



Perfecting the Air

PCRDAMT2601

Air Handling Unit

Product Catalogue



D DM-AHU

Double Skin Modular Air Handling Unit

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Product Overview

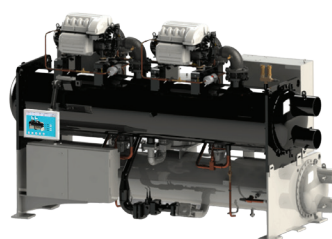
Double Skin Modular Air Handling Unit



Daikin Double Skin Modular Air Handling Unit (DM AHU) is engineered using a versatile modular paneling concept, specifically designed to meet stringent indoor air quality requirements across diverse commercial and customized markets. Our AHUs are built for high performance, providing excellent thermal efficiency, airtightness, and the flexibility needed to optimize operating efficiency and sound levels.

Key Performance and Recommended Range

- **Model Range:** 0204 to 3143
- **Air Flow Capacity:** 700 to 90000 CMH
- **Static Pressure:**
 - DM1: Up to 1500 Pa
 - DM2 & DM2TB: Up to 2000 Pa
 - DMA6: Up to 2500 Pa
- **Applications:** Suitable for both Chilled Water and DX (Direct Expansion) systems



Chiller



DX Outdoor Unit

Construction, Insulation and Energy Efficiency

The DM AHU is constructed around a **rigid frame** made from high-strength **extruded aluminum**. This design incorporates advanced features to minimize energy heat loss and prevent internal condensation, ensuring optimal efficiency.

Thermal Barrier Technology

A key feature is the AHU's **thermal barrier** construction, utilizing three-leg nylon corner pieces and insulated frames to enhance performance.

- **Insulation Panels:** Double skin panels are available with **25mm, 50mm, or 60mm Polyurethane (PU)** insulation.
- **Frame Insulation:** All frames are insulated with **3.0mm PE foam** or feature a **thermal break strip**.
- **Advanced Profile:** The new **thermal-break step profile** and accompanying thermal-break step panel provide superior strength, insulation, and energy savings compared to original profiles.
- **Maintenance:** The **external clip method** or **screw method** used to secure the double skin PU insulation panel ensures both an airtight seal and **easy accessibility for maintenance**.

Product Overview

Selection and Customization

To facilitate system design and optimization, Daikin provides a dedicated **Selection Software Program** for the DM AHU.

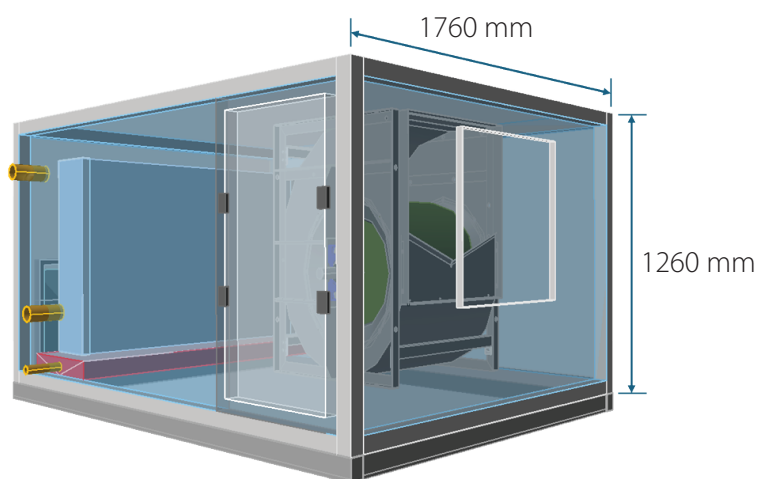
- **Design Optimization:** Software helps optimize the best AHU arrangement and performance for either chilled water or DX systems.
- **Customization:** Standard components can be selected and placed according to specific customer requirements.
- **System Validation:** The program immediately identifies if there is no suitable component choice for the defined unit, ensuring system compatibility.
- **User-Friendly Output:** Provides essential technical data, including:
 - Fan curves data
 - Coil performance data
 - Unit dimension
 - Shipment weight



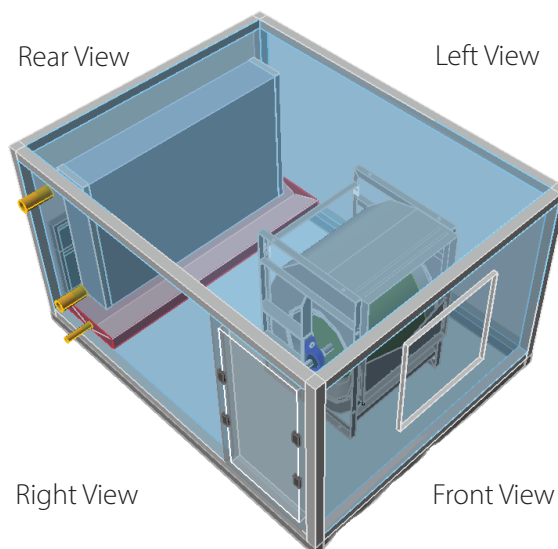
Product Nomenclature

D	DM	A6	-	8	13	
Manufacturer	Model Name	Profile Type	-	Unit Nominal Height	Unit Nominal Width	Design Version
Daikin	Double Skin Modular AHU	1: 25mm Profile	-	Refer table below		1: B
		2: 50mm Profile				2: B
		2TB: 50mm Thermal Break Profile				2TB: B
		A6: 60mm Thermal Break Profile (Step Panel)				A6: Nil

Profile Type	Unit Nominal Size	Actual Cabinet Dimension
DM1	08	$8 \times 100 + 400 = 1200 \text{ mm}$
DM2	08	$8 \times 100 + 450 = 1250 \text{ mm}$
DM2TB	08	$8 \times 100 + 450 = 1250 \text{ mm}$
DMA6	08	$8 \times 100 + 460 = 1260 \text{ mm}$



DMA6 - 0813



Marketing Tool

AHU Selection Software - EPOCH 5.1

The DM AHU's configuration is made effortless and precise through the use of the AHU selection software, EPOCH 5.1.

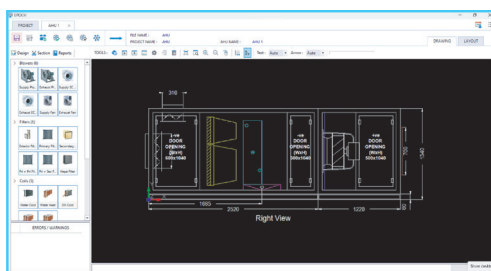
This powerful tool allows users to define the optimal arrangement and performance, whether for a Chilled Water or DX system, by selecting standard components tailored to specific customer requirements.

