DAIKIN

altherma

Daikin Altherma 3 GEO

for Collective Housing

reddot award 2018
winner

iF DESIGN AWARD 2018

Economy, efficiency and environmental performance - all in one

Daikin Altherma 3 GEO 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.

In order to meet the UK government's zero carbon target for 2050, planning policies and building regulations are changing the way the energy rating of dwellings is assessed.

In addition, the UK electricity grid has decarbonised rapidly over the last decade, with more electricity generated from renewables. As a result the carbon emission factor for grid electricity has been dramatically reduced, which is recognised in the most recent updates to SAP. Therefore running a highly efficient heat pump system on low carbon electricity can deliver huge reductions in carbon emissions.

All of this will transform the way heating and cooling systems are designed, driving a rapid shift from fossil fuel based heating systems to heat pumps as the solution of choice for collective heating and cooling.

What's more, burning gas within a high density housing development emits nitrous oxides and particulates, exactly where they are least welcome. So removing gas avoids the need for flues, which is a great advantage, especially in cities tackling the issue of poor air quality.

Daikin Altherma 3 GEO for Collective Housing delivers a highly efficient and innovative approach to fulfilling this need.

Daikin Altherma 3 GEO

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 GEO unit - a high-efficiency in-apartment water-to-water heat pump with integrated domestic hot water (DHW) cylinder.

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 above -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:

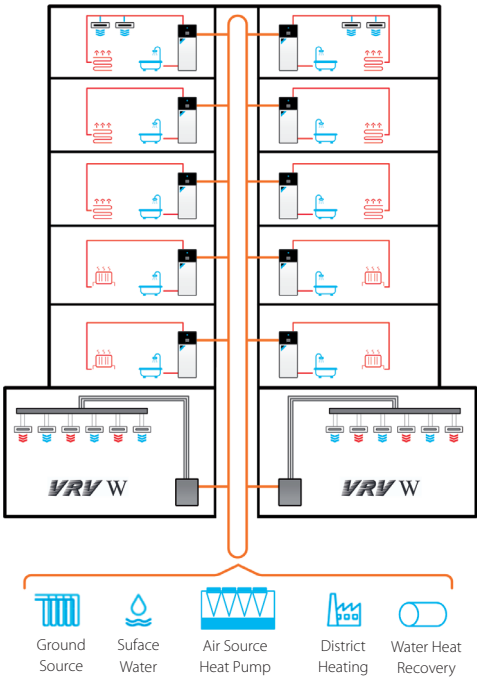
- Ground or air source heat pump
- Shared ground array, borehole or thermal piles
- Surface water source such as a river, canal or seawater
- District heat network
- Waste heat recovery

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_2 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

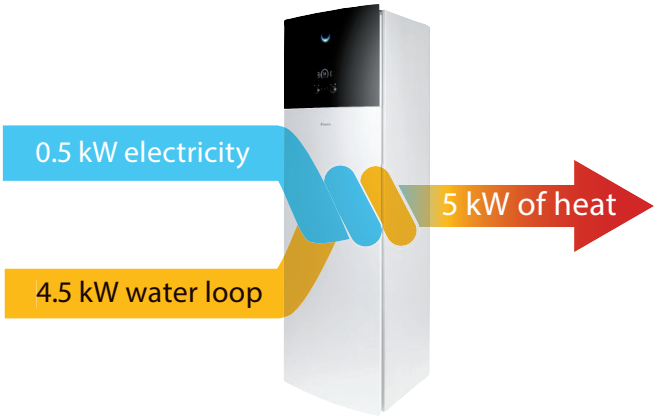
With a leaving water temperature up to 60°C and high efficiencies, the Daikin Altherma 3 GEO is designed to ensure the lowest running costs and highest comfort levels for each apartment.

Versatility by design

Daikin Altherma 3 GEO 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.

