

BODY CONTROL SYSTEM

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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

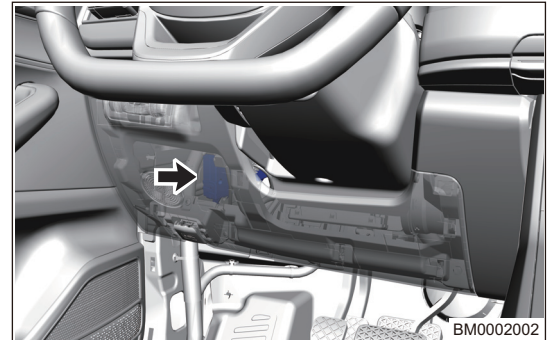
اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



GENERAL INFORMATION

Overview

Description



Body control module is called BCM for short which integrates most of vehicle electrical appliances, and it is an important part of the body electrical system.

1. Function Description

- (a) Tire pressure function (if vehicle is equipped with tire): Tire pressure monitoring system is an active safety device, which can monitor tire pressure and temperature in real time and display tire pressure and temperature on meter. When tire pressure is too low or temperature is too high, tire pressure monitoring system will warn the driver of driving danger.
- (b) Window anti-pinch function (if vehicle is equipped with anti-pinch function): When passenger is caught by window that is performing automatic up operation while operating window automatic up or remote one-touch up function due to carelessness, glass regulator motor is controlled to rotate in reverse direction by jam protection control module before motor reaches set value of jam protection force, so that the window glass goes down for a certain distance to prevent passenger from being jammed.
- (c) The main functions are as below: defrost, turn signal light, lane change, hazard warning light, position light, park light, low beam light, follow me home, car location, high beam, passing light, rear fog light control, daytime running light, battery save, dome light, third row dome light, rear view mirror ground light, window, PEPS button background light control, anti-theft management, trunk opening management (with PLG), door status, central lock, front wiper control, front washer control, back-up light control, key status position signal, sudden braking hazard warning light double flashing alarm function, assist steering illumination, brake light control, rear view mirror folding, DVD settings, remote control function, LIN ambient light.

2. BCM installation position:

- (a) It is installed on body under instrument panel.

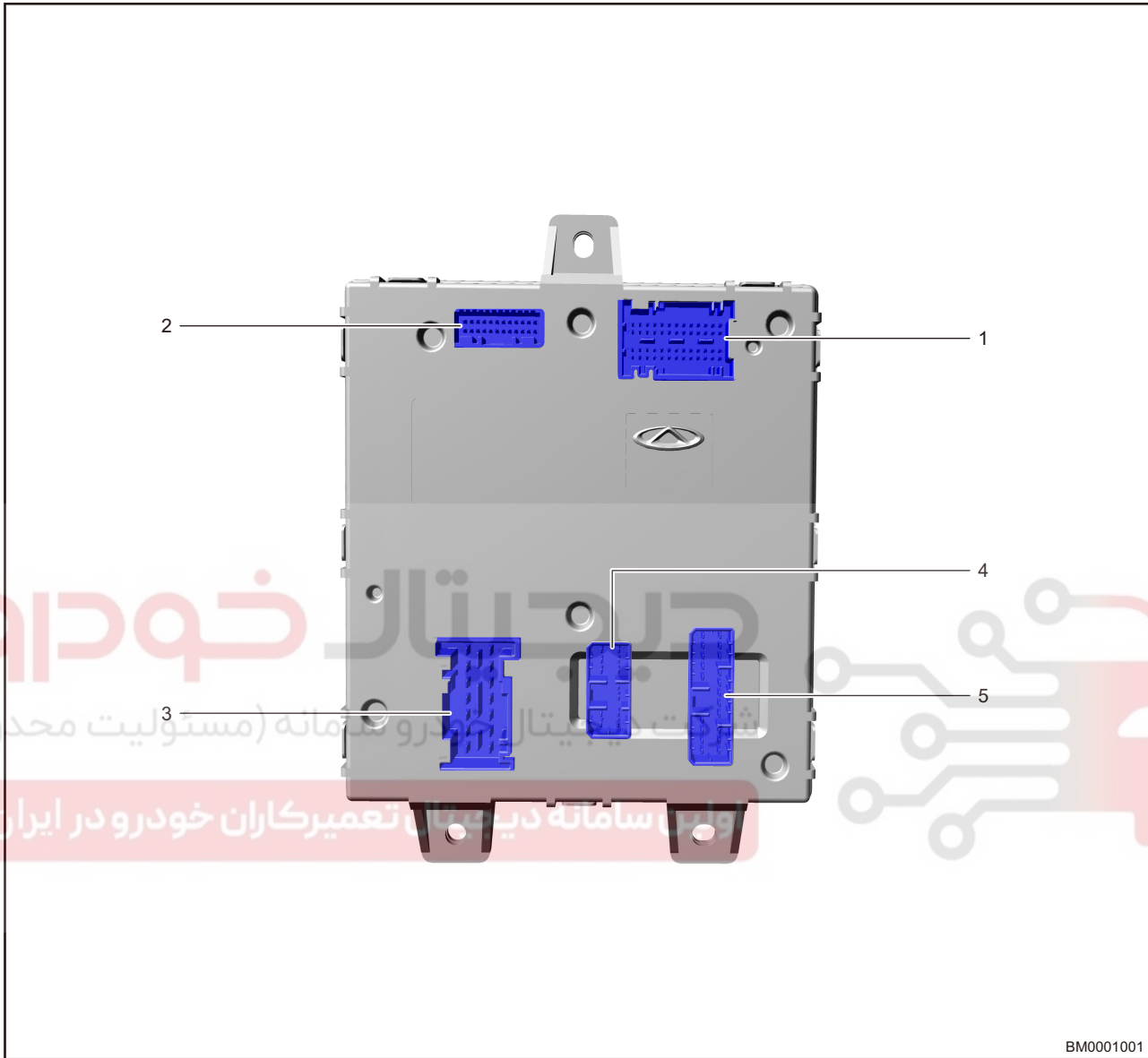
Specifications

Torque Specifications

Description	Torque (N·m)
Body Control Module Bracket Fixing Nut	7 ± 1
Instrument Panel Left Lower Protector Assembly	1.5 ± 0.5
Instrument Panel Fuse and Relay Box Fixing Nut	7 ± 1

Body Control Module

Terminal Definition



BM0001001

Pin 1-52 Connector	Pin 2-24 Connector
Pin 3-14 Connector	Pin 4-12 Connector
Pin 5-20 Connector	

