



World's best auto cooling

TYREGUARD 400

Operating Instructions Tyre Pressure Monitoring System

Part #1015 – #1017 - #1019

WARNING!

This product may contain a coin/button cell battery. Keep product and batteries away from children. Battery can cause severe or fatal injuries in 2 hours or less if swallowed or placed inside any part of the body. Seek immediate medical attention if it is suspected that a coin/button battery has been swallowed or placed inside of any part of the body.



1. Introduction

Congratulations on purchasing your new TYREGUARD 400 Tyre Pressure Monitoring System (TPMS). Your TYREGUARD 400 TPMS system is a safety system for monitoring the vehicle's tyre pressure and temperature. It consists of externally mounted wireless sensors, fitted to the vehicles wheel tyre valves, and a hand-held monitor. The sensor will monitor the tyre's air pressure and temperature. The sensor transmits the tyre pressure and temperature information to the dash-mounted/handheld monitor. The monitor can be placed on the dashboard, on the sun visor or mounted in any convenient place in the vehicle using the window mount included.

Your TYREGUARD 400 TPMS is a sophisticated product which requires programming. Please:

» **Read these instructions very carefully in their entirety before starting installation.**

» **Don't install any of the sensors before programming the monitor!**

If you need help, check our website www.daviescraig.com.au, email info@daviescraig.com.au or call us +61 (0) 3 9369 1234 – Monday-Friday, 8.30am-5.00pm EST.

2. TYREGUARD 400 System Contents

Item	Quantity		
	#1015	#1017	#1019
Monitor	1	1	1
Sensors	4	6	8
Anti-theft locking nut	4	6	8
Sensor batteries	4	6	8
Monitor Mounting Cradle	1	1	1
Monitor Window Mount	1	1	1
USB cigarette lighter charger (12/24V)	1	1	1
USB Charging Cable	1	1	1
Wrench Tool	1	1	1
Operating instructions	1	1	1

Your monitor is supplied partially charged and should be fully charged before you commence programming. It takes (approx.) 6 hours to charge your monitor fully, after which the unit will operate for 120 hours (5 days) without a charge.

Fitting Sensor Locks (Optional)

The nut slips over the valve stem first. Screw on the sensor (finger tight). Raise / screw the nut until it makes contacts with sensor. Tighten with the supplied wrench.

The important thing here is to not lose the wrench as you'll need it to remove the sensors should you need to adjust tyre pressures.

Note: the anti-theft locking rings are NOT required to secure the sensors to the tyre valve stems. They should only be used if you are in a "high theft" area.



Nut

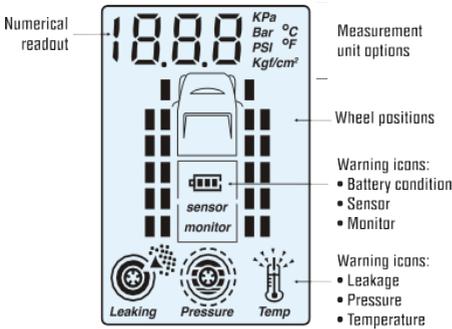


Wrench

3. Installation and Programming Instructions

TYREGUARD 400 screen legend

TYREGUARD 400 Monitor Buttons



Important; before installing the tyre sensors:

- a) Ensure you have inflated the vehicle's tyres to your required pressures.

Note: It is recommended to set tyre pressures at those recommended by the manufacturer or listed in the vehicle's handbook.

- b) Ensure the monitor battery is fully charged and is in Alignment mode,
- c) Ensure batteries have been fitted to each sensor. UNDER the terminal, + side up)

Note: Do not over-tighten the plastic cap as this may damage the cap and O-ring.

Sensor Battery Installation

Unscrew the sensor cap, insert a new CR1632 battery. Be sure the "+" (plus) side is up, under the metal clip and is firmly touching the "+" terminal. Incorrect insertion will burn out the circuit. The cap should be very snug to remain waterproof. DO NOT use pliers.

Dispose of any used lithium batteries safely.

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This product may contain a coin/button cell battery. Keep product and batteries away from children. Battery can cause severe or fatal injuries in 2 hours or less if swallowed or placed inside any part of the body. Seek immediate medical attention if it is suspected that a coin/button battery has been swallowed or placed inside of any part of the body.



NOTE:

- a) The battery model required for the sensors is a CR1632 button battery.
- b) Ensure the battery is inserted UNDER the terminal.
- c) The "+" and "-" pole of sensor battery must be placed in the correct position with the "+" terminal facing up; failure to do so may cause the sensor to burn out.
- d) When replacing batteries inspect the O-ring for damage and replace as necessary (contact us).

