All-in-one, all year round heating, cooling and domestic hot water supply solution

HEAT PUMP INVERTER R-410A

DAIKIN
absolute comfort
The climate is changing. The effects are visible throughout the world and even the speed of this change seems to be increasing.

Your customer sees and hears this every day.

To limit the consequences of global warming as much as possible, CO₂ emissions must decrease.

Your customer knows this.

The supply of fossil fuels is finite and this leads to continuously higher fuel prices.

Your customer feels this (in his wallet).

Your customer wants a heating solution that uses less energy.

Just like you, your customer realizes it is time to switch to an energy efficient heating system, which produces low CO₂ emissions.

The Daikin Altherma air-to-water heat pump is a durable energy system that transforms unutilized and inexhaustible energy from the outside air into usable heat. Daikin Altherma is best combined with low temperature heating systems and aims to achieve optimal comfort. Moreover, Daikin Altherma is easy to install.
3 IN 1 SYSTEM

FOR NEW CONSTRUCTION & RENOVATION

- MORE COMFORT
- LOW ENERGY CONSUMPTION
- FEWER CO₂ EMISSIONS

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DOMESTIC HOT WATER PRODUCTION
Daikin Altherma is an innovative system that heats, produces domestic hot water and can even cool spaces. Daikin Altherma offers your customer maximum comfort the whole year through.

These heat pumps are also an interesting alternative for classic gas or fuel oil heating as they offer your customers unique benefits:

- They use renewable energy sources (such as outside air)
- They deliver considerable savings in energy
- They deliver a significant contribution in the fight against CO₂ emissions
- They can provide heating, cooling and domestic hot water

**ENERGY EFFICIENT OPERATION**

The air-to-water heat pump from Daikin uses a sustainable energy source. In fact, it extracts heat from the outside air. The system consists of a closed circuit containing R-410A refrigerant. A thermodynamic cycle is created through evaporation, condensation, compression and expansion. A heat pump “pumps” heat from a low to a high temperature level. The heat raised is transferred to the water distribution system (under floor heating, low temperature radiators and/or fan coil units) in the home via a heat exchanger.

Depending on the model and the conditions, a Daikin Altherma air-to-water heat pump delivers between 3 and 5 kWh of usable heat for every 1 kWh of electricity it uses. That’s a great ratio from 3:1 - 5:1!

### 1. THE 3 IN 1 GUARANTEE FOR ABSOLUTE COMFORT

Renovating your heating system and wanting to reduce your energy costs? Interested in a heating solution with lower energy costs? The heat pump is currently the most efficient indoor comfort system on the market: a cutting-edge technology with clear benefits for you and the environment.

**DAIKIN HEAT PUMP EXPERIENCE**

Daikin has more than 50 years of experience with heat pumps, and supplies more than one million of them to homes, shops and offices each year. This success is not just a quirk of fate: Daikin has always been at the cutting edge of technology and its goal is to provide you with turn-key comfort. Only a market leader can guarantee you this level of service and quality control!

**HIGH EFFICIENCY MEANS LOW ENERGY COSTS**

Heating system efficiency is measured using the Coefficient of Performance (COP), which is the ratio of heat produced to energy consumed.
A GOOD DESIGN IN JUST 3 STEPS

STEP 1
Calculation of heat losses
(Transmission and ventilation losses)

STEP 2
Selection of Daikin Altherma based on heat loss calculation and preferably for a low water temperature application (104°F - 95°F)
Tip: Use the available Daikin selection and software tools (see page 27)

STEP 3
Selection of heating terminal unit solution, after choosing Daikin Altherma unit, with a ΔT = 5
Tip: Remember to consider the pump characteristic of the provided circulator!

DAIKIN ALTHERMA SYSTEM CONFIGURATIONS

**MONO-VALENT**
- Uses heat pump energy only
- Ideal for new construction
- 100% heat pump coverage: selection of bigger capacity and higher investment cost heat pump

**MONO-ENERGETIC**
- Uses heat pump energy with backup electric heater
- Ideal for new construction
- Best balance between investment cost and running cost, results in lowest lifecycle cost

**BI-VALENT**
- Uses heat pump energy with auxiliary boiler
- Ideal for refurbishment/upgrade

**SPACE HEATING WITH AN AUXILIARY BOILER**
1. Space heating application by either the Daikin Altherma Hydrobox or by an auxiliary boiler connected in the system.
2. An auxiliary contact decides whether the Hydrobox or the boiler will operate.
3. The auxiliary contact can be an outdoor temperature thermostat, an electricity tariff contact, a manually operated contact, etc...
4. Domestic hot water in such an application is always produced by the system tank connected to the Hydrobox, including when the boiler is in operation for space heating.
Daikin offers you the choice between a Daikin Altherma system with an outdoor unit and indoor unit, or a Daikin Altherma Monobloc System, in which the hydrobox components are located within the outdoor unit.

| **DAIKIN ALTHERMA**  
| **SPLIT TYPE** |
| --- | --- |
| Application | Heating and (optional) cooling (+ domestic hot water) |
| Heat pump type | Outdoor (compressor) unit + Indoor (hydronic parts) unit |
| R-410A refrigerant piping | Between outdoor unit and indoor unit |
| H₂O piping | Between indoor unit and indoor heating appliances |
| Installer’s advantages | No extra insulation of H₂O piping required to protect from freezing up |

The Split system can be combined with
- Under floor heating
- Fan coil units
- Low temperature radiators to provide your customers the comfort they require.

