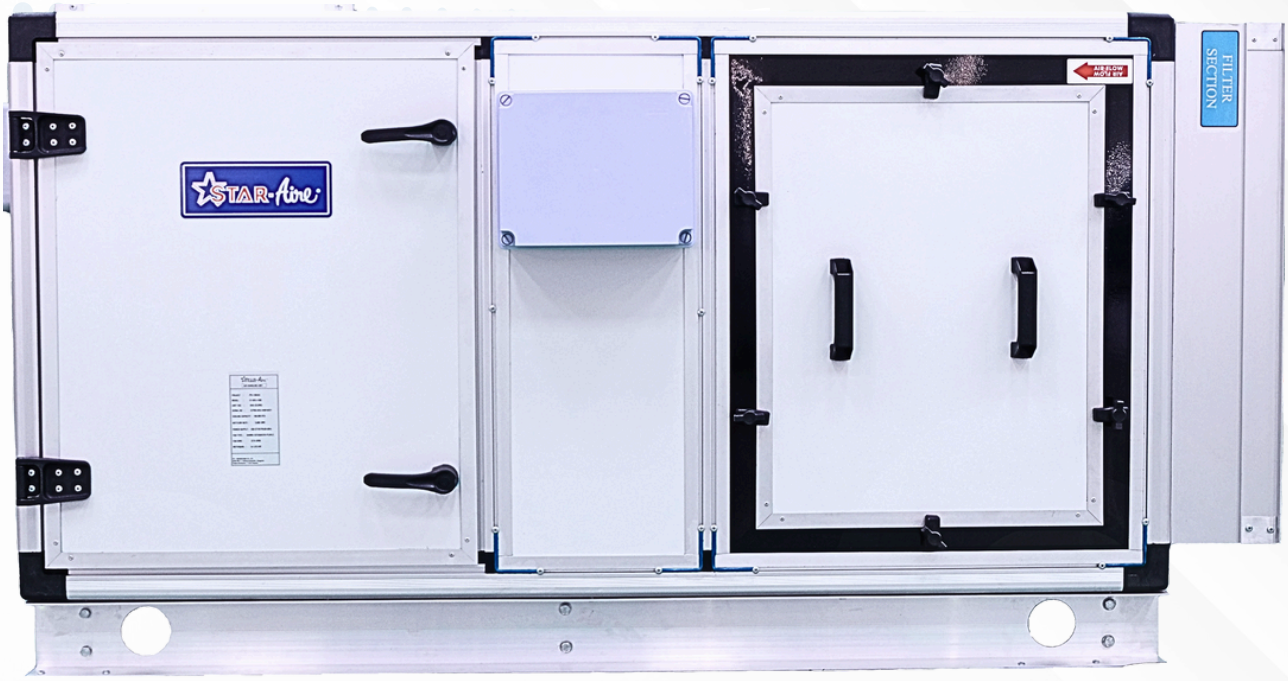
STAR-Aire®



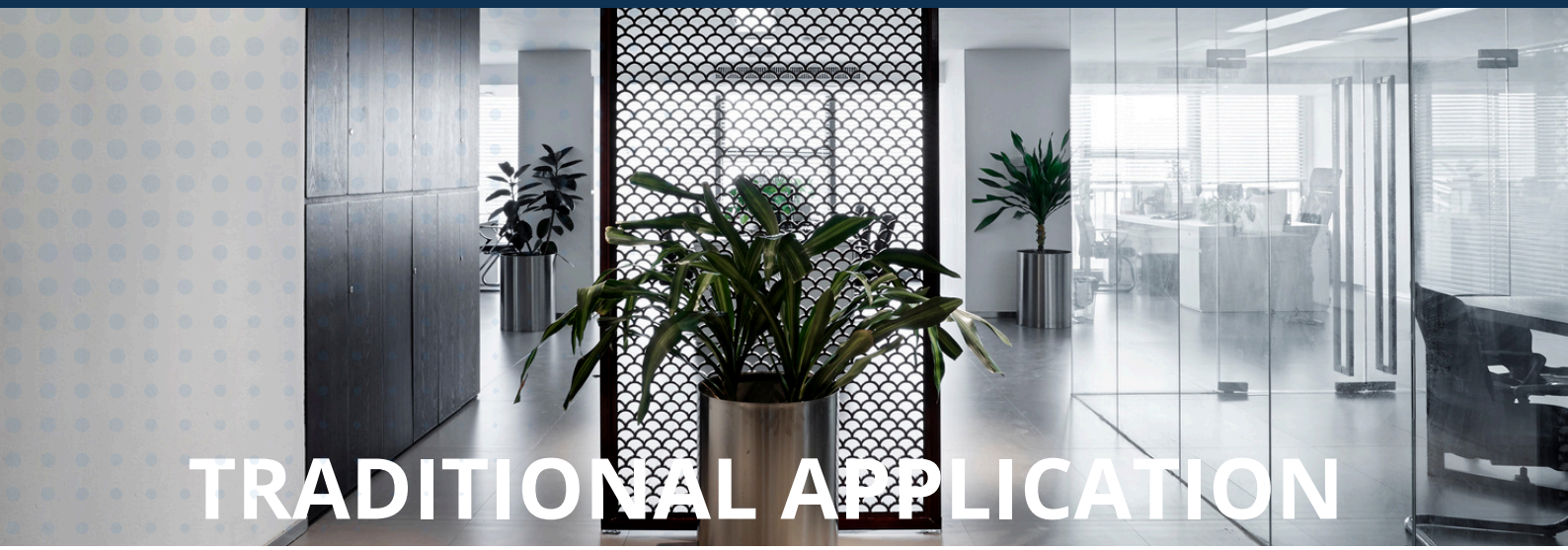
DOUBLE SKIN AIR HANDLING UNIT

MODEL: DB SERIES

Double Skin Air Handling Unit

Engineered for Performance, Efficiency & Durability

- **Superior Air Quality**
  Optimized airflow for a healthier environment
- **Enery-Efficient Insulation**
  Advanced thermal & Acoustic protection
- **Heavy-Duty & Leak-Proof**
  Durable construction with minimal leakage
- **Easy Maintenance**
  Hinged access doors with viewports for quick servicing
- **Flexible Design**
  Modular system with multiple blower orientations



TRADITIONAL APPLICATION

- High levels of comfort, together with efficient performance and energy efficiency are key features in Air handling units for traditional applications.
- The main aim is to maintain a constant temperature and humidity levels, ensuring a reduction of operating costs.
- The main objective is to ensure high levels of comfort over time.
- Continuous upgrade of units' performance and the use of quality components can contribute in extending the life cycle of the plant.
- Versatility and plug-and-play solutions are fundamental features in traditional applications.
- The reduction of on-site operations contributes in making the assembly process easier, thus increasing cost savings
- It is widely recognized that high comfort levels are directly connected to low noise emissions
- It surely improves both comfort and quality levels increasing the value of the building and the investment.

SPECIFIC APPLICATION

- Some applications are critical and the kind of plant must be evaluated from time to time, considering the requirements of the building
- Custom-made solutions and the use of further components are fundamental requirements of specific sectors.
- The quality of the system is of utmost importance in this kind of application and it strongly depends on the attention to detail and the installation of high quality components
- Specific sectors, such as hospitals and chemical applications, require reliable units complying with the strictest regulations
- Solutions for specific sectors must be able to integrate a number of special components. The big challenge is designing complex units that can guarantee quick and easy installation.
- In some specific applications, the noise emissions index is one of the most important performances. In hospitals, theatres and cinemas, this index is as important as the performance indicator. Hence, it is particularly important to choose a low noise unit

THE SOLUTIONS

Each application, from traditional to specific sectors, is characterised by high comfort levels and strict plant requirements.

