

Daikin Altherma hybrid
heat pump

The natural
combination



Daikin Altherma hybrid heat pump, the natural combination

Seasonal efficiency, smart use of energy

The EU wants to make people aware of what units are consuming and ban non-efficient products from the market.

Seasonal efficient units reflect the standardised conditions you can expect over an entire heating and cooling season.

From September 2015 onwards, heating systems like heat pumps, combustion, domestic hot water tanks or any kind of combination, will receive an energy label to help the customer to make the most efficient choice.



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

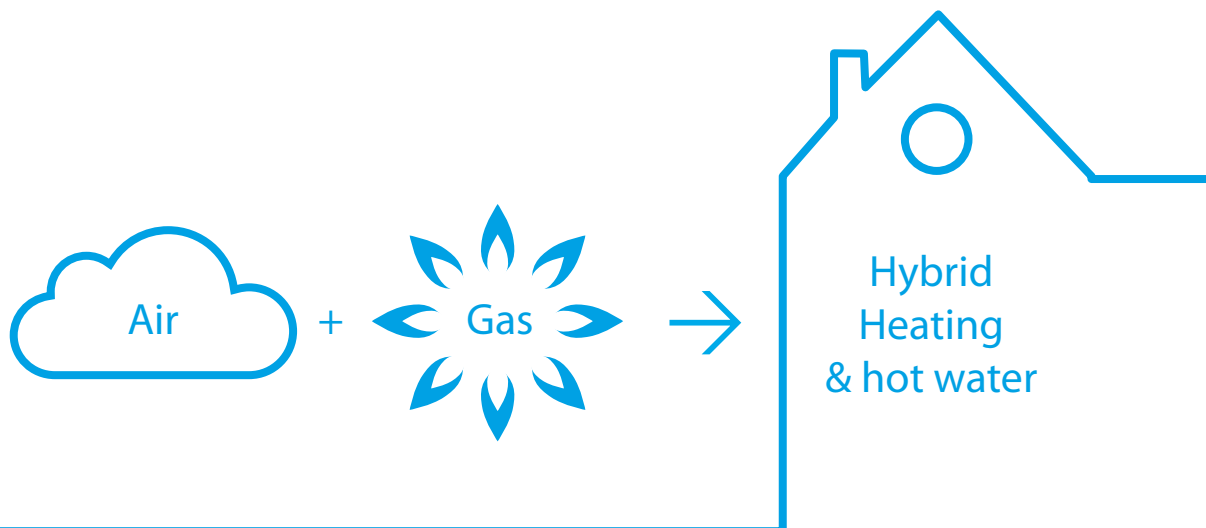
What is condensing boiler technology?

