Data Analysis









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

Data Analysis

The saved data can be displayed on "Recorded Data."

Data Analysis Screen :Text Mode

HOME Online	SONATA/i45(Y. En	./2014/G 2.4 GDI gine	vci 🚌 🐌	2-3
$\boldsymbol{\mathcal{P}}_{\mu}$	Data A	nalysis	O	
< Stop	Graph	Selective Display	Actuation Test	>
Sensor N	lame(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 Pressu	re	100.0	hPa	
Water Temperature Volt	age	5.0	V	
Water Temperature		-45.0	'C	
Ambient Air Temperatur	re	20.2	'C	
Intake Air Temperature	Voltage	5.0	V	
Intake Air Temperature		-48.0	'C	
Engine Oil Temperature		-39.8	'C	
02 Sensor Binary Type	Bank1 Upstream(Op	tion) 0.4	V	
O2 Sensor Binary Type Downstream(Option)	Bank1	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.

<	Stop	Graph	Selective Display	Actuation Test	>
<	Recorded Data	Group			>

Stop	Stops recording Sensor Data and the data can be saved by clicking the [Save] button. *The button toggles between [Stop] and [Start] button.
Graph	Shows the current data value in a graph format. Able to convert to Text format.
Selective Display	Refreshes data values for specific items. Toggles with [Normal Display] button.
Actuation Test	Performs Actuation test for the selected systems.
Recorded Data	Opens Files and reviews the recorded data on SD card.
Group	Shows sensor data by group
Save	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.

номе	Online	SONATA/i45(Y. En	./2014/G 2.4 GDI gine	vci 🙈 🚯	3-3
		Data A	nalysis	O	
<	Stop	Text	Item Selection	Reset Min/Max	>
16.0		Battery Voltage		MAX: 11.4	×
				11.4 V	
0.0				MIN: 11.4	1
	Ba	ttery Voltage after IG Ke		MAX: 11.4	×
				11.4 V	
				MIN: 11.4	1
8000		Actual Engine Speed		MAX: 0	×
				0 RPM	
				MIN: 0	1
2550		Target Idle RPM		MAX: 1100	×
				1100 RPM	_
				MIN: 1100	1
6.0	Pressure	e Sensor(MAP) Signal Vo	ltage	MAX: 0.0	×
				0.0 V	
				MIN: 0.0	1
1200.0		Intake Manifold Pressur	e	MAX: 100.0	×
				100.0 hPa	
				MIN: 100.0	1
6.0	Wa	ter Temperature Voltage	9	MAX: 5.0	×
				5.0 V	
				MIN: 5.0	1
143.2		Water Temperature		MAX: -45.0	×
				-45.0 'C	
				MIN: -45.0	1

<	Stop	Text	Item Selection	Reset Min/Max	>

<	Actuation Test	Recorded Data	+ Time scale –	+	Zoom	- >	
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Function Buttons

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

Sensor Data Item Search & Sort

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

Search

Tap 2 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 4 button to search.



HOME Online	ELANTRA(MD)	/2014/G 1.8 gine	MPI	VCI 🙃	🖲 🖂
P	Data A	nalysis		ť	Э 🛄
intake					٩
< Stop	Graph	Selective	Display	Actuation	Test >
Sensor Name	(123)		Value	Unit	Link Up
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) Sign	nal Voltage		0.0	V	
Intake Manifold Pressure			100.0	hPa	
Water Temperature Voltage	•		5.0	V	
Water Temperature			-48.0	'C	
Ambient Air Temperature			-35.2	'C	
		I .			* ~
1 ⁻ 2 [@] 3 [#] 4	\$ 5%	6 [^] 7 ⁸	8*	9(0) Del
q w e r	t	y u	i	o p	
a s d	_f g	h	jk	I.	Q
û [•] z x a	: v	b n	m	, [!] .	? 🗘
Ctrl Sym	L			⊕⁄En ◀	
	_				

HOME Online	ELANTRA(ME	0)/2014/G 1.8 MPI Engine	vci 🚌 😽	38
ρ_{\star}	Data	Analysis	Ð	
Please enter the search w	ord.			٩
< Stop	Graph	Selective Display	Actuation Test	>
Sensor Na	ame(123)	Value	Unit	Link Up
Intake Manifold Pressu	re	100.0	0 hPa	
Intake Air Temperature	Voltage	5.0	0 V	
Intake Air Temperature		-48.	0 'C	
CVVT Controller Active	- Intake	OF	F -	
Air Intake Temperature	at Start	-48.	0 'C	E
Battery Voltage		17.4	4 V	
Battery Voltage after IG	Key	17.4	4 V	
Actual Engine Speed			0 RPM	
Target Idle RPM		165	0 RPM	
Pressure Sensor(MAP)	Signal Voltage	0.	0 V	
Water Temperature Vol	tage	5.	0 V	
Water Temperature		-48.	0 'C	
Ambient Air Temperatu	re	-35.1	2 'C	
Engine Oil Temperature		-39.1	8 'C	
Fuel Level(Option)		10	0 %	
Fuel Tank Pressure Val	ue(Option)	39.	0 hPa	
O2 Sensor Binary Type Downstream(Option)	Bank1	0.4	4 V	
O2 Sensor Linear Type Upstream(Option)	Bank1	2.	0 V	

