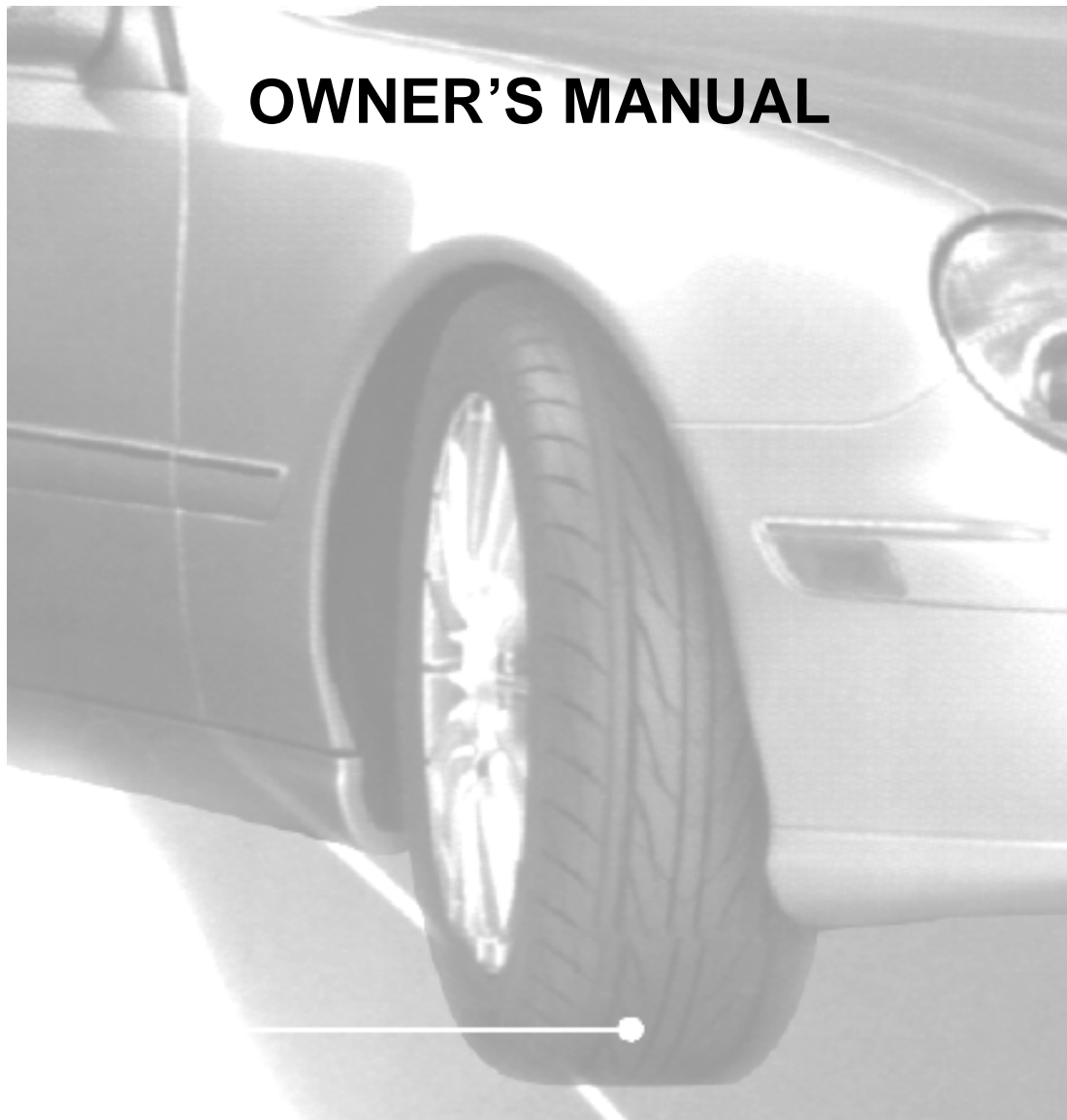


Tire Pressure Monitoring System



An advance tire pressure monitoring system
that gives you the maximum control

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The manufacturer reserves the right to change the contents of this manual at any time without prior notice. The information contained in this manual is proprietary and must not be reproduced without prior consent from the manufacturer.

