



Application Models: Buses & Trucks & Fleets & OTR

- It is highly appreciated to buy the genuine products of Valor
- Please read the installation guide carefully to make sure correct operation
- Do not use other ways of operating and installing, that is not included in this manual



Installation Guide for TPMS-203

The Second Edition

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Quick Use Notice

READ THIS NOTICE PRIOR TO INSTALLATION

Installation Steps

1. Before installation, please make sure the components appear undamaged and quantity is correct. See "*Part I System Components*" & "*Part II System Configuration*".
2. Select the overall location of each component before starting according to your vehicle's configuration. See "*Part II System Configuration*".
3. Install the integrated display, tractor ID box, antenna and harness on the tractor, following the instructions in "*Part III Installation on Tractor*".
4. Install the trailer ID box, antenna and harness on the trailer, following the instructions in "*Part IV Installation on Trailer*".
5. Install the transmitters and ID modules, following the instructions in "*Part V Installation Transmitter*".
6. Register trailer, set baseline pressure and do receiving test, following the instructions in "*Part VI Installation Testing*".

No tractor ID box and trailer ID box are provided for buses or straight trucks, so you can flip over these parts with "X".

	Part	Part	Part III				Part IV		PART	PART VI				
	I	II	3.1	3.2	3.3	3.4	4.1	4.2	V	6.1	6.2	6.3	6.4	
Buses							X	X	X		X		X	
Straight Trucks														

Default values have been assigned to each axle for the following:

- Standard Cold Inflation Pressure (SCIP)** — you can find on the tire sidewall
- Baseline Pressure** — 6Bar / 87PSI (default), can be reset by user according to SCIP
- Low Pressure Warning** — -20% deviation from baseline pressure
- High Pressure Warning** — +30% deviation from baseline pressure
- High Temperature Warning** — set to 80°C / 176°F
- Leakage Warning** — air lost is more than 0.33 Bar / 4.8PSI in 16 seconds

ATTENTION

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▲ Please read this Installation Guide carefully before using this product.

▲ TPMS-203 has been developed specifically to address the challenges of tire pressure monitoring on large-scale and multi-wheeled fleets.

▲ TPMS-203 is designed to monitor tire pressure and temperature. It is not designed to provide warning of sudden critical tire damage and blowout caused by external effects. The driver should react promptly to any warning and correct the problem.

▲ Tires can fail for other reasons besides low pressure or overloading. Always be on the alert for any other tire problems as indicated by unusual noises, vibrations, uneven tread wear, or bulges on the tire! If any of these symptoms occur, have the tires checked immediately by a professional staff!

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PART I SYSTEM COMPONENTS

Integrated Display: Integrated display and receiver unit monitor pressure and temperature information of each tire in a visual form continuously. If the display shows a tire that is abnormal, the display will alert the driver to the condition before it becomes dangerous.



Cupule Pedestal: Used to fix display on the windshield.



Transmitter: Mounted inside the tire on the centre of wheel using cradle and steel strap to continuously monitor tire's pressure and temperature every 4-second and transmit data via RF to the integrated display at 30-second intervals when tires are normal or immediately when the tires are abnormal.



Stainless Steel Strap: Tire transmitters are mounted to the surface of the rim using a stainless steel strap which can be installed on hundreds of thousands of wheels world wide. It's the most reliable and universal method of transmitter installation.



ID Module: ID module is an international patented innovative technology used to identify tire's position without any activation tool or complicated operation. Each ID module has an exclusive transmitter with the same ID code. The ID module is mounted in the display and Trailer ID box to register transmitter's ID code into the display that will recognize wheel positions as well as the baseline pressures for all tires.



Trailer ID Box: Trailer ID Box is mounted on the trailer to transmit trailer tires' data to display. Wireless communication between tractor and trailer has come true. The trailer transmitters automatically register themselves to the display via shortly pressing the set button when changing trailer, say goodbye to any complicated button operation!



Tractor ID Box: Tractor ID Box is electrified with lithium battery and installed on the tractor within 2 meters from Trailer ID Box. It is responsible to send ID number of display to Trailer ID Box so that the Trailer ID Box can wirelessly communicate with display.



Antenna: Installed under the chassis and near axles to collect the data of tires. An external antenna ensures signal reception reliability so that the integrated display always has up-to-date tire information.



Antenna Extension Cable: Prolonged antenna cable is used to connect integrated display with antenna and routed along the windshield rubber layer towards the chassis and along the vehicle's existing umbilical harness.



Three-way Connector: Connect the female screw with antenna extension cable and male screws with antennae.



Power Cord: Connect to the vehicle circuit.



