TP2 Tire sensor
TPMS (Tire Pressure Monitoring System)

Table of contents

You are cautioned that any change or modification not expressly approved in this manual could void your authority to operate this equipment.

Important safety and warning

This section contains important information on the safety and efficient operation of your TPMS device. Read this information carefully before using your TP2 system (TPMS).

Important safety warning

It can be caused to death or serious injury in case of wrongly use.

- TP2 is strongly recommended to install at the authorized dealer shops by SEETRON Inc.
- TP2 is installed for the 4 tire vehicles-sedans, RV,SUV- with radial tires whose tire pressure is less than 50 PSI. TP2 cannot work for the tube tire vehicles.
- TP2 is designed to monitoring tire pressure and temperature and transmit those data to the monitor inside the vehicles by wireless. It is unable to generate any warning signal in advance of the abrupt tire explosion.
- The valve nut should be tightened using a calibrated torque wrench to 4.0~4.5 N·m when you install it to the tire wheel. You should use torque wrench to tighten it and check the torque value after tightening. Improperly tightened tire sensor may be loosened during the driving. If the nut of tire sensor is overtightened, sensor can be damaged. If sensor nut is undertightened, it may cause air leaks.
- You may install the monitor in the cigarette socket or somewhere on the cockpit and may be unable to hear the warning alarm and display due to position of monitor. Install the monitor in visible and audible area.
- Do not place the monitor in the air bag deployment area.
- Do not place the monitor to interrupt your driving.
- The alert alarm can be disturbed by AV system in vehicle.
- TP2 is wireless device and there is no guarantee that interference will not occur by unexpected radio frequency energy. It may malfunction briefly.
- The antenna of receiver locates in the monitor. Keep certain distance not to interrupt the antenna.
- Do not adjust the monitor during driving.
- When the alert and warning occur, reduce speed and proceed to a safe location. And stop the car and check the tires.

TP2 is designed to provide convenience of preventing potential accidents, SEETRON shall not be liable for any accidents due to tire explosion or otherwise in terms of any law.

General warning

It can be caused to serious injury or damage of TP2 in case of wrongly use.

- Do not shake or strike the TP2.
- All warranties are void when TP2 disassembled or modified without supervision of SEETRON Inc.
- The rubber seal of tire sensor valve should be replaced whenever you change the tire. Hardened rubber seal can cause air-leaks of tire.
- Do not inject any tire liquid or aerosol tire sealant into tires, as this may cause a malfunction of the tire sensor.
- TP2 tire sensor cannot be mounted in the temporary tire (spare-tire) and special design wheel that the diameter of valve hole is not Ø11.5 mm and special contour on the rim.
- The monitor in the cigarette socket may be loosened by rolling of long driving or rattle over the road. Check the power connection of monitor before start.
- When you install the monitor on the cockpit, demount the flexible power adaptor from the monitor and connect additional power cable. The matching of antenna may be influenced by location.
- Do not contact with liquid, water, rain, extreme humidity or heavy perspiration, sand, dirt or the like.
- Until the vehicle is in motion, no data will be transmitted by tire sensor.The sensor will be active over certain acceleration of tire.
- The TP2 will not be able to give any indication if tire get punctured during parking time.
- When the battery is discharged, the tire sensor should be replaced.

Caution : Max capacity of outlet connection at 12 V inlet/outlet port

- Do not connect the electric device over 200 mA. to outlet port. The outlet port is designed for GPS only.
- While the flexible power adapter is connected , do not input power through 12V input/output port together.

NOTICES

1 FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part15 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.
- Consult the dealer or an experienced radio/TV technician for help.

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 European regulation

This device complies with all European Electromagnetic compatibility regulations (95/54/EC and EN300 220-1). The equipment has been tested and found to comply with the above regulations, and in addition it meets the requirements for low powered transmitters/ receivers as defined by the relevant radio approval authority. The regulations are designed to provide reasonable protection against harmful interference or susceptibility. Changes made to this device without the express approval of Seetron Inc. may void the user' s authority to use this device.

