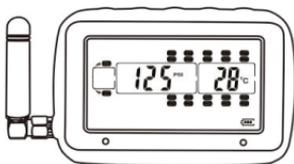




Wireless Tire Pressure and Temperature Monitoring System Instruction Manual

Model #: TM-507 507 Flow-through and 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

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SENSOR FEATURES

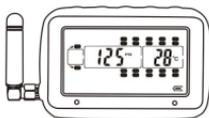
1. The sensors easily install on the valve stem.
2. Sensors are water resistant.
3. Pressure and temperature data is read every two (2) minutes.
4. Removal of a sensor (0 lbs. pressure) will shut off the sensor battery.
5. The sensor batteries last approximately one (1) year and are user replaceable.
6. Tire leaks and high temperatures are detected quickly.
7. Tires can be inflated without removing the sensor.
8. Each sensor has a unique, six (6) digit code for programming.
9. One-button sensor coding feature on display.
10. Sensors feature an anti-theft design using the included hex screws (507FT) and outer shell cap with wrench (507 Cap).

DISPLAY FEATURES

- 1) Easy to read display.
- 2) Two mounts included.
- 3) Integrated lithium 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 Kg/cm².
- 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.”

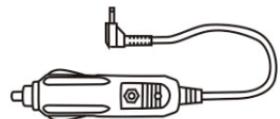
SYSTEM COMPONENTS IN KIT



Display



Cradle



Power Adapter



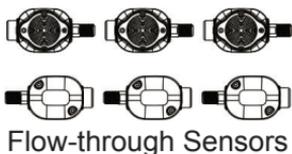
Hard Wire Kit



Extra “O” rings



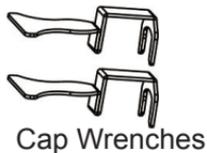
Suction Cup Mount



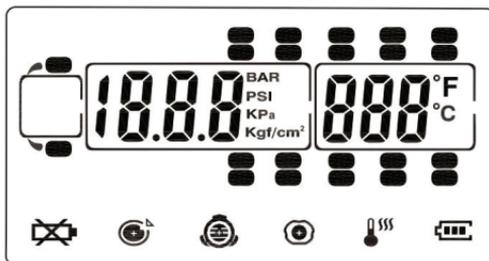
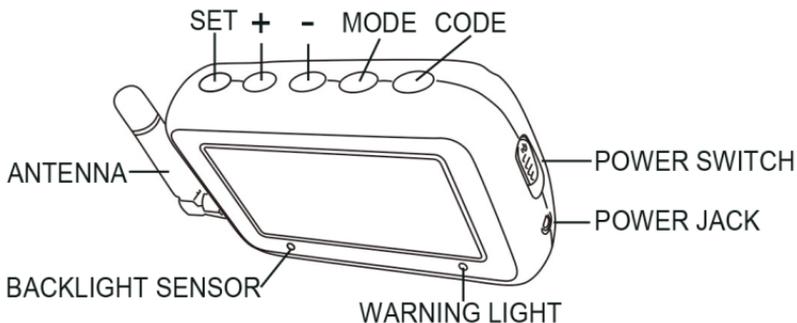
or



or



DISPLAY CONTROLS

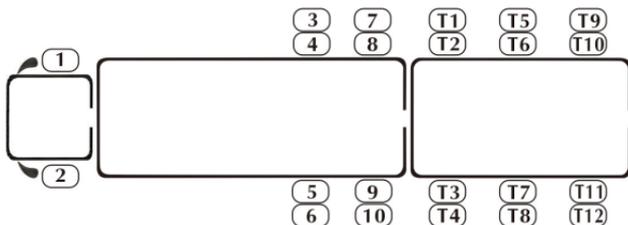


- Tire Indicator
- ⊗ Low Sensor Battery
- ⊗ Fast Leakage
- ⊗ High Pressure
- ⊗ Low Pressure
- ⊗ High Temperature
- ⊗ Display Battery

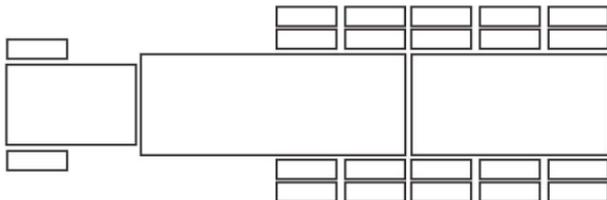
Pressure Unit: BAR, PSI, Kpa or Kgf/cm², user-selectable.
 Temperature unit: C° or F°, user-selectable.

