

MALLORY

MALLORY SONALERT PRODUCTS, INC.



FAQ APPLICATION Guide

FAQ's- Back-up Alarms

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General Alarm Technology

Q: What is an electronic audible alarm?

A: An electronic audible alarm produces an audible warning sound using electronic means. This is in contrast to electro-mechanical alarms that produce sound by mechanical means. Examples of electro-mechanical alarms include the old clapper type alarm clocks, school bells, and car horns. Examples of applications that use electronic audible alarms include smoke detectors and microwave ovens.

Q: What else are audible alarms called?

A: Buzzers, beepers, audible signals, piezo's, sounders, alerts, audio alarms, indicators, transducers, and various combinations of these terms (audio alerts, piezo indicators, etc.).

Q: How do electronic audible alarms work?

A: Audible alarms work by using electronic components to convert the user's input voltage into an appropriate oscillating signal that drives a metal sounder diaphragm. This metal sounder diaphragm then physically flexes up and down producing air pressure waves that the human ear interprets as sound. For a more detailed description, please read the Article titled, "[Audible Alarm Basics](#)" and see Technical Application Guide, "[Piezoelectric Alarm Operation](#)".

Electrical Application Issues

Sound Issues

Q: How is sound level measured?

A: Sound level is measured in decibels (abbreviated dB). The dB scale is an arbitrary scale that reflects the loudness of the sound that is being measured. It ranges from 0 dB (threshold of hearing) to 130 dB (threshold of pain). For a better understanding of the decibel sound level scale, see Technical Application Guide, "[Decibel Sound Level Scale](#)".

Q: How loud does my audible alarm need to be?

A: The audible alarm should be at least 10 dB louder than the ambient background noise so that it can be easily heard. You can estimate the ambient background noise by using the chart found in the Technical Application Guide, "[Decibel Sound Level Scale](#)" or you can use a sound level meter to measure the actual ambient noise level.

Q: When is a sound level twice as loud as another?

A: Every time the sound level increases by 10 dB, it will sound twice as loud to the human ear. For example, an alarm specified as 90 dB at 2 feet will sound half as loud as one specified as 100 dB at 2 feet.

Q: What does distance have to do with sound level?

A: Sound level falls off over distance. We intuitively know this because we have to talk louder (or even shout) when people are farther away. The rule of thumb is that every time the distance doubles, the sound level drops off by 6 dB. For example, if an audible alarm measures 60 dB at 2 feet, by the time it reaches 4 feet, it will only be 54 dB. By the time it reaches 8 feet, it will only be 48 dB, and so on.

Q: How come some audible alarms are specified at 2 feet and some are specified at 10cm? How do I compare alarms at various distances?

A: Unfortunately, there is no one standard distance for specifying the sound level for audible alarms. However, there are some common distances such as 2 feet (60 cm), 1 foot (30 cm), and 10 cm (4 in). An excel spreadsheet has been developed to convert among the most common distances used. The link for the spreadsheet is in our TECHNICAL RESOURCES webpage.

For example, if you want to compare an alarm that is specified as 100 dB at 10 cm and one specified as 88 dB at 2 feet, you must choose one distance that you want to use to compare the parts. Using the distance conversion spreadsheet, you would find that 88 dB at 2 feet equates to 103 dB at 10 cm, so the alarm specified as 88 dB at 2 feet is actually louder than the other one when they are compared apples to apples.

Q: How sensitive is the human ear to sound level changes?

A: Most people can only distinguish a sound level change only when it increases or decreases by 3 decibels. For example if a person was listening to an audible alarm that changed from 90 to 92 dB, that person would most likely say that the alarm did not get louder. If the sound level changed from 90 dB to 93 dB, the person would say that the sound level is slightly louder. If the sound level changed from 90 to 96 dB, the person would say that the sound level is significantly louder. If the sound level changed from 90 to 100 dB, the person would say that the sound level is twice as loud as before.

Q: What does dBa (A-Weighting) mean?