TPMS Smart Tool: TPMS Smart Tool is used to read transmitter ID and tire information, register trailer, indicate battery status and store results of the data received on a large backlit LCD display. Simple user control with 6 buttons: Switch on/off control, backlight control, control information reading, two controls to select function and one for data clearance. It is battery powered by 3 replaceable alkaline batteries. Low battery status is indicated to the user via the LCD display. (TPMS Smart Tool comes with a separate manual)



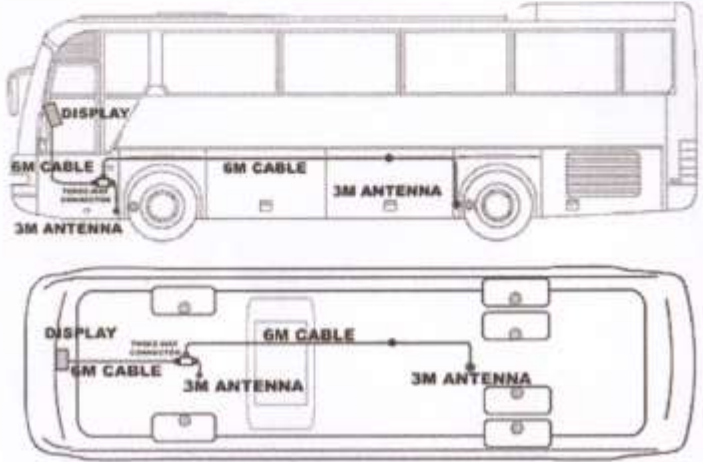
NOTE No tractor and trailer ID box is provided for buses or straight trucks. The quantity of Transmitter, Antenna, Antenna Extension Cable and Three-way Connector depend on vehicle's wheels and configuration.

NOTE The components and quantity have been printed on the surface of packing. If you are missing any of these components, DO NOT proceed with the installation. Contact the manufacturer or distributor for any missing or replacement parts.

Part II SYSTEM CONFIGURATION

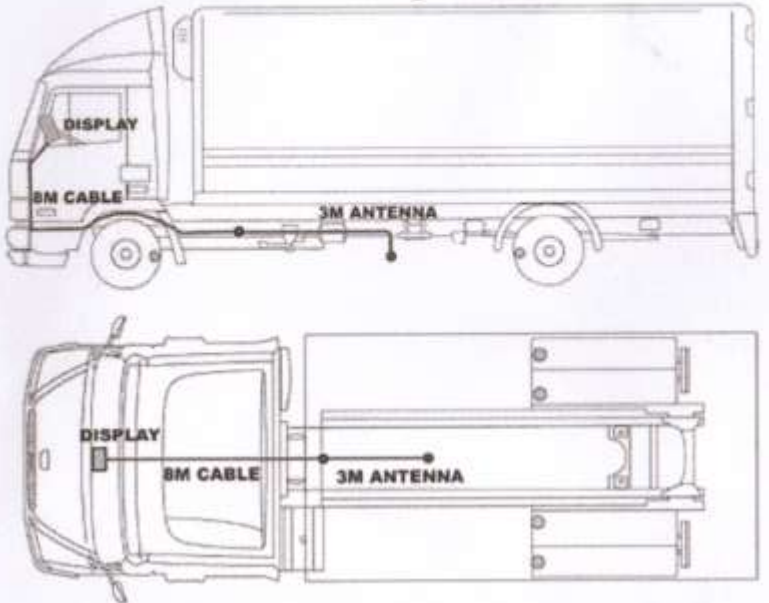
Before installation it's necessary to learn about the whole installation configuration. The installation location of each component depends upon the location of the other components in the system and the vehicle's configuration. As such, it is best to select the overall location of each component before starting. The following diagrams show common system configuration.

Buses



For Buses				
Part No.	Components	qty	Components	qty
TPMS203-BUSKIT	Integrated Display	1	Strips	1
	Cupule Pedestal	1	Insulating Tape	1
	Antenna Extension Cable (8m)	2	Double-sided Sticky Tape	2
	Antenna (3m)	2	Spare Fuse of Power Cord	1
	Three-way Connector	1	Power Cord	1
	Manual	1		
TPMS203-SI	Transmitter & ID Module	6/8		
TPMS203-STRAP	Stainless Steel Strap	6/8		

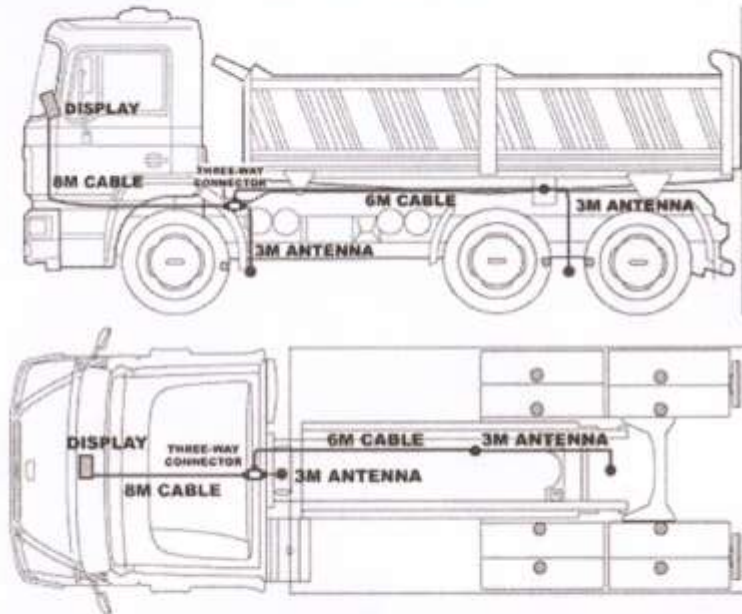
Standard Straight Trucks



* Standard Straight Truck: The wheelbase is less than 4 meters. (Wheelbase: The distance from the center of the front wheel to that of the rear wheel.)

