

all-in-one
Comfort
for residential & commercial
applications

INSTALLER CATALOGUE

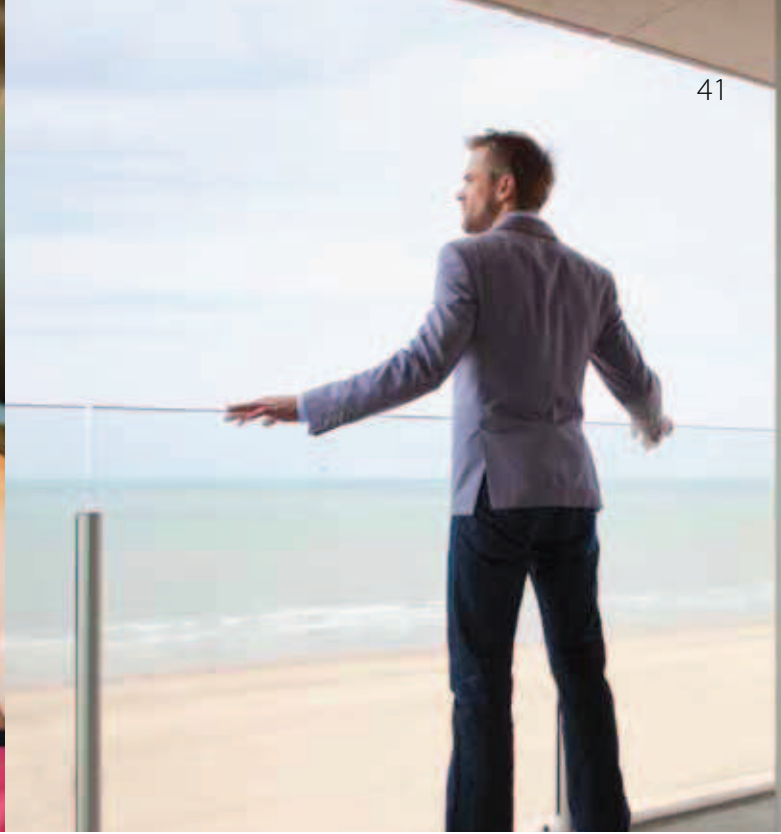


DAIKIN ALTHERMA
HEATING CATALOGUE

Heating, domestic hot water and cooling

The flexible

Daikin Altherma Flex Type:
for residential
and commercial applications



solution

Daikin Altherma Flex Type for residential and commercial applications is a **3-in-1 system** offering heating, domestic hot water and cooling all-in-one which is highly **energy efficient** thanks to Daikin's advanced heat pump technology.

Daikin Altherma Flex Type is today's answer to current and future issues of increasing energy costs and unacceptable environmental impact associated with conventional heating systems for commercial applications such as schools, hospitals, spas, gyms and hotels.

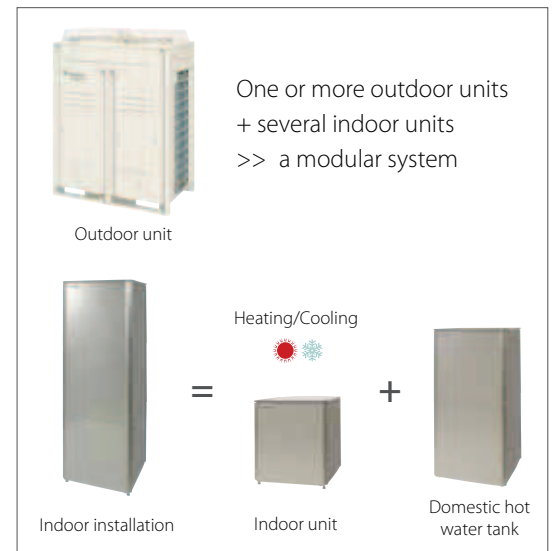
With Daikin Altherma Flex Type, 4/5 of the generated heat comes from the air, which is a renewable energy source that is free of charge! Daikin Altherma Flex Type achieves a typical seasonal COP of 3 in the moderate Western and central European climate.

Further more, Daikin Altherma Flex Type is a **modular system**. Depending from your project one or more outdoor units can be combined with up to ten indoor units per outdoor unit.

Efficient climate control for residential applications



1 Hot water 2 Heating 3 Cooling



Commercial applications

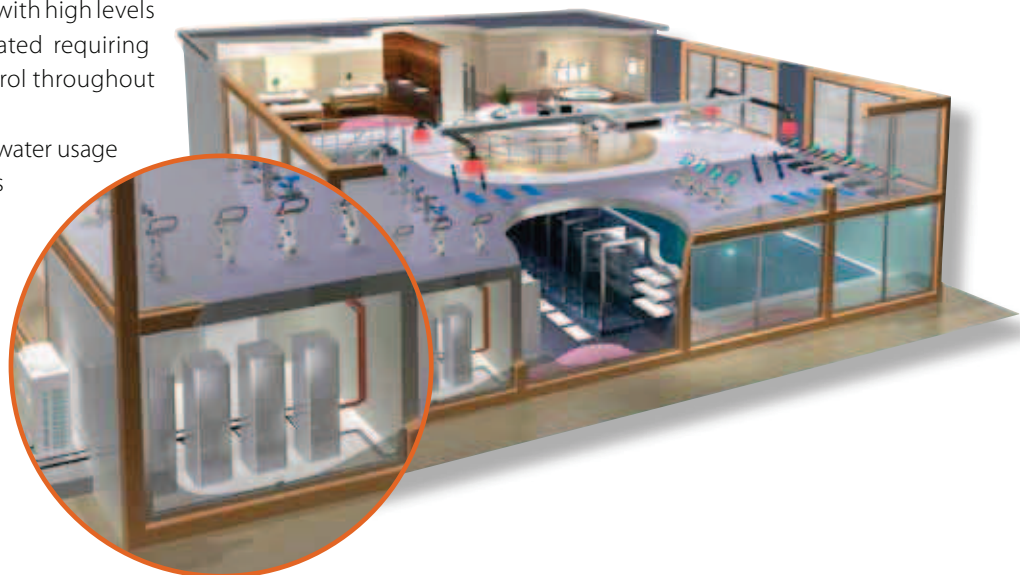
Fit for purpose & Hot water on demand

The challenges for a fitness center:

