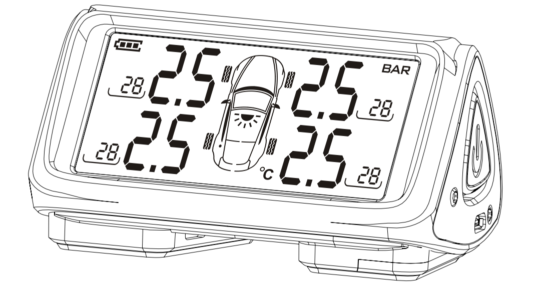
SOLAR POWER Technology

Solar power charging



Intelligent Tire Pressure Monitoring System

User Manual

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1. Product overview

1-1. Introduction

First of all, thank you for choosing our tire pressure monitoring system, which consists of a transmitter and a display

The system is used to detect the air pressure and temperature in the tire in real time, and send the collected pressure and temperature data to the display with wireless radio frequency, which are received and processed by the display, and shown on the screen. It can trigger alarms against the pressure and temperature values set by the user for different abnormalities to remind users and prevent traffic accidents.

The system can improve comfort of driving, reduce fuel consumption, minimize vehicle wear and optimize power performance.

Please read the Installation and User Manual carefully before using this product. Thank you!

1-2. Safety Precautions

Before installing this product, please read the following precautions:

1. Install the display in such locations where the driver's vision is not blocked.
2. Fix the monitor reliably in order to prevent falling in the process of driving.
3. When the vehicle is running, the air temperature in tire rises sharply and goes beyond the alarm value with the pressure of tire increasingly accordingly. Stop driving for natural cooling in case of brake failure or tire burst.
4. If the pressure continues to increase or decrease continuously at a fast speed, it is necessary to stop the vehicle and check whether there is gas leakage or other problems.
5. When the air pressure is excessively high, take care to prevent tire burst; when the air pressure is excessively low, pay attention to minimize fuel consumption and imbalance.
6. The product can monitor tire pressure and temperature in real time effectively, but can not prevent accidents due to failure of tire, so selection of quality tires is as important as monitoring the tire pressure with this product.
7. When driving the vehicle, pay attention to the displayed pressure and temperature values to ensure safe driving.
8. The product can automatically check the tires and trigger alarm, so the driver needs not to keep watch for the tire all the time to avoid distraction when driving.

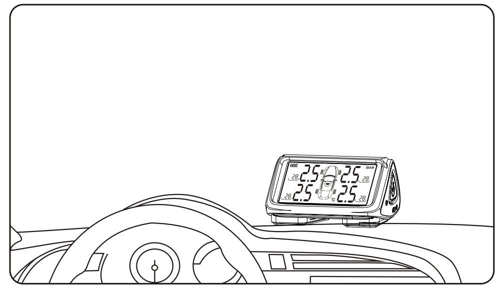
1-3. Installation Precautions

1. In case the display hasn't been sensing vibration or automatically turned off for 5 minutes, a slight movement can automatically start it to receive data sent from the sensor. If there is no data displayed, it does not mean that the product is abnormal, instead it updates the pressure when the pressure value changes.
2. The sensor and the display is connected in a wireless manner, between which the transmission distance is far enough. A number of anti-jamming functions are designed to minimize interference.
3. In the process of driving, due to the thermal expansion and contraction of the air, the tire pressure and temperature will vary from high to low, which is normal.
4. The tires generally are subjected to natural leakage, so the tire pressure will be reduced over time, which is normal and not directly related to the installation of this product.
5. If you have any question about installation, please contact the dealer or agent.

2. Product Features

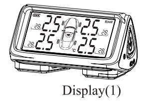
- Auto-induction charging with solar power
- Triggering alarm against excessive pressure and temperature
- Sound and voice alarm
- Multiple pressure units (PSI and BAR optional)
- Multiple temperature units (℃ and ℉ optional)
- Users can set alarm vale for tire pressure and temperature
- Interchangeability of installation position on tire
- Display is capable of wake-up function with slight movement
- Display can automatically enable backlight
- Display is equipped with rechargeable battery
- Sensor can replace the battery, permanent use
- Display shows the pressure or temperature of four tires simultaneously
- Triggering alarm for emergency leakage
- Simple installation and stable performance

The display shall be installed in the location that does not block the driver's sight, which shall be fastened securely with Velcro tape or anti-skid pad so as to prevent it from falling off.

