TPM 167

Tire Pressure Monitor System

User manual

1. Introduction

This document provides a Global Standard features and functions for all Lite-On Automotive Antenna-less High End TPM Systems.

2. Motivation for this Document

The motivation behind this document is to agree on a standard product range for all High End TPM System that is to be used through the organization. The intention is to standardizing the basic feature and function of the system within the entire Lite-On Automotive organization and therefore reduce the amount of unnecessary customer specific modifications and as a result, make more effective use of the available engineering resources.

3. Scope

This is a software related document covering the Electronic module features and functions only. It is the intention that customer specific versions of the system will be offered but this is to be achieved by changing wheel sensors, hardware kits and display tooling leaving the Electronic module software and hardware unchanged.

Note : The actual Electronic Module PCB is to be further standardized across the entire Lite-On Automotive TPM product range – one PCB Platform for all TPM system regardless of the features offered or the type of display being used. The different interface requirements are to be satisfied by PCB population changes only.

4. What is High End TPM?

High End TPM is a generic term for any Lite-On Automotive TPM system, supplied with an LCD Display incorporating two buttons.

5. Deviations

Customer specific deviation from this standard will be considered but only on the following conditions :-

6. Standard Feature and Functions

6.1 Normal operation mode

As soon as the ignition is switched on, the system will perform a self-test. This self-test should take no longer than 108 seconds to be completed. The self-test period is defined as the period from the point that the ignition is switched on to the point that the Electronic Module receiver has received the latest Tire Conditions from each wheel taught to the system. During the first 2-seconds of the self-test period, the back lighting of the display will turn on and display all Icons. After this 2-second period, one of 3 sets of conditions will be displayed:-

i) If all Tire Conditions were OK when the ignition was last switched off, then all tire symbols on the display will flash at a rate of 0.5 Seconds ON/0.5 Seconds OFF. If all tire conditions are OK at the end of the self-test period, the system will show the current conditions of each tire (Pressure and Temperature) starting from Left Front (LF), Right Front (RF), Right Rear (RR), Right Inside Rear (RIR), Left Rear (LR), Left Inside Rear (LIR) and finally the Spare Wheel.

ii) If all Tire Conditions were OK when the ignition was last switched off, then all tire symbols on the display will flash at a rate of 0.5 seconds ON/0.5 Seconds OFF. If Tire Condition information is received from a sensor indicting a Warning or Alert conditions (either Temperature or Pressure), then the Icon for the affected tire will start to flash immediately and the display will show the relevant Warning or Alert. See Tire Condition section below for more details. Note : This should happen as soon as the information is receiver – do not wait until the end of the self-test period.

iii) If Tire Conditions were not OK when the ignition was last switched off, then the Icon for the affected tire will immediately start to flash and the display will show the relevant Warning or Alert. See Tire Condition section below for more details. This Tire Conditions will continue to be displayed throughout the self-test period. At the end of the self-test period, the display will either change to indicate all tire conditions are now OK if the problem has been rectified or to show the Tire Condition Warning or Alert if the conditions still exists.

If the Tire Conditions of all tires are OK, all icons that represent a driving wheel will remain on for minute and the 3-digit 7-segment display will be empty (blank). The display will turn off after 1 minute (To avoid distraction/ irritation of the driver).

If no signal has been received from one sensor for more then 10 minutes (with the ignition on), the 3-digits 7-segment display will show “SCH” and the corresponding tire will blink (2Hz) indicating that the receiver is searching for a signal. This is only available in an ignition on condition.

Notes :

- The worst condition always has priority over the other conditions.
- The number of tire conditions displayed will be dependant upon the number of sensors taught to the system and the number of wheel Icons on the display. The Spare wheel, LIR and RIR will only be displayed if these sensors have been taught to the system.
- For a correct functionality of the system, the wheel-sensors need to be learnt to the system first. The sensors will be supplied pre-taught to the system. Each sensor will include identification to show its pre-taught position. (Actual Identification method will be determined at a later date in conjunction with the final customer).
- For a correct functionality of the system, the correct pressures need to be taught to the system (preset-pressure).
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6.2 Single Tire Display Mode

If the Tire Conditions of all tires are OK, the display will turn off after 1 minute (To avoid distraction/ irritation of the driver).

