Specifications

Items		Specifications
Rated voltage		DC 12V
Operating voltage		DC 9 ~ 16V
Operating temperature		-22°F~167°F(-30°C~ 75°C)
Insulation resistance		100MΩ or more
Dark current		Less than 3mA
Rated load	Door Lock Relay	DC 12V 200mA (Induction load)
	Door Unlock Relay	DC 12V 200mA (Induction load)
	Horn Relay	DC 12V 200mA (Induction load)
	Hazard Relay	DC 12V 200mA (Induction load)
	Key Hole Illumination LED	DC 12V 10mA(LED)
	Rear Fog Relay	DC 12V 200mA (Induction load)
	Tail Lamp Relay	DC 12V 200mA (Induction load)
	Driver Door Unlock Relay	DC 12V 200mA (Induction load)
	Trunk Release Relay	DC 12V 200mA (Induction load)
	Start Inhibit Relay	DC 12V 200mA (Induction load)
	Defogger Relay	DC 12V 200mA (Induction load)
	Wiper Relay	DC 12V 200mA (Induction load)
	Front Deicer Relay	DC 12V 200mA (Induction load)
	Head Lamp Low Relay	DC 12V 200mA (Induction load)
	Room Lamp	DC 12V 25W LAMP
	Safety Power Window ECU	DC 12V 200mA (Induction load)
	Driver Seatbelt Indicator	DC 12V 10mA(LED)
	Security Indicator	DC 12V 10mA(LED)
	ATM Shift Lock Relay	DC 12V 200mA (Induction load)
	Key Lock Solenoid	DC 12V 1A (Induction load)

Component
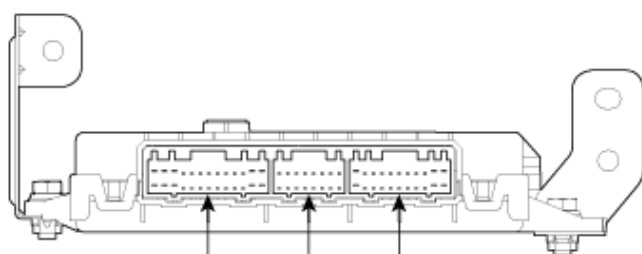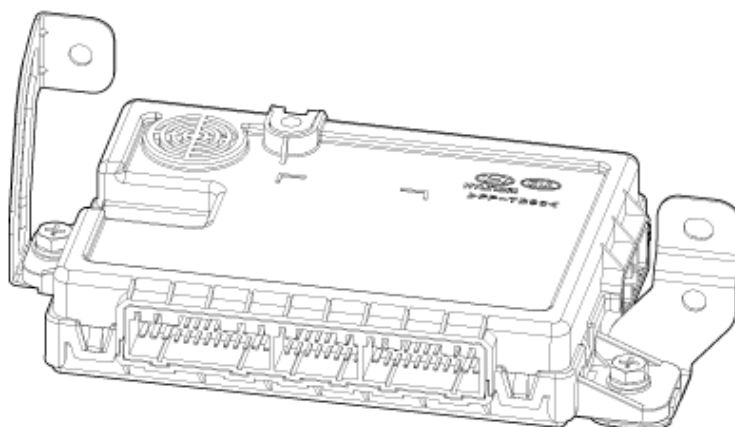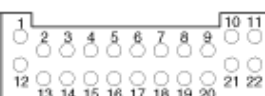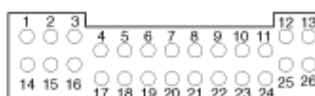

Connetor A Connetor B Connetor C

Connetor C

Connetor A

Connetor B

Connetor C
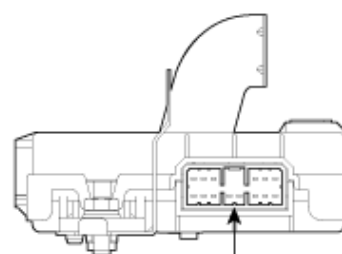
Connetor D

BCM Connector Terminals

Pin NO.	Description	Input acquisition threshold voltage (Operating Voltage 9V to 16Vat normal temperature/Output type)
A01	Battery	Operating Voltage 9V ~ 16V
A02	Ignition2 Switch	Switch on 8V above Switch off 2V below
A03	Wiper Intermittent SW	Switch on 8V above Switch off 2V below
A04	Vehicle Speed Sensor	Frequency Input
A05	Driver Door Actuator Unlock Switch	Switch on 6V above Switch off 2V below
A06	Power Window Door Lock Switch	Switch on 6V above Switch off 2V below
A07	Driver Door Key Lock Switch	Switch on 6V above Switch off 2V below
A08	Driver Door Key Unlock Switch	Switch on 6V above Switch off 2V below
A09	Reserved Active Low Switch1 / Vbb_sleep	Switch on 6V above Switch off 2V below
A10	TRUNK RELEASE SW	Switch on 6V above Switch off 2V below
A11	Inhibit D Switch	Switch on 8V above Switch off 2V below
A12	Inhibit N Switch	Switch on 8 above Switch off 2V below
A13	Ground1	GND
A14	Ignition1 Switch	Analog input
A15	Alternator Level	Analog input
A16	Washer Switch	Switch on 8V above Switch off 2V below
A17	Mist Switch	Switch on 8V above Switch off 2V below
A18	ACC Switch	Switch on 8V above Switch off 2V below
A19	Assistant Door Actuator Unlock Switch	Switch on 6V above Switch off 2V below
A20	Power Window Door Unlock Switch	Switch on 6V above Switch off 2V below
A21	Assistant Door Key Lock Switch	Switch on 6V above Switch off 2V below
A22	Assistant Door Key Unlock Switch	Switch on 6V above Switch off 2V below
		Switch on 6V above

A23	Crash Unlock Input	Switch off 2V below
A24	Start Stop Switch	Switch on 8V above Switch off 2V below
A25	Wiper Intermittant Volume	Analog input
A26	Ground2	GND
B01	Inhibit R Switch Back Up Switch	Switch on 8V above Switch off 2V below
B02	Reserved Active Low Switch2 /Vbb_sleep	Switch on 6V above Switch off 2V below
B03	Driver Door Switch	Switch on 6V above Switch off 2V below
B04	Trunk Switch	Switch on 6V above Switch off 2V below
B05	Tail Switch	Switch on 6V above Switch off 2V below
B06	Driver Seat Belt Switch	Switch on 6V above Switch off 2V below
B07	Auto Light Switch	Switch on 6V above Switch off 2V below
B08	Front Fog Switch	Switch on 6V above Switch off 2V below
B09	Inhibit P Switch	Switch on 8V above Switch off 2V below
B10	Stop Switch	Switch on 8V above Switch off 2V below
B11	Key Interlock Switch	Switch on 6V above Switch off 2V below
B12	Assistant Door Switch	Switch on 6V above Switch off 2V below
B13	Hood Switch	Switch on 6V above Switch off 2V below
B14	Key In Switch	Switch on 6V above Switch off 2V below
B15	Reserved Active Low Switch4 /Vbb_Normal	Switch on 6V above Switch off 2V below
B16	Defogger Switch	Switch on 6V above Switch off 2V below
C01	Head Lamp Switch	Switch on 6V above Switch off 2V below
C02	Reserved Active Low Switch4 /Vbb_Normal	Switch on 6V above Switch off 2V below
C03	Auto Light Sensor Power	5V Output / Analog Input
C04	CAN HIGH	Communication Line
C05	CAN LOW	Communication Line
C06	Auto Light Sensor Input	Analog Input

|		
C07	Reserved Active Low Switch4 /Vbb_Sleep	Low side / FET
C08	Door Lock Relay	Low side / FET
C09	Door Unlock Relay	Low side / FET
C10	Horn Relay	Low side / FET
C11	Hazard Relay	Low side / FET
C12	-	-
C13	Over Speed Signal	Switch on 6V above Switch off 2V below
C14	Auto Light Sensor Ground	GND
C15	Code Saver line	Switch on 6V above Switch off 2V below
C16	Diagnosis K-Line	Communication Line
C17	Key Hole Illumination LED	Low side / TR
C18	Rear Fog Relay	Low side / FET
C19	Tail Lamp Relay	Low side / FET
C20	Driver Door Unlock Relay	Low side / FET
C21	Trunk Release Relay	Low side / FET
C22	Start Inhibit Relay	Low side / FET
D01	Defogger Relay	Low side / FET
D02	Wiper Relay	Low side / FET
D03	Front Deicer Relay	Low side / FET
D04	NA	
D05	Head Lamp Low Relay	Low side / FET
D06	Room Lamp	Low side / FET
D07	Safety Power Window ECU	Low side / FET
D08	Autolight State	Low side / FET
D09	Driver Seatbelt Indicator	Low side / TR
D10	Security Indicator	Low side / TR
D11	Door Unlock State	Low side / FET
D12	ATM Shift Lock Relay	Low side / FET
D13	Key Lock Solenoid	Low side / FET
D14	NA	

Description

Body control module (A) receives various input switch signals controlling time and alarm functions for the intermittent wiper timer, washer timer, rear defogger timer, seat belts warning, central door lock, ignition key reminder, power window, door warning, tail lamp, crash door unlock, ignition key hole illuminatio and keyless entry & burglar alarm.
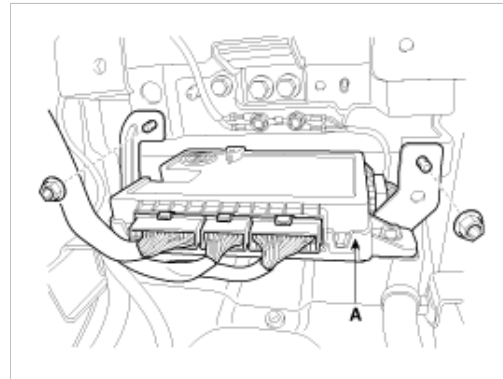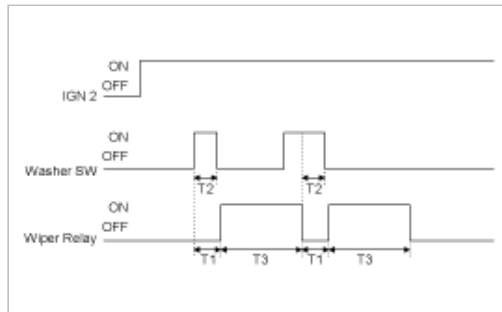
Function

