



Application Alley

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Automotive - Reed Sensor

Gear Shift Reed Sensor for Trucks



Custom
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Tomorrow

Introduction

More and more electronic control is being used in automobiles and trucks in “drive by wire” implementations, replacing traditional mechanical systems which are highly susceptible to wear. For improved functionality and ease of control, the transmission shifter arm movement in certain trucks is monitored using reliable Reed Sensors.

When battery drain is a concern in automobiles, the magnetically actuated Reed Sensor is the perfect solution since they draw no power when the vehicle is off. The MK16 Reed Sensor, an over-molded hermetically sealed Reed Switch is one of several surface mount sensors which can be used in a gear shifter application.

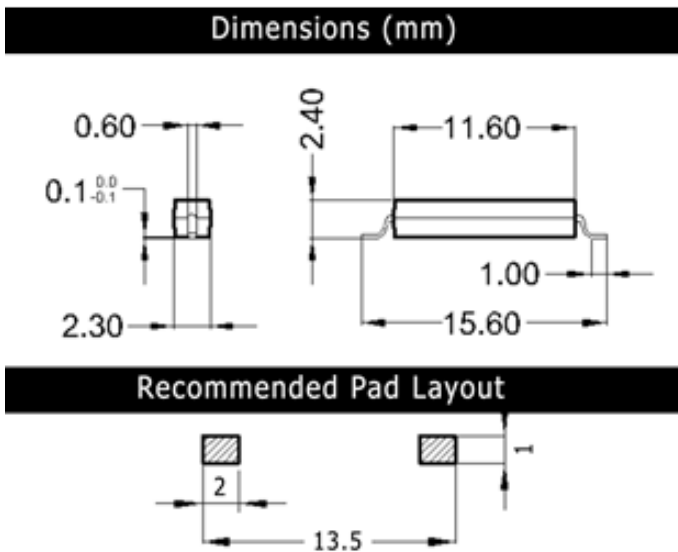


Figure 1. MK16-x-2 Sensor physical layout

Features

- Hermetically sealed
- Rugged overmolded surface mount package
- Dynamically tested contacts
- Reliable switching without wearing parts
- Ability to activate and control two sensors with one magnet

- Ability to handle “under the hood” environment
- Ability to operate -40°C to 130°C
- No operating power required
- Millions of switching operations

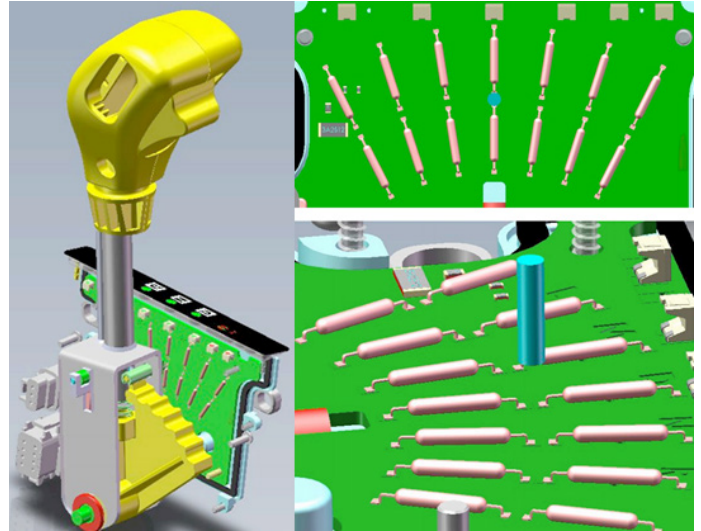


Figure 2. Cut-away of the gear shifter (left) and the sensor matrix top view (top right) and how magnet is centered directly over the sensor pairs.

Applications

- Any truck gear shift requirement requiring computer control
- Any application requiring accurate position placement sensing

Standex-Meder's Surface Mount Reed Switch Sensors Lead The Way

Truck gear shifts now use Standex-Meder's surface mounted Reed Sensor to sense the shifter position and send a signal to the micro computer initiating the gear change in the transmission. This approach eliminates the need for all the additional linkage from the transmission to the gear shift. Since the gear shift is one of the most used mechanical systems, its wear is inevitable with subsequent quality problems and ensuing costly repairs. Standex-Meder's electronic detection eliminates this entire issue.

In addition, Standex-Meder’s use of over-molded hermetically sealed reed switches makes it impervious to faulty operation when subjected to various environmental conditions.

In addition, since there could be up to 12 Reed Sensors engaged when the vehicle is in use, there are only two that are activated and drawing a small amount of power at any one time. When the vehicle is off none of the sensors draw any power, insuring any inadvertent battery drain is avoided.

In this application, Standex-Meder’s MK16 accomplishes the sensing action when the two Reed Sensors are activated by a samarium cobalt magnet mounted in the gear shift handle. When the gear shift is moved to a new position the magnet will move into the influence of the next pair of Reed Sensors, which when activated will carry out their dual function.

