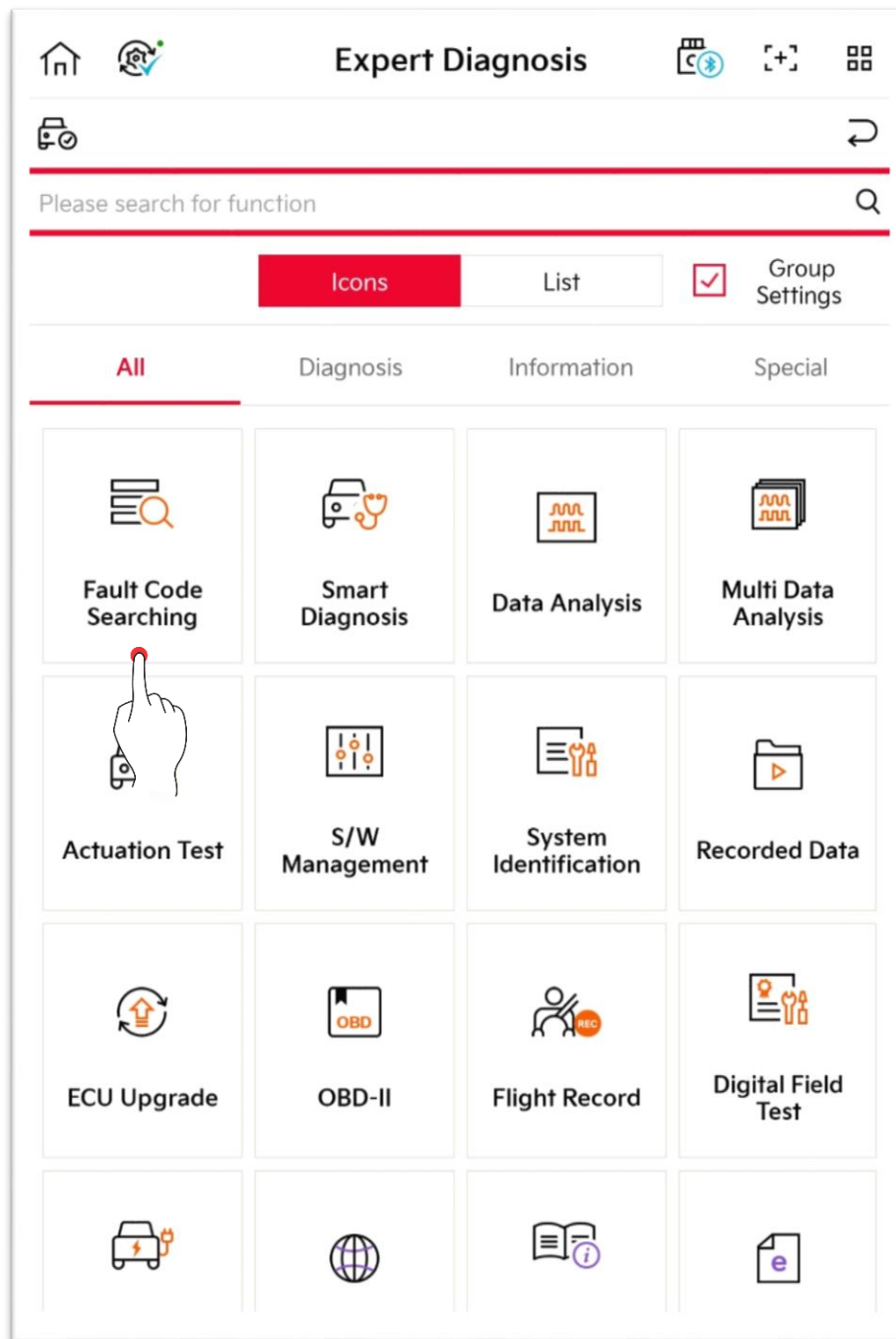


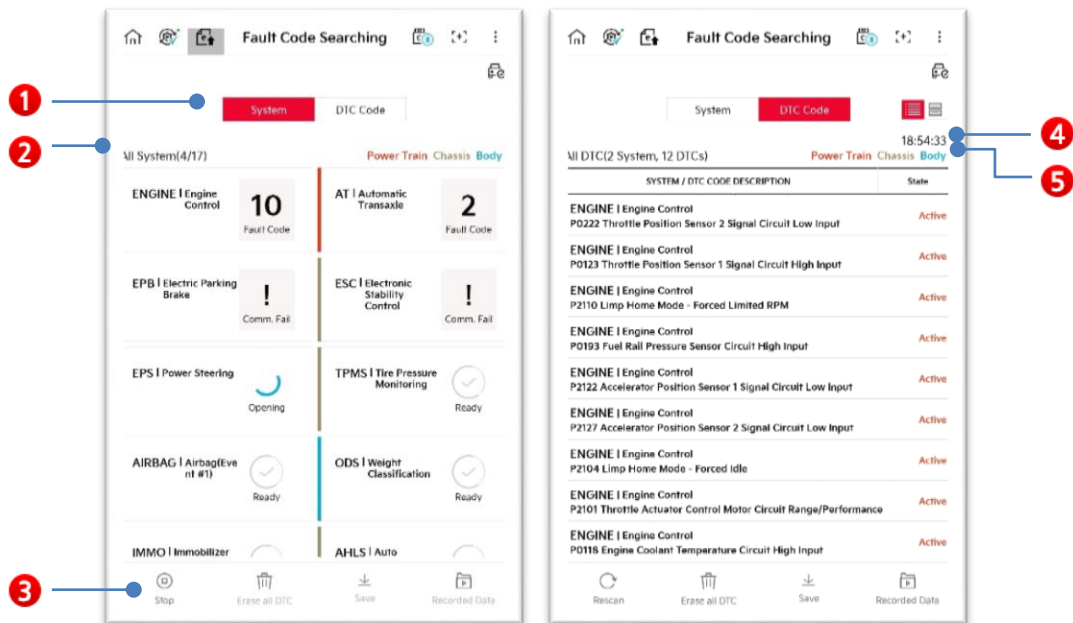
## Expert Diagnosis - Fault Code Searching

It searches fault code(s) of one or multiple number of systems mounted on the vehicle. The users can check detailed information related to fault codes that are searched, as well as maintenance information.



## Basic Operation

The searched fault codes can be checked in formats of group or list by system.

