Smart Heavy-Duty Vehicle TPMS Solution

Quick Installation Guide

EverFocus

Release Date: May, 2017

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1. Introduction

The Smart Heavy-Duty Vehicle TPMS Solution is designed to report you the information of tires on your vehicle. The complete solution includes a Smart Main Unit, TPMS Sensors, a Repeater and a Trailer Receiver. The Smart Main Unit can automatically search and match the TPMS Sensors, save your time from repeated and complicated adjustment. The TPMS Sensors detect the tire pressure and tire temperature in real time, and transmit these data to the Smart Main Unit through wireless technology. When under-inflation, over-inflation or abnormal temperature of the tires is detected, the Smart Main Unit will alert you immediately with LED and audible alarm.

The Smart Heavy-Duty Vehicle TPMS Solution can also work together with the Mobile Surveillance Solution to further increase the driving security. With a dedicated Receiver Box, you can also review the information of tires using EverFocus' Mobile DVR, and remotely track, monitor and manage any type of fleet vehicles using EverFocus' Xfleet fleet management server system.

Features

- Smart Main Unit can automatically search and match TPMS Sensors.
- Real-time monitoring of tire pressure, tire temperature, battery voltage of TPMS Sensors and wireless signal strength.
- Selectable tire pressure and tire temperature units.
- Smart Main Unit with 7 colors backlit provides visible and audible notifications.
- UHF wireless communication allows you to assign TPMS Sensors' ID using mobile app.
- TPMS Sensors are easy to install, and can be inflated directly without being uninstalled from the tires.

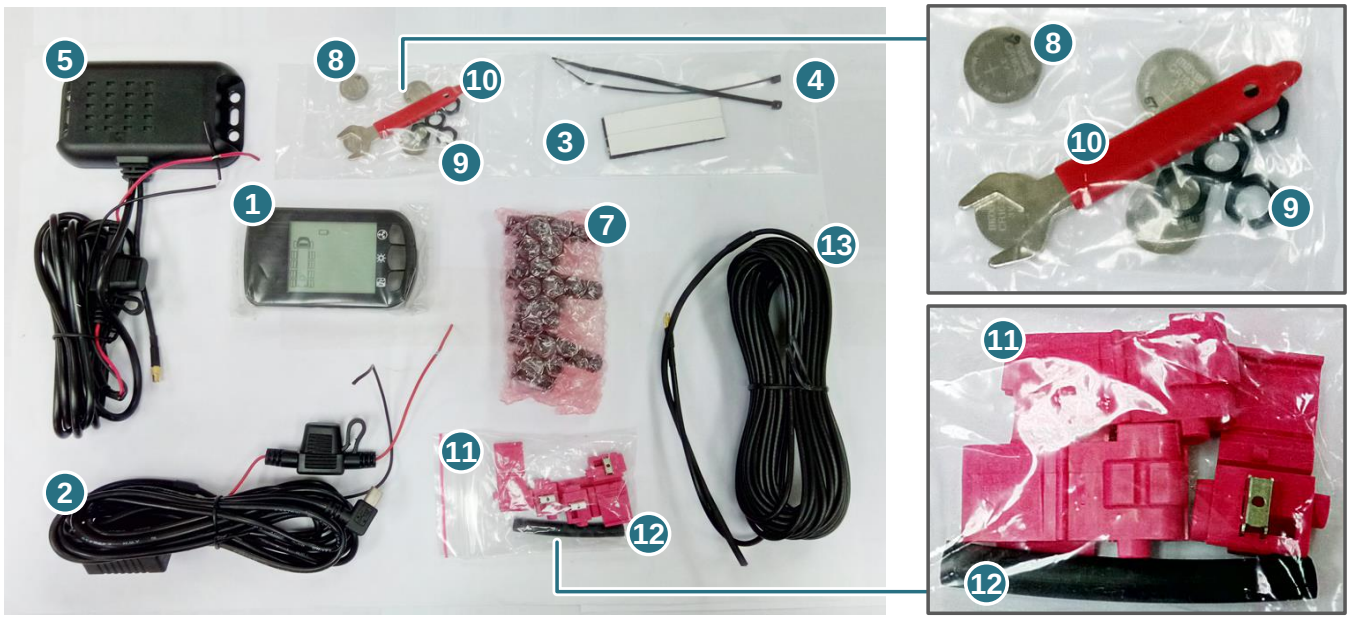
Advantages

- Intelligent design, no setting needed even the trailer is replaced.
- Alarm high / low limit can be configured quickly.
- Thru Flow TPMS External Sensors are easy to install.
- Simple setting steps and matching process.

Packing List

No.	Item Name	18-Wheel Solution	6-Wheel Solution
1	EV-LM06 (Main Unit)	x 1	
2	ACC to mini USB cable	x 1	x 1
3	Hook and loop tape	x 2	x 2
4	Cable tie	x 2	x 2
5	EV-TR01 (Trailer Receiver)	x 1	-
6	EV-RP01 (Repeater)	-	x 1
7	EV-S01 (Sensor)	x 18	x 6
8	EV-S01 Battery	x 18	x 6
9	EV-S01 Lock Nut	x 18	x 6
10	EV-S01 Wrench	x 4	x 1
11	Cable holder	x 4	x 4
12	Adhesive lined polyolefin tubing	x 1	x 1
13	10m antenna extension cable	x 1	x 1
14	Quick Installation Guide	x 1	x 1

18-Wheel Solution



6-Wheel Solution

Note:

1. Equipment configurations and supplied accessories vary by country. Please consult your local EverFocus office or agents for more information. Please also keep the shipping carton for possible future use.
2. Contact the shipper if any items appear to have been damaged in the shipping process.
3. Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Optional Accessory

You can use the optional accessories to expand the capabilities and versatility of the Smart Heavy-Duty Vehicle TPMS Solution. Please contact your dealer for more information.

	**EV-RM30** TPMS Receiver Box with RS-232 Interface, with Antenna • Transmits matched TPMS Sensors' signal. • Allows matching TPMS Sensor ID through Bluetooth or BTU.

