Dill ® Air Controls Products

Bluetooth Aftermarket TPMS
User Manual

- - - READ BEFORE INSTALLATION - - -

ENCLOSED TRAILERS | BOAT TRAILERS | FLATBED TRAILERS | UTV | RECREATIONAL VEHICLES | TRACK CARS

Devices not included

Scan to download the app

App screenshots within this document may look different than what is displayed on your device depending on its screen size, screen resolution, and operating system.

Table of Contents

Tire Position	ID Code

Tire Position	ID Code

1.0 - Initial Setup

1.1 - The Tire Pressure Sensors

Have a trained tire service technician install the valve-mounted or band-mounted tire sensors in the wheels (*see Section 6.0 for details*). Each tire sensor has a unique ID and, depending on the learning method performed (*see Section 3.0 for details*), they may need to be installed in a predetermined position. It is recommended to write down the ID codes before installation.

1.2 - Download and Open the App

1.2.1 - Using your device's camera or QR code reader, scan the QR code found on the cover of this instruction guide. This QR code will take you to our website, which has links to both platforms' apps.

-You can also search "Dill TPMS" within the device's app store.

Minimum Requirements

Platform	Operating System	Compatible Smartphone
Apple	iOS 12 or later	iPhone 5 or newer
Google / Android	Android 4.4 or later	Android Smart Phone

1.2.2 - Download the free app from the store and allow it access to the device's Bluetooth, Location, and Camera.

     -Access to Bluetooth is required because the tire sensors transmit Bluetooth Low Energy (BLE) to the device after they are learned (*see Section 3.0 for details*).

     -Access to Location may be required by some devices in order to search for nearby BLE devices. Earbuds and speakers, for example, do not use BLE, they use a standard Bluetooth technology, so location is not required to pair to all Bluetooth devices. The app does not use mobile data or GPS data during normal operations and can be used while in Airplane Mode.

     -Access to Camera is required if you want to scan the sensors' QR codes to learn them to the device (*see Section 3.4 for details*) or link a photograph to your saved application under "My Vehicle Info" (*see Section 2.2 for details*).

1.3 - Quick Start or Login

1.3.1 - By selecting Quick Start, you can start setting up your TPMS.

1.3.2 - By selecting Login, you can create an account and save your TPMS settings to the cloud, which allows other devices and users to monitor the same, saved vehicles if the login is shared. This process requires cellular data or a wifi connection.


4

2.0 - Create a Vehicle Profile

2.1 - Select the configuration that best matches your vehicle.
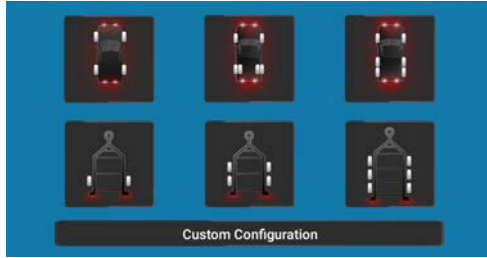
2.1.1 - Select "Custom Configuration" for a more custom layout. Up to 38 tires can be monitored under this layout with each axle receiving it's own pressure and temperature parameters.

- If more than 20 tires are learned and the display is running Apple iOS, make sure "Power Saving Mode" is turned OFF within the Settings for that layout.
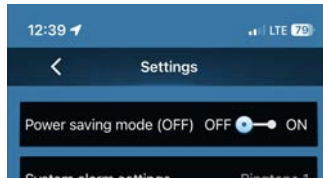

