



# **TPMS1209K03**

## **USER MANUAL**

Suzhou Sate Auto Electronic Co., Ltd

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## **S&T TPMS1209K03, Full-time Direct TPMS**

S&T TPMS1209K03 is a full-time direct Tire Pressure Monitoring System which includes one Display, one Receiver and 4 to 10 screw-on Transmitters.

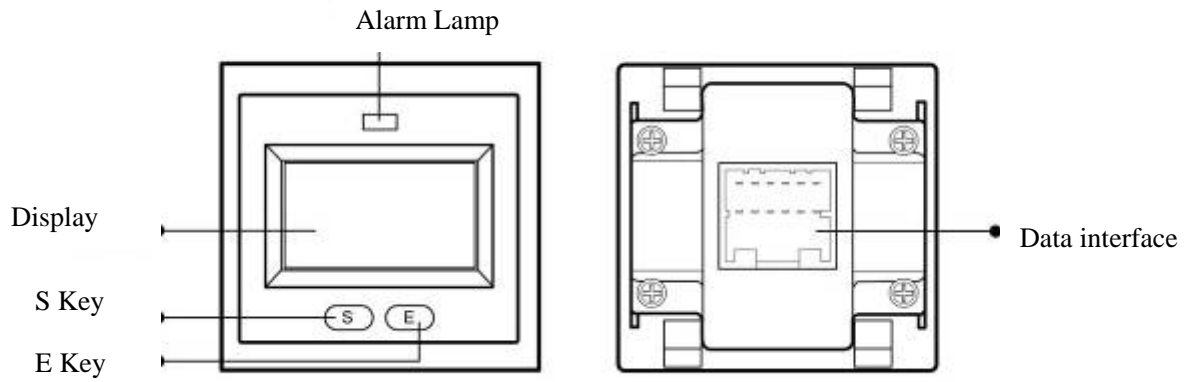
The Transmitter can be screwed onto the valve to replace original valve cap, then senses pressure and temperature inside the tire all the time. The Display can receive and deal with the data, then display the pressure on the screen. The system can issue different alarms if the tire pressure is under an improper state based on the standard pressure.

S&T TPMS1209K03 can sense and display the tire pressure all the time and can issue an alarm when the tire pressure is at an improper level, so as to notify the driver to treat the problem.

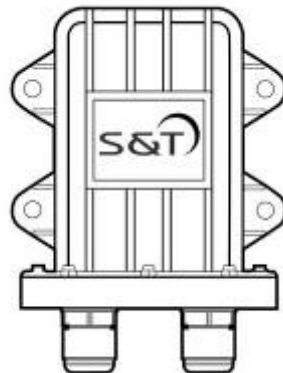
Through TPMS, the driver can keep the tire at a proper pressure so as to avoid excess gasoline consumption as well as to keep the vehicle under an easily controlled state.