- Large exercise rooms with high levels of heat being generated requiring rigorous climate control throughout the space
- High 'on demand' hot water usage in the changing rooms

The solution:

- Daikin Altherma Flex Type with its modular and flexible approach.



3-IN-1 SYSTEM

Daikin Altherma Flex Type heats, cools and produces domestic hot water:

- Heating: leaving water temperatures up to 80° C
- Cooling: leaving water temperatures down to 5° C
- Hot water: tank temperatures up to 75° C

Thanks to the heat recovery function, the system can heat up the hot water tank up to 60°C with rejected heat from cooling operation.

ENERGY EFFICIENT HEAT PUMP TECHNOLOGY

Compared to an oil boiler, this results in:

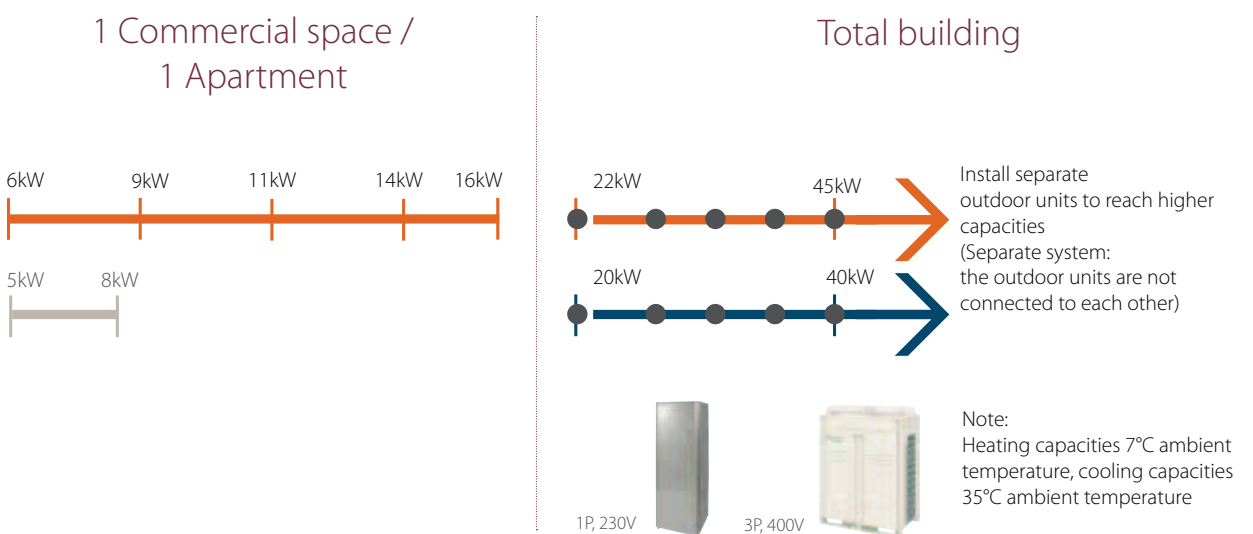
- Up to 36% less running costs*
- Up to 71% reduction of CO₂ emissions*
- Up to 35% reduction in primary energy use*

* Data calculated taking in account Belgian conditions: SCOP of 3, average energy prices 2007-2010, CO₂ emission factor for electricity production

MODULAR SYSTEM

One or more inverter-controlled outdoor heat pump units can provide heating, cooling and hot water. Outdoor units between 23 and 45 kW extract the heat from the outdoor air, raise it to an intermediate temperature and transfer this heat energy to the individual indoor units.

Indoor units are available in several classes (6, 9, 11, 14 and 16 kW), ensuring optimum efficiency. One outdoor unit can be combined with up to ten indoor units. Multiple outdoor units can be installed for larger applications.



→ 1. TWO DAIKIN TECHNOLOGIES COMBINED

OUTDOOR UNIT: Daikin VRV technology

Modular flexibility

The Daikin Altherma makes use of Daikin's renowned VRV technology. Multiple indoor units can be connected to a single outdoor unit. A combination of Proportional Integral Derivative controlled compressors and electronic expansion valves in the outdoor unit continuously adjust the circulating refrigerant volume in response to load variations in the indoor units connected to it.

This allows the indoor units to operate independently of each other, assuring total flexibility.

Each apartment retains control of its own heating, hot water and cooling.