TP2 Tire sensor

Introduction

The TP2 system is used for continuous monitoring of tire pressure in 4 wheel vehicle and spare tire while the vehicle is moving. It assists the driver in checking tire pressures, and provides warning message on the monitor.

1 System scope

Tire sensor : 4 each
Monitor : 1 each
12V flexible power adaptor : 1 each (aplug-in type, built in monitor)
Color code sticker for tire location identification: 1 set
Double coated tape : 1 each
Operation manual : 1 book.
- Option : Spare-tire

2 Getting to know your TP2

3 Alert & warning

The tire sensor TP2 warns of sudden loss of tire pressure and protects the driver against accident caused by defective tires and punctures.

- low pressure alert
- low pressure warning
- high temperature alert
- high pressure alert
- battery low warning
- broken sensor warning

4 Specification

Tire sensor

Frequency: 433.92 MHz
Out put power : below 10 mW
Operating temperature : -40 ℃ to 125 ℃
-40 ℉ to 257 ℉
Operating pressure : 0~51 PSI (0~3.5 bar)
Size L*H*W : 51*32*13 mm(2*1.3*0.5 inch)
Weight : 39 g (1.37 oz)
Power : 3.6 VDC Battery

Monitor

Frequency : 433.92 MHz
Power consumption : below 100 ma
Operating temperature : -20 ℃ to 80 ℃
-4 ℉ to 176 ℉
Size L*H*W : 75*45*20 mm (2.9*1.8*0.8 inch)
Weight : 70 g (2.50 oz)
Power : 12 VDC

Installation and start

1 Quick start guide

1. Plug in the monitor to cigarette socket and turn on the key to ACC mode
   * Caution: Do not keep ACC mode too long to prevent discharge of battery.
2. Mount the tire sensor.
3. Confirm the monitor display shows all tire pressure.
   * NOTE : Check the tire pressure before engine start.
4. Input your placard tire pressure in **MENU1** tire pressure mode

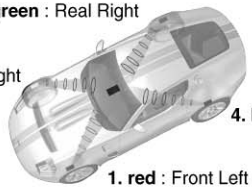

ACC mode

2 Quick location guide of tire sensor

Four tire sensors (red, yellow, green, and blue) have preset location and mount the tire sensor according to color.
Remember the color location that follows the color sequence of rainbow in clockwise.

3. green : Real Right

2. yellow : Front Right



4. blue : Real Front

1. red : Front Left (driver)

Use color code sticker on the wheel and wheel base to mark the location correctly.

* NOTE : If the tire sensor location does not correct, the wrong information shall be displayed on the monitor.

3 Mounting of tire sensor

1. Remove the tire and deflate the tire by removing valve core.
   Make the bead-unseating process by the bead breaker of tire changer. <photo 1>


<photo 1>

2. Place the tire/wheel assembly on the turn table and press the tire by bead pressing tool <photo 2>. Remove the valve and mount the sensor valve. When the bead is too stiff, remove the tire from the wheel completely and mount the sensor valve.
   * Caution : Clean the bead seats and valve stem hole thoroughly.
   * Caution : Lubricate the rubber seal (grommet) on the tire sensor.
   * Caution : Push the sensor down gently into the hole to seat the rubber seal without wrinkle.


<photo 2>

3. Tighten the hex nut by hand until it contacts the wheel. Torque the hex nut to 4.0~4.5 N·m using a calibrated torque wrench. Tighten it slowly to reduce the spring back of rubber seal. <photo 3>
   * Caution : Overtightening the valve nut will cause the sensor valve to break. Make sure tighten the nut below 5 N·m
   * NOTE : 4.0 N·m = 35 INCH Lbs.

