



InnoTechRV

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InnoTechR



Tire Pressure Monitoring System Operating Instructions (For RVs and Trucks)

www.InnoTechRV.com

1 Introduction

Congratulations on purchasing the new InnoTechRV TPMS-4000-X Tire Pressure Monitoring System. This system is a safety system for monitoring the vehicle's tire pressure and temperature. It consists of externally mounted wireless sensors, fitted to the vehicle's tire valves, and a hand-held monitor. The sensors monitor the tire air pressures and temperatures and transmit this information to the dash mounted monitor. The monitor can be placed on the dashboard, on the sun visor or mounted in any convenient place in the vehicle using the window mount included.



SENSOR

2 Function



TPMS-4000
(MONITOR)

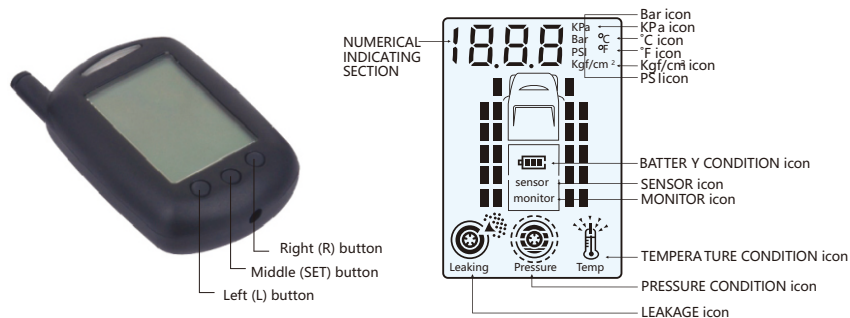
The monitor's function is to receive the temperature and pressure information transmitted from the sensors fitted to each tire and display this information on the screen in the specific units of measurement of your choice.

The monitor will emit an alarm when a tire pressure or temperature varies markedly from the targeted tire pressure and/or temperature (refer section 4.) The system will detect high or low air pressure as well as high temperature or rapid leakage from the tires. The monitor will flash a red warning LED lamp and an alarm will sound to remind the operator to check if the tires are high or low in air pressure, there is leakage, a high temperature condition, the monitor's battery is low, or there is a problem with a sensor.

Turn the monitor on by pressing the middle button. Turn off by holding the middle button until the monitor shuts itself down. Note the monitor will only shut down from Normal operating mode.

3 Installation & Operating Instructions

The following graphic identifies the icons on the monitor.



Unit Conversion Formulae

Temperature $F = 9C/5 + 32$

C = Celsius; F = Fahrenheit

Pressure 1 Bar = 14.5 psi

1 Bar = 100 kPa

1 Bar = 1.02 kgf/cm²

Important; before installing the tire sensors:

- Ensure you have inflated the vehicle's tires to your required pressures.
Note: It is recommended to set tire pressures at those recommended by the manufacturer or listed in the vehicle's handbook,
- Ensure the monitor battery is fully charged and is in Alignment mode,
- Ensure batteries have been fitted to each sensor. UNDER the terminal, + side up)
- If supplied, fit the small foam rubber pad inside the top of the sensor cap (designed primarily for off road vehicles)

Note: Do not over-tighten the plastic cap as this may damage the cap and o-ring.

Fitting Sensor Locks (Optional)

The kit is supplied with security locks for the sensors. Use of these is optional. Screw nut onto valve stem before fitting sensor. Tighten sensor then tighten lock nut back up to sensor using wrench supplied.



System Setup

1. First place the monitor into alignment mode by pressing Left & Right buttons simultaneously for 5 seconds. All 22 wheel positions will display on screen.
2. Press either L or R button to select the specific tire position you wish to align a sensor on.
3. Screw a sensor onto the corresponding wheel and within 5 secs the current pressure will be displayed against the corresponding flashing Tire icon on the screen. If the red LED light stays on and "- -" still shows at the top of the monitor display then the sensor has not aligned. Remove the sensor, remove and replace the battery and retry.
4. Repeat steps 2 & 3 for each tire.
5. When all tires have been aligned, press and hold the L & R buttons until the unaligned tire positions disappear. You are now in Normal Operating mode.

Note: If a sensor is to be removed from one valve and fitted to another valve, you must delete the current setting on the monitor and realign this sensor to the new tire. To delete an aligned sensor from a tire, whilst in tire alignment mode, select the tire position and then hold down the middle button until "- -" appears on the monitor.

To delete all alignments hold down the right hand button until "- -" appears on the monitor and no positions show a pressure.