Heat recovery

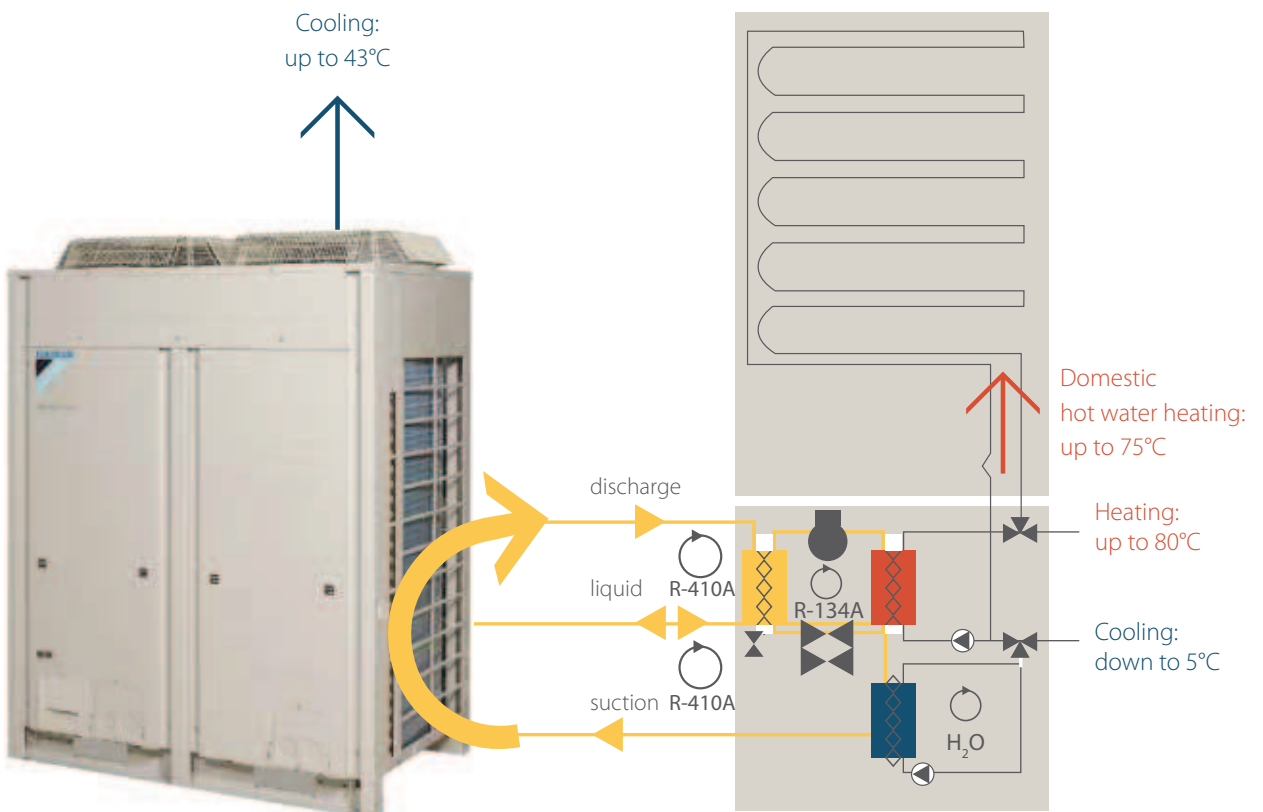
Heat absorbed while cooling one apartment can be recovered instead of being simply released into the air. This recovered heat can be used

- for domestic hot water production in the same apartment
- for space heating and domestic hot water production in other apartments

Maximum use is made of available energy, thus reducing electricity costs.

Inverter compressors

Daikin Altherma Flex Type owes its remarkable low energy consumption to a unique combination of highly efficient inverter-controlled Daikin compressors with a variable operating point. This allows capacity to be exactly matched to the actual heating demand of the building. The ability to optimally control the heat capacity of the outdoor unit also means maximum comfort and minimum energy consumption.



INDOOR UNIT: Daikin Altherma cascade technology

The Daikin Cascade technology uses an outdoor unit that extracts heat from the surrounding air and transfers this to the indoor unit via a R-410A refrigerant circuit. The indoor unit then increases this heat via the R-134a refrigerant circuit and it is then used to heat the water circuit. Using the unique cascade compressor approach, water temperatures of 80° C can be achieved without additional back-up heaters.

Space heating

Daikin Altherma Flex Type makes use of the cascade technology to improve the efficiency of the spacing heating supplied because it has a number of significant advantages over single refrigerant heat pumps:

- it provides for a wide range of water temperatures (25° - 80°C) which enables all types of heat emitters to be connected including under floor heating, convectors and radiators and it is compatible with existing radiator systems
- there is no drop in capacity with increasing water temperatures
- it delivers high capacities at low ambient temperatures right down to -20°C
- No back-up electrical heater is required

Domestic hot water heating

The cascade technology also delivers water temperatures of 75°C that can be used to heat up the domestic hot water tank, which makes it highly efficient for the production of domestic hot water.