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 own sensor number pattern.



Or use your own pattern:



AUTOMATIC CODE LEARNING (option #1)

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

- Turn the display on. You will be on the Main Screen.
- Press and hold the “CODE” button until it beeps and then release it (approx. 6 seconds). You are now in the coding mode.
- A tire icon will flash and all 22 tires will be displayed. “FFF FFF” should also be displayed.

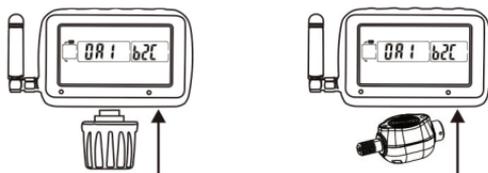
Note: If the right front tire is blinking and does not show all “Fs” you can delete that factory test sensor code as follows:

Press the “SET” button until it beeps (approx. 3 seconds). The display should now show “FFF FFF.” This display indicates the tire position is NOT coded and will not show on the Main Screen when out of the coding mode.

- Normally, start coding on the right/passenger side of the vehicle. This is position #1 or, in the case of a trailer, position #T1.
- Be sure you have your first sensor ready and keep the remaining sensors at least two (2) feet away from the display as to not interfere with the coding procedure.
- Hold your first sensor to the bottom of the display and quickly press and release the “CODE” button. The display’s red LED should light and it should beep once. A six (6) digit unique code should now appear on your screen, replacing the “FFF FFF.”

Note: If a double beep is heard and the “FFF FFF” does not change, try quickly pushing the “CODE” button once again. This may have to be done a few times for the code to appear. If the sensor does not code, check the battery voltage, be sure other sensors are not close to the coding sensor, be sure the sensor is touching the display, and be sure you are quickly pushing and releasing the “CODE” button. Call Tech Support at 770-889-9102 if none of the above works.

- Once coded, use the (+) or (-) buttons to navigate to the next tire position you want to code a sensor to.
- Again, put sensor #2 up to the bottom of the display and quickly press and release the “CODE” button to capture the sensor code. The “FFF FFF” should change to a new unique code.



- Continue this process until all your sensors are coded in the correct tire positions.
- Finally, press and release the “MODE” button to go back to the Main Screen. You should now see only the tires you coded. You have now completed the automatic sensor code set-up.

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 “CODE” button down until it beeps and start the coding process again.

Note: Be sure the sensor being coded is at least 2 feet away from the other sensors.

PRESSURE CODING (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.
- Stand by that tire and screw the sensor all the way down to seat it.

- The sensor will immediately transmit its six digit code to the display and it will be shown.
- Physically move to the next tire position you want to code.
- Using the (+) or (-) button, navigate to the tire on the display you are standing at.
- Again, finish screwing that sensor down to seat it. That code will now appear on the display.
- 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 display.

MANUAL CODING (option #3)

Note: This method is mainly used to program sensor codes from an old display to a new display if you do not have the sensors available.

- Be sure your display is ON and it is showing the main screen.
- Hold the “SET” button down until it beeps and release (approx. 3 seconds).
- The first “F” should be blinking (if no code was entered previously). Use the (+) or (-) buttons to change the first digit to the proper unit.
- Press and release the “MODE” button to move to the next digit position. Again, use the (+) or (-) buttons to change that digit.
- Continue this process until all six (6) of the digits are properly set.

- To move to another tire position, quickly press and release the “SET” button.
- When done, press and hold the “SET” button until it beeps to save the entries.

SENSOR INSTALLATION - Flow-through Sensor

- Be sure the anti-theft allen set screw at the sensor base is not screwed in as to impede screwing the sensor onto the valve stem.
- Screw the correctly marked 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. Give it a slight twist to seat it. Do Not Over-tighten!
- Using the provided small allen wrench, tighten the set screw onto the valve stem. This will prevent the sensor from being removed. If necessary, you can put the screw into the second screw hole to allow access by the allen wrench if your rim is in the way. Keep the wrench in a safe place for future use.
- You can now inflate or deflate the tire through the 507FT sensor without removing it.

