

# TPMS & HUD User manual



*Multi- functions Head Up Display*

*Tire pressure monitoring system*

The HUD is a powerful tool to provide important information of vehicle to driver for making more safety driving. Including Vehicle Speed, Engine RPM, Fuel Consumption Rate, Engine Loading, Battery Voltage, Engine coolant temperature, Throttle position ratio, Tire pressure, and Tire temperature. They will be shown according display mode selection. Over Speed, Low Battery Voltage, Over Coolant Temperature, Tire Over Inflation, Tire Deflation, and Tire Over Temperature will trigger warning immediately when they are detected.

**1. Item Check List :**

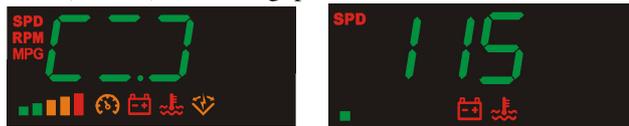
| Part NO | Parts     |   |
|---------|-----------|---|
| 1       | HUD       |  |
| 1       | OBD Cable |   |
| 2       | Velcro    |   |
| 4       | Sensor    |   |
| 4       | Lock nut  |   |
| 2       | Spanner   |   |
| 1       | Guide     |   |

**2. Installation :**

- 2.1 The OBD socket of vehicle was usually located under dashboard, please find it out and plug OBD cable of HUD.
- 2.2 Connect the other terminal(mini USB) of OBD cable to HUD.
- 2.3 Place HUD on top, left side of dashboard, and adjust its position for driver can easy read the reflection of HUD display on windshield.
- 2.4 Stick catoptrics film at the position of HUD reflection image on windshield to make the HUD reflection image clear.

**2.5 Turn on power ( ACC ON),no need start engine.**

- 2.5.1 HUD starts to learn protocol & make connection with ECU. Also can use Manual Select PROTOCOL Mode (MSPM) to learning, please refer to section 4.18.



- 2.5.2 HUD will show actual vehicle speed, if connection successful.
- 2.5.3 If HUD display turned off, please do not take it off now, HUD will keep trying 5 minutes, after 5 minutes in case HUD no response, it means that the HUD fail to connect with ECU.

*NOTE: This maybe caused by several reasons, please reconnect OBD connector, in case it is still fail in connect ,it means this model does not suit with the vehicle or OBD protocol of the vehicle is not OBDII / EOBD standard. No matter what, please connect to agent for assistance.*

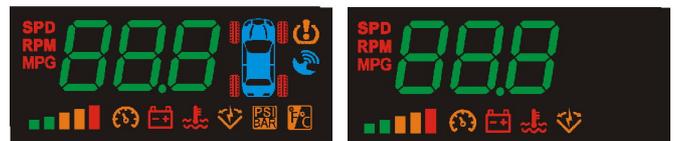
- 2.6 HUD will save protocol in memory after learning, if you would like to move HUD to another vehicle, please press Function Key to go with Setting Key to reset original memory.

**3. Function Description and Operation:**



- 3.1 Function Key : Press the Function Key to revolve each function display. It will show Vehicle Speed, RPM, KPL, Throttle Position, Coolant Temperature, Battery Voltage, Speed Limit Threshold, IR Set, and IR Close in rotation. There is Tire Temperature & Pressure threshold preset function for TPMS.
- 3.2 Setting Key : Press Setting Key to confirm the function selection and bring up the required data, use Function Key to go with Setting Key for reset memory.
- 3.3 Infrared (Optional) : For limit speed setting when vehicle is moving.
- 3.4 CDS : Detects environment lightness and adjust HUD illumination
- 3.5 OBD2 connect port : For connecting with OBD2 cable.
- 3.6 Model:

- EHM5000:TPMS(Internal Type Sensor)+ HUD**
- EHAT5000:TPMS(External Type Sensor) +HUD**
- EH1000: CAN&KWP2000&ISO protocol , none of TPMS**
- EH1030: J1850&KWP2000&ISO protocol, none of TPMS**



**3.7 Icons Description :**

**888** Numeric display : 3 digitals, Shows value corresponding to each displaying function.

**SPD** Speed: Numeric display shows current vehicle speed when this icon light up.

**RPM** Engine Revolutions Per Minute: Numeric display shows current Engine revolutions per minute (RPM/10) when this icon light up.

**MPG** Fuel Consumption Rate: Numeric display shows fuel consumption rate in Km per liter, when this icon lit.

**NOTE: Some vehicles have not support.**  
 Engine loading ratio : Total 5 scales to indicate instantaneous engine loading .Green means light loading.

**Over Speed Warning:** When vehicle speed exceed preset speed limit · this icon light up for warning, also warning sound, to remind driver to speed down. Icon automatically off when vehicle speed below preset speed limit.

