Heat pump
Tue Apr 16 2024

Midterrace

Property Details

Year built	**Pre 2000**

Design Data

Outside Design Temp – ODT (°C)	**-1.4**
Degree Days (DD)	**2228**
Mean air temp – MAT (°C)	**10**
Altitude (m)	**110**

Building Requirements

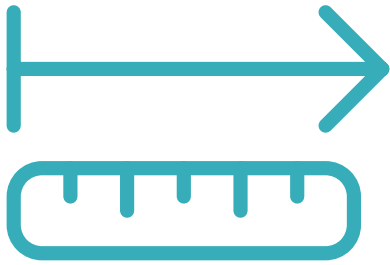|	
Space Heating load (W)	**3553**
Total area of building (m^2)	**77.65**
Average Watts per metre square (W/m^2) heat loss	**46**

Survey

Materials

Windows

PVC Double Glazed

U-value: 2.8

Doors

PVC-U door double glazed

U-value: 2.8

Radiators

K2 - two panels, two fins

External walls

Stone wall

U-value: 1.5

Internal walls

Stud wall

U-value: 1.72

Floor

Solid floor with 0mm of insulation

Solid floor with 50mm of insulation

Intermediate floors

Intermediate floors, boarding 19mm, airspace between joists, 9.5mm plasterboard
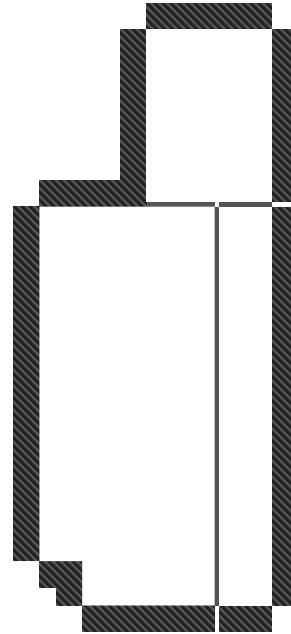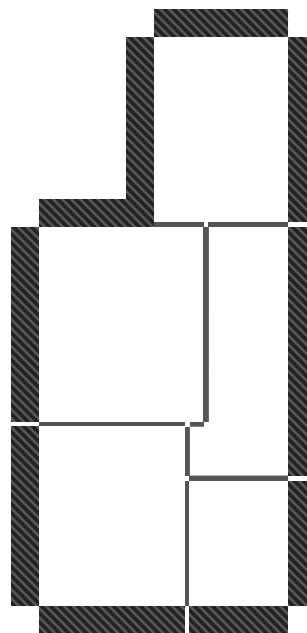
U-value: 1.41

Roof

Pitched roof - Slates or tiles, sarking felt, ventilated air space, 200mm insulation between joists, 9.5 mm plasterboard
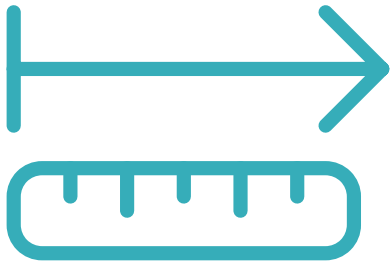
U-value: 0.18
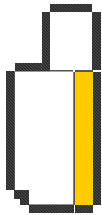
Ground floor

First floor

Room by room

Ground floor

Hall

Design temp: **19°C**
Air changes: **0.6/hr**
Area: **7.65 m²**

Volume: **18.36 m³**

Heat loss: **264 W, 35 W/m²**

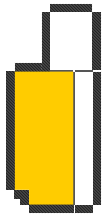|	K2	1200 x 600 mm Output at 37°C, 434 W	As surveyed

The expected heat loss is met. ✓

Living room

Design temp: **20°C**
Air changes: **0.6/hr**
Area: **25.01 m²**

Volume: **60.02 m³**

Heat loss: **1099 W, 44 W/m²**

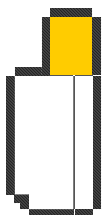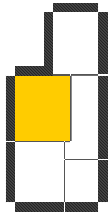|	K2	1200 x 600 mm Output at 37°C, 397 W	As surveyed
	K2	1200 x 600 mm Output at 37°C, 397 W	As surveyed
	K2	1200 x 600 mm Output at 37°C, 397 W	As surveyed

