

TPMS +

Multi-Functional
HUD-TPM System

T101
User Manual



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1.1 Introduction of Product Safety

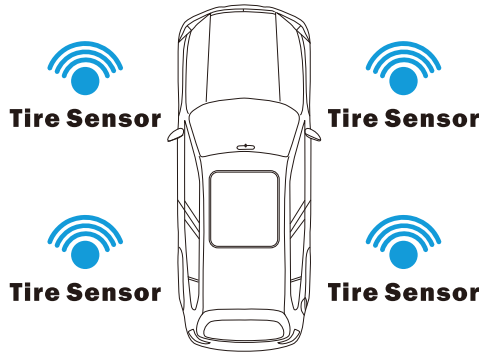


TPMS+ (Plus) 18 in 1 features

- Heads-Up Display(HUD).
- OBD-II interface connection.
- Tire pressure monitoring (TPM).
- Tire temperature monitoring.
- Low pressure tire warning alarm.
- Over pressure tire warning alarm.
- Speed real time display (KPH).
- Speeding warning setup and alarm.
- Infra red quick set up speed limit.
- Fuel economy gauge.
- Fuel economy (Km/L) real time display.
- Gearshift change gauge.
- Engine RPM real time display.
- Coolant temperature monitoring.
- Engine over heated warning alarm.
- Throttle body position monitoring.
- Vehicles battery voltage monitoring.
- TPMS tire sensor battery voltage monitoring.

TPMS+

1.2 How It Works



Tire wireless sensors transmitting data's :

- Tires pressure.
- Tires temperature.
- Tire sensors batteries voltage.

HUD display on
vehicle windshield



OBD-II interface collecting data's from vehicle ECU's :

- Vehicle speed (KPH).
- Engine RPM.
- Coolant temperature.
- Throttle position.
- Vehicles battery voltage.
- Lambda signal (for fuel economy indicator).

