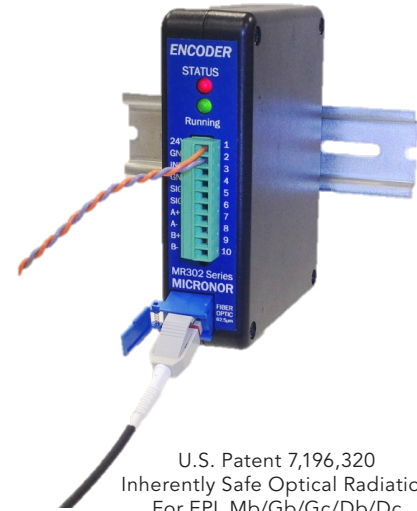


FIBER OPTIC INCREMENTAL ENCODER

MR302-1 DIN Rail Mount Controller

The MR30X series fiber optic position sensor system is an innovative all-optical design immune to any electro-magnetic interferences such as magnetic fields, lightning, voltage, and other harsh environment conditions. The MR302-1 Controller works with any of the MR30X series fiber optic incremental encoders - rotary or linear.



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

As shown in the diagram below, a Sensor is connected to the Controller via an industry-standard 62.5/125µm duplex multimode fiber optic link. As the incremental code media passes through the Sensor's internal optical pick-up, the phase output of two light beams create the classical A/B quadrature signals accessible via the controller's electrical interface.

APPLICATIONS:

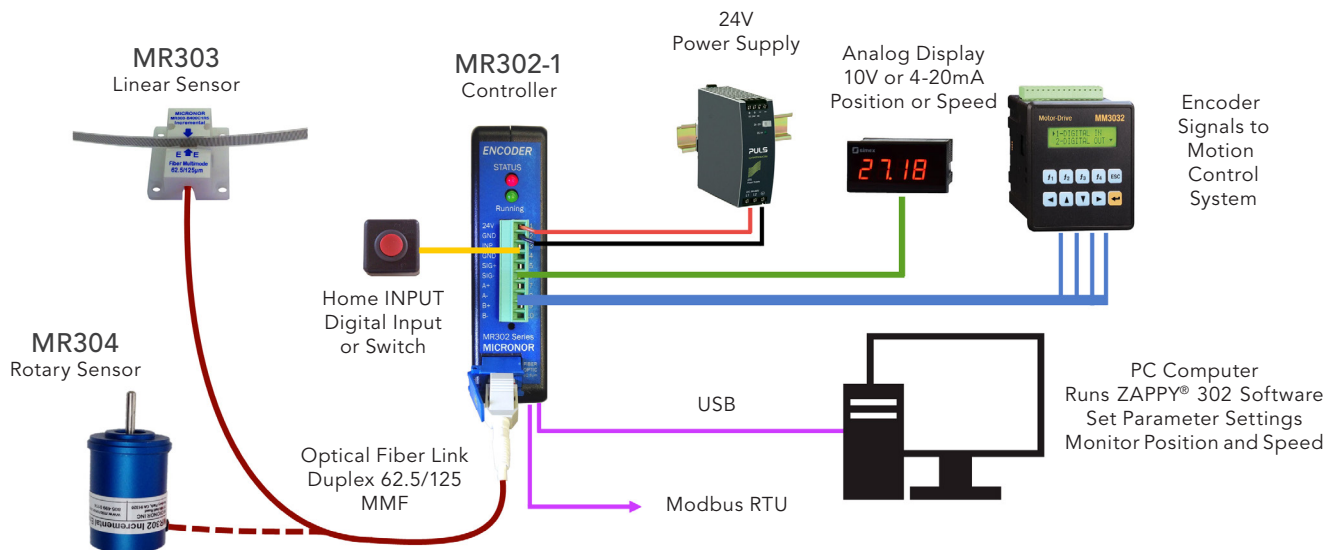
- Robotics
- Medical
- Industrial
- Mines

The controller keeps track of position and also calculates the RPM or linear speed of the connected encoder. Both position and speed can be read via Modbus/RS485 serial interface, USB or analog output. The analog output can be configured for either $\pm 10V$ or 4-20mA output.

