

FIBER OPTIC ABSOLUTE ENCODER

MR338 ZapFREE® MRI Safe Fiber Optic Absolute Position Sensor

The MR338 Series ZapFREE® Fiber Optic Absolute Position Sensor is an entirely passive, non-metallic absolute rotary encoder designed for use in Magnetic Resonance Imaging (MRI), nanomagnetic detection, EMC test labs, and similar applications where immunity and transparency to electromagnetic fields is required.



U.S. Patent 8,461,514 B1
Inherently Safe, Simple Mechanical Device
EPL Mb/Gb/Gc/Db/Dc

The MR330 system measures absolute angular position from 0° to 360° with 0.025° (14-bit) resolution and can track turns up to 4096 counts (12 bits). The remote MR330 Controller Module features multiple built-in interface for compatibility with industry standard motor drives, PLCs, and motion control systems.

MR330 Controller

24 VDC, SSI, RS485, Modbus,
USB, Analog, Digital

MR338

MRI Safe with
LC Duplex Pigtail



up to 300 meters

← Outside MRI Area

MRI Area →



Duplex LC, Multimode 62.5/125
Fiber Optic Cabling

Features

- Absolute 0.025° (14-bit) resolution
- 100% all-optical, passive sensing design
- Non-metallic for safe use in MRI Zone
- Immune and transparent to electromagnetic fields - does not leave artifacts in MRI scans
- Immune to lightning and high voltages
- EX Classified "Inherently Safe, Simple Mechanical Device".
- Outdistances copper, link lengths to 300 meters



Micronor MRI Safe position sensors are enabling MRI performance improvements and development of new medical devices

Specifications

Measurement Parameters	
Measurement Range	0° to 360° (continuous)
Resolution	13 bits (8192 counts), 14 bits (13,950 counts, 0.025°)
Maximum RPM	Maximum 2,500 rpm for position reading; Mechanical limit is 6,500 rpm
Mechanical Performance	
Moment of Inertia	2.17E-06 kg*m ²
Starting Torque	3.58E-04 N*m with Shaft Seal
Max Shaft Loads	Axial 30 N (6.75 lbf), Radial 60 N (13.5 lbf)
System MTBF (ISO Method)	L10 bearing life at 100% of max radial/axial load at 2500 rpm: 5.68E+05 hours L10 bearing life at 10% of max radial/axial load at 2500 rpm: 1.22E+06 hours
Optical Interface	
Optical Interface	LC Duplex, 62.5/125µm, Graded Index Fiber, 0.275NA, Type OM1
Link Length	Up to 300 meters with MR330 Controller
MR Attributes	ACR Guidance Document for Safe MR Practices
MRI Usage Zones	MR338 sensor is designed for safe use in all MR Zones I-IV
Materials Used	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 MR330 Controller IECEX Test Report (IECEXTR) GB/CML/ExTR 16.0070/00
ATEX	EPL Mb/Gb/Gc/Db/Dc
IEC Ex	EPL Mb/Gb/Gc/Db/Dc
NEC	Exempt
Environmental Performance	
Temperature/Humidity	Operating: -20° C to +65° C, Storage: -20° C to +65° C, 0%-95% RH (non-condensing)
Ingress Protection	Y Shaft Seal Option = IP65 N Shaft Shield Only Option = IP40
Physical Attributes	
Housing Dimension	Ø 58mm x 80mm L (industry standard 58mm servo mount housing)
Unit Weight	215g (7.58 oz)

Specifications subject to change without notice

Ordering Info

MR338 - Y 10 C10

Sensor Options

Shaft Seal

- Y** Seal, IP65
- N** Shield only, IP40

Note: Shaft seal recommended for most applications. Most common exception is where a very low starting torque is required.

Optical Connector Type and Pigtail Length

- C05** Duplex LC pigtail with 5m length
- C10** Duplex LC pigtail with 10m length

Shaft Diameter

- 10** 10 mm

Quick Ship Configurations:

- MR338-Y10C10** Ø10mm shaft with seal, Duplex LC optical pigtail=10m
- MR330-1** Controller

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

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