Wiper Control

1. WIPER DATA FLOW
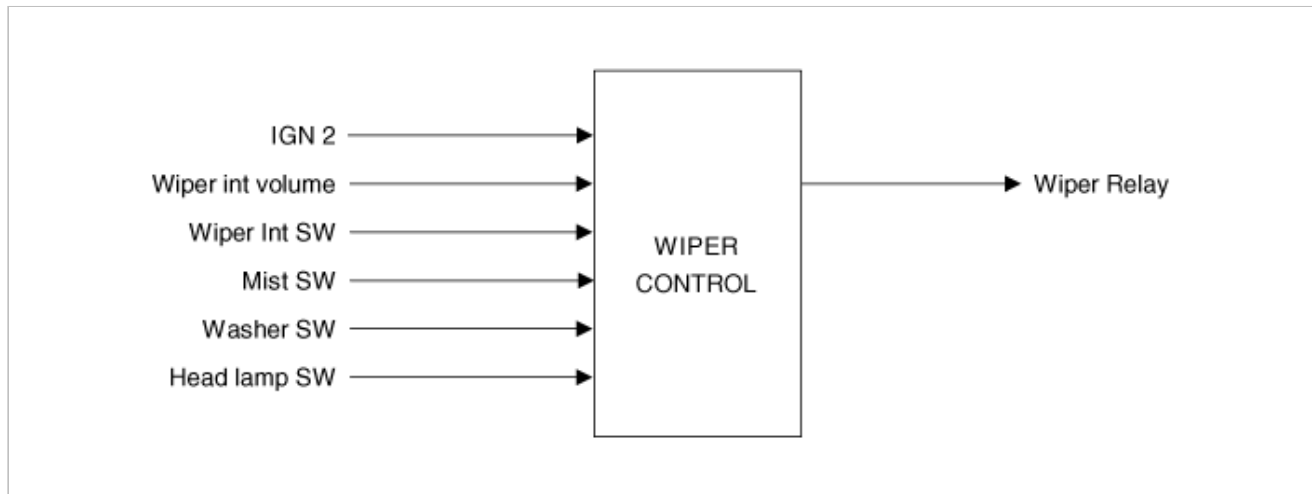
2. WASHER INTERLOCKING WIPER

Turn Wiper Relay ON after T1 when turning Washer SW ON at the status of IGN2 ON and if the input of Washer SW is between 0.06 and 0.2sec, turn the output of Wiper Relay OFF after T3.But, ignore the input of Washer SW occurred while washer interlocking wiper is being operated and accept it from the input of Washer SW after operating Wiper Relay.


T1 : 0.3 ± 0.1sec, T2 : 0.06 ~ 0.2sec, T3 : 0.7 ± 0.1sec

T3 = 0 (In case of T2 ≤ 0.06 sec.)

(1) Turn Wiper Relay ON after T1 when turning Washer SW ON at the status of IGN2 ON and if the input of Washer SW is more than 0.2sec, turn the output of Wiper Relay ON for 2.5~3.8sec after turning Washer SW OFF.
But, ignore the input of Washer SW occurred while washer interlocking wiper is being operated and accept it from the input of Washer SW after operating Wiper Relay.
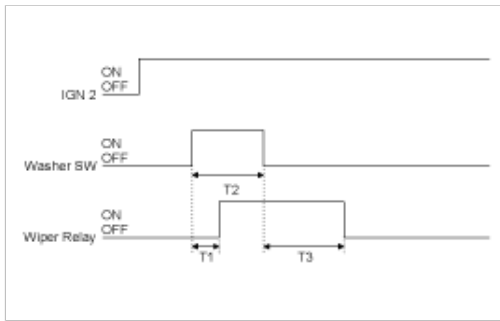
T1 : 0.3 ± 0.03s, T2 : over 0.2s, T3 : 2.5 ~ 3.8s

(2) Turn the output of WASHER INTERLOCKING WIPER ON when Washer SW is turned ON for more than 0.2sec during the operation of INT WIPER. If Washer SW is turned on for less than 0.2sec, turn the output of Wiper Relay ON once.
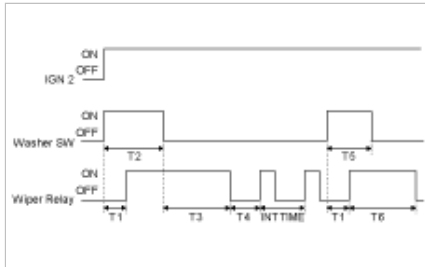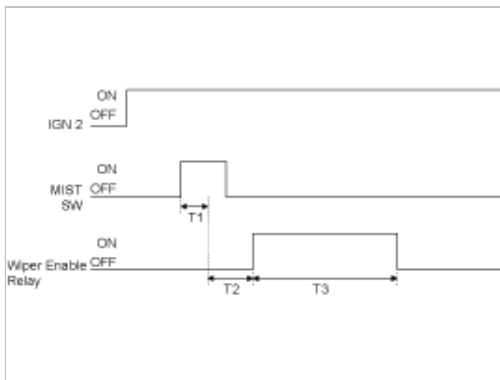

T1 : 0.3 ± 0.1s, T2 : over 0.2s,
T3 : 2.5 ~ 3.8s, T4 : INT TIME - 0.7s,
T5 : 0.06 ~ 0.2s, T6 : 0.7 ± 0.1s

(3) In case of starting (IGN1 ON & IGN2 OFF) ignore the input of Washer SW.

3. MIST INTERLOCKING WIPER

(1) Turn the output of Wiper Relay for 700ms when turning Mist SW ON at the status of IGN2 ON.


T1 : Min 60 ms, T2 : Max 100ms,
T3 : 700 ± 100ms

(2) If the input of Mist SW is continuous (for more than 700ms), keep the condition of Wiper Relay is ON and if Mist SW is turned OFF, turn the output of Wiper Relay for 700ms from that point.

(3) Ignore the input of Mist SW while operating WIPER by INT WIPER, WASHER Interlocking WIPER.
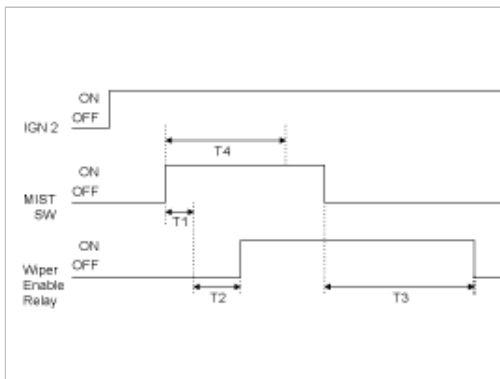
T1 : Min 60 ms, T2 : Max 100ms,
T3 : 700 ± 100ms, T4 : 700ms

Lamp Control

1. EXTERIOR LAMP CONTROL DATA FLOW
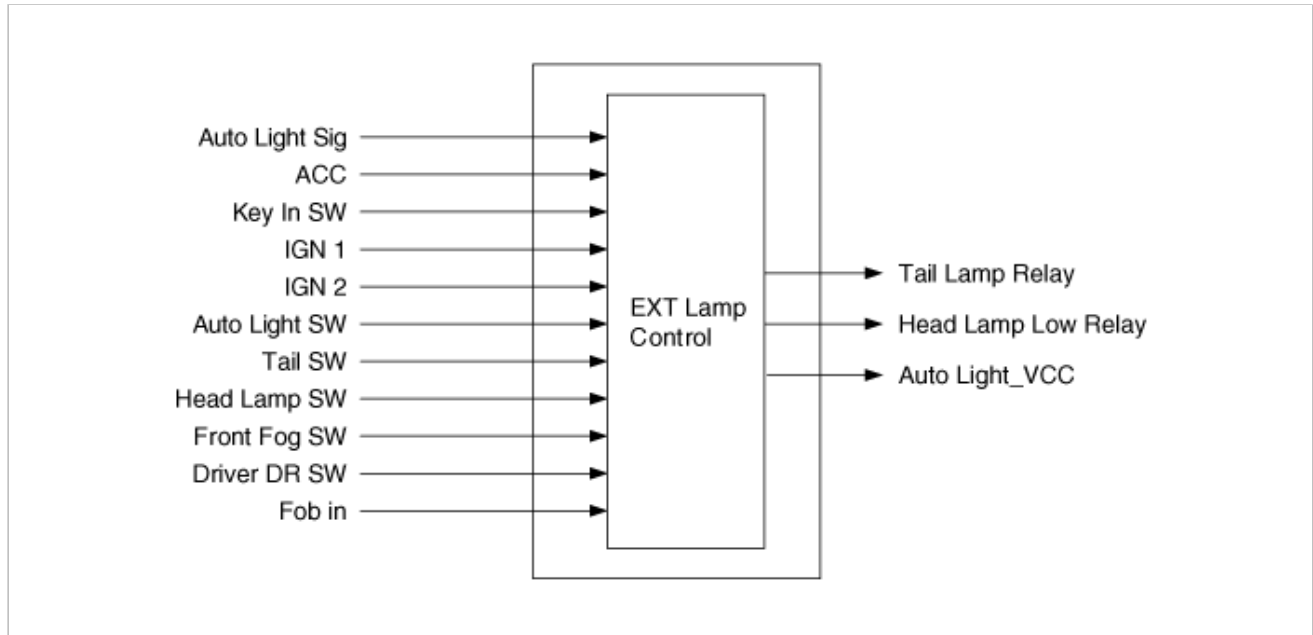
2. TAIL LAMP AUTO CUT

   (1) Turn IGN OFF when turning Tail SW ON after turning IGN ON and turn Tail Lamp Relay OFF (automatic blackout) when opening Driver door SW.

   (2) Also, turn Tail Lamp Relay OFF (automatic blackout) even though IGN is turned OFF after opening Driver door SW at the condition that IGN is ON.

   (3) When turning Tail SW ON again from OFF after the automatic blackout, Tail Lamp Relay will be turned ON and AUTO CUT function will be cancelled.

