Z-BOX Transceiver Installation Manual
TPMS sensor Installation guide

IMPORTANT NOTE: **SENSORS MUST BE INSTALLED DIRECTLY ONTO THE WHEELS VALVE STEM.**

DO NOT INSTALL THEM ON ANY TYPE OF VALVE EXTENSION AS THE WEIGHT OF THE SENSOR WILL CAUSE THE VALVE STEM/EXTENSION TO FLEX, RUB AND BREAK.

FOR INNER WHEELS, ONCE THE SENSOR IS FITTED DIRECTLY TO THE WHEELS VALVE AND IF YOU REQUIRE AN EXTENSION, PLEASE ORDER PART NO. OZX-PE140 (140MM WHITE PLASTIC VALVE EXTENSION)

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VERSION:	**004**

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Acronyms and Abbreviations

CAN ..... *Controller Area Network*
N/A ..... *Not applicable*
PN ..... *Part number*
RF ..... *Radio Frequency*
TBD ..... *To be defined*
UART ..... *Universal Asynchronous Receiver-Transmitter*

1. Introduction

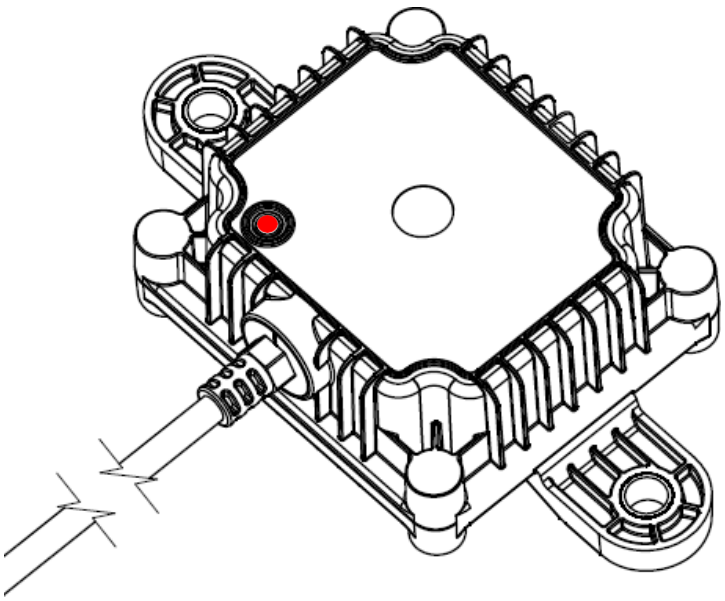
This installation manual is aimed to guide the proper installation of Z-Box Transceivers on trucks and trailers. The scope of this manual is to outline the specifications of the receiver and details for installation to optimize the performance and functionality of the Z-Box Transceiver in a commercial vehicle setting.

2. Technical Specifications

- Operating Voltage: 7 – 32V
- Working current: ≤ 30mA@24V
- Working temperature: -40°C - 85°C
- Overvoltage protection

3. Mechanical Specifications

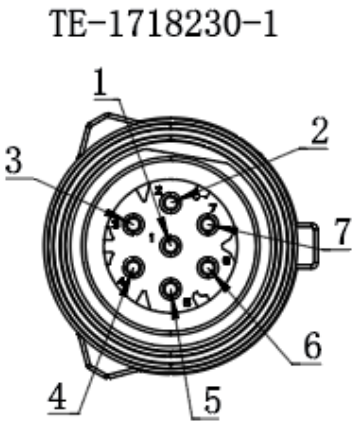
- Designed for heavy-duty automotive environments (water, dust, shocks, etc.)
- Weight: 190g
- Dimensions: 80x126x42mm (LxWxH)
- IP69 rating
- RGB LED available for diagnosis
- Material: PA66+GF30



4. Connection Specifications

The Z-Box Transceiver comes with a 1-meter-long pigtail cable and a TE 7 Pin connector (PN: 1718230-1) preinstalled.