♦ Sort

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

Stop Graph Stop Graph Sensor Name Accelerator Pedal Position Sensor A - Z Accelerator Pedal Position Sensor Z - A ETC Motor Duty Default	s ive Display A Value 0.0 0.0	Ctuation Test	Link Up	Data Ar Please enter the search word. Stop Graph	Selective Display	Actuation Test	
Flease enter the search word. Stop Graph Sensor Name Accelerator Pedal Position Sensor Accelerator Pedal Position Sensor Z-A Default ETC Motor Duty Sensor reference voltage (TEPs)	ive Display A Value 0.0 0.0	ctuation Test Unit	Link Up	Please enter the search word.	Selective Display	Actuation Test	۹ >
Stop Graph Select Sensor Name Accelerator Pedal Position Sensor Accelerator Pedal Position Sensor C - A Default Sensor reference voltane ((TPS))	Value 0.0 0.0	Unit J	> Link Up ∡	< Stop Graph	Selective Display	Actuation Test	>
Sensor Name Accelerator Pedal Position Sensor Accelerator Pedal Position Sensor Z - A ETC Motor Duty Default Sensor reference voltane 1(TPS)	Value 0.0 0.0	Unit 🖌	Link Up 🔺				
Accelerator Pedal Position Sensor Accelerator Pedal Position Sensor Z - A ETC Motor Duty Sensor reference voltane (ITPS)	0.0	V		Sensor Name	Value	Unit	Link Up
Accelerator Pedal Position Sensor Z - A ETC Motor Duty Default Sensor reference voltage 1(TPS)	0.0		Ξ	Accelerator Pedal Position Sensor-1 Voltage	0.0	V	Ξ
ETC Motor Duty Default Sensor reference voltage 1(TPS)		V		Accelerator Pedal Position Sensor-2 Voltage	0.0	v	
Sensor reference voltage 1(TPS)	0.0	%	Ξ	ETC Motor Duty	0.0	%	
construction consign ((1, c))	0.0	v		Sensor reference voltage 1(TPS)	0.0	v	
Sensor Reference Voltage-2	5.0	v		Sensor Reference Voltage-2	5.0	v	
Sensor Reference Voltage-3	5.0	v		Sensor Reference Voltage-3	5.0	v	
Sensor Reference Voltage-4	5.0	v		Sensor Reference Voltage-4	5.0	v	
CVVT State	PASSIVE	¥		CVVT State	PASSIVE		
Current Position of Inlet Camshaft - Bank1	127.1	"CRK	8	Current Position of Inlet Camshaft - Bank1	127.1	*CRK	Ξ
Current Position of Exhaust Camshaft - Bank1(Option)	-112.0	'CRK	8	Current Position of Exhaust Camshaft - Bank1(Option)	-112.0	'CRK	
Control Camshaft Position Setpoint Inlet - Bank1	127.1	*CRK	E	Control Camshaft Position Setpoint Inlet - Ba	nk1 127.1	"CRK	
Control Camshaft Position Setpoint Exhaust (Option)	-112.0	*CRK		Control Camshaft Position Setpoint Exhaust (Option)	-112.0	'CRK	
OCV Holding Pulse Width-Inlet CVVT	14.5	%		OCV Holding Pulse Width-Inlet CVVT	14.5	%	
OCV Holding Pulse Width-Exhaust CVVT(Option)	14.5	%		OCV Holding Pulse Width-Exhaust CVVT(Opt	ion) 14.5	%	

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 2^{nd} image below.

HOME Online	30(GD)/2013/G 1.8 Mi Engine	Ы	VCI 🔍 😽	5-5
\mathcal{P}_{μ}	Data Analysis		0	
< Stop Gr	aph Selectiv	e Display	Actuation Test	>
Sensor Name(103)		Value	Unit	Link Up 🖌
Battery Voltage		11.6	v	
Battery Voltage after IG Key		11.6	V	
Actual Engine Speed	7	0	RPM	
Target Idle RPM	4	1100	RPM	
Pressure Sensor(MAP) Sig	tage	0.0	v	
Intake Manifold Pressure	2	100.0	hPa	
Water Temperature Vo	12	5.0	v	
Water Temperature		-48.0	'C	
Ambient Air Temperate		20.2	'C	
Intake Air Temperature Vo	(5.0	V	
Intake Air Temperature		-48.0	'C	
Engine Oil Temperature	,	-39.8	'C	
02 Sensor Binary Type Bank1 Up	stream(Option)	0.4	V	
02 Sensor Binary Type Bank1 Downstream(Option)		0.4	V	
Vehicle Speed		0.0	km/h	
Relative Charge Value		0.0	%	
Purge Control Valve		0.1	%	
Injection Time - Inj.1		27.0	mS	
Injection Time - Inj.2		27.0	mS	

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 GDS Mobile setting except for the specific units.

