



## Wireless Tire Pressure and Temperature Monitoring System Instruction Manual

Model #: TM-510  
510 Cap Sensors

Thank you for purchasing the TST Tire Pressure Monitoring System. With minimal care, your new TPMS will provide reliable service for many years. Please read and understand the information contained within this manual. Keep this manual for future reference.



Telephone: 770.889.9102

Website: [www.tsttruck.com](http://www.tsttruck.com)

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## SENSOR FEATURES

1. Sensors easily install on the valve stem.
2. Sensors are water resistant.
3. Pressure and temperature data is read every two (2) minutes.
4. Removal of a sensor (0 lbs. pressure) will shut off the sensor battery.
5. Tire leaks and high-temperatures are detected quickly.
6. Each sensor has a unique, four (4) digit code for programming.
7. Sensor batteries last approximately 3-4 years.
8. Sensors feature an anti-theft cap.

## DISPLAY FEATURES

- 1) Easy to read display.
- 2) Mount included.
- 3) Integrated lithium-ion battery that is rechargeable with provided cord.
- 4) Wake-up activation of display when in motion.
- 5) Automatic display illumination in dark conditions.
- 6) Programable high and low-pressure alarm thresholds.
- 7) Programmable high-temperature alarm.
- 8) Visual and audible warning alarms when temperature or pressure exceeds thresholds.
- 9) Multiple pressure units: PSI, BAR, Kpa and Kgf/cm<sup>2</sup>.

- 10) Selectable temperature unit: °C or °F
- 11) Program up to 22 tires.
- 12) Tire pressure and temperature is displayed simultaneously for quick viewing of each tire.
- 13) The trailer display can be electronically removed from the screen when not towing.
- 14) Push button programming.
- 15) A fully charged display will continuously operate 5-7 days on battery power.
- 16) Tire temperature and pressure settings are configured “per axle.”

## SYSTEM COMPONENTS IN KIT



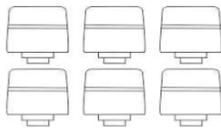
Display



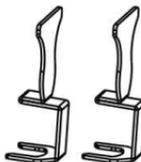
Display Holders



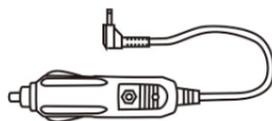
Long Antenna



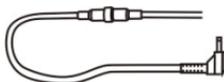
Sensors



Installation Tools



Power Adapter

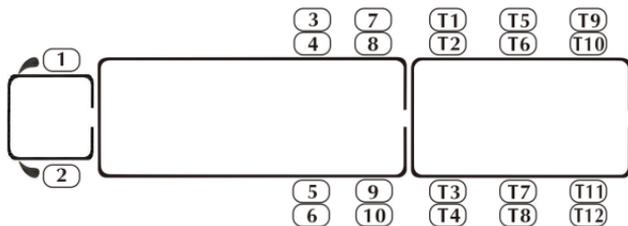


Hard Wire Kit

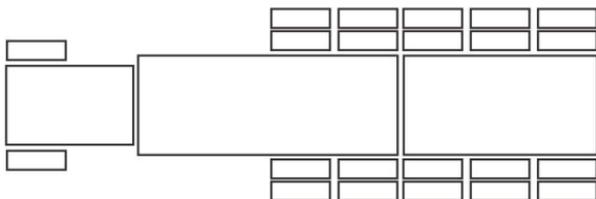


## PROGRAMMING SENSOR CODES INTO THE DISPLAY

Note: It is recommended to label each sensor first with the provided numbering code stickers, similar to the following pattern, before you code the sensors. This allows you to know which sensor is programmed to which tire position. You can also write in your sensor number pattern.



Or use your own pattern:



## SENSOR MANUAL CODING (Option #1)

Note: Code all the sensors to the display BEFORE screwing them onto the tire valve stem unless otherwise noted.

