Component Procedures: Instrument Cluster / Carrier

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Component Procedures: Instrument Cluster / Carrier

Parts and Labor (itype_189)

Parts

Qualifier	Part #	Name	Price	Note
Instruments & Gauges > Instr?	94041F3050	3.5"	637.89	Order By Vehicle Applicati?
Instruments & Gauges > Instr?	94061F3080	4.2"	1462.55	Order By Vehicle Applicati?

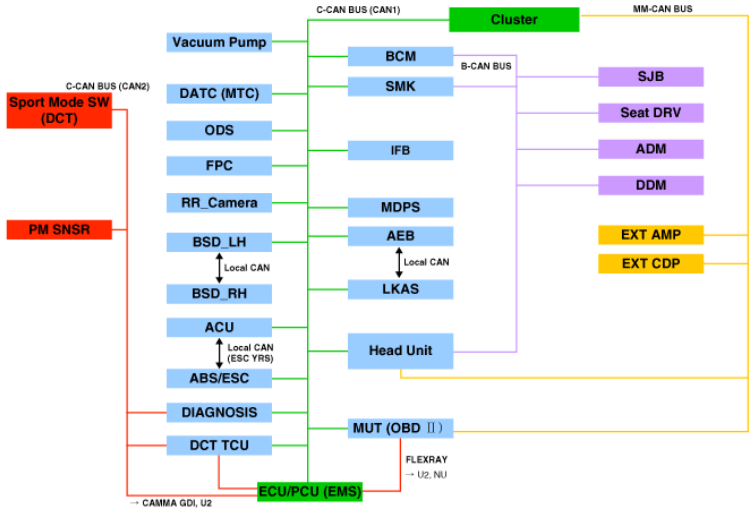
Labor

Operation	Qualifier Path	Skill	Std Hrs	Wty Hrs
Remove & Replace	Instruments & Gauges > Instrument Cluster, R&R	B	0.7	0.0

Instrument Cluster - Description and Operation (Article 44589)

- Description

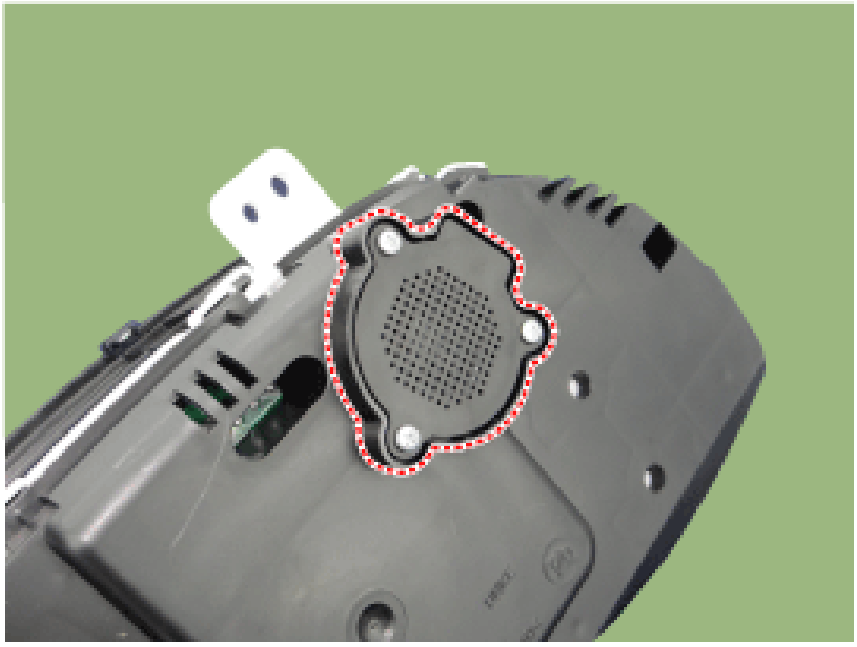
Communication Network Diagram



※ CAN : Controller Area Network

Abbreviation Expalnation
ACU Airbag Control Unit
ADM Assist Door Module
B_CAN Body Controller Area Network
BCM Body Control Module
BSD Blind Spot Detection
C_CAN Chassis Controller Area Network
CLU Cluster Module
DATC Dual Automatic Temp Control
DDM Driver Door Module
ESC Electronic Stability Program
EMS Engine Management System
LKAS Lane Keeping Assist System
M_CAN Multi media Controller Area Network
MDPS Motor Driven Power Steering
P_CAN Powertrain Controller Area Network
PSM Power Seat Module
SAS Steering Angle Sensor
SJB Smart Junction Block
SMK Smart Key Unit
PAS Parking Assist System

TCU Transmission Control Unit
TPMS Tire Pressure Monitor ing System
VDC Vehicle Dynamic Control
TMU Telematics System
ABS Anti-lock Brake System
SCC Smart Cruise Control
Cluster Variant Coding
Function
- High speed CAN communication (C-CAN) Custom Function : Boarding interlocking sheets, Welcome Light LDWS : Lane Departure Warning System SPAS: Smart Parking Assist System
- Custom Function : Boarding interlocking sheets, Welcome Light
- LDWS : Lane Departure Warning System
- SPAS: Smart Parking Assist System
- Low speed CAN communication (MM-CAN) AV : Audio / Video Multimedia information Display TBT : Turn By Turn Navigation Information Display
- AV : Audio / Video Multimedia information Display
- TBT : Turn By Turn Navigation Information Display
- Sound output Instrument cluster and the external speakers connected to the output of the various beeps and sound effects. If External AMP is applied, the directional alarm is outputted through the amp. [Standard Type] [Super vision Type] Sound Description and function (CAN data receiver) Welcome Welcome (Key out and door open/closed state checked by BCM) Goodbye Goodbye (Cluster) Door Open warning Kwy reminder warning (BCM), Vehicle speed is 5km/h or below & IGN switch is ACC or IGN or engine start & when vehicle speed is below 5 km/h or when the driver side door is opened Seat belt warning Driver seat belt warning (BCM) PAS System warning PAS sensor fault warning (BCM) Gear R PAS warning when shift gear R (BCM and SPAS) Parking Brake Parking brake warning (BCM) Start button SSB button warning (SMK) Rheostat light information Rheostat warning when select the max or min degree (Cluster) Smart Key departure Smart key out warning (SMK) N0n smart key warning (SMK) Smart Cruise Change from the conventional cruise to the smart cruise(SCC) Smart cruise driving information Smart cruise function cancel (SCC) conventional cruise Change from the smart cruise to the conventional cruise(SCC) Turn signal lamp (Tick) Turn signal lamp warning (BCM) Turn signal lamp (Tock) Turn signal lamp warning (BCM) Smart key battery low voltage Warnig when driver push the SSB button with low voltage battery smart key (SMK) EPB warning Warning when change from Auto Hold to EPB lock (EPB) Coolant temperature alarm When the engine temperature is over 120 ■ (EMS)
[Standard Type]