## I. Parts of TPMS1209K03

### Display



### Receiver



### Transmitter



## Parts of TPMS1209K03

1 Display

1 Receiver

Transmitter for each tire position purchased

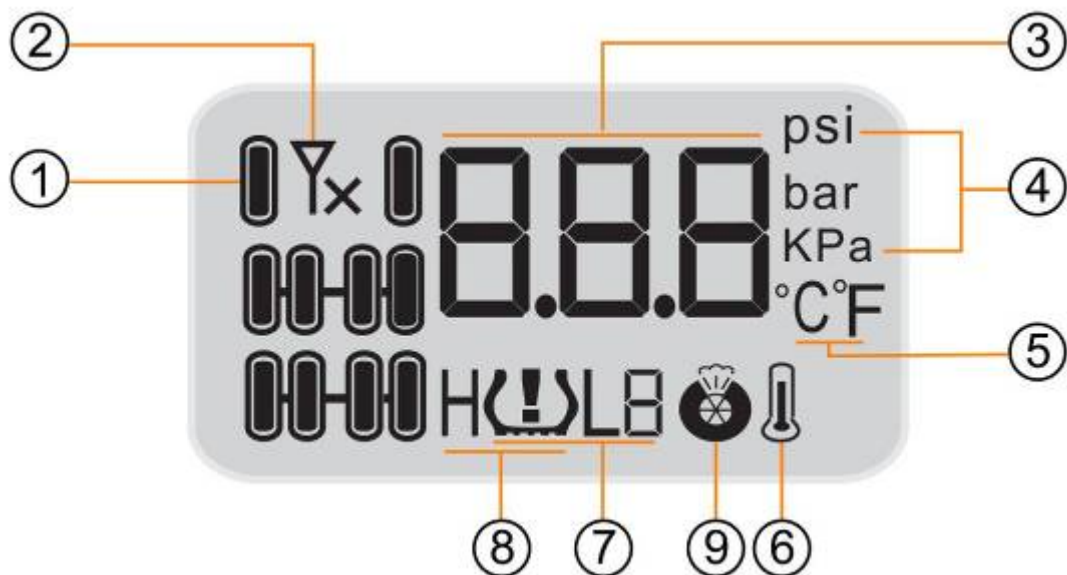
Transmitter lock for each tire position purchased

1 External Antenna

1 4M Coaxial Cable

1 Bracket

## Display



No.	Meaning	No.	Meaning
(1) Tire position icon	Current tire position	(6) High Temperature Alarm Icon	Current temperature is too high
(2) Transmitter Trouble Icon	Transmitter single trouble	(7) Low Pressure Alarm Icon	Low pressure alarm and alarm level
(3) Pressure/ temperature value	Pressure / temperature value	(8) High Pressure Alarm Icon	High pressure alarm
(4) Pressure Unit	Pressure unit	(9) Fast Leak Icon	Fast leak alarm
(5) Temperature Unit	Temperature unit, °C/°F		

