

Data Analysis





This is to check the input/output information between sensors/actuators and ECU. For convenience, it supports text and graph mode.

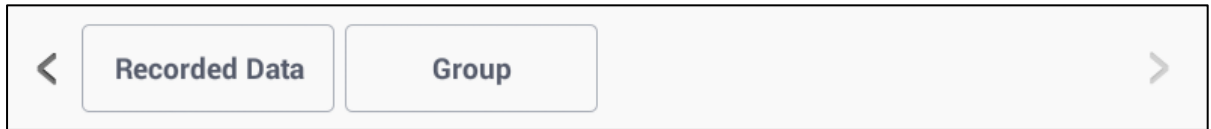
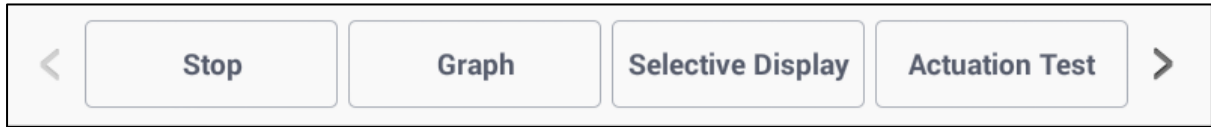
The saved data can be displayed on “Recorded Data.”

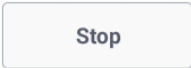
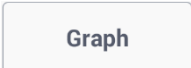
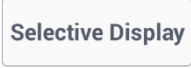
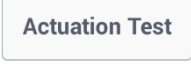

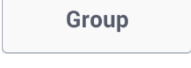

Data Analysis Screen :Text Mode

Sensor Name(97)	Value	Unit	Link Up
Battery Voltage	11.4	V	
Battery Voltage after IG Key	11.4	V	
Actual Engine Speed	0	RPM	
Target Idle RPM	1100	RPM	
Pressure Sensor(MAP) Signal Voltage	0.0	V	
Intake Manifold Pressure	100.0	hPa	
Water Temperature Voltage	5.0	V	
Water Temperature	-45.0	°C	
Ambient Air Temperature	20.2	°C	
Intake Air Temperature Voltage	5.0	V	
Intake Air Temperature	-48.0	°C	
Engine Oil Temperature	-39.8	°C	
O2 Sensor Binary Type Bank1 Upstream(Optional)	0.4	V	
O2 Sensor Binary Type Bank1 Downstream(Optional)	0.4	V	
Vehicle Speed	0.0	km/h	
Relative Charge Value	0.0	%	
Purge Control Valve	3.0	%	
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	

◆ Function Buttons

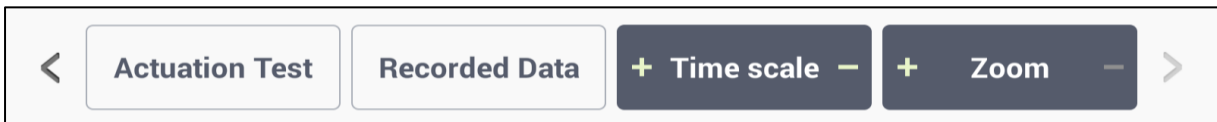
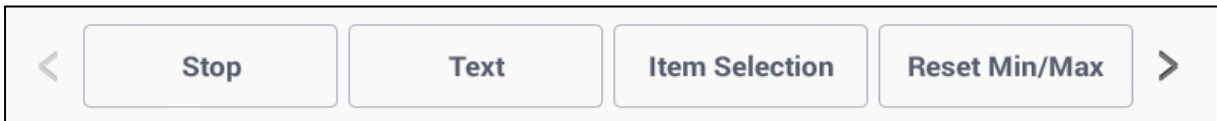
The below is the function buttons for Data Analysis.



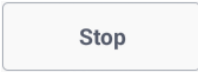
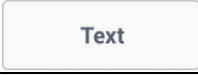


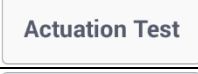

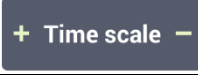


	Stops recording Sensor Data and the data can be saved by clicking the [Save] button. *The button toggles between [Stop] and [Start] button.
	Shows the current data value in a graph format. Able to convert to Text format.
	Refreshes data values for specific items. Toggles with [Normal Display] button.
	Performs Actuation test for the selected systems.
	Opens Files and reviews the recorded data on SD card.
	Shows sensor data by group
	All data, which has been recorded before [Stop] button is pressed, is saved as a file on SD card.

Data Analysis Screen :Graph Mode

This function is to display the sensor item value as a graph format. The user can see the value trend of the sensor data.





◆ Function Buttons

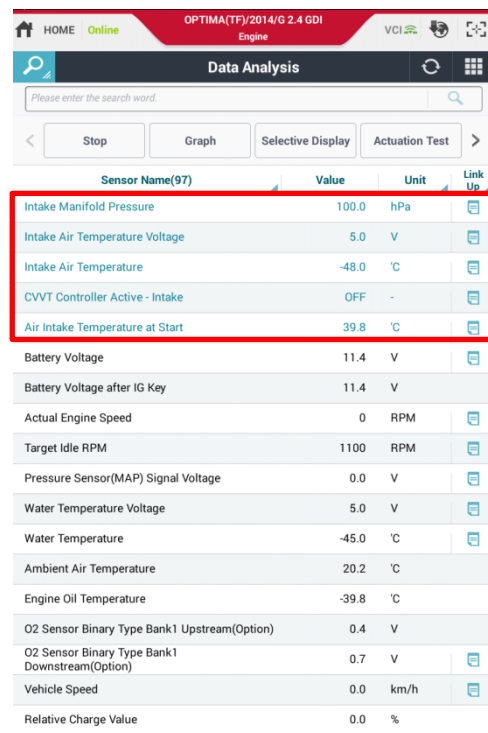
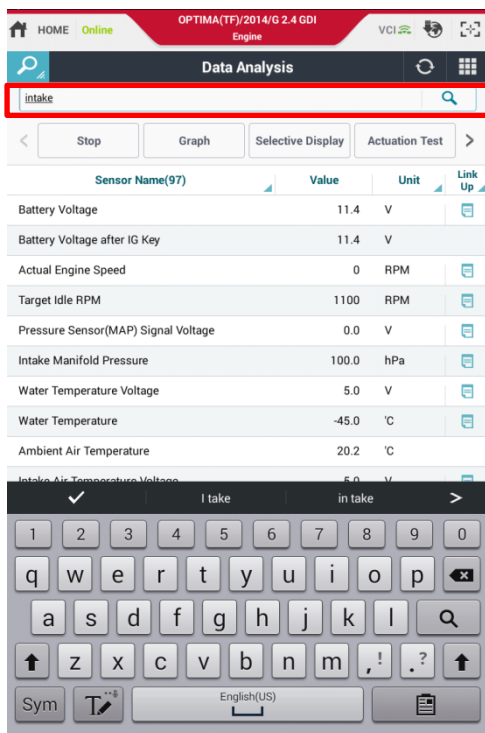
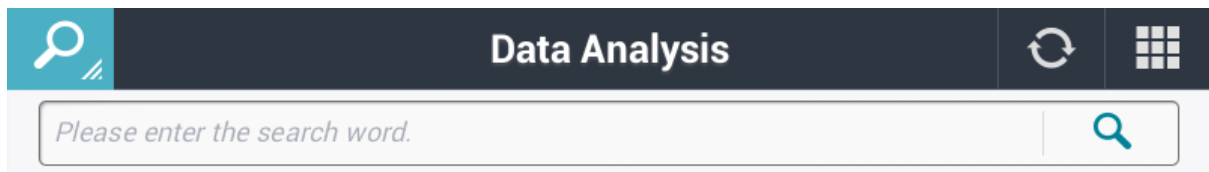
	<p>Stops recording Sensor Data and the data can be saved by clicking the [Save] button. *The button toggles between [Stop] and [Start] button.</p>
	<p>Shows the current data value as a text format. Able to convert to Graph format.</p>
	<p>Moves on to “Item Selection”</p>
	<p>Initializes the value of MAX/MIN on the right side.</p>
	<p>Performs Actuation test for the selected systems.</p>
	<p>Opens Files and reviews the recorded data on SD card.</p>
	<p>Magnifies/Reduces time base on the horizontal axis.</p>
	<p>Magnifies/Reduces outcome value base on the horizontal axis.</p>
	<p>All data, which has been recorded before [Stop] button is pressed, is saved as a file on SD card.</p>

Sensor Data Item Search & Sort

It supports searching/sorting function for data item to search easily as a reference to the diagnosis.

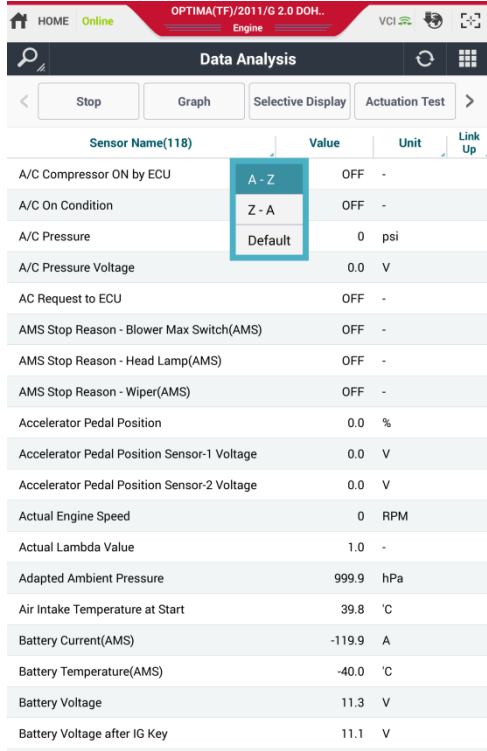
◆ Search

Tap  button on the left side of the Data Analysis title bar to open search bar. Enter the name (search words) on the search bar and tap  button to search.

