

# Daikin Altherma 3 WS for Collective Housing







## Economy, efficiency and environmental performance - all in one

Daikin Altherma 3 WS for Collective Housing provides an innovative approach to reducing the carbon footprint of apartment buildings. Individual heat pumps deliver economical heating, hot water and optional cooling for each apartment connected via a central water loop. So use of renewable energy is optimised and heat losses in distribution are minimised, improving the environmental performance of the apartment building.

The number of people living in urban areas is continuously increasing in the recent years. Multi-family dwellings in Europe are a good portion of the European building stock. Especially if we consider that, in 2018, 46.0 % of the EU-27 population lived in flats. (\*) Therefore, apartment buildings are among the most relevant contributors to the energy consumption and CO<sub>2</sub> emissions of the EU building sector.

As a consequence, the higher demand for living space makes the collective building sector grow in the future cities. Building sector plays a significant role for the energy consumption as it represents 40% of energy used in the EU.

New European Directives are driving the efficiency of modern buildings in order to reach future goals. In this perspective, heat pumps play a key role to achieve these goals not only in single dwellings but also in multi-family apartment buildings.

Daikin, the innovation leader for more than 90 years, takes the challenge in multi-family apartment building to apply full renewable solutions based on in-house heat pump technology. From low to high-rise apartment buildings, from individual to centralized heating systems, from retrofit to new built Daikin has the units, the experience and the solution for you.

(\*) [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Living\\_conditions\\_in\\_Europe\\_-\\_housing\\_quality](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Living_conditions_in_Europe_-_housing_quality)

# Daikin Altherma 3 WS

for Collective Housing

## Individual heat pumps connected to a central loop

This innovative system consists of a network of heat pumps connected to a common central water loop. In each apartment is a Daikin Altherma 3 WS unit - a high-efficiency water-to-water heat pump with integrated domestic hot water (DHW) tank.

The heat pump in each apartment works independently, but is connected to a common central water loop to form a communal system. The central water loop must be maintained between +10°C and below +30°C. Thanks to this wide temperature range, the central water loop can be warmed/or cooled via several different means:

- Ground or air source heat pump
- Shared ground array, borehole or thermal piles
- Surface water source such as a river, canal or seawater
- District heat network
- Waste heat recovery

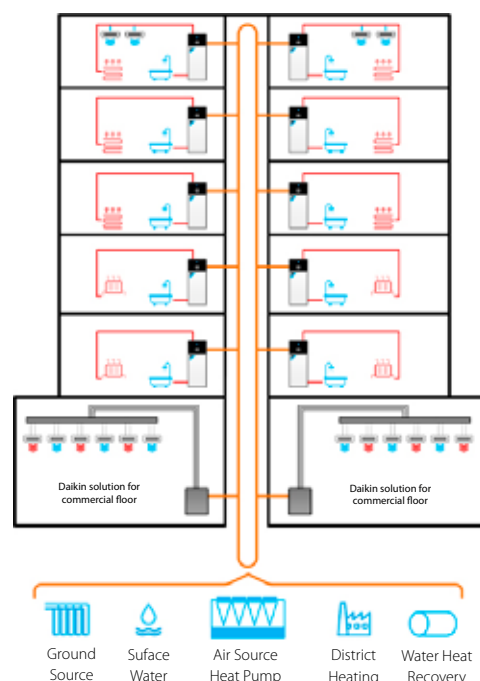
This offers the designer full flexibility to select the most appropriate form of renewable energy available to the site: ground, water or air

## Low ambient temperatures for minimal heat loss

This highly efficient heat pump network can provide economical heating, hot water and optional cooling for an entire apartment building at relatively low ambient water temperatures.

Compared with the high distribution losses that occur in typical communal heating systems - which

lead to overheated buildings and wasted energy - the low ambient loop means that heat losses are reduced by more than 90%. Hence it is a much more economical solution, that reduces the carbon footprint of the entire building.



## Key system advantages:

- Utilises renewable (or recovered) energy
- Low carbon heat pump solution delivers significant CO<sub>2</sub> reductions over traditional systems
- Low carbon solution helps reduce carbon offset payments
- Energy centre not required, saving valuable space
- Heating, hot water & cooling via a 2 pipe network offers capital savings over a traditional 4 pipe solution
- Intuitive user controls and internet connectivity as standard
- In-apartment heat pump has integrated back up heater, so heating & hot water is maintained in any eventuality.