Not only does the program provide immediate feedback on the suitability of component choices, but it also furnishes comprehensive technical data, including fan curves, coil performance, unit dimensions, and shipment weight, ensuring a smooth design-to-installation process.



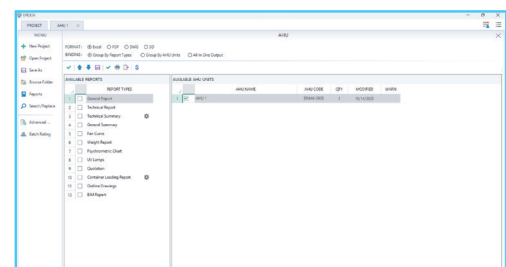
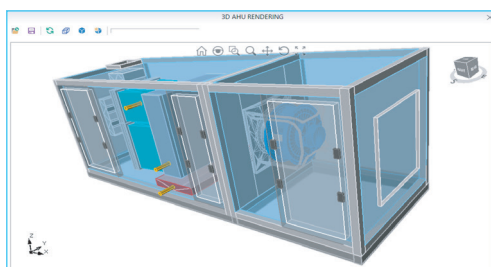
DDM AHU Selection Software

Key Features



- **Simplicity:**
 - User-friendly interface designed for easy navigation
 - Minimal technical knowledge required to operate
 - Fast generation of results without complex procedures

- **Flexibility**
 - Easily adapts to different project sizes and requirements
 - Customizable options to suit specific needs
 - Handles a variety of AHU configurations and components



- **Visualization**
 - Offers clear graphical displays and technical reports for easy understanding
 - 3D visualization of AHU layout and component arrangement
 - Exportable visuals for inclusion in proposals and technical documents

- **Integration**
 - Direct output to PDF, Excel, and CAD formats
 - Pricing systems for automatic cost estimation
 - Seamless integration with BIM plugin (Revit) for digital project coordination

Product Certification

Daikin's DM Series Air Handling Units are engineered to deliver superior quality, performance, and reliability. These units have achieved **EUROVENT** and **AHRI 1350** certifications — internationally recognized standards that validate the unit's **mechanical strength, air leakage rate, and thermal performance**.

- **EUROVENT and AHRI 1350 certifications** represent the industry's highest benchmarks for air-handling equipment performance and efficiency.
- These accreditations affirm Daikin's **commitment to product excellence, integrity, and compliance** with global HVACR standards.

EUROVENT Certified Ratings

					High Grade  Low Grade				
	DMA6	DM2TB	DM2	DM1	Class Classification of EN1886 standard				
Casing Strenght	D1(M)	D1(M)	D1(M)	D1(M)	Strenght class	D1	D2	D3	
					Maximum relative deflection of the cabinet under ±1000 Pa	4	10	>10	
Casing Air Leakage	L1(M)	L1(M)	L1(M)	L2(M)	Air leakage class	L1	L2	L3	
					Maximum air leakage rate of the cabinet under test pressure of -400 Pa (l/s/m ²)	0.15	0.44	1.32	
	L1(M)	L1(M)	L1(M)	>L3 (M)	Maximum air leakage rate of the cabinet under test pressure of +700 Pa (l/s/m ²)	0.22	0.63	1.90	
Filter By-passed Leakage	F9(M)	F9(M)	F9(M)	F9(M)	Filter by-passed class	F9	F8	F7	F6
					Maximum by-pass leakage rate, k in % of the volume flow rate	0.5	1	2	4
Thermal Transmittance	T2	T2	T4	T4	Thermal Transmittance class	T1	T2	T3	T4
					Thermal Transmittance (U) W/(m ² .K)	U≤0.5	0.5<U≤1.0	1.0<U≤1.4	1.4<U≤2.0
Thermal Bridging Factor	TB1	TB2	TB3	TB3	Thermal bridging factor class	TB1	TB2	TB3	TB4
					Thermal bridging factor (Kb)	0.75<Kb<1.0	0.6≤Kb<0.75	0.45≤Kb<0.6	0.3≤Kb<0.45

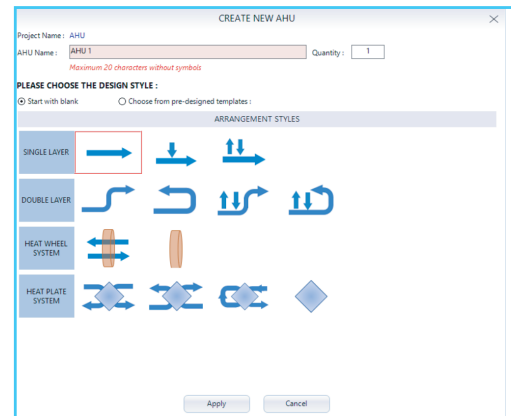
AHRI 1350 Certified Ratings

					High Grade  Low Grade				
	DMA6	DM2TB	DM2	DM1	Class Classification of AHRI Standard 1350 (I-P)				
Casing Deflection Rating Class	CD1	CD2	CD2	CD3	Strenght class	CD1	CD2	CD3	CD4
					Rating Differential Static Pressure, in H ₂ O	10	8	6	4
					Maximum Normalized Deflection, in/in of span	0.0033	0.0042	0.0042	0.0042
Casing Air Leakage Class (Negative)	CL1	CL1	CL1	CL2	Casing Air leakage class	CL1	CL2	CL3	CL6
Casing Air Leakage Class (Positive)	CL1	CL1	CL1	CL2	Maximum Casing Air Leakage Rate, cfm/100ft ² (at P=1 in.H ₂ O)	1	2	3	6
Thermal Transmittance Class with Leakage	CT1	CT2	CT3	CT3	Thermal Transmittance class	CT1	CT2	CT3	CT4
					Thermal Transmittance with Leakage (U), Btu/hr/ft ² /°F	U ≤ 0.16	0.16 > U ≥ 0.26	0.26 > U ≥ 0.39	0.39 > U ≥ 0.61
Thermal Transmittance Class without Leakage	CT1	CT2	CT3	CT3	Thermal Transmittance class	CT1	CT2	CT3	CT4
					Thermal Transmittance without Leakage (U), Btu/hr/ft ² /°F	U ≤ 0.14	0.14 > U ≥ 0.23	0.23 > U ≥ 0.36	0.36 > U ≥ 0.55
Thermal Bridging Class	CB1	CB1	CB3	CB3	Thermal bridging class	CB1	CB2	CB3	CB4
					Thermal Bridging Factor, Kb	Kb ≥ 0.8	0.8 > Kb ≥ 0.6	0.6 > Kb ≥ 0.4	0.4 > Kb ≥ 0.2

Configurations

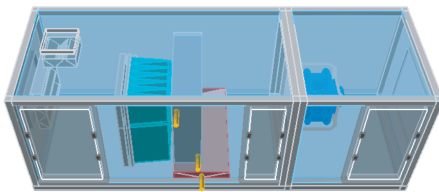
The DM AHU Series offers **exceptional design flexibility**, allowing units to be configured in **any layout** to suit diverse **space limitations and project specifications**.

