TPMS 1509T/1509R

User Manual
and Installation Guide

Please read this manual carefully before installation and use

Sate Tyre Pressure Monitoring System is designed to monitor tyre pressure and ambient tyre temperature to provide early warning of a potential or actual tyre failure.

S&T

TPMS Installation

Contents

Identify the Components

IN-CAB MONITOR

- 3 Wires: RED (Permanent Live), BLACK (Earth) and BLUE (Switched Live)

TYRE SENSOR

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TPMS Installation

Basic Installation for Trucks

Install the **IN-CAB MONITOR** into a vacant DIN slot in the dash or above the screen area. Establish the necessary connections (RED = permanent live, BLUE = ignition live, BLACK = earth) and connect via the three-pin plug socket (for easy removal when required). Ensure the antenna is fitted in an appropriate position in the upper area of the cab and away from any other antennae or electrical equipment that may interfere with reception. Turn on the vehicle ignition to power up the display and, per the instructions, program the **IN-CAB MONITOR** noting carefully the precise wheel location for each programmed sensor.

Each **SENSOR** must be given a specific wheel location. If the sensor is fitted to the wrong wheel, it will identify the wrong wheel on the display. When all sensors have been successfully programmed, fit each one to its specified wheel location. Tighten the sensors down by hand - do **NOT** use pliers or a wrench.

Note: for first installation of the sensors, make sure the sensor ID is correctly programmed into the monitor, then screw the sensor onto the valve.

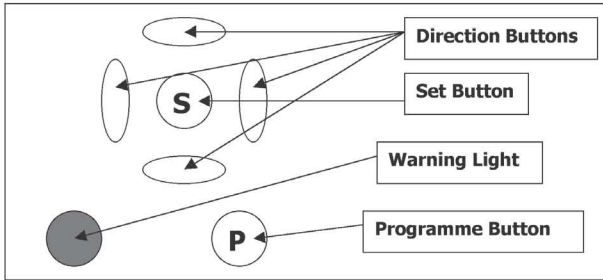**NB** More detailed installation instructions can be found in section i.

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i. Programming the System

The Display Control Panel

In-Cab Monitor

When installed and correctly connected, switching the unit on will illuminate the display as below:
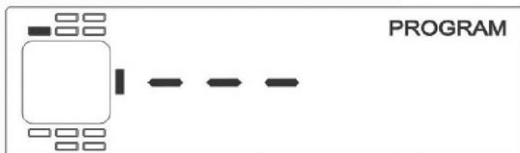
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i. Programming the System

Programming Sensor Locations

With the ignition on, press and hold down the P button on the lower right hand side of the display fascia for 3 seconds to enter the Programming Mode as shown below.

Now press the ▶ ◀ ▲ ▼ buttons above the P button. Notice how the black tyre location on the display moves around the cab. Familiarise yourself with selecting each tyre location in turn. Do not be concerned that the display shows more tyre locations than you actually have on your truck. Simply use the ones you need.

For ease, select the offside front steer as your starting point as shown above. Find this wheel by using the ▶ ◀ ▲ ▼ buttons and press the **SET** button located in the centre of the direction arrows for 3 seconds. The first of the 3 horizontal dashes will start to flash.

Now press the ▲ or ▼ button and note how the flashing dash scrolls through 0-9 and back to -.

Look at the top of the first sensor and note the three larger numbers eg. **021**. These are the last three digits of the sensor ID number. Using the ▲ or ▼ buttons, scroll to **0** for the first space.

Now press the ▶ button and the second dash starts to flash. Using the ▲ or ▼ buttons to select the number **2**. Move right and repeat to select **1**.

When all three numbers on the display match those on the sensor, press the **SET** button for 3 seconds to save the information. The In-Cab Monitor will bleep twice and the display will flash twice to confirm that the tyre location and sensor number have been successfully recorded.

Now select each tyre location in turn and repeat this procedure to input the data for each tyre sensor and its wheel location.

MAKE A NOTE OF EACH SENSOR LOCATION BECAUSE IF YOU FIT A SENSOR ON THE WRONG WHEEL, THE DISPLAY WILL IDENTIFY THE WRONG WHEEL TOO.

i. Programming the System

Programming Baseline Pressure

When all the sensors have been programmed to all the wheels, press the **P** button briefly but do not hold it down and the display shown below will appear.

The baseline air pressure for each wheel from which the alarms will work can be set. (The factory settings for the baseline pressure is set to 100psi, but can be changed to suit operators' policies. This pressure is used as the baseline for caculating the pressure deviates.) The procedure is exactly the same as for the sensor programming: use the ▶ ◀ ▲ ▼ buttons to select the tyre and input the desired pressure. This allows the operator to baseline different axle sets, for example, steer axles can be set at 110psi, drive tyres at 120psi and so on.

NOTE: the default setting for all wheels is 100psi. When the unit measurement is KPA, the last digit is 0 and cannot be adjusted. When the unit measurement is BAR, the hundredth digit cannot be adjusted.

Programming Date and Time

When all tyres have been pressure baselined, press the **P** button briefly but do not hold it down and the display shown below will appear.