Note: The monitor may initially show alarms or abnormalities until you have set your required pressures and units of measurement as follows.

Programming Standard Settings

1. Once all sensors have been aligned and you have taken the monitor out of Alignment Mode, press and hold the middle button for 5 seconds to enter into Programming Mode (left graphic opposite). The first aligned tire position will flash and the default pressure level will be displayed. (The default initial units are PSI). (Diag A - opposite)
2. Press the Left or Right button to decrease or increase the required normal cold tire pressure for this wheel position.
3. Press the middle button to select the next tire and repeat this sequence to set the cold tire pressure on each of the remaining tires.
4. Once you have set the pressure for the last wheel position the next press of the middle button will move you to pressure units. Unless you wish to change from PSI leave this setting. To change press the L or R button. (Diag B)
5. Pressing the middle button again will take you to temperature units and pressing the Left or Right buttons you can change between Fahrenheit and Celsius. (Diag C)
6. Pressing again will take you to the LoOFF function. Please refer to the Dual Pressure Function. Unless you intend to use the Dual Pressure Function leave this setting on LoOFF. (Diag D).
7. At anytime during the set up process you can exit to Normal mode by holding down the middle button for 5 secs until the monitor beeps. You have now finished programming.

Note:

1. Always install the sensor when the Tire is cold
2. Please check each Tire valve is not damaged.
3. Check to ensure there are no leaks and the sensors are firmly secured to each Tire valve.

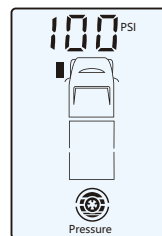


Installation of the Monitor

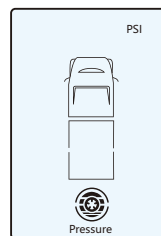
The monitor may be mounted using the pedestal supplied. The monitor can be fixed to a suitable surface in the vehicle, sun visor, dashboard etc. It has a built-in lithium battery recharged using the charger provided. It is not recommended that this charger be used to power the monitor continuously as it may damage the battery. If a USB cable (supplied separately) is used to charge the monitor then the USB power supply must be 2A or more.

Normal Operation

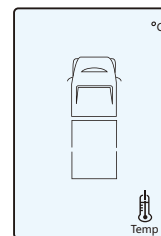
To check the pressures and temperatures, scroll through the selected tire positions using the left or right buttons. The monitor will indicate the pressure and then the temperature of each tire. After your checks are completed, the backlight will go out and the monitor will indicate the Tire pressure of the selected Tire. After approximately 30 secs the monitor will revert to a blank screen just showing the vehicle outline. In this mode the monitor will continue to receive readings from the sensors. If the monitor detects no movement for 15 minutes it will enter sleep mode to save battery power. It will revert to normal mode as soon as movement is detected.



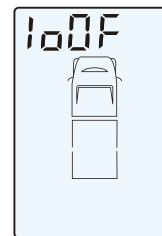
A



B



C



D

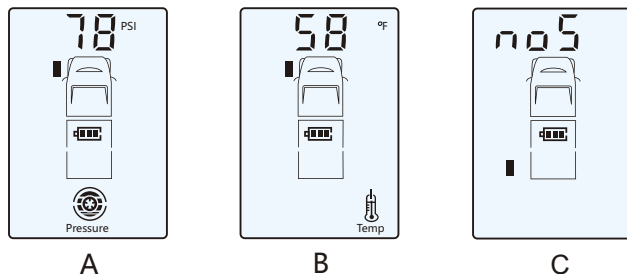
Reading Current Tire Conditions

Whilst in Normal mode, press the L or R button to check the air pressure and temperature of each of the tires in turn starting with the front left tire (graphics A & B below).

If the monitor fails to detect signals from a sensor or sensors for a period of time it may show the "no S" (no Signal) indication. (graphic C below). This may indicate the batteries are getting low on the sensors or that a booster/repeater may be required.

Do not re-align a sensor showing "noS". This is unnecessary. If the loss of signal is temporary the "noS" will disappear once signal is restored

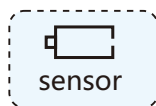
If the noS



Battery Low Indicators of the Monitor and Sensors



When the monitor battery charge is low, the battery icon and "MONITOR" icon on the screen will flash and the beeper will give a 10 second intermittent alarm. The monitor will then beep every 30 seconds when it is within 5 minutes of total discharge. The monitor should be plugged in to its charger.