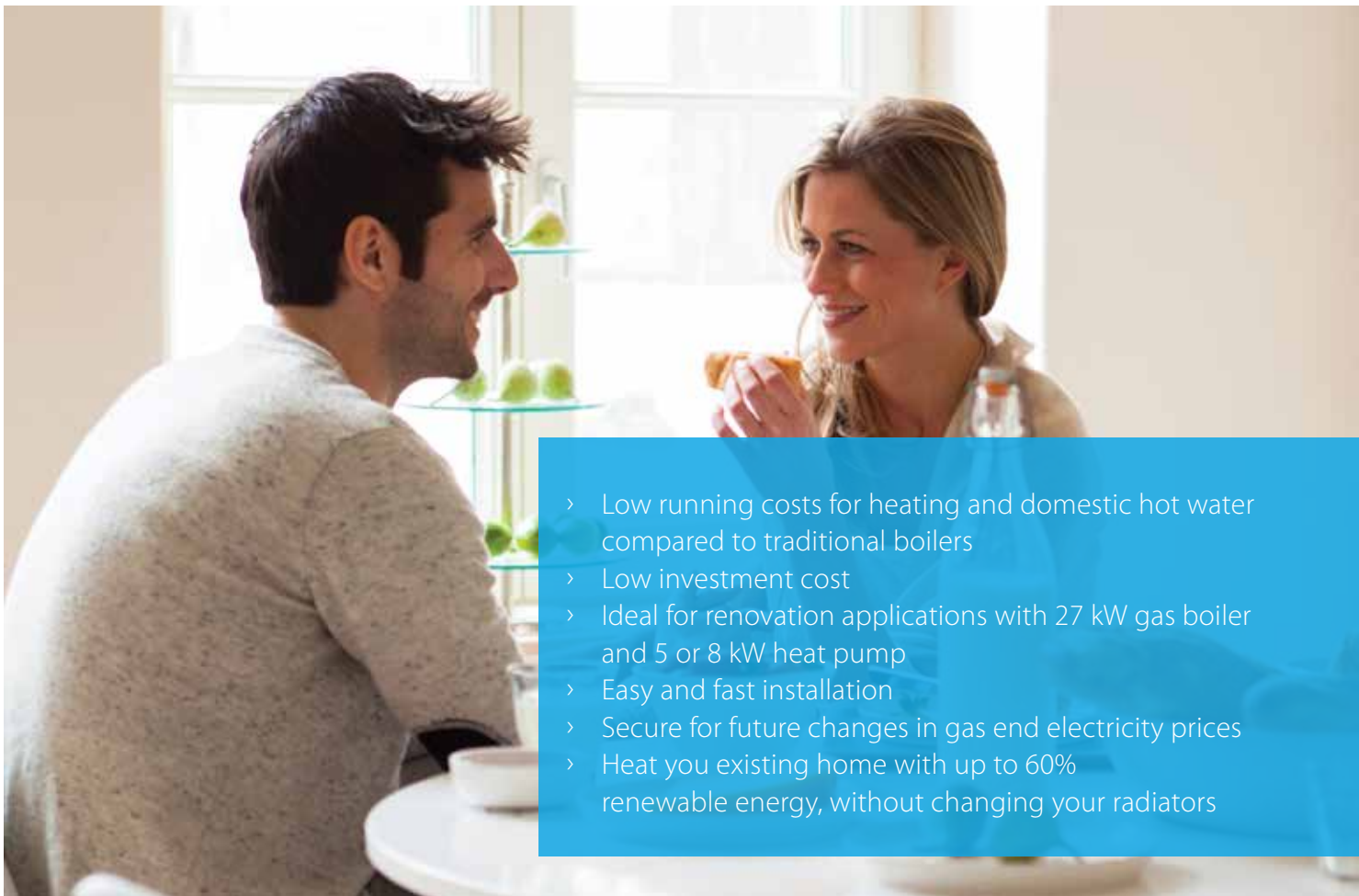
Condensing boiler technology converts the fuel used into usable heat, virtually without loss. This is both good for the environment and your wallet, since lower energy consumption means lower heating costs, less use of energy resources and a reduction in CO₂ emissions. During this process, flue gases 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.

What is an air-to-water heat pump?

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
- > Low investment cost
- > Ideal for renovation applications with 27 kW gas boiler and 5 or 8 kW heat pump
- > Easy and fast installation
- > Secure for future changes in gas end electricity prices
- > Heat you existing home with up to 60% renewable energy, without changing your radiators

