

Comparitive Characteristics of Various Linear Position / Displacement Sensor Technologies

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Characteristics	Resistive	Capacitive	Inductive				Magnetic		Time of Flight			Encoders	
Sensor Embodiment	Potentiometers	Capacitive	AC-LVDTs	DC-LVDTs	LVRTs	LVITs	Hall Effect	Magneto resistive	Magneto strictive	Ultrasonic	Laser	Optical	Magnetic
Range	0.1 - 20" 2.5-500 mm	0.01 - 0.4" 0.25-10 mm	0.02 - 20" 0.5-500 mm	0.1 - 20" 2.5-500 mm	0.01 - 0.4" 0.25-10 mm	0.2 - 40" 5-1000 mm	0.04 - 1" 1 - 25 mm	0.1 - 20" 2.5-500 mm	6 - 120" 0.15-3.0 m	4 - 400" 0.1 - 10 m	0.1 - 500" 2.5 - 12.5 m	6 - 60" 0.15 - 1.5 m	6 - 120" 0.15-3.0 m
Accuracy	□	⊖	⊖	⊖	⊖	⊖	▣	○	●	▣	●	●	⊖
Resolution	□	⊖	●	●	●	⊖	▣	○	●	▣	●	●	⊖
Repeatability / Hysteresis	▣	●	●	●	●	⊖	■	▣	●	○	●	⊖	⊖
Linearity	□	○	○	○	○	○	▣	○	⊖	▣	●	⊖	⊖
Dynamic Response	▣	○	○	○	○	○	□	▣	□	▣	□	■	■
Temp. Characteristics	▣	○	●	□	●	⊖	■	▣	○	▣	●	●	○
Vibration & Shock Sensitivity	■	○	●	○	●	○	⊖	⊖	▣	○	▣	▣	▣
Mechanical Overload Capabilities	■	▣	●	●	●	●	○	○	⊖	⊖	●	▣	▣
Life & Long Term Reliability	■	○	●	○	●	○	▣	○	▣	⊖	⊖	○	○
Contacts	⚡	✕	✕	✕	✕	✕	✕	✕	✕	⚡	⚡	✕	✕
Relative Cost	▼	◆	◆	▲	◆	▼	▼	▲	▲	◆	▲	◆	◆
Support Electronics	▼	▲	◆	▼	◆	◆	▼	▼	▼	◆	▲	▲	▲
Complexity & Cost	▼	▲	◆	▼	◆	◆	▼	▼	▼	◆	▲	▲	▲

Key:

Excellent	Very Good	Good	Moderate	Fair	Poor	High Cost	Mod. Cost	Los Cost	Contacting	Non-contacting	Contactless