



Παγκόσμιος Ηγέτης στο **Ιδανικό** Κλίμα.

Εξαερισμός - Αερισμός



Κεντρικά Γραφεία | Ελ. Βενιζέλου 5
Έκθεση | Αριστείδου 40 & Ελ. Βενιζέλου 3
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Air handling units

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Daikin air handling units

Why choose Daikin air handling units?

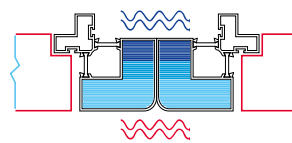
- › Maximum energy efficiency and indoor air quality
- › Wide range of functions and options
- › **High quality** components
- › **Innovative** technology: Unique features and state of the art technology for short payback
- › Operation **efficiency** and **energy savings**
- › Outstanding **reliability** and **performance**
- › Various applications are possible including air conditioning applications, industry-type process cooling, and large-scale district heat source systems.
- › Plug and play concept for easy installation and commissioning
- › Unique Daikin fresh air package available for connection of AHU to VRV or ERQ

Certifications

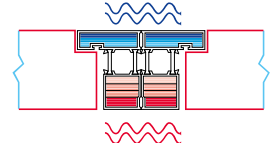
- › Eurovent certified performances
- › Exceeding 2018 ErP – ECODSIGN requirements
- › Certified according to the Hygiene Directive VDI 6022 (Modular L and Professional ranges)
- › Certified according to the Hygiene Directive DIN 1946 (Professional range)
- › RLT certified performances



Conventional design



Daikin design



The unique quality of Daikin AHU is accomplished by:

Panels

- › The outer panel is Pre-painted with Corrosion Class RC5
- › The inner panel is made of Aluzinc with Corrosion Class RC4

Gasket

- › Liquid gasket technology drastically reduces unit air leakage

Frame

- › All anodized aluminium which has the highest corrosion resistance compared to natural aluminium
- › Unique Daikin thermal break (35mm or 27 mm thermal break). Polyamide bars design to enhance thermal break unit performances
- › Distinctive Section to section thermal break profile to ensure thermal break design on the whole unit (see image above)
- › Rounded profile for increased ease of cleaning

IAQ

- › Flush internal surface and rounded corner flush surface to avoid the retention of dirt and to be easily cleanable
- › Wide filtration possibility to reduce pollution

Plug & Play Controls

- › Pre-commissioned and Factory-tested control for quicker on site commissioning
- › Sole manufacturer to provide a complete AHU DX solution from a single manufacturer available for connection of AHU to VRV or ERQ (everything factory-mounted)

Certifications

- › Eurovent certified performances
- › Exceeding 2019 ErP - ECODSIGN requirements
- › Certified according to the Hygiene Directive VDI 6022 (Modular L and Professional ranges)
- › Certified according to the Hygiene Directive DIN 1946 (Professional range)
- › RLT certified performances

Marketing tools

- › Watch the time-lapse video of a Daikin AHU construction on www.youtube.com/daikineurope
- › Watch the Modular L promotional video on www.youtube.com/daikineurope
- › Download our brochure on air handling units from my.daikin.eu
- › Get the access to the selection tool <http://tools.daikinapplied.eu> to select your air handling units in a few clicks.
- › Download the Modular L “Daikin Air Design” App on the App stores for iOS and Android



- › Consult the “Argue Card” document to support in promoting the Modular L range (*available on request – refer to your Daikin AHU specialist*)



Benefits for the installer

Plug and play design

- › Pre-programmed and factory-tested controls easiest and fast commissioning
- › Low voltage fast connectors in between AHU selections easiest on site unit assembly
- › Flush mounted electrical control panel avoiding risk of damage during transport and installation

Daikin Fresh air package

- › Plug & Play connection of Professional or Modular AHU to Daikin VRV and ERQ
- › Factory-mounted package contains expansion valves, electronic interface and sensors.
easiest and fast commissioning

Benefits for the consultant

Quick selection tool

- › In-house developed web software with improved user interface and preset parameters ensure that you can always find the optimum and most energy efficient product for your application
- › Unlimited configuration option
- › Infinity variable sizing (1 cm increments a unit sizes)

Benefits for the end user

Customizable or standard

- › Amazing tailor made capability to meet the specific customer needs with the Professional range or fast availability thanks to the “make to stock” standard Modular L range