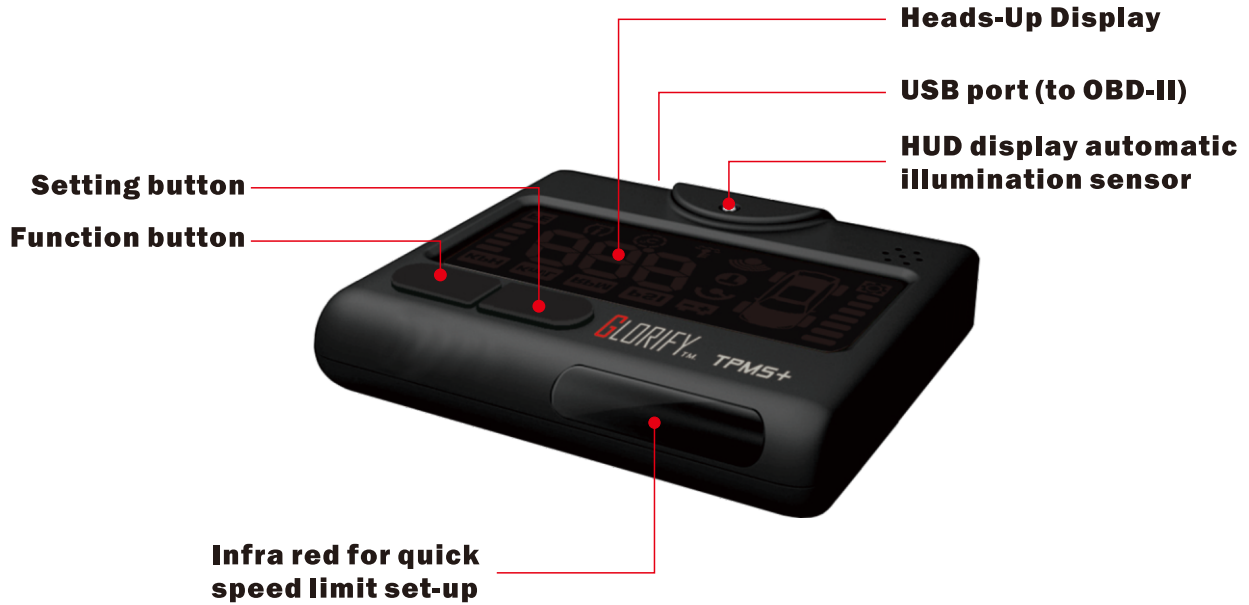
1.3 Heads-Up Display (HUD) Technology



HUD(Heads-Up Display) Technology firstly developed for military and commercial aviation to help pilot being able to view real time data on the windshield or helmet without looking down the lower side instrument.

1.4 Package Content

Descriptions	Q'ty (Pcs)
HUD (Heads-Up Display) Unit	1
OBD-II Cable	1
HUD Reflective Film	1
HUD Fitting Accessories	2
Tire Sensor	4
Tire Sensor Battery CR1632	4
Tire Safety Lock Nut	4
Tire Sensor Spanner	1
User Manual	1
Warranty Card	1



2.1 HUD Unit Installation and OBD-II Connection

Step 1: Find the vehicle OBD-II socket

It is usually located at driver side, under steering wheel. (Figure 1)

Step 2: Connect HUD unit to OBD-II socket.

(1) Make sure ignition switch is "OFF".

(2) Take out OBD-II cable. (Figure 2)

(3) Plug the OBD-II adapter into OBD-II socket, fix wire in adapter rib. (Figure 3 ~ Figure 4)

(4) Plug the "L" type USB connector to HUD unit, then make sure connection is tight. (Figure 5)



Figure 1



Figure 2



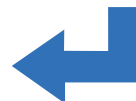
Figure 3



Figure 5



Figure 4



2.1 HUD Unit Installation and OBD-II Connection

Step 3 : Check HUD communication

In this stage to make sure the HUD unit and vehicle ECU OBD-II communication protocol is matched and working properly.

- (1) Start engine (Figure 6) and press SETTING button to switch-on the HUD unit.
- (2) Press FUNCTION button. (Figure 7)
- (3) If communication is successful, the HUD will display real RPM value (RPM x 10). (Figure 8)



Figure 6



Figure 7



Figure 8

Remarks :

If HUD unit shown RPM "0" value, which means the communication failed. Repeat Step 1 to 3 again. If the problem persists, which means the product does not apply to that vehicle model.

2.2 HUD Unit / Auto-power ON/OFF

Step 4 : Check HUD auto-power ON/OFF

In this stage to make sure the HUD unit can auto-power ON/OFF.

- (1) When HUD unit displaying “OFF” after switch-off key, that means auto-power OFF function workable.
(Figure 9)
- (2) Start engine again than check if HUD boot within 15 seconds (boot timing depends on vehicle ECU protocol). (Figure 10 ~ 11)



Figure 9

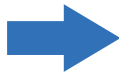


Figure 10



Figure 11

2.3 Sticking the Reflective-Film

Step 5 : Sticking the reflective film

- (1) Clean the windshield reflective area. (Figure 12)
- (2) Take off the release film, spray soap water both on windshield and reflective film (Figure 13), place absorbent material below to prevent water dripping on dashboard. (Figure 14)
- (3) Stick the reflective film on windshield and align it properly. (Figure 15)
- (4) Scratch out air and water between reflective film and glass windshield than clean. (Figure 16)
- (5) Wait until reflective film dry. (Figure 17)



Figure 12

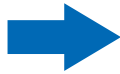


Figure 13



Figure 14



Figure 17



Figure 16



Figure 15

2.4 Sticking the VELCRO Tape

Step 6 : Sticking the velcro tape

- (1) Stick the velcro tape on bottom side of HUD. (Figure 18)
- (2) Tear-off the release film. (Figure 19)
- (3) Stick the velcro tape on properly dashboard area.
- (4) Place the HUD unit. (Figure 20)



