

Noise Assessment

This assessment is prepared in accordance with MCS 020 (a), the planning standard for air source heat pumps. This is to establish that the proposed location of the air source heat pump has a noise level lower than 37 dB(A) and would not require planning permission from the local authorities.

For the purpose of the calculation procedure the following notes have been issued:

- 1) Assessment position means a position 1m external to the centre point of any door or window to a habitable room of a neighbouring property as measured perpendicular to the plane of the door or window. In the case of multiple different assessment positions the position with the highest sound pressure level dB(A) will be used for this assessment.
- 2) Habitable room means any rooms used or intended to be used for sleeping or living which are not solely used for cooking purposes, but does not include bath or toilet facilities, service rooms, corridors, laundry rooms, hallways or utility rooms.
- 3) Neighbouring property means any building used for any of the purposes of Class C Town and Country Planning (Use Classes) Order 1987 (as amended) (includes dwelling houses, hotels, residential institutions and houses in multiple occupation). In instances where the air source heat pump would be installed on a block of flats, neighbouring property includes flats within the same block of flats (excluding the flat of the "owner(s)" of the air source heat pump).

Noise assessment calculation

Air source heat pump model:	Ideal Logic Air 5
Description of assessment position:	Neighbouring Window
Distance from heat pump to assessment position (m):	1.3

○ Sound Power Level

The sound power level is the total acoustical energy emitted by a sound source and is an absolute value. It is the total sound energy radiated by a source per unit of time. It is also not affected by the environment or location of the listener. The below is the A-weighted sound power level of the heat pump obtained from manufacturer's data. The power in "low noise mode" should not be used.

A-weighted sound power level (dB(A)):	52
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○ **Sound Pressure Level**

Sound pressure is what we hear. It is a pressure disturbance at a specific point in the atmosphere whose intensity is influenced not only by the sound power of the source, but also by the surroundings and the distance from the source to the point at which the sound is heard. It is the difference between the instantaneous pressure produced by a sound wave and the barometric pressure at a given point in space.

○ **Determination of “Directivity”**

The sound pressure level increases with the number of reflecting surfaces. A reflective surface is any surface (including the ground, but not vegetation) within 1m of the heat pump. The reflecting surface shall extend beyond the edge of the heat pump by 1m or more, in two or more directions (i.e. a very low wall next to an heat pump does not count as a reflecting surface).

Number of reflective surfaces (Directivity (Q)):

Three reflective surfaces (Q8)

○ **Barriers between the heat pump and the assessment position**

A correction shall be made for attenuation due to barriers between the heat pump and an assessment position. The construction of the barrier and the line of sight between the heat pump and assessment position shall both be taken into account to determine the attenuation of the barrier.

The following definitions of a barrier shall be used for the purposes of this assessment:

- 1) Barrier (Type 1) – a solid brick/masonry wall or a solid fence that is at least 18mm thick. There should be no cracks or gaps in the barrier. The barrier should extend horizontally by 1m or more from either edge of the heat pump.
- 2) Barrier (Type 2) – a solid fence that is less than 18mm thick. There should be no cracks or gaps in the barrier. The barrier should extend horizontally by 1m or more from either edge of the heat pump.
- 3) No barrier – open fences, fences with gaps and cracks, and vegetation do not count as a barrier. Walls or fences in a poor state of repair (e.g. gaps or pieces missing) do not count as a barrier.

Determination of barrier correction - barrier type:

No barrier



The following definitions of line of sight shall be used for the purposes of this assessment:

- 1) No view – If a barrier that completely obscures the vision of an assessment position from the top edge of the heat pump.
- 2) Partial view – If by moving up to 0.25m in any direction from the top edge of the heat pump the assessment position is visible.
- 3) Full view – If the assessment position is visible from the top edge of the heat pump.

Determination of barrier correction - line of sight:

Partial View

Resulting noise level

Noise Level dB(A)	Noise Assessment Summary
47.8	The calculated sound pressure level from the proposed heat pump location at the worst case assessment position is higher than 37.0 dB(A) and therefore, the air source heat pump will not meet permitted development due to noise. This installation may still go ahead if planning permission is granted by the local planning authority.