Efficient control logic

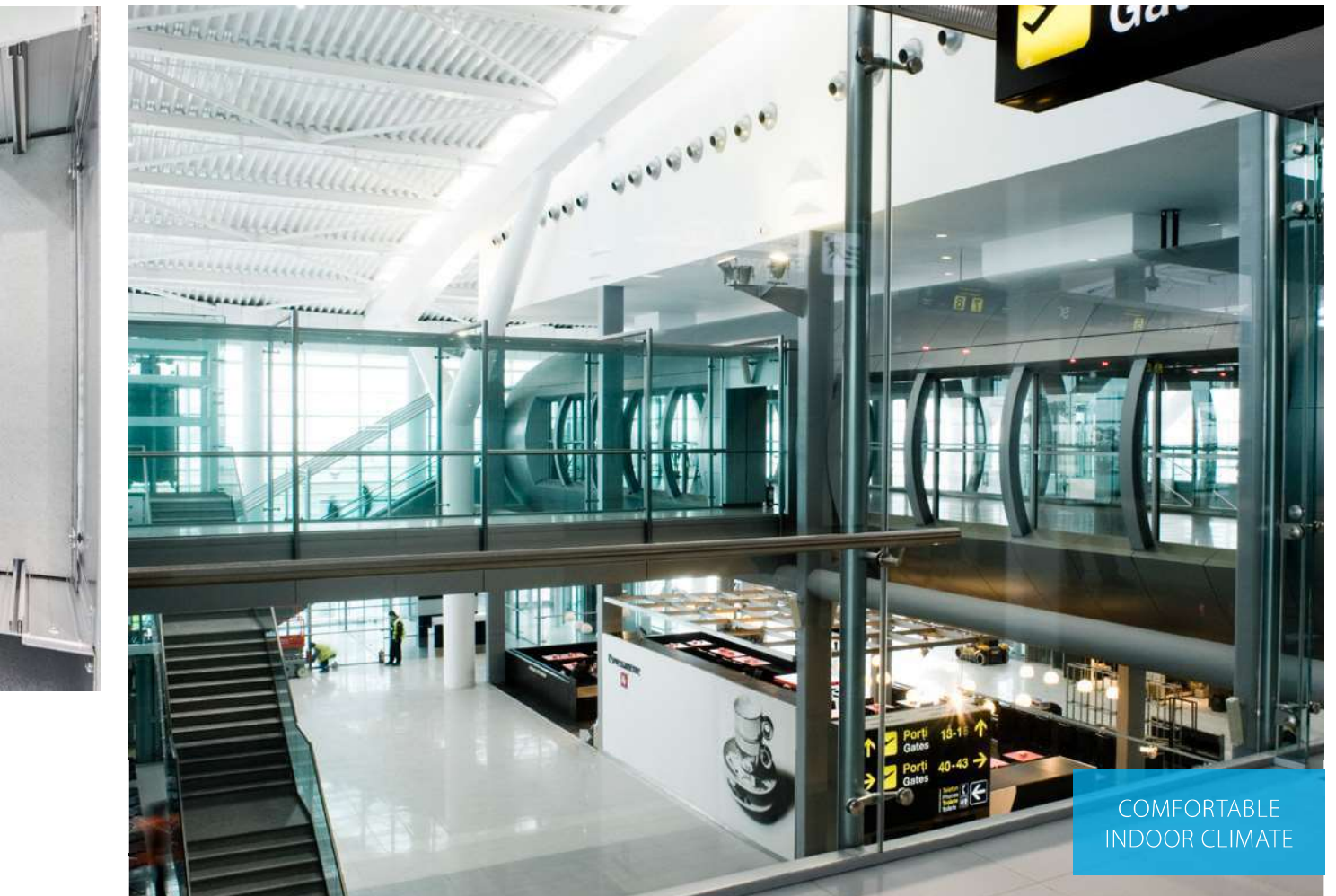
- › Open communication protocols (BACnet and Modbus) that guarantee BMS, and ITM compatibility
- › Energy efficient controls with reduced energy and operating cost
- › Highest efficiency to have sensible saving on energy all





Air handling units

D-AHU MODULAR R
INSTALLATION



COMFORTABLE
INDOOR CLIMATE

Products overview



Centralized and decentralized ventilation

D-AHU Professional

Air flow (m³/h x 1,000)

