



# Application Alley

## Appliance - Reed Sensor

*Electronic Stove Control Sensors Are More Efficient and Safe*

### Introduction

The new stove tops particularly those made of the flameless, burnerless ceran stoves use reed sensors to eliminate the need for knobs and use less power. Gas stoves and electric stoves with their exposed heating elements are always in need of cleaning. With gas stoves there is always the potential of fire as well.

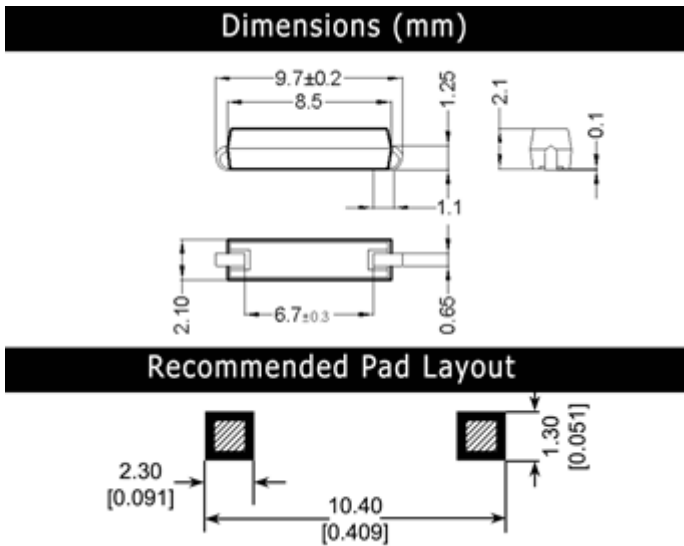


Figure 1. MK17-x-3 Sensor physical layout

### Features

- Magnet and Reed Sensor are isolated and have no physical contact by typically having the magnet mounted to a sliding device that is independent of the stove top, and the Reed Sensors are mounted on the under side of the stove top strategically placed such that the magnetic field of magnet will be sensed when brought within their proximity.
- The reed switch used in the Reed Sensors is hermetically sealed and is therefore not sensitive to high temperature environments
- The magnet is not affected by its environment
- Tens of millions of reliable operations
- Surface mounting and through hole mounting

- Cylindrical hole and screw fastening mounting
- Contacts dynamically tested

### Applications

Ideal for sensing the heat settings for each stove burner replacing the need for costly knobs. Ideal for applications sensing remotely through any non-ferromagnetic material in a host of different configurations

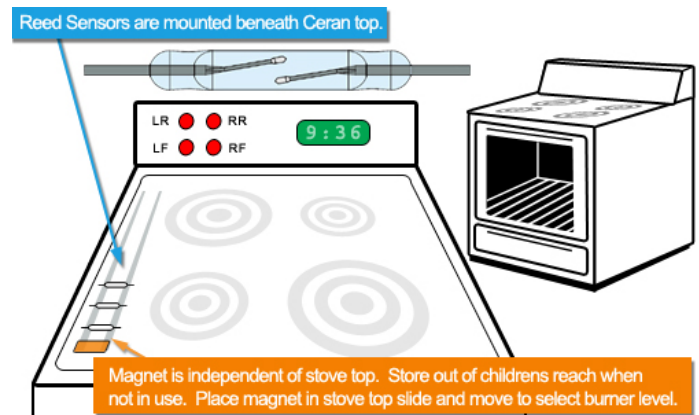


Figure 2. Magnet assembly is independent of stove and is used to control the burner level. The magnet can be stored out of reach of children when not in use.

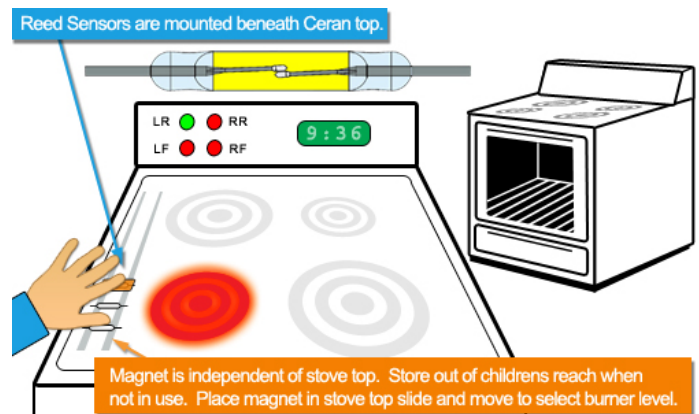


Figure 3. When magnet is inserted into stove top slide and moved over the sensors mounted beneath the Ceran top, the switches are actuated at each burner level.

### Reed Sensors Allow Knob-less Operation of Stove Tops and Represents a Real 'Green Approach'

Appliance designers continue to improve stove tops by making them less dangerous, more energy efficient and more child proof by ceran heating elements and knob-less operation by using reed sensors. The ceran stove is also very easy to keep clean with its smooth surface over the entire top.

This contrasts with gas stoves that have open flames for heating with reports of several household fires each year. These coupled with the exposed electric elements of electric stoves are in constant need of cleaning.

The new ceran stoves use a magnet mounted in a plastic housing that is independent of the stove top. Reed sensors are typically mounted on circuit boards on the underside of the stove top.

