v 1.01

TIRE PRESSURE MONITORING SYSTEM (TPMS)

eurosens T6-X, T22-X, T-38X

OPERATION MANUAL

MECHATRONICS

v 1.01

TPMS eurosens

OPERATION MANUAL

1 INTRODUCTION

The eurosens T6-X, eurosens T22-X, eurosens T38-X tire pressure monitoring systems (hereinafter referred to as the Systems) are used to monitor the pressure and temperature in each tire of the vehicle. After the user sets the permissible values of pressure and temperature, in case of deviation beyond these values, the system will generate alarms for the driver, notifying about the danger of continuing driving. The System also transmits information about the current tire pressure to the vehicle's remote monitoring system. The System contributes to better fuel economy, tire wear resistance and a more comfortable driving experience.

It is strongly recommended that you read the instructions below before using the System:

1. The monitor should be installed inside the vehicle where it does not affect normal driving.
2. The monitor should be well fixed to avoid falling off during driving.
3. After the sensor installation, it is highly recommended to check for any air leakage.
4. This TPMS can effective monitors tire pressure and temperatures but cannot prevent traffic accidents regular tire inspection and maintenance is still necessary.
5. After the system is installed correctly, the driver does not need to stare at the monitor all the time while driving. Alerts will be issued when abnormal conditions are found in the tires.

2 SYSTEM COMPONENTS

Minimum system setup is shown on fig Fig. 2.1.

Tire pressure sensors (hereinafter - Sensors) measure pressure and temperature in tires and transmit this information via 433 MHz radio channel. The information

can be displayed on the driver's monitor, which can also send the data to the GPS tracker via RS-232 interface.

These GPS trackers support RS232 TPMS data output: Navtelecom, Galileosky.

If onboard display is not required, the TC08 receiver with CAN interface can be used. Description of CAN messages is given in Appendix 1. Any GPS tracker with manual CAN reading support is suitable. The TC08 receiver and the driver's monitor can be used simultaneously.

These GPS trackers support manual CAN bus reading: Teltonika FMB(C,M) 6xx, Galileosky, Navtelecom.

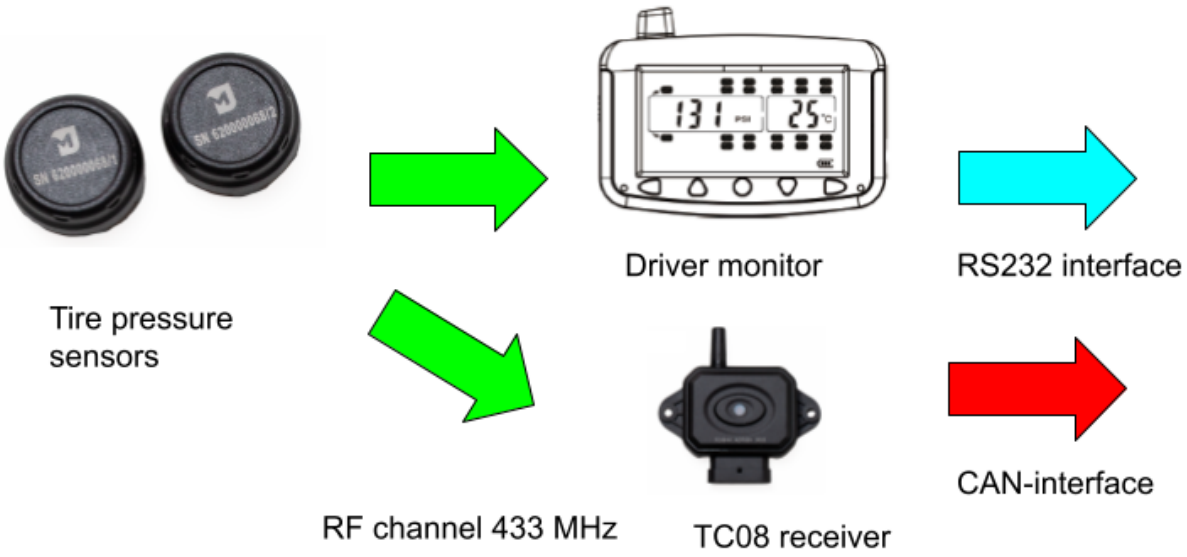


Fig. 2.1. Minimum system setup

If the vehicle is long or has a trailer, a repeater will need to be added to the system to read data from the furthest sensors (Fig. 2.2).

The repeater is installed between the furthest sensors and the driver's monitor/receiver to relay radio signals from the sensors. To do this, the repeater is connected to an external power supply.

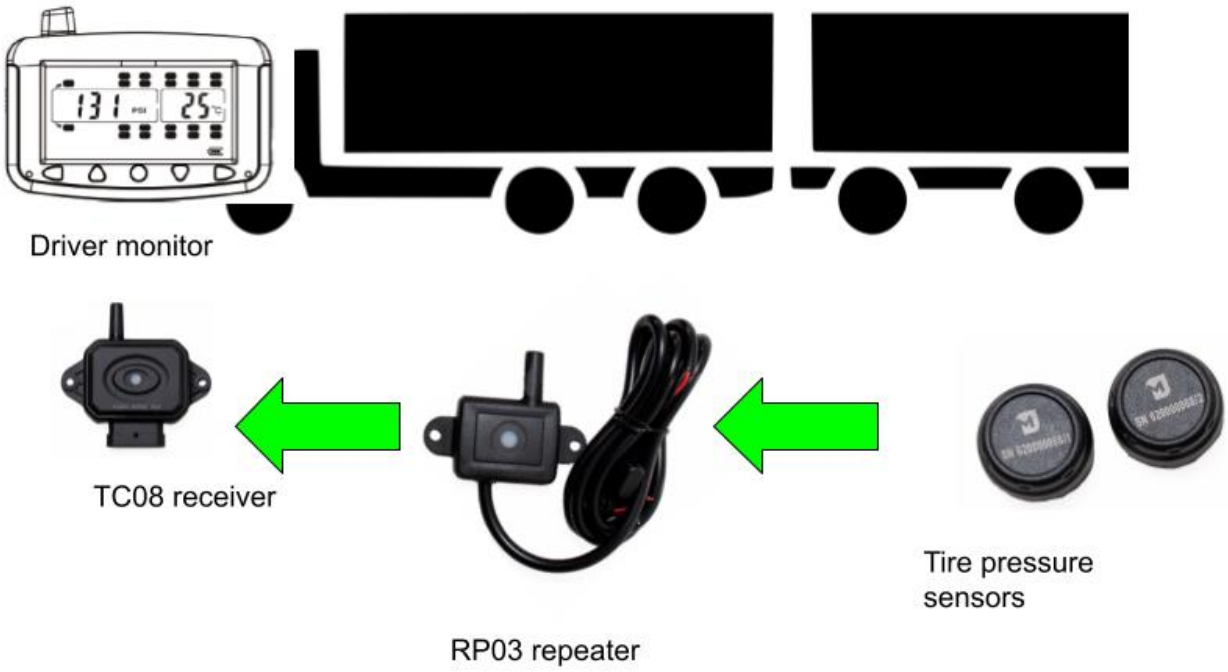


Fig. 2.2. System setup with a repeater

If the System is to be installed on road trains where trailer changes are possible, it should include (Fig. 2.3):

- RP03 repeater for signal amplification;
- wireless trailer tag CL;
- trailer tag reader and signal repeater RP15;
- special version TM508T22U driver's monitor (or receive data from the RP15 signal repeater via RS-232 interface).

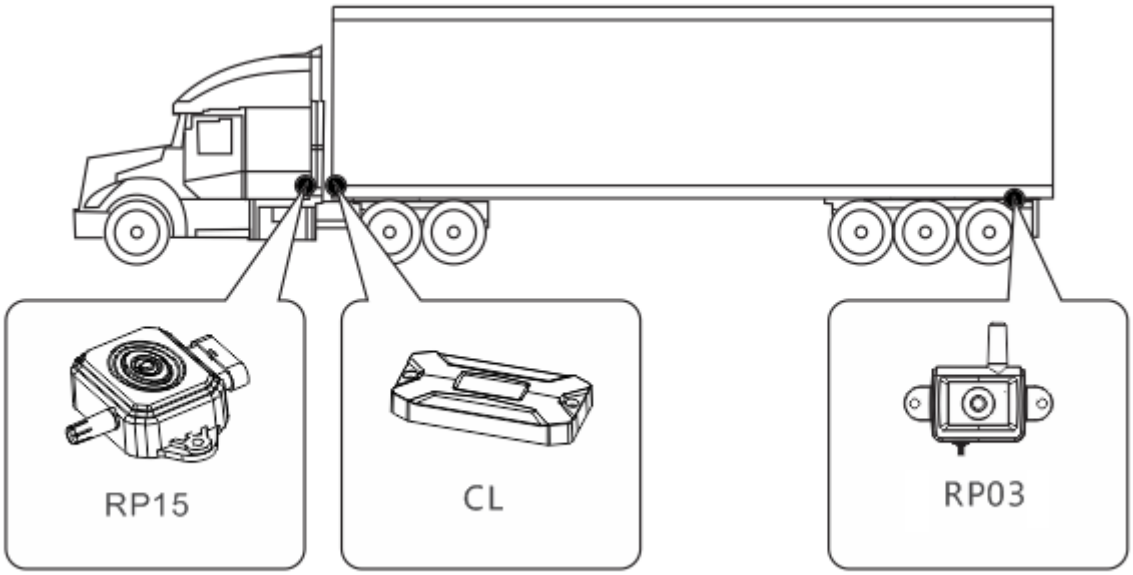


Fig. 2.3. Truck –trailer TPMS extra setup with trailer swap support

Driver monitor is the core of TPMS system and it determines the maximum supported number of sensors. All versions are described in Table 1. Any sensor model can work with any of the monitors, the monitor can simultaneously support different types of sensors, but not exceeding their maximum number.

Table 1. TPMS models.

