

Modern Metals

FAQs

FREQUENTLY ASKED QUESTIONS

MTS Sensors, a division of MTS Systems Corporation, is a recognized industry leader in sensing technologies and solutions that enable safety and automation applications. All MTS linear position sensors use our patented Tempsonics® magnetostrictive technology—they have been benchmarked as the industry standard for more than 30 years.

WHY USE MTS LINEAR POSITIONING SENSORS?

Years of research and development have led us to R-Series V, the fifth generation and next step in the innovative evolution of our sensors. MTS Sensors has maintained the qualities we've come to be known by—and have pushed the boundaries of durability and compatibility to provide our customers the best and most advanced R-Series we have ever made.

HOW WILL R-SERIES V SENSORS BENEFIT THE STEEL INDUSTRY?

To meet international standards for steel products, rolling mills require tight tolerances and consistency. The roll stands in these plants must en-

dure harsh environments without loss of productivity, while maintaining the accurate positioning of hydraulic rollers for Automatic Gauge Control (AGC). MTS R-Series rod-style sensors for hydraulic cylinders address these needs by offering accurate and robust linear position sensors for this environment, providing linear position feedback with sub-micron resolution—and are built to last, surviving impact shocks of up to 150 g.

HOW HAS MTS SENSORS IMPROVED UPON THEIR PRODUCTS?

MTS Sensors utilized years of experience with sensor data and customer feedback to improve the robustness of R-Series sensors. Sensors deployed in harsh environments that were returned for repair helped us build a better sensor. With this information, we improved the R-Series sensors' ability to withstand high temperature, shock, and vibration applications. The fifth generation R-Series sensors maintain fully backward compatible mechanical and electrical interfaces.

WHY SHOULD I CHOOSE R-SERIES V SENSORS? WHAT PERFORMANCE IMPROVEMENTS HAVE BEEN MADE TO THE FIFTH GENERATION R-SERIES?

The technology in the R-Series V sensor housing has been optimized, so that more precise data can be retrieved from the application.

- Resolution of 0.5 μm
- Jitter $< \pm 2.5 \mu\text{m}$
- Update rate up to 4 kHz
- Profinet with IRT (Isochronous Real Time) and EtherNet/IP with CIP Sync (Common Industrial Protocol)
- Measurement of up to 30 position magnets simultaneously

Your benefits:

- Extreme accuracy in position measurement, even in highly dynamic applications
- One sensor for multi-position-measurement for compact installation in applications
- Increased productivity for your application

WHAT DO I DO WHEN A SENSOR NEEDS REPLACING? WILL I NEED TO SEND THE CYLINDER OUT FOR SERVICING?

No. All R-Series rod-style sensors have a modular design that allows for easy servicing and replacing in the field. The pressure pipe flange remains in place in the cylinder. The sensor cartridge (consisting of the electronics head and sensing rod) is externally threaded into the cylinder instead of being fully embedded, making it easily removed from its outer protective pressure pipe assembly.



To replace the sensor, the sensor cartridge is unthreaded, the sensor electronics are replaced, and the sensor cartridge is reinstalled into the cylinder. MTS developed this method to allow for easy exchange of the sensor cartridge while the pressure seal is maintained, avoiding possible oil spillage and contamination.

ARE R-SERIES V SENSORS BACKWARD COMPATIBLE? WILL I BE ABLE TO INSTALL R-SERIES V SENSORS IN MY EXISTING MACHINERY THAT CURRENTLY USES OLDER R-SERIES SENSORS?

Yes. The new generation is completely backward compatible due to its proven electrical and mechanical connections and designs. This means that R-series sensors currently installed in existing applications can be replaced by sensors of the new generation. The well-known high performance and quality of previous R-Series generations is carried on and combined with the advanced features and new intelligent functions of R-Series V. Users get a familiar product from MTS Sensors, and at the same time can experience the power of the new generation.

- Proven mechanical connections and designs

- Proven electrical connection types and designs
- Well-known high performance and quality

Your benefits:

- No mechanical modifications necessary to integrate R-Series V
- No electrical modifications necessary to install R-Series V
- Easy to reap the benefits from the new features of R-Series V
- Smaller sensor housing of Profinet and EtherNet/IP/TM for compact installation

ARE R-SERIES V SENSORS READY FOR THE INDUSTRIAL INTERNET OF THINGS (IIOT) AND INDUSTRY 4.0?

Yes. The fifth generation of R-Series sensors, known as the R-Series V, are built ready for Industry 4.0.