2.2 - Select the Gear icon in the upper right corner and select "Your Vehicle Info".
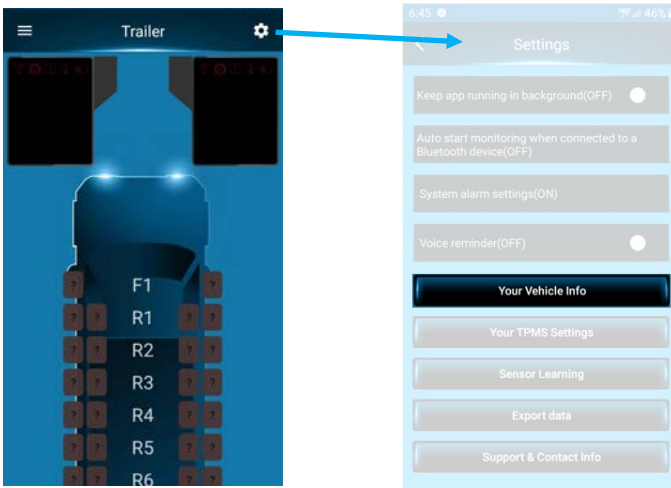
2.2.1 - Within this menu, you can name and store a photograph of the monitored vehicle for a more customized experience. Select the grey box to take a new photo using the device's camera, or use an existing image already saved to the device.

2.2.2 - This vehicle photograph and name will appear in the list of saved vehicles.

2.3 - To delete a saved vehicle, select the three horizontal lines in the upper left corner of the screen and select the trash can icon next to the vehicle. Press the green **+** to create a new vehicle.
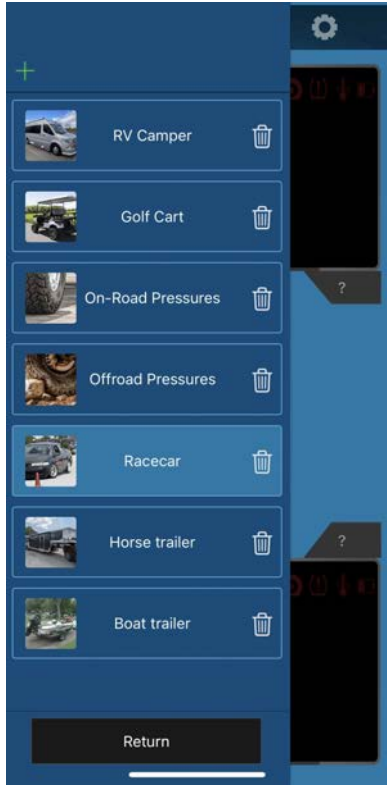
3.0 - Learn New Sensors

3.1 - Select the Gear icon and then "Sensor Learning & Rotation".

3.1.1 - There are three ways to learn new sensors to your system. It is recommended to record the ID of each sensor in each wheel before they are installed.

Unique Sensor ID Code

3.2 - Method 1—Tire Deflation

3.2.1 - The sensors must be pressurized for this learning method. Select which tire position you would like to learn first by tapping the screen. With the app open and the screen not asleep, deflate the tire at least 5psi (35kPa) and wait up to 60 seconds. Dropping the pressure forces the sensor to transmit and the app will acknowledge this by showing the sensor's ID code and transmitted pressure reading.

3.2.2 - Select "OK" if the appropriate sensor data is displayed on the screen. Repeat the above for the other tire positions. Remember to reinflate the tires to their recommended cold inflation pressure before driving.
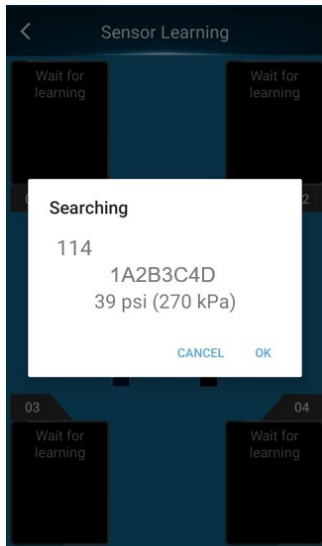
3.2.3 - This process can also be performed at any time to determine whether a sensor is operating properly. Create a new layout and attempt the above procedure to verify that the sensors are transmitting on their own.

