | 2060 | 2060 | 2060 | 2260 | 2260 | 2660 | 2660 | 3060 | 3060 |
| Empty Section | BS | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Panel Filter G3-G4 | PF | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Compact Filter F7-F9 | KF | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Bag Filter M5-F8 | TF | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| Carbon Filter | CF | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| Hepa Filter | HF | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Heating Coil | IB | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Electrical Heater | EB | 300 | 300 | 300 | 400 | 400 | 400 | 400 | 500 | 500 | 500 | 500 | 500 | 600 | 600 | 600 | 600 | 600 | 600 | 600 |
| Cooling Coil | SB | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 | 650 |
| Plate Type Heat Recovery | P-IGK | 1100 | 1100 | 1100 | 1500 | 1500 | 1800 | 1800 | 2000 | 2200 | 2200 | 2700 | 2700 | 2700 | 3000 | 3100 | 3100 | 3100 | 3100 | 3200 |
| Rotary Type Heat Recovery | R-IGK | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 900 | 900 | 900 | 900 | 900 | 900 | 900 | 900 |
| Humidifier Pad | PN | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Water Type Humidifier | SN | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 | 1300 |
| Steam Type Humidifier | BN | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Fan Module | FH1 | 1000 | 1000 | 1300 | 1300 | 1300 | 1500 | 1600 | 1600 | 1600 | 1800 | 2000 | 2000 | 2200 | 2200 | 2200 | 2400 | 2400 | 2400 | 2400 |
| Fan Module | FH2 | 650 | 650 | 850 | 850 | 1000 | 1000 | 1200 | 1200 | 1200 | 1200 | 1400 | 1400 | 1400 | 1400 | - | - | - | - | - |
| Sound Attenuator Section | SH | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| | | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 | 1500 |

Air Handling Unit Coding Examples

AHUPlus-42 120 Y HG2, PF(G4), IB, FH2

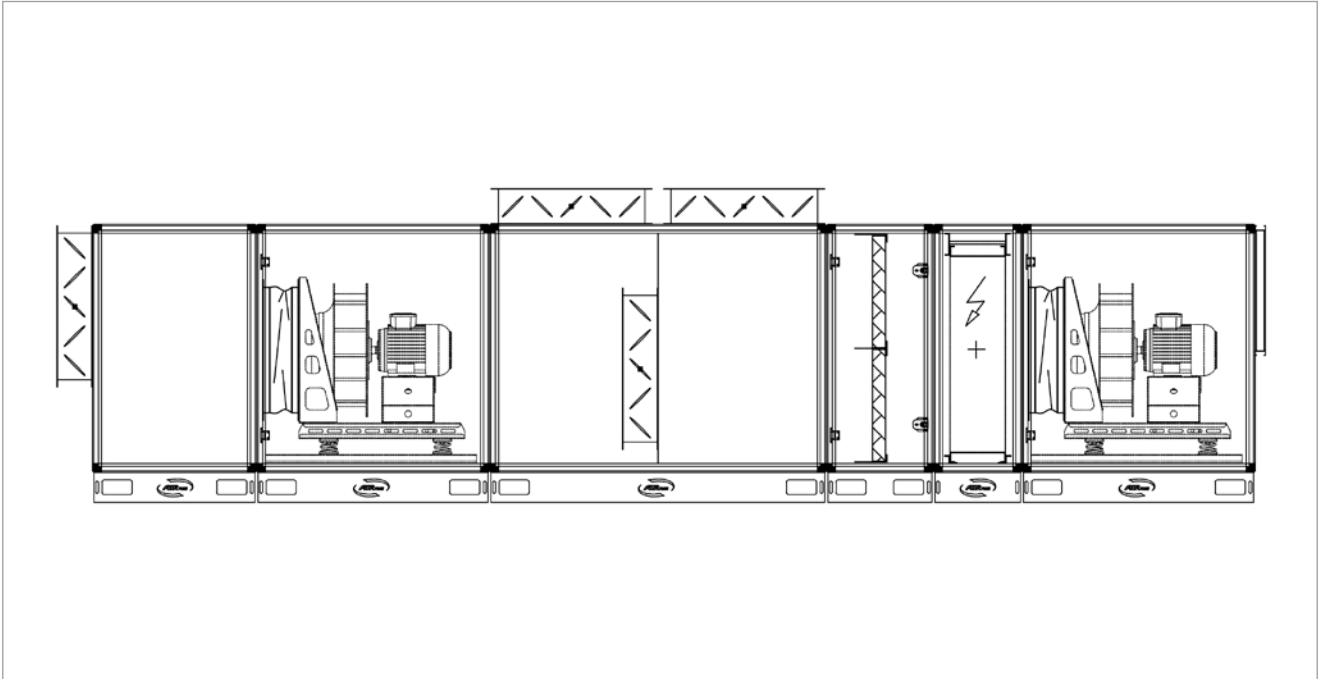


AHUPlus-42 420 Y HG1, PF(G4), TF(G7), IB, SB, FH1

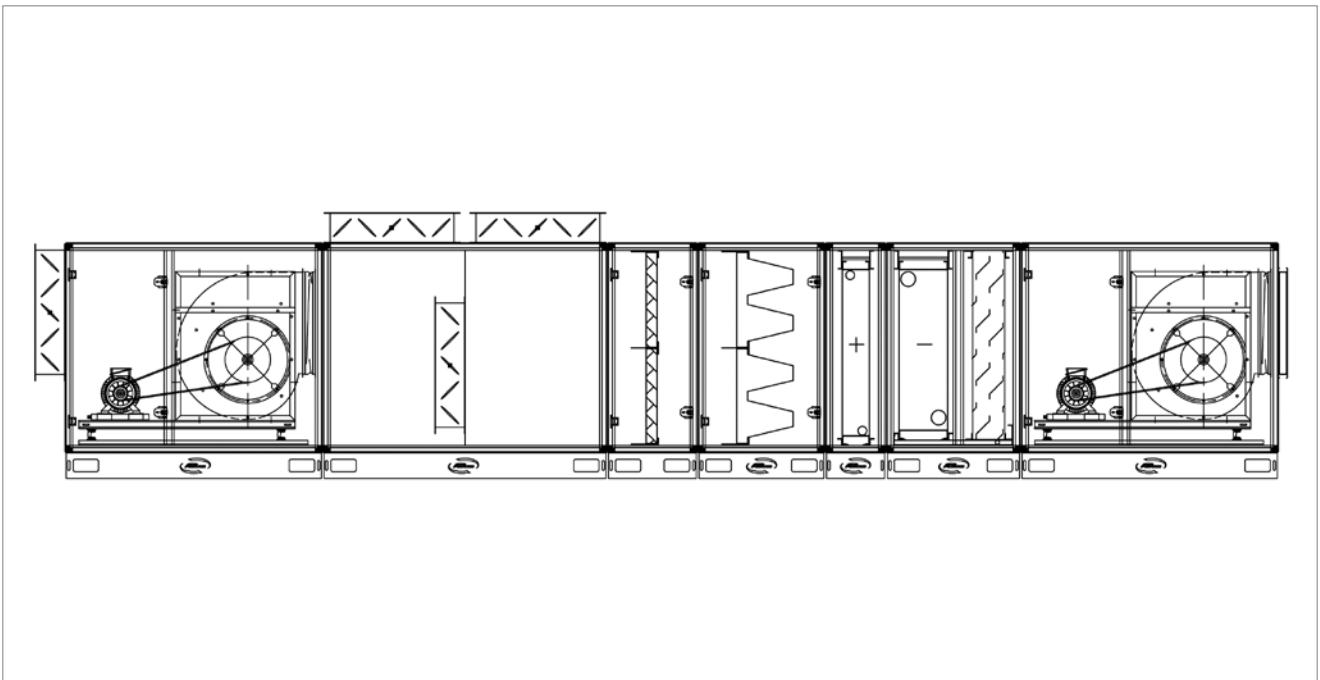


Air Handling Unit Coding Examples

AHUPlus-42 90 Y HG1, FH2, K1, PF(G3), IB, FH2

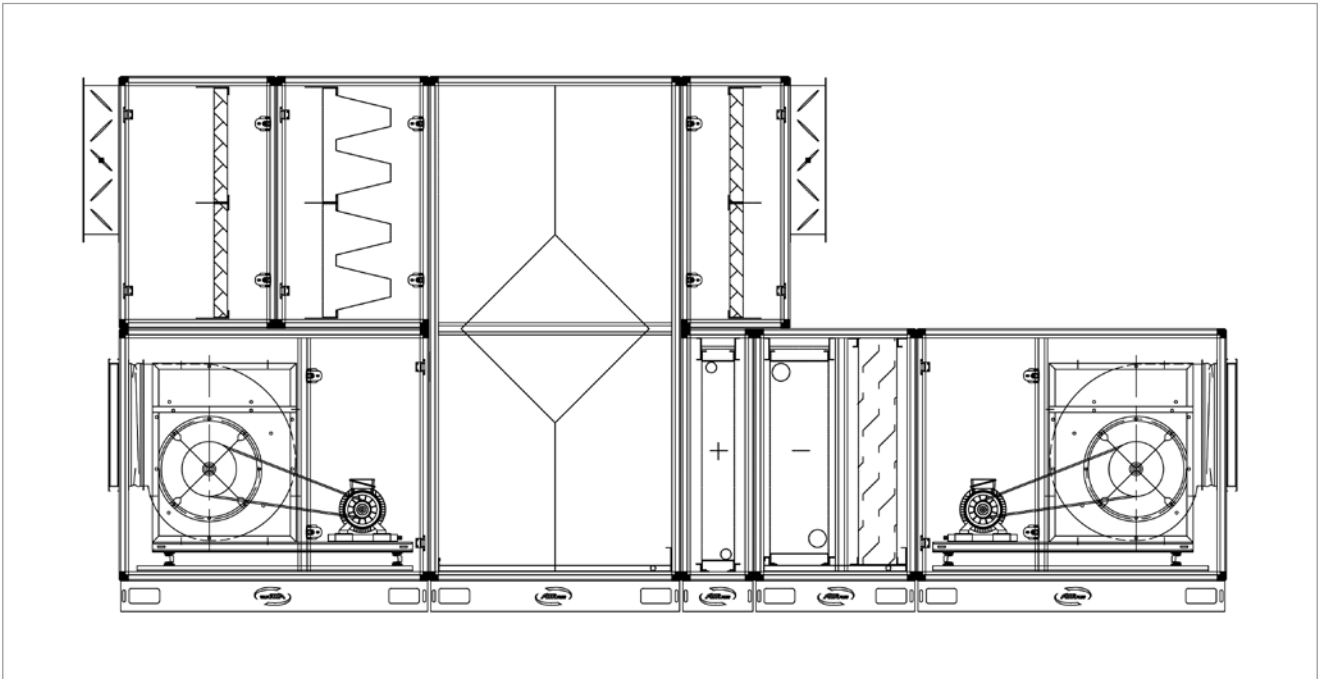


AHUPlus-42 200 Y HG1, FH1, K1, PF(G4), KF, IB, SB, FH1

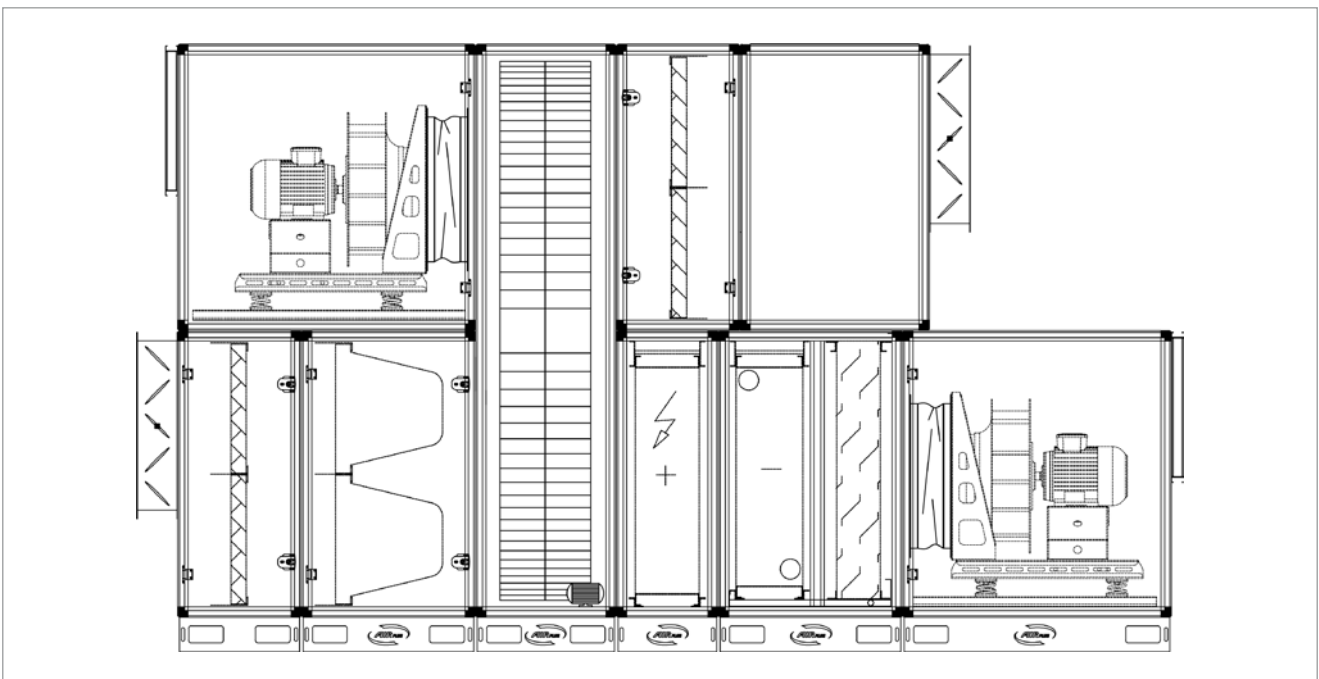


Air Handling Unit Coding Examples

AHUPlus-42 250 Y HG1, PF(G4), P-IGK, FH1, HG1, PF(G4), KF, IB, SB, FH1



AHUPlus-42 250 Y HG1, PF(G4), R-IGK, FH2, HG1, PF(G4), TF, IB, SB, FH2



AHU Plus

DX Air Handling Units



AHU Plus DX

DX Air Handling Units

AHUPlusDX-TH: DX Air Handling Unit with 100% Fresh Air

AHUPlusDX -IGK: DX Air Handling Unit with 100% Fresh Air and Heat Recovery

AHUPlusDX-KH: DX Air Handling Unit with Mixing Section

Section Construction Structure

DX Air Handling Units are formed from required modular sections according to need.

Frame of modular sections of our Air Handling Units are manufactured from natural aluminum anodized profile and plastic corner connection elements. Thickness of section panels are 42 mm, outer wall is electrostatic powder coated and inner wall is manufactured from galvanized sheet.

AHUPlus DX Air Handling Units are indispensable at central ventilation and ambient air conditioning applications due to its high efficiency and energy saving provided by its 70 kg/m³ dense Rockwool filled panels, modern frame structure, statically and dynamically balanced, quiet and efficient plug fans.

Our electrical motors are 380V-50Hz as standard. High efficient plug fans with EC motor can also be used on customer demand.

All double-walled panels are mounted to the aluminum frame by special torch tipped M6 nuts. Double-walled rigid standard inspection doors have gapless rigid hinge,

lock mechanism that will not create protrusion inside of the section and will not allow air leakage.

There are 180 mm high, full-length chassis feet manufactured from 2 or 3 mm galvanized sheet. There are slots and holes at the corner of the chassis feet for handling it with crane or forklift.

All of the holes required for automation (differential pressure switch, NTC temperature sensor, frost thermostat etc.) are opened on DX Air Handling Unit at production stage. Motor connection cables are taken to the junction box. On demand, the unit can be delivered as all automation placed, adjusted and collected at the panel.

Section connection elements are manufactured from aluminum alloy material. They have high structural strength for connecting the section from outside. The total number of use between sections varies according to the size of the model.

There is interior lighting and sight glass at fan and filter sections. Thanks to these accessories, sections can be checked without disabling the system.

DX Coil

DX coil means cooling the air by loading the heat taken from the air passing through the evaporator to refrigerant with the help of compressor.

To simply describe the system, a direct expansion-cooling coil is adapted to an Air Handling Unit and exterior VRF unit is connected to this coil to the extent it requires. While performing this operation, the refrigerant is evaporated at the source (AHU) where the heat transfer is made.

In the transfer made by conventional cooling groups (chiller / hot water boiler), heat first transferred to water and then the heat transfer made inside the AHU via pipes and pumps.

DX coil Air Handling Units condition the ambient air without the need for conventional cooling groups and even more with heat pumps, without need for hot water boilers.

Features

The main features sought at DX Air Handling Units can be listed as; operating efficiently while consuming low energy, air tightness, having construction that minimizes thermal bridges, not having vibration caused by dynamic forces.

DX series Air Handling Units' design and selection priorities are low operating cost and efficiency.

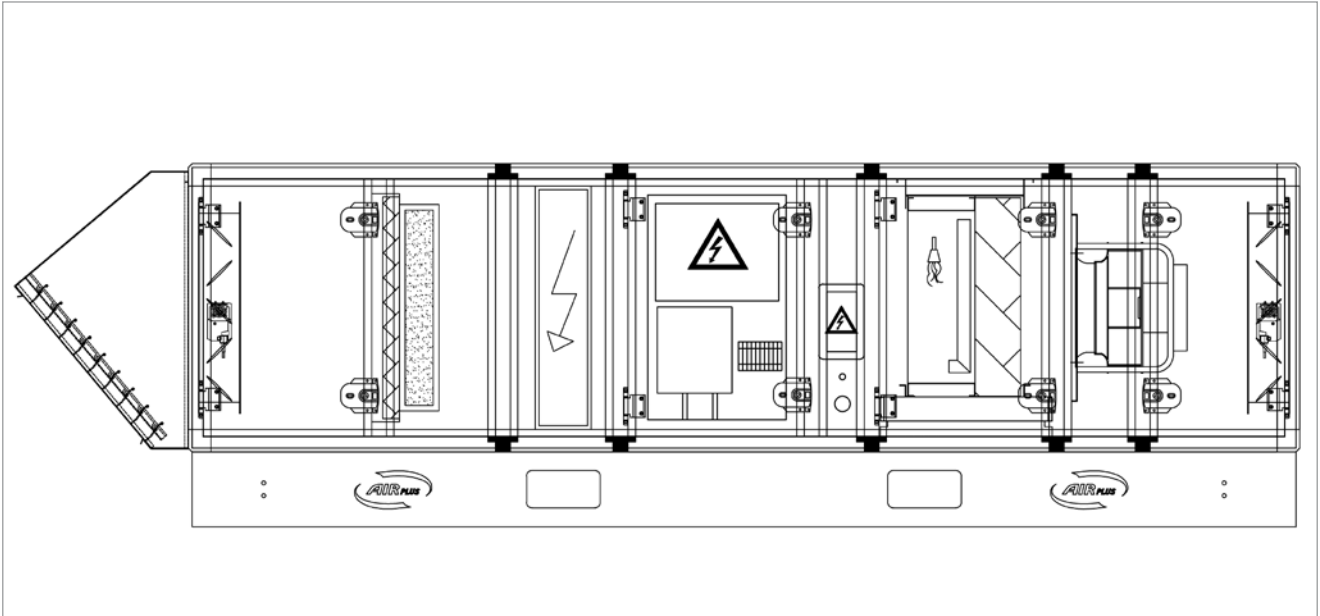
We can list the following features in order to support these priorities; energy-saving fans, efficient heat recovery exchangers and coils, internal unit structure that provides optimized airflow.

With our optional automation system, this efficiency can be taken to a higher level.



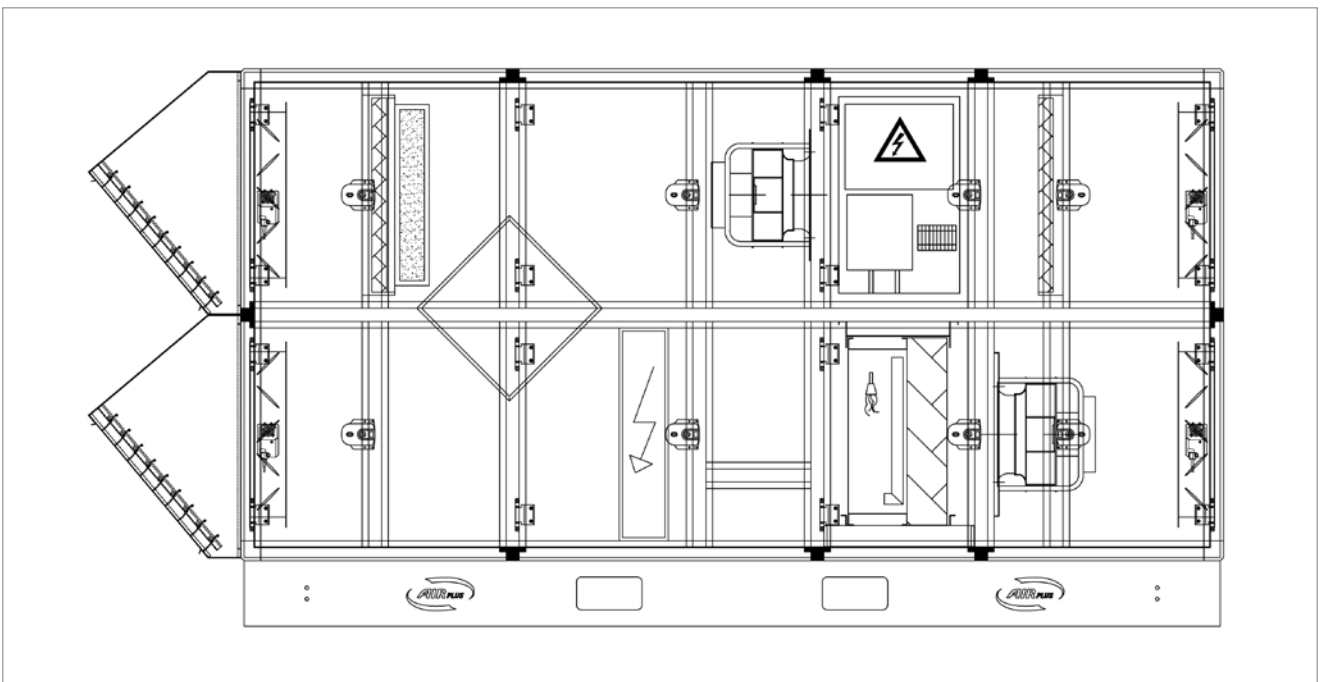
AHUPlusDX-TH

DX Air Handling Unit with 100% Fresh Air



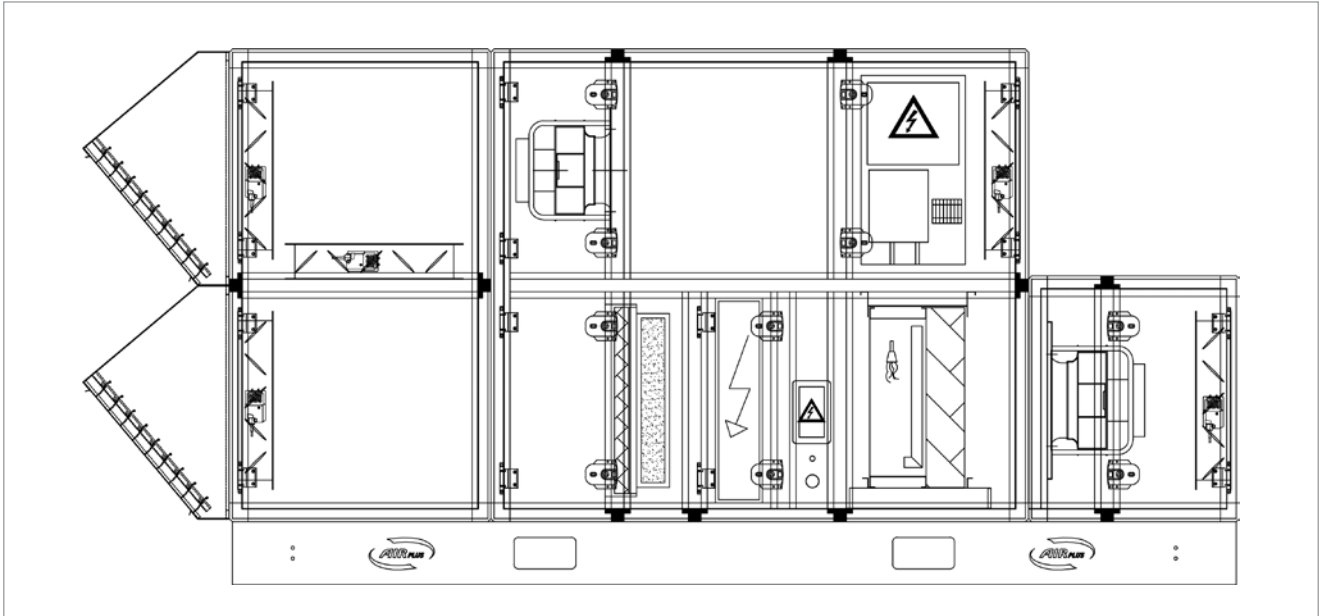
AHUPlusDX-IGK

DX Air Handling Unit with 100% Fresh Air and Heat Recovery



AHUPlusDX-KH

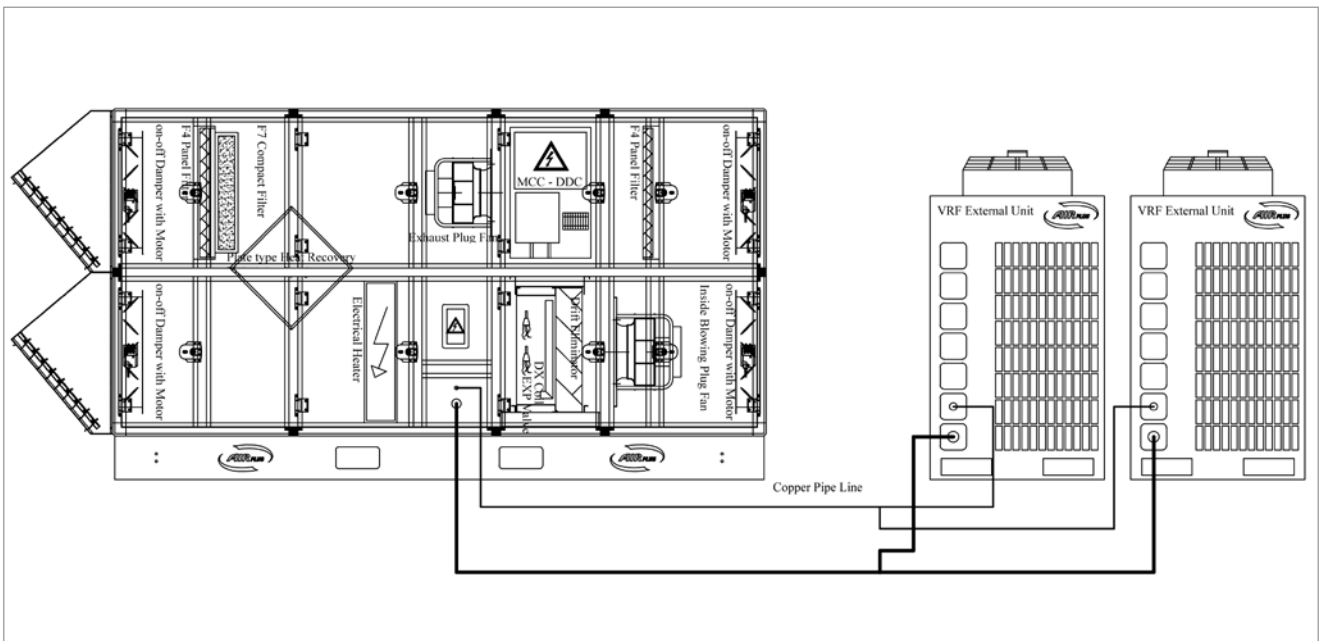
DX Air Handling Unit with Mixing Section



Advantages of DX Air Handling Units

- The most important advantage is that there is much less energy loss at fluid pipes,
- With high COP values, it is an advantageous system in terms of operating and investment costs, it provides new, easy and quick solution for small and medium sized facilities with only one investment,
- Heating and cooling is performed by single external VRF unit, reduces operating costs for heating and cooling,
- Thanks to compressors with variable capacity (inverter technology) and fans used, it provides optimal control, so that it is controlled locally and it consumes only required amount of power,
- Ability to give fast response to partial loads,
- Saving wide area required for water cooling group and boiler,
- Taking into regime in short time,
- There is no freezing risk of water coil in this system unlike conventional systems,
- Having much lower maintenance costs than conventional systems,
- Low noise level,
- In this system, there is less static load added to structure comparing the static load occurred by the water circulating in steel piping, pump and pipes in conventional chiller and hot water boiler systems,
- There is no need for closed are due to its suitability to operate outdoor,
- Have long lifetime considering conventional systems.