[Super vision Type]

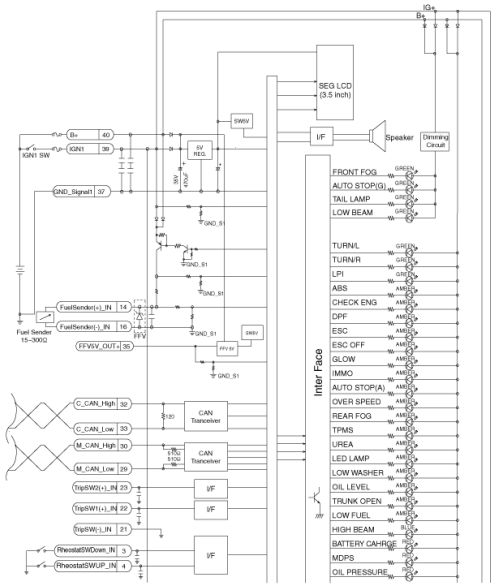
Sound Description and function (CAN data receiver)
Welcome Welcome (Key out and door open/closed state checked by BCM)
Goodbye Goodbye (Cluster)
Door Open warning Kwy reminder warning (BCM), Vehicle speed is 5km/h or below & IGN switch is ACC or IGN or engine start & when vehicle speed is below 5 km/h or when the driver side door is opened
Seat belt warning Driver seat belt warning (BCM)
PAS System warning PAS sensor fault warning (BCM)
Gear R PAS warning when shift gear R (BCM and SPAS)
Parking Brake Parking brake warning (BCM)
Start button SSB button warning (SMK)
Rheostat light information Rheostat warning when select the max or min degree (Cluster)
Smart Key departure Smart key out warning (SMK)
N0n smart key warning (SMK)
Smart Cruise Change from the conventional cruise to the smart cruise(SCC)
Smart cruise driving information Smart cruise function cancel (SCC)
conventional cruise Change from the smart cruise to the conventional cruise(SCC)
Turn signal lamp (Tick) Turn signal lamp warning (BCM)
Turn signal lamp (Tock) Turn signal lamp warning (BCM)
Smart key battery low voltage Warnig when driver push the SSB button with low voltage battery smart key (SMK)
EPB warning Warning when change from Auto Hold to EPB lock (EPB)
Coolant temperature alarm When the engine temperature is over 120 ■ (EMS)
- User Setting Mode (USM) Setting can be changed by using switchs (Menu, UP, Down and OK button). There are many items (for example, In/Out Seat Synchronization, In/Out Steering Wheel Synchronization, Auto Door Lock, Auto Door Lock Deactivate, Head Lamp Escort, Welcome Light, Welcome Sound, One Touch Turn Signal, Average Fuel Consumption Auto Reset, Brightness, and Content Setup) that can be set and customized. The signal flow during setting is as follows. UMS settings are set, they are transmitted to BCM. BCM transmits the settings via B_CAN to the relevant modules. The module completes setting and transmits the modified setting to BCM. BCM transmits the final settings via C_CAN to the cluster. The cluster communicates directly with C-CAN units.
- UMS settings are set, they are transmitted to BCM.
- BCM transmits the settings via B_CAN to the relevant modules.
- The module completes setting and transmits the modified setting to BCM.
- BCM transmits the final settings via C_CAN to the cluster. The cluster communicates directly with C-CAN units.
The cluster communicates directly with C-CAN units.

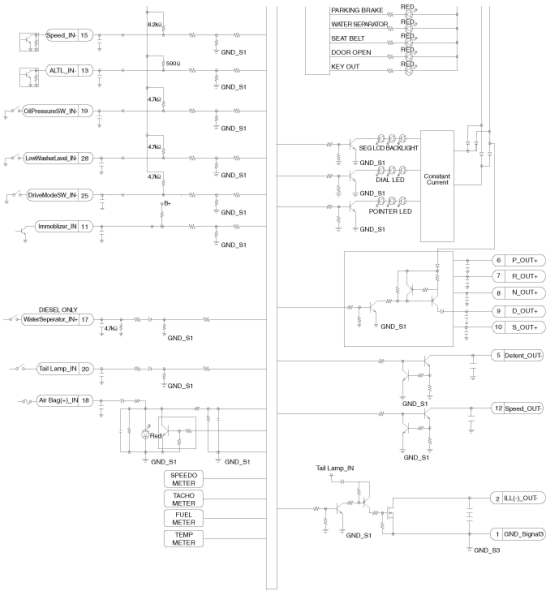
Information

- The cluster communicates directly with C-CAN units.

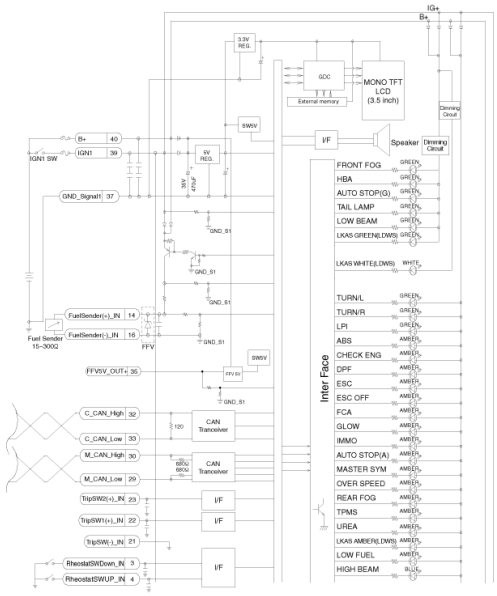
Instrument Cluster - Schematic Diagrams (Article 44588)

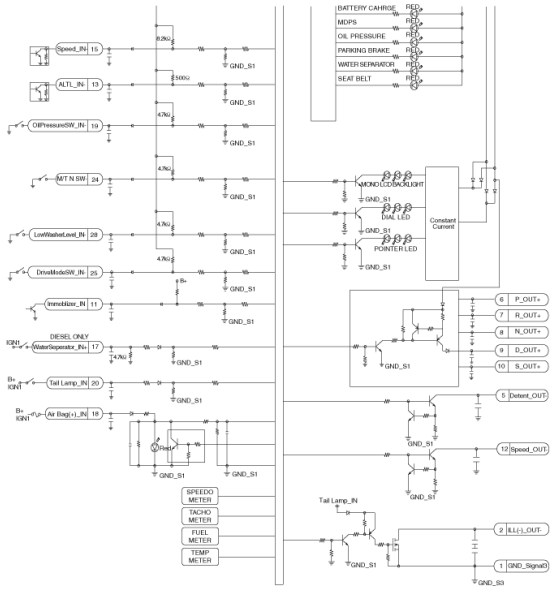
- Circuit Diagram
[General Standard]



