

FIBER OPTIC INCREMENTAL ENCODER

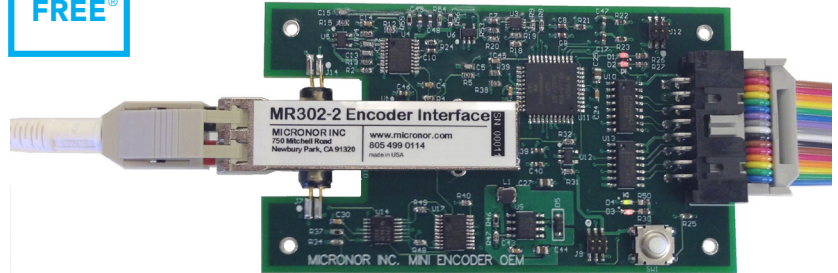
MR302-2 PCB Controller

MR30X SERIES

The MR302-2 PCB Controller enables Original Equipment Manufacturers (OEMs) to compactly and cost effectively integrate MR30X series fiber optic position sensors within their own equipment designs.



The MR30X series fiber optic position sensor system is an innovative all-optical design immune to any electro-magnetic interferences such as magnetic field, lightning, voltage, radiation, and other harsh environment conditions. The fiber optic aspect of the sensors also makes the system perfectly suited for long distance speed and position sensing over hundreds of meters without being affected by ground loop issues.



U.S. Patent 7,196,320

In operation, the MR302-2 Controller sends two optical wavelength signals to a remote MR30X series Sensor. The encoder then modulates each optical beam based on the direction with a leading or lagging phase shift. The return optical signals are split into two separate beams and converted back into electrical signals by two photodiodes whose outputs are amplified by two gain-controlled amplifiers. A microprocessor supervises the amplitude of the optical signals and constantly adjusts the signal to provide a stable quadrature output.

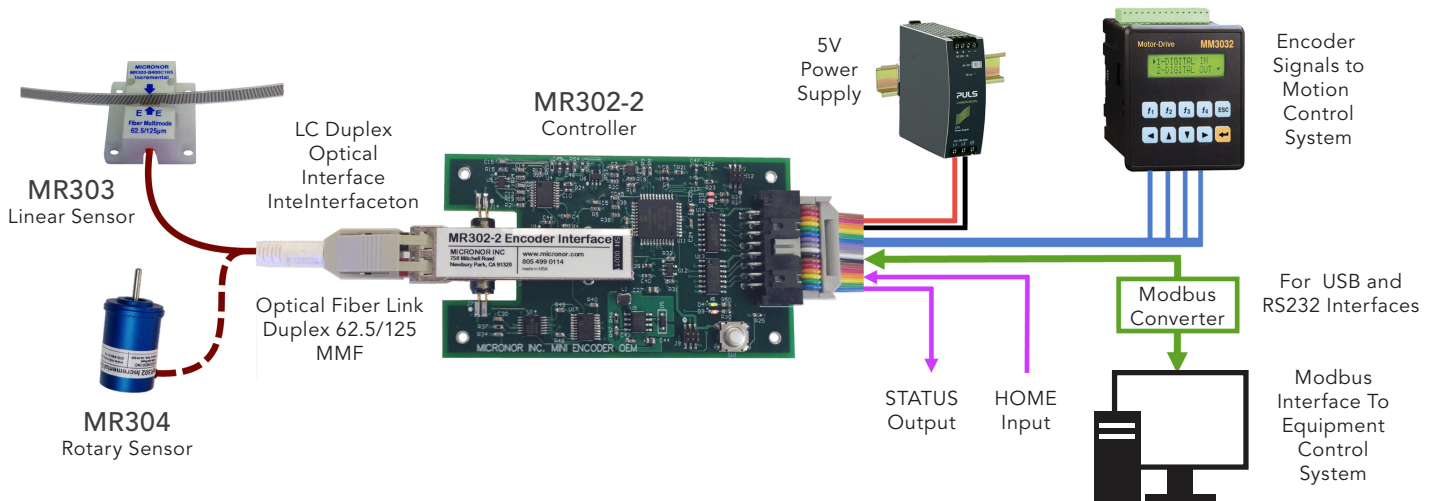
The system has built-in diagnostics and can signal any anomaly occurring during sensor operation.

APPLICATIONS:

- Medical
- MRI
- Robotics
- Industrial

FEATURES:

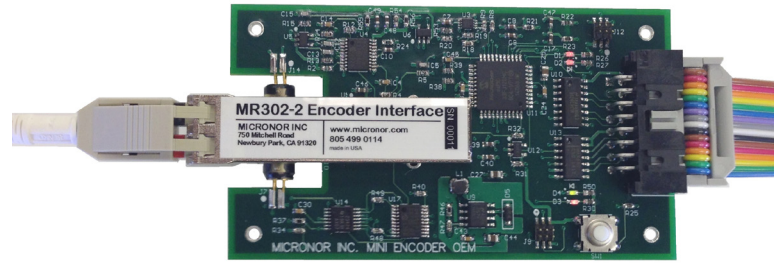
- Compact PCB form factor for ease of OEM system integration
- Supports all MR30X series rotary and linear sensors
- Operates from 5 VDC
- A/A'/B/B' RS422 line driver quadrature outputs
- Modbus RTU/RS485/RS422 compatible serial interface
- RS232 or USB interfacing available with optional converter
- Feature rich Modbus communications protocol
- LC Duplex multimode optical link operates up to 1600 meters



MR302-2 Electrical Connections

Electrical Interface via Ribbon Connector
 3M# N2516-5002-RB (Right Angle on PCB)
 Mating Part 3M# 89116-0103

Function	Pin	Pin	Function
---	1	2	+5V Power Supply
GND	3	4	n/c
Encoder A-	5	6	Encoder A+
Encoder B-	7	8	Encoder B+
+5V Power Supply	9	10	GND
(Serial) RCV-	11	12	RCV+ (Serial)
(Serial) XMT-	13	14	XMT+ (Serial)
ZERO INPUT	15	16	STATUS OUT (5V)



Specifications

Electrical Interface

Connector	16-pin ribbon cable receptacle, 3M N2516-5002-RB Recommended mating plug, 3M 89116-0103
Quadrature Outputs	A+/-B+/-B- RS422 line driver outputs, 100 kHz maximum bandwidth
Discrete Signals	ZERO Input, STATUS out, 5V logic
Serial Interface	Modbus RTU or RS422/485 compatible, User settable baudrate: 9,600 to 115,200 Byte format: 1 Start Bit, 8 Data Bits, 1 Stop Bit, No Parity
Power Supply	+5 VDC, 55mA typical, 100mA maximum Recommend 100mA power supply

Optical Interface

Connector	LC Duplex
Fiber Type	Duplex 62.5/125µm, Graded Index Fiber, 0.275 NA, Type OM-1
System Loss Budget	10dB
Maximum Distance	Up to 1600 meters (5250 ft) with MR30X series Sensor

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

Dimensions	98.9 x 50.8 x 12.7 mm (3.5 x 2.0 x 0.50 inches) plus ≈61.0 mm (2.40 inch) connector clearance
Mounting	4x #2-56 or M2.5 screws, Mounting pattern 3.10 x 1.60 inches
Weight	25g (0.9 oz)

Specifications subject to change without notice

Ordering Info

MR302-2

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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