System	eurosens **T6-X**	eurosens **T22-X**	eurosens **T38-X**
Maximum number of tires	6	22	38
Monitor	TM515T6	TM515T22	TM515T38
Supported sensors	SO, SU, SR, SK, SV, SQ1, SE-3, SH, SE-3L, ST, SC, SP-3, SL, SR, E06		
CAN-receiver	TC02, TC08		
Signal repeater	RP03		
Trailer ID beacon	CL		
Trailer ID reader	RP15		

Appearance of the System elements is shown on fig. 2.4.

Fig. 2.4.

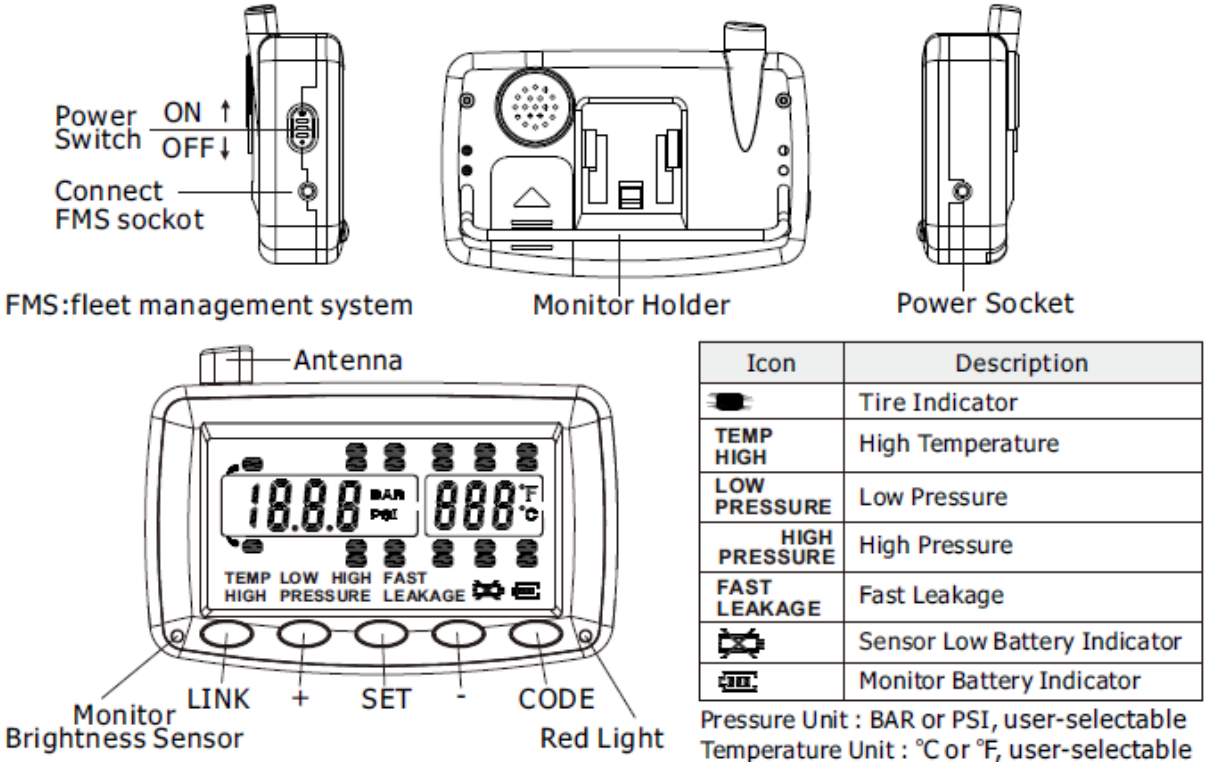
1 - Driver's monitor, 2 - monitor mounting bracket with holder, 3 - monitor power adapter into cigarette lighter, 4 - monitor mounting bracket, 5 - power cable and power cable with RS-232 interface, 6 - CAN receiver TC08, 7 - CAN receiver cable, 8 - RP03 repeater, 9 - external pressure sensors SP-3, 10 - wrench for mounting external pressure sensors

3 DRIVER MONITOR

3.1 MONITOR FEATURES

- Large LCD screen.
- Built-in rechargeable lithium battery.
- Automatic backlight.
- Configurable high/low pressure warnings.
- Configurable high temperature warnings.
- Visible and audible alerts.
- Selectable pressure units.
- Monitors up to 38 tires maximum.

3.2 USER INTERFACE



Icon	Description
	Tire Indicator
TEMP HIGH	High Temperature
LOW PRESSURE	Low Pressure
HIGH PRESSURE	High Pressure
FAST LEAKAGE	Fast Leakage
	Sensor Low Battery Indicator
	Monitor Battery Indicator

Pressure Unit : BAR or PSI, user-selectable
Temperature Unit : ℃ or ℉, user-selectable

Fig. 3.1.

3.3 SENSORS BINDING

Before you use the TPMS for the first time, you should program the sensor codes. There are 3 options available:
INFLATE CODE, INPUT ID CODE and LF (Low frequency) CODE.
Note: It is recommended to label the sensors positions of the tires.

3.3.1 LF (LOW FREQUENCY) CODE (NOT AVAILABLE FOR ALL SENSOR TYPES)

1. In standby mode, press and hold the CODE button for 3 seconds, release it after the beep to enter the LF coding mode. A flashing tire icon is displayed together with the letters FFF FFF for un-programmed tire or sensor's ID code for programmed tire.
2. Press the + or - button to select the desired tire.
3. Press the CODE button, a flashing tire icon and LF are displayed together with letter "Id"
4. Place the sensor close to the monitor and press the CODE button once the letters Id with a flashing LF will be displayed and a red light will be lit on the monitor.
5. On receiving the code, the monitor will issue a long beep and the tire position is stored together with sensor's ID code. The tire icon on the monitor will keep flashing after the code is received successfully.
6. If the monitor does not receive the code within 6 seconds, an error message Err will be displayed. A double-beep will be issued and the red light goes out.Move the sensor closer to the monitor and repeat step 4 and 5.
7. The tire icon and sensor's ID code will keep flashing.
8. Press the + or - button to select the other tire and repeat the above operations for all the tires.
9. The programmed sensors' ID can be saved automatically.
10. After all sensors' ID code are programmed to the monitor, press and hold the CODE button for 3 seconds to exit.

To prevent pairing errors, all sensors except the one to be tethered should be kept at least 1 meter away.

3.3.2 PROGRAMME SENSOR ID INTO MONITOR THROUGH INFLATION

The procedure is similar to 3.3.1, but the trigger for binding is the appearance of pressure in the sensor to be bound, rather than bringing the sensor to the monitor.

1. In standby mode, press and hold the CODE button for 3 seconds, release it after the beep to enter the coding mode. A flashing tire icon is displayed together with the letters FFF FFF for un-programmed tire or sensor's ID code for programed tire.
2. Press the + or - button to select the desired tire.
3. Mount the sensor on to the valve, the sensor will send its ID code to the monitor automatically. A beep will be issued and the tire position is stored together with sensor's ID code.
4. The tire icon and ID code will keep flashing.
5. Press the + or - button to select the other tire and repeat for all the tires.
6. The programmed sensors' ID can be saved automatically.
7. After all sensors' ID code are programmed to the monitor, press the CODE button for 3 seconds to exit.

3.3.3 INPUT SENSOR ID CODE TO THE MONITOR DIRECTLY

1. In standby mode, press and hold the CODE button for 6 seconds until the second beep(do not release after the first beep).
2. Press the + or - button to select the desired tire, and press SET button to confirm.
3. Press the CODE button to scroll through each digit code.

4. Press the + or - button to change the value of each digit code.

5. Then press SET button to save the ID code.

6. After all sensors' ID code are input to the monitor, press the CODE button for 3 seconds to exit.

If a sensor is coded twice into the same monitor, the previous setting will be deleted automatically.

3.4 Deleting a Single Sensor ID

3.4.1 In Sensor Code Mode

1. In standby mode, press and hold the CODE button for 3 seconds, release it after the beep to enter the coding mode. A flashing tire icon and ID code are displayed. Press the + or - button to select the desired tire.

2. Press and hold the SET button for 3 seconds. A double-beep sound will be issued after the sensor code is deleted successfully. If no further action is made after 3 minutes, the system will return to standby mode automatically. To return to standby mode immediately, press and hold the CODE button for 3 seconds until a beep is issued.

3.4.2 In Review ID Code Mode

1. In standby mode, press the CODE button to enter the review ID mode. A flashing tire icon and sensor's ID code are displayed. Press the + or - button to select the desired tire.

2. Press and hold the SET button for 3 seconds. A double-beep sound will be issued after the sensor code is deleted successfully. If no further action is made after 3 minutes, the system will return to standby mode automatically. Press the CODE button will return to standby mode immediately.

3.5 DELETING ALL SENSORS ID

1. In standby mode, press the CODE button to enter the review ID mode. A tire icon and sensor's ID code will flash.

2. Press and hold the LINK button for 3 seconds. During this period, a double-beep will be issued. The message dEL ALL will display on the monitor.

3. Press the SET button to confirm the delete operation or press the CODE button to cancel. If no further action is made after 3 minutes, the operation is automatically cancelled and the system will return to standby mode.

4 INSTALLATION

4.1 MONITOR INSTALLATION

1) Install the monitor inside the vehicle cabin without obstructing the driver's vision of the road.
2) Place the monitor on the dashboard or mount it onto the windscreen using the suction cup provided.
3) Plug the power adapter into the cigarette lighter and connect the power cable to the monitor or plug the power cable and connect to the vehicle power.

