

# Slip Ring & Rotation Sensor Assembly

## SR/ERT Series

- 10, 20, or 36 slip ring connections
- Encoder rotation sensor
- Additional encoder electronics (built in)
- Available with or without weatherproof seals
- Different rotor styles
- Circular connectors or color coded solder terminals
- Instrumentation quality rings & brushes
- Sealed, corrosion resistant metal housing



## Description

The *SR/ERT Series Slip Ring Assembly* is used when slip rings and/or a rotation sensor need to be mounted at the end of a rotating shaft. The gold alloy slip rings are used to make high quality electrical connection to strain gauges, thermocouples, or other sensors that have been installed on rotating machinery. The rotation sensor is used to measure rotational velocity, angular position, and direction of rotation all while not using any of the slip ring connections.

The rotors are made from high strength stainless steel while the stators are made from lightweight, anodized, aluminum. Various orientations of circular connectors or solder terminals can be specified for wiring terminations. For outline drawings, contact Michigan Scientific or visit our website at [www.michsci.com](http://www.michsci.com).

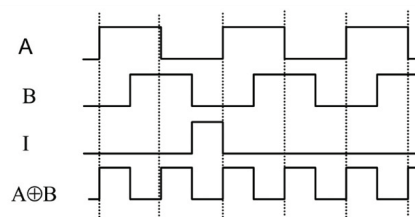
All slip ring housings in this series have been designed to accept contacting rotary seals. Units ordered with these seals are completely weatherproof. For higher speeds in dry conditions, units without contacting rotary seals are available.

### **Rotation sensor choices E256, E360, E500, & E512:**

Four optical encoder resolutions are offered, see the table below. Each of these encoder choices have four outputs, shown graphically below. Outputs A and B are in quadrature, meaning they are 90° out of phase. Output I is an index pulse. Output A⊕B is the exclusive OR of A and B, which doubles the basic resolution of the encoder. The outputs, 0 to 5 volt pulses, can drive TTL loads. The encoders have metal code wheels and rugged electronics, which are designed to tolerate shock and vibration.

Encoder choices	Outputs:Pulses per revolution			
	A	B	I	A⊕B
E256	256	256	1	512
E360	360	360	1	720
E500	500	500	1	1000
E512	512	512	1	1024

ENCODER  
OUTPUTS



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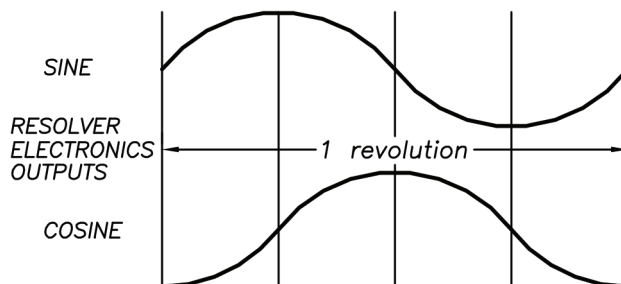
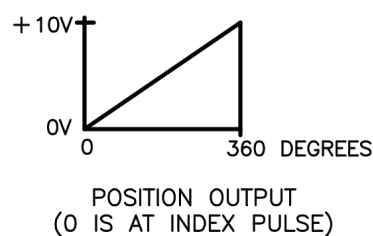
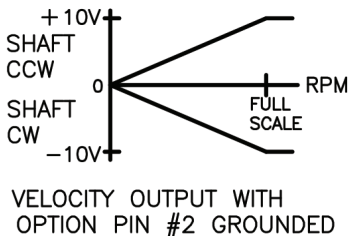
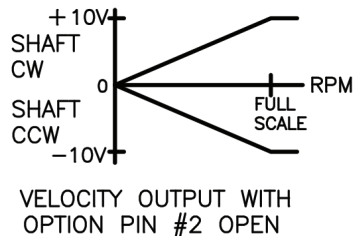
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Additional encoder electronics can be built into the encoder units. These electronics can provide either a tachometer or resolver output.

The tachometer option provides a voltage proportional to shaft velocity and a voltage proportional to the angular position of the shaft. Full scale for the angular position output is factory-configurable up to +10 Vdc. Full scale for the velocity output is factory-configurable up to  $\pm 10$  Vdc.

The resolver option provides both a sine and cosine analog output, which are 90 degrees out of phase with each other. Full scale outputs are factory-configurable up to  $\pm 10$  Vdc.



## Specifications

	10 Connections	20 Connections	36 Connections
Current Capacity Per Connection	0.5 A		
Maximum Peak Resistance Variation	0.1 $\Omega$		
Maximum Length	5 inches		
Weight	15 ounces		
Maximum Speed Without Seals	10,000 rpm	4,000 rpm	2,400 rpm
Maximum Speed With Rotary Seals	2,000 rpm		
Unit Torque Without Seals	3 in-oz		
Unit Torque With Seals	21 in-oz		
Encoder Operation	+5 to +20 Vdc, 100 mA		
Temperature Range	-40°F to + 185°F		
Maximum Incorrect Wiring Protection on Encoder	20 V		
Encoder Accuracy (Maximum Cumulative Error)	0.25°		

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