Surface Mount Sensor Series				Illustration
Series	Dimensions			
	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	

Specifications (@ 20°C) MK15 & MK06 Series			
	Min	Max	Units
<b>Operate Specifications</b>			
Must close distance	5	25	mm
Must open distance	5	25	mm
Hysteresis	Typical 50%		
<b>Load characteristics</b>			
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 MK06	-20	85	°C
Storage temp MK06	-20	85	°C
Operate temp MK15	-20	130	°C
Storage temp MK15	-20	130	°C

### Dimensions (mm)

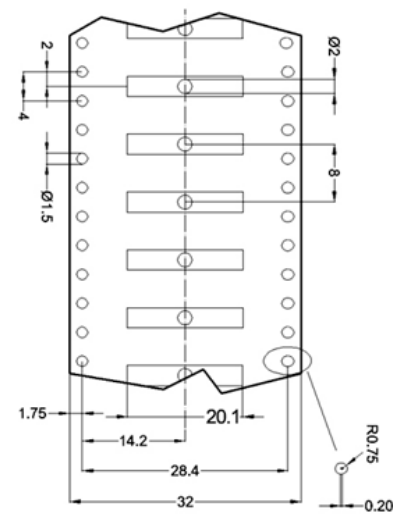


Figure 4. MK15 Tape & Reel

When the magnet assembly is brought in the vicinity of the reed sensors, the contacts close and a signal is sent to the electronics which turns on the burner to the selected level. Moving the magnet further will select a higher burner level, lower burner level, or turn off the burner when its use is complete.

Reed sensors represent the most energy efficient approach instead of using hall effect sensors that draw power all the time whether its in the sensing mode or not. The reed sensors while sitting idle draw zero power, and since that is the case 99.9% of the time much energy is saved. Also, children who cannot turn off their inquisitive minds are always intrigued with stove knobs. Usually they will find a way to reach them and turn the knobs. In the past this has led to fires and some badly burned children. With this new approach, this cannot happen, because there are no knobs and the plastic sliding assembly enclosing the magnet can be simply picked up and stored in a convenient location, away from any inquisitive minds.





Because Standex's sensors use hermetically sealed reed switches that are further packaged in strong high strength plastic, they can be subject to high temperature environments without any loss of reliability.

The reed sensor is an excellent choice because it can operate reliably over a wide temperature range, and represents an economical way to carry out the sensing function. Standex's sensors are packaged for surface mounting as well as through hole mounting. Also, Standex has cylinder packages as well as screw fastening packages having lead wires for remote attachment to the electronics.




Consult with our engineers for specific details for your exact application.

Consider some of the below options in surface mount and through hole versions for meter reading or similar applications.





#### Cylindrical Panel Mount Sensor Series

Series	Dimensions		Illustration	
	mm	inches		
MK03	D	5.25	0.207	
	L	25.5	1.004	
MK14	D	4	0.157	
	L	25.5	1.004	
MK18	D	5	0.197	
	L	17	0.669	
MK20/1	D	2.72	0.107	
	L	10	0.394	

#### Rectangular Panel Mount Sensor Series

Series	Dimensions		Illustration	
	mm	inches		
MK04	W	13.9	0.547	
	H	5.9	0.232	
	L	23.0	0.906	
MK05	W	19.6	0.772	
	H	6.1	0.240	
	L	23.2	0.913	
MK12	W	14.9	0.587	
	H	6.9	0.272	
	L	32.0	1.260	

### Through Hole Sensor Series

Series	Dimensions			Illustration
	W	mm	inches	
MK06-4	W	3.3	0.130	
	H	3.3	0.130	
	L	12.06	0.475	
MK06-5	W	2.8	0.110	
	H	3.2	0.126	
	L	14.30	0.563	
MK06-6	W	3.3	0.130	
	H	4.2	0.165	
	L	17.24	0.679	
MK06-7	W	3.3	0.130	
	H	4.2	0.165	
	L	19.78	0.779	

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

\*\*Consult the factory for more options not listed above.

## About Standex Electronics

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

Our magnetics offerings include planar, current sense, and conventional low- and high-frequency transformers and inductors. Reed switch-based solutions include Meder, Kent, and KOFU 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 range of product applications in the transportation, automotive, medical, test and measurement, military and aerospace, aviation, HVAC, appliance, security and safety, and general power and industrial markets.

Standex Electronics has a commitment to absolute customer satisfaction through a partner, solve, and deliver approach. With a global organization that offers sales support, engineering capabilities, and technical resources worldwide – we implement customer driven innovation that puts the customer first.

For more information on Standex Electronics, visit us on the web at [standexelectronics.com](http://standexelectronics.com).

### Contact Information:

#### Standex Electronics

World Headquarters  
4538 Camberwell Road  
Cincinnati, OH 45209 USA

#### Standex Americas (OH)

+1.866.STANDEX (+1.866.782.6339)  
[info@standexelectronics.com](mailto:info@standexelectronics.com)

#### Standex Electronics Asia (Shanghai)

+86.21.37606000  
[salesasia@standexelectronics.com](mailto:salesasia@standexelectronics.com)

#### Standex Electronics Europe (Germany)

+49.7731.8399.0  
[info@standexelectronics.com](mailto:info@standexelectronics.com)

#### Standex Electronics India (Chennai)

+91.98867.57533  
[kkasaragod@standexelectronics.com](mailto:kkasaragod@standexelectronics.com)

#### Standex Electronics Japan (Kofu)

+81.42.698.0026  
[sej-sales@standex.co.jp](mailto:sej-sales@standex.co.jp)

