



TIRE PRESSURE MONITORING SYSTEM

## USER MANUAL

T P M S 1 2 0 9 W 0 3

### NOTICE

1. Please do read this Manual carefully before using the product.
2. The system can monitor the tire pressure effectively, but does not warrant to avoid any sudden accidents. User should utilize the system to ensure the tire to be used under a standard pressure and avoid using the poor quality or badly abraded tires.
3. Users are not allowed to open, repair and refit the products by themselves, otherwise the warranty service will be invalid.
4. Users must fill the Warranty Card correctly after buying the product for maintaining their own rights and interests.
5. The final right to interpret the product is reserved by Sate Auto Electronic Co., Ltd.
6. Although equipped with S&T TPMS1209W, we still strongly suggest the User check and adjust the Tire Pressure at least once a month.

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TPMS1209W03 is a full-time direct tire pressure monitoring system which includes one wireless Monitor and four screw-on Transmitters.

The Transmitter can be screw ed onto the tire instead of the cap of the valve and then senses the pressure inside the tire all the time, while transmitting the pressure information data to the Monitor by RF technology.

The Monitor can receive and deal with the data, then display the pressure on the screen. The Monitor can issue different alarms if the tire pressure is under an improper sate based on the standard pressure.

S&T TPMS1209W03 can sense and display the tire pressure all the time and can issue an alarm when the tire pressure is improper, so as to notify the driver to treat the problem and prevent tire busting or tire damage.

Through TPMS1209W03, the driver can keep the tire at a proper pressure so as to avoid excess gasoline and keep the vehicle under an easily controlled state.

## S&T TPMS1209W03 PARTS

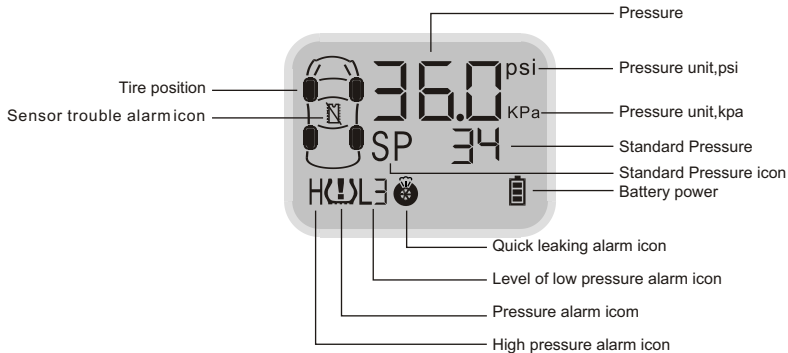
### Monitor



### Transmitter & Security Lock



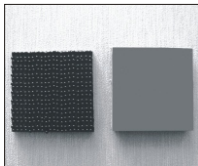
Display



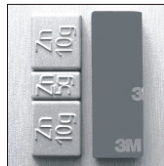
Lighter Plug



3M Dual Lock Fastener



Counterweight



## Monitor



1. Take out the Monitor from the box.
2. Choose a suitable location for the Monitor on the dashboard platform. Make sure to first scrub the surface of the platform with alcohol. Next, strip off the liner of the 3M Dual Lock Fastener, put the sticky side onto the suitable location, then fix the Monitor with the other side of the 3M Dual Lock Fastener on the dashboard.

**Note :** 1. In order to stick the Monitor firmly on to the dashboard, we strongly suggest the user to scrub the location with alcohol.

2. There are 4 pieces of the 3M Dual Lock Fastener in the packing box. One was affixed for you on the bottom of the Monitor in the factory; you can choose either one of the other three pieces in the box to put it on the dashboard, with the remaining two as a spare.
1. Plug the small end of the lighter plug into the socket on the side of the Monitor, and put the big end of the lighter plug into the lighter socket of the vehicle.
2. Turn on the Monitor by switching to "On".
3. Once the Monitor starts to work, the screen should start to display the pressure of the four tires in turn. Before the Transmitters are installed, the pressure and the unit information will be shown on the screen as " ---psi".

**Note 1:** If you don't want to or you do not find it convenient to use the lighter plug, using rechargeable batteries is an Option for powering the Monitor.