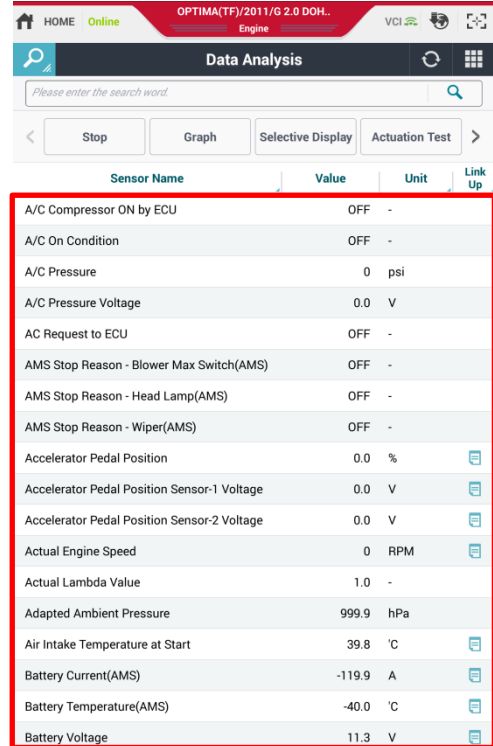


◆ Sort

The data can be sorted in alphabetical or reverse alphabetical order which makes the users convenient.



Sensor Name(118)	Value	Unit	Link Up
A/C Compressor ON by ECU	OFF	-	
A/C On Condition	OFF	-	
A/C Pressure	0	psi	
A/C Pressure Voltage	0.0	V	
AC Request to ECU	OFF	-	
AMS Stop Reason - Blower Max Switch(AMS)	OFF	-	
AMS Stop Reason - Head Lamp(AMS)	OFF	-	
AMS Stop Reason - Wiper(AMS)	OFF	-	
Accelerator Pedal Position	0.0	%	
Accelerator Pedal Position Sensor-1 Voltage	0.0	V	
Accelerator Pedal Position Sensor-2 Voltage	0.0	V	
Actual Engine Speed	0	RPM	
Actual Lambda Value	1.0	-	
Adapted Ambient Pressure	999.9	hPa	
Air Intake Temperature at Start	39.8	°C	
Battery Current(AMS)	-119.9	A	
Battery Temperature(AMS)	-40.0	°C	
Battery Voltage	11.3	V	
Battery Voltage after IG Key	11.1	V	

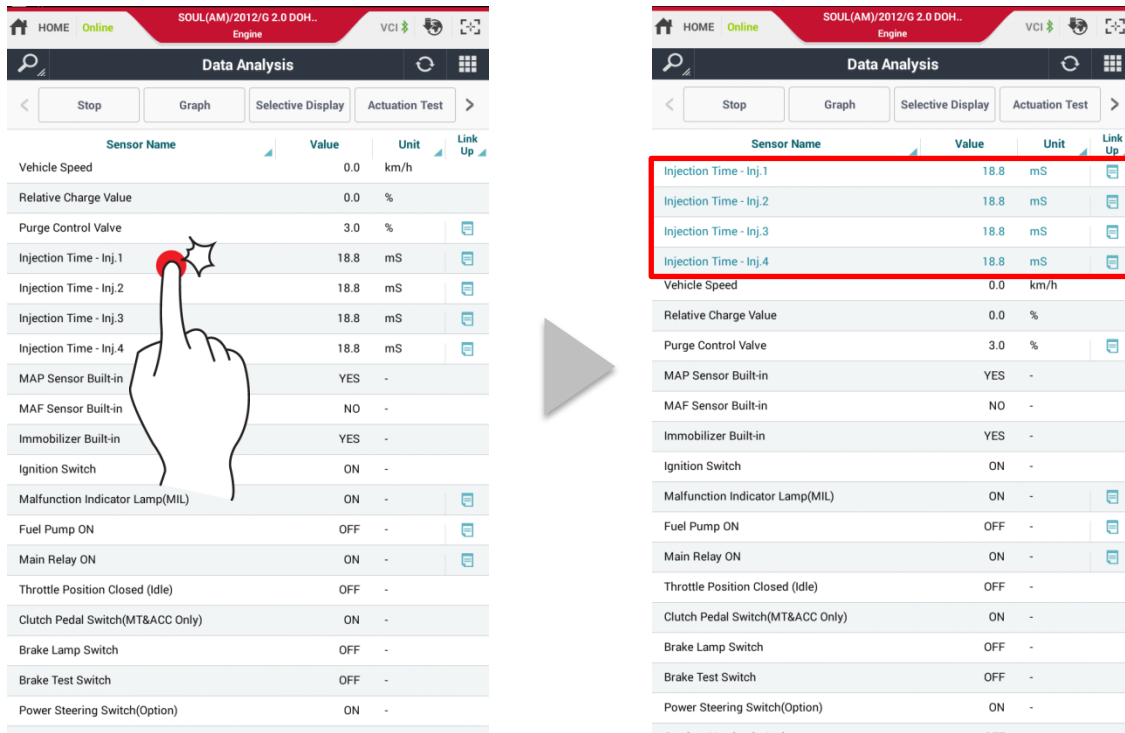
Sensor Name	Value	Unit	Link Up
A/C Compressor ON by ECU	OFF	-	
A/C On Condition	OFF	-	
A/C Pressure	0	psi	
A/C Pressure Voltage	0.0	V	
AC Request to ECU	OFF	-	
AMS Stop Reason - Blower Max Switch(AMS)	OFF	-	
AMS Stop Reason - Head Lamp(AMS)	OFF	-	
AMS Stop Reason - Wiper(AMS)	OFF	-	
Accelerator Pedal Position	0.0	%	
Accelerator Pedal Position Sensor-1 Voltage	0.0	V	
Accelerator Pedal Position Sensor-2 Voltage	0.0	V	
Actual Engine Speed	0	RPM	
Actual Lambda Value	1.0	-	
Adapted Ambient Pressure	999.9	hPa	
Air Intake Temperature at Start	39.8	°C	
Battery Current(AMS)	-119.9	A	
Battery Temperature(AMS)	-40.0	°C	
Battery Voltage	11.3	V	

A - Z	Sorts sensor items in alphabetical order.
Z - A	Sorts sensor items in reverse alphabetical order.
Default	Sorts sensor items in the basic order.

FIX

This function is to fix the items at the top to diagnose the sensor data.

The fixed items, which will be located at the top of the page, can be shown as a graph format or be displayed selectively as the 2nd image below.



When a user taps a sensor item, it will be fixed at the top. And it will be unfixed when the user taps the fixed sensor item.

Sensor Data Measure Units change

Measure units on DATA Analysis can change temporarily on KDS setting except for the specific units.

The image illustrates the process of changing measurement units for sensors in the Data Analysis interface. It consists of two side-by-side screenshots of the application.

Left Screenshot: Shows the 'Data Analysis' screen with a table of sensor data. The header row is highlighted with a red box. A hand icon points to the 'RPM' unit of the 'Target Idle RPM' sensor.

Sensor Name	Value	Unit	Link Up
Battery Voltage	11.4	V	
Battery Voltage after IG Key	11.4	V	
Actual Engine Speed	0	RPM	
Target Idle RPM	1100	RPM	
Pressure Sensor(MAP) Signal Voltage	0.0	V	
Intake Manifold Pressure	100.0	hPa	
Water Temperature Voltage	5.0	V	
Water Temperature	-45.0	°C	
Ambient Air Temperature	20.2	°C	
Intake Air Temperature Voltage	5.0	V	
Intake Air Temperature	-48.0	°C	
Engine Oil Temperature	-39.8	°C	
O2 Sensor Binary Type Bank1 Upstream(Optional)	0.4	V	
O2 Sensor Binary Type Bank1 Downstream(Optional)	0.4	V	
Vehicle Speed	0.0	km/h	
Relative Charge Value	0.0	%	
Purge Control Valve	3.0	%	
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	

Right Screenshot: Shows the same 'Data Analysis' screen, but with a 'Unit of Measure' dialog box open. The dialog box allows selecting a unit for the 'Intake Manifold Pressure' sensor. The 'hPa' unit is currently selected.

Unit of Measure	Value	Unit
Default	mbar	bar
hPa	kPa	MPa
mmHg	inHg	psi

Selective Display

The user can select data items and they are displayed at the top of the item list. Compared to Normal Display, it shows the data in detail.

Sensor Name	Value	Unit	Link Up
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	
Injection Time - Inj.3	18.8	mS	
Injection Time - Inj.4	18.8	mS	
Battery Voltage	11.4	V	
Battery Voltage after IG Key	11.4	V	
Actual Engine Speed	0	RPM	
Target Idle RPM	1100	RPM	
Pressure Sensor(MAP) Signal Voltage	0.0	V	
Intake Manifold Pressure	0.01	MPa	
Water Temperature Voltage	5.0	V	
Water Temperature	-45.0	°C	
Ambient Air Temperature	20.2	°C	
Intake Air Temperature Voltage	5.0	V	
Intake Air Temperature	-48.0	°C	
Engine Oil Temperature	-39.8	°C	
O2 Sensor Binary Type Bank1 Upstream(Optional)	0.4	V	
O2 Sensor Binary Type Bank1 Downstream(Optional)	0.4	V	
Vehicle Speed	0.0	km/h	




Sensor Name	Value	Unit	Link Up
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	
Injection Time - Inj.3	18.8	mS	
Injection Time - Inj.4	18.8	mS	
Battery Voltage		V	
Battery Voltage after IG Key		V	
Actual Engine Speed		RPM	
Target Idle RPM		RPM	
Pressure Sensor(MAP) Signal Voltage		V	
Intake Manifold Pressure		MPa	
Water Temperature Voltage		V	
Water Temperature		°C	
Ambient Air Temperature		°C	
Intake Air Temperature Voltage		V	
Intake Air Temperature		°C	
Engine Oil Temperature		°C	
O2 Sensor Binary Type Bank1 Upstream(Optional)		V	
O2 Sensor Binary Type Bank1 Downstream(Optional)		V	
Vehicle Speed		km/h	

