DAIKIN AC
absolute comfort

DAIKIN

altherma

Split Type System

Air to Water Heat Pump

HEAT PUMP
INVERTER
R-410A

EXPERTISE AND INNOVATION

Daikin Altherma offers complete flexibility for new construction and deep energy refurbishment projects. Using a low temperature hydronic circuit, these systems can be applied to satisfy a whole host of applications and configurations and can satisfy all your heating, cooling and domestic hot water needs.

An Integrated Solution

Daikin Altherma is a highly efficient air-to-water heat pump, hydronic system that provides an integrated, all electric solution for heating, cooling, and domestic hot water with solar thermal connectivity. With the ability to be combined with under floor heating, fan coil units, low temperature radiators, a domestic hot water tank, solar connectors, or a room thermostat, Daikin Altherma provides excellent flexibility and maximum year round comfort.

System Attributes

Daikin Altherma is a powerful solution with key benefits for the **environment**, enhanced **efficiency** and use in diverse **applications**.

Environment

1. All Equipment contains materials that are fully recyclable.
2. Daikin Altherma system inherent design and operational features mean effective tie in to Grid-Tied Solar PV (Low start up amps, operating amps, no locked rotor amps).
3. DHW Production via 3rd Party Solar Thermal solution and using the highly efficient Daikin Altherma serving as the Auxiliary Solution.
4. An air source Heating and DHW solution with NO Localized Gas or Oil consumption thus reduced CO2 emission, no Gas venting, no drilling, and no safety concerns.

Efficiency

1. Enhanced energy savings via Inverter Compressor operation where energy consumption matches the load.
2. Further savings via the Outdoor Reset Function to control water temperatures in relation to the current Ambient temperatures.
3. Operational efficiencies (COP up to 4.5) similar to or better than Geo-Thermal WSHP solutions, but with no added cost of well drilling and land excavation.

Application

1. Excellent flexibility for the architect / designer to apply the Daikin Altherma system to suit any residence design, scale or performance scope.
2. Unobtrusive, space saving and aesthetically satisfying complete Heating, Cooling and DHW solution.
3. Full utilization of hydronic circuit, giving small diameter piping, high heat transfer coefficient and the excellent comfort of Low Sound Levels from In-Floor Radiant, Low Velocity Fan Convectors or Radiators.

DESIGN FOR IDEAL COMFORT

Daikin Altherma components work together to provide the ideal comfort and water temperature.

1. **Outdoor Unit: An efficient use of energy from the air**

Utilizing a natural source of energy, the outdoor unit extracts heat from the outside air and transfers it through refrigerant piping to supply heating. Installed as a split system consisting of an outdoor compressor unit and Hydrobox containing the hydronic components or a MonoBloc system with a single outdoor unit combining both the compressor and hydronic components, Daikin Altherma delivers an energy efficient system, compact and easily installed.

2. **Hydrobox: A "boiler" from a heat pump source**

The Hydrobox heats the water that circulates through low temperature radiators, floor heating systems or fan coil units and provides domestic hot water. With optional cooling, the Hydrobox has the ability to reverse the cycle to provide chilled water.

3. **Domestic Hot Water Tank: For low energy consumption**

Available in two sizes, the domestic hot water tank provides warm water primarily from the thermal energy from the outside air. With specially placed system components, a heat exchanger connected to the heat pump along with a supplemental electrical heating element to boost hot water temperature for any additional water heating needs, warm water is always provided with maximum energy efficiency.

