



SmarTire Dealer Programming Tool

PN: 710.0021
Revision 1.04

Instruction Manual

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INTRODUCTION

The SmarTire Dealer Programming Tool (DPT) is designed to facilitate the programming of the SmarTire Passenger Car Receiver and the SmarTire Shielded Receiver (RV, bus and commercial vehicle applications). The DPT Display Unit **can not** be used as a regular Full Function Display. It can only be used for programming.

RECEIVERS PROGRAMMABLE USING A DPT

1. 200.0087 – Shielded Receiver (RV, bus and commercial vehicle applications)
2. 200.0059 – Passenger Car Receiver

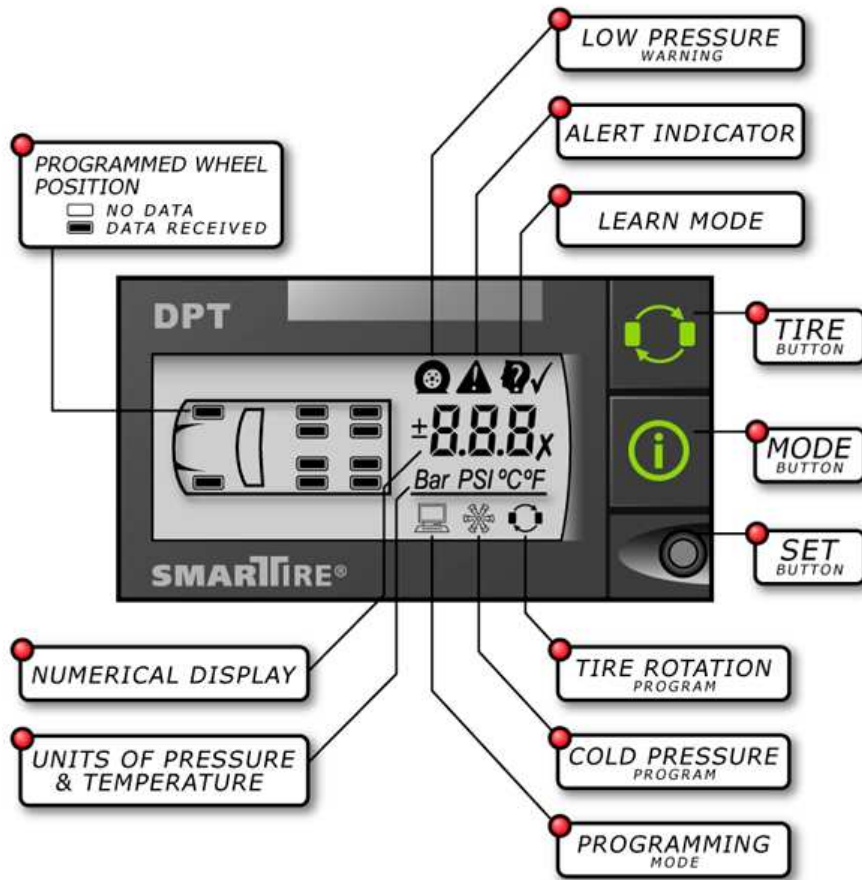
KIT CONTENTS

- Dealer Programming Tool
- Cable for connection of Tool to receiver
- Instruction Manual

DEALER PROGRAMMING TOOL OPERATING MODES

1. ***Cold Inflation Pressure (CIP) Change Mode:*** The 'CIP Change' programming mode simplifies the changing of Cold Inflation Pressure settings by simultaneously updating any other directly related settings with proportional default values. These settings include Low Pressure Alert, Critical Low Pressure Alert, Temperature Deviation Alert, and Slope.
2. ***Full Programming Mode:*** Enter this mode to program all individual tire parameters independently including programming new sensor ID numbers and relocating sensor ID numbers to different wheel positions.
3. ***Default Recovery Mode:*** Enter this mode to reset all system parameters to their factory default settings in the event of original programming corruption.