## II. Installation of Display and Receiver

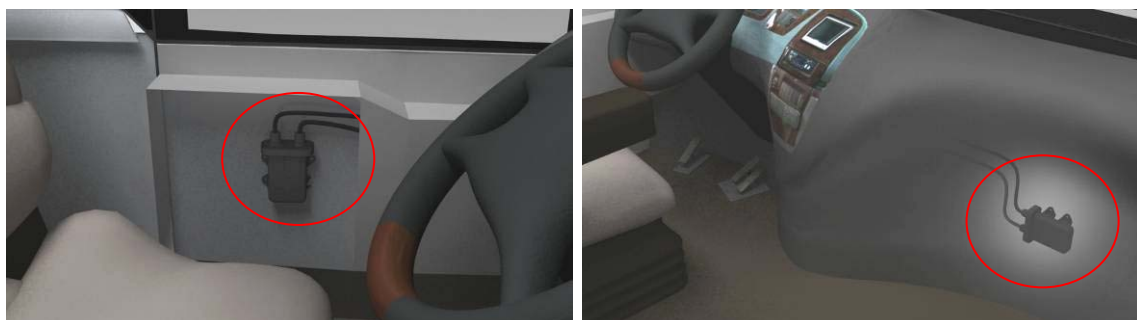
### Installation of Display

1. Take out the Display form the package.
2. Choose a suitable location on the dashboard, and embed the Display into it.

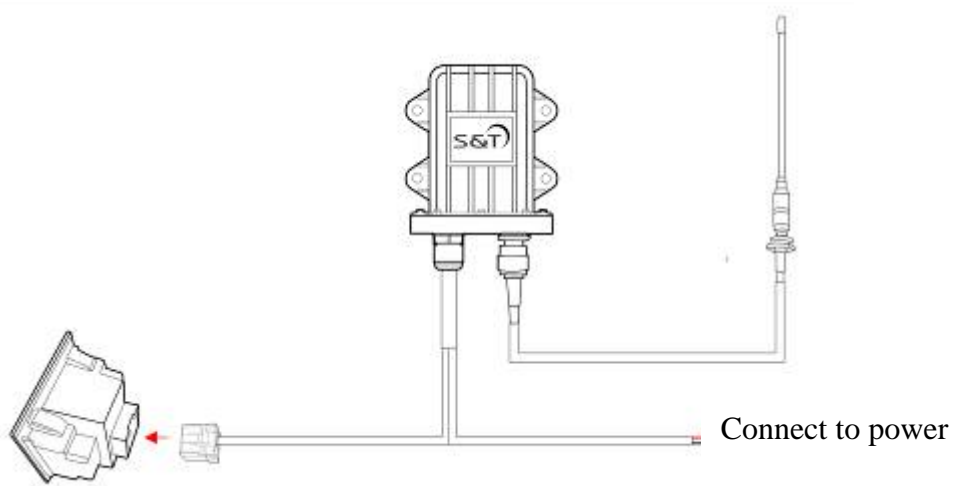


### Installation of Receiver

Choose a suitable location (electrical appliances box of driver seat side or electrical control cabinet of cab) to fix it with screws.



3. After fixed the receiver, connect the antenna, display and receiver, as show below:



No.	Color of power cable	Power
1	Red	24V/12V
2	Black	GND

When powered the receiver, it starts to work. At this time the display cannot receive any information as the transmitters are not installed. The display show “- - -” which means waiting for receiving the information. If nothing on display, please check the power wire connection.

### Installation of Antenna

Fix the antenna and bracket at the rear view mirror screw position, use rear view mirror screws to fix the antenna and bracket. As show below:



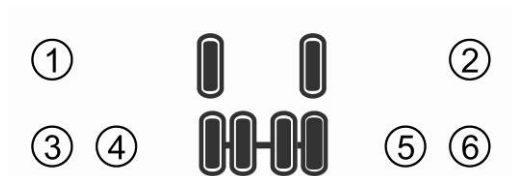
### III. Installation of Transmitter

#### Installation step of the Transmitter

1. Screw off the valve cap
2. Connect the meshing parts of the lock and the labeled transmitter to make them an integrated part, as shown in the right figure.



3. Screw the transmitter and security lock onto the corresponding tire valve ( take 6-wheel bus as an example). As shown below:



**Note:** If the security is not required, user can screw the transmitter onto tire valve directly.

3. Screw the transmitter and security lock tightly with wrench, and then fix them onto the tire valve.

**Note:** If security lock is installed together with transmitter, user can only screw off the transmitter with wrench. Please keep the wrench saved.

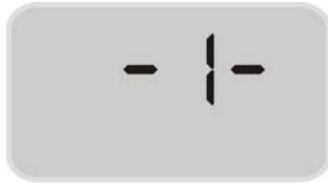
Once screwed onto the tire, the Transmitter can sense the pressure inside the tire and transmit the data to the Receiver, the information will appear onto the display within 6 minutes.



#### IV. Index Interface



This interface displays the normal mode.



Under the two interfaces above, hold and press E key for 3 seconds to enter the programming interface “1”, press S key to switch the index number from 1 to 4, press S key to exit from the programming index interface.

**Note:** Under the programming interface, if there is no operation in a certain time, system will return to the normal mode automatically.

The form below means the corresponding functions f index number:

No.	Function
1	Transmitter ID Inquiry and Programming
2	Standard Pressure Inquiry and Programming
3	Pressure and Temperature Unit Inquiry and programming
4	Deletion of Transmitter ID

## V. Standard Pressure Inquiry and Programming

### 1. Standard Pressure Inquiry

Pressure alarms issued by the system are related to the standard pressure:

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

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

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

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

Therefore user should program suitable standard pressure to ensure system's normal operation. The default standard pressure in the factory is 100psi, user can adjust the standard pressure value according to the actual situation. The standard pressure can be found in Vehicle User Manual, cover of oil box or on the interior door besides the driver seat, or refer to the professional.



