

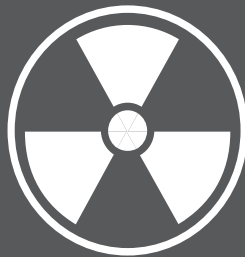


## WHAT CHALLENGES YOUR SENSOR APPLICATION?

*Micronor offers solutions!*



EMI/RFI



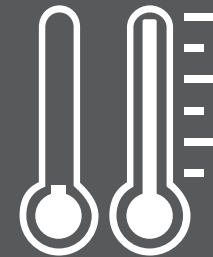
RADIATION



HIGH VOLTAGE



MAGNETIC FIELD



TEMPERATURE



EXPLOSIVE  
ATMOSPHERE

FIBER OPTIC KINETIC SENSORS



# POSITION Absolute Rotary and Linear Position Sensors

Fiber optic absolute position sensors (a.k.a. absolute encoders) are used where it is necessary to track absolute angular or linear position. These rotary encoders measure absolute angular position from 0° to 360° (13-bit or 14-bit resolution

depending on model) plus multi-turn tracking up to 12 bits (4096 turns). Absolute encoders output position as a digital value, SSI, RS485, Modbus RTU, and USB. Also scalable analog 4-20mA Current and Voltage outputs.

## MR330 Controller

14-bit (0.026°) Single Turn Resolution  
OM-1 62.5/125µm Glass Fiber

## MR330 Sensors

## MR430 Controller

13-bit (0.044°) Single Turn Resolution  
1mm M-POF Fiber

## MR431 Sensors



## MR330 Series

The MR330 series is a 14-bit Single Turn resolution + 12-bit Turn counting absolute encoder system based on Size 58mm industrial form factor with glass fiber technology for distances up to 300 meters. Rotary and linear models include Metallic and MRI Safe sensors. Linear string systems from 1.5m to 50m travel.

## MR430 Series

The MR430 series is a Size 11 (Ø1.1" / 26mm), POF-based absolute encoder system providing 13-bit Single Turn resolution + 12-bit Multi-Turn counting. The non-metallic, passive sensor offers several advantages: corrosion resistance, magnetic immunity, MRI invisibility, high voltage immunity, and distances up to 30m.



# MOTION Incremental Rotary and Linear Encoders

Fiber optic incremental encoders are used to sense speed or relative position of a motor shaft or linear actuator. Unlike electronic-based encoder outputs which are easily corruptible by noise, fiber optic quadrature signals are inherently immune to EMI, RFI and ground loops. The optical link allows interference free transmission up

to 2000 meters, especially useful in mining applications and similar Ex applications where inherent safety is required. Rotary sensor resolution is available to 1024ppr and linear encoder resolution to 100µm.

## MR340 Controllers

OM-1 62.5/125µm Glass Fiber

## MR340 Sensors

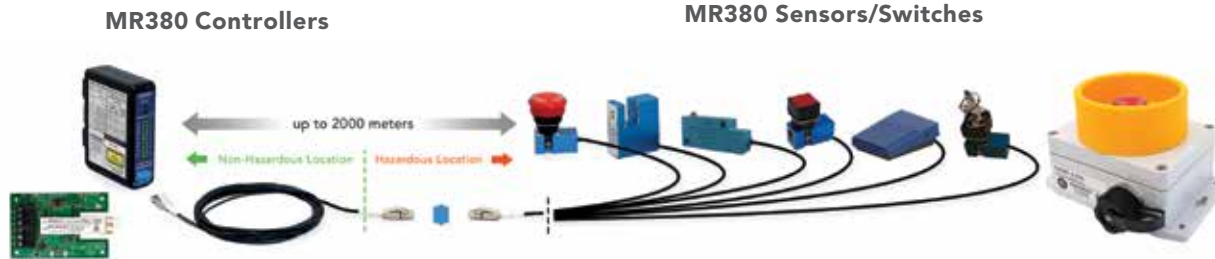


Encoders for the right application:

- Size 11 General Purpose – MR341
- Size 58mm General Purpose – MR342
- High Resolution Hollow Shaft for VFD feedback – MR344
- High Res. for VFD feedback – MR345
- Heavy Duty Size 90mm – MR346
- MRI Safe Size 58mm – MR348
- MRI Safe Linear, 100µm Res. - MR343

## **SIGNALING** E-Stop, Microswitch, and Signaling Sensors

Micronor offers discrete fiber optic signaling solutions for use in a wide range of medical, industrial, research and safety-related applications. These fiber optic sensors are especially ideal for potentially (Ex) explosive atmospheres such as mines, petrochemical and processing plants where inherent safety is required.