BCM (A) Terminal Definition

Terminal No.	Description	Terminal No.	Description
1-01	Heated Windshield	1-27	Dome Light Output
1-02	FL_DR_IND	1-28	Third Row Dome Light Output
1-03	-	1-29	Rear Defroster Output
1-04	Heated Windshield	1-30	High Speed Wiper Output
1-05	-	1-31	Heated Steering Wheel OUT
1-06	-	1-32	Light Sensor Input
1-07	-	1-33	Front Right Window Regulator Switch
1-08	-	1-34	Front Left Window Regulator Switch
1-09	-	1-35	-
1-10	Rear Left Door Open Signal	1-36	Passenger Side Window Regulator Disable Switch
1-11	-	1-37	Front Right Door Open Signal
1-12	Rear Right Door Open Signal	1-38	-
1-13	Front Left Door Lock State Signal	1-39	Brake Switch Input
1-14	Left Rear View Mirror Shadow Light Output	1-40	Passenger Side Window Regulator Disable Switch Operation Indicator
1-15	FR_DR_IND	1-41	-
1-16	LIN Signal (Shift Module)	1-42	Low Speed Wiper Output
1-17	-	1-43	Low Beam Light Output
1-18	High Beam Light Output	1-44	Horn Output
1-19	Rear Right Window Regulator Switch	1-45	Analog Ground
1-20	Passenger Side Front Right Window Regulator Switch	1-46	Turn Signal Light Switch
1-21	Passenger Side Rear Left Window Regulator Switch	1-47	Rear Left Window Regulator Switch
1-22	Passenger Side Rear Right Window Regulator Switch	1-48	Back Door Open Signal
1-23	Front Left Door Open Signal	1-49	Central Control Lock Switch Input
1-24	Front Wiper Stop Position Signal	1-50	Central Unlock Switch Input
1-25	-	1-51	-
1-26	Rear Wiper Stop Position Signal	1-52	Engine Hood Contact Switch

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BCM (A) Terminal Definition

Terminal No.	Description	Terminal No.	Description
2-01	Heated Steering Wheel Indicator	2-13	-
2-02	High Speed CAN Signal Low Side	2-14	Hazard Light Operation Indicator
2-03	-	2-15	High Speed CAN Signal High Side
2-04	-	2-16	-
2-05	ACC Signal Input	2-17	IGN Signal Input
2-06	-	2-18	-
2-07	Rear Fog Input	2-19	Rear Washer Input
2-08	Front Wiper Input	2-20	Front Washer Input
2-09	Rear Defroster Input	2-21	Rear Wiper Input
2-10	Rear View Mirror Fold Input	2-22	Front Wiper Input
2-11	Hazard Light Input	2-23	Light Input
2-12	High Beam - Flash Input	2-24	Wiper Sensitivity Switch

BCM (C) Terminal Definition

Terminal No.	Description	Terminal No.	Description
3-01	Power Supply 3	3-08	Rear Left Window UP Output
3-02	Power Supply 6	3-09	Rear Left Window DOWN Output
3-03	Ground 1	3-10	Power Supply 1
3-04	Ground 2	3-11	Front Right Window UP Output
3-05	Rear Right Window DOWN Output	3-12	Front Right Window DOWN Output
3-06	Rear Right Window UP Output	3-13	Front Left Window UP Output
3-07	Power Supply 2	3-14	Front Left Window DOWN Output

BCM (D) Terminal Definition

Terminal No.	Description	Terminal No.	Description
4-01	-	4-07	-
4-02	Central Unlock Output	4-08	-
4-03	Central Control Lock Output	4-09	Power Supply 5
4-04	Back Door Unlock Output	4-10	Rear Wiper Output
4-05	Front Washer Output	4-11	-
4-06	-	4-12	Rear Washer Output

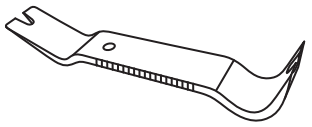
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BCM (E) Terminal Definition

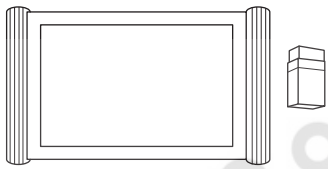
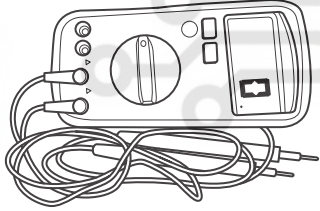
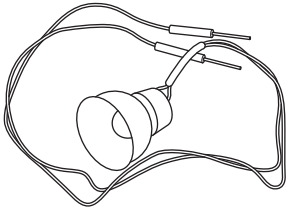
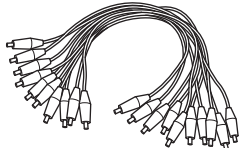
Terminal No.	Description	Terminal No.	Description
5-01	-	5-11	High Mounted Stop Light Output
5-02	Outside Rear View Mirror Unfold Output	5-12	-
5-03	Outside Rear View Mirror Fold Output	5-13	Heated Spray Nozzle OUT
5-04	Left Turn Signal Light Output	5-14	Left Daytime Light Output
5-05	Right Turn Signal Light Output	5-15	Right Daytime Light Output
5-06	Anti-theft Horn Output	5-16	Battery Saving Output
5-07	Back-up Light Output	5-17	Rear Fog Light Output
5-08	Left and Right Brake Light Output	5-18	-
5-09	Front Position Light + Backlight + License Plate Light	5-19	-
5-10	Rear Position Light + License Plate Light	5-20	Power Supply 4

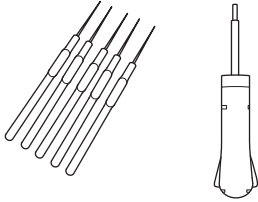

Tool Drawing

Special Tools

Tool Name	Part No.	Tool Drawing
Interior & Exterior Dismantling Device	CH-10008	 <p style="text-align: right;">037</p>

General Tool

Tool Name	Tool Drawing
X-431 PAD Diagnostic Tester	 <p style="text-align: right;">001</p>
Digital Multimeter	 <p style="text-align: right;">002</p>
Bulb Test Light (21 W)	 <p style="text-align: right;">087</p>
Jumper Wire	 <p style="text-align: right;">088</p>

Wire Harness Terminal Tools	 <p>089</p>
Oscilloscope	 <p>061</p>

BCM Function Test Specifications

37 Defroster

1. Defroster operation conditions: IGN ON; defroster signal active
 - (a) Active the defroster switch when the key is in OFF, ACC or START, the defroster will not operate.
2. When defroster is operating: Defroster stopped when 20 minutes elapsed
3. When defroster is operating: Active the defroster signal again, defroster stops
4. When defroster is operating: Key is switched from IGN ON to ACC or OFF, defroster stops
5. When defroster is operating: After the operation time reaches to 20 min. \pm 5 s, defroster stops
6. When defroster function operates: defroster function pauses when engine cranks while it resumes after engine has started

Caution:

- When voltage is below 11.5 V for more than 5 s, defroster output is shut down temporarily. If voltage is above 12.5 V for more than 15 s in the following counting time, the output will be restarted.

