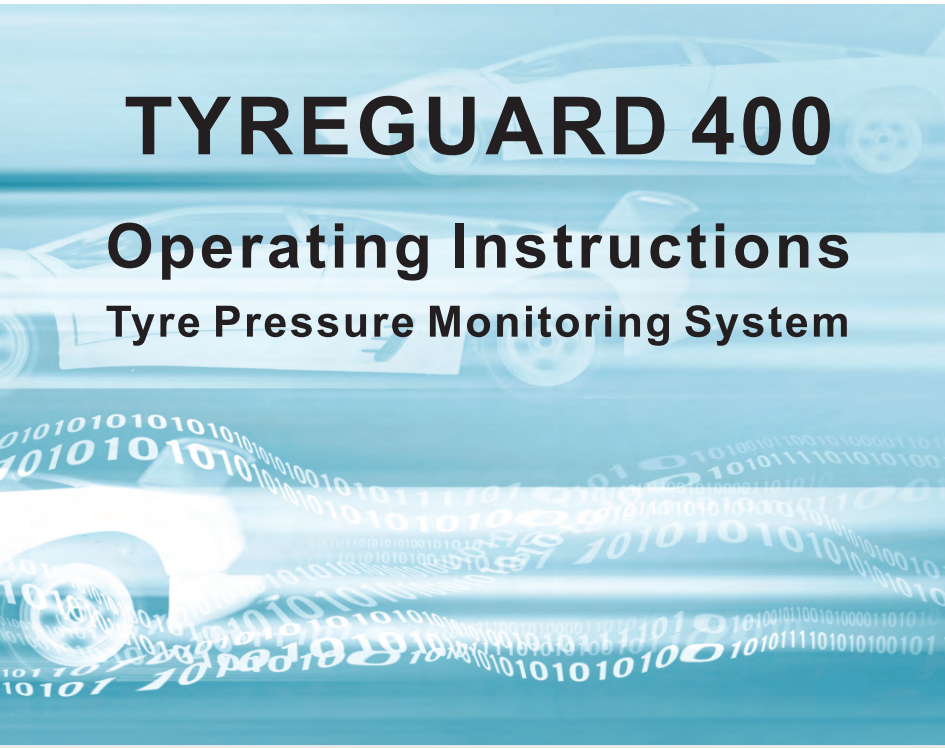
DAVIES, CRAIG

World's best auto cooling

TYREGUARD 400

Operating Instructions

Tyre Pressure Monitoring System



Issue date: December 2012

Introduction

Congratulations on purchasing your new TYREGUARD 400 TYRE PRESSURE MONITORING SYSTEM (TPMS).

Please check the assembly list (opposite page) to ensure all contents are enclosed.

Your TyreGuard 400 TPMS allows for constant monitoring of your vehicle's tyre pressure and temperature. It can receive wireless information from up to 22 wheels.

Your TyreGuard 400 TPMS is a sophisticated product which requires programming.

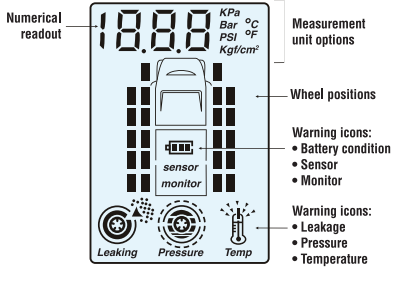
Please: » Read these instructions very carefully in their entirety before starting installation.

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

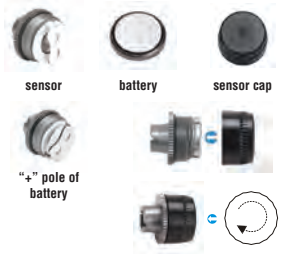
Your monitor is supplied partially charged *and should be fully charged before you commence programming*.

Your TyreGuard 400 can be customised to the measurement units you prefered; if you want to change the tyre pressure and temperature measurement units, please refer to Section 2. It takes (approx) 6 hours to charge your monitor fully, after which the unit will operate for 120 hours (5 days) without a charge.

Tyreguard 400 screen legend



Tyreguard 400 sensor components



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.