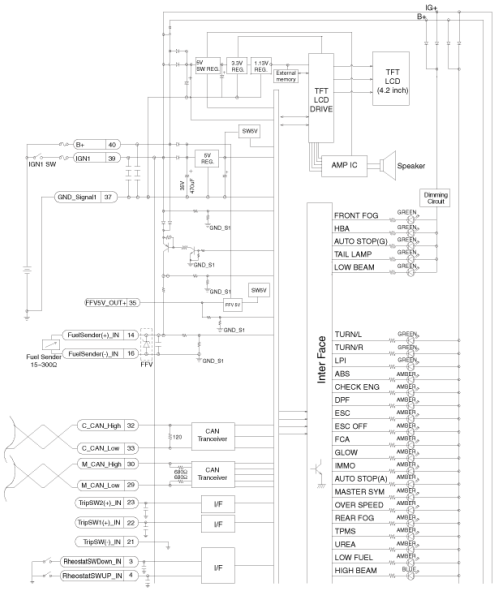


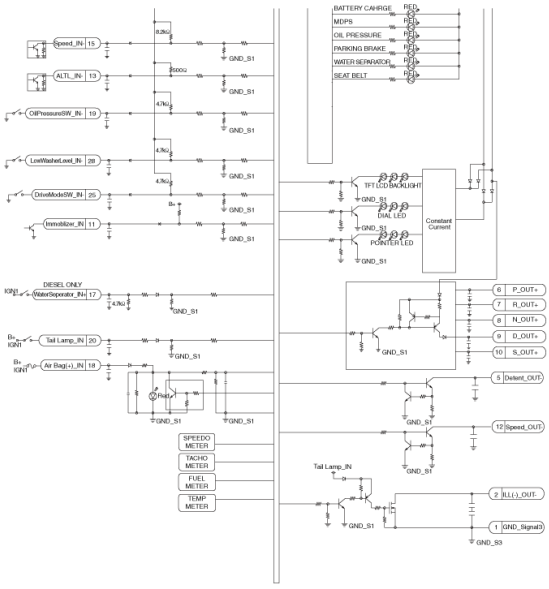
[MONO Type]





[General Supervision]



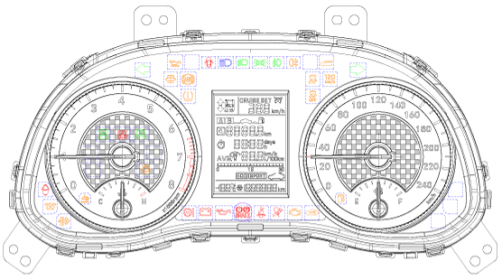


Instrument Cluster - Components and Components Location (Article 44584)

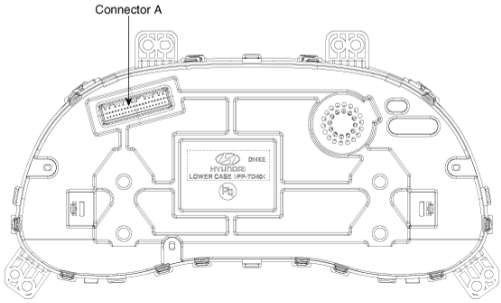
- Components

[General Standard Type (3.5" OLED)]

[Front]

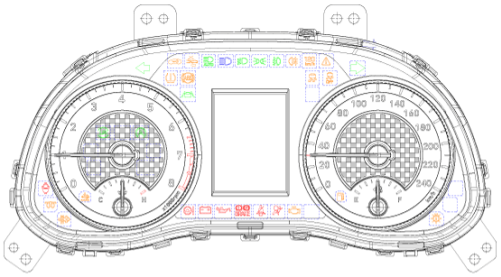


[Rear]

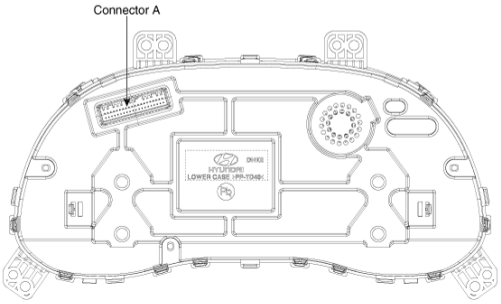


[MONO Type (3.5")]

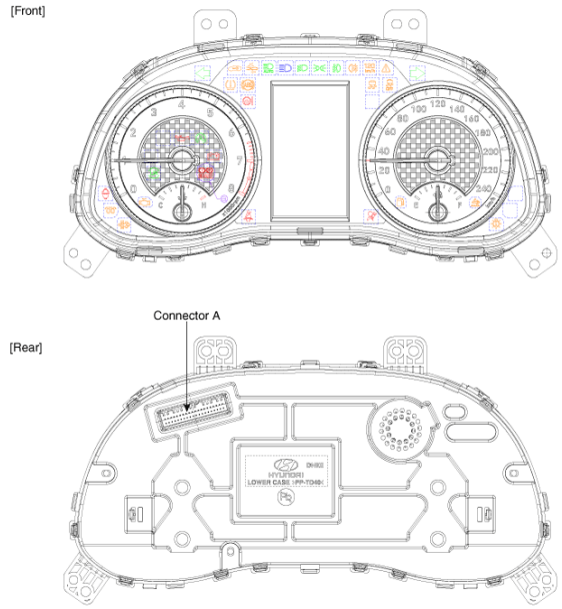
[Front]

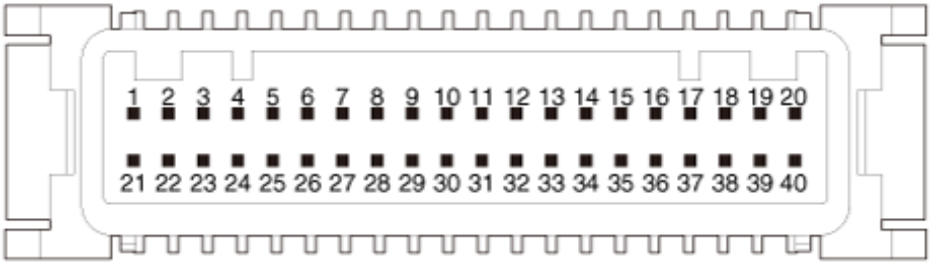


[Rear]



[General Super Vision Type (4.2" LCD)]