Turn Signal Light Function

1. Left turn signal light operating conditions: IGN ON; left turn signal light switch is activated
2. When left turn signal light is operating: the flashing frequency of left turn signal light is 400 ms on and 400 ms off.
 - (a) When left turn signal light is operating: key is switched from ON to OFF, left turn signal light stops operating and meter stops flashing.
3. When left turn signal light is operating
 - (a) The corresponding bulb is intact, BCM sends CAN signal and the frequency is the same as left turn signal light.
 - (b) If the corresponding 21 W bulb is damaged, BCM sends CAN signal and the frequency is 2 times of normal operating frequency. No matter whether the bulb is damaged or not, BCM will work and send signals.
4. Right turn signal light operating conditions: IGN ON; right turn signal light switch is activated

5. When right turn signal light is operating: the flashing frequency of right turn signal light is 400 ms on and 400 ms off.
 - (a) When right turn signal light is operating: key is switched from ON to OFF, right turn signal light stops operating and meter stops flashing.
6. When right turn signal light is operating
 - (a) The corresponding bulb is intact, BCM sends CAN signal and the frequency is the same as right turn signal light.
 - (b) If the corresponding 21 W bulb is damaged, BCM sends CAN signal and the frequency is 2 times of normal operating frequency. No matter whether the bulb is damaged or not, BCM will work and send signals.
7. When left/right turn signal light is operating: left/right turn signal light input is deactivated, left/right turn signal light should stop operating immediately
8. When left/right turn signal light is operating: key is switched from IGN ON to ACC or OFF, and left/right turn signal light stops operating immediately

Lane change function

1. Left lane change operating conditions: IGN ON; left turn signal light switch activates shortly (50 ms ~ 1000 ms)
2. When left lane change is operating: left turn signal light flashes 3 times at frequency of 400 ms on and 400 ms off
3. When left lane change is operating
 - (a) The corresponding bulb is intact, BCM sends CAN signal and the frequency is the same as left turn signal light.
 - (b) If the corresponding 21 W bulb is damaged, BCM sends CAN signal and the frequency is 2 times of normal operating frequency. No matter whether the bulb is damaged or not, BCM will work and send signals.
4. During left lane change operation: left turn signal light switch is activated (50 ms ~ 1000 ms) shortly again, and left turn signal light flashes 3 times again
5. When left lane change is operating: left turn signal switch remains active (>1000 ms) and automatically switches to left turn signal light operating logic
6. When left lane change is operating: key is switched from IGN ON to ACC or OFF, and left turn signal light stops operating immediately
7. When left lane change is operating: after flashing 3 times, left turn signal light should stop operating immediately
8. Right lane change operating conditions: IGN ON; right turn signal light switch activates shortly (50 ms ~ 1000 ms)
9. When right lane change is operating: right turn signal light flashes 3 times at frequency of 400 ms on and 400 ms off
10. When right lane change is operating
 - (a) The corresponding bulb is intact, BCM sends CAN signal and the frequency is the same as right turn signal light.
 - (b) If the corresponding 21 W bulb is damaged, BCM sends CAN signal and the frequency is 2 times of normal operating frequency. No matter whether the bulb is damaged or not, BCM will work and send signals.
11. During right lane change operation: right turn signal light switch is activated (50 ms ~ 1000 ms) shortly again, and right turn signal flashes 3 times again
12. When right lane change is operating: right turn signal switch remains active (>1000 ms) and automatically switches to right turn signal light operating logic
13. When right lane change is operating: key is switched from IGN ON to ACC or OFF, and right turn signal light stops operating immediately

14. When right lane change is operating: after flashing 3 times, right turn signal light should stop operating immediately

Hazard warning light function

1. Hazard warning light activation conditions: Hazard warning light switch is activated when hazard warning light is not activated.
2. When hazard warning light is activated: flashing frequency of left/right turn signal light and hazard warning light indicator are 400 ms on and 400 ms off
3. When hazard warning light is activated
 - (a) The corresponding bulb is intact, BCM sends CAN signal and the frequency is the same as turn signal light;
 - (b) If any 21 W bulb is damaged, the CAN signal frequency of turn signal light and the flashing frequency of hazard warning indicator will be 2 times of normal operating frequency.
4. When hazard warning light is activated: hazard warning light switch is activated again and hazard warning light function is turned off; left/right turn signal light stops operating immediately
5. When ABM sends a collision signal, hazard warning light function should be activated automatically (CAN signal of left/right turn signal light, indicator and turn signal light). Automatically activated hazard warning light function due to collision can be canceled as key is switched to OFF, then to ON or hazard warning light button is pressed
6. When turn signal light function and hazard warning light function are both effective, BCM should perform the next action

Caution:

- In a ignition cycle, BCM responds to one collision signal only.

Position light

1. Position light activation conditions: IGN ON or ACC; small light input or low beam light input is activated
2. When position light is operating: BCM should send CAN signal
3. When position light is operating: When small light input and low beam input are deactivated, small light stops operating
4. When position light is operating: When key is switched to OFF, small light stops operating and sends CAN signal

Parking light

1. Parking light activation conditions: key is switched to OFF; small light switch is activated
2. When parking light is activated: Small light comes on and BCM should send CAN signal
3. When parking light is activated: Small light switch is deactivated and small light is turned off, BCM should send CAN signal

Low beam light

1. Low beam light activation conditions: IGN ON; low beam light switch is activated
2. When low beam light is activated: BCM sends CAN signal
3. When low beam light is activated: When low beam switch input is canceled, low beam light turns off immediately
4. When low beam light is activated: Key is switched from IGN ON to ACC or OFF, low beam light turns off immediately

Follow me home

1. Light is in manual mode
 - (a) FMH function activation condition: Flash switch is activated within 2 minutes after key is switched to OFF, and it can be activated again within 2 minutes regardless of whether FMH function is manually turned off or automatically turned off due to overtime
 - (b) When FMH function is activated: Low beam light and small light are illuminated, and both CAN signal and FMH time are sent
 - (c) When FMH function is activated: default duration is 30 S. Activating Flash switch again for a short time will increase duration of FMH function by 30 S each time, but no more than 8 times
 - (d) When FMH function is activated: Flash switch is activated for 2 seconds, FMH function will be manually turned off - low beam light and position light will turn off immediately and cumulative duration of FMH will be reset
 - (e) When FMH function is activated: Key is switched to ACC or IGN ON, FMH function will be turned off - low beam light and small light will go out immediately and cumulative duration of FMH will be reset
 - (f) When FMH function is activated: FMH function will be automatically turned off after set FMH working time is reached: low beam light and small light will turn off immediately.
2. Light is in automatic mode
 - (a) The vehicle has fortification condition, light combination switch is in AUTO, remote controller lock button is pressed, and BCM receives valid signal sent from rain sensor, and low beam light and position light are automatically turned on for 30s.
 - (b) After 30 S or ignition key is switched to OFF/ON/ACC or light combination switch is switched from AUTO, low beam light and position light are turned off.