HOME Online	SONATA/i45(Y. En	./2014/G 2.4 GDI gine	vci 🔍 😽	5-3
ρ_{\star}	Data A	nalysis	O	
Please enter the search wo	ord.			۹
< Stop	Graph	Selective Display	Actuation Test	2
Senso	or Name	Value	Unit	Link Up 🖌
Ignition Output Value -	Cyl4	0.0	*CRK	
Engine Operating Statu	IS	Stop	-	
Calculated Oil Tempera	iture	-40	'C	
Adapted Ambient Press	sure	999.9	hP	
A/C Pressure Voltage		0.0	v	
A/C Pressure		0	psi	
Internal Resistance of I	Upstream Oxygen Se	nsor 65535	<u></u>	T
Internal Resistance of I Sensor	Downstream Oxygen	65535	77	(' '
Required Lambda		1.0	(
Lambda Sensor Correc	tion Value - Bank1	0.0	\backslash	
Off Duration 02 sensor Catalyst Bank1	Heating Upstream	0.0	2	
Off Duration 02 sensor Catalyst Bank1	Heating Downstrean	n 0.0	%	(
Fuel Adaption (Idle) - B	ank1	0.0	%	_)
Fuel Adaption (Part Loa	ad) - Bank1	0.0	%	
Ambient Air Temperatu	ire	20.2	'C	
Intake Manifold Pressu	ire	100.0	hPa	
Pressure Sensor(MAP)	Signal Voltage	0.0	v	
Water Temperature Vol	tage	5.0	v	

HOME Online	SONATA/i45(Y Eng	/2014/G 2. Jine	.4 GD		VCI	•	5-3
$\mathcal{P}_{\mathbb{A}}$	Data A	nalysis			í	Э	
Please enter the search word.						C	2
< Stop	Graph	Selectiv	e Dis	play	Actuation	Test	>
Sensor Nam	e		Va	lue	Unit		Link Up
Ignition Output Value - Cyl4				0.0	°CRK		
Engine Operating Status				Stop			
Calculated Oil Temperature				40	10		
Unit of Measure							P
Default	ml	bar			bar		
hPa	kl	Pa			MPa		
mmHg	in	Hg			psi		
				_			
	0	K					
Lambda Sensor Correction V	alue - Bank I			0.0	%	-	E
Off Duration O2 sensor Heati Catalyst Bank1	ng Upstream			0.0	%		
Off Duration O2 sensor Heat Catalyst Bank1	ng Downstrean	n		0.0	%		
Fuel Adaption (Idle) - Bank1				0.0	%		
Fuel Adaption (Part Load) - B	ank1			0.0	%		
Ambient Air Temperature				20.2	'C		
Intake Manifold Pressure				100.0	hPa		
Pressure Sensor(MAP) Signa	al Voltage			0.0	v		
Water Temperature Voltage				5.0	V		

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.

HOME Online	i30(GD)/20 En	13/G 1.8 MP gine	<u>'</u>	vci 🔍 😽	9-5-3
\mathcal{P}_{μ}	Data A	nalysis		÷	
< Stop	Graph	Selective	Display	Actuation Tes	t >
Sensor Na	ame(103)		Value	Unit	Link Up 🖌
Water Temperature Volta	age		5.0	v	
Intake Manifold Pressur	e		100.0) hPa	
Intake Air Temperature			-48.0) 'C	
Target Idle RPM			1100	RPM	
Battery Voltage			11.6	5 V	
Battery Voltage after IG	Кеу		11.6	5 V	
Actual Engine Speed			(RPM	
Pressure Sensor(MAP)	Signal Voltage		0.0	v	
Water Temperature			-48.0	o 'C	
Ambient Air Temperatur	e		20.2	2 'C	
Intake Air Temperature	/oltage		5.0	v	
Engine Oil Temperature			-39.8	3 'C	
02 Sensor Binary Type B	Bank1 Upstream(Op	tion)	0.4	۰ v	
O2 Sensor Binary Type B Downstream(Option)	Bank1		0.4	ŧ V	
Vehicle Speed			0.0) km/h	
Relative Charge Value			0.0) %	
Purge Control Valve			0.1	1 %	
Injection Time - Inj.1			27.0	mS	
Injection Time - Inj.2			27.0) mS	

HOME Online i30(GD)/2013/G 1.8 MPI Engine		vci 📾 🚯	36
P ₁ Dat	ta Analysis		O	
< Stop Graph	Normal D	isplay	Actuation Test	>
Sensor Name(103)		Value	Unit	Link Up 🖌
Water Temperature Voltage		5.0	v	
Intake Manifold Pressure		100.0	hPa	
Intake Air Temperature		-48.0	'C	
Target Idle RPM		1100	RPM	
Battery Voltage			V	
Battery Voltage after IG Key			V	
Actual Engine Speed			RPM	
Pressure Sensor(MAP) Signal Voltage			V	
Water Temperature			'C	
Ambient Air Temperature			'C	
Intake Air Temperature Voltage			V	
Engine Oil Temperature			'C	
02 Sensor Binary Type Bank1 Upstream	n(Option)		V	
O2 Sensor Binary Type Bank1 Downstream(Option)			V	
Vehicle Speed			km/h	
Relative Charge Value			%	
Purge Control Valve			%	
Injection Time - Inj.1			mS	
Injection Time - Inj.2			mS	

