

# EG Diagnostic program user manual – Introduction

Menu Path	Introduction
Description	Composition of EG diagnostic program for ECU(Engine Control Unit) & DCU(Dosing Control Unit)



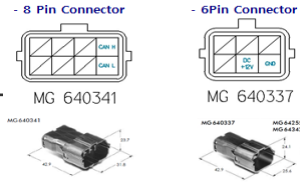
1



Communication tool to serve "CAN", "ISO-K"

Name UVIM (CAN)

2



Diagnostic connector & cable in between UVIM and machine  
- Depends on the application, they use different type of connector

Name Diagnostic connector

3



Cable for laptop and UVIM

Name USB Cable

4



Providing 2 types of SW for ECU & DCU  
- ECU for Engine control unit  
- DCU for Dosing control unit

Name Software

❖ Sequence

❖ Note

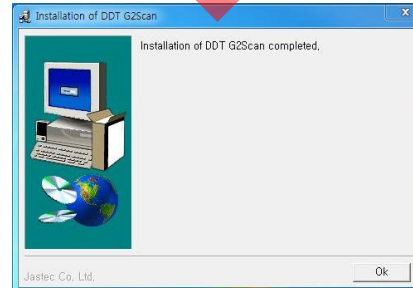
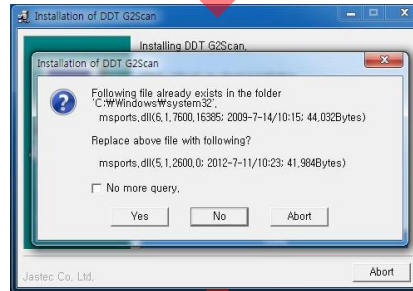
- DCU diagnostic SW for engine with SCR.
- ECU and DCU use same CAN line of the machine and so that can not use ECU and DCU SW at the same time.

**\* have to disconnect each SW and connect ECU or DCU SW.**

# EG Diagnostic program user manual - Installation

Menu Path	Installation
Description	Diagnostic program(SW) & UVIM(CAN communication tool) driver install

## STEP 1



### ❖ Sequence

1. Click "NEXT" or "YES" until completed message shown

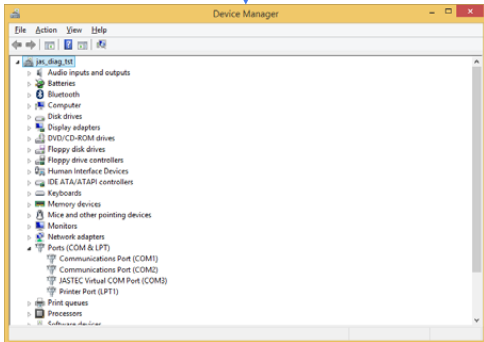
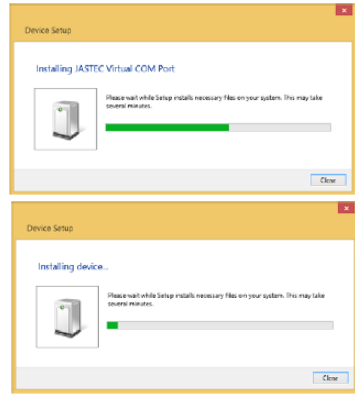
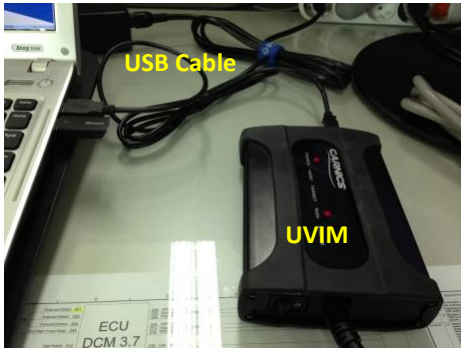
### ❖ Note

- Diagnostic Kit include SW CD, otherwise user asking accessibility for downloading to contact service manager

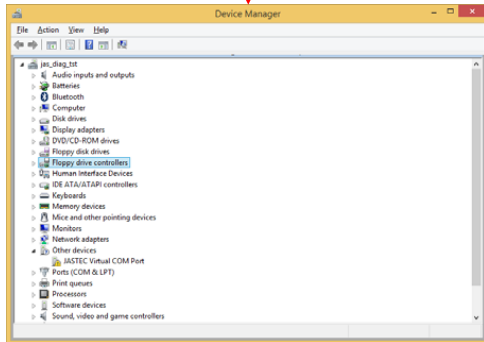
# EG Diagnostic program user manual - Installation

Menu Path	Installation
Description	Diagnostic program(SW) & UVIM(CAN communication tool) driver install

## STEP 2



Case 1  
without yellow exclamation mark



Case 2  
with yellow exclamation mark

### ❖ Sequence

1. Connect UVIM in order device will set up automatically
  2. After device set up, go to "Device Manager" and define the condition as
    - 2.1 Without yellow exclamation mark (Case 1)
    - 2.2 With yellow exclamation mark (Case 2)
- \* driver should be updated manually  
\* go to STEP 2-2