For system to work safely and smoothly, all automation scenarios are compatible with Heat Pump Outdoor Unit and is a package solution with DX Air Handling Unit automation. Automation is designed to make DX Air Handling Unit and Heat Pump Outdoor Unit is synchronized.



Advantages AIRPLUS DX Air Handling Unit

- 1)** Our DX Air Handling Units are manufactured in 1.800 and 25.000 m³/h range and 14 and 224 kW cooling capacity range.
- 2)** High efficient rotary type or plate type heat exchanger provides energy conservation.
- 3)** DX Air Handling Units have 42 mm Rockwool (50 kg/m³) insulated panel construction.
- 4)** All following warning and safety signs and capacity information labels are placed on Air Handling Unit. (Warning signs are indelible and not affected by heat, cold and UV rays from sun.)
- 5)** Plug fans are directly coupled with motor shaft and can be controlled with frequency inverter. EC motorized plug fans can be used on customer demand. (Efficiency of EC motorized plug fan is 92% and EC motorized plug fan application is recommended.)
- 6)** Fan motor powers are selected considering dirty filter pressure loss.
- 7)** There are built-in MCC (Magnetic Control Center) and DDC (Direct Digital Control) panels with relevant protection class on Air Handling Unit.
- 8)** Besides MCC and DDC panels, there is EMERGENCY STOP BUTTON.
- 9)** There is compact switch outside the device that cuts out the main electricity supply in case of emergency intervention.
- 10)** EEV (Electronic Expansion Valve) and thermal sensors are mounted into DX Air Handling Unit during production and protected from outdoor weather conditions.
- 11)** When the VRF unit that is connected to Air Handling Unit is defrosting, air handling unit's control system should switch to standby mode without alarming.
- 12)** DX coils are selected to make cooling (evaporator) in summer and heating (condenser) in winter.
- 13)** Sight glass and siphon of DX Air Handling Unit are provided.
- 14)** Start-up (mechanical installation, necessary end connections, and setting up of parameters) of DX Air Handling Unit and VRF outdoor unit are made by AIRPLUS. Our company gives start-up and maintenance trainings.
- 15)** Frequency inverter for AC motor is optional. Frequency inverters for motor control have high EMC filtering feature.
- 16)** PLUG fans can control airflow rate by calculating differential pressure with built-in inverter.
- 17)** Airflow rate over DX coil is kept stable by controller via frequency inverter. i.e., pressure differences (Filter pollution)
- 18)** Optionally; controller with microprocessor on DDC panel is capable of communication with at least one communication protocol (i.e., ModBUS RTU)
- 19)** Optionally; controller with microprocessor is programmed with software that is appropriate with operation logic of DX system. Critical working scenarios that are mutual alarm controls (Hot Start, Defrost Time, Defrost Cycle etc.) are included in the DX Air Handling Unit automation software. Thus, the maximum system protection measures are taken.
- 20)** Optionally; all field sensors and control equipments are mounted to DX Air Handling Unit. (i.e., Damper motors, pressure differential sensors, thermal and humidity sensors, CO₂ or CO/VOC sensors, 3-way valve bodies, modulating valve actuators, freeze protections etc.).
- 21)** Optionally, DX Air Handling Unit section lighting is provided.



APHS

*Swimming Pool
Dehumidification Units*



APHS Series

Swimming Pool Dehumidification Units

Why Humidity Control Is Important At Indoor Swimming Pools?

At indoor swimming pools, water evaporates because of ambient conditions, pool surface area and pool activities. Consequently, moisture content increases and this prevents perspiration of human body. High temperatures at dry air do not disturb. However, when humidity exceeds a certain limit, people cannot sweat which causes heat accumulation at human body and so the environment becomes uncomfortable. Increase of body temperature increase can cause fatigue and slowness at metabolism.

This affects hygienic conditions of indoor swimming pools negatively. Due to high humidity in air, condensation occurs on building elements, which causes damage on building elements, distortion of building static and shortening of lifetime of building elements.

If highly humid places are not kept under control, they become suitable environments for reproduction and growth of harmful microorganisms that creates a threat to human health. Therefore, humidity control at indoor swimming pools where intensive humidity occurs is highly important for facility users in terms of necessary hygienic conditions, human health and lifetime of building.

Why Humidity Occurs At Indoor Swimming Pools?

If partial pressure of water vapor of ambient air is below saturation temperature then evaporation occurs on surface of pool water. Ambient air temperature and relative humidity, pool water temperature, ambient air movements and pool usage type affects evaporation.



Example for Calculation of Evaporation Amount on Pool Surface

Dehumidification is required at pools because of human activities at pool, evaporation on pool surface and external factors. The most important source is evaporation on pool surface. Factors affecting this are;

- Ambient air temperature
- Pool water temperature
- Relative humidity of ambient
- The amount of air movement
- Pool usage type

$$W = e \times A \times (P_B - P_L) \rightarrow (\text{According to VDI 2089 norm}),$$

A : Pool Surface Area (m^2)

P_B : Saturated Vapour Pressure At Water Temperature (mbar),

P_L : Partial Vapour Pressure At Air Temperature (mbar),

e : Total Evaporation Coefficient

- At less used pools: $13 \left(\frac{g}{hm^2mbar} \right)$
- At moderately used pools: $28 \left(\frac{g}{hm^2mbar} \right)$
- At commonly used pools: $35 \left(\frac{g}{hm^2mbar} \right)$

Example: Water temperature of less used hotel pool with $650 m^2$ surface area is $28^\circ C$. Ambient air temperature is $30^\circ C$ and relative humidity is 55%. Evaporation calculation according to this information is:

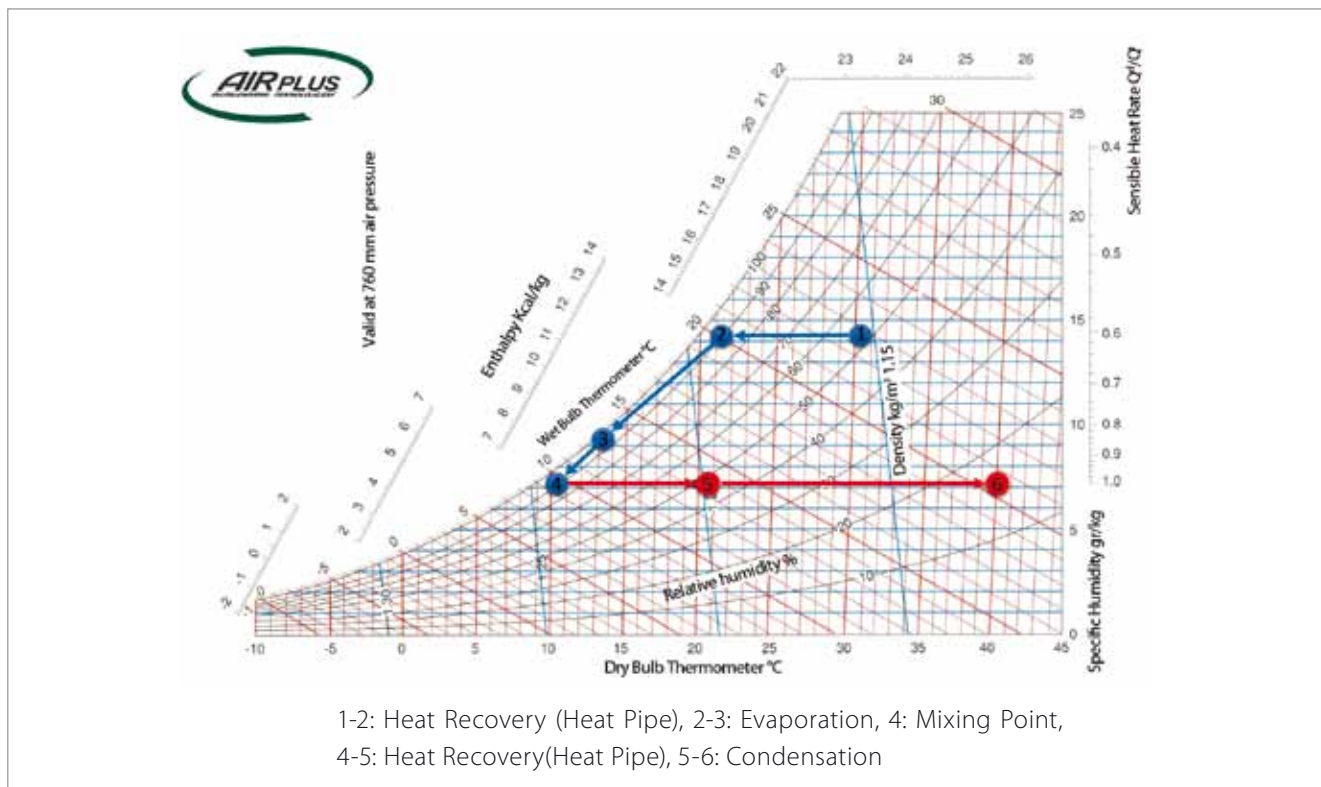
$$P_B: 38.54 \text{ mbar}$$

$$P_L: 23,5 \text{ mbar}$$

$$e: 13 \left(\frac{g}{hm^2mbar} \right)$$

$$W = 13 \times 650 \times (35.54 - 23.5) = 128 \text{ kg/h}$$

AIRPLUS Pool Dehumidification Unit Psychrometric Diagram



Technical Specifications

FRAME STRUCTURE:

Frame of AIRPLUS Pool Dehumidification Unit consist of anodized aluminum profiles, aluminum muntins, ABS corner and muntin connection parts. Thanks to interlaced profile design, smooth inner surface is obtained which can be cleaned easily. Special feet design provides homogeneously distribution of total weight on the floor. Standard forklift and handling holes in both length and width of the frame, provide ease of handling on both vertical and horizontal axes.



PANEL STRUCTURE:

Panel structure of AIRPLUS Pool Dehumidification Unit is manufactured as double walled with 70 kg/m^3 42 mm Rockwool insulation. Panel thickness is 42 mm and its interlaced design provides smooth inner surface. Optionally, panel thickness can be manufactured as 55 mm. Internal and external sheets have 0,9 mm thickness and electrostatic powder paint coated in order to operate in pool ambient conditions. EPDM gaskets are used at panel and frame connections to obtain no thermal bridge and tightness.



PAN STRUCTURE:

Fast and appropriate water discharge is very important at Pool Dehumidification Units because the high condensation amounts. At AIRPLUS Pool Dehumidification Unit, fast accumulation and discharge of condensed water is possible by the design of two sloped pans with 90 mm depth. Material of pans is 1,2 mm stainless sheet. Condensation of external ambient air is prevented by 50 mm rock wool insulation under the pan. Adequate siphon height is provided by standard 200 mm feet height.



Technical Specifications

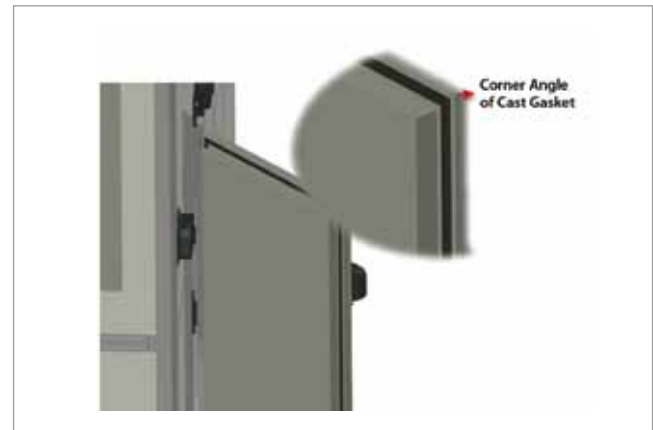
DAMPER STRUCTURE:

Dampers manufactured from special designed aluminum profiles have hidden plastic gear structure and bearings. Thereby moving parts are protected from dust particles coming from external environment and system runs without any problems. Due to aerodynamic design of damper blades, distortion of airflow lines is prevented and minimum pressure loss is achieved.



DOOR STRUCTURE:

Doors are very important in the matter of air leakage at Air Handling Units due to their moving structures. Doors manufactured from 0,9 mm painted sheet forms leak proof structure by usage of cast gaskets to obtain gapless structure. Corner angles of special cast gasket are calculated and mounted according to this calculation to prevent leakage from corner. External gear system is used as handle and hinge system to obtain smooth internal surface. Door latches are the places where thermal bridges are formed. However, because the door latches used have no extension into the section, therefore thermal bridges between inside and outside will not be formed.



FAN:

At AIRPLUS Pool Dehumidification Units, EC fans in accordance to ERP directives are used as standard. Body is manufactured from special sheet with increased corrosion resistance. It is designed as high efficient for required total airflow rate and pressure. Flow rate control can be made according to pressure.



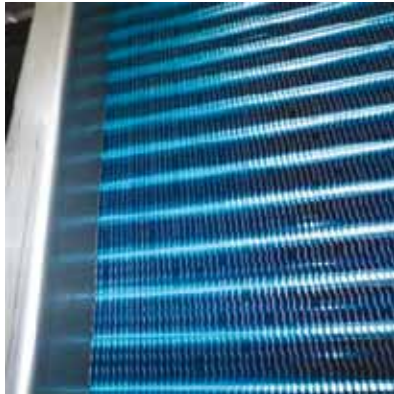
COIL:

At AIRPLUS Pool Dehumidification Unit, there are evaporator, heat pipe, condenser and water heater coil. Lamellas of all coils are coated with epoxy and hydrophilic and frames are painted for protection from humidity and chlorine. Drift eliminator manufactured from PP material and has a painted frame used after evaporator to prevent condensed water to go to other sections and duct.



Technical Specifications

| Coil | Lamella Coating | Frame Coating |
|--------------------------|-----------------|---------------|
| Evaporator | Hydrophilic | Painted |
| Condenser | Epoxy | Painted |
| Heat Pipe | Epoxy | Painted |
| Water Heater Coil | Epoxy | Painted |



COMPRESSOR and COOLING CYCLE:

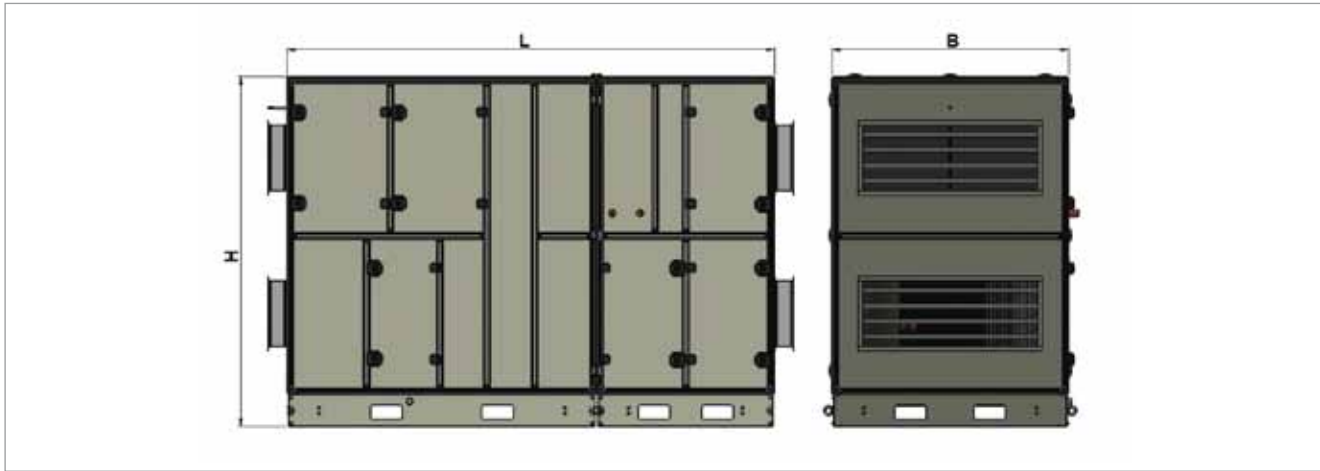
At AIRPLUS Dehumidification Units, scroll compressor is used as standard for dehumidification cooling cycle. General elements of cycle are; evaporator, condenser, expansion valve (thermostatic), compressor, solenoid valve, drying filter, sight glass. R407C refrigerant is used.



FILTERS:

G4 class filters are used as standard. With specially designed filter slide mechanism, it provides ease of maintenance. Low depth bag filter application can be made optionally. Filter pressure loss value is calculated according to $(\text{clear} + \text{dirty})/2$ formula. Filter pollution can be monitored from automation system via differential pressure switch.





Technical Specifications Table For Airplus Dehumidification Unit

| Model | | APHS 2750 | APHS 4000 | APHS 5750 | APHS 9000 | APHS 11000 | APHS 16000 | APHS 20000 | APHS 25000 |
|---------------------------------------|-------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Dehumidification Capacity | kg/h | 17 | 23,5 | 35 | 52 | 65 | 96 | 115 | 150 |
| Airflow Rate | m ³ /h | 2750 | 4000 | 5750 | 9000 | 11000 | 16000 | 20000 | 25000 |
| Cooling Capacity | kW | 18,7 | 26 | 38,5 | 57 | 72 | 107 | 128 | 167,5 |
| Heating Capacity | kW | 30 | 42 | 64 | 93 | 115 | 175 | 220 | 251 |
| Heat Recovery Capacity | kW | 9 | 12 | 17,3 | 27 | 32,5 | 48 | 59 | 74 |
| External Pressure Value (Inlet Line) | Pa | 350 | 350 | 350 | 330 | 350 | 350 | 350 | 350 |
| External Pressure Value (Supply Line) | Pa | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Ventilator Motor Power | kW | 1,19 | 1,56 | 2,16 | 4,27 | 5,14 | 8,1 | 7,62 | 13,8 |
| Aspirator Motor Power | kW | 1,04 | 1,46 | 2,06 | 3,29 | 4,78 | 6,6 | 9,2 | 12,06 |
| Unit Power Value | kW | 7,52 | 9,89 | 14,57 | 23,91 | 30,12 | 47,4 | 57,22 | 74,86 |
| Filter - Inlet Line/ Supply Line | | G4/G4 | G4/G4 | G4/G4 | G4/G4 | G4/G4 | G4/G4 | G4/G4 | G4/G4 |
| Refrigerant | | R407C | R407C | R407C | R407C | R407C | R407C | R407C | R407C |
| Compressor Type - Number of Cycles | | Scroll - 1 | Scroll - 1 | Scroll - 1 | Scroll - 1 | Scroll - 1 | Scroll - 2 | Scroll - 2 | Scroll - 2 |
| Fan Type - Quantity | | EC Plug -2 | EC Plug -2 | EC Plug -2 | EC Plug -2 | EC Plug -2 | EC Plug -4 | EC Plug -4 | EC Plug -4 |

Dimensions Table For Airplus Dehumidification Unit

| | | | | | | | | | |
|---|---------------|------|------|------|------|------|------|------|------|
| DIMENSIONS | L (mm) | 3110 | 3235 | 3405 | 3565 | 3800 | 3800 | 4000 | 4200 |
| | B (mm) | 990 | 1160 | 1320 | 1490 | 1640 | 2110 | 2510 | 2560 |
| | H (mm) | 1694 | 1820 | 2074 | 2202 | 2328 | 2582 | 2582 | 2582 |
| Heating Coil Inlet-Outlet Pipe Diameters | mm | 27 | 27 | 33 | 42 | 42 | 48 | 48 | 60 |
| Drainage Pan Outlet Pipe Diameters | mm | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |

Operation Scenarios

Operation scenario where pool usage rate is low and dehumidification process is not applied:

- Heat recovery is active
- Last heater is active if required
- Inlet and supply fan is active at low flow rate
- Cooling cycle is inactive



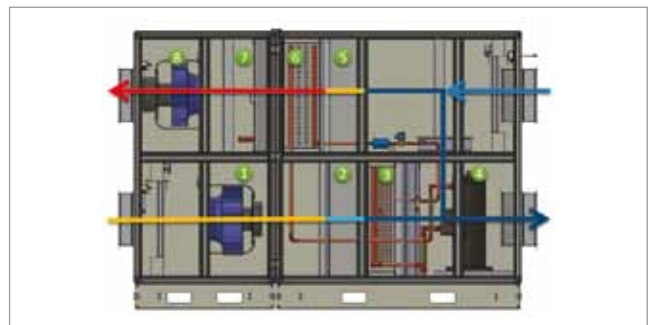
Operation scenario where pool usage rate is low and dehumidification process is applied:

- Heat recovery is active
- Last heater is active if required
- Inlet and supply fan is active at low flow rate
- Cooling cycle is active



Operation scenario where pool usage rate is high and dehumidification process is applied:

- Heat recovery is active
- Last heater is active if required
- Inlet and supply fan is active at high flow rate
- Cooling cycle is active



Mid season (free cooling) operation scenario:

- Heat recovery is active
- Last heater is active if required
- Inlet and supply fan is active at high flow rate
- Cooling cycle is inactive



1 Inlet fan

2 Heat recovery

3 Evaporator

4 Compressor

5 Heat recovery

6 Condenser

7 Water type heater

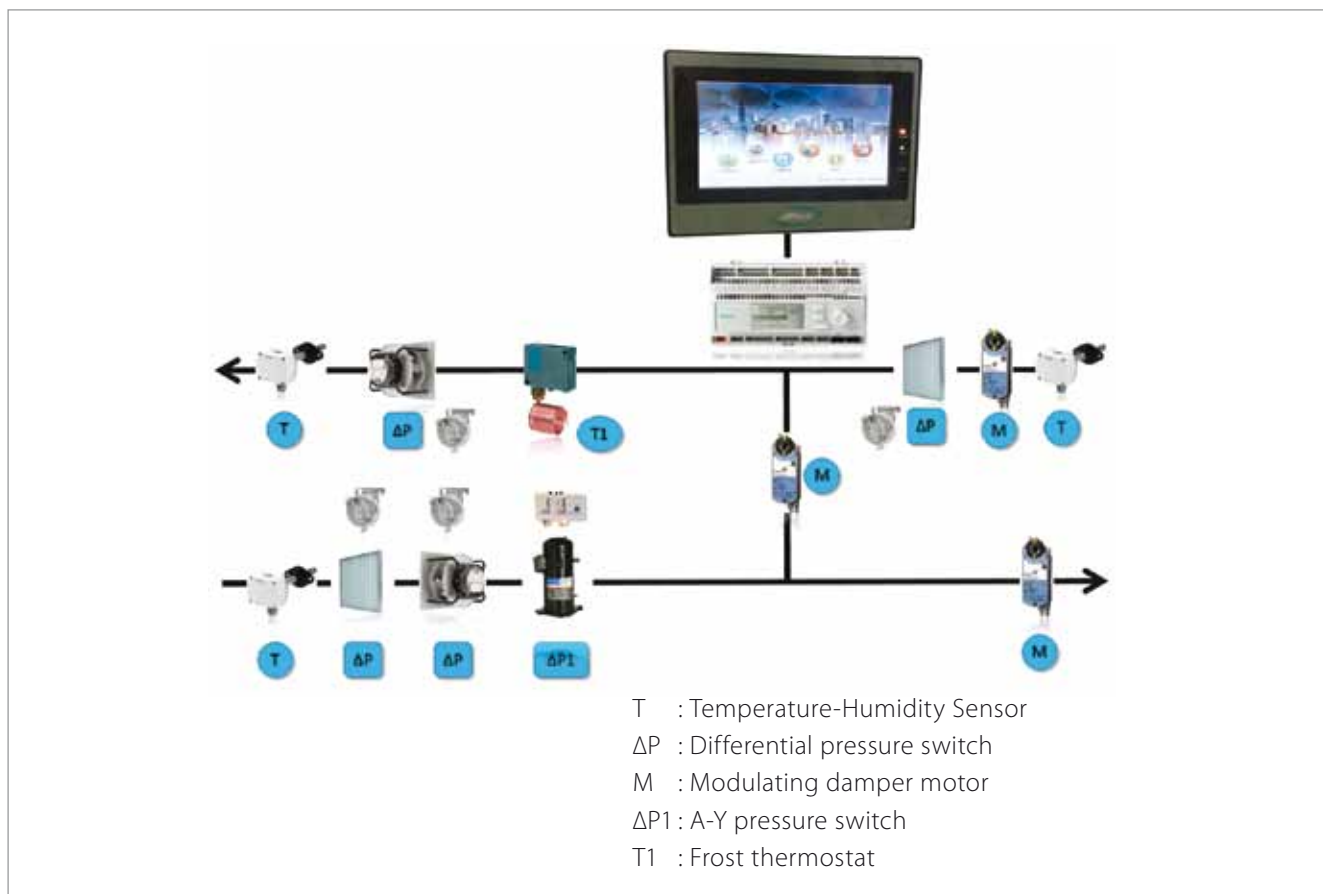
8 Supply fan

Automation System and Flow Diagrams

AIRPLUS Pool Dehumidification Unit is offered with the automation system as a package. Thus, by only making power connection and preset settings, the unit can be activated directly. All automation equipments are located inside the unit so they are protected from external factors.

Below functions can be made with automation system;

- Controlling and monitoring external, ambient and supply air temperatures and humidity
- Filter pollution check according to set pressure values
- Flow rate control of EC fans in accordance with pressure
- Modulating control and monitoring of fresh air, return air and mixing dampers
- Control and monitoring compressor pressure
- Frost control of heating coil
- Monitoring all of the alarms at LCD display
- Can be integrated to building automation system
- Customizable end-user interface
- All functions of units can be monitored from LCD display
- Different determined operation scenarios automatically sensed and activated



AP-DIGK

Vertical Type

Heat Recovery Units



AP-DIGK

Vertical Type Heat Recovery Units

Vertical type heat recovery units are designed to meet high flow rates of exhaust and supply air requirements in closed places with large volume or industrial facilities. They provide energy saving by recovering heat energy without mixing exhaust and fresh air thanks to its plate or rotary type heat exchanger and centrifugal fans provide high air flow and pressure.

Section Construction Structure

Frame of our vertical type heat recovery units are manufactured from natural anodized aluminum profile and plastic corner elements. Thickness of section panel is 25 mm or 42 mm according to customer choice, outer wall is electrostatic powder coated and inner wall is manufactured from galvanized sheet.

Vertical type heat recovery units are indispensable at central ventilation applications due to its high efficiency and energy saving provided by its 50 kg/m³ density Rockwool filled panels, modern frame structure, statically and dynamically balanced, quiet and efficient centrifugal or plug fans (on customer demand).

All double-walled panels are mounted to the aluminum frame by screws. Double-walled and rigid standard inspection doors have gapless rigid hinge, lock mechanism that won't create protrusion inside of the section and won't allow air leakage.