Car location

1. Light is in manual mode
 - (a) LMC function activation condition: IGN OFF; FMH is activated in this same ignition cycle (ON > ACC > OFF) and automatically turns off due to overtime; remote control unlock signal is received; four doors are closed.
 - (b) When LMC function is activated: Low beam light and small light are on and send CAN signal.
 - (c) When LMC function is activated: FMH function cannot be activated, low beam light and small light operate in LMC mode.
 - (d) When LMC function is activated: Remote control lock signal (four doors are closed) is received, LMC function is turned off - low beam light and small light are off.
 - (e) When LMC function is activated: Any door is opened, LMC function is turned off -- low beam light and small light are off.
 - (f) When LMC function is activated: Any key is switched to ACC or IGN ON, LMC function is turned off -- low beam light and small light are off.
 - (g) When LMC function is activated: After receiving remote control unlock signal, LMC function delays 60 s (subject to remote control unlock time received)
 - (h) When LMC function is activated: Longest duration is 60 s, LMC function will turn off automatically after overtime.
2. Light is in automatic mode
 - (a) The key is in OFF, light combination switch is in AUTO, remote controller unlock button is pressed, and BCM receives valid signal sent from light sensor, and low beam light and position light turn on for 30 s.
 - (b) After 30 s or ignition key is switched to ACC, low beam light and position light go out.
 - (c) When LMC function is activated, if the activation conditions are met again or FMH function is activated, it counts down from 30 s again and the light will not flash.

Automatic light ON

1. Automatic light activation conditions: IGN in ON position; light switch in AUTO; LIN valid signal sent from rain sensor received
2. After automatic light ON function is activated, BCM sends low beam light and position light CAN signals to instrument cluster.
3. Low beam lights go out if any condition is met
 - (a) IGN not in ON.
 - (b) Light switch is switched from AUTO
 - (c) Rain sensor LIN signal is invalid.
4. Position lights go out if any condition is met.
 - (a) IGN not in ON.
 - (b) After light switch is moved from AUTO for 2 s.
 - (c) After invalid rain sensor LIN signal keeps for 5 s.

High beam lights

1. High beam light operating conditions: IGN ON; low beam lights are in activating status, high beam light switch is activated
2. When high beam light is operating: high beam lights come on and send CAN signal
3. When low beam light is operating: When engine starts, high beam lights temporarily stop operating but CAN data will be sent continuously and resume operation after engine has started.
4. When high beam light is operating: high beam light switch is deactivated and high beam lights turn off
5. When high beam light is operating: low beam light switch is deactivated and high beam lights turn off
6. When high beam light is operating: key is switched from IGN ON to ACC or OFF, high beam lights are turned off

Flash function

1. Flash operating conditions: IGN ON; Flash switch is activated
2. When Flash is operating: High beam lights come on and send CAN signal
3. When Flash is operating: When engine starts, high beam lights temporarily stop operating and resume operation after engine has started
4. When Flash is operating: when Flash switch is deactivated, high beam lights turn off
5. When Flash is operating: key is switched from IGN ON to ACC or OFF, high beam lights turn off

Front Fog Light Control

1. Front fog light operating conditions: IGN ON; small lights are in activating status, front fog switch is activated
2. When front fog lights are operating: Front fog lights come on and sends CAN signal
3. When front fog light is operating: Front fog switch activation is canceled and front fog lights go out
4. When front fog lights are operating: Key is switched from IGN ON to ACC or OFF, front fog lights go out
5. When front fog light is operating: Small light is turned off; front fog lights go out and send CAN signal

Rear Fog Light Control

1. Rear fog light operating conditions: IGN ON; front fog light or low beam light load is activated; rear fog light switch is activated.
2. When rear fog light is operating: Rear fog light comes on and sends CAN signal.
3. When rear fog light is operating: When rear fog light switch is activated again, rear fog lights turn off.

4. When rear fog light is operating: Key is switched from IGN ON to ACC or OFF, rear fog light is turned off.
5. When rear fog light is operating: When low beam light or front fog light load is turned off, rear fog lights turn off at the same time.

Daytime Running Light

1. Daytime running light operating conditions: Power assembly is started; low and high beam lights are not activated.
2. When daytime running light is operating: When power assembly is stopped, daytime running light function is turned off.
3. When daytime running light is operating: The activation of clearance light, low beam light and front fog light will cause daytime running lights to be turned off.
4. When daytime running light is operating: Flash function does not affect daytime running light.

Battery Save

1. Battery save function remains active during IGN ON or IGN ACC
2. Battery save function remains active without other wake-up sources within 15 minutes after IGN OFF
3. Battery save timing within 15 minutes after IGN is turned to OFF: Any door or trunk opened, remote unlocking signal received, key insertion or removal will reset timing to 15 minutes.

Caution:

- Battery save load includes: Key light, dome light and trunk light.
- Battery Save can be woken up by central control unlock or mechanical unlock after Battery Save is turned off.

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Dome light

1. Key insertion and removal, dome light and key light control
 - (a) When key is removed, BCM turns on dome light and key light is on for 3 minutes (fades in and fades out).
 - (b) Within 3 minutes of dome light operation: key insertion does not affect the operation timing of dome light and key light.
 - (c) Within 3 minutes of dome light operation: When IGN is turned to ON, dome light and key light will fade out immediately.
 - (d) Within 3 minutes of dome light operation: If all doors are closed after any door is opened, dome light and key light continue to work for 8 s, and then fade out.
2. Door status, dome light and key light control
 - (a) If any of doors is opened and remains open, dome light comes on for 3 minutes (fades in and fades out).
 - (b) Within 3 minutes of dome light operation: If another door is opened while one door remains open, dome light continues to come on for 3 minutes, and then fades out.
 - (c) Within 3 minutes of dome light operation: When IGN is turned to ON, all doors are closed, dome light will fade out immediately.
 - (d) Within 3 minutes of dome light operation: When IGN is turned to OFF or ACC and all doors are closed, dome light will fade out after 8 s; if the key is turned to IG ON within 8 s, dome light will fade out immediately.
3. Remote control key, dome light and key light control
 - (a) When BCM receives unlock signal from remote controller: no matter what status the door is in, dome light comes on for 15 S (fades in and fades out).
 - (b) Within 15 s of dome light operation: When IGN is turned to ON, dome light and key light will fade out immediately.

- (c) Within 15 s of dome light operation: When remote controller is fortified successful, dome light will go out immediately.
 - (d) Within 15 s of dome light operation: when any door is opened, dome light enters into mode 2.
4. Collision signal, dome light and key light control
- (a) When IGN is turned to ON, regardless of door condition, BCM will illuminate dome light for 30 minutes after receiving CAN signal. There is no fade-in process, including fade-out process.
 - (b) Within 30 minutes of dome light illumination: if key is switched to OFF, dome light will fade out immediately.
 - (c) Within 30 minutes of dome light illumination: if BCM receives remote controller key lock signal, dome light goes out immediately and there is no fade-out process.

Caution:

- Please turn rear dome light switch to Door position to test above function logic.
- In any of above conditions (key insertion and removal, door status, remote control key) triggers dome light to come on, another event is triggered again, and dome light illumination time is reset.

