EV Acceleration Solutions

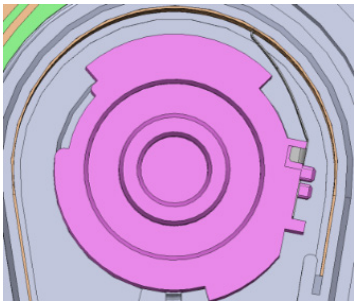
Electric Bi and Tri-Wheel Vehicles

As the electric vehicle market continues to expand, the speed capabilities of electric scooters have also increased significantly, reaching over 40km/hr. CTS 500 Series Acceleration Position Sensors are widely used in two-wheel EVs that run at higher speeds. Once the driver rotates the handlebar, the position sensor reads how much the handle has been rotated, and sends a signal to the motor controller to accelerate or deccelerate.

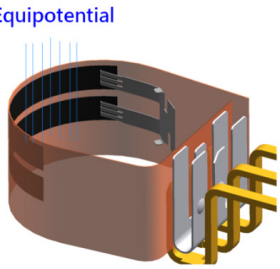
CTS sensing solutions provide low DPPM and precise readings of linearity and hysterisis. Having been used in both internal combustion and electric vehicles for over ten years, these products have been proven to stand up to the elements and provide end users with reliable performance.

HOW IT WORKS

CTS TPS contacting systems are made with a radial design, providing longer working contactor arc length and greater resolution compared to planar designs. The electrical element includes flexible substrates that mitigate non-linearity errors due to resistive film thickness. No laser trimming is required, as a uniform resistive paint thickness provides a consistent linear output.



The axial rotor movement does not change the sensor output, safeguarding product accuracy, and no extra parts are needed to control the effects of rotor end play. Our elements are durable enough to withstand repeated use and exposure to the elements throughout the lifespan of the application.



BENEFITS

Benefits of our 500 Series Acceleration Position Sensors include:

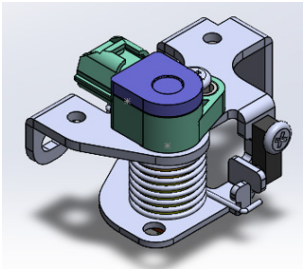
- Reliable performance and optimized signal quality over life due to proprietary thick film materials
- Radius design provides high linearity and hysteresis performance value
- Crafted with materials chosen for resistance to temperature change
- Greater resolution leads to better sensitivity to the movement of handle bar's rotation
- Mature product with low DPPM to increase safety
- Choice of mounting ear location, and clockwise or counterclockwise rotation
- Compact design to decrease COO

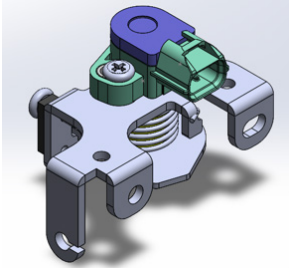
ELECTRICAL SPECIFICATIONS

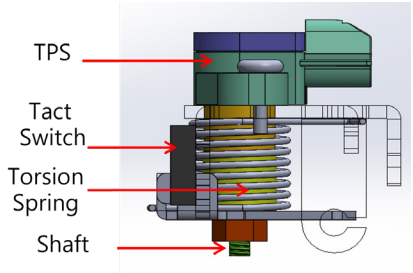
Parameter	Conditions & Remarks	Min.	Max.	Unit
Total Resistance		5.0 -40%	5.0 +40%	kΩ
Linearity	±2.0% (point slope linearity)			
Mechanical Rotation Angle			122°	
Electrical Rotation Angle			105°	
Hysteresis (500 Series)			1%	applied voltage
Hysteresis (500D Series)			0.6%	applied voltage
Slope	0.8%/degree			
Normal Index Voltage (CW)	6% of applied at mid-adjustment			
Normal Index Voltage (CCW)	10% of applied at mid-adjustment			
Adjustable Index Range		0	20	
Torque Requirement	5.11			N-cm
Electrical Limit			16	VDC
Typical Voltage		5	10	VDC
Power Rating			0.8	watts

MECHANICAL AND ENVIRONMENTAL

Mechanical Cycling	2 x 106 full strokes @1 Hz; 2 x 106 half strokes @ 0.5 Hz
Standard Vibration	24 hrs., 3 planes; random 50 to 500 Hz; 30G
Thermal Shock	30 cycles, -40°to 120°C; transition time less than 1minute soak at each temperature
Operating Temperature Range	-30°to 110°C
Storage Temperature Range	-40°to 120°C
Water Resistance	JIS D0203
Solvent Exposure	Brush on gasoline, engine oil brake fluid, transmission fluid and antifreeze
Dust Exposure	JIS D0207-F2
RoHS	Lead-Free. Fully compliant to RoHS Directive
Packaging:	Tray packaging







ABOUT CTS

CTS is a leading designer and manufacturer of products that Sense, Connect, and Move. We manufacture sensors, actuators, and electronic components in North America, Europe, and Asia, and provide solutions to OEMs in the aerospace & defense, medical, industrial, communications, information technology, and transportation industries.

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