NOTICE

FCC Notice

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Caution : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

System Scope of Use and Warnings

Tire Pressure Monitoring System (TPMS)

This system is a sensing device designed to measure and display tire operation and/or activate an alert to the driver when pressure and temperature irregularities are detected. It is the responsibility of the driver to react promptly and with discretion to alerts. Abnormal tire inflation pressure should be corrected at the earliest opportunity.

System Installation and Usage

Use of the TPMS requires that it has been properly installed by qualified personnel according to the instructions here.

This system is suitable for use in passenger car, SUV and 4X4 tires up to maximum cold inflation pressure of 500 kPa (or 73 psi).

Reacting to Alerts

When an alert or warning is received, reduce vehicle speed and proceed to a safe stop location where the tire can be inspected and/or serviced.

The *low-pressure* alert indicates that the air pressure has dropped to a selected minimum and a *high-temperature alert* indicates that the temperature of the tire content has surpassed the threshold value set.

Use of Chemical

Temporary resealing or re-inflation products containing internal sealants or propellants in any tire assembly may adversely affect the operation of the Sensor/Transmitter.

1. TECHNICAL SPECIFICATION

Sensor / Transmitter Module	
Operating Temperature Range	-40°C to +125°C
Operating Humidity	100%
Weight	48 gram
Size	101 mm x 26 mm x 44 mm
Battery Life (Projected)	5 years in normal use
Transmitting Frequency	433.92 MHz
Transmitter Activation	Pressure change

Table 1

Display/Receiver Module	
Power Supply	9 ~ 15 V DC
Current Consumption	30mA nominal, 80mA during alert @ 12V DC.
Operating Temperature Range	-40°C to +85°C
Weight	146 gram
Receiving Frequency	433.92 MHz
Monitored Temperature Range	-40 ~ 125°C (-104 ~ 257°F)
Monitored Pressure Range	0 ~ 500 kPa (Accuracy: ± 10 kPa) 0 ~ 73 psi (Accuracy: ± 1.5 psi)

Table 2

2. Component Part Code List

After unpacking, ensure that all the parts listed below are available. Should any part(s) is/are found missing, please return to your dealer and get a complete replacement set.

Item	Description	Part Code	Quantity
1	TPMS DISPLAY MODULE ASSY	70-08-01-001-0	1
2	TPMS SENSOR MODULE ASSY#1	70-08-01-002-0	1
3	TPMS SENSOR MODULE ASSY#2	70-08-01-003-0	1
4	TPMS SENSOR MODULE ASSY#3	70-08-01-004-0	1
5	TPMS SENSOR MODULE ASSY#4	70-08-01-005-0	1
6	TPMS 9FT POWER CABLE ASSY	70-08-02-001-0	1
7	SENSOR TAG - RED (#1)	02-09-00-001-0	1
8	SENSOR TAG - YELLOW (#2)	02-09-00-002-0	1
9	SENSOR TAG - BLUE (#3)	02-09-00-003-0	1
10	SENSOR TAG - GREEN (#4)	02-09-00-004-0	1
11	SENSOR CLAMP 72"	06-06-00-009-0	4
12	TPMS OWNER'S MANUAL	08-09-01-001-0	1

Table 3

For replacement parts, quote the description, part code and quantity required when ordering.

 <p>Item 1</p>	 <p>Item 2, 3, 4 & 5</p>	 <p>Item 6</p>
 <p>Item 7, 8, 9 & 10</p>	 <p>Item 11</p>	 <p>Item 12</p>

3. GETTING STARTED

How it works

Pressure and temperature information are sent to the Receiver and displayed on the LCD display. When an under-inflated or over-heated tire is detected, the Receiver will emit an audible warning and activate the backlight to warn the driver. The alerts depend on threshold value set for pressure and temperature. Either the factory or manual preset value can be selected.

