

Electronics and Communication

In the modern electronics world, the reed switch finds applications in almost every equipment and supports the growth in electronics today, which is influenced by constraints like compactness, low power consumption, and functional reliability. A few reed switch and reed sensor applications in the field of electronics and communication are listed below.

Cellular phone, Notebook computer and PDA doors

In mobile devices with doors to protect the keypads, the power to the display or central processing unit (CPU) can conveniently be switched on or off, just by opening or closing the doors. A reed sensor can be used in these applications because it does not drain any power from the battery, irrespective of its contact state. Furthermore, when the sensor is actuated, the resistance across the contacts is so low in the order of a few milliohms, that unnecessary battery drain is avoided. Reed sensors are also used in notebook computers to trigger the CPU to sleep when the door is shut. Suitable products: **R3**, and **R2** SMD reed sensors.

On/off switch in Microphones and Radio transmitters

In microphones and radio transmitters, unnecessary signal transients and speaker crackle can be avoided at the time of switching on or off, by using a reed sensor based on/off switch. The reed sensor is mounted on a small PCB inside the microphone, and a sliding unit with a magnet fitted to the outer casing actuates it. Unlike conventional slide switches which wear out due to repeated mechanical movements of the slide contacts, the reed sensor is actuated when the magnet is slid into place, ensures that a good contact is made, and no wear out occurs. Suitable products: **MS-10x** PCB mountable reed sensors, and goal-post formed **MM-1018**, and **RM-1318** reed switches.

Telephone hook switches and Hands-free Kits

Reed sensors can easily switch modern telephone circuitry loads. Conventional hook switches, which are used in telephones, undergo millions of operations and fail easily. When a reed sensor is used in the place of a hook switch, it can survive millions of operations. Normally closed reed sensors can be used for such applications to save on additional components. Most telephone handsets have an inbuilt magnet in the speaker, and this field is enough to open the reed sensor contact and break the circuit. Taking the handset off the hook closes the reed sensor and enables the dial tone. The same principle can also be used in hands-free kits inside automobiles to cradle various mobile devices. Suitable products: **R2B** normally closed SMD reed sensors and **MS-10x** miniature PCB mountable reed sensors.

Automatic dentist's drill activation

A reed sensor finds application in the tiny tip of a dentist's drill to work as a pressure sensor, which starts or stops the drilling. Only when the drill is pressed against a hard surface, like teeth, which in turn moves the spring loaded magnet closer to the reed sensor, does the drilling start. Pressing the drill against delicate organs like tongue and lips does not accidentally switch the drill on. Again, life of the reed sensor is very high as there are no mechanical parts, and a reed sensor, being hermetically sealed, is immune to liquids like saliva and other dental mouthwashes. Suitable products: **MS-212** ultra-miniature cylindrical sensors, and **UM-0018** ultra-miniature reed switches with cropped leads.

Winding count and tension sensing and in Coil Winders

Reed sensors find an important role in closed loop tension control systems like coil winders, tape and reel machines etc. The wire, which is to be wound, is usually taken through a spring, which gives cushioning when winding on bobbins, which are not circular. A reed sensor mounted near this spring with a magnet mounted on the spring itself ensures that the optimum tension level of the wire is maintained and if exceeded, a visual indication or a slow-down or stop in the winding motor can be triggered. Apart from tension sensing, a reed sensor can also accurately count the number of turns wound on the bobbin. Suitable products: **MS-225** threaded cylindrical sensors, and **MS-324** miniature flat pack sensors.

Relays in Modems and Fax Machines

Ultra miniature relays are manufactured by winding coils around reed switches and can be used to switch high loads with very low input voltages. Reed relays are extensively used in a number of electronics and communication equipment, especially modems and fax machines to switch the telephone line. Special reed relays which have low inductance can be used in radio frequency (RF) switching applications to ensure that there is no power loss. Suitable products: **MM-1018** and **UM-0018** ultra-miniature reed switches can be used in molded reed relays.

