



# Technical Information Sheet

## Compact Twin Compressor Heat Pumps

### Features and Benefits

- **Low Running Costs**
- **Low Carbon Emissions**
- **Ease of Installation**
- **Complete Kit Available**
- **UK Manufacture**
- **Access to industry grants**
- **Available up to 24kW in single phase**



### Product Description

The Kensa twin compressor range of Compact heat pumps are designed to provide space heating and domestic hot water production (optional extra) 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.

Heat pumps are ideally suited to underfloor heating distribution systems mounted in screed as the large heat emitting surface area means a low flow temperature from the heat pump can be used increasing its efficiency.

Radiators can also be used within the heating distribution system however due to the higher flow temperatures required from the heat pump, its efficiency will be decreased and hence it is important to assess the viability of installing a unit against the alternative fuels available.

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

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**Kensa Engineering Ltd**  
Mount Wellington, Chacewater, Truro, Cornwall, TR4 8RJ  
Tel: 01872 862140 Fax: 01872 862440  
info@kensaengineering.com  
[www.kensaengineering.com](http://www.kensaengineering.com)



Certificate Number MCS1216  
Heat Pumps

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Kensa Engineering Ltd  
Mount Wellington  
Fernsplat, Chacewater, Truro.  
Cornwall TR4 8RJ

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Certificate No: MCS BBA 0055  
Technology : MCS007 Heat Pumps

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	Single Phase				Three Phase				
Nominal thermal kW rating	12	16	20	24	12	16	20	24	30
Part Number	C120-T1H	C160-T1H	C200-T1H	C240-T1H	C120-T3H	C160-T3H	C200-T3H	C240-T3H	C300-T3H
MCS Approved	BBA0055/06	BBA0055/07	BBA0055/08	BBA0055/09	BBA0055/11	BBA0055/12	BBA0055/13	BBA0055/14	BBA0055/15
<b>Performance data—rated heating output at B0/W35 BS EN14511</b>									
Power consumption	4.0	5.2	5.8	7.2	3.7	4.9	5.7	6.9	8.1
Coefficient of performance*	4.13	4.15	4.16	4.14	4.15	4.20	4.15	4.18	4.15
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 l/min	32.8	45.6	52.8	65	32.4	46.6	53.2	65.8	79.1
Pressure drop kPa at design flow rate	10.8	10.8	14	20.3	10.5	11.2	14.1	20.7	28.8
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	37.2	50.6	58.4	72.0	36.0	50.8	58.2	71.8	85.9
Pressure drop kPa at design flow rate	9.47	9.3	12.3	18.7	8.9	9.4	12.3	18.6	26.5
Max flow temperature °C***	55								
<b>Electrical Values @B0/W35</b>									
Rated Voltage	220 – 240 V / 50 Hz				400V / 50Hz				
Power supply rating amps	40	63	63	63	25	25	25	32	32
Rated current (max) amps	36.1	43.7	52.5	65.4	13.7	16.0	18.9	23.6	27.0
Typical running current @ B0/W35 amps	20.1	27.4	28.0	35.4	8.3	10.7	12.2	15.2	17.5
Starting current amps****	40	44	44	48	37	48	55	68	79

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<b>Refrigerant circuit</b>									
Process medium	R407C								
Fill volume kg	2.0	2.2	2.4	2.6	2.0	2.2	2.4	2.6	2.4
Compressor type	Scroll								
<b>Dimensions</b>									
H x W x L (mm)	900 x 900 x 570								
Dry weight kg	165	167	170	180	165	167	170	180	185
<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	28	50			28	50			
Heating flow and return mm	28								

\* 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

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### 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. These immersion heaters should be run during the low cost periods provided with an Economy Ten tariff. Contact Kensa for further information. Kensa supplies a special three way valve to divert between modes. The installer would need to provide a time clock to control DHW periods.

Nominal thermal kW rating	12	16	20	24	30
<b>Building size</b>					
Building size m <sup>2</sup>	300	400	500	600	750
<b>Space heating</b>					
Slinkies	3 x 40m	4 x 40m	4 x 50m	5 x 50m	6 x 50m
Manifold	3 way	4 way	4 way	5 way	6 way
Antifreeze* litres	125	150	150	200	225
<b>Space heating and domestic hot water production</b>					
Slinkies	3 x 50m	4 x 50m	5 x 50m	6 x 50m	7 x 50m
Manifold	3 way	4 way	5 way	6 way	7 way
Antifreeze* litres	125	150	200	225	275
Recommended minimum heat transfer area in DHW tank (not supplied)	2.4m <sup>2</sup>	3.2m <sup>2</sup>	4.0m <sup>2</sup>	4.8m <sup>2</sup>	5.6m <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.

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.