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RESEARCH ARTICLE

OVER SPEED ALARMS FOR TWO WHEELERS

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ABSTRACT

Two- wheeler riding calls for constant attention. The moment you become unmindful of speed, applying sudden brakes to avoid obstacle may lead to accident. An over-speed alarm can be of great help to avoid such situations. It acts like a watchful friend that warns you whenever you drive faster than the set limit speed. Over speed indicator is a device that tells the driver if he is exceeding the particular speed limit. With the over speed indicator in your car you can be sure that you are not going get yourself booked for over speeding. The system has a computer which stores the speed limits of different areas. The GPS in the system feeds the exact location of the car to the computer which looks up in its database to determine the permissible speed for the area and limits the car within the allowable speed.

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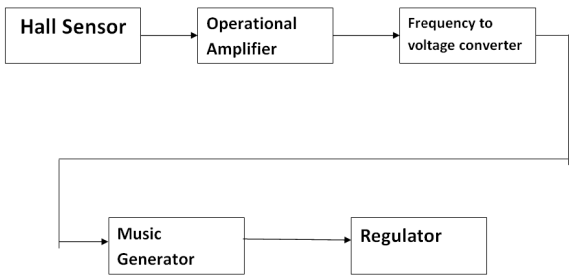
INTRODUCTION

These days two wheelers are used by any person travelling and it needs a lot of attention. However, there might come a time when such attention is lost. Hence, a device is needed which can help one take its place without worrying. Such is a device known as "Over speed alarms for two wheelers". This helps in accident avoidance. It is a device that alarms the driver when the speed exceeds above the desirable speed. This is done with the help of a hall sensor which works on the principle of hall effect. "When a current carrying conductor is placed in a magnetic field, a voltage is introduced perpendicular to both the current and the field. This is known as hall effect". This hall effect output decides the speed and a buzzer is connected to alarm the driver.

Block diagram



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Explanation of each block:

Hall sensor: Hall sensor is a transducer that varies output voltage with response to the magnetic field.

"When a current carrying conductor is placed in a magnetic field, a voltage is introduced perpendicular to both the current and the field. This is known as hall effect". Hall effect sensors are used for proximity switching, positioning, speed detection, and current sensing applications.

In its simplest form, the sensor operates as an analog transducer, directly returning a voltage.

A Hall Effect sensor may operate as an electronic switch.

- Such a switch costs less than a mechanical switch and is much more reliable.
- It can be operated up to 100 kHz.
- It does not suffer from contact bounce because a solid state switch with hysteresis is used rather than a mechanical contact.
- It will not be affected by environmental contaminants since the sensor is in a sealed package. Therefore it can be used under severe conditions.

Operational Amplifier: It is a DC-coupled high-gain electronic voltage amplifier with a differential input and, usually, a single-ended output. In this configuration, an

op-amp produces an output potential (relative to circuit ground) that is typically hundreds of thousands of times larger than the potential difference between its input terminals. They are also used to do mathematical operations in many linear, non-linear and frequency-dependent circuits. The popularity of the op-amp as a building block in analog circuits is due to its versatility. Due to negative feedback, the characteristics of an op-amp circuit, its gain, input and output impedance, band width etc. are determined by external components and have little dependence on temperature coefficients or manufacturing variations in the op-amp itself.

1. **Frequency to voltage converter:** A converter that provides an analog output voltage which is proportional to the frequency or repetition rate of the input signal derived froma flowmeter, tachometer, or other altern ating-current generating device.These devices consist of two independent, high-gain frequency-compensated operational amplifiers designed to operate from a single supply or split supply over a wide range of voltages
2. **Music generator:** Music is generated through speaker LS1 when the voltage given to it is more than the limit set. It goes high when voltage given is much higher than the expected value.
3. **Regulator:** A **voltage regulator** is designed to automatically maintain a constant voltage level. A voltage regulator may be a simple "feed-forward" design or may include negative feedback control loops. It may use an electromechanical mechanism, or electronic components. Depending on the design, it may be used to regulate one or more AC or DC voltages.

CMOS class A output structure. LED1 indicates high pulse o/p. the output of LM358 applied to LM2917N consisting an input amplifier, a versatile op amp comparator, with an active zener and converts the frequency into proportional voltage. Its o/p is filtered by C4 & C5 and applied to TL071. It is wired as differential amplifier. The o/p of IC3 is proportional to the speed change is amplified by op amp IC4. The output of IC4(pin 6) is fed to comparator CA3130 and compared with reference voltage. The comparator provides regulated 3.3v (via zener diode) to music generator UM66.The output of UM66 drives speaker LS1 with the help of transistor T1. To sound the alarm whenever the two wheeler goes over speed. The circuit is provided by the 7v battery of the two wheeler. IC 7805 is used to provide regulated 5V to IC1 & IC2. Capacitor C8 & C9 bypass the ripples present in the supply.

