



CUSTOMER INFORMATION KRONE SMART TYRE MONITORING

Tyre pressure monitoring system mandatory as of 06.07.2024

KRONE TPMS System „Smart Tyre Monitoring“

KRONE strives to offer its customers the safest and most reliable trailers on the market. For this reason, KRONE offers a new TPMS (Tyre Pressure Monitoring System) system to comply with the new UN-ECE R141 guidelines on this. It will be provided as standard equipment on all KRONE trailers from July 2024. This document provides information on the basics, KRONE's technical implementation and frequently asked questions incl. answers.

TPMS: UN-ECE Guidelines 141 and Cybersecurity: UN-ECE Guidelines 155/156

UN ECE R141 is the basis for the introduction of the new KRONE TPMS system. This regulation sets standards for tyre pressure monitoring systems (TPMS) in commercial vehicles. It also requires all new commercial vehicles with first registration after 6 July 2024 to be equipped with a TPMS system. With this, the UN strives to reduce the risk of accidents on the road. Accordingly, such a TPMS system monitors the pressure and temperature of all tyres installed in the vehicle. If the pressure ever drops by more than 20%, the TPMS system alerts the driver directly. In such a situation, a warning message is displayed on the dashboard of the truck after a maximum of 10 minutes (depending on the truck equipment).

How does the KRONE TPMS system work?

KRONE's TPMS system works with sensors attached to each wheel. The sensor is attached to the rim with a strap, securing it in place:

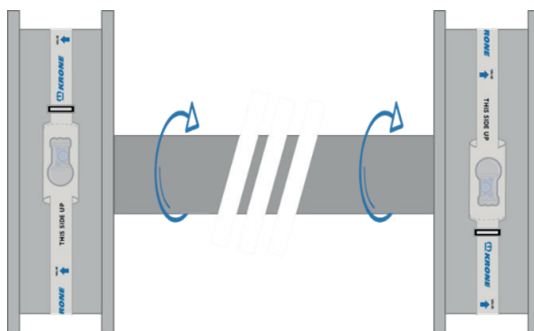


Figure 1: Sensor in belt pocket on rim

Tyre pressure and temperature data are transmitted by the sensors to a central receiving unit, where they are converted into signals and evaluated. If a tyre falls below the prescribed critical limit, a warning signal is sent via the electronic braking system (EBS) to the truck and thus to the driver. According to the standard, a warning light is displayed on the dashboard and in some cases it may also trigger an acoustic alarm. The display depends on the manufacturer and year of construction of the tractor, i.e. how and whether this data can be displayed in the tractor.

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Subject to modifications,
Beu- status as of October 2023

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Advantages of the TPMS system from KRONE

The advantages of the TPMS system from KRONE at a glance:

- Reduced risk of accidents for drivers and road users by avoiding burst tyres or dangerous parts on the road surface
- Avoiding higher fuel consumption due to too low air pressure
- Extended service life of the tyres due to optimum wear
- Reduce unplanned downtime and save time and money by eliminating unnecessary tyre pressure checks
- Ensuring trailer approval through legal compliance with UN ECE regulations 141

Service, prices and warranty

KRONE provides a simple tyre app that allows the user to connect to the receiver locally on the trailer and maintain the system in the event of a tyre change or replacement.

At the beginning of the implementation, KRONE will train its service partners and tyre service providers. Therefore, the usual KRONE service will be available in KRONE service and tyre workshops. So you can also rely on the availability of the sensors everywhere in Europe. You can always find a competent partner via the KRONE Service Locator (<https://www.krone-trailer.com/en/360-services/service-locator>) and the KRONE Tyre Locator (<https://www.krone-trailer.com/en/360-services/tyre-locator>).

The cost of KRONE's TPMS system is included in the standard price of the trailer. KRONE offers a 2-year warranty on its TPMS system. If a sensor fails during the warranty period, KRONE will replace it free of charge. The overall service life of the sensor depends on the temperature conditions and the application profile of the trailer, but on average the service life of the sensors is expected to be more than 5 years.

How to order a KRONE trailer with TPMS?

To order a KRONE trailer with TPMS, simply contact your local KRONE representative. For current orders, be sure to specify that the trailer is to be equipped with the UN ECE R141 TPMS system. From the scheduled mandatory date of 6 July 2024, you can be sure that all trailers will be automatically equipped with the TPMS system.