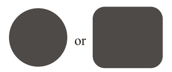


4. Components

Accessories of receiver:

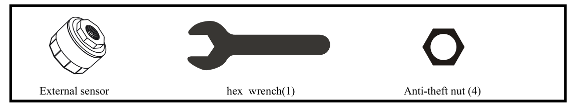


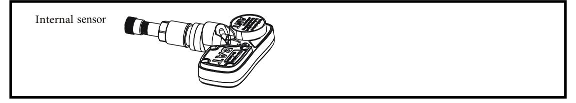
Display(1)



Anti-skid pad(1)

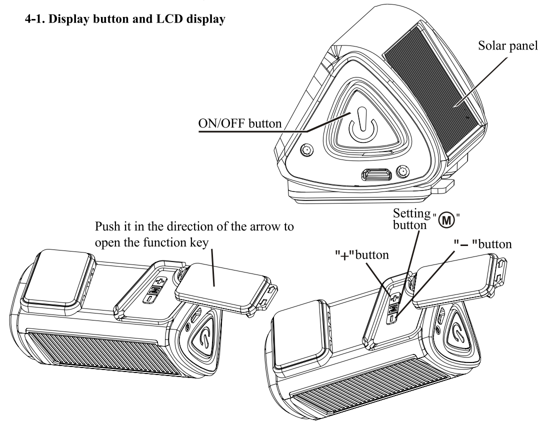
Accessories of transmitter:

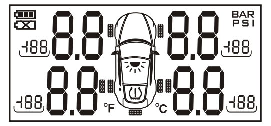




The number of sensors is determined by the customer's needs; 4 sensors are delivered.

4-1. Display button and LCD display





Icon	Description
▯	Tire
⌧	Sensor low power alarm
▭	Display power indicator
(!)	Fault
☀	Charging with solar power

Pressure unit: BAR or PSI, optional for users

Temperature unit: ℃ or ℉, optional for users

Buttons	Description of operation
⏻ ON/OFF button	Hold down this button to switch on the product, and hold it down again to switch off the product
Ⓜ Setting button	A. Hold down this button to enable function setting mode: 1. Pressure unit setting 2. Temperature unit setting 3. High pressure alarm setting 4. Low pressure alarm setting 5. High temperature alarm setting B. Press the button 5 times in a row to enable code calibration mode: 1. Left front tire 2. Right front tire 3. Right rear tire 4. Left rear tire C. In setting mode, code calibration mode and tire interchanging mode, hold down M button to confirm and save function settings.
+button	Hold it down to enable tire interchanging mode; press it to page up or increase digit
-button	Press it to page down or decrease digit

5. Parameter setting

In the standby mode, hold down the Ⓜ button on the display, and release it until the first sound of Beep; enter the first setting interface on display, and the corresponding LCD icon flashes; then press Ⓜ button to select the parameters to be set; press the - and + buttons to set the specific parameter values, after which hold down the Ⓜ button, and release it until the first sound of Beep to save the parameters. Exit and return to normal standby mode.

5-1. Factory setting

Pressure unit	BAR/PSI
High pressure alarm value	3.2BAR(46PSI)
Low pressure alarm value	1.7BAR（24PSI）
Temperature unit	℃/℉
High temperature alarm value	70°C/158°F

Reset:

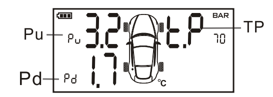
When the product is switched on, hold down the Ⓜ and + buttons for 5 seconds!

Turn on/off the display

When the users need to park the vehicle for a long time, the users can manually turn off/on the display. In the shutdown state, hold down the ⏻ button until the sound of beep, and the display starts; when the product is on, hold down the ⏻ button until the sound of beep, and the display is off; when the battery power is low, the display will automatically shut down.

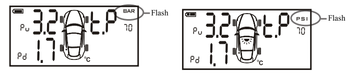
5-2. Setting order

Note: Hold down the Ⓜ button to enable setting mode, where the following interface is shown.