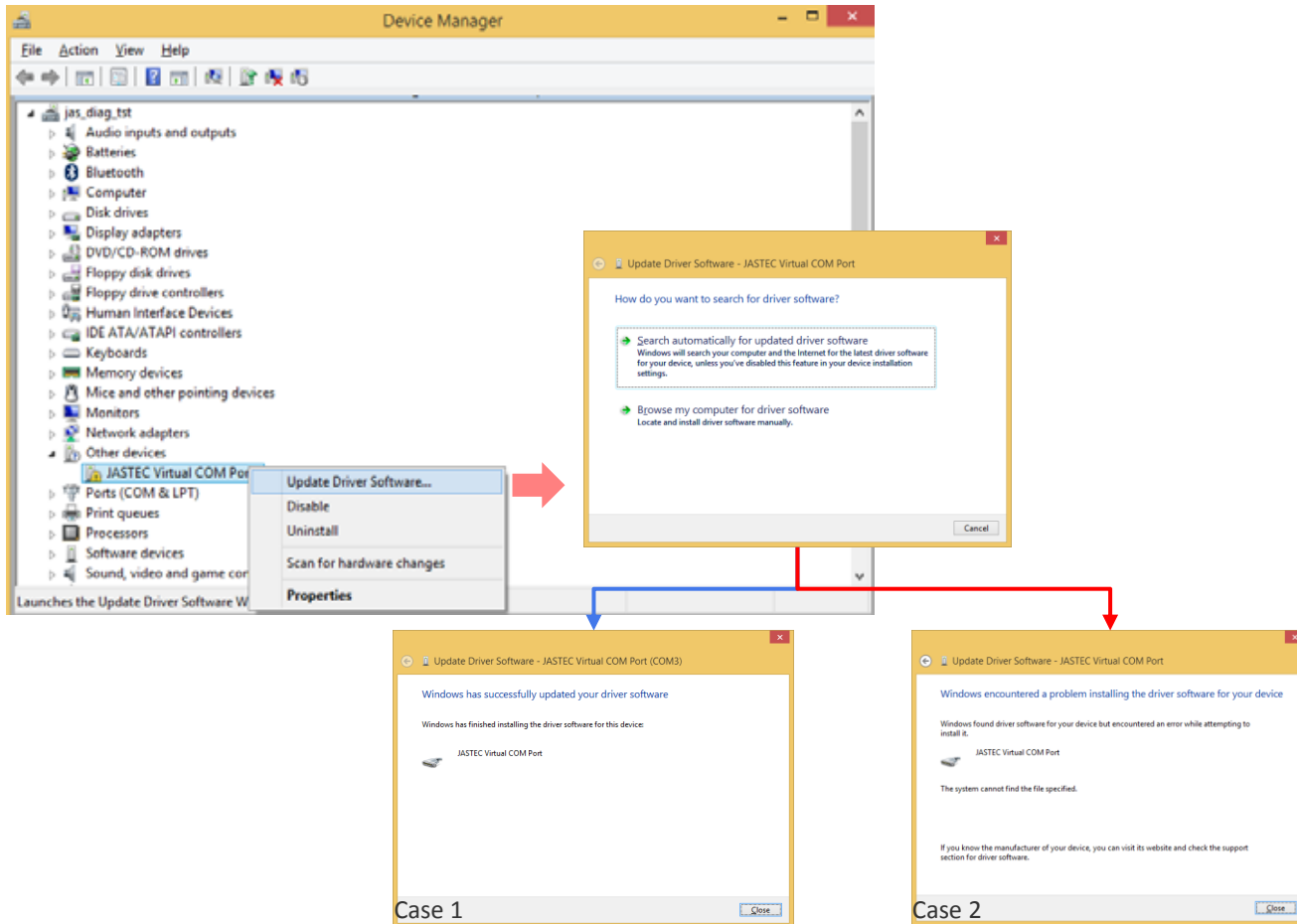
### ❖ Note

- System OS
- > window xp, 7(32, 64bit), 8, 8.1

# EG Diagnostic program user manual - Installation

Menu Path	Installation
Description	Diagnostic program(SW) & UVIM(CAN communication tool) driver install