A library of **pre-designed configuration templates** is available for typical system arrangements, enabling **faster selection, optimized design, and shorter project turnaround time**.

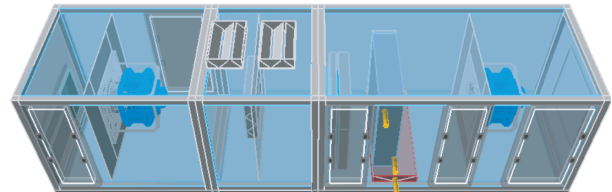


Variety of AHU Configurations

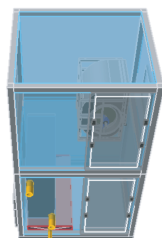
Typical AHU Configurations



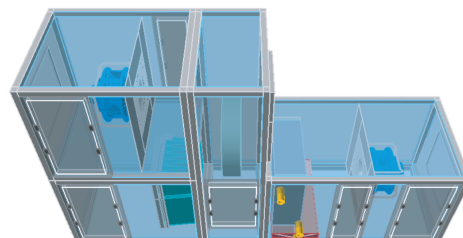
Single Layer



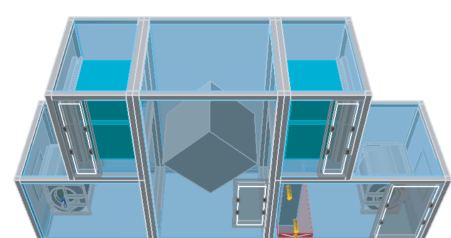
Single Layer with 3-Way Damper



Double Layer



Double Layer with Heat Wheel System

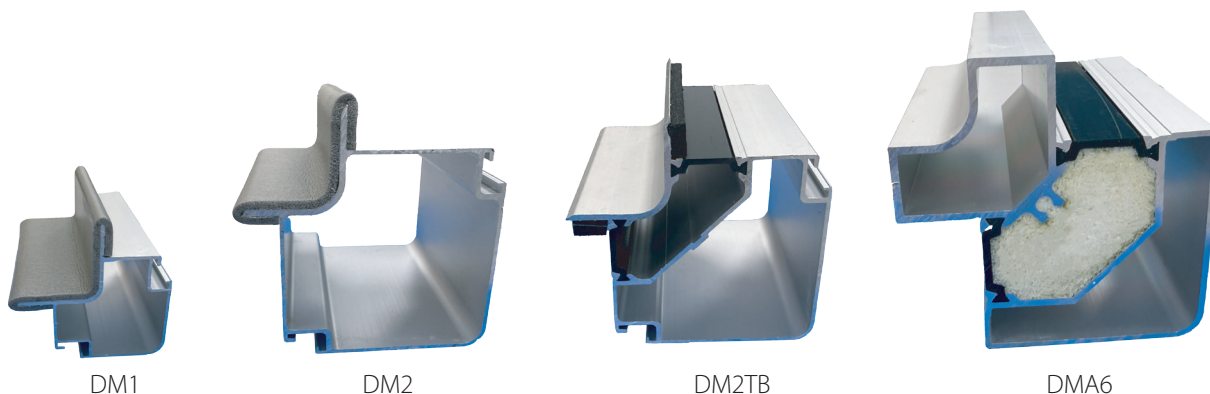


Double Layer with Heat Plate System

Construction & Design Details

Casing / Cabinet Construction

The DM AHU is designed and constructed to meet high standards for performance and structural integrity, utilizing robust materials for its frame and panels.



Design & Construction Details

The unit complies with BS EN 1886 and is certified by EUROVENT and AHRI 1350.

- **Frame Construction:**
 - The frame is constructed from **high-strength extruded aluminium pentapost** with round edges and flat intermediate posts (DM2, DM2TB, and DMA6).
 - It features a frame channel design where three individual pieces are bolted together to create a strong composite corner
 - This construction provides **high rigidity** and exceptional **structural stability**.
- **Panel Construction:**
 - Panels are made of **double-skin polyurethane (PUR) foam insulation**.
 - **External skin:** 0.5 mm pre-painted steel.
 - **Internal skin:** 0.5 mm galvanized steel (GI).
 - **Optional skin thicknesses:** 0.8 / 1.0 / 1.2 mm.
 - **Insulation thickness:** 25 / 50 / 60 mm (density 40 kg/m³).

Performance, Access, and Assembly

The design incorporates features that optimize performance, simplify maintenance, and streamline on-site assembly

- **Performance Features:**
 - Low sound level due to insulated double-skin construction.
 - Maintenance-friendly — panels removable without affecting frame rigidity.
 - Low energy consumption design.
- **Access & Assembly:**
 - Access doors: swing-type or removable panel with full-perimeter gasket for airtight sealing.
 - Module-to-module joints use overlapping splice with gasket for air-tightness and easy installation.
 - Bolt and nut brackets simplify on-site assembly of multiple modules.
 - Mounted on galvanized steel base frame for easy handling and positioning.