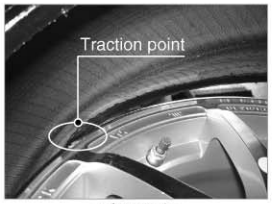

<photo 3>

4. Put the color code same as sensor color showing tire location on the outside of wheel. <photo 4>

<photo 4>

5. When remove tire from wheel completely, be careful to mount the tire with sensor to the wheel.

5-1. To avoid damaging tire sensor, position the wheel with sensor should locate around 4 to 6 o'clock in relation to the mounting head at 12 o'clock.
The valve stem should be slightly ahead of the traction point. The traction point is the area where the bead contacts the rim flange. <photo 5-1>
Rotate the tire/wheel assembly to mount the bottom bead. Locate the sensor around 4 to 6'clock again and mount the upper bead by rotating the tire/wheel assembly. <photo 5-2>



<photo 5-1>


<photo 5-2>

* Caution : Clean the tire and wheel before mounting. The dirt in tire may cause the damage of sensor.

6. Inflate tire pressure. To inflate the tire pressure accurately, use the electronic tire inflator. <photo 6>

7. Make balancing and fix the tire on vehicle according to the color code indication.


<photo 6>

4 Replacement of tire with tire sensor

When you replace the used and worn out tire with new tire, you must be careful not to damage the tire sensor.

1. Remove the valve core and deflate the tire.

2. Unscrew the valve nut using M12 socket and push the valve stem to let the sensor fall inside the tire.Gently bounce the tire several times to ensure that the sensor drops to the bottom of the tire.


Push the stem gently

3. Separate the bead from the rim using bead breaker of tire changer.

4. Demount tire and wheel using tire changer and remove the sensor.

Replace rubber seal

5. To ensure a leak-free installation, always replace the old rubber seal before mounting the sensor.

6. Repeat the mounting process NO. 2~7. at page 9-10.

* Caution : Do not discard the original valve core. If the valve core is damaged, replace it with the same type to avoid air-leak due to galvanic corrosion.


Push and change

5 Installation of monitor

1. Installation on cigarette socket or 12V power outlet

1) Plug in the flexible power adaptor built-in monitor to the socket.

2) When use GPS or the device of low power consumption together with TP2, connect DC 12V power cable between in/out power port and GPS (or the device).
   * Caution : Do not connect the additional device over power consumption of 200 mA.
3) Adjust the viewing angle.

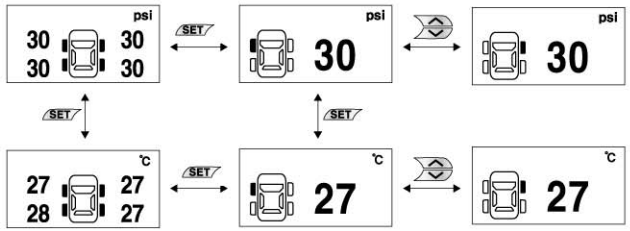
2. Installation on the cockpit

1) Demount the flexible power adaptor from the monitor and position the monitor in any convenient location on the cockpit within sight and reach of the driver.
2) Fix the monitor using double coated tape.
3) Connect the additional power cable to 12V in/out port.
   * Caution : Do not place the monitor in the air bag deployment area.

Operation

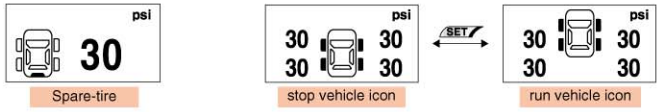
1 RUN MODE

Once turn on the power, the monitor goes into stand-by mode waiting for transmission of sensor. Until the vehicle in motion no data will be transmitted and only vehicle icon shall be displayed. After receiving the data, monitor displays the tire pressure in sequence. Monitor displays 4 tires data as standard and the single display is selected by pressing SET button. Press ∧ / ∨ button to scroll through the tires in single display.



Press SET button to select tire temperature from pressure display.

