

Dual Output Hall Effect Sensor  
Fully Redundant, Non-Contacting Rotary

# 9900 Series

The BEI Sensors 9900 Series offers a non-contacting Hall effect sensor in a rugged design, ideally suited for tight packaging constraints while providing superior reliability and durability. Unlike most similar products, the 9900 provide the full redundancy of two independent Hall detectors in a common package (single output sensors also available). Each Hall detector is rigidly supported to meet the severe durability requirements of demanding applications as automotive and off-highway. Rotating sintered magnets enable the stationary detectors to perform with improved accuracy and reliability, including excellent temperature stability and corrosion resistance. One-time factory programmability allows for greater flexibility in design and custom outputs.

Fully sealed, (meeting and/or exceeding IP66/IP67 standards) the 9900 is impervious to contamination and moisture. An integrally molded, 6-pin connector makes a sealed connection with industry standard Packard Electric connectors.

**9900 Series Features:**

**Rotating magnet/Fixed sensor configuration**

Provides improved accuracy and reliability

**Two independent outputs for redundancy**

Full redundancy assures back-up safety

**Fully programmable**

Outputs; offset, gain, slope and temperature compensation

**Sintered Alnico-8 magnets**

Provide excellent temperature stability and corrosion resistance

**Ratiometric Output**

**Factory programming through connector**

After completion of assembly provides high accuracy

**Sealed construction**

IP66/IP67, 6-pin I/O Interface to Packard Electric Connector

**Extended temperature range**

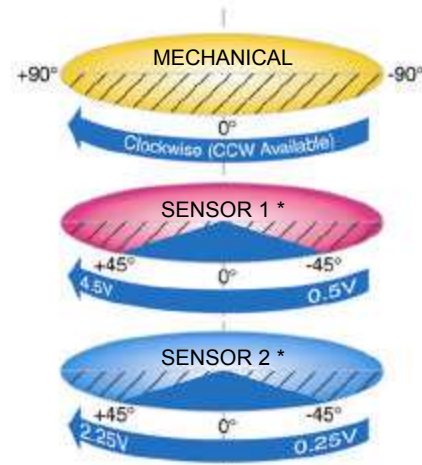
-40° to +150°C available optionally

**Return spring (CW standard, CCW optional)**

Eliminates mechanical backlash

**Extended operating life**

35 million operational cycles



\* OTHER OPTIONS AVAILABLE

**Ordering Information:**

990X XXX XX XX

- Temperature Rating:  
Blank = Standard 85C, HT = 125C
- Spring Return:  
CW = Clockwise, CCW = Counter Clockwise, NS = No Spring Return
- Electrical Angle:  
ie. 090 = ±45°, 120 = ±60°
- Number of Sensors:  
1 = Single Output, 2 = Dual Output

SAMPLE: 9902 090 CW  
 Standard 85C  
 CW = Clockwise Spring Return  
 90° (±45°) Electrical Angle  
 Dual Output

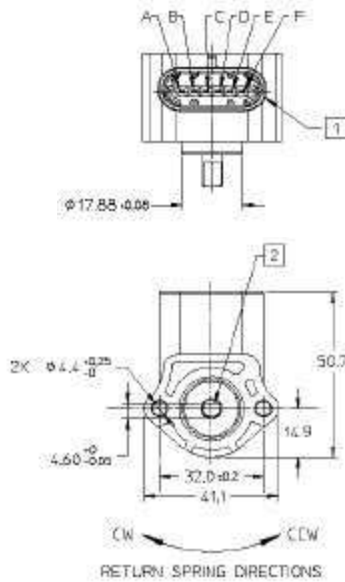


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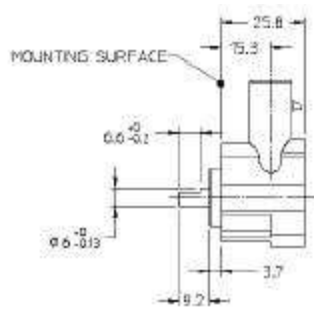
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ISO9001 Certified/ QS9000 Registered

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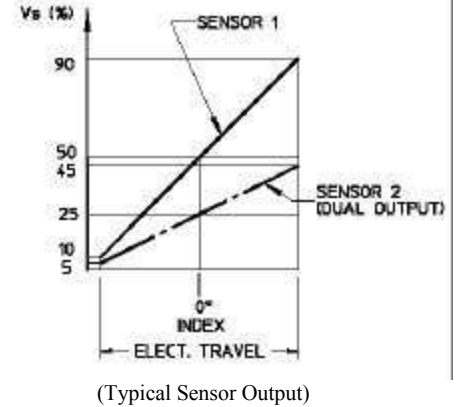


- 1 Connector mates with Packard Electric METRI-Pack 150.2 series (pull-to-seat 6 pin sealed connector assemblies) (i.e. 12162261, 12162260 or 12162210)
- 2 Shaft flat is shown with:  
sensor 1 output at 50%  $V_s$  (input voltage).  
sensor 2 output at 25%  $V_s$  (input voltage).



NOTE: All dimensions are shown in millimeters.

CONNECTOR PIN OUTPUT		
	SENSOR 1	SENSOR 2
$V_s$ (input)	F	B
GROUND	E	A
OUTPUT	C	D



## Mechanical Specifications

Mechanical Travel	-90° to +90° (180° total rotation)
Frequency Response	1,000Hz minimum
Rotational Torque	0.025 – 0.110 N-m
Weight	35 grams (approx.)

## Electrical Specifications

Mechanical Input Range	-45° to +45° (other angles available)
Input Voltage	5.0 V $\pm$ 0.25V DC
Input Current	10mA maximum per output 20mA maximum total
Sensor 1 Output	0.5V - 4.5V
Sensor 2 Output	0.25V – 2.25V (Different output voltage range for sensor outputs available as a custom option)
Accuracy	$\pm$ 2.0% of full scale at room temperature $\pm$ 3.0% of full scale over operating temperature range
Resolution	Analog (continuous)

## Environmental Specifications

Electromagnetic Compatibility	100V/meter, 14kHz – 1GHz range
Vibration	10G peak, 20 – 2,000 Hz
Shock	50Gs, half sine pulse, 5 m sec duration
Side Load	1kg for 1 million cycles
Operating temperature range	-40°C to +85°C (wider operating temperature -40° to +150°C available as a custom option)
Storage temperature range	-55°C to +105°C (-55°C to +165°C)

Specifications subject to change without notice. BE2023

**BEI SENSORS**

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