Standex DETECT Electronics

APPLICATION ALLEY

Reed Switch & Sensor Technology for Alternative Energy Applications



INNOVATE | CONSULT | ENGINEER | DELIVER





Reed Switch Features:

- Ability to switch up to 10,000 Volts
- Ability to switch currents up to 5 Amps
- Ability to switch or carry as low as 10 nano-Volts without signal loss
- Ability to switch or carry as low as 1 femtoAmp without signal loss
- Ability to switch or carry up to 7 GigaHz with minimal signal loss
- Isolation across the contacts up to 10^{15} W
- Contact resistance (on resistance) typical 50 milliOhms (mW)
- In its off state it requires no power or circuitry
- Ability to offer a latching feature
- Operate time in the 100 ms to 300 ms range
- Ability to operate over extreme temperature ranges from –55 °C to +200 °C
- Ability to operate in all types of environments including air, water, vacuum, oil, fuels, and dust-laden atmospheres
- Ability to withstand shocks up to 200 Gs
- Ability to withstand vibration environments of 50 Hz to 2000 Hz at up to 30 g
- Long life. With no wearing parts, load switching under 5 Volts at 10 mA, will operate well into the billions of operations
- No power consumption, ideal for portable and battery-powered devices
- No switching noise



The Alternative Energy market has seen a staggering boom over the last ten years, with no signs of slowing down as technology advances.

Reed Switches & Sensors have been a critical aspect of providing reliable, long-lasting Alternative Energy products across the globe. Why? Because they require zero power consumption, offer long life expectancy, and a hermetic seal.

Over the years, the Reed Switch has shrunk in size from approximately 50 mm (2 inches) to 3.9 mm (0.15 inches). These smaller sizes have opened up many more applications, particularly in RF and fast time domain requirements

Alternative Energy:

- **Wind turbines**
- **Solar Panels**
- **E-Bike Brakes**
- **E-Car Charging**

Helping Wind Turbines Remain Energy Efficient, Sustainable & Eco-friendly

- The surface mount Reed Sensors are used for the task of sensing wind turbine rotor speeds.
- In the event of excessive winds, the Reed Sensor signals the turbine rotor to disengage from the power generation mechanism to prevent gear train damage
- Reed Sensors are designed in a robust thermoset over-molded package impervious to extreme temperatures and harsh conditions.
- The Reed Sensor uses a simple magnetic field detection to sense the rotor speed without contact.

Without question, the Reed Switch's hermeticity lends itself to more switching applications than any other switching device. Its ability to be used as a complete sensing component by itself or the ease of packaging it into special sensing requirements is done without any complicated process or high tooling costs.

There are so many existing and potential applications for Reed Sensors that it would be impossible to discuss them all here. However, we will cover some of the basic Alternative Energy applications that we hope will give insight and new considerations for your present and future projects.



E-Bike Brake Detection

Shutting off the electric auxiliary drive motor of an e-bike as soon as the brakes are applied is critical for safety. This improvement uses a Reed Switch Sensor and magnet to detect the movement of the hand brake lever.

The Reed Sensor is positioned in the brake housing while the permanent magnet is fixed in the hydraulic piston. The slightest movement of the brake lever brings the magnet into proximity with the sensor and switches off the engine.

Reed Sensors can carry out other e-bike safety switching functions such as activating the brake light, sensing seat occupancy, etc.

E-Cars Connector Detection

Battery life and charging have been a major focus of electric vehicle (EV) manufacturers in recent years, and Reed Sensors function as a critical tool in ensuring a safe and efficient charging cycle.

To avoid potential electrical accidents and arcs, the current flow between the plug and socket must be continuously monitored. This means tiny sensors must continually check the correct position of the connector into the port and interrupt the power supply should the need arise.

Our switches last for billions of switching operations while remaining unaffected by their environment thanks to their hermetic seal – thus making a significant contribution to the security and the development of electrically driven automobiles.

Reed Sensors can also control further functions, such as an immobilizer, power indicator, locking, etc.



For When it Matters - The Right Design, at the Right Time, at the Optimal Cost.

At Standex Electronics, we believe in: Collaborative innovation with our customers

- Collaborative innovation with our customers
- Delivering the right design, at the right time, at the optimal cost
- Acting as an extension of your engineering team
- Living our promise: **Innovate | Consult | Engineer | Deliver** — when the stakes are high, Standex Detect delivers

To learn more about how Standex Detect can support your projects with innovative sensing, switching, and relay technologies, visit standexdetect.com or contact our engineering team to discuss your specific application needs.

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