3.3 - Method 2—Type in Sensor ID codes

3.3.1 - Select which tire position you would like to learn first. Manually type in the eight character ID code that is located on the sensor housing and select OK. Repeat this process for the other tire positions.
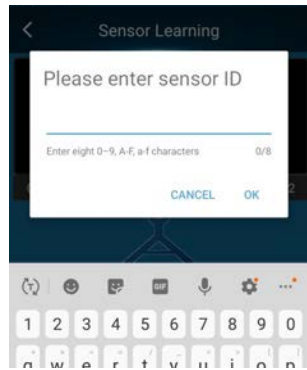
3.4 - Method 3—Scan Sensor QR codes

3.4.1 - The sensor housing must be visible for this learn method. Select which tire position you would like to learn first. Scan the small QR code that is located on the sensor with your device's camera. Placing a solid color background behind the sensor may improve your camera's focusing ability. Repeat this process for the other tire positions.

QR Code
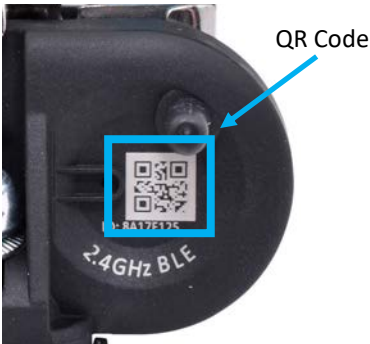
4.0 - Setting the Warning Levels

4.1 - Units of Measurement

4.1.1 - Select the preferred temperature unit: F° or C°

4.1.2 - Select the preferred pressure unit: psi, kPa, or Bar

4.2 - Setting the Warning Alarm interval

4.2.1 - This setting controls how often an audible warning will sound.

4.3 - Setting the Pressure Range

4.3.1 - Improper installation or setup of this product could lead to personal injury, property damage, and/or death.

4.3.2 - The user-selected pressure values typed in will determine the minimum and maximum tire pressures. A measured pressure value outside of this range will cause the pressure warning alarm to sound and a visual notification to appear on the screen.

4.3.3 - Select the Question Mark icon to proceed to the Pressure Baseline Calculator. Dill recommends setting the pressure range based on 20% below the cold tire inflation pressure for the vehicle and 30% above the cold inflation pressure.
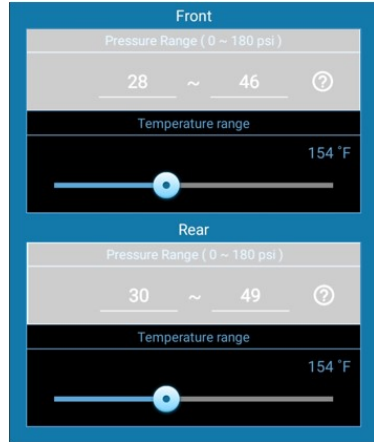

4.3.4 - You must select a pressure range for each axle.
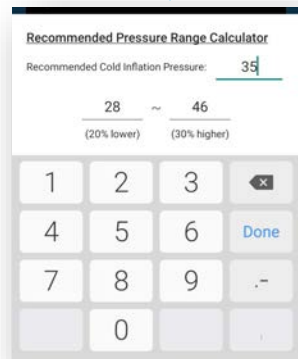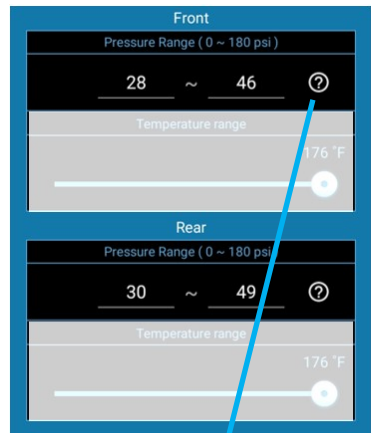
4.4 - Setting the Temperature Warning

4.4.1 - The average Passenger Car and Light Truck tire can be damaged if the internal air temperature exceeds 176°F (80°C). Some Commercial truck tires can withstand up to 196°F (91°C). Contact your tires' manufacturer for more details and advice.