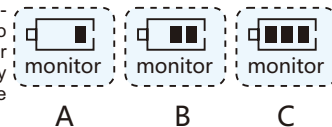


When a tire sensor has a low battery, the battery icon and "SENSOR" icon together with the corresponding tire icon flash on the screen and a 10 second intermittent alarm will sound. If the power of any of the sensors becomes too low, please replace the corresponding battery immediately.

Charging the Monitor

The built-in lithium battery of the monitor is rechargeable. Please connect the 12/24V DC charger into the port at base of the monitor, and then insert the adapter plug into the port of the vehicle's 12/24V DC accessory port. It takes approximately 6 hours to fully charge the monitor.

The battery icon will cycle as it is charging..



Note: Please keep the monitor in a cool environment when charging. When not in use the monitor should be left fully charged and turned completely off.

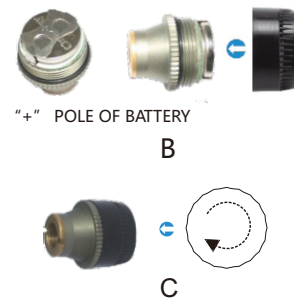
Sensor battery replacement

Replace the corresponding sensor's battery when the monitor indicates a low battery. Unscrew the plastic cap from the sensor, take out the battery and replace with a new button cell battery, (CR 1632). Ensure the "+" terminal is touching the upper bracket. Screw down the cover.



Note:

1. The battery model required for the sensors is a CR1632 button battery.
2. Ensure the battery is inserted UNDER the terminal.
3. The "+" and "-" pole of sensor battery must be placed in the correct position with the "+" terminal facing up; failure to do so may cause the sensor to burn out.
4. When replacing batteries inspect the o-ring for damage and replace as necessary (contact us).



Power up

Quickly press the middle button to enter into normal mode from the powered off state.

Note: Once the monitor is on, the information from all Tires can take up to 8 minutes to be received in normal conditions. When the sensors are in an area of strong interference or in very cold conditions, the monitor may not receive the signal. Pull out the monitor's antenna to increase the strength of the signal.

Power off

Hold down the middle button for at least 8 seconds, and the monitor will automatically switch off. Please note: the system will first enter into Programming mode 5 seconds while holding down the middle button, continue holding down the middle button until the screen goes completely blank to power off the monitor.

Note: Whether the monitor is turned on or off, the sensors will continue to transmit normally..

Standby Time

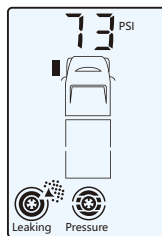
The monitor has an intelligent 15 minute Sleep mode. The monitor goes into Sleep mode to save power after the vehicle has been motionless for more than 15 minutes. When movement is detected, the monitor automatically turns on and recommences monitoring of the sensors.

4 Warning Conditions

The INNOTECHRV TPMS-X has two primary functions, monitoring the temperature and pressure conditions of the vehicle's tires. The following are the abnormal conditions that will trigger a warning.

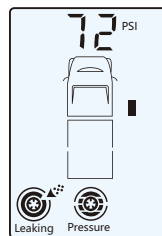
Rapid Leakage

When the air pressure of a tire drops more than (3psi) within 2 minutes the monitor will signal an audible alarm and the "Leaking" icon will flash on the monitor's screen



Slow Leakage

When the air pressure of a tire drops more than 3psi over a period of between 2~10 minutes, the monitor will signal an audible alarm and the "Leaking" icon will flash on the monitor's screen. The Wheel position will flash to indicate which tire has the abnormal air pressure and what its current air pressure reading is. The red LED will also flash on the monitor.

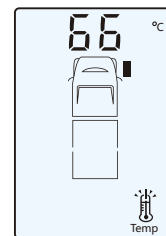


Note: If there is a fast or slow leak the sensor will send a message to the monitor whether driving or stationary.

High Temperature Warnings

When the temperature inside the tire exceeds 149oF (65oC) the system will give a stage 1 high temperature alarm and the monitor will indicate the position of the tire with the abnormal temperature along with its current temperature. Abnormal temperature is indicated by the flashing red LED on the monitor and the temperature icon flashing on the screen.

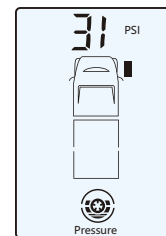
A stage 2 alarm will occur if the temperature inside the tire exceeds 167 oF (75 oC) (See Indicator levels on right)



Low Pressure Warnings

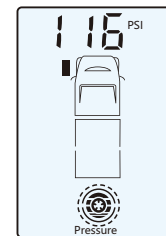
When the actual tire pressure is equal to or falls below 85% of the set pressure the system will give an alarm and the monitor will indicate the position of the tire with the abnormal air pressure and its current pressure. The low pressure is indicated by the flashing red LED on the monitor and the pressure icon flashing on the screen.