TyreGuard 400 Assembly

Item	Quantity	Part #
AC charger	1	1022
Allen key	1	---
Anti-theft locking rings	4	---
DC cigarette lighter charger (12/24V)	1	1013
Monitor	1	1012
Mounting bracket	1	1014
Operating instructions	1 book	1019
Sensors	4	1011
Sensor batteries (CR1632)	4	1010

Unit Conversion

Temperature Units Conversion

F = (9 x C) ÷ 5 + 32 eg: to convert 25°C = 9 x 25 [225] ÷ 5 [45] + 32 = 77°F

C = (F - 32) x 5 ÷ 9 eg: to convert 77°F = 77-32 [45] x 5 [225] ÷ 9 = 25°C

Pressure Units Conversion

1 Bar = 14.5 psi

1 Bar = 100 kPa

1 Bar = 1.02 kgf/cm^2

Getting Started

Firstly, you need to install the CR1632 lithium batteries into the sensors (see Section 1).

Before installing each sensor on to each tyre valve stem, ensure you have installed the sensor batteries (see Section 1) and change the TyreGuard 400 monitor to "Alignment" mode (see Section 3). Study the illustration on page 1 and the display examples at right. Determine on the display where you would like each of your wheels to appear. These are the only positions you need to align sensors and modify to your pressures. Any positions not used will be ignored and will disappear once programming is complete.

All tyres should be cold and inflated to the vehicle manufacturer's recommended pressures *(not what's printed on the tyre!).* Check that valve stem threads are not scratched, rusted or damaged. If marked, have them replaced before mounting sensors. If you are monitoring dual wheels, it's best to have clear access to both valve stems. Valve extenders may be used. We recommend using only high quality extenders and having them professionally installed. Once a sensor is mounted on the valve stem, be sure it does not touch any solid portion of the wheel. Each sensor weighs only 9 grams, and therefore will not affect wheel balance. As well, due to their light weight, the sensors can be fitted to rubber valve stems.

Please note:

- Whenever a sensor has been installed or a valve extender added, cover with soapy water to confirm no air loss.
- After driving over rough terrain (or once a month) check tightness to make sure all sensors and sensor caps are still securely fastened.
- If a rapid air loss or high temperature is indicated (#12a, b and e), be aware of your surroundings and cautiously drive the vehicle to a safe location of the road as soon as possible.
- We suggest you double check pressure by testing each tyre with an accurate mechanical or digital gauge on a regular basis.
- In "Standby" mode, the monitor is in NEUTRAL.
- Whenever you increase or decrease your tyre pressures for any reason (eg, driving over different terrain such as sand), the pressure setting in the monitor will also need to be changed. To carry this out, refer to Section 4, "Pressure Setting" mode.

Please see page 17 for additional notes.

On a new monitor (right), there are no readings or tyre positions until the sensors are installed.

If sensors have been installed, you will see the related wheel positions displayed on the monitor (see display examples, below).

There are three modes:
"Standby", "Pressure Setting" and "Alignment".

Standby Mode: This is the neutral mode and the mode the unit should always be in when monitoring tyres. To confirm you're in "Standby" mode, press the right button continuously and the monitor will scroll through each tyre in the sequence of: *tyre pressure –> tyre temperature –> next tyre pressure –> next tyre temperature* and so on.

Pressure Setting Mode: This mode should only be entered into when you are programming the tyre pressure into the monitor or customising the display (see Section 2). To confirm you're in "Pressure Setting" mode, simply press the left or right button and this should either increase or decrease the current tyre's pressure setting.

Alignment Mode: This mode should only be entered into when you are aligning (programming) sensors, deleting sensors or re-programming the unit (see Sections 3, 7 and 8). To confirm you're in "Alignment" mode, you should see all 22 wheel positions displayed and either a green LED and pressure reading or a red LED and "---" on the monitor. Pressing the right button will scroll through each wheel waiting for a sensor to be aligned, deleted or re-programmed.

Display examples

1. Sensor Battery Installation / Replacement

Unscrew (counter clockwise) 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 so as to remain waterproof. **DO NOT use pliers.**

Dispose of any used lithium batteries safely.

2. Customise your display

Unit options: kPa, BAR, PSI or kgf/cm^2 plus °F or °C

From "Standby" mode, press and hold centre button for 5 seconds to enter the basic "Pressure Setting" mode. Then press and release the centre button to scroll through each tyre. After tyre #22, the pressure unit will flash. Press right or left button to scroll through kPa, BAR, etc. Press centre button again to confirm your choice and bring up the temperature component. Press right or left button to alternate between °C and °F.