All of the holes required for automation are opened at the production stage. Motor connection cables are taken to the junction box which is outside of the section. There are 180 mm high, full-length chassis feet under sections, manufactured from 2 mm galvanized sheet. There are slots

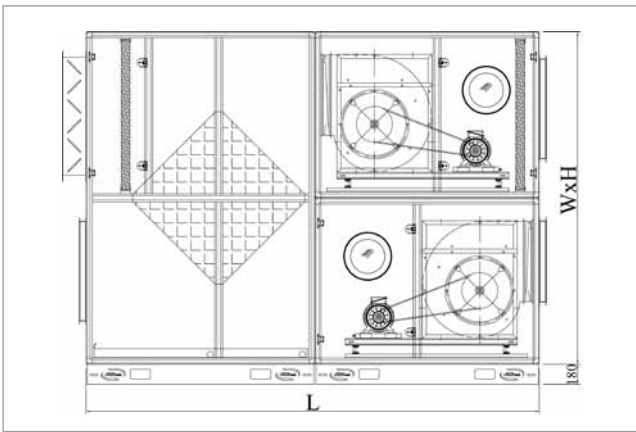
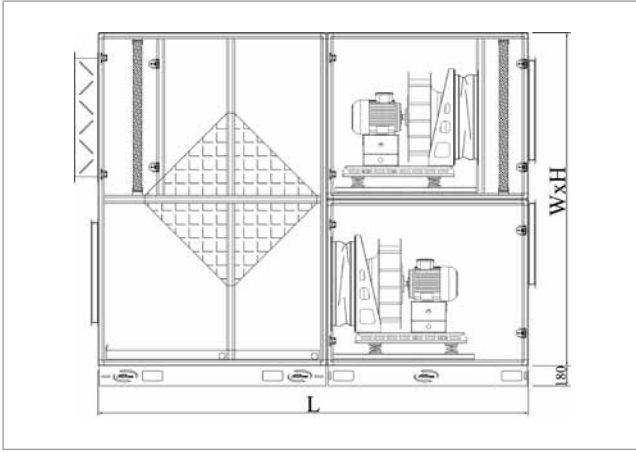
and holes at the corner of the chassis feet for handling it with crane or forklift.

Heat recovery units have automation systems (on demand).

Plate Type Heat Recovery Section

The casing and blade of the damper at plate type heat recovery section are manufactured from extruded aluminum profile. Opposed blades of damper have aerodynamic structure that reduce air friction. Blade mechanism of damper is from high strength plastic gears.

Open-close positions of the damper can be controlled manually or with servo motor. Fixed plate heat recovery units that are used at cross flow plate systems are made from formed aluminum sheet. Exhaust and fresh air passes through separate sections so they don't get mixed. Thanks to plate type heat exchangers, 40-60% energy efficiency (according to outside air and ambient air conditions) is provided. Therefore, by the energy provided from wasted energy, operating costs are minimized. By-pass applications with by-pass damper can be made, on customer demand.



Panel Filter Section

On supply and return circuits, there is G4 class cassette type filters placed before cross flow plate type heat exchanger, as standard. Filters' frame construction allows them to be easily removed and attached via inspection doors. Filter frames are made from galvanized sheet as sliding or cased types. For automation purposes, there are manometers on filter section showing the differential pressure of filter group.

Fan Section

At vertical type heat recovery units, double inlet centrifugal fans are used as standard. Fan-motor kit is placed on vibration absorbing chassis. Power transmission is provided from belt-pulley system. Thanks to this system fan rotation speed can be set as desired and optimal flow rate and pressure settings can be made. Plug fan application can also be made on customer demand. At plug fan applications, motor shaft is connected directly to fan body without any interconnect components. Motor rotation is equal to fan rotation and on AC motors, precise rotation speed adjustment, hence flow rate / pressure adjustments can be made by using frequency inverter.

Electric motors are IP54 protection class, 2-4 poled, 380 V, 50 Hz and surface cooled. Terminal box is IP55 protection class and the motors are in accordance to IEC 34-6 requirements. Minimum 15% fan rotation increase is taken into account while selecting the electric motor. Electric motor easily provides the necessary power even in this increased speed.

AP-DIGK Type Heat Recovery Devices Dimensions and Capacity Table

| MODEL | Airflow Rate (m ³ /h) | External Static Pressure (Pa) | Motor Power (kW-d/d) | Dimensions (mm) | | |
|-------------|----------------------------------|-------------------------------|----------------------|-----------------|------|------|
| | | | | W | H | L |
| AP-DIGK-50 | 5000 | 300 | 2,2 - 1500 | 900 | 1540 | 2300 |
| AP-DIGK-75 | 7500 | 300 | 3 - 1500 | 1100 | 1720 | 2550 |
| AP-DIGK-100 | 10000 | 300 | 4 - 1500 | 1300 | 2000 | 2850 |
| AP-DIGK-130 | 13000 | 300 | 5,5 - 1500 | 1600 | 2140 | 2950 |
| AP-DIGK-170 | 17000 | 300 | 7,5 - 1500 | 1600 | 2320 | 3200 |
| AP-DIGK-200 | 20000 | 300 | 7,5 - 1500 | 2100 | 2550 | 3300 |

HRV Plus

Ceiling Type

Heat Recovery Units



HRV Plus

Ceiling Type

Heat Recovery Units

Fresh air units with heat recovery are also known as HRV or VAM. HRV units are designed to meet supply and exhaust requirements indoor areas, and they provide energy saving by gaining heat energy from exhaust air without mixing it with fresh air, thanks to its special plate type heat exchanger and fans.

Material Used in Product

Carrying frame is from 1,00 mm double walled galvanized sheet and inside of the unit is insulated with 30 mm noise insulation. They have self motorized, exported, quiet, mono phase (230 V) plug fans that are suitable for speed control. At our heat recovery units, 45% to 60% efficient heat exchangers are used.

Operating Features

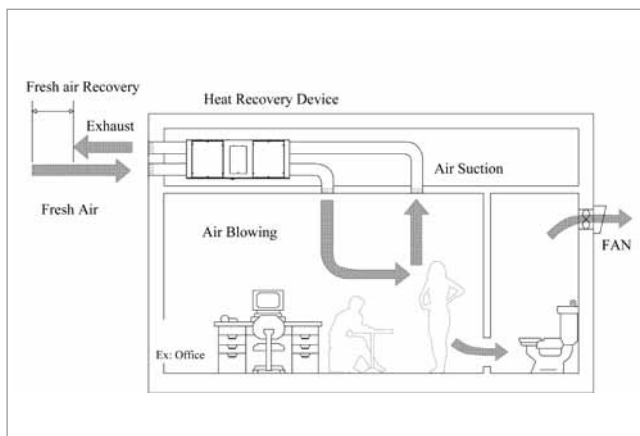
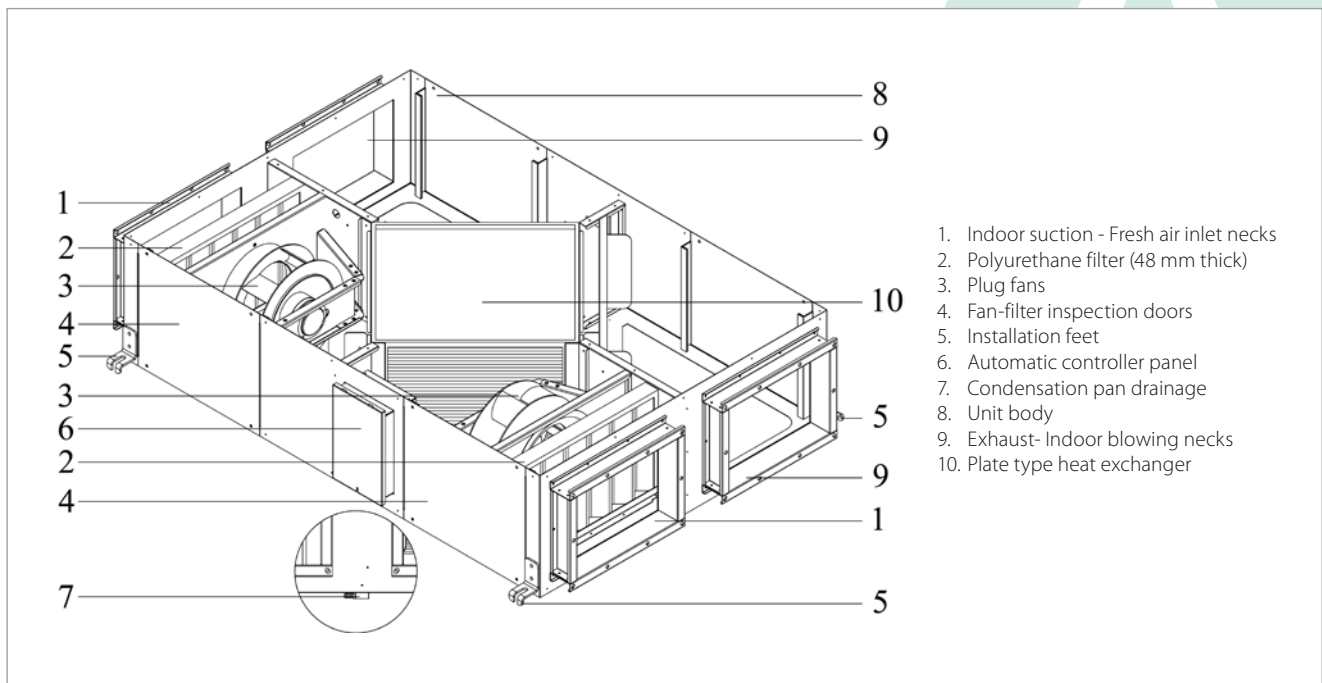
Ceiling type heat recovery units are designed to get high indoor air qualities besides providing energy saving. Efficient

heat transfer is made between warm and cold airflows by aluminum plate type heat exchanger with high performance and thermal conductivity. Beside its energy saving advantage, it also provides required fresh air in places where high exhausting is needed such as offices, banks, hotels, houses, cinema halls, exhibition halls, hospitals, multi-purpose halls, restaurants and cafeterias. Heat recovery units are manufactured in 10 standard models between 500 m³/h and 5000 m³/h airflow rates. Standard models are designed to be easily installed and maintained and their heights make them suitable to be used in suspended ceiling.



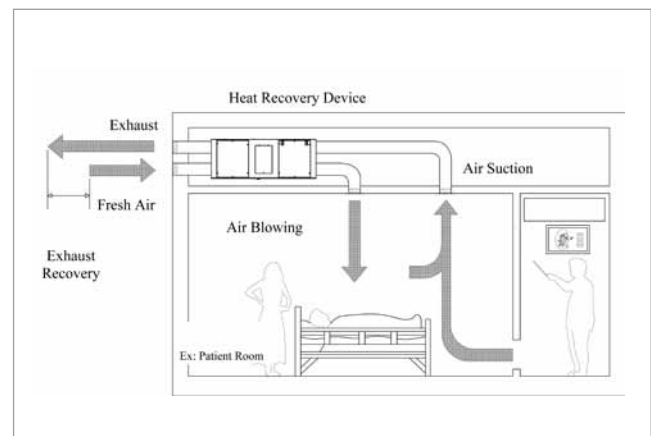
Functions

- Provides required fresh air and increases indoor air quality.
- Exhaust low quality indoor air.
- Conditions fresh air by using exhaust air energy.
- Filters supplied fresh air.



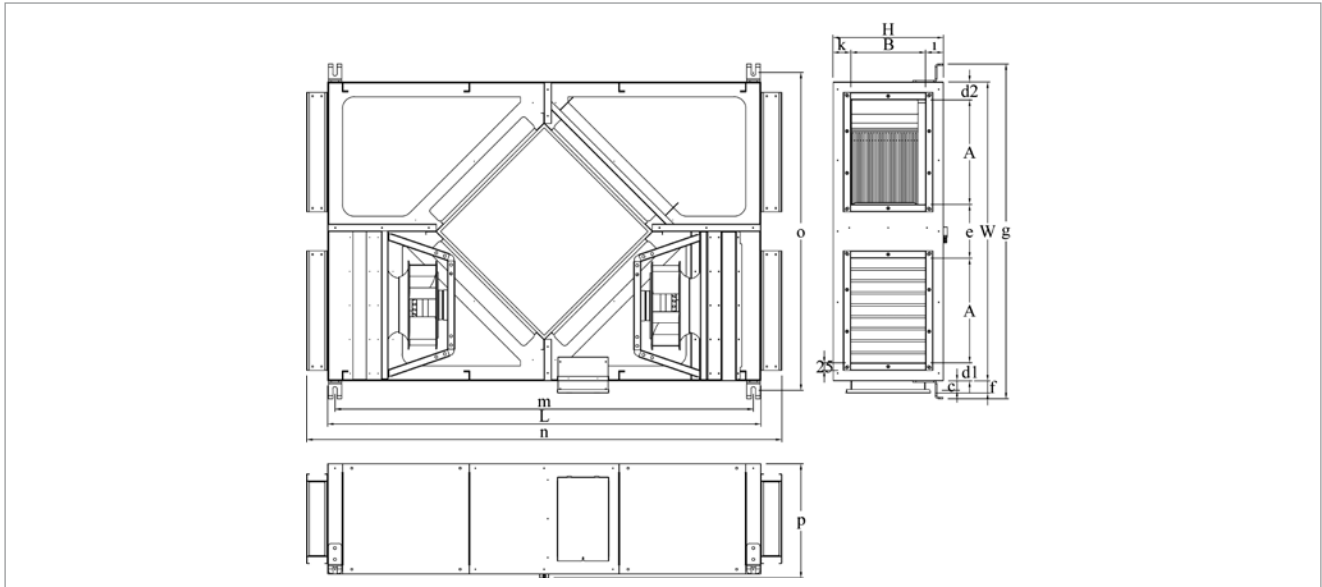
Supply Air Enrichment Mode

This mode is set to increase the air supply and to prevent the flow back of toilet-kitchen smells or moisture. This mode increases the room pressure.



Exhaust Air Enrichment Mode

This mode is set to increase the exhaust air and to prevent the leakage of smell or bacteria to other rooms. This mode decreases the room pressure.

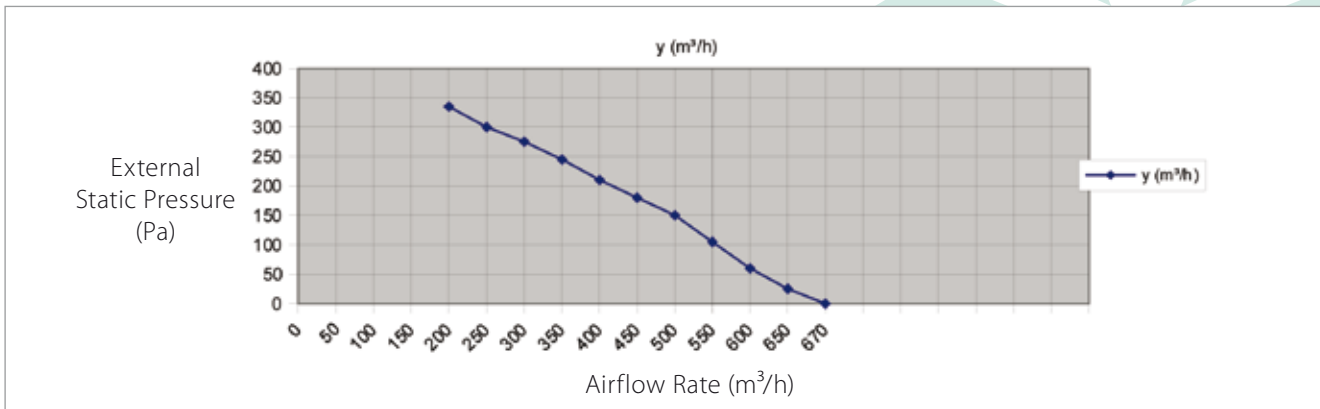


HRVPlus Type Heat Recovery Devices Dimensions, Airflow Rate - External Static Pressure and Electrical Power Table

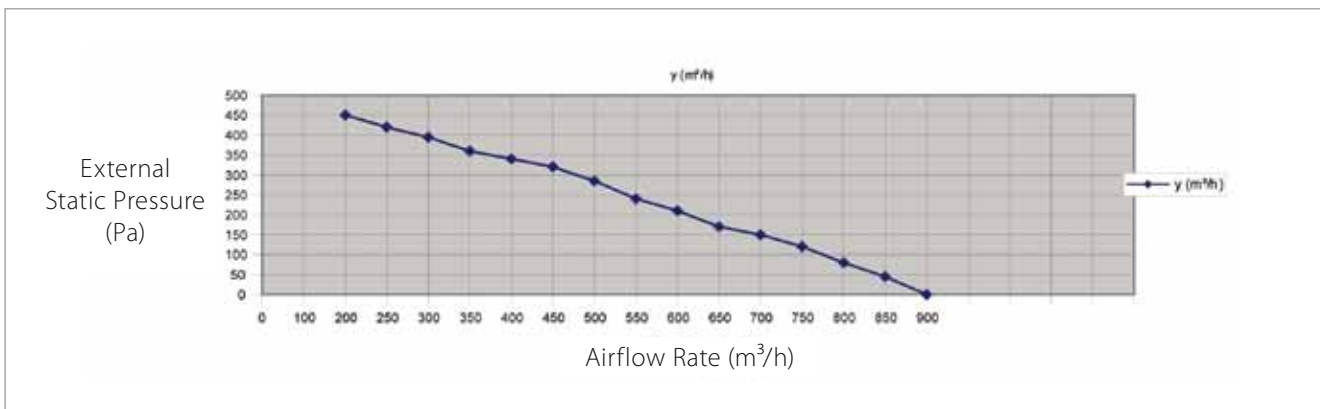
| MODEL | | HRVPlus-500 | HRVPlus-750 | HRVPlus-1000 | HRVPlus-1500 | HRVPlus-2000 | HRVPlus-2500 | HRVPlus-3000 | HRVPlus-3500 | HRVPlus-4000 | HRVPlus-5000 | |
|-----------------------------|-------------------------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|
| Airflow Rate | m ³ /h | 500 | 750 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 5000 | |
| External Static Pressure | | 150 | 120 | 165 | 250 | 120 | 175 | 140 | 180 | 100 | 140 | |
| Electrical Values | Voltage | V | 230 | 230 | 230 | 230 | 230 | 230 | 230 | 230 | 230 | |
| | Including Electrical Heater Voltage | V | 230 | 230 | 230 | 230 | 230 | 380 | 380 | 380 | 380 | |
| | Power | w | 90x2=180 | 130x2=260 | 185x2=370 | 515x2=1030 | 515x2=1030 | 690x2=1380 | 680x2=1360 | 680x2=1360 | 680x2=1360 | 1300x2=2600 |
| | Current | A | 0,4x2=0,8 | 0,6x2=1,2 | 0,85x2=1,7 | 2,25x2=4,5 | 2,25x2=4,5 | 3,1x2=6,2 | 3,0x2=6,0 | 3,0x2=6,0 | 3,0x2=6,0 | 5,7x2=11,4 |
| Sound Level of Noise | dBA | 44 | 46 | 46 | 52 | 50 | 48 | 46 | 47 | 47 | 52 | |
| Length | mm | 1150 | 1150 | 1150 | 1420 | 1420 | 1750 | 1750 | 1850 | 1850 | 1900 | |
| Width | mm | 800 | 800 | 800 | 1000 | 1000 | 1150 | 1150 | 1200 | 1200 | 1400 | |
| Height | mm | 370 | 370 | 370 | 370 | 370 | 560 | 560 | 600 | 600 | 750 | |
| Duct Connection (AxB) | mm | 280x250 | 280x250 | 280x250 | 350x250 | 350x250 | 400x350 | 400x350 | 450x400 | 450x400 | 450x400 | |
| c | mm | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | 38,5 | |
| d1 | mm | 60 | 60 | 60 | 60 | 60 | 125 | 125 | 100 | 100 | 133 | |
| d2 | mm | 60 | 60 | 60 | 60 | 60 | 50 | 50 | 37,5 | 37,5 | 133 | |
| e | mm | 120 | 120 | 120 | 180 | 180 | 175 | 175 | 162,5 | 162,5 | 233 | |
| f | mm | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 | |
| g | mm | 920 | 920 | 920 | 1120 | 1120 | 1270 | 1270 | 1320 | 1320 | 1520 | |
| i | mm | 60 | 60 | 60 | 60 | 60 | 105 | 105 | 100 | 100 | 175 | |
| k | mm | 60 | 60 | 60 | 60 | 60 | 105 | 105 | 100 | 100 | 175 | |
| m | mm | 1100 | 1100 | 1100 | 1370 | 1370 | 1700 | 1700 | 1800 | 1800 | 1850 | |
| n | mm | 1290 | 1290 | 1290 | 1560 | 1560 | 1890 | 1890 | 1990 | 1990 | 2040 | |
| o | mm | 877 | 877 | 877 | 1077 | 1077 | 1227 | 1227 | 1277 | 1277 | 1477 | |
| p | mm | 383 | 383 | 383 | 383 | 383 | 573 | 573 | 613 | 613 | 763 | |
| Weight | Kg | 65 | 69 | 75 | 105 | 123 | 182 | 182 | 206 | 206 | 292 | |
| Electrical Heater | kW | 1,5 | 2,5 | 3 | 4,5 | 6 | 7,5 | 9 | 10 | 12 | 12 | |
| (80-60°C) Water Coil Heater | | 2,7 | 3,4 | 3,9 | 6 | 7 | 8 | 8,5 | 9,4 | 10 | 12,4 | |

External Static Pressure - Airflow Rate Diagrams of HRVPlus Ceiling Type Heat Recovery Unit

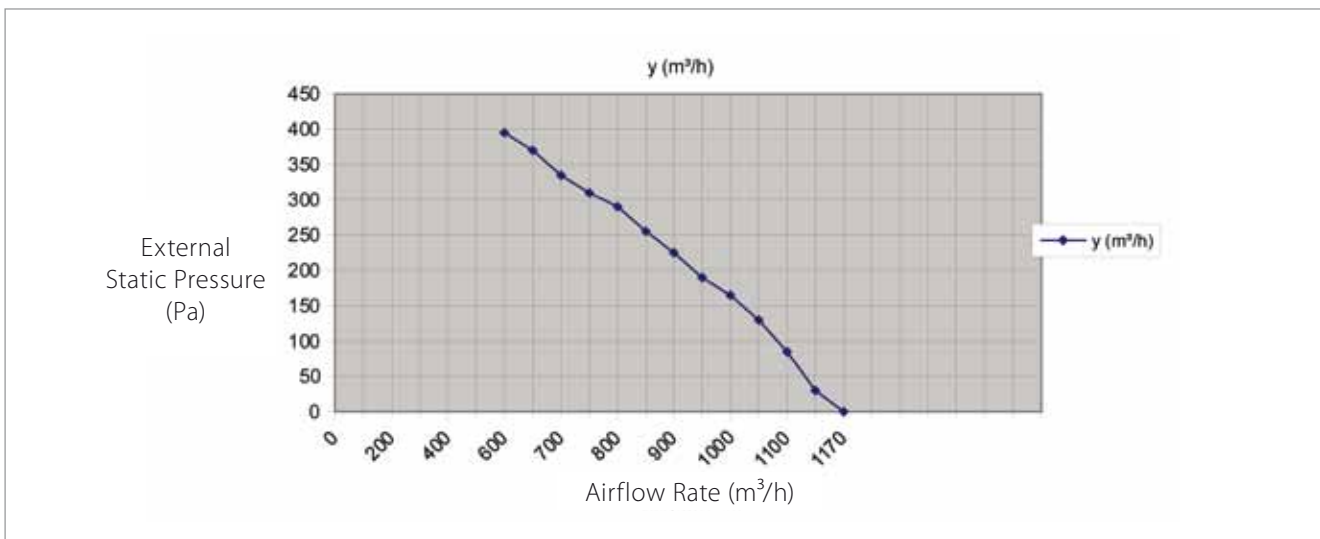
HRVPlus-500



HRVPlus-750

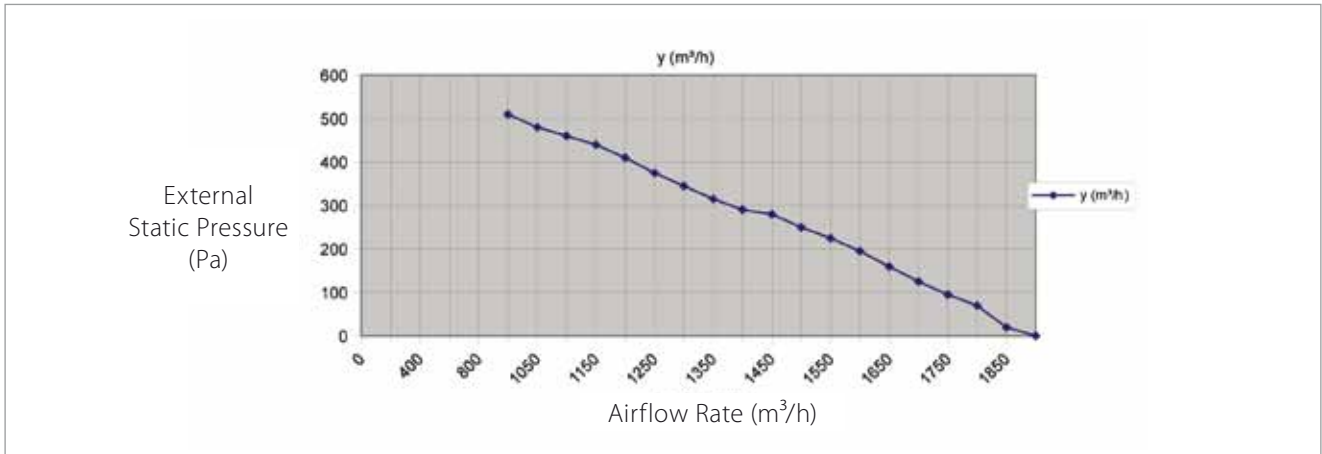


HRVPlus-1000

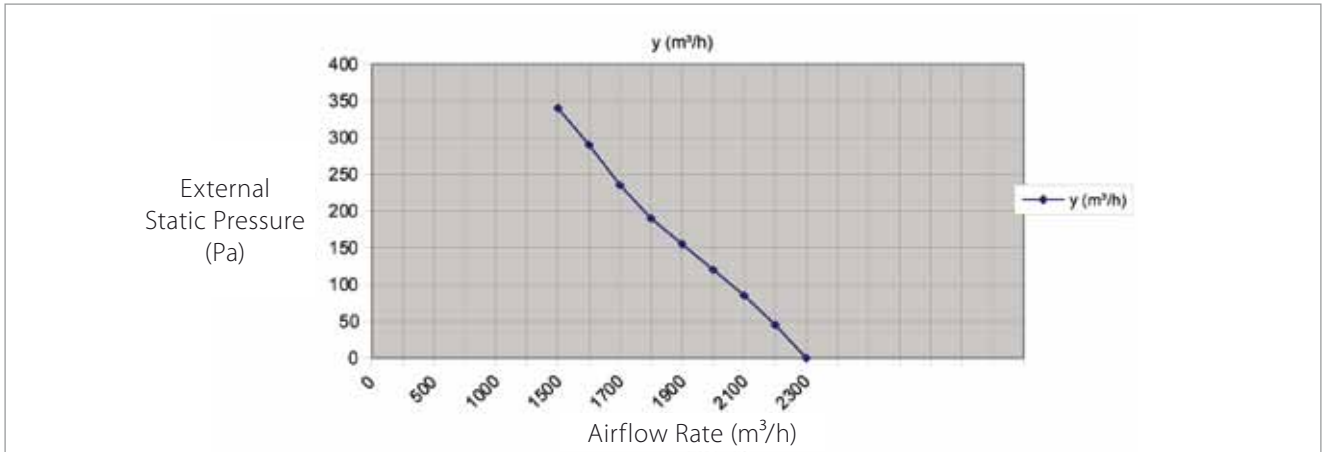


External Static Pressure - Airflow Rate Diagrams of HRVPlus Ceiling Type Heat Recovery Unit