Sensor Installation and Alignment

1. Place the monitor into alignment mode by pressing and holding both the Left and Right buttons on the monitor for 5 seconds. All 22-wheel positions will be displayed on the screen
2. Press either the Left or Right button to select the specific tyre position you wish to align a sensor.
3. Screw a sensor onto the corresponding wheel and within 5 seconds the current pressure will be displayed and the LED at the top of the monitor will turn green.
 - a. If the LED light Remains Red and the pressure reading shows "- - -" the sensor has not aligned. Remove the sensor, remove and replace the battery and retry.
4. Repeat steps 2 & 3 for each tyre.
5. When all tyres have been aligned, Press and hold the Left and Right buttons until the unit returns to normal Operating Mode and all the unaligned positions are no longer displayed.
 - a. You should only see the positions that have successfully aligned.

Note: If a sensor is to be removed from one valve and fitted to another valve, you must delete the current setting on the monitor and realign this sensor to the new tyre.

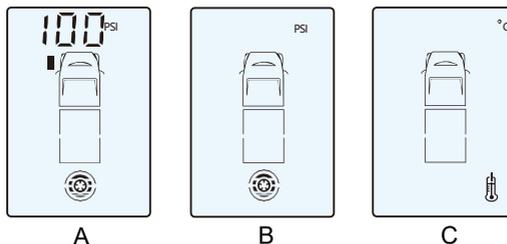
The monitor may initially show alarms or abnormalities until you have set your required pressures and units of measurement as follows.

Delete/ Clear Tyre Positions

1. To delete an aligned sensor from a tyre, whilst in tyre alignment mode, select the tyre position and then hold down the center button until "- - -" appears on the monitor and LED light turns red.
2. To delete all alignments, hold down the right-hand button until "- - -" appears on the monitor and no positions show a pressure.

Programming Standard Settings

1. Once all sensors have been aligned and you have taken the monitor out of Alignment Mode, press and hold the centre button for 5 seconds to enter Programming Mode (left graphic opposite). The first aligned tyre position will flash, and the default pressure level will be displayed. (The default initial units are PSI). (Diagram A)
2. Press the Left or Right button to decrease or increase the required normal cold tyre pressure for this wheel position.
3. Press the Centre button to select the next tyre and repeat this sequence to set the cold tyre pressure on each of the remaining tyres.
4. Once you have set the pressure for the last wheel position the next press of the centre button will move you to the trailer disconnect setup.
5. Pressing the middle button again will take you to temperature units and pressing the Left or Right buttons you can change between Fahrenheit and Celsius. (Diagram D)
6. At any time during the set up process you can exit to Normal operating mode by holding down the centre button for 5 secs until the monitor beeps. You have now finished programming.



NOTE:

- a) Please allow approx. 30 minutes for your monitor to adjust to your new programmed settings.
- b) Always install the sensor when the Tyre is cold
- c) Please check each Tyre valve is not damaged.
- d) Check to ensure there are no leaks and the sensors are firmly secured to each Tyre valve.

Installation Of the Monitor

The monitor may be mounted using the mount supplied. The monitor can be fixed to a suitable surface in the vehicle, Windscreen, dashboard etc. It has a built-in lithium battery recharged using the charger provided. It is not recommended that this charger be used to power the monitor continuously as it may damage the battery.

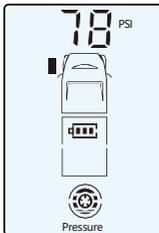
4. System Operation

Normal Operation Mode

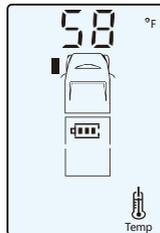
To check the pressures and temperatures, scroll through the selected tyre positions using the left or right buttons. The monitor will indicate the pressure and then the temperature of each tyre. After your checks are completed, the backlight will go out, and the monitor will indicate the Tyre pressure of the selected Tyre. After approximately 30 seconds the monitor will revert to a blank screen just showing the vehicle outline. In this mode the monitor will continue to receive readings from the sensors. If the monitor detects no movement for 15 minutes, it will enter sleep mode to save battery power. It will revert to normal mode as soon as movement is detected.