If the mode button is pressed after the display turn-off, the system will display the current condition of each tire starting from LF. (Rotation from LF->RF->RR->LR)
If the mode button is pressed again within one minute of completion of the self test or within one minute of the display being turned back on, the display will change and show the condition of the LF Tire. This tire condition will be displayed for 1 minute.
If the mode button is pressed again within one minute(while the display is still showing the condition of LF Tire), the display will change the show the condition of the RF Tire. This tire condition will be displayed for 1 minute.

If the mode button is pressed again within one minute (while the display is still showing the condition of the RF Tire), the display will change and show the condition of the RR Tire.

If the mode button is pressed again within one minute (while the display is still showing the condition of the RR Tire), the display will change and show the condition of either :-

i) The LR Tire
ii) The RIR Tire (If a RIR Tire has been taught to the system.)

If the mode button is pressed again within one minute (while the display is still showing the condition of the RIR Tire), the display will change and show the condition of the LR Tire.

If the mode button is pressed again within one minute (while the display is still showing the condition of the LR Tire), the display will change and show the condition of either :-

i) LF Tire – the entire sequence will repeat
ii) The LIR Tire (If a LIR Tire has been taught to the system)
iii) The spare Wheel (If a spare wheel has been taught to the system)

If the mode button is pressed again within one minute (While the display is still showing the condition of the LIR Tire), the display will change and show the condition of either :-

i) LF – the entire sequence will repeat
ii) The spare wheel (If a spare wheel has been taught to the system)

If the mode button is pressed again within one minute (While the display is still showing the condition of the Spare Wheel), the display will change and show the condition of the LF tire and the entire sequence will repeat.

If at any point, the mode button is not pressed within 1 minute, the display will turn off and the next press of the mode button will cause the LF tire conditions to be displayed and the entire sequence will repeat.

6.3 Tire Conditions

6.3.1. Over Pressure Warning: Stop car immediately and check pressure

Condition 1

The pressure of one (or more) of the front tires is *MaxPressure%* of the Front Preset Pressure or higher.

Condition 2

The pressure of one (or more) of the rear tires is *MaxPressure%* of the Rear Preset Pressure or higher

Condition 3

The pressure of the spare tire is *MaxPressure%* of the highest of the two preset pressures (Front Preset pressure or rear preset pressure – which ever is the highest).

Indication

A 3 Step Indication procedure will be used to highlight this condition :-

Step 1. The “Over Pressure Alarm” icon will be shown and the icon of the corresponding tire will blink for 2 minutes and beep at the same frequency (1 Hz) for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 2. The “Over Pressure Alarm” icon will be shown and the icon of the corresponding tire will blink only with doubled frequency (2 Hz) for 2 minutes and beep at the same frequency for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 3. The “Over Pressure Alarm” icon will be shown and the icon of the corresponding tire will blink at a doubled frequency again (4 Hz) and beep at the same frequency for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 3 will be repeated continuously until the condition is improved (a normal or warning condition has been met).

During this whole period, the 3-digit 7-segment section will show the current pressure of this tire.

Whenever this condition applies to the spare tire, the “Over Pressure Alarm” icon will be shown and the corresponding icon will blink and beep in the same frequency (1 Hz) for 15 seconds showing the corresponding pressure (only once when ignition is turned on). When all other tires are ok and therefore the corresponding icons are shown continuously, the icon for the spare tire will keep on blinking and the “Over Pressure Alarm” icon will be shown. In spite of the incorrect pressure of the spare tire, the 3-digit 7-segment section will show nothing and the backlighting will turn off after one minute.

Exception

The Over Pressure Warning will not be applicable for a particular axle if the following condition is met :-

$$\textbf{Preset Pressure for the axle} > {}^{537}/_{\textit{MaxPressure\%}}$$

This is due to the fact that the maximum operating pressure of the sensor is 5.375 Bar and

therefore the High Pressure Warning level for preset pressures above this setting will exceed the operating range of the sensor.

6.3.2 Pressure Warning: Please check pressure

Condition 1
The pressure of one (or more) of the front tires is *PressureWarning%* of the Front Preset Pressure or lower.

Condition 2
The pressure of one (or more) of the rear tires is *PressureWarning%* of the Rear Preset Pressure or lower.

Condition 3
The pressure of the spare tire is *PressureWarning%* of the highest of the two preset pressures (Front Preset pressure or rear preset pressure – which ever is the highest).