4.4.2 - The temperature warning level slider can be adjusted to 176°F (80°C) on the standard 2, 4, and 6-tire layouts. The Custom Configuration 38-tire layout allows the warning level to be set up to 196°F (91°C). A measured temperature value higher than the saved setting will cause the temperature warning alarm to sound and a visual notification to appear on the screen.

Front
Pressure Range (0 ~ 180 psi)
28 ~ 46 ⑦
Temperature range
154 °F

Rear
Pressure Range (0 ~ 180 psi)
30 ~ 49 ⑦
Temperature range
154 °F

4.4.3 - A high temperature warning can be caused by a number of problems such as an overloaded tire, tire pressure that is too low for the load or tire, a seized brake assembly, or an overheating axle hub assembly. Normal driving will also cause an increase in tire temperature so if the warning is set too low, false alarms may occur.

5.0 - Other App Settings (Not all are available on all devices)

5.1 - Keep App Running in Background

5.1.1 - By keeping this setting ON, visual and audible TPMS notifications will still occur should you be using a different app at the time of a tire-related event.


5.2 - Auto Start Monitoring

5.2.1 - This setting will turn on the app only when the device is wirelessly connected to a vehicle's Bluetooth system. This setting is only selectable if the option to keep the app running in the background is turned off and the phone has been paired to a vehicle before.

5.3 - System Alarm Settings

5.3.1 - This setting allows selection of the audible tone that will sound when there is an active warning. Depending on your device, you may be able to turn off all audible notifications within this setting.

5.4 - Voice Reminder

5.4.1 - This setting allows use of the App's pre-recorded voice messages that speak the warning. For example "*Front Left Tire Pressure Error*" and "*Number 8 Tire Temperature Error*."
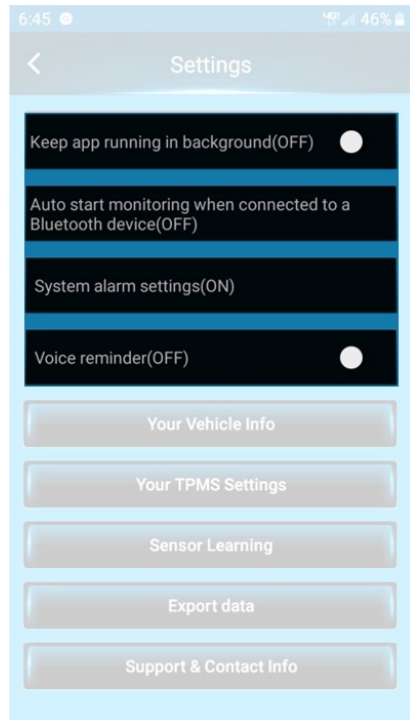
6.0 - Sensor Installation

6.0.1 - It is recommended that any type of internally-mounted TPMS sensor or tire valve be installed by trained tire technicians using calibrated hand tools. Improper installation or setup of this product could lead to personal injury, property damage, and/or death.

6.1 - Valve-type

6.1.1 - Verify the rim hole size on the wheel. The included TPMS valve includes two hex nuts and two rubber grommets; one for 0.453" (11.5mm) diameter rim holes and one for 0.625" (15.8mm) diameter rim holes. Only one hex nut and one grommet per wheel should be used.

6.1.1.1 - If the rim hole measures 0.618 - 0.633" (15.7—16.0mm) diameter, remove the smaller grommet and install the larger grommet. The wider base of the grommet should be against the wide base of the valve stem.
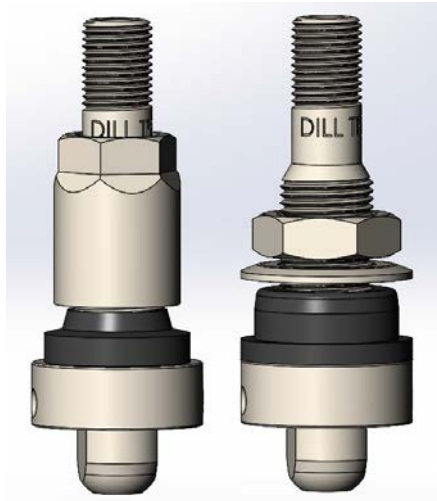
On the Left, the 0.453" grommet is installed along with the tall hex nut.
On the Right, the 0.625" grommet is installed with the large washer and hex nut.