Press centre button to confirm your choice. Press and hold centre button for 5 seconds to exit. After an additional 5 seconds, the unit will go to "Standby" mode.

Note: You will not be able to scroll through all 22 positions if the unit has had sensors previously installed. In this case, simply follow the above procedure at each installed position. The pressure unit will flash immediately after your last tyre position.

Change Monitor to "Alignment" Mode

3. Alignment Mode – Sensor Installation

A. From "Standby" mode, press and hold BOTH right and left buttons at same time (approx. 5 seconds). All 22 positions will appear.

B. Front left tyre position will flash with RED LED illuminated.

C. With the monitor in your hand, mount any sensor on the valve/wheel location indicated on the screen. (Refer to Section 11 if you wish to use Sensor Anti-Theft Lockling Rings.) LED will turn GREEN and pressure will be displayed within 30 seconds. If pressure is not displayed, remove the sensor for 10 seconds and re-mount.

D. Press right or left button to move to next tyre valve position (LED will be RED).

E. Repeat items "C" and "D" above until all sensors are mounted.

F. You MUST EXIT after the last sensor has been mounted. Press right AND left buttons simultaneously (approx. 5 seconds).

At this point you should see the number of tyre positions which have sensors installed. All remaining positions will now have been deleted. The monitor will revert to "Standby" mode after 5 seconds.

Your monitor is now ready to set the pressures of each tyre.

Change Monitor from "Standby" to "Pressure Setting" Mode

4. Pressure Setting Mode

A. Press and hold centre button for 5 seconds. If system is new, you will see *72.4 psi* (factory default setting)

B. Press the right or the left button until your desired tyre pressure is displayed

C. Press centre button to confirm and move to next tyre position

D. Repeat "b" and "c" above for all tyre positions to be monitored

E. You MUST EXIT press and hold centre button for 5 seconds

Display will "beep" and revert to "Standby" mode after another 5 seconds.

Please allow approx. 30 minutes for your monitor to calibrate to your new programmed settings.

To view tyre pressures, you may now press the right or left button and scroll through all tyre positions. The first press will show the tyre pressure, the second press the tyre temperature, the third press will move to the next tyre sensor position.

Mount the monitor in your vehicle where it's visible and does not obstruct your vision of the road. We suggest you plug in the monitor for your first few journeys.

The rest of this document contains important operating information.

PLEASE DON'T LOSE IT – YOU WILL NEED IT AGAIN IN THE FUTURE!

5. Power Off

It is not necessary to power off the system as it will shut itself down after 15 minutes of no movement. The unit re-starts automatically when movement is detected.

However, if you wish to turn it off manually (from the “Standby” mode), press and hold the centre button for 8 seconds.

Note: the unit will enter the “Pressure Setting” mode after 5 seconds.

Continue to hold down the button for an additional 3 seconds to completely turn the system off (screen goes completely blank). If the monitor does not go completely blank, the unit is still in a “Standby” mode when you first press the centre button. You will need to exit from either the “Pressure Setting” mode or the “Alignment” mode. See item #3F or #4E.

6. Power On

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

7. Delete and re-program if:

A. The TPMS system is moved to another vehicle with different tyre pressures.
B. You want to clear everything and start again.
C. A sensor needs to be replaced.
D. Additional sensors are to be added (system expansion).

8. How to detect/clear and re-set programs:

A. From “Standby” mode, press both right and left buttons at the same time to enter “Alignment” mode.
B. Press right OR left button until desired tyre position is flashing.
C. Press and hold centre button until only “---psi” is displayed at top of screen (LED turns RED).
D. IF REPLACING a sensor, mount it to the selected valve stem. The monitor will show the exact pressure (LED turns GREEN). If there is no reception within 30 seconds, remove sensor for 10 seconds and re-mount. Have the monitor in your hand to carry out this sensor alignment.
E. IF POSITION IS TO BE LEFT UNMONITORED, press and hold BOTH right and left buttons at the same time (5 seconds). The monitor will return to “Standby” mode. The deleted tyre position icon will no longer be displayed.
F. When installing the replacement sensor, return to the “Alignment” mode (see #3A). Press the right OR left button until the desired location is flashing (LED is RED). Attach the sensor securely.