The process for powering the Monitor by battery power is as follow:

- 1) Take off the cover of the battery box on the back of the Monitor;
- 2) Put three rechargeable batteries into the battery box;
- 3) Cover the battery box;
- 4) Turn on the Monitor.

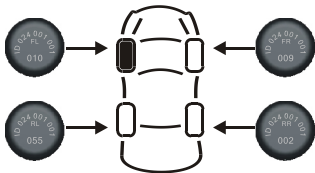
**Note 2:** The lighter plug is a special plug with a transformer inside.

**Note 3:** On some vehicles, the cigarette lighter will power off when the engine powers off. If this happens, or if the user accidentally pulls out the lighter plug from the lighter, if rechargeable batteries are already emplaced inside the Monitor, and the power of the batteries is enough to operate the Monitor, the Monitor can switch to the battery power mode automatically, with no detriment to the system.

**Note 4:** If you turn off the Monitor, the Monitor can not receive information, treat problems, or display information and alarms at all.

**Note 5:** If the Lighter Plug is connected to the vehicle power and the car will not be used for a long time, the power maybe exhausted and the car may not be able to start. Thus, we strongly suggest that the user pull out the lighter plug or turn off the Monitor if the vehicle will not be used for a long time.

## Transmitter



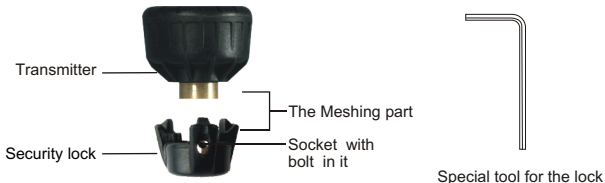
1. Inflate the tire to the standard pressure.
2. Check the Tire Position mark on the Transmitter shell, the FL is for the front left tire, the FR is for the front right tire, the RL is for the rear left tire, and the RR is for the rear right tire.
3. Check whether the rubber seal is placed smoothly and suitably inside of the copper stem of the valve.
4. Screw off the current cap of the valve on the tire.

**Note:** *IMPORTANT!* TPMS1209W03 provides a Security Lock for each Transmitter to prevent the Transmitter from being stolen or lost. The use or disuse of the Lock will not influence the work of the Transmitters. If you want to install the Lock, please follow the Installation Steps of the Security Lock on Page 5. The Lock Must be installed together with the Transmitter.

5. Screw the Transmitters corresponding to each tire position onto the valve;
6. Check each connection of Transmitter and valve with the soap solution to confirm whether the Transmitter is firmly screwed on to the valve or not. Also check whether there is air leakage caused by the installation or the seal of the Transmitters or not.
7. Once screwed onto the tire, Transmitter can sense the pressure inside the tire and transmit the data to the Monitor. Information should appear on the screen within six minutes of installation.

- Note**
1. Pay attention to the current tire pressure, the current pressure should be standard before the installation of the Transmitter. The standard pressure can be found on the User Manual of the vehicle, the Cover of the Gasoline Tank, or the inner side of the door for driver.
  2. After installing the Transmitter, please keep the vehicle stable for at least 100 seconds.
  3. If one of the Transmitters is broken or fails to work, the others won't be influenced. Only the broken one or the lost one needs to be changed or replaced.
  4. The Transmitters should be installed after the Monitor is installed.

## Security Lock



TPMS1209W03 has a lock and a special tool for the lock for each Transmitter to prevent the Transmitter from being stolen. The Security Lock has three sockets on it and each socket has a bolt in it, as shown in the above figure. The function of the lock is to connect the Transmitter and the Lock by connecting the meshing part of them, and then fasten the lock firmly by the three bolts in the sockets, thus the Transmitter with the Lock can be firmly screwed onto the valve and cannot be stolen or be screwed onto the valve and cannot be stolen or be screwed off by a sudden force. Installing the Lock or not will not influence the functions of the Transmitter. The customer can choose whether use the Security lock or not.

**Note:** If the customer chooses to use the Lock, the following installation steps should be follow the Transmitter Installing Term 4.

### Installation step of the Security Lock

1. connect the meshing part of the Transmitter and the Lock



First connect the meshing parts of the Lock and Transmitter to make them an integrated part, then screw the Transmitter together with the Lock firmly onto the valve, as shown in the left figure.