Also...A code of all F's (FFFF) means the tire icon will NOT show up on the display screen. If any of the digits are not "F," the system will interpret this as a code and the tire icon WILL show on the screen. To delete any tire position, the code must be set to "FFFF."

- Turn the display on by holding the (-) button down until it beeps. You will now be on the Main Screen.

- Press and hold the “SET” button until it beeps and then release it (approx. 5-7 seconds). You are now in the code programming mode.
- A tire icon will flash and all 22 tires will be displayed. “FFFF” should be displayed.
- Navigate to the tire you want to code by quickly pressing the “SET” button until you arrive at the tire position on the screen.
- Enter the first digit of the four-digit code from the sensor using the (+) or (-) buttons.
- Move to the next digit by quickly pushing the “MODE” button. Enter the second digit of the code with the (+) or (-) buttons.
- Press “MODE” to go to the third digit. Enter it.
- Press “MODE” and put in the fourth and final digit for that tire position. When done you can:
- Quickly press “SET” to move on to another tire position to enter the next four-digit code.

OR

- Press and hold the “SET” button to save the code you entered.

Note: If the right front tire is blinking and does not show all “F’s” you can delete the factory test sensor code as follows:

- Press the “SET” button until it beeps (approx. 4-6 seconds). The display should now show a code other than “FFFF.” This display indicates the tire position is coded and will show on the Main Screen.

- To remove the tire icon from the screen, the four-digit code has to display all F's. With the first digit flashing, set it to "F" using the (+) or (-) buttons.
- Press "MODE" to move to the next digit. Set that to "F."
- Continue to set all the digits to "F." When done and with "FFFF" showing on the screen, press and hold the set button until it beeps. This will save the code you entered and exit the programming mode.

Note: When in the coding mode, the display will time-out within approximately one (1) minute if no buttons are pushed. At that point, you will have to again hold the "SET" button down and start the coding process again.

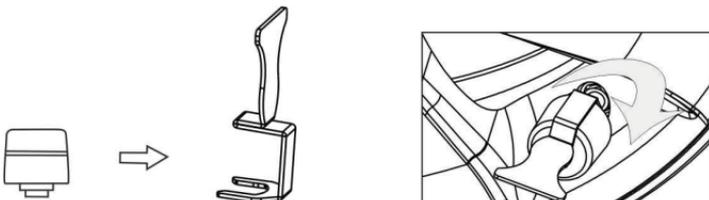
## AUTOMATIC CODE LEARNING (Option #2)

- Be sure your display is ON and it is showing the main screen.
- Be sure your sensors are numbered. Screw the sensors partly onto each valve stem in the order you numbered them. Do NOT screw them down far enough to hear air hissing out.
- Hold the "SET" button down until you hear a second beep and then release.
- Navigate to the tire icon you want to code that sensor to on the display.
- Stand by that tire and screw the sensor all the way down to seat it.
- The sensor will immediately transmit its four-digit code to the display and it will be displayed.
- Physically move to the next tire position you want to code.

- Using the (+) or (-) button, navigate to the tire on the monitor you are standing at.
- Again, finish screwing that sensor down to seat it. That code now will appear on the monitor.
- Continue this procedure until you have coded all the sensor positions.
- Finally, press the “SET” button until it beeps to save all the sensor codes in the monitor.

## SENSOR INSTALLATION

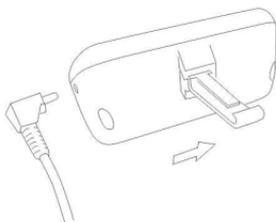
- Be sure to write down your sensor code in this manual in the correct tire position for future reference.
- Using one of the tools included with your kit, slip the sensor into the tool.



- Screw the correct sensor onto the valve stem for that tire position. Tighten the sensor until the air stops leaking and the sensor bottoms-out on the valve stem. Then give it a slight twist to seat it. Do Not Overtighten!