   (4) When turning IGN KEY ON after the automatic blackout, Tail Lamp Relay will be turned ON and AUTO CUT function will be cancelled.

   (5) AUTO CUT will be kept when removing or installing B+ at the status of AUTO CUT.

   (6) Tail Lamp Relay will be kept turning OFF though Driver door SW is closed from opened at the status of AUTO CUT.
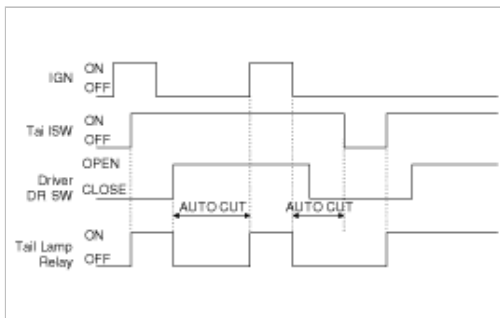
   *1 IGN KEY ON : Key in SW ON or ACC ON or IGN 1 ON or IGN 2 ON (Non-SMK)
   Fob in ON or ACC ON or IGN 1 ON or IGN 2 ON (SMK)
   IGN KEY ON : Key in SW OFF and ACC ON and IGN 1 OFF and IGN 2 OFF (Non-SMK)
   Fob in OFF and ACC ON and IGN 1 OFF and IGN 2 OFF (Non-SMK)

3. AUTO LIGHT CONTROL

   (1) If the service voltage (Auto light_VCC) of AUTO LIGHT SENSOR is less than 4v or more than 6v at the status of IGN1 ON, it means it has defects. Always turn Tail Lamp Relay and Head Lamp Relay ON regardless of the value of SENSOR when turning Auto Light SW ON with trouble. The FILTERING time for defects and recovery of the service voltage is 300msec each.

(2) If the value of Auto Light Signal is input value of LIGHT ON at the status of IGN1 ON and Auto Light SW ON, turn the LIGHT ON in 2.5sec ± 100msec.

(3) If the value of Auto Light Signal is input value of LIGHT OFF at the status of LIGHT ON, turn the LIGHT OFF in 2.5sec ± 100msec.

(4) If the value of Auto Light Signal is input value of TAIL LAMP ON, turn Tail Lamp Relay ON only and if it is input value of HEAD LAMP ON, turn Tail Lamp Relay and Head Lamp Relay ON.

(5) Turn the proper LIGHT ON immediately when turning Auto Light SW ON in the condition of LIGHT ON and turn the LIGHT OFF when turning Auto Light SW OFF.

(6) Keep the output of head lamp SW without blinking if the value of Auto light signal is input value of head lamp ON when moving the head lamp SW ON position to the Auto light SW ON position.

(7) Keep the output of head lamp SW without blinking when moving the Auto light SW ON position to the head lamp SW ON position.

(8) Follow the table below for each value of LIGHT ON for Auto Light Signal.

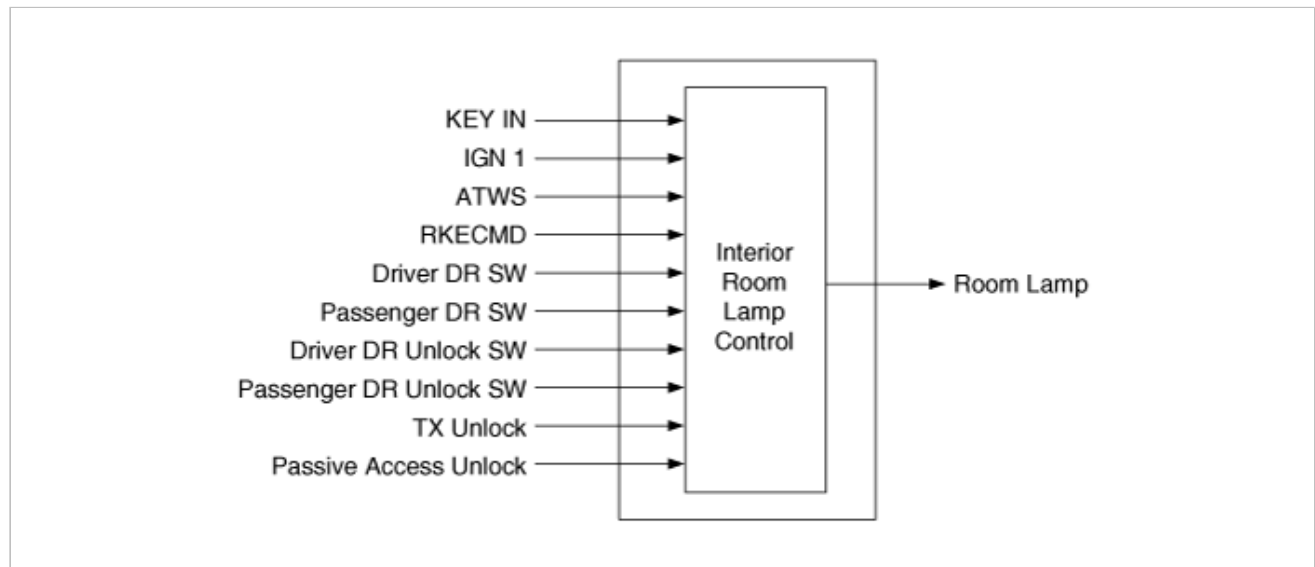|	TAIL LAMP	HEAD LAMP
ON	0.82±0.05V	0.82±0.05V
OFF	1.65±0.05V	1.65±0.05V
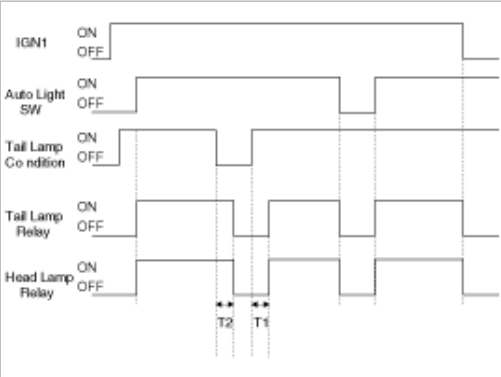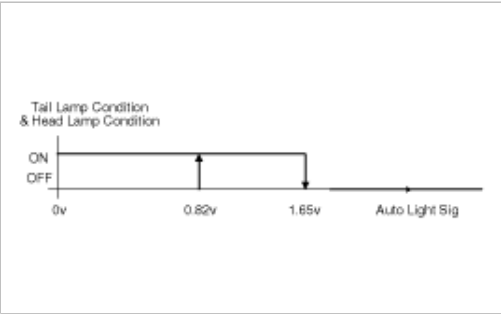
T1 : 12 ± 0.2s, T2 : 12 ± 0.2s

4. HEAD LAMP LOW

(1) Turn Head Lamp Relay ON when turning Head Lamp SW ON while IGN1 is ON.

(2) Turn Head Lamp Relay OFF if IGN1 OFF or Head Lamp SW is OFF.

(3) Do not control things above if Head Lamp Relay can be controlled by Auto Light function.
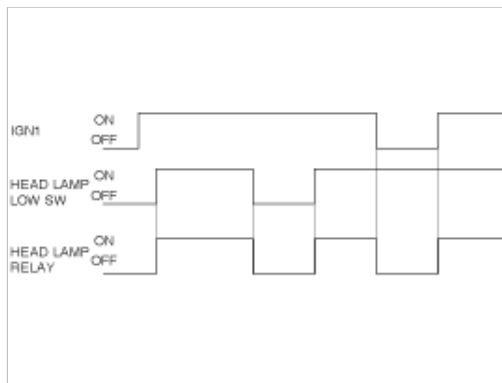
Interior Room Lamp

1. INTERRIOR ROOM LAMP DATA FLOW

ATWS : Logic signal of ATWS
RKECMD : RKE LOCK/UNLOCK signal

2. Room Lamp Off

  (1) Condition 1

State	Description
Initial condition	Room Lamp OFF and IGN OFF and DOOR CLOSE
Event	- Unlock - Key in ON to OFF
Action	Room Lamp ON for 30± 3 sec.

  (2) Condition 2

State	Description
Initial condition	Room Lamp OFF
Event	Any DOOR OPEN for over 0.1 sec. when ALL DOORS are closed
Action	ROOM LAMP ON for 20 min

  (3) Condition 3

State	Description
Initial condition	Room Lamp OFF and IGN1 OFF

Event	IGN1 ON and DOOR OPEN for over 0.1 sec.
Action	ROOM LAMP ON
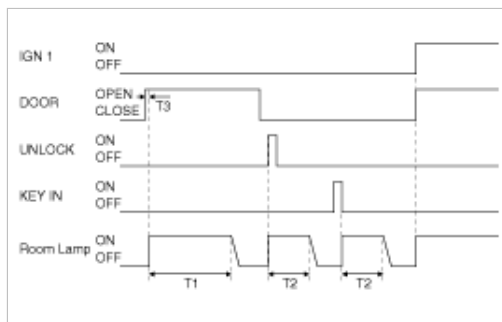
T1 : 20 ± 1min, T2 :30 ± 3sec, T3 : 100 ms

3. Room Lamp On for 30s
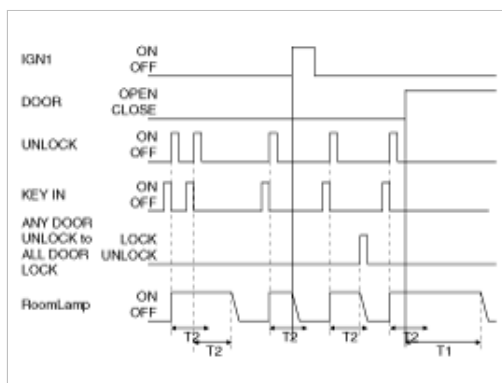   (1) Condition 1

State	Description
Initial condition	ROOM LAMP ON for 30s and IGN1 OFF
Event	DOOR OPEN for over 0.1 sec. when ALL DOORS are closed.
Action	ROOM LAMP ON for 20min

   (2) Condition 2

State	Description
Initial condition	ROOM LAMP ON for 30s and IGN1 OFF
Event	UNLOCK by TX Key in ON to OFF
Action	ROOM LAMP ON for 30s

