Temposonics®

MTS SENSORS

Magnetostrictive, Absolute, Non-contact
Linear-Position Sensors

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Drive Technology Industry Flyer

Photo sources: MTS & EAAT GmbH

The Measurable Difference

Be Absolute with MTS Sensors

Performance and Reliability

Productivity improvements, frequent product changes, and sophisticated machining tasks are constant challenges in linear actuator applications. Design engineers are increasingly finding that MTS Temposonics R-Series sensors can provide the absolute position feedback needed for their application while providing greater robustness to shock, vibration, and contamination. The speed and performance of R-Series linear-position sensors enables smooth position and velocity control while improving productivity.

The Challenge ...

Many designers are looking to switch from incremental encoders to absolute encoders to provide improved safety and eliminate extra movement to find reference positions. In addition, maintaining encoders in harsh environments that include contamination or shock and vibration can significantly increase the cost of ownership. Applications for linear actuators need sensors that meet high performance requirements while providing reliability and robustness to improve total cost.

MTS' Sensors Meet The Challenge

Designed for precise and robust position measurement, magnetostrictive sensors can be installed in electrical linear motors, as well as electro-mechanical actuators, pneumatic, hydraulic, spindle or power-grip belt drives, or wherever high-accuracy, dynamic positioning tasks must be performed.

Application Include:

- **Assembly lines**
- **Material handling**
- **Component feed equipment**
- **Quick positioning systems**
- **Quick-change systems for work-piece holders**
- **Packaging applications**
- **Machine Tools**

Proven Position Sensors for Drive Technology Industry Applications

Added Benefits of Temposonics Technology

The Temposonics technology used inside every MTS sensor provides an absolute position measurement that doesn't require calibration or any reference moves. In addition, there is no minimum or maximum speed limitation because they are absolute position devices that continue sampling at a fixed rate and resolution regardless of the application velocity.

Magnetostrictive sensors provide precise, dynamic measurement of absolute position and velocity and are capable of measuring signals in the sub-millisecond range. They can reach sub-micron resolutions which permits displacements at very low speeds of only 0.5 mm/s; measurement cycle times down to 100 microseconds to track fast motion; a linearity of <± 0.01% and typical repeatability of 2.5 microns. Real-time linearity correction is available to get measurement accuracy down to 20 microns or better.

MTS' Proven Solution

Accuracy, Value + Versatility = Profit

Proven Advantages

There are no electronics or moving cables attached to the position magnet, only the moving machine part. This makes the magnetostrictive position sensors a more rugged and reliable technology. In addition, the position magnet does not need to be physically tethered to the sensor, but could, for example, be attached to a moving carriage that comes in and out of range of the sensor. Multiple positions can even be reported from a single sensor using some interfaces such as Profibus, and EtherCAT.

There are multiple choices to provide continuous position feedback, so the choice comes down to the specific application implementation. What are the interface requirements? What is the environment like? Is there a risk of contamination, shock, or vibration? Today's magnetostrictive technology is increasingly meeting the needs of a wide range of applications and provides significant productivity and cost of ownership benefits.

Did You Know?

All MTS' Linear-Position Sensors are designed with Temposonics® Magnetostrictive Technology and have been benchmarked as the Industry Standard for more than 25 years!

MTS Product Families Meeting Industry Needs

R-Series Sensors:

Our highest performing magnetostrictive linear-position sensors available. Rod-style features include:

- Analog SSI, EtherCAT®, Profibus-DP, DeviceNet, and CANbus outputs
- Position and velocity with measurement cycles of 100 microseconds
- Non-linearity <± 0.01% Full stroke
- Repeatability <± 0.001% Full stroke
- 25 mm (1 in.) to 7620 mm (300 in.)

G-Series Sensors:

Outstanding sensor performance, rod-style features include:

- Enhanced diagnostics and programmability
- Analog, Start/Stop, and PWM outputs
- Non-linearity <± 0.02 % Full stroke
- Repeatability <± 0.001 % Full stroke
- 50 mm (2 in.) to 7620 mm (300 in.)

E-Series Sensors:

Economic effective magnetostriction alternative performance

- Cost alternative to potentiometers
- Analog and start/stop outputs
- Non-linearity <± 0.02% Full stroke
- Repeatability <± 0.001% Full stroke
- 50 mm (2 in.) to 1525 mm (60 in.)

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