Handling Alerts

When any of the tire is not within the threshold limits (e.g. under inflated or over heated, the following will occur:

- An audible warning will be activated for a period of 10 seconds at an interval of 7 minutes.
- The backlight of the LCD display would be activated for 25 seconds at the first occurrence.
- The pressure value and/or temperature value on the display will blink at twice the normal rate. Likewise for the affected tire icon.

The above will continue until the threshold returns to their corresponding preset value.

All TPMS unit comes with a factory-preset value of **160 kPa (23 psi)** for the Low Pressure Alert and factory preset value of **80°C (176°F)** for the High Temperature Alert.

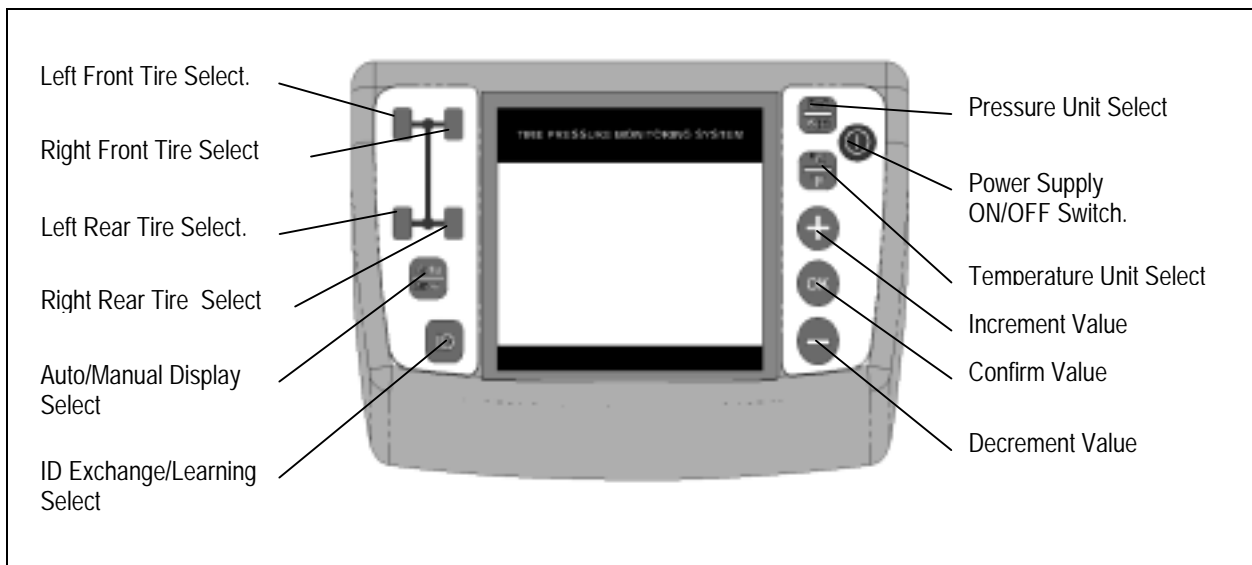


Figure 1 Display/Receiver Module

4. SENSOR/TRANSMITTER MODULE

Installation

Caution: Qualified personnel must perform the following installation procedures to ensure that the Sensor/Transmitter Module are properly installed and undamaged. It does not include any standard procedures normally required in the process of replacing a tire but due care should be taken to ensure that the sensors are not damaged.

Tools Required

- Tire changing equipment
- Tire balancing equipment
- Hexagon socket and driver (5/16" or 7 mm)
- Cutter



Figure 2 Sensor Module

Installing Sensor/Transmitter Module

Suggested installation sequence:

Transmitter	Wheel Position
Red (1)	Left Front
Yellow (2)	Right Front
Green (3)	Left Rear
Blue (4)	Right Rear

Table 5

The base of the drop center well of the wheel must be flat and wide enough to allow the Sensor/Transmitter to contact the rim over its complete width.

- Pass strap through Sensor/Transmitter. See Figure 3.
- Use the tire valve as a reference position (for servicing). Position the Sensor/Transmitter in the lowest area of the drop center well in front of the valve. (See Figure 4 and Figure 5) The tire valve will be the reference position of the sensor in order not to damage the sensor when removing tire from the wheel.