Sensor Name(118)	Value	Unit	Link Up
A/C Pressure	0	psi	
A/C Pressure Voltage	0.0	V	
Adapted Ambient Pressure	999.9	hPa	
Intake Manifold Pressure	100.0	hPa	
Pressure Sensor(MAP) Signal Voltage	0.0	V	
A/C Compressor ON by ECU	OFF	-	
A/C On Condition	OFF	-	
AC Request to ECU	OFF	-	
AMS Stop Reason - Blower Max Switch(AMS)	OFF	-	
AMS Stop Reason - Head Lamp(AMS)	OFF	-	
AMS Stop Reason - Wiper(AMS)	OFF	-	
Accelerator Pedal Position	0.0	%	
Accelerator Pedal Position Sensor-1 Voltage	0.0	V	
Accelerator Pedal Position Sensor-2 Voltage	0.0	V	
Actual Engine Speed	0	RPM	
Actual Lambda Value	1.0	-	
Air Intake Temperature at Start	39.8	°C	
Battery Current(AMS)	-119.9	A	


Step 1

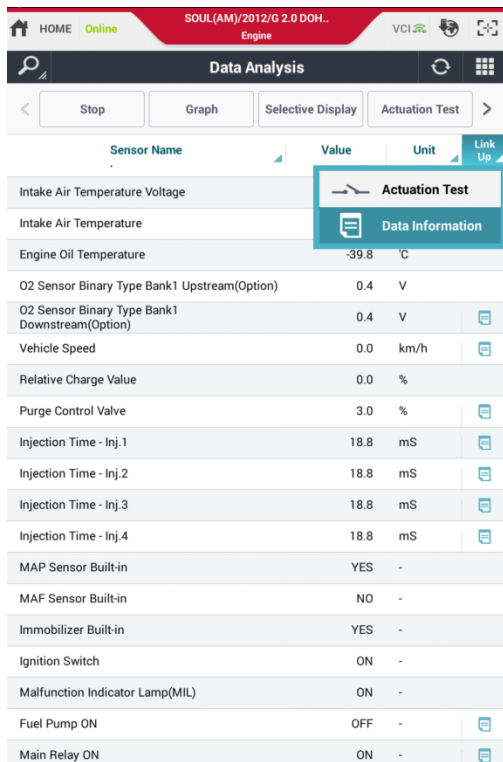
- 1 Fix the sensor item
- 2 Tap [Selective Display] button above.




















Link Up

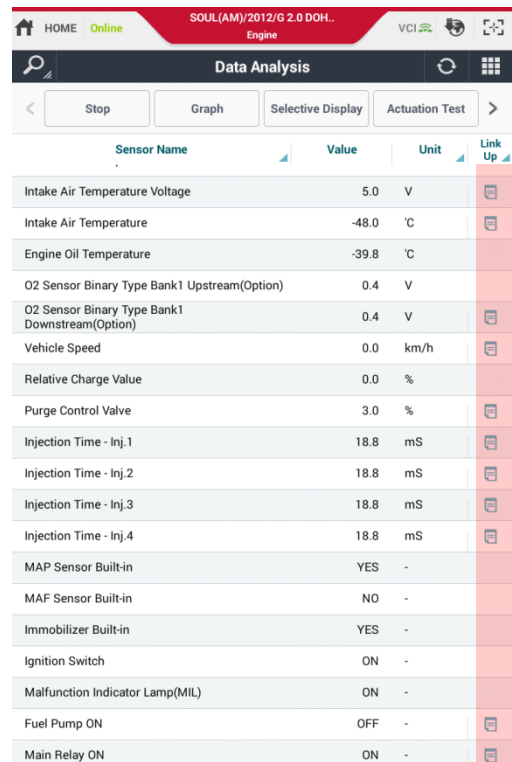
When there is Service Information or Actuation Test item for each sensor Item,  will be displayed on the right side of the sensor data item bar.




















◆ Data Information


When there is Service Information item for each sensor item,  will be shown on the right side of each sensor item bar.



Sensor Name	Value	Unit	Link Up
Intake Air Temperature Voltage			
Intake Air Temperature			
Engine Oil Temperature	-39.8	°C	
O2 Sensor Binary Type Bank1 Upstream(Optional)	0.4	V	
O2 Sensor Binary Type Bank1 Downstream(Optional)	0.4	V	
Vehicle Speed	0.0	km/h	
Relative Charge Value	0.0	%	
Purge Control Valve	3.0	%	
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	
Injection Time - Inj.3	18.8	mS	
Injection Time - Inj.4	18.8	mS	
MAP Sensor Built-in	YES	-	
MAF Sensor Built-in	NO	-	
Immobilizer Built-in	YES	-	
Ignition Switch	ON	-	
Malfunction Indicator Lamp(MIL)	ON	-	
Fuel Pump ON	OFF	-	
Main Relay ON	ON	-	

Sensor Name	Value	Unit	Link Up
Intake Air Temperature Voltage	5.0	V	
Intake Air Temperature	-48.0	°C	
Engine Oil Temperature	-39.8	°C	
O2 Sensor Binary Type Bank1 Upstream(Optional)	0.4	V	
O2 Sensor Binary Type Bank1 Downstream(Optional)	0.4	V	
Vehicle Speed	0.0	km/h	
Relative Charge Value	0.0	%	
Purge Control Valve	3.0	%	
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	
Injection Time - Inj.3	18.8	mS	
Injection Time - Inj.4	18.8	mS	
MAP Sensor Built-in	YES	-	
MAF Sensor Built-in	NO	-	
Immobilizer Built-in	YES	-	
Ignition Switch	ON	-	
Malfunction Indicator Lamp(MIL)	ON	-	
Fuel Pump ON	OFF	-	
Main Relay ON	ON	-	

Tap  icon, Data Information related to the sensor item will be shown at the bottom of the screen.

HOME Online SOUL(AM)/2012/G 2.0 DOH.. VCI Engine

Data Analysis

Stop Graph Selective Display Actuation Test

Sensor Name	Value	Unit	Link Up
Battery Voltage	11.4	V	
Battery Voltage after IG Key	11.4	V	
Actual Engine Speed	0	RPM	
Target Idle RPM	1100	RPM	
Pressure Sensor(MAP) Signal Voltage	0.0	V	
Intake Manifold Pressure	100.0	hPa	
Water Temperature Voltage	5.0	V	
Water Temperature	-45.0	°C	


Data Information

- Manifold Absolute Pressure/Barometric Pressure Circuit Range/Performance

Manifold Absolute Pressure/Barometric Pressure Circuit Range/Performance

General Description
 PCM compares the MAPS output and calculated MAPS value while enable condition is met. If the actual MAP value is higher than Maximum threshold or lower than Minimum threshold for a pre-determined time, PCM determines that a fault exists and a DTC is stored.


Component Location




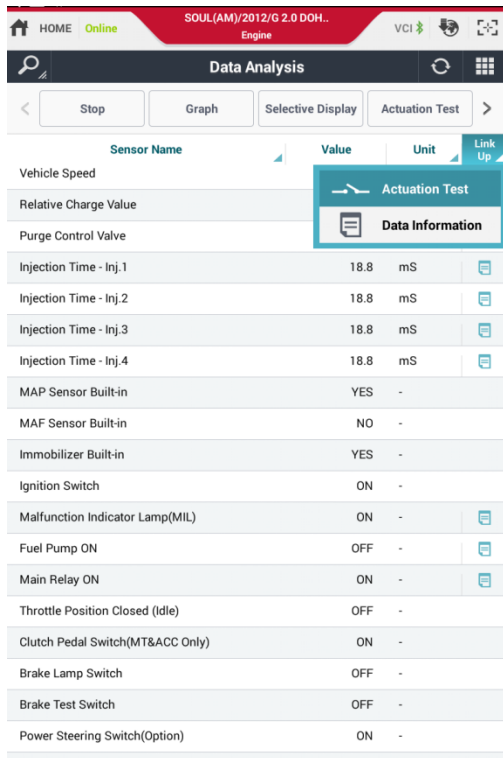
MAP & IATS








Monitor DTC Status

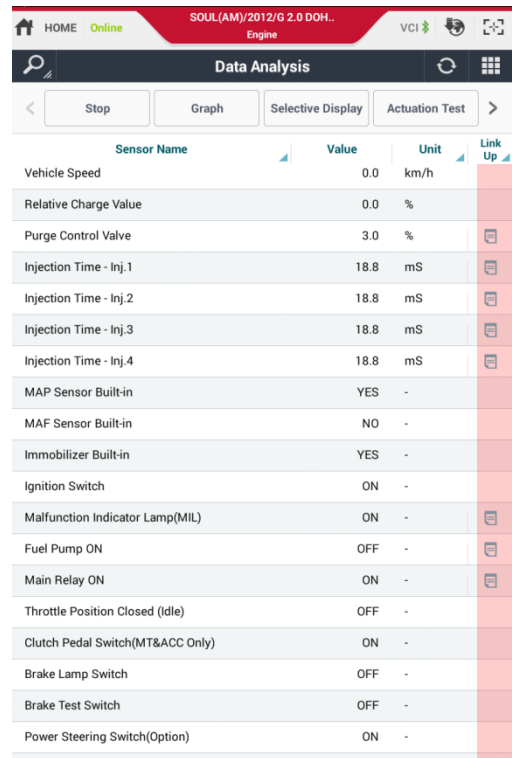
◆ Actuation Test









When there is Actuation test item for each sensor item,  will be shown on the right side of each sensor item bar.

Tap  icon, users can check the name of the Actuation test and perform the test immediately by tapping the item.



