ULTRASONIC CAR ALARM

FOR THE
H.T.D.2E ELECTRONICS
PROJECT 1995/96

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Nowadays cars are becoming a necessity in everyday's life. Unfortunately cars are a target for thieves, and in most cases it is a fairly easy task for a thief to break into a car. Though cars are being more improved and sophisticated due to the great advances in technology, it seems that for most of the cars, the security system needs to be more improved and effective.

Although a few years ago a couple of concealed switches provided a good end in most cases, adequate means of defeating car thieves, nowadays something a little more sophisticated is really required. One reason for this is that car thieves are generally familiar with simple forms of alarms, immobilisers etc, and means of overcoming them. Perhaps of more relevance, it is common for quiet expensive items to be left in cars, either in the form of loose items in the back of the car or as car accessories such as radios, cassette players, compact disc players, and the like. Many car alarms are of little or no use against someone who breaks or forces open a window and removes items from inside the car.

This burglar alarm design is basically the same as the ultrasonic movement detector type that is often used to protect homes and other buildings. Ultrasonics are high frequency sound waves beyond the range of the human ear. So ultrasonics cover a frequency range from 18,000 Hz upwards. Compared with sonics (i.e. sound waves we can hear), ultrasonics have shorter wavelengths because their frequencies are higher.

By detecting movement inside the car, it renders the method of entry irrelevant, and even someone reaching in through a window left slightly open should trigger the alarm. The circuit incorporates an Exit Delay Timer which prevents the unit from being activated until several seconds after it has been switched on, giving the user an opportunity to leave the car and deactivate the alarm before it sounds. Once activated the alarm operates the car horn, and to make it more obvious that this is not merely some sort of electric fault say, but genuinely an alarm, the horn is sound. Of course, some other alarm generator could also be used. To avoid unnecessary annoyance to others and to prevent excessive drain on the car's battery, the alarm is automatically switched off after about two and a half minutes.