6.1.1.2 - Certain alloy wheels with 0.453" rim holes and a deep external counterbore may not accept the larger washer and hex nut so the tall hex nut should be used. A washer is not required when using the tall hex nut.

6.1.2 - Insert the valve through the rim hole and verify that the rubber grommet is seated against the rim hole surface. The black sensor housing should not be resting on the wheel barrel or sticking up above the tire bead seat area by more than 0.5" (excluding the sensor's antenna).

6.1.3 - Proceed to tighten the 9/16" hex nut or 12mm hex nut to 40 inch pounds, making sure that the black sensor housing does not press against the wheel barrel.

6.1.4 - Properly reinstall the tire while avoiding damage to the sensor. Make sure the sensor's antenna does not get caught between the tire bead and the wheel bead seat area.

6.1.5 - Rebalance the wheel and tire to account for the weight increase attributed to the sensor and valve.

        -TPMS-approved balance beads and compounds will not damage the sensor but it is possible that over time, when combined with moisture within the tire, their particles could clog the sensor's pressure port preventing correct tire pressure measurements. Use at your own risk.

6.2 - Band-type

6.2.1 - The sensor comes pre-installed in the mounting cradle. No adjustments need to be made to the sensor's mounting bolt.

6.2.2 - Peel off the adhesive paper from the bottom of the sensor's cradle. The adhesive on the cradle prevents the assembly from rotating around the wheel barrel.

6.2.3 - Adhere the sensor's cradle to the left or right of the wheel's valve in the wheel's drop center. The sensor can point inward or outward. It is recommended to install the sensor/cradle at the location of the wheel's valve so its location is always known during tire mounting, tire dismounting and, if the need arises, to scan the sensor.

6.2.4 - Insert the band through the lowest slot of the cradle.

6.2.5 - Wrap the band around the rim and cut off excess band with shears before tightening the band's screw.

6.2.6 - Tighten the band's screw to <u>40 inch pounds</u> using an 8mm ratchet or Flat-head screwdriver.

6.2.7 - Properly reinstall the tire while avoiding damage to the sensor. Make sure the sensor's antenna does not get caught between the tire bead and the wheel bead seat area.

6.2.8 - Rebalance the wheel and tire to account for the weight increase attributed to the sensor and cradle.

-TPMS-approved balance beads and compounds will not damage the sensor or band but it is possible that over time, when combined with moisture within the tire, their particles could clog the sensor's pressure port preventing correct tire pressure measurements. Use at your own risk.

7.0 - Sensor Operations

7.1 - Once your rolling speed exceeds 10mph (16kph), the sensors will transmit tire pressure and temperature data to the display every 90 seconds even if there is no change in pressure.

7.2 - If a pressure change greater than 2psi happens while rolling, depending on the rate of change (i.e. a fast leak), the display will update within 8 seconds or less.

7.3 - After being stationary for more than 10 minutes, the sensors will go to sleep and not transmit to conserve battery life. Therefore, the sensors are unable to monitor the pressure in a stored spare tire.

7.4 - If a sensor transmission is not received by the display within 6 minutes, "Awaiting Data" will display in place of the pressure and temperature readings. If a sensor transmission is not received after 6 minutes of driving then the sensor may be missing (the wheel and tire assembly may have come off of the vehicle), the sensor's battery may be depleted, or a Sensor Signal Repeater may be required.