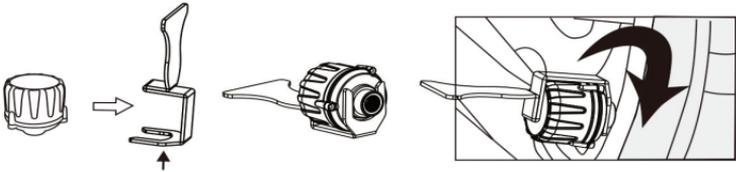


SENSOR INSTALLATION - Cap Sensor

- Place the provided wrench around the sensor. You must use the wrench to put the sensor on or take it off the valve stem.
- Screw the correctly marked sensor onto the valve stem for that tire position. Tighten the sensor until the air

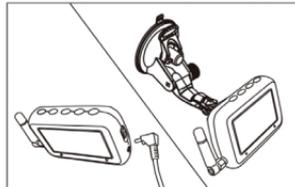
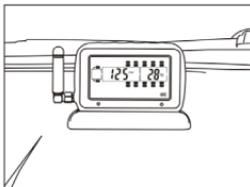
stops leaking and the sensor bottoms-out on the valve stem. Give it a slight twist to seat it. Do Not Over-tighten!

- Keep the wrench in a safe place for future use.
- To inflate or deflate the tire, you must remove the 507 cap sensor.



DISPLAY INSTALLATION

- There are two display mounts that come with the kit: A suction cup mount and a dash mount. Double-sided tape is provided for affixing the dash mount display holder.
- The suction cup mount can be used on the windshield, side window or directly on a smooth dash. Snap the mount into the back tabs on the display to use.
- Plug the power cord into the vehicle's cigarette lighter/power port and then into the side of the display to charge the internal lithium battery. Charge the display for four (4) hours the first time.
- An optional hard wire cord is provided if you choose to wire the display into your vehicle's ignition switch. In this case, the display will automatically come on when the ignition is on.



DISPLAY BUTTONS

- There are five (5) programming buttons located across the top of the display. They are: “SET,” (+), (-), “MODE” and “CODE.”
- The power slide switch is located on the right side of the display. Slide it up to turn on the display. Slide it down to turn off the display.

NOTE: The side power switch will not turn off the display when constant power is applied to the unit either by the cigarette lighter/power cord or the hard wire kit.

PARAMETER SETTINGS (Setting the sensor alarms)

NOTE: The factory default settings are:

Pressure Unit: PSI

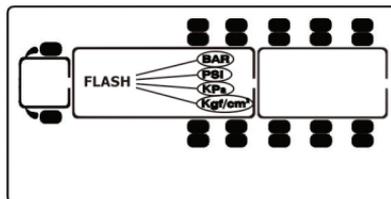
Temperature units: °C

High Pressure: 175 lbs.

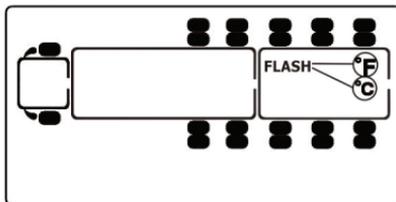
High Temperature: 70°C (158° F)

Low Pressure: 100 Lbs.

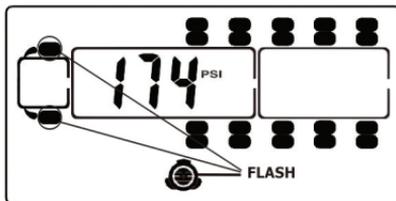
- Be sure your display is ON and it is showing the Main Screen.
- Press and hold the “MODE” button until the display beeps (approx. 6 seconds).
- You should see “PSI” on the screen. If not, push and release the (+) button to scroll through the pressure units until “PSI” appears.



- 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 display to read temperature in Centigrade (Celsius). An “F” will appear.

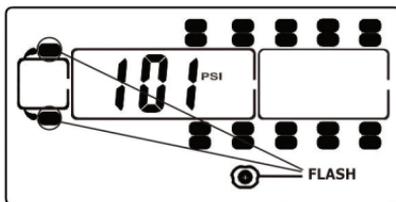


- Press and release the “MODE” button. The first axle (steer axle) on the truck cab will appear and will blink showing the high-pressure alarm setting. If you are putting sensors on this axle, set the pressure alarm to 20-25% above your normal tire pressure for those tires.