## DISPLAY INSTALLATION

- There are two ways to mount the display to your dash.
- The vent clip can be attached to the display and then clipped inside one of the vehicle A/C vents.
- Optionally, the provided velcro pads can be used to secure the display to the top of the dash.
- Plug the power cord into the vehicle's power port and then into the side of the monitor to charge the internal lithium battery. Charge the display for four (4) hours the first time.
- An optional hardwire cord is provided if you choose to wire the display into your vehicle's ignition switch. In this case, the monitor will automatically come on when the ignition is on.



## PARAMETER SETTINGS (Setting the sensor alarms)

NOTE: The factory default settings are:

Pressure Unit: PSI

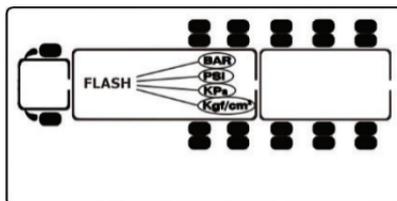
Temperature units: °C

High Pressure: 175 lbs.

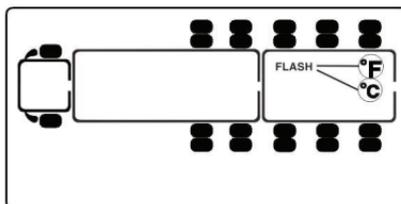
High Temperature: 70°C (158° F)

Low Pressure: 100 Lbs.

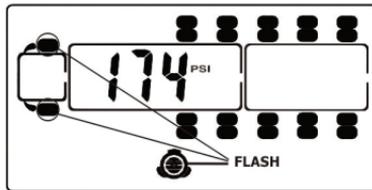
- Be sure your monitor is ON and it is showing the main screen.
- Press and hold the “MODE” button until the monitor beeps (approx. 6 seconds)
- You should see “PSI” on the screen. If not, push and release the (+) button to scroll through the pressure units until “PSI” appears.



- Press and release the “MODE” button (do not hold it down). “C” for Centigrade (Celsius) will appear on the screen. For Fahrenheit, press and release the (+) button, unless you want the monitor to read temperatures in Centigrade (Celsius). An “F” will appear for Fahrenheit.

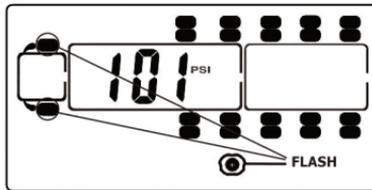


- Press and release the “MODE” button. The first axle (steer axle) on the truck cab will appear and will flash and show the high-pressure alarm setting. If you are putting sensors on this axle, set this pressure alarm to 20-25% above your normal tire pressure for those tires using the (+) or (-) buttons.



High Pressure-Front Axle

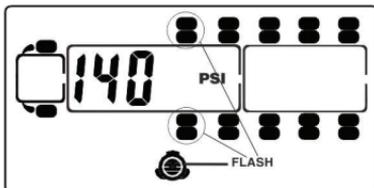
- Again, press and release the “MODE” button. The low-pressure alarm setting will appear. Set this 10% below the normal tire pressure for this axle.



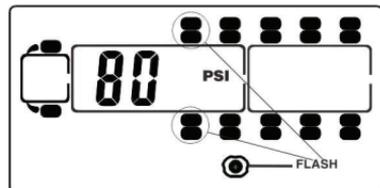
Low Pressure-Front Axle

NOTE: If your normal tire pressures are below 100 lbs., you must first set the low-pressure alarm and then go back to the same axle (by clicking the “MODE” button) and set the high pressure. This must be done for any axle with pressures less than 100 lbs.

- Press and release the “MODE” button. The next axle in sequence will flash and the high-pressure alarm will be displayed. Set the high-pressure alarm and press and release the “MODE” button. Set the low-pressure alarm for that axle.