For Standard Straight Trucks				
Part No.	Components	qty	Components	qty
TPMS203-STKIT	Integrated Display	1	Strips	1
	Cupule Pedestal	1	Insulating Tape	1
	Antenna Extension Cable (8m)	1	Double-sided Sticky Tape	2
	Antenna (3m)	1	Spare Fuse of Power Cord	1
	Manual	1	Power Cord	1
TPMS203-SI	Transmitter & ID Module	6/8		
TPMS203-STRAP	Stainless Steel Strap	6/8		

Long Straight Trucks

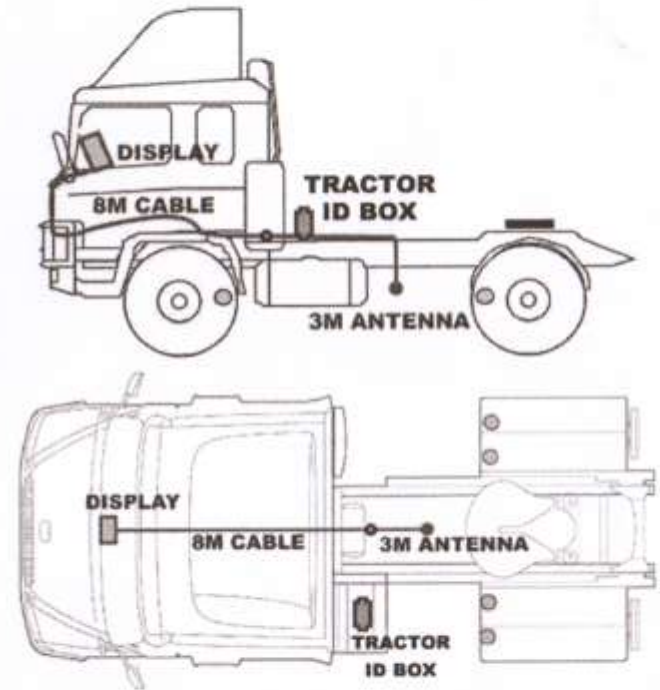


* Long Straight Truck: The wheelbase is more than 4 meters or the shielding effect is good for there are many metal concentrations around the wheel. (Wheelbase: The distance from the center of the front wheel to that of the rear wheel.)

For Long Straight Trucks

Part No.	Components	qty	Components	qty
TPMS203-STKITL	Integrated Display	1	Strips	1
	Cupule Pedestal	1	Insulating Tape	1
	Antenna Extension Cable (8m)	1	Double-sided Sticky Tape	2
	Antenna Extension Cable (6m)	1	Spare Fuse of Power Cord	1
	Antenna (3m)	2	Power Cord	1
	Three-way Connector	1	Manual	1
TPMS203-SI	Transmitter & ID Module	10/12		
TPMS203-STRAP	Stainless Steel Strap	10/12		

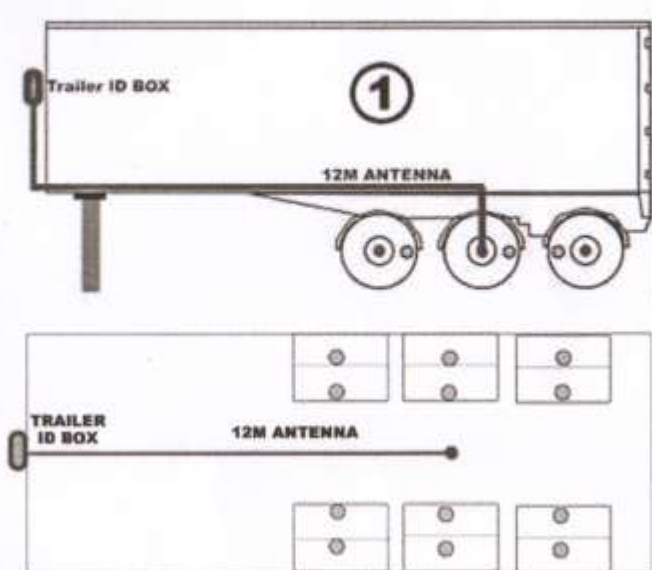
Tractors



For Tractors

Part No.	Components	qty	Components	qty
TPMS203-TRACTORKIT	Integrated Display	1	Strips	1
	Cupule Pedestal	1	Insulating Tape	1
	Tractor ID Box	1	Double-sided Sticky Tape	2
	Antenna Extension Cable (8m)	1	Spare Fuse of Power Cord	1
	Antenna (3m)	1	Power Cord	1
	Manual	1		
TPMS203-SI	Transmitter & ID Module	6/10		
TPMS203-STRAP	Stainless Steel Strap	6/10		

Trailers



For Trailer

Part No.	Components	qty	Components	qty
TPMS203-TRAILERKIT	Trailer ID Box	1	Power Cord	1
	Transmitting Aerial of Trailer ID Box	1	Spare Fuse of Power Cord	1
	Antenna (12m)	1	Manual	1
	Magnet	5	Magnet Bracket	5
TPMS203-SI	Transmitter & ID Module	6/8/12		
TPMS203-STRAP	Stainless Steel Strap	6/8/12		