In addition, the Split system can be connected to
- A domestic hot water tank to supply your customer’s hot water needs
- Solar collectors, with optional solar kit, to compliment the production of hot water
- A room thermostat, to regulate the ideal temperature easily, quickly and conveniently.
### DAIKIN ALTHERMA MONOBLOC

<table>
<thead>
<tr>
<th>Application</th>
<th>Heating and (optional) cooling (+ domestic hot water)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat pump type</td>
<td>Outdoor unit only (compressor and hydronic parts combined)</td>
</tr>
<tr>
<td>R-410A refrigerant piping</td>
<td>Inside outdoor unit</td>
</tr>
<tr>
<td>H₂O piping</td>
<td>Between outdoor unit and heating terminal units</td>
</tr>
<tr>
<td>Installer’s advantages</td>
<td>Only H₂O piping needed to install the system</td>
</tr>
</tbody>
</table>

The monobloc system can be combined with:
- Under floor heating
- Fan coil units
- Low temperature radiators to provide your customer the comfort they require.

In addition, the monobloc system can be connected to:
- A domestic hot water tank to supply your customer’s hot water needs
- Solar collectors, with optional solar kit, to compliment the production of hot water
- A room thermostat, to regulate the ideal temperature easily, quickly and conveniently.
**THE BASICS**

The system consists of 5 components which together to provide the ideal comfort and water temperature.

1A/ OUTDOOR UNIT:
AN EFFICIENT USE OF ENERGY FROM THE AIR

Daikin Altherma uses a natural source of energy. The outdoor unit extracts heat from the outside air and transfers it inside through refrigerant piping to supply heating. The compact outdoor unit is easily installed and, as no drilling or excavation work is required, it can also be installed in condos and apartments.

1B/ HYDROBOX:
THE HEART OF THE DAIKIN ALTHERMA SYSTEM

The hydrobox heats the water that circulates through low temperature radiators, floor heating systems or fan coil units and also provides domestic hot water. If you opt for the combination of heating and cooling, then the hydrobox can also reverse the cycle to provide lower water temperatures and thus cooling to the home.

2/ DOMESTIC HOT WATER TANK:
FOR LOW ENERGY CONSUMPTION

As for your domestic hot water, Daikin Altherma is just as clever. The unique lay-out and special placement of the system components maximize energy efficiency. The water inside the storage tank is primarily warmed up by thermal energy from the outside air, thanks to a heat exchanger connected to the heat pump. However, an additional electrical heating element in the domestic water tank can take care of extra heat required in the shower, tub or sink. At necessary intervals the water is automatically heated to 158°F or more to prevent the risk of bacteria growth. With Daikin Altherma, delightfully warm and perfectly safe water can be enjoyed at all times. Depending on the daily consumption of hot water, Daikin Altherma domestic hot water tanks are available in two different sizes.

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1A / OUTDOOR UNIT:
**Fan Coil Unit (field supply)**

1B / HYDROBOX:
**Solar pump station with solar kit option (field supply)**

2 / DOMESTIC HOT WATER TANK:
**Low temperature radiator (field supply)**

4 / Solar kit

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3/ MONOBLOC OUTDOOR UNIT: ALL IN ONE
In addition to Daikin Altherma Split type systems, Daikin has a monobloc version in which the hydrobox components are located within the outdoor unit. In this new system, the water pipes, rather than refrigerant lines, run indoors from the outdoor unit, making installation much quicker and easier for the installer.

4/ SOLAR KIT
The solar kit provides the transfer of solar heat to the Daikin Altherma hot water tank via an external heat exchanger. In contrast to tanks with two heat exchangers, this system allows the entire content of the tank to be efficiently heated with solar heat and, if necessary, with heat pump energy.

5/ ROOM THERMOSTAT
With the wired room thermostat, the ideal temperature can be easily, quickly and conveniently regulated.
3. TECHNICALLY

1 - DAIKIN ALTHERMA SPLIT TYPE AIR-TO-WATER HEAT PUMP

THE OUTDOOR UNIT

- Compact, weather-resistant and easy to install
- Contains an inverter controlled compressor for energy efficiency and precise temperature regulation
- Heat pump operation range: heating and domestic hot water to -4°F outside temperature

HEAT EXCHANGER

ANTI-CORROSION TREATMENT

As standard, the heat exchanger in the outdoor unit is provided with an anti-corrosion treatment. This treatment guarantees and noticeably increases the resistance against acid rain and salt corrosion.