4. **Solar Thermal Connection Kit:**

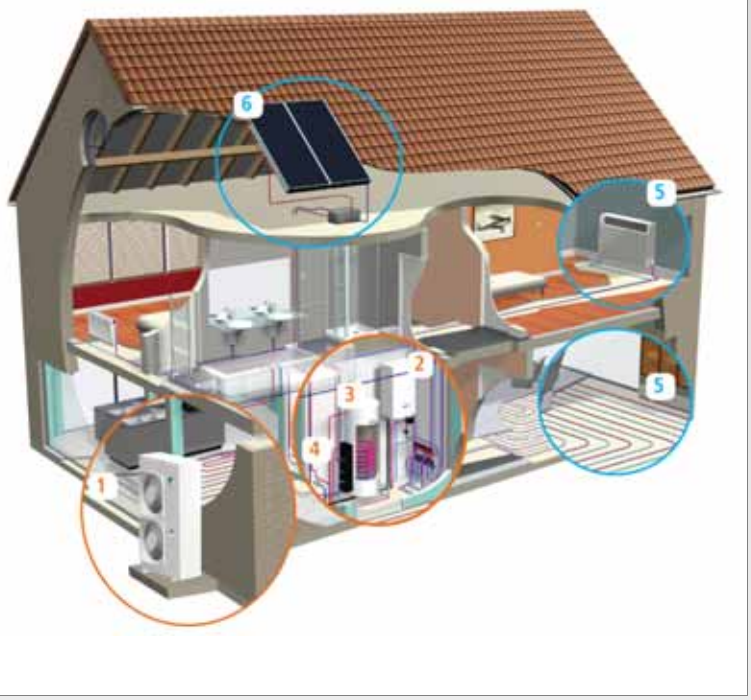
Averaged over a year, the sun delivers half of the energy needed to bring domestic hot water up to the desired temperature for free. By connecting a solar boiler to the Daikin Altherma system, rays are transferred into heat and stored in the hot water storage tank.

Room Thermostat: For convenient temperature regulation

With the wired room thermostat, the ideal temperature can be conveniently regulated easily and quickly.

Daikin Altherma Split Type System

Capacity	Nominal 1.5 Ton to 4.5 Ton
Application	Heating and (optional) cooling Domestic hot water
Configuration	Outdoor (compressor) unit Indoor (hydronic parts) unit
R-410A Refrigerant Piping	Between outdoor unit and indoor unit
Water (H_2O) Piping	Between indoor unit and indoor heating/cooling appliances
Installer's Advantages	No extra insulation of H_2O piping required to protect from freezing up
Field Supply Connectable Heating Emitters (5)	Under floor heating Low temperature radiators Overhead Radiant Cooling panels Fan coil units Fan convectors
Combinable With	Domestic hot water storage tank (3), Solar thermal connection kit (4) and field supply Solar thermal panels (6) for hot water production Third party thermostats



Energy Savings for Peace of Mind

Reduced operating costs with Daikin Altherma Heat Pumps

Daikin Altherma is a domestic heating and hot water system based on air-water heat pump (AWHP) technology. It represents a flexible and cost-effective alternative to a fossil heating solution.

How does a heat pump work?

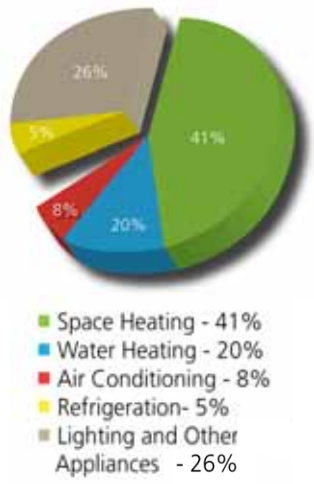
1. Air passes through the heat exchanger and absorbs latent heat from the outside air and evaporates.
2. Vapor passes into the compressor and is compressed, concentrating the heat.
3. Hot vapor is condensed where heat is rejected and the vapor condenses back into a liquid. The rejected heat passes into the central heating and hot water system, ready for use in the home.
4. Liquid refrigerant passes through an expansion valve, ready to start the cycle again.