## STEP 2 (case 2)



### ❖ Sequence

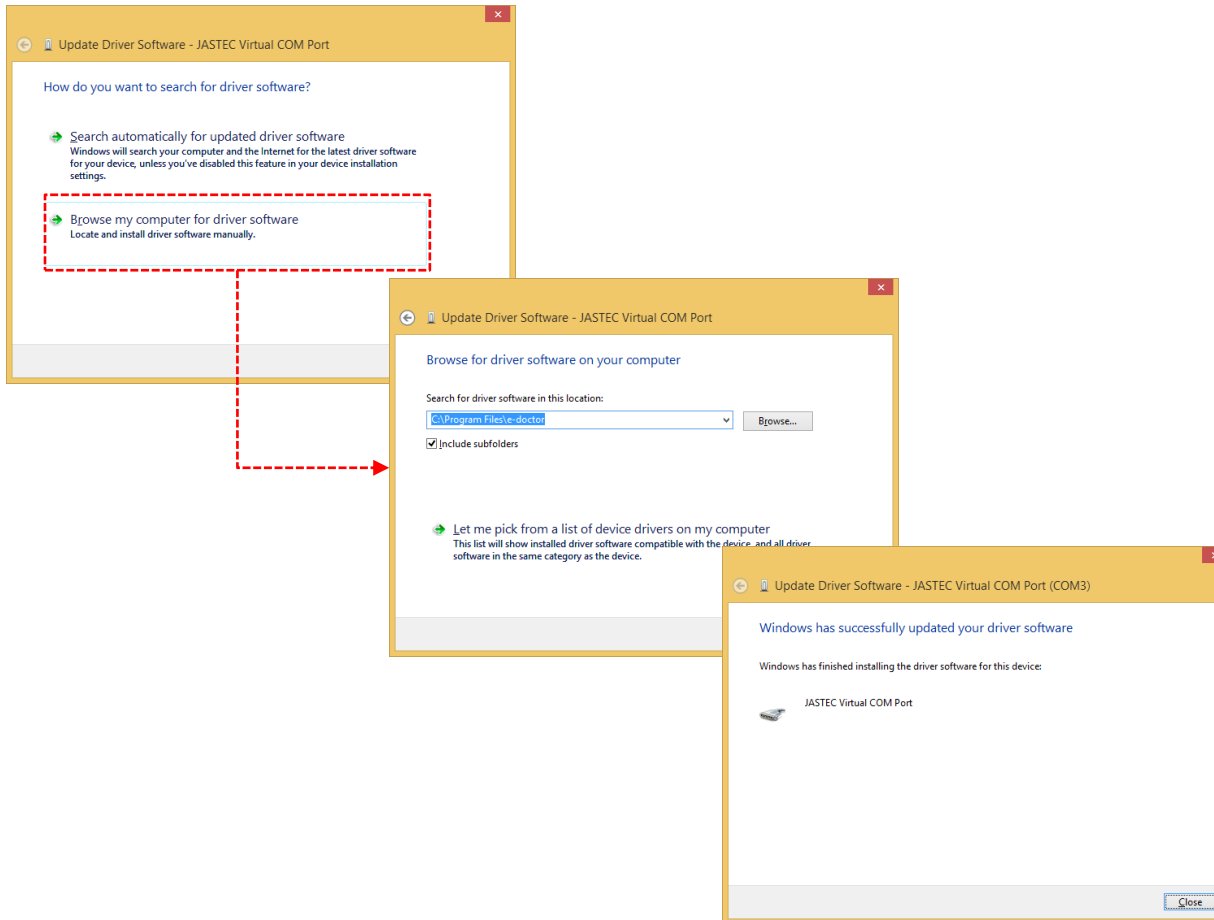
- 2.2 Click "Update Driver Software"
  - Driver searching screen will be shown
  - then click "search automatically for update driver software"
  - \* Case 1 : driver update
  - \* Case 2 : go to 2.3

### ❖ Note

# EG Diagnostic program user manual - Installation

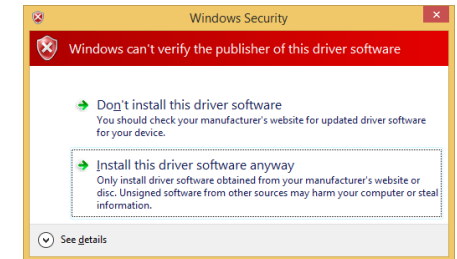
Menu Path	Installation
Description	Diagnostic program(SW) & UVIM(CAN communication tool) driver install

## STEP 2 (case 2)



### ❖ Sequence

- 2.3 Click “Browse my computer for driver software”
  - 32 bit OS : c:\program files\ ~~
  - 64 bit OS : c:\program files(x86)\ ~~
- 2.4 Click “Next” and if ‘Window Security’ shown, click “Install this driver software anyway”



### ❖ Note

# EG Diagnostic program user manual - User Registration

Menu Path	User Registration
Description	Diagnostic program required authentication number for activating tool

## 1. User Registration



Your laptop own has original number

Contact your service manager to get authentication number

## 2. User Security Level (ID & PW)

### ❖ Sequence

#### 1. User registration

- Click program icon then program required “authentication number”
- Contact your service manager to get authentication number

#### 2. User ID & PW

- Create your own ID then contact service manager.
  - > Service manager will provide PW, according to security level