EASY CONFIGURATION

AHU is the ultimate solution for air handling technology. A single and compact unit responding to the different requirements. The correct configuration is ensured by '**UNIHEAT WinAHU-Optimizer**, a selection software that computes and presents all the necessary data for correct air handling unit selection.

The high range of materials, components and accessories selectable, together with The total freedom of composition makes the software is unique and intuitive while satisfying.

ATTENTION TO DETAIL

Each unit is designed in such a way as to fit in each application.

Exceptional quality is built into every component, ensuring not only high efficiency but also exceptional versatility and reliability.

This contributes to extending the life cycle of the unit whilst reducing the maintenance costs. As far as specific sectors is concerned, the distinctive feature is the installation of the highest-quality components that can match special requirements

THE SOLUTIONS

PLUG&PLAY SOLUTION

The units have been designed in such a way that if there is not enough room for the sections to reach the installation area they can be built and assembled on-site either from modular sections or in CKD configuration.

This is possible thanks to special connections that are used to join adjacent functional sections or unit blocks.
It's a completely versatile unit that is also characterised by a simplification of the system and a 'Plug & Play' concept to ensure easy installation and commissioning. When the unit is delivered on site, it can be installed easily, reducing maintenance and further installation costs.

CUSTOMER-MADE

No matter how different the application is, the unit can be special designed for each project by different series of component. Especially for industrial and hospital project, the cleanness need to be fully considered to ensure enduser's request. And for commercial and residential project, the operation cost and energy saving is the primary target.

At the same time, **AHU** units are fitted with dedicated components with world leading quality and insist on cooperating with worldwide well-know manufacturers to achieve the reliable and durable performance

TECHNOLOGY CHOICE

SMART CONTROL

AHU is equipped with the best thermal components available on the market: temperature and humidity probes and high precision differential pressure switches.

The core system that manages all the components is the **STAR AIRE** programmable PLC controller. This controller ensures the programming of different time bands, increasing the efficiency of the system and reducing the energy consumption when the system does not work at full load.