140

120

100

90

80

70

60

50

40

20

0



Professional

- › Infinite variable sizes
- › **Tailored to the individual customer**
- › Modular construction

50 years of European
Design AHU
manufacturing experience



Modular R

- › Pre-configured sizes
- › Plug and play concept
- › EC fan technology
- › **Heat recovery wheel (sorption and sensible technology)**
- › Compact design



D-AHU
Modular R

500 m³/h
up to 25,000 m³/h

Modular P

- › Pre-configured sizes
- › Plug and play concept
- › EC Fan technology
- › **High efficiency aluminum counter flow plate heat exchanger**
- › Compact design



D-AHU
Modular P

500 m³/h
up to 15,000 m³/h

› Modular L

- › Pre-configured sizes
- › Plug and play concept
- › EC Fan technology
- › **High efficiency aluminum counter flow plate heat exchanger**
- › Low height unit
- › For false ceiling applications



D-AHU
Modular L

150 m³/h
up to 3,450 m³/h

Selection software

ASTRA Web

- › Quick AHU selection that will save you precious time, drastically reducing selection time through the new software interface.
- › Very competitive solution available within the Wizard thanks to pre-uploaded parameters.
- › High selection quality, thanks to the intelligence embedded within the software core.

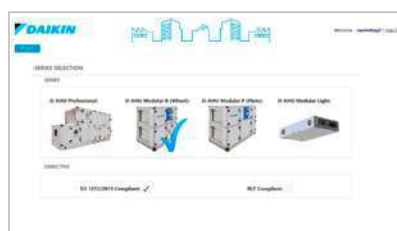
Quickly select your air handling unit by following the wizard:

- 1 Select the series: D-AHU Professional, D-AHU Modular R, D-AHU Modular P and Modular L
- 2 Insert the air flow supply and return
- 3 Insert the summer/winter air supply setpoint
- 4 Insert the summer/winter outdoor and extract temperature

You will get immediately your 3D result and it's ready to customize!

Now, you will be able to modify your unit (adding or changing components) in order to have a product that meets all your needs.

When finished a technical report, price list, fan curve chart and psychrometric chart can be generated. These final reports can be downloaded in different formats.



Eurovent certification

Daikin Applied Europe S.p.A. participates in the Eurovent Certified Performance programme for Air Handling Units.

Check ongoing validity of certificate:
www.eurovent-certification.com
 or www.certiflash.com



Result Energy Termic S2&F2

Eurovent Classification according to EN1886

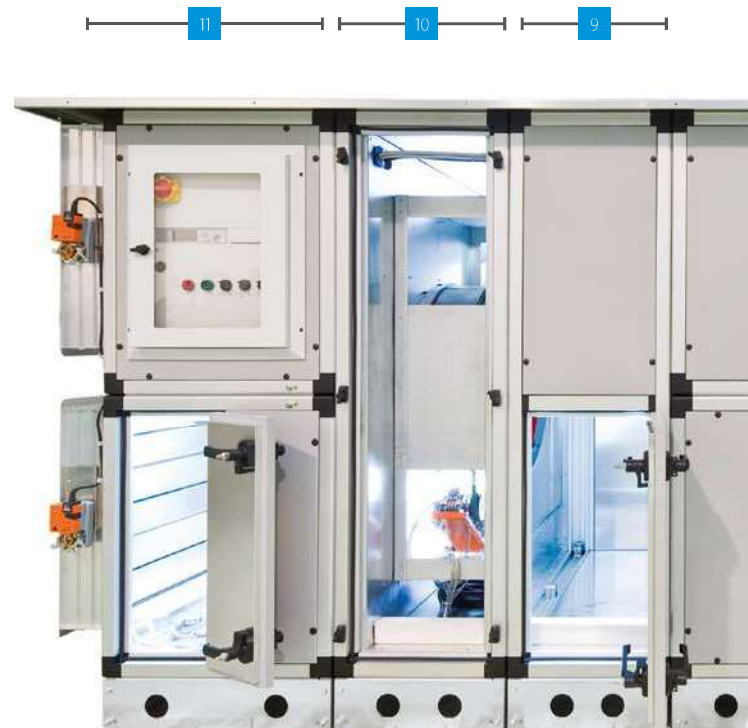
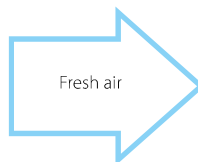
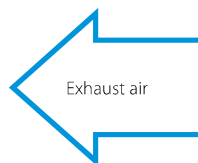
D1	Casing strength class	D1	D2	D3		
	Max. relative deflection mm x m ⁻¹	4.00	10.00	EXCEEDING10		
L1	Casing air leakage class at -400 Pa	L1	L2	L3		
	Max. leakage rate (f ₄₀₀) l x s ⁻¹ x m ⁻²	0.15	0.44	1.32		
L1	Casing air leakage class	L1	L2	L3		
	Max. leakage rate (f ₇₀₀) l x s ⁻¹ x m ⁻²	0.22	0.63	1.90		
F9	Filter bypass leakage class	F9	F8	F7	F6	G1 TO F5
	Max. filter bypass leakage rate k in % of the volume flow rate	0.50	1	2	4	6
T2	Thermal transmittance	T1	T2	T3	T4	T5
	(U) W/m² x K	U <= 0.5	0.5 < U <= 1	1 < U <= 1.4	1.4 < U <= 2	No requirements
TB2	Thermal bridging factor	TB1	TB2	TB3	TB4	TB5
	(kb) W x m² x K-1	0.75 < K _b <= 1	0.6 < K _b <= 0.75	0.45 < K _b <= 0.6	0.3 < K _b <= 0.45	No requirements