DEALER PROGRAMMING TOOL CONTROLS AND INDICATORS

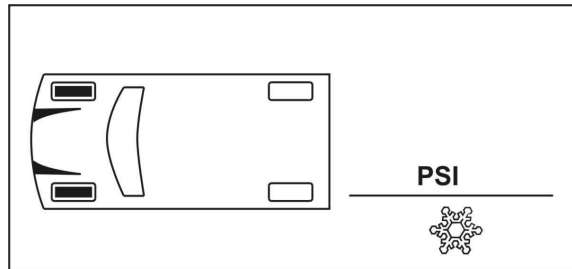


DEALER PROGRAMMING TOOL OPERATION: GETTING STARTED

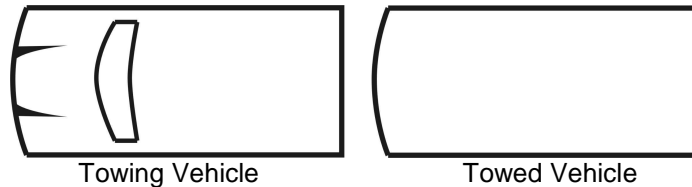
1. Disconnect the electrical power to the receiver.
2. Depending on the receiver being programmed, follow the appropriate instructions below:
 - a. Basic Receiver: remove the front bezel to provide access to the display cable connector.
 - b. Basic Receiver using an Integrated Full Function Display: disconnect the display from the receiver to provide access to the display cable connector.
 - c. Basic Receiver or Shielded Receiver using a Remote Full Function Display: disconnect the existing display cable from the receiver to provide access to the display cable connector.
3. Connect the DPT display cable to the back of the DPT and then connect it to the receiver.
4. Restore electrical power to the receiver and power on the system. On power-up, the DPT will beep twice and briefly display all screen elements. It will then check the receiver for custom and factory profile problems. (If a problem is detected, the DPT will display an E2 error and the problem will need to be corrected by restoring default settings using the Default Recovery Mode.)
5. After programming is complete, power down the receiver, unplug the DPT, and restore the system to its original configuration.

COLD INFLATION PRESSURE (CIP) CHANGE MODE

1. After powering on the system, press the 'SET' button once (must be less than two (2) seconds) to enter the Cold Inflation Pressure Change Mode. The screen should now show a snowflake icon, a designation of pressure units (PSI or Bar) and the preprogrammed wheel positions in the vehicle outline. The wheel icons of the selected axle will also be filled in. Adjustments to the default Cold Inflation Pressure (CIP) setting for each axle can now be made.



2. Press the 'TIRE' button to toggle between the different pre-programmed axles. Depending on the type of preconfigured receiver being programmed (Basic or Shielded), there are six axles that can be programmed grouped into two sets of three. The first set of three axles is for the towing vehicle and the second set is for a trailer / tow-behind. Only axles that have sensors programmed to them can be selected. The vehicle outline changes appropriately to reflect either towed or towing vehicle as shown below. Each time the tire button is pushed, the display will show the next axle in sequence. Please ensure the correct axle group is selected when programming the CIP. For example: If programming the CIP on main vehicle, please ensure towing vehicle group is displayed.



3. Press the 'MODE' button to select the desired axle. The current CIP value for that axle will now be displayed.
4. Increase the CIP value by pressing the 'TIRE' button or decrease the CIP value by pressing the 'MODE' button.
5. Once the desired value is displayed, press the 'SET' button to save the value.
6. Press the 'TIRE' button to toggle to the next axle to be programmed (if required) and repeat steps 2 - 5 until all programmed axles are set to the desired CIP values.
7. When complete, press the 'SET' button to exit the CIP Change mode.

