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## 3M™ Wireless Tire Pressure Monitoring System

3M™ Wireless Tire Pressure Monitoring System can provide the tire pressure and automobile voltage information to the car owner. By installing the 3M™ Wireless Tire Pressure Monitoring System onto your car, you can be aware of the pressure and temperature of each tire, as well as the battery/generator voltage condition at any time.

1. Upon the reception of any abnormal tire pressure or temperature, the system will immediately send warning signals to the 3M™ Wireless Tire Pressure Monitoring System within the car, and at the same time alert the driver that the tire pressure or temperature issue has to be repaired at once by displaying red light indicators, numeric values and warning titles.
2. When the battery/generator voltage becomes lower than 11.5V, the battery light indicator will turn from green to red and blink, alerting the car owner that the car needs to be brought to the service center for inspection immediately.

**NOTE:** It is strongly recommended that whenever the battery voltage becomes lower than 11.5V, whether before or after the engine is started, please drive your car to the automobile service center immediately and have it inspected and repaired by automobile professionals.

3. Through the system, the car owner can be aware of the car's tire pressure or temperature conditions at any time during car driving. Normal tire pressures can save fuel consumption efficiently and hence elevate the added value of your automobile products and driving experience. Meanwhile, by providing the battery voltage information, this system can make the car owner aware of the electricity supplying and charging conditions, and hence react appropriately before the battery is depleted.

## Warnings

## EMC and FCC Warnings

This system complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this system may not cause harmful interference
- (2) this system must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates wireless radio signals. If not installed and used in accordance with the instructions, it may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception (this can be determined by turning the equipment off and on), the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the system
- Change the position or connection method of the receiver

**Caution:** Any changes or modifications to the system itself not expressly approved could void the user's authority to operate this system.

To comply with the FCC RF exposure compliance requirements, this device and its antenna must not be co-located or operating to conjunction with any other antenna or transmitter.

## System Operating Ranges and Warnings

The 3M™ Wireless Tire Pressure Monitoring System uses sensors to measure the tire pressures and then uses radio signals to transmit the tire pressure information to the display so as to provide warnings to the driver. When abnormal tire pressure or temperature conditions are detected, the system will automatically generate warnings advising the driver to react immediately and to have the tire repaired, in order to prevent issues like insufficient tire pressure or high tire temperature. Conditions which may result in traffic accidents can therefore be detected in advance.

Warning: This system transmits signals via wireless transmission. Therefore, under certain conditions or environments, the wireless signal might be weakened or cannot be received due to interferences, incorrect operations or inappropriate installations. When the system cannot receive signals from a certain tire for 20 minutes, the displayed value for that tire would become " E1 ". When this happens, please drive the car away from its current position (because there might be strong radio signal interferences nearby), or go to the appointed tire service center immediately to inspect if the tire sensor has failed or if the battery in the tire sensor has depleted (if there exists a long-term abnormal condition, the tire sensor will need to emit radio warning signals continuously, and in this way the lifespan of the battery will become shorter than its expected normal lifespan). When the system cannot receive signals from any one of the tire for 20 minutes (probably because the receiver and display unit has failed), the displayed values of all four tires would become " E2 ". When this happens, please take the receiver and display unit to your distributor for inspection and repair immediately.

## System Installation and Operation

The 3M™ Wireless Tire Pressure Monitoring System needs to be correctly installed by qualified operators according to the procedures listed in the installation manual in order for the system to function correctly and its warranties to be effective. This system applies to 4-wheel sedans, SUVs and 4x4 wheels, and has a maximum measurable pressure at 76 psi (gauge pressure) or 92 psia (absolute pressure). Please note that all pressures mentioned later in this manual are gauge pressures, which are more commonly used.

## System Warnings

When the warning light indicator illuminates and the buzzer starts to beep, please lower your speed and seek for a safe parking place to have your tire inspected, and then go to the nearest qualified tire service center immediately for tire repair. Low tire pressure warning indicates that the tire pressure has dropped down below the safe tire pressure value. High tire temperature warning indicates that the tire temperature has risen up above the safe standard value.

## Usage of Chemicals

Sealants or specific tire filling chemicals can result in the malfunction of the tire pressure monitoring system, or affect the function of the sensors.

# 3M™ Wireless Tire Pressure Monitoring System Specification Sheet

Tire Sensor and Emitter Unit Specifications	
Battery life	More than 5 years under normal usage
System adaptable circumstantial temperature	-40°C to 125°C
System operating temperature	-30°C to 105°C
System operating humidity	95%
System operating frequency	433.92MHz
Tire pressure monitoring range	0~76psi(for general 4-wheel sedan)

Tire Sensor and Emitter Unit Specifications	
Tire pressure measurement error	(under normal operating conditions) $\pm 1$ psi
Temperature measurement error	$\pm 4^{\circ}\text{C}$ (under average normal circumstantial temperature)
Emitter frequency	433.92MHz
Emitter frequency	3.6V
Sensor weight	35g











## Mode II

Front tires and rear tires switch crisscrossly (No. 1\*No. 3\*No. 2\*No. 4\*No. 3\*No. 1\*No. 4\*No. 2)

