

MR316

ZapFree™ HEAVY DUTY FIBER OPTIC ROTARY ENCODER

MICRONOR
automation components

Products

The MR316 series ZapFree™ Fiber Optic Rotary Encoder is an entirely passive, intrinsically safe, fiber optic incremental rotary encoder – ideal for a wide range of harsh and hazardous environmental applications. The all-optical sensor requires a single 62.5/125 MM optical fiber link for utmost ease of installation.

Downstream, the MR310 Remote Encoder Interface (REI) module provides an array of interfaces and features:

- Direct A/B Pull-Up and A/A'/B/B' Line Driver quadrature outputs
- Multiplier/Divider function with separate A/A'/B/B' LD Outputs
- Fully programmable 4-20mA output (Speed or Position)
- Fully programmable ±10V analog output (Speed or Position)
- RS422/RS485 serial interface (RS232 adapter available)



Intrinsically Safe
Simple Apparatus
CE Ex op is I/II ... Ga

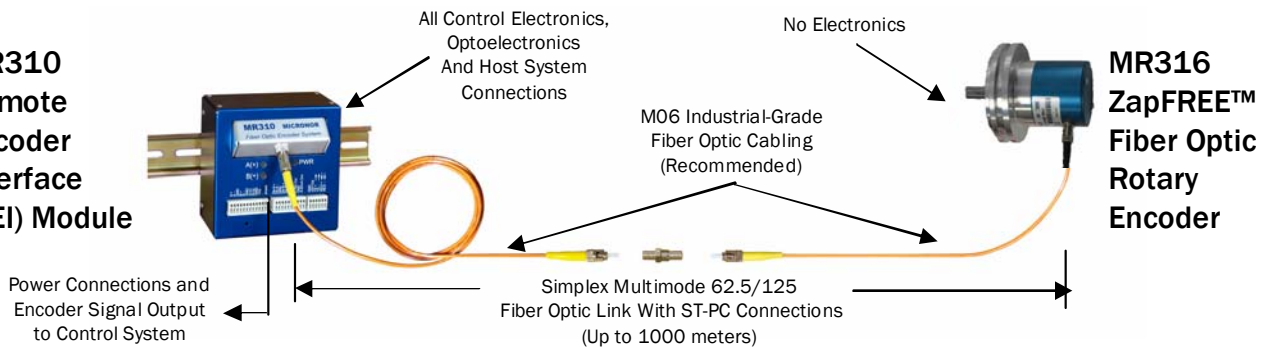
Features

- 100% passive sensing design in industry standard 90mm Ø encoder housing
- ATEX Classification “Simple Apparatus” and Intrinsically Safe. For use in all IEC Group I/II, U.S. Class I/II/III and Zones 0/1/2/20/21/22 hazardous and explosive atmospheres
- Insensitive to EMI and RFI for use in and around medical equipment and “noisy” industrial environments
- Immune to lightning and atmospheric static that “zaps” conventional encoders
- Outdistances copper - link lengths to 1000m
- Standard temperature range: -40/+80 °C; **Extended** option range: -60/+150 °C
- Special versions can be engineered for radiation and thermal-vac environments



Installation

MR310 Remote Encoder Interface (REI) Module



1. Connect the MR316 to the external equipment via a flexible shaft coupling and follow flange/panel mounting guidelines provided in MR3XX ZapFREE™ Encoder System User Guide.
2. Make MR310 electrical connections (power, ground, quadrature signals, serial interface, etc.) to the control system via WAGO Quick-Connect plugs (supplied with the MR310).
3. Connect ZapFREE™ Encoder to MR310 Module via MR320 series ST-PC to ST-PC FO cable assembly (or equivalent).
4. The ZapFREE™ Fiber Optic Encoder System is now ready to operate!

Specifications

Specifications Subject To Change Without Notice

Resolutions	100, 128, 256 and 360ppr (Other options available upon request)
Max Speed	Continuous Operating Speed For 256ppr (Contact Micronor if higher speed requirements.)
For MR310 Direct Quadrature Outputs	8000 rpm (Using standard MR310 and no Auxiliary Functions)
For MR310 Auxiliary Functions	5000 rpm (Speed limitation if all processor-controlled auxiliary functions are being used at same time; e.g. Programmable Divider, Programmable Analog Outputs, etc. Contact Micronor for more information about operational trade-offs versus speed.)
Optical Interface	ST-PC (for connection to MR310 REI Module)
Fiber Type	MM 62.5/125µm, Graded Index, 0.275NA
Fiber Length (between MR310 and MR316)	Up to 1000m (3280 ft)
Temperature/Humidity Range and ATEX Ratings	ATEX Classification "Intrinsically/Inherently Safe Simple Apparatus"
STANDARD Option	-40° C to +80° C / 0% to 95% RH (non-condensing) ☐☐ Ex op is I/II 80°C/T6 U.S.: Class I/II/II, AEx op is Group I/II/III 80°C/T6 , Zone 0/1/2/20/21/22, Division 1/2
EXTENDED Option	-60° C to +150° C / 0% to 95% RH (non-condensing) ☐☐ Ex op is I/II 150°C/T3 U.S.: Class I/II/II, AEx op is Group I/II/III 150°C/T3 , Zone 0/1/2/20/21/22, Division 1/2
Max Shaft Loads	Radial = 140N (31 lbf), Axial = 70N (15 lbf)
Seal Rating	IP66 (strong jet water and temporary submersion)
Shaft OD	Ø 12mm with 4mm keyway and M4 thread
Housing/Weight	Ø 90mm x 82.5mm L; 615 g (21.5oz)
System MTBF	Bearing life calculated at 50% of max radial and axial load at 2500 RPM: 3.11 x 10 ⁵ hours (35.6 years)

Ordering Info

MR316 - C12T00

Resolution Options

- A 100ppr
- B 128ppr
- C 256ppr
- D 360ppr

Termination Option

- T1R5 ST Pigtail, 1.5m
- T00 ST Receptacle

Shaft Size

- 12 12mm OD
- Others on request

Temperature Range

- Blank Standard
- E Extended

Optional Mounting Accessory:

MR316A Set of 3x BMF Hold-Down Clamps and 3x Screws

Related Items:

- MR310 Remote Encoder Interface (REI) Module
- MR320-M06Lxx Fiber Optic Cable Assembly
- MR320A ST-to-ST Mating/Bulkhead Adapter

For additional technical information, contact Micronor and request:

- EC-TD5107 MRI-Compatible (Non-Metallic) Rotary Encoder Data Sheet
- MR310 Remote Encoder Interface (REI) Module Data Sheet
- MR312 ZapFREE Solid Shaft Rotary Encoder Data Sheet
- MR314 ZapFREE Hollow Shaft Rotary Encoder Data Sheet
- MR320-M06Lxx Ruggedized Fiber Optic Cable Assembly Data Sheet
- MR3XX ZapFREE™ Encoder System User Guide
- MR3XX ATEX Declaration of Conformity Report
- MR310/MR312/MR314/MR316/MR320 Mechanical Reference Drawings

MICRONOR INC.

900 Calle Plano Ste 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