**NOTE:**

- CIP settings are specified by the vehicle manufacturer and usually appear on a placard in defined locations on the vehicle and/or in the Vehicle Operators Manual.
- The DPT's CIP Change Programming Mode establishes the following alert levels:
 - a. High Pressure Sensor – Critical Low Pressure Alert = CIP -10%, Deviation Alert = CIP +/- 10PSI, and the Slope = CIP +10;
 - b. Low Pressure Sensor – Low Pressure Alert = CIP-15%, Critical Low Pressure Alert = CIP - 20%, Deviation Alert = CIP +/- 10PSI, and the Slope = CIP +10;
 - c. If other alert threshold settings are desired, they must be programmed individually using the Full Programming Mode (see Full Programming Mode section). The CIP range allowed on axles equipped with low and high pressure range sensors is:
 - Low Pressure Sensor Range – from 10 PSI to 76 PSI (0.7 bar to 5.2 bar)
 - High Pressure Sensor Range - from 45 PSI to 165 PSI (3.08 bar to 11.3 bar)



FULL PROGRAMMING MODE

The Full Programming Mode is used to independently program the following:

- A. Sensor ID Numbers
- B. Cold Inflation Pressure (CIP) Settings
- C. Critical Low Pressure Alert Setting
- D. Pressure Deviation Alert Setting
- E. High Temperature Alert Setting
- F. Metric or Imperial Units Selection
- G. Slope Value Setting
- H. Low Pressure Alert Setting (For Basic Receiver without Full Function Display only)

To enter the Full Programming Mode, power on the system and then press and holding the 'SET' button for more than two (2) seconds and less than five (5) seconds. The screen should now show a snow flake icon, computer icon and a designation of pressure units (PSI or Bar). Press the 'MODE' button to toggle between the various programming screens. Programming instructions for each screen are outlined below.

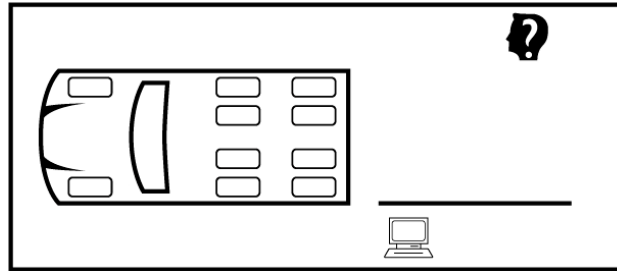
A. Programming Sensor ID Numbers

All SmarTire pre-configured kits have a receiver that has been programmed with the ID numbers of the sensors included in the kit. If, for various reasons, a sensor needs to be replaced, the new ID number must be programmed into the receiver.

When programming a new sensor ID number, the installer must first configure the receiver so that it is ready to receive a new ID number and then make the sensor transmit its ID number. Provoking transmissions can be accomplished by moving the vehicle to activate the sensors and then deflating the tire (sensors are motion activated and auto transmit when triggered by a pressure loss) or by using the SmarTire LF Initiator Tool. Complete instructions for programming sensor ID numbers using both methods for provoking transmissions are provided below.

Programming Sensor ID Numbers Using an LF Initiator

1. After connecting the DPT and installing all sensors, power on the system. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
2. Press the 'MODE' button to toggle between the different programming screens until the learn icon (a profile of a head containing a question mark) and a computer icon appear on the display. The DPT is now displaying the Sensor ID Number Programming screen.