Construction & Design Details

DM2TB & DMA6

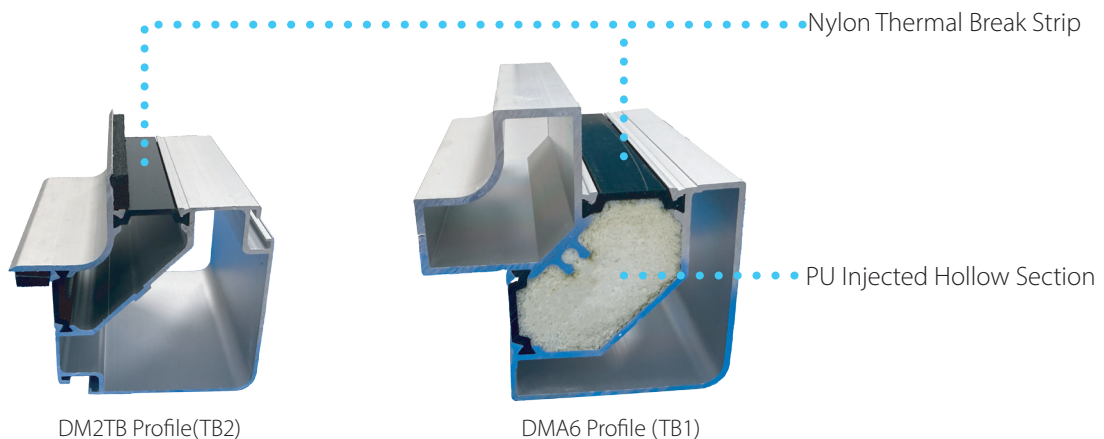
Thermal Break Profile

The Air Handling Unit (AHU) frame utilizes a new generation of high-quality profiles, including the **thermal break round edge aluminum profile (DM2TB)** and the **new improved step profile (DMA6)**, specifically engineered to enhance overall AHU performance.

Frame Technology: Thermal Break Profile

The core innovation lies in the thermal break design, which is constructed as follows:

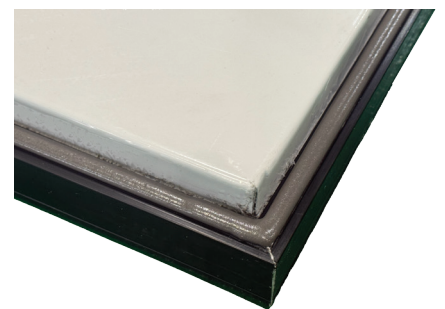
- **Composition:** The profile consists of two separate extruded aluminum parts.
- **Insulation:** These parts are joined by a thermal barrier nylon strip that is sandwiched between the inner and outer aluminum layers.
- **Function:** This design creates an effective, isolated thermal layer between the inside and outside of the AHU cabinet, which significantly minimizes the release of thermal energy (heat loss).
- **Availability:** The thermal break profile is available for cabinets with 50 mm & 60 mm panel thicknesses.



Key Performance Benefits

A high-performance AHU is characterized by minimal air leakage and reduced heat loss. The thermal break profile delivers numerous long-term advantages:

- **Increased Energy Efficiency:** System efficiency is boosted by significantly lowering heat loss.
- **Condensation Control:** Minimizes condensation forming on the exterior surface of the AHU.
- **Insulation Integrity:** Avoids moisture migration into the Polyurethane (PU) panel, which preserves the insulation's long-term effectiveness.
- **Improved Longevity:** Increases the operational life of the AHU and reduces long-term running costs.
- **Acoustic Performance:** Enhances the unit's sound insulation properties.



PU injected Gasket for Panel (DMA6)

Component Highlights

Fan Section



DIDW Centrifugal Fan



EC Fan

The fan is a critical component responsible for system air delivery. Its primary technical function is to overcome the system's static pressure—the collective resistance imposed by components such as filters, coils, and ductwork—thereby ensuring the required air volume is delivered both quietly and efficiently.

The fan assembly can be driven by two primary motor types:

- **AC Motor:** Available in both direct-drive and belt-drive configurations.
- **EC Motor (Electronically Commutated):** Typically utilized in a direct-drive arrangement for superior part-load efficiency.

The selection between a conventional centrifugal fan and an EC fan is a strategic decision based on the application's specific requirements for **performance, energy efficiency, long-term operational cost, and maintenance complexity.**

Key Specifications & Features

- **Fan Type option**
 - Double Inlet Double Width (DIDW) Centrifugal fan: Forward Curve, Backward Inclined & Airfoil
 - Plenum Fan with Induction Motor
 - Electronic Commutated Centrifugal fan (EC Fan) with IE5 efficiency
 - Axial Fan with IE4/IE5 Permanent Magnet Motor
- **Induction Motor Option**
 - Type: Horizontal foot-mounted, induction squirrel cage motor, TEFC (Totally Enclosed Fan-Cooled).
 - Efficiency classes IE1, IE2, and IE3.
 - Space heater and thermistor for protection.
 - Flame-proof motor available.
- **Additional Features:**
 - Compatible with Variable Frequency Drive (VFD) for energy-efficient speed control.
 - Safety and efficiency accessories include thermistor, VFD, and disconnect switch.
 - Optional motor starter panel for indoor and outdoor application.



Star-Delta Starter Panel
(Indoor)



VFD Starter Panel
(Outdoor)

Component Highlights

Coil Section

The coil is a critical **heat exchanger** component installed within the AHU, serving as the primary device for **conditioning the supply air** circulated to the occupied space. The fundamental function of any coil—whether for cooling or heating—is to facilitate the controlled transfer of **thermal energy** between the air stream traversing its fins and the secondary fluid (typically water or refrigerant) flowing through its copper tubes.

Cooling coils, specifically **Chilled Water (CW)** and **Direct Expansion (DX)** coils, are employed for simultaneous **sensible and latent heat removal** from the air stream. The cold fluid absorbs sensible heat from the warmer air, thereby reducing the air's temperature. When the coil surface temperature falls below the air's dew point, **latent heat removal (dehumidification)** occurs, causing moisture to condense and draining as condensate. Conversely, a **Hot Water (HW) heating coil** adds sensible heat to the air; the hot fluid transfers thermal energy to the cooler air stream, elevating the temperature for space heating. Both coil types are indispensable for maintaining precise setpoint temperatures, humidity control, and guaranteeing optimal occupant thermal comfort irrespective of ambient conditions.



Chilled Water Coil

Technical Overview

- **Optimized Design:**
 - Coil positioned within casing to enclose headers and return bends for maximum heat transfer efficiency.
 - Designed to maximize cross-sectional area utilization and ensure uniform air distribution.
- **Construction:**
 - Seamless copper tubes with aluminium corrugated fins for superior heat transfer.
 - Factory-sealed coil connections with grommets and gasket sleeves to prevent air leakage and condensation.
- **Serviceability:**
 - Coils are removable from side or top panels without dismantling the section.
 - Optional intermediate drain pan allows cleaning access between stacked coils.
- **Performance & Standards:**
 - Designed in accordance with AHRI Standard 410.
 - Suitable for chilled water or DX systems.
 - Drip pan system ensures effective condensate drainage and prevents flooding.