Connector Pin Information

No	Description	No	Description
1	GND	21	Trip switch (-)_Input
2	Illumination (-)	22	Trip switch 1 (+)_Input
3	Rheostat switch (Down)_Input	23	Trip switch 2 (+)_Input
4	Rheostat switch (Up)_Input	24	-
5	Dentent	25	Driver mode switch_Input (AT only)
6	AT ('P' Position)	26	-
7	AT ('R' Position)	27	-
8	AT ('N' Position)	28	Washer level low signal_Input
9	AT ('D' Position)	29	Multimedia-CAN (Low)
10	AT ('S' Position)	30	Multimedia-CAN (High)
11	Immobilizer_Input	31	-
12	Vehicle speed_Input	32	Chassis-CAN (High)
13	Alternator_Input	33	Chassis-CAN (Low)
14	Fuel sender (+)_Input	34	-
15	Vehicle speed_Output	35	FFV_Output
16	Fuel sender (-)_Input	36	-
17	Water Separator_Input	37	GND
18	Air Bag (+)_Input	38	-
19	Oil press switch_Input	39	IGN 1
20	Tail lamp_Input	40	Battery (+)

Instrument Cluster - Repair Procedures (Article 44590)

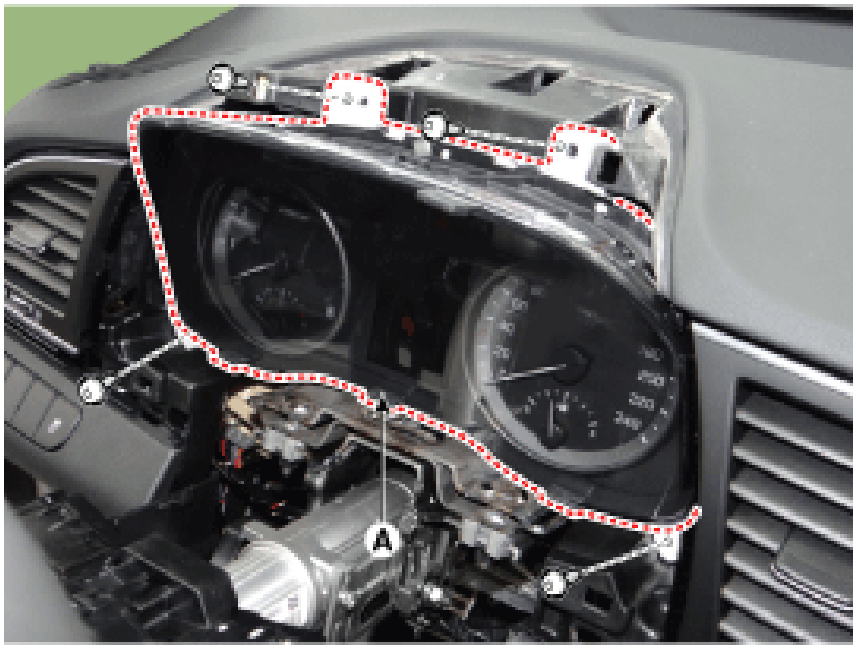
- Removal

Put on gloves to protect your hands. When prying with a flat-tip screwdriver, wrap it with protective tape,

and apply protective tape around the related parts, to prevent damage.

CAUTION

- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts, to prevent damage.
- Disconnect the negative (-) battery terminal.
- Remove the cluster fascia panel. (Refer to Body - "Cluster Fascia Panel")
- Separate the instrument cluster (A) after loosening the mounting screws.

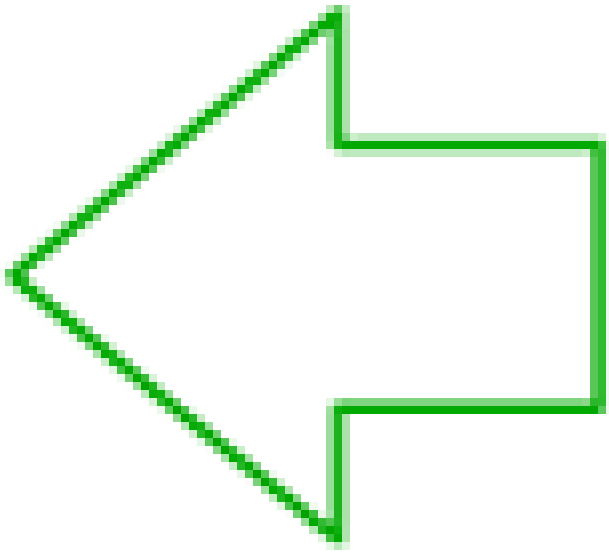


- Remover the instrument cluster (A) after disconnect the cluster connector (B).

- Installation
- Install the cluster after connect the cluster connectors.
- Install the cluster fascia panel.
- Connect the negative (-) battery terminal. Perform variant coding after exchanging the instrument cluster.
Perform variant coding after exchanging the instrument cluster.

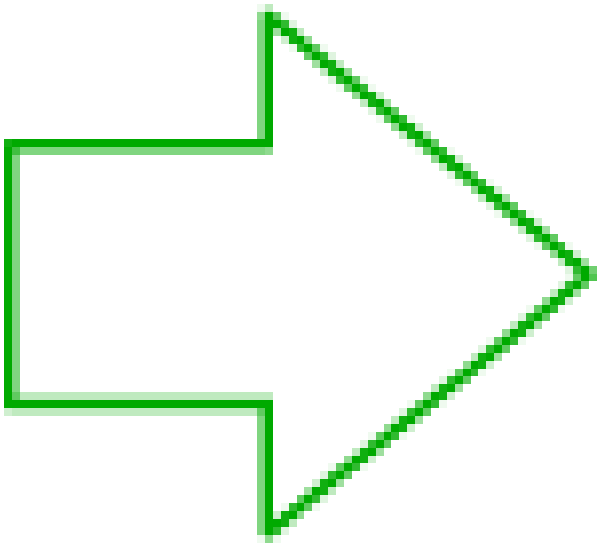
- Perform variant coding after exchanging the instrument cluster.
- Inspection
- Check point (Warning indicator) Fault conditions and normal operating conditions, refer to the owner's manual. No Ref Symbol Name Color Signal input Signal Control Check point 1 Turnsignal (Left) Green CAN BCM (Gateway) Multifunction Switch BCM CAN Failure 2 Turnsignal (Right) Green CAN BCM (Gateway) Multifunction Switch BCM CAN Failure 3 Tail Lamp Green CAN BCM (Gateway) Multifunction Switch BCM CAN Failure 4 Fog Lamp Green CAN BCM (Gateway) Multifunction Switch BCM CAN Failure 5 High Beam Blue CAN BCM (Gateway) Multifunction Switch BCM CAN Failure 6 Warning Yellow CAN BSD BSD System CAN Failure TPMS TPMS System CAN Failure SCC SCC System CAN Failure LDWS LDWS System CAN Failure FCW FCW System CAN Failure HBA HBA System CAN Failure BCM Exterior Lamp BCM CAN Failure Hard-wired Low Washer Washer fluid level sensor Wiring Failure Digital Input Reminders when service checks 7 Battery Charge Red Hard-wired Alternator Alternator Wiring Failure Battery 8 Oil Pressure Red Hard-wired ECM Oil Pressure Sensor Wiring Failure ECM CAN Failure 9 Check Engine Yellow CAN ECM ECM CAN Failure 10 Immobilizer Yellow CAN + Hard-wired IMMOBILIZER SMK Immobilzer System SMK BCM CAN Failure Hard-wired 11 Parking Brake Brake Fluid EBD EPB EVP Red CAN BCM (Gateway) EBD EPB EVP ABS TCS BCM ABS System EPB System CAN Failure Parking Brake Switch Brake Oil Lever Sensor 12 ABS Yellow CAN ABS ABS System CAN Failure 13 ESC Yellow CAN TCS ABS System CAN Failure 14 ESC Off Yellow CAN TCS ABS System CAN Failure 15 EPB Yellow CAN EPB EPB System CAN Failure 16 Auto Hold White Yellow Green CAN TCS TCS System CAN Failure 17 Seat Belt Red CAN BCM (Gateway) BCM CAN Failure 18 Airbag Red CAN SRSCM SRSCM System CAN Failure 19 EPS (MDPS) Red CAN MDPS MDPS Unit System MDPS Motor CAN Failure 20 TPMS Yellow CAN TPMS TPMS System TPMS Sensor CAN Failure 21 LKAS Green White Yellow CAN LKAS LKAS System CAN Failure 22 Fuel Warning Yellow Direct (Micom) Fuel Sender Fuel Sendar Failure Wiring Failure 23 Door Open Red CAN BCM (Gateway) BCM CAN Failure Door Sensor/switch 24 ECO Green Hard-wired ECO Mode Drive Mode Switch ECM System TCU System 25 SPORT Yellow Hard-wired SPORT Mode Drive Mode Switch ECM System TCU System 26 CRUISE Green CAN ECM ECM CAN Failure 27 SET Green CAN ECM ECM CAN Failure 28 HBA Green CAN LDWS HBA System CAN Failure 29 AUTO STOP Green Yellow CAN ECM ECM CAN Failure 30 AEB Yellow CAN SCC AEB System CAN Failure
Fault conditions and normal operating conditions, refer to the owner's manual.