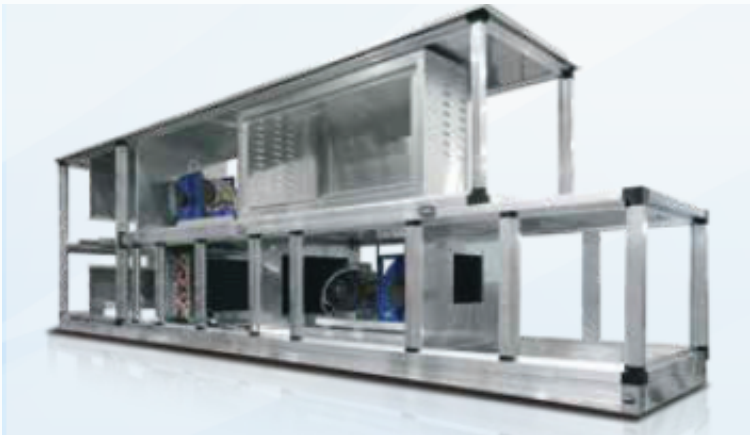
Key features of the control are:
• Programmable PLC controller by **STAR AIRE** to suit all types of applications.
• Regulation of the part-load operation according to the set-point and the ambient load.
• Monitoring through the web server and BMS compatibility.
(Modbus, RS-485)

STURDY CASE

AHU has developed a casing design with different kinds of profiles and panels that can be chosen depending on the purpose of the application.

The high-quality level of the structure allows for units operating at pressures higher than 1000 Pa with minimized air leakages and high mechanical strength.

The panels are manufactured in such a way so as to provide effective thermal and acoustic insulation.
Installation is made easier through the design of modules with connectors that allow for easy cleaning of the unit.



SELECTION SOFTWARE

The design of the AHU is completely configurable thanks to the **STAR AIRE** selection software. This smart tool ensures quick and precise calculations of the unit selection.

The selection software computes and presents all the necessary data for correct air handling unit selection. All extra accessories can be precisely selected, depending on the type of application, whether traditional or specialized. Data and calculations are easy and quick thanks to a user-friendly
interface.

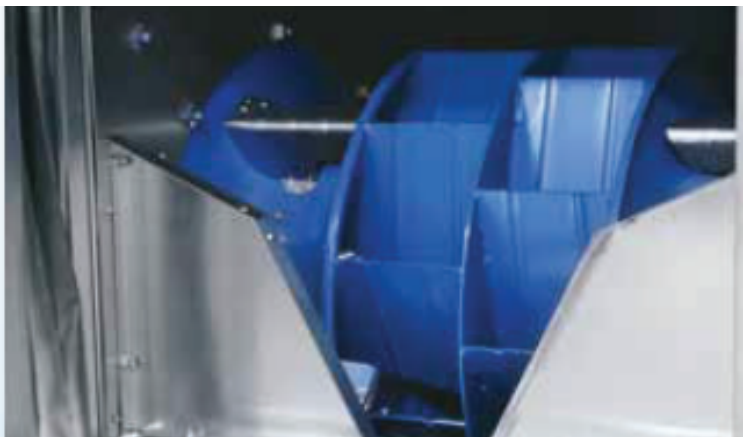
Efficiency, low noise level, reliable operation. Attention to detail and easy configuration

FANS

A wide array of fan options provides optimal sound and efficiency choices depending on the kind of application.

The intrinsic efficiency of the fans contributes in improving the overall efficiency of the units, ensuring very low noise emissions.

Fans with variable speed reduce the noise level according to the partial load of the coils and the temperature of the treated air