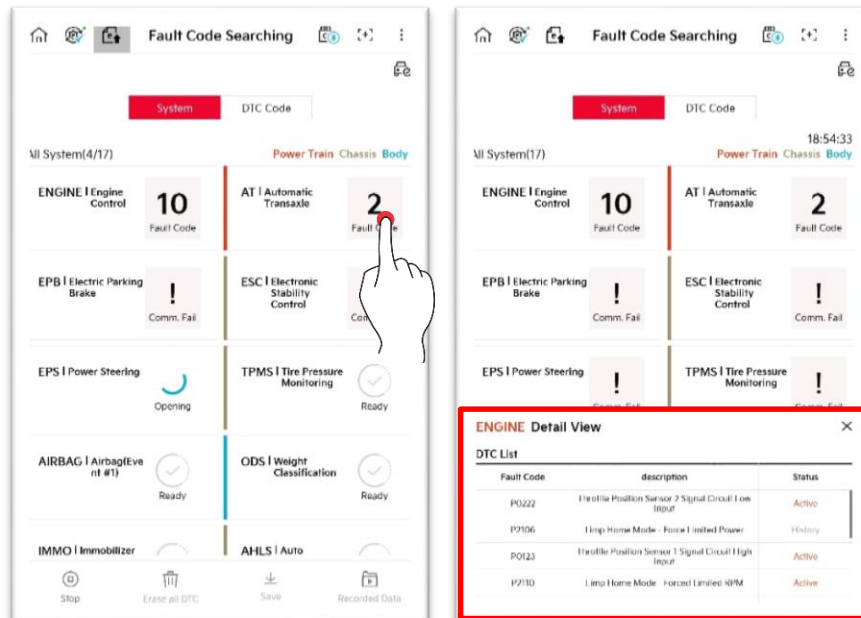


1	You can configure viewing of list by system/by fault code.
2	You can filter systems and fault codes, and view a desired item.
3	The searched fault code can be researched again or deleted.
4	It shows time consumed for searching the fault code.
5	It shows groups of systems and fault codes (powertrain, chassis, body) through color classification.