A: dB is the abbreviation for decibels which is how the sound level of audible alarms is measured. The "a" in dBa means that the sound level was measured on an A-Weighting scale. The A-Weighting scale was developed to compensate for the fact that the human ear is not a perfect microphone. By applying the A-Weighting scale to sound level measurements, you put the different frequencies (pitches) that the audible alarms produce on an even basis (i.e. comparing apples to apples). Mallory always uses A-Weighting for their sound level measurements, but not all audible alarm manufacturers are this diligent.

Environmental Issues

Q: What is the difference between "UL Listed" and "UL Recognized"

A: UL Listed means that a piece of equipment has met the requirements spelled out by UL for that type of equipment. UL Recognized means that the individual component has met the requirements spelled out by UL for that type of component. The main difference is that equipment is UL Listed while components are UL Recognized. Since Mallory alarms are components, they are only required to be UL Recognized in order to be used in UL Listed equipment. Check Mallory's UL or cUL on-line Yellow Cards in the TECHNICAL RESOURCES webpage to determine which alarms are UL or cUL Recognized and therefore can be used in UL Listed equipment.

Q: What is the shelf life of an audible alarm?

A: Mallory is not aware of anyone who has ever had a shelf life issue with our alarms. That being said, some alarm models contain aluminum electrolytic capacitors. The recommended shelf life for these capacitors is 5 to 10 years depending on how they are used. Our application of these capacitors is not especially sensitive to the shelf life issues of these components, so we would expect that they would last 8-10 years or longer in our alarms just sitting on the shelf (no voltage applied during that time).

Warranty

The seller warrants the goods to be supplied hereunder will conform to the pertinent specifications, drawings and approved samples, if furnished, and that such goods will be of good materials and workmanship and free of defects if properly installed and used as sold by Seller. If within one-year period from the date of shipment to Purchaser such goods, not having been subject to misuse, alteration, modification, neglect. Improper installation or unauthorized repairs not exposed to an abnormal environment, are shown not to be in conformity or are shown to be defective in workmanship or materials, Seller's sole and exclusive obligation under this warranty is to repair or replace such goods, provided return is made prepaid to Seller or its designated representative with the following tagged information: (i) date of shipment of such goods to Purchaser; (ii) date such goods are determined to be non-conforming or defective; and (iii) specifying the apparent non-conformity or defect. No claim will be allowed under this warranty unless Purchaser notifies Seller of such claim within 30 days after Purchaser learns of facts giving rise to such claim. Purchaser's failure to test, inspect and make claim within such one-year period shall be conclusive evidence that the goods shipped were satisfactory in all respects. The liability of Seller under the forgoing warranty shall not exceed the price charged by Seller for the goods which give rise to the Purchaser's claim. THE AFORESAID WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER EXPRESS OR IMPLIED (INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE), EXCEPT OF TITLE. SELLER ASSUMES NO LIABILITY FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR OTHER DAMAGES OF ANY TYPE (INCLUDING, BUT NOT LIMITED TO, DAMAGES RELATED TO LOST SALES AND PROFITS, EXCESSIVE OR INCREASED COSTS AND EXPENSES, FIELD RECALL AND RETROFIT, COSTS AND EXPENSES , DOWNTIME COSTS AND CLAIMS OF CUSTOMERS OR PURCHASER FOR SUCH DAMAGES) RESULTING FROM NON-CONFORMING OR DEFECTIVE CONDITION OF ANY GOODS SOLD BY SELLER TO PURCHASER HEREUNDER, AND PURCHASER ASSUMES ALL LIABILITY FOR ALL CONSEQUENCES ARISING OUT OF ITS USE OR SALES OF SUCH GOODS. THE AFORESAID REMEDY OF PURCHASER IS EXCLUSIVE AND THIS LIMITATION OF LIABILITY PROVISION SHALL APPLY TO ANY AND ALL CLAIMS OR SUITS BASED UPON NEGLIGENCE, BREACH OF CONTRACT, BREACH OF WARRANTY, STRICT LIABILITY, OR ANY OTHER LEGAL THEORY UPON WHICH LIABILITY MAY BE ASSERTED AGAINST SELLER BY PURCHASER OF OTHERS.