- Fault conditions and normal operating conditions, refer to the owner's manual.
No Ref Symbol Name Color Signal input Signal Control Check point
1 Turnsignal (Left) Green CAN BCM (Gateway) Multifunction Switch BCM CAN Failure

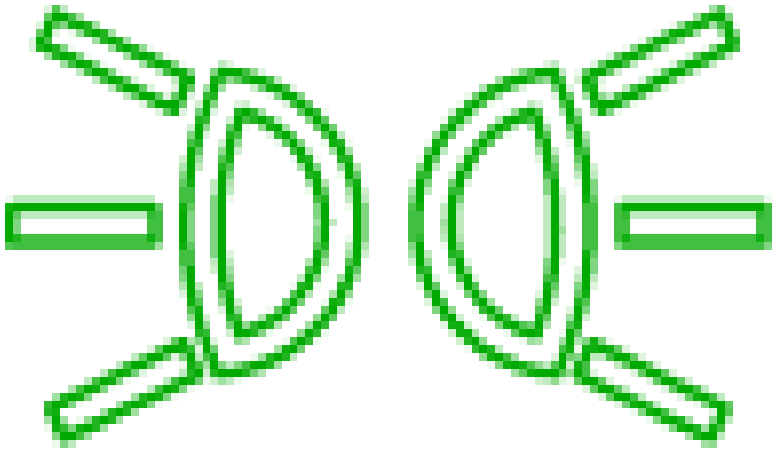


- Multifunction Switch
- BCM
- CAN Failure

2 Turnsignal (Right) Green CAN BCM (Gateway) Multifunction Switch BCM CAN Failure

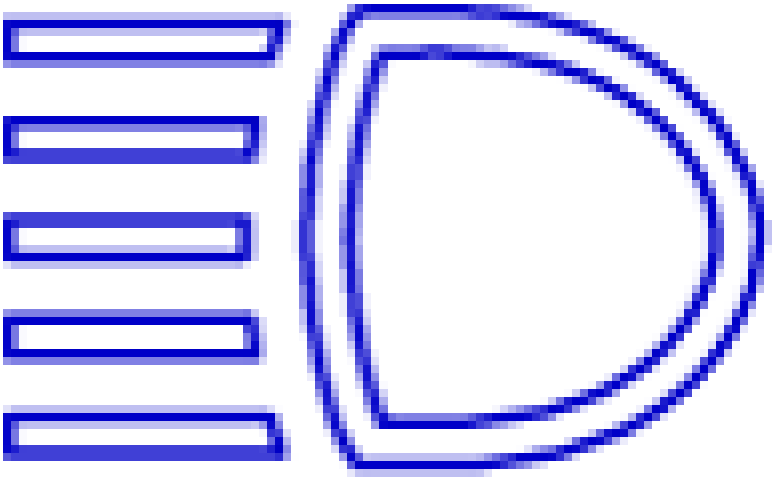


3 Tail Lamp Green CAN BCM (Gateway) Multifunction Switch BCM CAN Failure



4 Fog Lamp Green CAN BCM (Gateway) Multifunction Switch BCM CAN Failure

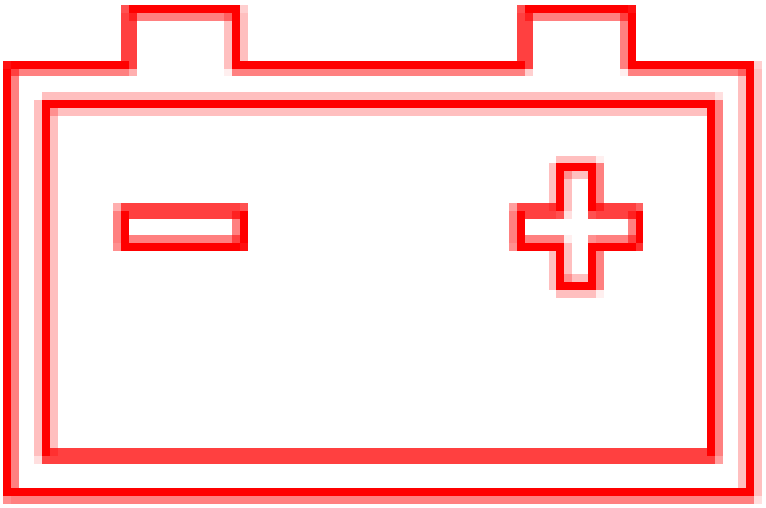
5 High Beam Blue CAN BCM (Gateway) Multifunction Switch BCM CAN Failure