Caution: Ensure that the sensor is not in contact with the valve.

- Attach the strap end to the clamp by advancing the worm gear with a socket driver or screwdriver. Tighten until secured.
- Cut-off any excess of the sensor clamp to approximately one inch from worm gear with a cutter.
- Attach the corresponding color tag to the valve stem by carefully twisting the tag onto the valve stem and securing it with the valve cap. See Figure 6.
- Proceed to mount the tire onto the wheel.
- Ensure that the tires are properly re-balanced.



Figure 3



Figure 4

Figure 5

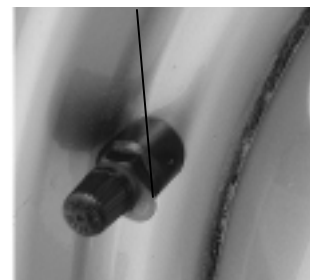


Figure 6

* = The sensor tag (Figure 6) has the same color and number as the same as the sensor label (Figure 5).

Note

Keep the colored sensor tag on the valve stem for installation and tire rotation.

Display/Receiver Module

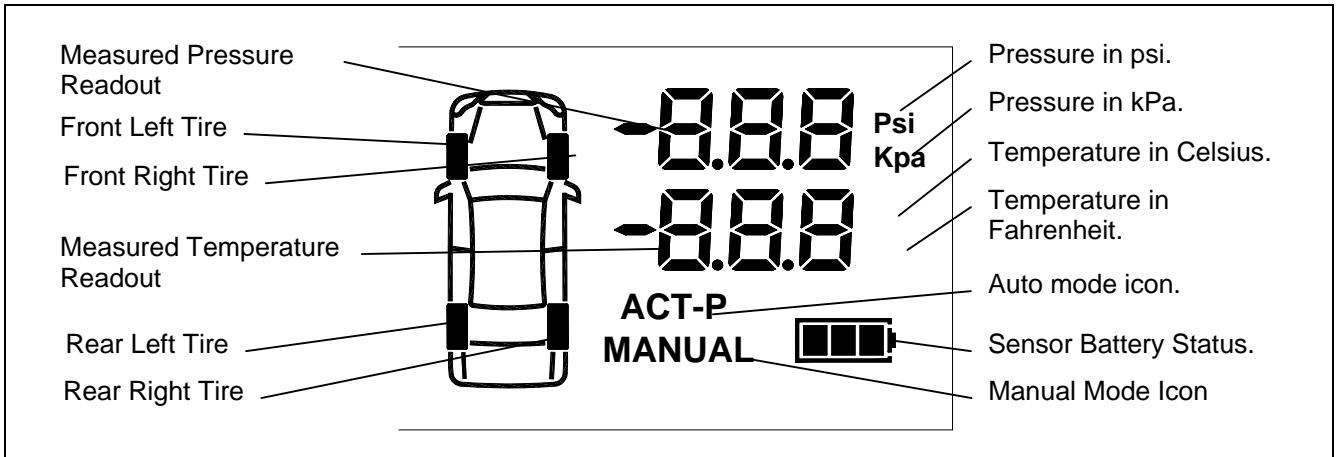


Figure 7 LCD Display

Installation

1. Insert the Power Supply Cable connector into Receiver socket, which is located at the top rear. Refer Figure 8.
2. Connect the other end of the Power Supply Cable to the vehicle **+12VDC, Ground** and **ACC**.

RED color wire to vehicle **+12V DC**,
 BLACK color wire vehicle **Ground**,
 ORANGE color Wire to vehicle **ACC**,

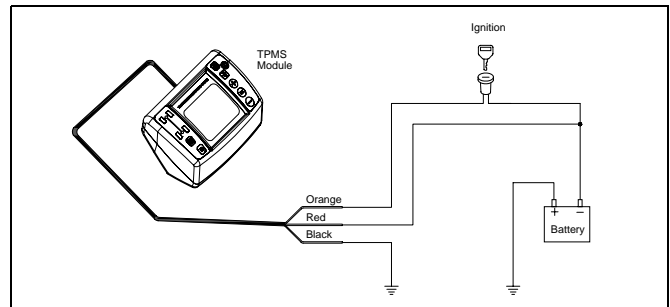


Figure 8 Wiring Diagram

3. Peel off the film covering the 2 pieces of adhesive double-sided-tape film on the back of the display/receiver module.
4. Determine the desired location for Display/Receiver Module. Refer Figure. 10 for possible locations.
5. Apply pressure around the Display/Receiver Module panel for maximum mounting of the module to the car windscreen.