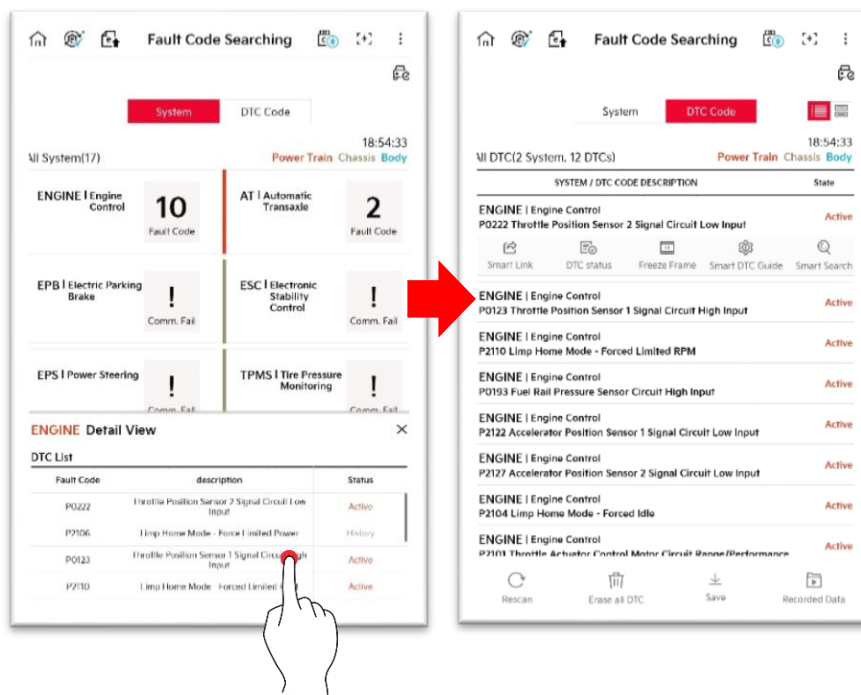
## Fault Code Search - System

It shows number of searched fault codes by system.

If you select a system, a detailed screen on the searched fault code appears at the bottom.





If you select a fault code in the detailed screen, it is switched to 'Fault Code' screen, which provides additional information.



## Status Information

This is status information on the searched results of the fault codes.

### Status Information by Card

 Scanning	Currently performing diagnosis communication with the vehicle.
 Ready	Preparing for diagnosis communication.
<b>0</b> Good	There are no search results for fault codes.
<b>3</b> Fault Code	It indicates number of searched fault codes.
<b>!</b> Communi- cation Failed	Diagnosis communication has failed.
<b>-</b> Not Supported	This system is not supported.

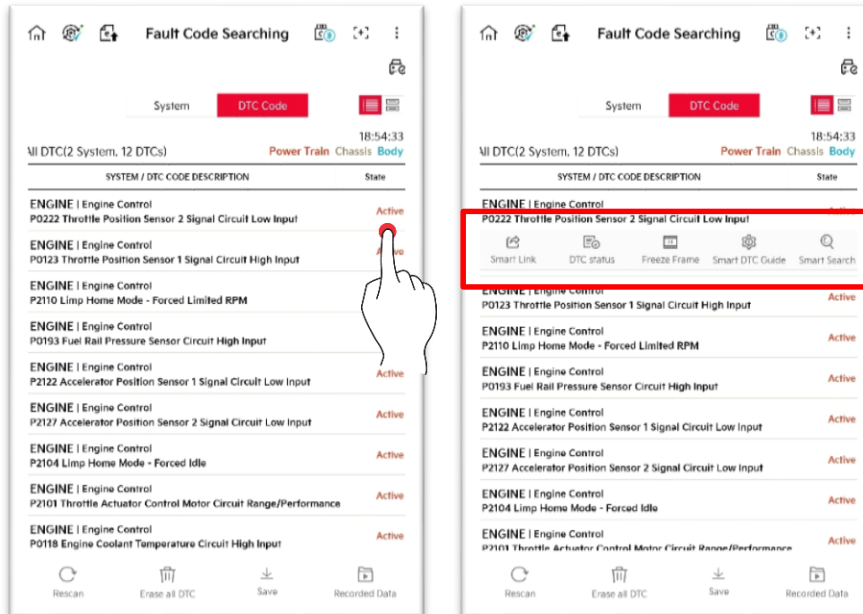
### Fault Code Status Information

<b>Current</b>	Fault codes that are currently recognized as faults in the vehicle.
<b>History</b>	Fault codes that are not currently recognized as faults, although the corresponding faults had occurred in the past.