This is the time/date setting programme. The first display is the year and shows 08. If this is incorrect, press and hold down the **SET** button for 3 seconds. The first digit **0** will flash and can be reset as necessary, using the ▲ ▼ buttons. When the correct number has been chosen, press and hold the **SET** button for 3 seconds. The In-Cab Monitor will bleep twice and the display will flash twice to confirm that the data is saved and the display will move to the next screen.

If the year display is correct, simply use the ▼ button to move to the next display and input the correct details for month, day, date, hours and minutes as shown below. Press and hold the **SET** button for 3 seconds after each entry to save the data and change the screen to the next display.

i. Programming the System

Programming Date and Time Cont.

Display shows month 11. To change this, repeat the procedure as before.

M 11

Display shows date 12. To change this, repeat the procedure as before.

d 12

Display shows hour 16 – 4.00pm. To change this, repeat the procedure as before.

h 16

Display shows minutes 33. To change this, repeat the procedure as before.
You have now input the correct time and date.

M 33

S&T

i. Programming the System

Programming Pressure and Temperature

Now press the **P** button briefly but do not hold it down and the display shown below will appear.

```
                    PSI    UNIT
```

Pressing the ▲ ▼ buttons will select the Pressure or Temperature Programming Mode. Choose one by pressing and holding the **SET** button for 3 seconds. **PSI** will start to flash. Pressing the ▲▼ buttons will cycle between the available units – PSI, KPA or BAR. When you have selected your preferred unit, press and hold the **SET** button. The In-Cab Monitor will bleep twice and the display will flash twice to confirm your selection.

(example of screen showing °C UNIT)

```
         ┌─────┐
         │  88  │°C
         └─────┘
              TRAILER ON
```

In the Temperature Programming Mode, press and hold the **SET** button for 3 seconds and °**F** will start to flash. Pressing the ▲▼ buttons will cycle between °F and °C. When you have selected your preferred unit, press and hold the **SET** button. The In-Cab Monitor will bleep twice and the display will flash twice to confirm your selection.
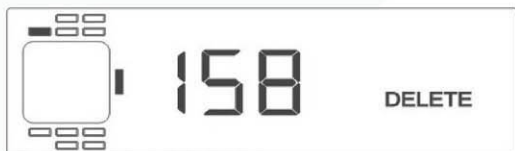
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i. Programming the System

Deleting Sensor Location

Briefly pressing the **P** button again without holding it down will change the display to **DELETE** mode. It is unlikely that you will ever use this, but it is there to remove the sensor position and number from the memory if, for example, a sensor is replacement.

Only programmed wheel locations will be shown - in this instance, the OSF wheel with its sensor number 158. Use the ▶ ◀ ▲ ▼ buttons to select the wheel position you wish to delete. Press and hold down the **SET** button for 3 seconds and the In-Cab Monitor will bleep twice and the display will flash twice to confirm your selection.

Pressing the **P** button once more will return the unit to Programming Mode and programming is completed by pressing and holding down the **P** button for 5 seconds after which the In-Cab Monitor will return to Normal Operating Mode.

NOTE The display will now only show the wheel configuration precisely as it has been programmed and any non-programmed wheels will be deleted from the display.

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ii. Installing the Sensors

Now that the sensors have been programmed into the In-Cab Monitor and (where fitted) the Smart Booster, they can be fitted to the wheels. Before fitting, inspect the valve stems for dirt, perished rubber and poor fittings and, if in any doubt, replace the stem. Make sure each sensor is fitted to the correct wheel. Tighten the sensors by hand - do **NOT** use pliers or a wrench.

The vehicle can now be powered up ie ignition on and, over the next few minutes, the In-Cab Monitor will pick up the sensor signals, recognise and display them on screen. Until all the programmed sensors' information has been received, the display will cycle round the programmed wheels, showing each one in turn together with their pressure and temperature.

If any of the tyres register a pressure outside the baseline pressure tolerance, an alarm will sound (see Alarm Function).

iii. Normal Operation and Features

Each time the truck is started up, the In-Cab Monitor will take a few minutes to locate and read all the fitted sensors. Whilst locating the sensors, the display moves from wheel to wheel to show the tyre pressure and tyre temperature for each wheel. It does this automatically and will continue to do so until either an incident of low/high pressure or high temperature is indicated (see Alarm Function). If all programmed sensors are recognised and all pressures are within tolerances, the display then changes the Normal Mode as shown below:

TRAILER ON

The backlight is off and the display shows **ON** until an alarm is triggered.
To display tyre pressures and temperatures, simply press the ▶ ◀ ▲ ▼ buttons to illuminate the display and allow interrogation of each tyre in turn. Pressing the **SET** button will display the temperature and pressing it again will return the display to Normal Mode as above.

vii. Alarm Function

There are **Five** alarm functions:

1. **LOW TYRE PRESSURE** – three alarm levels
2. **HIGH TYRE PRESSURE** – one alarm level
3. **FAST LEAK** – one alarm level
4. **LOSS OF SENSOR SIGNAL** - one alarm level
5. **HIGH TEMPERATURE** – one alarm level

Low Tyre Pressure

A baseline pressure has been programmed into the system at first installation (see section ii). There are three levels of alarm which are triggered when the pressure drops to 5% (Stage One Alarm), 10% (Stage Two Alarm) and 15% (Stage Three Alarm) below that baseline pressure. For example, if the baseline pressure is set at 100psi, the alarms will sound at 95psi, 90psi and 85psi respectively

Stage One alarm (5%)

Once every second the red warning light on the display will flash and the audible alarm will beep. The display backlight is illuminated and identifies the tyre with the problem, its pressure and the reason for the alarm, as shown below:

The L indicates Low Pressure and the single dash a Stage One Alarm.