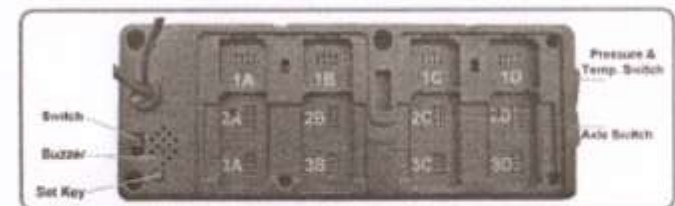
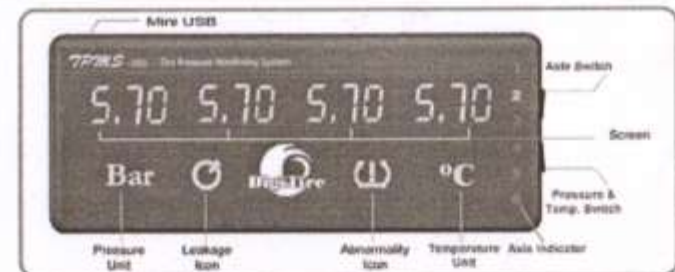
Part III INSTALLATION ON TRACTOR/BUS/STRAIGHT TRUCK

3.1 Installation Integrated Display

Using the included cupule pedestal, mount the integrated display to the windshield in a clean and easily viewable location. Make sure it does not impair the driver's vision of the road and that it can be seen easily by the driver.



Display Overview



3.2 Installation Power Cord

NOTE Before installation, make sure the switch for integrated display is at off position.

3.2.1 Place the cable of the power cord underneath the rubber layer around the edge of windshield towards circuit box.



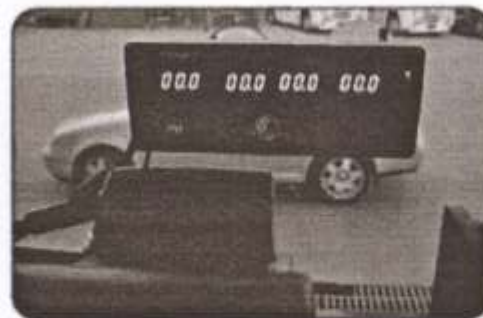
3.2.2 Remove the cover of circuit box. Correctly connect the red wire and blue wire with anode and cathode respectively. Tie up all the cables with a strap and put in the compartment, then replace the cover of circuit box.



3.2.3 Connect power cord with display.



3.2.4 Turn on the display. If the connection is right the screen backlight will light up in green and display "000" on the screen. If the display doesn't light up, make sure the connection is correct.



NOTE There is a fuse on the power cord to protect display when the electric current is strong. Please follow the mounting procedure above.

NOTE If the vehicle is out of service for several days, please turn off the display to save power.

3.3 Installation Antenna

NOTE Dos and Don'ts

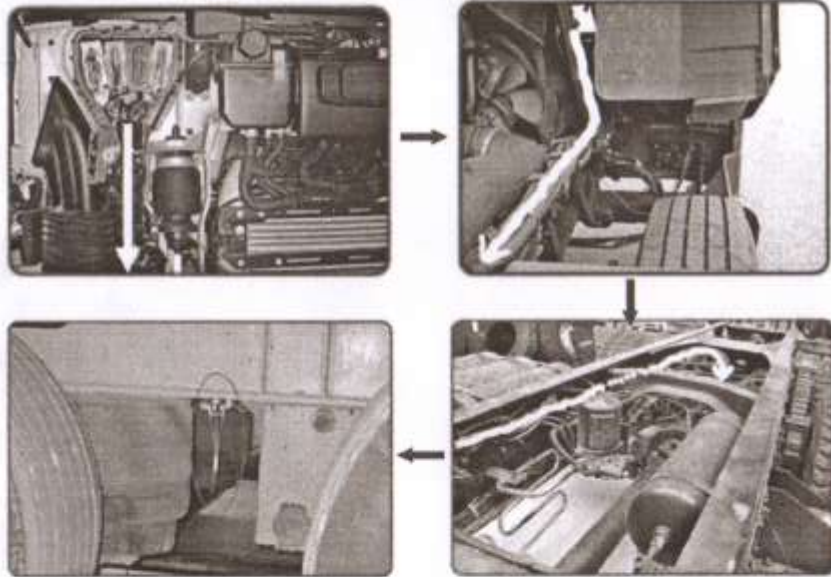
- Protect the cable from heat and sharp edges --- Keep adequate distance from exhaust pipes and sharp metal.
- Fasten the cable along the vehicle's existing umbilical harness.
- Provide some extra cable to allow for slight adjustment if needed.
- Apply cable a strip every 50 cm (1.7 feet) to ensure it is held firmly in place.
- Apply cable a strip on both sides of the connectors to avoid the connectors loosening.
- Make sure all connections are screwed tightly and wrapped with insulating tape.
- The terminal of the antenna requires a clear line-of-sight to the tires for signal reception.
- Install the terminal of antenna vertically pointing downward with the terminal of antenna a minimum of 30cm (1feet) from the ground.

- Do not mount the antenna near large concentration of metal which will shield signal transmission.
- Do not have the antenna touch the vehicle except its mounting base.
- Do not mount the antenna on or near moving parts such as steering linkages, drive shafts or suspension assemblies.
- Do not over tighten cable strips.

3.3.1 Connect the antenna extension cable to the display and place it underneath the rubber layer around edge of windshield.