### 2. Lock the Transmitter



Use the special tool to screw the three bolts inside the sockets on the lock. Let both the Lock and the Transmitter be screwed firmly onto the valve, as shown in the left figure.

Then the Transmitter can not be screwed off unless the three bolts are screwed off by using the special tool.

## HOW TO INFLATE THE TIRE WITH A LOCKED Transmitter

BEFORE inflating the tire, please

- 1) Use the special tool to loose the three bolts inside the sockets on the Lock.
- 2) Screw off the Transmitter.
- 3) Remove the Transmitter together with the Lock from the Valve.

**Note:** 1. The Lock will not influence the Transmitters' operation, you can choose whether or not to use the Lock while you install the Transmitter.

2. The tires need to be re-balanced after installing the Transmitter and the Lock.

## INSTALLATION OF THE COUNTERWEIGHT

In order to ensure that each tire remains balanced after installation of the TPMS Transmitters, it is strongly recommended that the user attach the provided adhesive counterweights as shown below. It is also recommended that the user takes their car to a qualified service station for re-balancing after Transmitter installation. To install the counterweight:

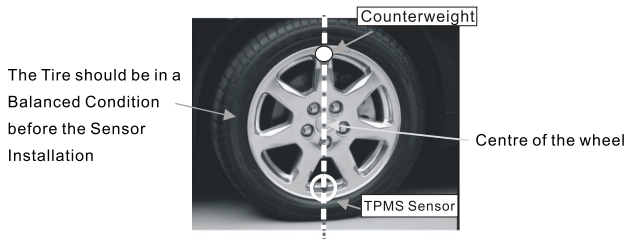
1. Remove wheel covers (if required) and apply directly to rims.
2. Clean the location where the counterweight will be placed with water (cleaning most dirt particles off first), then with rubbing alcohol (then give a final clean to the surface). This location should be directly across the position of the Transmitter on the wheel (see diagram).
3. Take out the counterweight from the accessory bag in the package and remove the liner material on its back.

**Note:** If attaching the Transmitter without the Lock, use the 20g-counterweight (10g + 10g).

If attaching the Transmitter with the Lock, use the 25g-counterweight (10g + 10g + 5g).



4. Place the counterweight on the cleaned location, as shown in the figure below.



- Note :** 1. It is recommended that your vehicle tires are balanced, prior to installing the Transmitter.  
2. If you notice significant vibration from your tires before installation, it is recommended that you bring your vehicle to an auto service station for tire balance.

Under the operation mode, press and hold the E key for 3 seconds to access the Programming interface. Then press the S key, the interface will switch between the interface of "Pressure Unit Switch" and "Standard Pressure Programming". If there is no operation for 5 minutes, the system will exit the Programming interface and return to the normal operating mode.

### 1. Pressure UnitSwitch

The system provides 2 pressure units "kPa" and "psi". Users can choose the unit as following:



Figure 1-1

Under the operation mode, press the E key for 3 seconds to access the Programming interface. Then press the S key to select the "Pressure Unit" interface, and the pressure units "psi" and "kPa" will appear on the screen, as shown in figure 1-1.



Figure 1-2

Then press the E key to access the "Pressure Unit Switch" interface, as shown in figure 1-2.

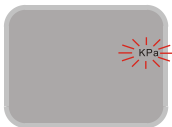


Figure 1-3

Press the S key to switch the Pressure Unit between the "psi" and "kPa". Then press the E key to confirm the selected Pressure Unit.

### 2. Standard Pressure Programming

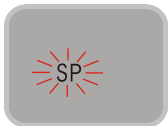


Figure 2-1

Under the operation mode, press and hold the E key for 3 seconds to access the Programming interface. Then press the S key to select the "Standard Pressure Programming" interface, the "SP" icon flashes as shown in figure 2-1.



Figure 2-2

Press the E key to access this program. The first number of the Standard Pressure of the Front Left tire is flashing, as shown in figure 2-2.



Figure 2-3

Press the S key to adjust the number and press the E key to confirm it. Then the second number of the Standard Pressure of the Front Left tire will flash, as shown in figure 2-3.