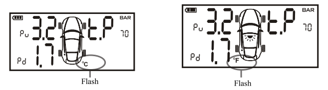
① Pressure unit setting

When the PSI or BAR icons are flashing, press - or + button to select PSI or BAR as required.



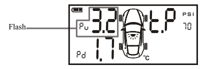
② Temperature unit setting

When the ℃ or ℉ icons are flashing, press - or + button to select ℃ or ℉ as required.



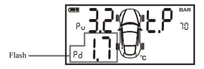
③ High tire pressure alarm value setting (Pu)

When the high pressure parameter and icon are flashing, press - or + button to select the high pressure alarm value as required.



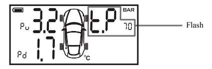
④ Low tire pressure alarm value setting (Pd)

When the low pressure parameter and icon are flashing, press - or + button to select the low pressure alarm value as required.



⑤ High temperature alarm value setting (Tp)

When the temperature parameter and tire icon are flashing, press the + or - button to set the alarm temperature as required.



6. Alarm status

High pressure/low pressure/high temperature/emergency leakage/sensor battery low voltage alarm

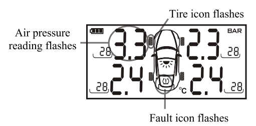
The pressure or temperature of four tires is shown in the same interface on the display. When the tire pressure or temperature exceeds the safety range set by the user, the corresponding tire icon, parameters and corresponding fault icons ((!), ⌧) flash on the display. The alarm sound and red backlight prompts until all tire failures are removed.

For example: Factory parameters setting are shown in the right table:

High pressure alarm value	3.2 BAR
Low pressure alarm value	1.7BAR
High temperature alarm value	70℃

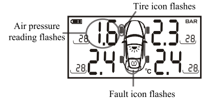
6-1. High pressure alarm

For example, when the pressure value of the front left tire is 3.3BAR, the display shows the interface as the one on the right and gives out alarm sound (beeping). The red backlight indicates the parameters.



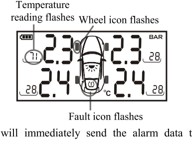
6-2. Low pressure alarm

For example, when the pressure value of the front left tire is 1.6BAR, the display shows the interface as the one on the right and gives out alarm sound (beeping). The red backlight indicates the parameters.



6-3. High temperature alarm

For example, when the temperature of the left front tire is 71℃, the display shows the following interface and gives out alarm sound (beeping). The red backlight indicates the parameters.

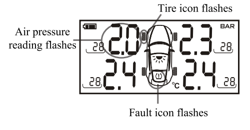


6-4. Emergency leakage alarm

When the sensor detects emergency leakage, it will immediately send the alarm data to the display; the corresponding tire icon, pressure reading, fault icon and red backlight show on the display; the alarm sound (beeping) is given out. Press any key to disable the alarm sound, but the tire icon, pressure reading, fault icon and red backlight still flash until all faults on the tires are removed.

For example, when the left front tire pressure drops from the normal air pressure 2.3BAR directly to 2.0 BAR, the emergency leakage alarm is triggered as follows:

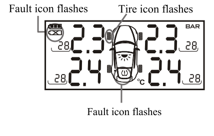
The air pressure reading flashes the tires



6-5. Low sensor voltage alarm

When the sensor detects the low voltage, it will immediately send the alarm data to the display, on which the corresponding tire icon, low voltage icon, red backlight flash and the alarm sound (beeping)is given out. Press any key to disable the sound, but the low voltage icon, tire icon and the red backlight still flash until the sensor battery has been replaced.

For example, when the right rear tire sensor voltage is excessively low, the low voltage alarm is displayed as follows:



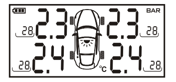
Intelligent Tire Pressure Monitoring System

Mini Upgrade Version

User Manual

7.Other functions

7-1. 4 Tires shown on display



7-2. Display power-down mode

When the vehicle hasn't been running for 5 minutes and the battery is not being charged, the display will automatically enter the power-down mode. The display will be shut down and not receive any data from the sensor. Press any button or slightly move the display, it will return to standby mode.