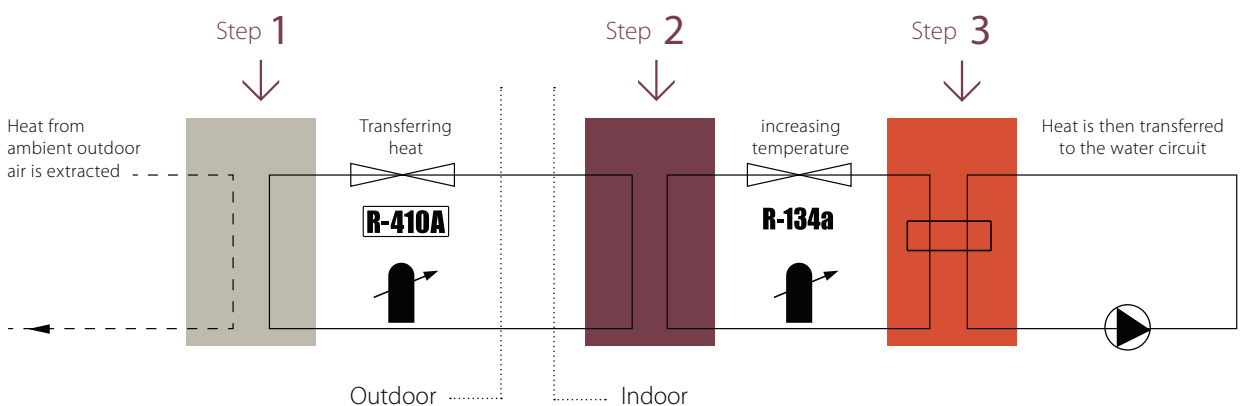
- Domestic hot water can be produced up to 75° C, without the assistance of an electric heater
- No electric heater required for Legionella disinfection
- COP of 3.0 for heating from 15° C to 60° C
- Heat-up time from 15° to 60° C in 70 minutes (200L tank)
- Equivalent hot water volume of 320L at 40° C (without reheat) for a 200L tank at a tank temperature of 60°C. Higher volumes of equivalent hot water are available with the 260l tank, or using a higher tank temperature.

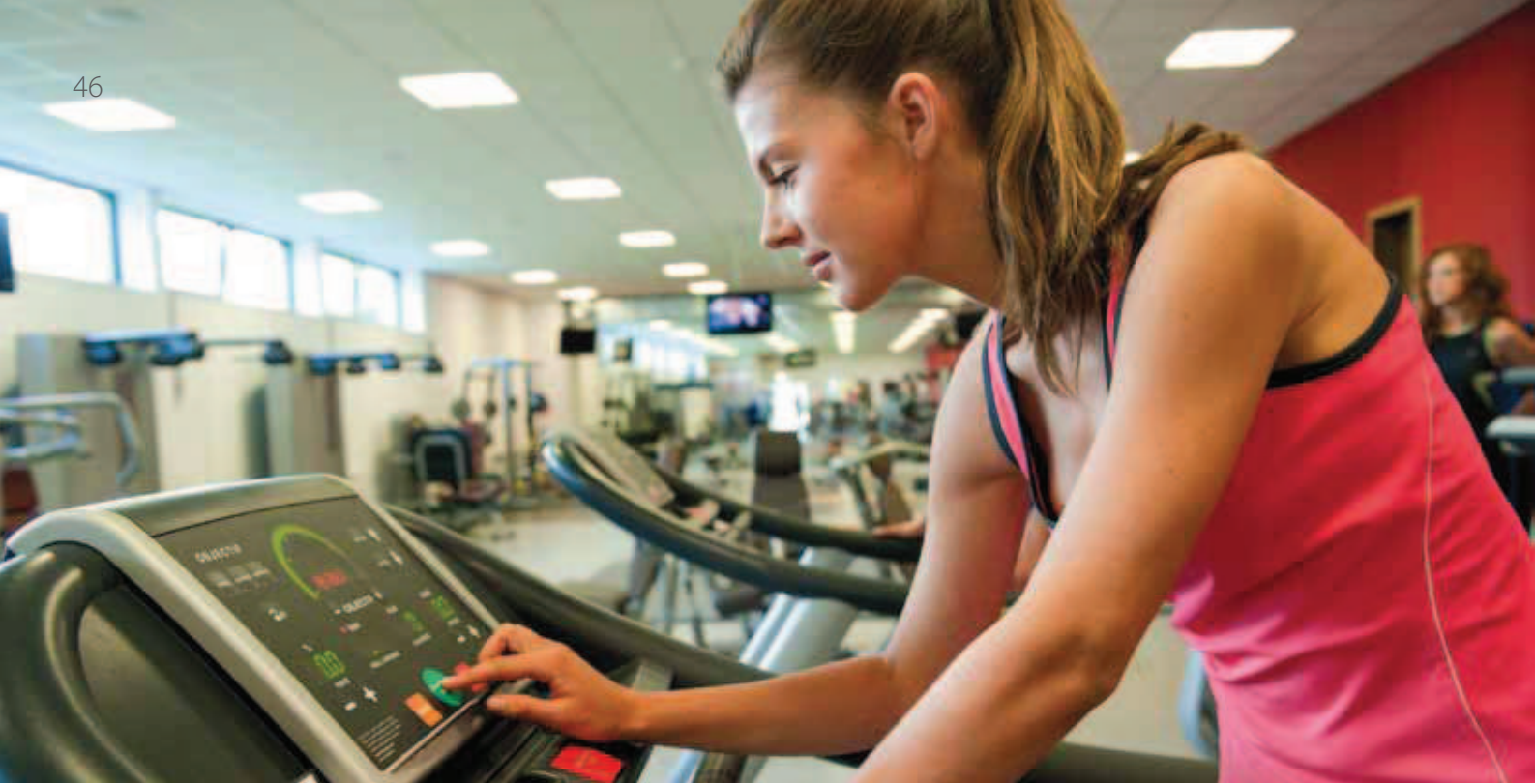
Cooling

The second refrigerant cycle R-134a can be bypassed to offer efficient cooling. The R-410A refrigerant cycle is reversed, and the cool water circuit can be used to cool the rooms.

- High cooling capacities with water temperatures down to 5°C, in combination with Daikin heat pump convector or Daikin fan coil units
- Under floor cooling is possible, with water temperatures down to 18° C
- Heat from cooling operation can be recovered to heat the domestic hot water tank

Cascade technology





→ 2. DOMESTIC HOT WATER TANK

The indoor unit and domestic hot water tank can be stacked to save space, or installed next to each other, if only limited height is available.

