

**MR 330-1 Controller**



**Features**

- ➔ Controller for Absolute 0-360° position sensor with 0.025° resolution
- ➔ Multi-turn tracking to 4096 turns (12-bits)
- ➔ EX rated Inherently Safe Optical Radiation
- ➔ Immune to EMI, RFI, high voltage and lightning
- ➔ Interference free transmission up to 300m

**Product Description**

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

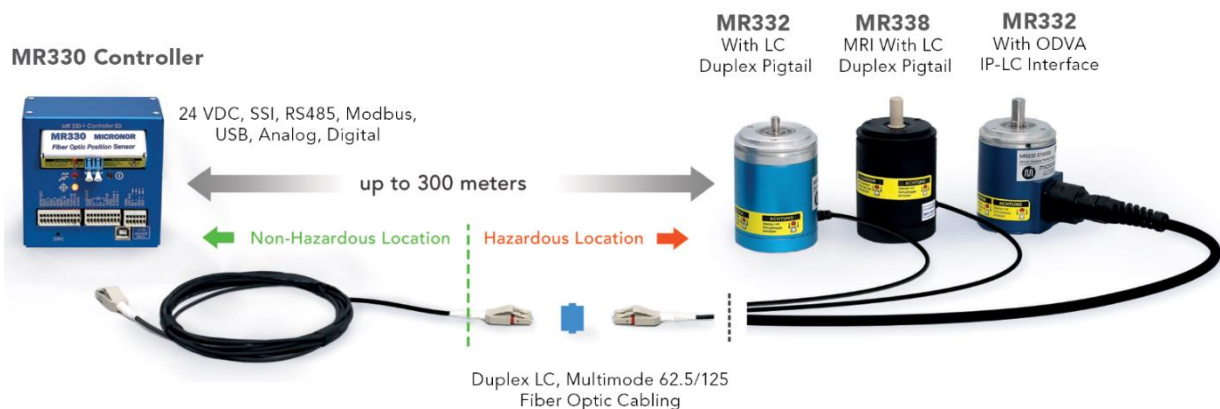
Fiber optic sensors outperform electromechanical and electronics-based sensors, where:

- Immunity to EMI, RFI and lightning is required
- High voltage isolation is needed
- Must operate interference-free over long distances
- Hazardous area mandates an inherently safe solution

**Application**

- Medical and MRI
- Transportation
- Oil, gas and mines
- Robotic systems
- Process industries and instrumentation

**System Planning**



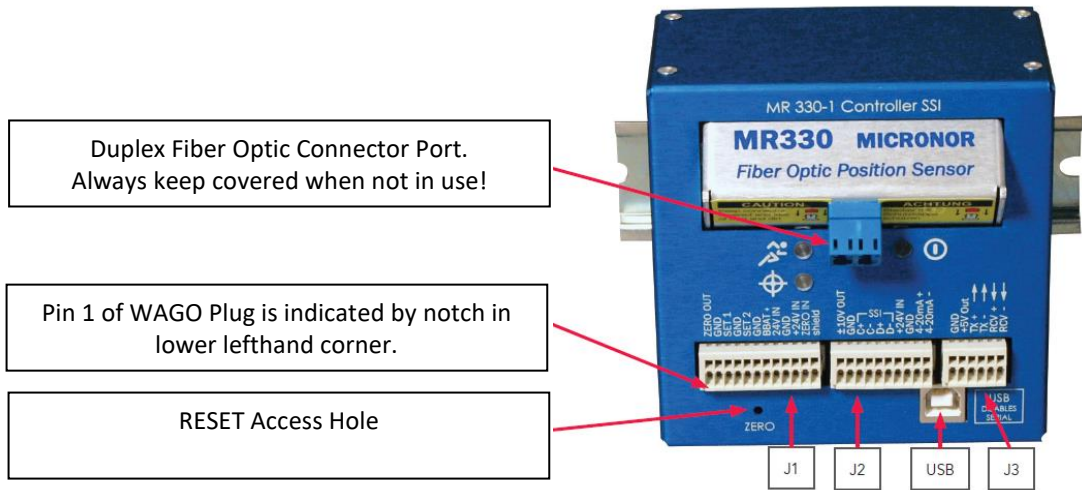
1. Verify cabling and junction boxes compatible with the operating environment.
2. Verify that the optical link loss is within Controller's Maximum Loss Budget.
3. Consult Application Note AN118 for more information, examples, and guidance on loss budget.