Display processes: the " 2 " displayed at the lower right corner means the system is now in Mode II

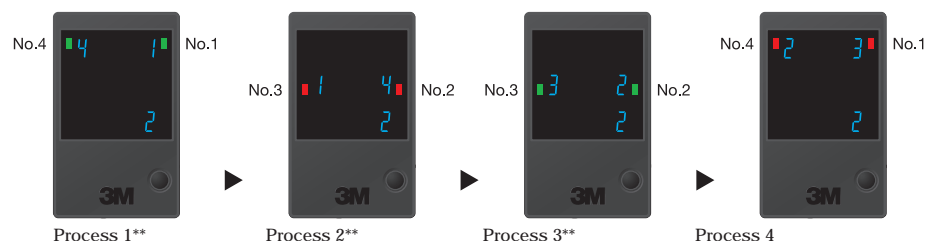
Process 1: " 1 " is displayed at Tire No. 1; " 4 " is displayed at Tire No. 4; both are displayed in green

Process 2: " 4 " is displayed at Tire No. 2; " 1 " is displayed at Tire No. 3; both are displayed in red

Process 3: " 2 " is displayed at Tire No. 2; " 3 " is displayed at Tire No. 3; both are displayed in green

Process 4: " 3 " is displayed at Tire No. 1; " 2 " is displayed at Tire No. 4; both are displayed in red

After you have done with the Tire Switching Mode, press the Setup button to complete the Mode II setup procedure and go back to normal display mode.



### Mode III

Front tires move to rear crisscrossly; rear tires move to front parallelly (No. 1\*No. 3\*No. 2\*No. 1\*No. 3\*No. 4\*No. 4\*No. 2)

Display processes: the " 3 " displayed at the lower right corner means the system is now in Mode III

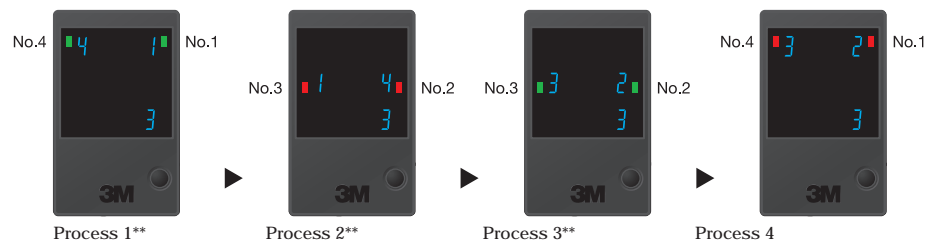
Process 1: " 1 " is displayed at Tire No. 1: " 4 " is displayed at Tire No. 4: both are displayed in green

Process 2: " 4 " is displayed at Tire No. 2: " 1 " is displayed at Tire No. 3: both are displayed in red

Process 3: " 2 " is displayed at Tire No. 2; " 3 " is displayed at Tire No. 3; both are displayed in green

Process 4: " 2 " is displayed at Tire No. 1: " 3 " is displayed at Tire No. 4: both are displayed in red

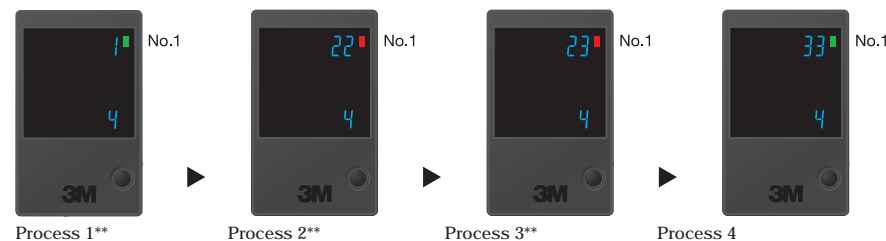
After you have done with the Tire Switching Mode, press the Setup button to complete the Mode III setup procedure and go back to normal display mode.



## Mode IV-1

Arbitrary tire location rearrangement: the " 4 " displayed at the lower right corner means the system is now in Mode IV

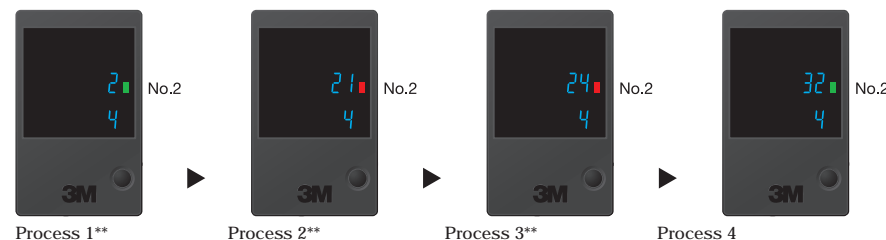
A green light indicator is displayed at Tire No. 1, and the "1" displayed aside indicates you're setting up the location for sensor No.1. Next, please deflate tire No. 1 to a pressure value lower than 26 psi. The pressure value is now displayed at Tire No. 1, along with a red light indicator. Then, please inflate tire No.1 to a normal pressure value (no less than 26 psi and no greater than the recommended normal pressure value). The normal pressure value is now displayed at Tire No. 1, along with a green light indicator. The "4" displayed at the lower right corner means the system is now in Mode IV. If sensor No.1 remains at the same position and needs no reconfiguration, please press the Setup button during Process 1 of Mode IV-1 to skip configuration of sensor No.1 and enter Mode IV-2 (as illustrated in Process 1 of Mode IV-2). The screen will pause for 2 seconds and then automatically enter Mode IV-2.



