



Product catalogue 2018

# Air handling units



Easy and flexible solutions for any ventilation requirements



## 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

### Benefits for the installer

- › Simple precise commissioning through pre-programmed DDC controller
- › Reduced installation time thanks to internal electrical wiring and external terminal connections avoiding drilling into unit panels
- › Flush mounted electrical control panel avoiding risk of damage during transport and installation

### Benefits for the consultant

- › Quick selection tool - in-house developed web software with improved user interface allowing for a professional report in a few clicks
- › Unlimited configuration options

### Benefits for the end user

- › Energy efficient controls, allowing the user to determine a wide range of settings, resulting in excellent operational flexibility
- › Safe operation - fully integrated electrical panel for units taller than 80cm
- › Amazing tailor made capability to meet the specific customer needs

## Marketing tools

Watch the time-lapse video of a Daikin AHU construction on [www.youtube.com/daikineurope](http://www.youtube.com/daikineurope)

› Download our brochure on air handling units from [my.daikin.eu](http://my.daikin.eu)

› Follow the wizard and select or modify your Modular or Professional AHU in a few clicks!



### Packaged control solution for Daikin AHU

- › Electrical control panel complete with Direct Digital Control (DDC) controller
- › Internal fitting of all sensors and pressure measurement devices
- › Built-in temperature, humidity and CO<sub>2</sub> sensors
- › Internal electrical wiring for all components

### Energy efficient while focusing on maximum comfort

- › Set points can be specified for supply, return or room temperature
- › Precise control of all AHU components such as mixing dampers, heat recovery wheels, water valves, pressure switches for filters and fans, fan motors and inverters

### Plug and play design

- › Low voltage fast connectors in between AHU sections

### Easy start-up and commissioning

- › Pre-programmed and factory-tested controls ensuring all wiring is installed correctly
- › Reduced energy and operating costs

### Daikin Fresh air package

- › Plug and play connection of Professional or Modular R AHU to Daikin VRV and ERQ
- › Factory mounted package contains a.o. expansion valve, electronic interface and sensors
- › Ensuring high efficiency and comfort





Air handling units



SMART CONTROLS



DAMPER AND EC FAN



HEAT RECOVERY WHEEL AND FILTER



D-AHU MODULAR R  
INSTALLATION



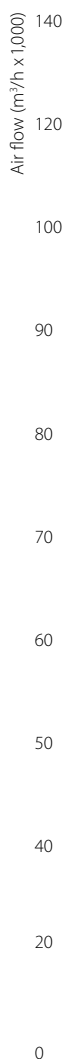
COMFORTABLE  
INDOOR CLIMATE



# Products overview



## D-AHU Professional



### Professional

- › Pre-configured sizes
- › **Tailored to the individual customer**
- › Modular construction



750 m<sup>3</sup>/h  
up to 144,000 m<sup>3</sup>/h

### 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 m<sup>3</sup>/h  
up to 25,000 m<sup>3</sup>/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 m<sup>3</sup>/h  
up to 15,000 m<sup>3</sup>/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

100 m<sup>3</sup>/h  
up to 3,400 m<sup>3</sup>/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 or D-AHU Modular P
- 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](http://www.eurovent-certification.com)  
 or [www.certiflash.com](http://www.certiflash.com)