Sensor Name	Value	Unit	Link Up
Vehicle Speed			
Relative Charge Value			
Purge Control Valve			
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	
Injection Time - Inj.3	18.8	mS	
Injection Time - Inj.4	18.8	mS	
MAP Sensor Built-in	YES	-	
MAF Sensor Built-in	NO	-	
Immobilizer Built-in	YES	-	
Ignition Switch	ON	-	
Malfunction Indicator Lamp(MIL)	ON	-	
Fuel Pump ON	OFF	-	
Main Relay ON	ON	-	
Throttle Position Closed (Idle)	OFF	-	
Clutch Pedal Switch(MT&ACC Only)	ON	-	
Brake Lamp Switch	OFF	-	
Brake Test Switch	OFF	-	
Power Steering Switch(Optional)	ON	-	

Sensor Name	Value	Unit	Link Up
Vehicle Speed	0.0	km/h	
Relative Charge Value	0.0	%	
Purge Control Valve	3.0	%	
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	
Injection Time - Inj.3	18.8	mS	
Injection Time - Inj.4	18.8	mS	
MAP Sensor Built-in	YES	-	
MAF Sensor Built-in	NO	-	
Immobilizer Built-in	YES	-	
Ignition Switch	ON	-	
Malfunction Indicator Lamp(MIL)	ON	-	
Fuel Pump ON	OFF	-	
Main Relay ON	ON	-	
Throttle Position Closed (Idle)	OFF	-	
Clutch Pedal Switch(MT&ACC Only)	ON	-	
Brake Lamp Switch	OFF	-	
Brake Test Switch	OFF	-	
Power Steering Switch(Optional)	ON	-	

SOUL(AM)/2012/G 2.0 DOH..			
Engine			
Data Analysis			
Stop		Graph	
Selective Display		Actuation Test	
Sensor Name	Value	Unit	Link Up
Relative Charge Value	0.0	%	
Purge Control Valve	3.0	%	
<ul style="list-style-type: none"> Data Information General Information Actuation Test Canister Purge Valve 			
Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	
Injection Time - Inj.3	18.8	mS	
Injection Time - Inj.4	18.8	mS	
MAP Sensor Built-in	YES	-	
MAF Sensor Built-in	NO	-	
Immobilizer Built-in	YES	-	
Ignition Switch	ON	-	
Malfunction Indicator Lamp(MIL)	ON	-	
Fuel Pump ON	OFF	-	
Main Relay ON	ON	-	
Throttle Position Closed (Idle)	OFF	-	
Clutch Pedal Switch(MT&ACC Only)	ON	-	
Brake Lamp Switch	OFF	-	
Brake Test Switch	OFF	-	
Power Steering Switch(Optional)	ON	-	

HOME Online SOUL(AM)/2012/G 2.0 DOH.. VCI Engine

Data Analysis

Stop Graph Selective Display Actuation Test

Sensor Name	Value	Unit	Link Up
Relative Charge Value	0.0	%	
Purge Control Valve	3.0	%	

- Data Information General Information
- Actuation Test Canister Purge Valve

Injection Time - Inj.1	18.8	mS	
Injection Time - Inj.2	18.8	mS	
Injection Time - Inj.3	18.8	mS	
Injection Time - Inj.4	18.8	mS	

Actuation Test

Test item

Canister Purge Valve

- Duration: Until Stop Button
- Condition: IG. ON/ENG.OFF
- Result:

Start

Oil Control Valve - Intake Bank1

Refer to Actuation Test about the detailed explanation.

Actuation Test Interlock

Actuation test list supported by selected system can be checked at the bottom of the Data Analysis screen and it can be performed.

The screenshot shows the 'Data Analysis' screen with the 'Actuation Test' tab selected. The top navigation bar includes 'HOME Online', 'SOUL(AM)/2012/G 2.0 DOH.. Engine', and 'VCI'. Below the navigation are buttons for 'Stop', 'Graph', 'Normal Display', and 'Actuation Test'. A table displays sensor data:

Sensor Name	Value	Unit	Link Up
Injection Time - Inj.1	18.8	mS	[Link Up]
Injection Time - Inj.2	18.8	mS	[Link Up]
Injection Time - Inj.3	18.8	mS	[Link Up]
Injection Time - Inj.4	18.8	mS	[Link Up]
Battery Voltage after IG Key		V	
Actual Engine Speed		RPM	
Target Idle RPM		RPM	
Pressure Sensor(MAP) Signal Voltage		V	

Below the table is an 'Actuation Test' section with a list of test items:

- Engine Check Lamp(MIL)
- Fuel Pump Relay
- Fan Motor Control-High Speed
- Fan Motor Control-Low Speed
- Main Relay
- Canister Purge Valve
- Oil Control Valve - Intake Bank1
- Oil Control Valve - Exhaust Bank 1(Optional)
- Ignition Coil Enable/Disable-#1



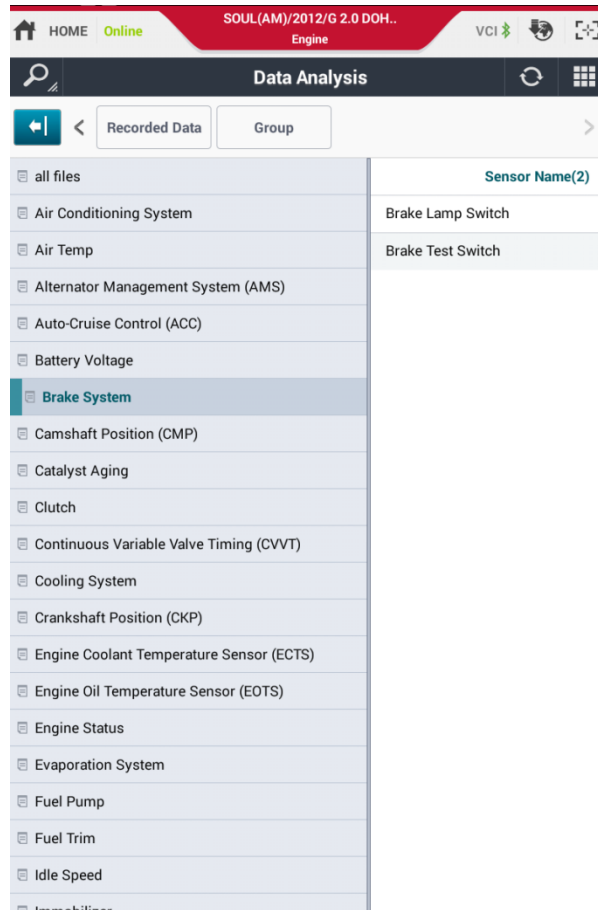
The screenshot shows the 'Data Analysis' screen with the 'Actuation Test' tab selected. The top navigation bar is identical to the first screenshot. The 'Actuation Test' section is expanded to show configuration for 'Fan Motor Control-Low Speed':

- Duration:** Until Stop Button
- Condition:** IG_ON/ENG.OFF
- Result:** [Empty field]

A 'Start' button is visible at the bottom of the configuration area. Below the configuration, the 'Main Relay' test item is partially visible.

Data Item Fix by Grouping

The sensor items are specified by the group as below.



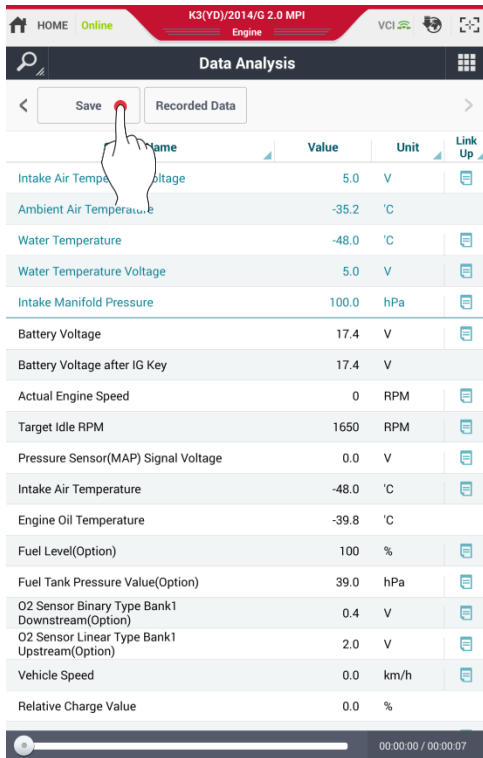
The screenshot shows a mobile application interface for 'Data Analysis'. At the top, there is a status bar with 'HOME Online', 'SOUL(AM)/2012/G 2.0 DOH.. Engine', and 'VCI'. Below this is a navigation bar with a search icon, 'Data Analysis', a refresh icon, and a grid icon. A secondary bar contains 'Recorded Data' and 'Group' buttons. The main content is a list of sensor groups on the left and their corresponding sensor names on the right. The 'Brake System' group is highlighted in blue.

	Sensor Name(2)
all files	
Air Conditioning System	Brake Lamp Switch
Air Temp	Brake Test Switch
Alternator Management System (AMS)	
Auto-Cruise Control (ACC)	
Battery Voltage	
Brake System	
Camshaft Position (CMP)	
Catalyst Aging	
Clutch	
Continuous Variable Valve Timing (CVVT)	
Cooling System	
Crankshaft Position (CKP)	
Engine Coolant Temperature Sensor (ECTS)	
Engine Oil Temperature Sensor (EOTS)	
Engine Status	
Evaporation System	
Fuel Pump	
Fuel Trim	
Idle Speed	
Immobilizer	

Data Save

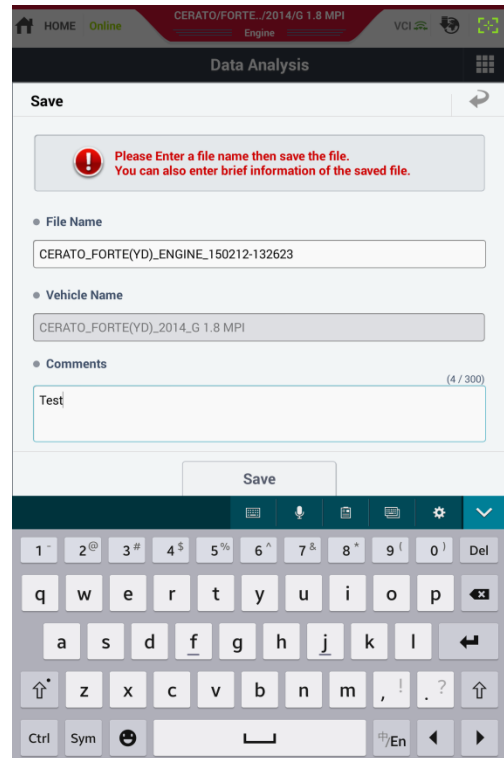
All the data, which has been recorded, will be saved as a file on SD card by pressing the [Save] button.

