

## Marine Industry and Meteorology

Reed sensors find an important place in marine applications where they are exposed to salt water and sub zero temperatures due to their inherent corrosion resistant contact characteristics. A variety of fluid levels need to be constantly monitored in boats. The marine industry also needs weather instruments like pressure gauges, anemometers, and wind vanes for safe navigation. Reed sensors are also used in these instruments.

### Boat engine temperature

Thermal reed sensors can be mounted on the engine block to sense high temperatures and give an indication on the instrument panel. Thermal reed sensors can also be used in a variety of applications on boats to monitor oil temperature, etc. Suitable products: **TRS-P** thermal reed sensors.

### Anchor, rudder, and hatch position

Just as reed sensors are used in automobiles for end position and intermediary position sensing of sun roofs, doors, windows, bonnets and trunks, they are also used in boats and yachts to sense anchor position, hatch open and close positions, and intermediary and end positions of the rudder. Suitable products: **MS-216** and **MS-214** cylindrical sensors.

### Accurate level sensing of fluids

Special reed sensors with an integrated resistor can be mounted on PCBs to give out a potentiometric feed back across two outputs as a foamed magnetic float moves along its length. The PCB tracks can be designed in such a way that a full tank gives high resistance and an empty tank gives low resistance, or vice versa. Rainfall in mm can also be measured using this principle. For sensing fluids such as sewage, a perforated housing can be fitted outside the float assembly so that semi solids do not come near the float and obstruct its path. Suitable products: **MK-xxxx** reed sensors with resistor, and **MS-10x** miniature PCB mountable reed sensors.

### Pressure Gauges

Bourdon tube pressure gauges are fitted with a magnet on the Bourdon tube itself so that as pressure increases, the magnet moves along a circumference. A circular PCB with many reed switches mounted from centre to circumference giving a potentiometric two wire feedback can be used to accurately measure pressure. The advantage with such gauges is that multiple alarm points can be set. Suitable products: SMD formed **MM-1018** and **RM-1318** reed switches, and **R3** SMD reed sensors.

### Anemometers

Spinning cup anemometers are fitted with magnets and as the wind blows, a reed sensor can count the number of pulses which can then be used to calculate wind speed. Suitable products: **MS-214** and **MS-216** cylindrical sensors and **MS-225** threaded sensors.

### Wind Vanes

Eight reed switches are mounted radially at 22.5 degree angles making compass points on a circular PCB and the wind vane contains one long magnet which is the diameter of the PCB. The wind vane is mounted at the centre of the circular PCB. As the wind direction changes the vane actuates the corresponding reed switches and the wind direction is known. Suitable products: SMD formed **MC-1425** and **IL-2022** reed switches, and **R3** SMD reed sensors.

### Lake-bottom currents

Reed switches are used in flow meters to calculate volume of liquid. Flow meters are attached to a depth probe and insert into glacial lakes for monitoring the velocity and current of the water at various depths by environmentalists and scientists. Suitable products: **SM-1322** and **RM-1318** miniature reed switches in flow meters.

### Rowing Electronics

Reed sensors are used in water proof rowing equipment like stroke meters to count the number of strokes of the oar in kayaks, canoes, and boats. The reed sensor is mounted under the moving seat and a magnet is placed under the seat. For every stroke, the magnet moves back and forth over the reed sensor. Suitable products: **MS-10x** PCB mountable reed sensors and goal post formed **IL-2022** and **MO-1422** reed switches.

### Survival rafts

Survival rafts contain water sensors which trigger the compressed air cylinder to inflate the raft. To prevent against accidental inflation, a small magnet and reed switch is placed in the raft. The magnet needs to be pulled out of its pocket for the unit to activate when it hits the water. Reed switches are also used in emergency locator transmitters (ELT) to prevent the unit from transmitting when inside the cover. This is done by placing a magnet inside the pocket of the cover and mounting a reed switch inside the ELT. This keeps the ELT from transmitting as long as it is inside its cover. Suitable products: **MS-10x** miniature PCB mountable reed sensors, **R3** miniature SMD reed sensors.

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

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27 December 2013