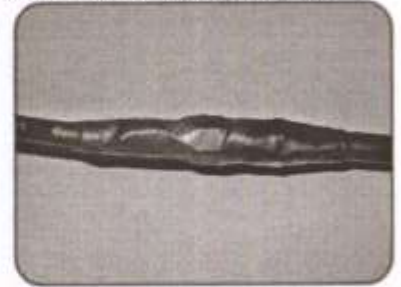
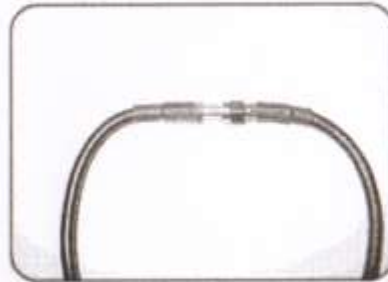


3.3.2 Place the antenna extension cable along the vehicle existing umbilical harness extending to the chassis of tractor, screw the antenna onto the antenna extension cable and fix the terminal of antenna on the chassis in the front of second axle with the magnet.

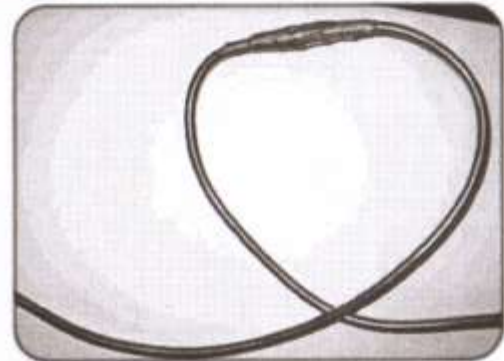


ATTENTION: Step of connecting the antenna and antenna extension cable to avoid the connectors loosening during driving.

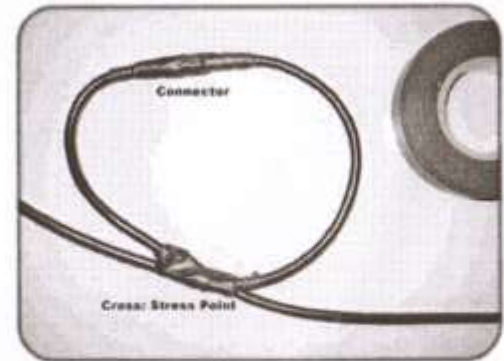
1. Make sure all connections are screwed tightly and wrapped with insulating tape



2. Place crosswise antenna over the antenna extension cable



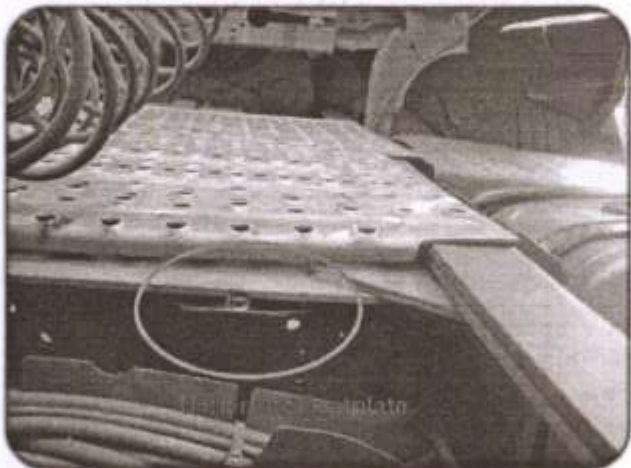
3. Wrap crosswise and tightly with insulating tape so that the stress point fall on the cross not the connector



3.4 Installation Tractor ID Box

NOTE For buses / OTR / straight trucks, you can flip over this part.

Fix the tractor ID box on the tractor near the junction with magnet.



NOTE: No tractor ID box is provided for buses and straight trucks.

The tractor ID box is electrified by lithium battery without change and charge.

The tractor ID box must be installed on the tractor.

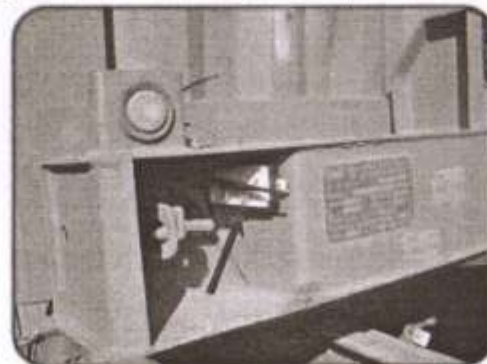
The distance between the tractor ID box and trailer ID box must be within 2 meters in order to get a good signal and avoid electromagnetic interference.

Part IV INSTALLATION ON TRAILER

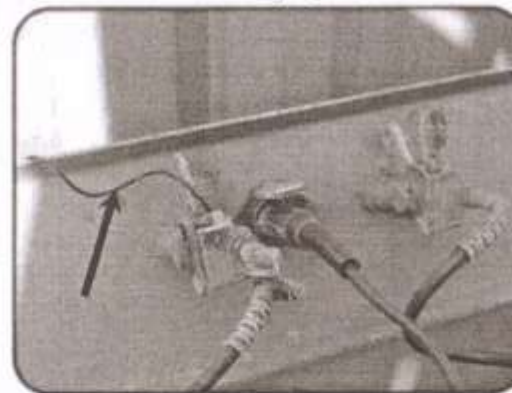
NOTE No trailer ID box is provided for straight trucks/buses/OTR vehicles. For tractors with trailers, please read this part before installation.

