

# Sensing the Closure of Fire, Safety, and Emergency Doors Using MEDER's Unique Ferromagnetic Metal Detection Sensors



*Products for tomorrow...*

REED RELAYS ■ REED SENSORS ■ REED SWITCHES

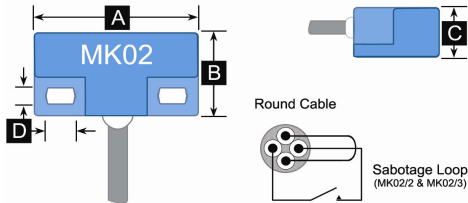


Figure 1. Screw mount version diagram of MK02 Series metal detection reed sensors

## Introduction

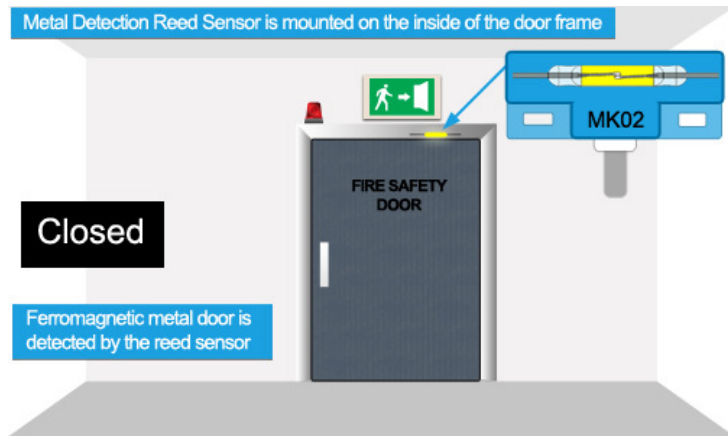
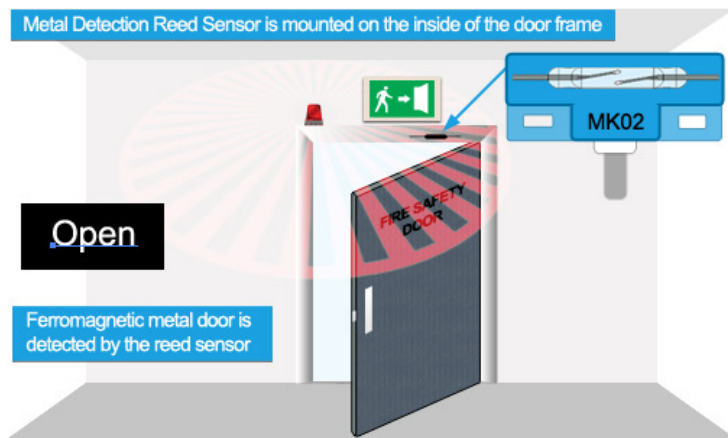
MEDER engineers have developed a reliable way to detect the status of an emergency door. Normally reed sensors require a reed sensor and a magnet to carry out the sensing function. However, almost all emergency doors must be made of steel or a steel alloy. This steel interferes with the magnetic field shunting it from the reed sensor, thereby eliminating its usage in these applications. Therefore, designers only had mechanical switches at their disposal to detect the status of any emergency door. They have been used successfully; however, they can fail prematurely or may have limited life cycles. Designers now have a much better and more reliable alternative with MEDER's one component reed sensor that uses the influence of the steel door to activate the sensor.

## Features

- Alternative to inductive sensors
- One component reed sensor
- The reed sensor never comes in direct contact with the movement of the door
- The reed switch used in the reed sensor is hermetically sealed and is therefore not sensitive to dirty environments and early electromechanical failure
- The reed sensor comes with various leads, connectors and lead lengths for ease of electrical connection
- Mechanically stable enclosure
- Millions of reliable operations
- Hermetically sealed to operated in dirty environments
- Requires no power to operate
- Screw fastening or PCB through hole mounting
- Contacts dynamically tested

## Applications

- Elevator control
- Ideal for fire, safety, and emergency exit doors
- Freight container security
- Can be used for sensing of steel movement on pistons, vehicles, etc.
- Machinery safety control
- Mechanization systems
- RV leveling systems
- Safety control
- Window sensor



## Reed Sensors Sense the Status of Emergency Doors Without the Use of an External Magnet

MEDER's invention and patent of a ferromagnetic metal detection sensor is a 'stand alone sensors'; they only require a ferromagnetic material to be brought within a specified distance, causing the contacts to close. They switch reliably for 10s of millions of operations. No actuating magnet is necessary. No physical touching occurs, which is necessary in the case of the electromechanical sensor.