# Designed to suit modern living



## Optimised for comfort

With a leaving water temperature up to 65°C and high efficiencies, the Daikin Altherma 3 WS is designed to ensure the lowest running costs and highest comfort levels for each apartment.



## Versatility by design

Daikin Altherma 3 WS is highly versatile and works with various heat emitters, such as radiators, underfloor heating, heat pump convectors or fan coil units for maximum design flexibility.



## All in one integrated model

The floor standing indoor unit with integrated DHW tank has a minimal footprint, utilising as little floorspace as possible.





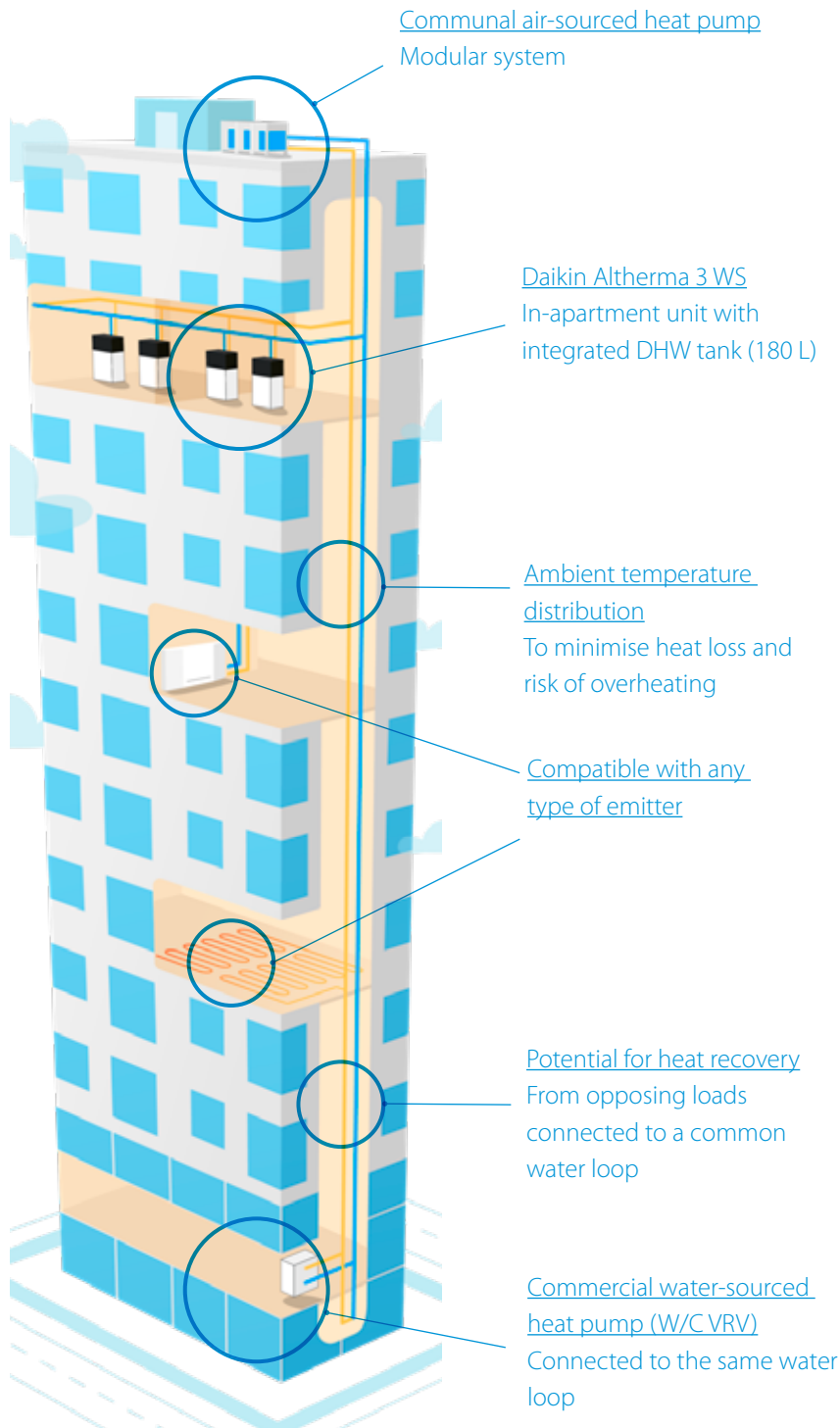
## Delivering decarbonisation

Compared with a typical Combined Heat & Power (CHP) and boiler system often used in apartments, the Daikin Altherma 3 WS system delivers a reduction in carbon emissions of 143 tonnes.<sup>1</sup>



