**Serie MR 310**

Features:
- Quasi-absolute multiturn encoder function via 24-bit Counter Mode.
- Programmable DIVIDER Mode
- Programmable analog outputs for Speed or Position modes

Description

The MR310 ZapFREE[TM] REI module is the electronic interface to the ZapFREE[TM] Fiber Optic Rotary Encoder System. The module converts a ZapFREE[TM] encoder's optical signals to standard A/B quadrature signals for direct connection to any conventional counter, PLC or computer interface board.

Two programmable analog outputs (4-20mA and ±10V) can be set for Speed or Position modes. An RS422/RS485 serial interface is provided for setting the MR310's internal parameters for standalone operation as well as real-time serial control and communications. The optional MR232-1 adapter cable converts the interface for RS232 operation and easy connection to PC controllers. The MR310 mounts on standard DIN rails and operates from readily available 24VDC (+15 to +32V).

Installation
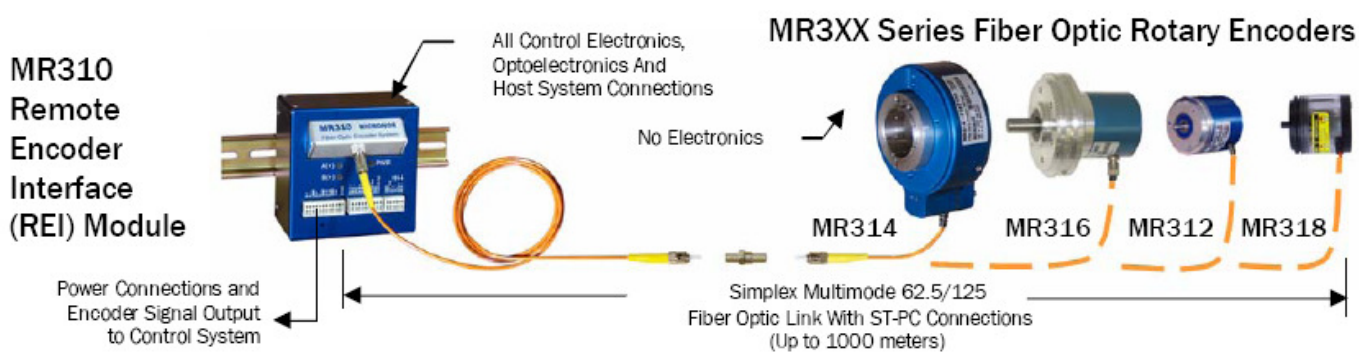
1. Verify your optical link loss margin. ZapFREETM encoder system has a two-way loss margin of 6.5dB to cover fiber attenuation over distance as well as losses of inline connectors & splices.

2. Follow industry-specific FOLAN component selection and installation guidelines.

Serie MR 310

Encoder Family

MR312

- Size 58mm, IP64
- 6mm Shaft Ø
- 100, 128, 256 or 360ppr

MR314

- Size 100mm, IP65
- 38mm Ø Hollow Shaft
- 1024ppr resolution

MR316

- Size 90mm, IP66
- 12mm Shaft Ø
- 100, 128, 256 or 360ppr

MR318

- Non-metallic, MRI compatible
- Size 58mm
- 6mm Shaft Ø
- 360ppr resolution

MR232.X

MR232.1 RS422/485 to RS232 Adapter
MR232.2 RS232/485 to USB Adapter

The optional MR232.1 (RS232) or MR232.2 (USB) adapters are used to connect the MR310 REI Module to a PC via a RS232 COM or USB port. These active cable adapters facilitate running MICRONOR's Zappy Configuration/Diagnostics Program software program used to change operating parameters stored in the MR310 module as well as to run diagnostics when troubleshooting encoder problems. A Zappy Installation CD-Rom is supplied with the MR310 module.

Specifications:
- Connects between J3 on MR310 module and either COM or USB port on PC
- MR232.2 also contains a software driver mini CD required to use the adapter
- Length: 3 meters (nominal)
- Temperature range: 5 ℃ to 30 ℃

Serie MR 310

Zappy Configuration Software

What is Zappy?