## Mode IV-2

Arbitrary tire location rearrangement: the " 4 " displayed at the lower right corner means the system is now in Mode IV

A green light indicator is displayed at Tire No. 2, and the " 2 " displayed aside indicates you're setting up the location for sensor No.2. Next, please deflate tire No. 2 to a pressure value lower than 26 psi. The pressure value is now displayed at Tire No. 2, along with a red light indicator. Then, please inflate tire No. 2 to a normal pressure value (no less than 26 psi and no greater than the recommended normal pressure value). The normal pressure value is now displayed at Tire No. 2, along with a green light indicator. The " 4 " displayed at the lower right corner means the system is now in Mode IV. If sensor No. 2 remains at the same position and needs no reconfiguration, please press the Setup button during Process 1 of Mode IV-2 to skip configuration of sensor No. 2 and enter Mode IV-3 (as illustrated in Process 1 of Mode IV-3). The screen will pause for 2 seconds and then automatically enter Mode IV-3.







## Appendix A

## Explanations of Symbols and Specialty Terms

kPa	A unit for measuring tire pressure; kilogram-force per square meter
psi	A unit for measuring tire pressure; pound-force per square inch
bar	Pressure measuring unit; bar
°C	Celsius temperature measuring unit
°F	Fahrenheit temperature measuring unit
Circumstantial temperature during tire inflation	It is recommended that the tire can be inflated in a service center under a circumstantial temperature of 25° C
Low tire pressure warning	When the tire pressure becomes lower than this warning value (its factory default value is 26 psi), this system will generate visual and audio warnings to alert the driver
High tire pressure warning	When the tire pressure becomes lower than this warning value (its factory default value is 50 psi), this system will generate visual and audio warnings to alert the driver
High tire temperature warning	When the tire temperature becomes higher than this warning value (its factory default value is 80° C), this system will generate visual and audio warnings to alert the driver
Wireless receiver and display unit	A microelectronic product which contains a signal receiving chip, a computational chip, a display device and a warning speaker
Wireless tire sensor and emitter unit	A microelectronic product which needs to be installed within the tire. The sensor chip uses wireless RF technology to transmit real-time pressure and temperature values of the tire to the wireless receiver and display unit

## Appendix B

### kPa / psi Tire Pressure Unit Conversion Table

kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi
10	1	110	16	210	31	310	45	410	60
20	3	120	18	220	32	320	47	420	61
30	4	130	19	230	34	330	48	430	63
40	6	140	20	240	35	340	50	440	64
50	7	150	22	250	37	350	51	450	66

kPa	psi	kPa	psi	kPa	psi	kPa	psi	kPa	psi
60	9	160	23	260	38	360	53	460	67
70	10	170	25	270	39	370	54	470	69
80	12	180	26	280	41	380	55	480	70
90	13	190	28	290	42	390	57	490	72
100	15	200	29	300	44	400	58	500	73

## °C / °F Temperature Unit Conversion Table

°C	°F	°C	°F	°C	°F
-40	-40	20	68	80	176
-30	-22	30	86	90	194
-20	-4	40	104	100	212
-10	14	50	122	110	230
0	32	60	140	120	248
10	50	70	158	125	257

## System Warranty Policies

In Taiwan, we provide one-year free warranty for this product, beginning from the purchase date (as determined by the invoice date). The warranty duration can be determined by the invoice received by the customer when purchasing this product, or the warranty card of this product (must contain the purchase date and the original distributor's seal). If the last day of the warranty duration falls on a national holiday, the following day will become the last day of the warranty duration. In case you cannot provide the aforementioned evidence, we will use the original shipping date of the product purchased by you to determine the warranty duration. The original shipping date will be judged based on the serial number (S/N) of this product. Within the warranty duration, if there is any defect or fault in the performance of this product under normal operation and usage, we may choose to repair the product or replace it with a new one.

The following conditions are not covered by our warranty policies, so we may request you to pay a reasonable maintenance and shipping fee:

1. You are unable to prove the product is still within the warranty period;
2. Any breakdown or damage caused by non-compliance of regulations stated on the operation manual of this product
3. Any damage caused by act of God (such as natural disaster, flood, fire, earthquake, thunder, typhoon, etc.), artificial damage (such scratch, damage from fall, tenon breakage, strike, crack, impact, etc.), human negligence (such as loss, lack of proper care, etc.) or other abnormal conditions;
4. Any damage caused by installation, addition, expansion, modification or repair of parts not authorized or approved by us, performed by the customer him/herself or any other third party;
5. Consumable parts and accessories which need periodical replacement.