Sensor ID Number Programming Screen

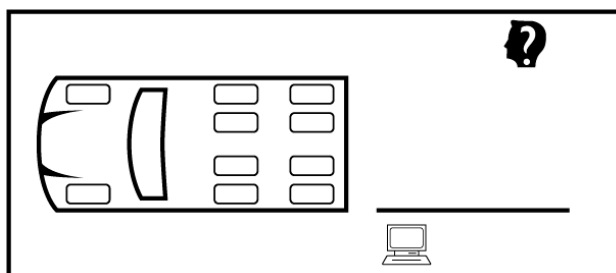
3. Press the 'TIRE' button to select Sensor ID Number Programming and the ten possible wheel positions for the primary vehicle will be displayed (windshield appearing on screen). The pre-programmed sensor positions are indicated by darkened tire icons.
4. Press the 'TIRE' button to toggle to the desired wheel position. The flashing tire outline indicates the selected wheel position. When toggled past the primary vehicle, the display will show possible wheel positions for a tow-behind vehicle. Continue toggling past the axles of the two-behind vehicle to once again access the primary vehicle.
5. If a sensor ID number is already programmed in the selected wheel position (indicated by a filled in tire icon and an 'X' on the screen next to the 'MODE' button), the ID number must be erased before a new ID number can be programmed. Press the 'MODE' button to erase the pre-programmed ID number (the 'X' will disappear) and then press the 'MODE' button again to select the wheel position for programming (check mark will be displayed). If a sensor ID number does not exist at the selected location, simply press the 'MODE' button once to select the highlighted wheel position for programming.
6. The receiver is now ready to receive the new sensor ID number. Turn on the LF Initiator Tool and go to the tire that contains the new sensor to be programmed into the receiver. Position the transmission end of the LF Initiator Tool approximately 1 inch from the sidewall of the tire near the valve stem (sensor should be installed near the valve stem). Press the 'LEARN' button on the LF Initiator Tool and the sensor will transmit its ID number to the receiver. Be sure to hold the tool in place until the light turns off to ensure the signal has reached the sensor. The tire icon on the display will turn black and the screen will display an 'X' when the transmission has been received.
7. Press the 'TIRE' button to toggle to the next wheel position to be programmed (if required) and repeat steps 4 - 6 until all sensor ID numbers that need to be programmed are programmed into their respective locations in the receiver.
8. Press the 'SET' button to save all of the sensor ID numbers and their locations into the receiver's memory.
9. When complete, press the 'SET' button to exit.

NOTE:

If 'ERR' appears on the screen and two or more tire icons are flashing, two wheel locations have been programmed with the same sensor ID. If two identical sensor ID numbers are programmed, press the 'TIRE' button to select one of the flashing locations for reprogramming and then repeat steps 3 - 6 at the flashing locations. Repeat for the second location to ensure that the correct sensor ID numbers are programmed. Press the 'SET' button to save the revised sensor ID numbers into the receiver.

Programming Sensor ID Numbers Using the 'Pressure Change' Method

1. After installing all of the sensors, activate them by driving the vehicle above 15 MPH for 1 – 2 minutes. After stopping the vehicle the sensors will be active for 15 minutes; sensing tire pressures every 12 seconds and randomly transmitting data ever 3 - 6 minutes or when they detect a 3 PSI drop in pressure. **You now have 15 minutes to program the receiver or the vehicle will need to be moved again.**
2. Power off the system, connect the DPT and then power it back on. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
3. Press the 'MODE' button to toggle between the different programming screens until the learn icon (a profile of a head containing a question mark) and a computer icon appear on the display. The DPT is now showing the Sensor ID Number Programming screen.



Sensor ID Number Programming Screen

4. Press the 'TIRE' button to select Sensor ID Number Programming and the ten possible wheel positions for the primary vehicle will be displayed (windshield appearing on screen). The pre-programmed sensor positions are indicated by darkened tire icons.
5. Press the 'TIRE' button to toggle to the desired wheel position. The flashing tire outline indicates the selected wheel position. When toggled past the primary vehicle, the display will show possible wheel positions for a tow-behind vehicle. Continue toggling past the axles of the two-behind vehicle to once again access the primary vehicle.
6. If a sensor ID number is already programmed in that wheel position (indicated by a filled in tire icon and an 'X' on the screen next to the 'MODE' button), the ID number must be erased before a new ID number can be programmed. Press the 'MODE' button to erase the pre-programmed ID number (the 'X' will disappear) and then press the 'MODE' button again to select the wheel position for programming (check mark will be displayed). If a sensor ID number does not exist at the selected location, simply press the 'MODE' button once to select the highlighted wheel position for programming.
7. The receiver is now ready to receive the new sensor ID number. Deflate the tire that contains the sensor to be programmed by approximately 5 PSI (must be deflated continuously). **Do not deflate the tire below 10 PSI.** The tire icon on the display will turn black and the screen will display an 'X' when the transmission has been received.



