

FIBER OPTIC ABSOLUTE ENCODER

MR330 Controller Module

MR330 SERIES

The MR330-1 Controller Module is the active optical and electrical interface for the MR330 series ZapFREE® Fiber Optic Absolute Position Sensor System. The module incorporates multiple built-in interfaces for compatibility with PLCs, motor drives and other motion control systems.



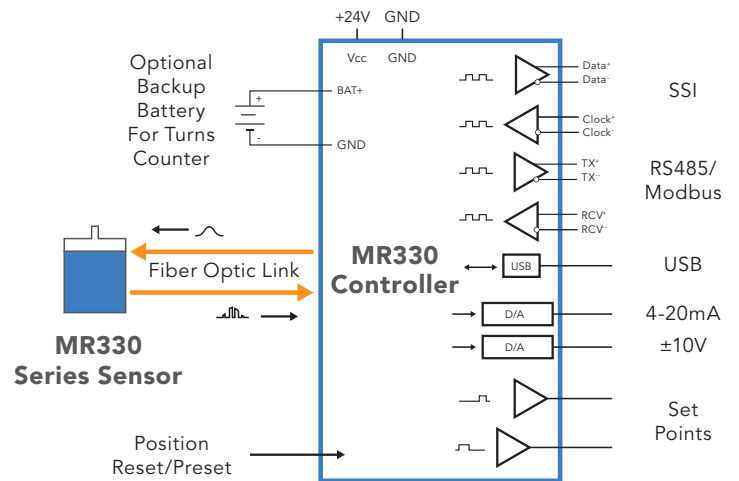
U.S. Patent 8,461,514 B1
Inherently Safe Optical Radiation
For EPL Mb/Gb/Gc/Db/Dc

Features

- Absolute 0-360° position sensor with 0.025° resolution
- Multi-turn tracking to 4096 turns (12-bits)
- EX rated Inherently Safe Optical Radiation
- Sensor can be installed in any manner of hazardous location or explosive atmosphere - gas, dust or mines
- Controller is installed outside the hazardous area
- Interference-free transmission up to 300 meters

Interfaces

- SSI Interface
- USB interface
- RS485/Modbus RTU serial interface
- RS232 with optional MR232-1 adapter
- Programmable 4-20mA output
- Programmable ±10V output
- Programmable Digital Set Points
- LabVIEW™ sample software drivers are available



