

Ques. WHAT IS AN ACCELEROMETER? WHAT'S THE DIFFERENCE BETWEEN TILT SENSOR AND ACCELEROMETER SENSOR?

Pamarthi Kanakaraja

Ans. An accelerometer is an electromechanical device that measures acceleration forces.

The forces may be static or dynamic. If you have the amount of static acceleration due to gravity, you can find out the angle the device is tilted at with respect to the earth's surface. If you have the amount of dynamic acceleration, you can analyse the way the device is moving.

Accelerometers can be used to measure vibration on vehicles, safety monitoring devices, industrial machines and process control systems. These are also used to measure seismic activity, inclination, dynamic distance, and speed with or without the influence of gravity.

Accelerometers are commonly made of either piezoelectric, piezoresistive or capacitive elements, which are used to convert the mechanical motion into an electrical signal. The piezoelectric is the most common form of accelerometer that uses microscopic crystal structures. When the static crystal structure is deformed due to physical force or bending, it creates a voltage from the stress and the accelerometer interprets the voltage to determine velocity and orientation.

Accelerometer sensor vs tilt sensor

Accelerometer sensor. Accelerometer sensors are available in one-, two- or three-axis models to detect magnitude and direction of acceleration. Accelerometers in most smartphones make use of three-axis models, whereas only two axes are used in

some cars to determine the moment of impact. The more sensitive the accelerometer, the more easily it can measure acceleration.

An accelerometer can be used as a tilt sensor but not all tilt sensors are accelerometers. For example, a mercury tilt sensor can't give you a readout of acceleration. A typical accelerometer sensor is shown in Fig. 1.



Fig. 1: A typical accelerometer sensor



Fig. 2: A typical tilt sensor

Tilt sensor. It's like a type of on-off level switch. It simply tells you that it has tilted. Its contact opens when tilted and closes when not tilted. The contact doesn't open through other logic unless it is physically tilted. Normally, a tilt sensor doesn't measure motion. A full motion detector would use at least three axes and often additional sensors. A tilt sensor often measures the tilting in two axes of a reference plane. A typical tilt sensor is shown in Fig. 2.

Q2. WHAT IS A COMMUNITY RADIO STATION AND WHAT ARE THE PREREQUISITES FOR OWNING ONE?

Mukul Rustagi

A2. Community radio station (CRS) or community radio (CR) is another type of radio broadcasting service. There are several subtypes of radio broadcasting: commercial, non-commercial educational (NCE) public broadcasting, and non-profit types like community radio, student-run campus radio stations and hospital radio stations.

In India, CRS is operated in

frequency modulation (FM) mode. FM broadcasting is capable of better sound quality than AM broadcasting. Throughout the world, the FM broadcast band falls within the very high frequency (VHF) part of the radio spectrum. Usually, FM band is in 87.5-108.0MHz range, or some portion thereof, with a few exceptions in some countries. The effective radiated power of a CRS FM transmitter should be 100 watts or even less. Transmitter power above 100 watts and up to 250 watts is allowed but subject to approval by the Committee constituted under the chairmanship of Secretary, Ministry of Information & Broadcasting, India.

The permitted maximum height of antenna above the ground is 30 metres, and the station is expected to cover a range of 5-10km. You can get the list of operational community radio stations from the website of Ministry of Information & Broadcasting: <http://www.mib.nic.in/broadcasting/community-radio-stations-0>

Depending on the setup and wattage requirement, the CRS may cost anywhere between ₹ 300,000 and ₹ 29,00,000 or even more. For details on the cost, you may refer to <http://communityradio.in/pdf/crs-in-india-infrastructure-technology-considerations-paper.pdf> and http://becil.com/Admin_Doc/CRS_proposal.pdf

You need to apply in the prescribed format along with a processing fee in the form of a demand draft drawn in favour of Pay & Accounts Officer, Ministry of Information & Broadcasting, New Delhi, and payable at Delhi. Detailed guidelines and application form are available on the ministry's website: www.mib.nic.in

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