## Reduction in capital costs

With a low temperature water loop connected to a heat pump chiller on the roof or in the plant rooms, plus a Daikin Altherma 3 WS unit in each apartment linked to Daikin heat pump convectors or fan coil units, the total system will deliver lower carbon emissions compared with a typical heating system. This could reduce a developer's carbon offset payments, so delivering a low carbon heating and cooling system makes both excellent environmental and economic sense.



## BLUEVOLUTION

Heat pump technology reduces carbon emissions compared with any traditional fossil fuel heating system. But the Daikin Altherma 3 WS goes further to reduce the Global Warming Potential (GWP) of system, as it features Daikin's Bluevolution technology which uses R-32 refrigerant. R-32 has a lower GWP than other refrigerants typically used in heat pump systems - and less refrigerant is required too - so it's more environmentally friendly overall.

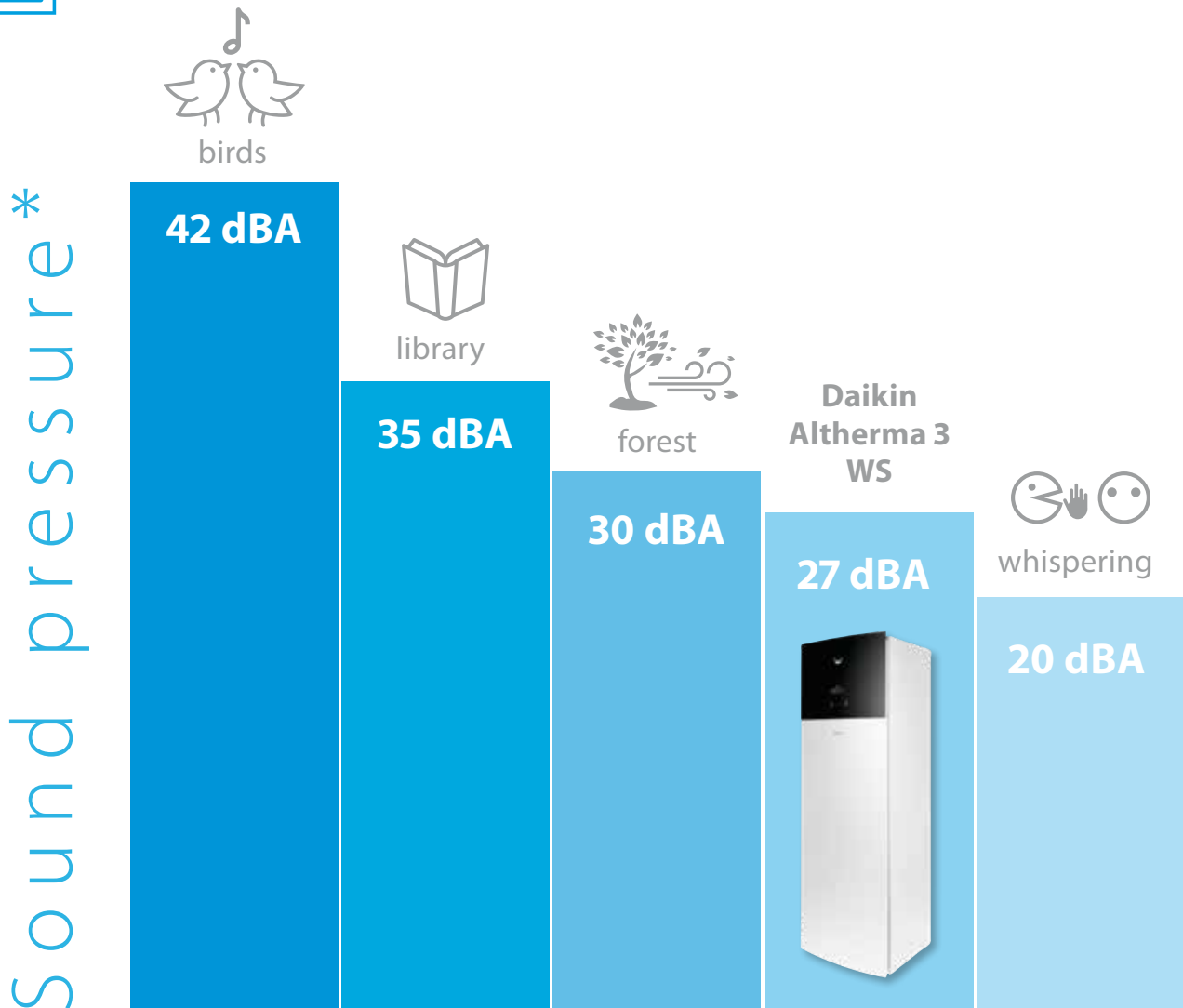
<sup>1</sup> Based on a block of 277 apartments with a Combined Heat & Power (CHP) system and Heat Interface Units (HIU) with CHP thermal efficiency of 48% and electrical efficiency of 32%, 60% CHP / 40% boiler, compared with a Heat Pump with a SCOP of 3.7 based on SAP2012