* Caution : No data shall be displayed without receiving the sensor transmission.
* Caution : The data of spare-tire can be seen in single display only after registration.

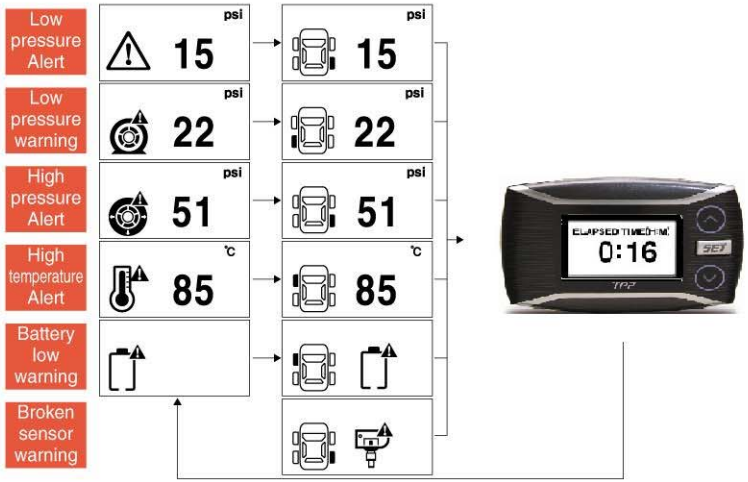


* NOTE : To stop the moving vehicle icon, press SET button for 2 second.

2 Warning mode

Alerts and Warnings	Threshold and conditions
Low pressure Alert	Lower than 18 PSI or sudden pressure drop
Low pressure warning	When tire pressure falls below 20% or 25% of recommended tire pressure.The percentage can be preset in **MENU2**.
High pressure Alert	Tire pressure is higher than 49 PSI (2 bar)
High temperature Alert	When the tire temperature is higher than 80 ℃ (176 ℉)
Battery low warning	The battery of tire sensor is discharged
Broken sensor warning	No transmission from the sensor

Under alert and warning mode, the red alarm backlight warning and alert icons and the audible alarm turn on and off continuously. Also, the warning and alert icons and tire location and the elapsed time information are displayed in sequence.
The icons and displays are as bellows;



Press any button to acknowledge and stop the flashing and alarm.
Press any button once to stop the audible alarm and press any button again to revert to a normal run mode. But the alert icons and alarm red backlight on LCD screen remains on and the display reverts to a normal run mode.

Reverted display from low pressure warning

Reverted display from broken sensor warning

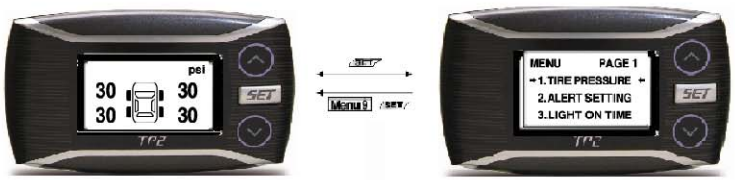
* NOTE : Under low pressure alert mode, the visible and audible alarms remain after pressing twice but display of run mode is added in sequence of alert display.

The display of low pressure alert after acknowledgement

When the alert occurs, reduce speed and proceed to a safe location to check tires.
The warnings and alerts is cancelled when the tire are properly re-inflated to correct level.

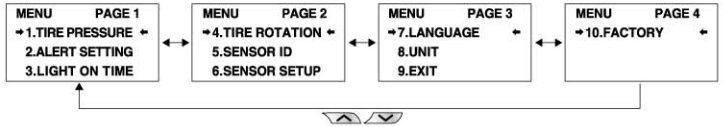
* NOTE : The elapsed time of warning can provide a guide of limited mileage for RUN-Flat tire and PAX tire after puncture.

3 Program mode



RUN MODE　　Program mode

Press the SET button over 2 seconds to move to program mode.
Press the SET button over 2 seconds to revert to RUN mode or select **MENU9** EXIT using SET button.