HOME Online	130(GD)/20 En	13/G 1.8 MPI gine	vci 📾 🐶	2+3
\mathcal{P}_{μ}	Data A	nalysis	Ð	
< Stop	Graph	Normal Display	Actuation Test	>
Sensor Na	me(103)	Value	Unit	Link Up 🔺
Water Temperature Volta	ge	5.0	v	
Intake Manifold Pressure	2	100.0) hPa	
Intake Air Temperature		-48.0) 'C	
Target Idle RPM		1100	RPM	
Battery Voltage			v	
Battery Voltage after IG H	(ey		v	
Actual Engine Speed			RPM	
Pressure Sensor(MAP) S	ignal Voltage		v	
Water Temperature			'C	
Ambient Air Temperature	9		'C	
Intake Air Temperature V	oltage		v	
Engine Oil Temperature			'C	
02 Sensor Binary Type B	ank1 Upstream(Op	tion)	v	
02 Sensor Binary Type B Downstream(Option)	ank1		V	
Vehicle Speed			km/h	
Relative Charge Value			%	
Purge Control Valve			%	
Injection Time - Inj.1			mS	
Injection Time - Inj.2			mS	

Step1

2

Fix the sensor item

Tap [Selective Display] button above.

Link Up

When there is Service Information or Actuation Test item for each sensor Item, \Box 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, \square will be shown on the right side of each sensor item bar.

$\boldsymbol{\rho}_{_{\!\scriptscriptstyle \!$	Data A	nalysis		C)
Please enter the search wor	d.				Q
Stop	Graph	Normal	Display	Actuation T	est >
Sensor	Name		Value	Unit	Link Up
VIS Control State			->-	Actuation	Test
Cooling Fan Relay - Low				Data Infor	mation
Cooling Fan Relay - High			ON	-	
O2 Sensor is Ready for (Upstream	Operation-Bank1		OFF	-	
02 Sensor is Ready for (Downstream	Operation-Bank1		OFF	-	
Lambda Fuel Trim Active	Downstream - Ban	k1	OFF		
Overheat Protection Acti	ve - Bank1		OFF		
CVVT Controller Active -	Intake		OFF		
CVVT Controller Active -	Exhaust(Option)		OFF		
Knock Detected - S1B1			OFF	-	
AMS Stop Reason - Wipe	er(AMS)		OFF		
Reference Timer Started	at IG ON		2174	Sec	
			20.2	'C	
Water Temperature at St	art				

D,		Data An	alysis	0	Į
Please	enter the search wor	d.			۹,
<	Stop	Graph	Normal Display	Actuation Test	;
., .	Sensor	Name	Value	Unit	Lir
VIS Co	ntrol State		OFF		E
Cooling	g Fan Relay - Low		ON		
Cooling	g Fan Relay - High		ON	-	
02 Sen Upstre	isor is Ready for (am	Operation-Bank1	OFF	-	E
O2 Sen Downs	isor is Ready for (tream	Operation-Bank1	OFF		E
Lambd	a Fuel Trim Active	Downstream - Bank	1 OFF		E
Overhe	at Protection Acti	ve - Bank1	OFF		
суут с	Controller Active -	Intake	OFF		E
суут с	Controller Active -	Exhaust(Option)	OFF		E
Knock	Detected - S1B1		OFF	-	E
AMS S	top Reason - Wipe	er(AMS)	OFF	-	E
Refere	nce Timer Started	at IG ON	2189	Sec	
Water	Temperature at St	art	20.2	'C	E
Air Inta	ke Temperature a	t Start	39.8	'C	E

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



Actuation Test

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

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

HOME Online SONATA/145(Y/2	014/G 2.4 GDI	VCI 🚌 🍓	38
🔎 Data Ana	alysis	Ð	
Please enter the search word.		0	2
< Stop Graph	Normal Display	Actuation Test	>
Sensor Name	Value	Unit	Link Up
Engine Running Detected		Actuation Tee	
Evap Purge Control Active		Actuation res	
Synchronization Succeed(CMP/CKP)	E	Data Informat	ion
VIS Control State	OFF	1.0	
Cooling Fan Relay - Low	ON		
Cooling Fan Relay - High	ON	-	
O2 Sensor is Ready for Operation-Bank1 Upstream	OFF		
O2 Sensor is Ready for Operation-Bank1 Downstream	OFF	+	
Lambda Fuel Trim Active Downstream - Bank1	OFF	-	
Overheat Protection Active - Bank1	OFF	-	
CVVT Controller Active - Intake	OFF	-	
CVVT Controller Active - Exhaust(Option)	OFF	-	
Knock Detected - S1B1	OFF	-	
AMS Stop Reason - Winer(AMS)	OFF	-	
And drop freudon in per(And)			

HOME Online SONATA/i45(Y	/2014/G 2.4 GDI ine	vci 📾 😽	36
Data Ar	nalysis	÷	
Please enter the search word.		0	۲
< Stop Graph	Normal Display	Actuation Test	>
Sensor Name	Value	Unit	Link Up 🖌
Engine Running Detected	OFF	-	
Evap Purge Control Active	OFF	-	
Synchronization Succeed(CMP/CKP)	OFF		
VIS Control State	OFF	-	
Cooling Fan Relay - Low	ON	-	
Cooling Fan Relay - High	ON	-	
O2 Sensor is Ready for Operation-Bank1 Upstream	OFF	- 1	
O2 Sensor is Ready for Operation-Bank1 Downstream	OFF		
Lambda Fuel Trim Active Downstream - Bank	d OFF	-	
Overheat Protection Active - Bank1	OFF	-	
CVVT Controller Active - Intake	OFF	-	
CVVT Controller Active - Exhaust(Option)	OFF	-	
Knock Detected - S1B1	OFF	-	
AMS Stop Reason - Wiper(AMS)	OFF	-	