Under the normal mode, press E key for 3 seconds to enter into the programming interface, press S key to switch to programming interface 2.



Under the programming interface 2, press E key to

enter Standard pressure inquiry interface. It first displays the standard pressure of front left tire.

The default value is 100psi.



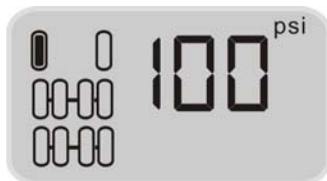
Press S key to inquiry every tire's standard pressure one by one.



Press S key for 3 seconds at any tire position to exit from the interface 2.

## 2. Standard Pressure Programming

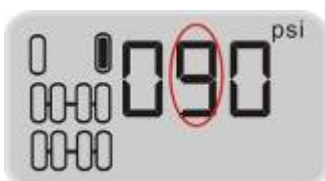
Take programming the standard pressure to 90psi for an example:



Under the standard pressure inquiry state, press E key for 3 seconds to enter the standard pressure programming interface.



At this time, the first digit starts to flash, press S key to adjust this value.



Press E key, the second digit starts to flash, press S key to adjust the value to 9.



After programmed the standard pressure as above steps, press E key for 3 seconds with beep buzzes twice, then return to the standard pressure inquiry interface. Press S key in the programming process will drop the current modified value and return to the interface 2.



Under the standard pressure inquiry interface, hold and press S key to return to the programming interface 2.

### Note:

In order to ensure the normal work, system will limit the max pressure value. If the pressure programmed exceed this value, system will drop this programming and retain the standard pressure before modify.

All the max value of tire standard pressure is limited to:

999Kpa / 9.9Bar / 144Psi

## VI. Functions

### 1. Alarm function

#### High temperature alarm



**Function:** The system will issue a High Temperature Alarm when the temperature around the tire valve exceeds 90°C.

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

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

### 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 light, High Pressure Warning Icon and the audible alarm turn on together.

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

### Quick Leak Alarm



**Function:** The system will issue a Quick Leak Alarm when the pressure drop exceeds 3psi within 12 seconds.

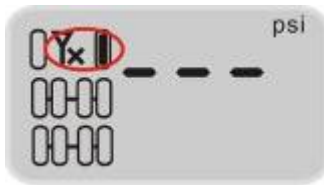
**Alert Mode:** The alarm light and the audible alarm turn on the Quick Leak Icon flashes continuously.

**Treatment:** Press any key to stop the audible alarm. The red alarm light 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 light will automatically turn off when the tire pressure returns to the standard level.

#### Note:

Once the quick leak alarm happens, please slow down and check the tire.

## Transmitter Trouble Alarm



Function: If one Transmitter fails to work, or the Display 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 light, 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 Master can receive the signals from this tire position again.

## 2. Pressure and temperature unit inquiry and programming

Display will provide 3 kinds of pressure units (Kpa, Psi, Bar) and 2 kinds of temperature units ( $^{\circ}\text{C}$ , F) for user to select.



Under the normal mode, hold and press E key 3 seconds to enter the programming interface, then press S key to switch to the programming interface

3.

### 2.1 Pressure and temperature unit inquiry:



Under the programming interface 3, press E key to



enter the pressure and temperature unit inquiry interface. It will display pressure unit inquiry



interface firstly, the current unit in the picture is psi. Press S key to switch to temperature unit inquiry interface, the current unit in the picture is °C.



Press S key to return to the interface 3.

## 2.2 Pressure unit programming



Under the pressure unit inquiry state, hold and press E key for 3 seconds to enter the programming interface. The current unit will continue to flashes as the red part in the picture.



Press S key to switch the pressure unit Psi, bar, Kpa as in the picture, the unit selected will continue to flash.



