micronor

FIBER OPTIC INCREMENTAL ENCODER

MR320 Controller Module

Questions?
Call 805.389.6600

MR320 SERIES

The MR320 Controller module is the active optical and electrical interface for the MR320 series ZapFREE® Fiber Optic Incremental Encoder System. The module incorporates multiple built-in interfaces for compatibility with PLCs, motor drives, and other motion control systems.

ZAP FREE®

Ex

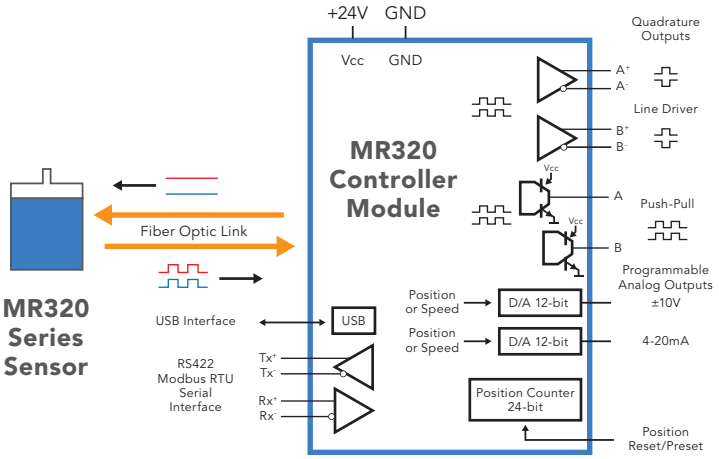
U.S. Patent 7,196,320
Inherently Safe Optical Radiation
For EPL Mb/Gb/Gc/Db/Dc

Features

- Mounts on standard 35mm DIN Rail
- Operates from +15VDC to +32 VDC power supply
- Inherently Safe Optical Radiation
- Controller is installed outside of hazardous area
- Interference-free transmission up to 2500 meters

Interfaces

- A/B quadrature outputs – line driver and push-pull
- Programmable 4-20mA output, Position or Speed
- Programmable ±10V output, Position or Speed
- USB interface
- RS485/Modbus RTU interface
- RS232 with optional MR232-1 adapter