6 Warning Yellow CAN BSD BSD System CAN Failure

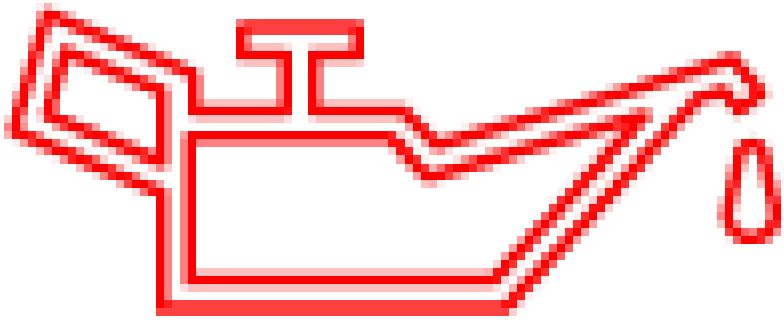
- BSD System
TPMS TPMS System CAN Failure
- TPMS System
SCC SCC System CAN Failure
- SCC System
LDWS LDWS System CAN Failure
- LDWS System
FCW FCW System CAN Failure
- FCW System
HBA HBA System CAN Failure
- HBA System
BCM Exterior Lamp BCM CAN Failure
- Exterior Lamp
Hard-wired Low Washer Washer fluid level sensor Wiring Failure
- Washer fluid level sensor
- Wiring Failure
Digital Input Reminders when service checks

7 Battery Charge Red Hard-wired Alternator Alternator Wiring Failure Battery



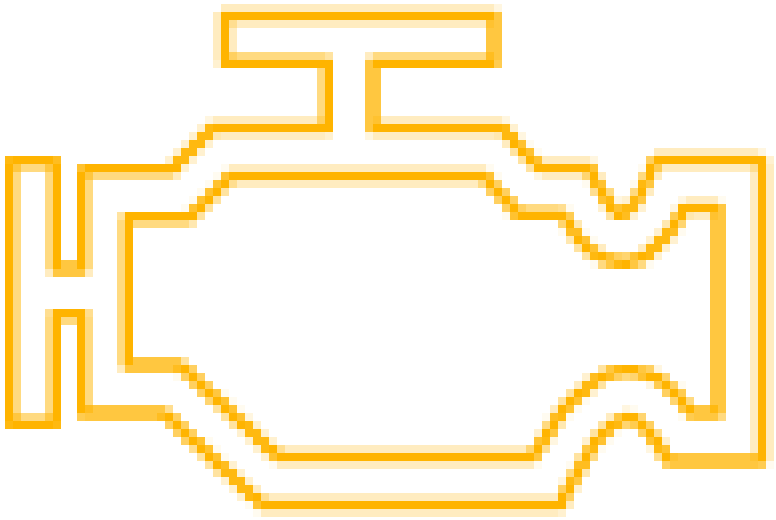
- Alternator
- Battery

8 Oil Pressure Red Hard-wired ECM Oil Pressure Sensor Wiring Failure ECM CAN Failure



- Oil Pressure Sensor
- ECM

9 Check Engine Yellow CAN ECM ECM CAN Failure



10 Immobilizer Yellow CAN + Hard-wired IMMOBILIZER SMK Immobilzer System SMK BCM CAN Failure Hard-wired

- Immobilzer System
- SMK
- Hard-wired

11 Parking Brake Brake Fluid EBD EPB EVP Red CAN BCM (Gateway) EBD EPB EVP ABS TCS BCM ABS System EPB System CAN Failure Parking Brake Switch Brake Oil Lever Sensor

- ABS System
- EPB System
- Parking Brake Switch
- Brake Oil Lever Sensor

12 ABS Yellow CAN ABS ABS System CAN Failure

13 ESC Yellow CAN TCS ABS System CAN Failure

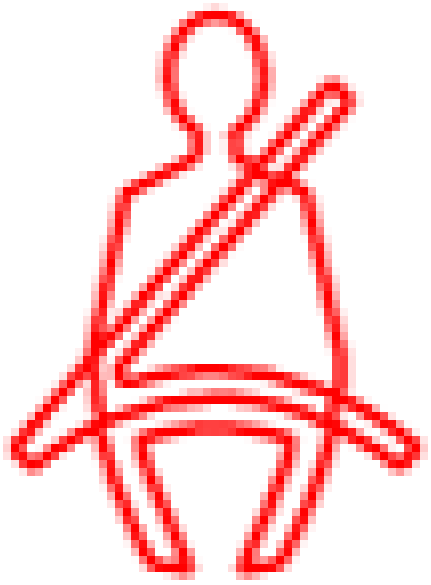
14 ESC Off Yellow CAN TCS ABS System CAN Failure

15 EPB Yellow CAN EPB EPB System CAN Failure

16 Auto Hold White Yellow Green CAN TCS TCS System CAN Failure

- TCS System

17 Seat Belt Red CAN BCM (Gateway) BCM CAN Failure



18 Airbag Red CAN SRSCM SRSCM System CAN Failure

- SRSCM System

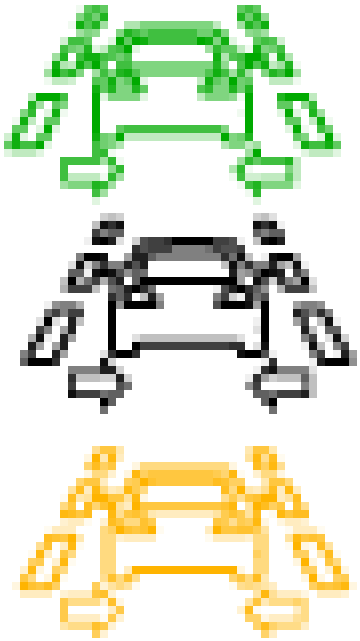
19 EPS (MDPS) Red CAN MDPS MDPS Unit System MDPS Motor CAN Failure

- MDPS Unit System
- MDPS Motor

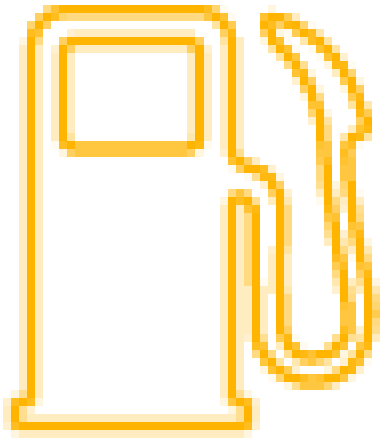
20 TPMS Yellow CAN TPMS TPMS System TPMS Sensor CAN Failure