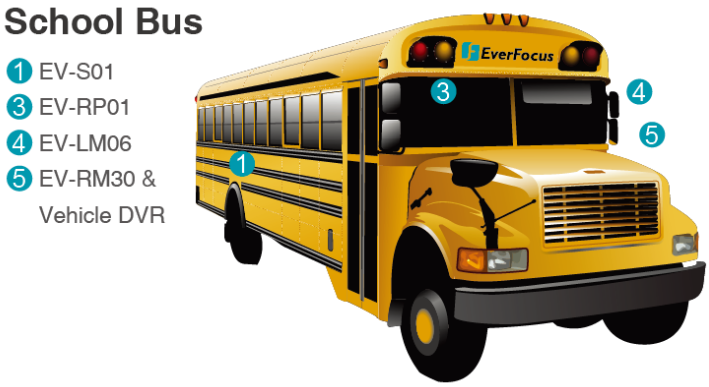
	**EMV1200/800/400 HD** Mobile DVR • Full HD mobile DVR (supports Analog SD/HD cameras) • Up to 1080p resolution for recording • eZ.Controller function: Control camera OSD settings and PTZ operation directly from DVR end • Support HDD (up to 1TB) or SSD • 3-axis G-sensor embedded • M12 Aviation connectors adopted • Multiple network monitoring: Web viewer, XFleet fleet management server system
	**EMV1601/801/401** Mobile DVR • Hybrid mobile DVR (supports both Analog SD and IP cameras) • Up to 1080p resolution for recording • Support HDD (up to 4TB) • 3-axis G-sensor embedded • M12 Aviation connectors adopted • Multiple network monitoring: Web viewer, XFleet fleet management server system
	**EMV400S FHD** Mobile DVR • Full HD mobile DVR (supports Analog SD/Full HD cameras) • Up to 1080p full HD resolution for live and recording • eZ.Controller function: Control camera OSD settings and PTZ operation directly from DVR end • Supports SD card up to 128G • 3-axis G-sensor embedded • Multiple network monitoring: Web viewer, Genie XMS XFleet (Server System)
	**EMV400SSD** Mobile DVR • Full HD mobile DVR (supports Analog SD/Full HD cameras) • Up to 1080p full HD resolution for live and recording • eZ.Controller function: Control camera OSD settings and PTZ operation directly from DVR end • Supports SD card up to 128G • Supports 2.5” SSD up to 4TB • 3-axis G-sensor embedded • Multiple network monitoring: Web viewer, Genie XMS Xfleet (Server System)

2. Installation

Architecture

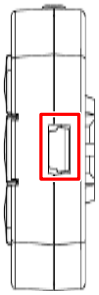
18-Wheel Solution

6-Wheel Solution



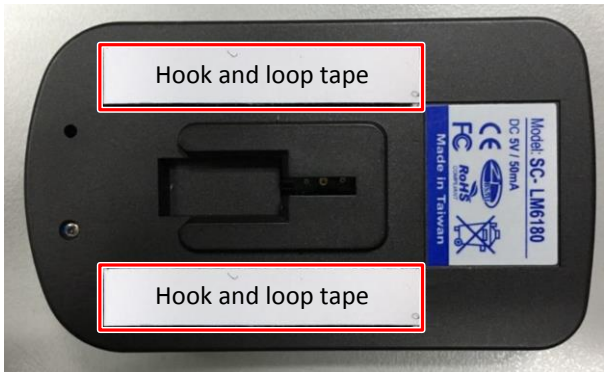
2.1 Main Unit Installation

1. Connect the main unit to ACC power using the supplied **ACC to mini USB cable**, red wire to ACC power and black wire to GND.



Mini USB Connector

2. Use the supplied **Hook and loop tape** to fix the main unit.

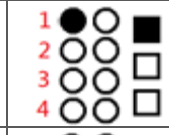
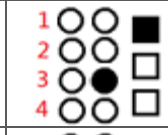
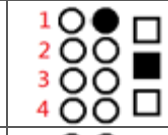
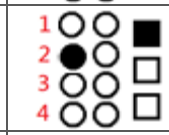
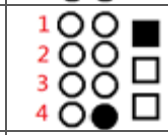
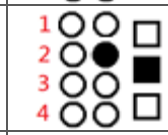
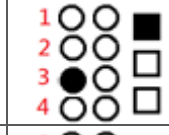
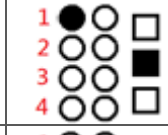
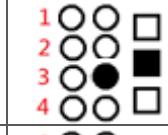
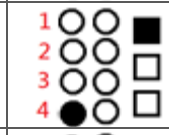
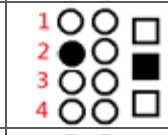
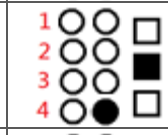
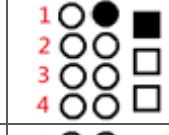
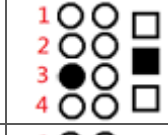
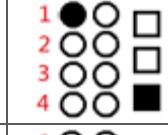
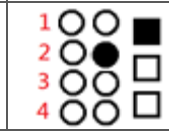
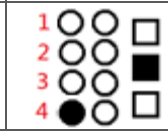
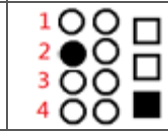


2.2 Sensor Installation

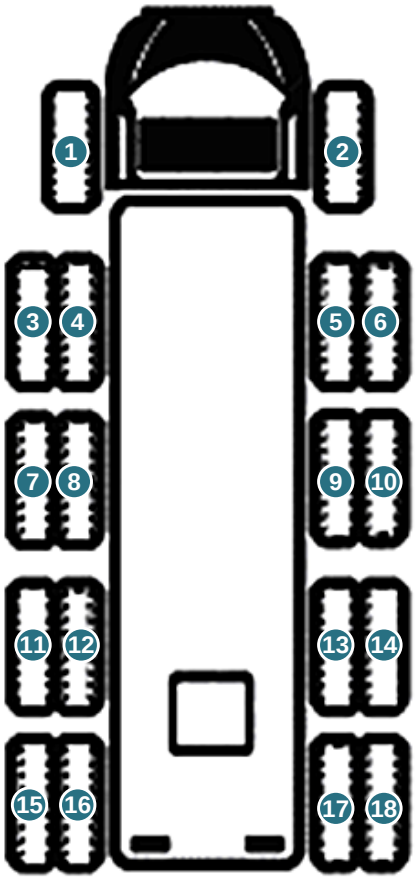
1. Check the sensor number according to the sticker on the sensor. The number corresponds to the order of installing the sensor.

Sensor Number 1:

Sensor Number 6:

Number	Sticker	Number	Sticker	Number	Sticker
1		7		13	
2		8		14	
3		9		15	
4		10		16	
5		11		17	
6		12		18	

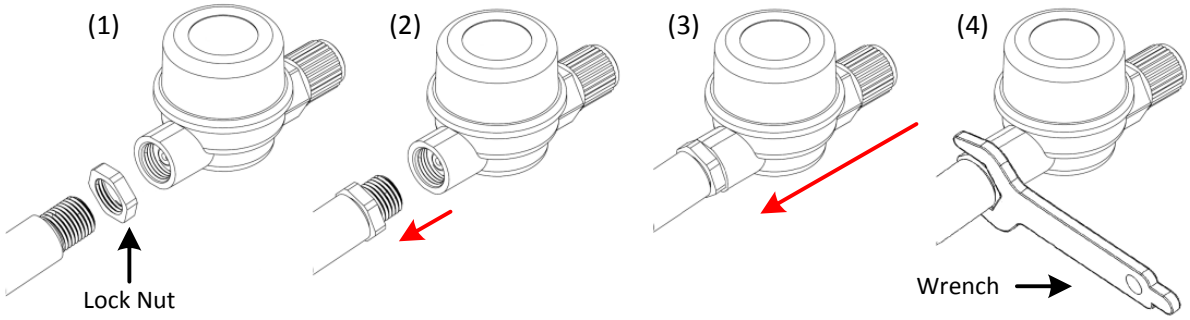
Sensor Installation order



2. Put the supplied **EV-S01 Battery** into the sensor, then tighten the cap until the water-proof ring is thoroughly covered.