Typical Daikin heat exchanger

Hydrophilic layer
Aluminium
Corrosion-resistant acrylate resin

SUPER PERFORMANCE THANKS TO THE INVERTER PRINCIPLE

The coefficient of performance (COP) of the Daikin Altherma heat pump is also largely attributable to the Daikin inverter principle. An integrated frequency-converter adjusts the rotational speed of the compressor to suit the heating demand. Therefore, the system seldom operates at full capacity and your customer only pays for the energy which they actually need.

Heating operation:

Temperature / Power input

Set temp.

Slow start

Temperature remains stable

System without Inverter

System with Inverter

Time

HIGH EFFICIENCY COMPRESSORS:

The scroll-compressors provided are designed as a compact, robust, low-noise device to guarantee optimal operational reliability (no valves and built-in swing-link coupling) and efficiency (through a low initial flow and a constant compression ratio).
HYDROBOX

- Available in two versions: EKHBH for heating only, EKHBX for heating and cooling
- Built-in electric back-up heater for additional heating during extremely cold outdoor temperatures or as back-up in case of problems with the outdoor unit
- 2 shut-off valves to assemble the water outlet and inlet
- Compact and easy to install: all components are pre-assembled, all parts are easy to reach for maintenance. Wall-mounting is comparable to a traditional gas heater.

1. Heat exchanger
2. Expansion tank (2.64 gal.)
3. Circulator
4. Tank with back-up heating
5. Air purge valve
6. Refrigerant fluid connection
7. Refrigerant gas connection
8. Water inlet connection
9. Water outlet connection
10. Pressure gauge (water circuit)
11. Water filter
12. Pressure relief valve
13. User interface
14. Switch box
15. Flow switch

EXTRA POSSIBILITIES THANKS TO THE INDOOR UNIT…

Heating and Cooling

If you choose Daikin Altherma with an indoor unit EKHBX, it can not only heat the house, but also cool it. The heat pump is then equipped with a reversible 4-way valve, whereby the refrigeration cycle is reversed and heat is removed from the rooms. The indoor unit can cool rooms via under floor cooling or fan coil units.

Set temperature limits

To prevent incorrect manual adjustments, temperature limits can be implemented for both cooling and heating. With under floor heating, for example, it is important that the temperature of the water is controlled to the type of floor element. To prevent condensation problems, the temperature for floor cooling can never be lower than 64.4°F. For fan coil units, the water temperature can be allowed to decrease to 41°F.
THE USER INTERFACE

With the easy to reach digital user interface in the indoor unit, controlling the Daikin Altherma system is also simple for your customer. The display offers a great deal of useful information:

- Day of the week
- Time
- Operating mode
  (heating or cooling, heating domestic hot water, low-noise operating outdoor unit)
- Room thermostat
- Inspection
- Compressor operation
- Pump operation
- Back-up operation
- Booster heating operation
  (in the hot water tank)
- Error codes for alarm
- Temperature
  (outdoor temperature, temperature in hot water tank, leaving water temperature at indoor unit exit)

DID YOU KNOW…

Your customer can select a maximum of five time periods each day during which the following functions will or will not be activated:

- Low-noise operation of the outdoor unit
- Electric booster heater in the hot water tank
- Heating of the domestic water
- Reduction of the water temperature

The five time periods per function are repeated daily. Your customer can still manually adjust the system when he stays home unexpectedly or stays up later. These settings are automatically switched off at the next programmed event.
2 - DAIKIN ALTHERMA MONOBLOC AIR-TO-WATER HEAT PUMP

- All hydronic parts are located within the outdoor unit
- H₂O piping between outdoor unit and indoor heating apparatus

1. High efficiency compressor
2. Expansion tank
3. Tank with back up heating
4. Pressure gauge (water circuit)
5. Refrigerant connection

**Freeze protection of hydronic parts**
In order to protect the water pipes from freezing up during winter, insulation is provided for all hydronic components and special software has been applied to activate the pump and back-up heater if necessary. This prevents the water temperature from dropping below freezing point and can minimize the need for the addition of glycol to the water pipes.

**The Daikin Altherma monobloc is available in different versions**
- heating only or heating and cooling
- with bottom plate heater
- single phase
- 35MBH, 48MBH, or 54MBH

**Built-in electric back-up heater** for additional heating during extremely cold outdoor temperatures. The Daikin Altherma Monobloc is standard equipped with a 6 kW back-up heater, which can be adjusted to 3 kW.