8. Press the 'TIRE' button to toggle to the next wheel position to be programmed (if required) and repeat steps 5 - 7 until all sensor ID numbers that need to be programmed are programmed into their respective locations in the receiver.
9. Press the 'SET' button to save all of the sensor ID numbers and their locations into the receiver's memory.
10. When complete, press the 'SET' button to exit.
11. Ensure all tires are inflated to the proper pressure.

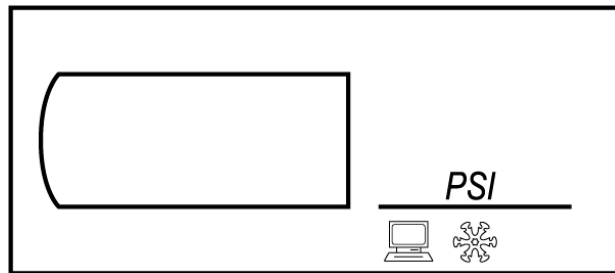
NOTE:

If 'ERR' appears on the screen and two or more tire icons are flashing, either two wheel locations have been programmed with the same sensor ID numbers or different pressure range sensors are detected on the same axle. If two identical sensor ID numbers are programmed, press the 'TIRE' button to select one of the flashing locations for reprogramming and then repeat steps 5 - 8 at the flashing locations. Repeat for the second location to ensure that the correct sensor ID numbers are programmed. Press the 'SET' button to save the revised sensor ID numbers into the receiver. If different pressure range sensors are installed onto the same axle of a vehicle, the incorrect ones will need to be replaced before the receiver will allow the Sensor ID Number Programming Function to close.

B. Programming Cold Inflation Pressure (CIP) Settings

The Cold Inflation Pressure (CIP) Setting screen is used to customize the default CIP setting to a specific vehicle.

1. After connecting the DPT, power on the system. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
2. Press the 'MODE' button to toggle between the different programming screens until the snowflake icon, the computer icon and a designation of pressure units (PSI or Bar) appear on the display. The DPT is now displaying the CIP Setting Programming screen.



CIP Setting Programming Screen

3. Press the 'TIRE' button to select CIP Setting Programming.
4. Press the 'TIRE' button to toggle between the pre-programmed axles.
5. Press the 'MODE' button to select the desired axle. When selected, the pre-programmed CIP setting for that axle will be displayed.
6. Increase the CIP value by pressing the 'TIRE' button or decrease the value by pressing the 'MODE' button.
7. Press the 'SET' button to save the new CIP value.
8. Repeat steps 4 - 7 until all axles to be programmed are set to the desired CIP values.
9. When complete, press the 'SET' button to exit.

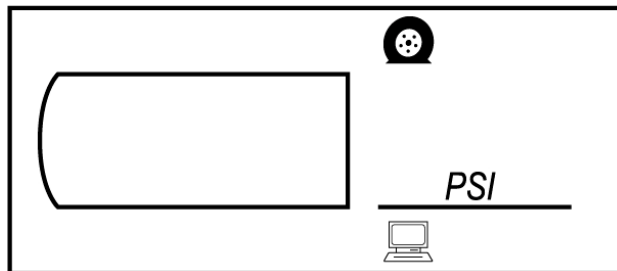
NOTE:

In the Full Programming Mode, changing the CIP does not affect other alert parameters for the axle.

C. Programming the Critical Low Pressure Alert Setting

The Critical Low Pressure Alert is the second warning of an under-inflated tire. Its default setting triggers the alert when the contained air pressure of a tire falls to a pre-set value below the CIP setting.

1. After connecting the DPT, power on the system. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
2. Press the 'MODE' button to toggle between the different programming screens until the flat tire icon, the computer icon and a designation of pressure units (PSI or Bar) appear on the display. The DPT is now displaying the Critical Low Pressure Alert Setting Programming screen.