3. Screw the sensors to the corresponding tires follow the installation order.
   1) Remove the original valve cap of the tire, clean the surface of the valve stem then put the supplied **EV-S01 Lock Nut** into the valve stem.
   2) Screw the **EV-S01 Lock Nut** until it reaches the end of the valve stem.
   3) Rotate the sensor clockwise to screw it to the valve stem. Make sure the sensor is completely screwed to the valve stem.

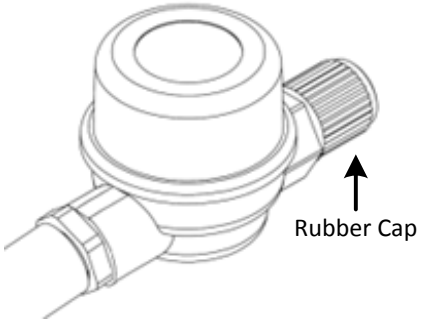
4) Use the supplied **EV-S01 Wrench** to tighten the **EV-S01 Lock Nut** for securing the sensor.



Note:

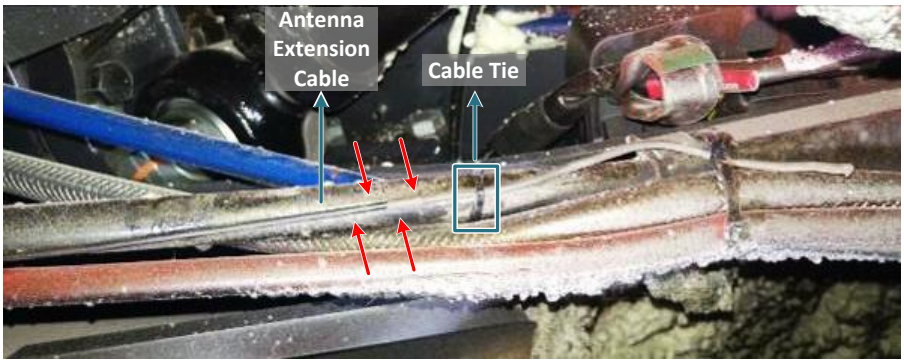
1. It is recommended to replace the sensor battery when the battery voltage is below 2.7V.
2. Use only CR1632 3V lithium battery.
3. Make sure the detergent on the sensor and valve stem is completely washed away after cleaning up the vehicle to avoid corrosion.
4. Do not change the installation order of the sensors, or exchange sensors from different tires.

4. To inflate the tire, just remove the rubber cap of the sensor instead of remove the whole sensor.

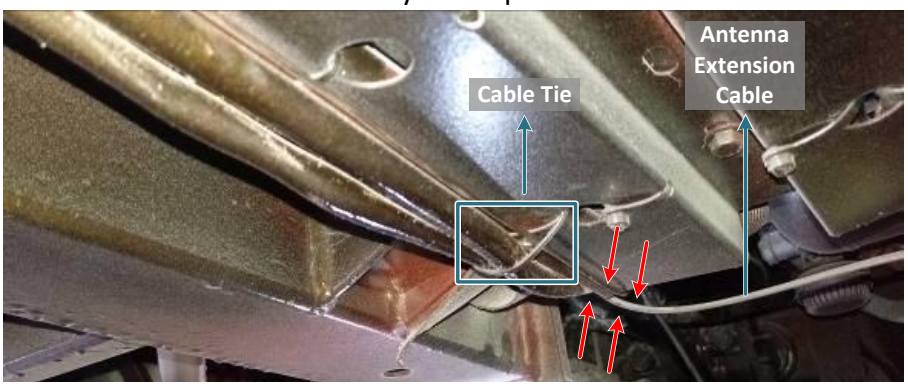


2.3 Antenna Extension Cable Installation

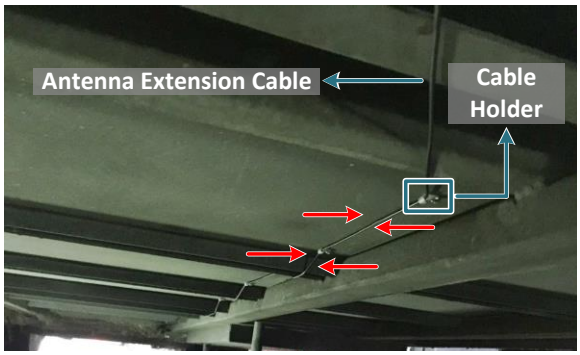
1. Connect the antenna cable of the repeater or the trailer receiver with the supplied **10m antenna extension cable**.
2. Wire the antenna extension cable along the vehicle's body wiring to the chassis that near the rear wheels.

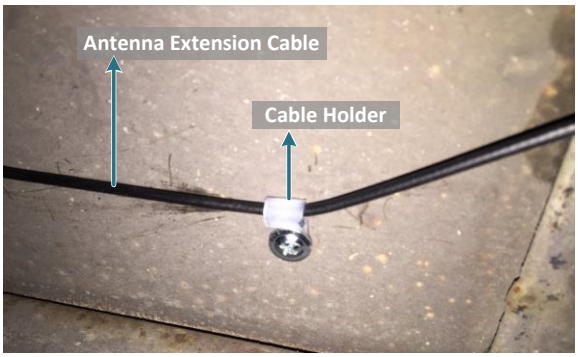


3. Fix the antenna using the supplied **Cable tie**. Do not twist the antenna cable and make sure the antenna does not touch any metal parts.

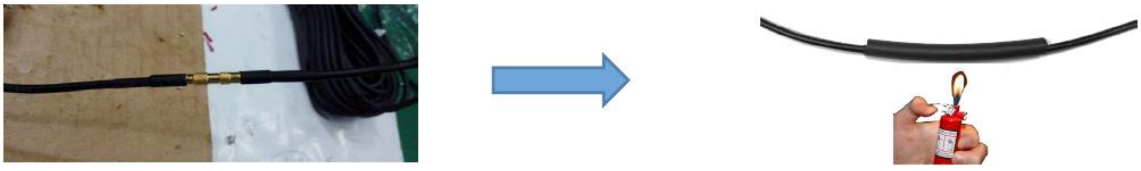


4. For closed chassis, fix the antenna using the supplied **Cable holder**. When use screws to fix the **Cable holder** on the chassis, make sure to prepare screws of proper length in avoiding damage of the oil tank.