The working principle at a glance

Typical configurations for Daikin air handling units provide a versatile range of functions. Our system offers numerous options for customisation through an extensive range of variations and added functionality.

Supply side

- 1 Damper section including ventilation grilles, factory-mounted actuators
- 2 Premium efficiency filters with factory-mounted differential pressure manometer
- 3 Heat recovery system (cross flow and counter flow plate heat exchanger or rotary heat exchanger)
- 4 Mixing box with damper and factory-mounted actuators
- 5 R-410A with heat recovery system with galvanised condensate tray and drip protection
- 6 Supply air fan, EC technology (with hinged door, opening drive monitoring, mounted and cabled lighting and ON/OFF switch)



Fans

- › EC plug fan
- › Forward curved fan
- › Backward curved fan
- › Backward airfoil blades fan
- › Plug fan

Exchangers

- › Water coils
- › Steam coils
- › Direct expansion coil
- › Superheated water coils
- › Electric coils

Humidifiers

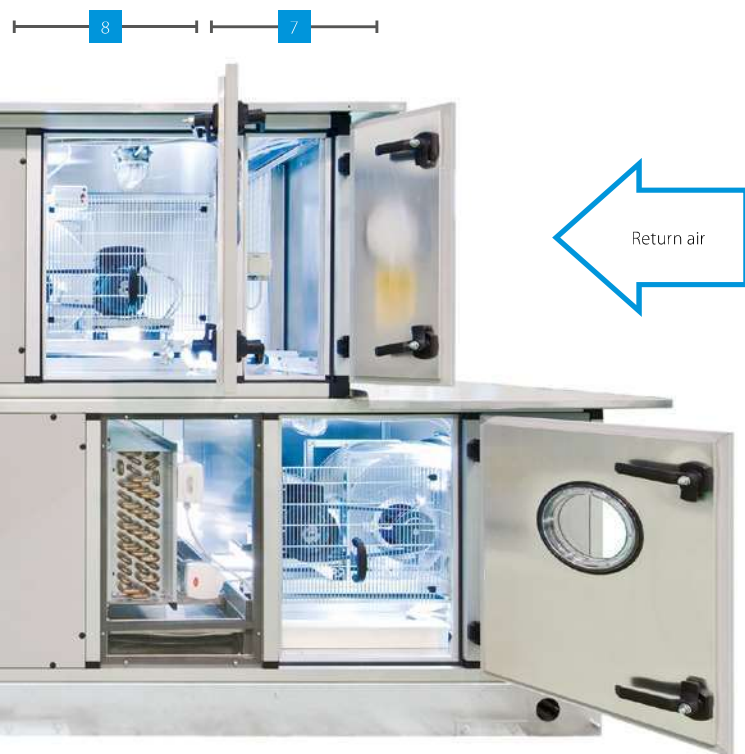
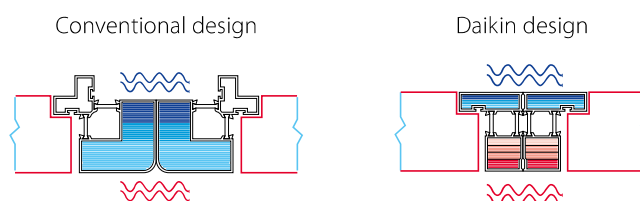
- › Evaporative humidifier without pump (loss water)
- › Evaporative humidifier with re-circulating pump
- › Air washer without pump (loss water)
- › Air washer with re-circulating pump
- › Steam humidifier with direct steam production
- › Steam humidifier with local distributor
- › Atomized water spray humidifier