The following figure shows the connector pinout:



PIN DESCRIPTION			
PIN	DESCRIPTION	COLOR	NOTES
1	CAN-L	WHITE	
2	232TX	BROWN	
3	GND	GREEN	
4	232RX	RED	
5			EMPTY
6	CAN-H	BLACK	
7	POWER	BLUE	

TWISTED

P/N: **OZX-THR** - Oz-Sensor 1.8m Jump Cable with TE 7 Pin connector to bare wires. 2A Fused.

Wiring Colours. Blue – Ignition Power 12/24V Green – Ground Red – RS232 RX Brown – RS232 TX White – CAN-L Black – CAN-H	

P/N: **OZX-Z-BKT** - Oz-Sensor Universal Z-Box Transceiver Mounting bracket. Heavy Duty 3mm Mild Steel, Powder Coated.

5. Positioning Recommendations

The range of the sensors is restricted. Consequently, we generally advise determining an installation placement for the Z-Box Transceiver that is relatively central to all the installed sensors sending data to it, ensuring dependable data transmission.

Consider the following recommendations when identifying the optimal mounting position for the Z-Box Transceiver:

- Aim for an unobstructed line of sight between the Z-Box Transceiver and the corresponding sensors, or at least the wheels.
- Steer clear of any metal barriers between the Z-Box Transceiver and the associated sensors that could impede reception, such as a trailer pallet box or an air tank.
- When seeking the ideal position for the Z-Box Transceiver, prioritize the distance to sensors placed in more challenging environments, like deep rims or twin wheels.
- For trucks, the Z-Box Transceiver should be closer to the driving axle (deep rims, twin wheels) than the steering axle.
- Place the Z-Box Transceiver where the temperature remains within the specified operating range and away from devices generating heat.
- Maintain a minimum distance of at least 20 cm between the Z-Box Transceiver and any high- bitrate cables and 50 cm from electric motors, alternators, or other electrical machines with coils and windings.
- Begin by setting up the first vehicle of a particular type in a fleet and thoroughly verify its performance. Subsequent vehicles of the same type can then be replicated with less time spent on performance verification.

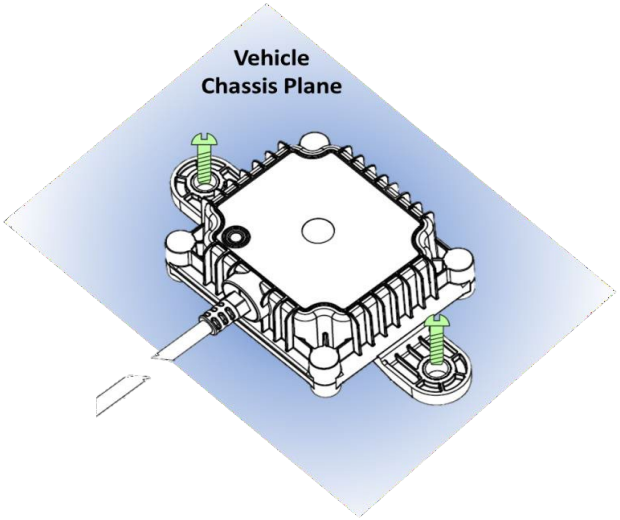
Z-Box Transceiver Positioning Guide Example
(logo size facing down towards the ground)

5.1. Receiver mounting

The receiver can be affected by interference, so it's important to install it properly. Place the unit with its **top** side, which includes antennas, facing outward (away from any metal) and preferably facing down towards the ground. Make sure the **top**, face with laser markings and LEDs, is not obstructed.

The **bottom** of the receiver should be in direct contact with the vehicle chassis or mounting bracket. Avoid leaving any gaps that could cause vibrations between the unit and the vehicle chassis.

To secure the unit to the vehicle chassis, you can use M8 screws (not included) in existing holes. Alternatively, use heavy duty cable ties to fasten the unit in your preferred position. Remember not to use metal ties.