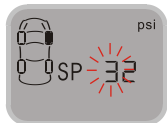


Figure 2-4

After the 2 numbers of the Standard Pressure of the Front Left tire are programmed, press the E key to confirm. As it shifts to the Standard Pressure Programming of the Front Right tire, the first number of it flashes, as shown in figure 2-4.

Follow the above steps to program the Standard Pressure of the other tires. When the Standard Pressure of all the tires are programmed, press the E key to bring the display back to the normal mode.

**Note:** The standard Pressure Programming for pressure unit "psi" and "kPa" are almost the same. The only difference is that when "kPa" is chosen as the pressure unit, the Standard Pressure has 3 numbers and the third number of the Standard Pressure for each Transmitter is "0", it can not be adjusted, user can only press The E key to confirm it.

### Power Switch automatically

The Monitor can be powered by the vehicle power through the lighter plug or the rechargeable battery.

Using vehicle power is strongly recommended.

If the lighter plug is inserted into the power socket of the Monitor, even if the battery group is also inside the Monitor battery box, the Monitor will still draw power from vehicle power.

But when the vehicle power is off for some reason, the system will automatically switch to battery power.

The Monitor will work normally when powered by batteries rather than the vehicle, in identical fashion.

If parked for more than 10 minutes when powered by the rechargeable batteries, the Monitor will switch into the power-saving mode. But all the alarms can be received by the Monitor and it will send out alarms accordingly.

### High Pressure Alarm



Function: The system will issue a High Pressure Alarm when the tire pressure is 25% higher than the standard.

Alarm mode: The alarm lamp, High Pressure Warning Icon and the audible alarm turn on together.

Treatment: Press any key to stop the audible alarm. The red alarm lamp remains on and the display reverts to the normal mode. The red alarm lamp goes off only when the tire pressure returns to the standard level.

### Low Pressure Level 1 Alarm



Function: The system will issue a Low Pressure Level 1 Alarm when the tire pressure is 12.5% lower than the standard.

Alarm mode: The alarm lamp, Low Pressure Level 1 Warning Icon and the Audible alarm turn on together.

Treatment: Press any key to stop the audible alarm. The red alarm lamp remains on and the display reverts to the normal mode. The red alarm lamp goes off automatically only when the tire pressure returns to the standard level.

### Low Pressure Level 2 Alarm



**Function:** The system will issue a Low Pressure Level 2 Alarm when the tire pressure is 25% lower than the standard.

**Alarm mode:** The alarm lamp, Low Pressure Level 2 Warning Icon and the Audible alarm turn on together.

**Treatment:** Press any key to stop the audible alarm. The red alarm lamp remains on and the display reverts to the normal mode. The red alarm lamp goes off automatically only when the tire pressure returns to the standard level.

### Low Pressure Level 3 Alarm



**Function:** The system will issue a Low Pressure Level 3 Alarm when the tire pressure is 50% lower than the standard.

**Alarm mode:** The alarm lamp, Low Pressure Level 3 Warning Icon and the Audible alarm turn on together.

**Treatment:** Press any key to stop the audible alarm. The red alarm lamp remains on and the display reverts to the normal mode. The red alarm lamp goes off automatically only when the tire pressure returns to the standard level.

### Quick leaking Alarm

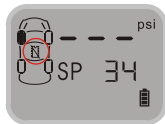


**Function:** The system will issue a Quick Leaking Alert when the pressure dropping exceeds 2.8psi within 12 seconds.

**Alert Mode:** The alarm lamp and the audible alarm turn on, the Quick leaking Icon flashes continuously.

**Treatment:** Press any key to stop the audible alarm. The red alarm lamp remains on and the display reverts to the normal mode. Slow down the vehicle and stop at a safe place to inspect the tire. The red alarm lamp goes off automatically only when the tire pressure returns to the standard level.

### Transmitter Trouble Alarm



Function: If one Transmitter fails to work, or the Monitor can't receive the data because of the RF interference for a certain time, the system will issue a Transmitter Trouble Alarm.

Alert Mode: The red alarm lamp, the Transmitter Trouble Alarm Icon and the audible alarm turn on together.

Treatment: Press the any key to stop the audible alarm. The red alarm light will automatically turn off when the Monitor can receive the signals from this tire position again.