Plug and Play control solution

- › Air flow control
- › Air temperature control
- › Chilled water and DX cooling system control
- › Free cooling
- › CO₂ automatic control
- › air temperature control (supply, return, ambient)
- › Variable Air Volume (VAV) and Constant Air Volume (CAV) systems

Unique section to section thermal break profile

- › Thermal bridge free for the entire AHU
- › Smooth interior surface with improved IAQ (Indoor Air Quality)



Return side

- 7 Premium efficiency filters with factory-mounted differential pressure manometer
- 8 Exhaust air fan, EC technology (with hinged door, opening drive monitoring, mounted and cabled lighting and ON/OFF switch)
- 9 Mixing box with damper and factory-mounted actuators
- 10 Heat recovery system (cross flow and counter flow plate heat exchanger or rotary heat exchanger)
- 11 Damper section including ventilation grilles, factory-mounted actuators

Heat recovery systems

- › Heat wheel, sensible or sorption
- › Cross flow and Counter flow plate heat exchangers
- › Run-around coils

Other section

- › Attenuator section
- › Mixing box section with actuators or manual controlled dampers
- › Empty section

Filters

- › Synthetic pleated filter
- › Flat filter aluminium mesh
- › Rigid bag filter
- › Soft bag filter
- › High efficiency filter
- › Carbon absorption filter
- › Carbon deodorizing filter

Accessories

- › Control features
- › Frost protection
- › Manometers
- › Drive guard
- › Roof
- › ...

Professional

Flexible solution for custom applications

Flexible design

- Daikin Professional air handlers are tailored to your needs, optimizing always the unit for the most cost-effective selection and manufacturing standardization.
- › Air flow from 500 m³/h up to 144,000 m³/h.
 - › All the units can be modularly designed to facilitate the transport and the assembly on site.
 - › New features available as counter flow plate heat exchanger, biocide filters...



Variable dimensioning

Size	Airflow (m³/h)	Height - mm	Width - mm
1	1,800	640	720
2	2,200	640	810
3	3,500	740	980
4	5,400	840	1,190
5	6,600	840	1,390
6	7,600	940	1,390
7	9,000	1,090	1,380
8	11,000	1,150	1,550
9	14,000	1,270	1,720
10	18,300	1,390	1,970
11	23,800	1,570	2,190

Size	Airflow (m³/h)	Height - mm	Width - mm
12	29,800	1,690	2,480
13	33,800	1,870	2,510
14	43,200	1,990	2,940
15	51,000	2,110	3,230
16	63,000	2,290	3,620
17	68,000	2,290	3,890
18	77,000	2,290	4,410
19	87,000	2,410	4,660
20	95,400	2,470	4,960
21	111,200	2,590	5,460
22	127,000	2,650	6,060

- › 1 cm increment for width & height dimensions
- › No additional design cost and lead time for customized unit

Example

Airflow (m³/h)	Unit Size	Height (mm)	Width (mm)	Face Velocity (m/s)
47,000	Size 15	2,110	3,230	2.27
	1,920x2,720	2,110	2,950	2.5

Plug and play: More control, more flexibility

The plug and play control system allows for more precise control than ever before, allowing the user to determine a wide range of settings, resulting in excellent operational flexibility.

The factory-fitted electrical control panel, complete with Direct Digital Control (DDC) is combined with in-built temperature, humidity and CO₂ sensors to control mixing dampers, heat recovery systems, water valves, pressure switches

for filters and fans, fan motors and inverters.

All these components are wired internally and individual AHU modules are linked by fast connectors.