- **MR386 Fiber Optic Microswitch** is designed for applications and environments where electromechanical switches are unsafe or unreliable. Interchangeable with industry standard V-series micro switch.
- **MR387 Fiber Optic Emergency Stop** is a Functionally Safe solution which operates beyond the reach of traditional electromechanical E-Stop switches. Special solutions available for decentralized loop control.

## **ACCELERATION** MR660 Single and Multiaxis Accelerometers

MR660 Series Fiber Optic Multiaxis Accelerometers provides an innovative solution for measuring vibration and movement in high voltage or explosive environments. Sensors are available in 1- to 3-axis configurations and employ a highly sensitive, robust MEMS membrane design. The system can measure acceleration up to 50g with a calibrated analog output of 100mV/g pk-pk.

MR660 Controller



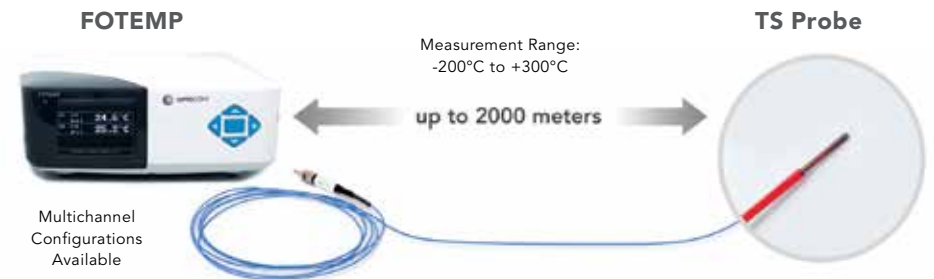
MR660 Sensor  
1D, 2D, or 3D



## **TEMPERATURE** Discrete GaAs Temperature Sensors

Fiber optic thermometers are used in applications where electronics-based thermocouples, thermistors and IR cameras cannot be used:

- Electromagnetic, RF, microwave, high voltage and lightning environments
- Potentially explosive environments, including mines, storage tanks and chemical plants
- Hot spot monitoring in power transformer
- Medical applications, including MRI and X-ray
- Food and semiconductor industries



Contact Micronor Inc. with your sensor challenges!



## OEM Solutions

Innovation and a deep technical fiber optics know-how allows Micronor to tackle challenging tasks for position measuring solutions that will work reliably in hostile environments. Micronor has also partnered with numerous companies solving and implementing measurement solutions for nuclear research, medical MRI applications and mining. We're here to help, contact us with questions regarding your application.



### Medical

Non-metallic MRI Safe sensors enable new fMRI functionality and medical device development. Applications include MRI cradle position, MRI phantoms, and MRI-guided biopsy & surgical robots.



### Energy

Utility and energy applications require immunity to high voltage and all dielectric design. Fiber optic encoders can monitor tap changer position, switchgear state, generator speed, and speed of top drives.



### Industrial

Industrial applications benefit from fiber's interference-free feedback and inherent safety. Welding robots, smelters, mines, chemical plants, and food processing.



### Transportation

Electric railways, aerial trams, and aerospace benefit from the passive sensor's electrical isolation and immunity to high voltage & lightning.



### Infrastructure

Fiber optic position sensors traverse the distances needed to monitor and control lift bridges, dams, floodgates, sluice gates, and hydro-electric power plants.

Micronor Inc. was founded 2003 in Newbury Park, California. The founders accurately predicted the need for fiber optic kinetic sensors which provide immunity from lightning, EMI/RFI, radiation and magnetic fields. Based on an innovative and patented technology, using wavelength as the information carrier, the first product introduced to the market were the incremental encoders. These products are used in the transportation, mining, oil and gas industries for position sensing and controlling the speed of VFD drives. As an innovative and flexible company, Micronor offers a wide range of fiber optic sensors as depicted within this brochure.

## Who To Contact

World wide contacts:  
For information and sales  
info@micronor.com or  
call +1-805-389-6600  
For product support,  
support@micronor.com or  
call +1-805-389-6600

WORLD WIDE HEADQUARTERS

MICRONOR INC, 900 Calle Plano, Suite K, Camarillo, CA 93012 USA  
T +1-805-389-6600 F +1-805-389-6605  
info@micronor.com www.micronor.com

EUROPE

MICRONOR AG, Pumpwerkstrasse 32, CH-8105 Regensdorf, Switzerland  
T +41-44-843-4020 F +41-44-843-4039  
info@micronor.com www.micronor.com