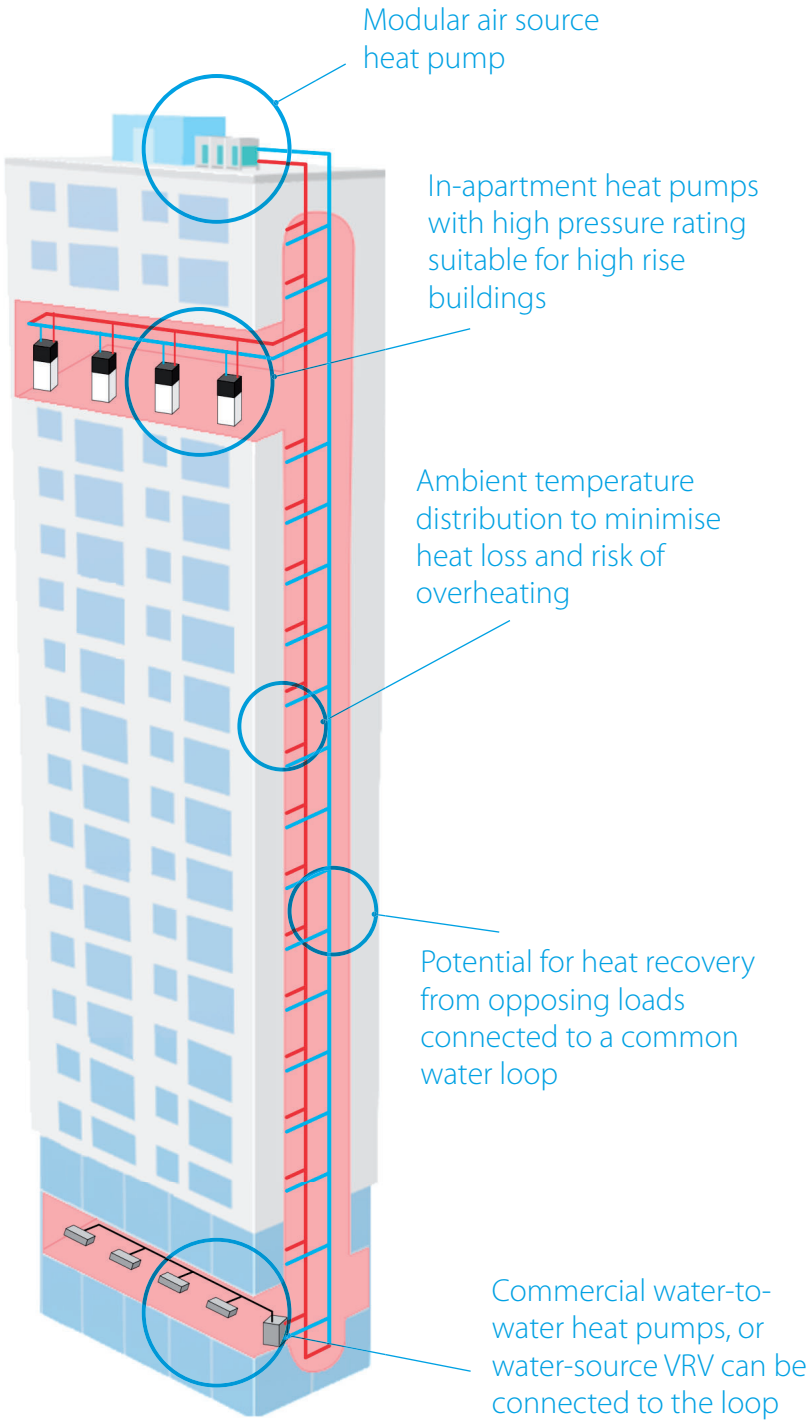
All in one integrated model

The floor standing indoor unit with integrated DHW cylinder 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 GEO system delivers a reduction in carbon emissions of 143 tonnes.[1]



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 GEO 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