Indication
The "Pressure Warning" icon will be shown and the icon of the corresponding tire will blink for one minute and beep in the same frequency for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button. After this minute the "Pressure Warning" icon will be shown continuously. During this whole period, the 3-digit 7-segment section will show the current pressure of this tire.

This complete procedure will be repeated only once again after 10 minutes.
After this the "Pressure Warning" icon will be shown continuously and the 3-digit 7-segment section will show the current pressure.

Whenever this condition applies to the spare tire, the "Pressure Warning" icon will be shown and the icon of the spare tire will blink (1 Hz) and beep in the same frequency for 15 seconds showing the corresponding pressure (only once when ignition is turned on). When all other tires are OK and therefore the corresponding icons will be shown but the icon for the spare tire will keep on blinking and the "Pressure Warning" icon will be shown. In spite of the incorrect pressure of the spare tire, the 3-digit 7-segment section will show nothing and the backlighting will turn off after one minute.

6.3.3 Under Pressure Alarm: Stop car immediately and replace tire

Condition 1
The pressure of one (or more) of the front tires is *PressureAlert%* of the Front Preset Pressure or lower.

Condition 2
The pressure of one (or more) of the rear tires is *PressureAlert%* of the Rear Preset Pressure or lower.

Condition 3
The pressure of the spare tire is *PressureAlert%* of the highest of the two preset pressures (Front Preset pressure or rear preset pressure – which ever is the highest).

Indication

A 3 Step Indication procedure will be used to Highlight this conditions

Step 1. The “Under Pressure Alarm” icon will be shown and the icon of the corresponding tire will blink for 2 minutes and beep at the same frequency (1 Hz) for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.
Step 2. The “Under Pressure Alarm” icon will be shown and the icon of the corresponding tire will blink only with doubled frequency (2 Hz) for 2 minutes and beep at the same frequency for 15 seconds. Again the driver must be able turn off the beeping whenever he pushes the button.

Step 3. The “Under Pressure Alarm” icon will be shown and the icon of the corresponding tire will blink at a doubled frequency again (4 Hz) and beep at the same frequency for 15 seconds. And again the driver must be able turn off the beeping whenever he pushes the button.

Step 3 will be repeated continuously until the condition is improved (a normal or warning condition has been met).
During this whole period, the 3-digit 7-segment section will show the current pressure of this tire.

Whenever this condition applies to the spare tire, the “Under Pressure Alarm” icon will be shown and the corresponding icon will blink and beep in the same frequency (1 Hz) for 15 seconds showing the corresponding pressure (only once when ignition is turned on). When all other tires are ok and therefore the corresponding icons are shown continuously, the icon for the spare tire will keep on blinking and the “Under Pressure Alarm” icon will be shown. In spite of the incorrect pressure of the spare tire, the 3-digit 7-segment section will show nothing (Don’t show “SAF”!!) and the backlighting will turn off after one minute.

6.3.4 Over Temperature Warning: Stop car immediately and check tire

Condition
The temperature is 85°C or higher.

Indication
A 3 Step Indication procedure will be used to highlight this condition :-

Step 1. The “High Temperature” icon will be shown and the icon of the corresponding tire will blink for 2 minutes and beep at the same frequency (1 Hz) for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 2. The “High Temperature” icon will be shown and the icon of the corresponding tire will blink only with doubled frequency (2 Hz) for 2 minutes and beep at the same frequency for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 3. The “High Temperature” icon will be shown and the icon of the corresponding tire will blink at a doubled frequency again (4 Hz) and beep at the same frequency for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 3 will be repeated continuously until the condition is improved (a normal or warning condition has been met).

During this whole period, the 3-digit 7-segment section will show the current temperature of this tire.

Note : Not applicable to the Spare Wheel

6.3.5 Fast Leaking Alarm : Stop Car Immediately

Condition

The specific tire is losing more than 0.2 Bar within 1 minute.

Indication

A 3 Step Indication procedure will be used to highlight this condition :-

Step 1. The “Fast Leaking” icon will be shown and the icon of the corresponding tire will blink for 2 minutes and beep at the same frequency (1 Hz) for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 2. The “Fast Leaking” icon will be shown and the icon of the corresponding tire will blink only with doubled frequency (2 Hz) for 2 minutes and beep at the same frequency for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 3. The “fast Leaking” icon will be shown and the icon of the corresponding tire will blink at a doubled frequency again (4 Hz) and beep at the same frequency for 15 seconds. The driver must be able turn off the beeping whenever he pushes the button.

