

# Model TS904

## Tilt Sensor



DS-TS904-8/02



### FEATURES

- Variety of Angular Ranges
- Rugged Housing with Molded Cable
- Easy Installation
- Excellent Long Term Stability
- Superior Repeatability/Hysteresis
- EMI/RFI/ESD Protection
- Low Power Consumption
- Linear Amplified Output
- Temperature Compensated
- Over-voltage & Reverse Polarity Protection
- Excellent Shock & Vibration Tolerance
- Made in U.S.A.

### APPLICATIONS

Kavlico's Model **TS904 Tilt Sensor** features a total angular range from  $-10^{\circ}$  to  $+10^{\circ}$  through  $-60^{\circ}$  to  $+60^{\circ}$ . Specifically designed for such applications as: road construction, machine tools, agricultural vehicles, container handling, belt operations and hydraulic lift systems. This rugged

device has a long operating life with a shelf life exceeding 10 years.

The **TS904** has a broad operating temperature range of  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  and a response time of 0.5 to 3 seconds. Operating from a 5 Vdc regulated power supply, this unit

provides a 0.5 Vdc through 4.5 Vdc output with  $0^{\circ}$  at 2.5 Vdc. Featuring a glass-filled plastic molded housing with two, 0.25" ID mounting holes, the **TS904** is easily installed in a wide variety of hostile environments.

### OPERATION

Key to the high performance of the **TS904** Tilt Sensor is Kavlico's ceramic, variable capacitance sensing element with programmable ASIC on

hybrid circuit for reliable signal conditioning and maximum electronic integration. This same technology is successfully used by Kavlico for

automotive, diesel engine, compressor, medical and HVAC applications. Millions of Kavlico sensors are in use worldwide.

### QUALITY

Kavlico's sophisticated manufacturing practices have earned the highest quality awards from its customers.

As an ISO 9001 registered and QS9000 compliant company, Kavlico is committed to total customer satisfaction. Each and every sensor is tested for conformance to its applicable specifications prior to shipment.

### OEM DESIGNS

Kavlico's primary function is the design of application specific sensors to meet demanding high volume OEM requirements. Using capacitive, piezoresistive and single chip sensing technologies, Kavlico offers a wide variety of custom outputs, housings, pressure and electrical connections, ranges and environmental protection configurations.

**Solutions for tomorrow's sensing applications...Today**

# Model TS904

## Tilt Sensor

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### SPECIFICATIONS

Note: Performance Specifications with 5 ±0.002 Vdc power supply at 25°C

<b>Angular Ranges</b>	-10° to +10° through -60° to +60°
<b>Supply Voltage:</b>	5.00 ± 0.25 Vdc
<b>Output Voltage</b>	0.5 Vdc (MIN. Angle)
<b>(Ratiometric):</b>	2.5 Vdc (Zero)
	4.5 Vdc (MAX. Angle)
<b>Ratiometricity:</b>	±0.5% of Span MAX.
	with 4.75 to 5.25 Vdc supply
<b>Supply Current:</b>	5 mA MAX.
<b>Output Impedance:</b>	100 Ohms MAX.
<b>Accuracy Band:</b>	±1.25% of Span MAX. (0 to +30°C)
	±3.75% of Span MAX. (-30°C to +85°C)
<b>Operating Temp:</b>	-30°C to +85°C
<b>Storage Temperature:</b>	-40°C to +125°C

Accuracy includes errors due to calibration, hysteresis, repeatability, linearity, and temperature. Span is the algebraic difference between end points (MIN. and MAX. angle output)

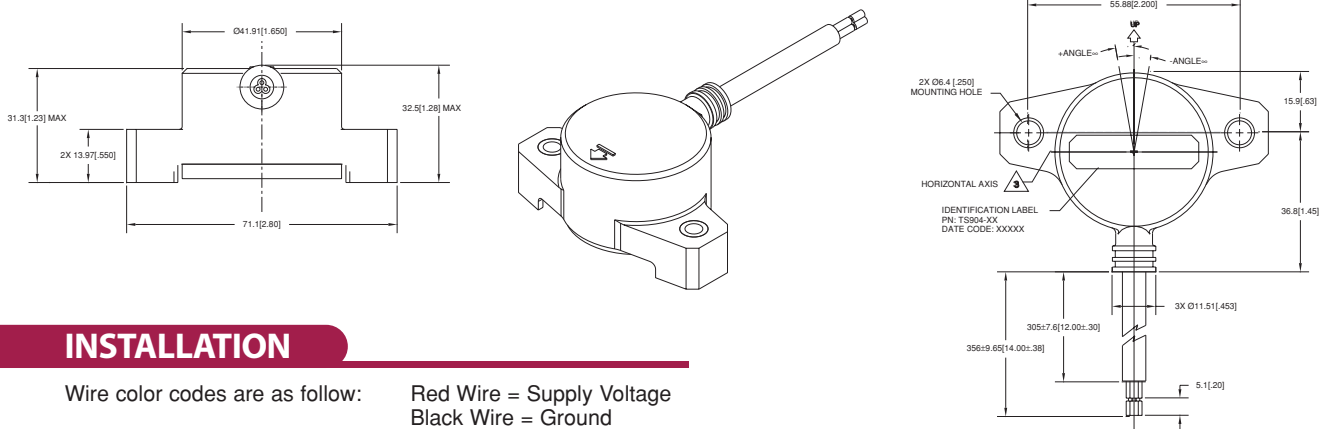
<b>Response Time:</b>	(10 to 90% of span change in response to step change from - MIN. angle to + MAX. angle)
	3.0 Seconds @ -30°C
	1.0 Seconds @ +25°C
	0.5 Seconds @ +85°C

<b>Housing Material:</b>	Polyester based TPU (15% glass filled)
<b>Vibration:</b>	10 G's peak sinusoidal (10 to 2000 Hz)
<b>Elec. Termination:</b>	12 in. long cable, 18 AWG

<b>Recommended Interface Impedance:</b>	25K Ohm MIN. resistance between sensor output and electrical ground.
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<b>Weight:</b>	8 oz.
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### OUTLINE DRAWING



### INSTALLATION

Wire color codes are as follow: Red Wire = Supply Voltage  
Black Wire = Ground  
Green Wire = Output

Mount vertically on a flat surface using the two holes (6.4mm), with the cable facing downwards.

### HOW TO ORDER

A typical order number has two codes, separated by one hyphen

#### TS904 Tilt Sensor

##### Angular Range

10	-10° to +10°
20	-20° to +20°
30	-30° to +30°
45	-45° to +45°
60	-60° to +60°

#### TS904 - 60

Example: TS904-60

**Warranty:** Kavlico warrants that its products will be free from defective materials and workmanship for a period of one (1) year from date of delivery to the original purchaser and that its products will conform to Kavlico's specifications or standards. Any product found to be defective will be replaced or repaired at the sole option of Kavlico.

Note: Kavlico reserves the right to change its specifications at any time without notice. Kavlico is not expert in the customer's technical field and therefore does not warrant the suitability of its product for the application selected by the customer.

Kavlico products are manufactured or covered by one or more of the following patents: 4329732, 4388668, 4398426, 4425799, 4426673, 4617607, 4680971, 4735098, 4974117, 5315877, 5329819, 5540086 with other U.S. and foreign patents pending.



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