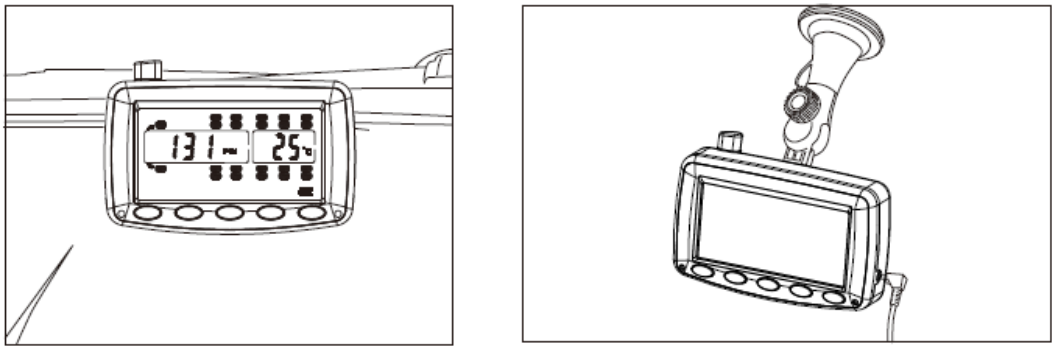


Fig. 4.1.

4) If the bracket is needed, please follow the instructions below. Be sure not to obstruct the driver's vision when the monitor is installed.

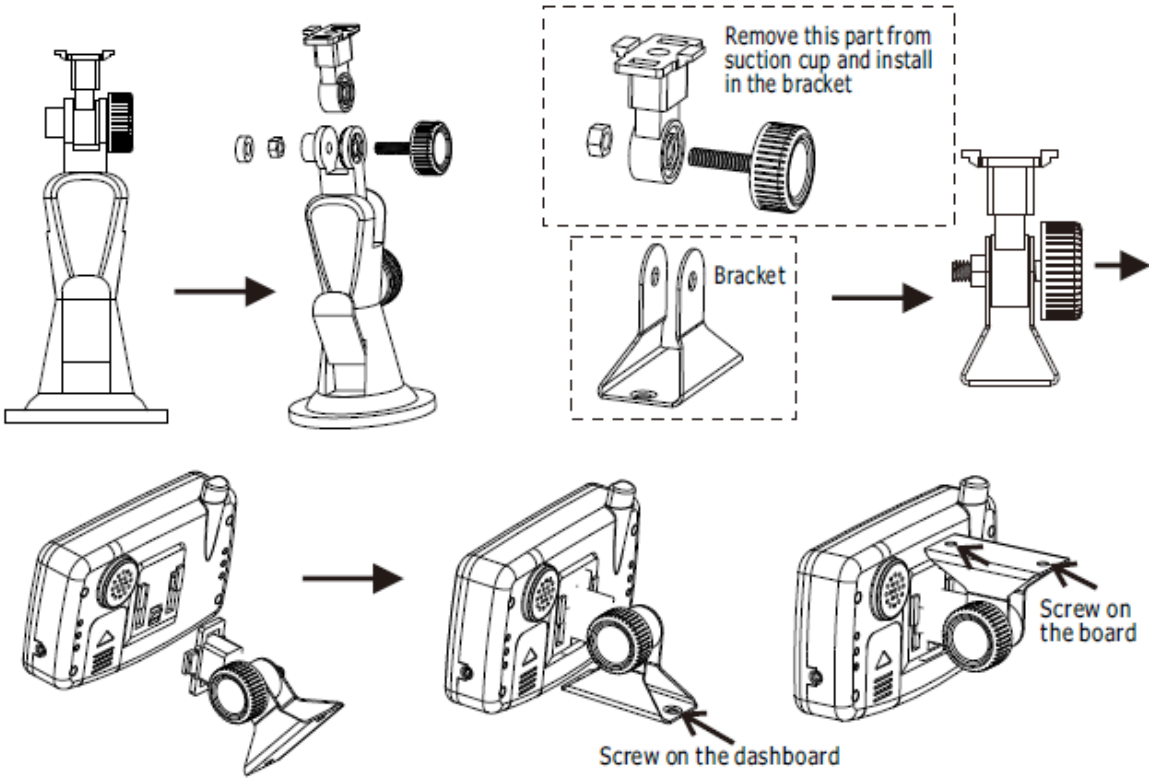

Remove this part from suction cup and install in the bracket
Bracket
Screw on the board
Screw on the dashboard

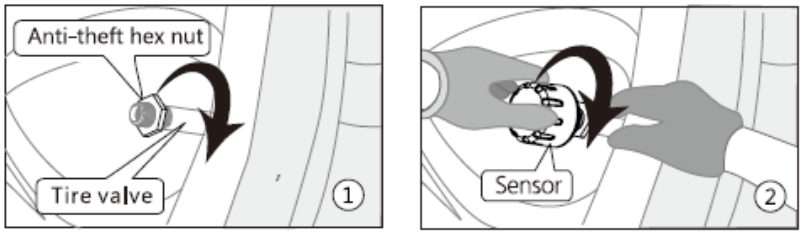
Fig. 4.2.

fig.4.3. Monitor installation

4.2 EXTERNAL SENSOR INSTALLATION

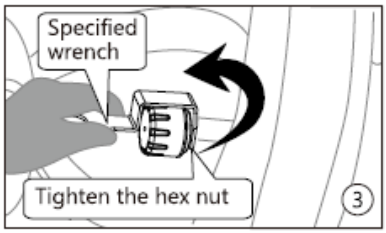
Please ensure to turn on the monitor firstly before install the sensor in order to the monitor can receive the sensor data on time.

1. Screw the anti-theft nut onto the valve stem threads untill it buttoms out.
2. Unscrew the tire valve cap and mount the tire sensor in its place. Tighten the sensor until the air stops leaking and the sensor bottoms-out on the valve stem. Then give it a quarter turn more to seat it. Do not over tighten!
3. Use your fingers to screw the hex nut up to bottom of the sensor. Using the provided wrench, tighten the hex nut against the bottom of the sensor. This will prevent the sensor from being removed. Keep the wrench in a safe place for a future use.



① Install the anti-theft hex nut onto the tire valve.

② Install the sensor onto the tire valve clockwise.



③ Tighten the anti-theft hex nut counterclockwise until the nut is tightened against the sensor.

fig.4.4. Monitor installation

4.3 INSTALLATION OF INTERNAL VALVE SENSOR

The internal sensor replaces the original valve on the tyre. If not already assembled, assemble the sensor to the provided valve assembly and adjust the valve angle. Make sure the washer is in position and tighten the securing nut. Remove the dust cap and securing nut from the sensor valve assembly.

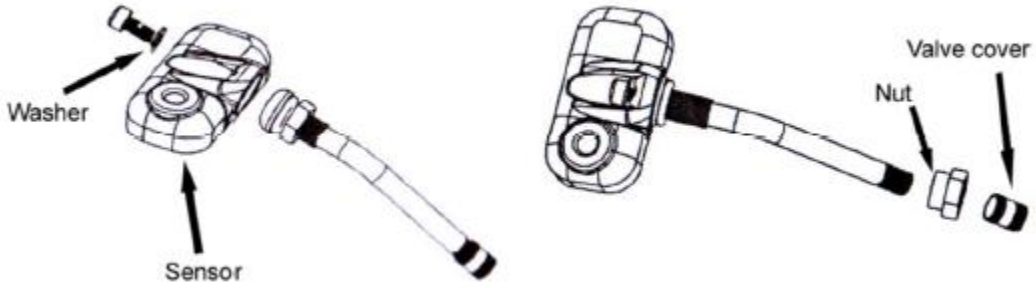


fig.4.5. Valve sensor assembly

Deflate the tyre and remove the tyre and original valve. Fit the sensor and valve to the rim and tighten the securing nut. Re-fit the tyre, re-inflate it and refit the dust cap (fig. 4.6).

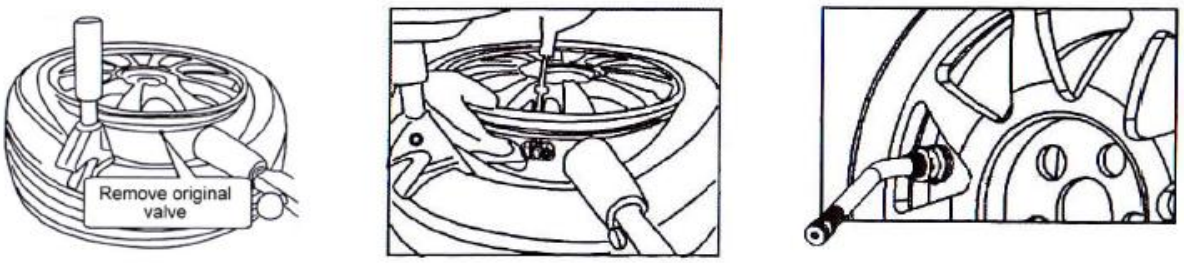


fig.4.6. Valve sensor installation

Once fitted, do not lever the sensor if the tyre has to be removed (fig. 5.7).