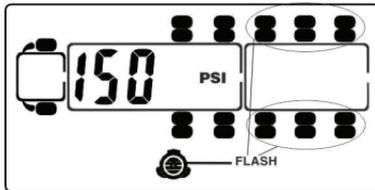


High Pressure-2nd Axle

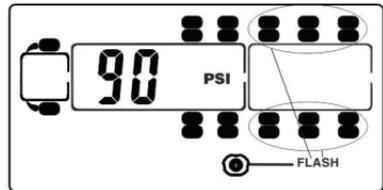


Low Pressure-2nd Axle

- Continue to set the high and low pressures for each axle.
- When you get to the Trailer Section of the display, all the tires will flash. You can now set all the trailer axle high and low pressures as one group. Set the high-pressure alarm first, than press and release the “MODE” button and set the low-pressure alarm.

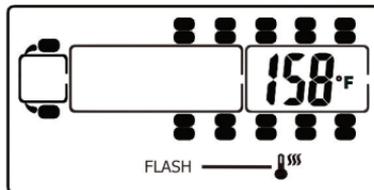


High Pressure-Trailer



Low Pressure-Trailer

- Press and release the “MODE” button once again. The Temperature icon appears and the default temperature setting of 158° will display. Typically, do not change this setting unless you have a special circumstance.



- Finally...IMPORTANT...Push and release the “SET” button to save all your parameter settings in the monitor.

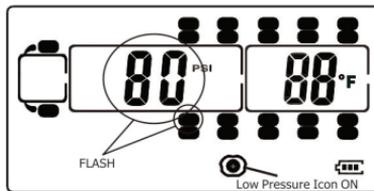
## MONITOR ALERTS

### Out of Parameter Alert

The 510 Cap sensors send the tire pressure and temperature readings to the monitor every two (2) minutes. If a tire is outside the parameters that were set, an immediate audible alarm will sound and the red LED light will immediately flash. The audible alarm can be silenced for a short while by pushing any of the four buttons on the front of the monitor. The red warning light will continue to flash until the pressure or temperature issue is resolved and brought back into your preset levels.

### Fast Leak Alert

When a fast tire leak is detected, the sensor will send that data immediately to the display. You will see the problem tire flash on the display, the corresponding icon will be seen at the bottom of the screen and the pressure and temperature read-outs will flash. You will also hear an audible alarm. Again, you can press any of the four buttons on the display face to silence the alarm for a short while. The screen readout will continue to flash and alarm until the problem is corrected.

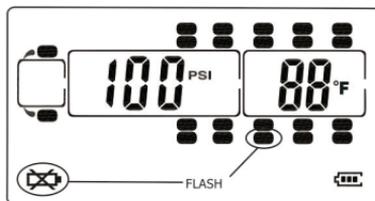


Fast Leak Alert

### Sensor Low Battery Alert

The sensor low battery indicator will display when the internal, non-replaceable battery is at the end of its life. The tire affected will flash along with the pressure and temperature read-out and the low battery symbol in the lower left corner of the screen will flash if your display is on. Replace the sensor as soon as possible.

**NOTE:** This low battery alert will display for only a short time until the battery is exhausted. If you do not have the monitor on often, the indicator signal will be sent but not displayed on the screen since it was off. If your sensor is not reporting to the display, you may have to replace the sensor. Call TST for Tech Support.



Low Sensor Battery Alert

## OTHER FUNCTIONS

### Normal Display Scrolling

The display will automatically scroll/cycle through the coded tires one by one. Each tire will be displayed for approximately 5-6 seconds. You can manually cycle through the coded tires by pushing the (+) or (-) buttons on the display. The display will show the tire you choose for approximately 10 seconds before continuing to cycle.

### Backlighting and Motion Detection

The display is equipped with a light sensor and a motion sensor. The backlight will turn on when the vehicle is in motion and there is little ambient light. If the vehicle has stopped for a while and the display is on the internal battery, the display will “go to sleep” until the vehicle resumes motion. To shut the light sensor off, press the “+” button for approximately 4 seconds.

### Disconnecting and Reconnecting a Towed Vehicle

When a towed vehicle is displayed on the screen and you want to temporarily remove it (example: leaving a trailer at a campground), press and hold the “MODE” and (-) buttons until

the trailer section on the screen disappears. The sensors on the trailer will not be read. To bring the trailer section back on the screen, again, push the “MODE” and (-) buttons at the same time until the towed vehicle reappears.