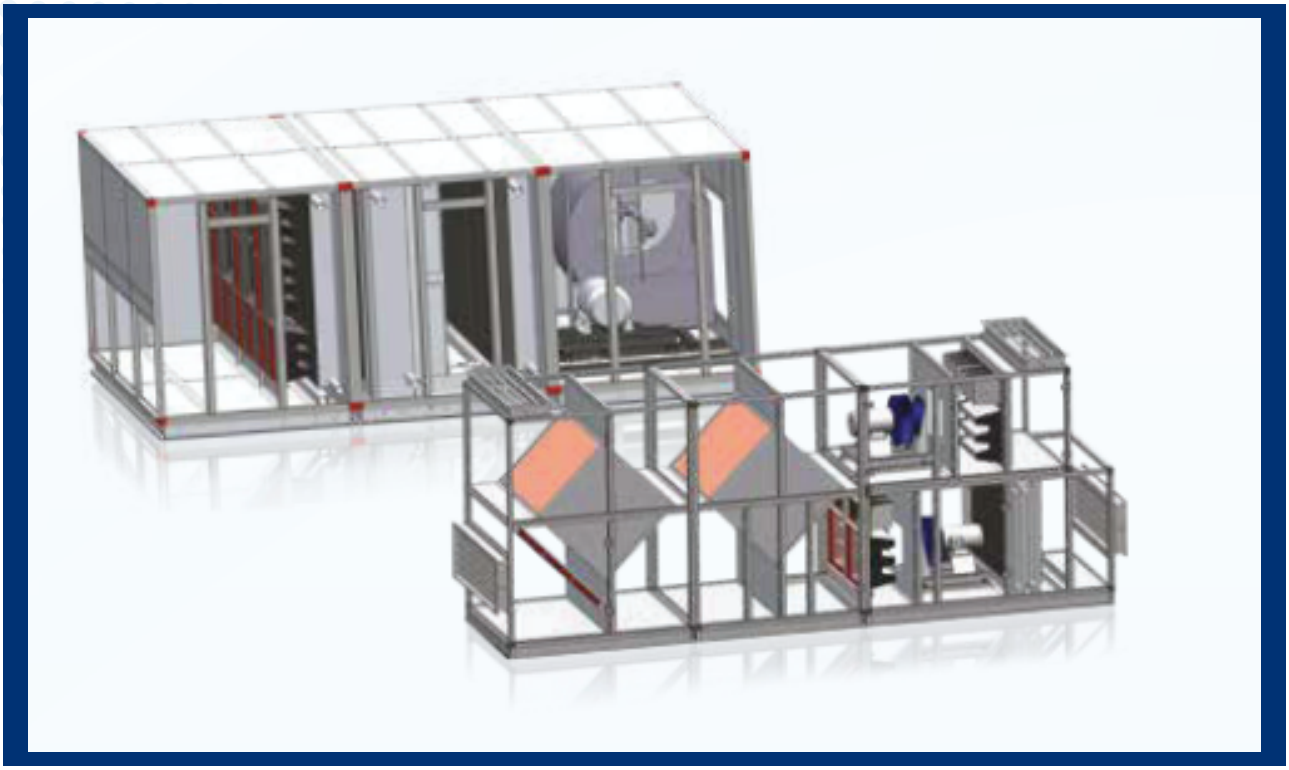


HIGH LEVEL CONFIGURATION

High-level configuration can ensure the reliability and durable operation. So **STAR AIRE** insists on producing high-quality products or cooperating With world-famous manufacturers to offer the best configuration for the customer for best performance.

From coil to attenuator, the product quality is strictly controlled by dedicated equipment or Inspection of the supplier and incoming materials.
Besides, a strict AHU selection process is also required to ensure better performance, such as the coil face velocity, fan efficiency, water pressure drop and other key parameters.

MAIN FUNCTION



Main Functions

• It generates files to be exchanged among the users and the company.

• It creates Word/Pdfs with specifications of each single unit.

• Always up-to-date data through the Internet connection.

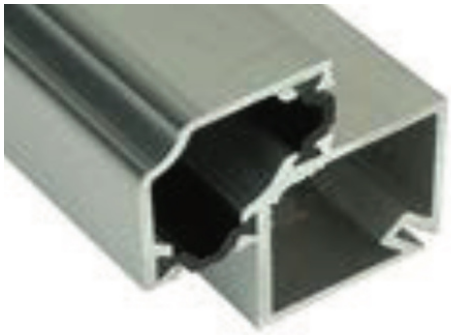
TEMPERATURE CONTROL TOOLS

Temperature and humidity tools installed by **STAR AIRE** are among the best components on the market. The unit is completely plug-and-play, and all the components are directly installed within the company. The result is simple: better performance and a reduction in installation times and operating costs.

- **PLUG FAN (EC/AC)**
- **CENTRIFUGAL FAN (EC/AC)**
- **HOT / COLD / REFRIGERANT / STEAM / SS COIL**
- **ROTARY RECOVERY SYSTEM / PLATE HEAT EXCHANGER**
- **FILTERS**
- **HUMIDIFICATION / DEHUMIDIFICATION**
- **DAMPERS**

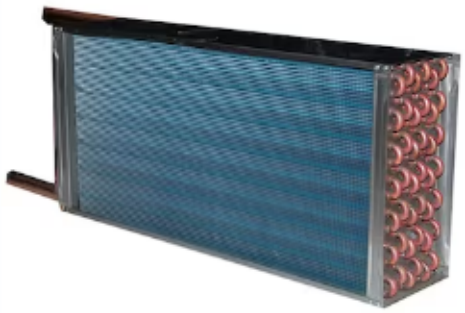
EXCELLENCE ON THE GLOBAL MARKET

FRAMEWORK AND PANEL



The framework consists of the internal frame, external frame, and the PVC insulator. All frames are made of high gauge aluminum alloy with anodized treatment. The PVC insulator is extruded to the internal and external frame, avoiding a thermal bridge. The insulation material -PU foam of up to 75mm thickness is injected between the double-wall panels. All bolts are external-connected type, resulting in easy dismounting and maintenance. The internal corner between panels is specially designed with a circular surface for easy cleaning.