High Pressure-Front Axle

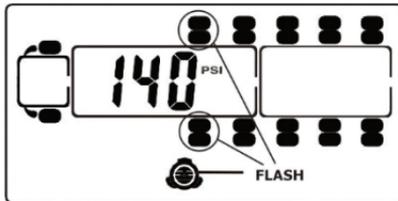
- Press and release the “MODE” button. The low pressure alarm setting will appear. Set this at 10% below the normal tire pressure for this axle.



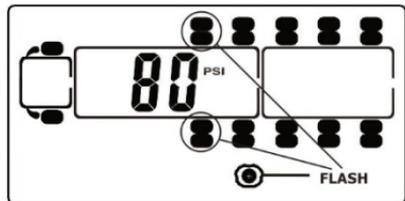
Low Pressure-Front Axle

NOTE: If your normal tire pressures are below 100 lbs., you must first set the low-pressure alarm and then go back around 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 blink and the high-pressure alarm will be displayed. If you have sensors here, set the high-pressure alarm and press and release the “MODE” button. Set the low-pressure alarm for that axle.

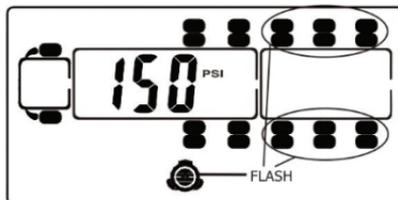


High Pressure-2nd Axle

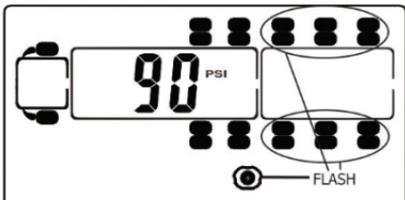


Low Pressure-2nd Axle

- 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, press and release the “MODE” button and set the low-pressure alarm.

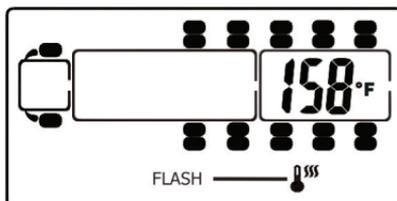


High Pressure-Trailer



Low Pressure-Trailer

- Press and release the “MODE” button once again and 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 display.

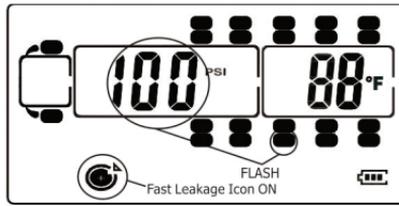
DISPLAY ALERTS

Out of Parameter Alert

The 507FT and Cap sensors send the tire pressure and temperature readings to the display every two (2) minutes. If a tire is outside the parameters that were set, the 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 five buttons on the top of the display. The red warning light will continue to flash until the pressure or temperature issue is resolved and brought back into your pre-set 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 get an audible alarm. Again, you can press any of the five top buttons to silence the alarm for a short while. The display will continue to flash and alarm until the problem is corrected.

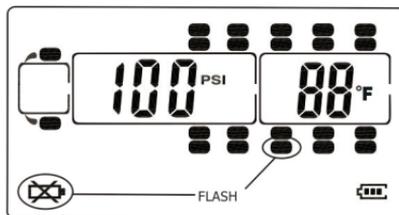


Fast Leak Alert

Sensor Low Battery Alert

The sensor low battery indicator will display when the CR1632 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 display. Replace with a new battery 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 display on often, the indicator signal will be sent, but not shown on the display since it was off. If your sensor is not reporting to the display, check the battery voltage. If it is below 2.75 volts (normally 3+ volts), you will have to change the sensor battery.



Low Sensor Battery Alert

OTHER FUNCTIONS

Normal Display Scrolling

The display will automatically scroll/cycle through the displayed tires one by one. Each tire will be displayed for approximately 5-6 seconds. You can manually cycle through the displayed 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

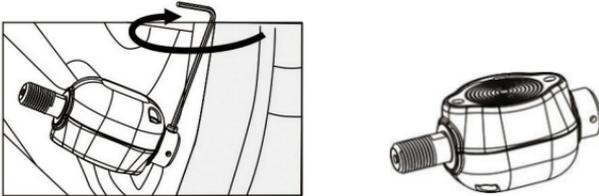
When a towed vehicle is displayed on the screen and you want to temporarily remove it (example: leaving a trailer at a campground), press and hold the “MODE” and (-) buttons simultaneously until the trailer section of the display disappears. The sensors on the trailer will not be read. To add the trailer section back on to the display again, push the “MODE” and (-) buttons at the same time until the towed vehicle reappears.