◆ Text Mode



The screenshot shows the 'Data Analysis' screen with a list of recorded data points. A hand icon is pointing to the 'Save' button located at the top left of the list. The data list includes various parameters such as Intake Air Temperature, Ambient Air Temperature, Water Temperature, and Battery Voltage.

Name	Value	Unit	Link Up
Intake Air Temperature Voltage	5.0	V	
Ambient Air Temperature	-35.2	°C	
Water Temperature	-48.0	°C	
Water Temperature Voltage	5.0	V	
Intake Manifold Pressure	100.0	hPa	
Battery Voltage	17.4	V	
Battery Voltage after IG Key	17.4	V	
Actual Engine Speed	0	RPM	
Target Idle RPM	1650	RPM	
Pressure Sensor(MAP) Signal Voltage	0.0	V	
Intake Air Temperature	-48.0	°C	
Engine Oil Temperature	-39.8	°C	
Fuel Level(Optional)	100	%	
Fuel Tank Pressure Value(Optional)	39.0	hPa	
O2 Sensor Binary Type Bank1 Downstream(Optional)	0.4	V	
O2 Sensor Linear Type Bank1 Upstream(Optional)	2.0	V	
Vehicle Speed	0.0	km/h	
Relative Charge Value	0.0	%	

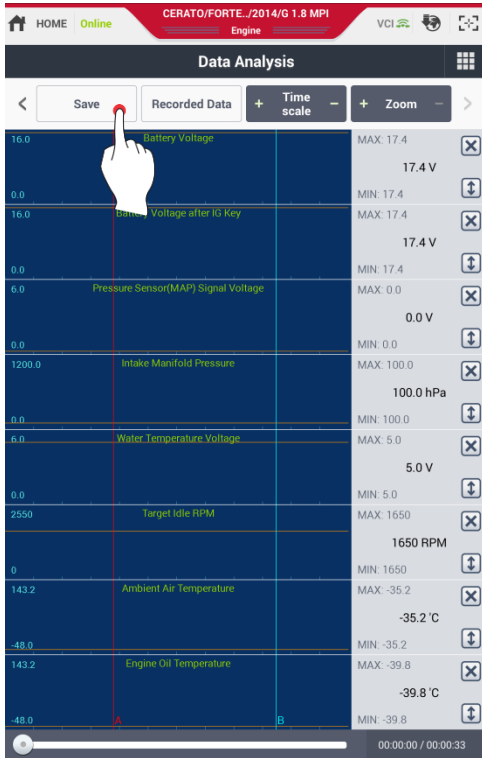


The screenshot shows the 'Save' dialog screen. It prompts the user to enter a file name and vehicle name. The file name is 'CERATO_FORTE(YD)_ENGINE_150212-132623' and the vehicle name is 'CERATO_FORTE(YD)_2014_G 1.8 MPI'. The comments field contains 'Test'. A red warning icon and text are visible at the top of the dialog.

**Please Enter a file name then save the file.
You can also enter brief information of the saved file.**

- File Name
CERATO_FORTE(YD)_ENGINE_150212-132623
- Vehicle Name
CERATO_FORTE(YD)_2014_G 1.8 MPI
- Comments (4 / 300)
Test

◆ Graph Mode



Save

Please Enter a file name then save the file.
You can also enter brief information of the saved file.

- File Name: CERATO_FORTE(YD)_ENGINE_150212-132623
- Vehicle Name: GERATO_FORTE(YD)_2014_G 1.8 MPI
- Comments: Test (4 / 300)

Save

Recorded Data Display

The saved sensor data, which is saved on SD Card, can be loaded and be displayed.

◆ Text Mode

Data Analysis

Recorded Data | Group

Sensor Name	Value	Unit	Link Up
Battery Voltage	11.6	V	
Battery Voltage after IG Key	11.6	V	
Actual Engine Speed	0	RPM	
Target Idle RPM	1100	RPM	
Pressure Sensor(MAP) Signal Voltage	0.0	V	
Intake Manifold Pressure	100.0	hPa	
Water Temperature Voltage	5.0	V	
Water Temperature	-48.0	°C	

Recorded Data

Graph | File Info

Sensor Name	Value	Unit
Actual Engine Speed	0	RPM
Pressure Sensor(MAP) Signal Voltage	0.0	V
Water Temperature	-48.0	°C
Ambient Air Temperature	20.2	°C
Intake Air Temperature	-48.0	°C

00:00:00 / 00:00:19

◆ Graph Mode

Data Analysis

Start | Text | 10.8s | B

Battery Voltage after IG Key: MAX: 11.2, MIN: 11.2, 11.2 V

Actual Engine Speed: MAX: 0, MIN: 0, 0 RPM

Target Idle RPM: MAX: 820, MIN: 820, 820 RPM

Pressure Sensor(MAP) Signal Voltage: MAX: 0.0, MIN: 0.0, 0.0 V

Recorded Data

Graph | File Info

Sensor Name	Value	Unit
Pressure Sensor(MAP) Signal Voltage	0.0	V
Water Temperature Voltage	5.0	V
Water Temperature	-39.8	°C
Intake Air Temperature Voltage	5.0	V
Fuel Level(Optional)	100	%
O2 Sensor Binary Type Bank1 Downstream(Optional)	0.4	V
O2 Sensor Linear Type Bank1 Upstream(Optional)	2.0	V

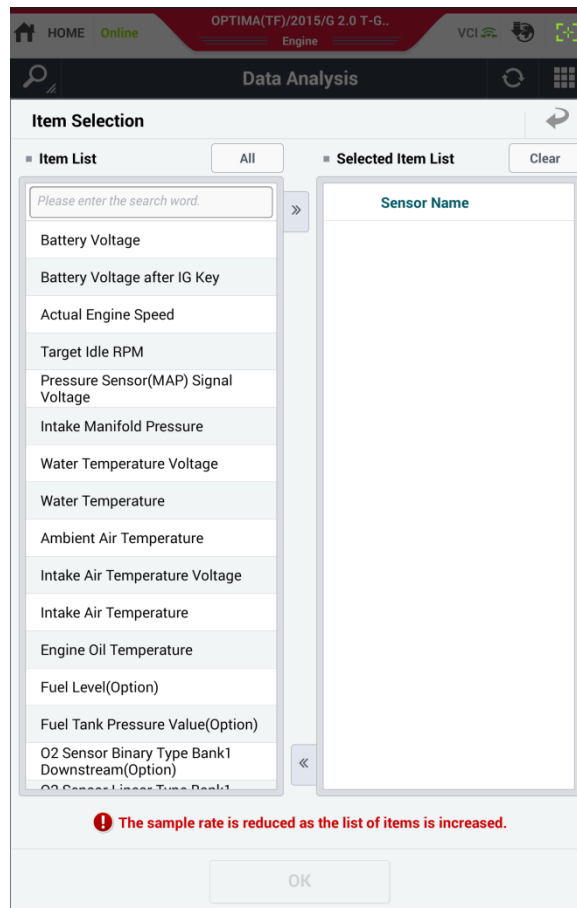
00:00:00 / 00:00:12

	Stops recording sensor data and shows the recorded data.
	Shows the current data value as a graph format. Able to convert to Text format.
	Plays reverse with double speed.
	Plays reverse with normal speed.
	Pauses
	Plays with normal speed.
	Plays with double speed.

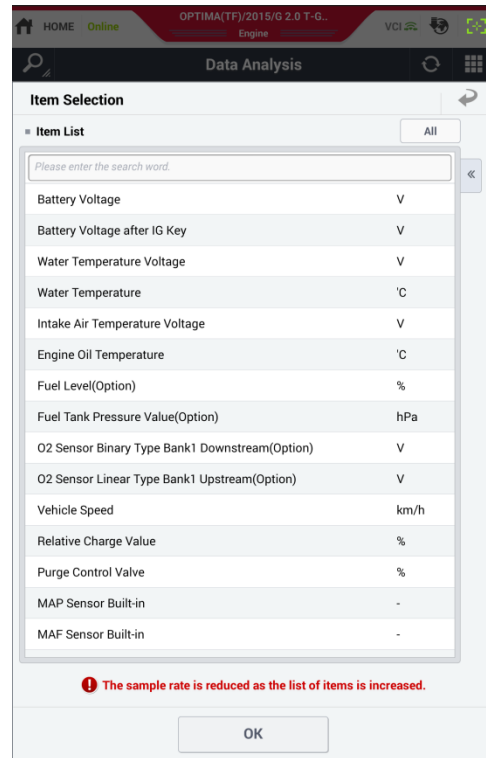
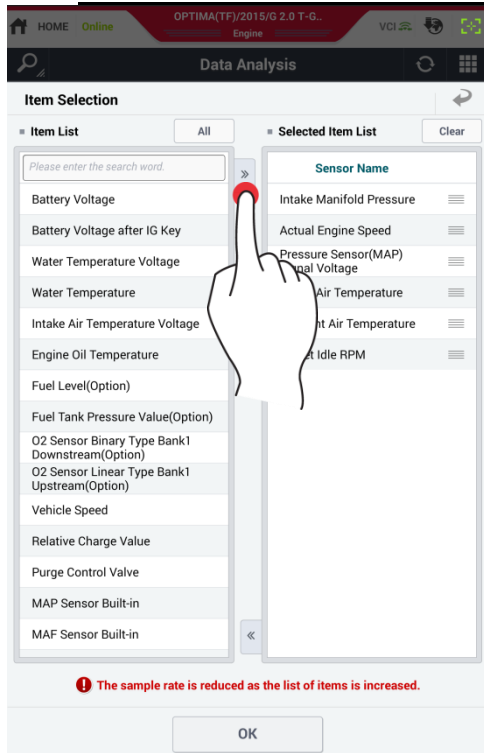
Data Analysis - Graph Mode