6. Wiring the Z-Box Transceiver

6.1. General wiring scheme

IMPORTANT NOTE: DISCONNECT AND ISOLATE POWER BEFORE MAKING OR BREAKING ANY WIRING CONNECTIONS.

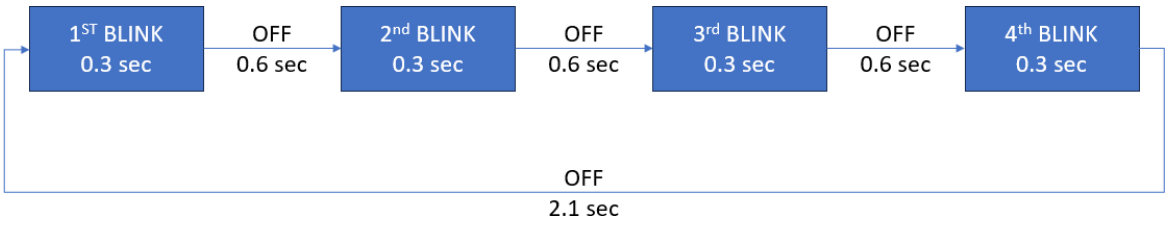
Consider the following:

- Connect the **PWR** wire of the installation cable to **clamp 15 (IGN). (Blue Wire)**
  - **Not** to permanent power – of the truck/trailer.
  - Fuse this connection with **min 2A** / **max. 10 A**.
- Connect the **GND** wire to **ground (clamp 31). (Green Wire)**
- Optional CAN Bus connection: (not used for TOLL)
  - Connect the **CAN-H** and **CAN-L** wires to the corresponding CAN bus connection
  - The Z-Box Transceiver includes a 120 Ohm termination resistor, which can be disabled.
  - If the desired CAN-Bus is not terminated, a 120 Ohm termination resistor is required
- TOLL RS232 connection:
  - Connect the **RS232 Tx** and **RS232 Rx** wires to the corresponding RS232 interface connection.

NOTE: TOLL TRUCKS INSTALLATION, Please ensure the RS232 Tx and Rx wires are run into the Trucks' cabin and left labelled where the MT Data Telematics Main module is located. These will eventually be connected to the MT Data serial input.

7. Status LED

The in-built RGB LED for diagnosis is a visual indicator to inform about the operational status or health of the system. These LEDs are designed to emit different colours or patterns to communicate specific messages, providing users or technicians with a quick and intuitive way to assess the condition of the device. See the below description to identify the system status through the status LED.



1st BLINK	**RF receiving status**
RED	Channels 1 and 2 not receiving frames
GREEN	Channel 1 or 2 receiving frames
BLUE	Channels 1 and 2 receiving frames

2nd BLINK	2.4GHz Link Status
RED	Transmitting only
GREEN	Receiving and Transmitting
BLUE	Connected

3rd BLINK	CAN/UART receiving status
RED	Always red
GREEN	N/A
BLUE	N/A

4th BLINK	TBD
RED	Always red
GREEN	N/A
BLUE	N/A

8. Configuration

Use the “Oz Sensor X” app available for Android and iOS to configure the receiver properly.
The available configuration include, but not limited to:

- Vehicle Type (Truck or Trailer);
- CAN Baud Rate, Termination Resistor, Address;
- Communication Type (BLE, CAN, RS232).
- And others.