Figure 18

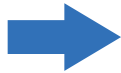


Figure 19

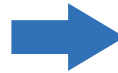


Figure 20

3.1 Tire Sensor / Tire Sensor Position

Step 1 : Make sure sensors position and label

The tire sensors come with individual label to indicate assigned position.
The tire sensors shall be installed according to the assigned position. (Figure 21)

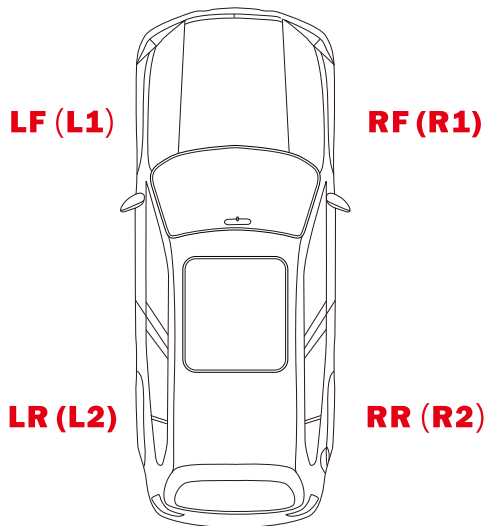


Figure 21

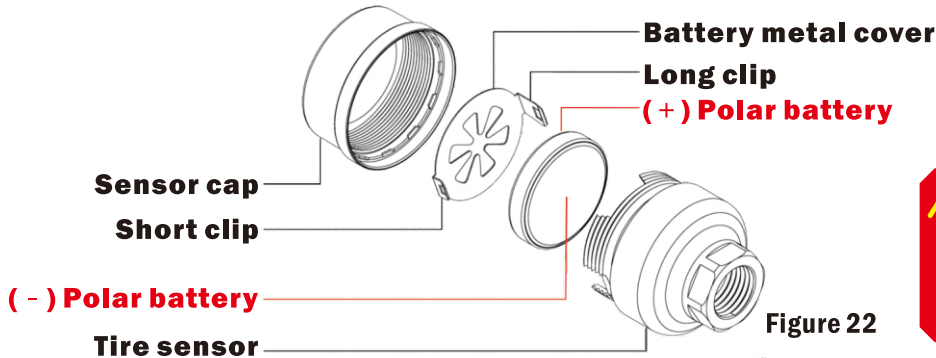


R1 Right Front
R2 Right Rear
L1 Left Front
L2 Left Rear

3.2 Tire Sensor / Tire Sensor Battery Installation

Step 2 : Tire Sensor Battery Installation

The tire sensors apply with lithium CR 1632 batteries.



Caution !
Wrong placement of battery polarity will cause sensor battery malfunction.

- (1) Prepare the sensor battery, check the + / - polarity. (Figure 22)
- (2) Remove sensor cap.
- (3) Remove the battery metal cover by unclipping both clips (short and long clips).
- (4) Place the battery in correct polarity.
- (5) Place the battery cover in place and press both clips with proper closure.
- (6) Close the sensor cap by screwing tightly.
- (7) Reading the tire sensors battery voltage to make sure the sensors work properly.
(ref. to page 24) Replace sensor battery when voltage is under 2.6 Volt.

3.3 Tire Sensor / Installation On Vehicle Tire

Step 3 : Install tire sensors on vehicle tires

Before installation, be sure the position of each sensor shall be correctly placed.

