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Thank you for purchasing the MST700 advanced tire monitoring sensor which produced by Michelin(China) Investment CO., LTD Please read this manual carefully before installation to properly install this product. After reading, please keep it safe for future use.

1.Introduction

This product is suitable for 4 to 22 wheels trucks, even more, used to monitor tire basic attribute, pressure, temperature, motion and battery, in real time and low power consumption. Especially, the product designed to support loading advanced algorithm for edge calculation and output more complex result to match the requirement of multiple application scene, including real-time warning and early-warning message, asserts tracking and internal status analysis, etc. The product transmits data to low power wide-area network (LPWAN) wirelessly, when the tire pressure is too low, too high, changing quickly, or the temperature is over the threshold, the product emits the alarm message immediately to the local or remote IoT gateway (the gateway is a standalone product, not including in the spec, please check with Michelin sales to get more information about the gateway).



Fig. 1 Architecture diagram

The scope of this document is for how to install and using the product in general truck. If you need to adapt the product to use in heavy trucks, engineering vehicles, metro, etc., please contact Michelin Technology or local agent dealers for the detail.

In this document, all parts provided by Michelin are marked with green color, and other non-green parts are provided by the car manufacturer, please pay attention. Michelin does not provide installation accessories such as screws, bolts, nuts, straps, gaskets and shrapnel.

2.Instructions for use

2.1 Transmitter Activity

Transmitter keep in idle status after manufacture with ultra-low power consumption, to active:

a) Install the transmitter and inflate the tire, when tire's pressure > 2 bar and keep the status at least 2 min. Transmitter active and change to working mode, monitor tire attribute period and send data to IoT gateway.

b) Change transmitter's positioning (active by internal motion sensor) quickly, then use APP to find the transmitter, connect and do active.

2.2 Transmitter's defaultsetting

The major parameter of default setting in working mode including:

- Check tire's major status, pressure, temperature, battery, motion, every 10s;
- Send status to IoT receiver or gateway every 15min.
- When either pressure or temperature changing quickly, send alarm message to IoT receiver/gateway immediately, and waiting for ACK(acknowledge) message. If no ACK, re-send message for 2~3 times.

2.3 UpdateTransmitter's Setting

Use APP to change the transmitter's default setting or load new detect algorithm:

- Set checking period of the tire's major attribute
- Set sending period of the status message
- Set the alarm threshold of the max pressure and temperature
- Loading alarm detect algorithm
- Bind transmitter's ID with tire's ID
- Update transmitter's security key (AES 128bits)

2.4 Alarm message

Depends on the transmitter's abnormal detection algorithm and threshold, the alarm message including:

- High/Low pressure warning
- High temperature warning
- Fast/Slow leak warning
- Low battery warning

IoT Receiver (gateway) collect all tire's status and warning message, send the message to cloud and trigger other local device for alarm.

3. Installation Notes

The transmitter is installed on the **INSIDESURFACE** of the tire.

1) Remove the wheel from the vehicle and separate the tire from the wheel hub. Please ensure that the tire inside surface is clean.

2) Grind tire inside and use Michelin Technology suggested tire adhesive to install the rubber housing. Grind process is MUST and it's the key factor of the sticking firmness. Then waiting for 24hr and CHECK the firmness again.



Fig.1 Installation Diagram of Rubber Housing

3) Put the transmitter into the rubber housing and adjust the position of the transmitter to fully inside the housing. For off-road trucks and engineering vehicles installation, DO SUGGEST to use adhesive again at bottom and around of transmitter.



Fig.2 Installation Diagram of Transmitter

- 4) Use APP scan the transmitter and bind with serial number of the tire.
- 5) Active transmitter by either inflate the tire or APP. Auto activity is working when pressure large than 2bar and keep at least 15min.
- 6) Waiting 15min and check tire status in cloud backend system.

4. Warranty

4.1 Warranty Period

The warranty period is from the time when the user purchased the product (the date of the original purchase certificate), and the product warranty is 12 months.

4.2 The warranty does not apply to the following situations

- a) Abnormal installation;
- b) Any changes or modifications to this product without the consent of the company;
- c) Failure to use, maintain, or store the product in accordance with the requirements of the product

- user manual, causing human damage;
- d) Unauthorized disassembly and repair damage;
 - e) Other failures or damages caused by problems other than product design, technology, manufacturing, quality, etc.;
 - f) The product is under extreme temperature or environment, or is affected by corrosion, oxidation and other chemical influences, the warranty will not apply;
 - g) This warranty does not apply to any consumable parts of the system (such as the battery in the transmitter).

5. Special Reminder

a) The sensor is a kind of tire monitoring system (TPMS), it is a safety device that monitors the air pressure and temperature conditions of automobile tires. It can remind users to take measures to eliminate hidden dangers in advance when the above conditions are abnormal. However, it cannot be ignored that the tire itself should be in good condition as required by the vehicle at any time. The user should still check the following conditions according to the requirements of the user manual of the car:

whether the depth of the tire pattern has reached the wear limit, whether the tire has scratches, unilateral wear, cracks, Defects such as fractures and perforations.

If the tire itself has the above defects and causes a tire burst accident, it is not within the scope of the quality responsibility of the tire pressure monitoring system.

b) This product sends the data of the pressure, temperature and other tire attribute to local or remote IoT gateway, which are for reference and warning purposes only, and cannot prevent the occurrence of car traffic accidents.

c) This product complies with the relevant national laws and regulations on automotive electronics products, the low-power transmitter and receiver requirements of the radio management department, and the electromagnetic compatibility requirements.

6. Disclaimer

The copyright of MST700tiresensor and related materials belongs to Michelin(China) Investment CO., LTD, and its property rights are protected by national laws. Without the authorization of Michelin, other companies, units, agents and individuals shall not use and copy illegally.

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The MST700 tiresensor may contain certain design defects or errors. Once found, it will be included in the errata and may cause the product to differ from the published specifications. If requested by the customer, the latest errata can be provided.

Before ordering the product, please contact your Michelin Technology sales office or distributor to obtain the latest specifications.

Michelin(China) Investment CO., LTD reserves the right to revise this user manual at any time without notice.

FCC Regulations

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.