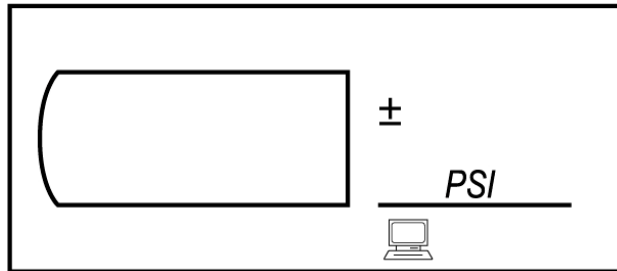
Critical Low Pressure Alert Setting Programming Screen

3. Press the 'TIRE' button to select Critical Low Pressure Alert Setting Programming.
4. Press the 'TIRE' button to toggle between the pre-programmed axles.
5. Press the 'MODE' button to select the desired axle. When selected, the pre-programmed Critical Low Pressure Alert setting for that axle will be displayed.
6. Increase the Critical Low Pressure Alert value by pressing the 'TIRE' button or decrease the value by pressing the 'MODE' button.
7. Press the 'SET' button to save the new Critical Low Pressure Alert value.
8. Repeat steps 4 - 7 until all axles to be programmed are set to the desired Critical Low Pressure Alert values.
9. When complete, press the 'SET' button to exit.

D. Programming the Pressure Deviation Alert Setting

The Pressure Deviation Alert Setting is the first warning of an under-inflated tire. Its default setting triggers the alert when the contained air pressure of a tire deviates plus or minus ten (10) PSI.

1. After connecting the DPT, power on the system. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
2. Press the 'MODE' button to toggle between the different programming screens until the plus and minus icons, the computer icon and a designation of pressure units (PSI or Bar) appear on the display. The DPT is now displaying the Pressure Deviation Alert Setting Programming screen.



Pressure Deviation Alert Setting Programming Screen

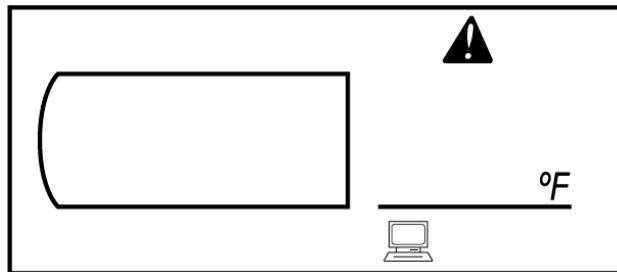
3. Press the 'TIRE' button to select Pressure Deviation Alert Setting Programming. The pre-programmed Pressure Deviation Alert setting for the vehicle will now be displayed.
4. Increase the Pressure Deviation Alert value by pressing the 'TIRE' button or decrease the value by pressing the 'MODE' button.
5. Press the 'SET' button to save the new Pressure Deviation Alert value.
6. Press the 'SET' button to exit.

NOTE: The Pressure Deviation Alert setting applies to all axle locations. The Pressure Deviation Alert can be turned off by setting this parameter to 0 PSI.

E. Programming the High Temperature Alert Setting

The High Temperature Alert warns the driver when a tire's temperature exceeds a set level. SmartTire pre-configured systems for passenger vehicles have a default setting of 176°F (80°C). SmartTire pre-configured systems for RVs, buses and commercial vehicles have a default setting of 195°F (90°C).

1. After connecting the DPT, power on the system. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
2. Press the 'MODE' button to toggle between the different programming screens until the caution triangle icon, the computer icon and a designation of temperature units (°F or °C) appear on the display. The DPT is now displaying the High Temperature Alert Setting Programming screen.



High Temperature Alert Setting Programming Screen

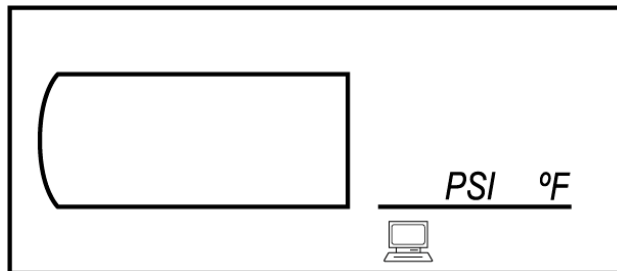
3. Press the 'TIRE' button to select High Temperature Alert Setting Programming. The pre-programmed High Temperature Alert setting for the vehicle will now be displayed.
4. Increase the High Temperature Alert value by pressing the 'TIRE' button or decrease the value by pressing the 'MODE' button.
5. Press the 'SET' button to save the new High Temperature Alert value.
6. Press the 'SET' button to exit.