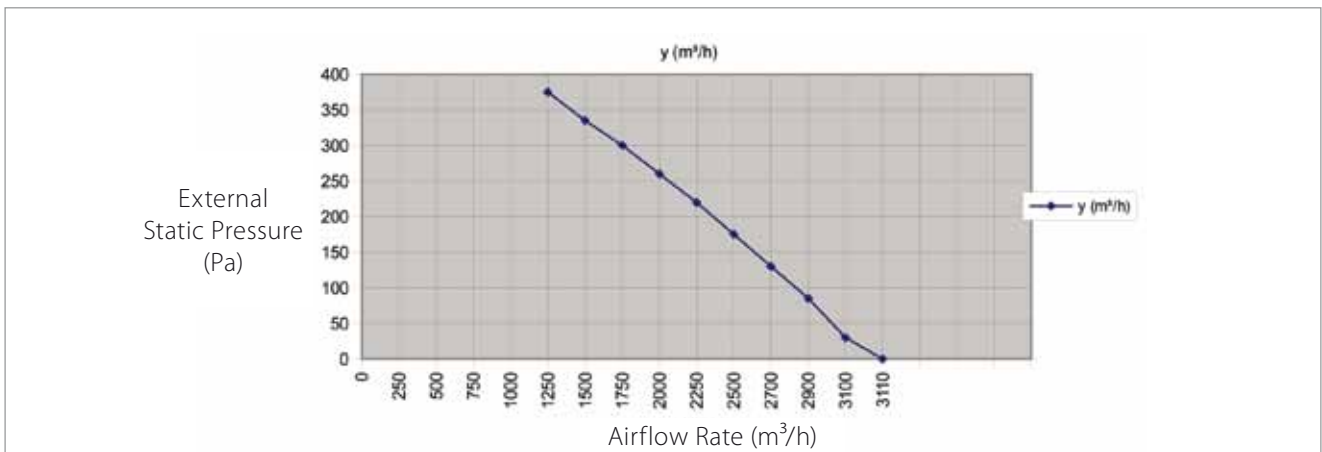
HRVPlus-1500



HRVPlus-2000

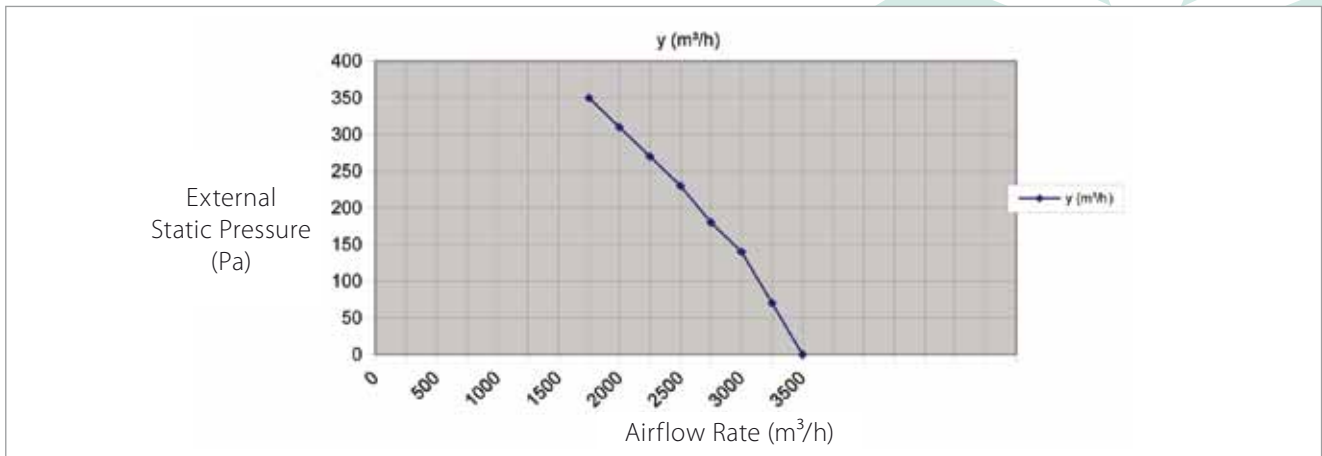


HRVPlus-2500

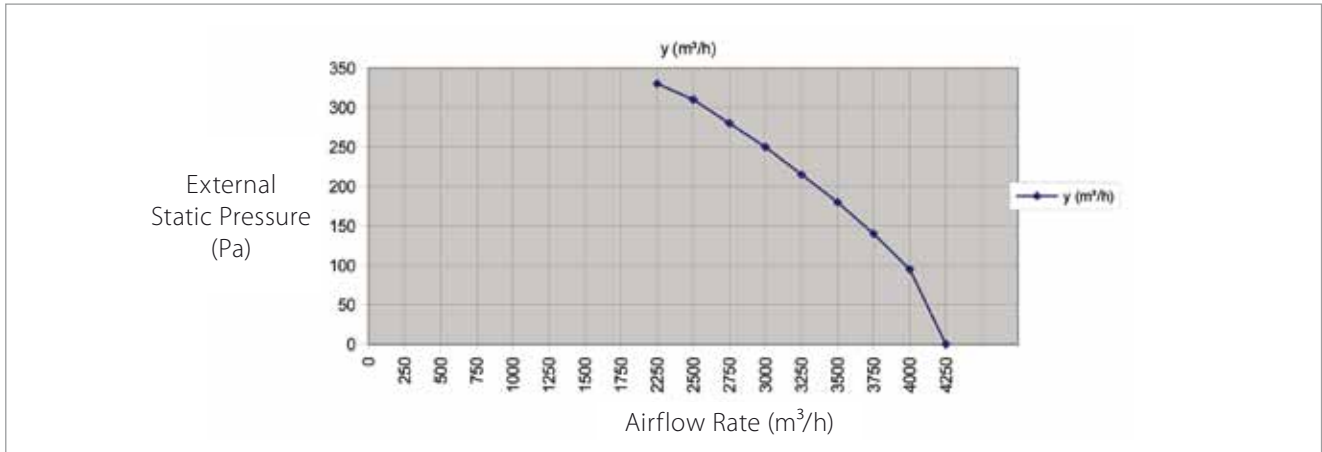


External Static Pressure - Airflow Rate Diagrams of HRVPlus Ceiling Type Heat Recovery Unit

HRVPlus-3000



HRVPlus-3500-4000



HRVPlus-5000

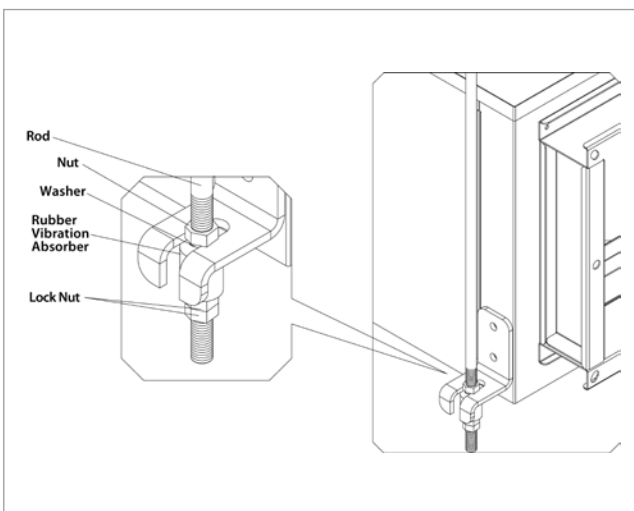


Things to Be Considered About Ceiling Type Heat Recovery Units

- This unit must not be used at places where humidity and temperature are very different such as heated swimming pools, cold storage depots. It must not be used at places that are exposed to rain. (Otherwise you may have electrical shock, and the unit does not operate properly.)
- Do not use this unit in abrasive environments (like acids) and in places causing corrosion (oil smoke, paint, toxic gasses etc.). Do not use it in flammable environments (containing explosive gas).
- Fixing of the unit with rods must be done durable enough and securely.
- Maintenance spaces must be considered while fixing the unit. Otherwise the unit cannot be interfered for filter change and when interference to fan motors needed.
- Exhaust air outlet and fresh air inlet (outdoor side of the unit) of unit should not get rainwater.
- Sharp turns, multiple elbows, sudden contraction or expansion at duct should not be allowed.

Installation of Ceiling Type Heat Recovery Units

Mounting feet are used for hanging the unit on ceiling. Use steel dowel and rod for hanging the unit. It is recommended to use rubber vibration absorber. Fix M12 rod, M12 washer, M12 nut and Rubber Vibration Absorber to each four mounting feet as shown in below figure. Check durability of rods while installation is done.



Accessories

Heat Recovery Unit Automatic Controller (Standard Type)

- Turkish and English display
- Stylish controller unit with LCD display
- 230 V AC power supply
- Set value is adjustable between 5-30 °C
- Seeing current ambient temperature on controller unit
- Direct access to feature desired to be used
- Controls aspirator and ventilator motor speeds manually in 6 stages for each
- Controls heating coils manually in 2 stages
- Electrical heater doesn't start until ventilator fan starts operating. When the unit is shut off electrical heater disengaged first and ventilator fan operates for a while to remove heat load.
- Ability to run electrical and water coils automatically or manually
- Displays fan speed stages while operating manually
- Ability to start or shut off the device from building central automation
- Displays line connection errors
- Ability to communicate up to 50 meter with 4x0,22 mm shielded cable
- Whatever the status of unit is in while the unit is interrupted because of power failure, it continues to run in the same status after the power has been supplied again.
- Suitable to connect differential pressure switch to check filter pollution (optional)
- Suitable to connect temperature sensor (optional)

Heat Recovery Unit Automatic Controller (Special Type)

- 220 V AC power supply
- 2 PCS 220V AC (triac) outlet
- Fuse and varistor protection. Fuse is used for protecting the unit from high current and varistor is used for protecting the unit from high voltage.
- Heater air inlets to detect and display any error on heaters in order to provide measures. DS18B20 temperature sensor is used. Ability to measure between -55 to +125 °C.
- BMS Run feature for start up and shut off. It operates according to signal coming from BMS (Building Management System). Fans will not operate if BMS is off. BMS is shut off if fans stop.
- A module can be added according to requirements to filter the

- noise caused from power supply and reduce the harmonics of current and voltage.
- RFI/EMI filter
- Heater control
 - Standard: 2 stages. On demand: 3 stages
 - On demand time-stage modulating heater control for more comfort
 - Pre heater control
 - Heater error inlets
 - Sensing and displaying the errors of heaters. Taking precautions on demand
- BMS_Run and BMS_Out (Digital inlet for start up and shut off)
- Filter pollution measurement to send "unit is running" information to BMS
- Besides sensing filter pass with differential pressure switch or similar equipment, filter permeability can be also measured by using differential pressure sensor and fan speed can be adjusted according to this information
- Outdoor temperature sensor (on demand)
- If unit has heater, its operating status is adjusted according to outdoor temperature
- If unit has pre heater, its operating status is adjusted according to outdoor temperature
- Supply air temperature sensor
- Too hot or too cold air supply can be prevented if modulating heaters are used by controlling supply air temperature
- Air quality sensor inlet
- It can be used to measure ambient air quality or similar purposes (i.e. Humidity sensor)
- Fan rotation speed outlet can send 0-10V DC, 0-5V DC information to outside for both fans
- Operating according to time
- Weekly program
- Night-day operating mode
- Constant sleep and constant fully operation with single button
- Modbus (for building management system)
- Fan rotation speed
- Error status
- Temperatures
- Operation parameters
- Time, date reading and setting

Electrical Heaters

Electrical heater is used at supply line of heat recovery unit to give additional heat to indoor at cold climates.

- Standard casing is from galvanized sheet and resistor from stainless steel pipe.
- There are two 80°C limit thermostats at electrical heaters; one of them is back up.
- Electrical heater doesn't start until ventilator fan is operating, thanks to automatic controller. When the unit is shut off electrical heater disengaged first and ventilator fan operates for a while to remove heat load.
- Mono phase electrical heaters are manufactured as single staged, and three phase heaters are 2 staged.

Electrical Heater Capacity Table

| MODEL | HRVPlus-500 | HRVPlus-750 | HRVPlus-1000 | HRVPlus-1500 | HRVPlus-2000 | HRVPlus-2500 | HRVPlus-3000 | HRVPlus-3500 | HRVPlus-4000 | HRVPlus-5000 |
|------------------------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Electrical Heater Power (kW) | 1,5 | 2,5 | 3 | 4,5 | 6 | 7,5 | 9 | 10 | 12 | 12 |
| Electrical Heater Grade | 1 | 1 | 1 | 1 | 1 | 1 // 2 | 1 // 2 | 1 // 2 | 1 // 2 | 1 // 2 |
| Voltage (V) | 230 | 230 | 230 | 230 | 230 | 380 | 380 | 380 | 380 | 380 |
| Current (A) | 6,6 | 10,9 | 13,1 | 19,6 | 26,1 | 11,4 | 13,7 | 15,2 | 18,3 | 18,3 |

Water Heaters

- Water coils make maximum heat transfer between air and fluid (water) inside thanks to mechanical bond between aluminum lamellas and copper pipe. They are used in places with hot water boiler at supply line of heat recovery unit to give additional heat to indoor at cold climates.
- It can be controlled manually or automatically via motorized valve by automatic controller.
- They are manufactured in standard capacities.

Water Coil Heater Capacity Table

| MODEL | HRVPlus-500 | HRVPlus-750 | HRVPlus-1000 | HRVPlus-1500 | HRVPlus-2000 | HRVPlus-2500 | HRVPlus-3000 | HRVPlus-3500 | HRVPlus-4000 | HRVPlus-5000 |
|--|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Fluid Side Temperature (Inlet / Outlet): 80 / 60°C (P.S.: In Istanbul Conditions) | | | | | | | | | | |
| Airflow Rate (m ³ /h) | 500 | 750 | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 5000 |
| Water Coil Heater Power (kW) | 2,7 | 3,4 | 3,9 | 6 | 7 | 8 | 8,5 | 9,4 | 10 | 12,4 |
| Water Pressure Drop (kPa) | 3 | 4 | 6 | 14 | 18 | 10 | 7 | 8 | 9 | 17 |

Internal Water Heater



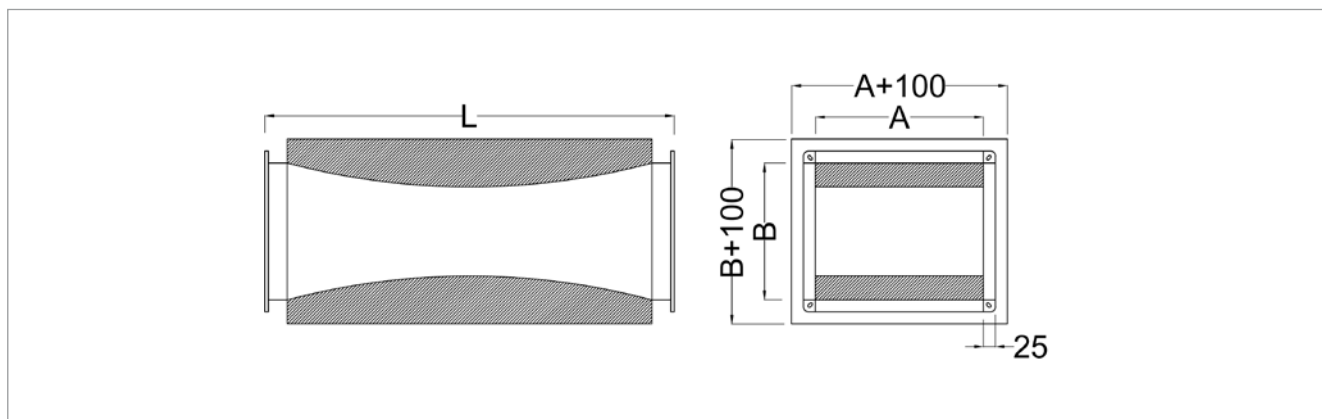
Internal Electrical Heater



Sound Attenuators

- External surface of sound attenuator is from galvanized sheet, internal surface which is exposed to airflow is from perforated galvanized sheet. Filler between two surfaces is from 50 or 100 mm thick, 70 kg/m³ dense, no-combustible Rockwool covered with fiberglass.
- On applications that require very low noise level; two sound attenuators can be used together.

| Attenuator Dimensions (mm) | | | Absorbing Capacity (dB) | Pressure Loss (Pa) |
|----------------------------|-----|------|-------------------------|--------------------|
| A | B | L | for 250 Hz | |
| 280 | 250 | 1000 | 5 | 10 |
| 350 | 250 | 1000 | 5 | 10 |
| 400 | 350 | 1000 | 5 | 11 |
| 450 | 400 | 1000 | 6 | 12 |



HRV-DX Plus

DX Ceiling Type

Heat Recovery Units



HRV-DX Plus

DX Ceiling Type Heat Recovery Units

Heat Recovery Units are the ones providing energy saving by recovering heat energy without mixing exhaust air and fresh air by means of fans included in heat exchanger with aluminum plate designed in order to meet exhaust and fresh air needs indoor areas. Heat recovery devices with DX coils are designed to provide 100% fresh air need. These devices operate with high COP and EER values by means of connections with exterior VRF units.

Product Material

The supported frame is double-walled and made of galvanized sheet having 1,00 thickness, the internal side of the device has sound insulation of 30 mm thickness.

It has engine driven, imported, silent, mono-phase (230V) plug fans suitable for speed control. In our heat recovery units, the heat exchangers having 45-60% efficiency are used.

DX coil and electronic control unit are placed in the device. The drain pan and drainpipe are placed under heat exchanger and DX coil. The bottom is coated with heat insulation against perspiration.

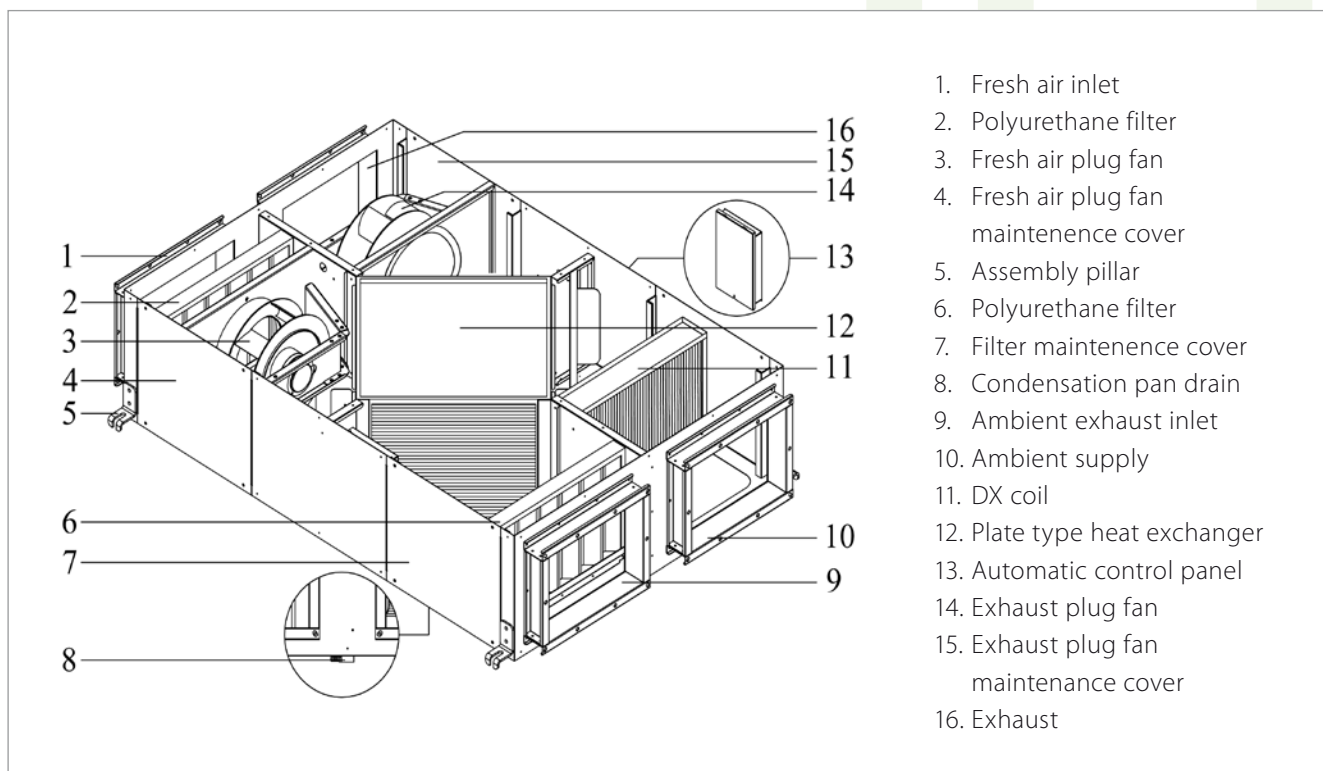
Operating Features

The ceiling type heat recovery devices are designed for obtaining high inside air quality as well as providing energy saving. An efficient heat transmission is provided between warm and cold air streams by means of heat exchangers with aluminum plates having high performance and thermal conductivity. Ambient air is cooled with DX coil. They are devices intended to provide fresh air in work places, banks, offices, hotels, houses, cinemas, exhibition-expo centers, hospitals, multi-purpose halls, restaurants, cafes and this type of places required to be exhausted intensively as well as having energy saving advantage. The devices are produced as standard 5 models within 750 m³/h-4000 m³/h airflow range. The models are designed in the appropriate height to be mounted on suspended ceiling and in a way to be mounted and maintenance can be made easily.



Function

- It provides the required fresh air to indoor and increase the air quality
- It discharges the poor quality air out from the ambient.
- It conditions fresh air by using energy of exhaust air.
- It provides filtration of fresh air supplied to indoor.
- It provides ambient cooling with DX coil-VRF external unit.



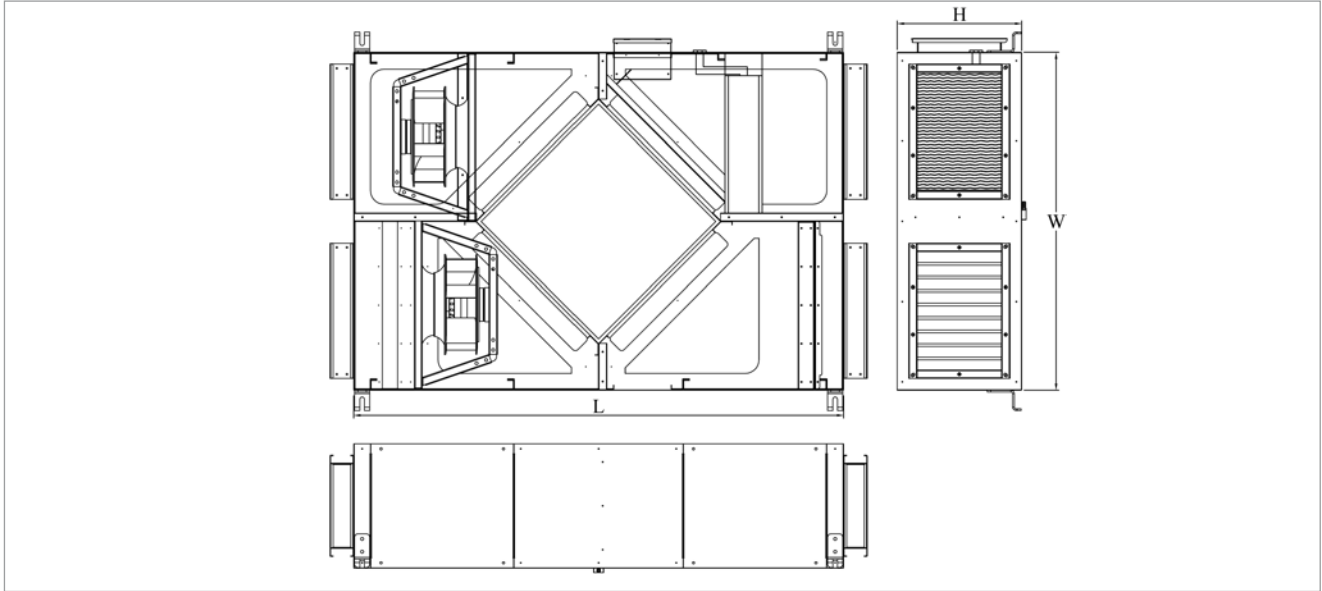


Table of HRV-DX Plus Dimensions, Flow Rate – External Pressure Loss

| MODEL | | HRV-DX Plus-750 | HRV-DX Plus-1000 | HRV-DX Plus-1500 | HRV-DX Plus-2500 | HRV-DX Plus-4000 |
|--------------------------|-------------------|-----------------|------------------|------------------|------------------|------------------|
| Airflow Rate | m ³ /h | 750 | 1000 | 1500 | 2500 | 4000 |
| External Static Pressure | Pa | 100 | 150 | 140 | 120 | 160 |
| Voltage | V | 230 | 230 | 230 | 230 | 230 |
| Power | w | 370 | 450 | 1030 | 1360 | 2600 |
| Current | A | 1,7 | 2 | 4,5 | 6 | 11,4 |
| Cooling Capacity | kW | 5,6 | 9 | 11,2 | 22,4 | 28 |
| Heating Capacity | kW | 6,3 | 10 | 12,5 | 25 | 31,4 |
| Noise level | dB(A) | 48 | 46 | 52 | 50 | 52 |
| Length (L) | mm | 1150 | 1400 | 1400 | 1700 | 1850 |
| Width (W) | mm | 950 | 1150 | 1250 | 1500 | 1600 |
| Height (H) | mm | 400 | 400 | 400 | 600 | 760 |
| Duct connection | mm | 280x250 | 280x250 | 350x250 | 350x250 | 450x400 |
| Weight | Kg | 85 | 105 | 125 | 215 | 300 |

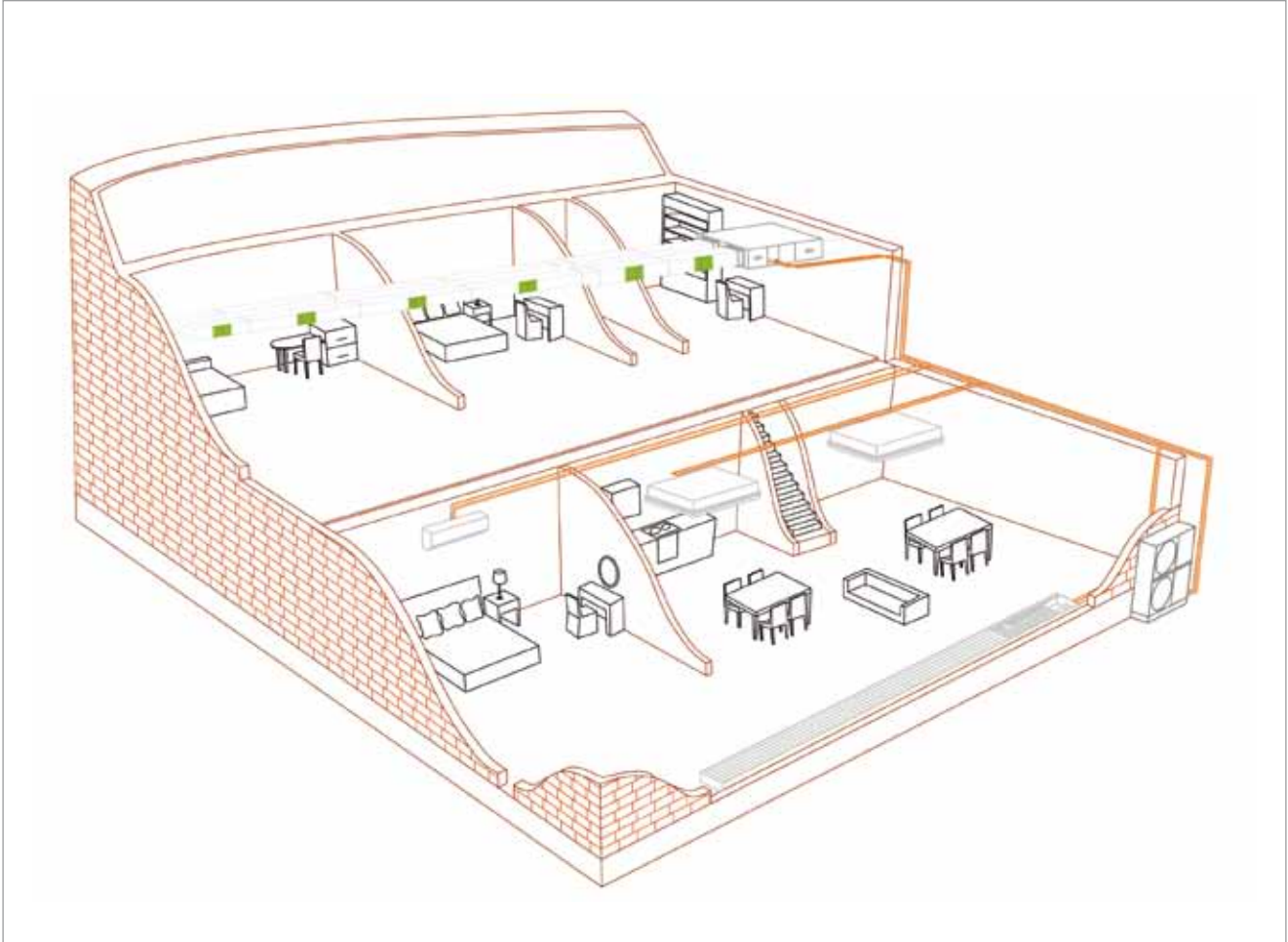
* When the electric heater is added to the device, length (L) is increased by 300 mm

Automatic Controller and Room Panel

- Turkish and English display
- Stylish room panel with LCD display
- 230V AC supply.
- Instant display of ambient temperature and adjust set value.
- 3 stage control for aspirator and ventilator severally.
- On-off control of DX coil expansion valve.
- Turn on/off device from building central automation.
- Ability to maintain the last operation status of the device during electricity failures when power failure is ended.
- Connection feature of differential pressure switch for filter pollution. (on demand)
- Connection of heat sensor (on demand)

Advantages of DX Ceiling Type Heat Recovery Unit

- The advantage by means of height for suspension to the suspended ceiling.
- Less energy loss in fluid pipes.
- Advantageous system in terms of operation and investment cost by means of high COP values, offering new, easy and fast solution to small and medium scaled facilities.
- Performance of heating and cooling through single VRF external unit, decrease in heating and cooling running costs.
- Optimum control with variable capacity compressors (inverter technology) and fans used in VRF external unit thus consumption of needed energy due to local control.
- Rapid response to partial loads.
- Saving from the large space to reserve for water cooling group and boiler.
- Take into regime within the possible shortest time.
- Non-availability of the freezing risk of water serpentine of device as it is present in conventional systems
- Lower maintenance expenses when compared to conventional systems.
- Static load imposed on the structure by the water amount flowing through steel piping, pump and pipe in conventional system with chiller and hot water boiler is very low in this system.
- Longer life when compared to conventional devices.



