

S&T

TIRE PRESSURE MONITORING SYSTEM

USER MANUAL

T P M S 1 2 0 9 B

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 TPMS1209B, we still strongly suggest the User check and adjust the Tire Pressure at least once a month.

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S&T TPMS1209B, FULL-TIME DIRECT TPMS

S&T

TPMS1209B is a full-time direct tire pressure monitoring system which includes one wireless Master and four screw-on Sensors.

The sensor can be screw inside the tire instead of the valve to sense the pressure and the temperature inside the tire all the time and transmits the pressure information data to the master by RF technology.

The master can receive and deal with the data and issue differential alarms if the tire pressure or temperature is in an improper state.

S&T TPMS1209B can sense and display the tire pressure and the temperature all the time and can issue an alarm when the tire pressure or the temperature is at an improper level, so as to notify the driver to treat the problem and avoid tire busting or tire damage. Through TPMS, the driver can keep the tire running at a proper pressure so as to avoid excess gasoline consumption and keep the vehicle in an easily controlled state.

S&T TPMS1209B PARTS

S&T

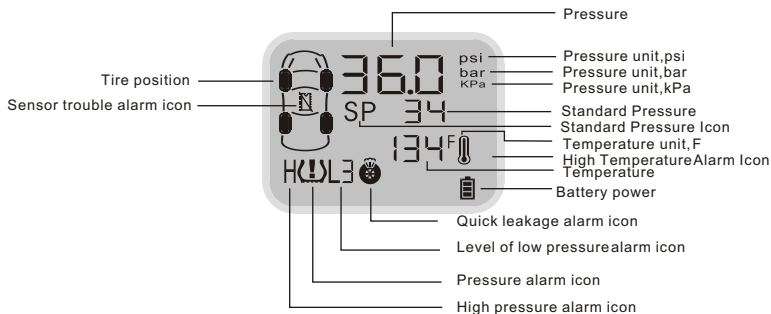
Master



Sonser



Display



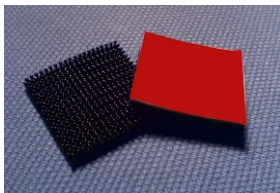
Lighter Plug

Big end



Small end

3M Dual Lock Fastener



Master



1. Take out the Master from the box.
2. Choose a suitable location for the Master 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 Master with another side of the 3M Dual Lock Fastener on the platform.

Note : 1. In order to stick the Master 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, you can choose one to affix on the bottom of the Master and choose another one to put it on the dashboard, with the remaining two as spare.

3. Plug the smallest end of the Lighter Plug into the socket on the side of the Master, and put the big end of the lighter plug into the lighter socket of the vehicle.

4. Turn on the Master by moving the power switch.

5. Once the Master starts to work, the screen starts to display the pressure of the four tires in turn. Before installing the sensors, the pressure & the unit information shown on the screen as " ---psi".

Note 1. If you don't want or you are not convenient to use the lighter plug, the rechargeable battery is an optional for powering the master. The operation process for battery power is as follows:

- 1) Take off the cover of the battery box on the back of the Master; 2) Put three rechargeable batteries into the battery box; 3) Cover the battery box; 4) Turn on the Master.
2. The lighter plug is a special plug with a transformer inside.
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 the rechargeable batteries are already emplaced inside the Master, and the power of the batteries is enough to operate the Master, the Master can switch to the battery power mode automatically, with no detriment to the system.
4. If you turn off the Master, the Master can not receive, treat, display and alarm at all.
5. If the Lighter Plug connects to the vehicle power while the car is not used for about 3 months, the vehicle power may be exhausted and the car perhaps cannot start as usual. So we strongly suggest the user to pull out the Lighter Plug or turn off the Master if the vehicle will not be used for a whole month or longer.

Sensor



1. First dismount the tires from the vehicle. Clean the rim and the inner wall of the rubber tubes.
2. Detach the valve of the tire.
3. Install the Sensors on the valve positions according to the Position Labels: "FL" is for the Front Left tire; "FR" is for the Front Right tire; "RL" is for the Rear Left tire; "RR" is for the Rear Right tires.
4. Mount the rubber tubes.
5. Inflate the tires to the Standard Pressure, and the re-balance the tires.
6. Fix the tires to the vehicle according to the labels.

Note : 1. This product is not applicable to those tires with inner tubes.

2. We strongly suggest the user to go to an Auto Service Shop to install the system.
3. If one of the sensors is broken or fails to work, the others can still function properly, only the broken one need to be replaced. please detach the broken sensor and follow the above steps to install the new sensor. Then please follow the ID Number programming steps on **page 14** to set the ID Number of the new sensor on the master.
4. The tires need to be Re-balanced after installing the TPMS1209B sensors.