COIL AND FIN

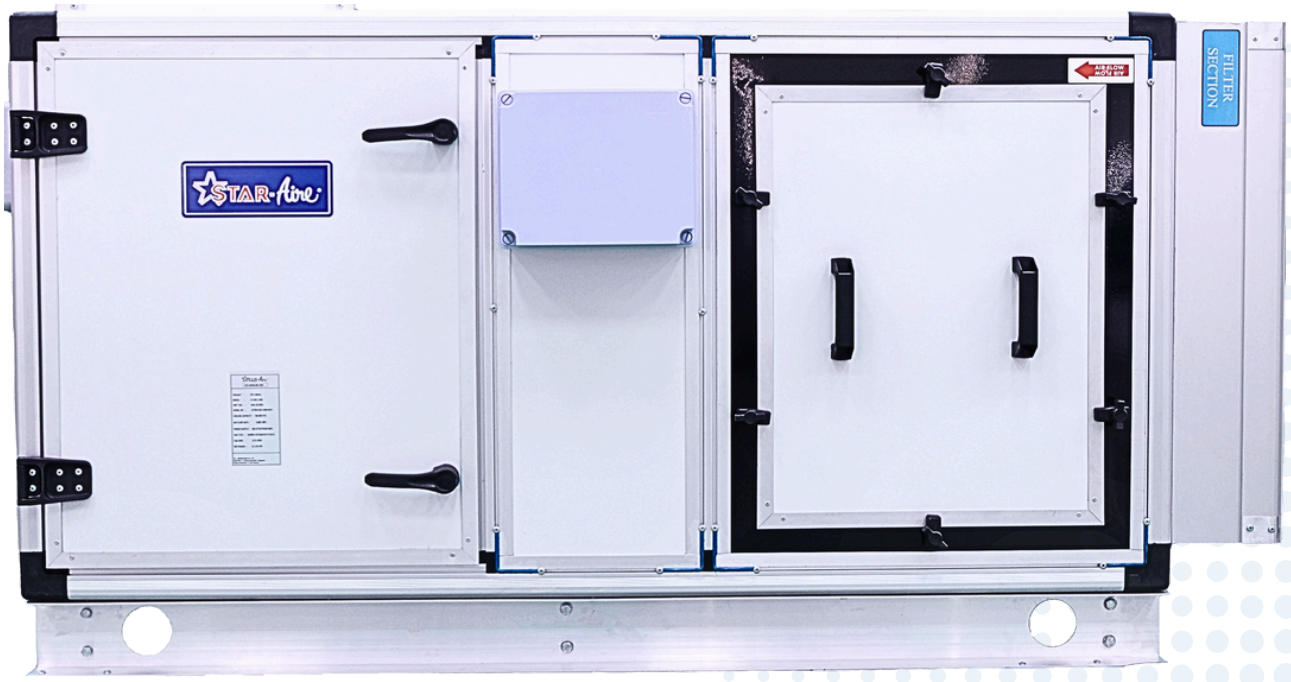


The coil is made of seamless copper tubes and hydrophilic aluminum fins. Hydrophilic 'blue' aluminium fins are optional for higher fin protection. All tubes are mechanically expanded to aluminum fins tightly to minimize thermal resistance. The stainless steel and the copper tube collectors are optional for high-quality. Fins are sine-wave type, and the Standard coil configuration has 1/2 to 12 rows as options. For the customer's specification. The configuration of coils is optimized to meet actual conditions. FAN AN

COIL AND FIN

The adoption of a well-known brand of DIDW, centrifugal fan, and bearing ensures the static and dynamic balance level of G4.0, which greatly improves the life duration of the bearing. The fan section is mounted onto a vibration-resistant frame with spring isolators or rubber pads, and is connected to the casing with high-temperature-resistant flexible connectors. Standard V-shape belt driven with taper-lock, high driven efficiency. Well-known brand of motor with IP54/IP55 protection and class F insulation. Available in front-curved, back-curved, airfoil, or plug form, depending on different requests.

STAR AIRE
DOUBLE SKIN AIR HANDLING UNIT [AHU]



AHU RANGE:

ONE SOLUTION FOR
ANY KIND OF APPLICATION

QUICK SELECTION

AHU Model	Standard Unit Dimension		Airflow (m^3/h)			
	Height (H)	Width (W)	Face Velocity (m/s)			
	mm	mm	2.00	2.25	2.50	2.75
20x30	610	915	1,769	1,991	2,212	2,433
20x35	610	1,068	2,186	2,460	2,733	3,006
20x40	610	1,220	2,606	2,932	3,258	3,583
25x30	763	915	2,359	2,654	2,949	3,244
25x35	763	1,068	2,915	3,279	3,644	4,008
25x40	763	1,220	3,475	3,909	4,343	4,778
30x30	915	915	3,098	3,485	3,872	4,259
30x35	915	1,068	3,828	4,306	4,784	5,263
30x40	915	1,220	4,562	5,133	5,703	6,273
30x45	915	1,373	5,292	5,954	6,615	7,277
30x50	915	1,525	6,027	6,780	7,534	8,287
40x30	1,220	915	4,570	5,141	5,712	6,283
40x40	1,220	1,220	6,731	7,572	8,413	9,255
40x45	1,220	1,373	7,807	8,783	9,759	10,735
40x50	1,220	1,525	8,891	10,003	11,114	12,226
40x60	1,220	1,830	11,052	12,434	13,815	15,197
40x70	1,220	2,135	13,213	14,865	16,516	18,168
50x30	1,525	915	5,898	6,635	7,372	8,110
50x40	1,525	1,220	8,687	9,773	10,859	11,944
50x50	1,525	1,525	11,476	12,910	14,345	15,779
50x60	1,525	1,830	14,265	16,048	17,831	19,614
50x70	1,525	2,135	17,054	19,185	21,317	23,449
50x80	1,525	2,440	19,842	22,323	24,803	27,283
50x90	1,525	2,745	22,631	25,460	28,289	31,118
60x40	1,830	1,220	10,657	11,989	13,321	14,653
60x50	1,830	1,525	14,349	16,143	17,936	19,730
60x60	1,830	1,830	17,836	20,066	22,296	24,525
60x70	1,830	2,135	21,324	23,989	26,655	29,320
60x80	1,830	2,440	24,811	27,912	31,014	34,115
60x90	1,830	2,745	28,298	31,835	35,373	38,910
60x100	1,830	3,050	31,785	35,759	39,732	43,705
60x110	1,830	3,355	35,273	39,682	44,091	48,500