## Fault Code Search - Fault Code

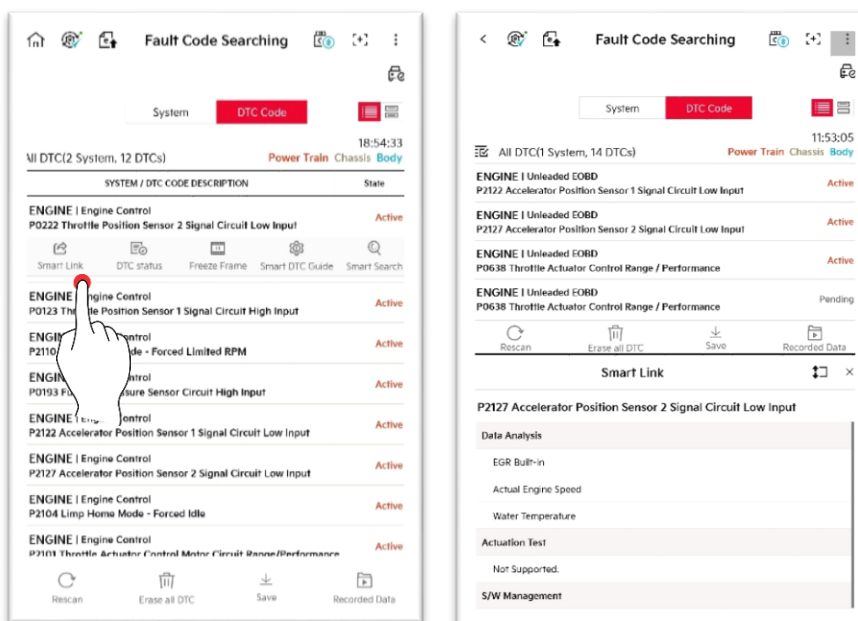
It shows searched fault codes in list format.

Use ^ v button to receive additional functions on fault codes.



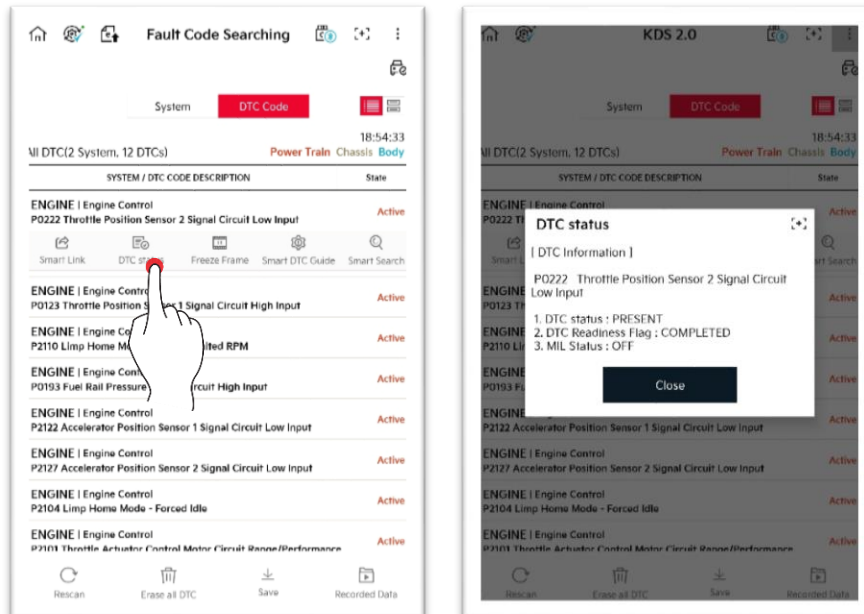
## Smart Link

It provides shortcut links to S/W Management, Actuation Test, and Data Analysis that are related to selected fault codes. Select a desired item.



