



## Hybrid Twin Compressor Heat Pumps

### Features and Benefits

- **Low carbon emissions**
- **Ease of installation**
- **High DHW temperature**
- **UK manufactured**
- **Access to industry grants**
- **Available in 15kW and 21kW**
- **Single phase**



### Product Description

The [Kensa Hybrid twin compressor range](#) of heat pumps are designed to provide space heating and domestic hot water production for well insulated buildings. Kensa heat pumps use low grade renewable energy from the ground and concentrates this to a higher temperature to provide heat into a buildings heating system.

The Hybrid units use standard (R407c) refrigerant in one compressor and high temperature (R134a) in the second. This allows the compressors to work together in heating mode to a chosen set point, 35-50°C.

In DHW mode the high temperature compressor can provide the additional 15°C to the hot water cylinder. This ensures customer satisfaction with hot water temperatures, provides additional hot water volume to the tap, and reduces the need for any direct electric top up in hot water mode.

As a UK manufacturer, Kensa offers a high quality product which is supported by industry leading technical support to ensure the application engineering is performed to the highest standard.



### Hybrid Twin Compressor Heat Pumps

	Single Phase	
Nominal thermal kW rating	15	21
Part Number	M150-T1H	M210-T1H
MCS Approved	BBA0055/32	BBA0055/33
<b>Performance data—rated heating output at B0/W35 BS EN14511</b>		
Power consumption	3.9	5.3
Coefficient of performance*	4.15	4.14
Immersion heater output	Kensa heat pumps do not feature back-up electric immersion heaters**	
<b>Brine (primary) based on 0°C in, -4°C out</b>		
Design flow rate kg/min	47.16	70.14
Pressure drop kPa at design flow rate	12.8	22.7
Max inlet temperature °C	15	
Min temperature °C (Outlet)	-5 (at standard settings)	
<b>Heating water (secondary) based on 30°C in, 35°C out</b>		
Design flow rate l/min	44.03	61.86
Pressure drop kPa at design flow rate	7.1	13.9
Max flow temperature °C***	65	
<b>Electrical Values @B0/W35</b>		
Rated Voltage	220 – 240 V / 50 Hz	
Power supply rating amps	50	60
Rated current (max) amps	43	58
Typical running current @ B0/W35 amps	25	29
Typical starting current amps****	44	48



### Hybrid Twin Compressor Heat Pumps

	Single Phase	
Nominal thermal kW rating	15	21
<b>Refrigerant circuit</b>		
Process medium	R407C / R134A	
Fill volume kg	1.0 / 1.4	1.3 / 1.4
Compressor type	Scroll	
<b>Dimensions</b>		
H x W x L (mm)	900 x 900 x 570	
Dry weight kg	167	180
<b>Operating pressure</b>		
Brine circuit min (primary) bar g	0.3	
Heating water circuit min (secondary) bar g	0.3	
Low pressure reset bar g	1.8	
<b>Connection sizes</b>		
Primary IN and OUT mm	50	
Heating flow and return mm	28	
<b>Performance (based on Average Climate) @35°C</b>		
ErP rating	A++	A+
SCOP	4.14	3.93
Seasonal space heating energy efficiency	158%	149%
<b>Performance (based on Average Climate) @55°C</b>		
ErP rating	A+	A+
SCOP	3.25	3.13
Seasonal space heating energy efficiency	122%	117%
<b>Sound Power Level</b>		
Sound Power Level (dB)	66	63

\* The COP figure quoted is calculated as per EN14511

\*\* In-built immersion heaters will increase running costs and CO2 emissions as they use direct electricity, because of this Kensa heat pumps do not include them.

\*\*\* By increasing the flow temperature from the heat pump the efficiency of the unit will drop and the COP decreases.

\*\*\*\* Kensa single phase compact heat pumps incorporate smart starts as standard to limit the starting current of the compressors. For full details on how the starting currents are calculated please contact Kensa.

Note: Design flowrates are for a ground temperature of 0 and –4°C and a load temperature of 30 and 35°C



## Hybrid Twin Compressor Heat Pumps

### Sizing

**SPACE HEATING:** Assumes 40 watts per square metre peak heating requirement. Precise sizing can be established by referring to the SAP report. In every instance reviewed in 2007/8, heat losses are between 30 - 40 watts per square metre for properties built to Part L 2006 (England and Wales). As a result, it may be possible to offer a smaller, less expensive heat pump and accessories. In every instance, Kensa heat pumps are sized to handle the peak heating load; Kensa appliances do not feature integral immersion heaters.

**DOMESTIC HOT WATER - SLINKY REQUIREMENT:** Sizing a heat pump and its ground arrays for domestic hot water is more complex. Whereas occupancy levels and lifestyle habits will not greatly affect the space heating load, they will impact on domestic hot water requirements. Clearly, an additional burden is imposed on the ground arrays; in addition, the year round requirement for domestic hot water means there is a lesser opportunity for the ground to recover temperature. As a consequence, extra pipework must be buried. The Slinky requirement outlined in the table below reflects typical water usage; please contact Kensa if requirements are considered exceptional.

**DOMESTIC HOT WATER - METHOD OF OPERATION:** The heat pump can be in space heating OR domestic hot water mode. When in DHW mode, the heat pump will achieve the highest possible stored water temperature which means its performance will be enhanced in the summer months (when ground conditions are warmest). After completing its DHW duty, the heat pump will return to space heating mode, if required. The heat pump will not be able to return to DHW model for two hours. For this reason, a suitably -sized storage cylinder should be specified. Any cylinder should be equipped with integral immersion heaters to provide a boost, if required. Contact Kensa for further information.

Nominal thermal kW rating	15	21
<b>Building size</b>		
Building size m <sup>2</sup>	375	525
<b>Space heating</b>		
Slinkies	3 x 50m	5 x 50m
Manifold	3 way	5 way
Antifreeze* litres	125	200
<b>Space heating and domestic hot water production</b>		
Slinkies	4 x 50m	6 x 50m
Manifold	4 way	6 way
Antifreeze* litres	150	225
Recommended minimum heat transfer area in DHW tank (not supplied)	3.0m <sup>2</sup>	4.2m <sup>2</sup>

\* Antifreeze quantities quoted are a minimum and may need to be increased depending on the distance between the heat pump and ground array manifold. The concentration should be a minimum of 20% and offer a protection to -10 °C.

**Please note the above methodology is not compliant with MCS which requires a full heat loss calculation to be carried out.** The values in the table are a guide only and Kensa would require a copy of the buildings SAP or heat loss report to provide a more accurate sizing before ordering.