Third Row Dome Light

1. Third row dome light operating conditions: trunk is opened and trunk light remains on for 15 minutes.
2. When trunk light is operating: trunk is closed and trunk light goes out immediately.

Rear View Mirror Ground Light

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1. Remote control and ground light function
 - (a) In OFF/ACC condition, ground light comes on for 15 s by key or remote control unlocking
 - (b) In OFF condition, BCM receives remote control fortifying/remote fortifying/PLG fortifying signal and vehicle fortifying is successful, and then ground light comes for 15 s.
 - (c) When key is switched to ON or 15 s of counting time is finished, the ground light goes out.
2. Door Condition Signal Control Ground Light Function
 - (a) In OFF/ACC/ON condition, if any door is opened, BCM controls ground light to come on for 3 minutes.
 - (b) Within 3 minutes of ground light activation: If another door is opened while one door remains open, dome light continues to come on for 3 minutes, and then fades out.
 - (c) In OFF/ACC/ON condition, if ground light comes on, BCM will control ground light to come on for 8 s and then go out after four doors are closed; within 8 s of ground light illumination, if the key is turned to ON position, ground light will go out immediately.
 - (d) When ground light comes on, with IGN in ON condition, the ground light will go out immediately if four doors are closed.

Caution:

- When ground light comes on, BCM enters door condition signal control ground light logic if any door is opened.
- Ground light will not illuminate if back door is opened.
- When the ground light comes on, if BCM is fortified or unfortified, BCM enter remote control signal/PEPS signal control ground light logic.

Window

1. Window activation condition: Window switch is activated with IGN ON, or within 2 minutes after key is moved out of ON position and both front doors are closed.
2. Window switch has 4 states
 - (a) Manual up: Window goes up when the switch is turned to this position, and it stops when switch is not in this position;
 - (b) Manual down: Window goes down when the switch is turned to this position, and it stops when switch is not in this position;

- (c) Auto up: Window goes up automatically when the switch is turned to this position until it blocks and stops or position changes;
- (d) Auto down: Window goes down automatically when the switch is turned to this position until it blocks and stops or position changes.
3. When window activation is in auto mode: Press UP or DOWN switch of corresponding window again to stop window activation.
4. When window activation is in Auto mode: If reaching 2 minutes as described in 1, the window in operation will stop after completing current operation
5. When window activation is in Manual mode: If reaching 2 minutes as described in 1, the operating window will stop immediately
6. When key is switched to ACC or OFF within 2 minutes: If any front door is opened, window function will be disabled.
7. When window disabled switch is activated: Passenger side input will be prohibited; The operating window activated by passenger side switch will stop immediately. When window disabled switch activation is canceled, passenger side will be prohibited and window disabled indicator goes out
8. When key is in ACC or OFF: Window switch input will be invalid if any front door is opened (it is still invalid when closing the door after front door is opened); And if window is operating when front door is opened, stop the window immediately.
9. When engine starts, the operating window will stop immediately and it cannot resume after engine has started

PEPS ENGINE START STOP switch backlight control

1. When position light is on: BCM continuously sends CAN signal to illuminate PEPS backlight.
2. When small light is off,
 - (a) the door status changes:
 - When any door is opened, BCM continuously sends CAN signal to turn on the backlight for 3 minutes, and then sends CAN signal after 3 minutes to turn off the backlight.
 - Within 3 minutes of backlight illumination, if another door is opened, timing will restart again.
 - In IGN-ON condition, during 3 minutes of backlight illumination, if all doors are closed, backlight will go out after 3 s.
 - In IGN-OFF/ACC condition, within 3 minutes of backlight illumination, if all doors are closed, backlight will go out after remaining on for 11 s.
3. PEPS SMART/RKE Control
 - When BCM receives CAN signal (regardless of door status), BCM will keep backlight remaining on for 18 s and then turn it off after 18 s.
 - If key is switched to ON within 18 S, backlight will be turned off immediately.
 - If key lock signal is received within 18 S, backlight will be turned off immediately.
 - If any door is opened within 18 S, it is performed according to door status control strategy.

Anti-theft management

1. Fortifying mode
 - (a) Trigger conditions:
 - IGN in OFF (not in IGN ON or ACC)
 - All doors, engine hood and trunk lid are closed.
 - BCM receives remote control lock command.
 - (b) BCM feedback when fortifying mode is entered:
 - Turn signal light flashes once (come on for 500 ms) and sends corresponding CAN signal.
 - Anti-theft deterrent indicator flashes at a frequency of 100 ms on, 1900 ms off.
 - Actuate the anti-theft horn 50 ms and high and low pitched horns 15 ms.

2. Fortifying failure mode
- Trigger conditions:
 - IGN is in OFF.
 - Any of four doors, engine hood or trunk lid is opened;
 - BCM receives remote control lock command.
 - BCM light feeds back when fortifying failure mode is entered:
 - Turn signal light flashes two times (flashing for 500 ms with a interval time of 1 s) and sends the corresponding CAN signal.
 - When entering fortifying failure mode:
 - If all doors are closed and any of the engine hood and trunk is opened, BCM will perform central control lock command once;
 - If engine hood and trunk lid are closed and any of the doors are opened, BCM will perform central control lock command and then perform unlock command (the interval time is 500 ms).
3. Intrusion mode
- Trigger conditions: BCM will enter to alarm status after the following conditions are met when the vehicle is in fortifying mode:
 - Doors or engine compartment cover is opened;
 - Key is turned to IGN ON;
 - Trunk is opened forcibly.
 - After entering to intrusion mode, BCM feedback the conditions within one alarm cycle (30 s):
 - Anti-theft horn (high and low pitched horns sound at frequency of 500 ms on and 500 ms off) operates for 28 ± 2 s, pauses for 5 s;
 - Left and right turn signal lights flash 28 s at frequency of 75 times/min (400 ms on, 400 ms off) and pause for 5 s, and send the corresponding signals;
 - Theft deterrent indicator is continuous flash at frequency of 100ms on, 200ms off, 100ms on, 600ms off.
 - All doors, engine hood, trunk lid and IGN ON illegal activation action are alarm trigger sources:
 - In the same alarm source, a single trigger source can trigger 3 alarm cycles at most;
 - In multiple alarm trigger sources, BCM can trigger 8 alarm cycles at most (after 8 alarm cycles, the sound and light alarm will stop);
 - If the intrusion ends, BCM will stop alarm after the current alarm cycle. If the same alarm source is triggered again after the alarm is over, BCM will perform the remaining alarm cycles.
 - When warning ends, if four doors, engine hood and trunk lid are closed
4. Fortifying deactivation mode
- Activation conditions: vehicle is in alarm mode; BCM receives RF unlock command or BCM detects signals for 1 s continuously after 2 s when the key is switched to IGN ON.
 - When the alarm is released: vehicle exits anti-theft function mode; anti-theft horn (high and low pitched horns (if equipped)) stops working, and the turn signal light stops flashing.
 - After alarm is released, if IGN is not in ON, anti-theft indicator light still flashes at a frequency of 100 ms on, 200 ms off, 100 ms on and 600 ms off; if the key is in IGN ON, anti-theft indicator light stops flashing.
5. Re-fortifying mode
- Trigger conditions:
 - Vehicle is in fortifying mode;
 - BCM receives remote control unlock command.
 - BCM feedback when fortifying mode is released:
 - Theft deterrent indicator turns off immediately;
 - Turn signal light flashes 2 times at frequency of 500 ms on and 500 ms off, and sends the corresponding signals.