   (3) Condition 3

State	Description
Initial condition	ROOM LAMP ON for 30s and IGN1 OFF
Event	IGN1 ON, after 30sec, entering ARM state or ALL DOOR LOCK
Action	The state go to ROOM LAMP DECAYING state Room Lamp decaying for 2 ± 0.2 sec and OFF

T1 : 20 ± 1min, T2 : 30 ± 3sec

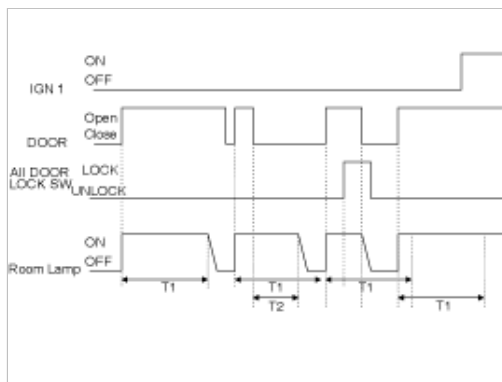4. Room Lamp On for 20min
   (1) Condition 1

State	Description
Initial condition	Room Lamp ON for 20min and IGN1 OFF
Event	IGN1 ON
Action	ROOM LAMP ON

(2) Condition 2

State	Description
Initial condition	Room Lamp ON for 20min and IGN1 OFF
Event	DOOR CLOSE and ALL DOOR LOCK Or after 20min
Action	ROOM LAMP DECAYING for 2 ± 0.2 sec and OFF

(3) Condition 3

State	Description
Initial condition	ROOM LAMP ON for 20min and IGN1 OFF
Event	DOOR CLOSE
Action	ROOM LAMP ON for 30s

T1 :20 ± 1min, T2 : 30 ± 3sec

5. Room Lamp Decaying
   (1) Condition 1

State	Description
Initial condition	ROOM LAMP DECAYING and IGN1 OFF
Event	DOOR OPEN for over 0.1 sec. when All doors are closed
Action	ROOM LAMP ON for 20min

(2) Condition 2

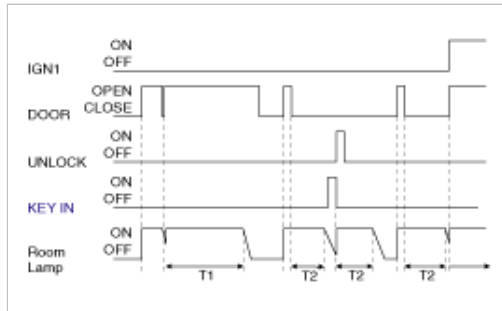| State	Description
Initial condition	ROOM LAMP DECAYING and IGN1 OFF and DOOR CLOSE
Event	UNLOCK by TX Key in ON to OFF
Action	ROOM LAMP ON for 30s

(3) Condition 3

State	Description

Initial condition	ROOM LAMP DECAYING
Event	After decaying
Action	ROOM LAMP OFF

(4) Condition 4

State	Description
Initial condition	ROOM LAMP DECAYING
Event	IGN1 ON and DOOR OPEN for 0.1 sec.
Action	ROOM LAMP ON

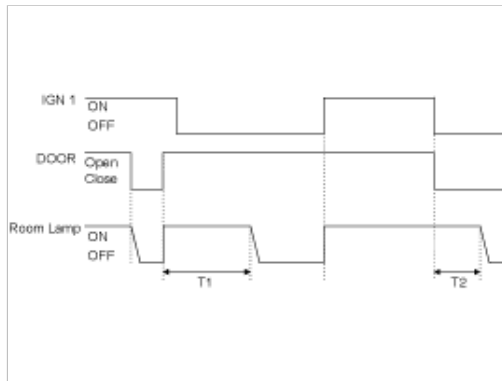T1 : 20 ± 1min, T2 : 30 ± 3sec.

6. Room Lamp On
   (1) Condition 1

State	Description
Initial condition	Room Lamp ON and IGN1 ON and DOOR OPEN
Event	DOOR CLOSE
Action	ROOM LAMP DECAYING for 2 ± 0.2 sec. and OFF

(2) Condition 2

State	Description
Initial condition	Room Lamp ON and IGN1 ON and DOOR OPEN
Event	IGN1 OFF
Action	ROOM LAMP ON for 20min

(3) Condition 3

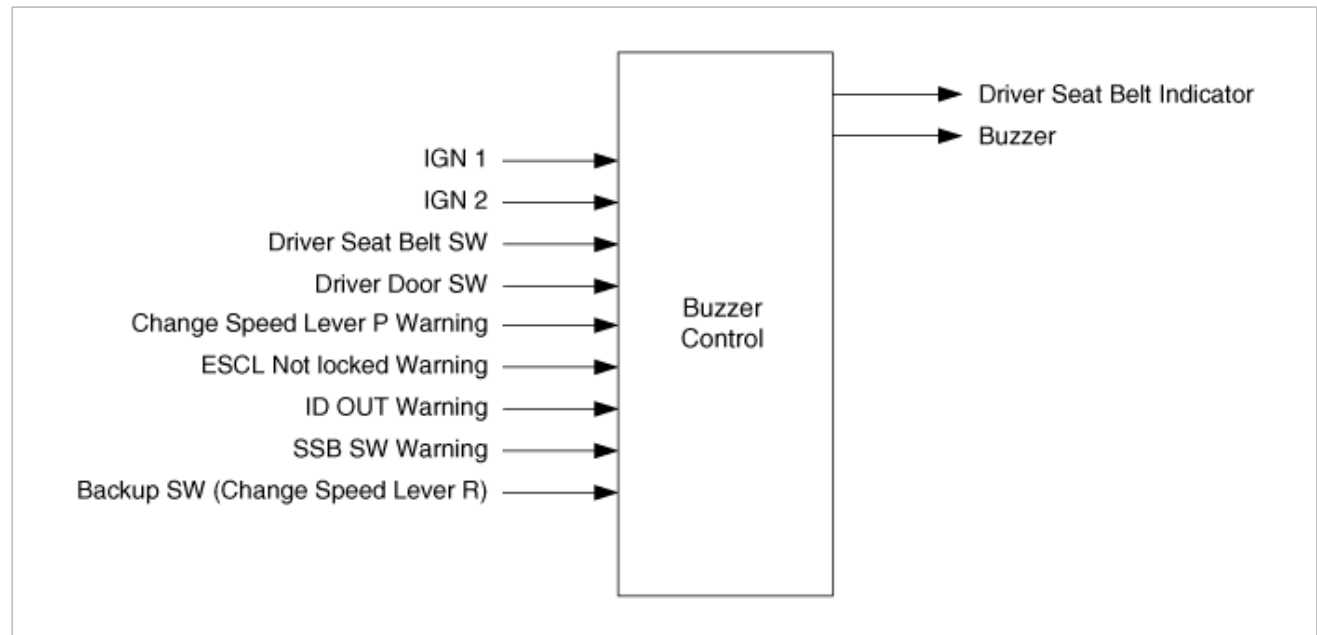| State	Description
Initial condition	Room Lamp ON and IGN1 ON and DOOR OPEN
Event	DOOR CLOSE and IGN1 OFF
Action	ROOM LAMP ON for 30s

T1 : 20 ± 1min, T2 : 30 ±3sec

NOTE

1. ROOM LAMP should not be flickered when turning IGN1 ON.
2. Exposure for the ROOM LAMP should be more than 32 steps.

7. BUZZER CONTROL

Data Flow

(1) SPECIFICATION of BUZZER SOUND

	Frequency	Frequency DUTY	Cycle	Sound pressure	Remark
Seat Belt Warning/ Seat Belt Reminder	800Hz	50%	1.0s	70±10dB	Decreasing sound
Key Operated Warning	800Hz	50%	0.6s	70±10dB	Decreasing sound
ESCL Not Unlocked Warning/ SSB SW Warning	800Hz	50%	-	70±10dB	Decreasing sound
ID Out					Continuous

Warning	800Hz	50%	-	70±10dB	sound
Back up Warning	1700Hz	50%	-	70±10dB	Decreasing sound

SEAT BELT WARNING/
SEAT BELT REMINDER/

ID OUT WARNING/
BackUp Warning

KEY OPERATED WARNING/
ESCL NOT LOCKED WARNING/
C_SSBSW _Warning

ESCL NOT UNLOCKED WARNING
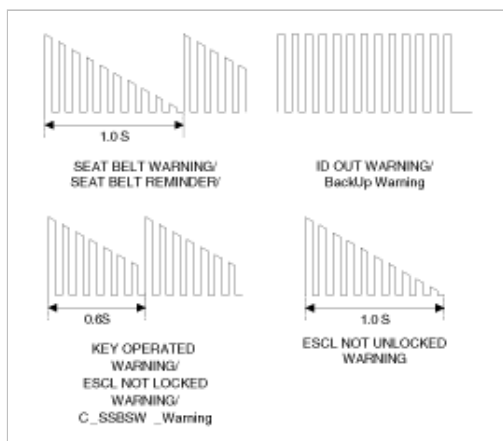
(2) Priority :
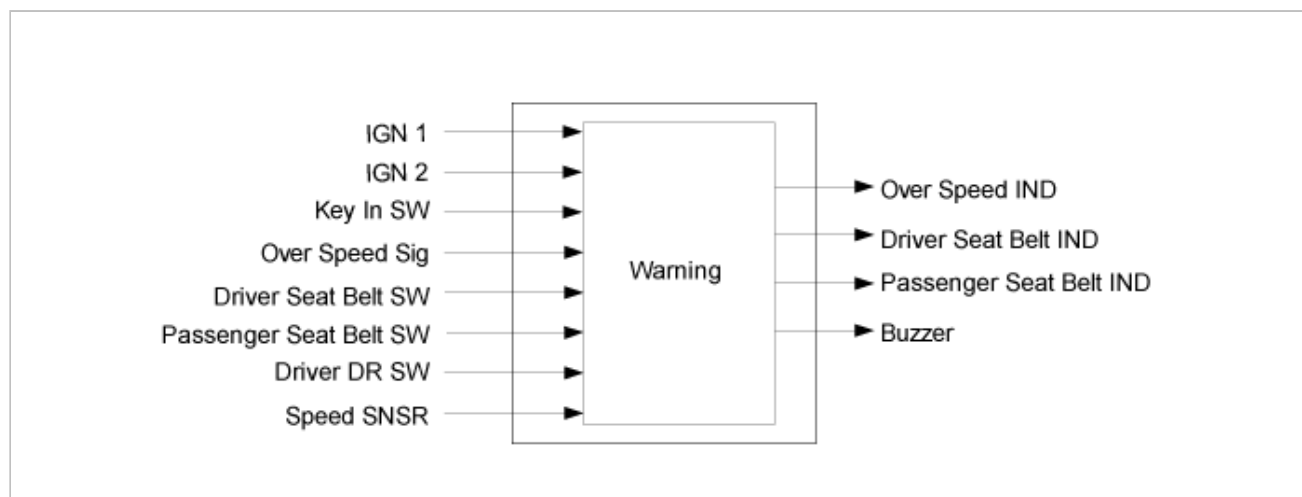
    A. Seat belt Warning/seat Belt Reminder

    B. Key Operated Warning

    C. ESCL Not Locked Warning

    D. ID Out Warning

    E. ESCL Not Unlocked Warning

    F. SSB SW Warning

    G. Back Up Warning

(3) Keep the output up to the OFF cycle when turning the output OFF.