Figure 9 Connection of Power Cable

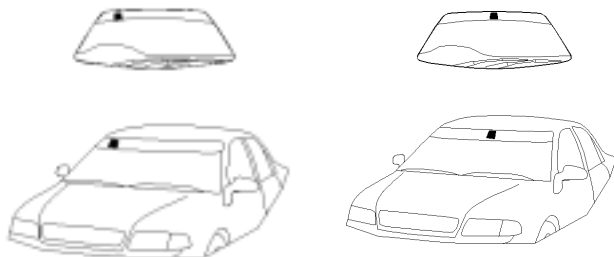


Figure 10 Possible mounting positions

Programming Manual Threshold Setting

To set to other alert threshold value for pressure and temperature, press and hold [Auto/Manual] button for 1 second twice.

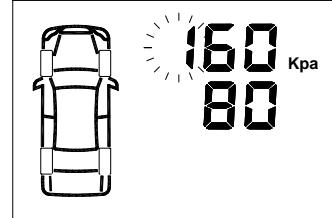
For low pressure alert, the maximum limit is 399kPa (58 psi) while for temperature, the maximum limit is 99°C (210°F).

Step 1

Upon entering this mode, the first digit of the tire pressure readout will blink, indicating that it is ready to accept new input. The value is changed by pressing the [+] button or [-] button to change the value.

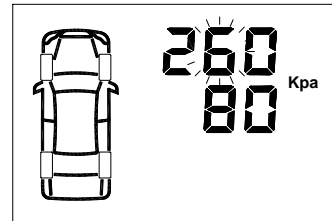
Note

This mode will terminate automatically if there are no key-button activities after 10 seconds and will revert back to the original factory preset value.



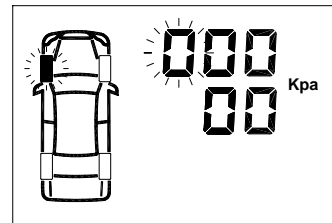
Step 2

To confirm the selected value, press the [OK] button to save it. The second digit will blink to indicate that it is ready to accept new input.



Step 3

Repeat steps 1 and 2 to adjust the value of other digits on the LCD display for both pressure and temperature.



Note

1. Value shown is for reference only.
2. The setting of Manual Threshold Setting can only be done in kPa (Pressure) and °C (Temperature). Refer to Annex 1 for conversion between the units.
3. To return to factory-preset value mode, press [Auto/Manual] button once.
4. To enter manual-preset value mode, press [Auto/Manual] button three times.

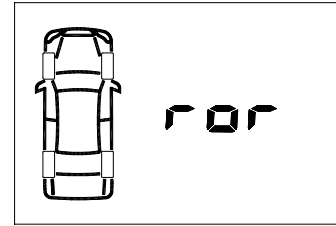
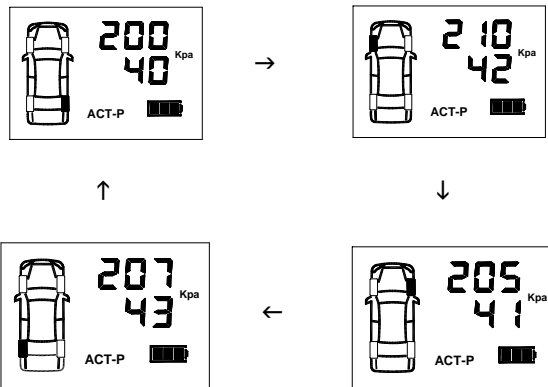
ACT-P: Factory Preset
MANUAL: Manual Preset

Display Mode

Press and hold [Auto/Manual] and [OK] button for 1 sec to alternate between Rotation Mode and Normal Mode. Press again to revert to the previous mode.