# Caring for customers' peace of mind

Daikin Altherma 3 WS promises almost silent operation, thanks to a specially designed swing compressor module, which limits vibrations and is sound insulated, to minimise noise levels.



## Exceptionally quiet operation



\*at 1 meter.

# Always in Control

Daikin offers a range of control options, so residents can enjoy full control of their heating system, anywhere, at any time.



## Smart control

Daikin' smart control offers the end user full control of the heating and hot water system, as well as saving money on energy bills, thanks to Daikin's modulating room control logic.

## Madoka for heating

Increase end user energy savings even further, with the elegant Madoka controller.

Madoka ensures a more stable room temperature, by adjusting the water temperatures depending on room temperature requirement, as well as reducing on/off cycling times.



BRC1HHDW



BRC1HHDS



BRC1HHDK

- ✓ Sleek and elegant design
- ✓ Match any interior scheme
- ✓ Easy to use with intuitive controls



## Daikin Residential Controller app

The Daikin Residential Controller is a smart phone app that allows end users to monitor and control their heating system, whenever and wherever they wish.



- 🔍 Monitor the status of the heating system
- 🔧 Control the operation mode and set temperature
- 📅 Schedule the set temperature and operation mode



# Quick and easy installation



Each apartment unit consists of a sealed R-32 low GWP heat pump, a highly insulated, integrated DHW tank and an electrical back up heater, so no F-gas qualifications are required to install and service the unit.

Installation and servicing are quick and easy too, thanks to a small footprint, factory-fitted piping on top of the unit, and a swappable hydro module.

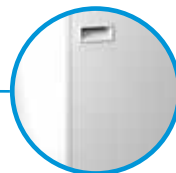
All pipe connections on top, paired in and out



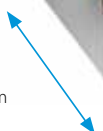
Standard electrical connections pre-cabled



Can be installed easily in confined spaces thanks to a small footprint and integrated handles



666 mm





# Intuitive interface

## The Daikin Eye

The intuitive Daikin Eye shows in real time the status of the system.



### Blue:

When the Daikin Eye indicates a blue colour, it means the boiler is functioning properly. The Daikin Eye will flash on and off when it's running on stand by mode.



### Red:

When the Daikin Eye indicates a red colour, it means the boiler is out of commission and requires a maintenance check.



## Quick to configure

Log in and you'll be able to completely configure the unit via the new user interface in 9 steps. You can even check if the unit is ready for use by running test cycles. You can upload the settings on a USB stick and download it directly into the unit, or via the cloud.

## Easy operation

Work super-fast with the new user interface. It's easy to use with just a few buttons and two navigational knobs.