(4) Measurement distance for sound pressure: 1.0 m

Warning Control

1. WARNING CONTROL DATA FLOW

Seat Belt Reminder

1. From IGN1 OFF (Default state)

State	Description
Initial condition	IGN1 OFF
Event	Driver Seat Belt SW belted and IGN1 ON
Action	- Start bulb check 6 seconds driver indicator blinking

State	Description
	- The automaton state is changed to IGN1 ON DRIVER BELTED

State	Description
Initial condition	IGN1 OFF
Event	Driver Seat Belt SW unbelted and IGN1 ON
Action	- Start bulb check 6 seconds blinking for Driver Seat Belt IND - Start bulb check 6 seconds warning for Buzzer - The automaton state is changed to IGN1 ON DRIVER UNBELTED

2. From IGN1 ON Driver belted

State	Description
Initial condition	IGN1 ON DRIVER BELTED
Event	IGN1 OFF
Action	- Stop bulb check 6 seconds blinking for Driver Seat Belt IND - Stop bulb check 6 seconds warning for Buzzer - The automaton state is changed to IGN1 OFF

State	Description
Initial condition	IGN1 ON DRIVER BELTED
Event	- Driver Seat Belt SW unbelted & Vehicle speed < 5Km/h
Action	- Start normal 6 seconds blinking for Driver Seat Belt IND - The automaton state is changed to IGN1 ON DRIVER UNBELTED

State	Description
Initial condition	IGN1 ON DRIVER BELTED
Event	Driver side seat belt is unbelted & Vehicle speed ≥ 5Km/h
Action	- Stop normal 6 seconds blinking for Driver Seat Belt IND - Stop normal 6 seconds warning for Buzzer - The automaton state is changed to IGN1 ON DRIVER UNBELTED

3. From IGN1 ON DRIVER UNBELTED

State	Description
Initial condition	IGN1 ON DRIVER UNBELTED
Event	IGN1 OFF
Action	- Stop Bulb check 6 seconds driver indicator blinking- Stop Normal 6 seconds driver indicator blinking- The automaton state is changed to IGN1 OFF

State	Description
Initial condition	IGN1 ON DRIVER UNBELTED
Event	Driver side seat belt is belted
Action	- Stop Normal 6 seconds driver indicator blinking- Stop ALL 6 seconds buzzer warning- The automaton state is changed to IGN1 ON DRIVER BELTED

| State	Description
Initial condition	IGN1 ON DRIVER UNBELTED
Event	Vehicle Speed >= 10km/h
Action	- Start buzzer and driver indicator Pattern (10 times (6sec ON/24sec OFF) + 6sec ON)- The automaton state is changed to PATTERN

4. From PATTERN

State	Description
Initial condition	PATTERN
Event	IGN1 OFF
Action	- Stop Buzzer and driver indicator Pattern- Stop ALL 6s driver indicator blinking- Stop ALL 6s buzzer warning- The automaton state is changed to IGN1 OFF

State	Description
Initial condition	PATTERN
Event	Driver side seat belt is belted
Action	- Stop Buzzer and driver indicator Pattern- Stop Normal 6s driver indicator blinking- Stop ALL 6s buzzer warning- The automaton state is changed to IGN1 ON DRIVER BELTED

| State	Description
Initial condition	PATTERN
Event	Vehicle Speed <= 5km/h
Action	- Stop Buzzer and driver indicator Pattern- If 6s buzzer period, after 6s warning stop Pattern- The automaton state is changed to IGN1 ON DRIVER UNBELTED

5. KEY OPERATED WARNING
   (1) When Driver Door SW is ON at the status of KEY IN ON, Buzzer will be outputted per 0.6sec continuously.

   (2) If KEY IN turns OFF or Driver Door SW is CLOSED during Buzzer output, the output will turn OFF.

   (3) When IGN1 turns ON while outputting, the output will be stopped.
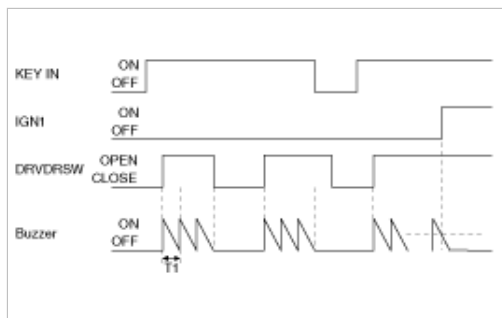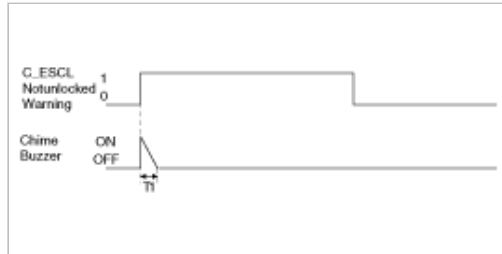

   T1 : 0.6 ± 0.1sec

6. ESCL NOT LOCKED WARNING (SMK)
   When receiving C_ESCL_Notlocked_Warning(CAN) ON, warning buzzer is on. And when releasing while putting a alarm into effect, it'll be canceled immediately.
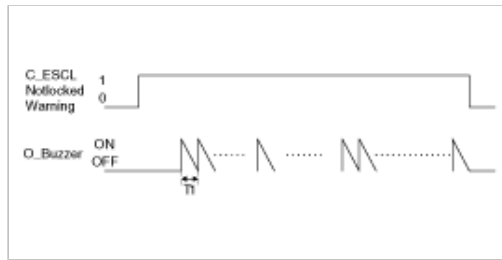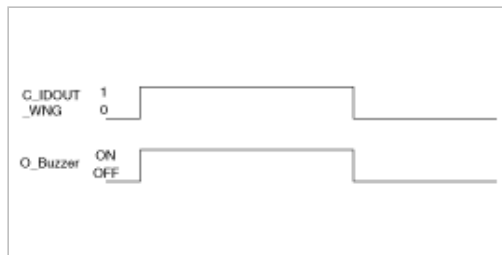
7. ESCL NOT UNLOCKED WARNING (SMK)

When receiving C_ ESCL_Notunlocked_Warning ON signal, outputting a warning buzzer ON one times for 1 sec.

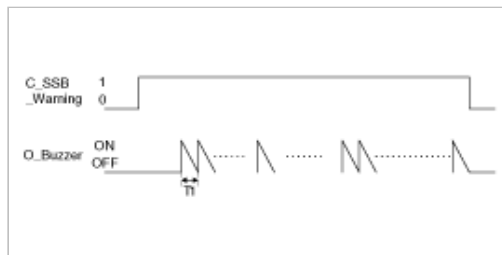T1 : 1.0 ± 0.1 sec

8. ID OUT WARNING (SMK)

When receiving C_ID OUT_WNG(CAN) ON, outputting a alarm. When receiving OFF, warning buzzer is canceled immediately.
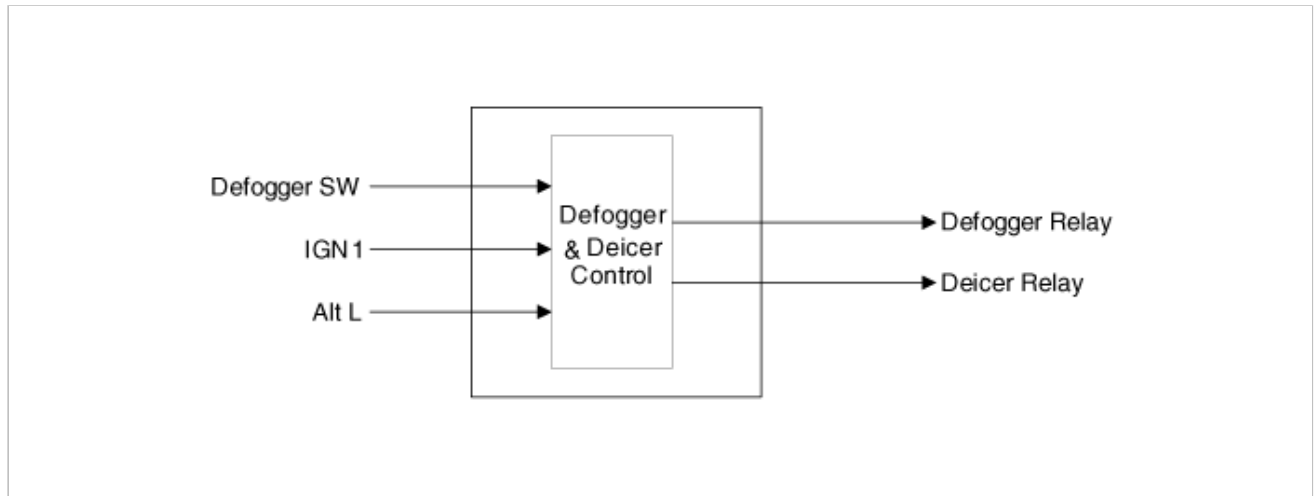

9. SSB SW WARNING (SMK)

When receiving C_SSB_Warning (CAN) ON, outputting a alarm, and when receiving OFF, a stop will do a alarm immediately.