Two further Low Pressure Alarms will occur at 75% and 50% below set pressure respectively. (See indicator levels on right)



High Air Pressure Warning

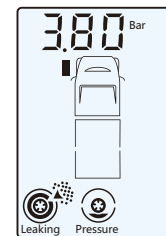
When the actual pressure is equal to or greater than 120% of the set pressure the system will give an alarm and the monitor will indicate the position of the tire with the abnormal air pressure and its current air pressure. The high pressure is indicated by the flashing red LED on the monitor and the pressure icon flashing on the screen, as the graphic on the



Multi-Warning Indication

When there are more than one Warning indications with one Tire simultaneously, the monitor will indicate all the various Warning Icons as the graphic on the right shows.

When there are Warning alarms on two or more tires at the same time, the respective tire icons with the abnormalities will all flash on the screen. In this situation the current tire reading being displayed will be indicated by that tire icon flashing more rapidly than the other icons.



Loss of Signal Indication

If the monitor does not receive a signal from one or more of the sensors for a continuous period of 30 minutes after coming out of Sleep mode, the audible alarm will sound for 15 seconds along with the flashing red LED on the monitor. The corresponding icon of the abnormal sensor will also flash and indicate "noS" which indicates there is either a fault with the sensor, the sensor is damaged or the sensor is out of range. The system will alarm every 20 minutes if the monitor still can't receive the signal from the sensor, as the graphic on the right shows. This may be a result of low battery voltage on the sensor or indicate the need for a booster/repeater if it happens regularly



Notes:

In an alarm condition the monitor will sound a continuous audible alarm for 15 seconds with the flashing red LED and the back light will remain on for 5 minutes along with the corresponding faulty tire icon flashing. Pressing the L or R button will stop the audible alarm. Shortly afterwards the back light will automatically go off but the red LED will remain on until the fault condition clears. The system alarm will sound again after one hour to further remind the operator if the condition has not cleared.

When a sensor is removed to inflate or deflate a Tire, this will cause the sensor to detect rapid and/or slow leakage because the sensor has suddenly detected zero pressure. Once the sensor is refitted the monitor will return to normal and the alarm will clear within a short period of time.

If you wish to add further sensors to the monitoring system, i.e. fitting sensors to an additional trailer, etc. refer to section 3, Installation & Operating Instructions.

5 Additional Functions

Delete All Function

This feature will allow all sensor alignments to be deleted from the monitor to allow realignment if sensors have been removed and wheel positions are unknown.

When in Alignment Mode press the Center and Right buttons for 3 seconds. All sensor alignments will be deleted.

Forced Update

This feature allows you to zero out all pressure and temperature readings. The monitor will then update on the next round of updates from sensors.

When in normal operating mode hold the Center and Right buttons for 3 seconds until monitor beeps. All readings will revert to 0.

Auto Trailer Disconnect

This feature will automatically switch the monitor to Trailer Disconnect mode when 4 sensors in the Trailer section have failed to report within a 60 minute period. "td" will show on screen. The monitor will revert to normal when it comes back into range of the sensors. Prior to entering "tD" mode individual sensors may show "noS". You may wish to then switch to Manual tD mode. Note that this function will only work with trailers with 4 or more tires

Manual Trailer Disconnect

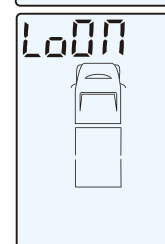
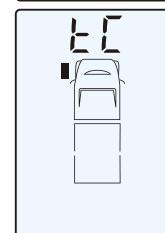
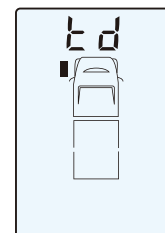
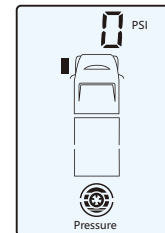
This feature enables you to manually switch the monitor to Trailer Disconnect mode. When in "tD" mode the monitor will not continually report loss of signal on the sensors in the trailer section. It will beep several times each time it wakes up out of sleep mode and show "tD" on screen.

Switch to tD mode by holding the Left Button down for 6 secs, "td" will show on screen. To take it out of tD mode hold the Left Button down again for 6 Secs. "tC" will briefly show on screen.

