

More about Sensors

Sensors come in all shapes and sizes, from the motion detectors that signal lights to go on when we enter a room to Geiger counters that detect radiation loss. They are used in commercial, industrial and personal applications, whether to tell us when we have a fever or to regulate conveyor systems in a factory. We even contain a number of biological sensors that regulate chemical balances within our bodies, or cause us to react to different stimuli.

Even in the manufacturing realm, the term sensor covers such a wide variety of applications and devices that it is almost impossible to define. Nonetheless, regardless of the industry, sensors are used to alert a person or system; sometimes this is in order to generate a new function, such as switching off a furnace, while in other instances it is to signal a problem. The majority of sensors, however, are meant to help regulate and control existing operations. Various speed and position sensors, for instance, assist in automotive engine management. Adjustable linear, null balance and output current sensors monitor AC or DC current for different electrical or industrial systems. Proximity sensors assist in aircraft and marine applications, among others.

Other sensor types include photoelectric sensors, which detect objects with light and have exceptional range; liquid level sensors and debris monitors, which can be used on fixed wing and rotary aircrafts; temperature and pressure meters, which factor into an immense range of industrial, commercial, medical and processing systems; and electrochemical sensors, such as amperometric and coulometric sensors, which measure various biological functions. From the places we visit to our means of transportation, we are surrounded by sensors and systems that rely on sensors, as well as goods that could not exist without them.

Sensors play even more direct roles in our everyday lives. Thermometers and barometers tell us the weather, oil and fuel gages keep our cars running, and proximity sensors turn on and off our outdoor lights. Of course, direct applications do not stop there. Automated doors, elevators, ovens and refrigerators all incorporate sensors into their designs, making sure our pathways stay open, our food stays fresh, and our appliances remain dependable.

Sensors are devices that convert a physical parameter such as room temperature, blood pressure or wind speed into a signal that can be measured electrically. Other sensor outputs are equally valid (e.g. visual output from a glass thermometer), but we will confine our coverage to electrical output sensors as they are more compatible with electronic measuring devices.

Once the physical parameter has been converted to an electrical equivalent it is easily input into a computer or microprocessor for manipulating, analyzing and displaying.

By far the most common parameter measured is temperature. At present temperature is the only parameter covered in detail.

Each year hundreds millions of sensors are manufactured. They are in domestic appliances, medical equipment, industrial control systems, air-conditioning systems, aircraft, satellites and toys.

Sensors are becoming smarter, more accurate and cheaper. They will play an ever increasing role in just about every field imaginable.