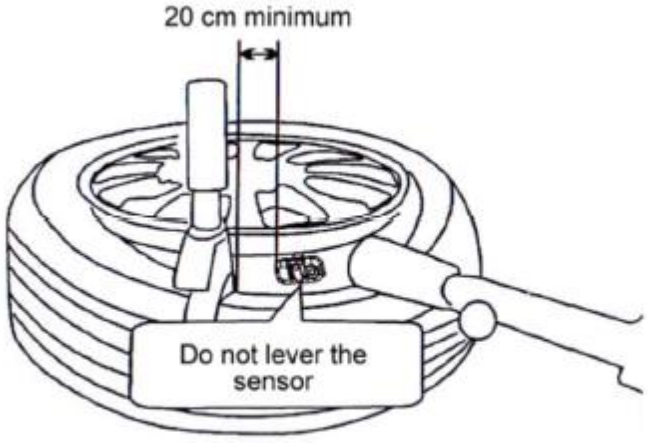


Fig. 4.7

4.4 INSTALLATION OF INTERNAL BANDAGE SENSOR

1. Unload the tire from the vehicle and deflate the tire, use tire changers to demount the tire.

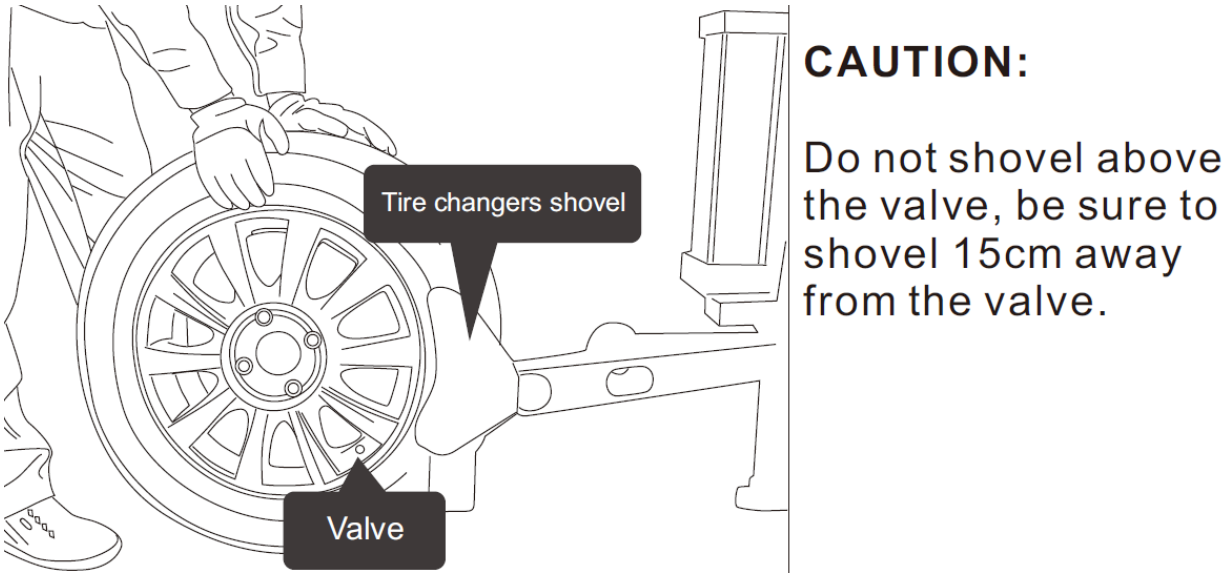


Fig. 4.8

2. Using the screw to fix and tighten the band and sensor.

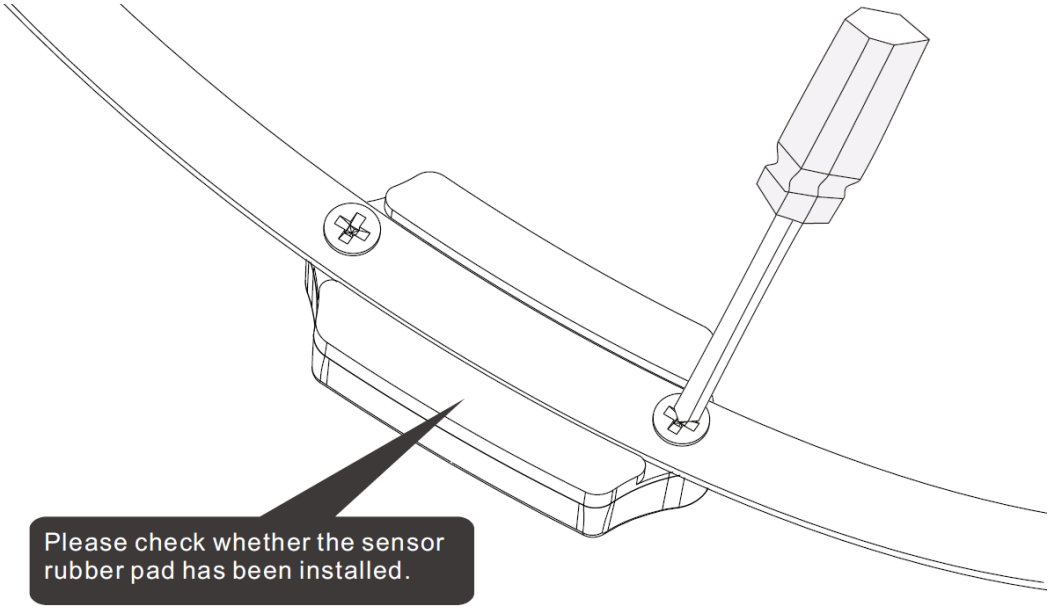


Fig. 4.9

Strap the tighten sensor and band to the center position of the wheel hub.

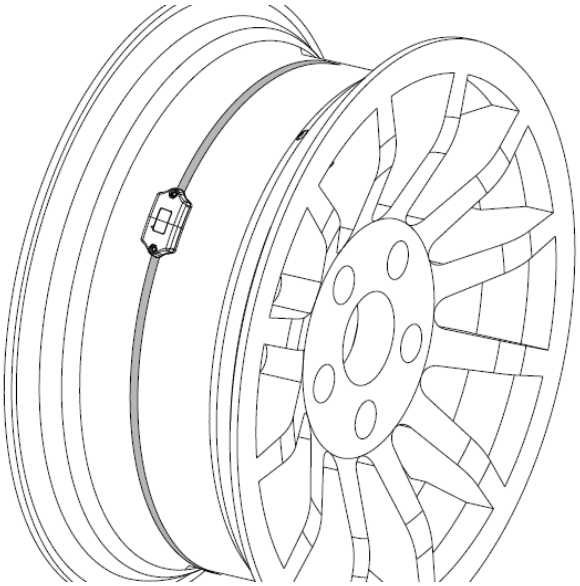


Fig. 4.10

Using screwdriver to fix the band to the wheel hub, ensure that the band will be not loosened, install back the tire and inflate to standard pressure, the installation is finished.

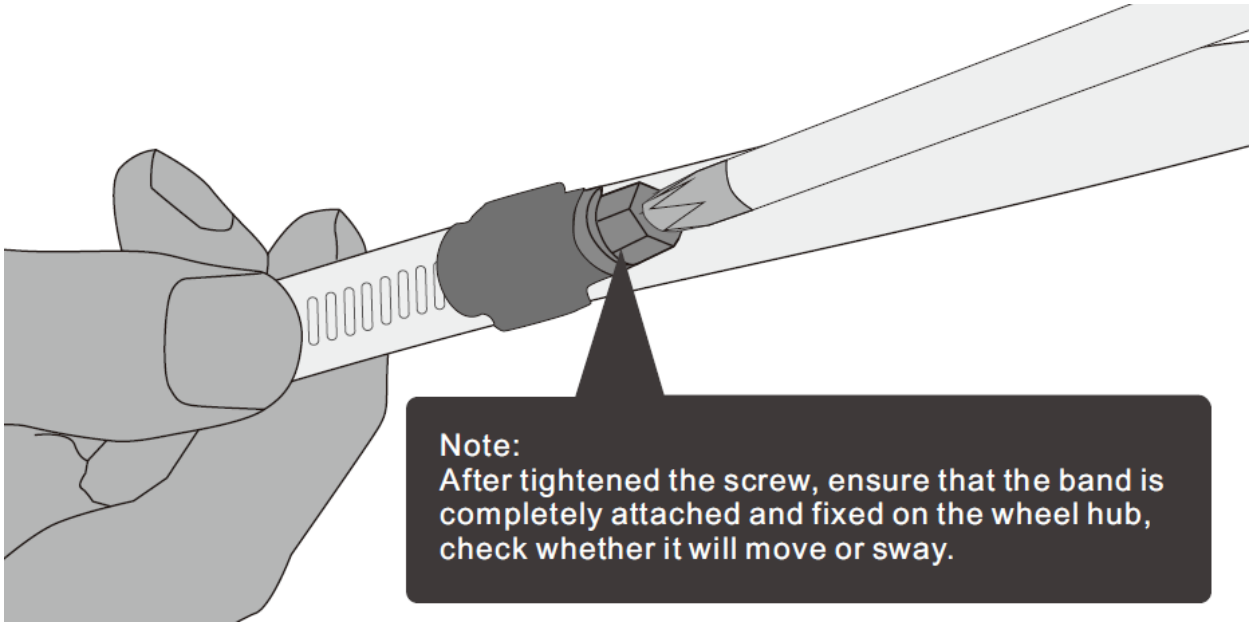


Fig. 4.11

4.5 INSTALLATION OF INTERNAL EMBEDDED SENSOR

1. Unload the tire from the vehicle and deflate the tire, use tire changers to demount the tire.

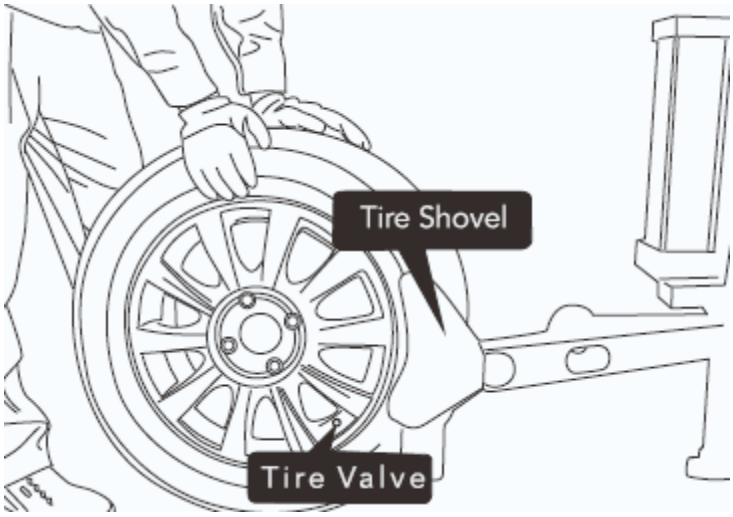


Fig. 4.12

2. Open the rubber tire by machine (fig. 4.13).

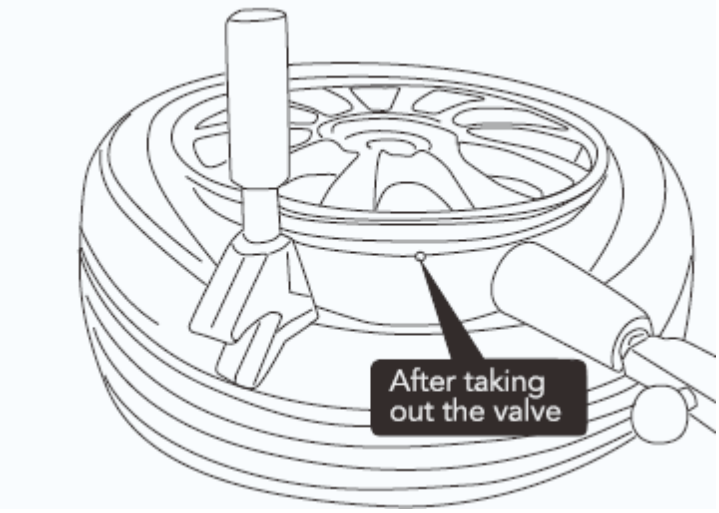


Fig. 4.13

3. A side is the tire inner side wall, B side is the sensor rubber cap flat side. To make sure the sensor will be glued onto the tire wall tightly, please polish both sides with polisher before installation.

