Appliance - Reed Sensor

Coffee & Espresso Machines Use Reed Sensors To Detect Water Levels And Position
Introduction

In many of the newer coffee machines, without permanent water connections for commercial or domestic applications, a low water indicator lamp signals the minimum water level. In this case a permanent magnet is built into a float housing installed in a removable plastic water tank. Sensors in coffee makers play an important role by checking on the status of accessoies such as the water tank, milk container, drip tray, grounds container, milk foam attachment, and the cap (capsule machine). Sensors detect the level of water and milk in the tanks, when the grounds container must be emptied, and if there is leakage in the system. Standex-Meder sensors can also be used as an On/Off Switch without creating any noise during the switching process.

Features

- Hermetically sealed
- Millions of reliable operations
- Minimal space required
- Corrosion resistant
- Cost effective solution

The reed switch used in the Reed Sensor is hermetically sealed and is therefore not sensitive to spillage or wet environments.

- The hermetically sealed reed switch is ideally suited for switching low signal level voltages and currents
- Magnet and Reed Sensor are isolated and have no physical contact by typically having the magnet mounted to the movement and the Reed Sensor mounted and positioned to pick on the end limit position/s
- The magnet is not affected by its environment
- Cylindrical hole and screw fastening mounting
- Contacts dynamically tested
- Large sensing distances possible
Applications

- Reed Sensors are ideal for use in coffee or espresso machines with removable water tanks or with permanent water connections
- Position detection - water tank, milk tank, grounds container, drip tray, milk foam attachment, cap (capsule machine), on/off switch, selection switch

The positioning of the Reed Switch and the magnetic strength of the magnetic float guarantee the switching of the contacts when the water level drops to the level of the Reed Switch sensor position. By design, the switch sensor remains closed even after the water level continues to drop well below the minimum water level.

In the machine itself, a Reed Switch is mounted behind a plastic or aluminum cover. The magnetic contacts of our MK03 and MK04 series, for example, offer the sensing requirements suitable for this application.

### Specifications (@ 20°C) MK14 Series

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Min</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Must close distance</td>
<td>5</td>
<td>25</td>
<td>mm</td>
</tr>
<tr>
<td>Must open distance</td>
<td>5</td>
<td>25</td>
<td>mm</td>
</tr>
<tr>
<td>Hysteresis</td>
<td></td>
<td></td>
<td>Typical 50%</td>
</tr>
</tbody>
</table>

Load characteristics

- **Switching Voltage**: 200 V
- **Switching Current**: 0.5 Amps
- **Carry Current**: 1.5 Amps
- **Contact Rating**: 10 Watts
- **Static Contact Resistance**: 150 mΩ
- **Dynamic Contact Resistance**: 200 mΩ
- **Breakdown Voltage**: 320 V
- **Operate Time**: 0.5 msec
- **Release Time**: 0.1 msec
- **Operate Temp**: -20°C to 85°C
- **Storage Temp**: -20°C to 85°C

### Cylindrical Panel Mount Sensor Series

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>mm</th>
<th>inches</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK03</td>
<td>D</td>
<td>5.25</td>
<td>0.207</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>25.5</td>
<td>1.004</td>
</tr>
<tr>
<td>MK14</td>
<td>D</td>
<td>4</td>
<td>0.157</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>25.5</td>
<td>1.004</td>
</tr>
<tr>
<td>MK18</td>
<td>D</td>
<td>5</td>
<td>0.197</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>17</td>
<td>0.669</td>
</tr>
<tr>
<td>MK20/1</td>
<td>D</td>
<td>2.72</td>
<td>0.107</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>10</td>
<td>0.394</td>
</tr>
</tbody>
</table>

### Rectangular Panel Mount Sensor Series

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>mm</th>
<th>inches</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK04</td>
<td>W</td>
<td>13.9</td>
<td>0.547</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>5.9</td>
<td>0.232</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>23.0</td>
<td>0.906</td>
</tr>
<tr>
<td>MK05</td>
<td>W</td>
<td>19.6</td>
<td>0.772</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>6.1</td>
<td>0.240</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>23.2</td>
<td>0.913</td>
</tr>
<tr>
<td>MK12</td>
<td>W</td>
<td>14.9</td>
<td>0.587</td>
</tr>
<tr>
<td></td>
<td>H</td>
<td>6.9</td>
<td>0.272</td>
</tr>
<tr>
<td></td>
<td>L</td>
<td>32.0</td>
<td>1.260</td>
</tr>
</tbody>
</table>

**Consult the factory for more options not listed above.**
In the case of coffee machines with permanent water connections, the same sensor approach applies except for the fact that the indicator light is removed and a water-switching valve is added.

Generally speaking, this approach works well for all similar fluid level applications.

Standex-Meder Electronics offers a wide range of products such as Reed Switches, Reed Sensors, Floats, and Magnetics. We develop and manufacture customized solutions for our customers that specially adapt sensors and float magnets for their products.

Examples of solutions include but are not limited to complete assemblies such as a PCB board including Reed Switches and connectors. Our sensors are available in a wide range of connection options, housing forms, and mounting options.

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.

Contact Information:

Standex-Meder Electronics
World Headquarters
4538 Camberwell Road
Cincinnati, OH 45209 USA

Standex Americas (OH)
+1.866.STANDEX (+1.866.782.6339)
info@standexelectronics.com

Meder Americas (MA)
+1.800.870.5385
salesusa@standexmeder.com

Standex-Meder Asia (Shanghai)
+86.21.37820625
salesasia@standexmeder.com

Standex-Meder Europe (Germany)
+49.7731.8399.0
info@standexmeder.com