Charging the Display

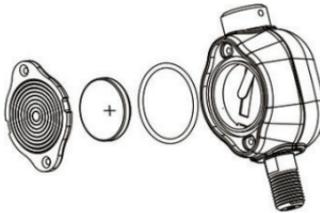
The display is powered by a non-replaceable, lithium-ion battery. A battery level indicator is located on the front, lower right side of the display. When the indicator shows one bar, it is recommended you charge the display as soon as possible to avoid disruption when in use. It will take approximately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

REPLACING THE FLOW-THROUGH SENSOR BATTERY (CR1632)

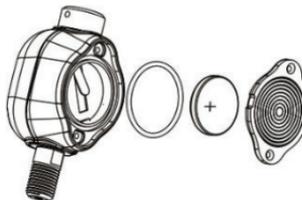
- Remove the sensor from the tire valve stem.



- Use a jeweler's Phillip's screwdriver to remove the two screws from the battery cover on the side of the sensor. The (+) side of the battery can now be seen.



- Remove the CR1632 battery and check that the metal contact points in the sensor are not corroded. To clean the contact points, use a pencil eraser and lightly rub the two metal battery contacts in the sensor.

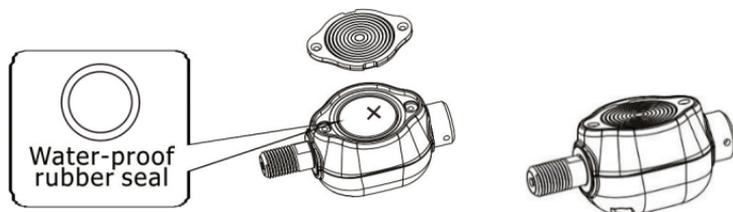


- Install a new battery. Be sure the (+) (positive) side is facing out.



NOTE: It is recommended that you check the voltage of the new battery before installation. It should read 3+ volts when new. Do not install if the battery reads less than 3 volts.

- Check the “O” ring that surrounds the battery compartment. This is the waterproof seal. Replace if old or damaged. Additional “O” rings are provided in your 507FT kit or can be purchased from TST by calling 770-889-9102.

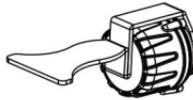


- After a new battery installation, replace the battery compartment cover and snugly tighten the two screws. Do not over-tighten.
- Screw the sensor on to the correct tire position.
- Tighten the allen screw onto the valve stem.

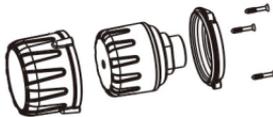
NOTE: Changing the battery in the sensor does NOT affect the sensor programming in the display. You will not have to reprogram the sensor into the display.

REPLACING THE CAP SENSOR BATTERY (CR1632)

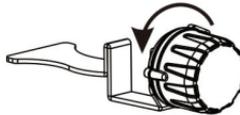
- Remove the sensor from the tire valve stem.



- Use a jeweler's Phillip's screwdriver to remove the three screws at the base of the sensor. This will separate the anti-theft housing.



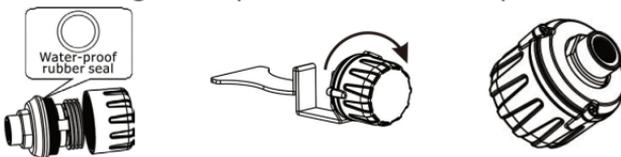
- Use the installation tool to hold the base of the inner sensor and screw off the cap.



- Slide the battery out of the cage sideways. Note that the (+) side is up. Replace with a new battery that is 3+ volts.



- At this time check the "O" ring at the base of the threads. Be sure it is in place. If it is worn or broken, replace it. Screw the cap back on, replace the two halves of the anti-theft housing and replace the three Phillip-head screws.