- TPMS Sensor

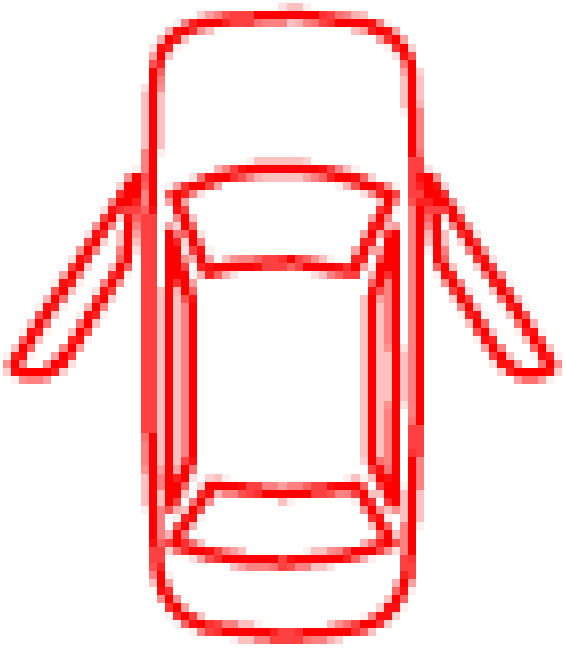
21 LKAS Green White Yellow CAN LKAS LKAS System CAN Failure



- LKAS System
22 Fuel Warning Yellow Direct (Micom) Fuel Sender Fuel Sendar Failure Wiring Failure



- Fuel Sendar Failure
23 Door Open Red CAN BCM (Gateway) BCM CAN Failure Door Sensor/switch



- Door Sensor/switch

24 ECO Green Hard-wired ECO Mode Drive Mode Switch ECM System TCU System

- Drive Mode Switch
- ECM System
- TCU System

25 SPORT Yellow Hard-wired SPORT Mode Drive Mode Switch ECM System TCU System

26 CRUISE Green CAN ECM ECM CAN Failure

27 SET Green CAN ECM ECM CAN Failure

28 HBA Green CAN LDWS HBA System CAN Failure

29 AUTO STOP Green Yellow CAN ECM ECM CAN Failure

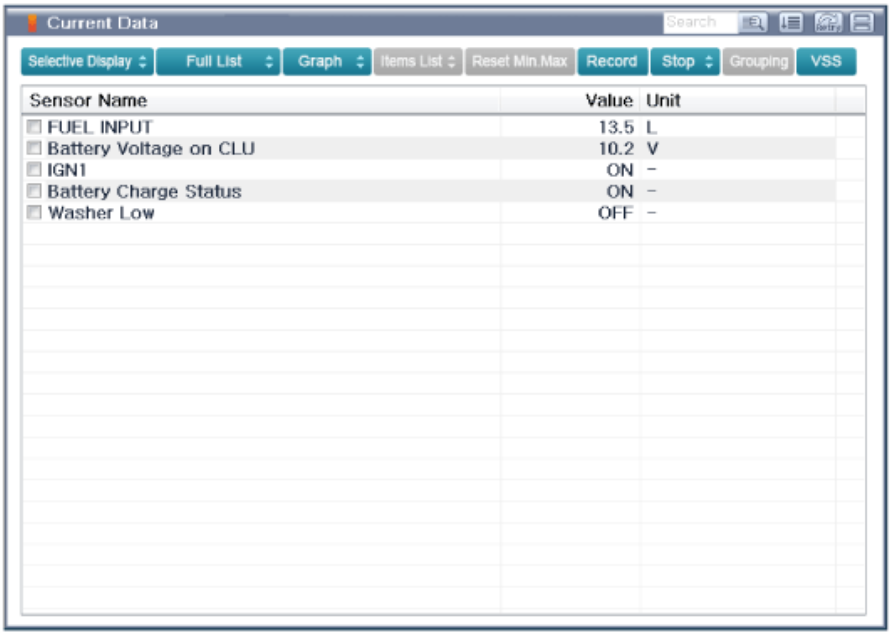
30 AEB Yellow CAN SCC AEB System CAN Failure

- AEB System
- Check point (Gauge) No Name Signal Input Signal Control (Unit/Sensor) Check Point 1 Speedometer C-CAN ABS/ESC 1) CAN Line failure 3 Tachometer C-CAN EMS 1) CAN Line failure 4 Cooling water temperature C-CAN EMS 1) CAN Line failure 5 Fuel Hardwire Fuel Sander 1) Fuel sender failure 2) Wiring failure 6 Shift lever indicator C-CAN TCU 1) CAN Line failure

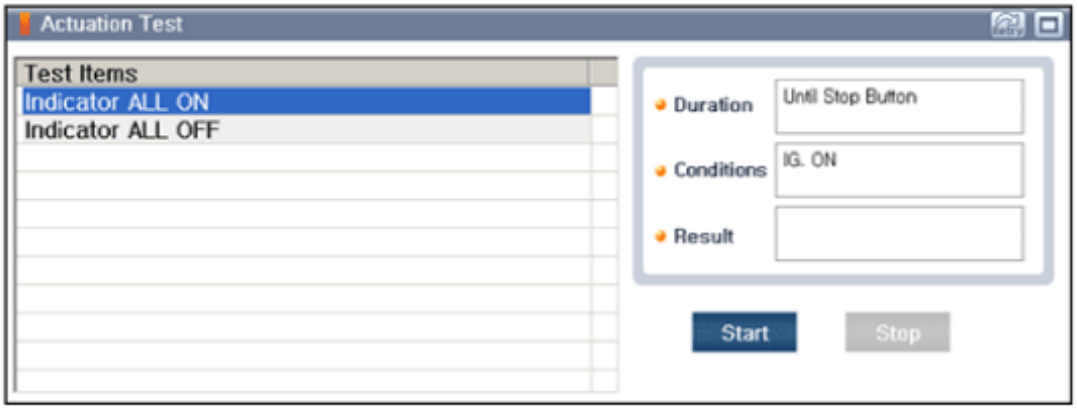
No Name Signal Input Signal Control (Unit/Sensor) Check Point
1 Speedometer C-CAN ABS/ESC 1) CAN Line failure
3 Tachometer C-CAN EMS 1) CAN Line failure
4 Cooling water temperature C-CAN EMS 1) CAN Line failure
5 Fuel Hardwire Fuel Sander 1) Fuel sender failure
2) Wiring failure
6 Shift lever indicator C-CAN TCU 1) CAN Line failure

Diagnosis with GDS

- The body electrocal system can be quickly diagnosed failed parts with vehicle diagnostic system (GDS). The diagnostic system (GDS) provides the following information. Self diagnosis : Checking the failure code (DTC) and display Current data : Checking the system input/output data state Actuator test : Checking the system operation condition Additional function : Other controlling such as he system option and zero point adjustment
- Self diagnosis : Checking the failure code (DTC) and display
- Current data : Checking the system input/output data state
- Actuator test : Checking the system operation condition
- Additional function : Other controlling such as he system option and zero point adjustment
- Select the 'Car model' and the system to be checked in order to check the vehicle with the tester.
- Select the 'Body Control Module (BCM)' to check the 'Cluster Module (CLU)'.
- Select the 'Current Data'' menu to search the current state of the input/output data. The input/output data for the sensors corresponding to the cluster module (CLU) can be checked.