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

A. Space heating



Most economical mode

- > heat pump only
- > hybrid mode
- > gas only



Energy prices & Efficiency

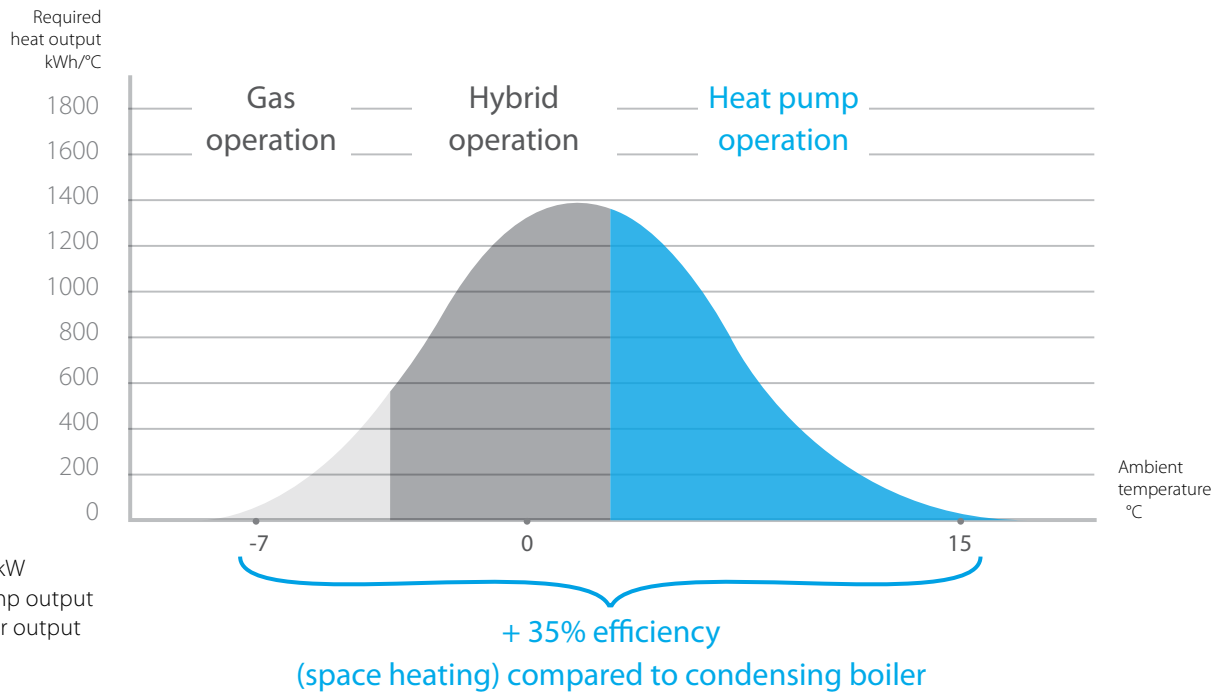
Depending on the outdoor temperature, energy prices and the internal heat load, the Daikin Altherma hybrid heat pump smartly chooses between the heat pump and/or the gas boiler, possibly in simultaneous operation, always selecting the most economical mode to operate.

System efficiency

The diagram shows two efficiency ratings in green arrow-shaped boxes. The top one is for space heating (radiator icon) with an A++ rating. The bottom one is for domestic hot water (tap icon) with an A rating.

*EHYHBH05AV32 / EVLQ05CV3 + EHYKOMB33AV2

Illustration of an average European climate



- › Heat load: 14 kW
- › 70% heat pump output
- › 30% gas boiler output

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 occurring 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!

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.