The Heat Pump Advantage

The Energy Challenge

How Energy is Used in Residences (2005)*

Heating and Hot Water account for the largest portion of monthly utility costs

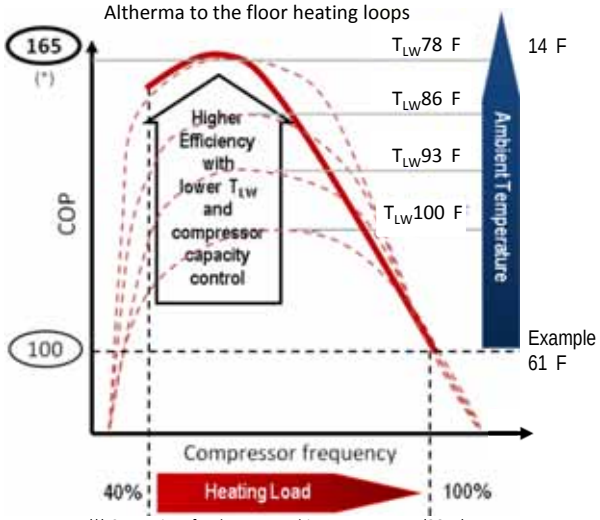


*2005 is the most recent year for which data is available.
Source: U.S. Energy Information Administration, Residential Energy Consumption Survey 2005

The Daikin Difference

The inverter compressor in combination with outdoor reset set-point control results in excellent operating COP's.

T_{LW} = water temperature from Altherma to the floor heating loops

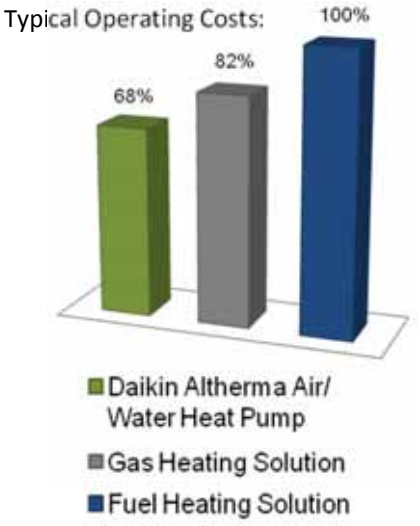


(*) Comparison for the same ambient temperature (36 F)

The Savings Benefit

Typical Savings – 20% or more

The Daikin Altherma heat pump boiler works more efficiently and saves more energy than a traditional heating systems using fossil fuel.



Conditions: Required annual heating energy: 20,000 kWh.
Source: Energy prices based on EUROSTAT statistics [first semester 2007].

Leading Product Warranty

Daikin offers industry leading comprehensive standard warranties for extra peace of mind with your investment. Extended warranties are also available.