- (1) Remove tire-valve cap. (Figure 23)
- (2) Screw-in the safety lock nut first. (Figure 24)
- (3) Place sensor on assigned position. (Figure 25)
- (4) Screw it tightly. (Figure 26)



Figure 23



Figure 24



Figure 25



Figure 26

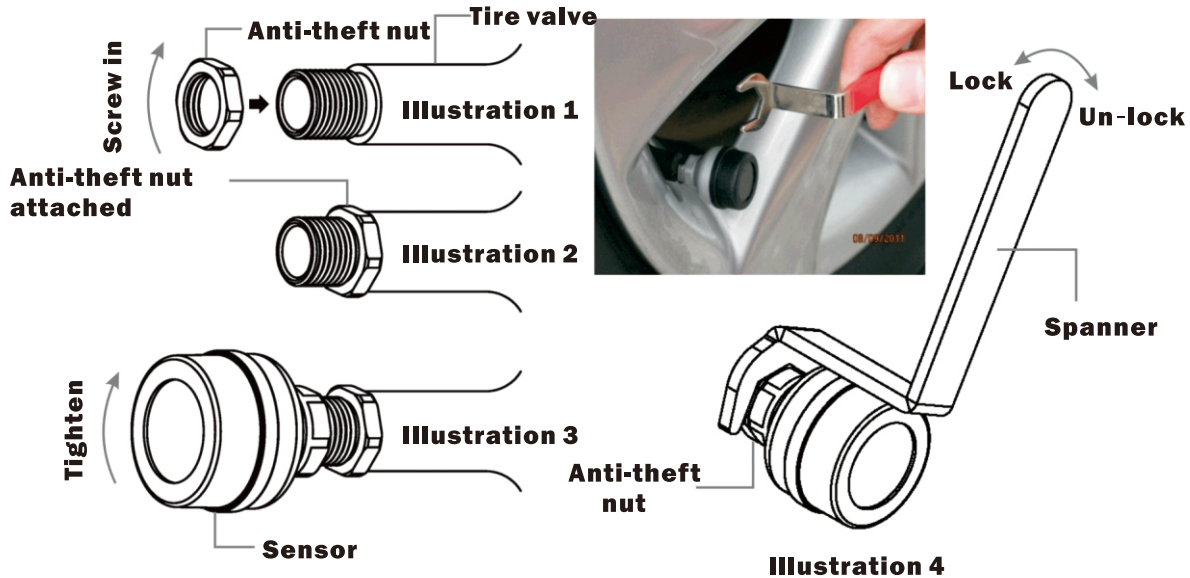
Note :

The tire sensor shall be fitted and screwed tightly to prevent tire air leakage.

3.4 Tire Sensor / Anti-theft Nut

Step 4 : Anti-theft nut usage

- (1) Screw the anti-theft nut in the tire valve. (Illustration 1 and 2)
- (2) Screw and tighten the tire sensor in clockwise direction. (Illustration 3)
- (3) Use spanner to tighten nut in anti-clockwise direction to lock sensor. (Illustration 4)



4.1 HUD Infra-red / Quick Speed Limit Set-up

Quick speed limit set up by infra-red function.

- (1) When driving at desire speed, place your hand approx. 5 cm distance from infra-red lens around 3 seconds.
- (2) When HUD captured the current speed, HUD will generate 3 beeps sound.
- (3) While driving over the limit, HUD will beep for twice and speed limit icon blinks.



Speed limit icon

Note :

Do not place any object in front of infra-red lens within 10 cm.

4.2 HUD / Learning ECU Protocol



HUD Unit shows during the first connection to vehicle ECU via OBD-II interface. It will take few seconds for learning, searching and communication with pre-program protocol.
(ISO 15765(CAN)/ISO 9141-2/ISO 14230(KWP2000))



HUD Unit shows successfully.

4.3 HUD / Receiving RF Signal From Tire Sensors

After engine start, HUD begin receiving sensor data from individual tires.

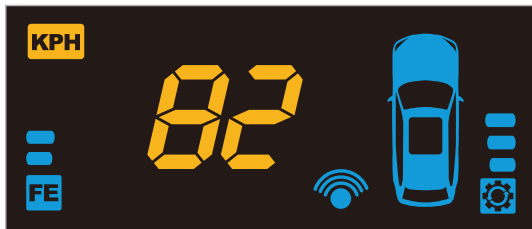


All the tire icons vanished, HUD have got all sensor data with healthy tire status.