TROUBLESHOOTING TIPS

- Label all your sensors with the provided stickers first so you will know which sensor goes in which tire position.
- If a sensor is not allowing air to pass through it OR 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 and through 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 usage should take only minutes to acquire the sensor information.
- Do not overtighten the sensors on the valve stems. Make sure they are snug and use the anti-theft set screw (507 flow-through) to lock the sensor onto the valve stem.
- When done programming the Parameters into the display, remember to quickly push the “SET” button to save the Parameters. It is not necessary to use the “SET” button when coding the sensors.
- 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 display is plugged into a constant 12v power source, the sliding power switch on the side will not function. To turn the display off, unplug the power supply and the switch will now operate.
- 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.
- If your sensor is not transmitting data to the display, try re-coding the sensor to the same tire position. See Automatic Code Learning (Option #1, page 4).

COMMON QUESTIONS

- **What do I do if my sensor is not reading?**
 - 1) Check the CR1632 battery in the sensor. If you have a voltmeter, be sure the battery is reading over 3 volts. If not, replace with a new battery. We recommend testing a new battery as well to be sure it is above the 3-volt minimum parameter.
 - 2) Unscrew the sensor off the valve stem and then reinstall it. The sensors are pressure-sensitive and will reset once reinstalled.
 - 3) 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.
 - 4) If your sensor is not transmitting data to the display,

try recoding the sensor to the same tire position. See Automatic Code Learning (Option #1, page 4).

- **Why does my display sometimes “drop” sensor data from a tire position?**
 - 1) If you have a vehicle(s) that exceeds 34’ in length, you may need a repeater to amplify the sensor signals from the tires to the monitor. This issue is not limited to the rear tires on a vehicle. Also, a repeater is recommended for vehicles with a lot of metal, as the metal may cause interference.
 - 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 display 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 display off overnight. As the air temperature rises the next day or as you start driving, the tires will 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 setting. If your tire pressure settings are below 100 lbs., you must first set the low-pressure alarm

settings and then come back around to the high-pressure using the “MODE” button and set the axles’ high-pressure settings. When done, be sure to press and release the “SET” button to save all the parameter settings.

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

The display will alarm for the following reasons:

- 1) Low battery on a sensor, lower left battery icon blinks.
- 2) A rapid leak (icon at bottom of screen).
- 3) An overheating tire temperature (temperature icon at 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 icon representing a tire with a problem blinks.

- **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 together.
- 2) When the trailer section of the display disappears, release the buttons.
- 3) To electronically reconnect the trailer section, again, press and hold the “MODE” and (-) buttons.
- 4) When the trailer section of the display reappears, release the buttons.

- **How do I remove an unwanted tire icon from the display?**
 - 1) Hold down the “CODE” button until it beeps and then release it.
 - 2) Navigate to the tire you want to remove from the screen by using the (+) or (-) buttons to move through the tire icons.
 - 3) When on the correct tire, hold down the “SET” button until it beeps.
 - 4) You should see “FFF FFF” across the display.
 - 5) Quickly push and release the “MODE” button.
 - 6) 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	1 – 1.5 years

Physical Sensor Size - Flow-through	2.2" Length x 1" Width x .9" Height 52mm Length x 26mm Width x 23.5mm Height
Physical Sensor Size - Cap	1.06" Diameter x .9" Height 27mm Diameter x 23mm Height
Sensor Weight - Flow-through	0.77 oz. / 22 grams
Sensor Weight - Cap	0.54 oz. / 15.4 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	8v – 30v DC
Frequency	433.92 MHz
Size	3.46" Length x 2.36" Width x .94" Depth 88mm Length x 60mm Width x 24mm Depth
Weight	4.4 oz / 125 grams

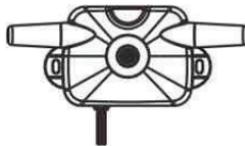
This system is designed to monitor air pressure and temperature within the tire. It is only for added safety and not meant to replace regular tire maintenance and exercise of reasonable care when operating a motor vehicle. The system cannot prevent accidents nor will TST be responsible for damage or 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.

REPEATER

The repeater is used to strengthen/amplify the sensor signal forward to the display. A repeater is packaged with this system.

Wire the repeater into a 12v source that will be constant while driving. The red light on the repeater will illuminate when operational. The unit is waterproof and can be mounted inside or out.

There is no set-up needed for the repeater.



Repeater

NOTES:



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