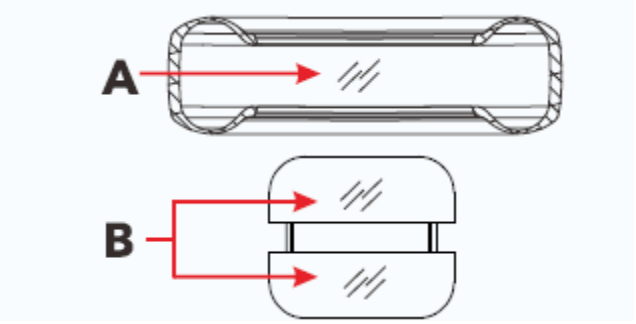


Fig. 4.14

4. Install sensor inside the rubber cap (fig. 4.15).

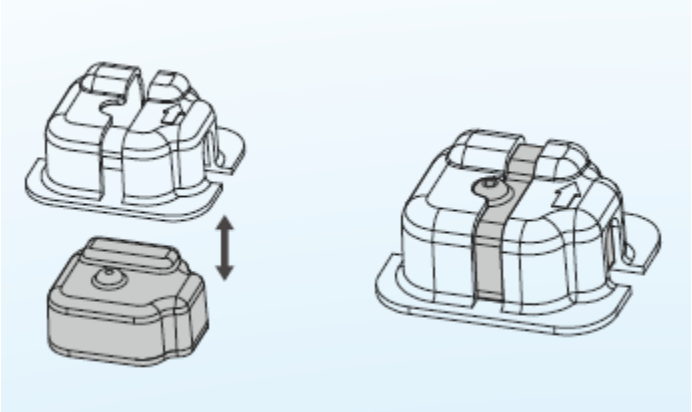


Fig. 4.15

5. Use the special glue to apply on sensor A side and put it onto the exact position where the tire wall has been fully polished. The sensor could be not stick to the tire wall for the second time during installation (fig. 4.16).

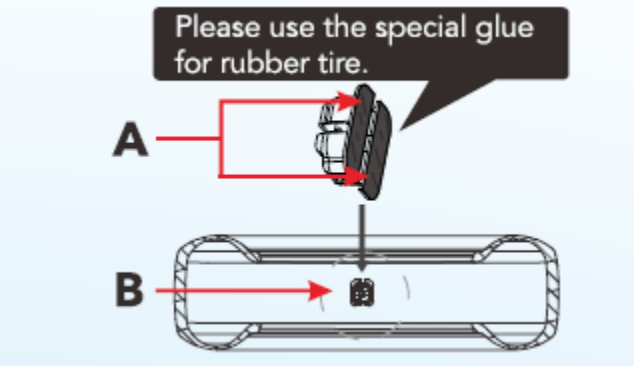


Fig. 4.16

6. Put back the rubber tire on the tire rim, make sure the sensor is next to the tire valve (fig. 4.17).

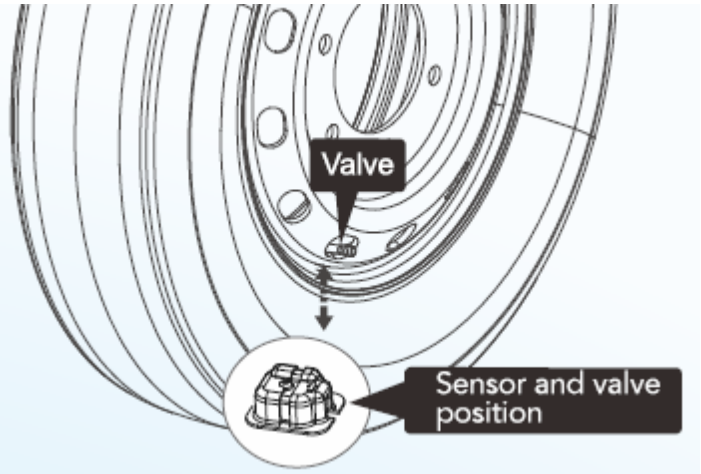


Fig. 4.17

Arrow on the sensor should be in same direction with tire movement direction (fig. 4.18).

No movement after sensor has been glued to the wall

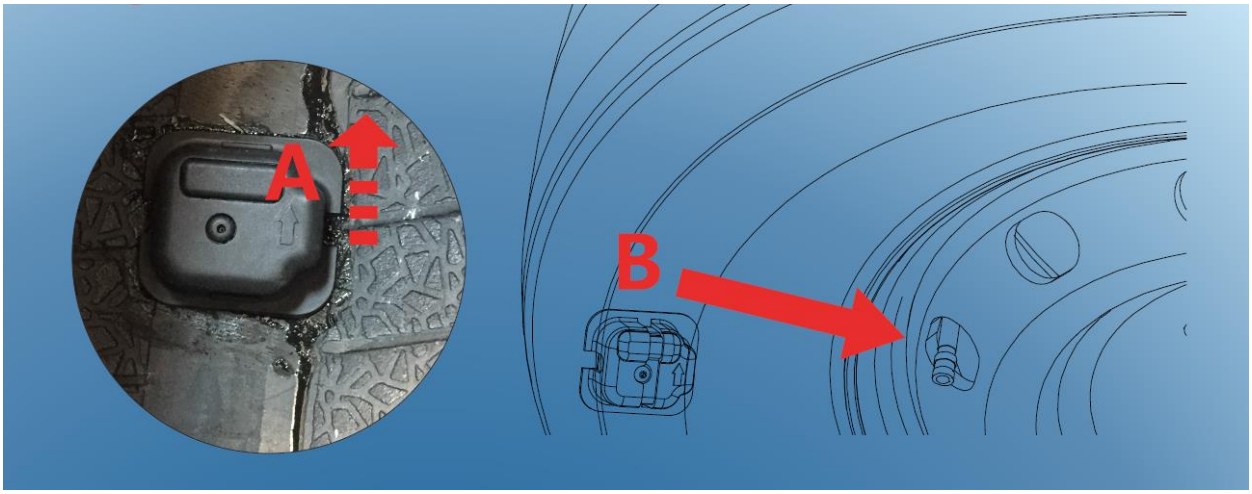
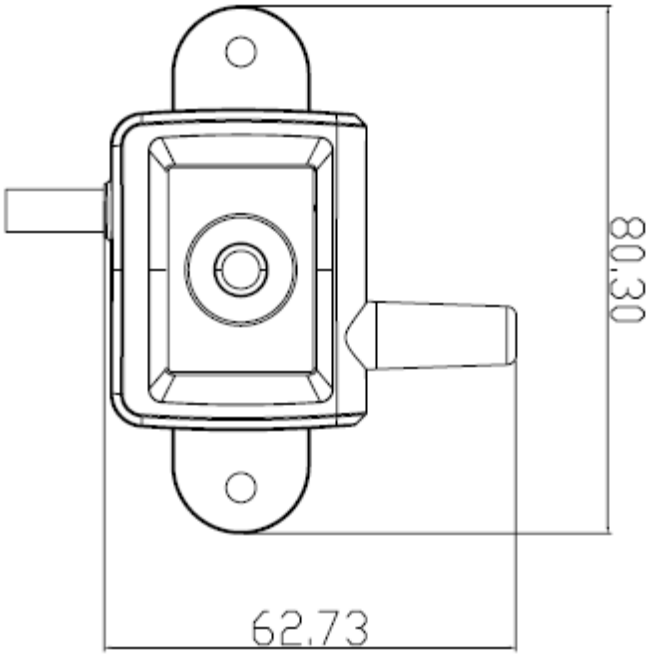


Fig. 4.18

4.6 REPEATER INSTALLATION (OPTION)

The repeater should be mounted on the tractor, acting as a signal amplifier. For best performance, mount the repeater near the front of the trailer. The repeater does not require adjustment, it amplifies all signals from tire pressure sensors that it can read.

Operational Temperature	-20℃ ~ 80℃
Storage Temperature	-30℃ ~ 85℃
Working Voltage	12 ~ 24V
Transmission Power	<18dBm
Transmission Frequency	433.92MHz
Size	91(L) x 38(W) x 15(H) mm
Weight	42g



5 AUTOMATIC TRAILER IDENTIFICATION

In a truck fleet, trailers are often interchangeable with many tractors.

The combination of RP15 devices and CL wireless tag allows data from the new trailer to be transmitted to the truck monitor without having to re-enter all trailer sensor codes. Monitor should be TM508T22U version.

5.1 PAIR BETWEEN TM508T22U DISPLAY AND CL ID STORE DEVICE

Place the bottom of the TM508T22U display close to the CL ID store device, press the **CODE** button of the display with a beep to enter into review ID code mode, short press **SET** button with a beep, display shows CL ID, trailer's sensor ID input to CL successfully. Short press **CODE** once with a beep to release, exit to standby mode.