Consult our engineering group with your specific applications.

| Specifications (@ 20°C) MK16 Series | | | |
|-------------------------------------|-------------|-----|-------|
| | Min | Max | Units |
| Operate Specifications | | | |
| Must close distance | 5 | 15 | mm |
| Must open distance | 5 | 15 | mm |
| Hysteresis | Typical 50% | | |
| Load characteristics | | | |
| Switching voltage | | 200 | V |
| Switching current | | 0.5 | Amps |
| Carry current | | 0.5 | Amps |
| Contact rating | | 10 | Watts |
| Static contact resistance | | 150 | mΩ |
| Dynamic contact resistance | 200 | | mΩ |
| Breakdown voltage | 230 | | V |
| Operate time | | 0.6 | msec |
| Release time | | 0.1 | msec |
| Operate temp | -40 | 130 | °C |
| Storage temp | -50 | 130 | °C |

Dimensions (mm)

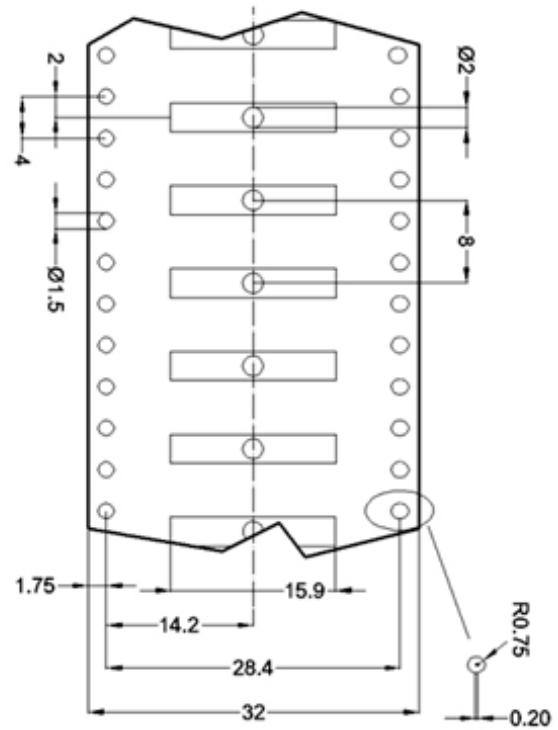










Figure 3. MK16 Tape & Reel

Consider some of the below surface mount options for the gearshift application.

| Surface Mount Sensor Series | | | | | |
|-----------------------------|------------|-------|--------|---|--------------|
| Series | Dimensions | mm | | inches | Illustration |
| | | mm | inches | | |
| MK15 | W | 2.5 | 0.098 |  | |
| | H | 2.5 | 0.098 | | |
| | L | 19.50 | 0.768 | | |
| MK16 | W | 2.3 | 0.091 |  | |
| | H | 2.3 | 0.091 | | |
| | L | 15.60 | 0.614 | | |
| MK17 | W | 2.1 | 0.083 |  | |
| | H | 2.1 | 0.083 | | |
| | L | 9.61 | 0.378 | | |
| MK22 | W | 2.7 | 1.060 |  | |
| | H | 2.3 | 0.091 | | |
| | L | 15.60 | 0.614 | | |
| MK23-35 | W | 2.2 | 0.087 |  | |
| | H | 1.95 | 0.077 | | |
| | L | 15.75 | 0.620 | | |
| MK23-66 | W | 2.2 | 0.087 |  | |
| | H | 2.7 | 1.060 | | |
| | L | 19.60 | 0.772 | | |
| MK23-87 | W | 2.0 | 0.079 |  | |
| | H | 2.1 | 0.083 | | |
| | L | 15.60 | 0.614 | | |
| MK23-90 | W | 2.54 | 0.100 |  | |
| | H | 3.05 | 0.120 | | |
| | L | 24.9 | 0.980 | | |

Find out more about our ability to propel your business with our products by visiting www.standexmeder.com or by giving us a hello@standexelectronics.com today! One of our engineers or solution selling sales leaders will listen to you immediately.

About Standex-Meder Electronics

Standex-Meder Electronics is a worldwide market leader in the design, development and manufacture of standard and custom electro-magnetic components, including magnetics products and reed switch-based solutions.

Our magnetic offerings include planar, Rogowski, current, and low- and high-frequency transformers and inductors. Our reed switch-based solutions include Meder, Standex and OKI brand reed switches, as well as a complete portfolio of reed relays, and a comprehensive array of fluid level, proximity, motion, water flow, HVAC condensate, hydraulic pressure differential, capacitive, conductive and inductive sensors.

We offer engineered product solutions for a broad spectrum of product applications in the automotive, medical, test and measurement, military and aerospace, as well as appliance and general industrial markets.

Standex-Meder Electronics has a commitment to absolute customer satisfaction and customer-driven innovation, with a global organization that offers sales support, engineering capabilities, and technical resources worldwide.

Headquartered in Cincinnati, Ohio, USA, Standex-Meder Electronics has eight manufacturing facilities in six countries, located in the United States, Germany, China, Mexico, the United Kingdom, and Canada.

For more information on Standex-Meder Electronics, please visit us on the web at www.standexmeder.com.

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