Step 3 will be repeated continuously until the condition is improved (a normal or warning condition has been met).

During this whole period, the 3-digit 7-segment section will show the current pressure of this tire.

Note : Not applicable to the Spare Wheel

6.3.6 The condition (pressure and temperature) of all Tires is OK!

Condition

The tire pressure of all Tires is > *PressureWarning% and* < *MaxPressure%* of the front or Rear preset pressure (preset pressure used for calculation depends on the position of the tire) and the tire temperature of all tires is below 85 DEG C.)

Indication

The icon of each wheel will flash in sequence for 2 seconds and the 3-digit 7-segment section of the display will show sequentially the pressure and the temperature for 1 second each.

Whenever the driver presses the mode button, the display will show the current condition of the LF Tire and then display the other Tire in sequence for each subsequent mode button press as described in Section 6.2 Single Tire Display Mode.

The display will always switch off after 1 minute after displaying OK tire conditions or 1 minute after the mode button has been pressed to display the conditions of a specific tire using the single tire display mode. This is to prevent driver distraction/irritation. Each time the mode

button is pressed when the display is switched off, the Single Tire Display Mode will be activated starting from the LF Tire.

6.3.7 No Signal Received Warning

Condition

If no signal has been received from one sensor for more then 10 minutes (with the ignition on).

Indication

If no signal has been received from one sensor for more then 10 minutes (with the ignition on), the 3-digits 7-segment display will show “SCH” and the corresponding tire will blink (2Hz) indicating that the receiver is searching for a signal. This is only available in an ignition on condition.

. TPMS LEARNING PROCEDURE

6.4.1. Pressure Learning Mode:

Before starting this procedure, all tires must be inflated to the vehicle manufacturer’s recommended cold inflation pressure.

The following procedure should be followed :-

1. Push and Hold the Mode Button
2. Switch on the Ignition
3. Keep the Mode button pressed until confirmed (3 seconds) by a high beep tone. (1 second)
4. The system will start reading out the pressure of each wheel to calculate the preset pressures:
   a. Front Preset Pressure: The average pressure of the two front wheels.
   b. Rear Preset Pressure: The average pressure of the two rear wheels or 4 rear wheels if inside rear tires have been taught to the system.

   During this procedure the wheel Icons (4 or 6 depending on the type of display) will blink continuously showing the driver the system is busy for pressure learning. (Remove PL)
5. The receiver will confirm within 54.6 seconds that all tire pressures are read-out by a high beep tone (1 second).
6. The receiver will store the Front Preset Pressure and the Rear Preset Pressures in to EEPROM and the system will exit the “Pressure Learning Mode” 1 minute after the beep confirmation. However, if the mode button is pressed for 6 seconds within this 1-minute period the warning and alarm setting can be changed. The system will confirm with a high beep tone (1 second)
7. The current *PressureWarning %* value will be displayed on the 2 right digits of the 3-digit 7-segment display (i.e. 75). Press the mode button to increase this setting by 5% to a maximum of 90%. If the mode button is pressed again when 90 is displayed, then the setting will return to the minimum setting of 60.

8. When *PressureWarning%* has been set, press and hold the mode button for 3 seconds. The system will confirm with a high beep tone (1 second). Note : If the mode button is pressed and held for 3 seconds, there should be no increase in the *PressureWarning%* value on the press of this press and hold.
9. The current *PressureAlert%* value will be displayed on the 2 right digits of the 3-digit 7-segment display (i.e. 50). Press the mode button to increase this setting by 5% to a maximum of 80% (or *PressureWarning%*-5%) which ever is lower. If the mode button is pressed again when the maximum setting is displayed, then the setting will return to the minimum setting of 50%.

When *PressureAlert%* has been set, press and hold the mode button for 3 seconds. The system will store the new setting into EEPROM and the system will confirm with a high beep tone (1 second) and returns to its normal operation mode.). Note : If the mode button is pressed and held for 3 seconds, there should be no increase in the *PressureAlert%* value on the press of this press and hold.