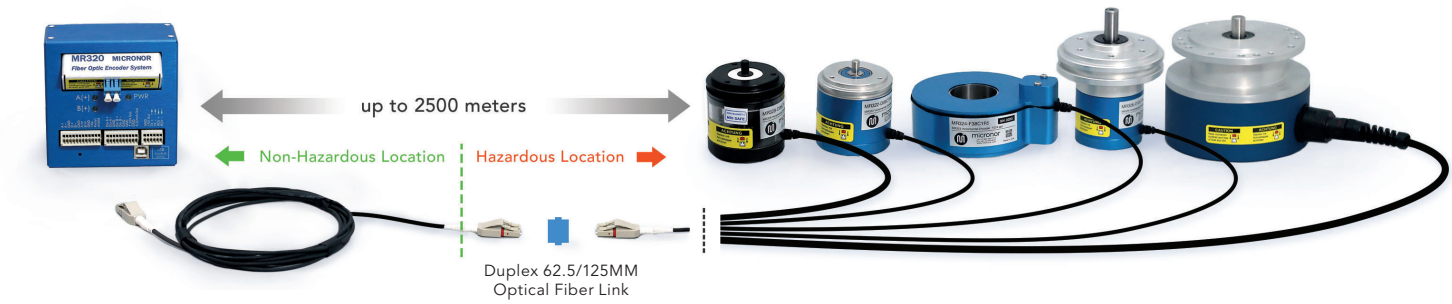
System Planning

MR320 Controller
Inherently Safe Optical Radiation

24 VDC, A/B, Analog, Digital, RS485,USB

MR320 Series Sensor
Simple Mechanical Device

MR328 MRI Compatible | MR322 | MR324 | MR326 IP66 Rating | MR325

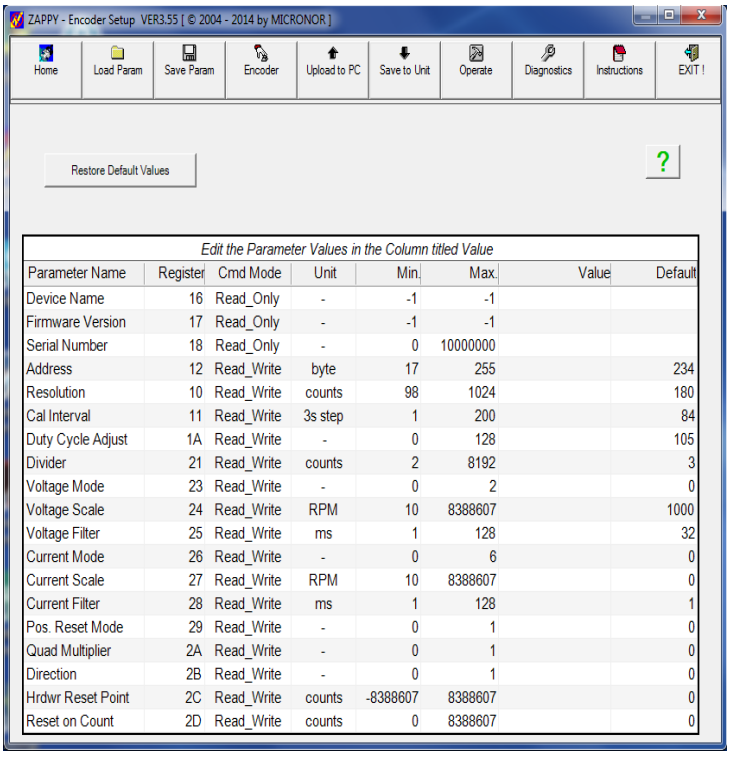


1. Verify cabling and junction boxes compatible with the operating environment.
2. Verify that the optical link loss is within the Controller's Maximum Loss Budget.
3. Consult Application Note AN118 for more information, examples and guildance on loss budget.

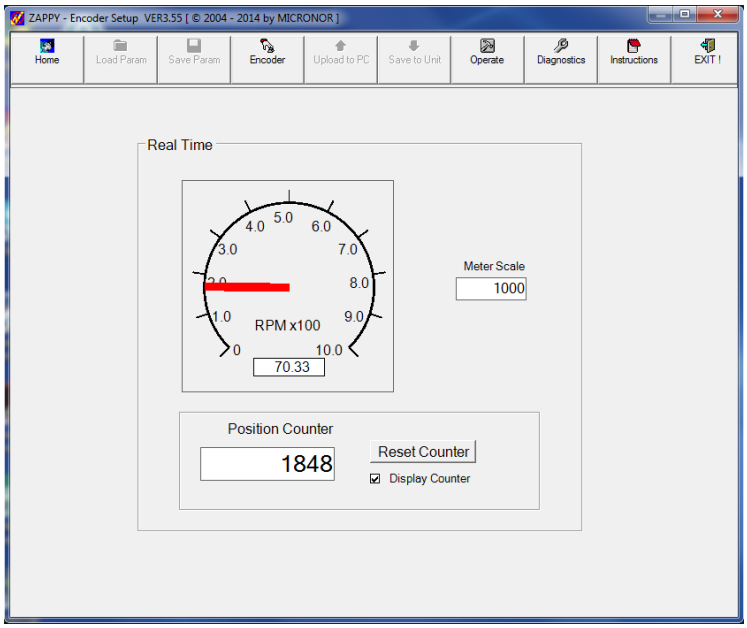
ZAPPY® Configuration Software

As delivered, the Micronor ZapFREE® Fiber Optic Encoder System (consisting of MR320 series fiber optic encoder and MR320 module) are pre-programed, 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 these functions. The software is designed to run on a PC running under Windows XP or later. The PC can be connected to the MR320 module via built-in USB or RS422/RS485 interfaces. RS232 interface capability with with optional MR232-1 RS485-to-RS232 Converter Cable. Typical ZAPPY® screens are shown below:

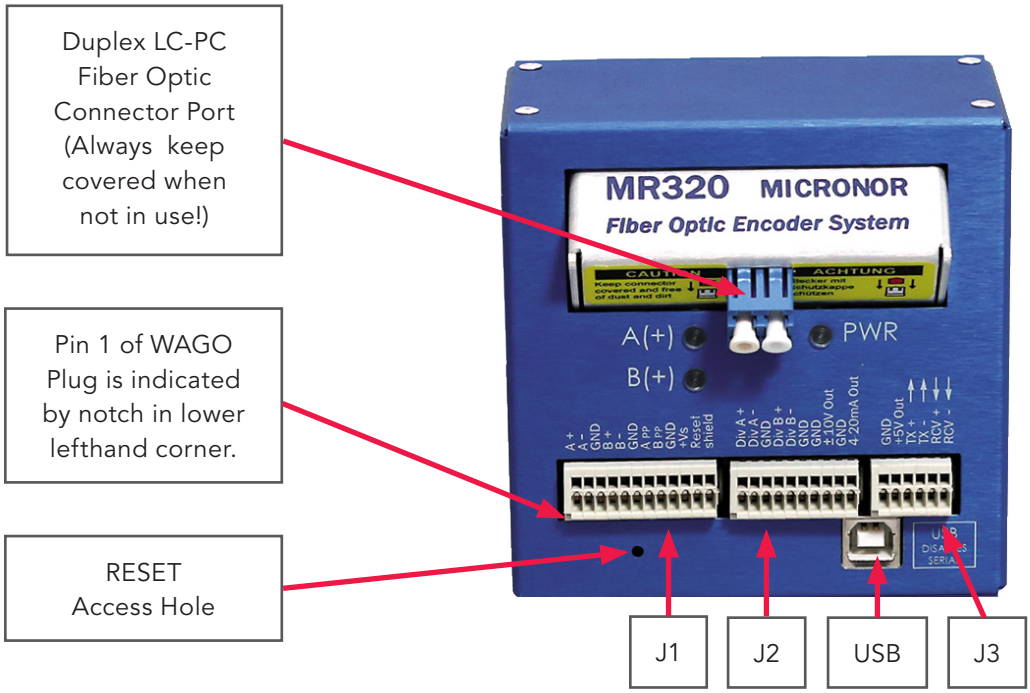
Encoder Parameters Set-Up Screen



Real-Time Encoder Status Screen



Electrical and Optical Connections



J1 Wago PN: 733-112 (12 Pin Terminal)	
1	A+ (5V)
2	A- (5V)
3	GND
4	B+ (5V)
5	B- (5V)
6	GND
7	A Push-Pull (24V)
8	B Push-Pull (24V)
9	GND
10	+Vs
11	Counter Reset
12	Shield

J2 Wago PN: 733-110 (10 Pin Terminal)	
1	Div A+ (5V)
2	Div A- (24V)
3	GND
4	Div B+ (5V)
5	Div B- (24V)
6	GND
7	GND
8	± 10V Out
9	GND
10	4-20mA

J3 Wago PN: 733-106 (6 Pin Terminal)	
1	GND
2	+5V Out
3	TX+ (Output)
4	TX- (Output)
5	RCV+ (Input)
6	RCV- (Input)

Specifications

Electrical Interfaces	
Direct Quadrature Outputs Bandwidth Format	 70kHz max A/A'/B/B' RS422 (5V) Line Driver and A/B Push-Pull (24V)
POSITION COUNTER Range	Direction/Sign Bit plus 24-bit counter value (±8,388,607, equivalent to 8,192 revolutions with MR324 1024ppr encoder). Both software and hardware Zero (calibration) Set available.
DIVIDER Quadrature Outputs	DIVIDER range is 2-8192, A/B RS422 Line Driver (5V) and A/B Push-Pull (24V) Outputs..
Analog Outputs Current Output: Voltage Output:	Each output is individually programmable for Position (full-scale range of 1-8,388,607 counts) or SPEED (full-scale range of 10-10,000 RPM) Range: 0mA to 24mA, Max Burden Resistance: 500Ω (24V supply) Range: ±12V; Max Current: 5mA (2kΩ load); Short Circuit < 5 seconds
RS422/485 Interface	Direct connection via J3, Modbus RTU compatible
RS232 Interface	With optional MR232-1 Converter Cable
Modbus interface	Modbus (RTU) compatible RS422/RS485 interface
USB interface	USB built-in, disables RS485/Modbus interface when used
Electrical Connections	J1, J2, J3 connections via WAGO QuickConnect Plugs (supplied with MR320)
Optical Interface	
Optical Interface	LC Duplex, 62.5/125µm Graded Index Fiber, 0.275NA, Type OM1
System Loss Budget	12.5dB
Maximum Optical Link Length	Up to 2500 meters (8300 ft) with MR320 series Sensors Consult Application Note AN118 for more information. Contact Micronor for longer distance requirements.
Laser Safety	Class 1 per IEC 60825-1
Power Supply	
Power Supply Input	+15VDC to +32VDC, 60mA (During Power Up, power supply should be capable of delivering a momentary current in excess of 100mA.)
+5V Output	10mA maximum load. (Designed for powering MR232-1 RS485/RS232 adapter cable)
Explosive Atmospheres	**Inherently Safe Optical Radiation**
EX Classification	Controller shall be installed in non-hazardous location only Power supply to Controller shall be current limited to 200mA 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
NEC	Exempt
Environmental Performance	
Temperature/Humidity	-5° to +55°C / 30% to 85% RH (non-condensing)
Ingress Protection	IP40
Physical Attributes	
Mounting	35mm DIN Rail
Housing Dimensions	102mm W x 102mm D x 68mm H
Weight	300g (10.5oz)

Specifications subject to change without notice

Ordering Info

M R 3 2 0

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