## Charging the Display

The display is powered by a non-replaceable, lithium-ion battery. A battery level indicator is located on the lower right side of the display. When the indicator shows one bar, it is recommended you charge the monitor as soon as possible to avoid disruption when in use. It will take approximately four (4) hours to fully charge. The display run time is 5-7 days on a full charge.

## SENSOR BATTERIES

- Sensor batteries are not replaceable by the consumer. Call TST at 770-889-9102 for sensor replacement.

## TROUBLESHOOTING TIPS

- Label all your sensors with a silver sharpie first so you will know which sensor goes on which tire position or write down your sensor code and tire position in this manual.
- If the sensor is not reading or reading a lower pressure, try unscrewing the valve core in the valve stem a half a turn. This may allow more air to get to the sensor. CAUTION...Do not stand in front of the valve stem when performing this procedure with a valve core tool!
- It may take up to 30 minutes for the sensor data to appear on the display the first time you set up the system. Leave the display on until all sensor data appears. After the sensor data is received the first time, subsequent system use should only take minutes for sensor data acquisition.
- Do not overtighten the sensors on the valve stems. Make sure they are snug on the valve stem.

- When done programming the Parameters into the display, remember to quickly push and release the “SET” button to save the Parameters.
- To save the sensor codes when done coding all the sensors, press and hold the “SET” button. The display will beep and the codes are saved. You will then be returned to the Main Screen.
- If your tire pressure is under 100 lbs., you will have to program the Low-Pressure alarm first and then come back around and program the High-Pressure alarm. The high pressure cannot go lower than the low-pressure setting, which defaults to 100 lbs.
- When the display is on and reading, you can press the (+) or (-) buttons to quickly scroll through the tires on your display. The automatic scrolling function will resume after 10 seconds when no buttons are pushed.
- If your sensor is not transmitting data to the display, try removing the sensor from the tire stem and, after waiting 5 seconds, screw the sensor back onto that stem. This resets the sensor electronics.
- If your display is plugged into a constant 12v power source, the power switch (“-“ button) will not function. To turn the monitor off, unplug the power supply and then push the (-) button to shut off the display.
- To extend the life of the sensor battery, remove the sensor from the valve stem. The internal pressure switch will shut the battery off. Note that, even though the battery is off, it will still degrade with time.

## COMMON QUESTIONS

- **What do I do if my sensor is not reading?**

- 1) Unscrew the sensor off the valve stem and then reinstall it. The sensors are pressure sensitive and will reset once reinstalled.
- 2) If it still does not read, try placing a working sensor from another tire on that valve stem. Keep in mind, the sensor you just moved will continue to read in its original tire position on the display. If that sensor does not read normally, you may have a valve stem problem. Try unscrewing the valve core as described above. If the switched sensor reads normally, it may be a sensor issue.

Call 770-889-9102 for more troubleshooting.

- 3) If your sensor is not transmitting data to the display, check to see if your sensor code has been input into the display correctly. A “d” and a “6” can look similar.

- **Why does my display sometimes “drop” sensor data from a tire position?**

- 1) If you have a unit that exceed 34’ in length, you may need a repeater to amplify the sensor signals from the tires to the display. This issue is not limited to the rear tires on a vehicle. A unit with a lot of metal, like an Airstream trailer, also needs a repeater.
- 2) Be aware that an indoor/outdoor thermometer with an external temperature sensor may interfere with the TST TPMS. Temporarily remove all the batteries in the thermometer AND exterior sensor and see if the problem is corrected. A thermometer with a higher frequency (915 Mhz) may be required. Atomic clocks can also cause interference with the sensors.