EKHTS: Domestic hot water tank

- Available in 200 and 260 litres
- Efficient temperature heat-up: from 10°C to 50°C in only 60 minutes*
- Heat loss is reduced to a minimum thanks to the high quality insulation
- At necessary intervals, the indoor unit can heat up the water to 60°C to prevent the risk of bacteria growth.

* Test done with a 16kW outdoor unit at ambient temperature of 7°C 200L tank

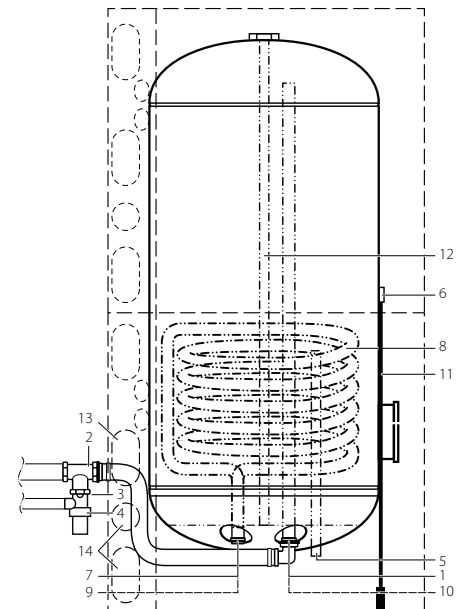
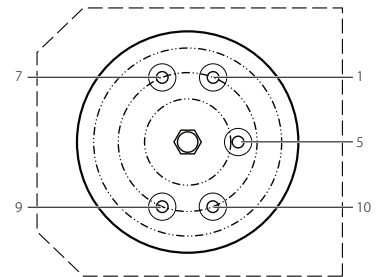


Stacked

or



Non-stacked



- | | |
|---|-----------------------------|
| 1. Hot water connection | 8. Heat exchanger coil |
| 2. T-piece (field supply) | 9. Return outlet connection |
| 3. Pressure relief valve connection | 10. Cold water connection |
| 4. Pressure relief valve (field supply) | 11. Thermistor |
| 5. Recirculation hole | 12. Anode |
| 6. Thermistor socket | 13. Knockout holes |
| 7. Flow inlet connection | 14. Knockout holes |

→ 3. EASY CONTROL

System controller

The user interface controls the high temperature heating system in two ways:

1/ Weather dependant floating set point

When the floating set point functionality is enabled, the set point for the leaving water temperature will be dependant on the outside ambient temperature. At low outside ambient temperatures, the leaving water temperature will increase to satisfy the increasing heating requirement of the building. At warmer temperatures the leaving water temperature will decrease to save energy.

2/ Thermostat control

With Daikin Altherma's user interface with integrated temperature sensor, the ideal temperature can be easily, quickly and conveniently regulated.

The easy-to-control user interface for high temperature applications guarantees your comfort:

- › Space heating
- › Quiet mode
- › Setback function
- › Disinfection function
- › Off function
- › Time scheduler
- › Domestic water heating mode



Optional room thermostat

An external sensor (EKRTETS) can be placed between the under floor heating and the floor, as an option to the wireless room thermostat. The thermostat measures the room temperature and communicates directly to the user interface.

The LCD screen of the room thermostat indicates all the necessary information regarding the setting of the Daikin Altherma system in the blink of an eye. The user can easily navigate between the different menus, the most common of which include:

- Setting the temperature of the room based on measurements from the built-in or external sensor
 - Cooling and heating mode
 - Off function (with integrated frost-protection function)
 - Holiday function mode
 - Comfort and reduced function modes
 - Time (day and month)
 - Programmable week-timer with 2 user defined and 5 pre-set programmes, with up to 12 actions per day
 - Keylock function
 - Setting limits. The installer can change the upper and lower limits
 - Floor temperature protection and protection against condensation for underfloor cooling *
- * only in combination with EKRTETS

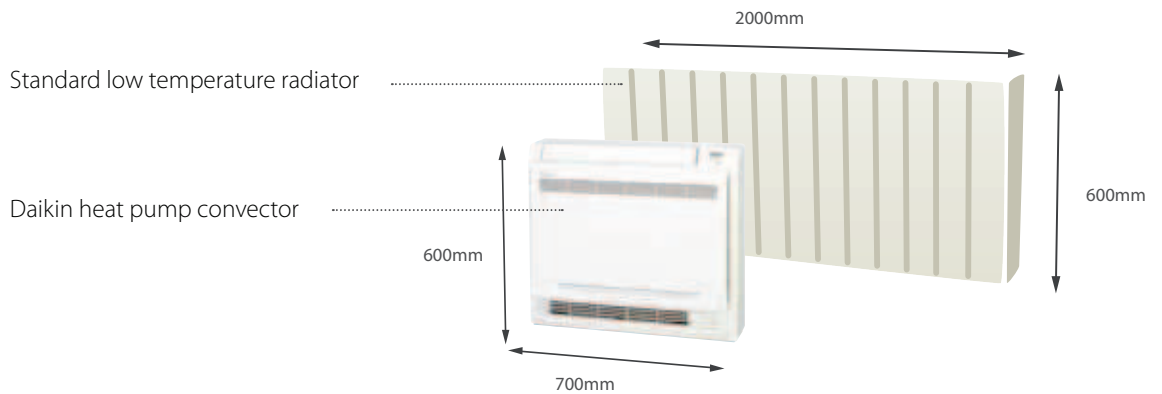


→ 4. HEAT PUMP CONVECTOR

The Daikin heat pump convector operates at typical water temperatures of 45°C, which can be efficiently produced thanks to the Daikin Altherma cascade technology.