**Battery Voltage:** Numeric display shows battery voltage when this icon light up.





Engine Coolant Temperature: Numeric display shows engine coolant temperature when this lamp light up.



Throttle Position Ratio: Numeric display shows throttle position ratio ( 0~100%) when this icon light up.



Infrared Close: Once the infrared function is disable, the  lit when vehicle is stop.

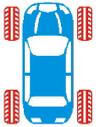


Infrared Set: You can set speed limit threshold by infrared, once the function is enabled.



Speed adjustment: rate 50% ~ 70%, 90% ~ 120%, default value is 100.

**Tire Pressure Monitoring System (TPMS, optional):**  
**Installation of TPMS please refer to the EHM5000/**  
**EHAT5000/ user guide.**



Tire LED indicates TPMS Sensor status. Press Setting key to display tire temperature, pressure and voltage.



Tire Temperature: Numeric display show Temperature of current indicated tire when this icon light up.



Tire Pressure: Numeric display show Pressure of the current indicated tire when icon this light up.



Tire Condition Abnormal Warning: If any tire pressure or temperature abnormal was detected, this icon will light up for warning, also warning sound, to alert driver immediately. Alarm threshold adjustment please refer to section 4.14,4.15,4.16



RF signal: Indicates RF signal from sensor is received.

**4.Operation :**

- 4.1 Basic function display: pressing Function Key, can sequent select HUD display function form: Vehicle Speed, Engine RPM, Fuel Consumption Rate, Throttle Position Ratio, Engine Coolant Temperature, Battery Voltage, and Limit Speed Setting,...etc in rotation.
- 4.2 Vehicle Speed Display : **SPD** lit, **888** shows current vehicle speed (Km/h or Mile/h ).
- 4.3 Engine Revolutions Per Minute Display : **RPM** lit **888** shows current Engine revolutions per minute (RPM/10).
- 4.4 Fuel Consumption Rate: **MPG** lit, **888** shows fuel consumption rate in KMs per liter.
- 4.5 Throttle Position Ratio Display :  lit, **888** shows throttle position ratio ( 0~100%).
- 4.6 Engine Coolant Temperature Display :  lit, **888**

shows engine coolant temperature (°C).

- 4.7 Battery Voltage :  lit, **888** shows battery voltage (Volt).
- 4.8 Engine loading ratio Display :  lit for indicating instantaneous engine loading (0~100%).
- 4.9 Speed Limit Setting :
- 4.9.1 by Key Operation :
  - ⇒ Press Function Key till  lit
  - ⇒ **888** indicate current setting.
  - ⇒ Pressing Setting key to enter Speed Limit Setting Mode **888** flashing.
  - ⇒ Keep press Function Key to change threshold:
    - 0(Diable )→50→60→70→80→90→100→110→120→130→140→150→160→170→180→190→0 (Disable)→50,..., revolving.
  - ⇒ Press Setting key to save and exit Speed Limit Setting Mode. **888** stop flashing.
  - ⇒ Finish.
- Please Do not Operate Key operation during driving.*
- 4.9.2 by Infrared: This function applies only to vehicle is moving.
  - ⇒ Place your hand in front of infrared zone
  - ⇒ Stay for about 3 seconds.
  - ⇒ When setting successful, HUD will response 3 alert sound.
  - ⇒ Finish.
- Setting rule:
  - If vehicle speed less then 50KM/HR, speed limit set to 50.
  - If vehicle speed faster than 50KM/HR, speed limit will set to next default value, for example, if current vehicle speed is 82 KM/HR speed limit will set to 90.
  - If vehicle speed over 190KM/HR, speed limit set to 190.
- 4.10 Speed adjustment: Press Function Key till display  then press Setting Key to enter adjustment mode. Press Function Key to adjust rate value and use Setting Key to save it, the default value is 100.
- 4.11 Alarm :
- 4.11.1 Over Speed Alarm: it sounds a short tonality and  lit, it will sound per 10 seconds in case still over speed .
- 4.11.2 Over Engine Coolant Temperature Alarm: When Engine coolant temperature higher than 108°C, it sounds a short tonality and  lit.
- 4.11.3: Low Battery Voltage Alarm: When battery voltage less than 12V  lit.
- 4.12 Infrared Set:  "ir S" lit then press Setting key "ir S" will flash and enable the function.
- 4.13 Infrared Close:  "ir C" lit then press Setting key "ir C" will flash and disable the function.
- 4.14 Preset tire temperature threshold:  lit then press Setting key into temperature adjust mode, use Function Key to adjust threshold. Range is from 60 to 75

°C.