Checking Tyre Pressures

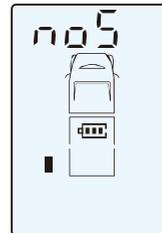
Whilst in Normal mode, press the L or R button to check the air pressure and temperature of each of the tyres in turn starting with the front left tyre (graphics A & B below). If the monitor fails to detect signals from a sensor or sensors for a period of time it may show the “no S” (no Signal) indication. (graphic C below). This may indicate the batteries are getting low on the sensors or that a booster/repeater may be required. Do not re-align a sensor showing “noS”. This is unnecessary. If the loss of signal is temporary the “noS” will disappear once signal is restored.



A



B

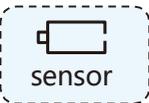


C

Battery Low Indicators of the Monitor and Sensors



When the monitor battery charge is low, the battery icon and “MONITOR” icon on the screen will flash and the beeper will give a 10 second intermittent alarm. The monitor will then beep every 30 seconds when it is within 5 minutes of total discharge. The monitor should be plugged in to its charger.



When a tyre sensor has a low battery, the battery icon and “SENSOR” icon together with the corresponding tyre icon flash on the screen and a 10 second intermittent alarm will sound. If the power of any of the sensors becomes too low, please replace the corresponding battery immediately.

Charging the Monitor

The built-in lithium battery of the monitor is re-chargeable. Please connect the USB charger cable into the port at base of the monitor and then insert USB the USB adapter plug into the Cigarette lighter port of the vehicles. The battery icon will cycle as it is charging. It takes approximately 6 hours to fully charge the monitor.

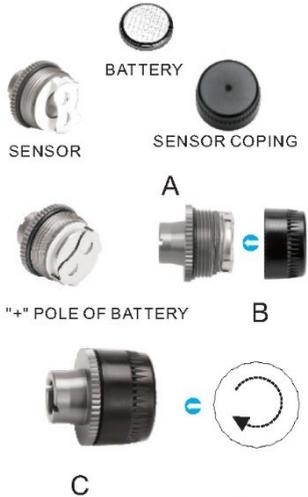


Note: Please keep the monitor in a cool environment when charging. When not in use the monitor should be left fully charged and turned completely off.

Sensor Battery Replacement

Replace the corresponding sensor's battery when the monitor indicates a low battery. Unscrew the plastic cap from the sensor, take out the battery and replace it with a new button cell battery, (CR1632). Ensure the "+" terminal is touching the upper bracket. Screw down the cover. The cap should be very snug to remain waterproof. DO NOT use pliers. Dispose of any used lithium batteries safely.

WARNING!
This product may contain a coin/button cell battery. Keep product and batteries away from children. Battery can cause severe or fatal injuries in 2 hours or less if swallowed or placed inside any part of the body. Seek immediate medical attention if it is suspected that a coin/button battery has been swallowed or placed inside of any part of the body.



NOTE:

- e) The battery model required for the sensors is a CR1632 button battery.
- f) Ensure the battery is inserted UNDER the terminal.
- g) The "+" and "-" pole of sensor battery must be placed in the correct position with the "+" terminal facing up; failure to do so may cause the sensor to burn out.
- h) When replacing batteries inspect the O-ring for damage and replace as necessary (contact us).

Power On

Press and release the center button to turn on the monitor. The unit will now receive information from all sensors that have been aligned on the specific tyres.

Power Off

Hold down the middle button for at least 8 seconds, and the monitor will automatically switch off. Please note: the system will first enter Programming mode 5 seconds while holding down the middle button, continue holding down the middle button until the screen goes completely blank to power off the monitor.

Note: Whether the monitor is turned on or off, the sensors will continue to transmit normally.

Standby Time

The monitor has an intelligent 15-minute Sleep mode. The monitor goes into Sleep mode to save power after the vehicle has been motionless for more than 15 minutes. When movement is detected, the monitor automatically turns on and re-commences monitoring of the sensors.

5. Warning Conditions

The TYREGUARD 400 TPMS system has two primary functions, monitoring the temperature and pressure conditions of the vehicle's tyres. The following are the abnormal conditions that will trigger a warning.

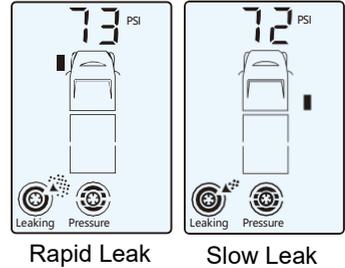
Rapid Leakage

When the air pressure of a tyre drops more than (3psi) within 2 minutes the monitor will signal an audible alarm, and the "Leaking" icon will flash on the monitor's screen

Slow Leakage

When the air pressure of a tyre drops more than 3psi over a period of between 2~10 minutes, the monitor will signal an audible alarm, and the "Leaking" icon will flash on the monitor's screen. The Wheel position will flash to indicate which tyre has abnormal air pressure and what its current air pressure reading is. The red LED will also flash on the monitor.