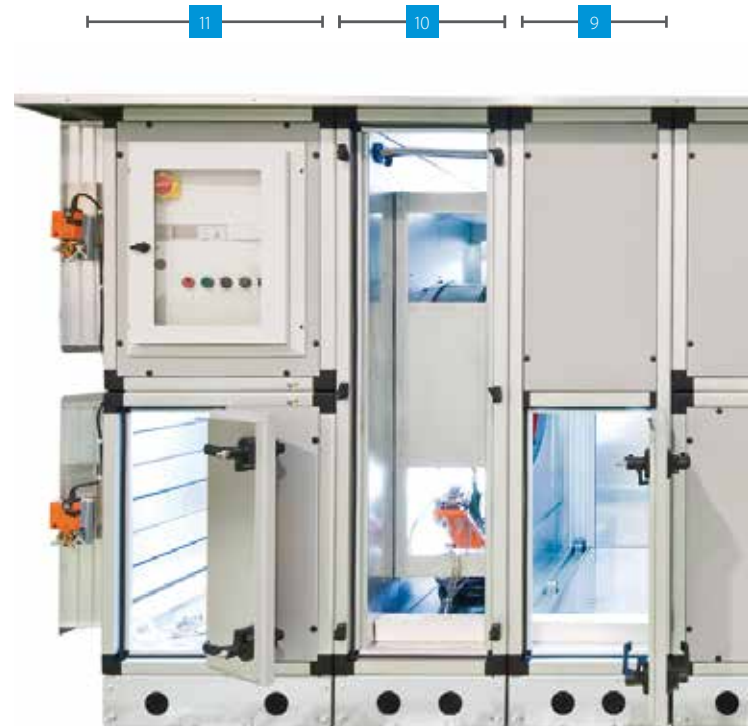
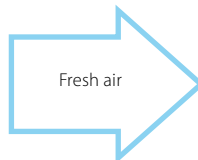
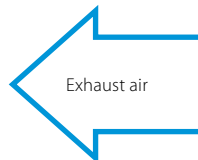
Result sp65	Eurovent Classification according to EN1886					
<b>D1</b>	Casing strength class Max. relative deflection $\text{mm} \times \text{m}^{-1}$	D1 4.00	D2 10.00	D3 EXCEEDING10		
<b>L1</b>	Casing air leakage class at -400 Pa Max. leakage rate ( $f_{400}$ ) $\text{l} \times \text{s}^{-1} \times \text{m}^{-2}$	L1 0.15	L2 0.44	L3 1.32		
<b>L1</b>	Casing air leakage class Max. leakage rate ( $f_{700}$ ) $\text{l} \times \text{s}^{-1} \times \text{m}^{-2}$	L1 0.22	L2 0.63	L3 1.90		
<b>F9</b>	Filter bypass leakage class Max. filter bypass leakage rate k in % of the volume flow rate	F9 0.50	F8 1	F7 2	F6 4	G1 TO F5 6
<b>T2</b>	Thermal transmittance (U) $\text{W}/\text{m}^2 \times \text{K}$	T1 $U \leq 0.5$	T2 $0.5 < U \leq 1$	T3 $1 < U \leq 1.4$	T4 $1.4 < U \leq 2$	T5 No requirements
<b>TB2</b>	Thermal bridging factor (kb) $\text{W} \times \text{m}^{-2} \times \text{K}^{-1}$	TB1 $0.75 < K_b \leq 1$	TB2 $0.6 < K_b \leq 0.75$	TB3 $0.45 < K_b \leq 0.6$	TB4 $0.3 < K_b \leq 0.45$	TB5 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 Bag filter with factory-mounted differential pressure manometer and hinged door
- 3 Heat recovery system (plate heat exchanger or rotation 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 (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

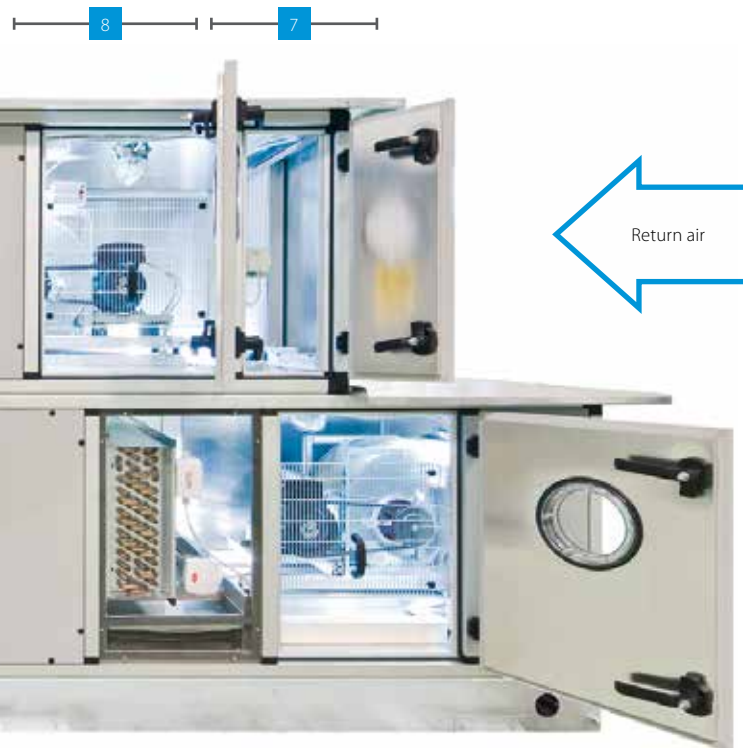
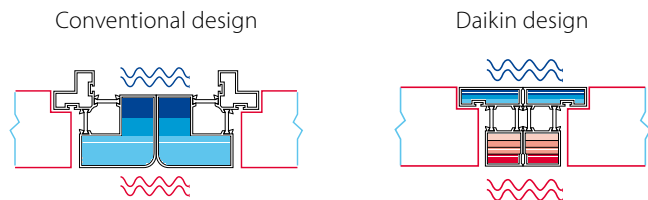