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

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

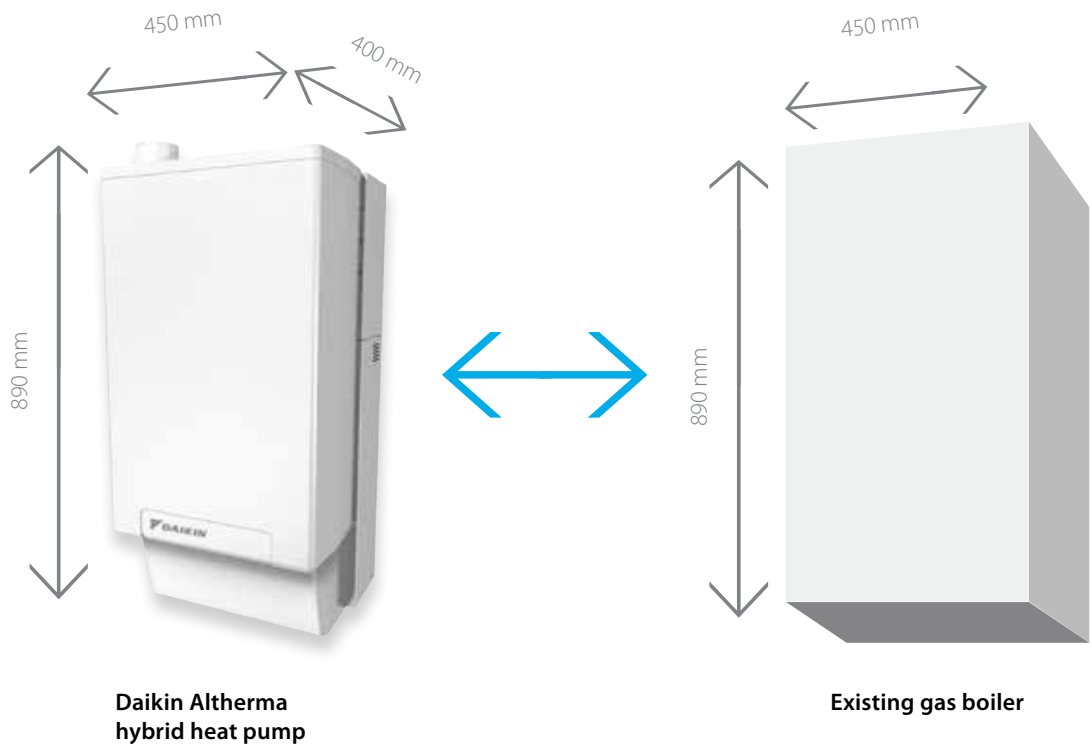
Efficiency increase up to 10-15% compared to traditional gas condensing boilers thanks to a special dual heat exchanger:

- › 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.



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.



Heat pump outdoor unit

Gas condensing boiler



Heat pump indoor unit

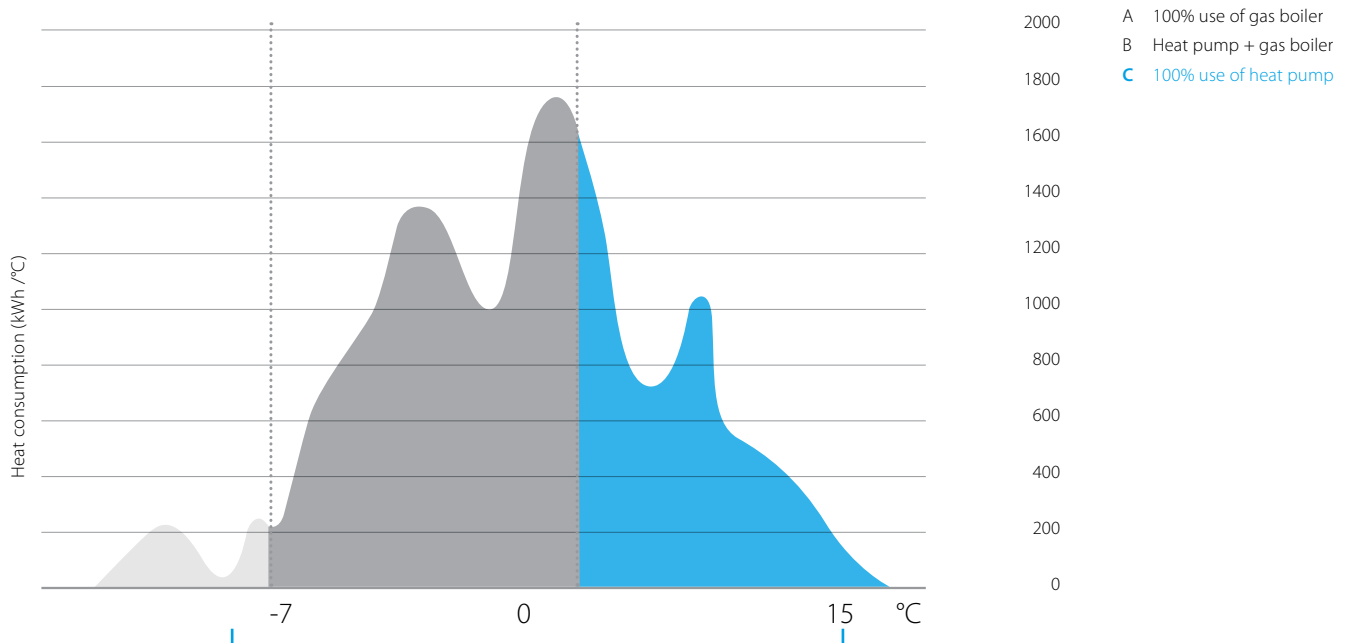
Replacing a gas boiler with a Daikin Altherma hybrid heat pump means saving on running costs for both space heating and the domestic hot water supply.