◆ Item Selection

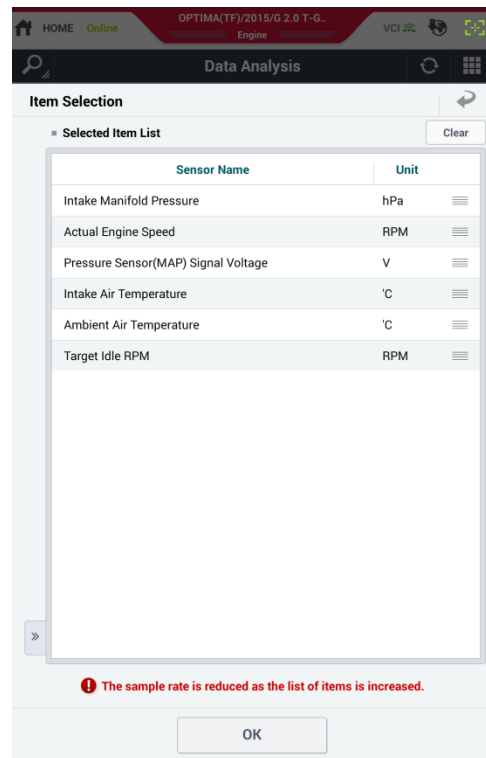
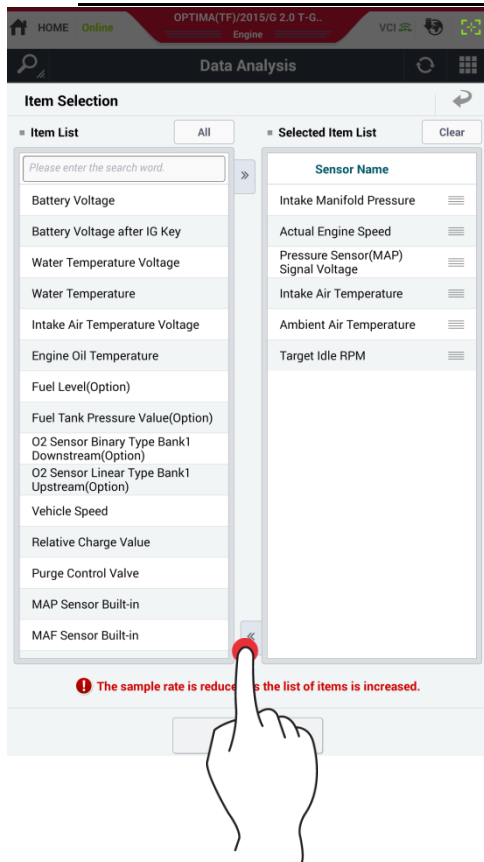
When sensor items are not fixed and switched to on a graph mode, to set the item the “Item Selection” screen appears. Please add / delete a sensor to read the following description.

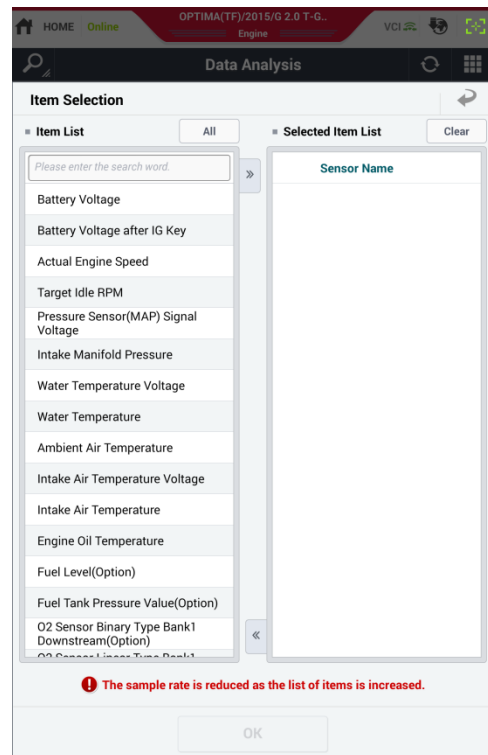
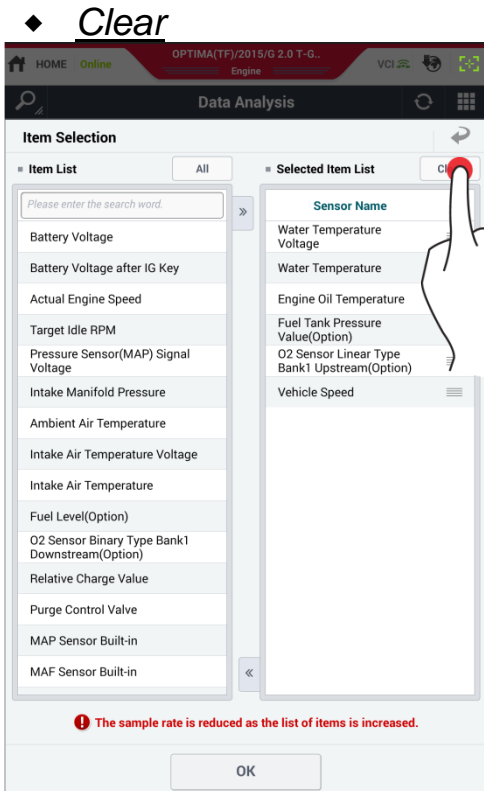
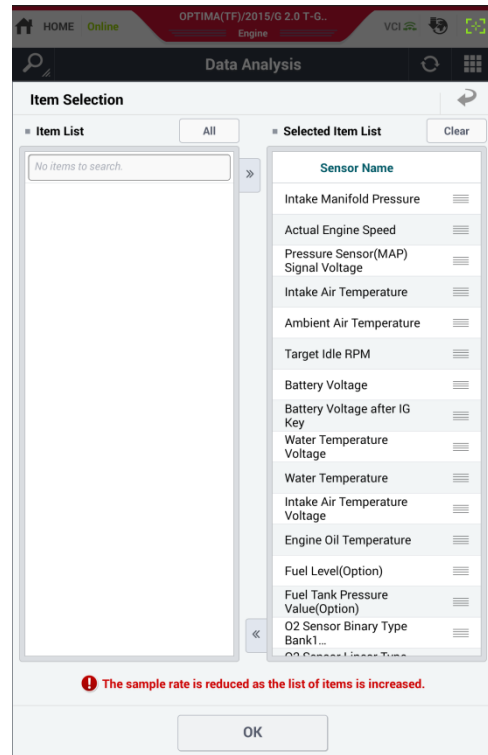
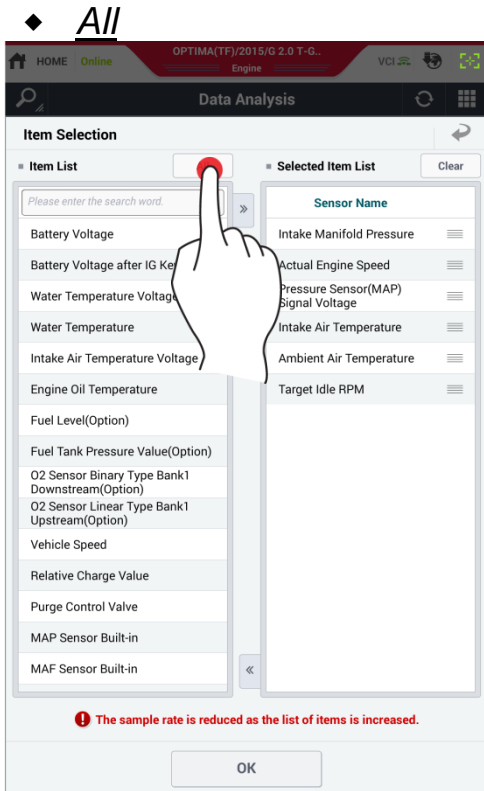