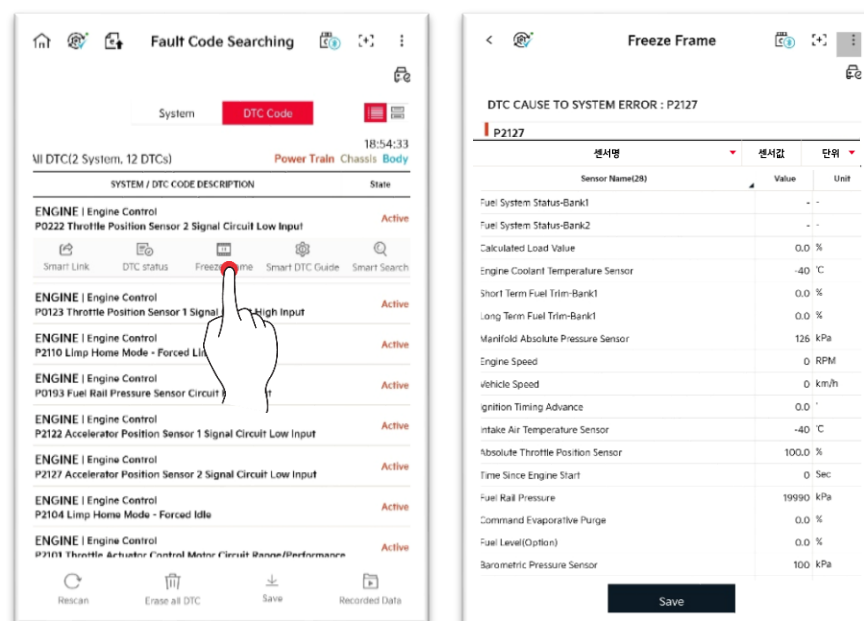
## DTC Status

It provides information such as fault type, fault diagnosis completion status and warning light status, etc. related to selected fault codes.



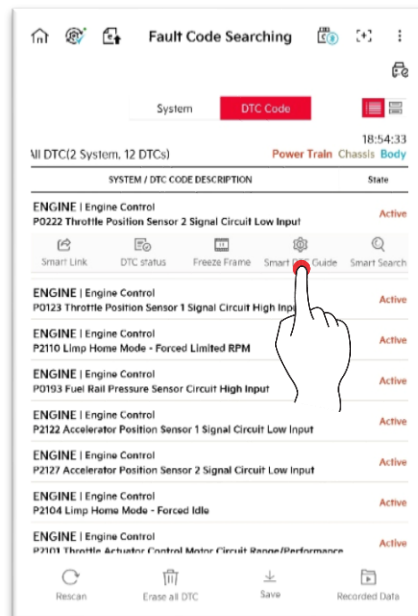
## Freeze Frame

It indicates the sensor data, which is stored in the vehicle at the time when the selected fault code has occurred.



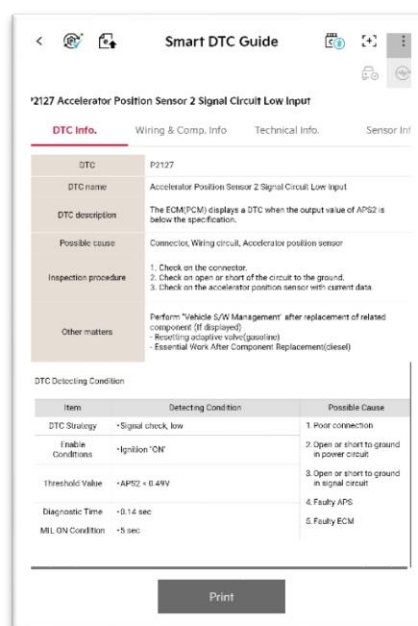
## Smart DTC Guide

It provides various functions for inspecting the fault codes that occurred, such as expected causes, inspection procedure and relevant wiring/unit information, etc.



## DTC Info

It summarizes and shows necessary information such as expected causes of the fault code occurrence and inspection procedure, etc.



## Wiring/Unit Information

It summarizes and shows necessary information such as expected causes of the fault code occurrence and inspection procedure, etc.

## Technical Information

It provides diagnosis guide for fault codes, electrical circuit diagram, and maintenance instruction.

\* Please refer to GSW data.