The heat pump convector is therefore the ideal heat emitter for apartment applications, providing high comfort levels:

- **Small dimensions** compared to low-temperature radiators: width is reduced with 2/3rd



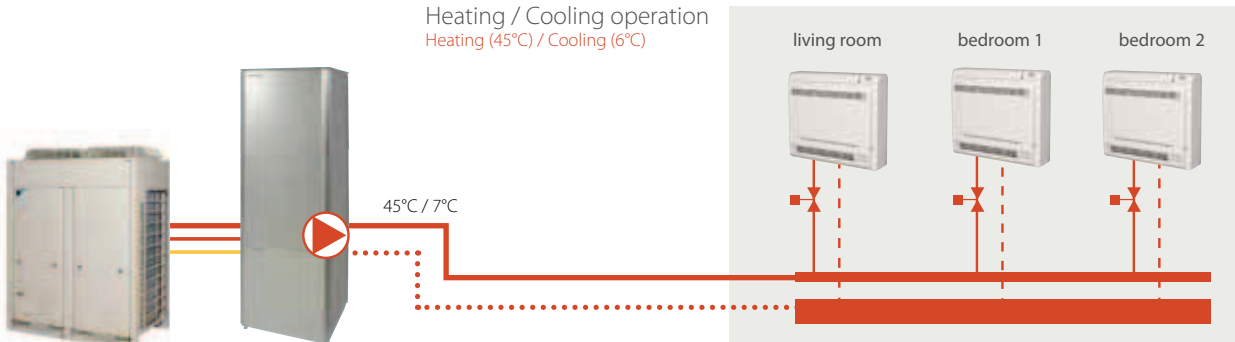
- **Low sound level** down to 19 dB(A), optimal for bedroom applications
- **High-capacity cooling** with water temperatures down to 6° C

Control

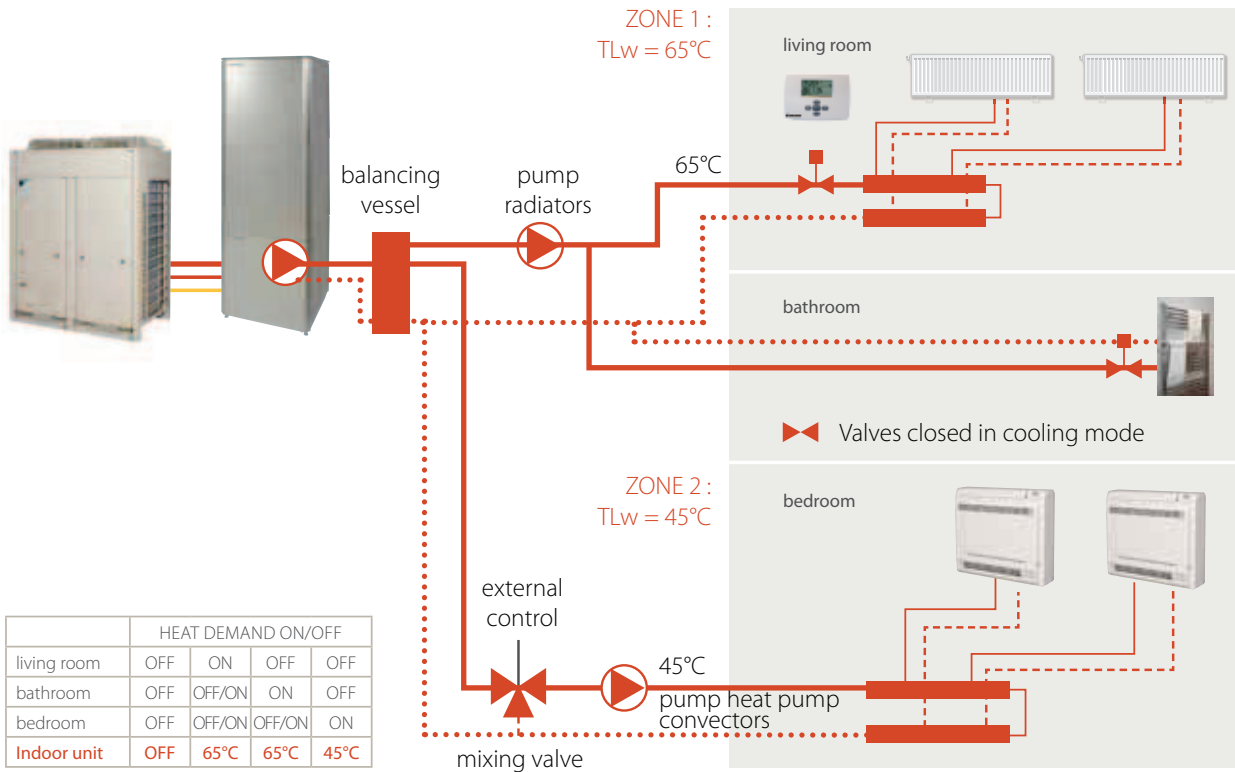
Each Daikin heat pump convector has its own control and every room can be independently heated (or cooled) as required. The remote control has a built-in weekly timer for optimum flexibility and comfort. Operation of the unit can be adapted to individual requirements.



