

Serie MR 310



Features:

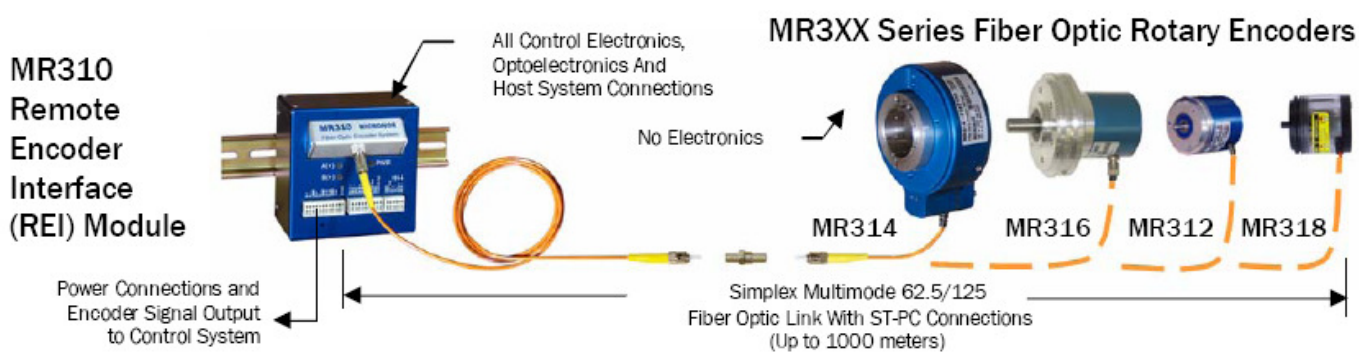
- Quasi-absolute multiturn encoder function via 24-bit Counter Mode.
- Programmable DIVIDER Mode
- Programmable analog outputs for Speed or Position modes

Description

The MR310 ZapFREE™ REI module is the electronic interface to the ZapFREE™ Fiber Optic Rotary Encoder System. The module converts a ZapFREE™ 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.

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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°C to 30°C

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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



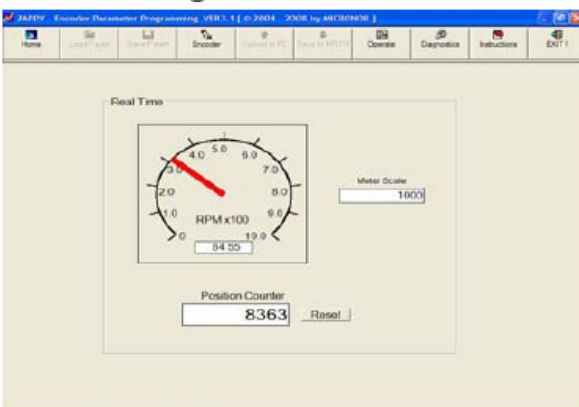
Encoder Parameters Display Screen

Restore Default Values

Edit the Parameter Values in the Column titled Value

Parameter Name	Register	Read/Write	Unit	Min.	Max.	Value	Default
Device Name	16	Read_Only	-	-1	-1	MR310	
Firmware Version	17	Read_Only	-	-1	-1	09.69	
Serial Number	18	Read_Only	-	0	1000000	1030	
Address	12	Read_Write	byte	17	255	234	234
Resolution	10	Read_Write	counts	80	1024	250	250
Cal Interval	11	Read_Write	3s steps	1	200	18	0
Driver	21	Read_Write	counts	2	129	4	1
Voltage Mode	23	Read_Write	-	0	2	1	0
Voltage Scale	24	Read_Write	RPM	10	900000	1000	1000
Voltage Filter	25	Read_Write	ms	0	128	64	64
Current Mode	26	Read_Write	-	0	5	2	0
Current Scale	27	Read_Write	RPM	10	900000	1000	1000
Current Filter	28	Read_Write	ms	0	128	64	64
Pos. Reset Mode	29	Read_Write	-	0	1	1	0
Quad Multiplier	2A	Read_Write	-	0	1	1	0

Real-Time Diagnostics Screen



Internal Diagnostics Screen

Analyze System

Optical Receiver

Analyze Receiver Settings

Channel A (1300nm)

Optical Power [dBm]: -29.8 [-35.0dBm - -33.0dBm]

Amplifier Gain: 6.8 [3.00]

Amplifier Output [V]: 2.17 [1.7V - 2.4V]

Channel B (830nm)

Optical Power [dBm]: -29.1 [-25.0dBm - -33.0dBm]

Amplifier Gain: 6.8 [3.00]

Amplifier Output [V]: 2.02 [1.7V - 2.4V]

Diagnostic Report

This Diagnostic Report may be saved to a text file. Press Save Report.

Save Report

Power Supply Voltages

Measure Voltages

REF 2.5V: 2.50 [2.48V - 2.52V]

POWER5V: 5.33 [5.0V - 5.4V]

POWER 12V: 14.97 [12V - 14V]

ANALOG Outputs

Get Analog Outputs

Voltage [12V - 17V]: 0.94

Current [0.24mA]: 0.00

Speed Measurement

Get Speed

RPM: 0.0 [144 - 0.0]

System/Cabling Test Mode

System Analyzer

The software will analyze the entire system and is capable of evaluating the health of the entire installation including the fiber optic cabling. User interaction is required. Please follow the instructions until tests is completed.

Start

Measuring baseline values
Baseline occupied.
Steadily rotate encoder, orimate a start and stop sequence on the servo drive system
When both CHA & CHB bar graphs show green the system is good.

Next

Click NEXT when done.

Channel A passed test
Channel B passed test
ANALYSIS
Passed.
Click NEXT

Online Instructions

SHORT INSTRUCTIONS

Remote Interface Module MR310
Firmware: V 0.7.1

Terminal Blocks

J1 - Terminal

1	A+ Line Driver
2	A- Line Driver
3	GND
4	B+ Line Driver
5	B- Line Driver
6	GND
7	A+ 24V source & sink
8	B+ 24V source & sink
9	GND (power)
10	+V+ ground (5V to +32V)
11	Counter RESET
12	Shield

J2 - Terminal

1	Divider A+
2	Divider A- source & sink
3	GND
4	

Technische Änderungen vorbehalten / Subject to change without prior notice

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Outline drawing



Technical data

DIRECT Quadrature Outputs	
Bandwidth	70kHz max. (Contact Micronor concerning modifications 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, GI, 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°C / 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