

The MR386 series Fiber Optic Microswitch paired with a MR380 series Controller provides a new, innovative signaling solution that can be deployed in difficult and hazardous environments over long distances. The switch sensor employs a photo interrupt scheme operating over a duplex 62.5/125µm optical link that allows for reliable signal detection. This provides the same mechanical attributes typically associated with ubiquitous electrical micro switches.

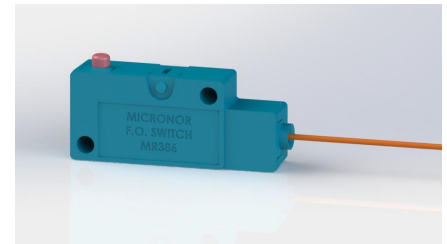
The entire fiber optic sensor system offers a generous loss budget, allowing for long distances, complex routing and daisy chaining of multiple switches.

**ZAP
FREE®**

Ex

MR

**Interchangeable with
Industry Standard V15-series
Form Factor**



Simple Mechanical Device
EPL Mb/Gb/Gc/Db/Dc

**MR380-2
Series
DIN Rail
Controller**



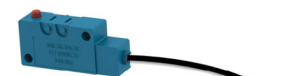
24V Operation,
Digital Output and
DPDT Relay Contacts

**MR380-0
Series OEM
Controller**



5-24V Operation,
Digital and
Open-Collector
Outputs

**MR386 Series
Microswitch**



Multiple Microswitches
can be optically wired
in series for interlock
applications

up to 4km (2.49 miles)

Fiber Optic Cabling
Duplex LC
Multimode 62.5/125 Fiber

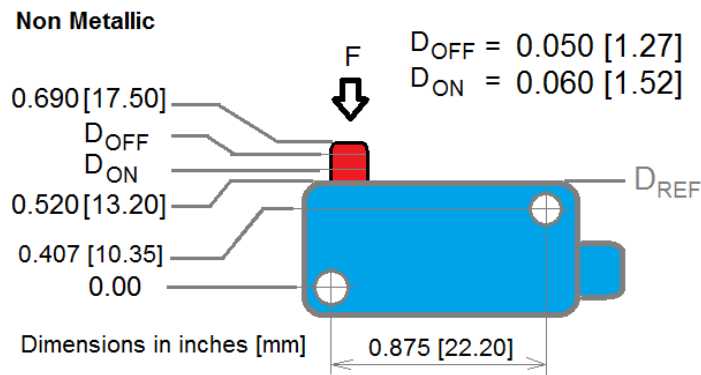
Features

- Two models - Industrial and Non-Metallic MRI Safe
- Interchangeable with V15-series electrical micro switch
- 100% passive sensing design - no electronics whatsoever
- Immune to EMI, RFI, lightning, and ground loops
- Immune to high voltages
- Inherently safe sensor can be used in all manner of hazardous and potentially explosive atmospheres -mines, gas and dust
- Operates over long distances - up to 4 km
- DIN rail or OEM controller available

Applications

- Medical MRI environment
- High voltage lines
- High voltage switches
- Transformer power tap
- Hazardous environments
- Oil, gas and mines
- Valve position
- Process monitoring
- Aerospace actuator