# Sensing the Closure of Fire, Safety, and Emergency Doors Using MEDER's Unique Ferromagnetic Metal Detection Sensors



*Products for tomorrow...*

REED RELAYS ■ REED SENSORS ■ REED SWITCHES

## MK02 Specifications

Operate specs	Min	Max	Units
Must close distance	5	2000	mm
Must open distance	5	2000	mm
Hysteresis (open dist./close dist.)	Typical 50%		

Load Characteristics	Min	Max	Units
Switching voltage		1000	Volts
Switching current		1.0	Amps
Carry current		1.5	Amps
Contact rating		100	Watts
Static Contact resistance		150	mΩ
Dynamic contact resistance		200	mΩ
Breakdown voltage	Up to	4000	Volts
Operate time		0.5	msec
Release time		0.1	msec
Operate Temp	-20	85	°C
Storage Temp	-35	85	°C

### PLEASE NOTE!

For best operation it is recommended that you **DO NOT** mount these sensors on any ferromagnetic material **OR** use any ferromagnetic screws.

- Alternative to inductive proximity sensors
- No power required to operate
- No external magnet required

Fire and safety doors in public buildings, hospitals, government buildings, hotels, museums, warehouses, banks, auditoriums, restaurants and other buildings frequented by people, require the exit door be shut at all times except in the case of an emergency. The doors also bar anyone from any unauthorized entry. By law the doors must be monitored at all times electronically of their status, and if they are opened proper warnings must be generated.

Prior to MEDER's unique ferromagnetic metal detection sensor, a reed sensor was used in conjunction with a magnet. However, the iron fire proof doors acted as a magnetic shunt. Very strong magnets had to be used, but still resulted in very low sensitivity. Typically to make it work effectively, a section of the iron door had to be removed and non-ferromagnetic material added, allowing the reed sensor to operate effectively. MEDER's patented ferromagnetic metal detection reed sensors have eliminated all this extra work and expense, at the same time, providing very reliable operation in a one-component device. No external magnet is required. When the emergency door is opened, the sensor no longer senses the ferromagnetic door, which was acting as a magnetic shunt. Once this magnetic shunt is removed a signal is sent to a central electronic circuit, which triggers an alarm.

The sensors can have normally open contacts as well as normally closed contacts. One can also select as an option, the added provision of a sabotage loop built into the sensor. If someone attempted to cut the cable coming from the sensor, the sabotage loop would be cut, alerting the central electronic circuit tripping an alarm.

## Screw Fastening Metal Detection Series

Series	Dimensions		Illustration
	Mm	inches	
<a href="#">MK02</a>	L	32.4	1.276
	W	16.7	0.657
	H	10.0	0.394
<a href="#">MK02/5</a>	L	46.0	1.811
	W	18.35	0.722
	H	13.0	0.512

## PCB Through Hole Metal Detection Series

Series	Dimensions		Illustration
	Mm	inches	
<a href="#">MK02/6-0</a>	L	24.0	0.945
	W	8.90	0.350
	H	7.70	0.303
<a href="#">MK02/6-1</a>	L	24.0	0.945
	W	7.70	0.303
	H	8.90	0.350
<a href="#">MK02/7-0</a>	L	40.5	1.594
	W	8.70	0.343
	H	12.70	0.500
<a href="#">MK02/7-1</a>	L	46.0	1.811
	W	12.70	0.500
	H	8.70	0.343

\*\*Consult our factory for your specific design requirements.