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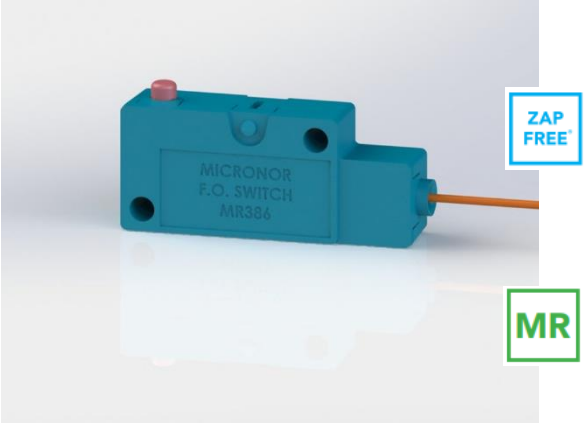
optical sensors

MR 386 Microswitch



Features

- ➔ Can be used in industrial and MRI applications
- ➔ Interchangeable with V15-series electrical micro switch
- ➔ 100% passive sensing design - no electronics
- ➔ Immune to EMI, RFI and ground loops
- ➔ Link lengths to 4000 meters

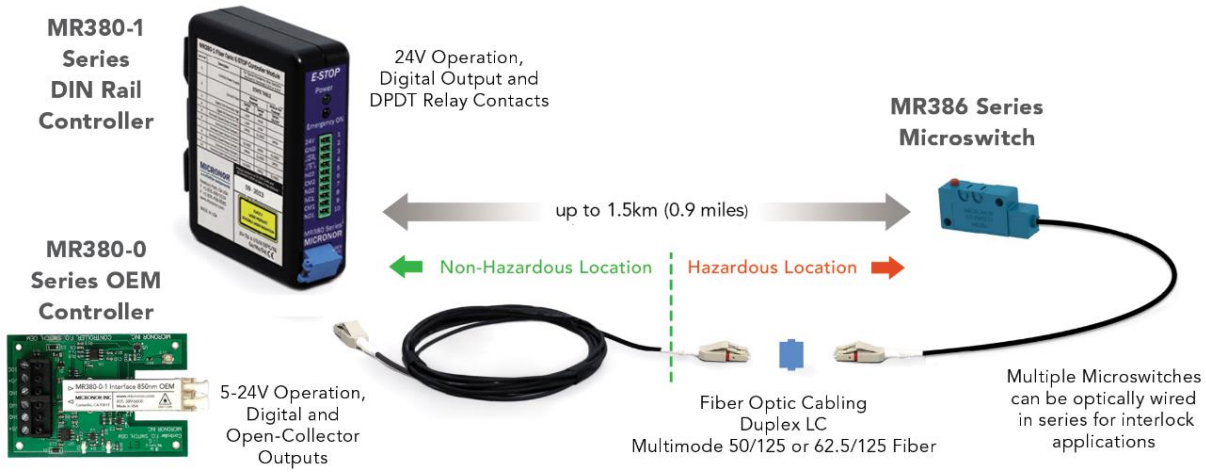
Product Description

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 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.
The MR380 Controller is the active optical and electrical interface for the MR380 E-Stop, E-Actuator and other Signaling Sensor products. ZapFREE® software is used for data acquisition.

Applications

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

System Planning



1. Verify cabling and junction boxes compatible with the operating environment.
2. Verify that the optical link loss is within Controller's Maximum Loss Budget.
3. Consult Application Note AN118 for more information, examples, and guidance on loss budget.

Subject to errors and changes Date: 21.04.2023

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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 9800.32.5XX: 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/s2 (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	
Physical Attributes		
Housing Dimension	V15 compatible, Consult Mechanical Reference Drawing	
Unit Weight	Sensor with 1.5-meter pigtail, 15 g (0.53 oz)	