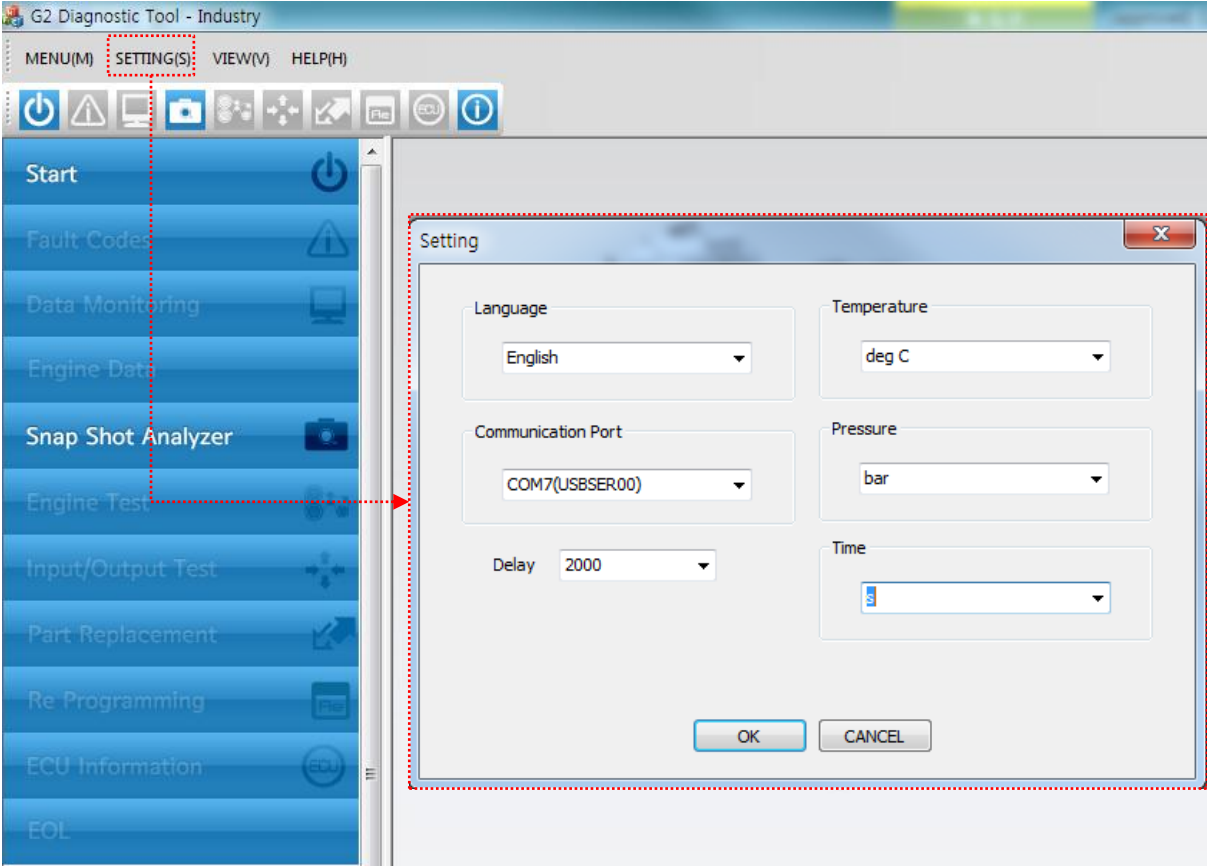
### ❖ Note

- Level 1 : Development (Supervisor)
- Level 2 : OEM (Dealer Service)

# EG Diagnostic program user manual – Program setting

Menu Path	Program user setting
Description	Diagnostic program required initial set up before starting

**Setting**



**❖ Sequence**

1. Setting
  - Language :
    - > English / Korean
  - Communication Port (UVIM driver) :
    - > COMxx(**USBSER00**)
  - Delay : 2000
  - Temperature :
    - > degC, degF, Kelvin
  - Pressure
    - > bar, hpa, kpa, psi
  - Time : s(second)

➔ after set up, click OK then program restart

**❖ Note**

# EG Diagnostic program user manual – Program introduction

Menu Path	Program introduction
Description	Diagnostic program consist of several functions to verify engine condition, fault code detecting and resolving, test, ECU reprogramming

Menu			
Main Menu	Sub Menu		For
Stop			
Fault Codes			Engine Fault Codes / Description / TSG
Data Monitoring	Data Monitoring 1 : Physical data Data Monitoring 2 : Flashing data		Service Data Monitoring (Data Logging)
Engine Data	Engine data 1 / 2 / 3 : sensors value		Engine & Electric Sensor parameter displaying
Snap Shot Analyzer			Engine Data Freeze Frame
Engine Test	RUT / SOT / Compression / Injector buzzing / Injector static IMV dynamic / Injector dynamic		Engine Routine Test for trouble shooting & performance
Input/Output Test	EGR, Glow plug, IMV test		Parts On-Off Test
Part Replacement			For New parts replacing
Re Programming			ECU Map Refreshing
ECU Information			ECU Information
EOL	DeSOx (only for SCR type EG)		EOL Fuel Variant Coding

❖ Sequence

❖ Note



# EG Diagnostic program user manual – Fault code

Menu Path	Fault Code
Description	Fault code menu to find present or historic codes with trouble shooting guide for resolving

Menu

Stop

Fault Codes

Data Monitoring

Engine Data

Snap Shot Analyzer

Engine Test

Input/Output Test

Part Replacement

Re Programming

ECU Information

EOL

Erase DTC ✕
Save as Excel +
15 Fault Detected.

	Fault code	Description	Activity	Help
01	P1623	ECU Safety Monitoring Fault	Present	Freeze Frame
02	P1620	ECU Safety Monitoring Fault	Present	Freeze Frame
03	P1624	ECU Safety Monitoring Fault	Present	Freeze Frame
04	P025A	IMV Drive OC Fault	Present	Freeze Frame
05	P0107	Manifold Pressure Sensor Low Fault	Present	Freeze Frame
06	P0204	Injector Open Fault (Cylinder #4)	Present	Freeze Frame
07	P0203	Injector Open Fault (Cylinder #3)	Present	Freeze Frame
08			Present	Freeze Frame
09			Present	Freeze Frame
10			Present	Freeze Frame
11			Present	Freeze Frame
12			Present	Freeze Frame
13			Present	Freeze Frame
14			Present	Freeze Frame
15			Present	Freeze Frame

**DTC Snapshot**

P0204, Injector 4 fault (open circuit or short circuit)

**Fault Status**

Cause of Fault: Injector 4 open circuit  
 Fault Status: History  
 Warning Lamp: OFF

**SnapShot Data**

Index	Sensor Data	Variable	Value	Unit
1	Indicated torque	T_D_INDICATED_TORQUE	0	Nm
2	The scaled sensor value before validation.	P_L_COOLANT_TEMPERATURE	-40	°C
3	Manifold pressure raw value	P_L_MAP_RAW	0	kPa
4	The engine speed calculated over a single engine cy...	IN_Engine_cycle_speed	0	rpm
5	Linearised air temperature	P_L_INLET_AIR_TEMP_RAW	-40	°C
6	Time for which the engine has been running and sat...	SMC_Engine_running_time_cpy	0	s
7	The scaled sensor value before validation.	P_L_RAIL_PRES_RAW	2470	bar
8	The angular foot pedal position from potentiometer ...	P_L_PEDAL_FOOT_TL_RAW	0	%
9	Raw turbine inlet temperature from sensor reading	P_I_TURR_IN_TEMP_RAW	920	°C