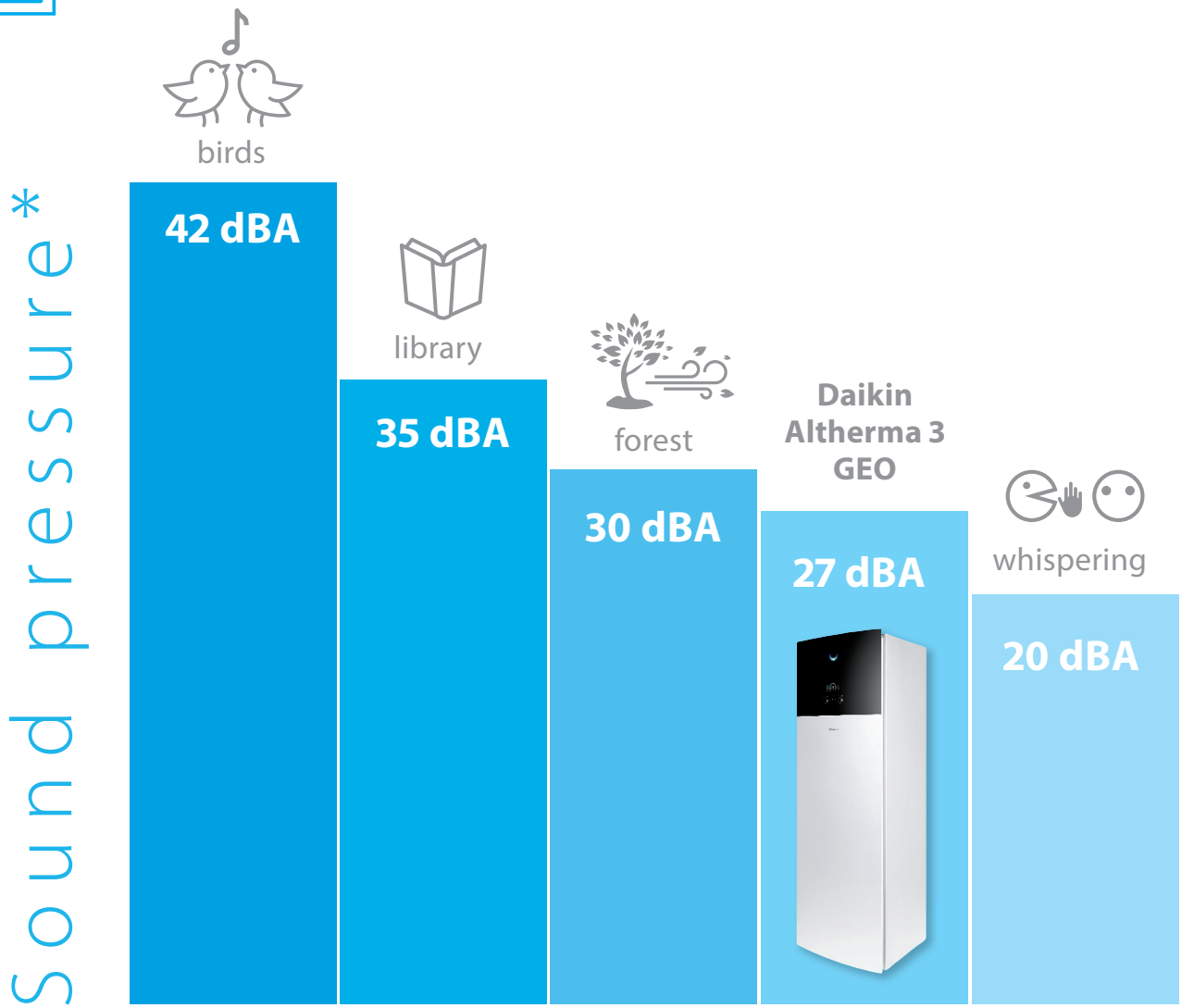
Heat pump technology reduces carbon emissions compared with any traditional fossil fuel heating system. But the Daikin Altherma 3 GEO goes further to reduce the Global Warming Potential (GWP) of system, as it features Daikin's Bluevolution technology which uses R32 refrigerant. R32 has a lower GWP than other refrigerants typically used in heat pump systems - and less refrigerant is required too - so it's more environmentally friendly overall.

[1] 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 Geo 3 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 Comfort Controller

The Daikin Smart Comfort Controller is designed to give 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

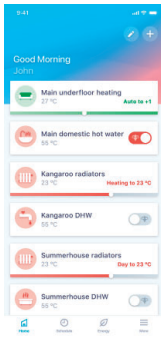
BRC1HHDS

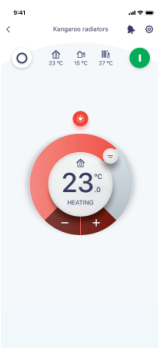
BRC1HHDK

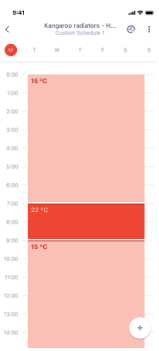
- Sleek and elegant design
- Match any interior scheme
- Easy to use with intuitive controls

Daikin Residential Controller app

The Daikin Residential Controller is a smart phone app, designed to work with either the Smart Comfort Controller, or Madoka for Heating Controller. It 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

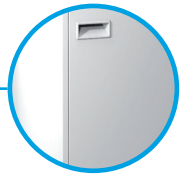
Each apartment unit consists of a sealed R32 low GWP heat pump, a highly insulated, integrated DHW cylinder and an electrical back up heater, so no F-gas qualifications are required to install and service the unit.

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



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 an 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.