The AHU control system can manage the chilled water coil, hot water coil, DX cooling and/or heating coil(s) (in conjunction with ERQ/VRV) of single or multiple refrigerant circuits (up to a maximum of four circuits per DX coil).

Modular R

High-end solution with heat recovery

Energy efficiency and indoor air quality

- › Predefined sizes
- › IE4 premium efficiency motor
- › High efficiency heat wheel (heat recovery)
- › Compact design
- › Advanced control features
- › Easy installation
- › Indoor air quality compliant with VDI 6022 hygiene guideline
- › Operating limits from -25 °C, -40 °C with electric heaters, up to +46 °C ambient temperature
- › VRV IV and ERQ coupling capability
- › Indoor and outdoor versions
- › Free cooling capability
- › Economy and Night mode operation
- › Monitoring and control through Daikin ITM



EC Fan

- › Air flow or pressure control (Variable Air Volume - Constant Air Volume)
- › Nominal air flow programmed at factory
- › Silent operation



Simple, quick installation

The Modular series' Plug and play design is more than just a convenient feature for installers. It offers cost-saving benefits as there is no need for expensive adjustments before the unit is commissioned. Plug and play makes everyone's life simpler, safer and more economical.

D-AHU Modular R			1	2	3	4	5	6	7	8	9	10
Airflow		m ³ /h	1,200	1,700	2,700	4,100	5,500	6,100	7,000	9,100	11,500	15,000
Temp. efficiency winter		%	80	79.7	80.1	80.2	80.7	80.1	80.7	80.8	80.5	80.6
External static pressure	Nom.	Pa	200	200	200	200	200	200	200	200	200	200
Current	Nom.	A	2.59	3.65	3.13	4.95	6.4	7.78	8.78	10.48	14.23	19.03
Power input	Nom.	kW	0.6	0.84	1.25	1.98	2.56	3.11	3.51	4.19	5.69	7.61
SFPv		kW/m ³ /s	1.553	1.507	1.451	1.521	1.387	1.549	1.525	1.432	1.487	1.551
Electrical supply	Phase	ph	1	1	1	1	1	1	1	1	1	1
	Frequency	Hz	50	50	50	50	50	50	50	50	50	50
	Voltage	V	230	230	400	400	400	400	400	400	400	400
Dimensions unit	Width	mm	720	820	990	1,200	1,400	1,400	1,600	1,940	1,940	2,300
	Height	mm	1,320	1,320	1,540	1,740	1,740	1,920	1,920	2,180	2,460	2,570
	Length	mm	1,700	1,700	1,800	1,920	2,080	2,280	2,400	2,450	2,280	2,400
Weight unit		kg	325	350	475	575	750	790	950	1,330	1,410	1,750

Modular P

AHU with plate heat exchanger

Highlights

- › 10 Predefined sizes
- › Compliant with VDI 6022



- › Operating limits from -25 C, +40°C with electric heaters
- › Plug & Play Controls
- › Monitoring and control through Daikin ITM
- › Easy installation and commissioning



EC Fan

- › Inverter driven with IE4 premium efficiency motor
- › High-efficient blade profiling
- › Reduced energy consumption
- › Optimized SFP (Specific Fan Power) for an efficient unit operation

Heat exchanger

- › Premium quality counter flow plate heat exchanger
- › Up to 92% of the thermal energy recovered
- › No cross contamination