Under the operation mode, press the E key and hold it 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 Unit Switch

The system provides 3 pressure units "psi", "Bar" and "kPa". Users can choose the units as following:

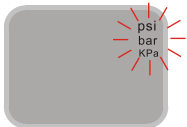


Figure 1-1

Under the operation mode, press the E key and hold it for 3 seconds to access the Programming interface. Then press the S key to select the "Pressure Unit" interface, the three Pressure Unit flash, as shown in figure 1-1.

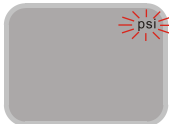


Figure 1-2

Then press the E key to access the "Pressure Unit Switch" interface, first the Pressure Unit "psi" appears on the display and flashes, as shown in figure 1-2.



Figure 1-3

Press the S key to switch the Pressure Unit between the "psi", "Bar" and "kPa", when the needed Pressure Unit appears on the display, press the E key to confirm it and the system returns to the normal mode automatically.

2. Standard Pressure Programming



Figure 2-1

Under the operation mode, press the E key and hold it 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.

The programming of the Standard Pressure is different according to the selection of the Pressure Unit.

2.1 The Steps of Standard Pressure Programming for Unit “psi” are as follow:



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 it and Press the E key to confirm the adjusted value. Then the second number flashes, as shown in figure 2-3.



Figure 2-4

Press the S key to adjust it and Press the E key to confirm the adjusted value. Then the first number of the Standard Pressure of the Front Right Tire flashes, as shown in figure 2-4.

Follow the above steps to set the Standard Pressure of the other tires.

2.2 The programming of the Standard Pressure for Unit “Bar” is almost the same as the Standard Pressure Programming for Unit “Psi”. Please follow the above steps to program the Standard Pressure for Unit bar.

2.3 The Steps of the Standard Pressure Programming for Unit “kPa” are also the same as the Standard Pressure programming for Unit “psi” and “bar”. But please pay attention that when choose “kPa” as the Pressure Unit, the pressure has three numbers and the third number of the Standard pressure is “0”, it cannot be adjusted, you can just Press the E key to confirm it.

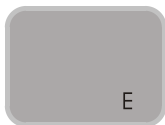


Figure 2-5

When the Standard Pressure for all the tires are programmed, the letter E will appear on the display, as shown in the figure 2-5. Then press the E key here, the system will return to the normal mode.

3. Tire Rotating Programming

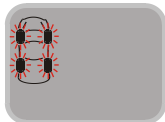


Figure 3-1

Under the operation mode, press the E key and hold it for 3 seconds to access the Programming interface. Then press the S key to select the "Tire rotation Programming" interface, the Four Tire icons flash shown in figure 3-1.

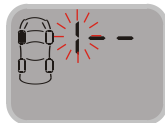


Figure 3-2

Then press the E key to access this program and the first number flashes. It stands for the Number of the Tire Position needs to be rotated. Press the S key to select the Tire Position to be rotated and press the E key to confirm it. As shown in figure 3-2.

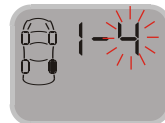


Figure 3-3

Then the third number flashes, it stands for the Target Tire Position to rotate. Press the S key to select the Tire Position and Press the E key to confirm it and the system will return to the normal mode automatically. For example, in figure 3-3, it shows that Tire 1 and Tire 4 are rotated.

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

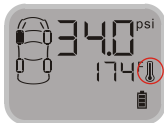


Function: The system will issue a Quick Leaking Alert when the pressure dropping exceeds 2.8psi within 12 seconds.

Alert Mode: The alarm lamp and the audible alarm turn on, the Quick Leaking Alarm 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.

High Temperature Alarm

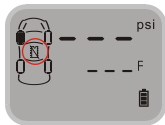


Function: The system will issue a High Pressure Alarm if the temperature inside the tire exceeds 168F.

Alert Mode: The red alarm lamp and the audible alarm turn, the High Pressure Alarm Icon flashes continuously.

Treatment: Press any key to stop the audible alarm. The red alarm lamp goes off Only when the temperature inside the tire returns to normal.

Sensor Trouble Alarm



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

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

Treatment: Press the any key to stop the audible alarm. The red alarm lamp goes off only when the Master 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 Master to work when the Master is powered by the battery group.

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

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

NOTE:



Usually, the Temperature in the tires will be displayed in turn on the screen. If need, the Standard Pressure can be displayed on the screen. At this time, the Temperature will disappear from the screen.



Power Switch automatically

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

Vehicle power is strongly recommended.