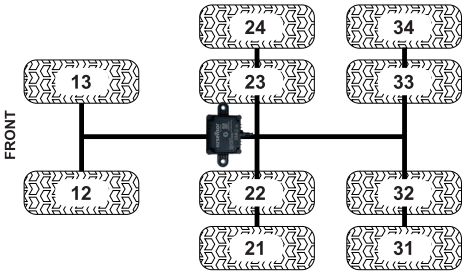
TOLL KITS WILL COME SUPPLIED PREPROGRAMMED TO SUIT THE VEHICLE IT’S BEING INSTALLED INTO. THEY WILL BE LABELLED WITH TOLL’s FLEET/ASSET NUMBER. PLEASE ENSURE THE TRANSCEIVERS, SENSORS AND DISPLAY (IF USED) ARE INSTALLED INTO THE CORRECT VEHICLE

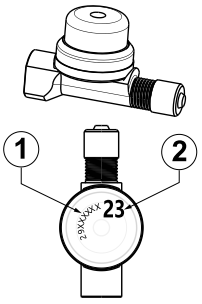
Apple IOS INSTALLER App: https://apps.apple.com/au/app/oz-sensor-x-tpms-installer/id6478497932
Android INSTALLER App: https://play.google.com/store/apps/details?id=com.nlpcontrolcenter.bleapp.zylux&hl=en&gl=US

9. Location Specific TPMS Sensor Installation Guide

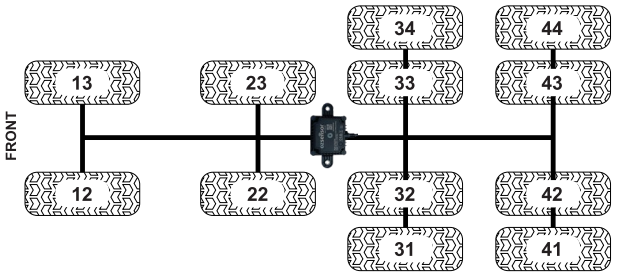
We recommend using the specialised tpms sensor torque tool to install the tpms sensors directly on the wheels valves. **DO NOT INSTALL THEM ON ANY TYPE OF VALVE EXTENSION OR FIT SENSORS TO ANY VALVE THAT IS BENT OR DAMAGED. SENSORS SHOULD NOT BE OVERTIGHTENED. RECOMMENDED TORQUE 3Nm / HAND TIGHT. SPRAY SENSOR / VALVE WITH SOAPY WATER TO ENSURE NO LEAKS.**

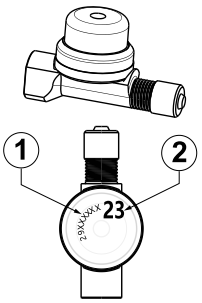
EXAMPLE TRUCK WHEEL LAYOUTS / SENSOR POSITIONING





1) **Sensor ID**
2) **Location No.**





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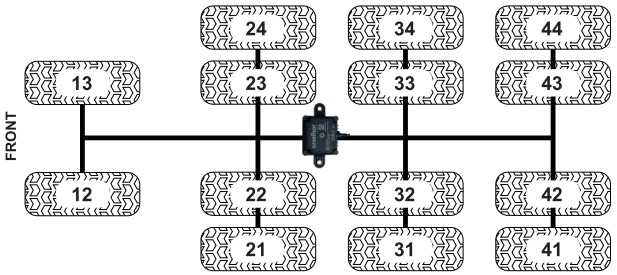
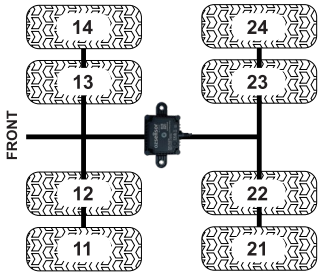
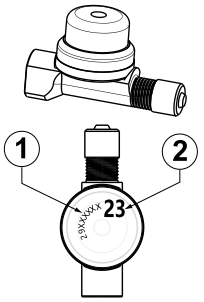


EXAMPLE TRUCK WHEEL LAYOUTS / SENSOR POSITIONING





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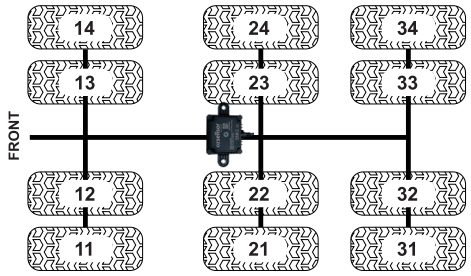