- **Why does my display sometimes alarm while I am sitting still in the evening?**

As night approaches and outdoor temperatures decrease, your tire pressures may drop below the parameters you have set, thus causing an out of spec alarm. When temperatures drop, turn your monitor off overnight. As the air temperature rises the next day or as you start driving, the tires will also heat up and come back into your parameters. You can also add air to your tires to bring them back into the parameters you set up.

- **Why can't I set a lower pressure than 100 lbs. for the high or low-pressure alarm?**

The high-pressure alarm cannot go lower than the low-pressure alarm default setting. If your tire pressure settings are below 100 lbs., you must first set the low-pressure alarm and then come back to the high-pressure settings using the "MODE" button and set the axles high-pressure alarm. When done, be sure to press and release the "SET" button to save all the parameter settings. See "Parameter Settings" above.

- **What conditions cause the display to alarm?**

1. A rapid leak (icon at bottom of screen).
2. A low sensor battery (lower left battery icon blinks).
3. An overheated tire temperature (temperature icon bottom of screen).
4. A High or Low pressure reading (be sure your parameters are set correctly).

In every instance, the tire Pressure and Temperature numbers will also flash when the tire having the problem flashes. The lower red alarm light will also flash.

- **How do I remove my trailer from the display screen when I am not using it?**

To electronically disconnect the trailer tire icons from the screen:

1. Press and hold the “MODE” and (-) buttons.
2. When the trailer section on the display disappears, release the buttons.
3. To electronically reconnect the trailer section, again, press and hold the same “MODE” and (-) buttons.
4. When the trailer section on the display reappears, release the buttons

- **How do I remove an unwanted tire icon from the display?**

1. Hold down the “SET” button until it beeps and then release it.
2. Navigate to the tire you want to remove from the screen by quickly pressing the “SET” button to move through the tire icons.
3. When at the correct tire, use the (+) or (-) buttons to adjust the first digit to an “F”.
4. Quickly push and release the “MODE” button to move to the next digit. Set that to “F”.
5. Continue until all digits are set to “F”.
6. When “FFFF” is showing, press and hold the “SET” button until it beeps to save the code.
7. You will be back to the Main Screen and the tire icon will be gone.

## SENSOR SPECIFICATIONS

Temperature Operating Range	-40° F – 176° F / -40° C – 80° C
Storage Temperature Range	-40° F – 185° F / -40° C – 85° C
Pressure Range	0 – 196 PSI / 0 – 13.5 bar
Pressure Accuracy Range	+/- 3 PSI / +/- .02 bar (with a digital gauge)
Temperature Accuracy Range	+/- 3°
Transmission Power	<10dBm
Transmission Frequency	433.92 MHz
Approximate Battery Life	3 – 5 years
Physical Sensor Size	1.1” Diameter x 1.26” Height  28mm Diameter x 32mm Height
Sensor Weight	0.77 oz. / 22 grams

## DISPLAY SPECIFICATIONS

Temperature Operating Range	-4 ° F – 176° F / -20° C – 80° C
Storage Temperature Range	-22° F – 185° F / -30° C – 85° C
Charger Input Voltage	11v – 24v DC
Frequency	433.92 MHz
Size	3.35” Length x 1.77” Width x 1.38” Depth  85mm Length x 45mm Height x 25mm Depth
Weight	5.64 oz / 160 grams

This system is designed to monitor air pressure and temperature within the tire. It is only for added safety and not meant to replace regular tire maintenance and exercise of reasonable care when operating a motor vehicle. The system cannot prevent accidents nor will TST be responsible for damage or injury due to (a) improper use, (b) failure to follow the product instructions or to perform any preventative maintenance, (c) unauthorized repair or modifications, (d) use of products beyond their useful life, or (e) external causes such as accidents, abuse, or other actions or events beyond TST’s reasonable control.

770.889.9102

[www.tsttruck.com](http://www.tsttruck.com)

TST-Doc-510 Manual-(A)

## NOTES:



4250 Keith Bridge Rd.  
Suite 200  
Cumming, GA 30041

770.889.9102

[www.tsttruck.com](http://www.tsttruck.com)

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