Dual Pressure Function

This feature is designed primarily for 4 Wheel Drive vehicles which are regularly taken on and off road. It allows two pressure settings to be set on each wheel so that the monitor can be switched between low pressures and road pressures. It can also be used for multiple trailer combinations.

When in programming mode, after setting pressure and temperature units (C/F), the next press of the center button will select the Dual Pressure mode. Press left or right button to select LoOff or LoOn. LoOn turns this function on.



Dual Pressure Function - Continued

If LoOn is selected then pressing the center button again will take you back to the first aligned tire and the low pressure settings can be input for each tire.

To switch between high and low pressures when in normal operating mode hold the Left and Center buttons for 3 seconds.



5 Technical Specifications

Sensor

Working Temperature	-10°C -- 85°C (14 F -- 185 F)
Working Humidity	0 -- 95%
Dimension	24 x 21 x 21mm (<0.65culn)
Weight	11g (0.4oz)
Battery Voltage	3V DC (CR1632)
Battery Life	~1 year
Standby Current	500nA
Working Current	6mA
Pressure Measure Range	0 psi -- 232 psi (0 bar-- 16 bar)
Pressure Measure Accuracy	±4.35 psi(±0.3 bar)
Temperature Measure Range	14°F TO 185° F (-10°C -- 85°C)
Temperature Measure Precision	±3°C
Signal Transmitting Frequency	434.2 MHz
Operating Distance	up to 20M(65ft). Booster recommended if towing or over 25ft(Receiver to rear Tire)

Monitor

Working Voltage	3V DC (Charging voltage 5V)
Working Temperature	-4° F TO 140° F (-20°C -- 60°C)
Working Humidity	0 -- 90%
Standby Current	0.1mA
Working Current	15 mA
Signal Receiving Frequency	434.2 MHz
Color of Backlight	White
Dimension	Monitor size: 82mm×55mm×23mm (3.2"x2.17"x.91")

6 Box Contents

Description	Quantity
Tire Sensors (TPMS-X)	X = no. of sensors (4-22)
Monitor	One (1)
Bracket	One (1)
12/24 V DC Accessory Power Socket Adapter	One (1)
Sensor anti-theft security devices	X = no sensors (4-22)
Security Wrench	One (1)
User Manual	One (1)

Optional Extras (Available Separately): Signal Booster, USB Charging Cable

InnoTechRV, LLC

Contact:

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For your records

Name: _____

Model No.: _____

Date of Purchase: _____

Place of Purchase: _____

Warranty - Summary of Conditions *

Unless otherwise published and agreed by terms of sale between InnoTechRV, LLC and the purchaser this product is warrantied for one year from the date of purchase. Warranty applies to original purchaser only. Warranty applies to defects in material or workmanship only. Warranty applies only to normal use. Misuse including, but not limited to, misuse, abuse, mechanical damage, alteration, miswiring, exposure to moisture or corrosive materials, failure of power supplies or improper wiring to a power source, shall not be covered. The only remedies under this warranty are replacement or repair of product at the discretion of InnoTechRV, LLC. Under no circumstances shall InnoTechRV, LLC have any liability to any party in excess of the original purchase price of the product in question.

*For detailed Warranty Document please contact us

Ⓒ This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. R-NZ E4918 Z0193

Quick Reference Guide

To Turn On: Hit Center button once
To Turn Off: Press and hold Center button for 8 secs (from operating mode only)

Setup & Programming
Alignment Mode: Hold L & R buttons for 3 secs to enter and exit Alignment mode (from operating mode)
Navigate using L & R buttons
Delete all alignments by holding Center & R buttons for 3 secs

Hold Center button for 4 secs to enter and exit Programming mode (from operating mode)
Navigate using Center button, select using L or R buttons

Zero Readings: Use L & R buttons to scroll between tires (alternates pressure then temp for each wheel).
Hold Center & R button for 3 secs until readings show zero

Dual Pressures: Switch to Low Pressure mode: Press and hold L & Center buttons until LoOn appears
Switch to High Pressure mode: Press and hold L & Center buttons until LoFF appears

Trailer Disconnect: Trailer Disconnect: Press and hold L button for 5 secs until "td" appears. To return to full monitoring, press and hold L button for 5 secs until "tC" appears

Indications
Low Pressure Alarms



High Pressure Alarms



High Temperature Alarms



Fast Leak Alarms



Trailer Disconnect

td

Trailer Reconnect

tC

No Signal

noS