**Blinking during
receiving RF signal**

5.1 HUD / Function and Setting



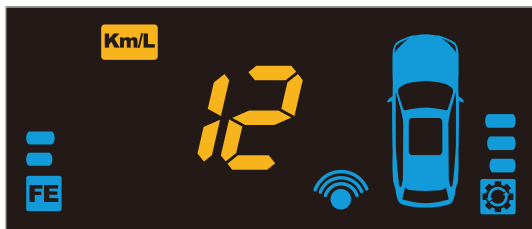
Function button - not press - main display

- (1) Display Speed (KPH).
- (2) TPMS monitoring (no tires abnormality).
- (3) SHIFT indicator works.
- (4) FE (Fuel Economy) indicator works.
- (5) RF icon blinking during receiving signals.



Function button - press 1

Engine RPM x 10 .



Function button - press 2

Fuel consumption (Km/L).

Note :

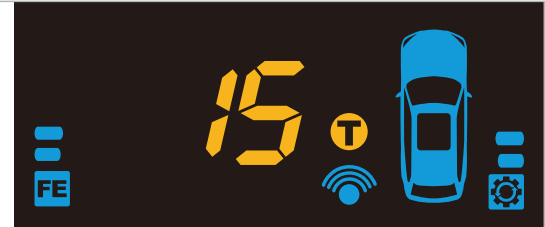
- (1) This function only works while vehicle moving.
- (2) This function applied while vehicle ECU protocol supported.

Function button - press 3

Throttle position gauge function.

Note :

This function applied while vehicle ECU protocol supported.



Function button - press 4

Engine coolant temperature.

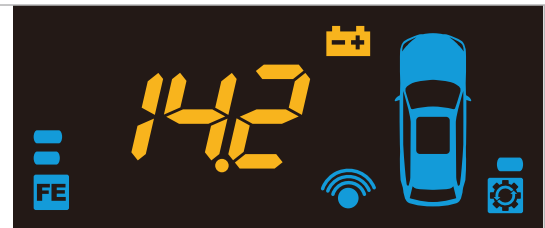
Continue warning beep sounds when the engine coolant temperature beyond 108°C .



Function button - press 5

Vehicle battery voltage (Volt).

Warning one beep sound per 10 seconds when the vehicle battery voltage drop less than 11.5 Volt, suggest to change new battery immediately.



5.1 HUD Unit / Function and Setting



Function button - press 6

Speed limit warning set-up.

Press SETTING button sequentially to set desired speed limit (50 > 60 > 70...300KPH). Set to "0" to disable this function.

2 beeps sounds per 10 seconds while vehicle speed over the set-up speed limit (lasted one minute) .



Function button - press 7

Calibration vehicle speed with vehicle speedometer.

Recommended calibration methods:

Keep HUD indicate in 100KPH, then check the speedometer.

If the value of speedometer is 105, set up calibration value as 105.

5.1 HUD Unit / Function and Setting (infra-red port)

Function button - press 8

Activate or disable infra-red (quick set-up speed limit warning, ref. to page 16).

Press SETTING button to enable or disable the infra-red function.

"irC" means infra-red is close(disable).

"irA" means infra-red is activated(enable).



5.1 HUD Unit / Function and Setting



Function button - press 9

Tire temperature (°C) warning.

Press SETTING button to set the temperature, available from 60°C to 75°C.

2 beep warning sounds per 10 seconds when abnormality detected (lasted one minute).



Function button - press 10

Set upper limitation of tire pressure (Psi) warning.

Available 40 to 60 by pressing SETTING button.

2 beep warning sounds per 10 seconds when abnormality detected (lasted one minute).



Function button - press 11

Set lower limitation of tire pressure (Psi) warning.

Available 25 to 45 by pressing SETTING button.