**Click** HELP OK

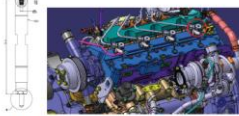
**Fault Code** | **Fault Name**

P0204 | P02 Injector Fault 2

**1) Overview**

CODE	REASON	EFFECT
P0204	Injector 4 open circuit	CS Valve Stop Single Turbocharger

**2) Component Location**



**3) Condition for Running Diagnostic:**  
After engine running

**4) Condition for Setting the Fault Code:**  
The spark is not ignited

**5) Condition for Clearing the Fault Code:**  
The injector 4 is not blocked

❖ **Menu**

- Erase DTC : Erase historic faults
- Save as Excel : Extract fault list as excel

❖ **Indication**

- (1) Fault Code & Description
  - Displaying Present & Historic Fault code & Description
- (2) Activity (Fault Status)
  - Present : Have to Solve
  - Historic : Historical Fault which was solved
- (3) Freeze Frame
  - Providing troubleshooting guide and Freeze Frame data

❖ **Note**

# EG Diagnostic program user manual – Data Monitoring

Menu Path	Data Monitoring -> Data Monitoring 1
Description	Enables to check or logging sensors and service data values

## Data Monitoring 1

> Data Monitoring 1 provide physical or data's which should measure lively to identify engine performance

**Data Excel To**  
State variable showing the condition of the engine

Sel	Num	Service Data	Variable	Value	Unit
<input type="checkbox"/>	001	Battery voltage	P_L_Battery_raw	11.2	V
<input type="checkbox"/>	002	Ignition switch condition	P_L_Igr		
<input type="checkbox"/>	004	First EGR closed position (AD Conversion)	P_L_Eg		
<input type="checkbox"/>	005	Fuel Temp Sensor (physical Value)	P_L_Eng		
<input type="checkbox"/>	007	Turbine inlet temperature (physical value)	P_L_Tu		
<input type="checkbox"/>	008	EGR valve duty cycle	ACM_E		
<input type="checkbox"/>	009	Brake switch condition	IN_Brak		
<input type="checkbox"/>	010	State variable showing the condition of the engine	SMC_ENGINE_STATE	00	
<input type="checkbox"/>	011	P_L_Coolant_temperature	P_L_Coolant_temperature	-40	deg C
<input type="checkbox"/>	084	IN_Engine_cycle_speed	IN_Engine_cycle_speed	0	rpm
<input type="checkbox"/>	084	I_C_Mdp_nb_update_failure_nv	I_C_Mdp_nb_update_failure_nv	0	-
<input type="checkbox"/>	085	Number of MDP update succeed	I_C_Mdp_nb_update success nv	0	-

### ❖ Menu

- Snapshot : Service data logging
- > Auto start : Data logging automatically when fault code raising
- > Manual start : Data logging initiating when user click “Manual Start” and finishing when click “Stop”
- Graph : Displaying selected data as a graph
- Save as Excel : Extract data as excel
- Save Selection : Displaying selected data for users convenience
- Open Selection : open selection file which were stored by users

### ❖ Indication

- (1) Find : Keyword searching
- (2) Sel : Select
- (3) Service Data : Engine vitals
- (4) Value : Current or last time values when engine stop

### ❖ Note



Data Monitoring

# EG Diagnostic program user manual – Data Monitoring

<b>Menu Path</b>	Data Monitoring -> Data Monitoring 2
<b>Description</b>	Enables to check or logging sensors and service data values

## Data Monitoring 2

> Data Monitoring 2 provide flashing memory data (use Save as Excel to identify engine condition before engine run)

The screenshot shows the Data Monitoring 2 interface with a sidebar on the left and a main data table. The sidebar includes options like Stop, Fault Codes, Data Monitoring, Engine Data, Snap Shot Analyzer, Engine Test, Input/Output Test, Part Replacement, Re Programming, ECU Information, and EOL. The main window has a control bar with buttons for Snapshot, Auto Start, Manual Start, Stop, and Frame =. Below this are filters for ALL, All, and Sel, and buttons for Graph, Save as Excel, Save Selection, and Open Selection. A Find button is also present. The data table below lists various engine parameters.

Sel	Num	Service Data	Variable	Value	Unit
<input type="checkbox"/>	003	Last EGR closed position (AD Conversion)	P_L_Egr_close_pos_learnt_nv	880	ADcnt
<input type="checkbox"/>	004	First EGR closed position (AD Conversion)	P_L_Egr_close_pos_mean_nv	880	ADcnt
<input type="checkbox"/>	013	Engine cycle counter array for Injector 1	P_L_Inj_pls_cnt_cycle_inj_nv[0]	0	-
<input type="checkbox"/>	014	Engine cycle counter array for Injector 3 (D18 = Injector 2)	P_L_Inj_pls_cnt_cycle_inj_nv[1]	0	-
<input type="checkbox"/>	015	Engine cycle counter array for Injector 4 (D18 = Injector 3)	P_L_Inj_pls_cnt_cycle_inj_nv[2]	0	-
<input type="checkbox"/>	016	Engine cycle counter array for Injector 2	P_L_Inj_pls_cnt_cycle_inj_nv[3]	0	-
<input type="checkbox"/>	017	All injectors pulse counter array for engine cycles	P_L_Inj_pls_cnt_cycle_nv	0	-
<input type="checkbox"/>	018	Injector 1 pulse counter array for Main injection	P_L_Inj_pls_cnt_main_nv_0	0	-
<input type="checkbox"/>	019	Injector 3 pulse counter array for Main injection (D18 = Injector 2)	P_L_Inj_pls_cnt_main_nv_1	0	-
<input type="checkbox"/>	020	Injector 4 pulse counter array for Main injection (D18 = Injector 3)	P_L_Inj_pls_cnt_main_nv_2	0	-
<input type="checkbox"/>	021	Injector 2 pulse counter array for Main injection	P_L_Inj_pls_cnt_main_nv_3	0	-
<input type="checkbox"/>	022	Pulse counter array for Main and After pulses type Recovery value = 0	P_L_Inj_pls_cnt_main_nv_4	0	-