System Planning

MR330 Controller



24 VDC, SSI, RS485, Modbus, USB, Analog, Digital

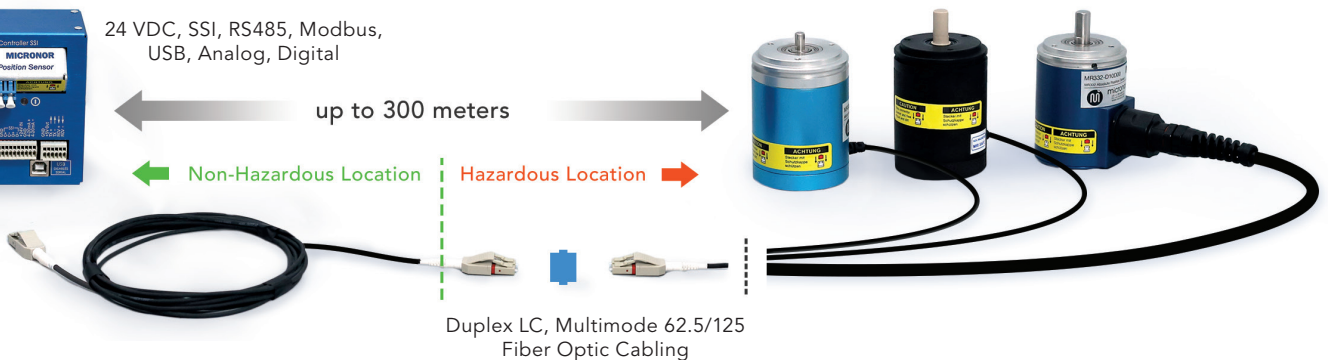
up to 300 meters

Non-Hazardous Location | Hazardous Location

MR332
With LC Duplex Pigtail

MR338
MRI With LC Duplex Pigtail

MR332
With ODVA IP-LC Interface

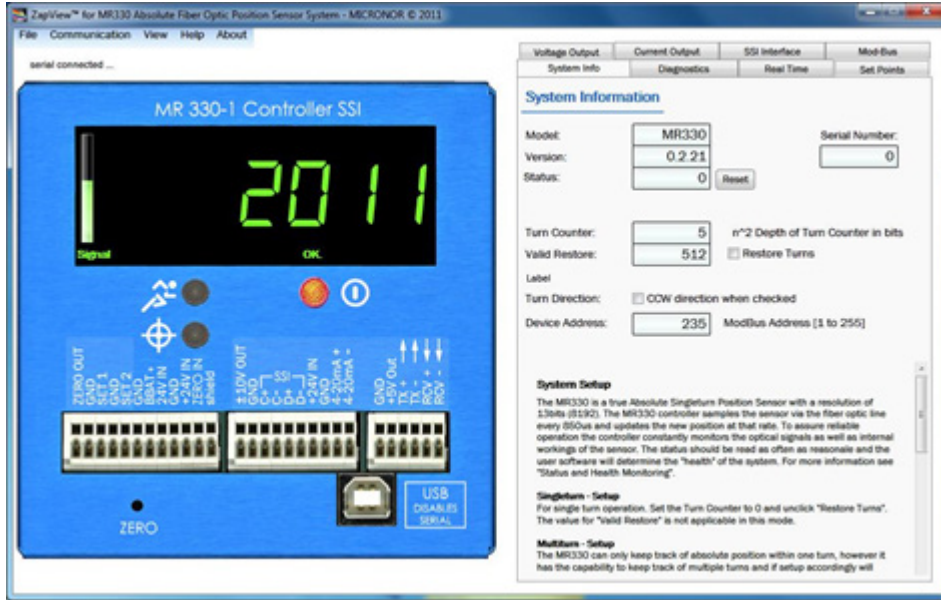


1. Verify cabling and junction boxes compatible with the operating environment.
2. Verify that the optical link loss is within Controller's Maximum Loss Budget.
3. Consult Application Note AN118 for more information, examples and guidance on loss budget.

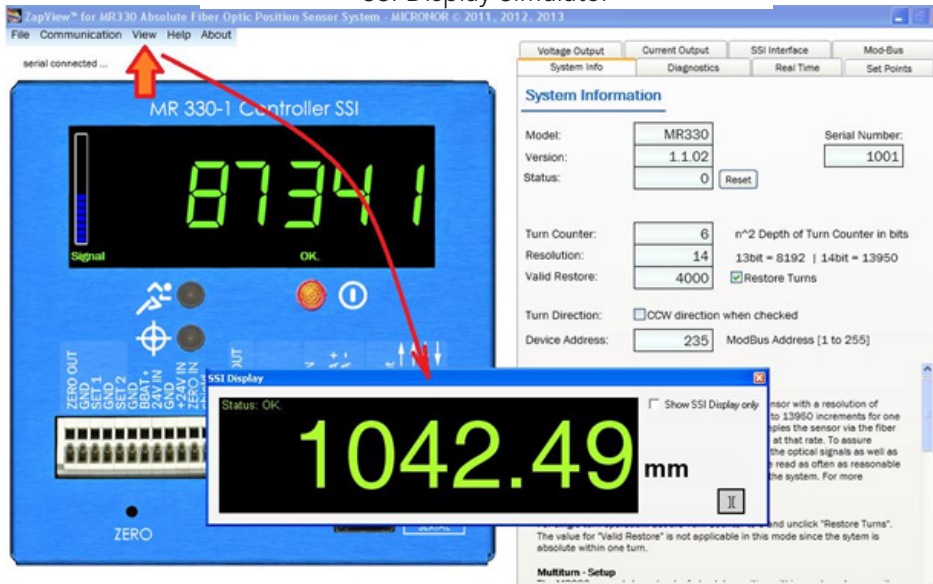
ZapView® Configuration Software

As delivered, the Micronor ZapFREE® Fiber Optic Absolute Encoder System (consisting of a MR330 series Encoder/Sensor and MR330-1 Controller Module) are pre-programmed, ready to be connected and operated using the SSI, USB or RS485/Modbus interface. However, many user applications intend to use the auxiliary functions such as the SSI Display Simulator, Analog Outputs, Digital Set Points, or run Diagnostics. For these latter functions, the user needs to use the supplied ZapView® 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 MR330-1 Controller module, via USB or RS485 or RS232 (with optional MR232-1 Adapter). Typical ZapView® screens are shown below:

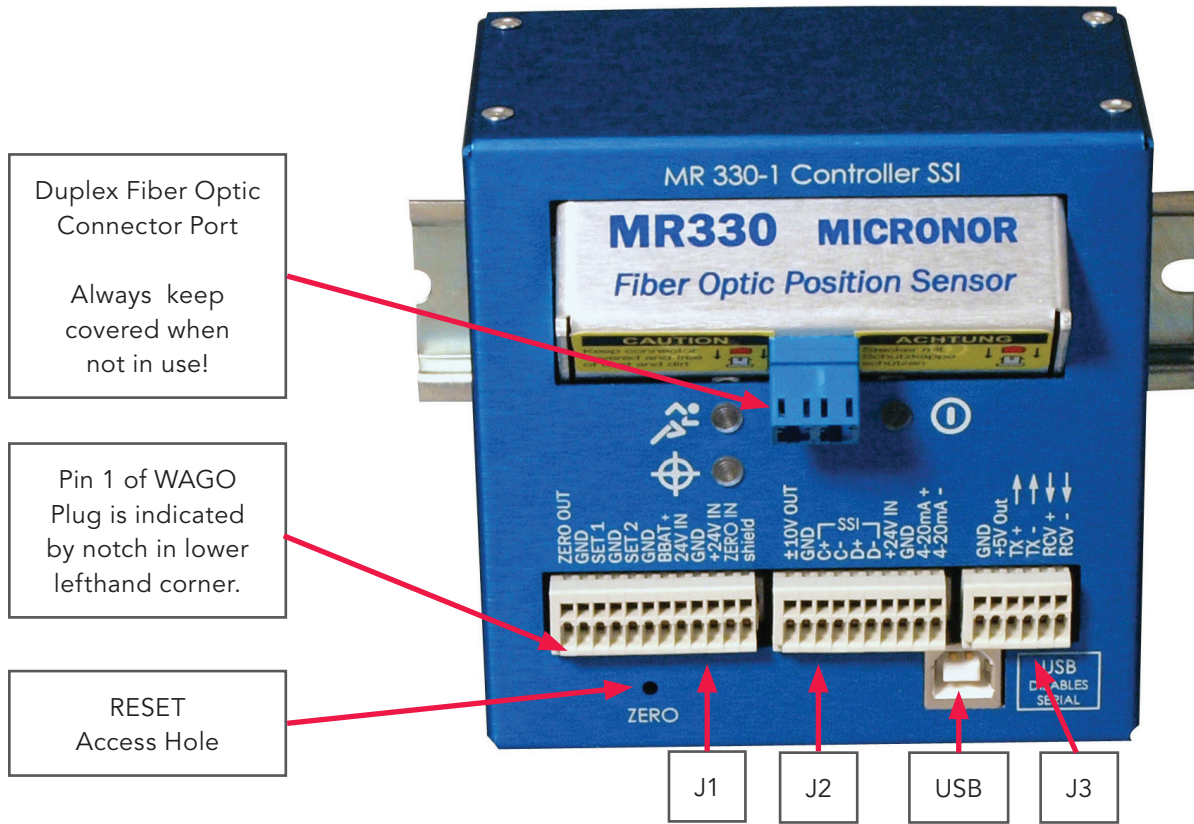
Start-Up Screen



SSI Display Simulator



Electrical and Optical Connections



J1 Wago PN: 733-112 (12 Pin Terminal)	
1	ZERO OUT
2	GND-
3	Set Point 1
4	GND
5	Set Point 2-
6	GND
7	BAT+
8	24V
9	GND
10	+Vs
11	ZERO IN
12	Shield

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

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

Position Measurement	
Single Turn Resolution	13 bits (8192 counts, 0.044°), 14 bits (13,950 counts, 0.0258°)
Multi-Turn Tracking	12 bits (4096 turns)
Electrical Interfaces	
SSI	25 bits, Programmable baudrate 25 kHz -250 kHz
RS485/Modbus RTU	56,200 Baud Default, Consult instruction manual for software protocol details
USB	USB, Disables Modbus interface when used
Current Output	Isolated 4-20mA (270V isolation maximum), Output scalable by user
Voltage Output	-10V to +10V, Non-Isolated, Output scalable by user
Digital Outputs	0-24V maximum 10 mA Load (Zero + two programmable Set Points)
Power Supply	+16 VDC to +32 VDC, 100 mA max at 24 VDC During Power Up, external power supply should be capable of 200 mA momentary output
Interface Update Rate	
Angular Speed	250 radians/second or 2400 RPM for accurate position reporting
Update Rate	1.17 kHz (850 µs)
Reporting Delay	SSI: Maximum 800 µs (time from actual position to SSI output) Analog Outputs: Maximum 1.0 ms
Optical Interface	
Interface	LC Duplex, 62.5/125µm graded index fiber, 0.275NA, Type OM1
System Loss Budget	2dB at 850nm
Maximum Optical Link Length	Up to 300 m (1000 ft)
Laser Safety	Class 1 per IEC 60825-1
Explosive Atmospheres	
Ex Classification	Controller shall be installed in non-hazardous location only Power supply to Controller shall be current limited to 200mA IECEX Test Report (IECEXTR) GB/CML/ExTR 16.0070/00
ATEX	EPL Mb/Gb/Gc/Db/Dc
IEC Ex	EPL Mb/Gb/Gc/Db/Dc
NEC	Exempt
Environmental Performance	
Temperature/Humidity	Operating: 0°C to +45°C, Storage: -15°C to +65°C, 25-95% RH (non-condensing)
Ingress Protection	IP30
Physical Attributes	
Housing Dimensions	102 mm W x 102 mm D x 68 mm H, includes 35mm DIN rail mount
Unit Weight	600g (22 oz)

Specifications subject to change without notice

Ordering Info

MR330 - 1

Controller Options Interfaces

1 SSI + Modbus (RTU) + USB

Sensors:

MR332 Standard Sensor, consult MR332 data sheet for information

MR338 MRI Safe Sensor, consult MR338 data sheet for information

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