AHU RANGE:

ONE SOLUTION FOR
ANY KIND OF APPLICATION

QUICK SELECTION

AHU Model	Standard Unit Dimension		Airflow (m^3/h)			
	Height (H)	Width (W)	Face Velocity (m/s)			
	mm	mm	2.00	2.25	2.50	2.75
70x50	2,135	1,525	17,214	19,365	21,517	23,669
70x60	2,135	1,830	21,397	24,072	26,746	29,421
70x70	2,135	2,135	25,580	28,778	31,975	35,173
70x80	2,135	2,440	29,764	33,484	37,205	40,925
70x90	2,135	2,745	33,947	38,190	42,434	46,677
70x100	2,135	3,050	38,130	42,897	47,663	52,429
70x110	2,135	3,355	42,314	47,603	52,892	58,182
70x120	2,135	3,660	46,497	52,309	58,122	63,934
70x130	2,135	3,965	49,600	55,800	62,000	68,200
70x140	2,135	4,270	53,713	60,427	67,141	73,856
70x150	2,135	4,575	57,826	65,055	72,283	79,511
80x80	2,440	2,440	33,964	38,210	42,455	46,701
80x90	2,440	2,745	38,775	43,622	48,469	53,316
80x100	2,440	3,050	43,587	49,035	54,484	59,932
80x110	2,440	3,355	48,398	54,448	60,498	66,548
80x120	2,440	3,660	53,210	59,861	66,512	73,163
80x130	2,440	3,965	58,021	65,274	72,526	79,779
80x140	2,440	4,270	62,833	70,687	78,541	86,395
80x150	2,440	4,575	67,644	76,100	84,555	93,011
80x160	2,440	4,880	72,455	81,512	90,569	99,626
90x100	2,745	3,050	49,276	55,436	61,596	67,755
90x110	2,745	3,355	54,716	61,555	68,395	75,234
90x120	2,745	3,660	60,155	67,675	75,194	82,714
90x130	2,745	3,965	65,595	73,794	81,994	90,193
90x140	2,745	4,270	71,034	79,914	88,793	97,672
90x150	2,745	4,575	76,474	86,033	95,592	105,152
90x160	2,745	4,880	81,913	92,153	102,392	112,631

Remark

- Profile: U1 - 25mm; U2 - 50mm; U3 - 75mm; Largest model of U1 is 75×120. Smallest model of U3 is 40×40.
- The unit base of 100mm is not included in the height in above table.
- U1 : Height = (H) + 34mm + 100mm; Width = (W) + 34mm
  U2&U3 : Height = (H) + 111mm + 100mm; Width = (W) + 111mm.
  Height = (H) + 137mm + 100mm; Width = (W) + 137mm

AHU RANGE:

ONE SOLUTION FOR
ANY KIND OF APPLICATION

PERFORMANCE DATA

Cooling, Return Air

Variable air flow ranges from 2,000 to 100,000 m3/h.

AHU Model	AIR FLOW (m^3/h)	4-row		6-row		8-row	
		Total Cooling Capacity (kW)	Water Pressure Drop (kPa)	Total Cooling Capacity (kW)	Water Pressure Drop (kPa)	Total Cooling Capacity (kW)	Water Pressure Drop (kPa)
20x30	2,000	9.2	3.0	13.8	9.0	16.7	17.0
30x30	4,000	21.2	8.0	29.0	21.0	33.9	38.0
30x40	6,000	32.8	12.0	43.1	20.0	51.3	52.0
30x50	8,000	40.8	6.0	56.7	17.0	66.7	29.0
30x60	10,000	54.6	13.0	73.3	31.0	85.3	54.0
40x50	12,500	62.4	7.0	86.8	19.0	102.6	33.0
50x50	15,000	76.4	7.0	106.7	18.0	124.9	30.0
50x60	18,000	99.5	13.0	133.2	30.0	154.7	52.0
50x70	22,000	125.5	21.0	165.6	52.0	186.1	40.0
50x80	25,000	147.8	32.0	182.7	24.0	215.9	58.0
60x80	30,000	179.7	32.0	221.4	22.0	260.7	54.0
60x90	35,000	212.3	46.0	261.7	34.0	293.3	25.0
60x100	40,000	245.0	66.0	302.3	48.0	338.5	34.0
60x110	45,000	245.3	12.0	343.0	64.0	384.1	47.0
70x110	50,000	277.7	11.0	386.7	59.0	431.9	44.0
80x110	60,000	330.2	11.0	460.6	62.0	515.3	46.0
90x110	70,000	382.6	11.0	534.3	64.0	598.5	48.0
90x120	80,000	441.7	16.0	610.3	88.0	684.6	66.0
90x140	90,000	522.8	25.0	706.9	133.0	789.5	99.0
90x160	100,000	578.8	19.0	761.8	45.0	877.5	76.0