NOTE: The High Temperature Alert setting applies to all axle locations. The High Temperature Alert can be turned off by setting this parameter below 30°C or 86°F.

F. Setting Display Values in Metric or Imperial Units

SmarTire receivers can send information to the display in either metric or imperial units. Use the Metric or Imperial Units Programming screen to customize the type of units displayed.

1. After connecting the DPT, power on the system. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
2. Press the 'MODE' button to toggle between the different programming screens until the computer icon, the current designation of pressure units (PSI or Bar) and the current designation of temperature units (°F or °C) appear on the display.



Metric or Imperial Units Programming Screen

3. Press the 'TIRE' button to select Metric or Imperial Units Programming.
4. Press the 'TIRE' button repeatedly until the desired pressure and temperature units combination appears on the screen. The four following combinations of pressure and temperature are available as selections: PSI & °F, Bar & °F, Bar & °C and PSI & °C.
5. Press the 'SET' button to save the new settings.
6. Press the 'SET' button to exit.

NOTE: The Metric or Imperial Unit setting applies to all axle locations.

G. Programming the Slope Setting

The 'SLOPE' value setting influences the equation calculating the relative pressure increase or decrease as a function of a tire's contained air temperature. As a rule for radial ply tires, the SLOPE value is determined by adding ten (10) units to the 'PLACARD' CIP setting (in PSI) as illustrated in the table below:

Passenger Vehicle Pressure Ranges

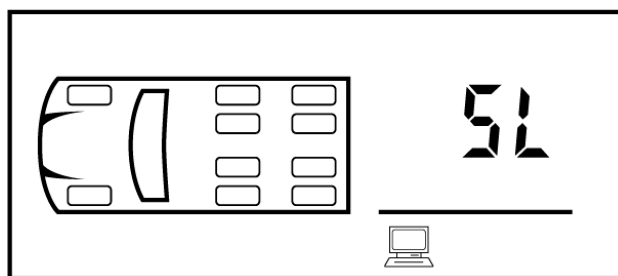
Vehicle's 'placard' CIP Setting	20 PSI	25 PSI	30 PSI	35 PSI	40 PSI	45 PSI	50 PSI
'SLOPE' Setting	30	35	40	45	50	55	60

RV & Commercial Vehicle Pressure Ranges

Vehicle's 'placard' CIP Setting	80 PSI	85 PSI	90 PSI	95 PSI	100 PSI	110 PSI	120 PSI
'SLOPE' Setting	90	95	100	105	110	120	130

If non radial ply tires are installed on the vehicle (bias ply tires are very rare in North America and Europe), the Slope value may need to be adjusted to a value other than 10 units more than the recommended CIP. Contact SmartTire Technical Support for assistance setting Slope values for non radial tires.

1. After connecting the DPT, power on the system. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
2. Press the 'MODE' button to toggle between the different programming screens until the computer icon and 'SL' appears on the display. The DPT is now displaying the Slope Setting Programming screen.



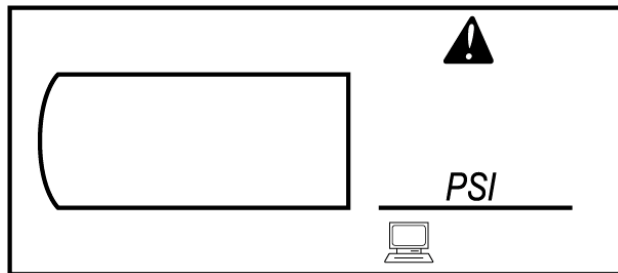
Slope Setting Programming Screen

3. Press the 'TIRE' button to select Slope Setting Programming.
4. Press the 'TIRE' button to toggle between the pre-programmed axles.
5. Press the 'MODE' button to select the desired axle. When selected, the pre-programmed Slope setting for that axle will be displayed.
6. Increase the Slope value by pressing the 'TIRE' button or decrease the value by pressing the 'MODE' button.
7. Press the 'SET' button to save the new Slope value.
8. Repeat steps 4 - 7 until all axles to be programmed are set to the desired Slope values.
9. When complete, press the 'SET' button to exit.