- (c) Within 30 ± 2 s after fortifying mode is released:
- If any of all doors, engine hood or trunk lid are open, BCM exits anti-theft mode;
 - If all doors, engine hood and trunk lid are always closed, BCM will lock automatically and enter the fortifying state after 30 s, and anti-theft indicator will flash at the frequency of 100 ms on and 1900 ms off.
6. Luggage compartment opening mode
- (a) Trigger conditions:
- Vehicle is in fortifying mode;
 - BCM receives the remote control trunk open command for more than 1.5 s.
- (b) BCM feedback when trunk opening mode is triggered:
- Turn signal light illuminates for 1 s and sends the corresponding signals.
 - Luggage compartment is open and no alarm is triggered.
- (c) Then close the trunk, vehicle returns to the fortifying state, and the trunk switch cannot open trunk.
- (d) After using remote control to open the trunk: After BCM receives remote control lock command, vehicle will immediately lock and return to fortifying state, but the turn signal light prompts fortifying failure.
- (e) After using remote control to open the trunk and close it again: After BCM receives remote control lock command, vehicle will immediately lock and return to fortifying state, but the turn signal light prompts fortifying successfully. If there is no registered key after the trunk closed, the switch will not open the trunk lid.

Trunk Opening Management (without PLG)

1. When the central lock is in unlock state
 - (a) When the trunk opening switch is activated, the trunk opens.
2. When the central control lock is in lock state
 - (a) Trunk is opened
 - IGN OFF.
 - BCM receives remote control trunk opening command for more than 1.5 s.
 - Turn signal light illuminates and sends CAN signals to open trunk;
3. After opening the trunk by remote control and close it manually, if there is no registered key (PKE), the trunk will not open by the trunk lid button.

Caution:

- When trunk is opened, the trunk light turns on.
- When trunk is opened, the actuate time of motor is 200 ms.
- When the vehicle speed reaches 10km/h, the trunk will not be opened (please note that the ignition remains in IGN while testing - BSM is 15 nodes).

Trunk Opening Management (with PLG)

1. When vehicle is unfortified
 - (a) When trunk switch is activated, trunk opens/closes; Turn signal light flashes twice with a frequency of 200 ms ON - 200 ms OFF.
 - (b) During back door opening/closing, short press remote controller to stop back door at current position.
 - (c) With global fortifying, BCM performs vehicle fortifying after trunk closer switch is pressed and the following conditions are met:
 - IGN OFF.
 - Four doors and engine compartment cover are closed.
 - Back door is locked within 10 s.

2. When vehicle is fortified
 - (a) Luggage compartment is opened
 - IGN OFF/ACC.
 - BCM receives remote control trunk command for more than 1.5 s with turn signal light flashing twice at a frequency of 200 ms on - 200 ms Off.
 - (b) During back door opening/closing, short press remote controller to stop back door at current position.
 - (c) After back door is closed, vehicle returns to fortified condition.

Door Condition

1. BCM sends CAN signal to open/close front left door.
2. BCM sends CAN signal to open/close front right door.
3. BCM sends CAN signal to open/close rear left door.
4. BCM sends CAN signal to open/close rear right door.
5. BCM sends CAN signal to open/close engine compartment cover.
6. BCM sends CAN signal to open/close trunk.

Central Control Lock

1. Central control lock activation conditions
 - Close all four doors.
 - Vehicle is not in anti-theft state.
 - Central lock locked switch is activated.
2. Central control unlock activation conditions
 - Central lock unlocked switch is activated.
 - Vehicle is not in anti-theft state.
3. Mechanical lock locked/unlocked activation conditions
 - Central control lock or mechanical lock locked switch is activated.
 - Vehicle is not in anti-theft state.
4. Auto unlock (if equipped) activation conditions
 - Vehicle speed is 0 km/h.
 - Door lock is locked;
 - Key is switched to OFF from other positions.

Caution:

The bench testing needs to ensure that there is no speed signal after IGN is turned off.

5. Collision unlock
 - (a) After BCM receives CAN signal when IGN ON: BCM performs central control unlocking twice and the interval time is 1 s (regardless of the door state); locking is prohibited; key is switched to OFF, prohibit locking is canceled.

Caution:

- BCM receives unlocking or locking command twice in 1 S and the second time will be ignored.
- BCM is powered on again after powered off, BCM has no lock or unlock action.
- For remote control lock and unlock function, please refer to lock and unlock contents in anti-theft management.

Front Wiper Control

1. Low speed wiper mode (Note: wiper washer switch)
 - (a) Activation conditions: IGN ON; low speed range switch of the wiper is activated.
 - (b) When low speed wiper is operating: When wiper switch is switched to other operation mode, the wiper will work in other modes immediately.



- (c) When wiper switch is switched to OFF from low speed range, the wiper will operate at low speed automatically until it returns to wiper stop position (whether it is IGN ON or not).
2. High speed wiper mode
- (a) Activation conditions: IGN ON; high speed range switch of the wiper is activated.
- (b) When high speed wiper is operating: When wiper switch is switched to other operation mode, the wiper will work in other modes immediately.
- (c) When wiper switch is switched to OFF from high speed range, the wiper will operate at low speed automatically until it returns to wiper stop position (whether it is IGN ON or not).
3. Intermittent wiper mode (without rain sensor)
- (a) Activation conditions: IGN ON; wiper intermittent/automatic switch is activated.
- (b) There are 4 gear positions on wiper sensitivity switch: 13 s, 8 s, 4 s, 2 s.
- (c) When the intermittent wiper activation status switches intermittent time to other gear positions, the operation status of wiper is as below:
- (1) When new time interval is shorter than the original one:
- If wiper is in pause status, wiper will operate in new intermittent at once.
 - If wiper is in moving status, wiper will operate in new intermittent since it is paused.
- (2) When new time interval is longer than the original one:
- If wiper is in pause status, wiper will operate in new intermittent since it is paused at the next time after completing the current cycle.
 - If wiper is in moving status, wiper will operate in new intermittent since it is paused.
4. Auto wiper (equipped with rain sensor)
- (a) When switch is turned to Auto, BCM receives rain LIN signals sent from rain sensor to drive wiper acting.
- (b) After LIN signal S_AUTO_H is received, high speed wiper is driven to operate.
- (c) After LIN signal S_AUTO_L is received, low speed wiper is driven to operate.
- (d) When LIN signal is interrupted or ignition key is out of ON position, if wiper is not in Park position, it will continue to operate until reaching Park position.
- (e) The action stops during ignition and resumes after ignition is finished.