### Warning of Low Battery Power



Function: The system will issue a warning alarm when the battery power is not enough to afford the Monitor to work when the Monitor powered by the battery group.

Alert mode: The audible alarm turns on and the Battery Icon flashes.

Treatment: Recharge the batteries or connect the Monitor to the lighter plug immediately.

### SPECIFICATION

Operating Temperature of the Monitor:	-20 °C+50 °C
Operating Temperature of the Transmitter:	-40 °C+85 °C
Pressure Monitoring Range of the Transmitter:	0~87psi
Pressure Monitoring Precision :	±1.5psi
Modulation type:	FSK
RF Frequency:	434.1Mhz
Emission Output Power:	-10dbm
Receiving Sensitivity:	-105dBm
Input Voltage:	5V (cigarette lighter adapter)
	1.2×3V (rechargeable battery group)

### 1. Counterweight

The provided counterweight is made from non-lead zinc alloy and the 3M tape is used, designed specifically for the North American market.

### 2. LCD operating temperature

For all of the LCD, the lowest limitation operating temperature is  $-30^{\circ}\text{C}$ , the upper temperature limit for working mode is  $70^{\circ}\text{C}$ , for storage the temperature limit is  $85^{\circ}\text{C}$ . This is determined by the character of the LCD.

If the LCD works under lower temperature (for example,  $-30^{\circ}\text{C}$ ) for a long time, the LCD may be destroyed entirely. On the Monitor, there is a LCD screen for displaying the information. In order to use the LCD properly, we strongly recommend the user power off the display if the temperature inside the vehicle will be lower than  $-30^{\circ}\text{C}$  for a long time.

### 3. Checking and inflating the tire pressure once a certain time

In order to ensure that your tires remain at optimum pressure levels, it is strongly recommended that the user check and adjust the pressure in each tire once a month.

### 4. How to change a new Transmitter

If one of the Transmitters is broken or the Transmitter fails to work, you should change a new Transmitter for the tire. The broken Transmitter will not influence the other Transmitters' operation, only the broken one needs to be changed. User can buy a new Transmitter and change it according to the following steps.

#### 4.1 Remove the broken Transmitter

Use the special tool to loose the three bolts inside the sockets on the Security Lock, then screw off the Transmitter and remove the Transmitter and the Lock from the valve.

#### 4.2 Find out the ID number of the new Transmitter

Take out the new Transmitter from the package, the ID number of the new Transmitter should be printed on the Introduction Manual or the Color Packing Board. The ID number has 12 digits.

#### 4.3 Select the Tire Position for the new Transmitter on the display

First screw on the new Transmitter.

Then operate the following steps on the Monitor.

**Note:** Under the ID Programming interface, if there is no operation for 5 minutes, the system will return to the Normal mode automatically.



Figure 4-1.

Under the operation mode, press the E key and hold it for 3 seconds to access the Programming interface. At this time, the pressure unit information appears on the interface as Figure 4-1.



Figure 4-2

Press the S key to select the “Standard Pressure Programming” interface, the “SP” icon flashes as shown in Figure 4-2.



Figure 4-3

Then press the E key for 3 seconds to access the ID Number Programming interface. At this time, the first 6 digits of ID Number of the First tire appears, as shown in Figure 4-3. The letter “H” standards for the first 6 digits of ID number of the Transmitter.



Figure 4-4

Press the S key to shift the interface, the Last 6 ID Numbers of the First tire appears on the display, as shown in Figure 4-4. The letter “L” standards for the Last 6 digits of the ID number of the Transmitter.





Figure 4-5

Press the S key to shift the interface, the First 6 digits and the Last 6 digits of the ID Number of each Transmitter will display in turn, On the interface of the position which needs to change the Transmitter, press and hold the E key for 3 seconds to confirm and the first number of the first 6 ID Numbers flash, as shown in figure 4-5.

#### 4.4 Program the ID Number of the Transmitter on the Selected Tire Position



Figure 4-6

Press the S key to adjust the first digit of the ID number and press the E key to confirm it. Then the second number flashes, press the S key to adjust it and press the E key to confirm, as shown in Figure 4-6. Then the following number will flash one by one.