5. Use the supplied **Adhesive lined polyolefin tubing** to secure the antenna connector.



2.4 Repeater Installation

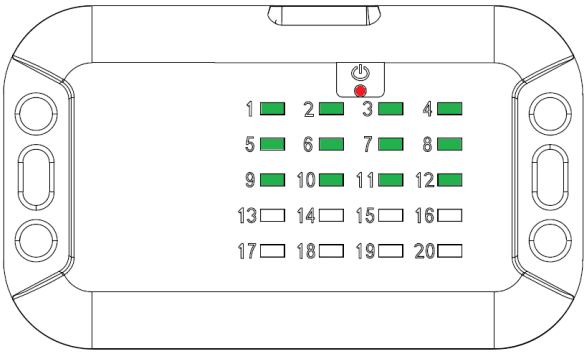
The repeater repeats the signal from the sensors. It is recommended to install the repeater in the vehicle's rear area.

1. Connect the power cable to the 9 ~ 30V battery power, red wire to ACC power and black wire to GND.
2. Connect the antenna cable with the supplied **10m antenna extension cable**. See *2.3 Antenna Extension Cable Installation* for more details.
3. Fix the repeater in the vehicle's rear area using cable ties. When the power is supplied, the LED on the repeater will turn on and blink. If the LED does not turn on, please check the power source. If the LED does not blink, please check the antenna connection.

2.5 Trailer Receiver Installation

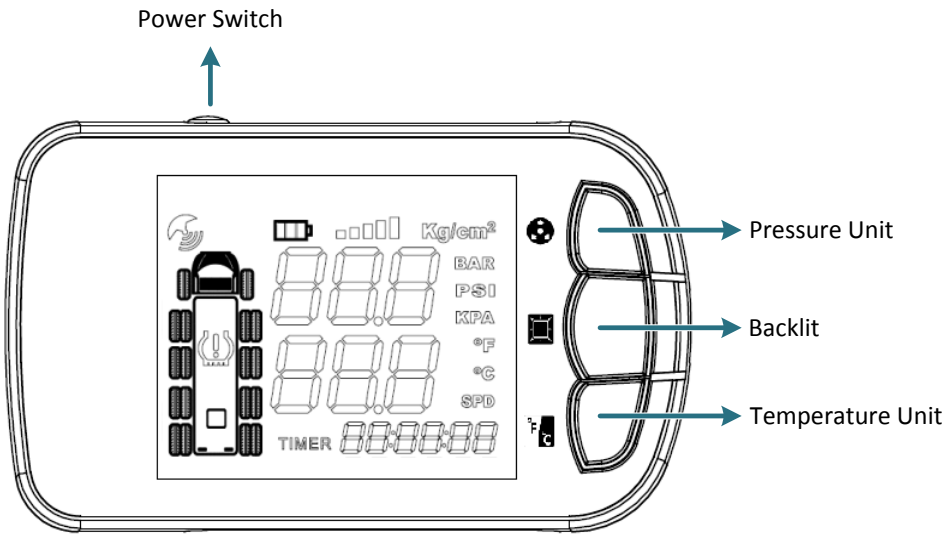
The trailer receiver receives the signal from the sensors and transmits the signal to the main unit. It is recommended to install the transceiver on the chassis or the vehicle's side, near the middle-front of the rear tires.

1. Connect the power cable to the 9 ~ 38V battery power, red wire to ACC power and black wire to GND.
2. Connect the antenna cable with the supplied **10m antenna extension cable**. See *2.3 Antenna Extension Cable Installation* for more details.
3. Fix the repeater on the chassis or the vehicle's side using cable ties or screws. When the power is supplied, the power LED (red) on the trailer receiver will turn on and blink. If the power LED does not turn on, please check the power source. When the trailer receiver is receiving signals from the sensors, the sensor LED (green) on the trailer receiver will turn on. If the sensor LED does not turn on, please check the antenna connection.



3. Main Unit Operation

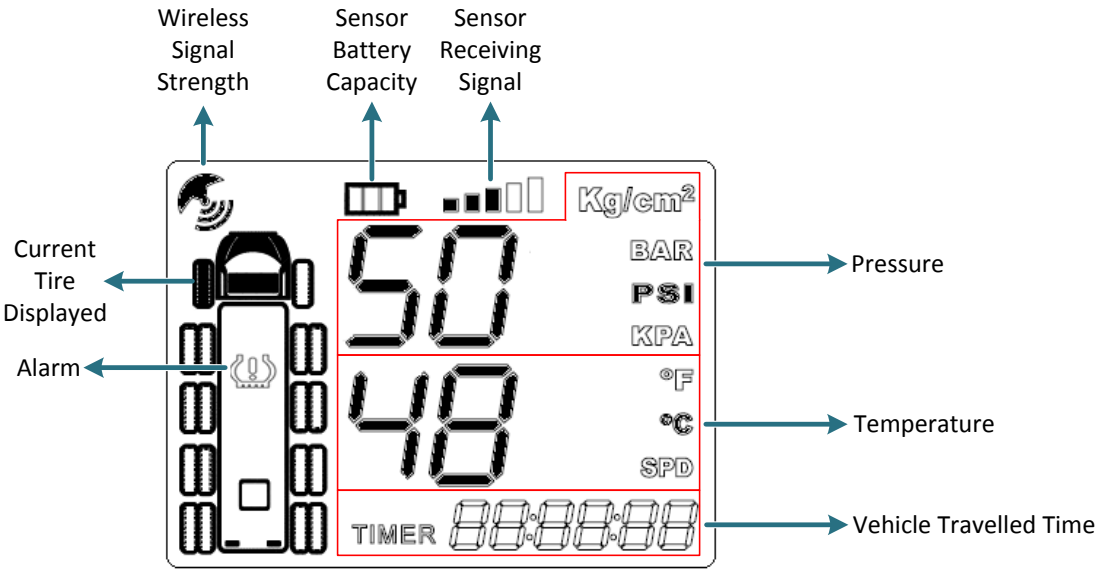
3.1 Buttons for Configuration



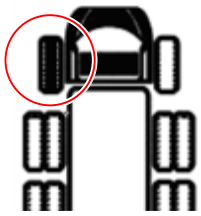
Symbol	Button	Function
	Power Switch	**In Normal Mode:** Power switch ON / OFF. **In Setting Mode:** Select backlit color.
	Pressure Unit	**In Normal Mode:** Press for 5 seconds to enter the pressure setting mode. **In Setting Mode:** Select item or increase value.
	Backlit	**In Normal Mode:** Switch backlit ON / OFF. **In Setting Mode:** Confirm selection & Exit.
	Temperature Unit	**In Normal Mode:** Press for 5 seconds to enter the temperature setting mode. **In Setting Mode:** Select item or decrease value.