   The monitor will then show that tyre’s exact pressure and the LED will become GREEN. MUST press BOTH right and left buttons to exit and return to “Standby” mode.
G. Start Again – clear everything!!!

   Follow A, B and C above. Instead of deleting/clearing only one position, you simply clear all 22. Your goal is to have “---psi” and a red LED at all positions. After tyre number 22 shows “---psi”, press the right button and scroll through all 22 positions one more time (in case you missed one).

   When confirmed, exit this mode by pressing and holding the right and left buttons again. The monitor will return to the “Standby” mode with no tyre position showing.

   Congratulations, you’ve cleared everything and can start again.

9. Checking Tyre Pressures

The TyreGuard 400 TPMS will constantly monitor all tyres which have been programmed and fitted with Sensors. If you wish to check each tyre pressure and temperature, press either a right or left button from “Standby” mode. The tyre position will be displayed along with its exact pressure. Press again and that tyre’s temperature appears. Press again to scroll to the next tyre. If a tyre position has been programmed but a sensor is either missing or malfunctioning, the display will show “no S”.

9.1: “no S” *(looks like a “5” on the monitor)* and Red Light warning:

If this appears on the display, it means the monitor has lost the “S” signal from one or more sensors. At the same time, a battery icon with “sensor” may appear. There are multiple possible causes for this warning.

A. Low Sensor Battery

If your batteries have been installed for 9 months or longer and this is the first time you have seen this warning, it may be time to replace one (or all) of the CR1632 batteries. You can source them from most battery specialty outlets.

B. Electronic Interference

With the constant addition of new wireless products (most running at 433 MHz), it’s possible that your TyreGuard 400 signal may be interrupted by electronic interference. If the signal comes back or is lost intermittently, the loss may be due to interference. If the loss persists the addition of a sensor booster may be required (part #1020).

C. Distance

Even though the TyreGuard 400 system may read sensors at a distance of 8 metres or more, there may be times when the signal may be lost due to cold temperatures and/or deteriorating battery power, shortening the transmission distance. A sensor booster may be required (part #1020).

D. Towed Unit

The appearance of the “no S” on the monitor is inevitable when a towed unit is separated from the towing (power) vehicle. Do not confuse the battery/sensor icon with a low battery. As long as you are aware you have disconnected the towed unit, you can simply ignore the warnings (it will only beep once an hour).

Note: When the vehicle and towed unit are re-united, the monitor will pick up the missing tyres automatically. This usually happens within the first 20 to 30 minutes (sometimes it may take longer). If you need them to re-connect sooner, simply loosen and tighten the sensors on the tow unit.

10. Low Battery Indicator (Receiver and Transmitter)

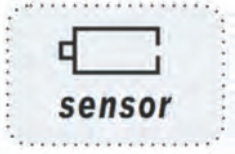
The TyreGuard 400 TPMS Monitor has a built-in Lithium battery which, under normal use, will function for 120 hours (5 days) before requiring a re-charge.

If the power is low, you will see an outline of a battery plus the word “monitor” on the screen. A buzzer will also sound for 10 seconds. After 5 minutes, the unit will power off.

To re-charge, simply use the supplied 12/24V car charger. A full charge takes 6 hours.

*** **Note:** vehicle should be running. If not, make sure power outlet is live.

Alternatively, use the supplied AC converter to charge the monitor.



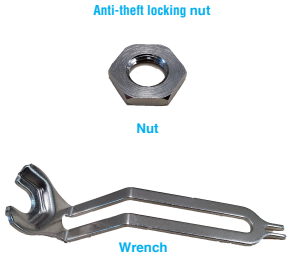
When a sensor battery is low, an outline of a battery plus the word “sensor” will appear. At this time the tyre position icon will flash and the buzzer will sound for 10 seconds. Please review Section 9.1 (above) for possible causes.

11. Sensor Anti-theft Locking Nut

The nut slips over the valve stem first. Screw on the sensor (finger tight). Raise / screw the nut until it make 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.



12. Multiple Alerts

The TyreGuard 400 TPMS monitors tyre pressure and temperature in real time (every 6 seconds). To save battery power, the REGULAR pressures and temperatures are updated on the monitor every 20 minutes. Should an abnormality occur, the monitor will react within 6 seconds. There are multiple levels of alerts which vary in style and intensity depending on the severity of the abnormality. Alerts are activated whether moving or stationary.