The icon shows a tyre and an exclamation mark

The available alarm mode will continue until it is muted by the driver. Pressing any button will silence the audible alarm but the visual alarm will not stop until the fault is rectified.

S&T

vii. Alarm Function

Stage Two Alarm (10%)

When pressure drops to 10% below baseline, a Stage Two Alarm will be triggered. Every half second the red warning light will flash and the audible alarm will beep. The display backlight is illuminated and the problem tyre and its pressure are identified.

The display shows **L** for low pressure and two dashes indicating a **Stage Two Alarm.**

As before, the audible alarm mode will continue until it is bypassed. Pressing any button will silence the audible alarm but the visual alarm will not stop until the fault is rectified.

Stage Three Alarm (15%)

When the pressure drops to 15% baseline, a Stage Three Alarm is triggered. Every half second the red warning light will flash and the audible alarm will beep. The display backlight is illuminated and the problem tyre and its pressure are identified. The display shows **L** for low pressure and three dashes indicating a **Stage Three Alarm**.

As before, the alarm mode will continue until it is muted by the driver. Pressing any button will silence the audible alarm but the visual alarm will not stop until the fault is rectified.

vii. Alarm Function

High Pressure Alarm

The High Pressure Alarm is triggered when the tyre pressure increases to 25% above the baseline pressure. Every half second the red warning light will flash and the audible alarm will beep. The display backlight is illuminated and the problem tyre and its pressure are identified as shown below:

An **H** next to the tyre warning icon indicates a **High Pressure Alarm**. The alarm mode will continue until it is bypassed. Pressing any button will silence the audible alarm but the visual alarm will not stop until the fault is rectified.

Fast Leak Alarm

In the event of a catastrophic tyre failure that causes a fast and massive pressure drop of more than 2.8psi every 12 seconds, the Fast Leak Alarm is triggered as shown below:


The Fast Leak icon is displayed and every half second the red warning light will flash and the audible alarm will beep. The display backlight is illuminated and the problem tyre and its pressure are identified as shown above. The audible alarm will continue until it is muted by the driver pressing any button. The visual alarm will not stop until the fault is rectified.

vii. Alarm Function

Loss of Sensor Signal

When a sensor signal fails or if the sensor is lost or damaged, S&T recognises that it is no longer receiving information from that sensor. After a maximum of 15 minutes' signal loss, a missing signal alert icon is shown on the display as shown below:
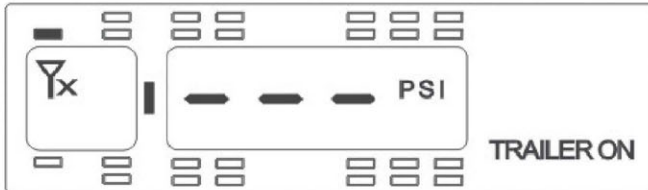
The red warning light flashes every half second and the audible beep becomes a continuous siren. The display shows which tyre sensor is at fault and three dashes will be displayed as there is no pressure signal.

The alarm mode will continue until it is muted by the driver pressing any button. The visual alarm will not stop until the fault is rectified either by fitting a new sensor or deleting the original sensor from the In-Cab Monitor or Smart Booster memory.

High Temperature Alarming

When the ambient temperature around the **SENSOR** reaches 90C or higher, the system will enter the High Temperature alarm mode. The display will show the following information;

The temperature will flash on the screen, the wheel position will be identified, the red LED warning light will flash every 0.5 seconds and an audible alarm will sound every 0.5 seconds. The audible alarm can be silenced by the driver pressing any button, but the visual alarms will continue until the fault is corrected.

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vii. Alarm Function

Alarm Log

Programming the time and date into the In-Cab Monitor allows the alarm history to be recorded and recalled in the event of an incident or accident. To display the 10 most recent alarm, press the **P** and **SET** buttons at the same time.

S&T records the last 10 alarm incidents with the most recent event showing on screen first. If no buttons are pressed within 3 seconds, the display will show all alarms in order of incidence with the relevant details of tyre pressure, tyre location, month, day, year and time. If the button is pressed at any time during this process, the display moves to the next alarm log. In this way, all 10 alarms can be read to recall incident type, time and date.

Pressing the **P** and **SET** buttons at the same time will return the display to Normal Mode.

FCC WARNING

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.

NOTE: The manufacturer is not responsible for and radio or TV interference caused by
unauthorized modifications to this equipment. Such modifications could void the user's authority
to operate the equipment.