HOME Online	i30(GD)/20 En	14/G 1.8 MI gine	Ы	vci 🚌 🎝	282
\mathcal{P}_{μ}	Data A	nalysis		O	
< Stop	Graph	Selectiv	e Display	Actuation Test	>
Senso	r Name(103)		Value	Unit	Link Up 🖌
Battery Voltage			11.6		
Data Information	General Information				
Actuation Test	Fan Motor Control-Hi	gh Speed			
Actuation Test	Fan Motor Control-Lo	w Speed			
Actuation Test	Main Relay				
Battery Voltage after	IG Key		11.6	V	
Actual Engine Speed	I		0	RPM	
Target Idle RPM			1100	RPM	
Pressure Sensor(MA	P) Signal Voltage		0.0	v	
Intake Manifold Pres	sure		100.0	hPa	
Water Temperature V	/oltage		5.0	v	
Water Temperature			-48.0	'C	
Ambient Air Tempera	ature		20.2	'C	
Intake Air Temperatu	ire Voltage		5.0	v	
Intake Air Temperatu	ire		-48.0	'C	
Engine Oil Temperate	ure		-39.8	'C	
02 Sensor Binary Ty	pe Bank1 Upstream(Op	tion)	0.4	v	
02 Sensor Binary Ty Downstream(Option)	pe Bank1		0.4	V	
Vehicle Speed			0.0	km/h	

HOME On	SONATA/	i45(Y/2014/G 2. Engine	4 GDI	VCIA	•	2+3
P	Da	ata Analysis		ś	5	
Please enter the	search word.				Q	
< Stop	p Graph	Normal	Display	Actuation	Test	>
	Sensor Name		Value	Unit		Link Up 🖌
Engine Running	g Detected		OFF	1		
Evap Purge Cor	ntrol Active		OFF	-		
Synchronizatio	on Succeed(CMP/CKP)		OFF			
	Ac	tuation Test		:	î	₽
 Test Item 						
Engine Check L	_amp(MIL)					Ŧ
 Duration 	Until Stop Button					
 Condition 	IG. ON/ENG.OFF					
Result						
		Start				
Fuel Pump Rela	ау					٢

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.

HOME Online SONATA/i45(Y.	./2014/G 2.4 GDI gine	VCI 🙃 🖣	E:
🔎 Data A	nalysis	Ð	
Please enter the search word.			Q
< Stop Graph	Normal Display	Actuation Te	est >
Sensor Name	Value	Unit	Link Up
Engine Running Detected	OFF	1	
Evap Purge Control Active	OFF	-	
Synchronization Succeed(CMP/CKP)	OFF	-	
Actuati ● Test Item	ion Test	ŝ	P
Actuati Test Item Engine Check Lamp(MIL)	ion Test	\$	₽
Actuati • Test Item Engine Check Lamp(MIL) Fuel Pump Relay	ion Test	\$	•
Actuati • Test Item Engine Check Lamp(MIL) Fuel Pump Relay Fan Motor Control-High Speed	on Test	\$	
Actuati • Test Item Engine Check Lamp(MIL) Fuel Pump Relay Fan Motor Control-High Speed Fan Motor Control-Low Speed	on Test	\$	
Actuation Test Item Engine Check Lamp(MIL) Fuel Pump Relay Fan Motor Control-High Speed Fan Motor Control-Low Speed Main Relay	ion Test	٥	
Actuation • Test Item Engine Check Lamp(MIL) Fuel Pump Relay Fan Motor Control-High Speed Fan Motor Control-Low Speed Main Relay Canister Purge Valve	ion Test	\$	
Actuat • Test Item 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	ion Test	\$	
Actual Caracteria	ion Test	٥	

	line E	ngine	VCI 🙃	
	Data	Analysis	1	o I
Please enter the	search word.			Q
< Sto	p Graph	Normal Display	Actuation	Test
	Sensor Name	Value	Unit	t Lii
Engine Runnin	g Detected	0	OFF -	
Evap Purge Co	ntrol Active	(OFF -	
Synchronizatio	on Succeed(CMP/CKP)	(OFF -	
 Test Item 	Actua	tion Test		≎ ∢
 Test Item Engine Check 	Actua Lamp(MiL)	tion Test		≎ • ∣ 6
Test Item Engine Check Ouration	Actuar Lamp(MIL) Until Stop Button	tion Test		€ 4
Test Item Engine Check Duration Condition	Actual Lamp(MIL) Until Stop Button IG. ON/ENG.OFF	tion Test		€ 4
Test Item Engine Check Duration Condition Result	Actual Lamp(MIL) Until Stop Button IG. ON/ENG.OFF	tion Test		€ 4
Test Item Engine Check Duration Condition Result	Actual Lamp(MIL) Until Stop Button IG. ON/ENG.OFF S	tion Test		€ •

Data Item Fix by Grouping

The sensor items are specified by the group as below.