**Control system on plug and play solution basis**

- › Air temperature control
- › Chilled water and DX cooling system control
- › Free cooling
- › CO<sub>2</sub> automatic control

**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** Bag filter with factory-mounted differential pressure manometer and hinged door.
- 8** Exhaust air fan (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 (plate heat exchanger or rotation exchanger)
- 11** Damper section including ventilation grilles, factory-mounted actuators

**Heat recovery systems**

- › Heat wheel, sensible or sorption
- › Plate heat exchanger (optional bypass)
- › 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 m<sup>3</sup>/h up to 144,000 m<sup>3</sup>/h.
- > All the units can be modularly designed to facilitate the transport and the assembly on site.



## Variable dimensioning

Size	Airflow (m <sup>3</sup> /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 (m <sup>3</sup> /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 cost for customized unit size
- > No additional lead time

**Example**

Airflow (m <sup>3</sup> /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 CO<sub>2</sub> sensors to control mixing dampers, heat recovery wheels, 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 <sup>3</sup> /h	1,200	1,700	2,700	4,100	5,500	6,100	7,000	9,100	11,500	15,000
Temp. efficiency winter		%	82.4	82.4	82.4	82.6	82.2	82.4	83	82.6	82.5	82.7
External static pressure	Nom.	Pa	200	200	200	200	200	200	200	200	200	200
Current	Nom.	A	2.38	3.18	1.65	2.58	3.35	3.86	4.32	5.36	7.15	9.50
Power input	Nom.	kW	0.55	0.73	1.14	1.79	2.32	2.68	2.99	3.72	4.95	6.58
SFPv		kW/m <sup>3</sup> /s	1.64	1.55	1.52	1.57	1.52	1.58	1.54	1.47	1.55	1.58
Electrical supply	Phase	ph	1	1	3 + N	3 + N	3 + N	3 + N	3 + N	3 + N	3 + N	3 + N
	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	720	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, -40C 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

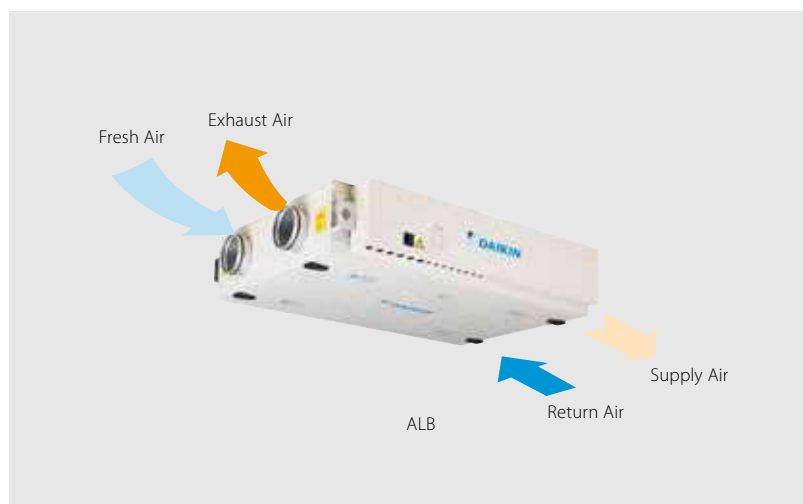
D-AHU Modular P			1	2	3	4	5	6	7	8	9	10
Airflow	m³/h		1,100	1,600	2,400	3,100	3,700	4,750	5,500	8,000	10,400	12,500
Thermal efficiency	%		93.9	93.6	93.2	93.1	93.1	93.1	93.1	93.3	93.1	93.1
External static pressure	Nom. Pa		200	200	200	200	200	200	200	200	200	200
Current	Nom. A		1.75	2.51	1.28	1.67	2.09	2.69	3.04	4.14	5.88	6.97
Power input	Nom. kW		0.40	0.58	0.89	1.15	1.45	1.86	2.11	2.87	4.07	4.83
SFPv	kW/m³/s		1.32	1.30	1.33	1.34	1.41	1.41	1.38	1.29	1.41	1.39
Electrical supply	Phase	ph	1	1	3 + N	3 + N	3 + N	3 + N	3 + N	3 + N	3 + N	3 + N
	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
- › Compliant with VDI 6022
- › Exceeding ERP 2018 requirement
- › Plug & Play Controls
- › Best choice when Compactness is needed (only 280 mm height up to 550 m<sup>3</sup>/h)
- › Easy installation and commissioning