AP-MESF

Extractor Hood Stations



AP-MESF

Extractor Hood Stations

Double walled extractor hoods can be used in kitchens utilized in large volume places such as food factories, restaurants of shopping malls and hotels and cooking and frying areas. Airplus extractor hood stations are suitable for double walled extractor hood applications; it offers ideal solutions such as conditioning, ventilation and heat recovery thanks to DX coil-external unit option with its compact structure for kitchen applications. Its automation is on the panel of the device.

Cell Construction Structure

All automation holes required on the extractor hood stations are perforated during production phase. Engine connection cables are taken into switch box out of the cell. All automation can be gathered on the panel of the device according to request of the customer and all settings can be adjusted and delivered. The carcass of module cells of our extractor hood stations are made of natural anodized aluminum profile and plastic corner joints. The thickness of the cell panels are 42mm, the outer Wall is electrostatic powder painted, inner Wall is manufactured from galvanized sheet. The extractor hood stations are irreplaceable of the kitchen ventilation and kitchen ambient air conditioning applications by means of high efficiency and energy saving provided Rockwool filled panels, modern carcass structure, and silent, statically and dynamically balanced, efficient plug fans. Our standard electrical motors are 380V-50 Hz. All double walled panels are mounted to aluminum frame by special torch tipped M6 nuts.

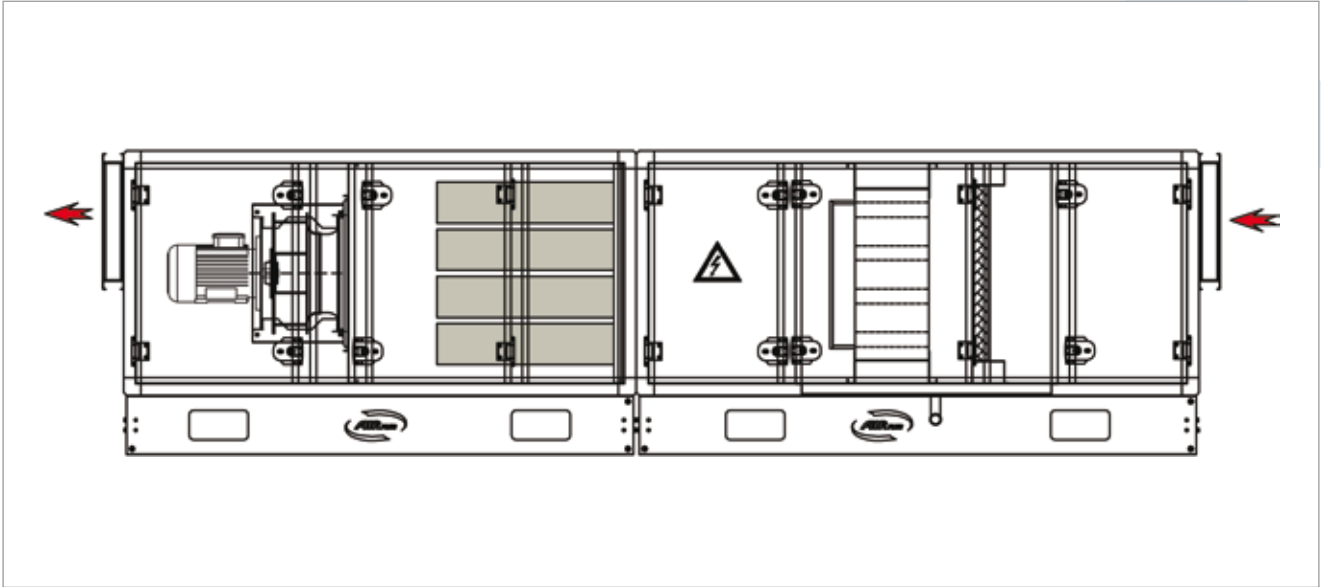
The service and inspection doors have standard gapless rigid hinges and lock mechanism with compression feature preventing air leakage and not forming protrusion within the cell. Doors are in double wall structure in a way not to scuff the carcass frames. There are 3 mm thick overall chassis stands having 180 mm height and made of galvanized sheet metal under the cells. There are slots at the corners of the chassis stands for handling with Crane and blade slots for handling with forklift.

Operation Features

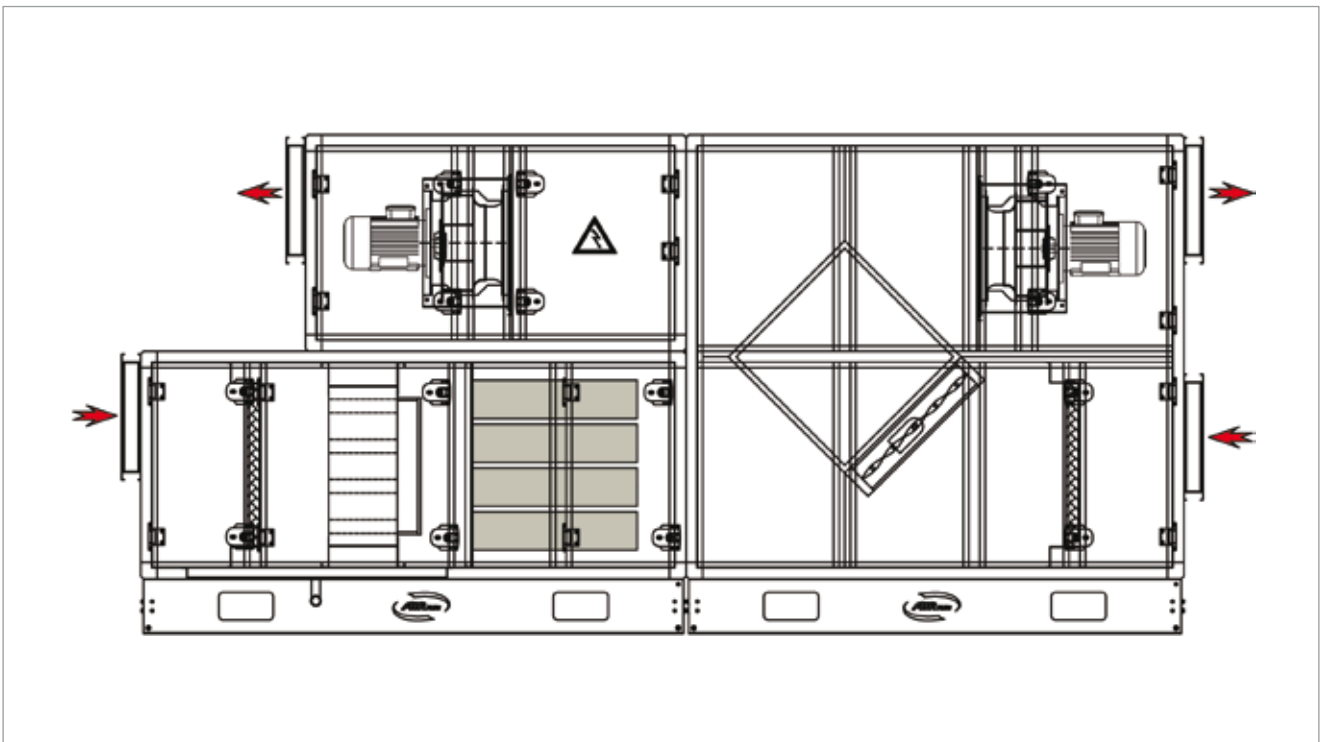
- It discharges the cooking gases and steam collected through extractor hood system in the kitchens during cooking as cleansed.
- The hot air formed in the kitchen is passed through the heat exchanger and the fresh air is conditioned by using heat recovery model without being mixed with hot air and transmitted to extractor hood system. In this way it provides energy saving.
- In model in which DX coil is used in fresh air line it is connected to external unit and it cools kitchen ambient by means of bypass damper.
- It increases the temperature of the fresh air with electrical heater (optional) after the heat in exhaust air is recovered.
- Less energy loss by means of DX-VRF system.
- It cleanses the ambient from particles and dust with G4 and/or F9 class filters in fresh air line.
- By means of metal filter, electrostatic filter and active carbon filter, the kitchen gases are exhausted with cleaning rate up to 99%. It provides minimum odor emission.
- Minimum environment pollution, it prevents dirty and oily air outlet from the funnel. Clean facility.
- It provides minimum efficiency loss.
- It provides minimum energy consumption.
- It extends the life cycle of fans and filters by means of the station.
- Availability of automation panel.
- Reasonable investment cost, offering easy and rapid solution, reasonable operating costs.

Models

Extractor Hood Station (100% Fresh Air)

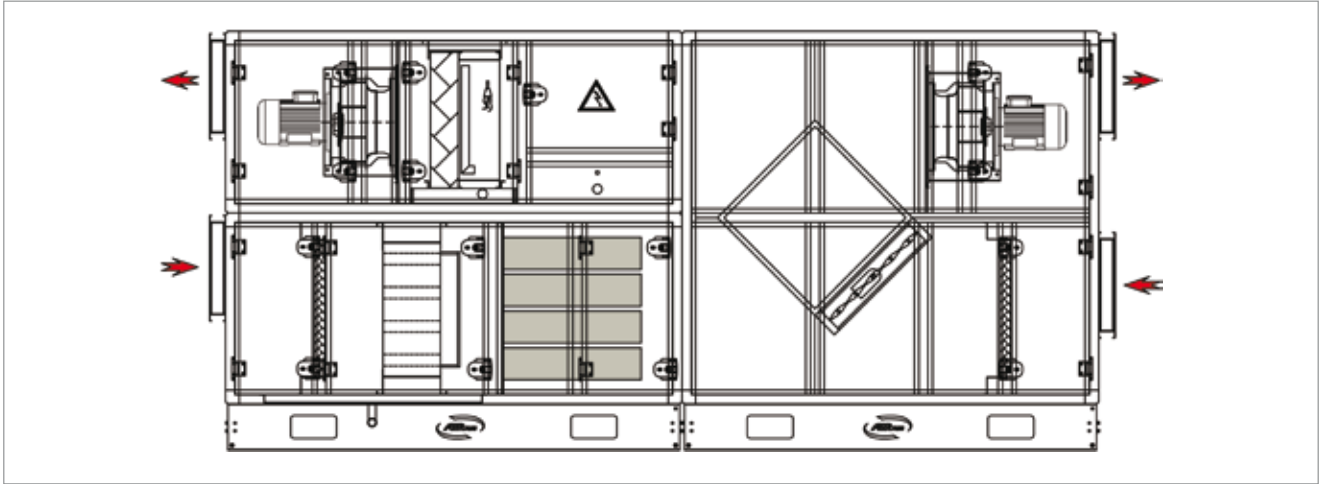


Heat Recovery Extractor Hood Station (100% Fresh Air)

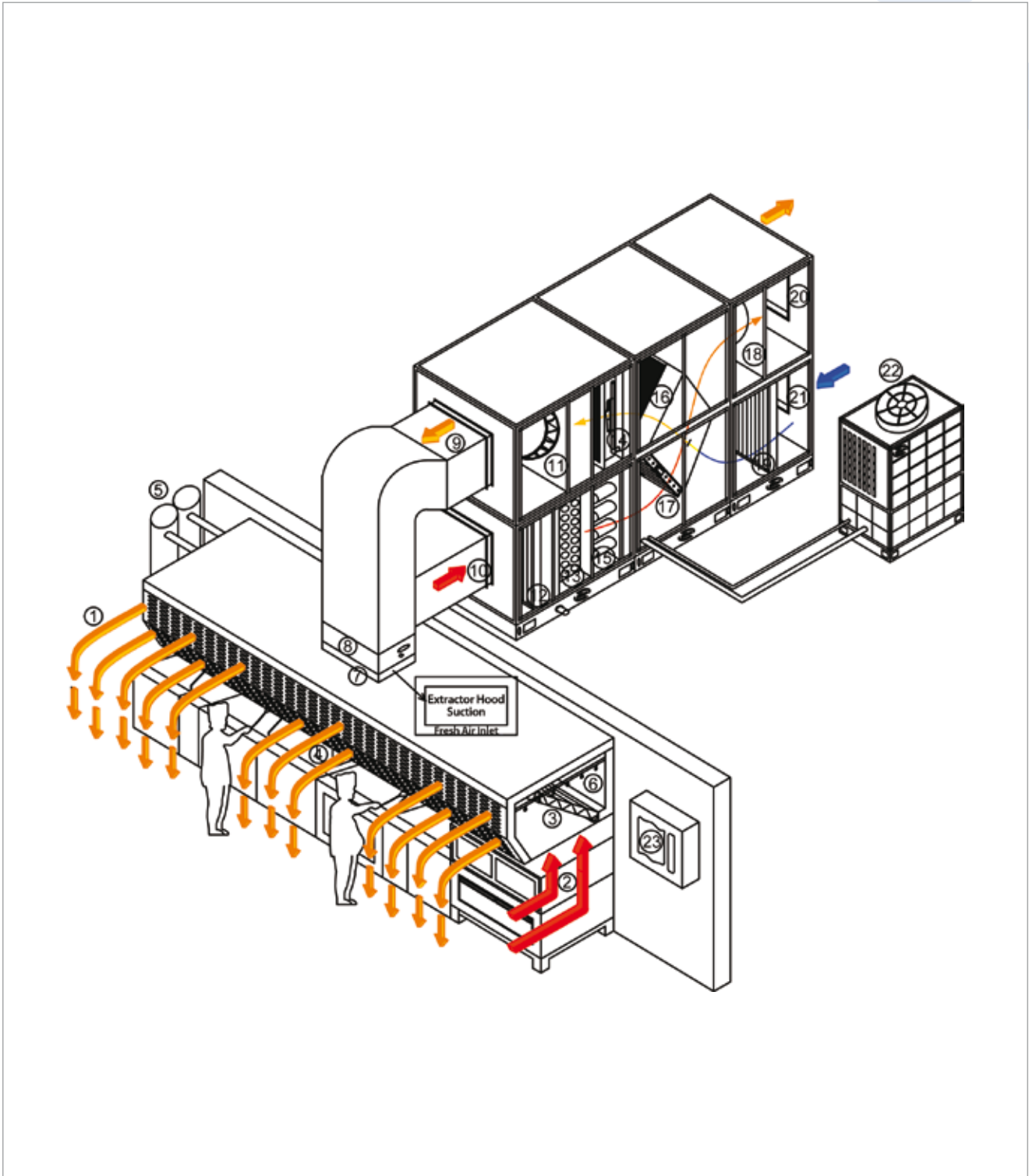


Models

Heat Recovery-DX Coil Extractor Hood Station (100% Fresh Air)



Extractor Hood System



Airplus Extractor Hood System Structure

A) Extractor Hood Structure

1. Fresh air supply to ambient
2. Cooker air exhaust
3. Metal filter
4. Extractor hood oil drainage
5. Fire extinguishers
6. Fire extinguisher nozzles

B) Duct Structure

7. Nested designed supply and exhaust ducts
8. 150 °C fused fire damper
9. Fresh air supply ambient
10. Extractor hood ambient exhaust

C) Station Structure

11. Ambient delivery fan
12. Metal filter (drain and pan)
13. Electrostatic filter (drain and pan)
14. DX coil
15. Active carbon filter
16. Plate type heat recovery
17. By-Pass damper (servo motor controlled)
18. Ambient exhaust fan
19. G4 cartridge filter
20. Exhaust (delivery to atmosphere) inlet
21. Fresh air inlet
22. VRF external unit

D) Automation Structure

23. Automation panel



EXTRACTOR HOOD STRUCTURE

It is manufactured from 316 quality stainless sheet metal. Unidirectional (wall side type) and bidirectional (in middle of the kitchen type) productions are performed. It takes in fresh air from vertical and inclined part of external side of extractor hood. The extractor hood performs the suction from internal part. Hot and oily air caused by the cooker pass through transversal metal filter. The oil retained by the metal filter is extracted by drainage line.

The energy saving is provided by performing heat transmission without mixing hot air passing through extractor hood into fresh air in winter by means of plate type heat exchanger in the station structure. Therefore, while the hot air conditioned in winter is being supplied to kitchen whereas the oily air formed due to cooker is cleaned and exhausted. The hot and oily air passing through extractor hood is cleaned and exhausted in the station without mixing into fresh air in summer and not passing through plate type heat exchanger. The fresh air to be supplied to kitchen ambient is cooled by passing through DX coil and sent to kitchen.

Thanks to this system, kitchen comfort conditions are provided while saving energy. It is also efficient for the ones working in front of the cooker in the kitchen. The fire extinguisher nozzles and fittings to extinguish the fire on the kitchen are available in the extractor hood. The fire extinguishers are available in the kitchen.

DUCT STRUCTURE

The section from upper part of the extractor hood to ambient Exhaust inlet of the station is comprised of nested designed two ducts. By this means, single inlet is used in the extractor hood. The interior duct is used to cleanse the air sucked from the extractor hood and exhaust to atmosphere and outer duct is used to supply the conditioned fresh air from outer wall to kitchen ambient.

150 °C fused fire damper is available in the duct for protecting human health, station and system against fires. This damper is closed during fire, thus fire is prevented from the station by decreasing oxygen in the kitchen.

STATION STRUCTURE

Exhaust and supply fans are made of backward sloping sparse blade metal material; the motor parts are insulated not to be exposed to air stream. The oily and smelly air in station's exhaust line is passed through metal filter; electrostatic filter and active carbon filter respectively. The metal filter is used to retain the oil particles, electrostatic filter is used to filter oil particles and soot, active carbon filter is used to filter toxic gases giving off smell with its gas molecule catching and retaining ability. The cumulative oil is discharged from the station by the drain pan under the metal filter and electrostatic filter.

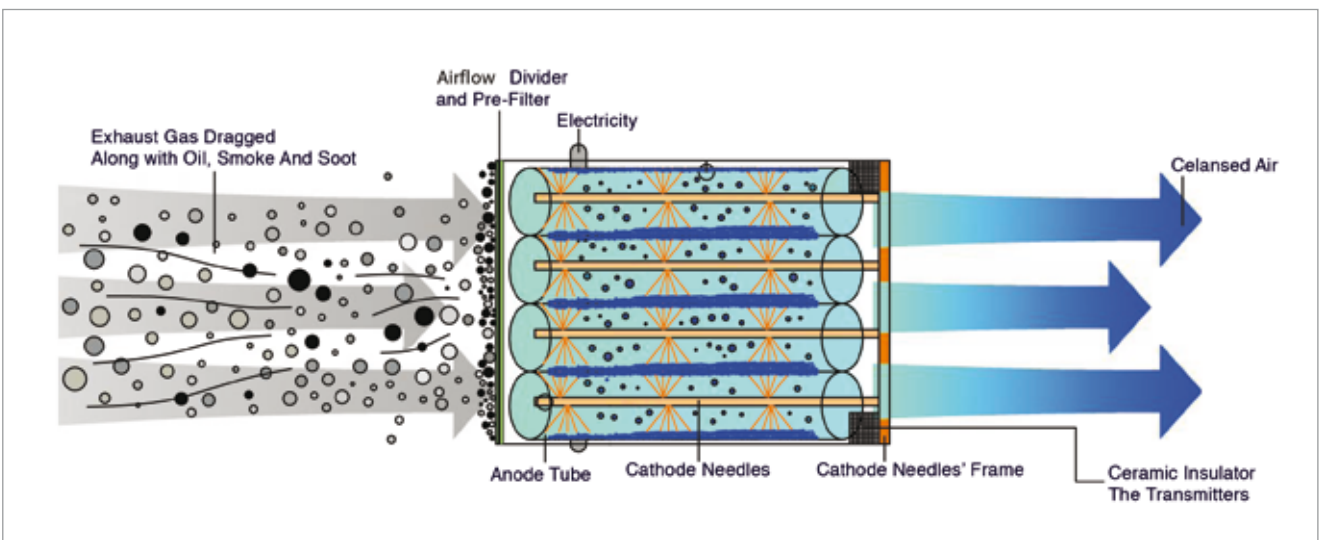
Plate type heat exchanger performs the function of transmission of cleansed hot exhaust air's heat energy to the fresh air by heat recovery. During this process, the air in both lines is not mixed. While the air sent out from the cooker is being cleaned and exhausted, the kitchen is heated by the heat recovery of the fresh air.

Cooling process of the kitchen is provided by turning off the heat exchanger by By-Pass damper found on the plate type heat exchanger, cleaning and exhausting exhaust air and passing fresh air through DX coil. For this process VRF external unit is used.



ELECTROSTATIC FILTER

The function of this filter is dissociate the particles from exhaust gases by applying an electrostatic load to smoke and soot particles by means of electrodes diffused from cathode side with the magnetic field formed with high voltage having negative ions generated by mixing and colliding electrons and air molecules. The negative electrostatic field formed by the power supply provides the dissociated exhaust gas to be sent out clean by retaining negative charged particles in positive charged anode section.



Active Carbon Filte

The active carbon filter has the property to catch and retain gas molecules. The surface of the active carbon filter is comprised of millions of small pores. Many odorous toxic gases are caught by means of these pores. The active carbons filters are replaced depending on the air pollution and frequency of use.



The Advantages of Airplus Extractor Hood Stations

- It has a package structure (automation, purification of kitchen air and delivery to the atmosphere, conditioning of kitchen air) and provides performance of various tasks through single device.
- It is an ideal solution and designed for double walled extractor hood systems.
- As the fan motor part is not exposed to air stream during the process of passing exhaust air through various filters, purified and delivered to the atmosphere, the life cycle of the product extends.
- The maintenance and cleaning of all components included in the device are performed with ease due to its ergonomic and sliding design.
- Stable operation and required extractor hood air speed are obtained by frequency inverters used in fresh air and exhaust lines.
- It reduces initial investment cost and operating cost up to 30% with heat recovery, double walled extractor hood and DX Coil-VRF external unit applications.
- It prevents environmental pollution by means of filters in use.
- It provides energy saving.
- It provides safety with the fire extinguisher system in double walled extractor hood system.



AP

Cell Type Aspirators



AP-EKO

Economic Series Cell Type Aspirators

AP-EKO series cell type aspirators are used for supplying fresh air or extracting ambient air in places where heating or cooling is not required. It is manufactured in high quality, fully impermeable and with low or high exhaust and supply capacity. Application areas are; workplaces, offices, cafeterias, supermarkets, restaurants, meeting halls, shopping malls, hospitals, kitchens, industrial facilities, banks etc.

Material Used in Product

Casing of our economic type cell type aspirators is manufactured from natural anodized aluminum profile and corner elements. Thickness of section panel is 25 mm, outer wall is electrostatic powder coated and inner wall is manufactured from galvanized sheet. They are indispensable at central ventilation applications thanks to its insulated panels, frame structure, statically and dynamically balanced, quiet, efficient double inlet centrifugal fans. Our standard electrical motors are 380V-50Hz.

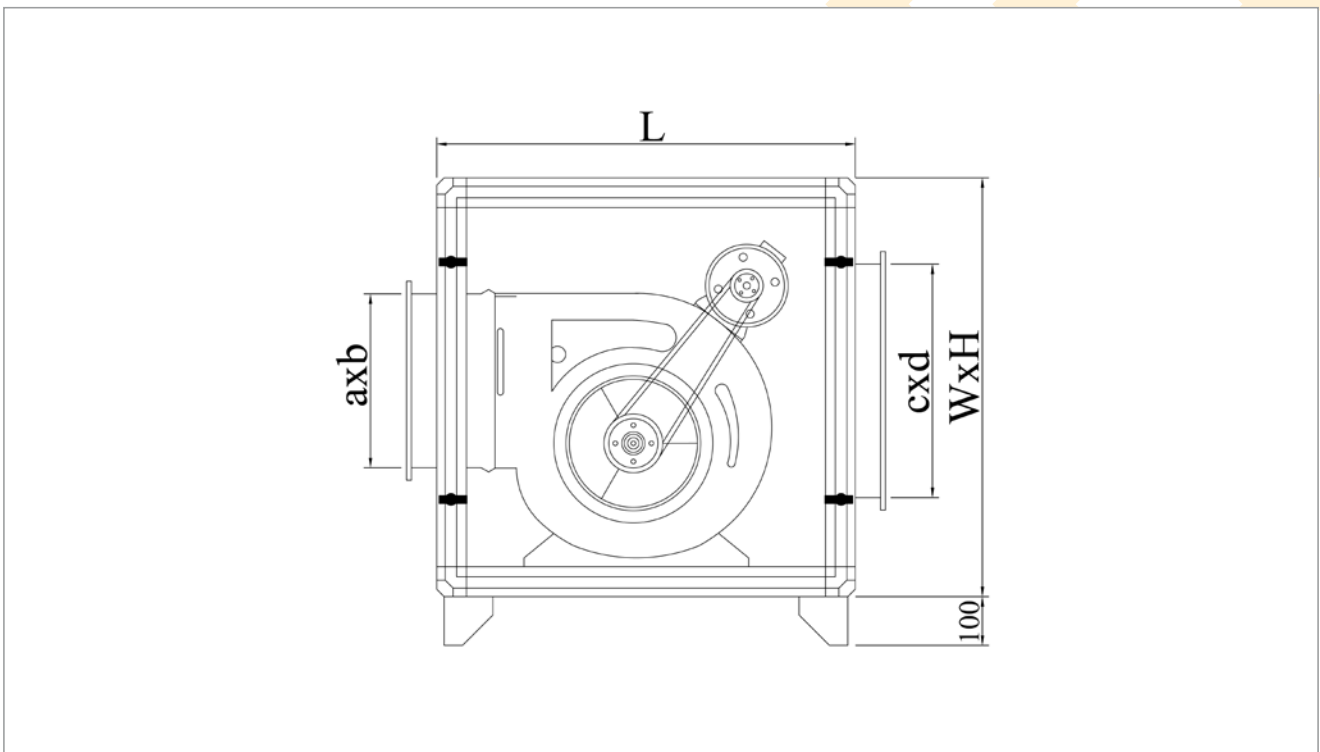
At AP-EKO series cell type aspirators, power transmission of fan-motor kit is made by belt and pulley system. In this

series, double inlet centrifugal fans are used and electrical motor is mounted over the fan. Optimum airflow rate and pressure values can be set by adjusting fan rotation speed via belt and pulley system. All double walled panels are fixed to the frame by screws. Standard maintenance and inspection doors have latch structure with compression feature that does not allow any air leakage. Under the sections, there are feet with 100 mm height manufactured from 2 mm galvanized sheet.