7-3. Charging display

The display is equipped with a built-in high-performance solar rechargeable battery, requiring no external power supply; the battery can be used continuously. When the icon ☀ is displayed, the battery is being charged with solar power.

7-4. Replacing tire

In the standby mode, hold down the "+" button for 3 seconds until you hear the beep sound, and the left front wheel icon flashes. Press the + and - button to select the tire to swap. After confirming the position of the first tire, press Ⓜ button to confirm, and then press the - button to select the tire position for the second tire. When the icons of both tires to change flash, press Ⓜ button to save the setting and exit to the normal state, which means that the tire swap setting has been completed. (If you perform no operation in 1 minute in setting mode, the system will automatically exit and return to standby mode.)

8.User code calibration

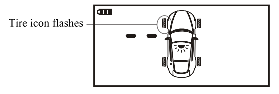
The factory has calibrated the codes for the four sensors and marked the positions, the user only needs to install the corresponding sensor to the corresponding tire. When the user needs to swap the tires, or there is wrong code, or the sensor position is forgotten in the assembly process, then the user can refer to the following inflation code for code calibration:

8-1. Inflation code calibration

Press the Ⓜ button 5 times in a row until you hear the beep sound, and the tire pairing mode is enabled. The icon of left front wheel▬ ▬▯flashes; press + or - button to select the tires to be matched, after which the corresponding tire icon ▯ and pressure ▬ ▬ flashes. Inflate the corresponding tire (screw the external sensor on to the tube valve. The signal received is changed into a pressure value; then press + or - button to proceed to pairing the next tire position. Follow the previous step to match the other tires, after which press the Ⓜ button for 3 seconds until you hear the beep sound to save and exit (Note: If there is no operation in the tire matching mode, it will exit the code calibrating mode in 3 minutes automatically.)

8-2 . Built-in sensor deflation matching method

First confirm that the tire pressure is above 2.0 Bar. Press the Ⓜ button 5 times in a row until you hear the beep sound, and the tire pairing mode is enabled. The icon of left front wheel▬ ▬▯flashes; press + or - button to select the tires to be matched, after which the corresponding tire icon ▯ and pressure ▬ ▬ flashes. Inflate the corresponding tire ; then press + or - button to proceed to pairing the next tire position. Follow the previous step to match the other tires, after which press the Ⓜ button for 3 seconds until you hear the beep sound to save and exit



9.Installation of built-in and external sensors

Corresponding tire position for sensor installation:

The sensor ID has been paired before delivery, so the sensor can be installed directly on the tire at the corresponding position and directly used. In the standard configuration, one display is connected with 3 sensors, and on each sensor a sticker indicating left front, left rear, right front, right rear is adhered, showing the corresponding tire position. If there is a spare wheel, then a stickers (spare) is posted on the spare tire position. During installation, stick the stickers to the corresponding tires as instructed (See Figure 1):

Installation position

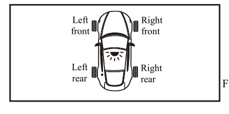


Figure 1

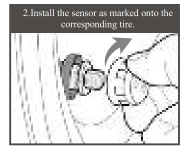
Note: Please install the display and sensors in the pair configured before delivery. If there is an error or the sensor installation position is forgotten in the assembly process, refer to the Inflation code to re-calibrate the code (For inflation code calibration, see the display section of the manual).

9-1. Installation of external sensor

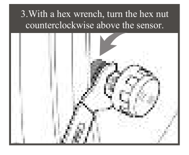
Note: Before installing the sensor, it is necessary to ensure that the display is turned on to facilitate the data transmission to the display from the sensor after installation.

1. (1) First remove the dust-proof cap on the tube valve where the sensor is to be installed, and then screw the hex nut on the valve.
2. (2) Then install the sensor marked the corresponding position on the tube valve with reasonable force. Do not apply excessive force so as not to damage the sensor as shown below;
3. (3) After installation, test the valve for gas leakage with the foam to ensure that there is no air leakage;
4. (4) With a hex wrench, turn the hex nut counterclockwise above the sensor to prevent it from being stolen.

1.Remove the dust-proof cap on the tube valve, and screw on the hex nut.