❖ Menu

❖ Indication

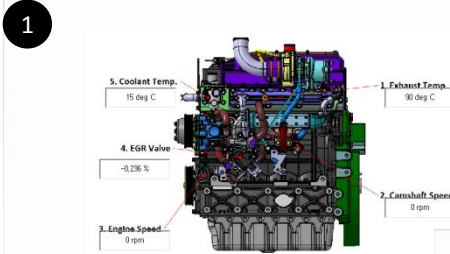
❖ Note

# EG Diagnostic program user manual – Engine Data

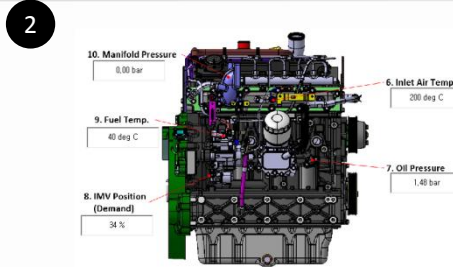
Menu Path	Engine Data 1 / 2 / 3
Description	Displaying engine sensors values

## Engine Data 1 / 2 / 3

- Stop
- Fault Codes
- Data Monitoring
- Engine Data
- Engine Data 1
- Engine Data 2
- Engine Data 3
- Snap Shot Analyzer
- Engine Test
- Input/Output Test
- Part Replacement
- Re Programming
- ECU Information
- EOL



Num	Service Data	Variable
1	DOC in temperature	IN12C_in_temp
2	SPM from Cam sensor (Physical value)	P_L_cam_spm
3	Engine speed	IN_Eng_cycle_speed
4	EGR valve position	IN_Egr_position
5	Coolant temperature	IN_Coolant_temperature



Num	Service Data	Variable
6	temperature	IN_I2_temperature
7	oil pressure	IN_Oil_pressure
8	of IMV	P_L_im_pwm_demand
9	fuel temperature	IN_Fuel_temperature
10	pressure	IN_Manifold_abi_pressure



Num	Service Data	Variable
11	Rail pressure (feedback value)	IN_Rail_pressure_feedback
12	Total fuel injection quantity	FQ2_Chr2_in_fuel_dmand

### ❖ Menu

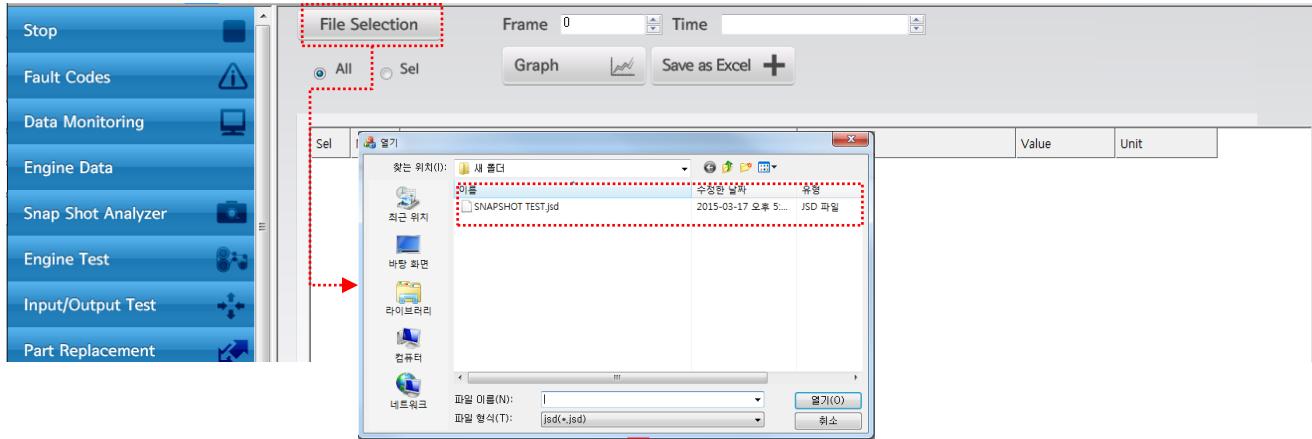
### ❖ Indication

- Engine Data 1
  - > 1. Exhaust Temp
  - > 2. Camshaft Speed
  - > 3. CRS Speed
  - > 4. EGR Valve
  - > 5. Coolant Temp
- Engine Data 2
  - > 6. Inlet Air Temp
  - > 7. Oil Pressure
  - > 8. IMV Position(Demand)
  - > 9. Fuel Temp
  - > 10. Manifold Pressure
- Engine Data 3
  - > 11. Common Rail Pressure
  - > 12. Fuel Injection (Quantity)

### ❖ Note

# EG Diagnostic program user manual – Snap Shot Analyzer

<b>Menu Path</b>	Snap Shot Analyzer
<b>Description</b>	Displaying data which were logged by “Data Monitoring -> Snapshot”