Component Highlights

Construction Materials and Thickness

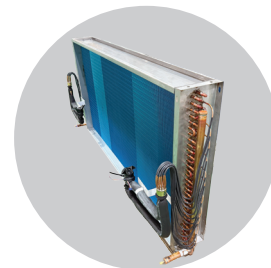
These specifications dictate the durability, heat transfer capability, and resistance to corrosion of the coil assembly.

- **Coil Frame Material:**
 - **GI (Galvanized Iron/Steel):** Standard, cost-effective option for non-corrosive, general applications.
 - **SSTL 304 (Stainless Steel 304):** Offers good corrosion resistance; suitable for slightly aggressive environments or high-humidity applications.
 - **SSTL 316L (Stainless Steel 316L):** Superior resistance to corrosion, particularly against chlorides; ideal for marine or highly corrosive industrial environments.
- **Fin Material:**
 - **Aluminium Fin:** Standard, highly efficient, and cost-effective material for heat transfer.
 - **Copper Fin:** Provides superior corrosion resistance and is often specified for applications with strict hygiene or demanding longevity requirements.
- **Copper Tube Thickness:**
 - **0.406 mm & 0.500 mm:** Specification options determining the pressure integrity and robustness of the heat transfer circuit. Thicker tubes (0.500 mm) provide greater mechanical

Protective Coatings and Header Details

These options are applied to coil fins to enhance corrosion resistance to increase the service life of the coil.

- **Fin Coating (Corrosion Protection):** Applied to fins to enhance life and performance in harsh conditions.
 - **Hydrophilic (Blue Fin):** Promotes water run-off (wetting), improving cooling capacity and reducing carry-over in high-humidity cooling applications.
 - **Heresite Coating:** A highly chemical and corrosion-resistant phenolic coating suitable for industrial or highly corrosive environments.
 - **Bygold Coating:** A specialized protective finish for enhanced durability and corrosion
- **Header Size (Diameter):**
 - **42 mm, 76 mm, 100 mm, 114 mm:** These diameters determine the manifold size for fluid distribution, selected based on the required flow rate and pressure drop for the specific thermal load.
- **Header Material and Connection:**
 - **Steel:** Typically used with **threaded connections (BSPT or NPT)** for robust piping interfaces.
 - **Copper:** Utilized for high-purity or specialized systems, available with **brazed connections** (for permanent, leak-tight joints) or **threaded connections (BSPT)**.
- **Optional Coil Flange Connection:** Can be specified for threaded headers, providing a more robust, standardized, and easily demountable piping interface compared to direct threading.



Hydrophilic Fin



Heresite Coating



Bygold Coating

Component Highlights

Drainage and Moisture Management

Effective condensate and moisture management are crucial for preventing water carry-over, microbial growth, and AHU corrosion.

- **Drain Pan Material:**
 - **Steel Painted:** Standard material with protective coating for condensate collection.
 - **SSTL 304 & SSTL 316L:** Stainless steel options offering superior longevity and resistance to corrosion from condensate, essential for hygiene-sensitive.
- **Optional Intermediate Drain Pan:** Installed **between staged coils** to ensure effective, separate drainage of condensate and prevent flooding or carry-over when coils are stacked vertically.
- **Optional Moisture Eliminator:**
A device installed immediately after the cooling coil to **prevent condensate water carryover** into the ductwork, maintaining system efficiency and avoiding microbial contamination.



Moisture Eliminator

Component Highlights

Filter Section

Mechanical Filtration

Clean air begins with effective filtration. The DM AHU is thoughtfully designed to deliver superior indoor air quality through a comprehensive range of filtration options. From **primary** and **secondary** filters to high-efficiency **HEPA** filters, each solution is sourced from trusted manufacturers to ensure lasting performance and reliability.

To further enhance air purity, **activated carbon filters** are available to effectively remove gaseous contaminants typically found in urban environments — including VOCs, SOx, NOx, and ozone — for a fresher, healthier indoor atmosphere.

- **Sliding filter Frame**
 - **Side-loading:** Filters inserted and removed from the side through a small door or cover.
 - Installation options: External (On AHU casing for pre-filter), Internal
- **Universal Holding Frame**
 - **Front-loading:** Filter are inserted and removed from upstream side. It requires maintenance space for personnel to enter and replace filters.
 - Advantage: **Modular frame** with **gaskets on all sides** to minimize bypass leakage.
 - Installation options: External (On AHU casing for free air intake application), Internal
- **HEPA Filter Frame**
 - **Front-loading:** Designated frame for **HEPA filter** to ensure ensuring **airtight sealing** and **maximum filtration efficiency**.
 - Used in applications that requires highest level of air cleanliness, such as hospital, laboratories and cleanroom.



Sliding Filter Frame



Universal Holding Frame



Pre-Filter



Secondary Filter



HEPA Filter

Component Highlights

Filter Section

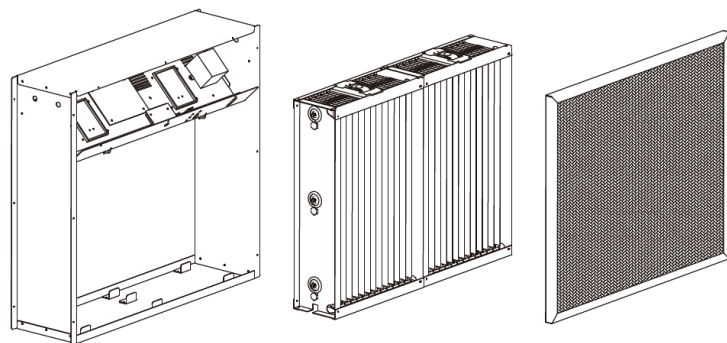
Electronic Filtration

Beyond conventional mechanical filters, the DM AHU also offers an advanced electronic filter, or **electrostatic air cleaner (EAC)**, for even greater purification. This system works by ionizing airborne dust and impurities as they pass through a high-voltage field, attracting them to oppositely charged collection plates. The process captures ultra-fine particles and delivers a **sterilizing effect**, ensuring cleaner, safer, and more comfortable air for every environment.

