TyrePal TeleTPMS Module

TMSM-3

User manual

TyrePal
A WSL COMPANY
TYRE PRESSURE MONITORING SYSTEMS

Contents

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1. Introduction

The TyrePal TeleTPMS system can be installed on any kind of vehicle or trailer. The TeleTPMS Module communicates tyre pressure data and vehicle location to a database that can be accessed by a web application.

The TMSM Module itself combines the following elements:

- Tyre pressure monitoring system (TPMS) with programmable alert levels
- GPS receiver for vehicle location
- GPRS communication module
- Rechargeable lithium battery
- SIM card for network connection

The module receives tyre pressure and temperature data from sensors on the tyres and location information from the GPS. This data is transmitted through the network connection every few minutes. In the event of an alert condition, the normal transmission sequence is interrupted and data is transmitted immediately.

The remote database processes the data further and makes it accessible to authorised users via a web application and SMS.

Trailer applications

For fleets using multiple trailers that are swapped between tractor units, automatic linkage to the correct trailer is enabled by a Smart Transceiver (TCRB) fitted to each trailer.

Where a trailer fleet is to be monitored independently of the tractor units, the TeleTPMS Module can be installed directly on the trailers. To provide maximum standby monitoring, the system only reports location, not tyre pressure data, when there is no power connected.

Additional system components

TyrePal sensors fitted to each tyre provide the pressure and temperature data. Various TyrePal TPMS sensor types are supported. Sensors are battery powered and each one has a unique ID. They communicate with the module via 433MHz.

For heavy vehicles such as buses or HGVs, a Repeater (TCRR) is recommended to increase the data transmission range from the sensors in the rear tyres. Mounted towards the rear of the vehicle, it acts as a signal booster.

For fleets using multiple trailers that are swapped between tractor units, a Smart Transceiver (TCRB) is fitted on each trailer. This enables the system to read the sensor IDs and alert levels associated with the trailer that is currently connected.

Sensor tyre positions are registered to the module or the Smart Transceiver with a Hand-held Reader Programmer (TCTH) which can to set the alert levels for high tyre pressure, low pressure and high temperature on an axle- by-axle basis. Alert levels can also be set from the web application.

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2. Installation

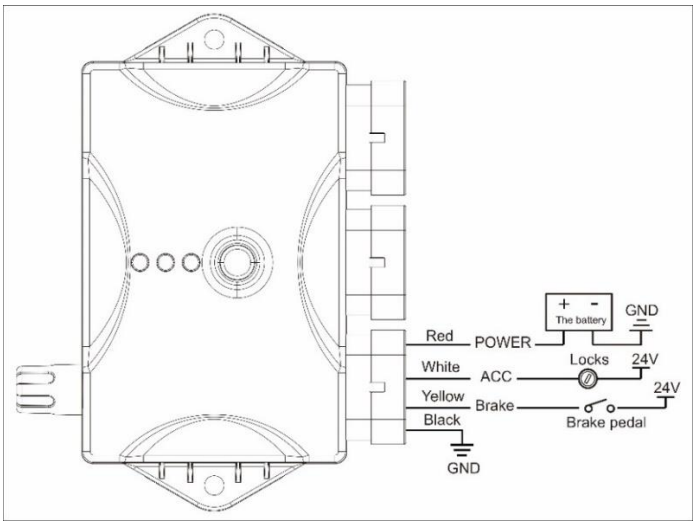
For a truck and trailer, the TeleTPMS Module is normally installed on the truck (tractor). We recommend it is installed inside the cab and away from electronic equipment that may cause interference. If possible, position it so that the antenna is clear of metal components that may reduce the radio frequency signal from the sensors.

If trailers are swapped between trucks, a Smart Transceiver (TCRB) on each trailer enables the module to automatically connect to the appropriate trailer when the brake pedal is pressed. To enable this feature, the yellow wire on the TeleTPMS Module and the yellow wire on the TCRB are connected to the braking circuit.

