

FIBER OPTIC SIGNALING

MR386 ZapFREE® Microswitch

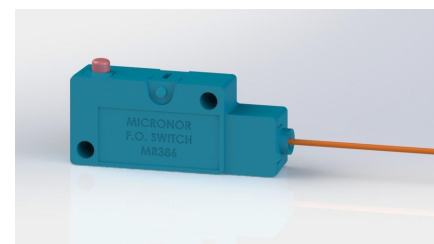
MR380 SERIES

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.



Interchangeable with Industry Standard V15-series Form Factor



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

**MR380-1-3
Universal
SM/MM
DIN Rail Mount
Controller**



24V Operation,
Digital Output and
DPDT Relay Contacts

**MR380-0-UNI
OEM Universal
Controller**



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

up to 20km (12.4 miles)

**MR386 Series
Microswitch**



Fiber Optic Cabling
Duplex LC
Multimode 62.5/125 Fiber

Multiple Microswitches
can be optically wired
in series for interlock
applications

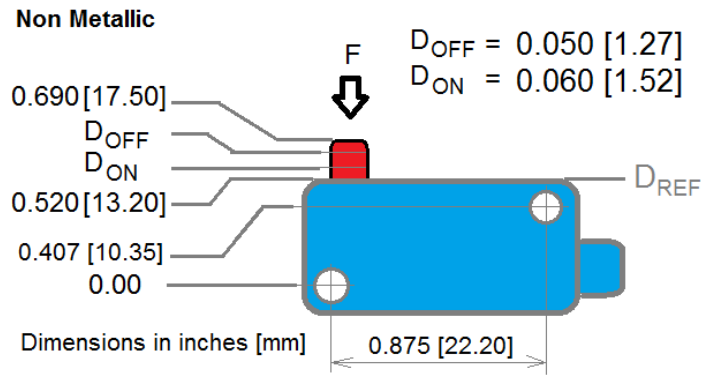
Features

- Two models - Industrial and Non-Metallic MRI Safe
- Interchangeable with Honeywell/Omron V-series electromechanical micro switch and roller/arm accessories
- 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 20km

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

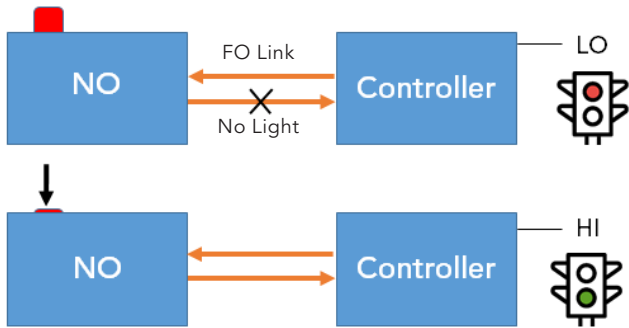


Sensor Specifications

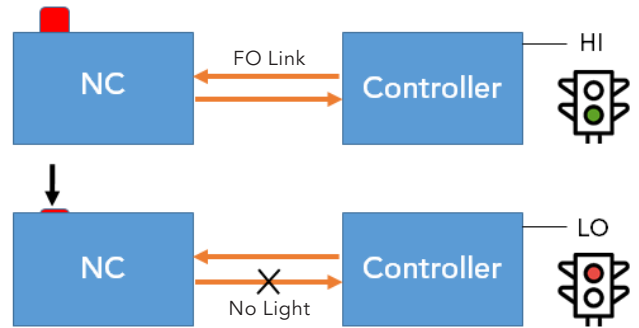
Switching Characteristics	
Durability	> 1,000,000 operations minimum
Actuation Force (typ.)	MRI: 1.49 N (150 gF) Industrial: 0.49 N (50 gF)
Release Force (typ.)	MRI: 0.49 N (50 gF) Industrial: 0.13 (13 gF)
Switching Hysteresis (typ.)	MRI: 0.25 mm Industrial: 0.26 mm
Operating Frequency	150 operations 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 Also compatible with OM2/OM3 50.125 MMF
Maximum Distance	Distance depends on the user's system loss budget which is the total round-trip loss of all optical link components. Maximum distance for direct run between microswitch and controller is 20km. 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	
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	
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)

Sensor Operation

Normally Open (NO)



Normally Closed (NC)



Ordering Info

MR386 - 2 0 - 1R5

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:

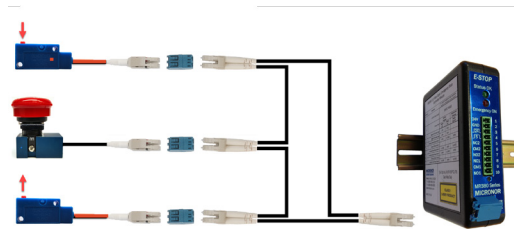
- MR386-20-1R5** MR Safe (non-metallic) Microswitch, NO, 62.5/125µm MMF, Pigtail=1.5m
- MR386-24-1R5** MR Safe (non-metallic) Microswitch, NC, 62.5/125µm MMF, Pigtail=1.5m
- MR386-21-1R5** Industrial Microswitch, NO, 62.5/125µm MMF, Pigtail=1.5m
- MR386-25-1R5** Industrial Microswitch, NC, 62.5/125µm MMF, Pigtail=1.5m

- MR380-0-UNI** OEM Controller, Universal SMF/MMF, 1310nm
- MR380-1-3** DIN Rail Mount Controller, Universal SMF/MMF 1310nm

Omron VAL2 Roller Leaf Spring Arm accessory kit mounted on MR386 (same V series Form Factor)



E-Stop and Microswitches Can Be Wired in Series for Tamperproof Fiber Optic Interlock



MICRONOR SENSORS, INC.
 2085 Sperry Ave, Suite A-1, Ventura, CA 93003, USA
 +1-805-389-6600
 sales@micronor.com www.micronor.com