     - Keep in mind that "Awaiting Data" will be displayed at start-up until you reach a rolling speed exceeding 10mph (16kph) or you have been stationary for more than 15 minutes after coming to a stop. This is normal.
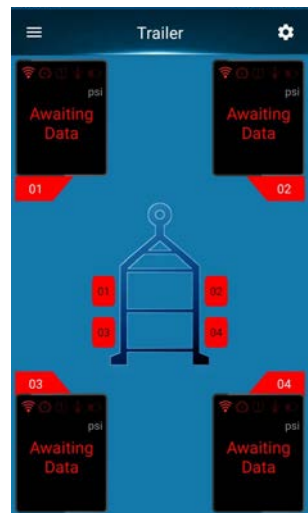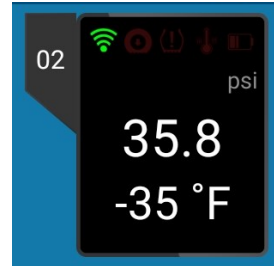
8.0 - On-screen Icons

8.1 - Transmission Received

8.1.1 - If the icon is green, a sensor transmission was just received. The sensors do not transmit a constant stream of data to conserve battery life, so the icon will only flash green every so often.

8.1.2 - If the icon is yellow, a sensor transmission was received within the last 6 minutes. The sensors wake-up when driving at least 10mph (16kph) and transmit every 90 seconds if there is no drastic change to the tire pressure.

8.1.3 - If the icon is red, a sensor transmission has not been received in more than 6 minutes and no pressure or temperature readings will be displayed. When the app is first started, all positions will show a red icon and "Awaiting Data" until a sensor transmission is received.

8.1.4 - If all sensors are rolling and are known to be working properly but no transmissions are being received, then a Sensor Signal Repeater may be required (*see Section 11.0 for more details*).

### 8.2 - Active Pressure-related Warning

8.2.1 - If this icon is illuminated, then the last measured pressure reading is outside of the user set pressure limits. The icon could be illuminated for a low tire pressure or a high tire pressure. Once the measured pressure reading returns to being within the set pressure limits, the icon will turn off.
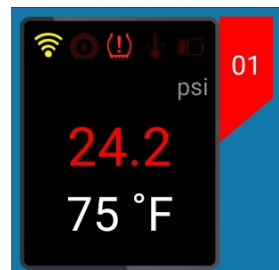
8.3 - Pressure Leak Detected

8.3.1 - If this icon is illuminated, then a fast tire pressure leak has been detected. It is recommended to pull over in a safe location and inspect the deflating tire. If the pressure reading is still within the user set pressure limits then the pressure-related warning icon may not be illuminated yet.
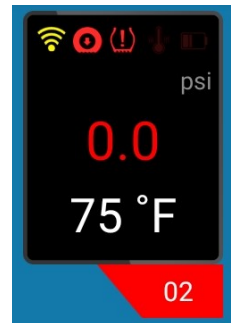
8.4 - Active High Temperature Warning

8.4.1 - If this icon illuminates, the tire temperature has exceeded the user-set temperature limit. See Section 4.4.3 for possible reasons for a High Temperature Warning.

8.5 - Sensor Battery Low

8.5.1 - If this icon illuminates, the sensor transmitted a low battery voltage reading that signifies the sensor battery is nearing the end of its life. Replace the sensor as soon as possible to ensure continuous monitoring of the tire.
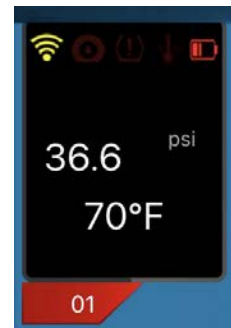
9.0 - Rotate Tires/Sensors

9.1 - After a tire rotation, you will need to move the sensor ID codes within the app to their new positions.

9.2 - Select the Gear icon, then "Sensor Settings", then "Change Sensor Positions."

9.3 - On the screen, you will drag and drop the sensor ID codes into their new positions.