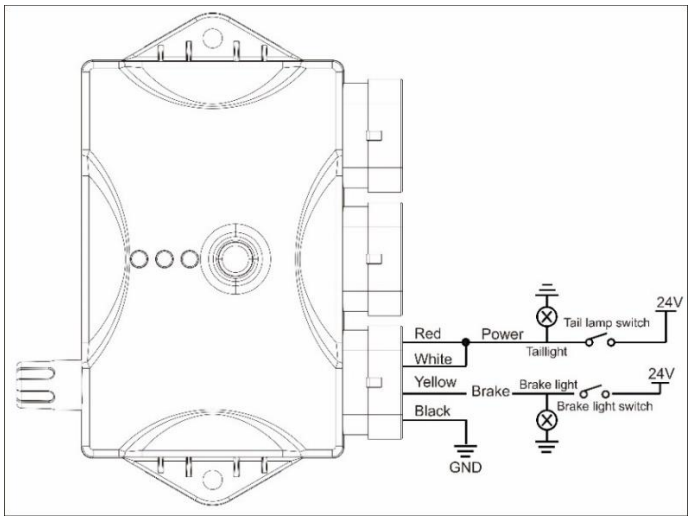
For trailer-only fleets, the TeleTPMS Module is installed directly on the trailer.

The vehicle's 12 to 24V supply maintains the battery charge in the module, which continues to operate in a power-saving state while the vehicle is parked. The ACC connection enables the module to switch between normal working and power saving modes.

Installation on a truck



Installation on a trailer



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3. Setting up

First set-up

On first setting up, the module sends a setup message to the server. When the connection is successful, the device is held in a list of unallocated devices, and may need to be allocated specifically to the user's fleet before it is accessible to the web application.

Please refer to the on-line Web Interface documentation for detailed information about using the web application.

Turning power on and off

When installed on the vehicle and connected as shown, the module turns on automatically when the vehicle is being driven and enters a power saving mode when it is not.

To turn on if the external supply is not connected: Long press the power button for 3 seconds. The red LED flashes once within 3 seconds and the module turns on.

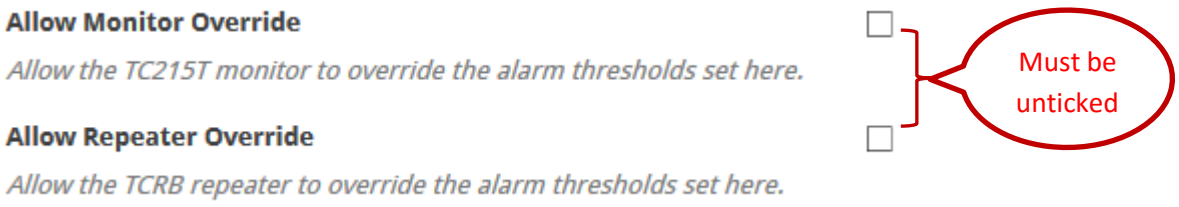
To turn off if the external supply is not connected: Long press the power button for 3 seconds. The red LED flashes twice to indicate that the module is turning off.

4. Registering sensors and setting alert levels with TCHH Hand Held Reader

Please refer to separate instructions for the Hand Held Reader to register sensors and set alert levels.

Note that the hand tool can be used for a variety of TPMS functions, including systems with up to 38 wheels on tractor and trailer, but the TeleTPMS Module supports up to 22 wheels. For transfer to TeleTPMS module, tractor tyres must be registered to the first three axles displayed on the tool, and trailer tyres to the first three trailer axles. The fourth tractor axle and the remaining axles on the trailer display are not used.

Once the IDs and alert levels are stored in the hand-held reader, they can be transferred to the TeleTPMS Module with the following procedure. Before uploading, the module settings must be configured through the web application to *disallow* Monitor Override and *disallow* Repeater override. This setting is accessed by selecting the Vehicle and then selecting Configuration. It usually takes a few minutes for the new configuration to take effect.



Note that tractor and trailer IDs and settings must be uploaded separately.

- With the Hand Held in standby mode, press the SET button to select the tractor or trailer required.
- Press the SEND button until a beep sound is given and the screen displays 'Data Upload'.

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- With the TeleTPMS Module in normal mode, (i.e. LED flashing at three second interval), press the button on the module quickly FIVE times.
- The module enters learning mode (LED flashes on off at twice per second)
- The LED stops flashing after tyre codes are transfer successfully

To exit without saving, press the SEND button again.