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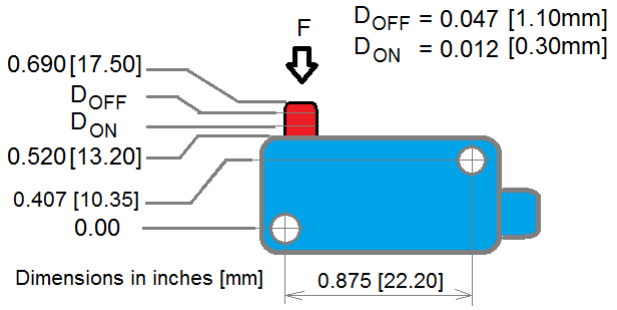
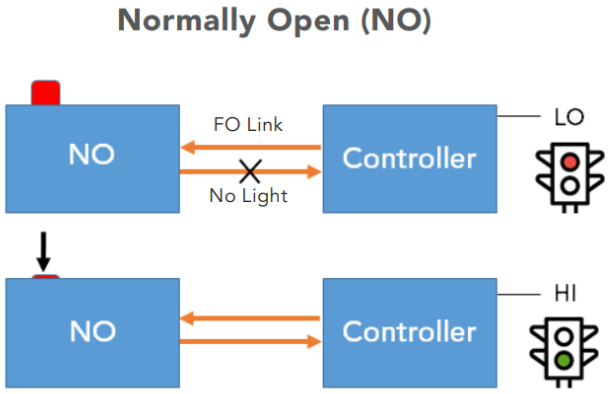
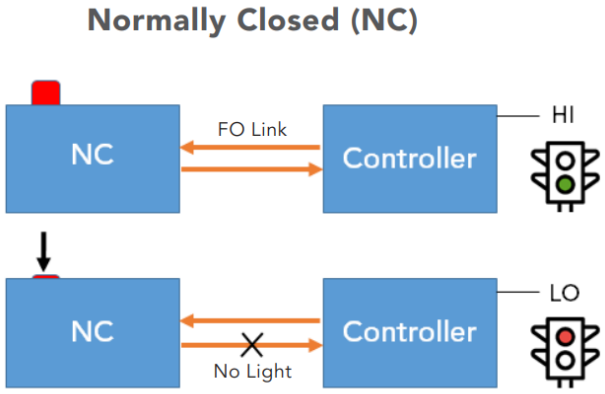
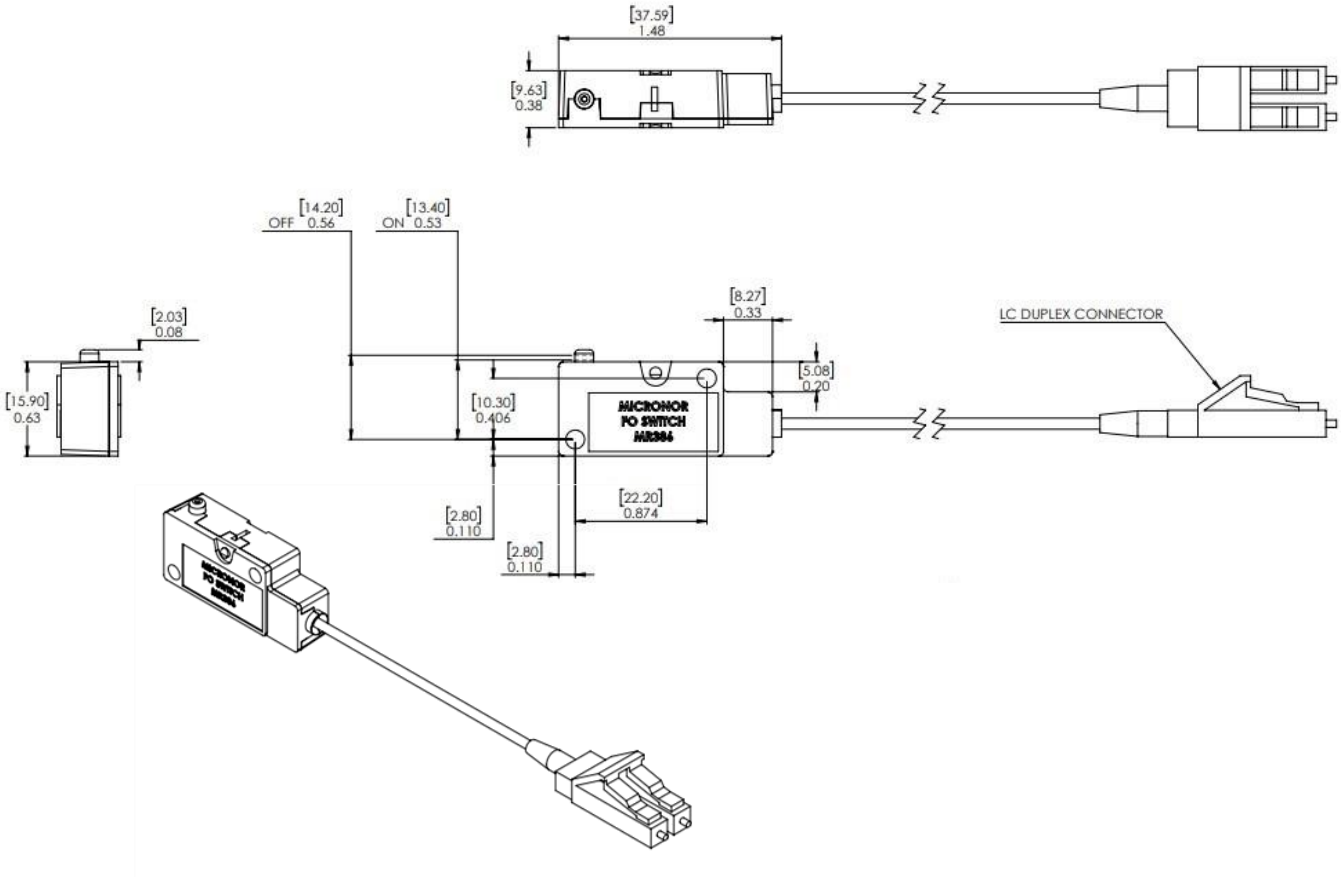
Sensor Operation







Drawing Inch [mm]



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Order Code

9800.32.500	MR386-20-1R5 – Fiber optical microswitch,	NO, MRI non-metallic, 1,5m, 62,5/125 Pigtail
9800.32.501	MR386-20-03 – Fiber optical microswitch,	NO, MRI non-metallic, 3m, 62,5/125 Pigtail
9800.32.502	MR386-21-1R5 – Fiber optical microswitch,	NO, industrial, 1,5m, 62,5/125 Pigtail
9800.32.503	MR386-21-03 – Fiber optical microswitch,	NO industrial, 3m, 62,5/125 Pigtail
9800.32.504	MR386-24-1R5 – Fiber optical microswitch,	NC, MRI industrial, 1,5m, 62,5/125 Pigtail
9800.32.505	MR386-24-03 – Fiber optical microswitch,	NC, MRI industrial, 3m, 62,5/125 Pigtail
9800.32.506	MR386-25-1R5 – Fiber optical microswitch,	NC, industrial, 1,5m, 62,5/125 Pigtail
9800.32.507	MR386-25-03 – Fiber optical microswitch,	NC, industrial, 3m, 62,5/125 Pigtail

Related Products

MR380-0-UNI	OEM Controller for Fiber Optic Signaling Products Series MR380
MR380-1	DIN Rail Mount Controller for Fiber Optic Signaling Products Series MR380
MR387	Fiberoptic Emergency Stop
973X.XX.XXX	Fiberoptic Extension Cable

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