Result

KRONE's TPMS system helps you increase safety, prevent accidents and improve fuel efficiency. The system complies with all applicable regulations and is easy to use. KRONE offers a 2-year warranty on the system and strives to provide its customers with the safest and most reliable trailers on the market. The introduction of the TPMS system is a further step on this path.

Frequently Asked Questions

Q: What sensors (protocol and specifications) does KRONE use?

A: KRONE uses sensors based on TireCheck's 433 MHz base protocol. The same protocol is also used by other trailer manufacturers, making it easy to find compatible sensors in tire repair shops. You can also use different sensors on a trailer if all installed sensors have implemented the supported TireCheck protocol.

Q: Can a separate/different TPMS system be integrated into new trailers?

A: No. KRONE will only install its own TPMS system on new trailers, as the TPMS system is part of the type approval and must meet the requirements of UN ECE R141.

Q: Who is responsible for maintenance or service if the device malfunctions or cannot connect to the vehicle?

A: The driver, as the leader of the rig, is responsible for responding to TPMS alerts. To support this, KRONE offers a mobile app that allows the driver to check the TPMS status and change the sensor IDs if necessary. This app is free and available to everyone. When changing a tire during a puncture, the driver must ensure that a compatible TPMS sensor is mounted on the rim. KRONE uses sensors with the TireCheck basic protocol. We recommend using the official KRONE TPMS sensor.

Q: Regarding legislation: Will this be part of the general inspection? What happens if one of the sensors doesn't work? (Is the trailer not allowed to be used until it is repaired?)

A: Yes, today we assume that TPMS exams will be part of the general inspection exam in all countries in the future. If one or more TPMS sensors do not work, the trailer will be deemed unroadworthy and repairs/upgrades will need to be made.

Q: How does the coupling to the truck work? What specifications are there?

A: The TPMS sensors communicate with the receiver unit using the 433 MHz frequency. The receiver unit is then connected to the trailer's EBS system via the CAN bus. The EBS system then forwards the TPMS data to the tractor via the CAN bus. All tractor manufacturers in classes N2 and N3 are required by law to display a UN ECE R141 compliant warning signal.

Q: Do I need a telematics box to use the TPMS system?

A: UN ECE R141 does not require a telematics option. In general, the TPMS solution must be able to send tire pressure and temperature information to the tractor using the EBS system. The standard is met as soon as the driver has access to the information from the TPMS system.

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Q: What are the advantages if I also have telematics installed?

A: TPMS data via telematics is a valuable addition to any fleet management system. They can help improve safety, operating costs and vehicle performance.

Here are some benefits that TPMS data via telematics offers:

- Improved fleet management: TPMS data can be used by dispatchers to monitor performance and Monitor the condition of trailers in a fleet. This can help improve fleet efficiency and avoid unexpected outages caused by data usage.
 - A fleet manager can constantly monitor the tire pressure of all trailers in their fleet from the office. This can help reduce fuel consumption and tire wear.
- Improved customer satisfaction: TPMS data can be used to provide data-based information to drivers and workshops about the condition of the trailers. This can help improve operational security and availability.
 - A tire service partner can constantly monitor vehicle tire performance using telematics data. This can help improve the safety and performance of the tires.
 - A driver can be notified immediately if a trailer's tire pressure drops. This can help prevent an accident.
- Improved environmental sustainability including reporting and secure documentation: TPMS data can help reduce fuel consumption and CO2 emissions. This can help improve environmental sustainability. Thanks to the telematics connection, this data can be used for internal and external reporting (topic ESG reporting)
- Through the use of telematics and the associated availability of TPMS data in the transport company's office, queries and telephone calls with the driver are unnecessary.

Q. Can I get the TPMS without built-in telematics?

A: KRONE installs a telematics unit as standard in every vehicle with a TPMS option.

Q: From what order date is TPMS part of the trailer's certificate of conformity?

A: This depends on the trailer type, lead time and usual pickup time. KRONE will proceed gradually with the transition for trailers, starting with those with the longest lead time. In order to avoid generalizations, we recommend that you contact your KRONE sales advisor and obtain specific information for your order.

Q: Can I drive a trailer if the tire pressure monitoring system issues an active warning?

A: It is not recommended as a tire pressure monitoring system increases safety for the driver and all other road users. It is important to check all tires as soon as possible.

Q: Will the tire pressure monitoring system always be based on the rim and tape, or are there other developments?

A: KRONE chose this variant due to market requirements. KRONE closely monitors market developments and continually evaluates which innovations are groundbreaking for further TPMS development.

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