As delivered, the MICRONOR Fiber Optic Encoder System (consisting of MR3XX series fiber optic encoder and MR310 module) are preprogrammed, ready to be connected and operated using the Direct Quadrature outputs. However, many user applications intend to use the auxiliary functions and operating modes within the encoder firmware, including Quadrature Multiplier/Divider, Position Counter, Analog Outputs or to run Diagnostics. For these latter functions, the user needs to use the supplied Zappy Configuration/Diagnostics program to perform a one-time setup for configuring functions. The software is designed to run on a PC running under Windows XP or later. To connect the PC to the MR310 module, the user will need to purchase either the MR232.1 RS485 to RS232 or MR232.2 RS485 to USB Adapter Cables. Typical Zappy screens are shown below:
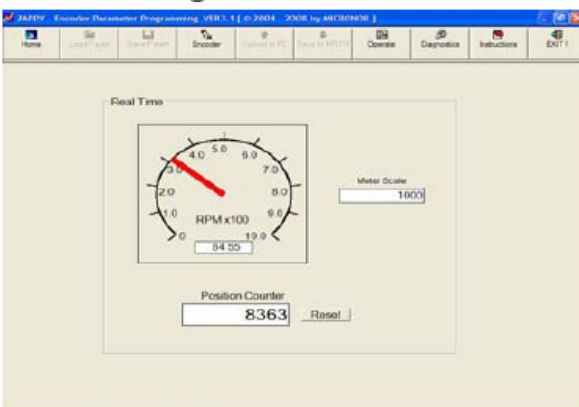

Start-Up Screen

Encoder Parameters Display Screen

Real-Time Diagnostics Screen

Internal Diagnostics Screen

System/Cabling Test Mode

Online Instructions

Technische Änderungen vorbehalten / Subject to change without prior notice

Serie MR 310

Outline drawing

J1 WAGO PN: 733-112 (12 PIN TERMINAL)	
1	A+
2	A-
3	GND
4	B+
5	B-
6	GND
7	A oc
8	B oc
9	GND
10	+Vs
11	Position Counter Reset
12	shield

J2 WAGO PN: 733-110 (10 PIN TERMINAL)	
1	Div A+
2	Div A-
3	GND
4	Div B+
5	Div B-
6	GND
7	GND
8	±10V Out
9	GND
10	4-20mA Out

J3 WAGO PN: 733-106 (6 PIN TERMINAL)	
1	GND
2	+5V Out
3	TX+ →
4	TX- →
5	RCV+ ←
6	RCV- ←

Technical data

DIRECT Quadrature Outputs	
Bandwidth	70kHz max. (Contact Micronor concerning modifivcations for higher bandwidth applications)
Format	A/B Open Collector and A/A'/B/B' Line Driver
Position Counter Range	Direction/Sign Bit plus 24-bit counter value (±8,388,607, equivalent to 8,192 revolutions with MR314 1024ppr encoder). Both software and hardware Zero (calibration) Set available.
DIVIDER Quadrature Outputs	DIVIDER range is 2-128. A/A'/B/B' Line Driver (A/B Open Collector or Open Emmiter are available as options)
Analog Outputs	Each output is individually programmable for Position or Speed
Current Output	Range: 0mA to 24mA, Max Burden Resistance: 500Ω (24V supply)
Voltage Output	±12V; Max Current: 5mA (2kΩ load); Short Circuit < 5 sec.
Fiber Optic Link	ST-PC. MM 62.5/125µm, Gl, 0.275NA. Up to 1000m. Two-way link margin is 6.5dB
Serial interface	RS422/RS485 (RS232 with optional MR232-1 adapter Cable)
Electrical Connection	J1: 12-pin (WAGO 733-112) J2: 10-pin (WAGO 733-110) J3: 6-pin (WAGO 733-106)
Power Supply Input	+15VDC to 30VDC, 60mA
+5Voutput	10mA max.
Temperature / Humidity	-5° to +55℃ / 30% to 85% RH
Seal rating	IP64
Mounting	Ø 58mm x 58mm L; 210g
Housing Dimensions	102mm W x 102mm D x 68mm H (/300g)

Order key

MR310

Technische Änderungen vorbehalten / Subject to change without prior notice