After select needed pressure unit, hold and press E key for 3 seconds with beep buzzes twice, save the selected pressure unit and return to the pressure unit inquiry interface. Press S key in the process of pressure unit

programming will drop the revising and return to the programming interface 3.



Under the pressure unit inquiry state, hold and press S key to return to the programming interface 3.

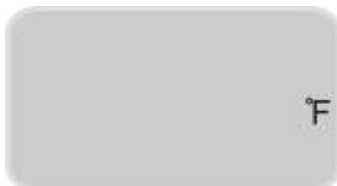
### 2.3 Temperature unit programming



Under the temperature unit inquiry state, hold and press E key for 3 seconds to enter the temperature unit programming interface. The current temperature unit continues to flash as the red part in the picture.



Press S key to switch the temperature unit °C, °F, the temperature unit selected continue to flash. After select needed temperature unit, hold and press E key for 3 seconds with beep buzzes twice, save the selected temperature unit and return to the temperature unit inquiry interface. Press S key in the process of pressure unit programming will give up the change and return to the programming interface 3.



Under the temperature unit inquiry state, hold and press S key to return to the programming interface 3.

## VII. Transmitter replacement

If there is a transmitter broken or lost, it will not affect other Transmitter's work, just to install a new one. Entering the Transmitter ID inquiry and programming interface, Transmitter ID is the 12 digits on the top of Transmitter.

### 1. Transmitter ID inquiry and programming



Under the normal mode, hold and press E key for 3 seconds to enter the interface 1.

#### 1.1 Transmitter ID inquiry:

Take the Transmitter ID "015-001-002-003" for example:

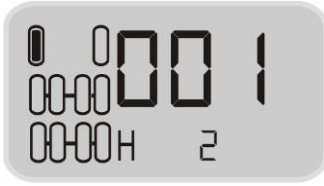


Under the interface 1, press E key to enter the Transmitter ID inquiry and programming interface.

It will first display the first 3 ID digits (or the first high part) of Transmitter on the front left tire, the "H1" on the screen stands for the current display.



Press S key to switch ID display, at this time the screen display the second high part, the "H2" stands for the current display.



Press S key to switch ID display, at this time the screen display the low 3 ID, the “L1” stands for the current display.



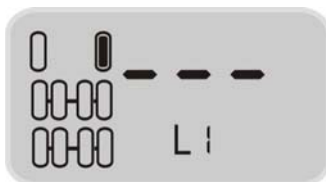
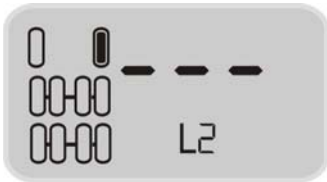
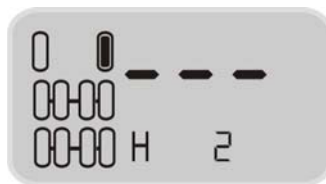
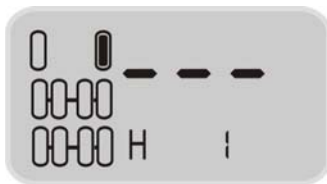
Press S key to switch ID display, at this time the screen display the second low 3 ID, the “L2” stands for the current display.



Press S key in turn will display ID on other places.

Press S key at any position to return to the interface 1.

The below pictures show that these tire positions do not have ID programmed:



## 1.2 Transmitter ID programming:



Under the ID inquiry interface, hold and press E key for 3 seconds to enter the ID programming interface. At this time, the first digit on the left starts to flash, press S key to adjust the value from 0~9.



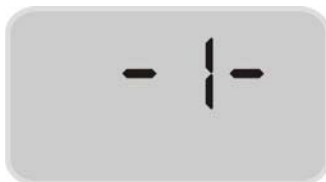
Press E key, next digit will start to flash, press S key to adjust this value.



After adjust the third digit, press E key to switch to the H2 interface for second high 3 ID, the first digit starts to flash.