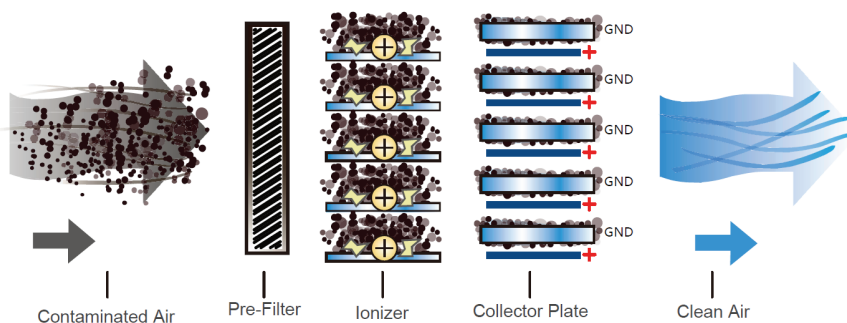
- **Key Features:**
 - Modular design: Adaptable to various airflow capacities and filtration requirements.
 - System integration ready: Equipped with a BMS communication port for seamless monitoring and control.
 - Comprehensive indicators: Display operation, cleaning, and malfunction status for easy maintenance.
 - Integrated pre-filter: Protects the electrostatic unit by capturing larger dust and particles, maintaining long-term performance and efficiency.



Electrostatic Air Cleaner



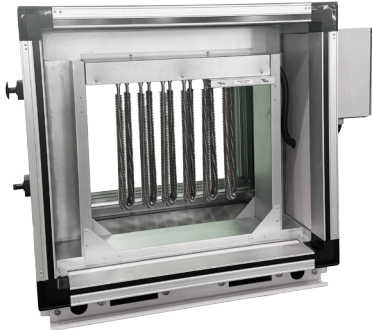
Frame Casing, Ionic Cell & Pre-filter



Working Principles

Component Highlights

Electric Heater Section

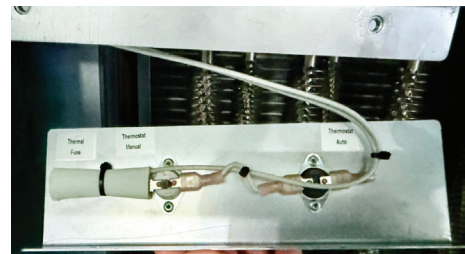


Electric Heater

The Electric Heater Section utilizes a **finned tubular electric heater** as a highly valuable alternative to conventional steam or hot water heating coils. This component is designed to achieve precise air temperature control, enabling the system to maintain the desired room condition, including specific relative humidity levels.

Technical Configuration and Control Options

- **Heater Rated Voltage:** 120 V, 220 V, 240 V
- **Wiring Connection:**
 - **1 Phase:** Suitable for Step Control (simple on/off staging)
 - **3 Phase (Star Connection):** Mandatory for Modulating Control
- **Control Method:**
 - **Step Control** (Standard - with field-supplied controller)
 - **Modulating Control** (Optional, for precise temperature regulation)
- **Safety Protection Devices**
 - **Mandatory:** Thermostat (Auto Reset), Thermostat (Manual Reset), Thermal Fuse
 - **Optional:** Differential Pressure Switch (Trigger off heater operation when no airflow/low airflow)



Thermostats & Thermal Fuse



Differential Pressure Switch

Optional Modulating Control Components

For applications requiring high-precision output, the following components are recommended to enable effective **modulating control**:

- **SCR Control Panel:** Essential for smoothly regulating the heater power (output) to maintain temperature.
- **RH Controller and RH Sensor:** Utilized to manage power based on humidity feedback, allowing the AHU to meet specific relative humidity targets.



SCR Panel

Component Highlights

Energy Recovery - Heat Recovery Wheel

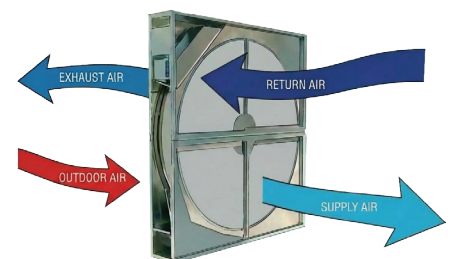


The integration of a Heat Recovery Wheel, is essential for efficiently introducing required outdoor ventilation while maintaining desired indoor air quality (IAQ). This component can recover 50% or more of the thermal energy that would otherwise be exhausted from the building, offering a highly sustainable solution to reduce operational costs.

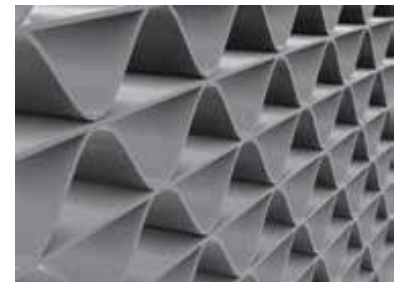
Operating Principle and Construction

The heat wheel operates by continuously capturing and transferring thermal energy between the two opposing air streams within the Air Handling Unit (AHU).

- **Operation:** The wheel rotates at a constant or variable low speed, capturing heat from the exhaust air and transferring it to the incoming supply air stream.
- **Energy Transfer:** It transfers both sensible energy (temperature) and latent energy (moisture).
 - **Winter Mode:** Transfers heat from the warm exhaust air to pre-heat the cold outdoor supply air.
 - **Summer Mode:** Transfers heat from the hot outdoor air to the cooler exhaust air, effectively pre-cooling the supply air.
- **Construction:** Constructed from **aluminum** coated with a heat transfer material, typically a desiccant such as **3A molecular sieve**, and driven by an electric motor.
- **Airflow Requirements:** Requires two dedicated fans: the **exhaust fan** and the **supply fan**.



Supply air and exhaust air streams

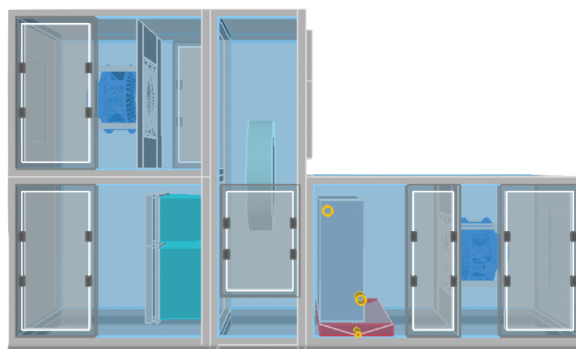


Aluminium fin coated with 3A molecular sieve

Key Technical and Economic Benefits

The ability of the heat wheel to transfer both sensible and latent energy makes it one of the most efficient recovery technologies available, providing significant system advantages:

- **Energy Savings:** Allows for a reduction in system capacity (cooling and heating loads) by approximately 20 - 50% due to heat recovery.
- **Equipment Sizing:** Directly enables a reduction in the capacity of the primary ventilation equipment (coils, chillers, boilers).
- **Indoor Air Quality (IAQ):** The most significant benefit is the contribution to **preventing Sick Building Syndrome (SBS)** by ensuring consistent introduction of treated outdoor air without significantly increasing energy costs.