FEATURES:

- Supports all MR30X series rotary and linear sensors
- Compact DIN rail mountable module
- Operates from 24 VDC
- Programmable line driver quadrature outputs (5V, 12V, 24V)
- Programmable output: $\pm 10V$ or 4-20mA, Position or Speed
- USB interface for parameter setting
- Encoder links up to 2000 meters
- DIN rail mount and OEM controller options available

The system has built-in diagnostics and can signal to the user any anomaly occurring during operation.



Electrical Connections

Electrical Interface via Terminal Plug Phoenix 1803659 (one supplied with Controller)		
Pin	Function	Notes
1	+24V	+24V Power Supply (typical 50mA)
2	GND	GND
3	HOMING INPUT	+24V Digital Input NOTE: Function is determined by user setting of Reset Mode 0x209. Typically used as HOMING Input to set absolute position of encoder.
4	GND	GND, Connected to Pin 2
5	SIG+	User Selectable Analog Output: $\pm 10V$ or 4-20mA NOTE: Either supplied ZAPPY® software or user software is used to set Electrical Mode, Functional Mode (Position or Speed), Scale and Filter.
6	SIG-	
7	A+	User Selectable Quadrature Output Level: 5V, 12V, 24V NOTE: Supplied ZAPPY® software or user software is used to set A/B output levels.
8	A-	
9	B+	
10	B-	



Located On Bottom:
USB and Modbus/RS485
Connector Interfaces

Specifications

Electrical Interface		NOTE: Electrical connections shall not exceed 3 meters
Connectors	Electrical connections via Terminal Plug, Phoenix 1803659 (one supplied with Controller) USB via Type B receptacle, Modbus via IEEE 1394 receptacle	
Quadrature Outputs	A+/A-/B+/B- line driver outputs are user configurable: 5V, 12V, 24V; 100 kHz maximum bandwidth	
Discrete Digital Signal	HOMING Input (24V)	
Digital Interfaces	USB and Modbus/RS485	
Analog Output	User selectable: $\pm 10V$ or 4-20mA, Position or Speed Mode Current Range=0-20mA, Max burden resistance=500 Ω (24V supply), Accuracy=0.25% F.S. Voltage Range= $\pm 10V$, Max current=5mA (2k Ω load), Short circuit<5s, Accuracy=0.25% F.S. Position Mode: Full scale range is 1 to 8,388,607 counts (equivalent to >8,192 revolutions of a 1024ppr encoder) based on contents of internal counter. Either Homing Input (+24V) or software command may be used as a Homing command to set absolute position. Speed Mode: Full scale range can be programmed from 10 to 10,000 RPM	
Power Supply	+24 VDC, 50mA (typical); Operates over 18V to 28V During power-up, external power supply should be capable of 100mA in-rush current	
Optical Interface		
Interface	LC Duplex, 62.5/125 μ m Graded Index Fiber, 0.275 NA, Type OM-1	
System Loss Budget	12dB	
Maximum Distance	Up to 2000 meters (6560 ft) with MR30X series Sensor	
Explosive Atmospheres Inherently Safe Optical Radiationj		
EX Classification	Controller shall be installed in non-hazardous location only Power supply shall be current limited to 200mA IEC ExTR Test Report TBD	
ATEX	EPL Mb/Gb/Gc/Db/Dc	
IEC Ex	EPL Mb/Gb/Gc/Db/Dc	
NEC	Exempt	
Environmental Attributes		
Temperature/Humidity	-5°C to +55°C (23°F to +131°F), 0-95% RH, Non-Condensing	
Ingress Protection	IP30, Keep free from contaminants	
Physical Attributes		
Mounting	35mm DIN rail or screw mount	
Dimensions	114 x 89 x 32 mm (4.5 x 3.5 x 1.25 inches)	
Weight	260 g (9 oz)	

Ordering Info

MR302 - 1

Linear Encoder

MR303-B400CXX, Consult MR303 data sheet for product information

Rotary Encoder

MR304-E03CXX, Consult MR304 data sheet for detailed product information

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