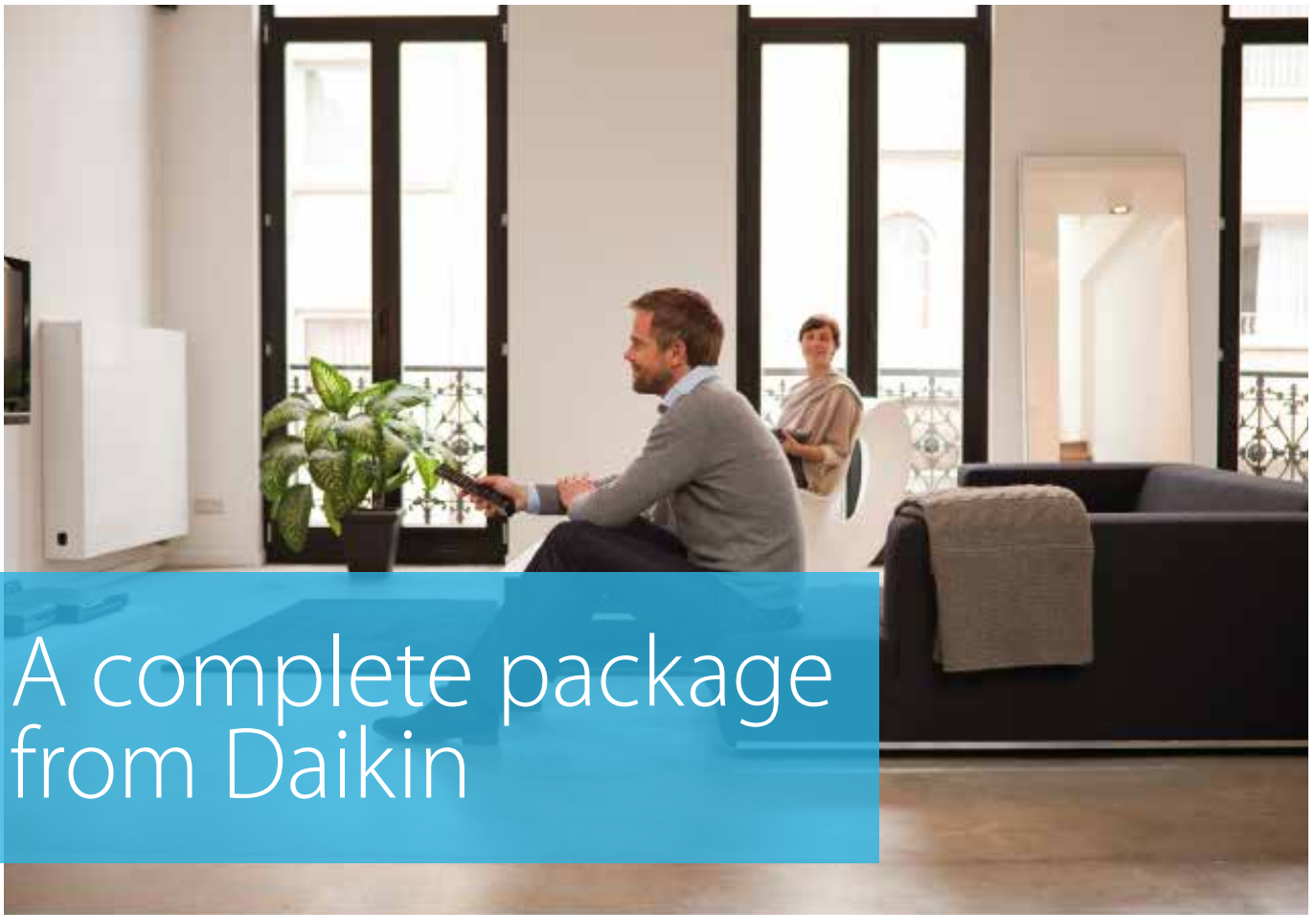
## Beautiful design

The user interface is especially designed to be very intuitive. The high contrasted colour screen delivers stunning and practical visuals that really help you as installer or service engineer.



Removable compressor module reduces the overall weight by 70 kg





## A complete package from Daikin

The beauty of the Daikin Altherma 3 WS system is that each in-apartment heat pump can connect to a wide variety of heat emitters and controls, all of which can be provided as a complete package by Daikin. This ensures seamless integration and consistency of the heating solution within each apartment.

Similarly, the communal water loop can be powered by range of different heat pump solutions. And once again, Daikin can offer a wide range of water source heat pumps, 2 and 4 pipe air source heat pumps, in an even wider range of configurations, to provide the central energy source for the collective heating system.

So for a highly efficient system that reduces the carbon footprint and offset payments of your apartment building, Daikin has the total solution.