5.2 PAIR BETWEEN TM508T22U DISPLAY AND RP15 LF REPEATER DEVICE

Press the RP15 LF repeater device button for 3 seconds to enter into pairing mode, the light flashes quickly, short press display CODE button with a beep to enter into review ID code mode, short press LINK button a beep, display shows it's own ID, RP15 LED is off, paired successfully. Short press CODE once with a beep to release, exit to standby mode.

Note: For the first installation, the pairing step is as below:

1. Pair all the sensor's to TM508T22U display;
2. Pair the TM508T22U display to CL ID store device;
3. Pair the TM508T22U display to RP15 LF repeater device;

5.3 INSTALLATION OF MODULES

The repeater shall be connected to 24V normal power, and the RP15 shall be installed in the middle position outside and behind the front head, and shall be

installed horizontally and in the middle as far as possible. RP03-2 installed in the middle position of the rear axle chassis and the antenna position should be exposed in the air without obstructing.

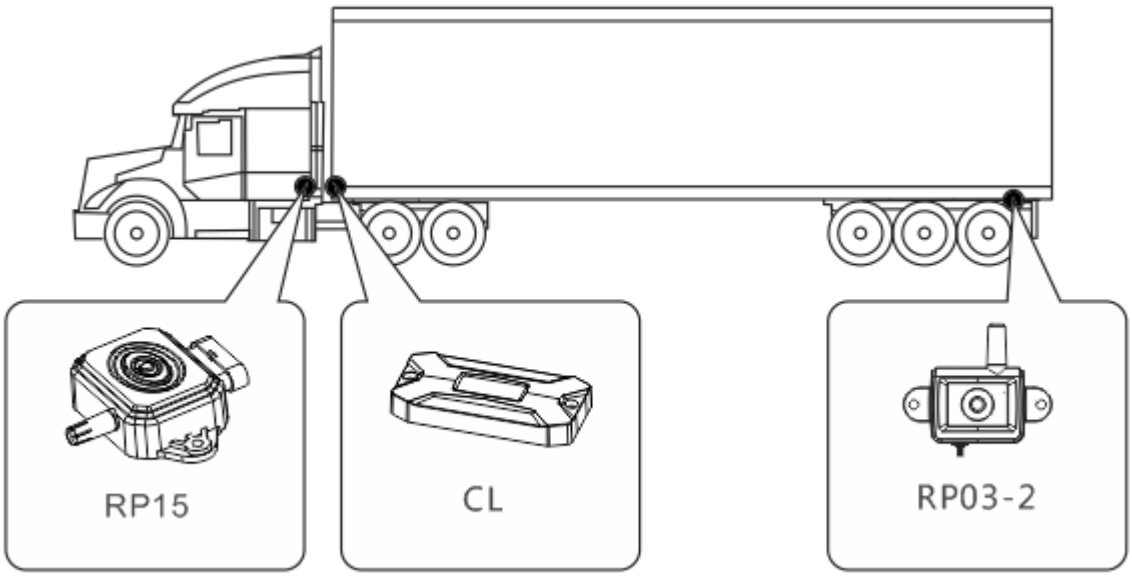
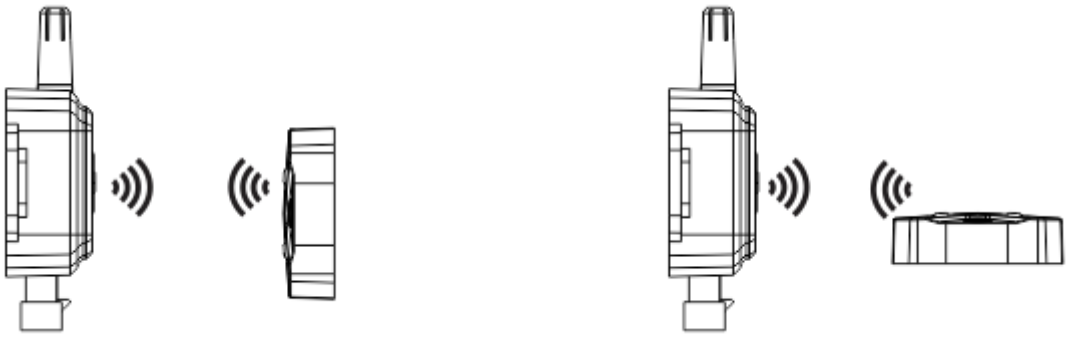


Fig. 5.1

Vertical installation (RP15 and CL):



Horizontal installation(RP15 and CL):

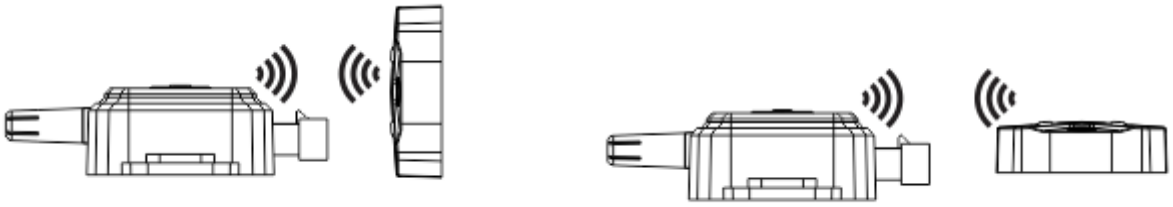


Fig. 5.2

The CL is installed at the front end of the trailer, less than 2m away from the RP15, with no occlusion and aligned in the center. (If RP15 and CL are not aligned, the installation can be shifted by 40CM left and right).

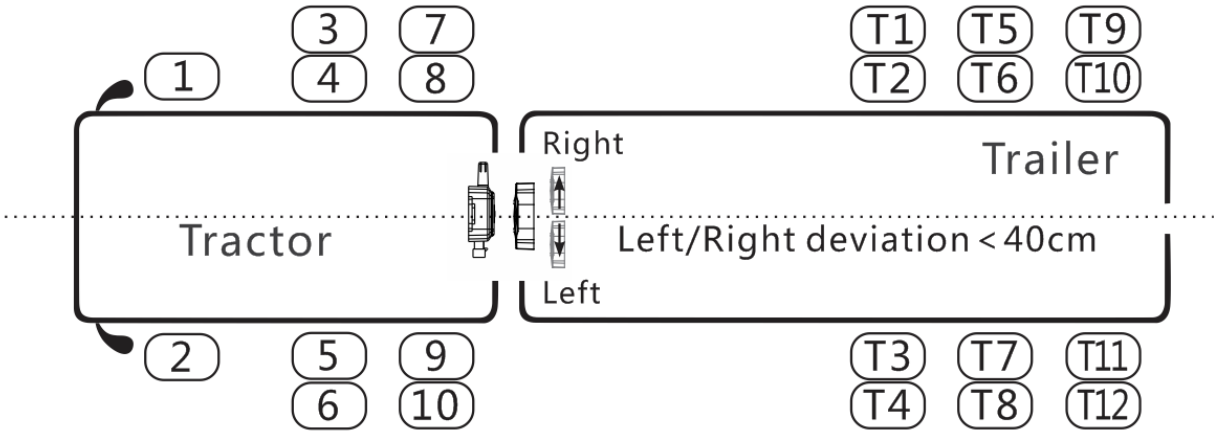


Fig. 5.3

If RP15 and CL are not aligned, the installation can also move front/rear/up/down within 2 meters

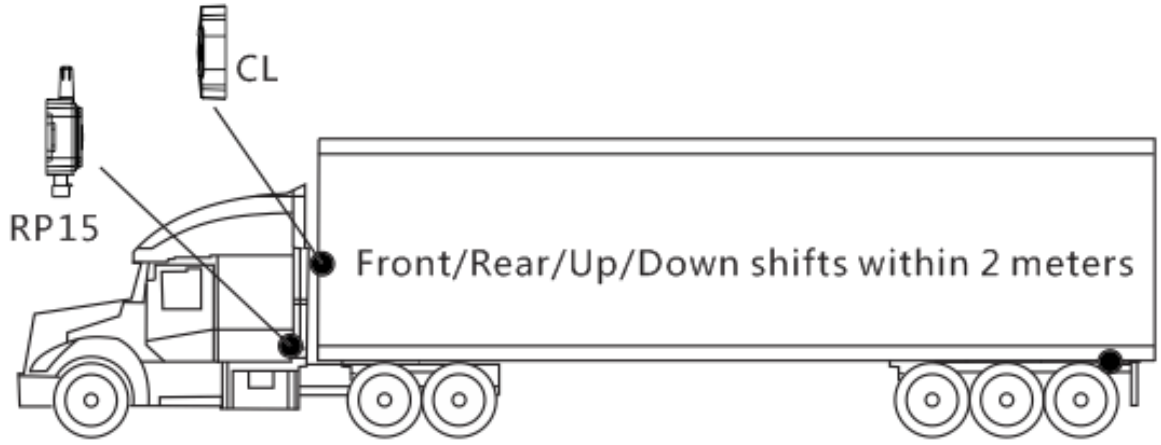


Fig. 5.4

6 TPMS SETTINGS

1. In standby mode, press and hold the SET button for 3 seconds, release it after the beep.
2. Press the SET button repeatedly to scroll thru the different parameters
3. Press the + or - button to adjust the desired settings.
4. Press and hold the SET button for 3 seconds then release it after the beep to save the settings.
5. If no action is taken for 1 minute, the system will return to the standby mode without making any changes.

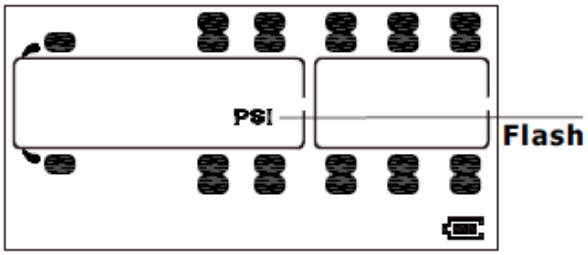
6.1 DEFAULT SETTINGS

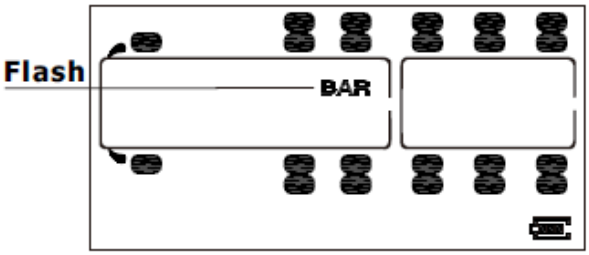
Pressure Unit:	PSI
High Pressure:	175PSI (12.1 BAR)
Low Pressure:	100PSI (6.9 BAR)
Temperature Unit:	℃
High Temperature:	70℃ (158℉)

To restore the factory default settings, turn on the monitor and press the SET button at the same time. The factory default settings will be restored without changing the ID code information.