If at any point during steps 6-10 a period of 1 minute passes without the mode button being pressed, the system will automatically exit the *PressureWarning%* and *PressureAlert%* programming mode and return to normal operation without changing the stored setting of either *PressureWarning%* or *PressureAlert%.*

Comment to Note 5: As every wheel-sensor is sending out its information (pressure & temperature) at least every 54.6 seconds(This condition is triggered by pressure in the tire), which means that the receiver has received information from all 4 wheel-sensors within that time period. Therefore this procedure shouldn't take longer than 54.6 seconds!

6.4.2 Wheel-Sensor Learning Mode:

1. Push and hold the mode button
2. Switch on ignition.
3. Release button
4. The Icon indicating the spare tire starts flashing (0.1 second ON/0.4 seconds OFF) and the 3-digit 7-segment section will show "LN5"

There are 3 options :-

a) The wheel sensor in the Spare tire can be taught to the system.
Deflate Spare tire by 0.2 bar. The receiver will confirm by a high beep tone (1 second) when the wheel-sensor is learnt.

b) The learning procedure for the Spare tire can be skipped by pressing the mode button as it is already taught to the system (receiver will remember the previously installed wheel-sensor).

c) The sensor in the spare wheel has been removed and the old sensor is to be deleted from the system. Press the mode button for 3 seconds. The system will confirm with a High beep tone (1 second).

5. The Icon indicating the LF tire starts flashing (0.1 seconds ON/0.4 seconds OFF) and the

3-digit 7-Segment section will show 001.

There are 2 options :-

a) The wheel sensor in the LF tire can be taught to the system.

Deflate LF tire by 0.2 bar. The receiver will confirm by a high beep tone (1 second) when the wheel-sensor is learnt.

b) The learning procedure for the LF tire can be skipped by pressing the button as it is already taught to the system (receiver will remember the previously installed wheel-sensor).

6. The Icon indicating the RF tire starts flashing (0.1 seconds ON/0.4 seconds OFF) and the 3-digit 7-Segment section will show 002.

There are 2 options :-

a) The wheel sensor in the RF tire can be taught to the system.

Deflate RF tire by 0.2 bar. The receiver will confirm by a high beep tone (1 second) when the wheel-sensor is learnt.

b) The learning procedure for the RF tire can be skipped by pressing the button as it is already taught to the system (receiver will remember the previously installed wheel-sensor).

1. The Icon indicating the RR tire starts flashing (0.1 seconds ON/0.4 seconds OFF) and the 3-digit 7-Segment section will show 003.

There are 2 options :-

a) The wheel sensor in the RR tire can be taught to the system.

Deflate RR tire by 0.2 bar. The receiver will confirm by a high beep tone (1 second) when the wheel-sensor is learnt.

b) The learning procedure for the RR tire can be skipped by pressing the button as it is already taught to the system (receiver will remember the previously installed wheel-sensor).

2. The Icon indicating the LR tire starts flashing (0.1 seconds ON/0.4 seconds OFF) and the 3-digit 7-Segment section will show 004.

There are 2 options :-

a) The wheel sensor in the LR tire can be taught to the system.

Deflate LR tire by 0.2 bar. The receiver will confirm by a high beep tone (1 second) when the wheel-sensor is learnt.

b) The learning procedure for the LR tire can be skipped by pressing the button as it is already taught to the system (receiver will remember the previously installed wheel-sensor).

The system will include the option to learn a further 2 tires at this point.

3. The receiver will exit the “Wheel-Sensor Learning Mode” and return to normal operation mode after 1 minute.
4. If the mode button is pressed for 3 seconds during this 1- minute period, the system will enter the 2 extra tire-learning mode and this will be confirmed by a high beep tone (1 seconds).

5. The Icon indicating the LR (or LIR) tire starts flashing (0.1 seconds ON/0.4 seconds OFF) and the 3-digit 7-Segment section will show 005.

There are 2 options :-

a) The wheel sensor in the LIR tire can be taught to the system.

Deflate LIR tire by 0.2 bar. The receiver will confirm by a high beep tone (1 second) when the

wheel-sensor is learnt.

b) The learning procedure for the LIR tire can be skipped by pressing the button as it is already taught to the system (receiver will remember the previously installed wheel-sensor).

7. The Icon indicating the RR (or RIR) tire starts flashing (0.1 seconds ON/0.4 seconds OFF) and the 3-digit 7-Segment section will show 006.

There are 2 options :-

a) The wheel sensor in the RIR tire can be taught to the system.