AHU RANGE:

ONE SOLUTION FOR
ANY KIND OF APPLICATION

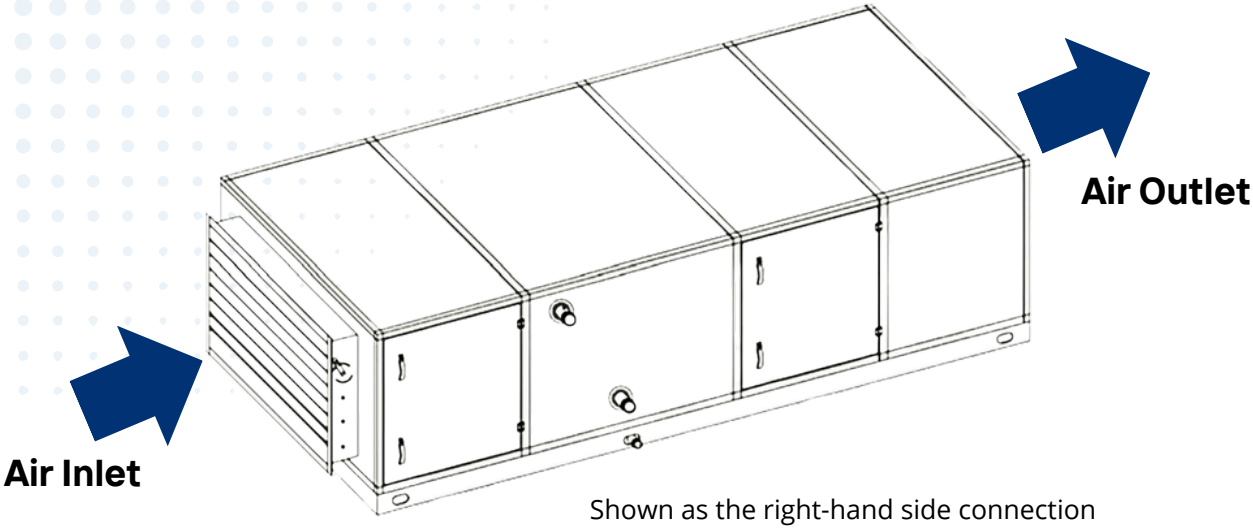
PERFORMANCE DATA

Cooling, Fresh Air

Variable air flow ranges from 2,000 to 100,000 m3/h.

AHU Model	AIR FLOW (m^3/h)	4-row		6-row		8-row	
		Total Cooling Capacity (kW)	Water Pressure Drop (kPa)	Total Cooling Capacity (kW)	Water Pressure Drop (kPa)	Total Cooling Capacity (kW)	Water Pressure Drop (kPa)
20x30	2,000	23.6	4.0	31.9	11.0	36.7	18.0
30x30	4,000	45.8	5.0	62.4	12.0	72.3	21.0
30x40	6,000	75.3	14.0	98.0	35.0	111.7	59.0
30x50	8,000	104.7	32.0	127.9	22.0	148.4	56.0
30x60	10,000	118.4	7.0	163.7	41.0	181.9	30.0
40x50	12,500	134.4	4.0	196.1	24.0	219.2	18.0
50x50	15,000	165.0	5.0	239.8	24.0	266.7	17.0
50x60	18,000	215.8	7.0	297.7	41.0	329.7	28.0
50x70	22,000	272.6	13.0	356.6	28.0	407.3	48.0
50x80	25,000	321.5	18.0	414.7	42.0	469.8	71.0
60x80	30,000	390.8	17.0	501.7	41.0	567.6	68.0
60x90	35,000	462.0	26.0	563.0	19.0	645.1	32.0
60x100	40,000	533.6	38.0	650.0	27.0	742.0	46.0
60x110	45,000	605.5	52.0	737.2	37.0	839.0	62.0
70x110	50,000	686.1	50.0	831.1	36.0	942.2	59.0
80x110	60,000	815.4	53.0	990.5	40.0	1,125.0	64.0
90x110	70,000	944.6	56.0	1,149.0	44.0	1,307.0	70.0
90x120	80,000	1,106.0	27.0	1,313.0	59.0	1,460.0	49.0
90x140	90,000	1,253.0	115.0	1,518.0	88.0	1,679.0	71.0
90x160	100,000	1,415.0	159.0	1,721.0	123.0	1,897.0	97.0

