HOCHIKI

TECHNOLOGY GUIDE

SOUNDERS & AUDIBILITY

YBO-BS Addressable Base Sounder
(shown with ALG-E Sensor)

YBO-BSB Addressable Base Sounder Beacon
(shown with ACA-E Sensor)

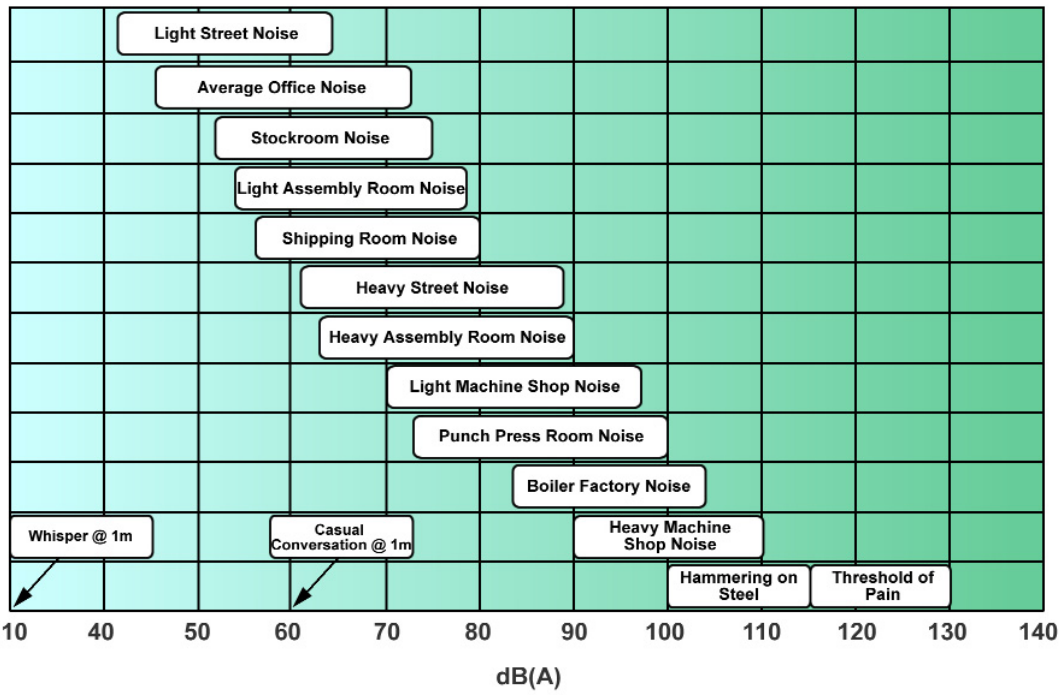
CHQ-WS2 Addressable Wall Sounder

BANSHEE Conventional Sounder

One of the most critical functions of a fire alarm system is its ability to warn occupants of an alarm condition. In order to ensure this it is essential that the audibility requirements of BS5839 Part 1 are met. This Technology Guide explains the relationships between sound volume, measured in decibels (dB(A)) generated by a sounder and other factors affecting audibility such as distance, internal surface finishes and signal frequency range.

Sound Levels of Common Background Noise

The following chart shows the sound level in decibels of common background noises in the workplace:



Loss of Decibels - Surfaces

The type of surfaces that predominate in the location of the Sounder will affect the maximum Sounder volume level:

Hard Finishes	Solid Stone or Brick Walls Solid Ceilings Stone or Tiled Flooring	**Lose 0 dB(A)**
Medium Finishes	Acoustic Ceiling Tiles Plastered Walls 5% Soft Coverings Composite Flooring (eg. Laminate)	**Lose 8 dB(A)**
Soft Finishes	Acoustic Ceiling Tiles Plastered Walls 5% Soft Coverings Carpeted Flooring	**Lose 9 dB(A)**

For example, a Sounder producing 95dB(A) @ 1 metre mounted within an area predominately furnished with soft finishes will actually only produce 86dB(A) @ 1 metre.

Loss of Decibels - Sounder Frequency Range

Adjustments to a Sounder's maximum volume level should be made depending on the frequency range of the Sounder:

Sounder Frequency Range	Adjustment
Up to 500Hz	Lose 0 dB(A)
500Hz to 1000Hz	Lose 3 dB(A)
1000Hz to 2000Hz	Lose 5 dB(A)

Loss of Decibels - Other Considerations

- Subtract 3dB(A) from Sounder's maximum volume level for safety margin – allowing for manufacturers tolerances.
- There is an inherent loss of volume through doors, lose 17dB(A) through normal doors, lose 27dB(A) through fire doors.

Loss of Decibels - Over Distance

This table shows the decrease in Sounder volume over distance.

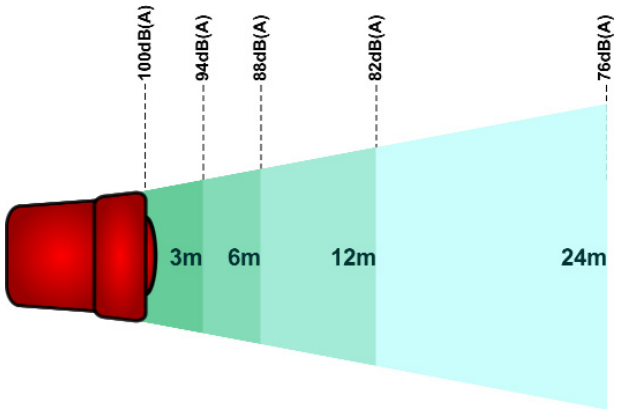
Tip: Use the maximum Sounder volume level taking into account the Sounder's frequency range and the loss of volume through surfaces and doors as described above before calculating loss over distance:

m	dB(A)																									
1	65	70	80	85	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120	122	124	126	128	130
2	59	64	74	79	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120	122	124
3	55	60	70	75	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120
5	51	56	66	71	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114	116
10	45	50	60	65	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
20	39	44	54	59	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104
30	35	40	50	55	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
50	~	36	46	51	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96
100		~	40	45	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90
200			~	39	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84
300				~	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80
500					~	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76
1000						~	~	~	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70
2000									~	~	~	38	40	42	44	46	48	50	52	54	56	58	60	62	64
3000												~	~	38	40	42	44	46	48	50	52	54	56	58	60
5000														~	~	38	40	42	44	46	48	50	52	54	56

This loss can be calculated with the following formula:

XdB(A) @ Y metres = (X-6)dB(A) @ 2Y metres

For example:
100dB(A) @ 1 metre = (100-6)dB(A) @ 2 metres
∴100dB(A) @ 1 metre = 94dB(A) @ 2 metres



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