LEADING TECHNICAL PERFORMANCE

Split System

Outdoor Unit				ERLQ018BAVJU	ERLQ024BAVJU	ERLQ030BAVJU	ERLQ036BAVJU	ERLQ048BAVJU	ERLQ054BAVJU
 ERLQ018,024,030BA  ERLQ036,048,054BA	Nominal capacity	Heating	Btu/h	19,620	23,340	28,760	38,200	47,800	54,600
		Cooling	Btu/h	24,570	27,840	28,560	47,600	59,100	60,600
	COP			4.25	4.12	3.81	4.55	4.42	4.18
	EER			10.41	9.7	9.33	12.4	10.2	8.9
	Dimensions (Net)	HxWxD	in.	28-9/10 x 32-1/2 x 11-8/10			46 1/6 x 35 7/16 x 12 5/8		
	Operation range	Heating	°F (°C)	-4 - 77 (-20 - 25)			-4 - 95 (-20 - 35)		
		Cooling	°F (°C)	50 - 110 (10 - 43)			50 - 114.8 (10 - 46)		
		DHW	°F (°C)	-4 - 110 (-20 - 43)*			-4 - 109.4 (-20 - 43)		
	Refrigerant Piping	Min	ft.	10	10	10	16.4	16.4	16.4
		Max	ft.	98	98	98	246	246	246
		Height	ft.	66	66	66	98.4	98.4	98.4
	Power Supply			208-230V/1Ph/60Hz					
	MCA		A	18			18		
	MOP		A	20			30		
Indoor Unit				**EKHB_030BA_VJU**			**EKHB_054BA_VJU**		
 EKHB___BA	Dimensions	HxWxD	in.	36 5/16 x 19 3/4 x 14 7/32			36 5/16 x 19 3/4 x 14 7/32		
	Leaving Water Temp Range	Heating	°F (°C)	(59) 77 - 131* ((15) 25 - 55)			(59) 77 - 131* ((15) 25 - 55)		
		Cooling	°F (°C)	41 - 71.6 (5 - 22) (If using EKHBX030)			41 - 71.6 (5 - 22) (If using EKHBX054)		
	Water Volume		gal.	0.18			0.26		
	Water Flow Rate Min./Max		GPM	3.17 / -			4.23/15.32		
	Back Up Heater Power Supply			208-230V/1Ph/60Hz			208-230V/1Ph/60Hz		
	Single Stage Back Up Heater (BA3VJU)	Capacity	kW	3kW			3kW		
		MCA	A	14.3 A			14.3 A		
		MOP	A	20 A			20 A		
	Two Stage Back Up Heater (BA6VJU)	Capacity	kW	6kW			6kW		
		MCA	A	28.6 A			28.6 A		
		MOP	A	30 A			30 A		

Measuring conditions: Heating Ta DB/WB 44.6°F/42.8°F (7/6°C) - LWC 95°F (35°C) (DT=9°F (5°C)
- Cooling Ta 95°F (35°C) - LWE 64.4°F (18°C) (DT=9°F (5°C)
* Booster heater operation from 95°F (35°C) onwards
(1) These conditions are based on under floor heating/cooling application

Optional Fan Coil Unit

	Model Number			EFWT024	EFWT036	EFWT048	EFWT060
 EFWT___A	Nominal Capacity	Heating	Btu/h	25,000	34,800	50,200	60,900
		Cooling (T)	Btu/h	28,600	32,000	42,700	52,400
		Cooling (S)	Btu/h	22,400	25,800	34,700	42,400
	Dimensions	HxWxD	in.	40x20x20	40x23x20	48x21-1/4x28	
	Nominal Air Flow Rate		CFM	800	1200	1600	1825
	EWT Range	Heating	°F (°C)	100 - 125 (37 - 52)			
		Cooling	°F (°C)	42 - 50 (5 - 10)			
	Nominal Water Flow Rate		gpm	4.5	6	8	10
	Nominal Pressure Drop		Ft Hd	5.5	5.5	5.4	7.9
	Electrical	AEVLU (ECM)	Power	120V/1Ph/60Hz			
			MCA	6	10	14	15
			MOP	15	15	15	15
		APVLU (PSC)	Power	120V/1Ph/60Hz			
			MCA	3.8	7.5	10	13.1
			MOP	15	15	15	15
		AEVJU (ECM)	Power	208-230V/1Ph/60Hz			
			MCA	3	4	6	9
			MOP	15	15	15	15
			Elec. Heat Options	5, 10kW	5, 10kW	15,20,25kW	15,20,25kW

Notes:
1. Cooling Capacity is based on 50°F Entering Water Temp and 80°F DB/67°F WB Entering Air Conditions.
2. Heating Capacity is based on 110°F Entering Water Temp and 70°F DB Entering Air Conditions.
3. Refer to detailed capacity tables for further information pertaining to the entire entering water temperature range and for flow rates and pressure drop.
4. Refer to engineering data book for further information on electric heat options.
5. Std efficiency models with PSC motor are available on request.