The expected heat loss is met. ✓

Kitchen

Design temp: **19°C**
Air changes: **0.6/hr**
Area: **7.92 m²**

Volume: **19.01 m³**

Heat loss: **662 W, 84 W/m²**

There is a shortfall of 662W. Larger radiators or a higher flow temperature will be required. ✗

First floor

Bedroom

Design temp: **19°C**
Air changes: **0.6/hr**
Area: **10.23 m^2**
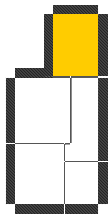Volume: **24.55 m^3**

Heat loss: **317 W,
31 W/m^2**

▥ K2	1000 x 400 mm Output at 37°C, 259 W	As surveyed

There is a shortfall of 57W. Larger radiators or a higher flow temperature will be required. ✗

Bath

Design temp: **19°C**
Air changes: **0.6/hr**
Area: **7.92 m^2**
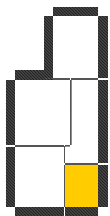Volume: **19.01 m^3**

Heat loss: **555 W,
70 W/m^2**

▥ K2	800 x 600 mm Output at 37°C, 289 W	As surveyed

There is a shortfall of 265W. Larger radiators or a higher flow temperature will be required. ✗

Bedroom

Design temp: **19°C**
Air changes: **0.6/hr**
Area: **3.94 m^2**
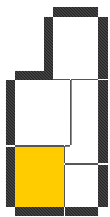Volume: **9.45 m^3**

Heat loss: **218 W,
56 W/m^2**

▥ K2	1000 x 400 mm Output at 37°C, 259 W	As surveyed

The expected heat loss is met. ✓

Bedroom

Design temp: **19°C**
Air changes: **0.6/hr**
Area: **8.36 m^2**
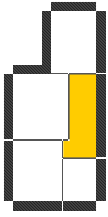Volume: **20.07 m^3**

Heat loss: **333 W,
40 W/m^2**

▥ K2	1000 x 400 mm Output at 37°C, 259 W	As surveyed

There is a shortfall of 74W. Larger radiators or a higher flow temperature will be required. ✗

Landing

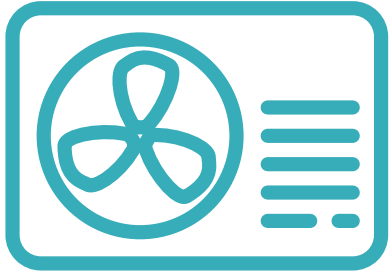Design temp: **19°C**
Air changes: **0.6/hr**
Area: **6.62 m²**

Volume: **15.88 m³**

Heat loss: **102 W**,
15 W/m²

There is a shortfall of 102W. Larger radiators or a higher flow temperature will be required.

✕

Heat pump

Samsung 5kw Monobloc Heat Pump

Model: AE050RXYDEG/EU

Specifications

ENA registration number	**SAMSG/09641/V1**
Proposed flow temperature	**37 °C**
Nominal output	**5.00 kW**
Actual output at 37 °C	**4.68 kW**
Heating SCOP at 37 °C	**3.5**
Sound power level	**61.0 dB**

Heat pump sizing
The heat pump is sufficiently large to meet the maximum anticipated space heating demand. ✓
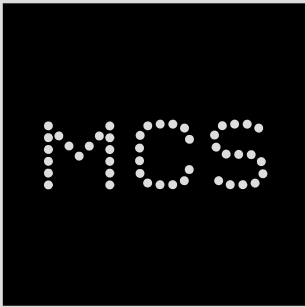
Sound level check

The sound check assesses how much sound from the heat pump will transmitted to neighbouring properties. If the likely sound level is less than 42dB then the installation can usually proceed without a planning application under the 'permitted development' rules.

Full details on the method used can be found in the MCS020 document on the MCS website.

MCS020 sound level calculation

1. Sound power level (dB)	**61.0**
2. Sound pressure level (dB)	**Q2 (one reflective surface)**
3. Distance from heat pump to assessment position (meters)	**10**
4. dB Distance Reduction	**-28**
5. Barriers Between heat pump and assessment position	**Visible**
6. Sound pressure level @ assessment position (dB)	**33**
7. Background noise level (dB)	**40**
8. Differential between 6. & 7.	**7**
9. Decibel Correction (dB)	**0.8**
10. Final Result (dB)	**41**

Sound check
The max sound pressure at the assessment position is expected to be within the permitted development threshold of 42dB. A planning application is not required.