A. Rapid Air Loss (Blow Out)

Condition: A tyre loses 3 psi or more in less than 2 minutes.
Alert Description:

- Constant audible "beep beep"
- White LCD screen flashes
- Red LED flashes
- Tyre position icon flashes
- "Blow Out" icon appears in lower left corner
- Digital tyre pressure flashes

Cautiously bring the vehicle to a stop and check the offending tyre. If the tyre registers close to normal pressure (with a regular gauge), it's possible the sensor may have loosened due to rough terrain. Re-attaching the sensor should cancel the warning.

B. Semi-Rapid Air Loss

Condition: A tyre loses 3 psi or more in 2 to 10 minutes.
Alert Description:

- Intermittent "beep beep"
- Red LED flashes
- Tyre position icon flashes
- "Leaking" icon appears in lower left corner
- Digital tyre pressure flashes

This warning would most often occur should you pick up a nail or sharp object, puncturing the tyre and causing a semi-rapid air loss. As in 12a, cautiously bring the vehicle to a stop and check the offending tyre.

C. Normal Pressure Loss (conditions 1, 2 & 3)

1: Condition: Over a long period of time, pressure in a specific tyre may have dropped 15% to 25% below the "basic" pressure previously set up for this tyre. Example: you originally set up the system for this tyre to contain 80 psi. If pressure drops to 68 psi (15% loss), the system will issue an alert.
Alert Description:

- Intermittent "beep" every 15 seconds for 5 minutes
- Tyre position icon will flash and show **75% full**
- Digital tyre pressure displays exact lower psi

To turn off the alert, press right or left button. If the abnormality is not corrected, the alert will re-activate after 1 hour.

2: Condition: If a tyre drops 25% to 50% below the set basic pressure, the alert will be the same as in Condition 1 except the Icon will show 50% full.

3: Condition: If a tyre drops below 50%, the pressure icon shows empty.

D. How to Adjust Start Point for Pressure Loss Warning

As previously stated, the TPMS is programmed to first warn if pressure drops 15% or more. If you would prefer this warning to come sooner (eg, at 10%), you may make this change by raising the basic starting pressure by 5%.

As an example, if the manufacturer's recommended pressure for your vehicle is 80 psi, this is what you need to put in your tyres. When setting up the TyreGuard 400 monitor in the basic "Pressure Setting" mode, simply input the tyre's pressure at 84 psi (80 + 5%.) Now the alert level will be at 71.5 psi (10% below the actual 80 psi in the tyre).

E. High temperature warnings 1 & 2

1: Condition: **internal temperature of tyre exceeds 167°F (75°C):**
Alert Description:

- » Intermittent "beep"
- » Red LED & "Temp" icon will flash
- » Exact digital temperature is displayed
- » Tyre position icon will flash

Note: To turn off the alarm, press the right or left button.

2: Condition: **temperature exceeds 185 °F (85°C)**
Alert Description:

- » Constant "beep beep"
- » Others same as condition 1

Obviously under either condition above you need cautiously to pull off the road and determine the cause of the overheating. On towing vehicles, this is may be due to a sticking brake caliper.

F. High Pressure Alert

Condition: **A tyre's pressure rises 20% above the basic set pressure**
Alert Description:

- » Intermittent "beep beep"
- » Tyre position icon flashes
- » Exact digital pressure flashes
- » Tyre pressure icon flashes

Note: To turn off the alarm, press the right or left button.

The alert will re-activate after 1 hour unless condition is corrected.

13. Optional TyreGuard 400 Transmission Booster Part #1020

Even though your TyreGuard 400 TPMS system has been tested and operates well up to 20 metres, 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 monitor.

14. Technical Specifications – TyreGuard 400 TMPS

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 metres. Booster recommended if towing distance is over 8 metres. (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

15. TyreGuard 400 Spare parts

Item	Quantity	Part #
AC charger	1	1022
DC cigarette lighter charger (12/24V)	1	1013
Monitor	1	1012
Mounting bracket	1	1014
Operating instructions	1 book	1019
Sensor batteries (CR1632)	4	1010
Sensor booster	1	1020
Sensor cap	1	1017
Sensors	1	1011
Sensors	2	1016

16. 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 unauthorised 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 F: +61 (0) 3 9369 3456

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.

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.

If you want the system to upgrade immediately, simply loosen and tighten the sensors to reset.

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