If the aspirator will be used for supplying fresh air, G3 or G4 filters can be added, on customer demand.



Dimensions and Capacity Table for AP-EKO Series Cell Type Aspirators



| MODEL | Airflow Rate (m ³ /h) | External Static Pressure (Pa) | Motor Power (kW-rpm) | Dimensions (mm) | | | Inlet (mm) | | Outlet (mm) | |
|------------|----------------------------------|-------------------------------|----------------------|-----------------|------|------|------------|-----|-------------|-----|
| | | | | W | H | L | c | d | a | b |
| AP-EKO-25 | 2500 | 300 | 0,75 - 1500 | 600 | 600 | 600 | 350 | 350 | 230 | 210 |
| AP-EKO-40 | 4000 | 300 | 1,1 - 1500 | 700 | 700 | 700 | 450 | 450 | 300 | 260 |
| AP-EKO-50 | 5000 | 400 | 1,5 - 1500 | 800 | 800 | 800 | 500 | 500 | 330 | 290 |
| AP-EKO-70 | 7000 | 400 | 2,2 - 1500 | 900 | 900 | 900 | 600 | 600 | 400 | 340 |
| AP-EKO-100 | 10000 | 400 | 3 - 1500 | 900 | 900 | 900 | 700 | 700 | 470 | 405 |
| AP-EKO-140 | 14000 | 400 | 4 - 1500 | 1100 | 1100 | 1200 | 850 | 850 | 560 | 480 |
| AP-EKO-170 | 17000 | 400 | 5,5 - 1500 | 1200 | 1200 | 1200 | 950 | 950 | 560 | 480 |

AP-S

Standard Cell Type Aspirators

AP-EX

Ex-Proof Cell Type Aspirators

Material Used in Product

Casing of our cell type aspirators are manufactured from natural anodized aluminum profile and plastic corner elements. Thickness of section panel is 25 mm or 42 mm according to customer demand, outer wall is electrostatic powder coated and inner wall is manufactured from galvanized sheet. They are indispensable at central ventilation applications due to its high efficiency and energy saving provided by its 70 kg/m³ dense Rockwool filled panels, modern frame structure, statically and dynamically balanced, quiet and efficient double inlet centrifugal fans or plug fans on demand. Our standard electrical motors are 380V-50Hz. At AP-S series standard cell type aspirators, fan-motor kit is placed on a vibration absorbing chassis and power transmission is made by belt and pulley system. Thanks to this system, optimum airflow rate and pressure values can be set by adjusting fan rotation speed as desired.

All double walled panels are fixed to the aluminum frame with screws. Double-walled rigid standard inspection doors have gapless rigid hinge, lock mechanism that won't create protrusion at the frame and won't allow air leakage with compression feature. There are 180 mm high, full-length chassis feet under the section. There are slots and holes at the corner of the chassis feet for handling it with crane or forklift.

If the aspirator will be used for supplying fresh air, rough or compact filter can be added, on customer demand. AP-EX series cell type aspirators have double inlet centrifugal fans

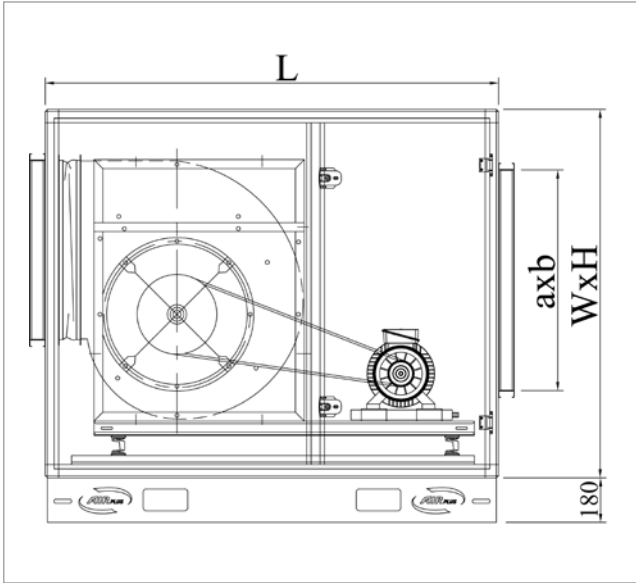
with ex-proof feature that prevent possible spark formation which can be happened because of impacts between rotary and fan body, thanks to its copper body exhaust cone. Our ex-proof electrical motors are 380V-50Hz.

Operating Features

AP-S series cell type aspirators are used for supplying fresh air in places where heating or cooling is not required. It is manufactured in high quality, fully impermeable and with low or high exhaust and supply capacity according to ambient air quality. Application areas are workplaces, offices, cafeterias, supermarkets, restaurants, meeting halls, shopping malls, hospitals, kitchens, industrial facilities, banks etc.

AP-EX series cell type aspirators are used at leading sectors of industry such as petro chemistry, pharmaceutical, dye industry, food, crude oil, and natural gas transportation. Considering the presence of explosive gases in these industries, we manufacture cell type aspirators at the most accurate protection class by using ex-proof fan and motor, without compromising safety. Ex-proof fans and motors keep their operating temperature while ambient temperature rises. Our cell type aspirators with ex-proof fan and motor providing the highest safety standards are designed to operate safely in places where explosives are present.

Dimensions and Capacity Table for AP-S and AP-EX Cell Type Aspirators



| MODEL | Airflow Rate (m ³ /h) | Fan Model | Dimensions (mm) | | | Inlet (mm) | |
|-----------|----------------------------------|---------------|-----------------|------|------|------------|------|
| | | | W | H | L | a | b |
| AP-S-25 | 750 - 2500 | 7-7/200/225 | 700 | 700 | 800 | 620 | 250 |
| AP-S-40 | 2500 - 4000 | 9-9/250/280 | 800 | 800 | 1000 | 720 | 300 |
| AP-S-60 | 4000 - 6000 | 10-10/280/315 | 900 | 900 | 1100 | 820 | 400 |
| AP-S-70 | 5000 - 7000 | 12-12/315/355 | 1000 | 1000 | 1200 | 920 | 450 |
| AP-S-80 | 6000 - 8000 | 15-15/355/400 | 1100 | 1100 | 1300 | 1020 | 450 |
| AP-S-100 | 8000 - 10000 | 18-13/355/400 | 1200 | 1200 | 1400 | 1120 | 500 |
| AP-S-120 | 10000 - 12000 | 18-18/400/450 | 1200 | 1200 | 1400 | 1120 | 600 |
| AP-S-150 | 12000 - 15000 | 18-18/450/500 | 1300 | 1300 | 1400 | 1220 | 650 |
| AP-S-180 | 15000 - 18000 | 500/560 | 1400 | 1300 | 1500 | 1320 | 700 |
| AP-S-250 | 20000 - 25000 | 560/630 | 1700 | 1500 | 1700 | 1620 | 800 |
| AP-S-300 | 25000 - 40000 | 630/710 | 1700 | 1700 | 1900 | 1620 | 1300 |
| AP-S-400 | 30000 - 40000 | 710/800 | 2200 | 2000 | 2200 | 2120 | 1000 |
| AP-S-600 | 40000 - 60000 | 710/800/900 | 2600 | 2000 | 2300 | 2520 | 1300 |
| AP-S-700 | 60000 - 70000 | 800/900 | 2600 | 2200 | 2300 | 2520 | 1500 |
| AP-S-1000 | 70000 - 100000 | 900/1000 | 2600 | 2300 | 2400 | 2520 | 2100 |

AP-M

Cell Type Kitchen Aspirators

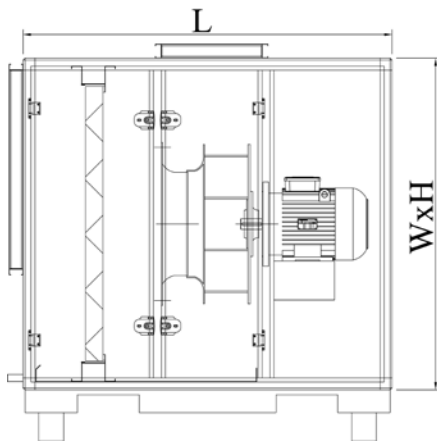
AP-M cell type kitchen aspirators are designed to exhaust hot, oily and humid air formed while cooking at industrial kitchens and cooking areas.

Material Used in Product

Casing of our cell type aspirators is manufactured from natural anodized aluminum profile and plastic corner elements. Thickness of section panel is 25 mm or 42 mm according to customer demand, outer wall is electrostatic powder coated and inner wall is manufactured from galvanized sheet. They are indispensable at central ventilation applications due to its high efficiency and energy saving provided by its 70 kg/m³ dense Rockwool filled panels, modern frame structure, statically and dynamically balanced, quiet and efficient plug fans. Our standard electrical motors are 380V-50Hz. At AP-M cell type kitchen aspirators; electrical motor side of fan is insulated to prevent exposure to airflow. The air extracted to the atmosphere is cleaned from oil and soot particles by grease filter placed at the inlet of kitchen type aspirators. Drainage pan and drainage outlet are standard in order to drain the condensed oil and moisture and also to drain the water and chemical cleaners used while chemical cleaning thanks to grease filter and drainage groove. Cell Type Kitchen aspirators are suitable to be operated with frequency inverters. All double-walled panels are mounted to the aluminum frame by nuts. Double-walled rigid standard maintenance and inspection doors have gapless rigid hinge, lock mechanism that won't create protrusion inside of the section and won't allow air leakage with compression feature. Doors are double-walled and have a rigid structure, and they won't rub the frame. Under the section, there are chassis feet manufactured from 2 mm galvanized sheet and vibration absorbing plastic wedges. There are slots at the corner of the chassis feet for handling it with forklift.



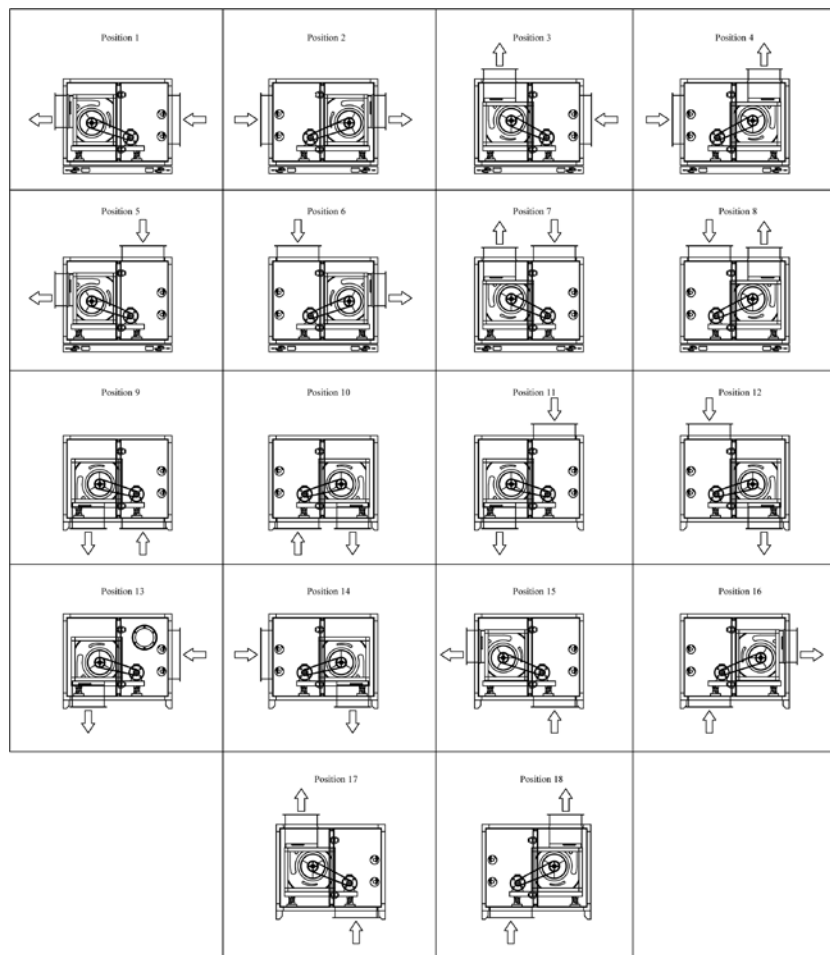
Dimensions and Capacity Table for AP-M Cell Type Aspirators



| MODEL | Airflow Rate (m ³ /h) | Motor Power (kW) | Dimensions (mm) | | |
|----------|----------------------------------|------------------|-----------------|------|------|
| | | | W | H | L |
| AP-M-20 | 2000 | 0,75 | 850 | 850 | 1150 |
| AP-M-35 | 3500 | 0,75 | 950 | 950 | 1250 |
| AP-M-54 | 5400 | 1,1 | 1050 | 1050 | 1350 |
| AP-M-78 | 7800 | 1,5 | 1150 | 1150 | 1450 |
| AP-M-90 | 9000 | 2,2 | 1250 | 1250 | 1550 |
| AP-M-116 | 11600 | 3 | 1250 | 1250 | 1550 |
| AP-M-150 | 15000 | 4 | 1350 | 1350 | 1650 |
| AP-M-174 | 17400 | 5,5 | 1350 | 1350 | 1650 |

Configuration Schema of Cell Type Aspirators

Looking Towards the Service Door, Supply and Return Direction Selection Schemas



AP-SS

*Shelter Air Handling
Units*



AP-SS

Shelter Air Handling Units

Shelter ventilation must be designed to provide air to meet minimum living conditions of people benefiting the shelter as long as their stay.

Inside the shelter, 50 Pa positive pressure must be provided by outside in order to prevent leakage of radiation, biologic and chemical dust and particles into the shelter. Shelter air shouldn't be heated, cooled and humidified. Shelters must have a normal ventilation system and a protective ventilation system.

Material Used in Product

Frames of our shelter air handling units are manufactured from natural anodized aluminum profile and plastic corner elements. Thickness of section panel is 42 mm, outer wall is electrostatic powder coated and inner wall is manufactured from galvanized sheet. There is 70 kg/m³ density Rockwool filled between walls.

On customer demand, interior section walls are covered with 1,20 mm lead plate for protection from harmful effects of X rays. Statically and dynamically balanced, quiet, efficient double inlet, backward curved centrifugal fans are used.

Electrical motors are 380V-50Hz.

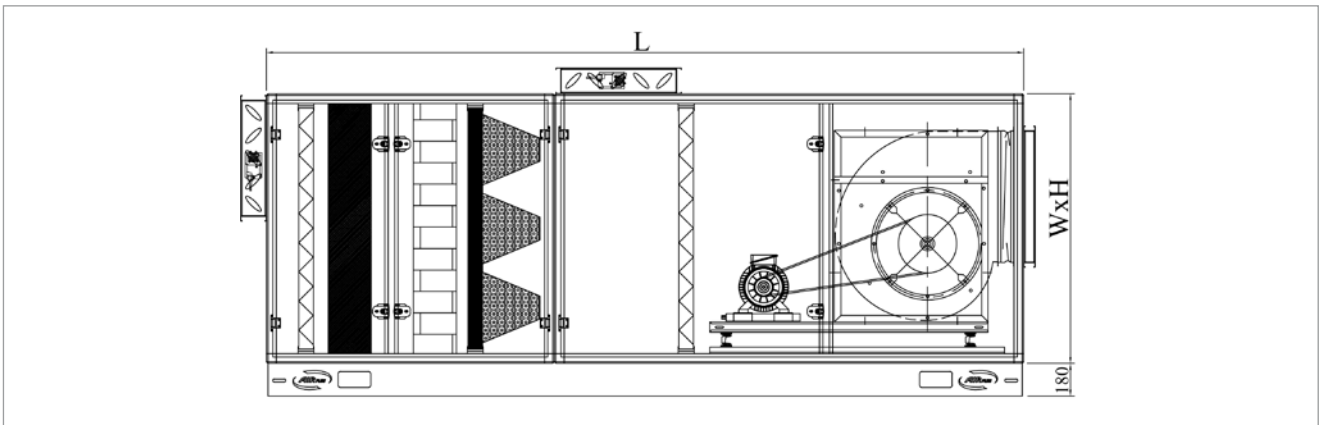
All double-walled panels are mounted to the aluminum frame by nuts. Double-walled rigid standard inspection doors have gapless rigid hinge, lock mechanism that won't create protrusion inside of the section and won't allow air leakage with compression feature. Doors are double-walled and have a rigid structure, and they won't rub the frame.

Motor connection cables are taken out to the junction box. Under the section, there are 180 mm high, full-length chassis feet manufactured from 2 or 3 mm galvanized sheet. There are slots and holes at the corner of the chassis feet for handling it with crane or forklift.

Unit is designed that if the outside air is polluted with radiation, biological or chemical dust and particles, air goes through G4 panel filter, F7 bag filter, radioactive nuclear filter, lead separator and active carbon filter, and in normal times air only goes through G4 panel filter.

Emergency and regular time dampers of shelter air handling units have spring return and on/off damper motor. To get the desired working condition relevant damper is opened and the other is closed. This way, special filters won't be used at normal times.

Dimensions and Capacity Table for AP-SS Shelter Air Handling Units



| MODEL | Airflow Rate (m ³ /h) | External Static Pressure (Pa) | Motor Power (kW) (380V - 50Hz) | Dimensions W x H x L (mm) |
|-----------|----------------------------------|-------------------------------|--------------------------------|---------------------------|
| AP-SS-200 | 2000 | 400 | 1,5 | 800 x 700 x 4400 |
| AP-SS-360 | 3600 | 400 | 2,2 | 800 x 900 x 4400 |
| AP-SS-540 | 5400 | 400 | 3 | 1100 x 900 x 4500 |
| AP-SS-720 | 7200 | 400 | 4 | 1400 x 900 x 4500 |

Section placement:

G4 Filter + Radioactive Filter + Lead Separator + Active Carbon Filter + Bypass Section + G4 Filter + Fan Section

AP Series

Floor Convectors



AP.C Series

Floor Convectors with Natural Convection

Floor Convectors

AP Series floor convectors are ideal complementary products to under floor heating; designed to prevent heat transfer and condensation happening on the surface of large glass facades while combining aesthetic and mechanical solutions. We manufacture floor convectors with 85 mm and 115 mm casing height according to capacity requirements and up to 6 meters as a single unit. We can provide 3 different linear grille for floor convectors according to aesthetic preference; natural anodized aluminum, painted aluminum and wooden. Optional digital control panel with warning light can control fan speed and energy consumption is prevented by reducing unnecessary capacity utilization with fluid control valve. We have 3 different models of floor convectors including with natural convection, with fan and with mini fan.

Material Used in Product

Linear grille and convector casing are manufactured from high corrosion resistant aluminum profile. We have optional aluminum frame. Our standard heating coils are from copper pipe and aluminum fins, with galvanized sheet mirror and brass sleeve fixed to outside of casing with 1/2" internal thread. Coils are manufactured by mechanically inflated copper pipes with 1/2" diameter and ensuring tight contact with lamellas. Coil with 6 mm pitch space is manufactured at 40x35 mm geometric mold. Discharge and air relief cocks are at the fixed brass sleeve, which is located outside of the casing. This way, water contact to internal casing is blocked and damage to electrical component is prevented. Coils are mounted on sheet feet in order to be able to remove after disconnecting the pipe connections. Optionally, 1/2" two way motorized valves can be used at coil outlet.

Operating Features

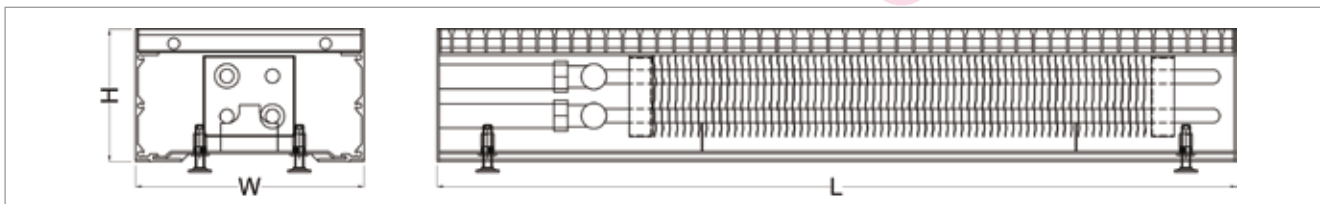
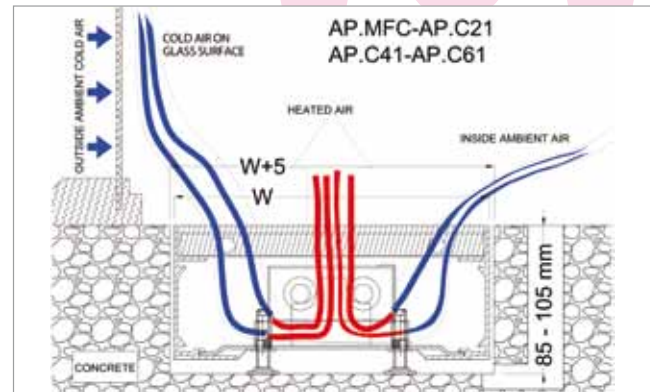
AP.C series floor convectors are modern heating equipments to support under floor heating system. As a secondary heating system, it can be used with radiator, under floor heating systems, air handling units etc. Wall cavity is not required for installation. It is placed to flooring slot and covered with stylish roll-up grille.

Specifically with the mechanical strength of linear grille that is parallel to short edge, it can be used in all areas of your application and you can move over it safely. In all convector casings there are setscrew bolts inside the casing to provide ease of application.

Floor convectors can be used at every place that have glass facade such as showrooms, winter gardens, indoor sports facilities, business centers, conservatoires, public spaces, banks and residences.

Floor convectors with natural convection work according to natural air convection principle. They are used as a secondary heating system for ambient heating.

They are used to prevent **heat loss** and especially to prevent **condensation** on glass surface.



Dimensions and Heating Capacity Table for AP.C Series Floor Convectors (Without Fan, Room Temperature 20 °C)

| Water Inlet-Outlet Temperature | 90 - 70°C | | | | | | 80 - 60°C | | | | | |
|--------------------------------|----------------------|--------|--------|---------|---------|---------|----------------------|--------|--------|---------|---------|---------|
| Convector Type | C21 | C41 | C61 | C22 | C42 | C62 | C21 | C41 | C61 | C22 | C42 | C62 |
| Convector Size (WxH) mm | 200x85 | 245x85 | 345x85 | 200x115 | 245x115 | 345x115 | 200x85 | 245x85 | 345x85 | 200x115 | 245x115 | 345x115 |
| Casing Length (L) mm | Heating Capacity (W) | | | | | | Heating Capacity (W) | | | | | |
| 1000 | 201 | 307 | 447 | 290 | 423 | 614 | 164 | 252 | 368 | 240 | 351 | 509 |
| 1250 | 272 | 409 | 611 | 390 | 558 | 854 | 222 | 336 | 495 | 322 | 464 | 693 |
| 1500 | 324 | 509 | 767 | 512 | 701 | 1109 | 279 | 419 | 598 | 423 | 565 | 918 |
| 1750 | 409 | 637 | 906 | 612 | 859 | 1323 | 335 | 501 | 724 | 491 | 696 | 1101 |
| 2000 | 477 | 796 | 965 | 739 | 1002 | 1483 | 391 | 605 | 785 | 571 | 828 | 1237 |
| 2250 | 550 | 844 | 1096 | 864 | 1171 | 1667 | 447 | 649 | 897 | 676 | 972 | 1394 |
| 2500 | 620 | 886 | 1143 | 933 | 1339 | 1712 | 474 | 701 | 939 | 759 | 1115 | 1433 |
| 2750 | 673 | 923 | 1184 | 1034 | 1480 | 1750 | 500 | 747 | 976 | 846 | 1234 | 1467 |
| 3000 | 688 | 1018 | 1534 | 1074 | 1502 | 2218 | 558 | 838 | 1196 | 866 | 1260 | 1836 |
| 3500 | 818 | 1274 | 1812 | 1224 | 1718 | 2646 | 670 | 1002 | 1448 | 982 | 1392 | 2202 |
| 4000 | 954 | 1592 | 1930 | 1478 | 2004 | 2966 | 782 | 1210 | 1570 | 1142 | 1656 | 2474 |
| Water Inlet-Outlet Temperature | 70 - 55°C | | | | | | 55 - 40°C | | | | | |
| Convector Type | C21 | C41 | C61 | C22 | C42 | C62 | C21 | C41 | C61 | C22 | C42 | C62 |
| Convector Size (WxH) mm | 200x85 | 245x85 | 345x85 | 200x115 | 245x115 | 345x115 | 200x85 | 245x85 | 345x85 | 200x115 | 245x115 | 345x115 |
| Casing Length (L) mm | Heating Capacity (W) | | | | | | Heating Capacity (W) | | | | | |
| 1000 | 141 | 215 | 314 | 204 | 298 | 432 | 86 | 134 | 197 | 129 | 192 | 279 |
| 1250 | 190 | 287 | 423 | 274 | 394 | 590 | 117 | 180 | 266 | 174 | 254 | 377 |
| 1500 | 239 | 358 | 510 | 361 | 479 | 778 | 148 | 225 | 321 | 229 | 310 | 484 |
| 1750 | 287 | 428 | 624 | 418 | 594 | 932 | 178 | 269 | 376 | 266 | 376 | 576 |
| 2000 | 335 | 518 | 670 | 486 | 702 | 1047 | 208 | 325 | 402 | 310 | 436 | 647 |
| 2250 | 382 | 563 | 764 | 585 | 823 | 1179 | 237 | 345 | 454 | 357 | 507 | 746 |
| 2500 | 406 | 607 | 799 | 646 | 943 | 1210 | 256 | 364 | 476 | 386 | 577 | 777 |
| 2750 | 427 | 639 | 830 | 719 | 1045 | 1239 | 267 | 380 | 496 | 425 | 637 | 803 |
| 3000 | 478 | 716 | 1020 | 722 | 1058 | 1556 | 296 | 450 | 642 | 458 | 650 | 968 |
| 3500 | 574 | 856 | 1248 | 836 | 1188 | 1864 | 356 | 538 | 752 | 532 | 752 | 1152 |
| 4000 | 670 | 1036 | 1340 | 972 | 1404 | 2094 | 416 | 650 | 804 | 620 | 872 | 1294 |

AP.FC Series

Floor Convectors with Fan

Material Used in Product

Linear grille and convector casing are manufactured from high corrosion resistant aluminum profile. We have optional aluminum frame.

Our standard heating coils are from copper pipe and aluminum fins, with galvanized sheet mirror and brass sleeve fixed to outside of casing with 1/2" internal thread. Coils are manufactured by mechanically inflated copper pipes with 1/2" diameter and ensuring tight contact with lamellas. Coil with 6 mm pitch space is manufactured at 40x35 mm geometric mold. Discharge and air relief cocks are at the fixed brass sleeve outside of the casing. This way, water contact to internal casing is blocked and damage to electrical component is prevented. Coils are mounted on sheet feet in order to be able to remove after disconnecting the pipe connections.

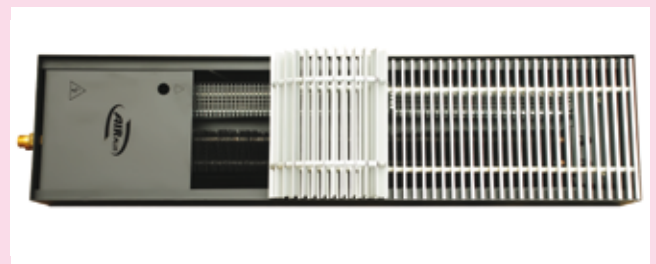
230 V, quiet cross flow fans with 45 mm rotary diameter are used at floor convectors. Fans have two speeds as 1250 rpm and 1630 rpm. Optionally; 24 V cross flow fans can be used. Fan power cable is connected with electric terminal inside casing. Main power line with thermic relay and electrical fuse protection is connected to electric terminal via connector on casing and the necessary power for fan is supplied. Optionally, room panel and electronical controller can be used. This way, the motorized valve on coil (on/off) and speed of cross flow fan (3 stages) can be controlled.