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

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

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

Auto Sleep mode of the Master

If the car parks for more than 10 minutes when powered by the rechargeable batteries, the Master will be switched into a sleep mode, this can save the battery power. And the alarm for Low Pressure Level 3 can still be received by the Master within 7 minutes and issue the alarm when the Master is activated. If powered by vehicle power, the Master will not switch into the sleep mode, only the LCD shutdown and all kinds of alarm information can be received by the Master, which can issue the alarm accordingly.

The rechargeable batteries recharged once can work 10~15 days, if the car runs no more than 2 hours a day.

1. LCD operating temperature

For all of the LCD, the lowest limitation operating temperature is -30°C, the upper temperature limit for working mode is 70°C, for storage the temperature limit is 85°C. This is determined by the character of the LCD.

If the LCD works under -30°C for a long time, the LCD may be destroyed entirely.

On the Master, there is a LCD screen for displaying the information. In order to use the LCD properly, we strongly recommend the user to power off the display if the temperature inside the vehicle will be lower than -30°C for a long time.

2. The power consumption

The Master power consumption is very small, only 10-12mAh under the normal mode and 22mAh under the alarming mode, if the vehicle be used under a usual state, the power consumption can even be ignored.

But if the vehicle parks for some long time, for example three to six months or more, the Master connected to the vehicle power through the Lighter Plug is still operating, it may consume much power of the vehicle, or even exhaust the vehicle power. So we strongly recommend the user to pull out the plug and power off the Master if the vehicle will park for a long time.

3. The work life of the battery group

Under a normal working mode, if the battery volume is 2300mAh. If the car runs for 2 hours and is powered by the battery every day, the battery group can last 15 days once recharged.

Note : If frequent alarms and frequent pressing the keys happen when powered by the rechargeable batteries, the working time of the battery group will reduce.

4. Charging the battery

- (1) The Batteries can only be charged by a Single-cell charger.
- (2) You Can NOT recharge the batteries by plugging the unit into the vehicle's 12V adapter directly.
- (3) You can NOT recharge the batteries by removing the Master from the vehicle and plugging the Master unit directly into an AC adapter.
- (4) You MUST recharge the batteries by removing them from the unit and placing them into a battery charger powered by AC. It takes 16 hours to recharge the batteries back to full power.
- (5) The batteries can be recharged with a customer's existing battery charger, because the Master contains 3 pcs of batteries, the charging requests odd charging positions.

5. Checking and inflating the tire pressure once a certain time

In order to keep your tires' pressure under a standard level, to avoid the slight damage or frequent alarming while the pressure near the alarm limit, we strongly recommend you to check and adjust the tire every month to keep the tire pressure under a proper state.

6. The instruction for rechargeable Battery and the usual guide

The battery Specification

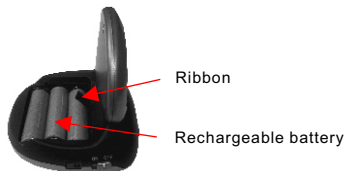
Nominal Voltage: 1.2V

Capacity: 2300 mAh,

Charging Condition: 220mA for 16 hrs at 20°C

Service Life: >500 cycles (IEC standard), Up to 1000 cycles

Ambient Temperature Range: standard Charging: 0°C~45°C, Discharging: -20°C ~ 50°C



- 1) On the base of the Master, there is a box with a cover for the battery group.
- 2) Lay the batteries in a correct polarity, leave the ribbon out of the outer battery.
- 3) When the batteries need to be recharged, take them out of the battery box by the ribbon and put them into the charger in correct polarity.
- 4) Once the charging is completed, put the batteries into the battery box or put them in a proper position on the vehicle as is necessary.

Note

- 1) Make sure to lay the batteries into the box by correct polarity;
- 2) Charge the battery to full capacity before using it;
- 3) Get the batteries out of the power box if the batteries will not be used for a long time;
- 4) Keep the batteries away from the children. If any child swallows the battery, see the doctor immediately;

- 5) DO NOT charge the battery overcapacity, that will shorten the span of the battery;
- 6) DO NOT incinerate or unseal the battery, or cause it short circuit;
- 7) DO NOT put the battery into the fire as a method of disapproval;
- 8) DO NOT put the battery without package inside the pocket, or put the battery together with the metal product such as coin, lap or hair pin, in order to avoid the short circuiting of the battery and lengthen the work life of the battery.
- 9) If working under -20°C , the battery capacity will become smaller, the working time will be shorter. Once up to the normal temperature, the battery capacity can be back to the normal.
- 10) DO NOT charge together with other kind of battery in order to avoid bursting, dumping, destroying and damaging.