NOMENCLATURE



Shown as the right-hand side connection

9 Module Height

15 Module Width

U2 – 90 + 150

U1 - 25mm Standard
U2 - 50mm Standard/Therma
U3 - 75mm Themal-break

E.g. 75mm thermal-break profile with 7 Module Height and 11 Module Width.
Nomenclature : P3 - 70 × 110

Connection Type

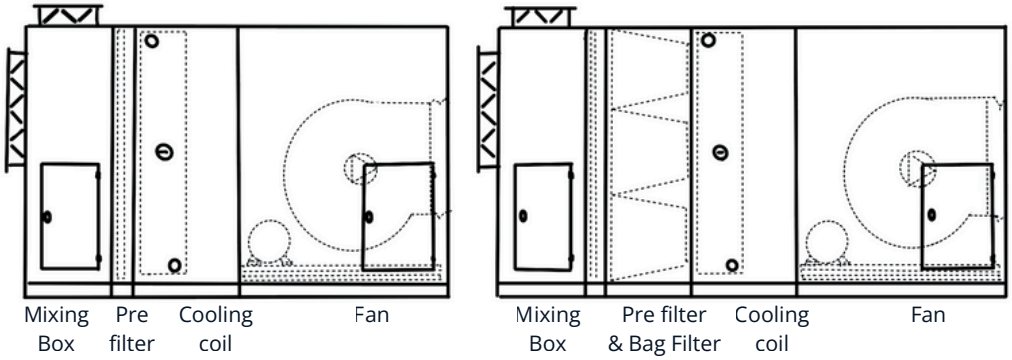
• The right-hand water connection is the cooling water coming from the right side while standing in front of the air-inlet side.

• The left-hand water connection is water from the left side while standing in front of air-inlet side.

NOMENCLATURE

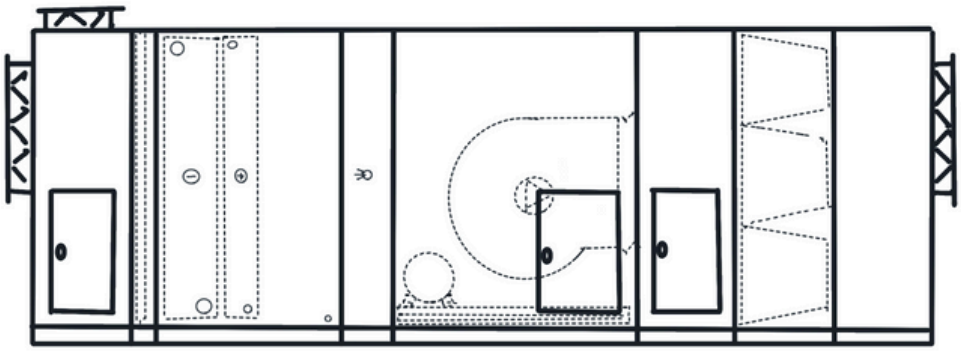
For commercial and residential application

The unit is equipped with a pre-filter only or combined with a bag filter. Cooling coil's capacity is selected based on the actual cooling load to deal with return air or fresh air. For this configuration, it can fulfill a normal application that only controls the air temperature.



For normal cleaness level application

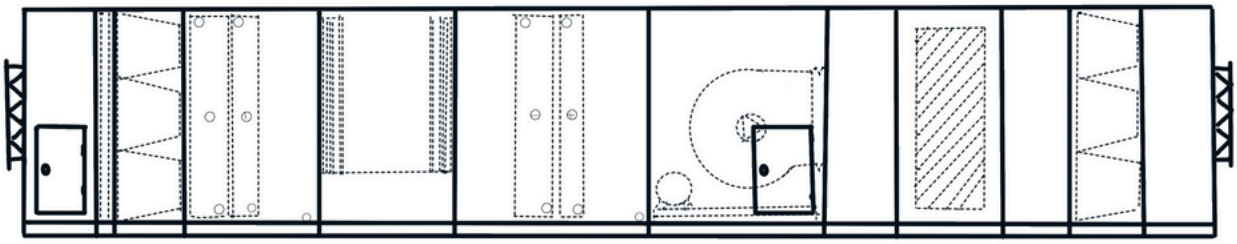
The pre-filter combined with bag f*ilter, cooling coil, re-heat coil and* humidifier are fixed in the StarAire AHU, which requires temperature and humidity control or cleanness control.



NOMENCLATURE

For high level cleanness control application

Installed with pre-filter, bag filter and high efficient filter, water spray system, multi coils as well as the attenuate; The water spray system can eliminate the chemical impurity(such as sulfur, nitride) and static electricity for electronic product in the fresh air, and it will decrease the cooling and humidification load in the subsequent air handling process for chiller ; This configuration is special for high-level cleanness control or fresh air need to be totally treated application.



Energy saving application (with heat recovery kits)

The heat wheel or plate-type heat recovery equipment can recovery the energy between fresh air and exhaust air to take use of the energy from the exhaust air for saving.