◆ Full Screen for Sensor Item List

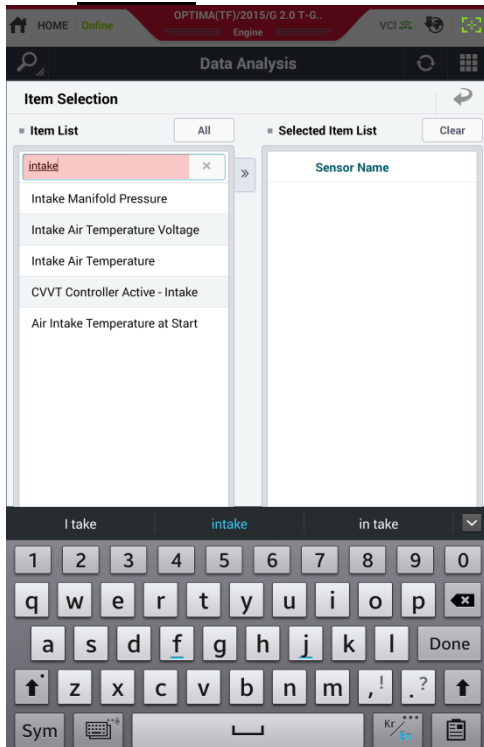


◆ Full Screen for Selected Item list



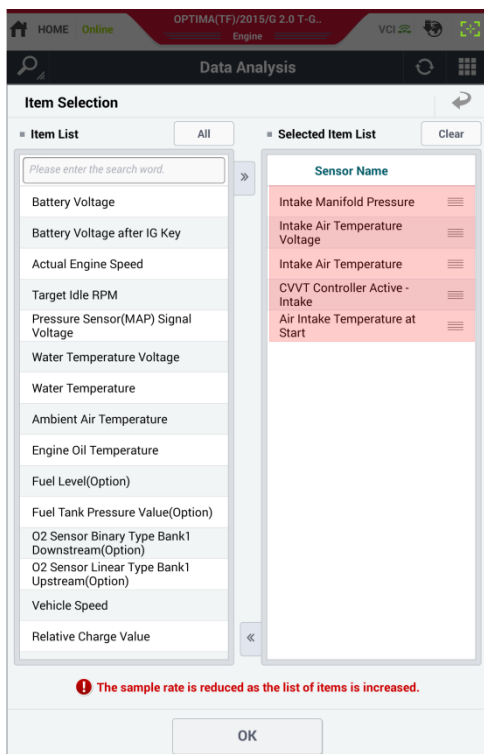


◆ Search



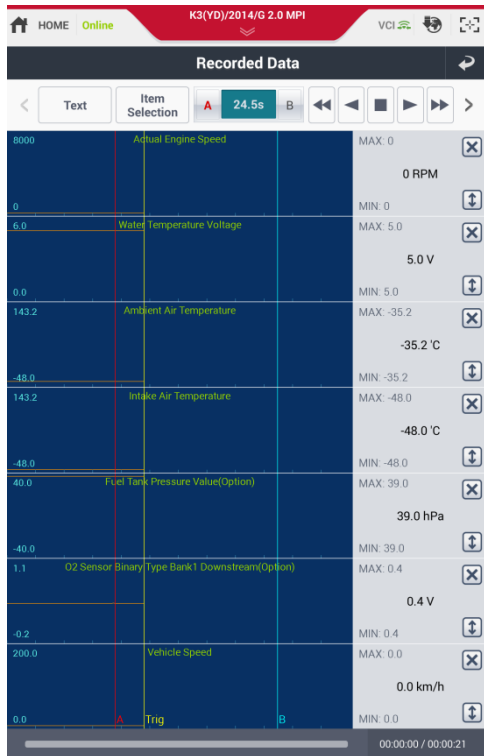
Step1

Enter search word in the search field



Step2


The Searched items are displayed on "Selected Item List".

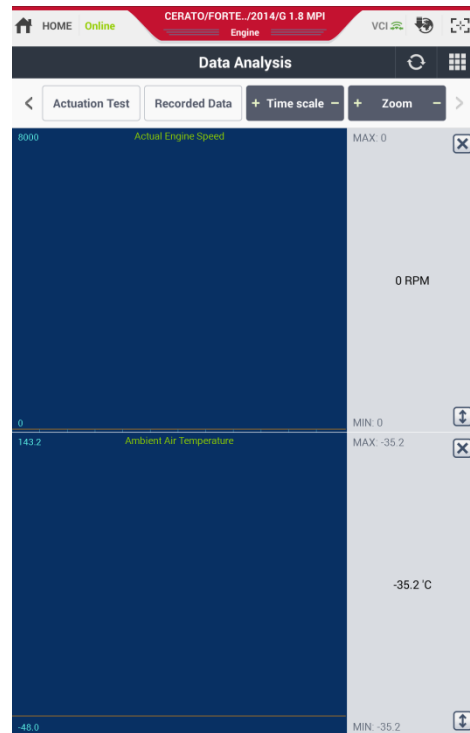
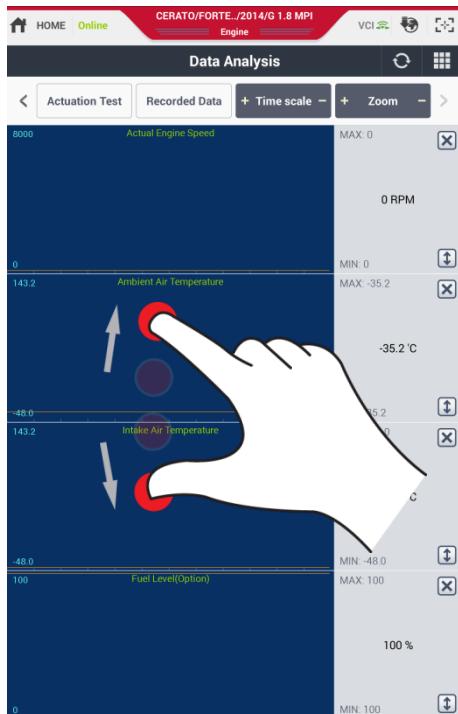


Step3

The graph mode data will be shown on the screen.

◆ Zoom in

Tap (+) on  or perform finger zoom-out on the screen using two fingers(Finger Zoom out) to expand the screen.



◆ Zoom out

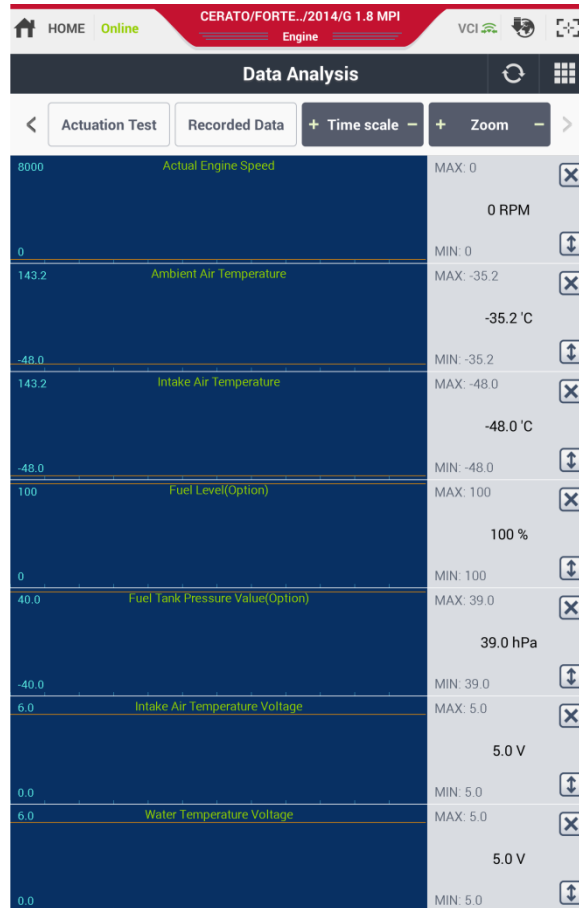
Tap (-) on **+ Zoom -** or perform finger zoom-in on the screen using two fingers(Finger Zoom out) to downsize the screen.



◆ Time scale Control

This is the function to control the time axis on Graph.

- ◆ Time scale + : Reduce one gradation of the time.
- ◆ Time scale - : Extend one gradation of the time.



◆ Recorded Data Review on Graph

Refer to Review Recorded Data



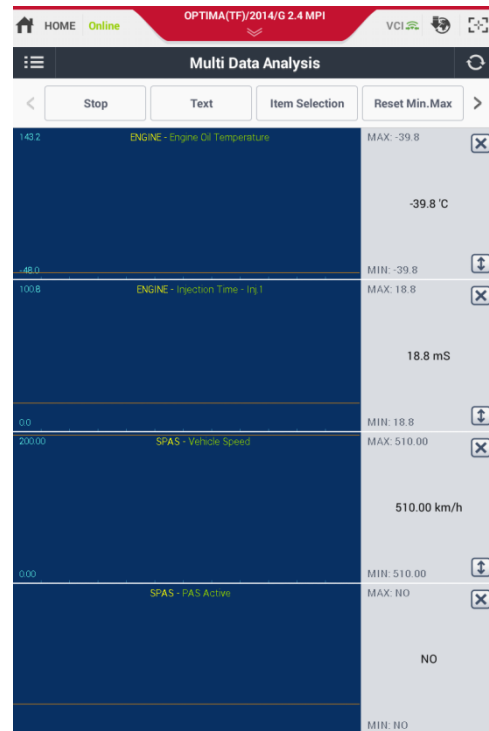
Function to check the input/output information of more than one system on the vehicle and display all of the values on the screen at the same time. This is only for CAN protocol system.

Screen Description

◆ Text Mode

System	Sensor Name(12)	Value	Unit	Link Up
ENGINE	Ambient Air Temperature	20.2	°C	
ENGINE	Intake Air Temperature	-48.0	°C	
ENGINE	Intake Air Temperature Voltage	5.0	V	
ENGINE	Engine Oil Temperature	-39.8	°C	
ENGINE	Injection Time - Inj.1	18.8	mS	
ENGINE	Injection Time - Inj.2	18.8	mS	
ENGINE	Injection Time - Inj.4	18.8	mS	
ENGINE	Injection Time - Inj.3	18.8	mS	
SPAS	Vehicle Speed	510.00	km/h	
SPAS	Trailer Coupled	NO	-	
SPAS	Reverse Gear Status	NO	-	
SPAS	PAS Active	NO	-	

◆ Graph Mode



Notice

☞ This function is only for CAN Protocol systems. So the display may be different from other diagnosis functions (DTC Analysis, Data Analysis, Actuation Test, S/W Management)
 * Refer to the chapter, "Data Analysis"

Multi Data Analysis System Selection



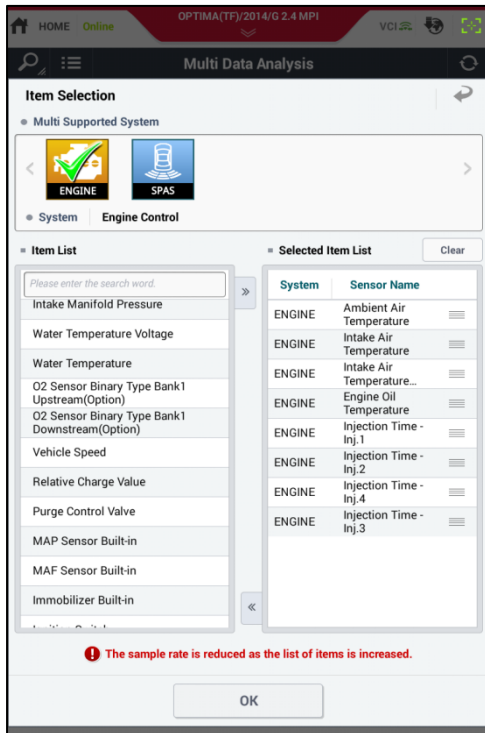
Step 1

- 1 Select systems to diagnose a vehicle. More than one system can be selected.
- 2 Tap [OK] button below.