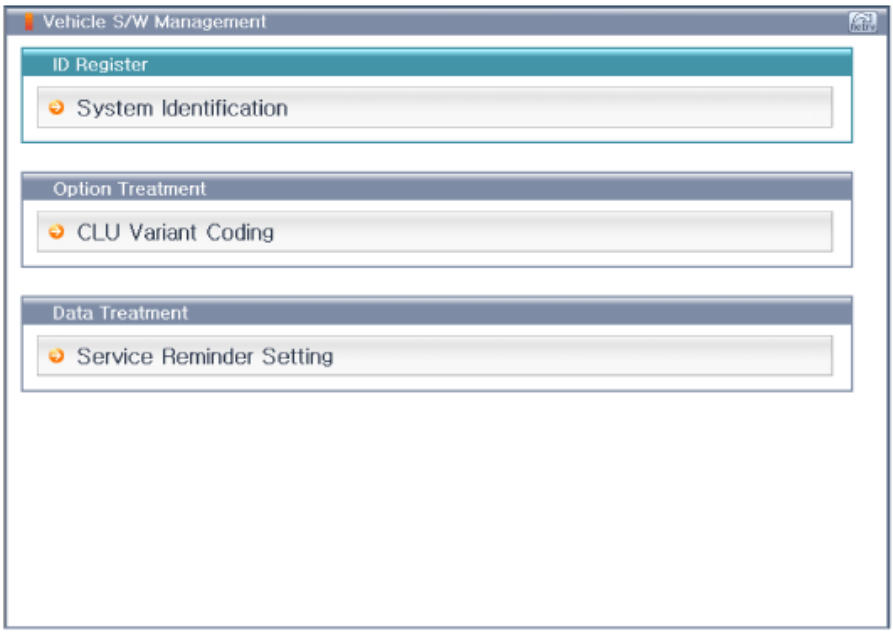


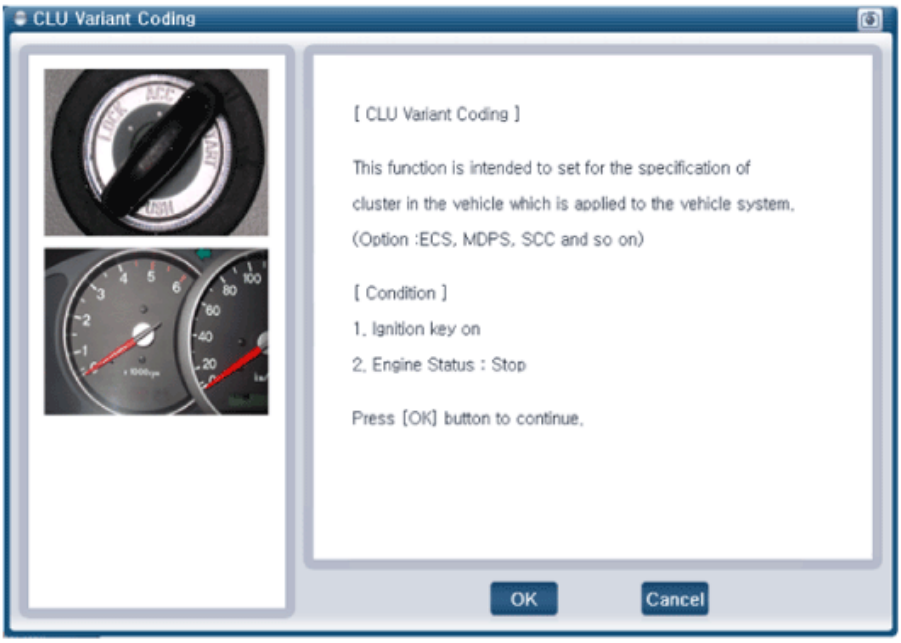
- To check the input value of cluster illumination , select option "Actuation test".

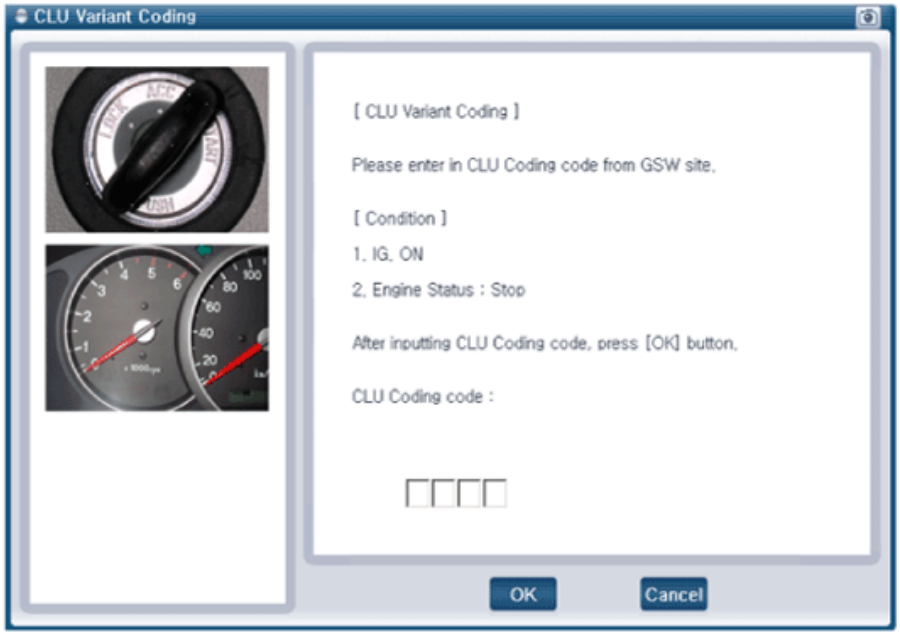


CLU Variant Coding

- Connect the cable of GDS to the data link connector in driver side crash pad lower panel, turn the power on GDS.
- Select model and "BCM".
- Select Variant coding mode to perform.


Vehicle S/W Management
ID Register
System Identification
Option Treatment
CLU Variant Coding
Data Treatment
Service Reminder Setting


CLU Variant Coding
[CLU Variant Coding]
This function is intended to set for the specification of
cluster in the vehicle which is applied to the vehicle system.
(Option :ECS, MDPS, SCC and so on)
[Condition]
1. Ignition key on
2. Engine Status : Stop
Press [OK] button to continue.
OK
Cancel



- If the trouble codes occurred when performing variant coding, try the CLU variant coding again after checking the installation status of CLU system.