3.2 Normal Mode

There are 4 operation modes of the main unit. In Normal mode, the information of each sensor will be displayed by turns.



Symbol	Description	Function
Kg/cm² BAR PSI KPA	Pressure	Display the tire pressure. To change the pressure unit, press **Pressure Unit** button .
°F °C	Temperature	Display the tire temperature. To change the temperature unit, press **Temperature Unit** button .
TIMER	Vehicle Travelled Time	Display the vehicle travelled time.
	Wireless Signal Strength	Display the wireless signal strength.
	Sensor Battery Capacity	Display the sensor battery capacity.
	Sensor Receiving Signal	Display the wireless signal strength.

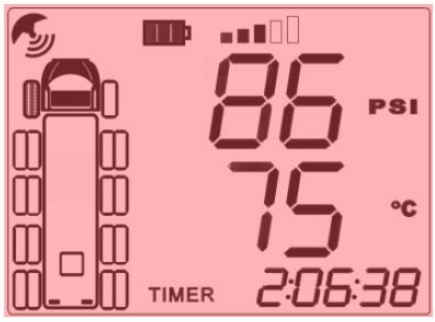
	Current Tire Displayed	Display the current detected tire.
	Alarm	When under-inflation, over-inflation or abnormal temperature of the tires is detected, the alarm icon will flash.

3.3 Alarm Mode

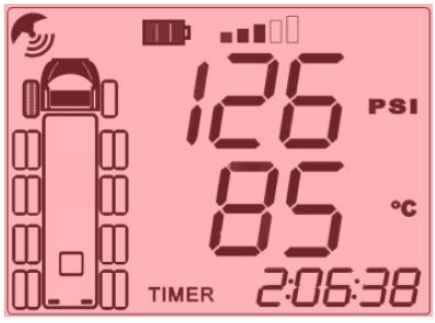
When abnormal pressure or temperature of the tires is detected, the system enters Alarm mode. In Alarm mode, the backlit turns red and the alarm icon on the top-left corner will flash. To set the pressure or temperature high / low limit, please see *3.4 Setting Mode*.

For example, if you set the pressure limit between 95psi and 132psi, and temperature high limit is 80°C, when the pressure / temperature of the front-left tire exceeds the limit, the system will alert you.

The current pressure of the front-left tire is 86psi, lower than the pressure low limit (95psi):



The current temperature of the front-left tire is 85°C, higher than the temperature high limit (80°C):



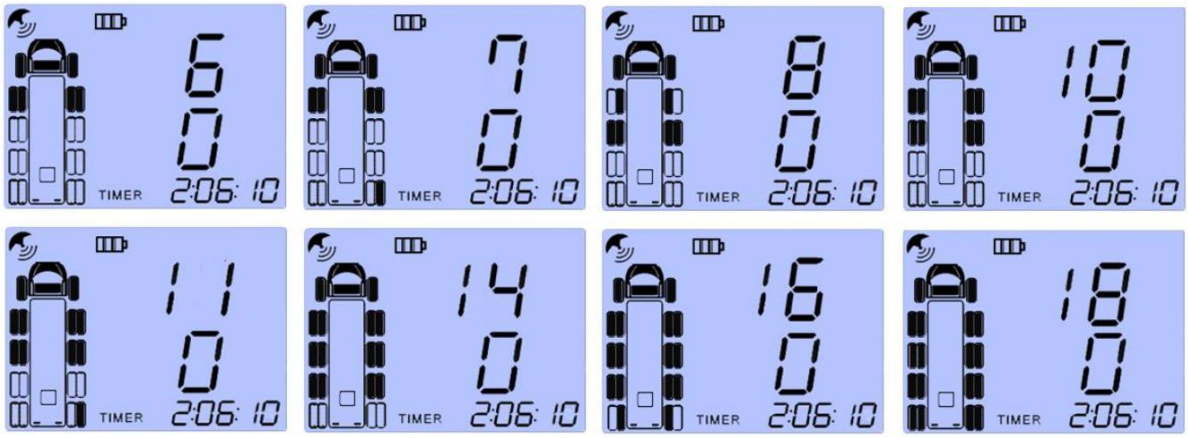
3.4 Setting Mode

In Setting mode, you can configure system settings include wheel number, temperature limit, pressure limit, backlit color, mute. Follow the steps below to enter each setting menu.

3.4.1 Wheel Number Setting

In Normal mode, press **Power Switch** button and **Pressure Unit** button for 5 seconds to enter the Wheel Number Setting menu. The backlit turns blue and the digit will flash.

In this menu, you can select wheel number from 6 wheels to 18 wheels. Use **Pressure Unit** button and **Temperature Unit** button to select previous or next option. Press **Backlit** button to save and exit.

