

DAIKIN

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## Daikin Altherma hybrid heat pump The natural combination

Daikin Altherma hybrid heat pump, the natural combination

### Why choose Daikin Altherma hybrid heat pump?

What the customer wants:

- more energy efficient systems >
- more cost effective systems >

Your solution: choose a Daikin Altherma hybrid heat pump

- combination of gas condensing technologies and air-to-water heat pumps
- delivers up to 35% more heating efficiency >
- optimises the operation of the most efficient gas condensing boilers >

#### Customer benefits:

- > low running costs for heating and domestic hot water
- > low investment costs
- ideal for renovation applications >

Your gains:

- modular construction >
- Easy and fast installation >

### What is condensing boiler What is an air-to-water technology?

## heat pump?

Condensing boiler technology converts the fuel used into usable heat, virtually without loss. This is both good for the environment and your wallet, since lower energy consumption means lower heating costs, less use of energy resources and a reduction in CO<sub>2</sub> emissions. During this process, flue gases are cooled to the extent that the steam they contain is condensed. The energy that is released by this process, is used as heating energy.

The Daikin Altherma air-to-water heat pump is a sustainable energy source: extracting heat from the outside air. In a closed loop containing a refrigerant, a thermodynamic cycle is created through evaporation, condensation, compression and expansion. This 'pumps' heat from a lower to a higher temperature level.

The heat gained is transferred to your home's central heating distribution system.





### Low running costs for heating and domestic hot water compared to traditional boilers

#### A. Space heating



#### **Energy prices & Efficiency**

Depending on the outdoor temperature, energy prices and the internal heat load, the Daikin Altherma hybrid heat pump smartly chooses between the heat pump and/or the gas boiler, possibly in simultaneous operation, always selecting the most economical mode to operate.

#### Illustration of an average European climate



(space heating) compared to condensing boiler

Heat load = the capacity of the space heating system required to maintain comfortable indoor temperatures at any time.

Required heat output = heat load x n° of occuring hours per year

#### Heat pump operation

The heat pump integrated in the Daikin Altherma hybrid heat pump is the best available technology for optimizing running costs at moderate outdoor temperatures, resulting in a COP (Coefficient Of Performance) of 5.04!

#### Hybrid operation

If a high heat load is required, or to achieve the highest efficiencies at the current conditions, both the gas boiler and heat pump operate at the same time in the most economical way. The water flow rate will be automatically regulated, in order to have the possibility of lowering the temperature of the water flowing from the radiators to the heat pump and so maximizing the heat pump efficiency. The exact time the switch-over is made from heat pump operation to hybrid operation depends on the house characteristics, energy prices, the requested indoor temperature setting and the outdoor temperature.

#### Gas operation

When outdoor temperatures are dropping drastically, it is no longer efficient to operate in hybrid mode. At that point, the unit will switch automatically to gas operation only.

(1) heating Ta DB/WB 7°C/6°C - LWC 35°C (DT = 5°C)

#### B. Domestic hot water

### Hot water produced with gas condensing technology

Efficiency increase up to 10-15% compared to traditional gas condensing boilers thanks to a special dual heat exchanger:

- > cold tap water flows directly into the heat exchanger
- > optimal and continuous condensing of the flue gases during domestic hot water preparation



### Low investment benefits

There is no need to replace the existing radiators (up to 80°C) and pipe work as our Daikin Altherma hybrid heat pump connects directly to the existing heating system, thus reducing the cost and disruption of installation. Thanks to the compact dimensions, the space needed for the new system is very similar to that of an existing system, so there is no loss of space and no need for structural modifications.



Daikin Altherma hybrid heat pump Existing gas boiler

## Ideal for renovation applications

Several applications are possible using the Daikin Altherma hybrid heat pump as all heat loads are covered up to 27 kW. The gas boiler can be installed without the heat pump in the early stages, in order to quickly restart heating in the case of a breakdown of the existing gas boiler.



## Easy and fast installation: 3 components

- > Heat pump outdoor unit
- > Heat pump indoor unit
- > Gas condensing boiler

As the heat pump indoor unit and gas condensing boiler are delivered as separate units, they are easier to handle and manipulate, and easier to install. The heat pump indoor unit is easily mounted on the wall with a standard back plate. With the quick interconnections, the gas condensing boiler is easily attached to the heat pump indoor unit, resulting in a very compact unit. Similar to all wall mounted gas boilers, all the connections are at the bottom and all the components can be accessed from the front, which makes the unit easy to service and maintain.