Sel	Num	Service Data	Variable	Value	Unit
<input type="checkbox"/>	001	Battery voltage	P_L_Battery_raw	11.2	V
<input type="checkbox"/>	002	Ignition switch condition	P_L_Ignition_switch	01	
<input type="checkbox"/>	004	First EGR closed position (AD Conversion)	P_L_Egr_close_pos_mean_nv	880	ADcnt
<input type="checkbox"/>	005	Fuel Temp Sensor (physical Value)	P_L_Fuel_temp_raw	-50	deg C
<input type="checkbox"/>	007	Turbine Inlet temperature (physical value)	P_L_Turb_in_temp_raw	920	deg C
<input type="checkbox"/>	008	EGR valve duty cycle	ACM_EGR_VALVE_DRIVE_DUTY_CYCLE	0	%
<input type="checkbox"/>	009	Brake switch condition	IN_Brake_switch	00	
<input type="checkbox"/>	010	State variable showing the condition of the engine	SMC_ENGINE_STATE	00	
<input type="checkbox"/>	011	Coolant temp (physical value)	P_L_Coolant_temperature	-40	deg C
<input type="checkbox"/>	012	Engine speed	IN_Engine_cycle_speed	0	rpm
<input type="checkbox"/>	084	Number of MDP update failed	L_C_Mdp_nb_update_failure_nv	0	-
<input type="checkbox"/>	085	Number of MDP update succeed	L_C_Mdp_nb_update_success_nv	0	-
<input type="checkbox"/>	103	Total soot mas inside the DPF calculated based on model	P_T_Dpf_model_soot_mass_nv	0.0	g
<input type="checkbox"/>	130	Transmission oil temp switch condition	ICV_Oil_trans_temp_switch	00	FALSE/TRUE

- ❖ **Menu**
  - File Selection :
    - > Open \*.jsd file from your laptop which was saved through the Data Monitoring Snap Shot function
- ❖ **Indication**
- ❖ **Note**


# EG Diagnostic program user manual – Engine Test

Menu Path	Engine Test
Description	Performance verification and for fault code trouble shooting

Engine Test

Test	Manual (Click)
Run up test	 Run up test
Shut off test	 SOT
Compression test	 Compression
Injector buzzing test	 Buzzing
Injector static test	 Inj. Static
IMV dynamic test	 IMV dynamic
Injector dynamic test	 Inj. dynamic

- ❖ **Menu**
  - Run up test
  - Shut off test
  - Compression test
  - Injector buzzing test
  - Injector static test
  - IMV dynamic test
  - Injector dynamic test
  
- ❖ **Indication**
  
- ❖ **Note**
  - provide "HELP" bar to get manual for each test


두산인프라코어

# EG Diagnostic program user manual – Input / Output Test

Menu Path	Input / Output Test
Description	Verifying electric parts condition

**Input / Output Test**

**Test Manual**

Throttle Actuator Test

Throttle Position

90% ( 2S ) ( 2S ) ( 2S )  
10% ( 2S ) ( 2S )

Time(s)

Test Condition  
 1. Engine : Stop  
 2. Ignition Key : Key On  
 3. Parking Brake : Parking

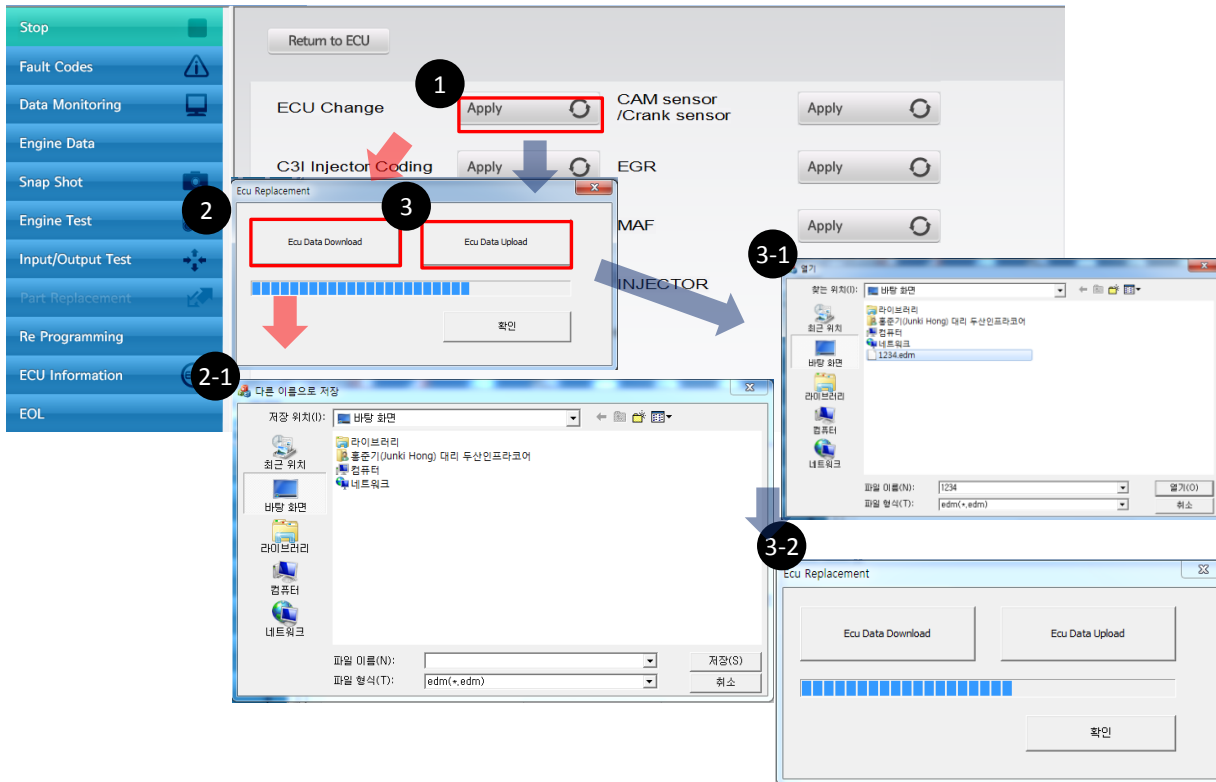
1. Click Graph button
2. Click Start button
3. Throttle position move to 90%
4. After 2 seconds later, position drop to 10% and hold 2 seconds before back to 90%, then repeated practice made like upper graph.