4.1 Installation Trailer ID Box

4.1.1 Fix the trailer ID box on the trailer near the junction with magnet. The location is only suggestion as every vehicle is different. Make sure keep the trailer ID box from rain.

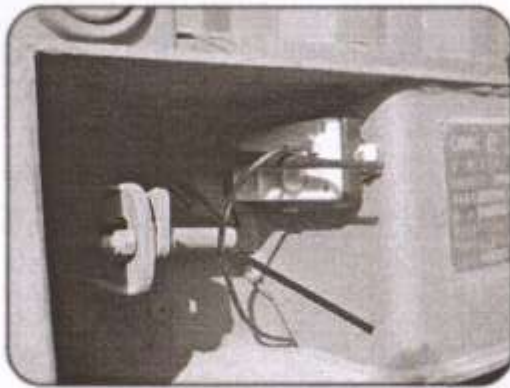


4.1.2 Electrify the trailer ID box at the place of power junction. **NOTE: Make sure the switch of trailer ID box is off before electrifying.**

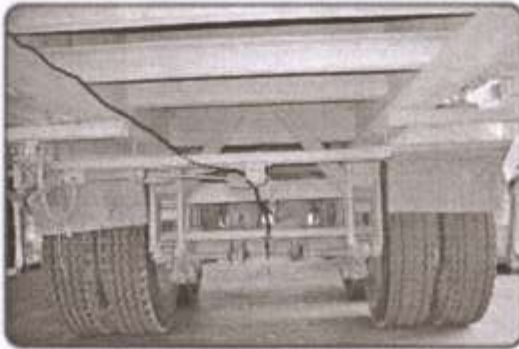


4.2 Installation Antenna of Trailer

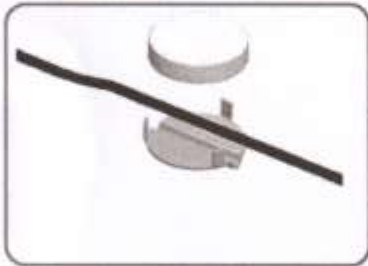
4.2.1 Screw the antenna extension cable on the trailer ID box as shown in the picture.



4.2.2 Place the antenna along the chassis harness extending to the front of axle. Use the magnet to fix the antenna on the chassis. **Since wireless signals are reflected by metal surfaces, the antenna requires a clear line-of-sight to the tires. Mount the antenna to the underside of the vehicle in a location that is open and unobstructed.**



4.2.3 You can use magnet to fix signal cable on the chassis or use strips to tie it to vehicle existing umbilical harness. The magnetism is strong. **BE CAREFUL OF PERSONAL INJURY AND DAMAGE TO YOUR WATCH OR CREDIT CARDS BY THE MAGNET.**



PART V INSTALLATION TRANSMITTER



Before installation, make sure you identify each pair of transmitter and ID module. There is a pair of transmitter & ID module, along with a rim label packed in a small white box, they have same ID code. For example: 01EB327F.



Install the transmitter in the wheel and paste the rim label on the rim. Then install the ID modules in the corresponding position of display and trailer ID box.

5.1 Installation Transmitter

5.1.1 Remove the wheel from the vehicle and then remove the tire. Clean the area where the transmitter is to be installed.

5.1.2 Loosen the steel strap. Wrap the strap around the centre of the rim in the lowest spot and mark it 5 cm (2") past worm gear.



5.1.3 Cut the extra strap tapered and file the rough edges.





The strap is under tension. Always use safety goggles or a face shield and gloves when mounting and dismantling the strap. Failure to follow these instructions may result in personal injury.

5.1.4 Install the tapered end of the strap through the opening of the cradle.

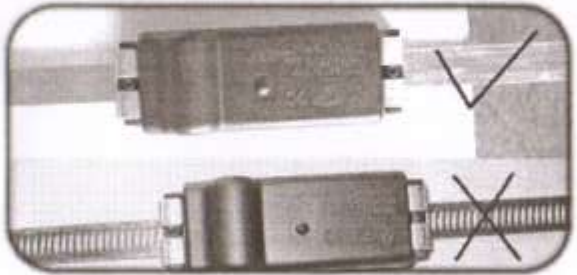


5.1.5 Remove the adhesive tape liner from cradle and paste transmitter beside the tire valve. Keep the strap parallel to the wheel flange and ensure the strap is positioned in the lowest spot possible for correct transmitter and cradle retention.



NOTE: The transmitter must be positioned in the lowest spot possible and installed beside the tire valve in order to know its approximate location after the tire has been mounted.

NOTE: When fixing the transmitter on the rim, make sure the section of steel strap installed through the transmitter is complete NOT TOOTHED.



5.1.6 Position worm gear 4" (10 cm) away from the edge of the transmitter and tighten worm gear until the transmitter can not be moved. DO NOT over tighten the strap, reference torque: 27-35 inch lbs (3-4 Nm)



5.1.7 Indicate the location and ID code of the transmitter by applying the supplied rim label to a clean and dry location on the rim.