* NOTE : How to use function keys;

1) SET button: enter key
2) SET button: secondary selection key: use in **MENU1** tire pressure to select the axle and **MENU4** tire rotation to select tire position and **MENU8** unit to shift.
3) ∧ / ∨ button: shift and scroll

MENU1. Recommended tire pressure in clod

● Programming steps

SET　1. To enter, press SET button
∧ / ∨　2. Input the recommended pressure using ∧/∨ button for front axle.
SET　3. Press SET button to return.
4. The front axle pressure is copied to real axle automatically but press SET button to input the real tires pressure differently, if required.

* Caution : Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
* Caution : The cold pressure is the air pressure inside the tire inflated at the ambient temperature before driving a vehicle.

* NOTE : Factory default = 30 PSI (2.1 bar)

MENU2. Alert setting

☞ Set the low pressure warning threshold.

● Programming steps

SET　1. To enter, press SET button
∧ / ∨　2. Select under-pressure value 20% or 25% using ∧/∨ button
SET　3. Press PRG button to save the threshold value
4. The monitor displays the threshold of low pressure warning shortly and return to menu

* NOTE : 20% warning threshold : recommended by tire manufacturers
25% warning threshold: recommended by NHTSA in USA

The example : calculation of threshold
Recommended tire pressure = 30 PSI, Under-pressure value = 20 %
30 - (30×20/100) = 24 PSI.

MENU3. LIGHT ON TIME

☞ The monitor has an energy saving feature that turns light on/off to selected time only and it turns light on automatically when required to display alert or program the unit

● Programming steps

SET 1. To enter, press SET button

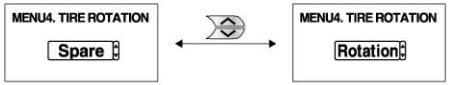
∧/∨ 2. Select the light on time using ∧/∨ button

SET 3. Press SET button to return.

* NOTE : Factory default = 10 sec.

MENU4. TIRE ROTATION

☞ Used for tire rotation and replacement of located tire to spare tire



● Programming steps

SET 1. To enter, press SET button

2. Without spare tire sensor, it goes to Rotation mode first

3. When a spare tire sensor is registered, you should select rotation or replacement first.

∧/∨ 4. Select Spare or Rotation cursor using ∧/∨ button.

5. See the **MENU4.1** Rotation for tire rotation

6. See the **MENU4.2** Spare for replacement of located tire to spare tire

※ The icon and tire location with color code.

ICON	Tire Location	NO.	Color code
1R	LEFT FRONT	1	RED
2Y	RIGHT FRONT	2	YELLOW
3G	RIGHT REAR	3	GREEN
4B	LEFT REAR	4	BLUE
5W	SPARE TIRE	5	WHITE

MENU4.1. Tire Rotation (without spare tire sensor)

● Programming steps

SET 1. To enter, press PRG button

∧/∨ 2. Press ∧/∨ button to scroll through a tire positions

SET 3. Press SET button to select it for editing (1R)

∧/∨ 4. Locate the editing tire to rotated position using ∧/∨ button

SET 5. Press SET button to set it as rotated tire (1R)

6. Press SET button to enter it

∧/∨ 7. Select Y to save and return to menu or select N or C using ∧/∨ button to cancel the editing and press SET button to enter it