## 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 700 Pa (depending on model sizes and air-flow)

## Heat exchanger

- › Premium quality counter flow plate heat exchanger
- › Up to 93% of the thermal energy recovered
- › High grade aluminum allowing high grade corrosion protection

D-AHU Modular L			2	3	4	5	6	7
Airflow		m <sup>3</sup> /h	300	600	1200	1500	2500	3000
Thermal efficiency		%	89	89	89	89	90	89
External static pressure	Nom.	Pa	100	100	100	100	100	100
Current	Nom.	A	0.49	1.09	2.17	2.72	5.28	6.52
Power input	Nom.	kW	0.11	0.25	0.50	0.63	1.22	1.50
SFPv		kW/m <sup>3</sup> /s	1.35	1.50	1.50	1.50	1.75	1.80
max ESP	Nom.	Pa	300	700	500	350	550	450
Electrical supply	Phase	ph	1	1	1	1	1	1
	Frequency	Hz	50	50	50	50	50	50
	Voltage	V	230	230	230	230	230	230
Dimensions unit	Width	mm	920	1,100	1,600	1,600	2,000	2,000
	Height	mm	280	350	415	415	500	500
	Length	mm	1,660	1,800	2,000	2,000	2,000	2,000
Weight unit		kg	125	180	270	280	355	360

\*Note: blue cells contain preliminary data

# Daikin fresh air package



## Plug and play connection of AHU to Daikin VRV and ERQ

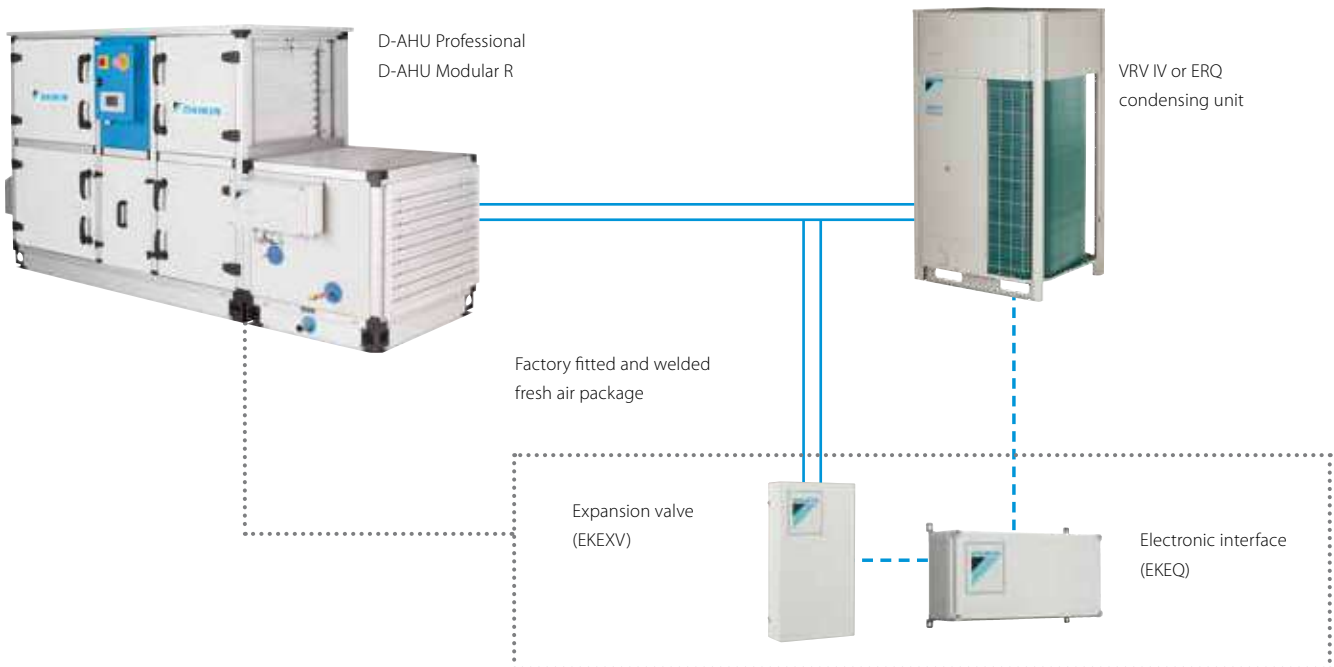
The Daikin fresh air package provides a complete solution, including all unit controls (expansion valve, control box and AHU controller) and sensors factory mounted and configured.