*Subject to errors and changes Date: 20.04.2023*

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**Electrical And Optical Connections**



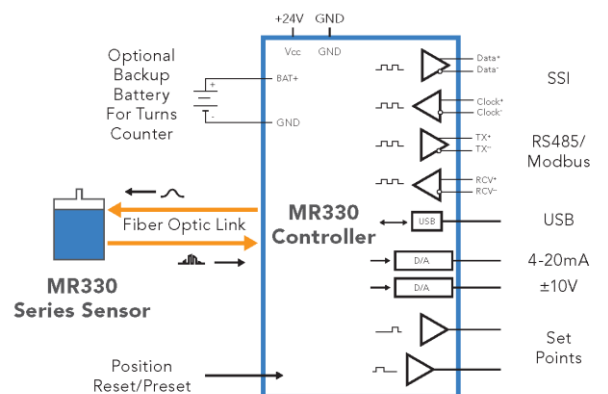
J1 Wago PN: 733-112 (12 Pin Terminal)	
1	ZERO OUT
2	GND-
3	Set Point 1
4	GND
5	Set Point 2-
6	GND
7	BAT+
8	24V
9	GND
10	+Vs
11	ZERO IN
12	Shield

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)

**Interfaces**

- SSI Interface / USB interface
- RS485/Modbus RTU Serial interface
- RS232
- Programmable 4-20mA output
- Programmable ±10V output
- Programmable Digital Set Points
- Zap FREE® Software is used for data acquisition



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**Specifications**


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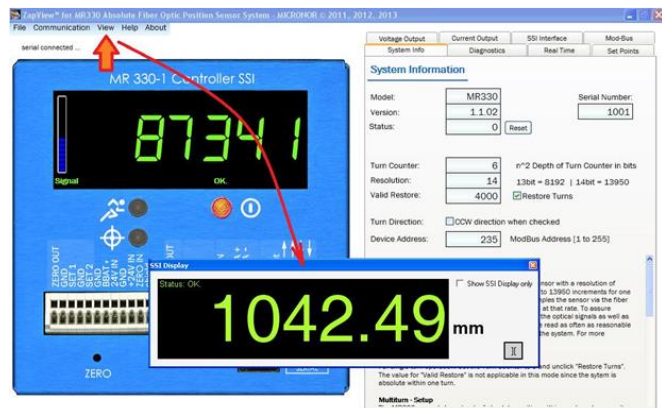
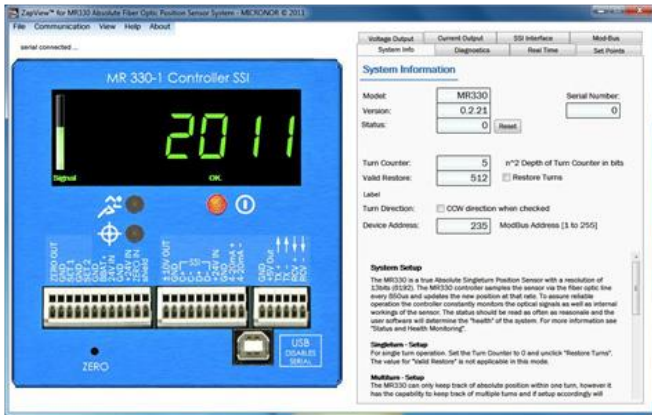
Position Measurement	
Single Turn Resolution	13 bits (8192 counts, 0.044°), 14 bits (13,950 counts, 0.0258°)
Multi-Turn Tracking	12 bits (4096 turns)
Electrical Interfaces	
SSI	25 bits, Programmable baud rate 25 kHz -250 kHz
RS485/Modbus RTU	56,200 Baud Default, Consult instruction manual for software 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
Environmental Conditions	
Temperature/Humidity	Operating: 0°C to +45°C, Storage: -15°C to +65°C, 25-95% RH (non-condensing)
Ingress Protection	IP30
Mechanical Attributes	
Physical Attributes	102 mm W x 102 mm D x 68 mm H, includes 35mm DIN rail mount
Unit Weight	600g (22 oz)