2.Install the sensor as marked onto the corresponding tire.



3.With a hex wrench, turn the hex nut counterclockwise above the sensor.

*With proper force, turn the sensor clockwise. Do not apply excessive force on the sensor, or otherwise it will damage the sensor! The nut installed above the sensor is designed to protect the sensor from being stolen. Store this dedicated installation tool (hex wrench) properly for disassembly and installation of sensors.

Note: (1) Each sensor shall be marked with the corresponding position so it can be accurately mounted on the corresponding tire.

(2) When the sensor voltage is low, the display will show a low voltage alarm.

(3) After the sensor is installed, check whether there is any leakage in the tire. If necessary, you can apply soap and water solution on the tube valve to check whether there is any leakage.

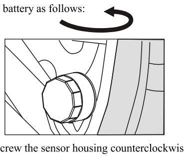
Replacing Battery for external sensor:

Note: Because the housing has the sticker indicating the position, when replacing the sensor battery, dismantle the sensor and housing one by one; do not mix, dismantle or install simultaneously to prevent installing the housing on the other tire position by mistake.

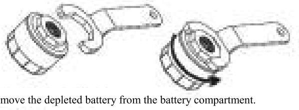
When the tire icon flashes and low voltage icon ⌧ appears on the display, replace the sensor battery indicated by the flashing icon (lithium battery CR1632; operating temperature: -20℃- +80℃). Users can buy batteries from dealers.

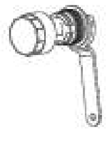
First remove the sensor from the tire, and then replace the battery as follows:

(1) With a hex wrench, remove the sensor from the tube valve. First, screw off the anti-theft nut clockwise (from the sensor), and then screw off the snesor counterclockwise.



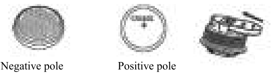
(2) Place a hex wrench onto the valve of sensor, and unscrew the sensor housing counterclockwise.





(3) Remove the depleted battery from the battery compartment.

(4) Load the new lithium battery CR1632 with the positive pole facing upwards.

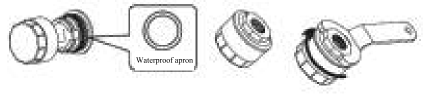


Negative pole CR1632 lithium battery

Positive pole CR1632 lithium battery

(5) Screw on the sensor housing, and then with the power tool tighten it clockwise.

Note: When installing the housing, be sure to check if the waterproof apron is in place; if it is damaged, replace it with a new waterproof apron before installing the housing.

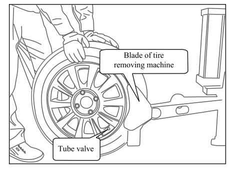


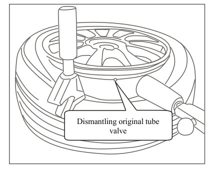
9-2. Installation of built-in sensor

Note: Before installing the sensor, ensure that the display is turned on in order to facilitate the timely data transmission to the display from the sensors after installation.

First remove the tires from the vehicle body, and then dismantle the rubber tires from wheels. Screw off the original tube valves, and then remove the valve cap, hex nut and gasket on sensors. Install the sensors onto the position of the original tube valves in line with the indication on the housing(left front, left rear, right front, right rear). Adjust the angle of the sensor, and then put the metal stem on other side of the wheel. With the sensor nuts, fasten the sensor on the wheel. Finally tighten the hex nuts. Install the rubber tires on the wheel and inflate them to the standard air pressure. Spin on the dust-proof cap. Install them onto the vehicle after balance test.

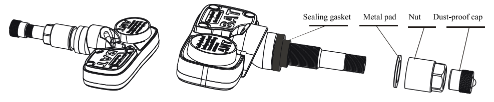
1. (1) First remove the tires, and deflate them.
2. (2) With tire removing machine to remove the outer tires, and dismantle the original tube valve.



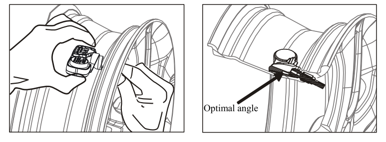


Note: Keep the blade of tire removing machine away from the sensor in case the sensor is damaged. When removing the tires installed with sensors, inform the operator to watch out for sensors (keep a distance 15 cm above the tube valve).

