

# Tire Pressure Monitoring

w/ SilverLeaf J1708 Interface  
Installation Manual



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## **Overview**

The Tire Pressure J1708 Package consists of the following elements:

### **Wheel Sensors**

These mount inside each wheel using a large metal hose strap, and measure the temperature and pressure of each tire. They periodically transmit this information wirelessly to the receiver.

### **Tire Pressure Receiver and Antennae**

The receiver has an internal antenna, but for most applications one or more external antennae should be added to improve reception. The receiver picks up the transmissions from the sensors and forwards the information to the SilverLeaf Interface.

### **SilverLeaf Interface**

This unit stores the data coming from the sensors, matches the sensor identification numbers to their positions on the vehicle, and reports the data on the J1708 data bus to the dash display. All the configuration information in the system is stored in this device. Thus if the dash display is changed - or even if there are multiple dash displays - the second display does not have to be configured in any special way. Similarly, if the receiver is exchanged, no change must be made. If sensors are changed, however, the new sensors have to be matched to an axle location in this device.

### **Dash Display**

The data is shown on a SilverLeaf dash monitor, such as the VMS 200 EL, VMS 400 or any of the VMS 616 iDigital Dash<sup>®</sup> variations. For illustration purposes, this manual will assume a VMS 200 is installed. There may be small differences in the programming procedure for other models.

### **Optional Car Display**

Also available is an in-car display/receiver combination. This product is completely compatible with the SilverLeaf package.

## **Features**

This package provides tire pressure and temperature information on all tires in an RV, RV and Trailer, or RV and Tow Car combination. The data is displayed on the dash display, which also provides notifications of alarms.

The display will show the actual temperature and pressure of each wheel. It will display an alarm if the temperature exceeds a programmed level, the pressure falls below a certain level, the battery level of a sensor falls too low, or no signal is received from a sensor.

Each wheel is assigned to a group, and each group can have different alarm levels. These are all user-configurable.

Two types of sensors are available. A low-pressure sensor is available for tires that use less than 72 PSI. A high-pressure sensor is available for tires up to 168 PSI. Both types can be used in the same vehicle.

# Installation

## *Antenna Placement*

The receiver can use two or more antennae. Smaller coaches may be able to operate fine with a single antenna, but we recommend two to three antennae for larger coaches, especially if a tow car or trailer is to be included. In these cases, one should be placed in the front to catch the steer axle sensors, the others in the extreme rear to catch the trailer and the rear axles. Generally it is better to mount them high, even on the roof, since that gives them a better line-of-sight to the center of the wheel rim. If the antenna is too low, the metal wheel rim may block part of the signal.

The receiver can be placed anywhere convenient, but it does require a sheltered location. The SilverLeaf Interface is usually best placed next to the receiver, but again it is mostly a matter of convenience.

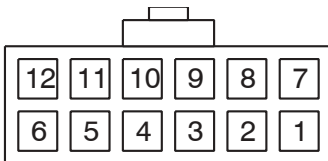
## *Wiring*

The antennae connect to the tire pressure receiver. Two connectors are included on the receiver, and if only one antenna is used it doesn't matter which.

The receiver connects to the tire pressure interface via a nine-pin adaptor cable provided in the kit. This cable carries the data signal, and in some applications, power. The other connector on the receiver in some cases is the power harness.

The main connector on the Tire Pressure Interface is a twelve pin Molex Mini-Fit Jr., and its pin-out is provided here. The unit requires 12V power and ground, and for most applications the power should be on the same circuit as the dash monitor. The power consumption is less than 200 mA.

The two data wires should be connected to the Accessory inputs on the dash unit. Data Plus should be connected Plus to Plus, Minus to Minus. If other accessories are already attached to the dash display, simply splice into the existing wires - again, Plus to Plus, Minus to Minus. There is no limit to the number of accessories that can be piggybacked together in this way, and no practical limit to the length of the network that this creates. However, if the data lines stretch more than about 10 feet from the dash we recommend using twisted pair, Belden 1035A.



Wire Side View

### Dash Display

- 1 Ground
- 7 Power (12V)
- 9 Accessory Data Link +
- 10 Accessory Data Link -

### Smartire Interface

- 1 Ground
- 3 Accessory Data Link +
- 4 Accessory Data Link -
- 7 Power (12V)

## ***Sensor Installation***

The sensors can be installed by any tire dealer. The tire must be removed from the rim and the sensor is strapped to the inside of the rim using a very large hose clamp. Each sensor has a serial number printed on its label - make sure the installer keeps track of which serial number went to each wheel location. This will make configuring the display much easier.

## System Configuration

The following illustrations are from a VMS 200 EL. If you are using any other SilverLeaf display the directions are the same, although the specific screen layouts will be different.

### *Wheel ID Assignment*

The first step in configuring the system is identifying which sensor is in which tire. Although this can be done by manually entering in the serial numbers, the easiest way is to trigger the sensors into broadcasting their ID numbers, then assigning the IDs to the wheel location. To trigger the sensors, simply drive a short distance.