Infrared remote control (Standard)
ARC452A15



All types of heat emitters can be connected to Daikin Altherma for apartment buildings and collective housing, thanks to its wide water temperature range and its ability to work with multiple set points, allowing a combination of different heat emitters operating at different water temperatures. The set point of the indoor unit is a function of the actual demand of the various heat emitters, ensuring optimum efficiency at all times and under all conditions.



At your service, with the Daikin selection

Daikin worked out three selection tools for an accurate estimation of your specific project and doing so Daikin provides a maximum of comfort, even in the early stage of choosing! / even when considering the options!

Make a quick estimation of savings on running costs and savings on CO₂ emissions thanks to the **Energy Savings Calculator**. Then the Daikin Altherma **simulation software** provides for every specific application and appropriate heat pump selection based on the specific house and location details. And for new houses or renovations the Daikin Altherma **selection and simulation software** allows quick and easy identification of the optimal mix of components.

tools





→ 1. ENERGY SAVINGS CALCULATOR

Daikin provides a web-based tool to give a quick estimation of savings on running costs and savings on CO₂ emissions. Based on a few inputs from the customer (location, house type, floor area, number of people), a comparison is made between the Daikin Altherma heat pump system and traditional heating systems. This comparison includes the space heating and domestic hot water heating. This is available for both new builds and refurbishment applications. <http://ecocalc.daikin.eu>



→ 2. SIMULATION SOFTWARE

The Daikin Altherma simulation software provides for every specific application and appropriate heat pump selection, taking into account the needs of the building and specific climate data. An installer can provide the following data:

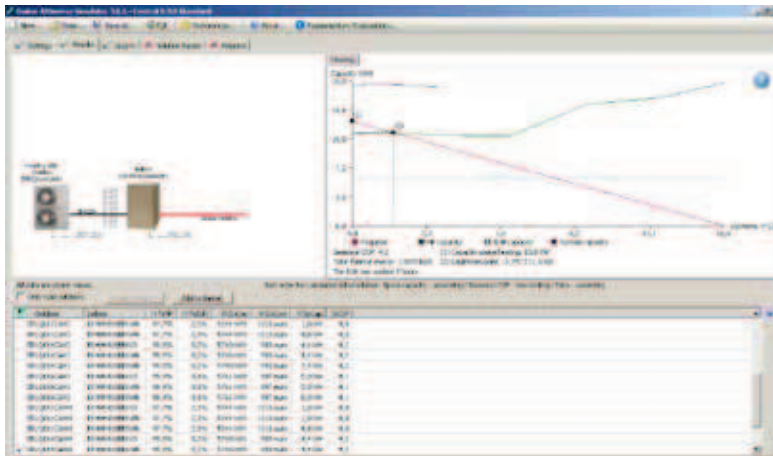
- house application: heat/cool load, water temperatures, power supply
- climate conditions: location, design temperature
- domestic hot water requirements: tank volume, material, solar connection
- preferences: "heating off" temperature, night setback function

Based on the specific house and location details, the software provides a full dimensioning assuring a correct material selection.

As well as a full material selection, the software provides detailed information for the installer and the end-user, on the expected outcome of the specified Daikin Altherma unit for its specific application and climate:

- seasonal efficiency of the heat pump system
- amount of back-up heater operation
- energy consumption and energy cost per month
- savings on running costs compared to traditional heating systems

All this information will be summarised in a detailed report.



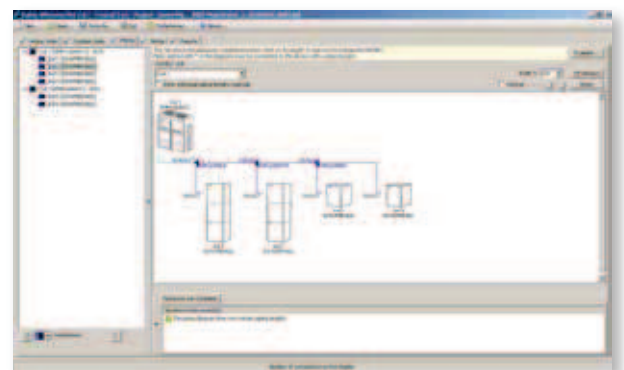
Check your local Daikin website for availability of this simulation software.

→ 3. SELECTION AND DESIGN SOFTWARE FOR DAIKIN ALTHERMA FLEX TYPE

The Daikin Altherma selection and simulation software for new houses or renovations allows quick and easy identification of the optimal mix of components. It automatically selects indoor and outdoor units based on the required heat loads per housing unit and calculates the required refrigerant piping dimensions.

The software also features:

- automatic or manual selection of indoor units
- automatic selection of outdoor units
- calculation of refrigerant piping diameters
- automatic selection of refnet headers and joints
- creation of piping and wiring diagrams with the possibility to export them as DXF file
- creation of extensive selection report



→ 3. DAIKIN ALTHERMA FLEX TYPE

INDOOR UNITS



INDOOR UNIT			EKHVMRD50AV1	EKHVMRD80AV1	EKHVMYD50AV1	EKHVMYD80AV1
Function			Heating only		Heating and cooling	
Dimensions	HxWxD	mm	705x600x695		705x600x695	
Leaving water temperature range	heating	°C	25~80		25~80	
Material			Precoated sheet metal		Precoated sheet metal	
Colour			Metallic grey		Metallic grey	
Sound pressure level	nominal	dB(A)	40 ¹ / 43 ²	42 ¹ / 43 ²	40 ¹ / 43 ²	42 ¹ / 43 ²
Weight		kg	92		120	
Refrigerant	Type		R-134a		R-134a	
	Charge	kg	2	2	2	2
Power supply			1~/ 50Hz /220-240V		1~/ 50Hz /220-240V	