T1 : 0.6 ± 0.1 sec

Defogger & Deicer Timer Control

1. DEFOGGER & DEICER CONTROL DATA FLOW

2. DEFOGGER TIMER

(1) If Defogger SW turns ON after Alt L is ON while IGN1 is ON, turn Defogger Relay output ON for 20min. (It is operated while ENGINE is RUNNING)

(2) If Defogger SW turns ON again while Defogger Relay output is ON, turn Defogger Relay output OFF.

(3) Also turn Defogger output OFF in case of Alt L OFF or IGN1 OFF while Defogger Relay output is ON.

(4) If Alt L is over 10 Volts ENGINE is RUNNING (Alt L ON) and if Alt L is less than 5 Volts ENGINE is STOPPED (Alt L OFF). Also, Alt L is between 5 and 10 Volts, keep the previous condition.

(5) Defogger Relay should not be outputted when turning Alt L ON while Defogger SW is pressed.
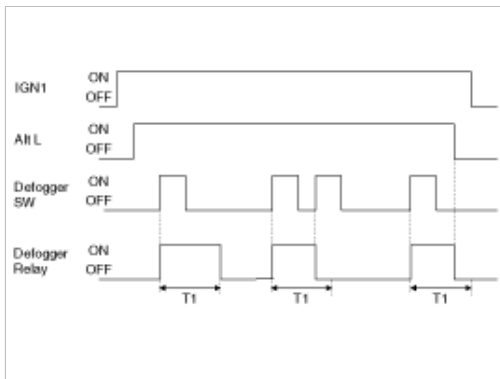
T1 : 20 ± 1min

3. FRONT DEICER TIMER

(1) Turn Deicer Relay output ON for 20min when turning Deicer SW ON after turning Alt L ON while IGN1 is ON (It is operated while ENGINE is RUNNING.)

(2) Turn Deicer Relay output OFF if Deicer SW turns ON again while Deicer Relay output is ON.

(3) Also Deicer Relay output OFF when turning ALT "L" or IGN1 OFF while Deicer Relay output is ON.

(4) If Alt L is over 10 Volts ENGINE is RUNNING (Alt L ON) and if Alt L is less than 5 Volts ENGINE is STOPPED (Alt L OFF). Also, Alt L is between 5 and 10 Volts, keep the previous condition.

(5) Deicer Relay should not be outputted when turning Alt L ON while Deicer SW is pressed.
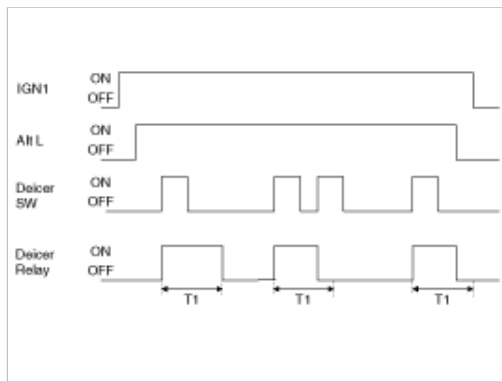
T1 : 20 ± 1min

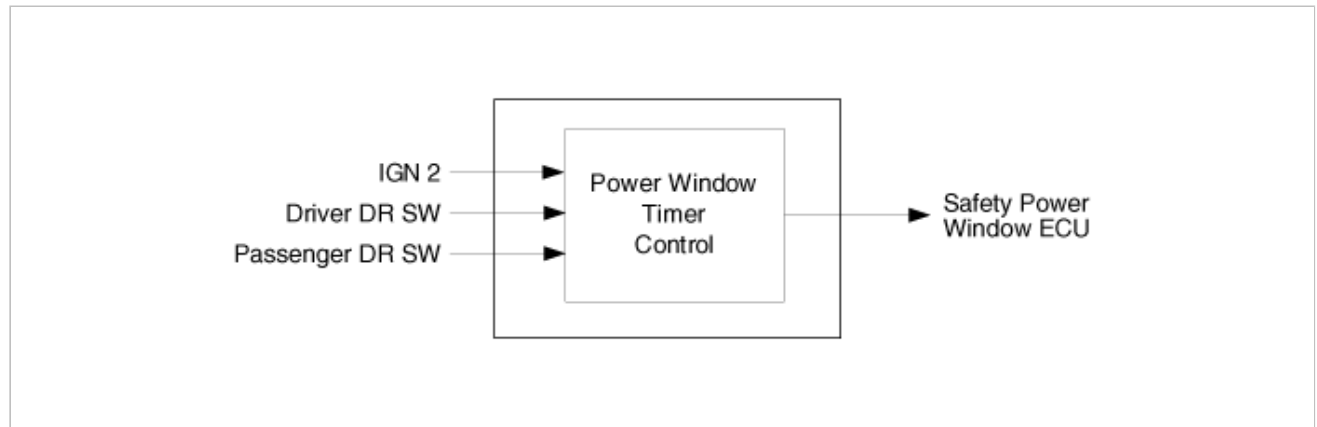4. POWER WINDOW TIMER

(1) Turn safety power window ECU output ON when turning L_IGN2 ON.

(2) Turn safety power window ECU output OFF after keeping safety power window ECU output for 30sec when IGN2 is OFF.

(3) Turn safety power window ECU OFF immediately when opening Driver Door SW or Passenger Door SW within the condition (2) above.

(4) Turn safety power window ECU output OFF when IGN2 is OFF while Driver Door SW or Passenger Door SW is open.
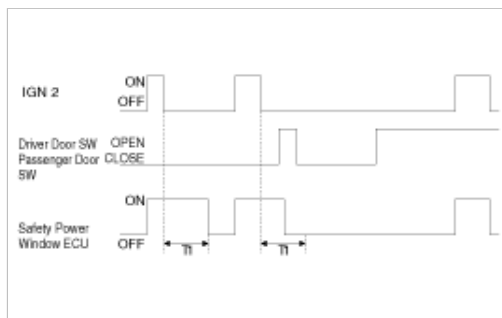
T1 : 30 ± 3sec

Door Lock/unlock Control
1. DOOR LOCK/UNLOCK CONTROL DATA FLOW

```
        IGN 1  ───────────────▶ ┌──────────┐
     Key In SW  ───────────────▶ │          │ ──────▶ DR Unlock Relay
         ATWS  ───────────────▶ │          │ ──────▶ DR Lock Relay
       RKECMD  ───────────────▶ │          │ ──────▶ Driver DR Unlock Relay
       SMKCMD  ───────────────▶ │          │
    Driver DR SW  ────────────▶ │          │
  Passenger DR SW  ───────────▶ │          │
 Driver DR Unlock SW  ────────▶ │          │
Passenge DR Unlock SW  ───────▶ │   Door   │
Driver DR Key Unlock SW  ─────▶ │   Lock/  │
Passenger DR KeyUnlock SW  ───▶ │  Unlock  │
 Driver DR Key Lock SW  ──────▶ │ Control  │
Passenger DR Key Lock SW  ────▶ │          │
Power Window DR Lock SW  ─────▶ │          │
Power Window DR Unlock SW  ───▶ │          │
     Speed SN SR  ────────────▶ │          │
     Crash Input  ────────────▶ │          │
Passive Access Unlock  ───────▶ │          │
 Passive Access Lock  ────────▶ │          │
        Fob in  ──────────────▶ │          │
      Inhibit P  ─────────────▶ │          │
     TX Unlock  ──────────────▶ │          │
       TX Lock  ──────────────▶ └──────────┘
```
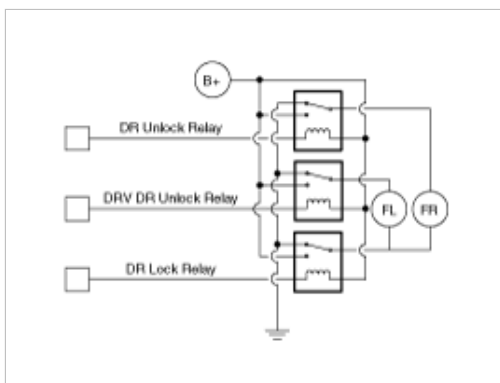
2. DOOR LOCK/UNLOCK RELAY CONTROL

(1) 2-Turn unlock

Mode	Door Unlock Relay	Driver Door Unlock Relay	Door Lock Relay
ALL DOOR LOCK	OFF	OFF	ON
ALL DOOR UNLOCK	ON	ON	OFF
Driver Door Unlock	OFF	ON	OFF

3. CENTRAL DOOR LOCK/UNLOCK

(1) If Driver Door Key Lock SW or Passenger Door Key Lock SW turns ON, turn Door Lock Relay output ON during T1. But prohibit the output when KEY IN ON *2) and IGN1 are ON.

(2) When Driver Door Key Unlock and Passenger Door Key Unlock turn ON, turn Door Unlock Relay and Driver Door Unlock Relay output ON during T1.

(3) Turn CENTRAL LOCK *3) ON during T1 when receiving TX LOCK signal. But ignore LOCK input when Driver Door SW or Passenger Door SW is ON.

(4) Turn CENTRAL UNLOCK *4)ON during T1 when receiving TX UNLOCK signal.

(5) Turn Door Lock Relay output ON during T1 when Power window Door Lock SW turns ON.

(6) Turn CENTRAL UNLOCK output ON during T1 when Power window Door Unlock SW turns ON. But prohibit the operation by Power window Door Unlock SW at the condition of ARM, ARMWAIT, REARM and ALARM.

(7) LOCK/UNLOCK by SAFETY KNOB is not interlock (Mechanical operation).

(8) Malfunction should be free when joining BATTERY (Also malfunction should be free at the location of Key In SW ON).

(9) Input which is less than 60msec should not be received (KEY LOCK/UNLOCK SW).