6.2 SETTINGS SEQUENCE

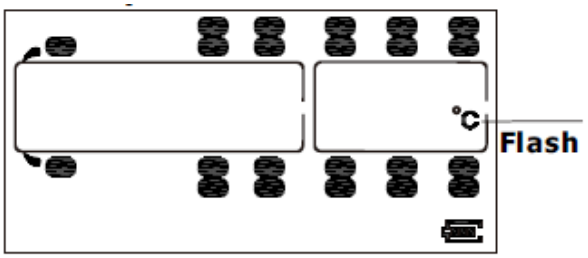
1.Pressure units

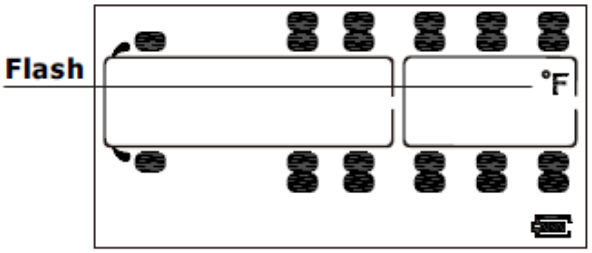




While the PSI or BAR icon is flashing, Press the + or - button to select .

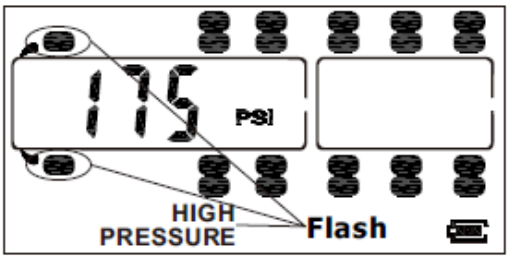
2.Temperature units





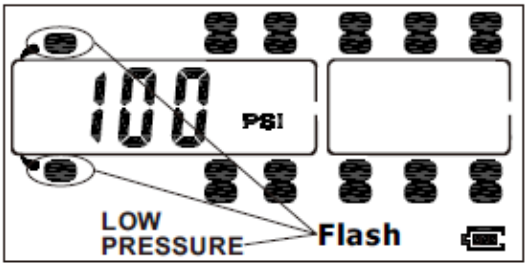
While the °C or °F icon is flashing, Press the + or - button to select.

3.High Pressure Alert in 1st Axle



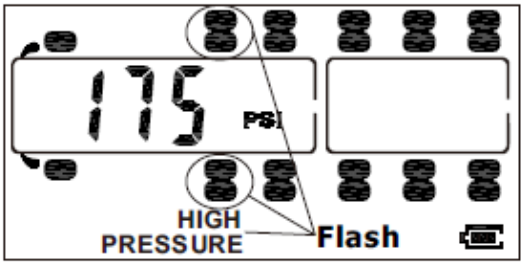
While both tires in the 1st axle and the **HIGH PRESSURE** icons are flashing, press the **+** or **-** button to adjust.

4.Low Pressure Alert in 1st Axle



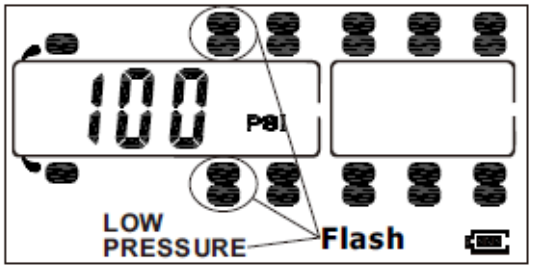
While both tires in the 1st axle and the **LOW PRESSURE** icons are flashing, press the **+** or **-** button to adjust.

5.High Pressure Alert in 2nd Axle



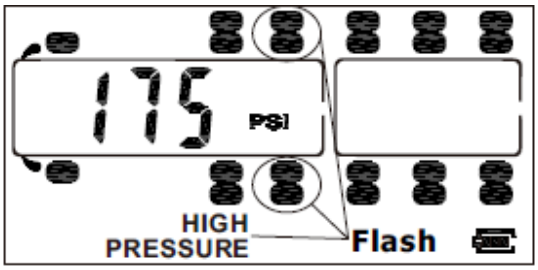
While 4 tires in the 2nd axle and the **HIGH PRESSURE** icons are flashing, press the **+** or **-** button to adjust.

6.Low Pressure Alert in 2nd Axle



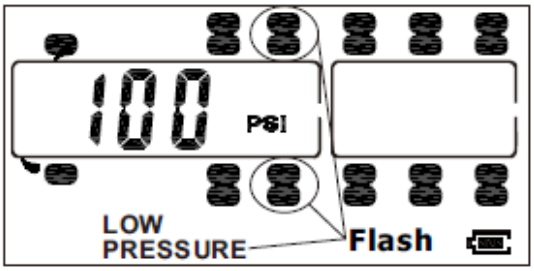
While 4 tires in the 2nd axle and the **LOW PRESSURE** icons are flashing, press the **+** or **-** button to adjust.

7.High Pressure Alert in 3rd Axle



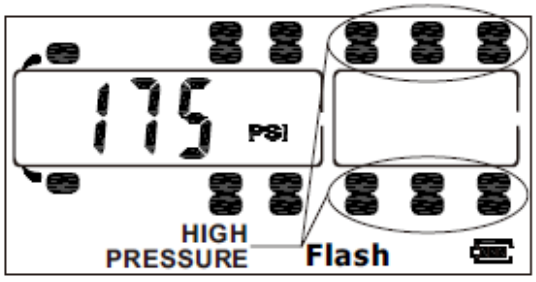
While 4 tires in the 3rd axle and the **HIGH PRESSURE** icons are flashing, press the **+** or **-** button to adjust.

8.Low Pressure Alert in 3rd Axle



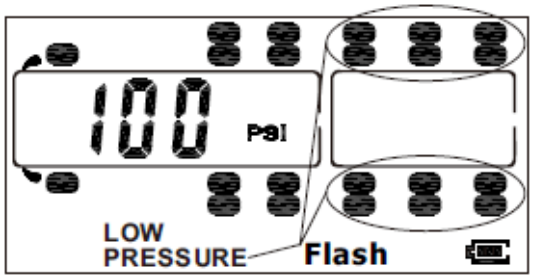
While 4 tires in the 3rd axle and the **LOW PRESSURE** icons are flashing, press the **+** or **-** button to adjust.

9.High Pressure Alert in trailer



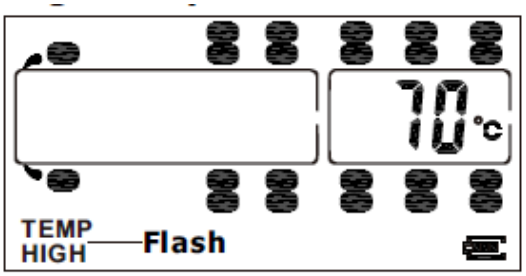
While all 12 tires in the trailer and the **HIGH PRESSURE** icons are flashing, press the **+** or **-** button to adjust.

10.Low Pressure Alert in trailer



While all 12 tires in the trailer and the **LOW PRESSURE** icons are flashing, press the **+** or **-** button to adjust.

11.High temperature Alert



While the **TEMP HIGH** icon is flashing, press the **+** or **-** button to adjust.

The high and low pressure signals for axle 1, axle 2, axle 3 and trailer are adjusted separately.

If the high pressure parameter is the same as the low pressure parameter during adjustment, the high pressure value cannot be adjusted lower than the low pressure parameter. It is necessary to adjust the low pressure parameter first and then the high pressure parameter.

7 ALERTS

The sensors send pressure and temperature readings to the monitor every 5 minutes. If any reading is out of the pre-defined values, you will notice 3 things:
1. An audible alarm;
2. The red light on the monitor will flash;
3. The corresponding icon on the monitor will flash.

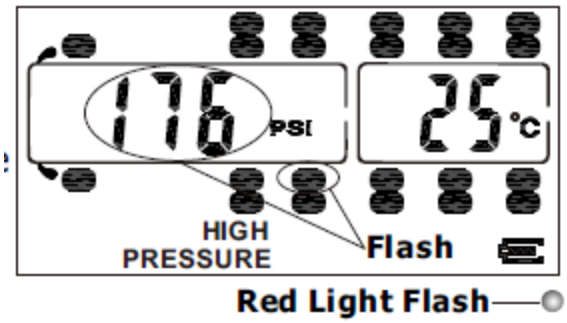
Press any button to switch the alarm off. However, the red light will not be turned off until the correct pressure and temperature settings are restored to within range.

