



# Application Alley

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## Medical - Reed Sensor

**In-The-Canal Hearing Aids Use Reed Sensors**



Custom  
Engineered  
Solutions for  
Tomorrow

## Introduction

Hearing aids are just that. They allow a person to better hear sounds and speech. Strange as it may seem to those that hear perfectly, people with hearing disabilities don't like to advertise their malady. Many of the hearing aids previously have been worn external to the ear acting as an advertisement - 'I can't hear well'. For this reason many people who could improve their hearing dramatically, refused to make the purchase because of the hearing aid's external exposure. Standex-Meder's hermetically sealed micro reed sensors represent a key component in a micro-electronic circuit. This circuitry makes it possible to wear the circuitry in the ear canal in an unexposed manner while obtaining hearing improvement.

### Dimensions (mm)

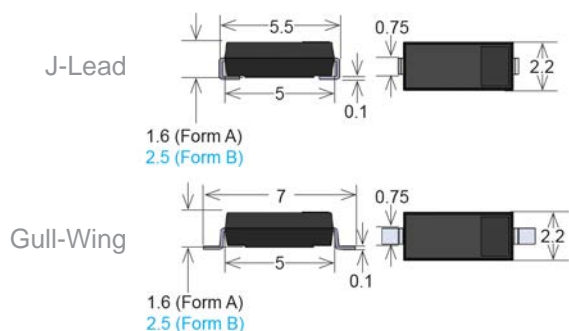


Figure 1. MK24 Sensor physical layout

## Features

- One of the smallest reed sensors on the market
- The reed switch used in the Reed Sensor is hermetically sealed and is therefore not sensitive to wet, moist environments
- Contacts dynamically tested
- High reliability
- Zero power consumption
- Supplied in tape and reel for surface mounting

## Applications

- Ideal for use where space is critical in battery operated devices

### Micro Reed Sensor Solves a Major Problem of Battery Power Drain and Size in In-The-Canal Hearing Aids

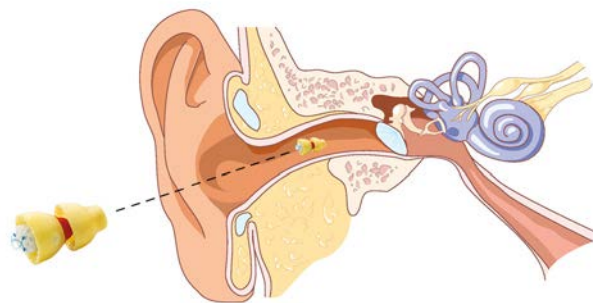


Figure 2. Completely In-the-canal hearing aid with integrated micro reed sensor.

Hearing aids in the past were worn on the outside of the ear, and they hooked over the top of the ear and rested behind the ear. Many people felt self-conscious when wearing these hearing aids in a public environment, and for this reason would not wear them at all. These large, behind-the-ear hearing aids used a rotary mechanical thumb switch to regulate the audible volume. Designers have been working on developing a smaller, better hearing aid that would fit in the ear canal. These new high-tech, miniaturized hearing aids have been made possible by the fact that less sound amplification is necessary due to their position closer to the ear drum, in conjunction with the development of integrated circuit technology. In the design of these smaller hearing aids, it is crucial to have a way to adjust the volume and program the microelectronics.


Standex-Meder’s hermetically sealed micro reed switch offered the perfect solution. A small wand (similar to, but smaller than, a pencil) with a magnet mounted on its end activates the reed sensor, when brought in proximity to the ear. This initiates the setting of the various modes and volume controls so vitally needed. This remote activation, offered by the micro reed sensor, was the essential ingredient for the solution to smaller, in-the-canal hearing aids.

Because Standex-Meder’s sensors use hermetically sealed reed switches that are further packaged in strong high strength plastic, they can be subject to rough treatment and environmental concerns such as grit, water, and moisture without any loss of reliability.

**Specifications (@ 20°C) MK24 Series**

	Min	Max	Units
<b>Operate Specifications</b>			
Must close distance	1.7	4.4	mT
Must open distance	0.7		mT
Hysteresis	Typical 50%		
<b>Load characteristics</b>			
Switching voltage		30	V
Switching current		0.3	Amps
Carry current		0.3	Amps
Contact rating		3	Watts
Static contact resistance	100	250	mΩ
Dynamic contact resistance	100	250	mΩ
Breakdown voltage	60		V
Operate time		1.0	msec
Release time		0.5	msec
Operate temp	-40	130	°C
Storage temp	-50	130	°C

**Surface Mount Sensor Series**

Series	Dimensions		Illustration
	mm	inches	
MK24	W	2.2 / 0.086	
	H	1.6 / 0.063	
	L	5.0 / 0.195	

**Dimensions (mm)**

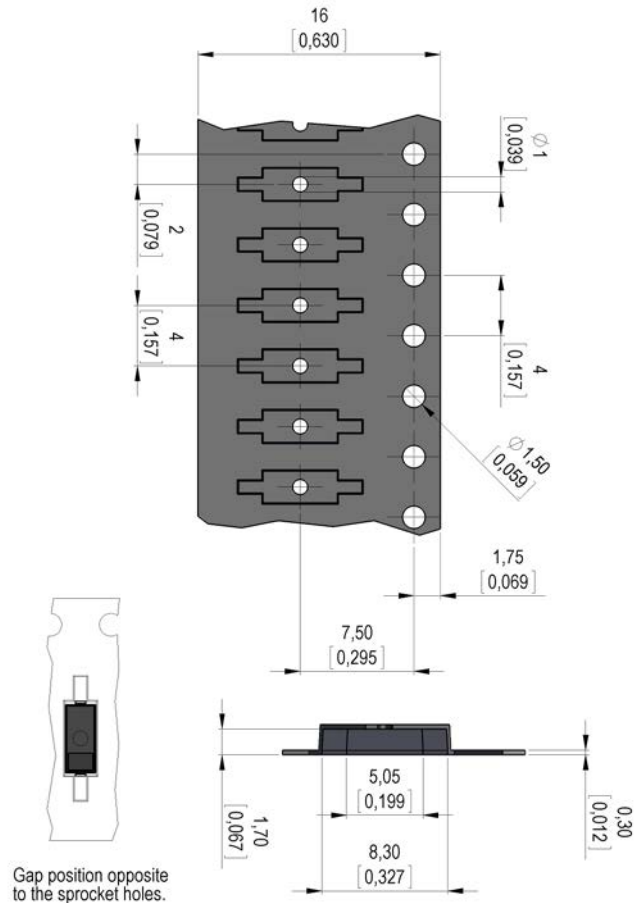


Figure 3. MK24 Tape & Reel

Standex-Meder’s sensors are packaged for surface mounting in tape and reel for ease of manufacturing. Contact the factory for more options for this application.

Find out more about our ability to propel your business with our capabilities and solutions by visiting [www.standexmeder.com](http://www.standexmeder.com). Give us a [hello@standexelectronics.com](mailto:hello@standexelectronics.com) today! One of our engineers or sales leaders will engage your team.

## 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](http://www.standexmeder.com).

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