* NOTE : Y, N, C icons

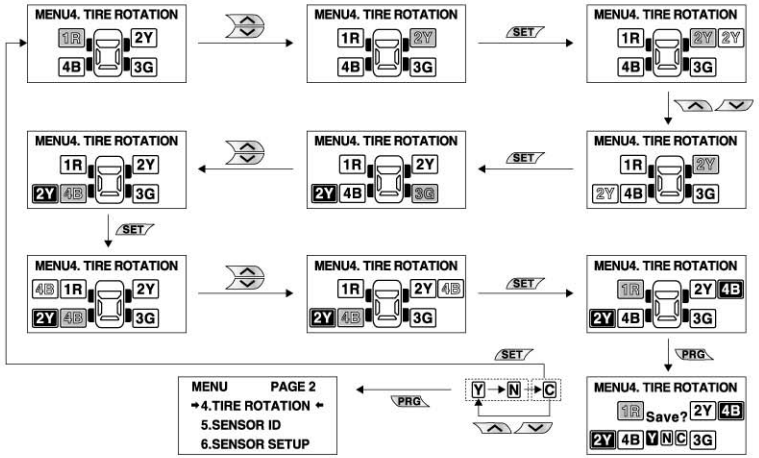
□ Y for Yes : save it and return to menu

□ N for No : do not save it and return to menu

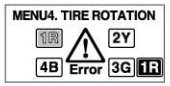
□ C for Cancel : Cancel the editing and program it again.

Easy guide of tire rotation

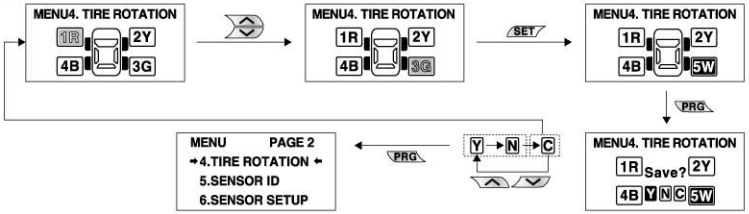
To rotate Front Right tire to Real Left



* NOTE : Press SET button to cancel the editing or select N or C icons
* NOTE : Error message ;
  If press the save button before completion of editing, the error message is displayed. Press SET button or C to return from error



MENU4.2. Replacement of located tire to spare tire



● Programming steps

SET — 8. To enter, select Spare cursor using SET button

∧/∨ — 9. Press ∧/∨ button to scroll through a tire position (3G)

SET — 10. Press SET button to select it for replacement (5W)

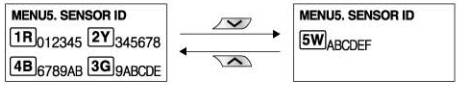
SET — 11. Press SET button to enter it

∧/∨ — 12. Select Y to save and return to menu or select N or C using ∧/∨ button to cancel the editing and press SET button to enter it

* NOTE : Once the 5W spare tire replaced, the punctured tire sensor (3G) becomes spare tire sensor automatically.
* NOTE : To delete the punctured tire sensor (3G), go to **MENU6.2** spare tire mode and select OFF cursor.
* NOTE : When select Rotation cursor to enter the tire rotation, the programming steps is same as **MENU4.1** tire rotation.

MENU5. SENSOR ID

☞ All TP2 sensors have unique identification number and the sensor ID is saved in monitor at the factory.



To see each sensor ID, press SET button.

Press ∧/∨ button to see the ID of spare tire sensor after registration.

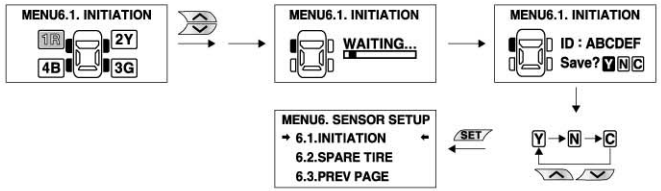
* NOTE: The display of sensor ID will provide the correct information for registration and initiation of sensor.

MENU6. SENSOR SETUP

This mode is used to replace the broken sensor and register new sensor.

MENU6.1. INITIATION

This mode is used to replace and register the new sensor.