Rotation Mode

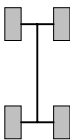
Each of the tires will be 'scanned' for the reading. The rotation will begin from Front Left tire, followed by Front Right Tire, Rear Left Tire, Rear Right Tire and the cycle will begin again with the Front Left Tire. This is indicated by a blinking tire icon.

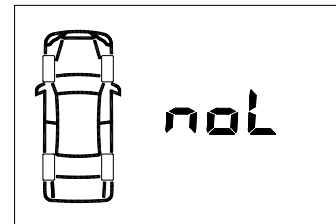
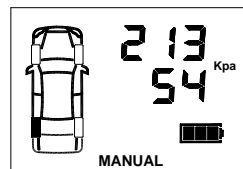


Rotation Mode Activated

Normal Mode

In the normal mode, the display will always show the tire with the lowest pressure value.

To view information of other tires, use  buttons to select the tire required.



Normal Mode Activated

Note

Value shown is for reference only.

Sensor ID Exchange Mode

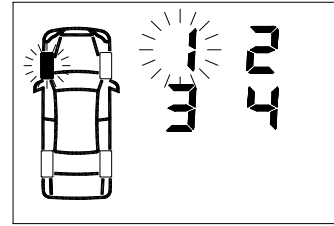
For rotation of tires, the Sensor ID data in the receiver must be changed accordingly to ensure that it indicates the correct tire when there are any irregularities.

Step 1

Press [ID] button for 1 second or more to enter the *Sensor ID Exchange Mode*.

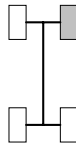
The blinking tire icon and corresponding Sensor ID digit indicates that it is ready to accept inputs from user.

For this example, assume that we are exchanging the Front Right Tire with the Rear Right Tire.

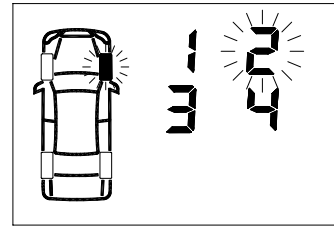


Step 2

Press the front right tire button to select it.



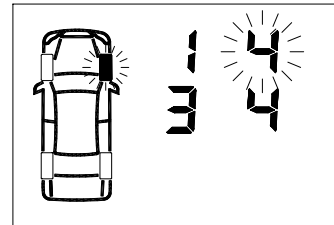
This will cause the front right tire icon and its corresponding ID digit to blink.



Step 3

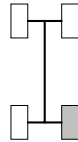
Use [+] key and [-] key to change the selected Sensor ID digit.

In this case, press [+] twice and follow by the [OK] button to save the new Sensor ID value.

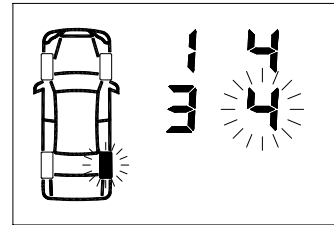


Step 4

Next, press the rear right tire button to select it.



The Rear Right Tire icon and its corresponding ID digit will blink.

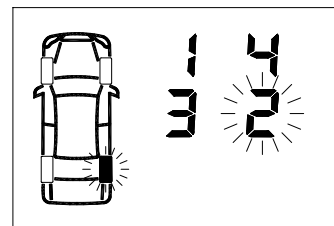


Step 5

Use [+] key and [-] key to change the selected Sensor ID digit.

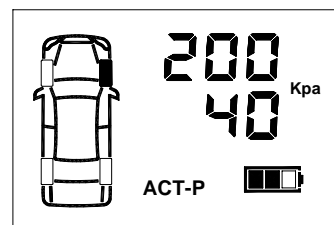
In this example, press [-] twice and follow by the [OK] button to save the new Sensor ID value.

To exit this mode without saving, press [ID] button for 1 second and it will exit Sensor ID Exchange Mode.