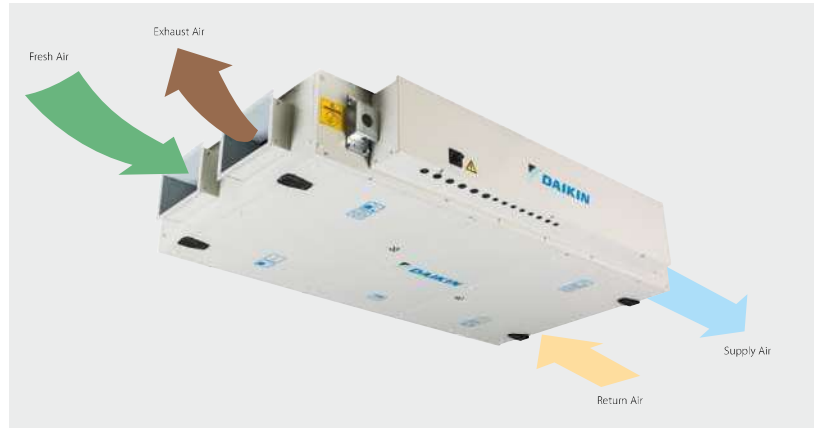
D-AHU Modular P			1	2	3	4	5	6	7	8	9	10
Airflow		m³/h	1,100	1,600	2,400	3,100	3,700	4,750	5,500	8,000	10,400	12,500
Thermal efficiency		%	91	91.5	92	91.9	91.9	92.2	92.3	91.7	93.1	93.1
External static pressure	Nom.	Pa	200	200	200	200	200	200	200	200	200	200
Current	Nom.	A	1.78	2.48	2.08	2.73	3.45	4.58	5.25	7.53	9.55	11.55
Power input	Nom.	kW	0.41	0.57	0.83	1.09	1.38	1.83	2.1	3.01	3.82	4.62
SFPv		kW/m³/s	1.183	1.092	1.09	1.113	1.188	1.21	1.207	1.216	1.148	1.166
Electrical supply	Phase	ph	1	1	1	1	1	1	1	1	1	1
	Frequency	Hz	50	50	50	50	50	50	50	50	50	50
	Voltage	V	230	230	400	400	400	400	400	400	400	400
Dimensions unit	Width	mm	720	820	990	1,200	1,400	1,400	1,600	1,940	1,940	2,300
	Height	mm	1,320	1,320	1,540	1,740	1,740	1,920	1,920	2,180	2,460	2,570
	Length	mm	2,030	2,200	2,610	2,660	2,800	3,210	3,340	3,840	4,060	4,190
Weight unit		kg	343	358	512	604	785	852	964	1,449	1,700	2,071

Modular L

Premium efficiency heat recovery unit

Highlights

- › 6 Predefined sizes
- › Certified VDI 6022
(for unit with air flow <1000 m³/h)
- › Exceeding ERP 2018 requirement
- › Plug & Play Controls
- › Best choice when Compactness is needed
(only 280 mm height up to 550 m³/h)
- › Easy installation and commissioning
- › Modular L is EPBD certified
- › Double filtration stage and filter efficiency up to ePM1 85% (F9)



EC centrifugal fan

- › Inverter driven with IE4 premium efficiency motor
- › High-efficient blade profiling
- › Reduced energy consumption
- › Optimized SFP (Specific Fan Power) for an efficient unit operation
- › Maximum ESP available 550 Pa (depending on model sizes and air-flow)

Heat exchanger

- › Premium quality counter flow plate heat exchanger
- › Up to 91% of the thermal energy recovered
- › High grade aluminum allowing high grade corrosion protection

For integration with Sky Air and VRV units, please refer to the Modular L Smart, in the Ventilation chapter

Technical details

D-AHU Modular L			02	03	04	05	06	07
Airflow	m³/h		300	600	1,200	1,500	2,500	3,000
Heat exchanger thermal efficiency¹.	%		90				91	90
External static pressure	Nom.	Pa	100					
Current	Nom.	A	0.52	1.26	2.17	2.74	5.04	6.09
Power input	Nom.	kW	0.12	0.29	0.50	0.63	1.16	1.40
SFPv².		kW/m³/s	1.25	1.52	1.3	1.35	1.46	1.5
ERP compliant			ErP 2018 Compliant					
Electrical supply	Phase	ph	1					
	Frequency	Hz	50/60					
	Voltage	V	220/240 Vac					
Main unit dimensions	Width	mm	920	1,100	1,600		2,000	
	Height	mm	280	350	415		500	
	Length	mm	1,660	1,800		2,000		
Rectangular duct flange	Width	mm	250	400	500		700	
	Height	mm	150	200	300		400	
Unit Sound Power Level (Lwa)	dBA		50	57	57	53	62	58
Unit Sound Pressure Level³.	dBA		34	41	41	37	46	41
Weight unit	kg		125	180	270	280	355	360

1. Winter design condition: Outdoor: -10°C, 90% Indoor: 22°C, 50%

2. SFPv is a parameter that quantifies the fan efficiency (the lower it is the better will be). This reduces if airflow decreases.

3. EN 3744. Surrounding, Directivity (Q) = 2, @1,5m distance

4. Electrical current is based on 230V