Features

- State of the art technology.
- Utilize renewable energy to heat your home and your hot water.
- High Efficiency for savings on operating costs.
- Configurable with Fan Coil Units, Fan Convectors, Under Floor Radiant Heating and Low Temperature Radiators.
- Low Sound Levels.
- Advanced Energy Saving Features.
- Outdoor Reset Function as Standard.
- 30-50% reduction in CO_2 emissions.

Optional Solar Kit

				EKSOLHWBAVJU
	Heat Exchanger	Pressure Drop	gal.	3.12
		Max. Inlet Temp	°F (°C)	230 (110)
		Heat Exchange Capacity	W/K	1,400
		Logarithmic Mean Temperature Difference (LMTD)	K	5
	Pump	Number of Speeds		3
		Power Input	W/K	46
	Water Circuit	Piping Connections Diameter	in.	3/4 FBSP
	Ambient Temperature	Max.	°F	95 (35)
		Min.	°F	33.8 (1)
	Power Supply			208-230V/1 ph/60 Hz
	Power Supply Intake			from indoor unit
	Dimensions (Net)	H x W x D	in.	30-1/32 x 12 x 10-1/32

Optional Domestic Hot Water

	Model Number		EKHWS050	EKHWS080
 EKHWS___BA3	Water volume	gal.	52.8	79.2
	Max. water temperature	°F	185	
	Max. water pressure	PSI	145	
	Insulation (Polyurethane foam) Min. thickness	in.	39452	
	Height	in.	45-3/8	63
	Diameter	in.	22-7/8	
	Booster heater	kW	3	
	MCA	A	14.3	
	MOP	A	20	
	Power supply		208-230V/1Ph/60Hz	
	Material inside tank		Stainless steel (DIN 1.4521) - 316L	
	Material outside casing		Epoxy-coated mild steel	

Currently there is no appropriate U.S. recognized testing and rating standard for technology that is of Air to Water design and can solve Hydronic Heating, Domestic Hot Water and Cooling requirements in a single packaged solution. As such, the U.S. Department of Energy (DOE) has issued Daikin with Waivers (Case number: CAC-024, as published from page no. 34,731 in the DOE Federal Register on June 18th, 2010, and Case number CAC-028 as published from page no. 11,438 in the DOE Federal Register on March 2nd, 2011) and assigned an "Alternate Test Procedure" detailing testing requirements to establish full load COP and EER values.

WARNINGS:

- Always use a licensed installer or contractor to install this product. Do not try to install the product yourself. Improper installation can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Use only those parts and accessories supplied or specified by Daikin. Ask a licensed contractor to install those parts and accessories. Use of unauthorized parts and accessories or improper installation of parts and accessories can result in water or refrigerant leakage, electrical shock, fire or explosion.
- Read the User's Manual carefully before using this product. The User's Manual provides important safety instructions and warnings. Be sure to follow these instructions and warnings.

For any inquiries, contact your local Daikin sales office.

JMI-0107

Organization:
DAIKIN INDUSTRIES, LTD.
AIR CONDITIONING MANUFACTURING DIVISION
Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF COMMERCIAL AIR CONDITIONING, HEATING, COOLING, REFRIGERATING EQUIPMENT, COMMERCIAL HEATING EQUIPMENT, RESIDENTIAL AIR CONDITIONING EQUIPMENT, HEAT RECLAIM VENTILATION, AIR CLEANING EQUIPMENT, MARINE TYPE CONTAINER REFRIGERATION UNITS, COMPRESSORS AND VALVES.

JQA-1452

Organization:
DAIKIN INDUSTRIES (THAILAND) LTD.
Scope of Registration:
THE DESIGN/DEVELOPMENT AND MANUFACTURE OF AIR CONDITIONERS AND THE COMPONENTS INCLUDING COMPRESSORS USED FOR THEM.

EC99J2044

All of the Daikin Group's business facilities and subsidiaries in Japan are certified under the ISO 14001 International standard for environmental management.

www.daikindifference.com

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For all equipment installation & application limitations please refer to the specific Engineering Data Books.
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