● Programming steps

SET 1. To enter **MENU6.1**, press SET button

∧/∨ 2. Press ∧/∨ button to scroll through a tire location

SET 3. Press SET button to select it for initiation

4. Inflate the tire with new sensor to wake up and transmit data

5. Wait to receive the transmission of new sensor ID. (waiting mode)

6. Confirm the new sensor ID in display

∧/∨ 7. Select Y to save and return to menu or select N or C using ∧/∨ button to cancel the editing and press SET button to enter it

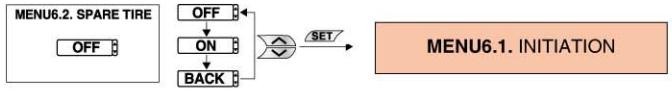
* NOTE : To stop the programming and return to menu, press SET button during waiting mode

* NOTE : To make the transmission of sensor, inflate the tire pressure after mounting new sensor or deflate the tire pressure below 18 PSI.

* NOTE: Error message ;
If press the save icon Y for overwriting or duplication of registered sensor, the error message is displayed. Press SET button to return from error

MENU6.2. SPARE TIRE

☞ this mode is used to register or delete the spare tire sensor



● Programming steps

SET 1. To enter **MENU6.2.** press SET button

∧/∨ 2. Press ∧/∨ button to scroll through on/off cursor

3. Select ON cursor to register new tire sensor to spare tire location

4. Inflate the tire with new sensor to wake up and transmit data

5. Wait to receive the transmission of new sensor ID. (waiting mode)

6. Confirm the new sensor ID in display

∧/∨ 7. Select Y to save and return to menu or select N or C using ∧/∨ button to cancel the editing and press PRG button to enter it.

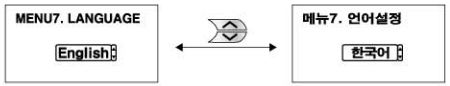
* NOTE : the information of cursor

OFF : no spare tire sensor registered, or delete the registered sensor

ON : spare tire sensor registered already or register new spare tire sensor

BACK : return to menu

MENU7. LANGUAGE



● Programming steps

SET 1. To enter **MENU7**, press SET button

∧/∨ 2. Press ∧/∨ button to scroll to language cursor

SET 3. Press SET button to return.

MENU8. UNIT

☞ Use this mode to select unit of pressure and temperature.

● Programming steps

1. To enter **MENU8**, press SET button
2. Press ∧/∨ button to scroll through unit cursor of pressure
3. Press SET button to shift to unit of temperature
4. Press ∧/∨ button to scroll through unit cursor of temperature
5. Press SET button to save and return to menu.

* NOTE : The pressure unit cursor : PSI, bar, KPA, Kg/cm²
The temperature unit cursor : C° , F°
* unit conversion : 1psi=0.06895 bar= 6.895 kPa = 0.0703kgf/cm²
* unit conversion : ℃=1.8×(℉-32)

MENU9. EXIT

☞ Use this mode to go to run mode

MENU10. FACTORY

☞ This mode is for factory use only.

Trouble shooting

Symptom	Solution
No display on LCD	Check the power connection. Plug in the power adaptor tightly to confirm the contact. Check the fuse in a flexible power adaptor.
Display is not clear	You cannot see the display clearly exposed to the sun. Place the monitor in location not exposed to the sun and check it. When it is too hot or cold over operating temperature range of monitor, the graphic display is not clear. Turn on air-condition or heater on vehicle.
No tire pressure is displayed.	The tire sensor will transmit the data from acceleration over 10km continuously.
The vehicle icon does not move	Press SET button for 2 seconds. You can hear a beep to indicate the vehicle icon will move. To stop the moving vehicle icon, press SET button again.

Additional information

MIC registered NO TP2-RV1

Trademarks
TP2 is a trademark of SEETRON Inc.

US patent NO. 6,945,103
Korean patent NO. 0497112

Quick location tips of tire sensor

Four tire sensors (red, yellow, green, and blue) have preset location and mount the tire sensor according to color.
Remember the color location that follows the color sequence of rainbow in clockwise.

NOTE : The spare tire sensor has white code.