# Daikin Altherma 3 WS

## Water sourced heat pump

- › Highest running cost savings, thanks to Daikin's unique swing compressor technology, which ensures maximum seasonal efficiency
- › Delivers leaving water temperatures of up to 65°C at high efficiency
- › Compatible with underfloor heating/cooling and fan coils, so is suitable for all applications
- › All-in-one floor standing unit includes the stainless steel domestic hot water tank and key hydraulic components, saving installation time and space



Indoor Unit		EGSA	H06D9W	X06D9W(G)	H10D9W	X10D9W(G)	
B0 / W35	Heating capacity	Min.			0.85		
		Nom.		3.34		5.48	
	Max.		7.98			9.55	
	Power input	Max.		0.7		1.12	
	COP			4.74		4.89	
B0	Cooling capacity	Max.		9.73		11.27	
B20 / W35	Heating capacity	Nom.		6		10.5	
		Power input	Nom.		0.7		1.3
	COP			9.9		8.5	
B20 / W55	Heating capacity	Nom.		6.6		10.2	
		Power input	Nom.		1.4		2.1
	COP			4.8		4.9	
B25 / W35	Heating capacity	Nom.		6		11.1	
		Power input	Nom.		0.5		1.1
	COP			13.4		10.6	
B25 / W55	Heating capacity	Nom.		6.7		10.1	
		Power input	Nom.		1.3		1.8
	COP			5.7		5.7	
Space heating	Average climate Brine in 0°C Water out 55°C	ηs (Seasonal space heating efficiency) Efficiency class	%	150	153	160	162
				sCOP	3.96 (1)	4.02 (1)	4.2 (1)
	Average climate Brine in 0°C Water out 35°C	ηs (Seasonal space heating efficiency) Efficiency class	%	214	219	210	213
				sCOP	5.54 (1)	5.54 (1)	5.44 (1)
Average climate water in 20°C water out 35 °C	ηs (Seasonal space heating efficiency) Efficiency class	%	360,4			340,9	
			sCOP	9,21 (2)			8,72 (2)
Domestic hot water	General	Declared load profile			L		
	Average climate	ηwh Efficiency class			117 A+		
Casing	Colour				White or Silver-grey		
	Material				Precoated sheet metal		
Dimensions	Unit	Height x Width x Depth	mm		1,891 x 597 x 666		
Weight	Unit		kg		222		
Hot water tank	Material				Stainless steel (EN 14521)		
	Water volume				180		
	Insulation	Heat loss	kWh/24h		1,2		
	Corrosion protection				Pickling		
Operation range	Installation space	Min.-Max.	°C		5 / 35		
	Water inlet	Min.-Max.	°C		+10 / +30		
	Heating	Water side	Min.-Max.	°C	5 / 65		
	Domestic hot water	Water side	Min.-Max.	°C	25 / 60		
Refrigerant	Type				R-32		
	GWP				675		
	Charge		kg		1.70		
	Charge		TCO <sub>2</sub> Eq		1.15		
Sound power level	Nom.		dBA	39.0		41.0	
Sound pressure level at 1 meter	Nom.		dBA	27.0		29.0	
Power supply	Name/Phase/Frequency/Voltage				3~/50/400 or 1~/50/230		
Current	Recommended fuses		A		3P 16A or 1P 32A		

(1) According to EN14825 and EN14511:2013

(2) According to real application conditions: water inlet 20°C / leaving water temperature 35°C (fixed)

### Accessories:

Accessory Ref	Description
BRC1HHDW	Madoka Heating - White
BRC1HHD5	Madoka Heating - Silver
BRC1HHDK	Madoka Heating - Black
EKUHWG3D	Daikin Altherma 3 Floor standing G3 Kit
EKPCCAB4	PC cable - to upload field settings from PC to unit
KRCS01-1	Optional remote temperature sensor for indoor unit
EKRP1HBA	Optional PCB kit for remote alarm monitoring, run and fault indication and bivalent operation
EKRP1AHT	Optional PCB for power limitation
EKCC*-W	Sequence controller
DCOM-LT/MB	Daikin Altherma Modbus Gateway
DCOM-LT/O	Daikin Altherma I/O Gateway
K.FERNOXTF1	Fernox magnetic filter 1"
K.FERNOXTF1FL	Fernox magnetic filter 1" and F1 inhibitor fluid (500ml)
EKGSHYDMOD	Hydro module replacement



**Daikin Europe N.V.** Naamloze Vennootschap Zandvoordestraat 300 · 8400 Oostende · Belgium · [www.daikin.eu](http://www.daikin.eu) · BE 0412 120 336 · RPR Oostende (Responsible Editor)



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