Deflate RIR tire by 0.2 bar. The receiver will confirm by a high beep tone (1 second) when the wheel-sensor is learnt.

b) The learning procedure for the RIR tire can be skipped by pressing the button as it is already taught to the system (receiver will remember the previously installed wheel-sensor).

8. The receiver exits the "Wheel Sensor Learning Mode" and returns into normal operating mode.

6.5 Spare Tire Swapping Settings

It is possible to swap the position a flat tire with the spare tire. A tire can only be swapped with a spare tire if its condition is a warning or an alarm.

1. Push and hold the auto button
2. Switch on the Ignition
3. Keep the button pressed until confirmed (6 seconds) by a two high tone beep. First high tone beep will be given after 3 seconds, keep the button pressed until the second beep is given after another 3 seconds.
4. Now the icon of the spare tire and the tire with the (most) abnormal condition will blink.
5. The swap can be confirmed by pressing the mode button.

(This feature enables the driver to avoid irritating warnings/alarms when he has replaced the faulty tire with a spare-tire. The car can be driven safely as all 4 "driving tires" are ok.)

Note: This option can also be used if the spare tire is not equipped with a wheel-sensor. The faulty tire will then be moved to position of the spare tire!

The same procedure can be used to re-learn the original tire to the system – swap the tire and the spare tire back again. As a result it is not possible to swap more than one tire using this procedure. If the button is pressed for 5 seconds, when a tire is already swapped or ignored, this tire will always be re-learnt to the system.

6.6 Tire Swapping Setting

It is possible to swap the positions of any tires (not the LIR and RIR) to allow easy re-learning of wheel positions without the need to fully repeat the Wheel Sensor Learning Procedure

1. Push and hold the auto position button
2. Switch on the Ignition
3. Keep the button pressed until confirmed (3 seconds) by a high beep tone. (1 second)
4. The Tire Icons of 2 of the 4 wheels will start flashing.
    a) Left Front /Right Front swap to Left Rear/Right Rear oppositely
    b) Left Front swaps to Right Rear and Right Front swaps to Left Rear
5. By pushing the mode button the user can scroll through the different combinations of wheels. The sequence will always begin at Left Front/Right Front icon flashing and if the mode button is pressed when Left Front/Right Front icons are flash, and displayed then the display will return to Left Front /Right Rear and Right Front/Left Rear icons flash the sequence will start again
6. By pressing the mode button from 3 seconds the swap selection is confirmed and the system will give a High Beep Tone (1 second) as confirmation.

6.7 Display Configuration mode

The units that are used for pressure and temperature can differ from country to country and can therefore be changed.

1. Push and hold mode-button
2. Switch on ignition.
3. Keep the button pressed until confirmed (6 seconds) by a two high tone beep. First high tone beep will be given after 3 seconds, keep the button pressed until the second beep is given after another 3 seconds.
4. The unit-icons for the pressure and temperature of the current unit setting will start flashing:
    a. PSI & °C icons
    b. PSI & °F icons
    c. Bar & °C icons
    d. Bar & °F icons
    e. Kg/cm^2 & °C icons
    f. Kg/cm^2 & °F icons
    g. By pushing the button the user is able to scroll through the different combination of units. (When the button is pressed when the Kg/cm^2 & °F icons are displayed, it will start over again showing the PSI & °C icons.
5. By keeping the button pressed for 3 seconds the selection can be confirmed and a high beep tone (1 second) will sound.

The default setting for the units used on the display can be set during programming.

6.8 Checking Preset Pressure Mode

The following procedure can be used to allow the user to display the front and rear axle preset pressures.

1. Press and Hold the Auto-Position Button
2. Switch on the ignition
3. Release the Button
4. The Icon of the front 2 tires will light up and the 3-digit 7-Segment section of the display will display the front preset pressure for 5 seconds
5. The Icon of the rear tires (2 or 4) will then light up and the 3-digit 7-Segment section of the display will display the rear preset pressure for 5 seconds
6. The receiver will exit the Checking Preset Pressure Mode and return to normal operation.

6.9 Power Off Memory Function

The receiver module will store the last received pressure and temperature conditions before the ignition was switched off and store these conditions in EEPROM memory for each tire.

When the ignition is switched back on, the system will report any Warning or Alert conditions immediately. The displayed Warning or Alert conditions will only be removed once new and OK (good) tire condition information is received from the relevant sensor.

IC / FCC Caution:

1. 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.

2. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

3. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.