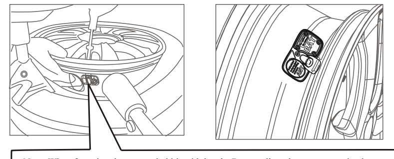
(3) First remove the metal pad, nuts, dust-proof cap on the sensor.



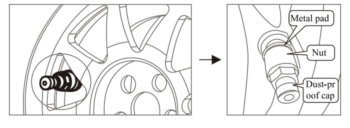
(4) Put the sensor into the valve position, and adjust the sensor in the wheel to the optimal angle by hand; then with a special tool, tighten the valve on the sensor to fix the sensor angle.



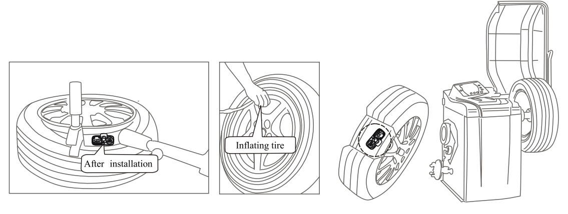
(5) Install the sensor in the position of tube valve, and then install the metal pad and nut in turn.



Note: When fastening the sensor, hold it with hands. Do not allow the sensor to spin along to prevent the sensor from being pressed against the wheel on one side.



(6) Install the tire onto the wheel. Take care not to damage the sensor. Inflate the tire to the standard pressure (Check if there is any air leakage after inflating the tire). Screw on the dust-proof cap. Install the wheel back after it is subjected to balance adjustment.



Note:

1. (1) The sensor installation steps above shall be carried out by the professional installation personnel.
2. (2) When installing the tires, adjust the position of the tire to keep the sensors away from the mechanical operation so as to prevent damage to the sensor.
3. (3) Each sensor bears the mark showing its tire position, which can make sure it is mounted on the corresponding tire.
4. (4) When the sensor voltage is low, the prompt icon will appear on the display.
5. (5) When the sensor is installed, thoroughly check whether there is any leakage; if necessary, apply the soap and water solution on the tube valve to check whether there is leakage.

10.Technical parameters

10-1. Technical parameters of display

Pressure set range	0-9.9Bar(0-99Psi) Pressure range 0-9.9Bar	Input voltage	DC 5V
Temperature set range	50°C~99°C	Frequency	433.92MHz
Operating temperature	-20℃-80℃	Dimension	82×52×35mm
Storage temperature	-30℃-85℃	Weight	92g

10-2. Technical parameters of sensor

	Internal sensor	External sensor
Operating temperature	-40℃-+125℃	-20℃-80℃
Storage temperature	-40℃-+125℃	-20℃-85℃
Pressure range	0-9bar(0-130.5psi)	0-9bar(0-130.5psi)
Pressure accuracy	±1.5 psi (±0.1 bar)	±1.5 psi (±0.1 bar)
Temperature accuracy	±3℃	±3℃
Transmission power	＜10dBm	＜10dBm
Transmission frequency	433.92MHz	433.92MHz
Batter service life	≥5 years/3years(small sensor)	≥2 years
Dimension	54*76*19mm/37*76*19mm(small sensor)	23(φ) *21 (H) mm
Weight	29g/18g(small sensor)	9g

11. Tips

1. Use this product properly for its design purpose; if it is used beyond its design purpose, the company will not be responsible for any consequence thereof!
2. This product shall be installed strictly in accordance with the User Manual; otherwise, the company will not be responsible for or give any explanation about any fault or problem caused by improper installation!
3. When setting the alarm value, it is necessary to strictly abide by its range. The alarm values for different vehicle models shall be set according to their tire parameters or instructions, or the range given by their agents or distributors (Do not modify the system with set values). The company will not bear any responsibility arising from unauthorized setting or improper setting.
4. This manual is subjected to revision without notice. The figures in this manual are only for convenience, the actual product shall prevail.
5. This product shall be installed by the experienced technician. When dismantling the tire again, take care not to damage the sensor.