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

HOME Online ELANTRA(MD)/2014/G 1.8		vci 📾 😽	5-3
P ₁ , Data Analysis			=
Save Recorded Data			>
Ser (123)	Value	Unit	Link Up 🖌
Target Idle RPM	1650	RPM	
Actual Engine Speed	0	RPM	
Intake Manifold Pressure	100.0	hPa	
Ambient Air Temperature	-35.2	'C	
Battery Voltage	17.4	v	
Battery Voltage after IG Key	17.4	v	
Pressure Sensor(MAP) Signal Voltage	0.0	v	
Water Temperature Voltage	5.0	v	
Water Temperature	-48.0	'C	
Intake Air Temperature Voltage	5.0	v	
Intake Air Temperature	-48.0	'C	
Engine Oil Temperature	-39.8	'C	
Fuel Level(Option)	100	%	
Fuel Tank Pressure Value(Option)	39.0	hPa	
02 Sensor Binary Type Bank1 Downstream(Option)	0.4	v	
O2 Sensor Linear Type Bank1 Upstream(Option)	2.0	v	
Vehicle Speed	0.0	km/h	
Relative Charge Value	0.0	%	
•	_	00:00:00 / 00:0	0:02



♦ Graph Mode



	Engine	
	Data Analysis	
Save		4
Place	Enter a file name then save th	a filo
You car	also enter brief information	of the saved file.
File Name		
ELANTRA(MD)_ENGI	NE_150226-114907	
e Vehicle Name		
	G 1 8 MPI	
(WD)_2014,	_0 1.0 Mil 1	
Comments		
((4 / 300
Test		(4 / 300
Test		(4 / 300
Test	Save	(4 / 300
Test	Save	(4/300
Test 1 - 2 [@] 3 [#]	Save	(4/300
Test 1 ⁻ 2 [@] 3 [#]	Save	(4/300 8* 9 (0) D i 0 p 4
Test 1 ⁻ 2 [®] 3 [#] q w e	Save 2 4 ^{\$} 5% 6^ 7 ^{&} r t y u	(4/300 8*9(0) i o p 4
Test 1 - 2 [@] 3 [#] q w e a s d	Save Save 4 ⁴ 5% 6^ 7 ⁸ r t y u <u>f</u> g h	(4/300 8°9(0) i o p 4 j k l 44
Test 1 ⁻ 2 [@] 3 [#] q W e a s d \hat{U} z x	Save Save	(4/300 8°9(0) 0 p 4 j k l 4 m ,! .? f

Recorded Data Display

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

Text Mode

Graph Mode



Stop	Stops recording sensor data and shows the recorded data.
Graph	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.

HOME Online	i30(GD)/:	2013/(Engine	G 1.8 MPI		VCI 🙃	🖲 🖂
\mathcal{P}_{μ}	Data	ı Ana	lysis			⊖ Ⅲ
Item Selection						•
= Item List	All		Selected	ltem List		Clear
Please enter the search word.		»	Se	ensor Nar	ne	
Battery Voltage						
Battery Voltage after IG Key						
Actual Engine Speed						
Target Idle RPM						
Pressure Sensor(MAP) Signal Voltage						
Intake Manifold Pressure						
Water Temperature Voltage						
Water Temperature						
Ambient Air Temperature						
Intake Air Temperature Voltag	e					
Intake Air Temperature						
Engine Oil Temperature						
O2 Sensor Binary Type Bank1 Upstream(Option)						
O2 Sensor Binary Type Bank1 Downstream(Option)						
Vehicle Speed		«				
Deletion Observe Vielos						
The sample rate	is reduc	ed as	the list of ite	ms is inc	reased.	
		UK				



HOME Online	I30(GD)/2013/G 1.8 MPI Engine	VCI 🙃 😽	
	Data Analysis	Ð	
tem Selection			₽
Item List		All	
Please enter the search word.			«
Battery Voltage		v	
Actual Engine Speed		RPM	
Pressure Sensor(MAP) Sign	al Voltage	v	
Intake Manifold Pressure		hPa	
Water Temperature Voltage		v	
Water Temperature		'C	
02 Sensor Binary Type Bank	1 Upstream(Option)	v	
02 Sensor Binary Type Bank	1 Downstream(Option)	v	
Vehicle Speed		km/h	
Relative Charge Value		%	
Purge Control Valve		%	
Injection Time - Inj.1		mS	
Injection Time - Inj.2		mS	
Injection Time - Inj.3		mS	
Injection Time - Inj.4		mS	
MAD OLIVIA DUIN IN			
The sample rate	te is reduced as the list of iter	ms is increased.	
	OK		

<u>Full Screen for Selected Item list</u>



n Selection = Selected Item List Sensor Name Battery Voltage after IG Key	(CI
Selected Item List Sensor Name Battery Voltage after IG Key	(CI
Sensor Name Battery Voltage after IG Key	1.0.4	
Battery Voltage after IG Key	Unit	
, , ,	v	
Target Idle RPM	RPM	
Ambient Air Temperature	'C	
Intake Air Temperature Voltage	v	
Intake Air Temperature	'C	
Engine Oil Temperature	'C	





• <u>Clear</u>



HOME Online	i30(GD)/	2013/ Engine	G 1.8 MPI		VCI 🙃	•
0 _{/i}	Data	ı Ana	lysis			0
Item Selection						
Item List	All		= Selected I	tem List		Clear
Please enter the search word.		»	Se	nsor Nar	ne	
Battery Voltage						
Battery Voltage after IG Key						
Actual Engine Speed						
Target Idle RPM						
Pressure Sensor(MAP) Signal Voltage						
Intake Manifold Pressure						
Water Temperature Voltage						
Water Temperature						
Ambient Air Temperature						
Intake Air Temperature Voltage	e					
Intake Air Temperature						
Engine Oil Temperature						
O2 Sensor Binary Type Bank1 Upstream(Option)						
O2 Sensor Binary Type Bank1 Downstream(Option)						
Vehicle Speed		«				
Daladina Okanas Valua						
The sample rate	is reduc	ed as	the list of iter	ns is inc	reased.	