Switching Characteristics

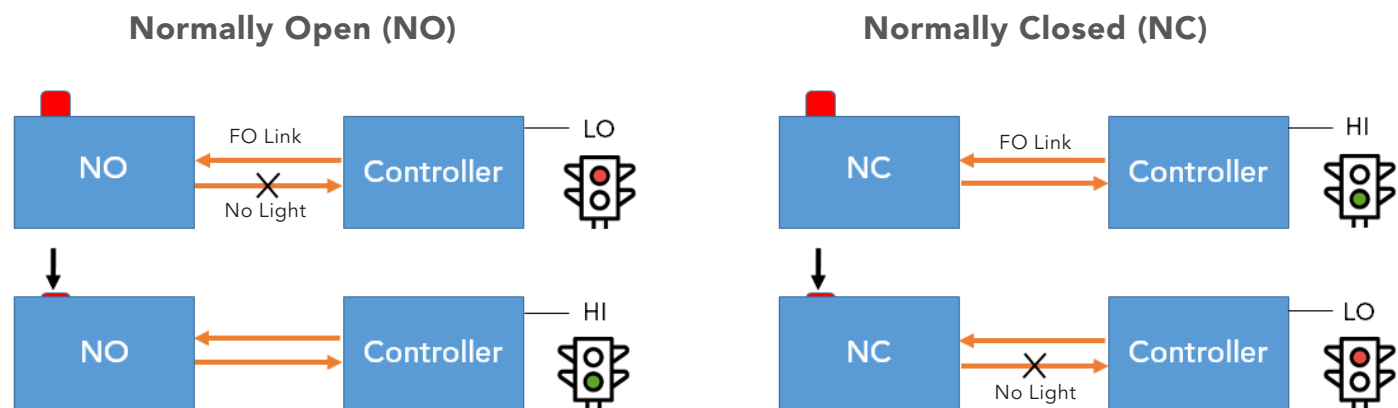


Sensor Specifications

Switching Characteristics		
Durability	> 1,000,000 operations minimum	
Actuation Force (typ.)	MRI: 1.49 N (150 gF)	Industrial: 0.49 N (50 gF)
Release Force (typ.)	MRI: 0.49 N (50 gF)	Industrial: 0.13 (13 gF)
Switching Hysteresis (typ.)	MRI: 0.25 mm	Industrial: 0.26 mm
Operating Frequency	150 operations per minute max	
Optical Interface		
Pigtail Configuration	LC Duplex Plug, Fiber type and pigtail length per ordering coder	
Insertion Loss	For MR386-2X-YY: IL=3.5dB max (3.0dB typical), 62.5/125µm OM1 MM Fiber	
Maximum Distance	Distance depends on the user’s system loss budget which is the total round-trip loss of all optical link components. Consult Application Note AN118 for more information.	
Environmental		
Temperature	Non-Metallic Model: -5°C to +60°C (+23°F to +140°F) Industrial Model: -40°C to +80°C (-40°F to +150°F)	
Humidity	15-90% RH, Non-Condensing, Non-Icing	
Ingress Protection	IP40	
Vibration	10 to 55 Hz, 1.5mm amplitude	
Shock	200 m/s ² (approx 20g) max	
MR Attributes		
ACR Guidance Document for Safe MR Practices		
MRI Usage Zones	MRI Safe sensor is designed for safe use in all MR Zones I-V Both immune and invisible to the MRI electromagnetic field	
Materials	Non-metallic except for fiber optic connector end	
Explosive Atmospheres		
Inherently Safe, Simple Mechanical Device		
EX Classification	Inherently safe, simple mechanical device when used with MR380 series Multimode Controller IECEX Test Report GB/CML/ExTR 16.0105.00/00	
ATEX	CE EPL Mb/Gb/Gc/Db/Dc	
IEC Ex	EPL Mb/Gb/Gc/Db/Dc	
NEC	Exempt	
Physical Attributes		
Housing Dimension	V15 compatible, Consult Mechanical Reference Drawing	
Unit Weight	Sensor with 1.5 meter pigtail, 15 g (0.53 oz)	

Specifications subject to change without notice

Sensor Operation



Ordering Info

M R 3 8 6 - 2 0 - 1 R 5

Fiber

2 62.5/125, Type OM1

Optical Circuit and Material

0 MRI Safe, Non-Metallic, NO
4 MRI Safe, Non-Metallic, NC

1 Industrial, NO
5 Industrial, NC

Optical Pigtail Length

1R5 LC Duplex Pigtail, 1.5m (Standard)

03 LC Duplex Pigtail, 3m

NOTE: Other lengths upon request

Quick Ship Configurations:

MR386-20-1R5 MR Safe (non-metallic) Microswitch, NO, 62.5/125µm MMF, Pigtail=1.5m

MR386-24-1R5 MR Safe (non-metallic) Microswitch, NC, 62.5/125µm MMF, Pigtail=1.5m

MR386-21-1R5 Industrial Microswitch, NO, 62.5/125µm MMF, Pigtail=1.5m

MR386-25-1R5 Industrial Microswitch, NC, 62.5/125µm MMF, Pigtail=1.5m

MR380-0-1 OEM Controller, 850nm Multimode

MR380-2-2 DIN Rail Controller, 1310nm Multimode