

# FIBER OPTIC INCREMENTAL ENCODER

## MR344 ZapFREE® Hollow Shaft Fiber Optic Incremental Encoder

**Questions?**  
Call +1-805-389-6600

**MR340 SERIES**

The MR344 ZapFREE® Heavy Duty Hollow Shaft Fiber Optic Incremental Sensor is an entirely passive, intrinsically safe, fiber optic incremental rotary encoder – ideal for a wide range of harsh and hazardous environmental applications. The passive, all-optical Sensor connects to the remote Controller via a standard duplex 62.5/125 multimode optical fiber link.



U.S. Patent 7,196,320  
Inherently Safe, Simple Mechanical Device  
EPL Mb/Gb/Gc/Db/Dc

The remote MR340 Controller Module transmits and converts optical signals to/from the Sensor. The Controller's multiple built-in interfaces insure compatibility with industry standard motor drives, PLCs, quadrature counters and motion control systems.

### MR340-1 Controller

Inherently Safe Optical Radiation



### MR344 Sensor

Simple Mechanical Device



Electrical Connections:  
24 VDC Power, A/B Quadrature Output  
Analog Outputs, RS485, SSI, USB

up to 2000 meters

← Safe Area | Hazardous Area →

Duplex LC and ODVA IP-LC  
Multimode 62.5/125, Fiber Optic Cabling

## Features

- 100% passive sensing design - no electronics whatsoever
- Sensor can be installed in all manner of hazardous and potentially explosive atmospheres - mines, gas and dust
- Immune to EMI and RFI for safe use in and around medical equipment, VFD drives and other "noisy" industrial environments
- Immune to lightning and high voltage which "zaps" electronics-based encoders
- Outdistances copper, link lengths to 2000m
- Standard Temperature range: -40°C to +80°C
- Extended Temperature option: -60°C to +125°C
- Special versions can be engineered for radiation and thermal-vac environments
- DIN Rail Mount controller module



**VFD  
Drive  
System**

# Specifications

Measurement Parameters	
Resolution	1024ppr
Max Speed	3,000 RPM continuous (MR340 Quadrature Outputs and Analog Outputs activated ONLY) <sup>(1,2)</sup> 3,600 RPM short term (< 1 minute) <sup>(2)</sup>
Mechanical Parameters	
Moment of Inertia	2.06E-4 kg*m <sup>2</sup> (Pocket Hole version), 2.09E-4 kg*m <sup>2</sup> (Through Hole version)
Starting Torque	3.53E-3 N*m (Pocket Hole version)
System MTBF	L10 Bearing life calculated at 2500 RPM: 2.12E+07 hours (2411 years)
Optical Interface	
Optical Interface	LC Duplex, 62.5/125µm Graded Index Fiber, 0.275NA, Type OM1
Link Length	Up to 2000 meters (6560 ft) with MR340 Controller
Explosive Atmospheres	Inherently Safe, Simple Mechanical Device
EX Classification	Inherently safe, simple mechanical device when used with MR340 Controller IECEX Test Report (ExTR) GB/CML/ExTR 16.0039/00
ATEX	EPL Mb/Gb/Gc/Db/Dc
IEC Ex	EPL Mb/Gb/Gc/Db/Dc
Environmental Attributes	
Temperature/Humidity	Standard: -40°C to +80°C, 0%-95% RH (non-condensing) Extended: -60°C to +125C, 0%-95% RH (non-condensing)
Ingress Protection	Through Hole Version=IP54 (dust protected, protected against splashing water) Pocket Hole Version=IP66 (dust proof, protected against powerful water jets)
Physical Attributes	
Housing Dimension	Ø 100mm x 49mm
Unit Weight	655 g (23 oz)
Materials	Body: Anodized Aluminum; Shaft Clamp and Bearings: Stainless Steel

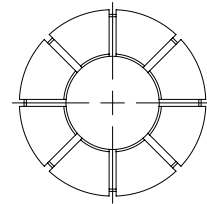
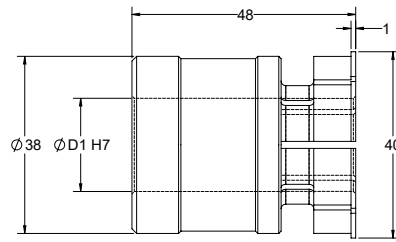
Specifications subject to change without notice

# MR314A Long Tether Arm Kit



Parameter	Description
Application	<ul style="list-style-type: none"> <li>For applications with fastening points located on variable pitch circle diameters</li> <li>Prevents radial play of the encoder</li> <li>Necessary axial play remains intact</li> <li>In addition to the electrical isolation offered by the fiber optic encoder, the insulating washers further inhibit bearing currents which, without insulation, can shorten the service life of encoder bearings</li> </ul>
Materials	Mounting bracket: Stainless Steel, Screws: Galvanized Steel, Shoulder washers: Plastic
Contents	<ul style="list-style-type: none"> <li>Flexing spring device (tether arm), Qty 1</li> <li>Screws, Qty 3</li> <li>Insulating shoulder washer set, Qty 2</li> </ul>
Ordering Code	MR314A

# Shaft Adapters



Parameter	Description	
Application	<ul style="list-style-type: none"> <li>Adapt smaller bores to MR344 38mm bore</li> <li>Provides thermally isolation as the plastic does not transfer the heat to the encoder.</li> <li>Temperature range -40°C to +115°C</li> </ul>	
Materials	Plastic	
Contents	One shaft adapter as ordered	
Ordering Codes	<b>Sizes</b>	<b>Part Numbers</b>
	8mm (0.31mm) 10mm (0.39") 12mm (0.47") 14mm (0.55") 15mm (0.59") 16mm (0.63") 18mm (0.71") 20mm (0.79") 25mm (0.98") 30mm (1.18") 32mm (1.26")  1/2" 5/8" 3/4" 1" 1 1/4"	MR344-99-01 MR344-99-02 MR344-99-03 MR344-99-04 MR344-99-05 MR344-99-06 MR344-99-07 MR344-99-08 MR344-99-09 MR344-99-10 MR344-99-11  MR344-99-12 MR344-99-13 MR344-99-14 MR344-99-15 MR344-99-16

## Ordering Info

**MR344 - F 38P C1R5**

**Resolution**

**F** 1024ppr

**Hollow Shaft Bore Size**

**38** 38mm ID, Through Hole, IP54

**38P** 38mm ID, Pocket Hole, IP66

**Termination Option**

**C1R5** 1.5m Duplex LC Pigtail

**C03** 3m Duplex LC Pigtail

**Temperature Range**

(Blank) Standard, -40°C to +80°C

**E** Extended, -60°C to +125°C

### Quick Ship Configurations:

**MR344-F38C1R5** Sensor, Through Hole, 1024ppr, Duplex LC Pigtail 1.5m

**MR344-F38C1R5E** Sensor, Extended Temperature, Through Hole, 1024ppr, Duplex LC Pigtail 1.5m

**MR344-F38PC1R5** Sensor, Pocket Hole, 1024ppr, Duplex LC Pigtail 1.5m

**MR340-1** DIN Rail Mount Controller

**MR314A** Tether Arm Kit

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