Case Study

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



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

	Daikin altherma hybrid heat pump	New gas condensing boiler	Existing gas non-condensing boiler
Space heating requirement: 19,500 kWh			
Energy supplied by heat pump	12,800 kWh	-	-
Efficiency of heat pump	3.64 SCOP*	-	-
Running costs	€ 675	-	-
Energy supplied by gas boiler	6,700 kWh	19,500 kWh	19,500 kWh
Efficiency of gas boiler	90%	90%	75%
Running costs	€ 521	€ 1,517	€ 1,820
Space heating requirement: 19,500 kWh			
Energy supplied by gas boiler	3,000 KWH	3,000 KWH	3,000 KWH
Efficiency of gas boiler	90%	80%	65%
Running costs	€ 233	€ 263	€ 323
		TOTAL	
Total Running costs	€ 1,429	€ 1,780	€ 2,143

* or 364%

→ Yearly savings: for space heating and domestic hot water

-20% versus new gas condensing boiler **351 €/year**

-33% versus existing gas non-condensing boiler **714 €/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°C
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			EHYHBH + EVLQ	05AV32 + 05CV3	08AV32 + 08CV3
Heating capacity	Nom.		kW	4.40 / 4.03	7.40 / 6.89
Power input	Heating	Nom.	kW	0.87 / 1.13	1.66 / 2.01
COP				5.04 / 3.58	4.45 / 3.42
Domestic hot water heating	General	Declared load profile		-	
	Average climate	η_{wh} (water heating efficiency)		96	
			Water heating energy efficiency class		A
Space heating	Average climate water outlet 55°C	General	η_s (Seasonal space heating efficiency)	128	127
				Seasonal space heating eff. class	
	Average climate water outlet 35°C	General	η_s (Seasonal space heating efficiency)	-	
				Seasonal space heating eff. class	

Indoor Unit		EHYHBH		05AV32	08AV32	EHYKOMB33A2/3
Gas	Consumption (G20)	Min-Max	m ³ /h	-	-	0.78-3.39
	Consumption (G25)	Min-Max	m ³ /h	-	-	0.90-3.93
	Consumption (G31)	Min-Max	m ³ /h	-	-	0.30-1.29
	Connection	Diameter	mm	-	-	15
Central heating	Heat input Q _n (net calorific value)	Nom	Min-Max	kW	-	7.6 / 6.2 / 7.6-27 / 22.1 / 27
	Output P _n at 80/60°C	Min-Nom		kW	-	8.2 / 6.7 / 8.2-26.6 / 21.8 / 26.6
	Efficiency	Net calorific value		%	-	98 / 107
	Operation range			°C	-	15/80
	Output	Min-Nom		kW	-	7.6-32.7
Domestic hot water	Water flow	Rate	Nom	l/min	-	9.0 / 15.0
	Operation range			°C	-	40/65
	Connection			mm	-	100
Supply air				mm	-	Yes
				mm	-	60
Flue gas				mm	-	White - RAL9010
Casing	Colour			White		White - RAL9010
	Material			Precoated sheet metal		
Dimensions	Unit	HeightxWidthxDepth		mm	902x450x164	820x490x270
Weight	Unit			kg	30	31.2
Power supply	Phase/Frequency/Voltage			Hz/V	-	1~/50/230
Electrical power consumption	Max.			W	-	55
	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	735x832x307
Weight	Unit			kg	54
Compressor	Quantity				56
	Type		Hermetically sealed swing compressor		
Operation range	Heating	Min.~Max.		°CWB	-25~25
Refrigerant	Type		R-410A		
	Charge			kg	1.45
Sound power level	Heating	Nom.		dBA	61
Sound pressure level	Heating	Nom.		dBA	48
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%)