9.4 - Hold your finger down on an ID code and slide your finger to the ID code's new position. The ID code previously at that location will move to the open position. Repeat this process until all ID codes are in their correct positions.
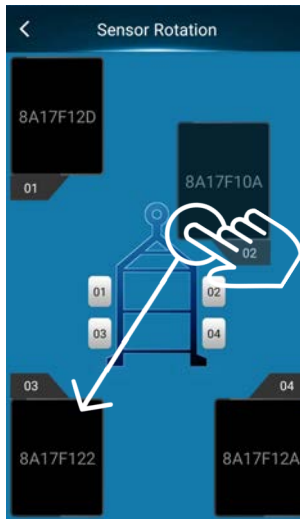
10.0 - Replace a Sensor

10.1 - If a sensor needs to be replaced, you will follow the same Sensor Learning methods described in Section 3.0.

10.2 - Select a Sensor Learning method and select the position you want to change.

11.0 - Sensor Signal Repeater

11.1 - This system has been tested to work on applications where the display is within 40 feet of the sensors. However, tire construction, vehicle construction, electronic interference, and below freezing temperatures can reduce sensor transmission distances.

11.1.1 - On certain Apple iOS devices, within the Settings menu you may see a "Power Saving Mode" toggle. If you experience reception issues, we recommend turning this setting to OFF to see if the problem is resolved before purchasing and installing the Sensor Signal Repeater.
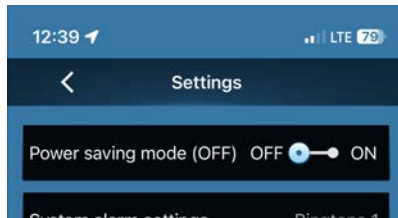
11.2 - Usage of the optional Sensor Signal Repeater will increase the transmission distance of the sensors. A 12v or 24v power source is required to power the repeater.

11.3 - The ideal mounting location would be the halfway point between the monitored tires and the display's typical location. For example, on a trailer, the repeater should be mounted out in the open and on the front of the trailer. On a RV chassis, it can be located in front of the rear driver-side tires.
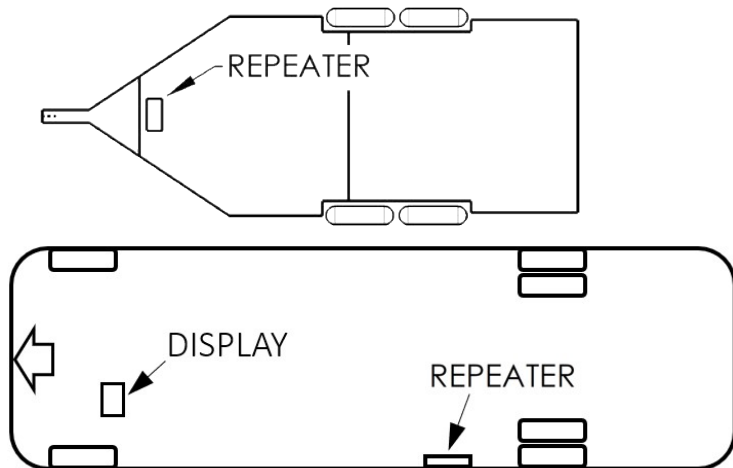
12.0 - Export Data

12.1 - The "Export Data" function, located under the "Settings" menu, allows downloading of collected TPMS data (sensor transmission timing and measurements) received while the display screen was on. If the display screen was off or asleep, no data points will be recorded even though the app is operating and monitoring the sensor transmissions.

	A	B	C	D	E
1	Date / Time	ID Code	Temperature	Pressure	Battery
2	6/1/2023 6:17	8A17F123	72	35.2	OK
3	6/1/2023 6:17	8A17F126	73	35.9	OK
4	6/1/2023 6:17	8A17F111	72	35.2	OK
5	6/1/2023 6:17	8A17F120	73	35.9	OK

12.2 - The data is downloaded into a spreadsheet (CSV file) which can be viewed using a software program such as Microsoft Excel. You are unable to view the data points within the TPMS app, so the file must be forwarded elsewhere via email or cellular text.