If necessary, an “in line” back-up heater of 6 kW can be mounted indoors (also adjustable to 3 kW or 3.5 kW)

**The scroll-compressors** provided are designed as a compact, robust, low-noise device to guarantee optimal operational reliability (no valves and built-in swing-link coupling) and efficiency (through a low initial flow and a constant compression ratio).
3 - THE DOMESTIC HOT WATER TANK

- Available in 2 capacities: 50 and 80 gallons for floor mounted installation.
- Stainless steel design.
- 1 37/64” cfc-free insulation material (polyurethane).
- Contains 2 heating elements: a heat exchanger at the bottom where the hot water from the hydrobox circulates and an extra 3 kW electric heater at the top.
- A thermistor in the hot water tank controls a 3-way valve and/or booster heater via the hydrobox.

1. Field supply
2. Hot water connection
3. Pressure relief valve connection
4. Pressure relief valve (field supply)
5. Electrical box
6. Electrical box lid
7. Recirculation hole
8. Thermistor socket
9. Flow inlet connection
10. Heat exchanger coil
11. Return outlet connection
12. Cold water inlet
13. Threaded thermistor hole for use with solar kit option. (Refer to the Installation manual EKSOHWWBAVJU).
MULTIFUNCTIONAL HOT WATER TANK …

■ Stainless steel

Daikin offers a tank made of stainless steel equipped with a sacrificial rod to protect the tank against corrosion.

■ Anti-bacteria function

To prevent the development of bacteria, the hot water tank is equipped with an anti-bacteria function. You can set up the program so the water is heated to a specific temperature (standard setting = 158°F) at a set time on one or more days of the week.

■ Flexible control

It is possible to set “priority setting” for the production of domestic hot water. In this way the customer has domestic hot water available at any time of the day.

The heating of the domestic hot water can also be set up according to the night tariff. Another opportunity for rational energy consumption.

■ Regulating switch-on and shut-off temperatures

You personally set the minimum and maximum temperature when the water in the tank must be heated by the heat pump for the customer.

■ Delaying booster heater switch-off

To prevent the booster heater from switching on and off too often, you can allow the system to switch off as soon as the temperature reaches a maximum of 39°F higher than the set temperature.

■ Allowing back-up heater and booster heater to work separately

Programming the system to prevent the simultaneous operation of the back-up heater and the booster heater is also possible. An interesting possibility for homes with a limited current amp load!

■ No natural gas or fuel oil connection or exhaust fume channel required.

DID YOU KNOW…

Your customers with a solar boiler can enjoy wonderful hot water at any time, even when the sun is not shining? An integrated re-heater is included in the system to help the sun on cloudy days.
4 - SOLAR KIT

SOLAR THERMAL BOILER

Averaged over an entire year, the sun delivers half of the energy we need to bring our domestic water up to the desired temperature for free. Your customer can use this solar energy by connecting a solar boiler to the Daikin Altherma system. A solar boiler is a thermal solar-energy system, whereby solar rays are transformed into heat. The heat is then stored in a water supply tank.

SOLAR KIT

The solar kit provides the transfer of solar heat to the Daikin Altherma hot water tank via an external heat exchanger. In contrast to tanks with two heat exchangers, this system allows the entire content of the tank to be efficiently heated with solar heat and, if necessary, with heat pump energy.

Daikin Altherma solar boiler assembly

- Solar collector (to be supplied by the installer)
- Plumbing network and solar pump station (to be supplied by the installer)
- Supply tank: standard Daikin Altherma domestic hot water tank
- Solar kit
- Re-heater (Daikin Altherma heat pump unit, which also provides the home with heating)
5 - THE ROOM THERMOSTAT

The large LCD screen on the room thermostat indicates all the necessary information regarding the setting of the Daikin Altherma system in a blink of an eye. The user can also easily navigate between the different menus whose most common functions and modes include:

- Setting the temperature of the room based on measurements from the built-in sensor
- Cooling and heating mode
- Off function (with integrated frost-protection function)
- Vacation function mode
- Comfort and reduced function modes
- Time (day and month)
- Programmable weekly timer with 2 standard and 5 pre-set programs
- Keylock function
- Setting limits. The installer can change the upper and lower limits

<table>
<thead>
<tr>
<th>Functions</th>
<th>Wired room thermostat EKRTWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating only</td>
<td>✓</td>
</tr>
<tr>
<td>Heating and cooling</td>
<td>✓</td>
</tr>
<tr>
<td>Comfort function mode</td>
<td>✓</td>
</tr>
<tr>
<td>Reduced function mode</td>
<td>✓</td>
</tr>
<tr>
<td>Scheduled function mode</td>
<td>✓</td>
</tr>
<tr>
<td>Number of setpoint changes</td>
<td>12/day</td>
</tr>
<tr>
<td>Holiday function mode</td>
<td>✓</td>
</tr>
<tr>
<td>Off function</td>
<td>✓</td>
</tr>
<tr>
<td>Setpoint limitation</td>
<td>✓</td>
</tr>
<tr>
<td>Keylock function</td>
<td>✓</td>
</tr>
</tbody>
</table>

DID YOU KNOW THAT...