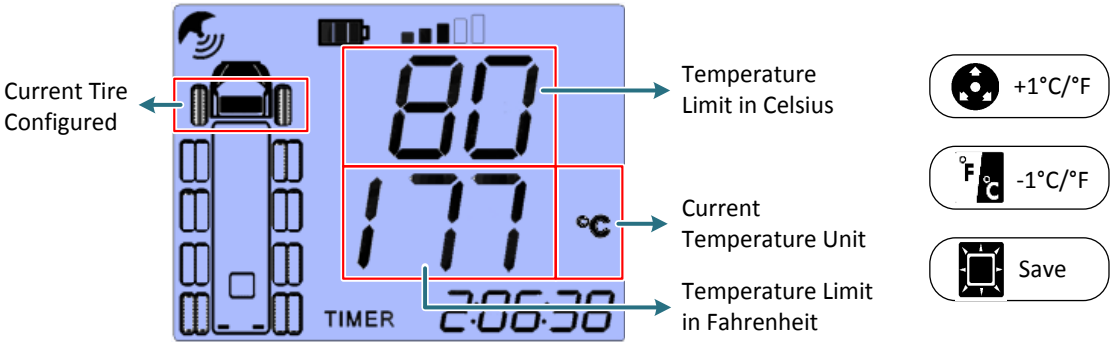


3.4.2 Temperature Limit Setting

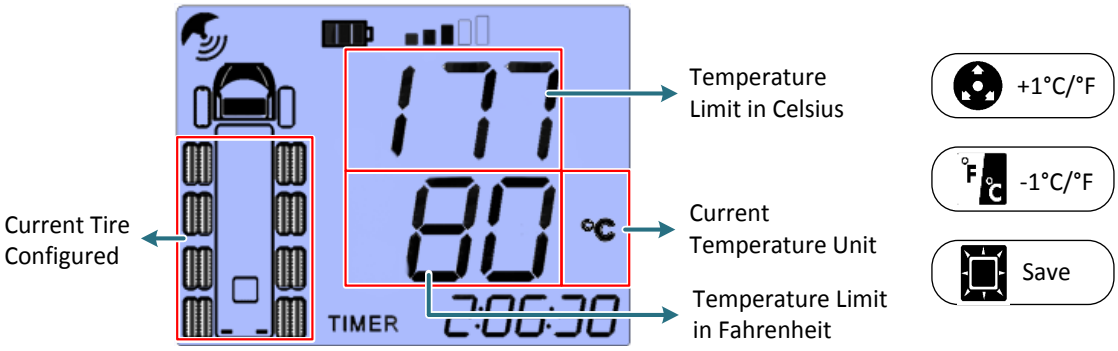
In Normal mode, press **Temperature Unit** button for 5 seconds to enter the Temperature Limit Setting menu. In this menu, you can configure the temperature high limit. The temperature high limit of the front tires and the other tires are configured separately. Use **Pressure Unit** button and **Temperature Unit** button to increase or decrease temperature value. Press **Backlit** button to save / save and exit.

1. In Normal mode, press **Temperature Unit** button for 5 seconds. The backlit turns blue and the digit will flash.

2. Set up the temperature high limit for the front-left and front-right tires. Use **Pressure Unit** button and **Temperature Unit** button to increase or decrease temperature value. The default temperature high limit is 85°C. Press **Backlit** button to save.



3. Continue to set up the temperature high limit for the other tires. Use **Pressure Unit** button and **Temperature Unit** button to increase or decrease temperature value. The default temperature high limit is 85°C. Press **Backlit** button to save and exit.

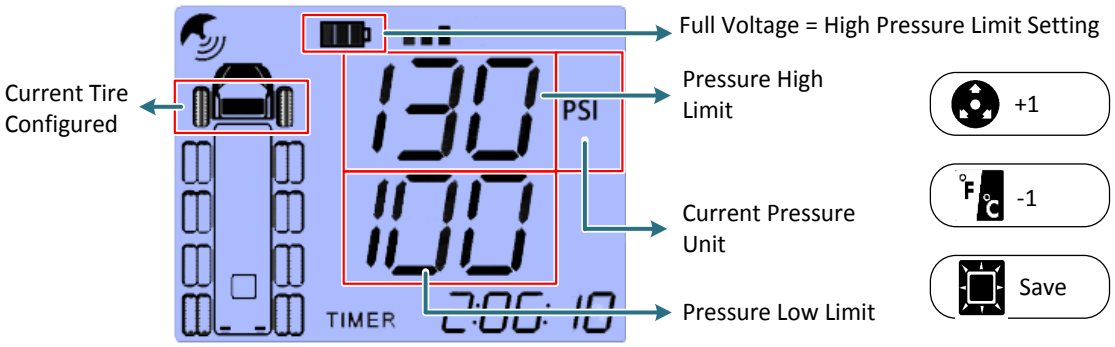


3.4.3 Pressure Limit Setting

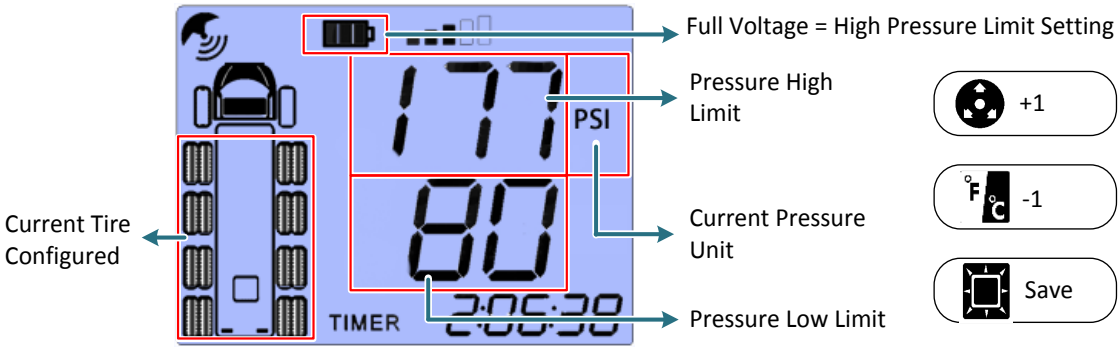
In Normal mode, press **Pressure Unit** button for 5 seconds to enter the Pressure Limit Setting menu. In this menu, you can configure the pressure high / low limit. The pressure limits of the front tires and the other tires are configured separately. Use **Pressure Unit** button and **Temperature Unit** button to increase or decrease temperature value. Press **Backlit** button to save / save and exit.

1. In Normal mode, press **Pressure Unit** button for 5 seconds. The backlit turns blue and the digit will flash.

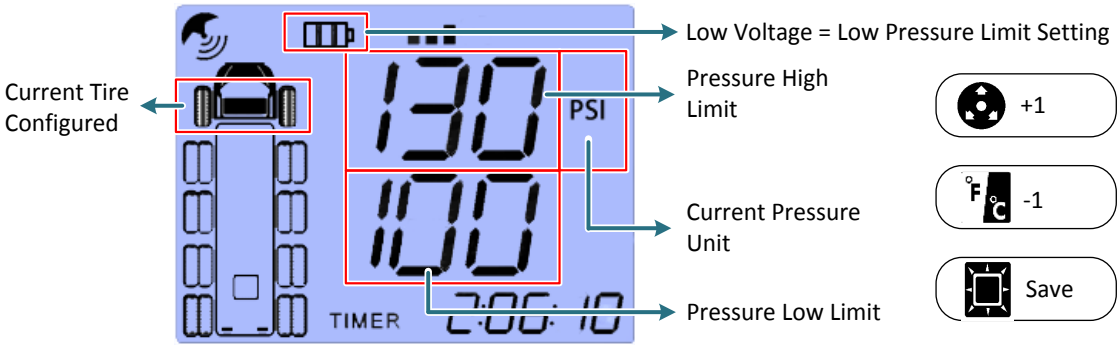
2. Set up the pressure high limit for the front-left and front-right tires. Use **Pressure Unit** button and **Temperature Unit** button to increase or decrease pressure value. The default pressure high limit is 132psi. Press **Backlit** button to save.