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



or perform finger zoom-out on the screen using two

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.

- <u>Time scale + : Reduce one gradation of the time.</u>
- Time scale : Extend one gradation of the time.

🕇 ном	ME Online	SONATA/i45(Y Eng	/2014/G 2.4 GDI jine	VCI 🙃 🐶	3-3
		Data A	nalysis	Ð	
<	Stop	Text	Item Selection	Reset Min/Max	>
8000		Actual Engine Speed		MAX: 0	×
				0 RPM	
0				MIN: 0	1
2550		Target Idle RPM		MAX: 1100	×
				1100 RPM	
				1111.1100	Î
143.2		Water Temperature	1 1 1	MAX: -45.0	×
				-45.0 'C	
-48.0		1		MIN: -45.0	•
6.0		ake Air Temperature Volta		MAX: 5.0	×
				5.0 V	
0.0				MIN: 5.0	1
143.2		Intake Air Temperature		MAX: -48.0	×
				-48.0 'C	
-48.0				MIN ⁻ -48.0	\$
143.2		Engine Oil Temperature		MAX: -39.8	×
				-39.8 'C	
-48.0				MIN: -39.8	*

♦ 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

		Multi Dat	a Analy	sis		O
<	Stop	Graph	Selectiv	e Display	Actuation Test	>
System	Ser	nsor Name(10)		Value	Unit 🔺	Link Up
ENGINE	Actual Engi	ne Speed		0	RPM	E
ENGINE	Target Idle F	RPM		1100	RPM	
ENGINE	Pressure Se Voltage	ensor(MAP) Signal		0.0	v	
ENGINE	Intake Air Te	emperature Voltage		5.0	V	
ENGINE	Intake Air Te	emperature		-48.0	'C	
ENGINE	02 Sensor E Downstrean	Binary Type Bank1 n(Option)		0.4	v	
ENGINE	Vehicle Spe	ed		0.0	km/h	
AT	Next Gear P	osition		0		Ξ
AT	Shift Contro	l Solenoid Valve E(SS-A)	OFF	-	
AT	Pressure Co Valve(VFS)	ontrol Solenoid "A"		0	mA	

Graph Mode



i 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



Only CAN Protocol systems display on the Vehicle Selection.

HOME Online	2013/0	6 1.8 MPI	VCI 🙃	1 2
	ata A	nalysis		Ð
Item Selection				•
Multi Supported System				
	ESP		P) PB	>
= Item List		= Selected I	tem List	Clear
Please enter the search word.	»	System	Sensor Name	
Battery Voltage		ENGINE	Actual Engine Speed	=
Battery Voltage after IG Key		ENGINE	Target Idle RPM	=
Intake Manifold Pressure		ENGINE	Pressure Sensor(MAP)	-
Water Temperature Voltage		ENGINE	Intake Air Temperature	=
Water Temperature		ENGINE	Intake Air Temperature	-
Ambient Air Temperature		ENGINE	O2 Sensor Binary Type	
Engine Oil Temperature		ENGINE	Vehicle Speed	=
O2 Sensor Binary Type Bank1 Upstream(Option)				
Relative Charge Value				
Purge Control Valve				
Injection Time - Inj.1	«			
The sample rate is reduce	ced as	the list of ite	ms is increased.	
	ок			

Step2

Select sensor items on each system.

HOME Online	/2013/0	6 1.8 MPI	VCIA	🔊 54
$P_{i} := Multi C$	Data A	nalysis		Ð
Item Selection Multi Supported System 				Ŷ
ENGINE A/T System Automatic Transaxle	ESP) (((P) PB	>
= Item List		Selected I	tem List	Clear
Please enter the search word.	»	System	Sensor Name	
Engine RPM		ENGINE	Actual Engine Speed	=
Gear Ratio		ENGINE	Target Idle RPM	=
Shift Control Solenoid Valve A(UD/		ENGINE	Pressure Sensor(MAP)	=
Shift Control Solenoid Valve B(2-6/ B)		ENGINE	Intake Air Temperature	=
Shift Control Solenoid Valve		ENGINE	Intake Air Temperature	=
Shift Control Solenoid Valve D(OD/ C)		ENGINE	O2 Sensor Binary Type	=
Shift Control Solenoid Valve F(SS- B)		ENGINE	Vehicle Speed	=
Torque Converter Clutch Solenoid Valve		AT	Next Gear Position	=
Torque Converter Clutch Control State		AT	Shift Control Solenoid Valv	=
Torque Converter Clutch Slip		AT	Pressure Control	=
Vehicle Speed	«			
The sample rate is redu	ced as	the list of iter	ns is increased.	
	OK			

Step3 After selecting the sensor items, tap [OK] button at the bottom of the screen.