Indoor unit



Outdoor unit

Efficiency data		EHYHBX + EVLQ		08AV3 + 08CV3	
Heating capacity	Nom.			kW	
Cooling capacity	Nom.			kW	
Power input	Heating	Nom.			kW
	Cooling	Nom.			kW
COP				4.45 / 3.42	
EER				3.42 / 2.29	
Domestic hot water heating	General	Declared load profile		-	
	Average climate	η_{wh} (water heating efficiency)	%	96	
		Water heating energy efficiency class		A	
Space heating	Average climate	General	η_{sp} (Seasonal space heating efficiency)	%	129
	water outlet 55°C		Seasonal space heating eff. class		A++
	Average climate	General	η_{sp} (Seasonal space heating efficiency)	%	-
	water outlet 35°C		Seasonal space heating eff. class		-

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 Q _n (net calorific value)	Nom	Min-Max	kW		-	
	Output P _n at 80/60°C	Min-Nom			kW		8.2 / 6.7 / 8.2-26.6 / 21.8 / 26.6
	Efficiency	Net calorific value		%		-	
	Operation range	Min-Max			°C		15/80
Domestic hot water	Output	Min-Nom			kW		7.6-32.7
	Water flow	Rate	Nom	l/min		-	
	Operation range	Min/Max			°C		40/65
Supply air	Connection			mm		-	
	Concentric					100	
Flue gas	Connection			mm		-	
	Concentric					Yes	
Casing	Connection			mm		60	
	Colour			White		White - RAL9010	
Dimensions	Material			Precoated sheet metal			
	Unit	HeightxWidthxDepth	mm		902x450x164		820x-x490x270
Weight	Unit			kg		31.2	
Power supply	Phase/Frequency/Voltage			Hz/V		-	
Electrical power consumption	Max.			W		-	
	Standby			W		55	
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	
Compressor	Quantity			1	
	Type			Hermetically sealed swing compressor	
Operation range	Heating	Min.-Max.	°CWB		-25~25
Refrigerant	Type			R-410A	
	Charge			kg	
Sound power level	Heating	Nom.			62
Sound pressure level	Heating	Nom.			49
Power supply	Name/Phase/Frequency/Voltage			Hz/V	
Current	Recommended fuses			A	
				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%)



Trust Daikin

Daikin may not be a household name. After all, we don't make cars, TVs, fridges or washing machines. But we do make world-class heat pumps. In fact, more than 275,000 Daikin Altherma heat pumps have been fitted across Europe since its initial launch in 2006. Because we focus on doing only what we're best at: creating the most efficient heating, ventilation and air conditioning solutions, renowned for design excellence, quality and reliability. So your customers can depend on Daikin for the ultimate in comfort, leaving you free to focus on other essentials – like winning new work and growing your business.

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ECPEN15-729A XXX · 06/15



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The present publication supersedes ECPEN14-729. Printed on non-chlorinated paper. Prepared by La Moviada, Belgium.