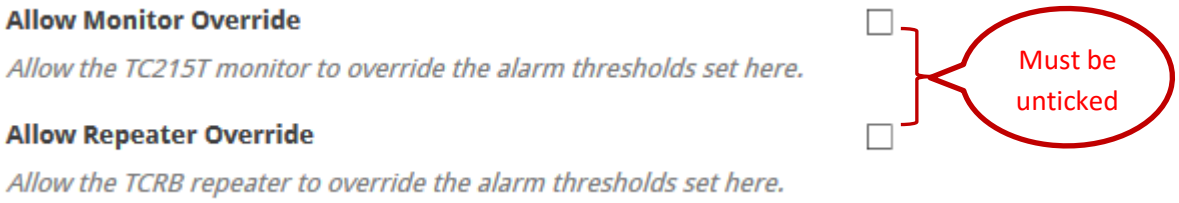
If the transfer fails, the Hand Held Reader displays the 'Failure' message and returns to the standby mode after three minutes. If it receives no confirmation from the receiving device, it returns to standby mode after eight minutes.

Note: Sensor registration codes are sent as a complete set and there is no procedure to send a single sensor while retaining others. This means that if a sensor has to be replaced, the whole set of sensor codes must be sent again.

5. Registering sensors and setting alert levels from a TC215 Monitor

Please refer to separate instructions with the monitor to register sensors and set alert levels in the monitor. Once the IDs and alert levels are stored in the monitor, they can be transferred to the TeleTPMS Module.

Before uploading, the module settings must be configured through the web application to *disallow* Monitor Override and *disallow* Repeater override. This setting is accessed by selecting the Vehicle and then selecting Configuration. It usually takes a few minutes for the new configuration to take effect.



The upload procedure is as follows:

- With the monitor in standby mode, press and hold the LINK button on the monitor for 6 seconds and release it after the second beep to enter sending mode. (Do not release it after the first beep). A flashing SEnd is displayed on the monitor.
- With the TeleTPMS Module in normal mode, (i.e. LED flashing at three second interval), press the button on the module quickly FIVE times.
- The monitor sends the trailer ID, pressure and temperature alert levels and the sensor IDs to the TeleTPMS module.
- On error, or if the communication is not completed within two minutes, the monitor gives a double beep and shows a flashing FAIL message.
- Press any button or wait three minutes to return to standby mode.

Note: The module stores only one set of data. Any previous data will be erased.

6. Automatic linkage to a trailer

When a trailer fitted with a Smart Transceiver (TCRB) is hooked up, the system can automatically read the sensor IDs and alert levels associated with the new trailer, overriding the setting shown on the web application.

To enable this, tick the box on the web application to allow Repeater override. This setting is accessed by selecting the Vehicle and then selecting Configuration. It usually takes a few minutes for the new configuration to take effect.

The linkage process is initiated when the brake pedal is pressed.

7. Working modes and data refresh rates

To optimise performance, tyre data and GPS location are measured and transmitted at intervals, not continuously. The various components of the system work together as follows.

Sensor update interval

TyrePal commercial sensors measure the pressure and temperature of the tyres every twelve seconds. If the pressure is steady or with only a small change, tyre data is transmitted to the module every five minutes.

If the sensor measures a rapid pressure loss, data is transmitted immediately and the TeleTPMS Module also initiates a data transmission.

TeleTPMS Module normal working mode

The TeleTPMS Module continuously receives data from the sensors, and uploads both GPS location and tyre data to the server every 5 minutes. In the event of an alert conditions, data is transmitted immediately.

This mode applies while the vehicle is being driven. Both power (red lead) and ACC (white lead) are at 12V to 24V.

TeleTPMS Module on tractor - power saving mode 1

While the vehicle is parked with ACC turned off, the module continuously receives sensor data and uploads GPS location and tyre data to the server every 12 hours.

This gives overnight coverage of both location and tyre pressure and applies while power (red lead) is at 12V to 24V but ACC (white lead) is not powered.

TeleTPMS Module on trailer - power saving mode 2

In a parked trailer that has no permanent on-board power, the module uploads GPS location data to the server every 12 hours, but it does not receive or send tyre data.