Smart DTC Guide

P2127 Accelerator Position Sensor 2 Signal Circuit Low Input

Technical Info    Sensor Info    Actuation Test    S/W Manual

Diagnosis Guide	ETM	Shop Manual
DTC Strategy	-Signal check, low	1. Poor connection
Enable Conditions	-Ignition 'ON'	2. Open or short to ground in power circuit
Threshold Value	-APPS2 < 0.45V	3. Open or short to ground in signal circuit
Diagnostic Time	-0.1 s	4. Faulty APS
MIL ON Condition	-3 sec	5. Faulty ECM

Diagnostic Circuit Diagram

Print

Smart DTC Guide

P2127 Accelerator Position Sensor 2 Signal Circuit Low Input

Technical Info    Sensor Info    Actuation Test    S/W Manual

Diagnosis Guide    ETM    Shop Manual

DM Problem Inspection Procedure

TEST ECM GROUND CIRCUIT: Measure resistance between ECM and chassis ground using the backside ECM harness connector as ECM side check point. If the problem is found, repair it.  
Specification: below 1Ω

TEST ECM CONNECTOR: Disconnect the ECM connector and visually check the ground terminals on ECM side and harness side for bent pins or poor contact pressure. If the problem is found, repair it.

If problem is not found in Step 1 and 2, the ECM could be faulty. If so, replace the ECM with a new one, and then check the vehicle again. If the vehicle operates normally then the problem was likely with the ECM.

RE-TEST THE ORIGINAL ECM: Install the original ECM (may be broken) into a known good vehicle and check the vehicle. If the problem occurs again, replace the original ECM with a new one. If problem does not occur, this is intermittent problem (Refer to Intermittent Problem Procedure in Basic Inspection Procedure).

remove!

-In the case of the vehicle equipped with immobilizer, perform "Key Teaching" procedure together (Refer to "Immobilizer" in BE group).

Turn ignition switch OFF and disconnect the negative (-) battery cable.

Disconnect the ECM connector (A).

Print



## Sensor Data - Text Mode

It indicates the sensor data related to fault codes in text format.

A reference value is provided to enable the user to check normal range of the sensor data.

The image shows a screenshot of the 'Smart DTC Guide' application. The title bar at the top reads 'Smart DTC Guide'. Below the title bar, the specific fault code is displayed: 'P0222 Throttle Position Sensor 2 Signal Circuit Low Input'. There are three tabs: 'Initial Info.', 'Sensor Info.', and 'Actuation Test'. The 'Sensor Info.' tab is selected and highlighted in red. Below the tabs, there are three sub-tabs: 'Text', 'Graph', and 'Test Mode'. The 'Text' sub-tab is selected. The main content area displays a table of sensor data.

Sensor Name	Value	Unit	Ref. IG ON
Throttle Position Sensor Angle 1	94.0	TPS	Max: 7.4 Avg: 7.4 Min: 7.3
Throttle Position Sensor Angle 2	94.3	TPS	Max: 7.3 Avg: 7.3 Min: 7.2
Throttle Position Sensor Angle1-Voltage	5.0	V	Max: 0.8 Avg: 0.8 Min: 0.8
Throttle Position Sensor Angle2-Voltage	0.0	V	Max: 4.7 Avg: 4.2 Min: 4.2
Actual Engine Speed	0	RPM	
Water Temperature	-39.8	°C	
Throttle Position Closed (Idle)	OFF		
Throttle Position Full Open	OFF		

## Sensor Data - Graph Mode

It indicates the sensor data related to fault codes in graph format.

A reference value is provided to enable the user to check normal range of the sensor data.

The image shows a screenshot of the 'Smart DTC Guide' application, similar to the one above, but with the 'Graph' sub-tab selected. The layout is the same, but the data is presented in a graph format. The 'Text' sub-tab is now greyed out, and the 'Graph' sub-tab is active. The table structure is identical to the one in the 'Text Mode' screenshot, but the values are presented differently to reflect the graph mode.

Sensor Name	Value	Unit	Ref. IG ON
Throttle Position Sensor Angle 1	94.0	TPS	Max: 7.4 Avg: 7.4 Min: 7.3
Throttle Position Sensor Angle 2	94.3	TPS	Max: 7.3 Avg: 7.3 Min: 7.2
Throttle Position Sensor Angle1-Voltage	5.0	V	Max: 0.8 Avg: 0.8 Min: 0.8
Throttle Position Sensor Angle2-Voltage	0.0	V	Max: 4.7 Avg: 4.2 Min: 4.2
Actual Engine Speed	0	RPM	
Water Temperature	-39.8	°C	
Throttle Position Closed (Idle)	OFF		
Throttle Position Full Open	OFF		