Front Washer Control

1. Front washer operation condition: IGN ON
2. Front washer operation will keep on outputting when front washer is activated
3. The washer stops operating when starting, and resumes operating after starting.
4. When front washer operation is over.
 - When wiper switch is in OFF position, wiper will operate for 3 cycles at low speed, and it operates for 1 cycle again after 6 ± 0.2 seconds; If BCM receives new front washer operation requirements during 3 cycles and 6 seconds of this wiper, wiper will perform new operation.
 - When wiper is in intermittent mode, wiper will operate for 3 cycles at low speed, and then it keeps the intermittent mode.

Rear Wiper Control

1. Activation conditions: IGN ON; rear wiper is activated
2. During rear wiper is operating, if rear wiper switch is turned to OFF and rear wiper is not in Stop position, rear wiper will continue to operate until it stops at stopping position
3. During rear wiper is operating, if ignition key is turned to ON and rear wiper is not in Stop position, rear wiper will continue to operate until it stops at stopping position
4. During rear wiper operation, the rear wiper when engine starts, and resumes operating after engine has started.

- When BCM judges that front wiper is activated and reverse gear is input, rear wiper will perform wiping automatically at an interval time of 4 s. Once either front wiper or reverse gear is turned off, rear wiper will stop operating immediately.

Rear Washer Control

- Rear washer operation condition: IGN ON
- Rear washer operation will keep on outputting when front washer is activated
- The rear washer stops operating when engine starts, and resumes operating after engine has started.
- When rear washer operation is finished
 - When wiper switch is in OFF position, wiper will operate for 3 cycles at low speed; If BCM receives new rear washer operation requirements during 3 cycles, wiper will perform new operation.
 - When wiper is in sweeping mode, wiper will sweep in original condition and continue to keep original condition after washer switch is released.

Back-up Light Control

- Back-up light operating conditions: IGN in ON
- After receiving reverse switch signal or CAN signal sent from TCU, BCM turns on backup light.
- If there is no switch signal and CAN signal, it will turn off back-up light.

37 Key Status Position Signal

- BCM sends the corresponding KeySts according to the actual location of the key
- The continuous activation time is up to 10 s when engine starts, and KeySts is sent after 10s. If ACC and ON positions change, BCM sends the corresponding key KeySts according to the actual position of key.

Sudden braking hazard warning light alarm function

- If the following conditions are met, hazard warning light is activated (CAN signals of left/right turn signal light, indicator light and turn signal light flash at frequency of 140 ms on/140 ms off)
 - The key position is in ON position.
 - CAN signal sent from ESP is received.
- If any of following conditions is met, stop the hazard warning light (left/right turn signal light, indicator light and turn signal light CAN signal) flashes
 - CAN signal sent from ESP is received.
 - Key position is in OFF position.

Caution:

- When hazard warning light of this function is operating, operate hazard warning light switch, this function stops immediately;
- During this operation, BCM receives collision signal and function stops immediately.

Assist steering illumination

- The following conditions meet the fog light assist illumination function ON
 - Key position is turn to ON.
 - The turn signal light turns on or steering column rotates by 45° or more.
 - Low beam light turns on.
 - The vehicle speed is less than 40 km/h.
- The following conditions meet the fog light assist illumination function OFF
 - Key is turned to ACC or OFF.
 - Steering light is turned off and steering column rotates by 10° or less

- Low beam light turns on.
 - The vehicle speed is less than 40 km/h.
3. When fog assist illumination is activated, instrument cluster indicator is not activated
 4. Online configuration is available for this function.

Brake light control

1. When any of following conditions is met, turn on the brake light function.
 - When brake switch is pressed, brake switch is a high level self-locking switch;
 - CAN signal sent from EPB is received;
 - CAN signal sent from ESP is received.
2. When brake light function is turned on, left and right brake lights and high mounted stop light turn on at the same time.
3. When all the above conditions are not met, left and right brake lights and high mounted stop light turn off simultaneously.

Rear View Mirror Folding

1. The switch is point contact type. Press the folding switch, the mirror is automatically folded, and press it again, the mirror is automatically unfolded
2. When it is powered on again after powered off, BCM stores the switch state before powered off
3. When the vehicle speed is greater than 10km/h, the folding function is shielded and the unfolding function works
4. When engine starts, the unfolding/folding function is paused and the function resumes after engine has started

DVD Settings

1. Daytime running light function
 - (a) DVD setting is ON to turn on the daytime running light function; DVD setting is OFF to turn off the daytime running light function.
2. Fortifying prompt
 - DVD setting is Light that turn signal light flashes once and horn does not sound when it is fortified;
 - DVD setting is Horn that horn sounds and turn signal light does not flash when it is fortified;
 - DVD setting is Light and Horn that turn signal light flashes and horn sounds when it is fortified.
3. Auto lock
 - (a) DVD setting is ON to turn on the auto lock function; DVD setting is OFF to turn off the auto lock function.
4. Headlight delay
 - (a) DVD is set to On to turn on the headlight delay function; DVD is set to off to turn off the headlight delay function.
5. Rear view mirror folding
 - (a) DVD is set to On to turn on the rear view mirror folding function; DVD is set to off to turn off the rear view mirror folding function.

Remote control function

1. Remote fortifying mode
 - (a) Trigger conditions:
 - IGN is in OFF (not in IGN ON or ACC)
 - All doors, engine hood and trunk lid are closed;
 - BCM receives remote fortifying command.

- (b) BCM feedback when fortifying mode is entered:
 - Turn signal light flashes once (turn on for 500 ms) and sends the corresponding signal;
 - Theft deterrent indicator is continuous flash at frequency of 100ms, 1900ms.
 - Actuate the anti-theft horn 50 ms and high and low pitched horns 15 ms.
2. Remote fortifying deactivation mode
 - (a) Trigger conditions:
 - IGN is in OFF (not in IGN ON or ACC)
 - All doors, engine compartment cover and trunk lid are closed.
 - BCM receives remote fortifying command.
 - (b) BCM feedback when remote fortifying deactivation mode is entered:
 - BCM performs fortifying deactivation, all doors and trunk unlocks and left/right turn signal lights flash twice (500 ms on and 500 ms off, continuous for two times)
3. Remote open trunk mode
 - (a) Trigger conditions:
 - Key position is in OFF;
 - BCM receives remote open trunk command.
 - (b) BCM feedback when trunk opening mode is triggered:
 - Turn signal light illuminates and sends the corresponding signals.
 - Meanwhile, trunk is opened and no alarm is triggered.
4. Remote car location mode
 - (a) Trigger conditions:
 - IGN-OFF/IGN-ACC;
 - BCM receives car location function command.
 - (b) BCM feedback when remote fortifying deactivation mode is entered:
 - High and low pitched horns sound 3 s, left and right turn signal lights flash 3 s and low beam light turns on 15 s.
5. Remote start mode
 - (a) Trigger conditions: BCM receives PEPS signal
 - (b) BCM feedback when remote start mode is entered:
 - Anti-theft alarm function caused by ON position is shielded, but those caused by four doors, engine compartment cover and back door are not shielded.
 - After BCM shields the alarm, it sends signals (CAN1) to PEPS and (CAN2) to CLM (when PEPS receives the signals, it will control the vehicle to start).
 - After BCM receives engine state signal, it will turn on position light and send signals.
 - (c) Exit remote start mode: Turn the key to OFF position
 - (d) BCM feedback when remote start mode is exited:
 - BCM will not shield the anti-theft alarm caused by ON position.
 - BCM sends signals.