Номе	Online	i30(GD)/201	3/G 1.8 MPI	VCI 📾 😽	56	
\mathcal{P}_{A} := Multi Data Analysis \mathfrak{O}						
<	Stop	Graph	Selective Display	Actuation Test	>	
System	Sen	sor Name(10)	Value	Unit 🔺	Link Up	
ENGINE	Actual Engin	e Speed	0	RPM		
ENGINE	Target Idle R	PM	1100	RPM		
ENGINE	Pressure Se Voltage	nsor(MAP) Signal	0.0	v		
ENGINE	Intake Air Te	mperature Voltage	5.0	V		
ENGINE	Intake Air Te	mperature	-48.0	'C		
ENGINE	02 Sensor B Downstream	inary Type Bank1 (Option)	0.4	v		
ENGINE	Vehicle Spee	ed	0.0	km/h		
AT	Next Gear Po	osition	0	-		
AT	Shift Control	Solenoid Valve E(S	S-A) OFF	-		
AT	Pressure Co Valve(VFS)	ntrol Solenoid A"	0	mA		

Step4

Check the values of Data Items in the selected systems.

How to use function button of Multi Data Analysis *Refer to "Data Analysis".



Actuation Test



Actuation

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

Screen Description

н	OME Online	SONATA/i45(Y. En	/2014/G 2.4 GDI gine	VCI 🕋	😵 🕃
		Actuat	ion Test		0 II
• Tes	t Item				
Engin	e Check Lamp(MIL	.)			J
Fuel F	Pump Relay				J
Fan M	lotor Control-High	Speed			٤
Fan M	lotor Control-Low	Speed			J
Main	Relay				٤
Canis	ter Purge Valve				٢
Oil Co	ntrol Valve - Intake	Bank1			۲
Oil Control Valve - Exhaust Bank 1(Option)					
Ignitic	on Coil Enable/Dis	able-#1			۲
$\overline{\mathbf{O}}$					<u>^</u>
ب		Data A	nalysis		• •
<	Stop	Graph	Selective Display	Grou	p >
	Sens	or Name(97)		Value	Unit
Batter	y 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	Water Temperature				'C

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



HOME Online	SONATA/145(Y. En	./2014/G 2.4 GDI gine	VCI 🙃		2-3	
	Actuat	ion Test		O		
 Test Item 						
Engine Check Lamp(MIL))				۲	
Fuel Pump Relay					۲	
Fan Motor Control-High	Speed				٤	
Fan Motor Control-Low S	peed				۲	
Main Relay					۲	
Canister Purge Valve					٩	
Oil Control Valve - Intake	Oil Control Valve - Intake Bank1					
Oil Control Valve - Exhau	Oil Control Valve - Exhaust Bank 1(Option)					
Ignition Coil Enable/Disa	ble-#1				۲	
\mathcal{P}_{μ}	Data A	nalysis		\$	₽	
< Stop	Graph	Selective Display	Grou	p	>	
Sens	or Name(97)		Value	U	nit 🔺	
Battery Voltage			11.4	v		
Battery Voltage after IG F	<ey< td=""><td></td><td>11.4</td><td>v</td><td></td></ey<>		11.4	v		
Actual Engine Speed			0	RPN	1	
Target Idle RPM 1100					1	
Pressure Sensor(MAP) S	ignal Voltage		0.0	v		
Intelie Manifeld Deserve			100.0	hPa		
Intake Manifold Pressure	2		10010			
Water Temperature Volta	ge		5.0	v		

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

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

HOME Onl	ine	SONATA/i45(Y. En	/2014/G 2.4 GDI gine	VCI 🙃	•	5-3	
		Actuat	ion Test		Ð		
Test Item							
Injector Disable	e-Cylinde	r 1				n	
 Duration 	Until S	top Button					
Condition	ENG ID	LE. NO DTC.					
Result							
	Start						
Injector Disable	-Cylinde	r 2				۲	
\mathcal{P}_{μ}		Data A	nalysis		\$	₽	
< Stop	•	Graph	Selective Display	Grou	ıp	>	
	Sens	or Name(97)		Value	Ur	nit 🔒	
Battery Voltage	Battery Voltage 11			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							

Step3

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

HOME On	SONATA/i45(Y Er	7/2014/G 2.4 GDI ngine	VCIA	🖲 🐼			
	Actua	tion Test		o III			
Test Item							
Injector Disable	e-Cylinder 1			🗊			
 Duration 	Until Stop Button						
 Condition 	Condition ENG IDLE. NO DTC.						
 Result 	Operation Command Faile	d					
Stop							
Injector Disable	-Cylinder 2			۲			
\mathcal{P}_{μ}	Data /	Analysis		€ €			
< Stop	p Graph	Selective Display	Grou	p >			
	Sensor Name(97)		Value	Unit			
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				v			
Intake Manifold	1 Pressure		100.0	hPa			
Water Temperature Voltage 5.0 V				v			
Water Tempera	Water Temperature -45.0 'C						

Step4

The result of Actuation Test displays on the screen.