### Higher efficiency

Daikin heat pumps are renowned for their high energy efficiency. Integrating the AHU with a heat recovery system is even more effective since an office system can frequently be in cooling mode while the outdoor air is too cold to be brought inside in an unconditioned state. In this case heat from the offices is merely transferred to heat up the cold incoming fresh air.

### High comfort levels

Daikin ERQ and VRV units respond rapidly to fluctuations in supply air temperature, resulting in a steady indoor temperature and resulting in high comfort levels for the end user. The ultimate is the VRV range which improves comfort even more by offering continuous heating, also during defrost.





## Options - D-AHU Professional

Construction type		SP 65	SP 45
Profile	Anodized aluminium	option	option
	Anodized aluminium with thermal break	option	option
Corner	Glass fibre reinforced nylon	standard	standard
Panel insulation	Polyurethane foam density 40 kg/m <sup>3</sup> thermal conductivity 0.022 W/m <sup>2</sup> K fire reaction class b-s2, diam. as per EN13501-1	standard	standard
	Mineral wool density 120 kg/m <sup>3</sup> thermal conductivity 0.036 W/m <sup>2</sup> K (referred to 20°C) fire reaction class A1 as per EN 135011	option	option
External sheet material	Pre-coated galvanized steel	option	option
	Aluzinc	standard	standard
	Galvanized steel	option	option
	Aluminium	option	option
	AISI 304 stainless steel	option	option
Internal sheet material	Pre-coated galvanized steel	option	option
	Aluzinc	standard	standard
	Aluminium	option	option
Base frame	AISI 304 stainless steel	option	option
	Aluminium up to 35,000 m <sup>3</sup> /h	standard	standard
	Galvanized steel from 35,000 m <sup>3</sup> /h	standard	standard
Handle	Glass fibre reinforced nylon	standard	standard
	Compression type	standard	standard
Type	Hinge function type (possibility to remove door)	option	option

## Customised regulation and control systems

All Modular air handling systems come with a regulation and control system (with or without connection to a BMS).

The MicroTech III controller is designed to work with most applications. It can thus manage a chilled water system or direct-expansion system while providing management of the heat recovery loop for constant or variable speeds.