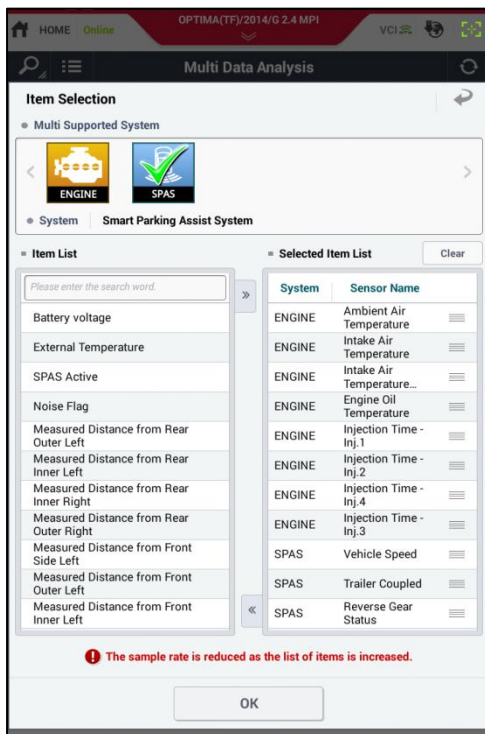
Notice

☞ Only **CAN Protocol** systems display on the Vehicle Selection.



Step2

Select sensor items on each system.



Step3

After selecting the sensor items, tap [OK] button at the bottom of the screen.

The screenshot shows a mobile application interface for 'Multi Data Analysis'. At the top, there is a status bar with 'HOME Online' and 'OPTIMA(TF)/2014/G 2.4 MPI'. Below that, a navigation bar contains 'Multi Data Analysis' and a refresh icon. A control bar has buttons for 'Stop', 'Graph', 'Selective Display', and 'Actuation Test'. The main content is a table with the following data:

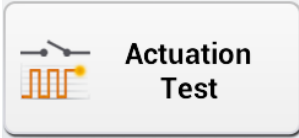
System	Sensor Name(12)	Value	Unit	Link Up
ENGINE	Ambient Air Temperature	20.2	°C	
ENGINE	Intake Air Temperature	-48.0	°C	
ENGINE	Intake Air Temperature Voltage	5.0	V	
ENGINE	Engine Oil Temperature	-39.8	°C	
ENGINE	Injection Time - Inj.1	18.8	mS	
ENGINE	Injection Time - Inj.2	18.8	mS	
ENGINE	Injection Time - Inj.4	18.8	mS	
ENGINE	Injection Time - Inj.3	18.8	mS	
SPAS	Vehicle Speed	510.00	km/h	
SPAS	Trailer Coupled	NO	-	
SPAS	Reverse Gear Status	NO	-	
SPAS	PAS Active	NO	-	

Step4

Check the values of Data Items in the selected systems.

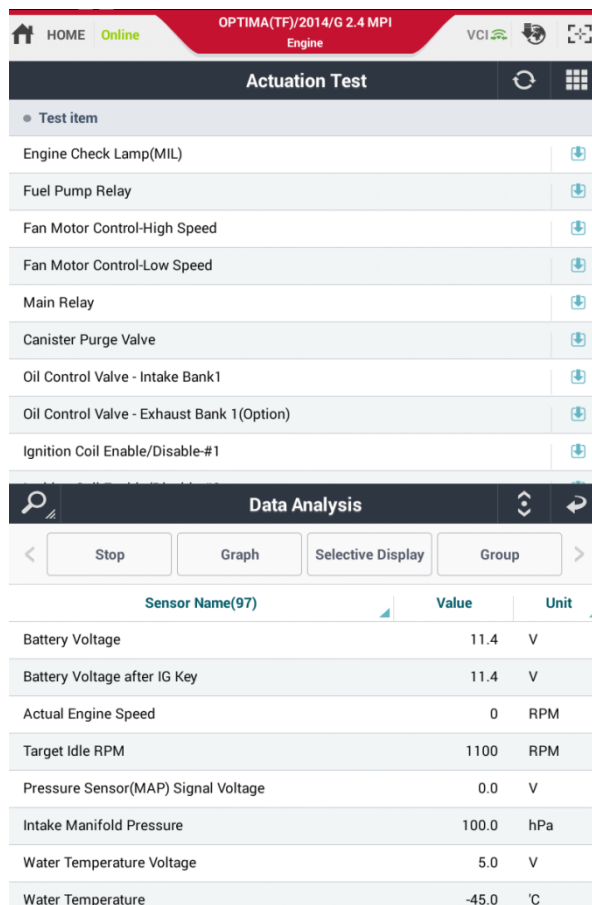
How to use function button of Multi Data Analysis

*Refer to "Data Analysis".



Function to check the sensor or the actuator to see if it works properly.

Screen Description



◆ **Actuation Test**

It displays Actuation Test Item supported on the selected vehicle and operates the selected actuator manually.

◆ **Data Analysis**

It displays the input/output value of sensor data when the user performs Actuation Test

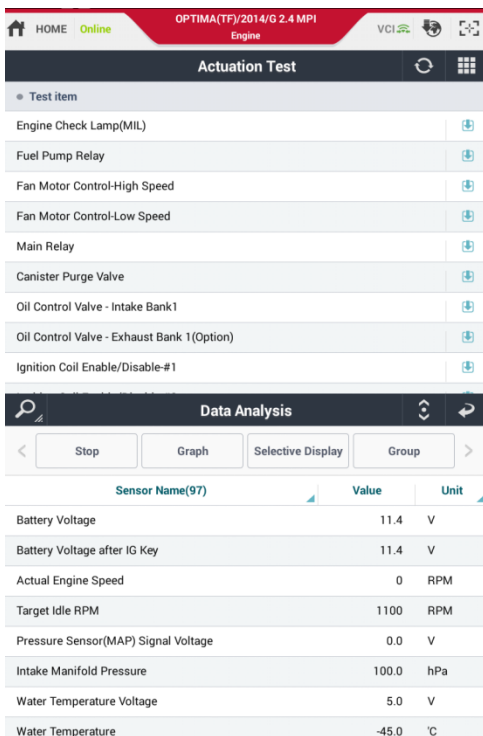
Actuation Test Operation



Step1

Select a vehicle and a system.

* Refer to “Vehicle Selection”



Step2

Select Actuation Test Item on the top screen. Set Sensor Data Item on the bottom screen.

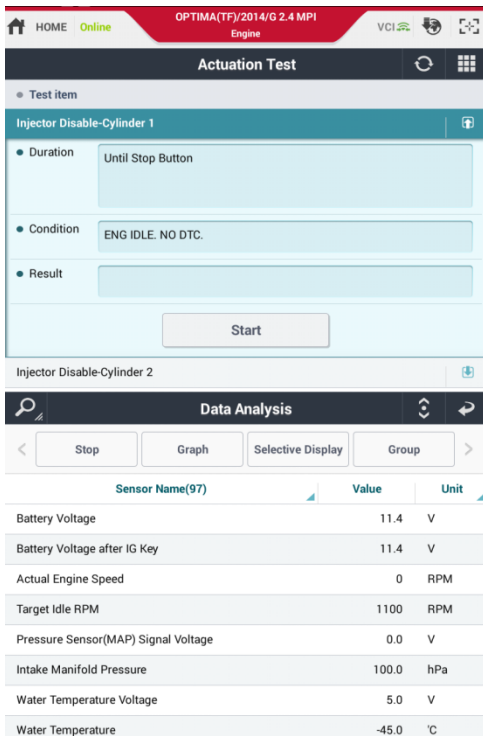
*Refer to “Data Analysis.”



Notice

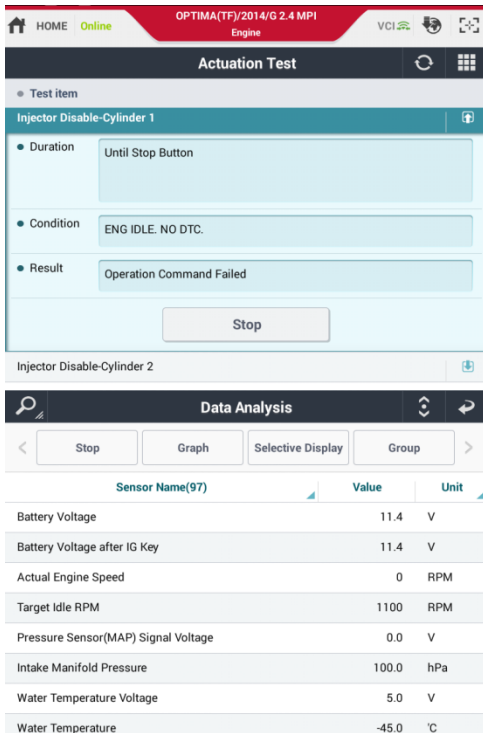


Drag the screen to see the hidden part on Actuation test screen.



Step3

Check Duration and Condition and tap [Start] button below.



Step4

The result of Actuation Test displays on the screen.