7. The Charger



The Charger MD6B1 Specification

| | |
|-----------------------|--------------|
| Input voltage (V) | 110V or 220V |
| Output voltage (V) | 1.5V |
| Charging current (mA) | 150 |
| Trickle Current (mA) | 90 |

- 1) Lay the batteries in a correct polarity;
- 2) Power the charger with an AC power;
- 3) LED on the charge can indicate the charging status clearly, "red" means the under charging, "red" lamp off indicate the charging is finished;
- 4) The safety time for the charging is 15 hours, the charge has a Timer control to ensure the safety;
- 5) This charger is suitable for Ni-MH and Ni-CD battery;
- 6) This charger is compatible for AA and AAA battery size;

Note

- 1) The new battery should use two or three times, for maximum effectiveness.
- 2) If loaded for a week or more, the current will automatically be off. So when you want to use, you should charge the batteries again.

- 3) This product is just for AA/AAA size, Ni-MH, Ni-CD battery. Don't insert any other batteries in the charger. It may damage the device, destroy the batteries and cause injury to the user.
- 4) Don't charge the batteries directly exposed to the sunlight. It can affect the charging result.
- 5) The working temperature is under 55°C while charging.

8. How to change a new Sensor

When need to change a new sensor

If one of the sensors is broken or the sensor fails to work, you should change a new Sensor for the tire.

The broken Sensor will not influence the other Sensors' work, only the broken one need to be replaced. User can buy a new Sensor and change it according to the following steps.

8.1 Remove the broken Sensor

1. First dismount the tire from the car.
2. Detach the broken sensor from the tire.

8.2 Find out the ID number of the new Sensor

Take out the new Sensor from the packing PKG, the ID number of the new single Sensor should be printed on the Introduction Manual or the Color Packing Board, the ID number has 12 digits.

8.3 Select the Tire Position for the new Sensor on the display

Screw on the new Sensor at first, then mount the tire.

Then operate as the following steps on the Master.

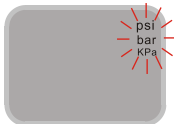


Figure 8-1.

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 8-1.



Figure 8-2

Press the S key to select the "Standard Pressure Programming" interface, the "SP" icon flashes as shown in Figure 8-2.



Figure 8-3

Then press the E key and hold it for 3 seconds to access the ID Number Programming interface. At this time, the first 6 digit of ID Number of the First tire appears, as shown in Figure 8-3. The letter "H" stands for the first 6 digit of ID number of the Sensor.



Figure 8-4

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 8-4. The letter "L" stands for the Last 6 digit of the ID number of the Sensor.



Figure 8-5

Press the S key to shift the interface, the First 6 digit and the Last 6 digit of the ID Number of each Sensor displayed in turn, On the interface of the position which needs to change the Sensor, press the E key and hold it for 3 seconds to confirm and the first number of the first 6 ID Number flashes, as shown in figure 8-5.

8.4 Program the ID Number of the Sensor on the Selected Tire Position



Figure 8-6

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 8-6. Then the following number flashes one by one.

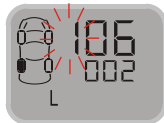


Figure 8-7

When the 6th digit of the First 6 digit of ID number are adjusted, Press the E key to confirm and shift to the next interface, the Last 6 digit of ID number appears on the display with a letter "L". And the first number flashes, as shown in Figure 8-7.

Follow the above steps to adjust all the rest ID Numbers of the new Sensor. When the 12th number are adjusted, press the E key and hold it for 3 seconds to confirm it, and this can also save all the adjusted 12 ID numbers of this tire. Then the ID Number programming of this tire are finished.

9.5 Exit the ID Number Programming Interface



Figure 8-8

When the ID Number of the new Sensor 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 8-8.

- Note :**
1. Under the ID Programming interface, if no operation for 5 minutes, the system will return to the normal mode automatically.
 2. Because this operation need to detach the tire from the car, we strongly suggest the user to go to an Auto Service Shop to change the broken sensor.

SPECIFICATION

| | |
|---------------------------------------|---|
| Operating Temperature of the Master: | -20°C+50°C |
| Operating Temperature of the Sensor: | -40°C+125°C |
| Pressure Scale of the Sensor: | 0~6Bar/ 0~87psi |
| Accuracy of the Pressure Measurement: | ±1.5psi |
| Modulation type: | FSK |
| RF Frequency: | 434.1Mhz |
| Emission Output Power: | -10dbm |
| Receiving Sensitivity: | -105dBm |
| Input Voltage: | 4.3V (cigarette lighter adapter) 1.2×3V (rechargeable battery group) |

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 numbers 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.

IC Caution:

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.



SUZHOU SATE AUTO ELECTRONIC CO.,LTD

www.satepms.com