(10) Do not execute the output of DOOR LOCK (UNLOCK) by KNOB change.
    *2) KEY IN ON : Key In ON
    *3) CENTRAL LOCK : Refer to control mode for each Spec.
    *4) CENTRAL LOCK : Refer to control mode for each Spec.
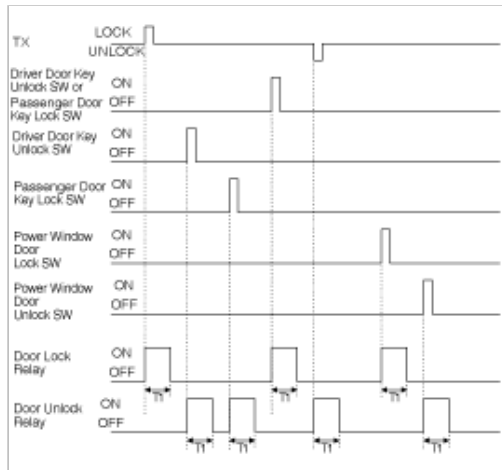
T1 : 0.5 ± 0.1sec

4. IGN KEY REMINDER
   (1) This function will not be operated if the speed of cars exceed 3km/h.

   (2) Perform Door Unlock Relay output for 1s after 0.5s when the condition becomes to be KEY IN ON, Driver Door SW is OPENED and Driver Door Unlock SW is LOCKED.

   (3) Perform ALL Door Unlock Relay output for 1s in 0.5s when the condition becomes to be KEY IN ON, Passenger Door SW is OPENED and Passenger Door Unlock SW is LOCKED.

   (4) Output ALL DOOR UNLOCK for 1s in 0.5s based on (3) if (2) and (3) are satisfied.

   (5) Output UNLOCK up to 3 times (excluding output for 1s) if LOCK condition is maintained though UNLOCK output is performed for 1s by (2), (3)(cycle for 1s: 0.5s ON/OFF).

   (6) Try UNLOCK once when DOOR is CLOSED while keeping LOCK condition after performing (5).

   (7) Output Door Unlock Relay once for 1s when Driver Door SW is closed within 0.5s since Driver Door Unlock SW is changed from UNLOCK to LOCK during KEY IN ON.

   (8) Output ALL DOOR UNLOCK once only for 1s when Passenger Door SW is closed within 0.5s since Passenger Door Unlock SW is changed from UNLOCK to LOCK during KEY IN ON.

   (9) Output ALL Door Unlock Relay once only for 1s if Driver Door Unlock SW becomes LOCK from UNLOCK within 0.5s since Driver Door SW is changed from OPEN to CLOSE during KEY IN ON.

   (10) Perform the function of KEY REMINDER when turning Power window Door Lock SW ON after opening Driver Door SW or Passenger Door SW during KEY IN ON.

   (11) Judge if RETRY output is performed or not at the point of the beginning of RETRY output(in 1.5s from the initial UNLOCK output).

   (12) Output UNLOCK though the condition is not kept for 0.5sec after realizing that of UNLOCK. But, do not output UNLOCK in case that KEY IN is OFF at the point of 0.5s passed after realizing the condition by the change of UNLOCK → LOCK in Driver Door Unlock SW or Passenger Door Unlock SW.
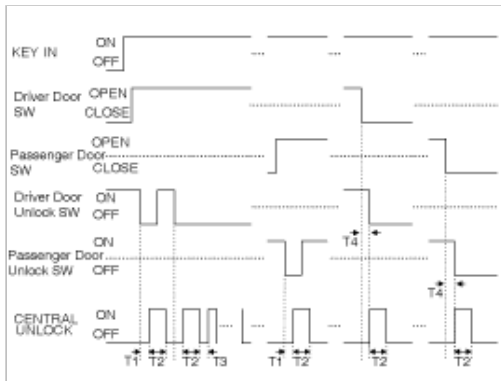
T1, T3 : 0.5 ± 0.1sec, T2 : 1 ± 0.1sec,
T4 : 0.5sec Max
** KEY IN ON : Key In ON or IGN1 ON or IGN2 ON
KEY IN OFF : Key In OFF and IGN1 OFF and IGN2 OFF

5. CRASH DOOR UNLOCK

(1) Always perform CENTRAL UNLOCK *9) output whenever Crash Input signal is inputted while IGN1 is ON.

(2) Keep CENTRAL UNLOCK output for the time left though IGN1 turns OFF from ON while outputting CENTRAL UNLOCK.

(3) Do not output CENTRAL UNLOCK if IGN1 SW turns ON from OFF after Crash Input signal is already inputted.

(4) Output CENTRAL UNLOCK during T3 if Driver Door Unlock SW or Passenger Door Unlock SW or Rear Right Door Unlock SW or Rear Left Door Unlock SW turns to LOCK from UNLOCK after outputting CENTRAL UNLOCK.

(5) Do not perform AUTO DOOR LOCK function at the condition of CRASH UNLOCK.

(6) CRASH DOOR UNLOCK function has priority to LOCK/UNLOCK control by other functions.

(7) Ignore the request for LOCK/UNLOCK by other functions while or after outputting CRASH DOOR UNLOCK. But, control LOCK/UNLOCK by other functions if IGN1 SW becomes OFF.
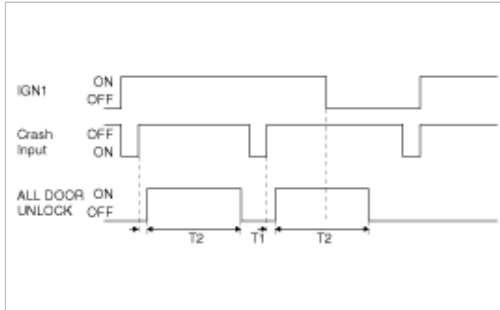
T1 : 40 msec, T2 : 5 ± 0.5 sec

6. AUTO DOOR LOCK

(1) AUTO DOOR LOCK is classified into non-activation/20km activation/40km activation. And follow the table below for the basic value and selected value of the regional operation SPEC.

Item	Description
Standard	Disable
Option 1	20 km/h

(2) On condition of IGN1 SW ON, output all door lock within T1 when keeping more than setting speed in (1). But, do not output LOCK if all DOORS are LOCKED or FAIL at first.

(3) Perform outputting LOCK up to 3 times (cycle for 1s) if either of DOORS is UNLOCKED after outputting LOCK in (2). But, ignore the DOOR that has changed to LOCK condition from UNLOCK during the output 3 times.

(4) Regard the respective DOOR FAILED if it is UNLOCKED after outputting 3 times.

(5) Output LOCK once only if the DOOR is UNLOCKED after the failed DOOR changes(UNLOCK→LOCK).

(6) Output LOCK once only if DOOR which was LOCKED after outputting LOCK in (2) becomes to be UNLOCKED.

But, output LOCK once for the respective DOOR although it keeps UNLOCK after LOCK output.

(7) Clear the FAILED DOOR when L_IGN1 SW is OFF.

(8) Do not perform AUTO DOOR LOCK function on condition of CRASH UNLOCK.
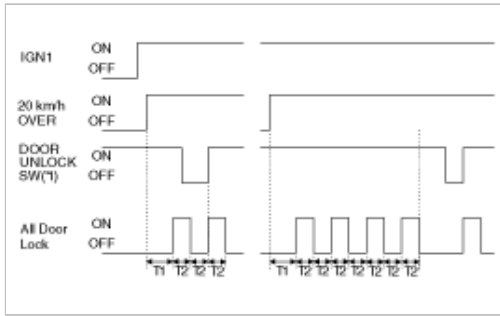
T1 : Max 1.5sec, T2 : 0.5 ± 0.1sec
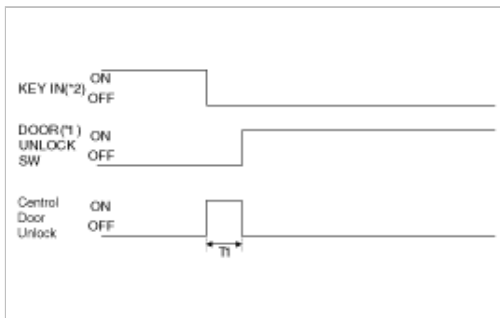*1 ON (UNLOCK) : Driver DR Unlock SW│Passenger DR Unlock SW UNLOCK
OFF (LOCK) : Driver DR Unlock SW│Passenger DR Unlock SW LOCK

7. AUTO DOOR UNLOCK

(1) AUTO DOOR UNLOCK is classified into non-activation and activation and activated for domestic ones only but not activated for others.

(2) If any door is locked, output all door unlock when turning KEY IN OFF after KEY IN is ON.
[(But, if all door is UNLOCK, it will not output.) AUTO DOOR UNLOCK should operate regardless outputing auto door lock.)]

