FINAL REPORT 2

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SOUND PRESSURE LEVER

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Abstract.

Strictly speaking, a trinket cannot be functional, but the title of this article is apart. It is a kind of miniature VU meter whose LED bar fluctuates in rhythm with ambient sound. Owing to its modest dimensions, it can easily be worn as an adornment which in a disco or a party, will, no doubt, draw the attention of many.

Nowadays , not many things surprise us anymore. In this age high technology, we are used to all kind of new discoveries and development, and technical ingenuity. Mobile telephone, portable CD players, watches with built in alarm. What is there left to impress us with ?. not only satellite TV, but also a radio controlled vehicle on planet Mars are accepted as a commonplace.

Of course this true not only in the world of science technology but also in other spheres of human interest. It is not easy to dream out something really new or innovative something that draws a spontaneous reaction of "Fancy that" or how they do it ? . the trinket describe in this article is designed specially fir lovers music and dance. It is intended to enable constructors to built something that set them apart from other. It is not exactly Hi-tech but rather a combination of technology and music.it is an adornment that by means of moving point of light, reacts to the sound pressure of music to which it is exposed. It may, never then less also fulfil a useful function when the wearer of the trinket note that the LED indication is constantly at maximum, it is time to put the ear plugs in because the sound pressure is then clearly no longer healthy.

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1.0 INTRODUCTION

1.1 The Nature Of Sound

Vibrating materials causes sound. If a panel of wood vibrates, the air next to it is pushed to front. If the rate of vibration is somewhere between tens and tens of thousands of excursions per second, the air has a natural elasticity, which we do not find at slower speeds. Wave your hand backward and forward once a second and the air does little except get out of its way, it does not bounce back. But if one could wave hand back and forth a hundred times every second, the air would behave differently: it would be the hand compressed backward as the surface of the hand moves forward and rarely as it moves back. In such circumstances the natural elasticity of the air takes over. As the surface moves forward, each particle of air pushes against the next, so creating a pressure wave. As the surface move back, rarefaction, and another pressure wave replaces the pressure wave, and so on follows that.

It is a property of elastic media that a pressure wave passes through them at a speed that is a characteristic of the particular medium. The speed of sound in the air depends on its temperature as well as the nature of the air. In normal conditions sound travel about 1120 feet in a second (about 340 meters per second).

The speed is independent of the rate at which the surface generating the sound moves backward and forward. The example was 100 excursions per second, but it might equally have been 20 or 20 000. This rate at which the pressure waves are produces is called the *frequency,* and this is measured in cycles per second, or *hertz*: [Hz = I c/s].

Let us return to that impossibly energetic hand shaking back and forth at 100 Hz. It is clear that it is not a perfect sound source: some of the air slips round the sides as the hand moves in each direction. To stop this happening with the fluid material like air, the sound source would have to be much larger. Something the size of a piano sounding board would be more efficient, losing less round the edges. But if a hand-sized vibrator moves a great deal faster, the air simply does not have time to get out of the way. For every high frequencies, even tiny surfaces are efficient radiators of sound.

In real life, sounds are produced by sources of all shapes and sizes that may vibrate in complicated ways. In addition, the pressure waves bounce off hard surfaces. Many sources and all their reflections - may combine to create a complex field of intersecting paths. How are we to describe, let alone reproduce, such a tangled skein of sound? Fortunately, we do not have to.