1 Sound levels are measured at:EW 55°C; LW 65°C

2 Sound levels are measured at:EW 70°C; LW 80°C

				EKHBRD011ACV1	EKHBRD014ACV1	EKHBRD016ACV1	EKHBRD011ACY1	EKHBRD014ACY1	EKHBRD016ACY1
Casing	colour material			Metallic grey					
	unit			Precoated sheet metal					
Dimensions	unit	height/width/depth	mm	705/600/695					
Weight	unit			144.25			147.25		
Operation range	heating	ambient water side	min.~max.	-20~20					
			min.~max.	25~80					
	domestic hot water	ambient water side	min.~max.	-20~35					
			min.~max.	25~80					
Refrigerant	type		R-134a						
	charge		kg	3.2					
Sound pressure level	nom.		dBA	43 ¹ 46 ²	45 ¹ 46 ²	46 ¹ 46 ²	43 ¹ 46 ²	45 ¹ 46 ²	46 ¹ 46 ²
	night quiet mode	level 1	dBA	40 ¹	43 ¹	45 ¹	40 ¹	43 ¹	45 ¹
Power supply	name			V1			Y1		
	phase			1~			3~		
	frequency		Hz	50					
	voltage		V	220-240			380-415		
Current	recommended fuses		A	25			16		

(1) EW 55°C; LW 65°C; Dt 10°C; ambient conditions: 7°CDB/6°CWB (2) EW 70°C; LW 80°C; Dt 10°C; ambient conditions: 7°CDB/6°CWB | (3) EW 30

OUTDOOR UNITS



OUTDOOR UNIT			EMRQ8AY1	EMRQ10AY1	EMRQ12AY1	EMRQ14AY1	EMRQ16AY1	
Nominal capacity	heating	kW	22.4	28	33.6	39.2	44.8	
	cooling	kW	20	25	30	35	40	
Capacity range		HP	8	10	12	14	16	
Dimensions	HxWxD	mm	1680x1300x765					
Weight		kg	331			339		
Sound power level	heating	dB(A)	78		80	83	84	
Sound pressure level	heating	°C	58		60	62	63	
Operation range	heating	°C	-20°C~20*					
	domestic water	°C	-20°C~35*					
Refrigerant	type	kg	R-410A					
Power supply			3~/50Hz/380-415V					
Piping connections	liquid	mm	9.52				12.7	
	suction	mm	19.1	22.2		28.6		
	high&low pressure gas		15.9	19.1		22.2		
	max total length	m	300					
	level difference OU-IU	m	40					
Recommended fuses		A	20		25		40	

Heating conditions: Ta = 7°CDB / 6°CWB, 100% connection ratio

Cooling conditions: Ta = 35°CDB, 100% connection ratio

*Capacity not guaranteed between -20°C and -15°C

DOMESTIC HOT WATER TANK



DOMESTIC HOT WATER TANK			EKHTS200AC	EKHTS260AC
Water volume		l	200	260
Max. water temperature		°C	75°C	
Dimensions	HxWxD	mm	1,335x600x695	1,610x600x695
Dimensions - integrated on indoor unit	HxWxD	mm	2,010x600x695	2,285x600x695
Material outside casing	Galvanised metal			
Colour	Metallic grey			
Empty weight		kg	70	78

HEAT PUMP CONVECTOR



HEAT PUMP CONVECTOR				FWXV15A	FWXV20A
Capacity	Heating	45°C ¹	kW	1.5	2.0
	Cooling	7°C ²	kW	1.2	1.7
Dimensions	HxWxD		mm	600x700x210	
Weight			kg	15	
Air flow rate	H/M/L/SL		m ³ /h	318/228/150/126	474/354/240/198
Sound pressure	M		dB(A)	19	29
Refrigerant	Water				
Power Supply	1~/220-240V/50/60Hz				
Piping connections	Liquid (OD)/Drain	12.7 / 20			

¹ Water inlet temperature = 45°C / Water outlet temperature: 40°C
indoor temperature = 20°CDB
Medium fan speed

² Water inlet temperature = 7°C / Water outlet temperature: 12°C
indoor temperature = 27°CDB / 19°CWB
Medium fan speed

Daikin: your reliable partner

Daikin is the specialist in climate conditioning systems – for private homes as well as for large commercial and industrial spaces. We make every effort to ensure that your customers are 100% satisfied.

High-quality, innovative products

Innovation and quality are constantly at the forefront of Daikin's philosophy. The entire Daikin team is continually trained to provide you with optimal information and advice.

A clean environment

In producing your customer's climate control system, we strive for sustainable energy consumption, product recycling and waste reduction. Daikin rigorously applies the principles of eco-design, thus restricting the use of materials that are harmful to our environment.



Today, Daikin leads the way towards more efficient, cost-effective and environmentally friendly comfort solutions, introducing products optimised for all seasons. In fact, Daikin products reduce energy and costs in a smart way. They are designed to perform under all conditions and reflect the actual performance you can expect over an entire heating and cooling season. So, with Daikin you make the right choice for your wallet... and the environment.



Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.



Daikin Europe N.V. participates in the Eurovent Certification programme for Air conditioners (AC), Liquid Chilling Packages (LCP) and Fan coil units (FCU). Check ongoing validity of certificate online: www.eurovent-certification.com or using: www.certiflash.com

Only applicable for Daikin Altherma low temperature units. Daikin Altherma high temperature units are not in scope of the Eurovent certification programme.

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