The key objective of Industry 4.0 is to empower manufacturing to be faster, more efficient, and customer-centric—progressing beyond automation and optimization and discovering new business models and opportunities. With R-Series V, you'll enjoy:

- Better understanding processes inside your application
 - Improved predictive maintenance scheduling
 - Avoiding unplanned downtime
- R-Series V sensors provide more

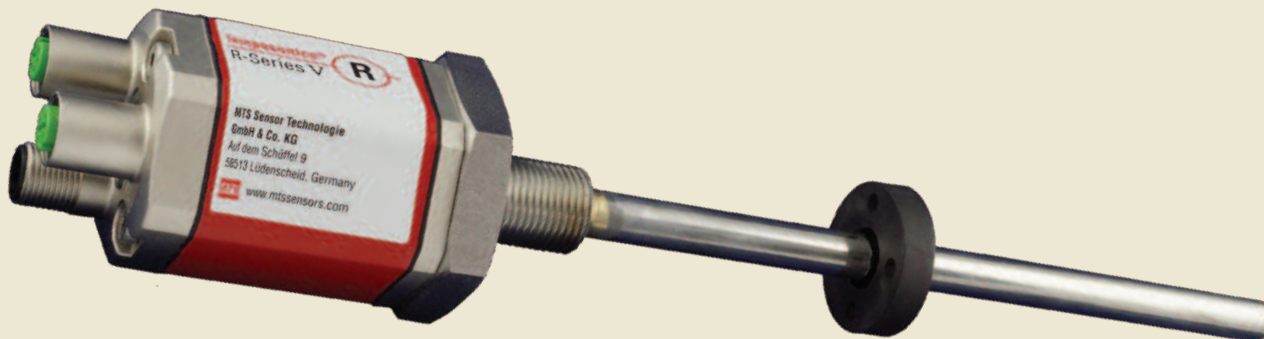
information to be used for diagnostics and troubleshooting so operators and engineers can get a better overall picture of the machine's health. Additional information from the sensors—delivered by the TempoLink smart assistant—translates to better maintenance and diagnostics that reduce downtime.

While the sensing technology itself is mature, builders and engineers are now finding additional ways to use this information and incorporate the data into actionable maintenance plans, for example. All our customers are looking for ways to do more with less—to innovate and improve to enhance productivity and performance without incurring significant costs.

WHY IS PREDICTIVE MAINTENANCE IMPORTANT?

One of the ways MTS Sensors helps our customers make better products is through our use of TempoLink technology in our fifth generation R-Series linear position sensors. The R-Series V sensors can continuously monitor themselves and log important information with onboard storage.

When a TempoLink smart assistant is connected to the sensor, this logged data can be retrieved and analyzed for troubleshooting and diagnostics. The tool delivers information such as current sensor



status, internal temperature, total operating hours, distance traveled by position magnets, and much more. With the smart assistant, users know more about their system health—which, in turn, minimizes downtime and enables preventative maintenance schedules.

WHAT COMMUNICATION PROTOCOLS ARE AVAILABLE?

The setup and diagnostics communication between sensor and TempoLink smart assistant is established over the power supply line, which leaves the data port available for real-time communication. The smart assistant can then transmit sensor parameters wirelessly or via a USB port. You'll get detailed information about the status of your sensor with the included Wi-Fi access point—with no access to company network necessary. And, you'll be able to connect wirelessly via Wi-Fi enabled device like smartphones, tablets, or laptops.

Temposonics R-Series V is now available in rod style and profile style and initially has Profinet and Ether-Net/IP™ outputs. The Industrial Ethernet sensors feature a 37% smaller housing, enabling more compact implementation in applications than with previous generations. Additional sensor types and outputs will follow later in 2018.

WHY WOULD YOU USE LINEAR POSITIONING FEEDBACK IN HYDRAULIC CYLINDERS?

Fifth generation R-Series V sensors feature improved linear positioning feedback with high-speed, high-ac-

curacy measurement as well as continuous feedback for motion control and other automation applications. In addition, the sensors incorporate these improvements along with additional diagnostics such as signal quality and alarms. For example, if signal quality is too low, it can be configured with an alarm for the engineer to investigate.

Additional improvements to R-Series V include faster and more accurate positioning measurement that enables manufacturing machines to operate at tighter tolerances—with resolution below one micron.

WHAT OTHER IMPROVEMENTS HAVE BEEN MADE TO THE FIFTH GENERATION R-SERIES SENSORS?

The new sensors are more robust and reliable than ever. R-Series V has extended operating temperature and input voltage ranges as well as increased shock and vibration resistance. The sensors are now easier to integrate into harsher and rougher applications while providing improved resolution and jitter for the measurement data.

Downtime and lost productivity are expensive. The robustness and reliability of fifth generation Temposonics R-Series position sensors can greatly reduce these costs, and quite often, can extend the life of the machine. R-Series V sensors offer high reliability under harsh environmental conditions. The improved robustness is made possible by using new components that increase the reliability of the application.

- Extended operating temperature

from -40 – +85°C

- Larger voltage supply range from 12 – 30 VDC \pm 20 % (9.6 – 36 V)
- Increased vibration resistance up to 30 g
- Increased shock resistance up to 150 g

Based on superior technology and continuously improved construction, these magnetostrictive devices are insensitive to contamination, and provide stable accurate output while subjected to vibration and shock. Their excellent immunity to interference ensures smooth sensor operation without maintenance expenses and downtime—the most cost-effective position measurement solution for the complete lifecycle of the machine. R-Series V sensors offer precise and reliable position measurement with maximum application possibilities and minimal additional action to protect the sensor against the harsh environment.

The R-Series V sensors are our highest performing magnetostrictive linear position sensors available, with High Vibration Resistance now included in all standard R-Series V sensors. The robust construction increases the sensor's vibration tolerance to 30g (10 – 2000 Hz) and the shock tolerance to 150g. These enhancements also increase the R-Series V sensors' longevity and ability to survive harsh applications. ■

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