13.0 - Frequently Asked Questions

-Can the system be used on a 2-wheel motorcycle?

No. The sensor mounting options were not designed for motorcycle wheels and there is no motorcycle layout available.

-Can the system be used on an ATV or UTV?

The answer is dependent on the application's recommended tire pressure, wheel design, and average speed. We do not recommend installing this system on any application that requires a cold inflation tire pressure of less than 10 psi (69 kPa) due to the pressure accuracy of the sensor (±1.5psi) and how ambient temperature can rapidly affect lower pressures. Also keep in mind that the sensors will only transmit when rotating above 10mph (16kph).

-Can the system be installed with a basic set of hand tools?

It is not recommended. The process required to install the internally-mounted tire pressure sensors should be performed by a trained tire technician using proper tire servicing equipment and calibrated torque tools.

-Can the system be installed by most tire shops?

If your preferred tire shop is familiar with factory TPM Systems found on passenger vehicles, then installing these tire pressure sensors should not be a challenge.

-Are the tire pressures monitored while the vehicle is parked?

The sensors go to sleep after they have been stationary for 10 minutes.

-Can I monitor a spare tire?

No. To conserve battery life, the tire pressure sensors stay dormant until they sense rotation above 10mph.

-Can the system detect a tire blowout?

Yes. Our sensors will transmit within seconds of a rapid loss of pressure or blowout. They will continue to transmit if the flat tire is being driven on, provided the sensor is not damaged.

14.0 - Replacement Parts

<u>9400-B</u>: BLE Sensor (cradle-mounted) with 1195 Band 　　　Torque band to 40in-lb 　　　Requires 1.3"+ wide wheel drop centers
<u>1195</u> Band: Fits wheels 14" to 26" diameter
<u>9400-V</u>: BLE Sensor with VS-496 Valve Stem installed 　　　Torque hex nut to 40in-lb (t20 screw: 20in-lb) 　　　Two Hex nut sizes included 　　　Two Grommet sizes included
<u>VS-496</u> Valve Stem: Fits 0.453" and 0.625" rim holes 　　　Torque hex nut to 40in-lb (t20 screw: 20in-lb) 　　　Made from Corrosion resistant Nickel-plated Brass 　　　Rated up to 200psi (BLE Sensor limited to 180psi)
<u>VS-490</u> Valve Stem (Optional): Fits only 0.453" rim holes 　　　Torque hex nut to 40in-lb (t20 screw: 20in-lb) 　　　Made from Black Anodized Aluminum 　　　Weighs 25g less than VS496 Valve Stem
<u>9405</u> (Optional): Sensor Signal Repeater 　　　Requires 12v or 24v power source 　　　40 mA draw 　　　76" long hardwire cord 　　　IP67 waterproof rating

<u>Quick Start Reference</u>

What's In Your Tires?®

Note: It is recommended to read this manual before use. The tire pressure sensors can be installed before or after downloading the App. Please record the sensor ID codes for each tire prior to installation. A space has been created for them on page 2.

Scan to download the App

1) **Download & Open App**

2) **Pick Vehicle Application Layout**

3) **Select Gear icon and "Sensor Learning"**

4) **Set Warning Levels within "Your TPMS Settings"**

5) **Turn On "Send Notifications" for this App**

<u>Sensor Specs</u>:

Operating Pressure: 0 to 150psi (0 to 1040kPa)

Maximum Sensing Pressure: 180psi (1240kPa)

Pressure Accuracy: ±1.5psi (10kPa)

Operating Temperature: -40°F to 196°F (-40°C to 91°C)

Temperature Accuracy: ±5°F (±3°C)

Battery Life: 5 to 7 years

<u>Help & Support</u>

TPMS@Dillvalves.com   - OR -   1-800-815-DILL (3455)

Monday—Friday 7am-7pm (Eastern Time Zone)