Open door sensing in Copiers and Scanners

In copiers and flatbed scanners, reed sensors are used to signal the main processor if the top door is left open. This prevents wastage of toner in copiers and helps build a closed loop system which can automatically start the scanning or copying cycle when the door is closed, and the magnet actuates the reed sensor. Suitable products: **MS-10x** PCB mountable reed sensors and SMD formed **SM-1322** reed switches.

Pacemakers and Defibrillators

Tachycardia and Bradycardia are problems in which the heart beats at a rate faster or slower than the normal human heart rate. Fibrillation is the uncontrolled beating of different parts of the heart. People with such heart problems need pacemakers or defibrillators to alter and maintain the pumping rate, or to control the beating at different parts of the heart. Implantable pacemakers and defibrillators use reed switches, so that the device mode can be altered with a magnet externally. Special reed sensors which are exclusively manufactured for use in life saving equipments are very compact and have a very high degree of reliability and precision. Suitable products: **UM-0018** ultra-miniature reed switches.

Due to continual improvement, specifications are subject to change without notice

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Vagus Nerve Stimulators

The Vagus nerve in the neck is one of the primary communication lines to the brain. Vagus Nerve stimulators are implantable devices which control the stimulation of impulses to the brain. When a patient senses a seizure coming, a magnet is used over the area where the stimulator is implanted to activate the reed switch inside, which in turn triggers an extra, on-demand stimulation to the Vagus nerve. In most cases, this prevents the seizure. Suitable products: **UM-0018** ultra-miniature reed switches.

Spirometers

Lung function tests (or pulmonary function tests, PFT) evaluate how much air a person's lungs can hold, how quickly he or she can move air in and out of the lungs, and how well the lungs add oxygen to the blood and remove carbon dioxide from the blood. A spirometer is a reed switch based flow meter which is attached to the tube into which the patient blows and sucks. The pulses sensed by the reed switch are fed to the tester which charts our different graphs known as spirograms which are then compared with those of healthy individuals. Suitable products: **UM-0018** ultra-miniature reed switches.

Over heat Protection

Electronic equipments incorporate an in-built overheat protection scheme. In general, the function of an overheat protection (OHP) device, is to alert the controller if a preset heat limit is exceeded. Unlike thermistor controlled systems, where continuous temperature monitoring and polling is required, thermal reed sensors can be used to directly cut off power, turn a cooling fan on, or interrupt the processor to do so. Suitable products: **TRS-M** thermal switches and **TRS-W** thermal reed sensors.

Electricity and Fluid Metering

In water meters, gas meters, and electricity meters, a reed sensor can be used to count the number of turns in the dial, and with minimum logic circuits, can give digital read outs. For such applications, specially designed reed switches with high spring back forces can be used inside the reed sensor. Even if the meter is unused for periods of up to three months and the reed sensor stays closed for all this time, the contact can easily open up and continue to work once the meter dial starts turning. Suitable products: **MS-324** miniature flat pack sensors, and **MS-214** cylindrical sensors.

Switches in weather proof electronic equipment

In weather proof walkmans, cellular phones, and CD players, conventional switches cannot be used because they are not water proof or dirt and dust proof. Hermetically sealed reed sensors are the ideal solution as they can be mounted inside the equipment, free from the external water and dirt, and tiny sliding magnets can be fitted on the outside to trigger them. These kinds of switches are also used in underwater cameras and flashes. Suitable products: **R3** miniature SMD reed sensors, and **R2** standard size SMD reed sensors.

Satellite dish position sensing

While tuning motorized dishes, the dish motor is turned until a clear signal is received and a reed sensor is locked there. Different channels are beamed from different satellites and reed sensors are used to remember the positions so that one dish can be used for different providers. In more advanced models, the reed sensor counts the number of rotations of the dish motor and gives feedback to the satellite receiver. Suitable products: **MS-328** flat pack sensors and **MS-228** threaded sensors.

Satellite dish position sensing

Most reed switch and reed sensor based products require contact protection when used with loads where there is a chance of inrush current. More details about contact circuits are available here. A reed sensor with a built-in resistor can be a simple choice for such applications as this saves another component. Suitable products: **MK-xxxx** sensors.

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