The factory preset values are:

High Pressure:	175PSI (12.1 BAR)
Low Pressure:	100PSI (6.9 BAR)
High Temperature:	70°C (158°F)

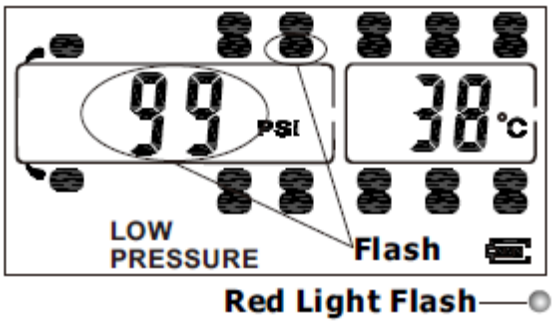
Monitor alerts:

7.1 High-pressure alert



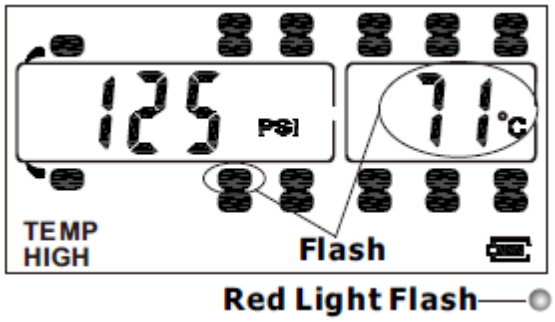
When the sensor detects high pressure in a tire, it will send an alert to the monitor immediately. The HIGH PRESSURE will show on LCD and the corresponding tire icon will flash. The audible alarm will be on together with the flashing red light. Press any button to turn off the alarm. However the flashing red light and icons will continue until the problem is corrected.

7.2 Low-pressure alert



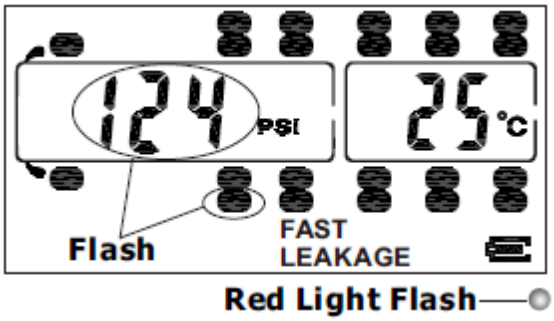
When the sensor detects low pressure in a tire, it will send an alert to the monitor immediately. The LOW PRESSURE will show on LCD and the corresponding tire icon will flash. The audible alarm will be on together with the flashing red light. Press any button to turn off the alarm. However the flashing red light and icons will continue until the problem is corrected.

7.3 High-temperature alert



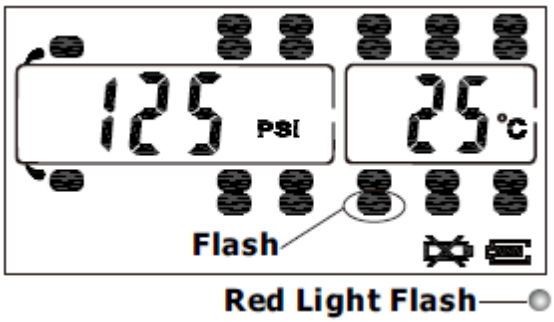
When the sensor detects high temperature in a tire, it will send an alert to the monitor immediately. The TEMP HIGH will show on LCD and the corresponding tire icon will flash. The audible alarm will be on together with the flashing red light. Press any button to turn off the alarm. However the flashing red light and icons will continue until the problem is corrected.

7.4 Fast leakage alert



When the sensor detects abnormal loss of tire pressure, it will send an alert to the monitor immediately. The FAST LEAKAGE will show on LCD and the corresponding tire icon will flash. The audible alarm will be on together with the flashing red light. Press any button to turn off the alarm. However the flashing red light and icons will continue until the problem is corrected.

7.5 Fast leakage alert



When the sensor detects low battery level, it will send an alert to the monitor immediately. The low battery icon will show on LCD and the corresponding tire icon will flash. The audible alarm will be on together with the flashing red light. Press any button to turn off the alarm. However the flashing red light and icons will continue until the problem is corrected.

High/Low Pressure and Fast Leakage Alerts

When the sensor detects high/low pressure abnormalities and fast leakage, it will send an alert to the transceiver immediately. The audible alarm will be on together with the flashing red light. Press any button on the transceiver to turn off the alarm. However the flashing red light will continue until the problem is corrected.

High Temperature Alert

The transceiver has a fixed temperature alert at 90oC. The sensors send the temperature readings to the transceiver every 5 minutes. If the temperature is above 90°C, an audible alarm will be on together with the flashing red light. Press any button on the transceiver to turn off the alarm. However, the flashing red light will continue until the temperature is dropped below 90°C.

8 OTHER FUNCTIONS

8.1 NORMAL SCROLLING DISPLAY

During normal operation, the monitor scrolls through and displays the tires one by one for 5 seconds. An audible alarm will be issued if one of the sensor data is not received by the monitor for more than 60 minutes. You can manually scroll through and select the tire by pressing the + or - button. A manually selected tire will be displayed for 10 seconds.

8.2 BACKLIGHT

The monitor has a built in light and motion sensor. The backlight only turns on when it detects the vehicle is in motion and when it is dark enough. The monitor will be in sleep mode to conserve battery life if the motion sensor detects the vehicle has stopped for a while. It will turn on again when it detects the vehicle is moving again. Press any button on the monitor to turn on the backlight manually, to turn it off, press and hold the + button for 3 seconds.

8.3 CONNECTING/DISCONNECTING THE TRAILER

When the trailer is not connecting to the tractor, press the LINK and - buttons at the same time, the trailer and its tire icons will be removed temporarily. Press the LINK and + buttons at the same time, the trailer and its tire icons will re-appear.

8.4 CHARGING THE MONITOR

The lithium-ion battery inside the monitor, when fully charged, is capable of running for 60 hours. When the battery icon  appears, a recharge is required.

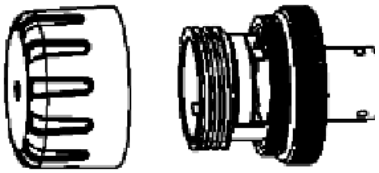
8.5 VIEVING ID-CODE

In standby mode, press the CODE button to enter the view mode, the monitor will display sensor's ID code if the tire position is programmed with a sensor, while it will display FFF FFF if the tire position is un-programmed. Press the + and - buttons to select the tires you want to review. It returns to standby mode after 3 minutes or by pressing the CODE button.

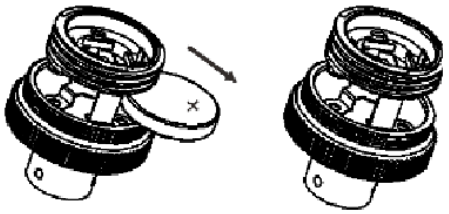
9 REPLACING THE SENSOR BATTERY

When the low battery icon is displayed on the monitor and the corresponding bus icon flashes, the sensor battery needs to be replaced. It is recommended to use a CR1632 battery that operates from -40 °C to + 80 °C. You can buy replacement batteries from your local supplier.

1. Unscrew the sensor housing.

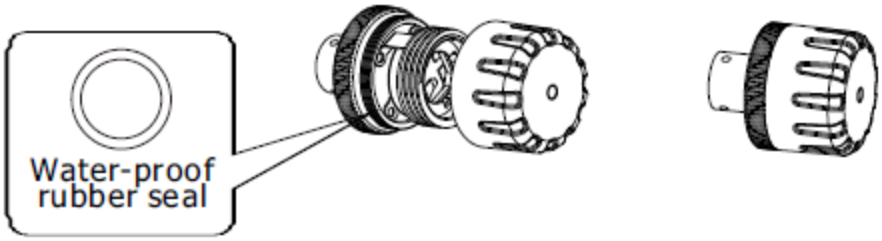


2. Extract the battery



3. Replace the battery (CR1632). Make sure the positive contact (+) is pointing upwards.

4. Make sure the waterproof rubber seal is in the correct position. Screw the sensor cover back on.


Water-proof
rubber seal

10 SPECIFICATIONS

10.1 MONITOR

Operational Temperature	-20°C ~ 80°C
Storage Temperature	-30°C ~ 85°C
Charger Input Voltage	DC 8 ~ 30V
Transmission Frequency	433.92MHz
Size	116(L) x 68(W) x 25(H) mm
Weight	138g

10.2 EXTERNAL SENSORS

Operational Temperature	-40°C ~ 80°C
Storage Temperature	-40°C ~ 85°C
Pressure Range	0~13 bar, 0~188 psi
Pressure Accuracy	±1.5 psi(± 0.1 bar)
Temperature Accuracy	± 3°C
Transmission Power	<10dBm
Transmission Frequency	433.92MHz
Battery Life	2 years (CR1632 -40°C~80°C)
Size	24mm(diameter) 29mm(height)
Weight	15.4g

10.3 REPEATER, CAN-INTERFACE

Operation temperature	-40°C ~ 85°C
Operation voltage	8~30B
Transmission power (repeater)	<18 dBm
Transmission frequency	433.92 MHz
Size	91 x 38 x 15 mm
weight	42 g

11 CAUTIONS

1. The monitor should be installed inside the vehicle where it does not affect normal driving.
2. The monitor should be well fixed to avoid falling off during driving.
3. After the sensor installation, it is highly recommended to check for any air leakage.
4. This TPMS can effective monitors tire pressure and temperatures but cannot prevent traffic accidents regular tire inspection and maintenance is still necessary.
5. After the system is installed correctly, the driver does not need to stare at the monitor all the time while driving. Alerts will be issued when abnormal conditions are found in the tires.

12 SUPPORT

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APPENDIX 1. CAN BUS TPMS PROTOCOL

CAN bus baud rate: 250 Kbit/s
CAN bus ID: 0x18FEF433 (PGN 65268)
Transmission interval: each 10 seconds
PDU: 254
PDU Spec: 244

№	PGN	SPN	Name	First byte (starts from 1)	Bit position in SPN	SPN length, bit	Resolution	Offset	Units
1.	65268 (FEF4)	929	Axle number (starting from front)	1	5-8	4	1	0	-
2.	65268 (FEF4)	929	Wheel number (from left to right)	1	1-4	1	1	0	-
3.	65268 (FEF4)	241	Pressure	2	1-8	8	4 KPa	0	Kpa
4.	65268 (FEF4)	242	Temperature	3	1-16	16	0.03125	-273 ^{0}C	^{0}C
5.	65268 (FEF4)	2587	Status	8	6-8	3	1	-	-

Status meaning:
1 – high pressure
2 – normal pressure
3 – Low pressure
6 – No connection with sensor

MECHATRONICS

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