T1 : 0.5 ± 0.1sec
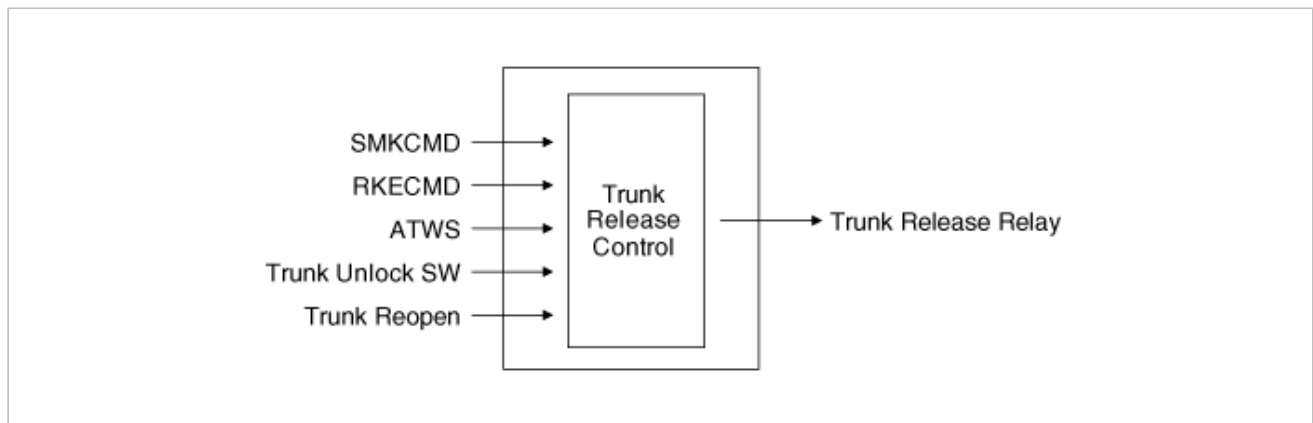*1 ON (UNLOCK) : Driver DR Unlock SW│Passenger DR Unlock SW UNLOCK
OFF (LOCK) : Driver DR Unlock SW│Passenger DR Unlock SW LOCK
*2 KEY IN ON : Key In ON (SMK : Fob in ON) or IGN1 ON or IGN2 ON
KEY IN OFF : Key In OFF (SMK : Fob in OFF) and IGN1 OFF and IGN2 OFF
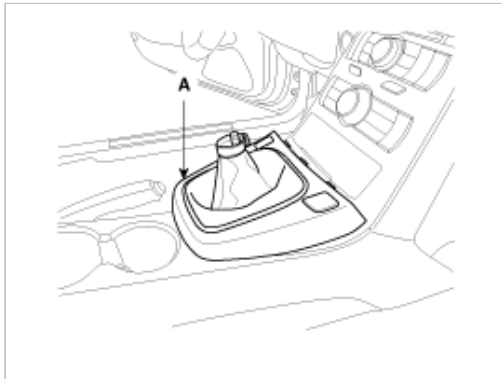
Trunk Release Control
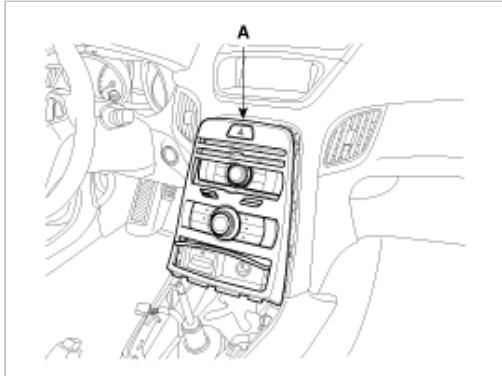
1. TRUNK RELEASE RELAY CONTROL DATA FLOW

RKECMD : TX LOCK, TX UNLOCK, TRUNK REOPEN UNLOCK

Removal

1. Disconnect the negative (-) battery terminal.

2. Remove the console upper cover(A).

3. Remove the center fascia lower panel(A).

4. Remove the body control module(A) after loosening 2 nuts and disconnecting the connectors.
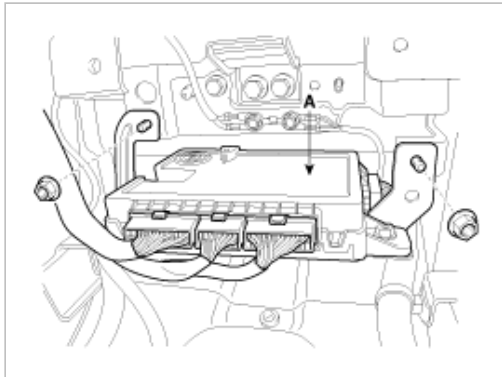
Installation

1. Install the body control module.

2. Install the center fascia lower panel.

3. Install the console upper cover.

Trouble Diagnostics When Using Diagnosis Tool

1. The body control module can diagnose by using the diagnosis tool more quickly.
   The BCM communicates with the diagnosis tool and then reads the input/output value and drives the actuator.

2. To diagnose the BCM function, select the menu of model and body control module.

Select System

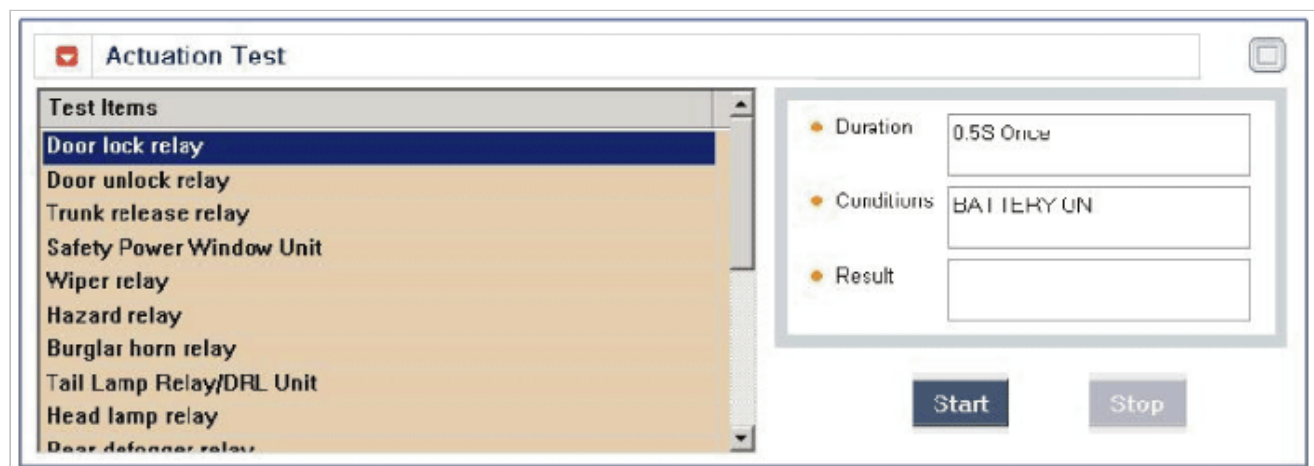|				
ENGINE	A/T	VDC	AIRBAG	AIR/CON
AHLS	IMMO	PIC	TPMS	BCM
CODE				

Selected

BCM
BODY CONTROL MODULE
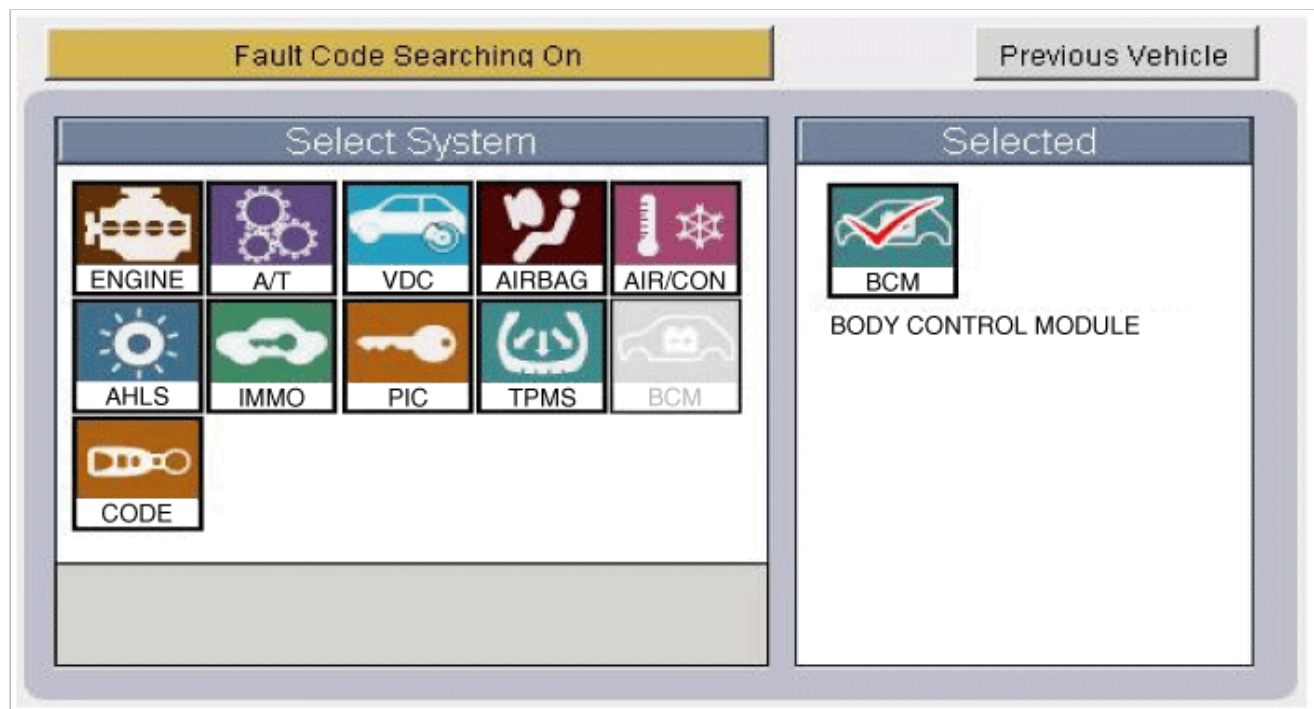
3. To consult the present input/out value of BCM, "Current DATA". It provides information of BCM input/output conditions of power supply, turn signal/brake lamp, headlamp, door, locks, outside mirror, wiper, auto-light and transmitters etc.

Current Data

Selective Display ⇕ Stardard List ⇕ Graph ⇕ Items List⇕ Reset Min.Max. Record Stop ⇕

Sensor Name	Value	Unit	Sensor Name	Value	Unit
Ignition 2	ON	-	Ignition 1	ON	-
Alternator L terminal	OFF	-	Key in switch	OUT	-
ACC switch	ON	-	Start stop switch	OFF	-
Safety Power Window Unit	ON	-	Auto light power	OFF	-
Tail Switch	OFF	-	Auto light switch	OFF	-
Head lamp switch	OFF	-	Front fog lamp switch	OFF	-
Tail lamp relay	OFF	-	Hazard lamp relay(+RK)	OFF	-
Driver seat belt indicator	OFF	-	Room lamp	ON	-

4. To perform compulsory operation on BCM input factors, select "ACTUATION TEST".

Actuation Test

Test Items

Door lock relay
Door unlock relay
Trunk release relay
Safety Power Window Unit
Wiper relay
Hazard relay
Burglar horn relay
Tail Lamp Relay/DRL Unit
Head lamp relay
Rear defogger relay

- Duration   0.5S Once
- Conditions   BATTERY ON
- Result

Start   Stop

Actuation Test

Test Items

- **Door lock relay**
- Door unlock relay
- Trunk release relay
- Safety Power Window Unit
- Wiper relay
- Hazard relay
- Burglar horn relay
- Tail Lamp Relay/DRL Unit
- Head lamp relay
- Rear defogger relay

- Duration: 0.5S Once
- Conditions: BATTERY ON
- Result: Success

[Start] [Stop]