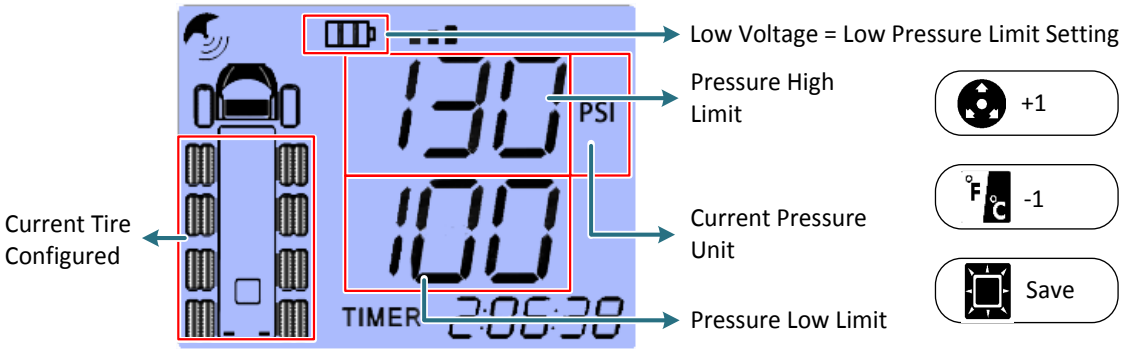
3. Continue to set up the pressure high limit for the other tires. Use **Pressure Unit** button and **Temperature Unit** button to increase or decrease temperature value. The default pressure high limit is 132psi. Press **Backlit** button to save.



4. Continue to set up the pressure low limit for the front-left and front-right tires. Use **Pressure Unit** button and **Temperature Unit** button to increase or decrease pressure value. The default pressure low limit is 95.0psi. Press **Backlit** button to save.



5. Continue to set up the pressure low limit for the other tires. Use **Pressure Unit** button and **Temperature Unit** button to increase or decrease temperature value. The default pressure high limit is 95.0psi. Press **Backlit** button to save and exit.



3.4.4 Backlit Color Setting

In Normal mode, press **Backlit** button and **Pressure Unit** button for 5 seconds to turn backlit on / off. When the backlit is turned on, press **Power Switch** button to change backlit color. Press **Backlit** button to save the current color and exit.

3.4.5 Mute Setting

In Normal mode, press **Backlit** button and **Power Switch** button for 2 seconds to enable / disable sound.

3.5 Learning Mode

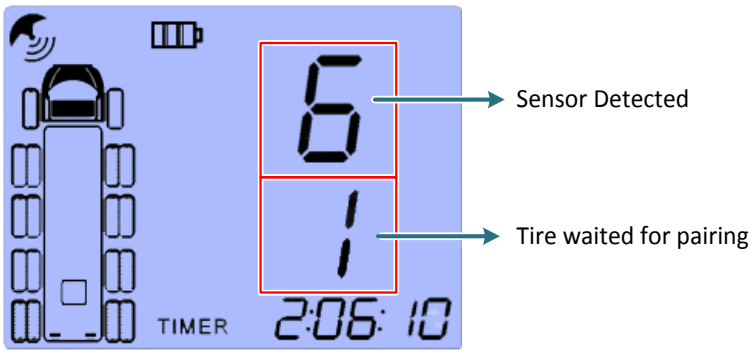
The sensors have been paired off with the tires during production. However if the tires are replaced, you can still pair the sensors with the tires in Learning Mode. You can pair all tires at once or just pair a single tire.

3.5.1 Pair All Tires

To pair all tires with sensors at once:

1. Put the supplied **EV-S01 Battery** into the sensor.
2. Turn on the main unit and put the sensors near it, later the main unit can detect the sensors more easily.
3. In Normal mode, press **Temperature Unit** button and **Pressure Unit** button for 5 seconds to enter the Learning mode. The backlit turns blue and the system will start to search the nearby sensors.

4. The sensors detected will be displayed on the screen. If you have a total of 6 sensors, the system should detect at least 6 sensors.

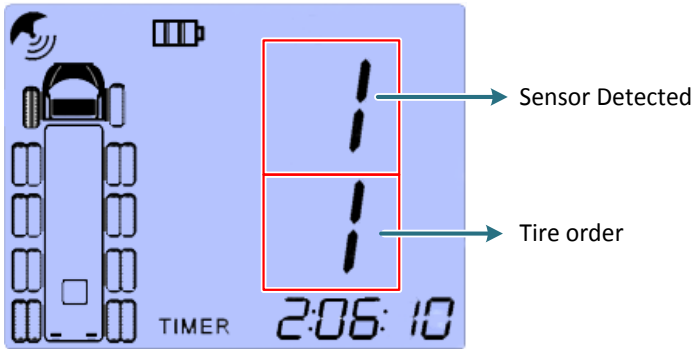


5. Screw the sensors to the corresponding tires follow the installation order. (See *2.2 Sensor Installation*)

3.5.2 Pair a Single Tire

To pair a single tire with a sensor:

1. Turn on the main unit. In Normal mode, press **Temperature Unit** button and **Pressure Unit** button for 5 seconds to enter the Learning mode. Press **Unit** button again to enter the tire order selection mode. In this mode, use **Unit** button to select the tire order.



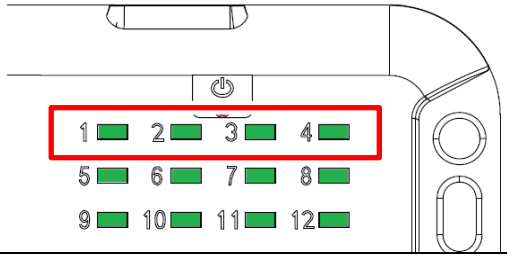
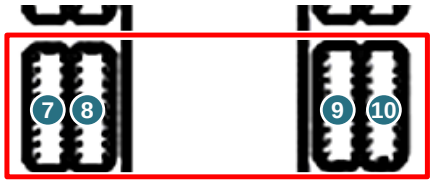
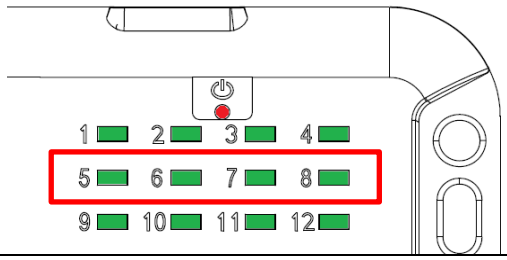
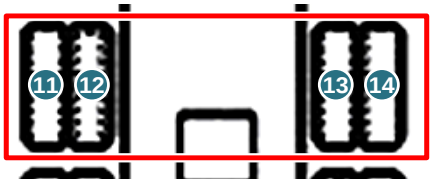
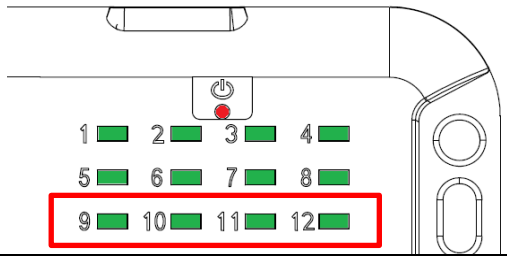
2. Put the supplied **EV-S01 Battery** into the sensor then put the sensor near the main unit, the system will start to search the nearby sensor which is powered but is not receiving any tire pressure.
3. After the sensor is detected, screw the sensors to the corresponding tire (See *2.2 Sensor Installation*).
4. When the sensor is successfully paired with the tire, the main unit will beep and its backlight will flash, then the system will returns to Normal mode.