Daikin has set up a number of monitoring sites (in Europe, Oregon, New Hampshire, Alaska, ...), where Daikin Altherma has been tested under totally different climate conditions. High satisfaction has been achieved with increased comfort, stable indoor temperature, low energy consumption and hot water always available... whatever the weather conditions at the monitoring site.
Control customized to your customer

The water temperature changes in function with the outside temperature so that your customer can enjoy a stable level of heating at any time. As the installer, you set up the system according to the desires of your customer. You input four temperatures to determine the “heating curve” and in doing so, you perfectly tune the Daikin Altherma system to the type of home.

Automatic re-start after power interruption

In the event of a power interruption of up to two hours, the system automatically resumes with the previously set parameters.

Quiet operation

The outdoor unit makes hardly any noise thereby leaving your customer’s (and the neighbor’s) peace and quiet undisturbed. You can even set the outdoor unit to produce 10dB(A) less noise during the night.

Electric back-up heating

Every Daikin Altherma system is equipped with a back-up heater (heating capacity of 3 or 6 kW). This unit can be used for supplemental heating during extremely cold outdoor temperatures or as a back-up in case of any problems with the outdoor unit. Your customer can then enjoy comfortable heating at any moment.

The operation of the back-up heater can be coupled to the outside temperature. The back-up heater will then only operate when outside temperatures are extremely low.

DID YOU KNOW…

with a Daikin Altherma heat pump, the temperature of the domestic water can go up to 185°F, the temperature of the hot water for heating ranges between 59°F and 131°F and the temperature of the cold water for cooling between 41°F and 72°F.
Customers today are, more than ever, conscious of the cost of heating.
There is not only the increasing cost of fuel oil and natural gas, but also the limited supply of fossil fuels and the problem of CO₂ emissions.
Energy efficient heating solutions are gaining in popularity.
Daikin Altherma debuted in Europe in 2006 and since then has demonstrated significant economical advantages over traditional systems as highlighted on the following graphics.

1. 66 To 80% Additional Heat
A heat pump boiler works more efficiently and saves more energy than a traditional heating system using fossil fuel. Daikin Altherma generates at least 3 to 5 kW of additional heat per 1kW of electricity used. Talk about a good investment.

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

2. PER (primary energy ratio)
This is the relationship between the usable energy generated and the primary energy consumed, with consideration for the electricity production efficiency and the electricity distribution.

**LOW PRIMARY ENERGY CONSUMPTION**
Conditions: For combustion systems, the PER indicates the overall efficiency of the system, while for heat pumps it is equal to the seasonal performance factor multiplied by the electricity production efficiency which on average is 0.4 in the European Union.

**DAIKIN ALTHERMA aIR / WATER HEAT PUMP BOILER**
Daikin Altherma produces no direct CO₂ emissions, so you personally contribute to a better environment. The system does use electricity, but even without renewable electricity the CO₂ emissions are still much lower than boilers that use fossil fuels.

**DID YOU KNOW…**
A small amount of ventilation in highly insulated houses provides for a healthy interior environment. The principle is simple: fresh air enters and contaminated air is removed.

In total, there are 4 ways in which air can be introduced and removed. But there is only one that is energy efficient, and that is ventilation with heat recovery. A maximum amount of energy is recuperated from the contaminated air and transferred to the fresh air.

By equipping the home with a ventilation system that includes heat recuperation, the heating requirement decreases and the quality of the home increases.
2. Application “heating” and “production of domestic hot water”
The temperature in each room is regulated by a valve on every water circuit. Hot water for domestic use is delivered by the domestic hot water tank connected to the indoor unit.
3. Application “heating/cooling” via room thermostat and “production of domestic hot water”
Heating using under floor heating loops and fan coil units. Cooling using only the fan coil units. Hot water for domestic use is delivered by the domestic hot water tank connected to the indoor unit.

4. Bi-valent application

1. Outdoor unit
2. Hydrobox
3. Heat exchanger
4. Pump
5. Valve
6. Manifold (field supply)
7. Valve
8. Motorized 3-way valve
9. Booster heater
10. Heat exchanger spiral
11. Tank for domestic hot water
12. Alternate heating device (field supply)
13. Aquastat (field supply)
14. Valve (field supply)
15. One-way valve (field supply)

This text is accompanied by a diagram showing the technical specifications and components involved in the bi-valent application system.
DAIKIN ALTHERMA MONOBLOC APPLICATIONS

1. Application “heating only” with a room thermostat connected to the indoor unit

![Diagram of heating only system]

- Unit
- Heat exchanger
- Pump
- Shut-off valve
- Collector (field supply)

FHL1...3 Floor heating loop (field supply)

T Room thermostat (field supply)

I User interface

2. Application “heating” and “production of domestic hot water”

The temperature in each room is regulated by a valve on every water circuit. Hot water for domestic use is delivered by the domestic hot water tank connected to the unit.