AHU with Heat Recovery Wheel

Component Highlights

Energy Recovery - Plate Heat Exchanger

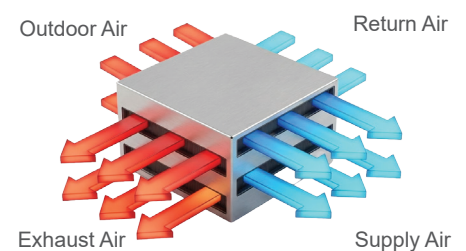


The integration of a Heat Recovery Wheel, is essential for efficiently introducing required outdoor ventilation while maintaining desired indoor air quality (IAQ). This component can recover 50% or more of the thermal energy that would otherwise be exhausted from the building, offering a highly sustainable solution to reduce operational costs.

Operating Principle and Construction

The heat wheel operates by continuously capturing and transferring thermal energy between the two opposing air streams within the Air Handling Unit (AHU).

- **Operation:** The wheel rotates at a constant or variable low speed, capturing heat from the exhaust air and transferring it to the incoming supply air stream.
- **Energy Transfer:** It transfers both sensible energy (temperature) and latent energy (moisture).
 - **Winter Mode:** Transfers heat from the warm exhaust air to pre-heat the cold outdoor supply air.
 - **Summer Mode:** Transfers heat from the hot outdoor air to the cooler exhaust air, effectively pre-cooling the supply air.
- **Construction:** Constructed from **aluminum** coated with a heat transfer material, typically a desiccant such as **3A molecular sieve**, and driven by an electric motor.
- **Airflow Requirements:** Requires two dedicated fans: the **exhaust fan** and the **supply fan**.

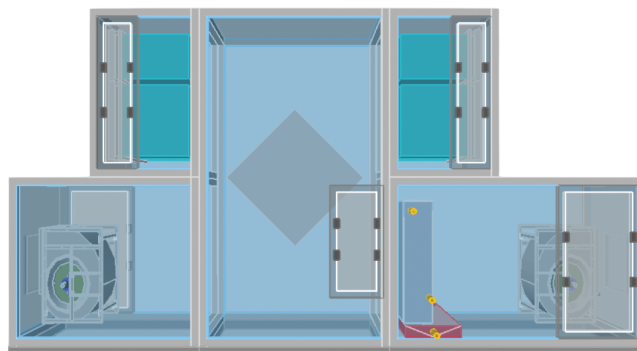


Supply air and exhaust air streams

Key Technical and Economic Benefits

The ability of the heat wheel to transfer both sensible and latent energy makes it one of the most efficient recovery technologies available, providing significant system advantages:

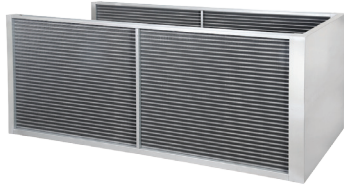
- **Energy Savings:** Allows for a reduction in system capacity (cooling and heating loads) by approximately 20 - 50% due to heat recovery.
- **Equipment Sizing:** Directly enables a reduction in the capacity of the primary ventilation equipment (coils, chillers, boilers).
- **Indoor Air Quality (IAQ):** The most significant benefit is the contribution to **preventing Sick Building Syndrome (SBS)** by ensuring consistent introduction of treated outdoor air without significantly increasing energy costs.



AHU with Heat Recovery Wheel

Component Highlights

Energy Recovery - Wrap Around Heat Pipe

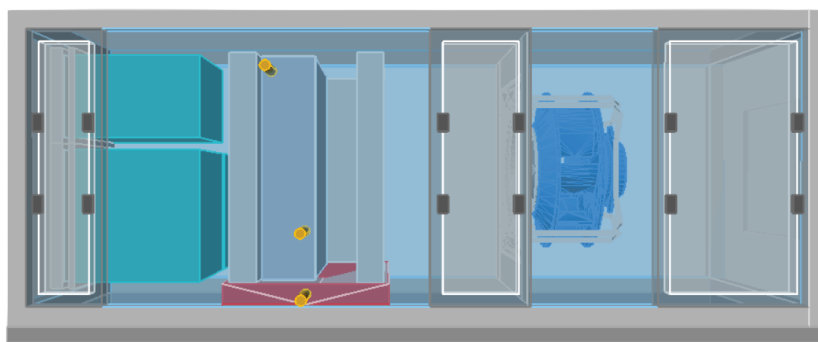
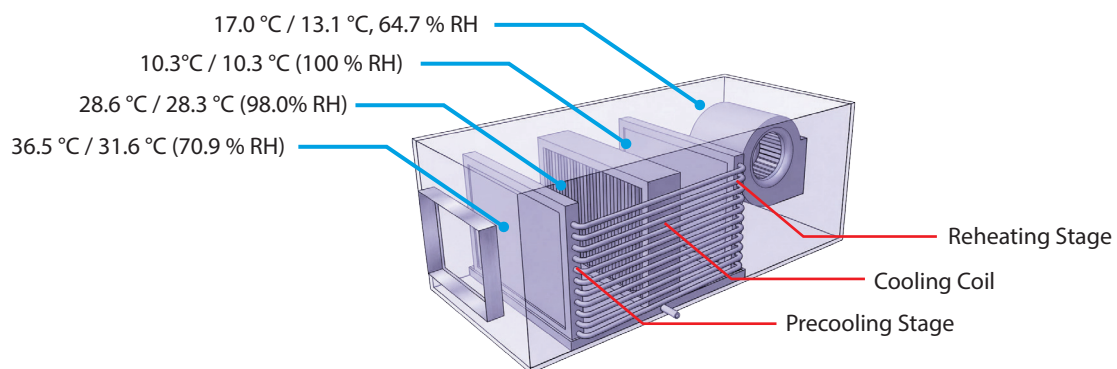


A Wrap-Around Heat Pipe (WAHP) is a high-efficiency, **passive thermal recovery** component integrated within an Air Handling Unit (AHU). It is specifically designed to enhance dehumidification performance by "wrapping" around a standard cooling coil. Unlike active systems that require external power, the WAHP utilizes a natural phase-change cycle to manipulate air temperatures. Its primary purpose is to solve the common HVAC dilemma: how to remove enough moisture from the air without delivering it to the room at uncomfortably cold temperatures.

Operating Principle and Construction

The system operates through a continuous, self-driven cycle involving two main heat exchangers—the **precool section and the reheat section**—connected by a series of tubes containing a refrigerant.