Press DIAG on the VMS until the Tire Setup Screen appears. On the left side of this screen you will build a map of the coach and trailer by assigning IDs to each wheel location. On the right the IDs appear of the sensors that have not yet been assigned. (Hopefully you kept track of the sensors as they were being installed, so you know which sensor is which. If not, you will have to trigger each sensor individually by letting some air out of each tire in turn.)



Turn the knob to highlight the wheel location, then press the knob. Then turn the knob to select a sensor ID, and press the knob again. Selecting MANUAL will allow you to enter an ID that does not appear on the list.

If you make a mistake, highlight the wheel and press CLEAR.

The screen does not have enough room to display all the sensors at once. If necessary, assign the sensors that you see, than drive a short distance and more sensor numbers will appear. Repeat until all the tire positions that you have sensor in are filled.

### *Tire Groups and Alarm Levels*

Since you may have a mixture of tire sizes on a vehicle, SilverLeaf allows you to set different limits to each tire or group of tires. To do this, you assign each tire to one of six groups. Press DIAG until the Tire Setup screen shown here appears. You may then use the knob to scroll through each wheel. If you press the knob you will then be able to change the tire group.



Next, you need to set the alarm limits for each group. Press DIAG again until the Tire Limits screen appears. You may then use the knob to scroll through each tire group, and set the alarm levels for each. There are two sets of levels - the yellow alert and the red alert - the yellow alerts are the levels on the left.



## Using Tire Pressure Monitoring

The main screens of the dash display will now show a special icon to indicate the general tire status. There are several icons that might appear.

If no data has been received from a sensor, the display will show a tire with an X through it.

If a wheel is in yellow alert, then there will be a yellow tire icon (for a color display) or a tire completely darkened.

If a wheel is in red alert, then a red icon (for a color display) or a circle with an exclamation mark will appear. If more than one wheel has an alert, the most serious alert will be shown on the main screen.

Pressing the INFO button will bring up the detailed Tire Status screen. (Depending on your display and the accessories installed, you may have to press INFO more than once.) This screen shows the pressure and temperature of each wheel in succession, and also provides other information. On the left side of the screen it shows the layout of the vehicle, with the status of each wheel indicated by an icon.

The screen will automatically cycle through each tire, showing the temperature and pressure of each. You can turn the knob to select a tire yourself. Pressing the knob allows you to see other bits of information. In addition to the Temperature and Pressure, the other selections include ID and Battery Level, Alarm Levels, and Signal Strength.

Signal Strength is important for selecting an antenna location. The strength is rated on a scale to 100, and this level gets updated every time the sensor transmits. For best reliability, a strength on each sensor of at least 70% is recommended, and you may have to adjust the antenna location accordingly. Note that sometimes two sensors may transmit over each other, which will cause the strength of each to show a very low number. Thus you should drive long enough to make sure several transmissions occur from each sensor before you conclude the antenna location needs to be changed.

### Tire Rotation

To rotate the tires, go back to the Tire Setup screen by pressing DIAG repeatedly until it appears. Then highlight each wheel and press CLEAR to clear that tire assignment. Then assign the tires again with the same method described earlier.

### Sensor Transmission

The sensors transmit data intermittently. When you first start your display you will see the "No Data" icon on each sensor. But as you start to drive, the sensors detect the movement and make their initial transmission. From that time on they will transmit every few minutes, or when they detect a meaningful change in temperature or pressure.

The precise timing of the messages is determined by a randomizing function of the serial number. It is possible that two sensors will transmit over each other when they first start. However, the randomization ensures that subsequent transmissions will be better separated, and such collisions are rare after the initial start.





## Warranty

This warranty is only for the SilverLeaf J1708 Interface. It does not cover the sensors, receiver, other components or combination of components, that may be mentioned in this manual. Those products may be covered by a warranty by the individual manufacturer - consult your product documentation.

The obligation of SilverLeaf Electronics, Inc. under this warranty shall be limited to repair or replacement (at our option) during the warranty period of any part which proves defective in material or workmanship under normal installation, use, and service, provided the product is returned to SilverLeaf Electronics, Inc.. The warranty period shall be one year from date of purchase of the unit, or purchase of the finished coach with the unit installed.

This warranty shall be invalid if the product is damaged as a result of defacement, misuse, abuse, neglect, accident, destruction, alteration, improper electrical voltages or currents, repair or maintenance by any party other than SilverLeaf Electronics Inc. or an authorized service facility, or any use violative of instructions furnished by us.

This one-year warranty is in lieu of all other expressed warranties, obligations, or liabilities. Any implied warranties, obligations, or liabilities, including but not limited to the implied warranties of merchantability and fitness for a particular purpose, shall be limited in duration to the one-year duration of this written limited warranty.

In no event shall SilverLeaf Electronics, Inc. be liable for any special, incidental, or consequential damages for breach of this or any other warranty, expressed or implied, whatsoever.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.



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