#### Gas condensing boiler



Heat pump outdoor unit

Heat pump indoor unit

Replacing a gas boiler with a Daikin Altherma hybrid heat pump means saving on running costs for both space heating and the domestic hot water supply.



A running cost comparison is made based on below parameters for a typical Belgian winter. Thanks to the hybrid principle, the most cost-efficient operation will be used no matter what the situation is.

#### Heat consumption during winter



A 100% use of gas boiler

B Heat pump + gas boiler

C 100% use of heat pump

+35% efficiency (space heating) compared to existing condensing gas boiler



	Daikin altherma hybrid heat pump	New gas condensing boiler	Existing gas condensing boiler
		Space heating	
Energy supplied by HP	12,800 kWh		
HP efficiency	3.64 Scop		
Energy supplied by gas boiler	6,700 kWh	19,500 kWh	19,500 kWh
Space heating efficiency	90%	90%	75%
Running costs	1,220 €	1,520€	1,820€
		DHW HEATING	
Energy supplied by gas boiler*	3,000 kWh	3,000 kWh	3,000 kWh
DHW heating efficiency*	90%	80%	65 %
Running costs*	230€	260 €	320€
		TOTAL	
Running costs	1,450€	1,780 €	2,140 €

\* for combi-boiler, no separate domestic hot water tank

# Yearly savings: for space heating and domestic hot water

19%	versus new gas condensing boiler	330 €/year
32%	versus existing gas condensing boiler	690 €/year

#### Conditions

Heat load	16 kW
Design temperature	-8°C
Space heating off temperature	16°C
Maximum water temperature	60°C
Minimum water temperature	38°⊂
Gas price	0.070 €/kWh
Electricity price (day)	0.237 €/kWh
Electricity price (night)	0.152 €/kWh
Total space heating requirement	19,500 kWh
Total DHW heating requirement (4 persons)	3,000 kWh

## Specifications

Efficiency data			EHYHE	BH + EVLQ	05AV32 + 05CV3	08AV32 + 08CV3	
Heating capacity	Min.			kW	1.80 (1)	/ 1.80 (2)	-
	Nom.			kW	4.40 (1) / 4.03 (2)	7.40 (1) / 6.89 (2)	-
	Max.			kW	5.12 (1) / 4.90 (2)	10.02 (1) / 9.53 (2)	-
Power input	Heating	Nom.		kW	0.87 (1) / 1.13 (2)	1.66 (1) / 2.01 (2)	a
СОР					5.04 (1) / 3.58 (2)	4.45 (1) / 3.42 (2)	
							-
Indoor Unit				EHYHBH	05AV32	08AV32	EHYKOMB33A2/3
Gas	Consumption (G20)	Min-Max		m³/h		-	0.78-3.39
	Consumption (G25)	Min-Max		m³/h		-	0.90-3.93
	Consumption (G31)	Min-Max		m³/h		-	0.30-1.29
	Connection	Diameter		mm		-	15
Central heating	Heat input Qn (net calorific value)	Nom	Min-Max	kW		-	7.6-27 (3)
	Output Pn at 80/60°C	Min-Nom		kW		-	8.2-26.6 (3)
	Efficiency	Net calorifi	c value	%		-	98 (4) / 107 (5)
	Operation range	Min-Max		°C		-	15-80
Domestic hot water	Output	Min-Nom		kW		-	7.6-32.7
	Water flow	Rate	Nom	l/min		-	9.0 / 15.0
	Operation range	Min-Max		°C		-	40-65
Supply air	Connection			mm		-	100
	Concentric					-	Yes
Flue gas	Connection			mm		-	60
Casing	Colour				W	hite	White - RAL9010
	Material					Precoated sheet metal	,
Dimensions	Unit	HeightxWi	dthxDepth	mm	902x4	50x164	820x490x270
Weight	Unit			kg	30	31.2	36
Power supply	Phase/Frequency/	/oltage		Hz/V		-	1~/50/230
Electrical power	Max.			W		-	55
consumption	Standby			W		-	2
Operation range	Heating	Ambient	Min.~Max.	°C	-25	~25	-
		Water side	Min.~Max.	°C	25	~55	-
Notes						-	For water circuit central heating, safety valve: refer to EHYHB*