- 4.15 Preset tire pressure threshold:  lit then press **Setting key** into High Pressure adjust mode, use **Function Key** to adjust threshold. Range is from 40 to 60 PSI.
- 4.16 Preset tire pressure threshold:  lit then press **Setting key** into Low Pressure adjust mode, use **Function Key** to adjust threshold. Range is from 25 to 45 PSI.
- 4.17 TPMS Sensor learning mode:  refer to sensor user guide.
- 4.18 Manual Select Protocol Mode (MSPM):
- 4.18.1 Power on HUD, press **Function Key** over 5 times then press **Setting Key** to enter MSPM → 
- 4.18.2 The display show “Cxx”, ‘C’ means that you can use **Function Key** to change protocol, ‘xx’ is protocol number. Press **Setting Key** to execute the protocol learning. HUD display “rxx”, ‘r’ means that HUD is running the selected protocol.  → 
- 4.18.3 Press **Function Key** to interrupt learning.  → 
- 4.18.4 HUD will display speed once learning is successful.
- 4.18.5 Protocol List for EH1000/EHM5000/EHAT5000

| NO | Protocol          | NO | Protocol           |
|----|-------------------|----|--------------------|
| 1  | TOYOTA            | 2  | Reserved           |
| 3  | KWP2000 Fast      | 4  | ISO9141            |
| 5  | ISO14230A         | 6  | CAN( 500K,11 Bits) |
| 7  | CAN(500K,29 bits) | 8  | CAN(250K,11Bits)   |
| 9  | CAN(250K,29Bits)  | 10 | NISSAN CAN         |
| 11 | ISO14230C         | 12 | ISO14230D          |
| 13 | KWP2000 SLOW      | 14 | ISO14230E          |
| 15 | ISO14230F         | 16 | ISO14230B          |
| 17 | PROTON SARVY      | 18 | TOYOTA Comfort     |
| 19 | Renault CAN       | 20 | PROTON GEN2        |
| 21 | Citroen           | 23 | Hyundai (old)      |

5. Electronic specification:

Head Up Display

|                       |                                     |
|-----------------------|-------------------------------------|
| Working voltage       | 9~30 V DC                           |
| Working current       | 80 mA                               |
| Operating temperature | -30 °C to 85 °C                     |
| Circuit protection    | Reverse wiring and surge protection |
| Speed Indication      | 0 ~ 400 KM/HR                       |
| Frequency             | 433.92 MHz                          |

6. TPMS (EHM5000/EHAT5000) display

- 6.1 Press setting key can bring up tire pressure, temperature and battery voltage data in sequence. Tire led indicate sensor location.
-  lit,  show tire temperature.
  -  lit,  show tire pressure.
  -  lit,  show sensor battery voltage.
  -  Indicate HUD did not receive RF signal yet.
- 6.2 Time out alert; If battery voltage is too low or exhausted or RF signal is jamming, the tire led lit and data show , if battery voltage is normal, maybe RF signal is interfered, please check antenna and wait a moment.
- 6.3 Tire abnormal alert: In case  lit, please slow down and check tire.
- 6.4 TPMS Antenna:  
The antenna wire should be set between windscreen and dashboard. Don't roll up the antenna wire.

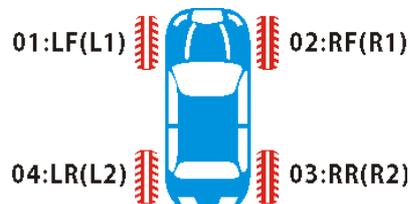


7. NOTE and CAUTION :

- 7.1 The information of HUD is for reference only. no operation HUD or plugging OBD allowed when driving.
- 7.2 Infrared work since vehicle is moving. If buzzer always sounds please make sure that there is no obstacles in front of HUD, or try to adjust HUD position to prevent disturbance.
- 7.3 If HUD does not auto wake up after engine starting, please press **Function Key** to turn on the HUD or try to restart engine and check whether OBD2 connector is relax.
- 7.4 To press both **Function** and **Setting Key** can turn off HUD.
- 7.5 No chemical allowed for clearing.
- 7.6 Do not place the unit at the dusty place. It could cause malfunction.
- 7.7 Connect the power plug securely. Improper connection will cause over current and may result in malfunction.
- 7.8 Do not remove cover, or modify the product. Contact your local dealer to perform servicing such as inspection, adjustment, or repair work.