Program all the 12 ID at the H1,H2,L1,L2 positions, hold and press E key for 3 seconds to save the programmed ID with beep buzzes twice, and then return to the ID inquiry interface. Press S key during the process of programming will drop the current operation and return to the ID inquiry interface.



Under the ID inquiry interface, hold and press S key to return to the programming interface 1.

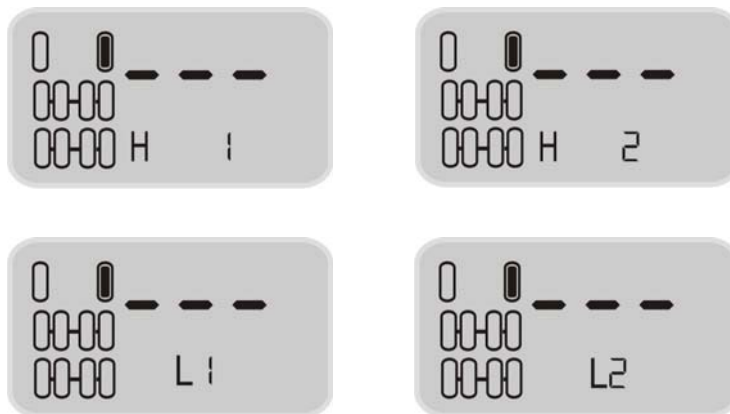
Note:

After programmed all the 12 ID, hold and press E key for 3 seconds, if

beep buzzes once, the current position's ID is as below picture without saving the programmed ID, please check:

1. If programmed wrong value or not. Every 3 ID is a group, the range of every group is 1~255, other value (for example 0,256) will not be accepted. The default Transmitter ID will not beyond this range.
2. If programmed the same ID. System will not accept two same ID programmed on two different tires. Transmitters with same ID will not appeared in a set of product.

If the two situations above appear, system will clear the ID on the current position, user need to program correct ID again.



## 2. New Transmitter installation

After input ID at the corresponding position on the display, user can install transmitter on the corresponding tires. Please refer “III. Transmitter installation” for the installation steps.

After installation successfully, please check the Transmitter's standard pressure, please refer to “V. Standard pressure inquiry and programming”.

### VIII. Transmitter deletion

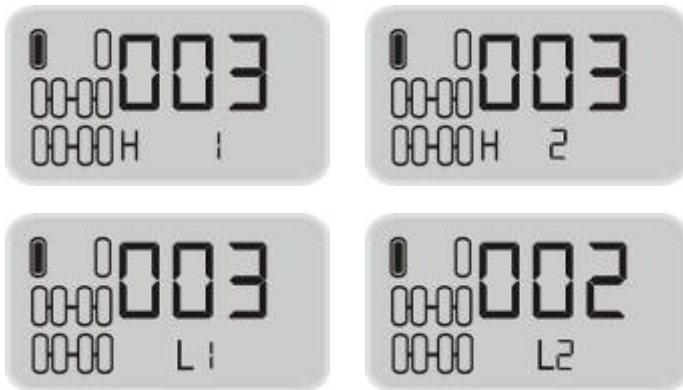
If user wants to cancel monitoring one tire on the display, just delete the ID on the Transmitter ID deletion interface. Display will not display this tire's pressure and temperature any more.



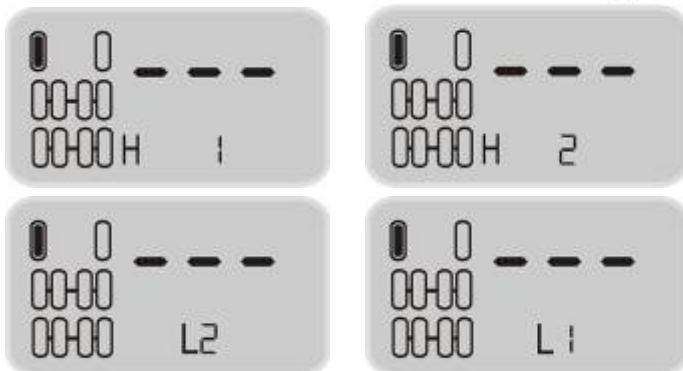
Under the normal mode, hold and press E key for 3 seconds to enter the programmingn interface, press S key to switch to interface 4, and then press

E key to enter Transmitter ID deletion interface.