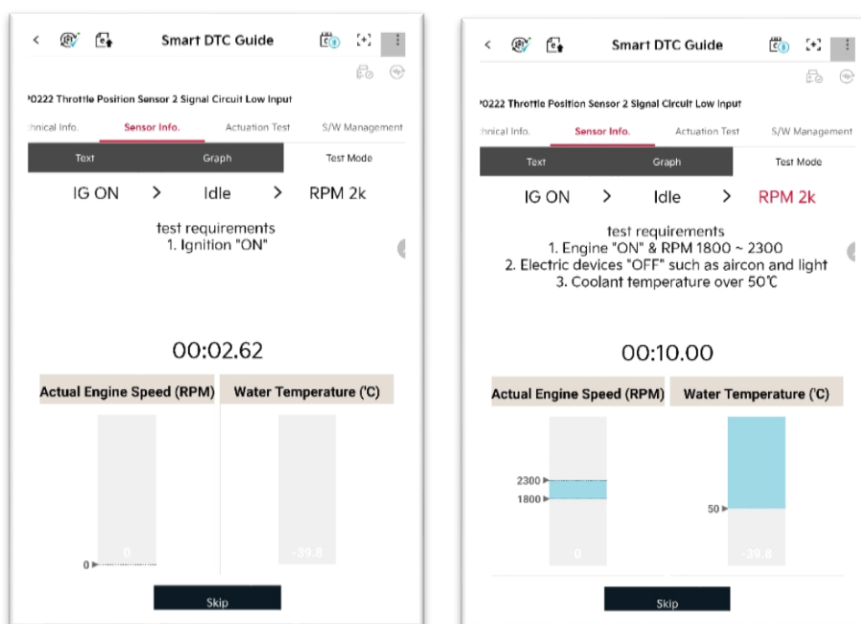


It may not be supported depending on the selected vehicle type, and the reference value is not an absolute number. Please utilize this value for reference purpose

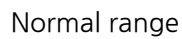
## Sensor Data - Test Mode

Test Mode saves the sensor data values under certain conditions including IG ON, Idle, 2000RPM, etc., and inspection can be performed through data comparison.

Once the test conditions indicated on screen are satisfied, data are collected for a designated time.

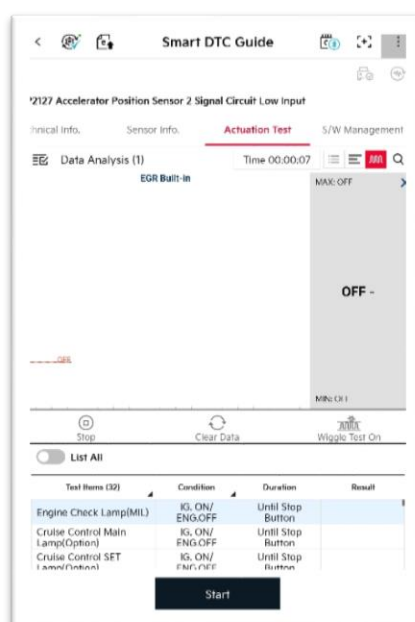


Sensor items that exceed/fall below the normal range reference value are indicated by change in color.



- Exceeding/fall below the normal range

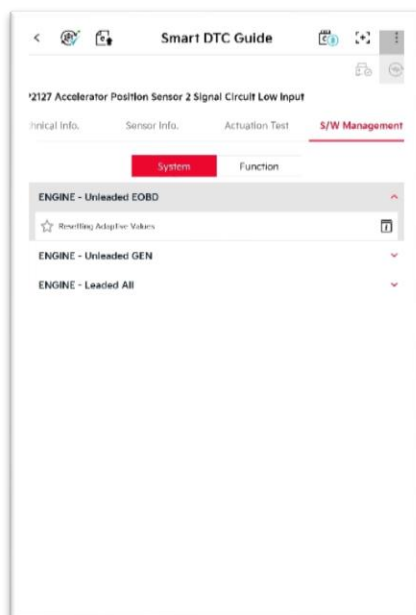
For detailed information on the forced self-driving, please refer to the relevant manual.



## S/W Management

It indicates additional functions related to selected fault codes.

For detailed information on the additional functions, please refer to the relevant manual.



## Smart Search

The smart search function collects or categorizes vehicle problem and repair history information on the data server to retrieve service information and parts information related to the problem entered by the technician.

If you enter VIN, you can check basic information and warranty repair history at the same time.