Operating Features

AP.FC series floor convectors are modern heating equipments to support under floor heating system. It can be used with radiator, under floor heating systems, air handling units etc. Wall cavity is not required for installation. Heating capacity and throw distance are increased by fan. It is placed to flooring slot and covered with stylish roll-up grille.

Specifically with the mechanical strength of linear grille that is parallel to short edge, it can be used in all areas of your application and you can move over it safely. In all convector casings, there is setscrew bolts inside the casing to provide ease of application.

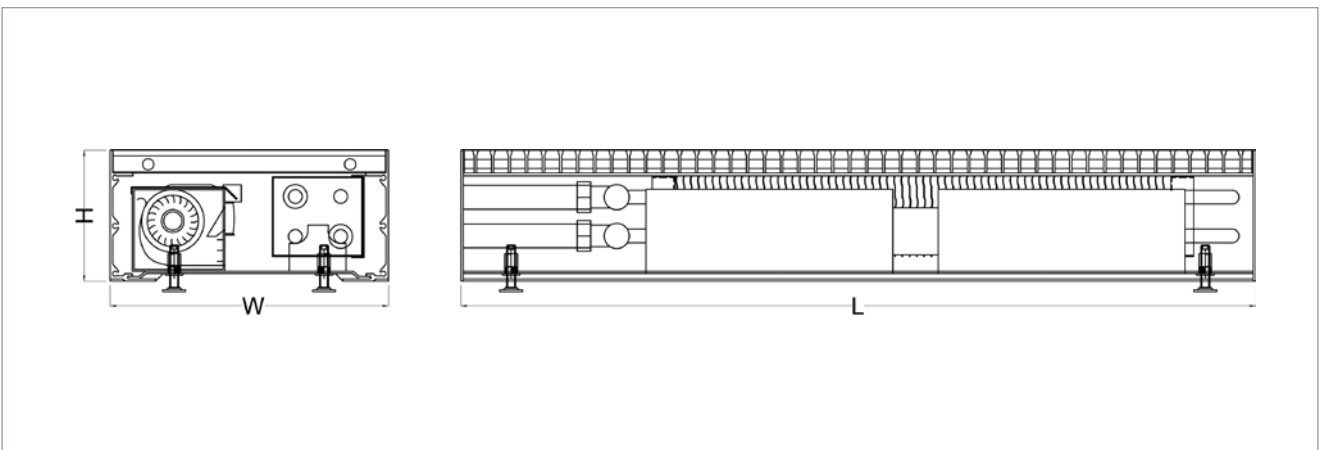
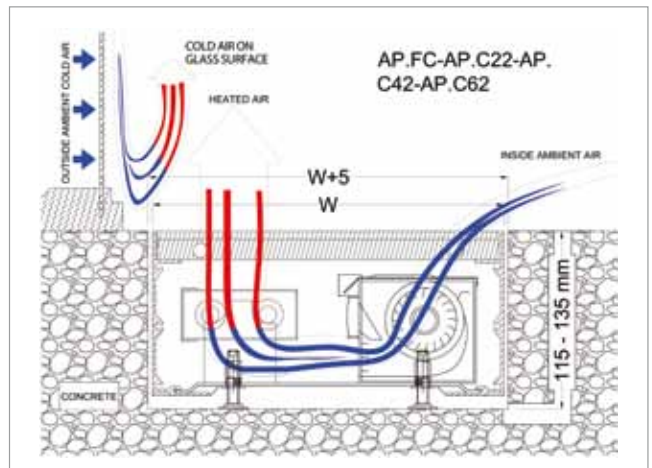
Floor convectors can be used at every place that have glass facade such as showrooms, winter gardens, indoor sports facilities, business centers, conservatoires, public spaces, banks and residences.





Floor convectors with fan can be designed to be primary or secondary heating system.

They are used to prevent **heat loss** and especially to prevent **condensation** on glass surface.



Dimensions and Heating Capacity Table for AP.FC Series (with Fan, 230 V, For 20 °C Ambient Temperature)

| Water Inlet-Outlet Temp. | 70-55°C | | | | | | | | | | | | 55-40°C | | | | | | | | | | | | 1. Step | | 2. Step | | | | | | | | | |
|--------------------------|----------------------|------|------|------|------|------|------|------|------|------|------|------|---------|------|------|------|------|------|------|------|------|--------------------|-----------|-------------|--------------------|----------------|----------------|----------------|---|---|---|---|---|---|---|---|
| | FC21 | | | | | | FC41 | | | | | | FC61 | | | | | | FC22 | FC42 | FC62 | Fan Rotation (rpm) | Power (W) | Current (A) | Fan Rotation (rpm) | Power (W) | Current (A) | | | | | | | | | |
| | FC21 | FC41 | FC61 | FC22 | FC42 | FC62 | FC21 | FC41 | FC61 | FC22 | FC42 | FC62 | FC22 | FC42 | FC62 | | | | | | | | | | | | | | | | | | | | | |
| Convector Type | Heating Capacity (W) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Convector Size (WxH) mm | Heating Capacity (W) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Casing Length (L) mm | Heating Capacity (W) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fan Step | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| 1250 | 411 | 624 | 675 | 1058 | 825 | 1307 | 906 | 1410 | 1215 | 1975 | 1381 | 2299 | 291 | 376 | 459 | 731 | 573 | 913 | 624 | 979 | 850 | 1384 | 969 | 1614 | 1250 d/d-215 | 35 W-0,25 A | 1630 d/d-300 | 52 W-0,39 A | | | | | | | | |
| 1500 | 496 | 794 | 774 | 1221 | 920 | 1473 | 1031 | 1632 | 1327 | 2192 | 1486 | 2510 | 334 | 533 | 534 | 850 | 642 | 1032 | 716 | 1138 | 950 | 1539 | 1044 | 1764 | 1250 d/d-215 | 35 W-0,25 A | 1630 d/d-300 | 52 W-0,39 A | | | | | | | | |
| 1750 | 777 | 1174 | 1123 | 1748 | 1325 | 2100 | 1492 | 2325 | 1916 | 3129 | 2150 | 3593 | 528 | 809 | 783 | 1224 | 929 | 1475 | 1043 | 1628 | 1345 | 2199 | 1511 | 2528 | 1250 d/d-323 | 70 W-0,50 A | 1630 d/d-450 | 104 W-0,78 A | | | | | | | | |
| 2000 | 865 | 1316 | 1208 | 1896 | 1413 | 2254 | 1602 | 2528 | 2017 | 3330 | 2246 | 3790 | 595 | 912 | 846 | 1329 | 988 | 1584 | 1122 | 1773 | 1417 | 2341 | 1578 | 2667 | 1250 d/d-323 | 70 W-0,50 A | 1630 d/d-450 | 104 W-0,78 A | | | | | | | | |
| 2250 | 1128 | 1692 | 1559 | 2429 | 1819 | 2887 | 2068 | 3231 | 2610 | 4275 | 2912 | 4882 | 783 | 1180 | 1093 | 1705 | 1278 | 2032 | 1450 | 2268 | 1835 | 3008 | 2048 | 3436 | 1250 d/d-430 | 70 W-0,50 A | 1630 d/d-600 | 104 W-0,78 A | | | | | | | | |
| 2500 | 1207 | 1826 | 1639 | 2570 | 1902 | 3037 | 2171 | 3426 | 2709 | 4471 | 3006 | 5074 | 840 | 1275 | 1151 | 1806 | 1338 | 2137 | 1523 | 2406 | 1905 | 3146 | 2114 | 3571 | 1250 d/d-430 | 70 W-0,50 A | 1630 d/d-600 | 104 W-0,78 A | | | | | | | | |
| 2750 | 1470 | 2206 | 1992 | 3106 | 2312 | 3674 | 2640 | 4135 | 3303 | 5420 | 3674 | 6169 | 1026 | 1544 | 1400 | 2185 | 1626 | 2586 | 1854 | 2908 | 2324 | 3816 | 2585 | 4343 | 1250 d/d-538 | 105 W-0,75 A | 1630 d/d-750 | 156 W-1,17 A | | | | | | | | |
| 3000 | 1501 | 2256 | 2072 | 3256 | 2432 | 3844 | 2780 | 4339 | 3483 | 5664 | 3880 | 6422 | 1033 | 1561 | 1470 | 2290 | 1711 | 2706 | 1955 | 3050 | 2468 | 4000 | 2748 | 4553 | 1250 d/d - 538 | 105 W - 0,75 A | 1630 d/d - 750 | 156 W - 1,17 A | | | | | | | | |
| 3500 | 1554 | 2348 | 2245 | 3496 | 2650 | 4200 | 2983 | 4650 | 3831 | 6257 | 4299 | 7186 | 1055 | 1617 | 1566 | 2447 | 1858 | 2949 | 2085 | 3255 | 2690 | 4398 | 3021 | 5055 | 1250 d/d-645 | 105 W-0,75 A | 1630 d/d-900 | 156 W-1,17 A | | | | | | | | |
| 4000 | 1730 | 2632 | 2416 | 3791 | 2825 | 4508 | 3204 | 5055 | 4034 | 6660 | 4491 | 7580 | 1190 | 1824 | 1691 | 2657 | 1975 | 3167 | 2243 | 3545 | 2834 | 4682 | 3156 | 5334 | 1250 d/d-645 | 105 W-0,75 A | 1630 d/d-900 | 156 W-1,17 A | | | | | | | | |
| 4500 | 2256 | 3384 | 3118 | 4857 | 3638 | 5773 | 4135 | 6462 | 5220 | 8550 | 5823 | 9764 | 1565 | 2358 | 2186 | 3410 | 2556 | 4063 | 2900 | 4536 | 3669 | 6016 | 4095 | 6871 | 1250 d/d-860 | 140 W-1,00 A | 1630 d/d-1200 | 208 W-1,56 A | | | | | | | | |

AP.MFC Series

Floor Convectors with Mini Fan

Material Used in Product

Linear grille and convector casing are manufactured from high corrosion resistant aluminum profile. We have optional aluminum frame.

Our standard heating coils are from copper pipe and aluminum fins, with galvanized sheet mirror and brass sleeve fixed to outside of casing with 1/2" internal thread. Coils are manufactured by mechanically inflated copper pipes with 1/2" diameter and ensuring tight contact with lamellas. Coil with 6 mm pitch space is manufactured at 40x35 mm geometric mold. Discharge and air relief cocks are at the fixed brass sleeve outside of the casing. This way, water contact to internal casing is blocked and damage to electrical component is prevented. Coils are mounted on sheet feet in order to be able to remove after disconnecting the pipe connections.

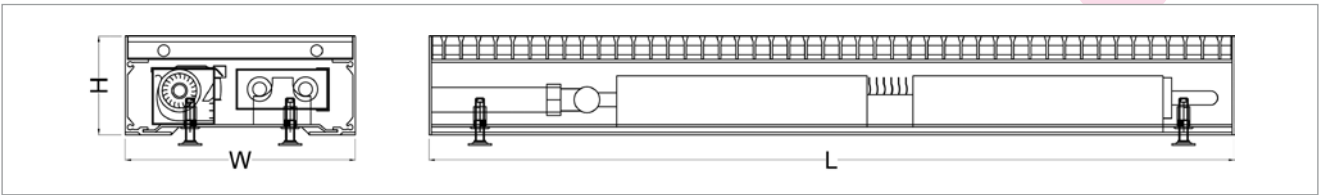
230 V, single speed, quiet cross flow fans with 30 mm rotary diameter are used at floor convectors. Optionally, 24V cross flow fans can be used. Fan power cable is connected with electric terminal inside casing. Main power line with thermic relay and electrical fuse protection is connected to electric terminal via connector on casing and the necessary power for fan is supplied. Optionally, room panel and electronic controller can be used. This way, the motorized valve on coil (on/off) and speed of cross flow fan (3 stages) can be controlled.

Operating Features

AP.MFC series floor convectors are modern heating equipments to support under floor heating system. It can be used with radiator, under floor heating systems, air handling units etc. Wall cavity is not required for installation. Heating capacity and throw distance are increased by fan. It is placed to flooring slot and covered with stylish roll-up grille. Specifically with the mechanical strength of linear grille that is parallel to short edge, it can be used in all areas of your application and you can move over it safely. In all convector casings, there is setscrew bolts inside the casing to provide ease of application. Floor convectors can be used at every place that have glass facade such as showrooms, winter gardens, indoor sports facilities, business centers, conservatoires, public spaces, banks and residences.

Floor convectors with mini fan can be designed to be primary or secondary heating system. Mostly it is used at places where the heat loss is occurring at glass surface. It forms an air curtain with the heated air.

Floor convectors with mini fan have minimum height and maximum capacity. With its 85 mm height it provides perfect solutions at apartments in multi-storey buildings and mezzanines.

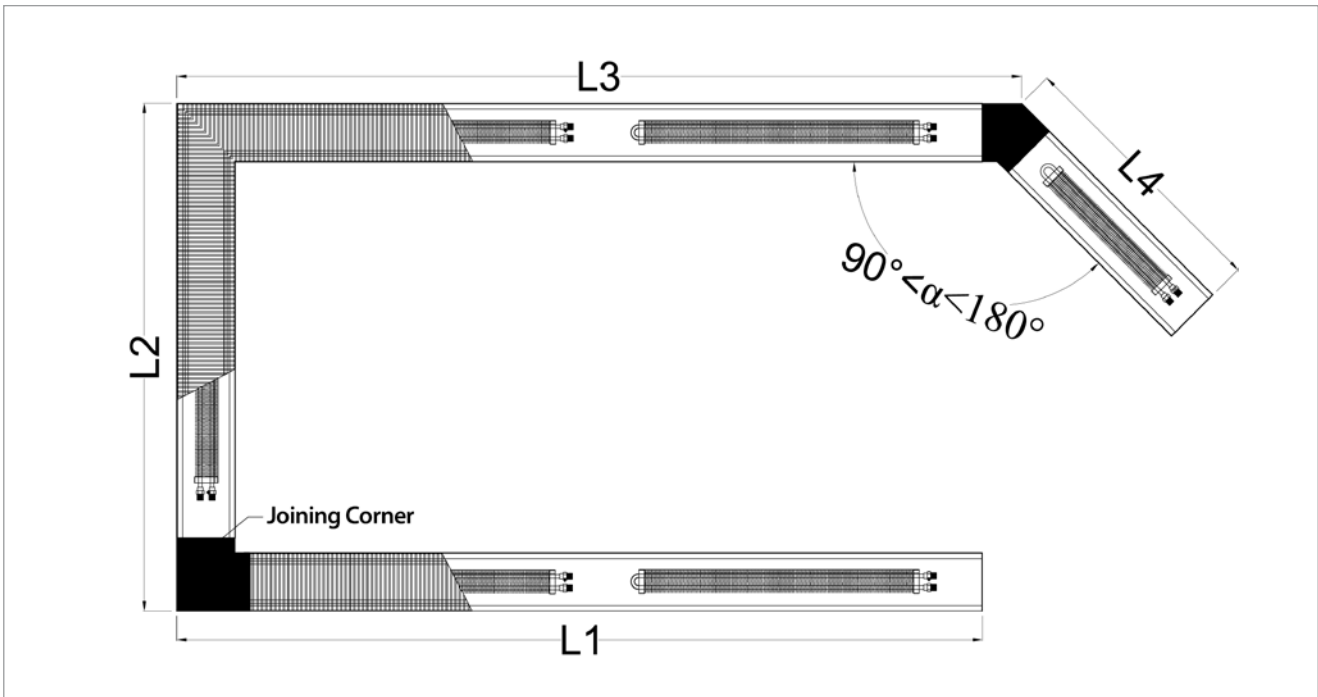


Dimensions and Heating Capacity Table for AP.MFC Series (with Mini Fan, 230 V, For 20 °C Ambient Temperature)

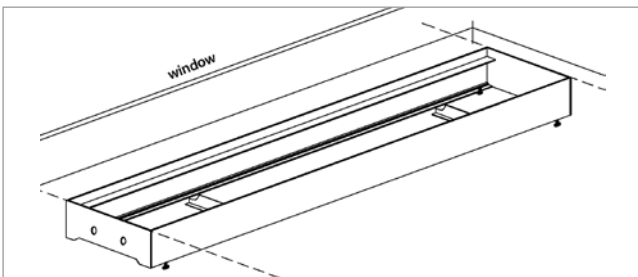
| Water Inlet-Outlet Temperature | 90 - 70°C | | | 80 - 60°C | | | 70 - 55°C | | | 55 - 40°C | | | Airflow Rate (m ³ /h) | Power (W) Current (A) |
|--------------------------------|----------------------|--------|--------|-----------|--------|--------|----------------------|--------|--------|-----------|--------|--------|----------------------------------|--------------------------|
| | MFC21 | MFC41 | MFC61 | MFC21 | MFC41 | MFC61 | MFC21 | MFC41 | MFC61 | MFC21 | MFC41 | MFC61 | | |
| Convector Type | MFC21 | MFC41 | MFC61 | MFC21 | MFC41 | MFC61 | MFC21 | MFC41 | MFC61 | MFC21 | MFC41 | MFC61 | | |
| Convector Size (WxH) mm | 220x85 | 300x85 | 380x85 | 220x85 | 300x85 | 380x85 | 220x85 | 300x85 | 380x85 | 220x85 | 300x85 | 380x85 | | |
| Casing Length (L) mm | Heating Capacity (W) | | | | | | Heating Capacity (W) | | | | | | | |
| 1250 | 597 | 928 | 1104 | 456 | 726 | 893 | 403 | 622 | 761 | 285 | 416 | 526 | 200 | 21 W-0,1 A |
| 1500 | 735 | 1045 | 1220 | 511 | 838 | 997 | 453 | 715 | 849 | 327 | 491 | 591 | 200 | 21 W-0,1 A |
| 1750 | 1084 | 1510 | 1770 | 850 | 1230 | 1455 | 730 | 1050 | 1238 | 495 | 732 | 865 | 300 | 42 W-0,2 A |
| 2000 | 1435 | 1958 | 2274 | 1140 | 1602 | 1876 | 977 | 1366 | 1597 | 672 | 955 | 1120 | 400 | 42 W-0,2 A |
| 2250 | 1546 | 2073 | 2391 | 1239 | 1702 | 1978 | 1060 | 1450 | 1682 | 734 | 1016 | 1181 | 400 | 42 W-0,2 A |
| 2500 | 1642 | 2174 | 2494 | 1325 | 1789 | 2066 | 1133 | 1524 | 1756 | 787 | 1069 | 1234 | 400 | 42 W-0,2 A |
| 2750 | 2038 | 2717 | 3121 | 1695 | 2253 | 2593 | 1450 | 1921 | 2205 | 1009 | 1347 | 1549 | 500 | 63 W-0,3 A |
| 3000 | 2198 | 2931 | 3366 | 1828 | 2430 | 2797 | 1564 | 2072 | 2378 | 1088 | 1453 | 1671 | 500 | 63 W-0,3 A |
| 3500 | 2535 | 3301 | 3768 | 2073 | 2730 | 3131 | 1769 | 2324 | 2660 | 1239 | 1634 | 1872 | 600 | 63 W-0,3 A |
| 4000 | 2870 | 3916 | 4548 | 2280 | 3204 | 3752 | 1954 | 2732 | 3194 | 1344 | 1910 | 2240 | 800 | 84 W-0,4 A |
| 4500 | 3402 | 4634 | 5384 | 2726 | 3795 | 4440 | 2330 | 3230 | 3771 | 1607 | 2255 | 2640 | 900 | 105 W-0,5 A |

Floor Convectors Details and Accessories

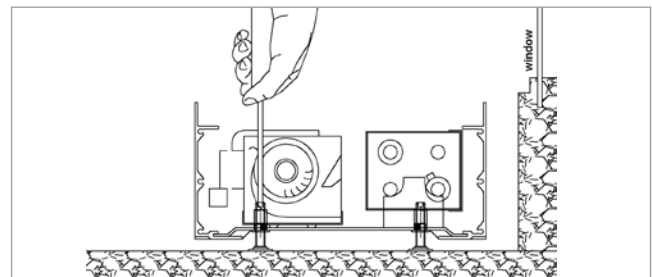
Corner Detail:



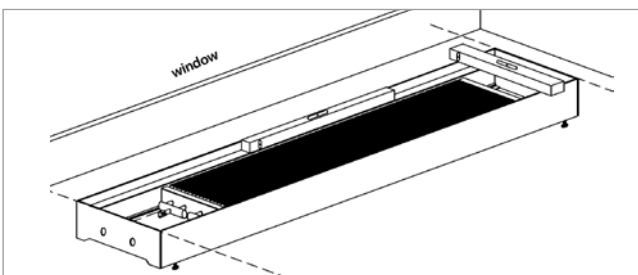
Installation Detail:



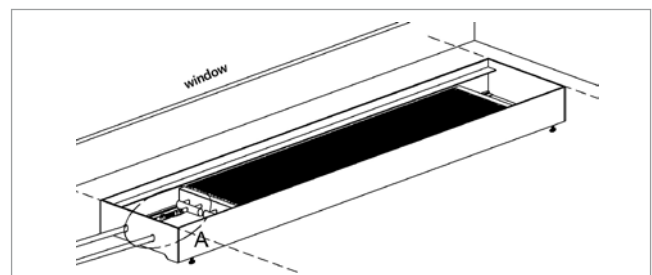
1. Precisely place the convector according to finished floor height.



2. After placing the convector according to the project, adjust the level with setscrews.

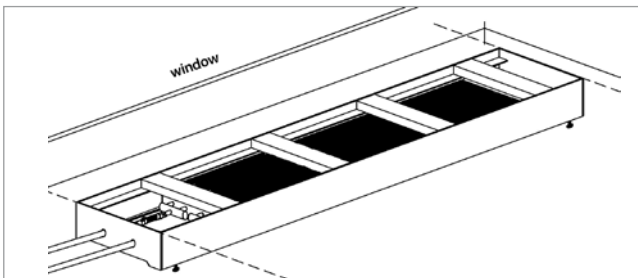
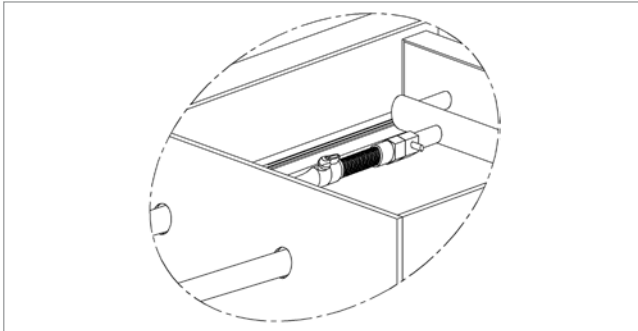


3. After adjusting the setscrews, check the flatness with water level.

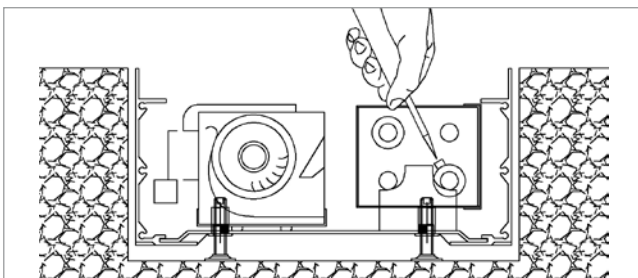


4. Make hydraulic and electrical (if convector has fan) connections. Check all connection before pouring concrete screed.

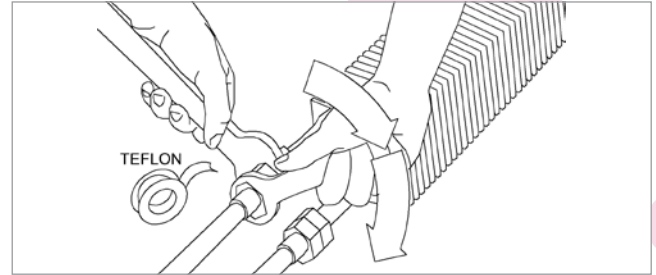
Floor Convectors Details and Accessories



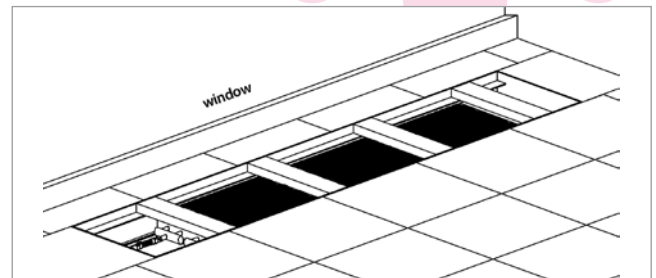
6. Place wedges to casing at equal intervals.



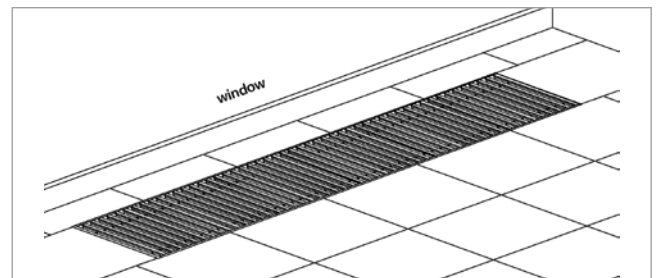
8. Make it start to operate after the plumbing is filled with water. Air inside the installation is discharged from the air relief cock at the coil inlet.



5. Use two wrenches and Teflon band while connecting coil inlet and outlet.



7. Place a separator to prevent construction residues to get into the convector. Fill in the convector surrounding with concrete screed.



9. Wedges are removed after the concrete is dry and linear grille is laid.

Accessories

Electronic Control Card and Room Control Panel:

- Control card, controls the motorized valve as on/off, according to the values set by user.
- Control card, controls the cross flow fan's speed in 3 stages according to the values set by user.
- If automatic speed is chosen at the panel, fan speed is adjusted in stages according to the difference between the ambient temperature and set temperature.
- The card is electronic and has 230 V power inlet.
- Controller is controlled by room control panel.

- One room control panel can control more than one (max. 8) floor convector control cards.
- Optionally, fan speed stages can be increased from 3 to 5.
- Optionally, weekly programming can be provided.
- Optionally, it can be connected to central system.

On/Off Controlled Two Way Valve with Electro-Thermal Actuator:

- It is connected to outlet of floor convector coil.
- It allows the water flow according to on/off signal it gets from thermostat.
- It can be used at max. 95°C water temperature and 16 bar pressure.
- It operates with 230 V - 50 Hz - 2,5 W power.

AP-HA

Air Heater Units



AP-HA

Air Heater Units

AP-HA-A: Air Heater Unit with Axial Fan
AP-HA-R: Air Heater Unit with Centrifugal Fan

Material Used in Product

Product casing is made from durable, chamfered twisted galvanized sheet whose exterior surface is electrostatic powder coated. Inside the casing, there are water coils with aluminum fins lined on two or three rows of copper pipe according to heating capacities and dynamically balanced, quiet and no vibrating high capacity fan is connected directly to motor. Louvers on supply side are functional and decorative. Louvre blades are made from extruded aluminum profile with aerodynamic structure.

Maximum air throw distance is obtained by; decreasing internal air pressure loss thanks to section design, choosing the optimum coil lamella pitch according to heating capacity, using high capacity fans and aerodynamic structure of louver blade. Natural anodized coating is applied in order to protect its natural color and brightness for many years.

Rack feet are optional for mounting the wall type air heater unit. Rack feet are electrostatic powder coated matching to the unit. They are designed to carry the unit weight. In order to facilitate wall assembly, standard holes are opened on the feet of rack. Optional room thermostat can be used on customer demand. Temperature can be set from thermostat. When set temperature is reached, air heater unit fan stops. When the temperature drops, fan starts again.

Operating Features

Air heater units provide practical solutions thanks to their high heating capacity, being economical and being safe. They are suitable for places like sports halls, production areas, meeting halls, warehouses and supermarkets.

Two prominent features of AP-HA air heater units are being owner and user friendly. It is owner friendly because it provides the most economical heating option. Hot water from your central heating installation or existing hot water or boiler in your facility can be used. It is user friendly because everybody can use it easily. It is trouble-free thanks to its durable structure.