![Diagram of heating and domestic hot water system]

- Unit
- Heat exchanger
- Pump
- Shut-off valve
- Collector (field supply)

Motorized 3-way valve

By-pass valve (field supply)

Booster heater

Individual room thermostat (field supply)

Individual motorized valve to control loop

FHL1 (field supply)

User interface
3. Application “heating/cooling” via room thermostat and “production of domestic hot water”
Heating using under floor heating loops and fan coil units. Cooling using only the fan coil units. Hot water for domestic use is delivered by the domestic hot water tank connected to the unit.

4. Application “heating/cooling” without a room thermostat
but with a heating only room thermostat controlling the underfloor heating and a cooling/heating thermostat controlling the fan coil units.
### HYDROBOX

<table>
<thead>
<tr>
<th>Function</th>
<th>EKHBH054B8A3VJU</th>
<th>EKHBX054B8A3VJU</th>
<th>EKHBH054B6VJU</th>
<th>EKHBX054B6VJU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leaving water temperature range</strong></td>
<td><strong>Heating only</strong></td>
<td><strong>Reversible</strong></td>
<td><strong>Heating only</strong></td>
<td><strong>Reversible</strong></td>
</tr>
<tr>
<td>Heating °F</td>
<td>77 - 131*</td>
<td>-</td>
<td>77 - 131*</td>
<td>-</td>
</tr>
<tr>
<td>Cooling °F</td>
<td>-</td>
<td>-</td>
<td>41 - 71.6</td>
<td>41 - 71.6</td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>Epoxy polyester painted galvanized steel</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Neutral white (RAL 9010)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Drain valve</strong></td>
<td>yes</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Dimensions (Net)</strong></td>
<td>HxWxD in.</td>
<td>36 5/16 x 19 3/4 x 14 7/32</td>
<td>36 5/16 x 19 3/4 x 14 7/32</td>
<td>36 5/16 x 19 3/4 x 14 7/32</td>
</tr>
<tr>
<td><strong>Weight (Net)</strong></td>
<td>lbs.</td>
<td>123</td>
<td>123</td>
<td>123</td>
</tr>
</tbody>
</table>

**When connected to all outdoor units**

<table>
<thead>
<tr>
<th>Main components</th>
<th>Expansion vessel</th>
<th>Volume gal.</th>
<th>2.64</th>
<th>2.64</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water circuit</strong></td>
<td>Max. water pressure PSI</td>
<td>43.5</td>
<td>43.5</td>
<td>43.5</td>
</tr>
<tr>
<td></td>
<td>Pre Pressure PSI</td>
<td>14.5</td>
<td>14.5</td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td>Piping connections diameter in.</td>
<td>1 1/4 Male BSP</td>
<td>1 1/4 Male BSP</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Piping in.</td>
<td>1 1/4</td>
<td>1 1/4</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Safety valve PSI</td>
<td>43.5</td>
<td>43.5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total water volume gal.</td>
<td>1.45</td>
<td>1.45</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Gas side diameter in.</td>
<td>ø 5/8</td>
<td>ø 5/8</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Liquid side diameter in.</td>
<td>ø 3/8</td>
<td>ø 3/8</td>
<td>-</td>
</tr>
<tr>
<td><strong>Operation range</strong></td>
<td>Waterside Heating °F</td>
<td>59 - 131</td>
<td>59 - 131</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Cooling °F</td>
<td>41 - 71.6</td>
<td>41 - 71.6</td>
<td>-</td>
</tr>
</tbody>
</table>

**When connected to ERLQ036**

<table>
<thead>
<tr>
<th>Main components</th>
<th>Pump</th>
<th>Nominal ESP unit</th>
<th>Heating PSI</th>
<th>7.6</th>
<th>7.6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cooling PSI</td>
<td>-</td>
<td>8.1</td>
<td>8.1</td>
</tr>
<tr>
<td></td>
<td>Water volume gal.</td>
<td>0.26</td>
<td>0.26</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Water flow rate Min./Max GPM</td>
<td>4.23/15.32</td>
<td>4.23/15.32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Water flow rate Nom. Heating GPM</td>
<td>8.48</td>
<td>8.48</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooling GPM</td>
<td>7.58</td>
<td>7.58</td>
<td>-</td>
</tr>
</tbody>
</table>