Step 6

The receiver will revert back to normal display and that complete the process of exchanging Sensor ID data in the receiver.



Sensor ID Learning Mode (Replacing Display Module or Sensor)

For programming of a new receiver unit or replacement of defective sensors, refer to the following steps.



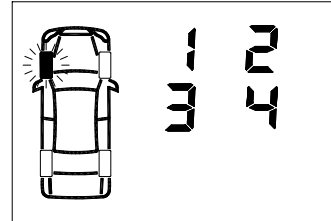
Figure 11

Step 1

Turn on the display module. Press [ID] button and [OK] button simultaneously for 1 second to enter Sensor ID Learning Mode.

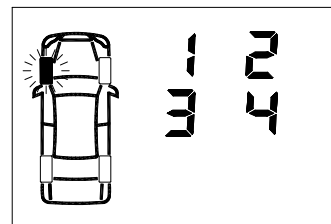
The blinking (once per second) of the tire icon, indicates that it is ready to accept new Sensor ID input.

Select the tire that requires replacement of sensor by pressing the selected tire icon on the LCD display.



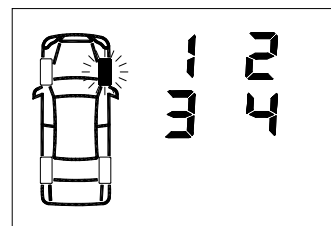
Step 2

Press the micro switch on the new sensor (refer Figure 11) for 1 second. Upon receiving the new Sensor ID, the tire icon will blink at a faster rate (twice per second).



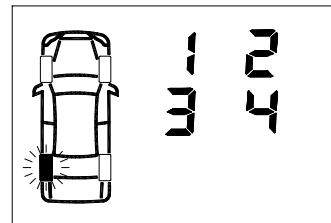
Step 3

Press [OK] button to save the new Sensor ID.



Step 4

If all 4 sensors are replaced, upon pressing the [OK] button for the tire, the receiver will revert back to the normal display. This indicates that the Sensor ID Learning Process is complete.



Note

1. Pressing [ID] button at any time during the learning process will abandon any changes and revert back to the factory preset.
2. When replacing new display unit, all 4 sensor ID must be re-programmed and saved.
3. The receiver will not save any identical Sensor ID.

7. Troubleshooting Guide

Symptoms	Possible cause(s)	Solution
No display on LCD panel.	No power.	Check connections of Power cable at both ends. Ensure that the connection is on the correct polarity and properly grounded.
No display on LCD panel.	Faulty Unit.	Contact your dealer for a replacement.
The unit does not activate when the POWER key button is pressed.	The car ignition has not been turned ON.	Turn the ignition key to ACC position.
The receiver is not learning the ID during ID LEARNING Mode.	Localize RF interference.	Move to another location and re-initiate the ID LEARNING process.
No instant alert	Reverse power cable installation.	Ensure that the red wire is connected to permanent power supply (battery) and orange wire is connected to ACC position of the ignition.

8. Appendix

Glossary

Cold Pressure	Recommended inflation pressure of a tire at ambient temperature of 22°C by vehicle manufacturers.
Low Pressure Alert	Visual and audible warning that is activated when the tire's pressure goes below the preset level.
Display/Receiver Module	The electronic module mounted inside the vehicle that alerts the driver of any tire irregularities.
Sensor/Transmitter Module	The electronic module mounted on the wheels that measure the air pressure and temperature of the tire.

9. Annexes

Annex I

psi To kPa To psi Conversion Table

kPa to psi Conversion Table						
kPa	psi	kPa	psi		kPa	psi
10	1	210	31		410	60
20	3	220	32		420	61
30	4	230	34		430	63
40	6	240	35		440	64
50	7	250	37		450	66
60	9	260	38		460	67
70	10	270	39		470	69
80	12	280	41		480	70
90	13	290	42		490	72
100	15	300	44		500	73
110	16	310	45			
120	18	320	47			
130	19	330	48			
140	20	340	50			
150	22	350	51			
160	23	360	53			
170	25	370	54			
180	26	380	55			
190	28	390	57			
200	29	400	58			