10. Optional In Cab Display.

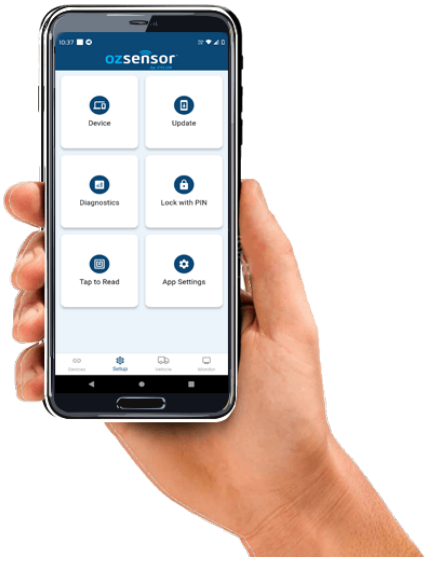
P/N: OZX-TMON

Specifications
Operating Voltage: 7 to 32V DC
Operating Current: ≤ 50mA @ 24V
Dimensions: 110 x 85 x 28mm
Alerts: Low Pressure, Extreme Low Pressure, High Pressure
Audio Alerts: Yes: Programmable OFF / ON
RX: 2.4Ghz BLE
TX: 2.4Ghz BLE
Unit Weight: 115 grams (Excl. Cable)
Fully Programmable: Pressure unit, Temperature Unit, Sleep time, Audio Alarm, Number of Trailers

The Optional Display is wired to an ignition or accessory source. If the cig plug is removed, please ensure the monitor is fused (3A or 5A). The monitor will come pre-programmed to the Truck Transceiver unit. If not programmed, please use the OZ-X Installer App to program them together.
Wiring – Red – Ignition (12V/24V) / Black - Ground

11. Verify Asset ID / Cloud Data

Once all sensors are installed and you have been receiving data on the Display page of the OZ-X Installer app, to verify the Asset ID (Fleet number) has been assigned correctly, please visit this link https://toll.tpms.au/verify, enter the asset ID of the vehicle, then press Search.

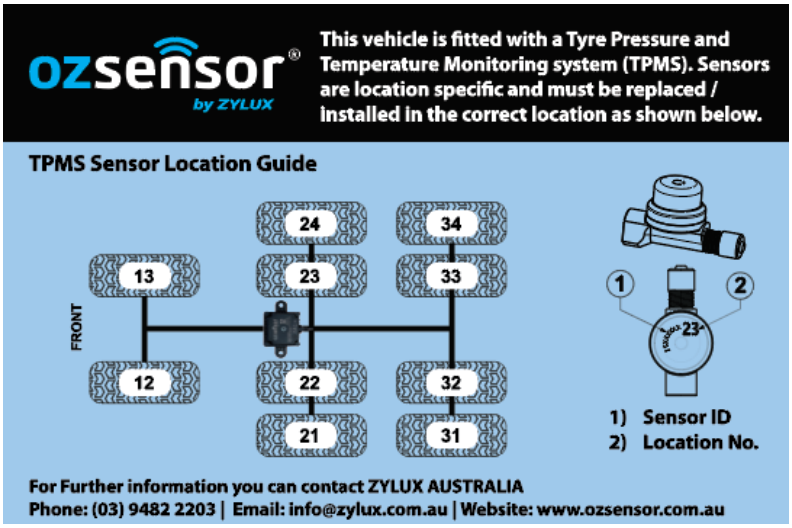


12. Trouble Shooting.

For the latest trouble shooting and support documents, please visit our website www.ozsensor.com.au/support

13. TPMS Labels.

Fit the included label to the Truck or Trailer in a suitable location once the installation is complete.



www.ozsensor.com.au/support