**When connected to ERLQ048**

<table>
<thead>
<tr>
<th>Main components</th>
<th>Pump</th>
<th>Nominal ESP unit</th>
<th>Heating PSI</th>
<th>6.3</th>
<th>6.3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cooling PSI</td>
<td>-</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td></td>
<td>Water volume gal.</td>
<td>0.26</td>
<td>0.26</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Water flow rate Min./Max GPM</td>
<td>4.23/15.32</td>
<td>4.23/15.32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Water flow rate Nom. Heating GPM</td>
<td>10.59</td>
<td>10.59</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooling GPM</td>
<td>9.46</td>
<td>9.46</td>
<td>-</td>
</tr>
</tbody>
</table>

**When connected to ERLQ054**

<table>
<thead>
<tr>
<th>Main components</th>
<th>Water side Heat exchanger</th>
<th>Water volume gal.</th>
<th>0.26</th>
<th>0.26</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Water flow rate Min./Max GPM</td>
<td>4.23/15.32</td>
<td>4.23/15.32</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Water flow rate Nom. Heating GPM</td>
<td>12.13</td>
<td>12.13</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooling GPM</td>
<td>9.93</td>
<td>9.93</td>
</tr>
</tbody>
</table>

*Back up heater operation between 59°F and 77°F*
## OUTDOOR UNIT

### HEATING ONLY

<table>
<thead>
<tr>
<th></th>
<th>ERLQ036BAVJU</th>
<th>ERLQ048BAVJU</th>
<th>ERLQ054BAVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal capacity Heating MBh</td>
<td>38.2</td>
<td>47.8</td>
<td>54.6</td>
</tr>
<tr>
<td>Cooling MBh</td>
<td>47.6</td>
<td>59.1</td>
<td>60.6</td>
</tr>
<tr>
<td>Nominal input Heating kW</td>
<td>2.58</td>
<td>3.30</td>
<td>3.97</td>
</tr>
<tr>
<td>Cooling kW</td>
<td>3.91</td>
<td>5.94</td>
<td>6.94</td>
</tr>
<tr>
<td>COP</td>
<td>4.34</td>
<td>4.24</td>
<td>4.03</td>
</tr>
<tr>
<td>EER</td>
<td>12.17</td>
<td>9.95</td>
<td>8.73</td>
</tr>
</tbody>
</table>

### OUTDOOR UNIT

<table>
<thead>
<tr>
<th></th>
<th>ERLQ036BAVJU</th>
<th>ERLQ048BAVJU</th>
<th>ERLQ054BAVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal capacity Heating MBh</td>
<td>38.2</td>
<td>47.8</td>
<td>54.6</td>
</tr>
<tr>
<td>Cooling MBh</td>
<td>47.6</td>
<td>59.1</td>
<td>60.6</td>
</tr>
<tr>
<td>Nominal input Heating kW</td>
<td>2.58</td>
<td>3.30</td>
<td>3.97</td>
</tr>
<tr>
<td>Cooling kW</td>
<td>3.91</td>
<td>5.94</td>
<td>6.94</td>
</tr>
<tr>
<td>COP</td>
<td>4.34</td>
<td>4.24</td>
<td>4.03</td>
</tr>
<tr>
<td>EER</td>
<td>12.17</td>
<td>9.95</td>
<td>8.73</td>
</tr>
</tbody>
</table>

### TECHNICAL SPECIFICATIONS

### MONOBLOC

<table>
<thead>
<tr>
<th></th>
<th>EDLQ036BAVJU</th>
<th>EDLQ048BAVJU</th>
<th>EDLQ054BAVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refrigerant charge R-410A lbs.</td>
<td>6.5</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Power supply</td>
<td>208-230V/1Ph/60Hz</td>
<td>208-230V/1Ph/60Hz</td>
<td></td>
</tr>
<tr>
<td>Recommended fuses</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Dimensions (Net)</td>
<td>46 1/16 x 35 7/16 x 12 5/8</td>
<td>46 1/16 x 35 7/16 x 12 5/8</td>
<td>46 1/16 x 35 7/16 x 12 5/8</td>
</tr>
<tr>
<td>Weight (Net)</td>
<td>227</td>
<td>227</td>
<td>227</td>
</tr>
</tbody>
</table>

Measuring conditions: Heating Ta DB/WB 44.6°F/42.8°F - LWC 95°F (DT=41°F) - Cooling Ta 95°F - LWE64.4°F (DT=41°F) 
* Booster heater operation from 95°F onwards 
(1) These conditions are based on under floor heating/cooling application
DOMESTIC HOT WATER TANK