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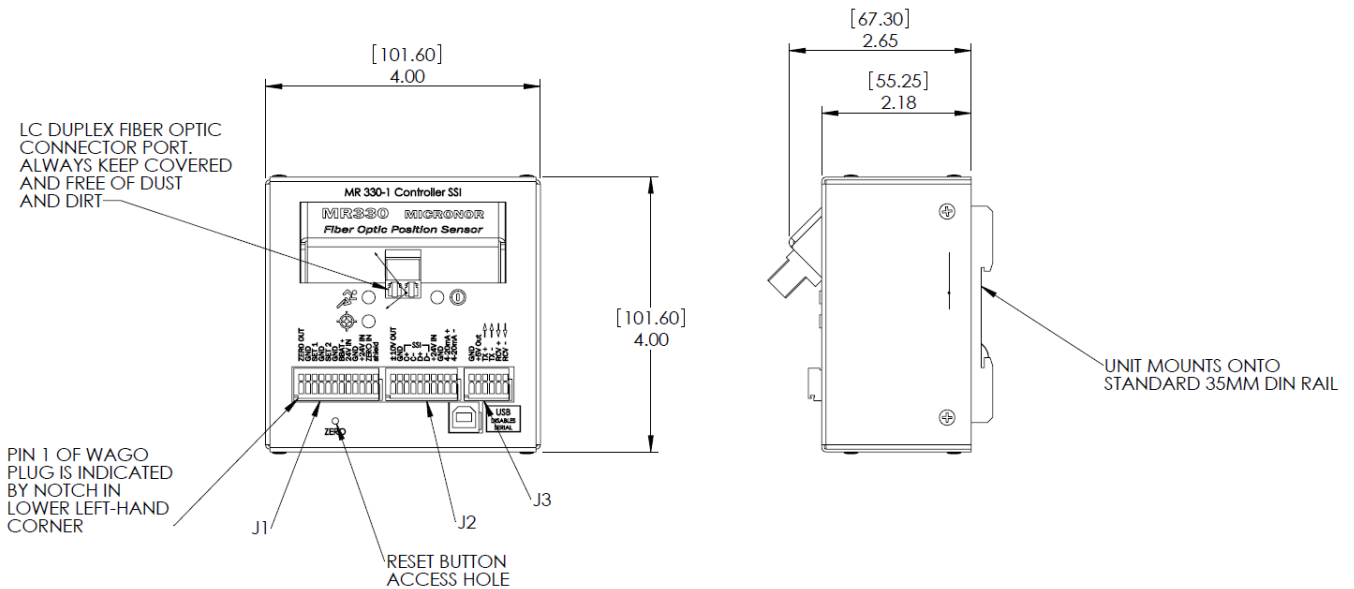


**Software Interface Zap View**

As delivered, the Micronor 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<sup>®</sup> 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. Typical ZapView<sup>®</sup> screens are shown below:



**Drawing Inch [mm]**



**Order Code**

9000.10.140 MR330 Controller

**Related Products**

- MR332 Rotary Encoder Ø58mm
- MR338 MRI Safe Metalfree Encoder Ø58mm
- 974X.XX.XXX Fiberoptic Extension Cable

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