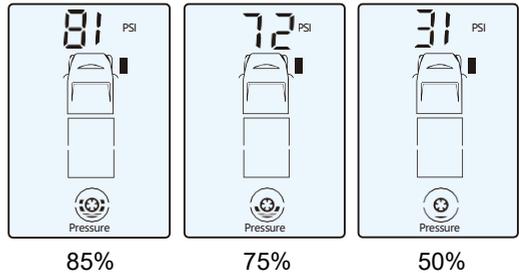
Note: If there is a fast or slow leak the sensor will send a message to the monitor whether driving or stationary.



Low Air Pressure Warnings

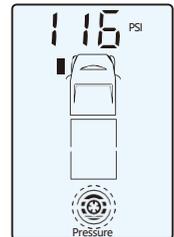
When the actual tyre pressure is equal to or falls below 85% of the set pressure the system will give an alarm, and the monitor will indicate the position of the tyre with the abnormal air pressure and its current pressure. The low pressure is indicated by the flashing red LED on the monitor and the pressure icon flashing on the screen.

Two further Low-Pressure Alarms will occur at 75% and 50% below set pressure respectively. (See indicator levels on right)



High Air Pressure Warning

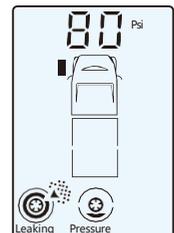
When the actual pressure is equal to or is greater than 120% of the set pressure the system will give an alarm, and the monitor will indicate the position of the tyre with the abnormal air pressure and its current air pressure. The high pressure is indicated by the flashing red LED on the monitor and the pressure icon flashing on the screen, as the graphic on the



Multiple Warning Indication

When there is more than one Warning indication with one tyre simultaneously, the monitor will indicate all the various Warning Icons as the graphic on the right shows.

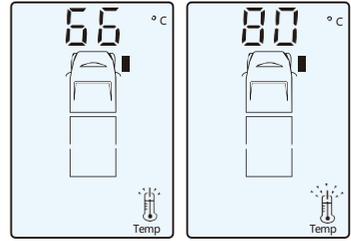
When there are Warning alarms on two or more tyres at the same time, the respective tyre icons with the abnormalities will all flash on the screen. In this situation the current tyre reading being displayed will be indicated by that tyre icon flashing more rapidly than the other icons.



High Temperature Warnings

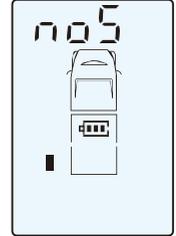
When the temperature inside the tyre exceeds 65°C (149°F) the system will give a stage 1 high temperature alarm, and the monitor will indicate the position of the tyre with the abnormal temperature along with its current temperature. Abnormal temperature is indicated by the flashing red LED on the monitor and the temperature icon flashing on the screen.

A stage 2 alarm will occur if the temperature inside the tyre exceeds 75°C (167°F) (See Indicator levels on right)



Loss of Signal Indication

If the monitor does not receive a signal from one or more of the sensors for a continuous period of 30 minutes after coming out of Sleep mode, the audible alarm will sound for 15 seconds along with the flashing red LED on the monitor. The corresponding icon of the abnormal sensor will also flash and indicate “noS” which indicates there is either a fault with the sensor, the sensor is damaged, or the sensor is out of range. The system will alarm every 20 minutes if the monitor still can't receive the signal from the sensor, as the graphic on the right shows. This may be a result of low battery voltage on the sensor or indicate the need for a booster/repeater if it happens regularly



Notes:

- In an alarm condition the monitor will sound a continuous audible alarm for 15 seconds with the flashing red LED and the back light will remain on for 5 minutes along with the corresponding faulty tyre icon flashing. Pressing the L or R button will stop the audible alarm. Shortly afterwards the back light will automatically go off, but the red LED will remain on until the fault condition clears. The system alarm will sound again after one hour to further remind the operator if the condition has not cleared.
- When a sensor is removed to inflate or deflate a tyre, this will cause the sensor to detect rapid and/or slow leakage because the sensor has suddenly detected zero pressure. Once the sensor is refitted the monitor will return to normal and the alarm will clear within a short period of time.
- If you wish to add further sensors to the monitoring system, i.e. fitting sensors to an additional trailer, etc. refer to section 3, Installation & Operating Instructions.