- **Precooling Stage:** Warm, humid return or outside air first passes through the precooling heat pipe. The liquid refrigerant inside the pipes absorbs heat from the air, causing the refrigerant to evaporate into a gas. This reduces the air's temperature before it reaches the main cooling coil, allowing the coil to reach the dew point much faster and extract more moisture.
- **The Cooling Coil:** The now-precooled air hits the AHU's primary cooling coil, where deep dehumidification occurs.
- **Reheating Stage:** The cold, saturated air then moves through the reheat heat pipe section. Meanwhile, the gaseous refrigerant from the first stage has traveled to this section. Because the air here is colder than the gas, the refrigerant condenses back into a liquid, releasing its latent heat into the air stream. This "free" heat raises the air temperature to a comfortable supply level, and the liquid refrigerant flows back to the precool section via gravity or capillary action to repeat the process.



AHU with Heat Recovery Wheel

Component Highlights

Indoor Air Quality Technologies

To meet the increasingly rigorous standards of modern building health, our Air Handling Units (AHUs) can be equipped with a suite of four advanced Indoor Air Quality (IAQ) technologies. These solutions go beyond standard mechanical filtration to actively neutralize microscopic threats. Clients can choose from **UVC Germicidal Irradiation** for microbial control, **TiO₂ Coil Coating** for surface hygiene, **Photocatalytic Oxidation (PCO)** for inhibition of germs and virus, or **Ionizers** for active particulate reduction. Whether specified individually or as a combined system, these options transform the AHU into a high-performance air purification hub.

UVC Germicidal Irradiation



Engineered to neutralize airborne threats, our UVGI Systems offer a robust germicidal solution that prevents the spread of viruses and microbes through ductwork and equipment.

By integrating UVC technology, AHUs provide continuous sterilization through **coil surface disinfection** or **air purification**, effectively deactivating pathogens in the airstream. This ensures that the HVAC system delivers both optimal climate control and a high standard of clinical air safety

UVGI control panels come with two options:

Basic

- On/Off selector switch & pilot lamp
- Door safety switch interlocking
- PVC enclosure

Advance Max (Ammeter)

- All features of Basic panel
- BMS communication and AHU interlocking relay
- Ammeter
- Stainless steel casing



TiO₂ Coil Coating



The advanced nanotechnology TiO₂ coating utilizes electrostatic application for uniform, quick-drying coverage on coil surface. Once exposed to light, the photocatalytic process initiates, decomposing organic pollutants, pathogens, and volatile organic compounds (VOCs). By maintaining an actively sterile environment, it serves as a critical component in preventing indoor cross-contamination.

Component Highlights

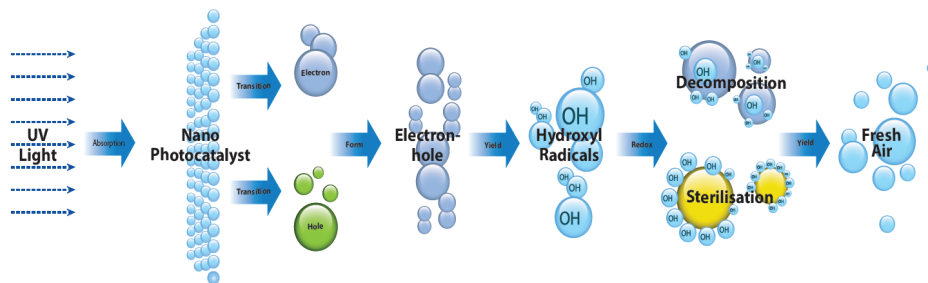
Indoor Air Quality Technologies

Photocatalytic Oxidation (PCO)



Nano-photocatalysts are activated by specific wavelengths of light, triggering the formation of electron-hole pairs. These pairs react with ambient moisture (H_2O) and oxygen (O_2) to generate highly reactive hydroxyl free radicals.

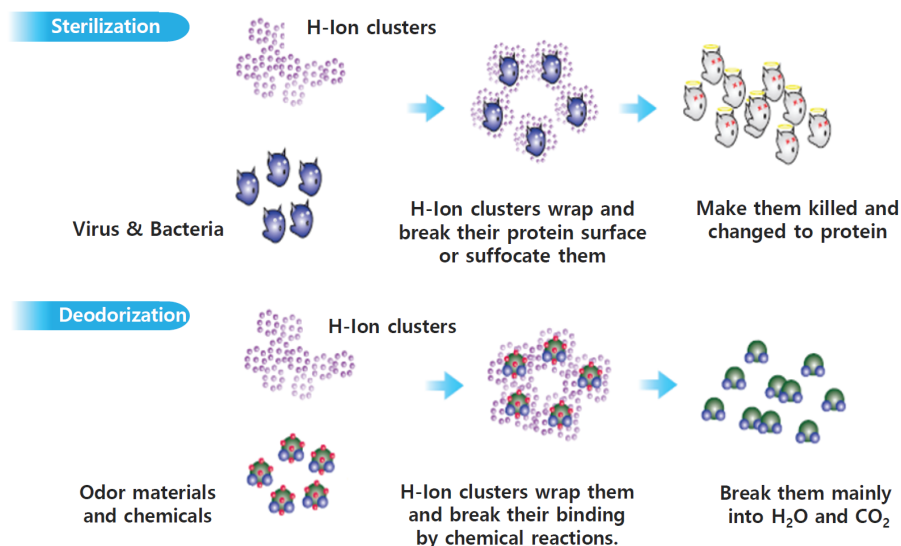
These radicals chemically attack and decompose the molecular structures of pollutants, effectively neutralizing harmful contaminants and inhibiting the growth of bacteria and viruses.



Ionizer

H-Ion Plasma Discharge technology represents a leap forward in environmental hygiene, moving beyond passive filtration to active molecular purification. By applying high-voltage discharge to the surrounding air, the system generates a balanced cloud of positive and negative ions.

These ions naturally bond with water molecules to form stable "H-Ion Clusters." These clusters act as microscopic hunters, seeking out and neutralizing airborne contaminants in real-time.





Certified in accordance with the AHRI Central Station Air-handling Unit Casing Certification Program, which is based on AHRI Standard 1350. Certified Units may be found in the AHRI Directory at www.ahrirectory.org



Daikin Refrigeration Malaysia Sdn. Bhd. participates in the ECP Programme for Air Handling Units. Check ongoing validity of certificate: www.eurovent-certification.com or www.certiflash.com

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*Note: 1) Specifications, design and other content appearing in this brochure are current as of January 2026 by subject to change without prior notice.
2) All pictures shown are for illustration purpose only. Actual product may vary due to product enhancement.*