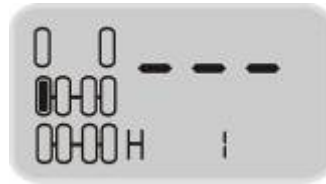
As below, No. 1 tire has been programmed ID “003-003-003-002”, press S key to inquiry ID of H1, H2, L1, L2 positions.



Under the above 4 interfaces, hold and press E key for 3 seconds, Transmitter ID will be deleted with beep buzzes twice, and then return to the current interface”-----“ as below:



If there is no programming at the current tire position, it will display “----- H1” as below picture, press S key to switch to next tire.



Under the deletion interface, hold and press S key for 3 seconds to return to interface 4.

## IX. Specifications

Display operating temperature:	-30°C ~ +70°C
Receiver operating temperature:	-40°C ~ +85°C
Transmitter operating temperature:	-30°C ~ +85°C
Transmitter pressure range:	0~13bar/188psi
Pressure precise:	± 0.15bar/2psi
Modulation type :	FSK
Radio communication frequency:	434.1 Mhz
RF output power:	0dbm
Receiving sensibility:	-105dbm
Input voltage:	24V/12V



## **X. Special Annex**

### **1. LCD Display operating temperature**

For all the LCD display, the lowest operating temperature is  $-30^{\circ}\text{C}$ , while the highest temperature is  $70^{\circ}\text{C}$ , the highest storage temperature is  $85^{\circ}\text{C}$ , and this is determined by the character of LCD. If LCD display works under rather low temperature (for example  $-30^{\circ}\text{C}$ ) for a long time, it may be destroyed. We suggest closing the display if the temperature inside the vehicle is under  $-30^{\circ}\text{C}$  for a long time.

### **2. Check and adjust tire pressure regularly**

In order to ensure vehicle run under the normal condition, we suggest user check and adjust tire pressure at least once one month.

### **3. New Transmitter installation**

If one of the Transmitters is lost or broken, you will need to change a new Transmitter. The broken one will not affect other Transmitter's normal work, just replace a new Transmitter

## **XI. FAQ**

### **1. Why do I have to check tires periodically with TPMS installed?**

The tires may become unbalance after running for some time, periodic check can keep tires in good conditions and avoid potential problems.

### **2. After installation, if change battery or restart receiver, is the displayed pressure or temperature information real-time values?**

The displayed info is the last received before power off, not real time values.

3. Why sometimes LCD becomes unclear?

This usually happens when temperature is too low. After temperature rises the LCD display will work normally again.

4. Why the display becomes unclear, nothing displays and there is beep buzzes?

This is usually caused by lower battery power, please change battery or use cigarette lighter plug.

5. Why tire pressure rises after vehicles runs for a while?

This is caused by the friction between tires and the ground. The heat will cause air inside tires inflate and caused pressure rises. Usually pressure rises about 2 to 4psi.

## **XII. Warranty Terms**

### **Valid Warranty Card**

1. The Warranty Card must be filled completely, signed by the user and sealed by the authorized distributors of Sate.
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 and the original invoice.

### **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 damages or faults due to improper use are not covered by warranty commitment.
3. Users are not allowed to open, repair and refit the products by themselves; otherwise the warranty service will be invalid.
4. Injecting chemicals such as leak-proof glue into the tire will damage the sensors and affect the system operation. Do not use such articles after the TPMS is installed.
5. The warranty does not include replacement of the enclosure and display panel.
6. The warranty does not cover product damage due to abrasion and corrosion.

### **VIII. Important Notes**

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