**TPMS Sensor Installation Guide**

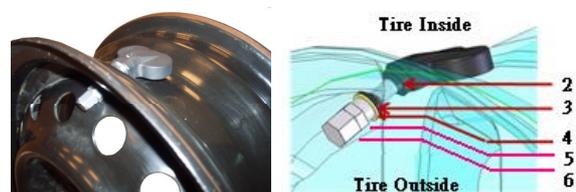
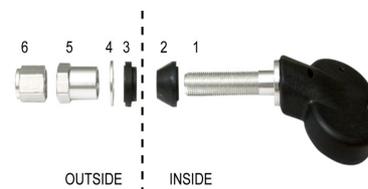
1. **Checks sensor ID & configures tire**  
There are initial sensor configured locations marked.
2. **Tires location.**  
01:Left Front(L1) 02:Right Front(R1)  
04:Left Rear(L2) 03:Right Rear (R2)



3. **Sensor Installation**

3.1 **Internal Sensor(M - type) :**

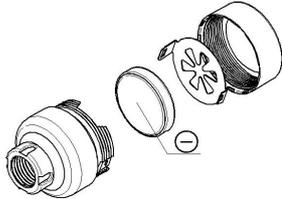
Since sensors must be installed to inner side of tires, it require to separate rim and tire, install tire on rim, balance tire and install wheel back to vehicle. Please get help from professional tire shops or your local dealer if necessary.



3.2 Procedures of install one sensor into tire are following.

- 3.2.1 Remove the tires from vehicles
- 3.2.2 Deflate the tires and separate rim and tire.
- 3.2.3 Fix sensor on rim with proper approaches.
- 3.2.4 Assemble rim and tire together, inflate to their typical pressures.
- 3.2.5 Balance wheel.
- 3.2.6 Install wheel to correct position of vehicle.
- 3.3 **External Sensor(AT - type)**
- 3.3.1 Install battery into sensor and tighten sensor top cap.

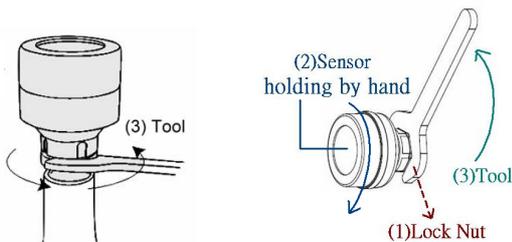
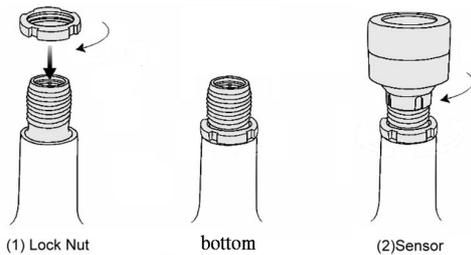
**Please care battery direction**



**Check Sensor location:**

Each sensor should be assigned a unique identification number (ID), and default sensor position( tyre 1... ) which was marked on sensor. Note: Tyre 1 assigned to Front tyre and tyre 2 is assigned to rear tyre.

3.3.2 Remove original valve cap and screw (1)lock nut first then (2)sensor onto valve stem.



3.3.3 Screw (1) lock nut back and using (3) Wrenches to lock tight. This prevents sensor from easy removing also in favor of sensor stationary. **Note: User may ignore this fixture, when causing inflation hassle concerns.**

3.3.4 Continue to install all other sensors with the same procedure.

**Note :**

- (1) Clean up the valve stem surface before installation to ensure the conductivity between sensor and valve.
- (2) Sensor shall be tight lock at valve stem to avoid leak.
- (3) please replace sensor battery in case voltage is low less than 2.7v.

**EHA5000 / EHM5000 Sensor ID Learning Guide**

- (1) To place sensor beside HUD
- (2) To press HUD **FUNCTION KEY** till show
- (3) To press **SETTING KEY** to enter learning mode, the HUD receives sensors ID that pressure is less than 25 psi (abnormal pressure) . The flash numeral display is the number of sensors are detected by HUD.
- (4) To install sensor to valve steam (EXTERNAL SENSOR) or inside tire (INTERNAL SENSOR) sequencing, and let sensor detects tire pressure then the HUD will learn sensor ID that its pressure variation is over 3 psi. **The first wheel is Left Front then Right Front, Right Rear, Left Rear.** **You have to ensure ID is saved into HUD then make next step.**

When the wheel lit RED and “Bi” sound, it mean the sensor ID is saved.

|                               |                               |
|-------------------------------|-------------------------------|
| <b>STEP 1: Left Front</b><br> | <b>STEP2: Right Front</b><br> |
| <b>STEP4: Left Rear</b><br>   | <b>STEP3: Right Rear</b><br>  |

**NOTE: Need to re-learn ID in case it is interrupted.**

- (5) HUD back to normal display mode in case it has completed ID learning.

**Reflective Films Installation**

1. Clean windshield inside with cleaner & water.
2. Tear open one side cuticle and spray cleaner water on film



3. Fix film and scratch water off. Wait for dry one minute



4. Careful to tear open another cuticle.



NOTE: if you do not remove the cuticle, the reflective image will be vague.