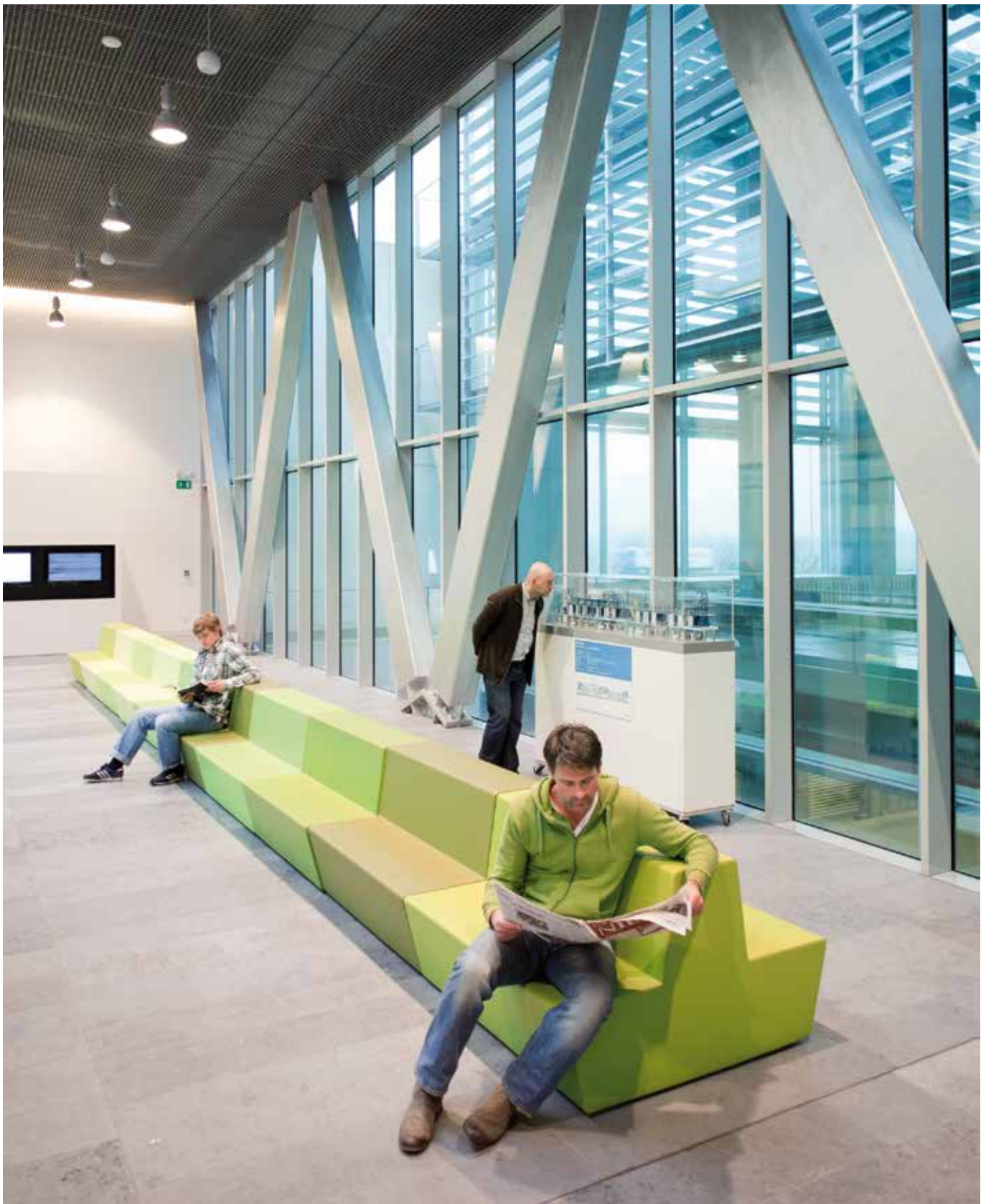
This allows for precise temperature control based on P.I.D. regulation, and constantly optimises the operating parameters of the air handling unit.

- › LCD display with 164 x 44 pixels.
- › 3-key control panel.
- › Rotating knob control for greater ease of use.
- › Memory for data backups.
- › Alarm relays for general types of incidents.
- › Password-controlled access for configuration changes.
- › Maintenance reports showing all run-time hours and general operating conditions.
- › Alarm log to facilitate the analysis of incidents.

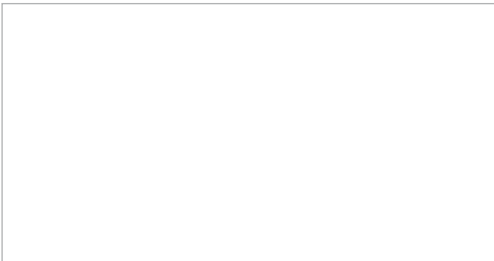
The MicroTech III controller provides the option of controlling the set-points for ambient air temperature, air return and supply air, and the possibility of regulating air quality with the addition of a CO<sub>2</sub> probe. For additional information about these features, please contact your Daikin representative.



The POL638 standard software has been customised to manage the control signals of Daikin's ERQ and VRV IV systems.



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ECPEN18-810 02/18



Daikin Europe N.V. participates in the Eurovent Certified Performance programme for Liquid Chilling Packages and Hydronic Heat Pumps, Fan Coil Units and Variable Refrigerant Flow systems. Check ongoing validity of certificate: [www.eurovent-certification.com](http://www.eurovent-certification.com)



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