Penny & Giles

Sealed Tilt Sensor

STT500

- **No moving parts**
- **High resolution ±0.07°**
- **Absolute measurement**
- **Measuring ranges ±10°, ±20°, ±30° and ±60°**
- **Less than 6.5mA supply current**
- **Marine-grade, cast-aluminum housing with 88mm dia. flange**
- **Rugged construction, sealed to IP69K**
- **Choice of cable outputs**

The STT series of sealed tilt sensors have been designed to provide reliable, fit-and-forget tilt measurement sensing for the most arduous operating environments. The STT500 is supplied in a rugged, marine grade cast aluminium housing.

The STT series use solid state 3D-MEMS (Micro-Electro-Mechanical Systems) technology to measure the sensor's inclination relative to earth's gravity.

They have a measurement range from ±10° to ±60° and provide a 0.5 to 4.5Vdc output signal over these angular ranges, with a nominal 2.5Vdc at 0° tilt. By using this technology, the STT series provide distinct advantages in reliability, stability and compactness over fluid based, electrolytic and pendulum operated sensors.

Highly robust, maintenance-free and easy to fit, the STT series sealed tilt sensors represent cost-effective solutions for demanding tilt measurement applications.

These tilt sensors are suitable for use in applications such as road construction equipment, cranes and booms, scissor lifts, agricultural vehicles, container handling and hydraulic lift systems.

SPECIFICATIONS

ELECTRICAL	
SUPPLY VOLTAGE	5Vdc ± 0.25Vdc (regulated) or 8-30Vdc (unregulated)
SUPPLY CURRENT	< 6.5mA
OVER VOLTAGE	Up to 40Vdc
REVERSE POLARITY PROTECTED	Yes
POWER-ON TIME	< 1s to within 1% of final output
MEASUREMENT RANGE	±10°, ±20°, ±30° and ±60°
OUTPUT VOLTAGE (5V SUPPLY)	10-90% of Vsupply, 50% of Vsupply for 0° tilt
OUTPUT VOLTAGE (8-30V SUPPLY)	0.5-4.5V, 2.5V for 0° tilt
RESOLUTION	±0.07°
OUTPUT NOISE	<1mV rms
ZERO TEMP. COEFFICIENT (Ø = 0)	<0.01°/°C
SENSITIVITY TEMP. COEFFICIENT	<0.015% of measured angle/°C
FREQUENCY RESPONSE	1.5Hz (-3dB) nominal
SETTLING TIME	<500ms to within 1% of final output
HYSTERESIS & REPEATABILITY	±0.07°
CROSS-AXIS SENSITIVITY†	<4.0% of normal axis sensitivity
LOAD RESISTANCE	10kΩ min. to GND
SHORT CIRCUIT PROTECTION	Output to GND and Output to 5V max.
MECHANICAL	
WEIGHT	200g (excluding cable options)
MOUNTING	3 x 6.50mm slots with ±10° adjustment. Max. tightening 6Nm
PHASING	0° when cable exit is vertically down
ENVIRONMENTAL	
PROTECTION CLASS	Up to IP69K
OPERATIONAL TEMPERATURE	-40 to +125°C (5V supply) -40 to +123°C (8V supply) Derate upper temperature limit by 0.5°C for every 1V increase in supply: e.g. -40 to +112 @ 30V supply
STORAGE TEMPERATURE	-55 to +125°C
VIBRATION	BS EN 60068-2-64: 1995 Sec 8.4 (14gn rms) 20Hz to 2000Hz Random
SHOCK	3m drop onto concrete (absolute maximum 20,000g)
EMC IMMUNITY LEVEL	BS EN 61000-4-3: 1999, to 100V/m, 80 MHz to 1GHz and 1.4GHz to 2.7GHz (2004/108/EC)

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