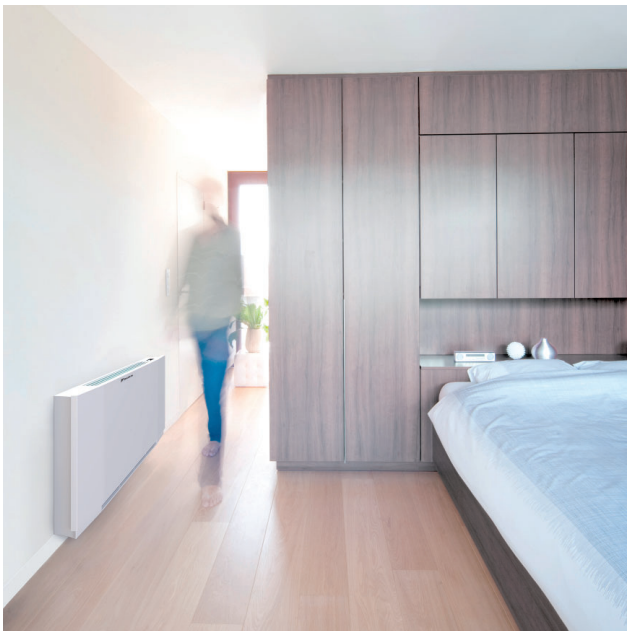
Removable compressor module reduces the overall weight by 70 kg

A complete package from Daikin

The beauty of the Daikin Altherma GEO 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 GEO

for Collective Housing

- Highest running cost savings, thanks to Daikin's unique swing compressor technology, which ensures maximum seasonal efficiency
- Delivers leaving water temperatures of up to 60°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

A+++ A+ 60°C R-32

Indoor Unit					EGSAH06UD9W	EGSAH10UD9W	EGSAX06UD9W	EGSAX10UD9W
Heating capacity	Performance at 0°C inlet temperature	35°C flow	Capacity	kW	0.85 - 7.5	0.85 - 9.1	0.85 - 7.5	0.85 - 9.1
			Nominal input	kW	0.7	1.12	0.7	1.12
			COP		4.74	4.89	4.74	4.89
	Performance at 20°C inlet temperature	35°C flow Heating	Capacity	kW	2.0 - 13.9	2.4 - 13.9	2.0 - 13.9	2.4 - 13.9
			Nominal input	kW	0.7	0.94	0.7	0.94
			COP		9.5	8.7	9.5	9.5
		55°C flow Heating	Capacity	kW	11.3	11.5	11.3	11.5
			Nominal input	kW				
			COP		5	5	5	5
		7°C flow Cooling	Capacity	kW	-	-	9.5	10.5
	Performance at 25°C inlet temperature	35°C flow Heating	Capacity	kW	2.3 - 14.8	2.7 - 17	2.3 - 14.8	2.7 - 17
			Nominal input	kW	0.7	0.94	0.7	0.94
			COP		11	9.8	11	9.8
		55°C flow Heating	Capacity	kW	12.3	12.5	12.3	12.5
			Nominal input	kW				
			COP		5.6	5.6	5.6	5.6
		7°C flow Cooling	Capacity	kW	-	-	9.1	9.8
Function					Heating & hot water		Heating, cooling and hot water	
Casing	Colour				White			
	Material				Precoated sheet metal			
Dimensions	Unit	HeightxWidthxDepth		mm	1,891 x 597 x 666			
Weight	Unit			kg	222			
Hot water tank		Material			Stainless steel (EN 1.4521)			
		Water volume		l	180	180	180	180
		Standing losses @ 60°C		kWh/24h	1.2	1.2	1.2	1.2
		Immersion heater		kW	-	-	-	-
Hydraulic characteristics		Energy source/Water loop		mm	28	28	28	28
		Water connections DHW		mm	22	22	22	22
		Water connections Space heating		mm	22	22	22	22
Inlet temperature range				°C	+10 ~ +30	+10 ~ +30	+10 ~ +30	+10 ~ +30
Leaving water		Heating		°C	+15 ~ +60	+15 ~ +60	+15 ~ +60	+15 ~ +60
		Cooling		°C	+5~ +20	+5~ +20	+5~ +20	+5~ +20
		Hot water		°C	+25 ~ +60	+25 ~ +60	+25 ~ +60	+25 ~ +60
Sound pressure / power level		Heating		dBA	27.0 / 39.0	29.0 / 41.0	27.0 / 39.0	29.0 / 41.0
Refrigerant charge		R32		kg	1.7	1.7	1.7	1.7
Power supply					1-phase / 230V / 50Hz			
Recommended fuses		Heat pump**		A	32			

Nominal capacity and nominal input tested according to EN 14511

Accessories:

Accessory Ref	Description
BRC1HHDW	Madoka Heating - White
BRC1HHDS	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(1)
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/IO	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

Notes:

i) Every EGSAH-D must be purchased alongside a G3 Kit (EKUHWG3D)

ii) Only one optional remote sensor can be installed

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Printed on non-chlorinated paper.

ECPEN20-751UK / 04/20