Applications already made and their impact

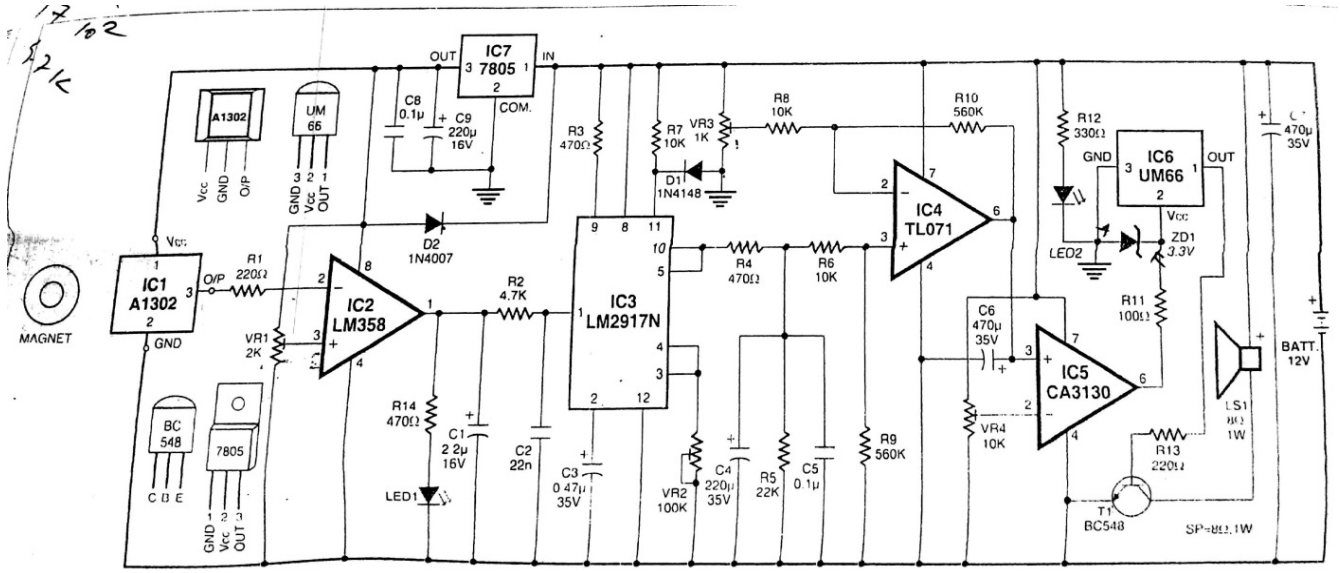
Speed Warning app on Google Play

An android app that displays your actual speed and tells you if you exceed the speed limit. You can manually select the speed limit or select the "Automatic" mode. The "automatic" mode determines the maximum speed relative to your pace. Speed Warning can run in the background along with a GPS for example. It is also possible to activate the vibrate mode to be warned of speeding even with the phone in his pocket.

Speedometer

A high quality Speedometer app with the same sophisticated brain inside as our paid version. When you go over a preset

Circuit diagram



Working

Over speed alarm based on Hall effect. That is "When a current carrying conductor is placed in a magnetic field, a voltage is introduced perpendicular to both the current and the field. This is known as hall effect".As shown in component list the A1302 used for hall sensor IC, which gives the output proportional to an applied magnetic field. It includes a linear amplifier and a

speed limit, the large digits change colour from green to red and the device emits a loud sound to alert you .Available on iPhone 4S & iPads. Native support for iPhone 6/6+ screens.

Sensys' unique multi-tracking radar RS240

Sensys' unique multi-tracking radar RS240 installed on the road sides usually in U.S.A. which enables measurement of the speed of each vehicle.

However, there is no such equipment yet which is installed in the vehicles to indicate the over speeding of vehicles. So, our attempt is to initiate with this technology since many other devices such as air control, ignition, and exhaust-gas treatment, as well as electronic control units have already been made.The only way to detect the over speed of the vehicle is by looking at the speedometer. But it is not possible to look at the speedometer when riding until there is an alarm.

Overall impact of this project

Most of the accidents that occur are due to over speed of the vehicles and the misbalance that is caused due to the same. It controls rash driving and also the control over the vehicle. With this project, many lives of the people can be saved. To attempt to identify drivers or vehicles that are breaking the speed limit for the purposes of prosecution. To remind vehicle users what the speed limit is, and that it should be obeyed.

Possible limitations of the work

Since, the project is hardware based, we cannot update the device through any programmable software. A new circuit will have to be made to fulfil the necessary requirement. There are many bikes which have higher cubic capacity(cc) with big silencer, which makes lot of noise. Due to this, there may occur a possibility that the alarm is not audible to the person riding the bike.

Conclusion

Hence, we can say that an over speed alarm is as much necessary for a bike as the other parts of it. It not only gives you an alarm but also helps save a life.

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