Transmission Booster Part #1020 – Optional

Even though your TyreGuard 400 TPMS system has been tested and operates well up to 20 meters, there may be occasions when a vehicle may emit electronic interference causing the loss of signal from the sensors. The chance of lost signals will increase with distance (from rear tyres to Monitor), extreme cold and battery deterioration.

The booster needs to be wired into a 12V or 24V DC power source.

Once installed on a towed unit, coach etc., no further programming or action is required.

The booster will automatically pick up the signals from all sensors and resend the information to the

7. Technical Specifications

Sensor

Working temperature	-20°C to 85°C (-4°F to 185°F)
Working humidity	0 - 95%
Dimensions	23 x 21 x 21 mm (0.8" x 0.8" x 0.9")
Weight	9g (0.3 oz.)
Battery voltage	3V DC (CR1632)
Battery life	9-12 months (approx.)
Standby current	500nA
Working current	6mA
Pressure range	0 - 145 psi (0 Bar - 10 Bar)
Pressure precision	± 4 psi (±0.3 Bar)
Temperature range	-20°C -- 85°C (-4°F to 185°)
Temperature precision	± 3°C (± 5°F)
Signal transmitting frequency	433.92 MHz
Operating distance	up to 20 meters. Booster recommended if the towing distance is over 8 meters. (monitor to rear tyre)

Monitor

Working voltage	3V DC
Working temperature	-20°C to 60°C (-4°F to 140°F)
Working humidity	0 - 90%
Standby current	0.1mA
Working current	15mA
Dimensions	90 x 55 x 24 mm (3.5" x 2.2" x 0.9")
Signal receiving frequency	433.92 MHz
Color of backlight	white

8. Unit Conversions

Temperature Units Conversion

$$F = (9 \times C) \div 5 + 32 \quad \text{eg: to convert } 25 \text{ }^\circ\text{C to } ^\circ\text{F} \quad 9 \times 25 \text{ [225]} \div 5 \text{ [45]} + 32 = 77^\circ\text{F}$$
$$C = (F - 32) \times 5 \div 9 \quad \text{eg: to convert } 77 \text{ }^\circ\text{F to } ^\circ\text{C} \quad 77-32 \text{ [45]} \times 5 \text{ [225]} \div 9 = 25^\circ\text{C}$$

Pressure Units Conversion

$$1 \text{ Bar} = 14.5 \text{ psi}$$
$$1 \text{ Bar} = 100 \text{ kPa}$$
$$1 \text{ Bar} = 1.02 \text{ kgf/cm}^2$$

9. TYREGUARD 400 Warranty

Your TYREGUARD 400 TPMS is guaranteed against manufacturing defects for a period of one year from date of purchase. Should the unit not function as designed, Davies, Craig Pty Ltd will repair or replace the item at no charge to the owner. Excluded are products that have been damaged through impact, water or unauthorized service. This warranty is limited to the replacement of the product only and does not extend to any incremental cost incurred. In no case shall Davies, Craig's liability exceed the purchase price.

If you have a question or a problem, please contact Davies, Craig Pty Ltd:
T: +61 (0) 3 9369 1234 E: info@daviescraig.com.au or log on to our website, www.daviescraig.com.au should you require further information. Many issues can be resolved over the phone.

10. Quick Reference Guide

To Turn On: Press Center button once

To Turn Off: Press and hold Center button for 8 secs (from operating mode only)

Setup & Programming

- Alignment Mode: Hold Left & Right buttons for 3 secs to enter and exit Alignment mode (from operating mode)
Navigate using Left & Right buttons
Delete all alignments by holding Center & Right buttons for 3 secs
- Programming Mode: Hold Center button for 4 secs to enter and exit Programming mode (from operating mode)
Navigate using Center button, select using Left or Right buttons

Indicators

Low Pressure



High Pressure



Leak



No signal



Notes

- Whenever settings are changed, the monitor is re-programmed or set up from new, the monitor may initially give false error readings. Please ignore these false alarms and wait for approx. 30 minutes for the monitor to calibrate to the new settings, in which time the monitor will return to normal.
- The monitor and sensors are motion sensitive. The sensors send a signal to the monitor every 6 seconds, however unless there is an abnormality the monitor will not update the reading immediately. The monitor will only update the current tyre readings once every 20 minutes.
- Therefore, when first driving the vehicle for the day, please allow up to 20 minutes for accurate readings to be displayed. The initial readings may be those of the previous day's memory.

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