Selection Key for AP-HA-A Air Heater Units With Axial Fan

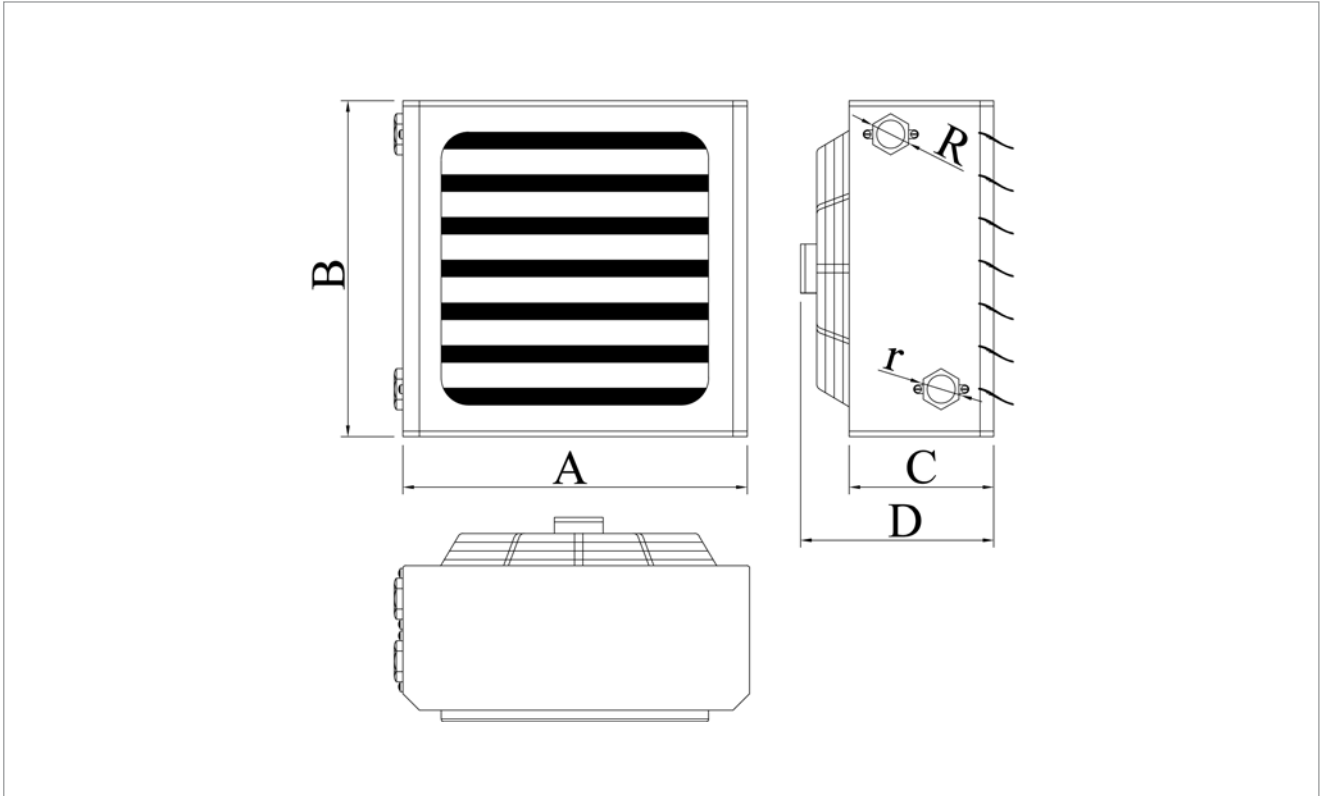
| Version | Model | Unit Type |
|---------|-------|--|
| | | <p>S: For hot water and maximum 2,5 atu steam, standard copper pipe - aluminum fins</p> <p>K: For superheated water and 2,5-5 atu steam, thick-walled copper pipe - aluminum fins</p> <p>C: For 5-10 atu steam, steel pipe - steel fins</p> |
| | | Model Type |
| | | AP-HA-A AP-HA-A Air Heater Unit with Axial Fan |

Selection Key for AP-HA-R Air Heater Units With Centrifugal Fan

| Version | Model | Unit Type |
|---------|-------|--|
| | | <p>SS: Standard copper pipe - aluminum fins, for hot water (90-70°C)</p> <p>SB: Standard copper pipe - aluminum fins, for steam (max. 2,5 atu)</p> <p>KS: Thick copper pipe - aluminum blade, for superheated water (110-90°C)</p> <p>KB: Thick copper pipe - aluminum blade, for steam (max. 5 atu)</p> <p>Ç: Steel pipe - steel fins, steam (max. 10 atu)</p> |
| | | Model Type |
| | | AP-HA-R Air Heater Unit with Centrifugal Fan |



Technical Features and Heating Capacity of AP-HA-A Air Heater Units with Axial Fan

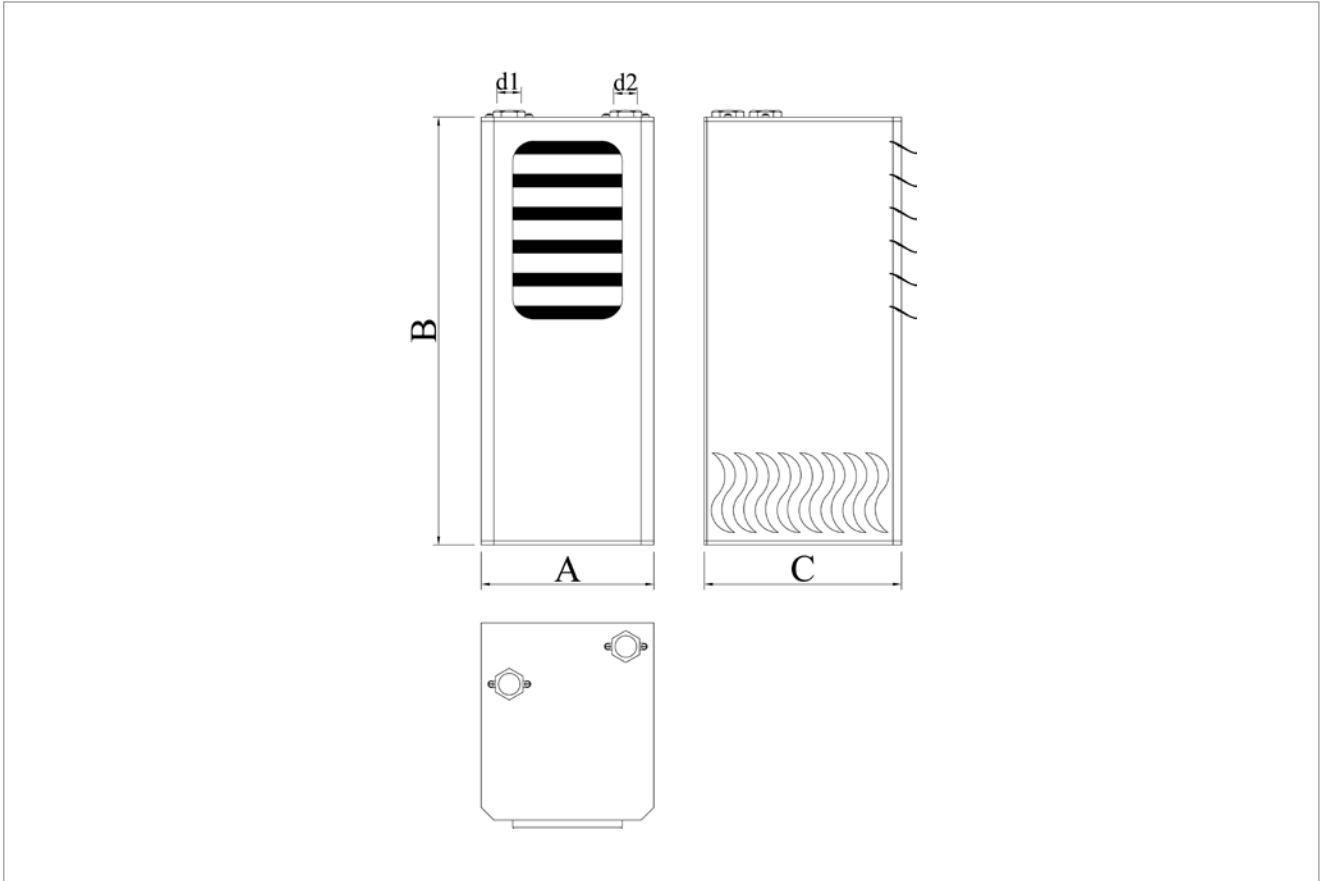


| MODEL | Air Flow Rate (m ³ /h) | Throw Distance (m) | Water Pressure Drop (Kpa) | Coil Water Volume (lt) | Operating Weight (kg) | Electrical (230V/50 Hz) | | Dimensions (mm) | | | | Warm and Hot Water | | Steam | |
|------------|-----------------------------------|--------------------|---------------------------|------------------------|-----------------------|-------------------------|-------------|-----------------|-----|-----|-----|--------------------|--------|-------|------|
| | | | | | | Power (W) | Current (A) | A | B | C | D | R | r | R | r |
| AP-HA-A 6 | 900 | 7 | 8 | 0,85 | 16 | 80 | 0,40 | 410 | 430 | 250 | 380 | 1/2" | 1/2" | DN20 | 1/2" |
| AP-HA-A 12 | 1700 | 7 | 10 | 1,10 | 17 | 100 | 0,40 | 470 | 490 | 250 | 380 | 3/4" | 3/4" | DN25 | 1/2" |
| AP-HA-A 17 | 2600 | 9 | 12 | 1,80 | 21 | 125 | 0,50 | 540 | 570 | 260 | 390 | 3/4" | 3/4" | DN32 | 1/2" |
| AP-HA-A 22 | 3500 | 10 | 13 | 2,30 | 26 | 165 | 0,70 | 600 | 630 | 260 | 390 | 1" | 1" | DN32 | 3/4" |
| AP-HA-A 28 | 4200 | 10 | 17 | 3,80 | 32 | 165 | 0,80 | 650 | 650 | 280 | 410 | 1" | 1" | DN32 | 3/4" |
| AP-HA-A 36 | 5250 | 10 | 19 | 4,60 | 38 | 245 | 1,00 | 720 | 760 | 280 | 410 | 1 1/4" | 1 1/4" | DN40 | 1" |

Heating Capacity

| MODEL | Air Flow Rate (m ³ /h) | (5°C) Air Inlet | | (10°C) Air Inlet | | (15°C) Air Inlet | | (18°C) Air Inlet | | (20°C) Air Inlet | |
|---------------------------------|-----------------------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|-----------------------|
| | | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) |
| 70/50°C Heater Capacity | | | | | | | | | | | |
| AP-HA-A 6 | 900 | 5580 | 25 | 4920 | 28 | 4380 | 32 | 4020 | 33 | 3840 | 35 |
| AP-HA-A 12 | 1700 | 11160 | 25 | 9840 | 28 | 8760 | 32 | 8040 | 33 | 7680 | 35 |
| AP-HA-A 17 | 2600 | 15810 | 25 | 13940 | 28 | 12410 | 31 | 11390 | 33 | 10880 | 34 |
| AP-HA-A 22 | 3500 | 20460 | 24 | 18040 | 27 | 16060 | 30 | 14740 | 32 | 14080 | 34 |
| AP-HA-A 28 | 4200 | 26040 | 26 | 22960 | 29 | 20440 | 32 | 18760 | 34 | 17920 | 35 |
| AP-HA-A 36 | 5250 | 33480 | 26 | 29520 | 29 | 26280 | 32 | 24120 | 34 | 23040 | 35 |
| 90/70°C Heater Capacity | | | | | | | | | | | |
| AP-HA-A 6 | 900 | 7680 | 33 | 6960 | 36 | 6360 | 39 | 6000 | 41 | 5760 | 42 |
| AP-HA-A 12 | 1700 | 15360 | 33 | 13920 | 36 | 12720 | 39 | 12000 | 41 | 11520 | 42 |
| AP-HA-A 17 | 2600 | 21760 | 32 | 19720 | 35 | 18020 | 39 | 17000 | 40 | 16320 | 42 |
| AP-HA-A 22 | 3500 | 28160 | 31 | 25520 | 34 | 23320 | 37 | 22000 | 39 | 21120 | 40 |
| AP-HA-A 28 | 4200 | 35840 | 34 | 32480 | 37 | 29680 | 40 | 28000 | 42 | 26880 | 43 |
| AP-HA-A 36 | 5250 | 46080 | 34 | 41760 | 37 | 38160 | 40 | 36000 | 42 | 34560 | 43 |
| 110/80°C Heater Capacity | | | | | | | | | | | |
| AP-HA-A 6 | 900 | 7320 | 32 | 7080 | 36 | 6840 | 41 | 6600 | 43 | 6480 | 45 |
| AP-HA-A 12 | 1700 | 14640 | 32 | 14160 | 36 | 13680 | 41 | 13200 | 43 | 12960 | 45 |
| AP-HA-A 17 | 2600 | 20740 | 31 | 20060 | 36 | 19380 | 40 | 18700 | 43 | 18360 | 44 |
| AP-HA-A 22 | 3500 | 26840 | 29 | 25960 | 34 | 25080 | 39 | 24200 | 41 | 23760 | 43 |
| AP-HA-A 28 | 4200 | 34160 | 33 | 33040 | 38 | 31920 | 42 | 30800 | 44 | 30240 | 46 |
| AP-HA-A 36 | 5250 | 43920 | 33 | 42480 | 37 | 41040 | 42 | 39600 | 44 | 38880 | 46 |
| 1 ATU Hot Steam Heater Capacity | | | | | | | | | | | |
| AP-HA-A 6 | 900 | 8580 | 36 | 7920 | 39 | 7560 | 44 | 7440 | 46 | 8220 | 52 |
| AP-HA-A 12 | 1700 | 17160 | 36 | 15840 | 39 | 15120 | 44 | 14880 | 46 | 16440 | 52 |
| AP-HA-A 17 | 2600 | 24310 | 36 | 22440 | 39 | 21420 | 43 | 21080 | 46 | 23290 | 51 |
| AP-HA-A 22 | 3500 | 31460 | 34 | 29040 | 37 | 27720 | 41 | 27280 | 44 | 30140 | 49 |
| AP-HA-A 28 | 4200 | 40040 | 38 | 36960 | 41 | 35280 | 45 | 34720 | 48 | 38360 | 53 |
| AP-HA-A 36 | 5250 | 51480 | 37 | 47520 | 41 | 45360 | 45 | 44640 | 47 | 49320 | 53 |
| 2 ATU Hot Steam Heater Capacity | | | | | | | | | | | |
| AP-HA-A 6 | 900 | 9660 | 40 | 8940 | 43 | 8520 | 47 | 8280 | 50 | 8520 | 53 |
| AP-HA-A 12 | 1700 | 19320 | 40 | 17880 | 43 | 17040 | 47 | 16560 | 50 | 17040 | 53 |
| AP-HA-A 17 | 2600 | 27370 | 40 | 25330 | 43 | 24140 | 47 | 23460 | 49 | 24140 | 52 |
| AP-HA-A 22 | 3500 | 35420 | 37 | 32780 | 40 | 31240 | 44 | 30360 | 47 | 31240 | 50 |
| AP-HA-A 28 | 4200 | 45080 | 42 | 41720 | 45 | 39760 | 49 | 38640 | 51 | 39760 | 54 |
| AP-HA-A 36 | 5250 | 57960 | 42 | 53640 | 44 | 51120 | 48 | 49680 | 51 | 51120 | 54 |
| 6 ATU Hot Steam Heater Capacity | | | | | | | | | | | |
| AP-HA-A 6 | 900 | 11820 | 48 | 11220 | 52 | 10860 | 56 | 10560 | 58 | 10380 | 60 |
| AP-HA-A 12 | 1700 | 23640 | 48 | 22440 | 52 | 21720 | 56 | 21120 | 58 | 20760 | 60 |
| AP-HA-A 17 | 2600 | 33490 | 47 | 31790 | 51 | 30770 | 55 | 29920 | 58 | 29410 | 59 |
| AP-HA-A 22 | 3500 | 43340 | 44 | 41140 | 48 | 39820 | 53 | 38720 | 55 | 38060 | 57 |
| AP-HA-A 28 | 4200 | 55160 | 50 | 52360 | 54 | 50680 | 58 | 49280 | 60 | 48440 | 62 |
| AP-HA-A 36 | 5250 | 70920 | 50 | 67320 | 53 | 65160 | 58 | 63360 | 60 | 62280 | 61 |

Technical Features and Heating Capacity of AP-HA-R Air Heater Units with Centrifugal Fan



| MODEL | Air Flow Rate (m ³ /h) | Throw Distance (m) | Water Pressure Drop (Kpa) | Coil Water Volume (lt) | Operating Weight (kg) | Electrical (230V / 50 Hz) | | Dimensions (mm) | | | Warm and Hot Water | | Steam | |
|------------|-----------------------------------|--------------------|---------------------------|------------------------|-----------------------|---------------------------|-------------|-----------------|------|-----|--------------------|--------|-------|------|
| | | | | | | Power (W) | Current (A) | A | B | C | d1 | d2 | d1 | d2 |
| AP-HA-R 6 | 950 | 9 | 11 | 0,95 | 36 | 130 | 0,60 | 370 | 1000 | 420 | 1/2" | 1/2" | DN20 | 1/2" |
| AP-HA-R 12 | 1600 | 11 | 13 | 1,25 | 46 | 185 | 0,85 | 420 | 1100 | 500 | 3/4" | 3/4" | DN25 | 1/2" |
| AP-HA-R 17 | 2400 | 13 | 14 | 1,95 | 54 | 515 | 2,25 | 480 | 1150 | 560 | 3/4" | 3/4" | DN32 | 1/2" |
| AP-HA-R 22 | 2900 | 14 | 16 | 2,60 | 63 | 690 | 3,10 | 560 | 1200 | 600 | 1" | 1" | DN32 | 3/4" |
| AP-HA-R 28 | 3600 | 14 | 18 | 4,15 | 76 | 680 | 3,00 | 600 | 1300 | 620 | 1" | 1" | DN32 | 3/4" |
| AP-HA-R 36 | 4900 | 15 | 19 | 5,35 | 85 | 680 | 3,00 | 600 | 1350 | 660 | 1 1/4" | 1 1/4" | DN40 | 1" |

Heating Capacity

| MODEL | Air Flow Rate (m ³ /h) | (5°C) Air Inlet | | (10°C) Air Inlet | | (15°C) Air Inlet | | (18°C) Air Inlet | | (20°C) Air Inlet | |
|---------------------------------|-----------------------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|-----------------------|--------------------------|-----------------------|
| | | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) | Heater Capacity (kcal/h) | Air Outlet Temp. (°C) |
| 70/50°C Heater Capacity | | | | | | | | | | | |
| AP-HA-R 6 | 950 | 5580 | 24 | 4920 | 27 | 4380 | 31 | 4020 | 33 | 3840 | 34 |
| AP-HA-R 12 | 1600 | 11160 | 28 | 9840 | 31 | 8760 | 34 | 8040 | 35 | 7680 | 37 |
| AP-HA-R 17 | 2400 | 15810 | 27 | 13940 | 29 | 12410 | 33 | 11390 | 34 | 10880 | 36 |
| AP-HA-R 22 | 2900 | 20460 | 28 | 18040 | 31 | 16060 | 34 | 14740 | 35 | 14080 | 37 |
| AP-HA-R 28 | 3600 | 26040 | 29 | 22960 | 31 | 20400 | 34 | 18760 | 36 | 17920 | 37 |
| AP-HA-R 36 | 4900 | 33480 | 27 | 29520 | 30 | 26280 | 33 | 24120 | 35 | 23040 | 36 |
| 90/70°C Heater Capacity | | | | | | | | | | | |
| AP-HA-R 6 | 950 | 7680 | 32 | 6960 | 34 | 6360 | 38 | 6000 | 40 | 5760 | 41 |
| AP-HA-R 12 | 1600 | 15360 | 36 | 13920 | 39 | 12720 | 42 | 12000 | 44 | 11520 | 45 |
| AP-HA-R 17 | 2400 | 21760 | 35 | 19720 | 37 | 18020 | 41 | 17000 | 42 | 16320 | 44 |
| AP-HA-R 22 | 2900 | 28160 | 37 | 25520 | 39 | 23320 | 42 | 22000 | 44 | 21120 | 45 |
| AP-HA-R 28 | 3600 | 35840 | 38 | 32480 | 40 | 29680 | 43 | 28000 | 45 | 26880 | 46 |
| AP-HA-R 36 | 4900 | 46080 | 36 | 41760 | 38 | 38160 | 41 | 36000 | 43 | 34560 | 44 |
| 110/80°C Heater Capacity | | | | | | | | | | | |
| AP-HA-R 6 | 950 | 7320 | 30 | 7080 | 35 | 6840 | 39 | 6600 | 42 | 6480 | 44 |
| AP-HA-R 12 | 1600 | 14640 | 35 | 14160 | 40 | 13680 | 44 | 13200 | 46 | 12960 | 48 |
| AP-HA-R 17 | 2400 | 20740 | 33 | 20060 | 38 | 19380 | 42 | 18700 | 45 | 18360 | 46 |
| AP-HA-R 22 | 2900 | 26840 | 35 | 25960 | 40 | 25080 | 44 | 24200 | 47 | 23760 | 48 |
| AP-HA-R 28 | 3600 | 34160 | 36 | 33040 | 41 | 31920 | 45 | 30800 | 47 | 30240 | 49 |
| AP-HA-R 36 | 4900 | 43920 | 34 | 42480 | 39 | 41040 | 43 | 39600 | 46 | 38880 | 47 |
| 1 ATU Hot Steam Heater Capacity | | | | | | | | | | | |
| AP-HA-R 6 | 950 | 8580 | 35 | 7920 | 38 | 7560 | 42 | 7440 | 45 | 8220 | 50 |
| AP-HA-R 12 | 1600 | 17160 | 40 | 15840 | 43 | 15120 | 47 | 14880 | 50 | 16440 | 56 |
| AP-HA-R 17 | 2400 | 24310 | 38 | 22440 | 41 | 21420 | 45 | 21080 | 48 | 23290 | 54 |
| AP-HA-R 22 | 2900 | 31460 | 41 | 29040 | 43 | 27720 | 47 | 27280 | 50 | 30140 | 56 |
| AP-HA-R 28 | 3600 | 40040 | 41 | 36960 | 44 | 35280 | 48 | 34720 | 51 | 38360 | 57 |
| AP-HA-R 36 | 4900 | 51480 | 39 | 47520 | 42 | 45360 | 46 | 44640 | 49 | 49320 | 55 |
| 2 ATU Hot Steam Heater Capacity | | | | | | | | | | | |
| AP-HA-R 6 | 950 | 9660 | 38 | 8940 | 41 | 8520 | 45 | 8280 | 48 | 8520 | 51 |
| AP-HA-R 12 | 1600 | 19320 | 45 | 17880 | 47 | 17040 | 51 | 16560 | 54 | 17040 | 57 |
| AP-HA-R 17 | 2400 | 27370 | 42 | 25330 | 45 | 24140 | 49 | 23460 | 52 | 24140 | 55 |
| AP-HA-R 22 | 2900 | 35420 | 45 | 32780 | 48 | 31240 | 52 | 30360 | 54 | 31240 | 57 |
| AP-HA-R 28 | 3600 | 45080 | 46 | 41720 | 49 | 39760 | 53 | 38640 | 55 | 39760 | 58 |
| AP-HA-R 36 | 4900 | 57960 | 44 | 53640 | 47 | 51120 | 50 | 49680 | 53 | 51120 | 56 |
| 6 ATU Hot Steam Heater Capacity | | | | | | | | | | | |
| AP-HA-R 6 | 950 | 11820 | 46 | 11220 | 49 | 10860 | 54 | 10560 | 56 | 10380 | 58 |
| AP-HA-R 12 | 1600 | 23640 | 53 | 22440 | 57 | 21720 | 61 | 21120 | 63 | 20760 | 65 |
| AP-HA-R 17 | 2400 | 33490 | 51 | 31790 | 54 | 30770 | 59 | 29920 | 61 | 29410 | 62 |
| AP-HA-R 22 | 2900 | 43340 | 54 | 41140 | 57 | 39820 | 62 | 38720 | 64 | 38060 | 65 |
| AP-HA-R 28 | 3600 | 55160 | 55 | 52360 | 59 | 50680 | 63 | 49280 | 65 | 48440 | 67 |
| AP-HA-R 36 | 4900 | 70920 | 52 | 67320 | 56 | 65160 | 60 | 63360 | 62 | 62280 | 64 |

AP-KEI

Duct Type Electrical Heaters



AP-KEI

Duct Type Electrical Heaters

Material Used in Product

Casing of duct type electrical heater is manufactured from galvanized sheet. Resistors are from 304 quality stainless pipe. There are two protection systems, one is a thermostat that can be adjusted between 0-80 °C and the other is 110 °C over-temperature thermostat.

Electrical heaters can be manufactured as 230V or 380V on customer demand. Number of stages of heaters can be 2 or 3. Panel with contactor can be manufactured on demand.

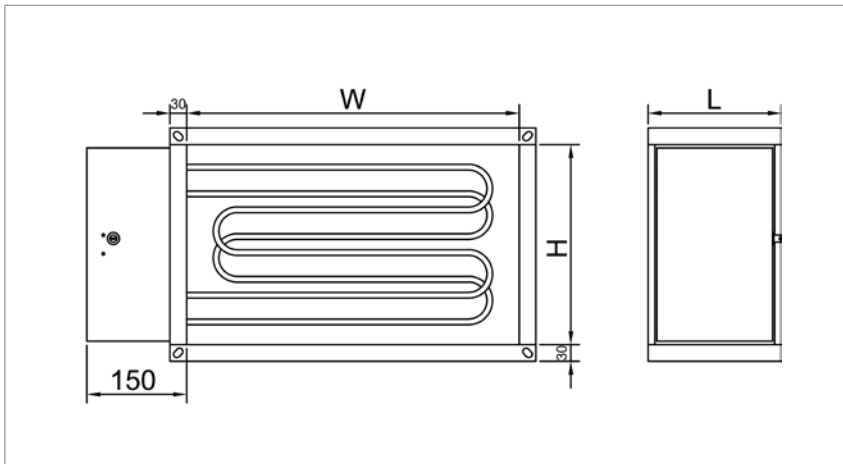
Operating Features

Duct type electrical heaters are designed for use at rectangular duct applications. AIRPLUS duct type electrical heaters are used as last heater at air conditioning system or for heating the supply air at fresh air systems.

Stand dimensions and capacity table are as shown on next page. We also manufacture nonstandard dimensions and capacities.



Capacity Table for Duct Type Electrical Heaters



| Air Flow Rate (m ³ /h) | Dimensions W x H x L (mm) | Electrical Heater Capacity (kW) | $\Delta T = T_2 - T_1$ (°C) | Voltage (V) | Current (A) |
|-----------------------------------|---------------------------|---------------------------------|-----------------------------|-------------|-------------|
| 500 | 300 x 300 x 200 | 3 | 17 | 230 | 13,1 |
| 750 | 400 x 300 x 200 | 4 | 15 | 230 | 17,4 |
| 1000 | 500 x 300 x 200 | 6 | 17 | 380 | 9,2 |
| 1500 | 500 x 400 x 200 | 8 | 15 | 380 | 12,2 |
| 2000 | 500 x 500 x 250 | 12 | 17 | 380 | 18,3 |
| 2500 | 600 x 500 x 250 | 14 | 16 | 380 | 21,3 |
| 3000 | 700 x 500 x 250 | 16 | 15 | 380 | 24,4 |
| 3500 | 700 x 600 x 250 | 20 | 16 | 380 | 30,4 |
| 4000 | 700 x 700 x 250 | 22 | 16 | 380 | 33,5 |



AIRPLUS İKLİMLENDİRME TEKNOLOJİLERİ SANAYİ VE TİCARET LTD. ŞTİ.

Alemdağ Mahallesi, Şair Mehmet Akif Ersoy Caddesi 93. Sokak No: 1
Taşdelen / Çekmeköy / İstanbul / Turkey

Phone: +90 216 420 65 58 **Fax:** +90 216 420 65 59

E-mail: airplus@airplus.com.tr