4. Trailer Receiver Operation

You can use the ID Learning function of the iTPMSystem to pair the sensor LEDs with sensors.

- iTPMSystem for Android devices:
  https://play.google.com/store/apps/details?id=Atbs.iTpms&hl=zh_TW
- iTPMSystem for iOS devices:
  https://itunes.apple.com/tw/app/tpms/id542118415?l=zh&mt=8

Please be noted that the trailer receiver only receive and transmit signal from sensor number 7 ~ 18, therefore the LED number 1 ~ 12 on the trailer receiver actually corresponds to the sensor number 7 ~18.

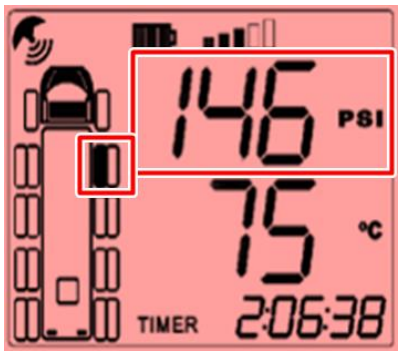
Wheel Group	LED Number on The Trailer Receiver	Sensor Number
1	1 ~ 4 	7 ~ 10 
2	5 ~ 8 	11 ~ 14 
3	9 ~12 	15 ~ 18 

1. Turn on the Bluetooth function on your mobile device and then search for the Trailer Receiver.
2. Run the iTPMSystem and then tap the **ID Learning** tab.
3. You can tap the **Edit** button to manually enter the sensor's ID number for each wheel group, or tap the **QR Code** button to scan the QR Code of the sensor.

5. Troubleshooting

- **Main unit does not receive any signal from sensor:**
  1. Remove the sensor from the tire, and see if the main unit receive the signal from the sensor.
  2. If the main unit does not receive any signal, put the sensors near the main unit, remove the **EV-S01 Battery** from the sensor and then put it into the sensor again.
  3. If the main unit still does not receive any signal, the sensor may not be paired correctly or the sensor's battery may be out of power.

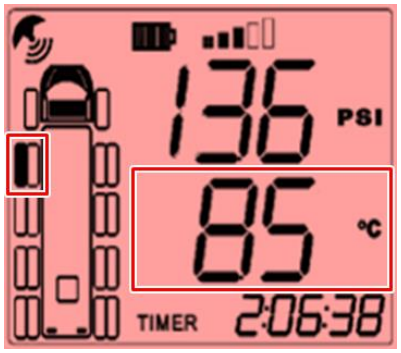
- **Below information appears on the main unit with flashing red backlight and audio alarm:**



The system is notifying you that the tire pressure of the current tire is too high (based on the default tire pressure high limit 145psi).

1. Check the tire temperature of the current tire. When the tire temperature is too high, the tire pressure may also increase.
2. If the tire temperature is normal, check the cold tire pressure. When the cold tire pressure is too high, the tire pressure may also increase. Adjust the cold tire pressure to 120±5psi when you have a vehicle maintenance.

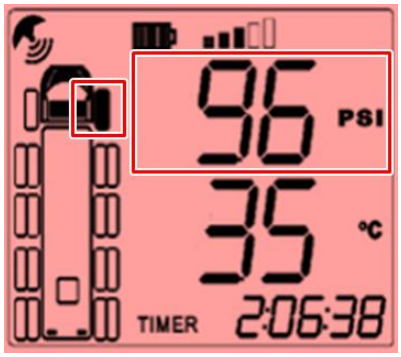
- **Below information appears on the main unit with flashing red backlight and audio alarm:**



The system is notifying you that the tire temperature of the current tire is too high (based on the default tire temperature high limit 85°C).

1. Check the brake. When you hit the brakes too often or the brake does not work correctly, the tire temperature may increase.
2. Slow your driving speed, and arrange a vehicle maintenance as soon as possible.

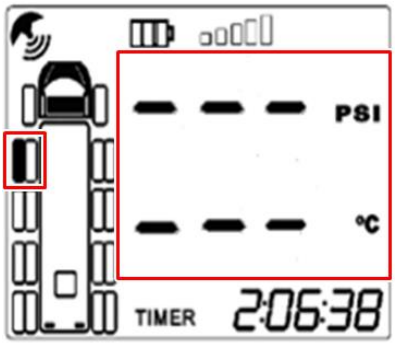
- **Below information appears on the main unit with flashing red backlight and audio alarm:**



The system is notifying you that the tire pressure of the current tire is too low (based on the default tire pressure low limit 100psi).

1. If the tire pressure keeps decreasing and the tire temperature keeps increasing, slow your driving speed, inflate the tire, and arrange a vehicle maintenance as soon as possible.
2. If the tire pressure keeps decreasing yet the tire temperature does not increase, adjust the cold tire pressure to 120±5psi when you have a vehicle maintenance.

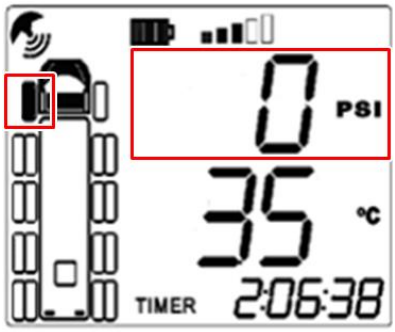
- **Below information appears on the main unit:**



The system does not receive the signal from the current tire.

1. Running the vehicle and see if the information appears again.
2. The sensor's battery voltage may be too low.
3. The sensor may be damaged or missing.
4. Leaves the current area and see if the information appears again.

- **Below information appears on the main unit:**

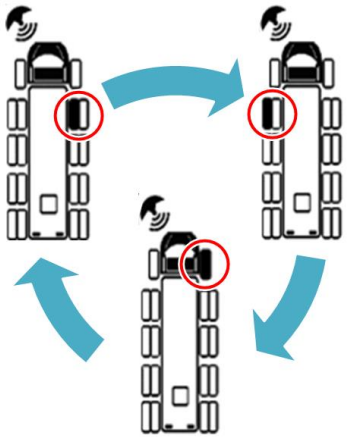


The system does not receive the tire pressure from the current tire.

1. Check the tire pressure of the current tire.
2. Make sure the valve thimble is installed properly.

- **No information displayed on the screen:**
  1. Check the power connection to the main unit.
  2. Check the fuse to the main unit.

- **The main unit only displays information of certain tires:**



The main unit will focus on the tires which have abnormal pressure or temperature. Check the tire pressure, temperature and sensor's battery voltage of the current tire.

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