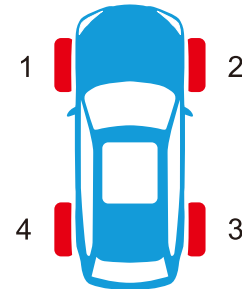
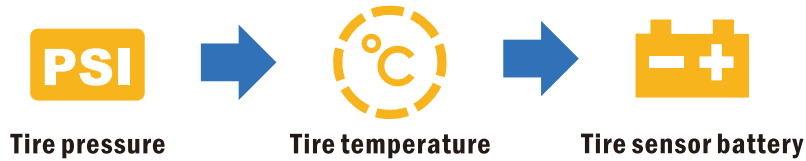
2 beep warning sounds per 10 seconds when abnormality detected (lasted one minute).

Function button - press 12

This function times will be back to main display.

5.2 Quick Check Tire Condition

Press **SETTING** button once for quick check individual tire pressure (PSI), tire temperature ($^{\circ}\text{C}$) and tire sensor battery voltage (Volt), each item will be displayed in 5 seconds sequentially.



Display 1 → 2 → 3 → 4
tire data in 5 sec. sequentially.

5.3 HUD - Warnings and Legends



Speed limit warning

Icon blink and two beep sounds sequentially per 10 seconds (lasted one minute).



Engine coolant temperature

Display engine coolant temperature. Icons blink and long beep sounds consecutively when temperature exceed 108 °C .



Vehicle battery voltage (Volt)

Display vehicle battery voltage. Icons blink and a beep sounds per 10 seconds when voltage below 11.5 Volt .



Tire pressure abnormality detected

Tire pressure abnormality detected on particular tire. Icons blink and two beeps sound per 10 seconds (lasted one minute).



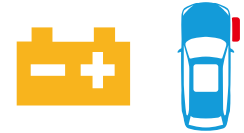
Tire temperature abnormality detected

Tire temperature abnormality detected on particular tire. Icons blink and two beeps sound per 10 seconds (lasted one minute).

5.3 HUD - Warnings and Legends

Tire sensor low battery

Warning icon appear when insufficient power (less than 2.6 Volt).
Replace tire sensor battery for optimum performance.



No tires abnormality detected

Tires pressure an temperature are in good condition.



FE (Fuel Economy) gauge

Fuel consumption gauge.



Fuel consumption (Km/L)

Fuel consumption indicator Kilometer/Litre.



Throttle position (%)

Throttle position indicator.



5.3 HUD - Warnings and Legends



Display speed KPH (Kilometer/Hour)

Display speed KPH.



Display engine RPM

Display engine RPM x 10.



Display vehicle battery (Volt)

Display vehicle battery voltage.



Shift indicator

Manual transmission shift reference.



Display RF communication

Blink when receiving RF signal from tire sensor.

Hybrid Cars Mode

- (1) Switch to infra-red setting function °
- (2) Press SETTING button around 5 seconds until the display EUC °
- (3) Press SETTING button to switch :
 - EUA: Hybrid Cars Mode
 - EUC: Non-hybrid Cars Mode
- (4) Press FUNCTION button to end setting °

Note :

Currently only support TOYOTA, LEXUS, HYUNDAI-KZA and GM of hybrid cars.

Contact your dealer before apply to other hybrid vehicle.



7.1 Product Specifications

Heads-Up Display (HUD)		Tire Sensor	
Voltage (Volt)	9 ~ 16	Voltage (Volt)	3
Current (mA)	350 Max	Battery type	CR1632
Working temperature (°C)	-40 ~ 85	Working temperature (°C)	-40 ~ 85
RF frequency (MHz)	433.92	RF frequency (MHz)	433.92
		Battery life	1 Year(※)

(※)The original sensor battery supplied with CR1632.

Battery usage life time depend on environment and battery brand and formula.

Disclaimer

The information provided in this user manual doesn't mean all inclusive. All user have to observe and comply to the vehicle manufacturer or tire manufacturer specification and all available safety regulation.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:(1)This device may not cause harmful interference, and(2) this device must accept any interference received, including interference that may cause undesired operation.

GLORIFY™ TPMS+

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