Figure 4-7

When the 6th digit of the First 6 digits of ID number are adjusted, Press the E key to confirm and shift to the next interface, the Last 6 digits of ID number appears on the display with a letter "L". The first number flashes, as shown in Figure 4-7.

Follow the above steps to adjust all the ID Numbers of the new Transmitter. After the 12th digit of the ID Number is adjusted, press the E key for 3 seconds to confirm, this can also save all the 12 adjusted digits of the ID Number. Then the ID Number programming of the Transmitter is finished.

#### 4.5 Exit the ID Number Programming Interface



Figure 4-8

When the ID Number of the new Transmitter are programmed, press the S key to shift the interface, when the letter "E" appears on the display, press the E key to exit the Number Programming Interface and return to the normal mode, as shown in Figure 4-8.

1. Q: Why is it necessary to do a periodic check on the pressure of a tire with TPMS?  
A: As you drive, tires can be damaged or become unbalanced over time. Checking your tire on a regular basis will ensure that it is functioning properly and safely.
2. Q: After installation, when changing the batteries or resetting the Monitor, the pressure information doesn't appear immediately.  
A: Please wait for about 6 minutes. If nothing happens, reset the Monitor Display (turn it off and on) and wait for another 6 minutes. If the current pressure information still does not appear, please contact our customer service line at +86-21-50792951.
3. Q: Sometimes the LCD screen is not very clear.  
A: This usually happens when the temperature inside the car is too low. When the temperature returns to normal, the display will become clear again. If the LCD screen remains unclear while the temperature has returned to normal for more than half an hour, the LCD may have been become permanently damaged due to exposure to low temperatures. In this event, please contact our customer service line at +86-21-50792951.  
**Note: Please do not leave the Monitor Display with the power on in low temperatures (for example, -30°C) for an extended period of time.**
4. Q: Why does the power level of the rechargeable batteries become shorter?  
A: Low temperatures will influence the work time of the recharged batteries. If the temperature in the car is too low (for example, -30°C) we recommend that you power the Monitor Display Through the 12V Lighter Plug. Once the temperature returns to a higher level, the batteries should operate as normal.
5. Q: Blurriness appears on the LCD screen, or there the LCD screen is blank. Sometimes the audible alarm also can be heard.  
A: This is usually caused by rechargeable batteries of the Monitor Display being low on power. Change the batteries or connect the Monitor Display to the vehicle power through a 12V Lighter Plug immediately.
6. Q: Why does the pressure inside the tire rise after running for some time?  
A: This is because of the friction between the tires and the ground. Heat from the friction of a moving tire will cause pressure inside the tire to rise. The pressure inside a tire can fluctuate up or down approximately 2-4psi depending on the speed of the vehicle. This is normal for most vehicles.
7. Q: Why is the Monitor Display not turning on?  
A: If the Monitor Display is being powered by rechargeable batteries, please check whether the batteries are installed in the correct polarity and if batteries have enough power. If the Monitor is powered by the 12V Lighter Plug, please check the connection between the Lighter Plug and your TPMS unit.  
If this does not solve your problem, please contact our customer service line at +86-21-50792951.

**Valid Warranty Card**

1. The Warranty Card must be filled completely, signed by the user and the authorized distributors of S&T TPMS.
2. The Warranty Card is valid in the countries or regions where the purchase occurs.
3. The Warranty Service requires user to offer the Warranty Card.

**Warranty Condition, Responsibility and Limitation**

1. The product warranty period is one year and is subject to the time marked on the invoice.
2. Any damage or faults due to improper use are not involved in the warranty commitment.
3. Users are not allowed to open, repair and refit the products by themselves, otherwise the warranty service will be Invalid.
4. The warranty does not include replacement of the enclosure and display panel.
5. The warranty does not cover the product damage due to abrasion and corrosion.

**Important Notes**

1. The Warranty Card must be filled completely and its number shall be quoted whenever the user requires the service.
2. Please inform Sate in case that the telephone number or address on the Warrant Card are changed.
3. The warranty responsibility is subject to the conditions and limitations specified in the *User Manual*.

**FCC Caution**

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.



**FCC Notes:**

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.

SUZHOU SATE AUTO ELECTRONIC CO.,LTD

[www.sate.com.cn](http://www.sate.com.cn)

**Rev 1.0**