5.1.8 Mount the tire on the rim, inflate tire to standard cold inflation pressure specified on tire sidewall and dynamic balance the wheel before it is put back on the vehicle.



Ensure that the tire beads and mounting hook do not touch the transmitter during mounting. Pay attention to the transmitter antenna not be clamped by tire bead and broken by mounting hook. DO NOT inflate tire higher than maximum pressure stamped on tire sidewall.

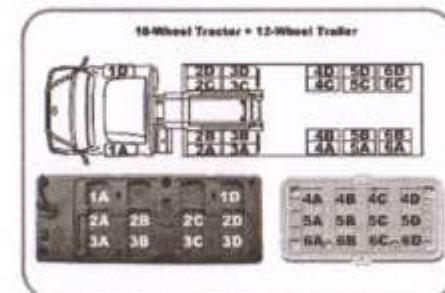
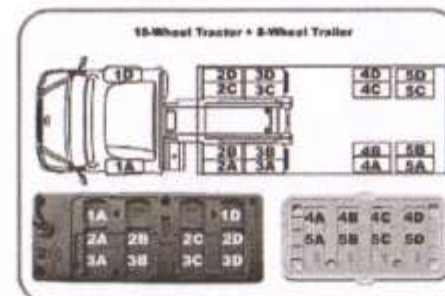
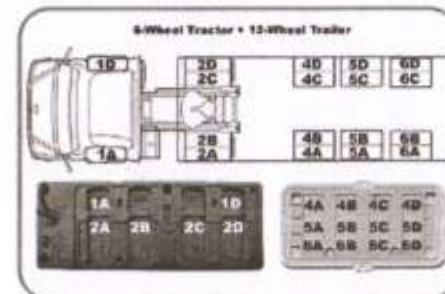
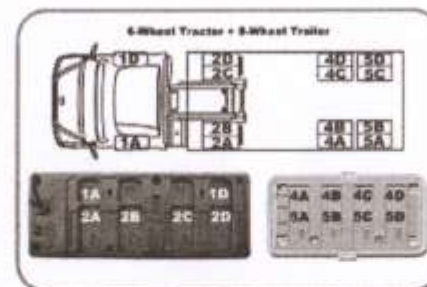
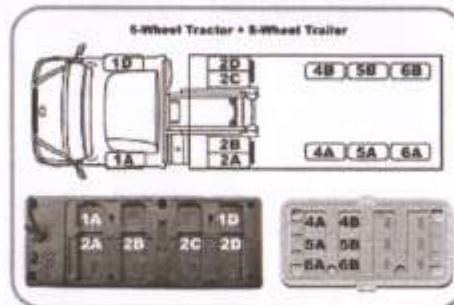
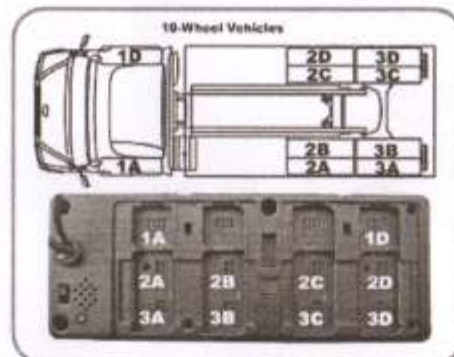
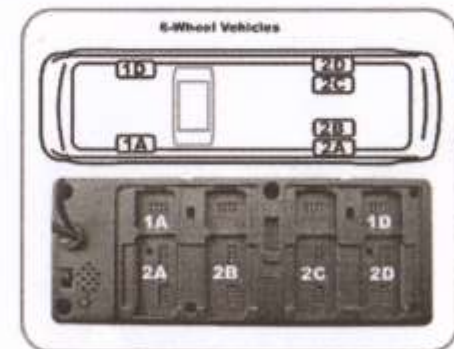
5.1.9 Use the same procedure to install the other transmitters. And record all ID numbers labeled on the rim in the following diagram so that you can attach the ID modules to the proper location



5.2 Installation ID module

5.2.1 Position relationship of ID module slots and tires

The following diagrams are the default relationship between ID module slots and tire position. After installing the transmitters in the wheels, their ID modules should be installed on corresponding ID module slots in display and trailer ID box.



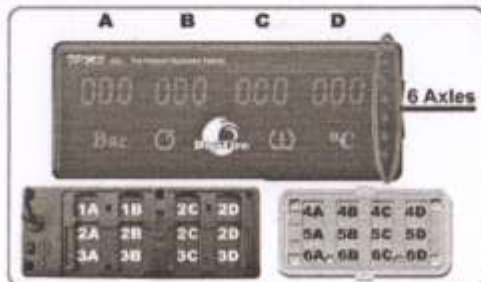
5.2.3 Mounting of ID Module

According to the figures above, install all ID modules in the back of display and trailer ID box.

NOTE Pay attention to the matching of needle plugs and slots when mounting ID module. If you can't find your vehicle configuration, please contact our customer service for suggestions.

5.2.4 Position relationship of ID module slots and screens

There are three axes of ID module slots in the back of display and trailer ID box respectively. The axle indicator "123456" on the display matches the six axes. For example, there are four ID modules mounted in Axle2, their data will be shown on the screen in line 2 from left to right.



NOTE: If no ID module is in the ID module slot, nothing will be shown on the corresponding screen. For example, no ID modules in axle 3, screens in line 3 do not illuminate.