This mode further conserves battery power and means that the position of a parked trailer remains available. Once the trailer is brought back into use, the tyre data is updated. This mode applies while neither power (red lead) nor ACC (white lead) are at 12V to 24V.

The TeleTPMS data transmission intervals can be adjusted from the server if required. Higher transmission rates increase the data usage, so users must have appropriate permissions to make this change.

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Sever to web page updates

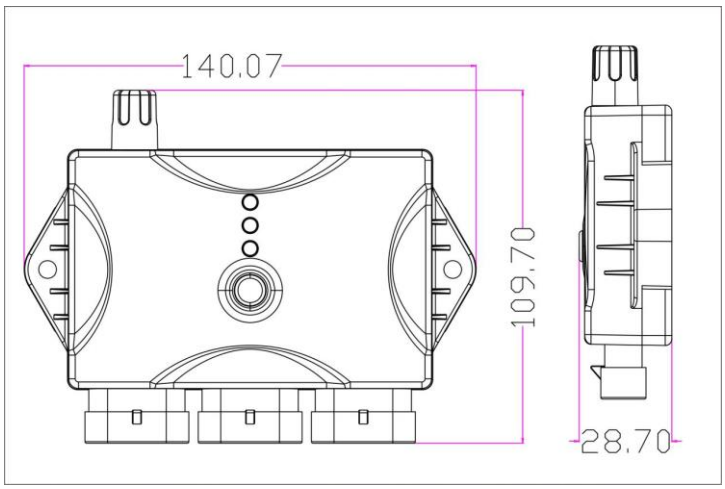
When the web application is opened, the latest information is displayed and the time of the last update is shown. Web browsers don't automatically keep refreshing the data, so if the application is left open, the browser continues to displays data as at the time it was opened.

The display can be updated to the most current position at any time by refreshing the browser.

8. Specification Summary

TMSM TeleTPMS Module

Dimensions	140 x 110 x 29mm
Weight	245g
Working voltage	12 to 24V
Working current	55 to 65mA
TPMS communication	433MHz
GSM frequency	GSM850，EGSM900，DCS1800，PCS1900，with automatic search for frequency band
Working temperature	-30°C to 80°C
Storage temperature	-40°C to 85°C
Diagnostics	Three coloured LEDs
Maximum tyre monitoring	22 tyres: 3 axles on truck, three axles on trailer



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9. Status lights on the module

Red - Power	
Red on continuously	Normal operation, power connected, battery charging
Red flashing at three second intervals (50ms on 3s off)	Normal operation, not connected to power, battery charged
Red flashing once every second (0.5s on, 0.5s off)	Battery is low
Red flashing on and off four times per second (250ms on, 250ms off)	Sensor coding mode
Red rapid flashing (100ms on, 100ms off)	Transmitting GPRS data over network
Red, green and yellow off	Module is switched off
Green - GPS	
Green and yellow flashing on and off four times per second together (250ms on, 250ms off)	SIM not present or not readable (Not giving CPIN READY)
Green flashing once every second (0.5s on, 0.5s off)	Failed to register on GPRS (AT+CGREG? Not giving 1 or 5)
Green flashing slowly (1s on 1s off)	Failed to attach to GPRS
Green rapid flashing (100ms on, 100ms off)	Timeout from server
Green short flash every second (50ms on 1s off)	GPS position not fixed
Green flashing at three second intervals (50ms on 3s off)	Normal operation - GPS position fixed successfully
Green, red and yellow off	Module is switched off
Yellow - GSM	
Yellow and green flashing on and off four times per second together (250ms on, 250ms off)	SIM not present or not readable (Not giving CPIN READY)
Yellow flashing once every second (0.5s on, 0.5s off)	SIM is being initialised
Yellow short flash every second (50ms on 1s off)	SIM initialisation complete
Yellow rapid flashing (100ms on, 100ms off)	Connecting with platform or connection failed
Yellow flashing at three second intervals (50ms on 3s off)	Normal operation - connected to platform normally
Yellow flashing slowly (1s on 1s off)	Very low or zero signal strength (AT+CSQ giving less than 6 or 99)
Yellow, red and green off	Module is switched off

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