- ❖ **Menu**
  - Item
  - > EGR valve test
  - > Glow plug test
  - > IMV valve test
- ❖ **Indication**
- ❖ **Note**
  - provide “HELP” bar to get manual for each test

# EG Diagnostic program user manual – Part Replacement

Menu Path	Part Replacement -> ECU Change
Description	Reset of last adaptive learning value which was stored in ECU for working efficiency.

## ECU Change



### ❖ Menu

### ❖ Sequence

1. Click ECU Change Apply button
2. Click ECU Data Downloading
  - 2.1 Save your laptop  
- format : \*.edm
3. Click ECU Data Uploading
  - 3.1 Open \*.edm file on your laptop
  - 3.2 Uploading

### ❖ Note



# EG Diagnostic program user manual – Part Replacement

Menu Path	Part Replacement -> C3I Injector Coding
Description	Injector has own identification code which known as C3I / C3I coding aim at to fit proper fuel quantity in between each injector.

## C3I Injector Coding

1

2

2-1

3

20 character consist of alphabet + digit

### ❖ Menu

### ❖ Sequence

1. Click C3I Injector Coding “Apply”
2. Displaying current injectors C3I codes which stored in ECU in production
  - 2.1 Verifying injector C3I code from injector cover and writing codes following the location of injector
3. Click “Write”

### ❖ Note

- If you change one injector only, modifying one injector C3I code at the right injector number
- Without C3I Injector coding process after replacement of injector, fault code rising.

# EG Diagnostic program user manual – Reprogramming

Menu Path	Re-Programming
Description	ECU Map file re-programming

### Re-Programming

- Stop
- Fault Codes
- Data Monitoring
- Engine Data
- Snap Shot
- Engine Test
- Input/Output Test
- Part Replacement
- Re Programming
- ECU Information
- EOL

1. Version of Current ECU SW : UNA41K\_T3\_D24WAP\_F\_F\_62PS\_130319\_2  
Version of Target ECU SW :

2. File Selection

0 (%)

START

3. File Selection: 비스팀W7.B0BCATW03.진단장치WMAPW산차G2WUNA41K\_T3.D24WAP\_F\_F\_62PS.13013  
SW VERSION : UNA41K\_T3\_D24WAP\_F\_F\_62PS\_130130

0 (%)

START

❖ Menu

❖ Sequence

1. Reading current ECU MAP file version
2. Click “File Selection”
  - Level 1 : Can load any kinds of map
  - Level 2 : Limited permission of map re-programming, evaluating current ECU map version
  - \* MAP File format : \*.ulp
3. Click “START”

❖ Note

- After completing, restart after 15 second later
- Erasing remain historic faults of ECU & DCU by each diagnostic SW
  - > Go to Fault Codes of each SW

Fault Codes

> Click

Erase DTC

# EG Diagnostic program user manual – ECU Information

Menu Path	ECU Information
Description	ECU Information

## ECU Information

1	ECU Software	DL03_LEA04_A04_UNF53E
2	ECU Hardware	28377296 40511425
3	Engine Model	D34BEDL03-001518LCF03
4	Flashing User Info.	002099890000
5	Last Programming Date	15-03-17

### ❖ Menu

1. ECU Software : ECU Map information
2. Engine Hardware : ECU serial lot No.
3. Engine Model :  
- Engine Model + Serial + Suffix
4. Flashing User Info : Last person who modifying ECU
5. Last Programming Date : Date of Modification

### ❖ Note

# EG Diagnostic program user manual – EOL (DeSOx)

Menu Path	EOL -> DeSOx(Only for SCR Type EG)
Description	DeSOx for engine with SCR

DeSOx

> Increasing exhaust gas temperature in order to desulphurization of SCR catalyst

Message	Desc	Value	Unit
IN_Engine_cycle_speed	Engine speed	0	rpm
P_T_Dpf_model_soot_mass_nv	Total soot mas inside the DPF calculated ba...	0.0	g
P_T_Regen_state	Regeneration state	00	
FQD_Chkd_post1_fuel_dmnd	Post 1 fuel inection quantity	0	mg/stroke
FQD_Chkd_post2_fuel_dmnd	Post 2 fuel inection quantity	0	mg/stroke
FQD_DPF_REGEN_TARGET_TEMP	Target DOC out temperature (DeSox Mode)	90.0	deg C
P_L_DPF_REGEN_INHIBITED	Regen switch is the inhibited state	00	0

<< Condition >>

- 1) Engine : Running
- 2) Coolant Temp : over 40 degC
- 3) Auto Regeneration : false
- 4) Pedal Position : Below 5%
- 5) Parking Brake : Brake On

- ❖ DeSOx for
  - Forced DeSOx by Driver or Service Engineer
  - Replacing SCR Catalyst
  - Replacing ECU
- > When it end, after treatment system NVM(non-volatile memory) to be removed.
- ❖ DeSOx Test Mode