H. Programming the Low Pressure Alert Setting

The Low Pressure Alert exists on systems that do not include the SmarTire Full Function Display only. It is triggered when the contained air pressure inside a tire falls to a pre-set value.

1. After connecting the DPT, power on the system. Press and hold the 'SET' button for more than two (2) seconds and less than five (5) seconds to enter the Full Programming Mode.
2. Press the 'MODE' button to toggle between the different programming screens until the caution triangle icon, the computer icon and a designation of pressure units (PSI or Bar) appear on the display. The DPT is now displaying the Low Pressure Alert Setting Programming screen.



Low Pressure Alert Setting Programming Screen

3. Press the 'TIRE' button to select Low Pressure Alert Setting Programming.
4. Press the 'TIRE' button to toggle between the pre-programmed axles.
5. Press the 'MODE' button to select the desired axle. When selected, the pre-programmed Low Pressure Alert setting for that axle will be displayed.
6. Increase the Low Pressure Alert value by pressing the 'TIRE' button or decrease the value by pressing the 'MODE' button.
7. Press the 'SET' button to save the new Low Pressure Alert value.
8. Repeat steps 4 - 7 until all axles to be programmed are set to the desired Low Pressure Alert values.
9. When complete, press the 'SET' button to exit.

DEFAULT RECOVERY MODE

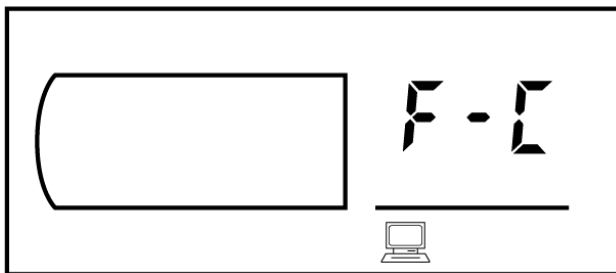
The Default Recovery Mode is used to reset a receiver to its factory default settings and / or to replace corrupted profiles.

Factory Configuration (F-C): This (rarely used) programming screen can be used to restore all of the receiver's settings to their factory defaults. Use it if the Full Function Display regularly stalls when the system powers on. Customized settings will need to be reprogrammed after activating this function.

Standard Profile (S-P): This programming screen can be used to erase a receiver's software profile and replace it with an uncorrupted version. CAUTION: This programming function will erase sensor ID numbers and all other custom settings from the receiver. Once erased, all data will need to be reprogrammed and settings reconfigured for the system to function normally. Reset the receiver's Standard Profile when the system is not functioning properly after using the Factory Configuration function.

Follow the steps below to reset the receiver to its original default factory configuration or to replace the existing software profile with a new standard profile.

1. After connecting the DPT, power on the system. Press and hold the 'SET' button for more than five (5) seconds to enter the Default Recover Mode. When in the Default Recover Mode, the display will show 'F-C' and the computer icon.



Default Recovery Mode

2. Press the 'MODE' button to toggle between the Factory Configuration screen (F-C) and the Standard Profile screen.
3. Push the 'TIRE' button to select either screen.
4. Push the 'TIRE' button to activate the programming function. When resetting to Factory Configuration, the receiver will be reprogrammed with the original default settings and the DTP display will return to the first Default Recovery Mode screen. When resetting to a Standard Profile, the receiver will be reprogrammed with a new standard profile. All original programming including sensor ID numbers and custom settings will be erased. The DPT will then enter the Full Programming Mode ready to receive the new sensor ID numbers.
5. When complete, press the 'SET' button to exit.