Outdoor Unit			EVLQ	05CV3	08CV3
Dimensions	Unit	HeightxWidthxDepth	mm	735	x832x307
Weight	Unit		kg	54	56
Compressor	Quantity				1
	Туре			Hermetically sea	led swing compressor
Operation range	Heating	Min.~Max.	°CWB	-:	25~25
Refrigerant	Type / GWP			R-410	A / 2,087.5
	Charge		kg/TCO <sub>2</sub> Eq	1.45/3.0	1.60/3.3
Sound power level	Heating	Nom.	dBA	61	62
Sound pressure level	Heating	Nom.	dBA	48	49
Power supply	Name/Phase/	Frequency/Voltage	Hz/V	V3/1	~/50/230
Current	Recommended fuses A				20

(1) Condition: Ta DB/WB 7°C/6°C - LWC 35°C (DT = 5°C) (2) Condition: Ta DB/WB 7°C/6°C - LWC 45°C (Dt=5°C) (3) Values according to G20 (4) 80/60 (5) 40/30 (30%) Contains fluorinated greenhouse gases





Indoor unit

Outdoor unit

Efficiency data			EHYHE	3X + EVLQ	08AV3 + 08CV3	
Heating capacity	Min.			kW	1.80 (1) / 1.80 (2)	
	Nom.			kW	7.40 (1) / 6.89 (2)	-
	Max.			kW	10.02 (1) / 9.53 (2)	
Cooling capacity	Min.			kW	2.50 (1) / 2.50 (2)	
	Nom.			kW	6.86 (1) / 5.36 (2)	
Power input	Heating	Nom.		kW	1.66 (1) / 2.01 (2)	
	Cooling	Nom.		kW	2.01 (1) / 2.34 (2)	
COP					4.45 (1) / 3.42 (2)	
EER					3.42 (1) / 2.29 (2)	
Indoor Unit				EHYHBX	08AV3	EHYKOMB33A2/3
Gas	Consumption (G20)	Min-Max		m³/h	-	0.78-3.39
	Consumption (G25)	Min-Max		m³/h	-	0.90-3.93
	Consumption (G31)	Min-Max		m³/h	-	0.30-1.29
	Connection	Diameter		mm	-	15
Central heating	Heat input Qn (net calorific value)	Nom	Min-Max	kW	-	7.6-27 (3)
	Output Pn at 80/60°C	Min-Nom		kW	-	8.2-26.6 (3)
	Efficiency	Net calorifi	c value	%	-	98 (4) / 107 (5)
	Operation range	Min-Max		°C	-	15~80
Domestic hot water	Output	Min-Nom		kW	-	7.6-32.7
	Water flow	Rate	Nom	l/min	-	9.0 / 15.0
	Operation range	Min/Max		°C	-	40~65
Supply air	Connection			mm	-	100
	Concentric				-	Yes
Flue gas	Connection			mm	-	60
Casing	Colour				White	White - RAL9010
	Material				Precoated	sheet metal
Dimensions	Unit	HeightxWid	dthxDepth	mm	902x450x164	820x490x270
Weight	Unit			kg	31.2	36
Power supply	Phase/Frequency/	Voltage		Hz/V	-	1~/50/230
Electrical power	Max.			W	-	55
consumption	Standby			W	-	2
Operation range	Heating	Ambient	Min.~Max.	°C	-25~25	-
		Water side	Min.~Max.	°C	25~55	-
	Cooling	Ambient	Min.~Max.	°CDB	10~43	-
		Water side	Min.~Max.	°C	5~22	-
Notes					-	For water circuit central heating, safety valve: refer to EHYHB*

Outdoor Unit			EVLQ	08CV3
Dimensions	Unit	HeightxWidthxDepth	mm	735x832x307
Weight	Unit		kg	56
Compressor	Quantity			1
	Туре			Hermetically sealed swing compressor
Operation range	Heating	Min.~Max.	°CWB	-25~25
Refrigerant	Type / GWP			R-410A / 2,087.5
	Charge		kg/TCO <sub>2</sub> Eq	1.60/3.3
Sound power level	Heating	Nom.	dBA	62
Sound pressure level	Heating	Nom.	dBA	49
Power supply	Name/Phase/Fr	equency/Voltage	Hz/V	V3/1~/50/230
Current	Recommended fuses			20

(1) Condition 1: cooling Ta 35°C - LWE 18°C (DT = 5°C); heating Ta DB/WB 7°C/6°C - LWC 35°C (DT = 5°C) (2) Condition 2: cooling Ta 35°C - LWE 7°C (DT = 5°C); heating Ta DB/WB 7°C/6°C - LWC 45°C (DT = 5°C) (3) Values according to G20 (4) 80/60 (5) 40/30 (30%) Contains fluorinated greenhouse gases





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.

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