<table>
<thead>
<tr>
<th>Feature</th>
<th>EKHW505BA3VJU</th>
<th>EKHW5080BA3VJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water volume</td>
<td>gal. 52.8</td>
<td>79.2</td>
</tr>
<tr>
<td>Max. water temperature</td>
<td>°F 185</td>
<td></td>
</tr>
<tr>
<td>Max. water pressure</td>
<td>PSI 145</td>
<td></td>
</tr>
<tr>
<td>Insulation (Polyurethane foam) Min. thickness</td>
<td>in. 1 37/64</td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>in. 45 1/32</td>
<td>63</td>
</tr>
<tr>
<td>Diameter</td>
<td>in. 22 1/16</td>
<td></td>
</tr>
<tr>
<td>Booster heater</td>
<td>kW 3</td>
<td></td>
</tr>
<tr>
<td>Piping connections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water inlet H/E Diameter</td>
<td>in. ø 3/4 FBSP</td>
<td></td>
</tr>
<tr>
<td>Water outlet H/E Diameter</td>
<td>in. ø 3/4 FBSP</td>
<td></td>
</tr>
<tr>
<td>Cold water in Diameter</td>
<td>in. ø 3/4 FBSP</td>
<td></td>
</tr>
<tr>
<td>Hot water out Diameter</td>
<td>in. ø 3/4 FBSP</td>
<td></td>
</tr>
<tr>
<td>Nominal running current</td>
<td>A 13</td>
<td></td>
</tr>
<tr>
<td>Fuse</td>
<td>A 20</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>208-230V/1Ph/60Hz</td>
<td></td>
</tr>
<tr>
<td>Material inside tank</td>
<td>Stainless steel (DIN 1.4521)</td>
<td></td>
</tr>
<tr>
<td>Material outside casing</td>
<td>Epoxy-coated mild steel</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Neutral white</td>
<td></td>
</tr>
<tr>
<td>Dimensions (Net) HxWxD</td>
<td>in. 45 9/32 x 22 27/32 x 22 27/32</td>
<td>63 x 22 27/32 x 22 27/32</td>
</tr>
<tr>
<td>Empty weight</td>
<td>lbs. 99</td>
<td>129.8</td>
</tr>
</tbody>
</table>

SOLAR KIT

<table>
<thead>
<tr>
<th>Feature</th>
<th>EKSL0HWBAVJU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat exchanger</td>
<td>pressure drop psi 3.12</td>
</tr>
<tr>
<td></td>
<td>max.inlet temp °F 230</td>
</tr>
<tr>
<td></td>
<td>heat exchange capacity W/K 1,400</td>
</tr>
<tr>
<td></td>
<td>Logarithmic mean temperature difference (LMTD) K 5</td>
</tr>
<tr>
<td>Pump</td>
<td>Number of speeds 3</td>
</tr>
<tr>
<td></td>
<td>Power input W 46</td>
</tr>
<tr>
<td>Water circuit</td>
<td>Piping connections diameter in. 3/4 FBSP</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>max. °F 95</td>
</tr>
<tr>
<td></td>
<td>min. °F 33.8</td>
</tr>
<tr>
<td>Power supply</td>
<td>208-230V/1Ph/60Hz</td>
</tr>
<tr>
<td>Power supply intake</td>
<td>from indoor unit</td>
</tr>
<tr>
<td>Dimensions (Net) HxWxD</td>
<td>in. 30 1/32x12x10 1/32</td>
</tr>
</tbody>
</table>

ROOM THERMOSTAT

<table>
<thead>
<tr>
<th>Feature</th>
<th>EKRTWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>Storage °F -4 - 140</td>
</tr>
<tr>
<td></td>
<td>Operation °F 32 - 122</td>
</tr>
<tr>
<td>Temperature setpoint range</td>
<td>Heating °F 39.2 - 98.6</td>
</tr>
<tr>
<td></td>
<td>Cooling °F 39.2 - 98.6</td>
</tr>
<tr>
<td>Clock</td>
<td>yes</td>
</tr>
<tr>
<td>Regulation function</td>
<td>proportional band</td>
</tr>
<tr>
<td>Dimensions (Net) HxWxD</td>
<td>in. 87x125x34</td>
</tr>
<tr>
<td>Weight (Net)</td>
<td>lbs. 0.47</td>
</tr>
</tbody>
</table>
Daikin Altherma’s “simulator” software program allows quick and easy indication of the benefits of a Daikin Altherma system.

By specifying a number of parameters such as the location, the surface area to be heated, the required heating capacity, the entry and exit water temperatures of the distribution network and the local energy prices, the program displays the following simulation details.

1. Material list with technical specification
2. Simulation graphics:
   a) Required and available heating capacity with indication of the SPF (or Seasonal COP)
   b) Duration of the heating period as a function of the outside temperature
   c) The annual energy cost compared with a heating system using gas or fuel oil
   d) The annual amount CO₂ emitted in tonnes compared with a heating system using gas or fuel oil
   e) The monthly energy consumption in kWh
   f) The monthly energy cost in dollars
   g) The total amount of thermal energy in kWh as a function of the outside temperature
   h) The radiated heat per ft² (in Btu/ft²) per month

All data is collected in a separate report. If you are interested in this software, contact your local Daikin Altherma distributor.
**WARNINGS**

- Always use a licensed installer or contractor to install this product. 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.


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