5.3 Removing Transmitter

5.3.1 Deflate the tire and remove the wheel weights from the rim. Push the tire bead away from the rim. Make sure to always set the bead breaker at least 90 degrees from the valve stem to avoid damaging the transmitter.

5.3.2 Firmly fix the wheel on the turntable clamps. (If the mounting head of the tire changer is positioned at 12 o'clock, then the valve stem should be at the 11 o'clock position.) Apply lubricant to both tire bead and rim, and then demount the upper tire bead.

5.3.3 Use the same procedure to demount the lower tire bead. (If the mounting head of the tire changer is at the 12 o'clock position, then the valve should also be at the 12 o'clock position.)

5.3.4 Final inspection: Visually inspect the rim and transmitter to ensure no damage has occurred.

PART VI INSTALLATION TESTING

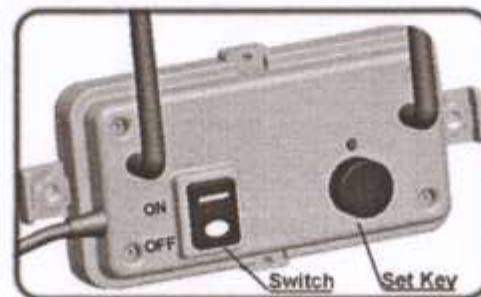
6.1 Register Trailer

There are two ways to register trailer into the display: TPMS Smart Tool and Wireless.

6.1.1 Register the trailer using the TPMS Smart Tool (please see 6.6 in the separate manual of TPMS Smart Tool).

6.1.2 Register trailer wirelessly

--- Turn on the Trailer ID Box and press the set key for 4 seconds. The indicator becomes green. The Trailer ID Box gets into the register mode.



--- Turn on the Tractor ID Box which will send out its tractor ID number immediately.



--- The Trailer ID Box receives the tractor ID number and remembers it. The indicator blacks out simultaneously. The registration is finished, wireless communication between tractor and trailer has come true.

6.2 Set the Baseline Pressure of Tractor/Bus/Straight Truck

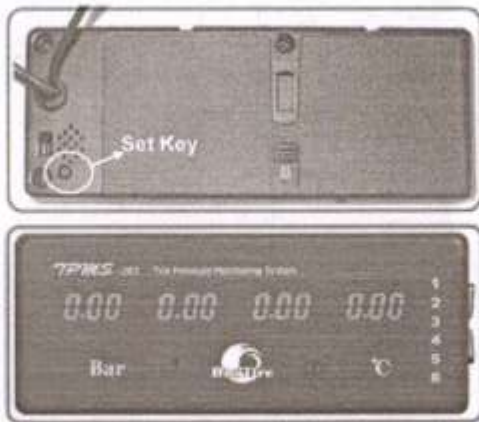
NOTE The baseline pressure has been set in the factory at 6Bar (87PSI) for all wheel positions. We recommend that you set the baseline pressure at the same pressure as standard cold inflation pressure recommended by tire manufacturer.

6.2.1 Inflate all tires' pressures to their standard cold inflation pressure.

6.2.2 Find the set key on the back of display. Press the set key briefly to check the baseline pressure set by manufacturer (6Bar/87PSI).

6.2.3 Press the SET KEY for 8 seconds, you will hear sound "beep", all backlights will be on

and the screens will show "000". This means you succeed in deleting the default baseline pressure.



6.2.4 The system will exit setting mode automatically after receiving signal from all transmitters.

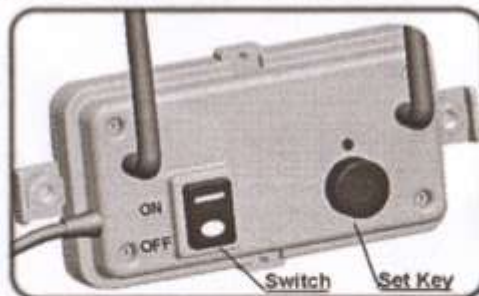
6.2.5 The display will refresh the tire data after receiving signal. The first pressure value received will be saved as new baseline pressure automatically.

6.3 Set the Baseline Pressure of Trailer

6.3.1 Inflate all trailer tires' pressures to the standard cold inflation pressure.

6.3.2 Keep the switch of Trailer ID Box ON.

6.3.3 Press the SET KEY for 8 seconds, you will hear a continuous "beep", the LED light will turn red. You succeed in deleting the default baseline pressure.



6.3.4 The Trailer ID Box will exit setting mode automatically after receiving signal from all trailer transmitters. The first pressure value received will be saved as new baseline pressure automatically.

NOTE **Warning thresholds:** The system will give a Low Pressure Warning when current pressure is 20% below baseline pressure and High Pressure Warning when current

pressure is 30% above baseline pressure.

NOTE It's necessary to set baseline pressure on the following conditions:
① First use of product.
② After replacement of transmitter and ID module.

After the display has received all transmitters' pressure, then you can press the SET KEY of display briefly to look up all tires' baseline pressure.

6.4 Receiving Testing

If the system succeeds in setting the baseline pressure, the display screen shows the tire data of each axel circularly and automatically. You can also press Axle Switch to look up tire data quickly.

If there are some problems, please see the Troubleshooting in User's Manual.