LIN ambient light

1. Initial Condition

After the vehicle is powered on first time after leaving production line or powered on after battery is disconnected and reconnected from vehicle, the ambient light is ON by default; Then, the system turns on/off according to DVD setting.
2. Ambient light ON/OFF
 - (a) When all the following conditions are met, BCM sends LIN signals (ambient light ON)
 - The position light output is in activated condition.
 - DVD settings are turned on.
 - (b) When the position light output cancellation is activated or DVD settings are turned off, the ambient light goes out

3. Courtesy Logic Related Ambient Light
 - (a) When all the following conditions are met, BCM sends LIN signals (ambient light ON)
 - Position light output is not activated.
 - The vehicle is in unfortified condition.
 - Any door is opened.
 - DVD settings are turned on.
 - (b) Ambient light comes on for 3 minutes.
 - (c) Within 3 minutes of ambient light on, if all doors are closed, the light will delay to go out for 8 s.
 - (d) Within 3 minutes of ambient light on, if any door is opened, restart to count for 3 minutes from the last door opened
 - (e) When the position light output is not activated, if any condition is met, BCM will immediately send LIN signal (ambient light turns off).
 - The vehicle is fortified successfully.
 - DVD settings are turned off.
4. Ambient Light Colour
 - (a) After the vehicle is powered on first time after leaving production line or powered on after battery is disconnected and reconnected from vehicle, the related driving mode is OFF by default. Then turn on/off according to DVD settings.
 - (b) When the related driving mode is OFF: Ambient light colour is blue by default, then choose different colour according to DVD settings.
 - (c) When related driving mode is turned on
 - In ECO mode, ambient light illuminates in green.
 - In SPORT mode, ambient light illuminates in red.
 - In NORMAL mode, ambient light illuminates in blue.
5. Ambient light brightness (music rhythm)
 - (a) Initial Condition
 - After the vehicle is powered on first time after leaving production line or powered on after battery is disconnected and reconnected from vehicle, the music rhythm mode is OFF by default.
 - (b) When music rhythm mode is turned off: Ambient light brightness is Level 3, then choose different brightness according to DVD settings.
 - (c) When music rhythm mode is turned on: brightness changes with music rhythm according to different brightness level signals sent from IHU

General Functions For Diagnostic Tester

Diagnostic tester menu

1. Choose "Tiggo 8"
2. Body control system menu

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Model Scan	
CHERY (CUSTOMIZED) V58.95 > Model Scan	
Vehicle Configuration	Vehicle Failure Status
Multi-Service	
EMS (Engine Management System)	OK
CVT25/CVT18(Transmission Control Module)	OK
ABS/ESP (Anti-Lock Braking System/Electronic Stability Program)	OK
EPS (Electronic Power Steering)	C120E-00
BCM (Body Control Module)	OK
TPMS (Tire Pressure Monitor System)	OK
EXIT	
Chery (Customized) T15/T17/T18/T19/T1A	

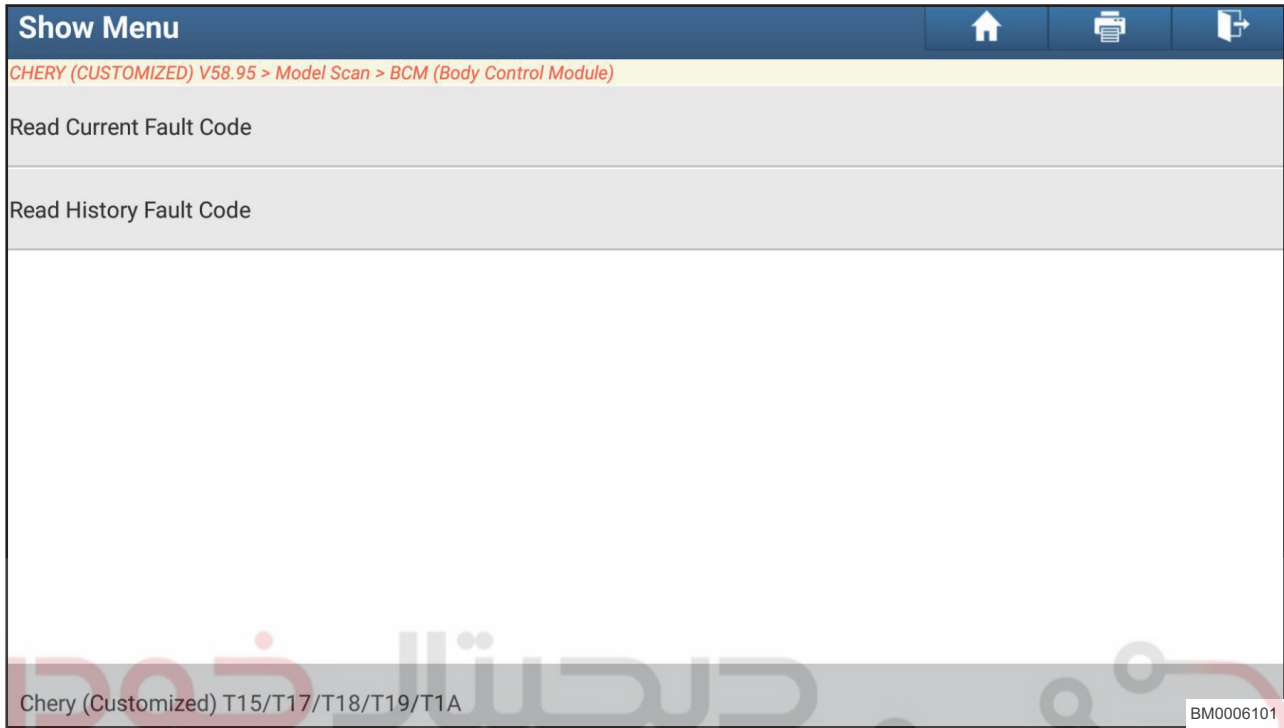
3. Diagnostic menu is as shown in illustration

Show Menu	
CHERY (CUSTOMIZED) V58.95 > Model Scan > BCM (Body Control Module)	
Version Information	Read Fault Code
Clear Fault Memory	Read Data Stream
Actuation Test	Special Function
Chery (Customized) T15/T17/T18/T19/T1A	

Read and Clear DTCs

Read DTCs

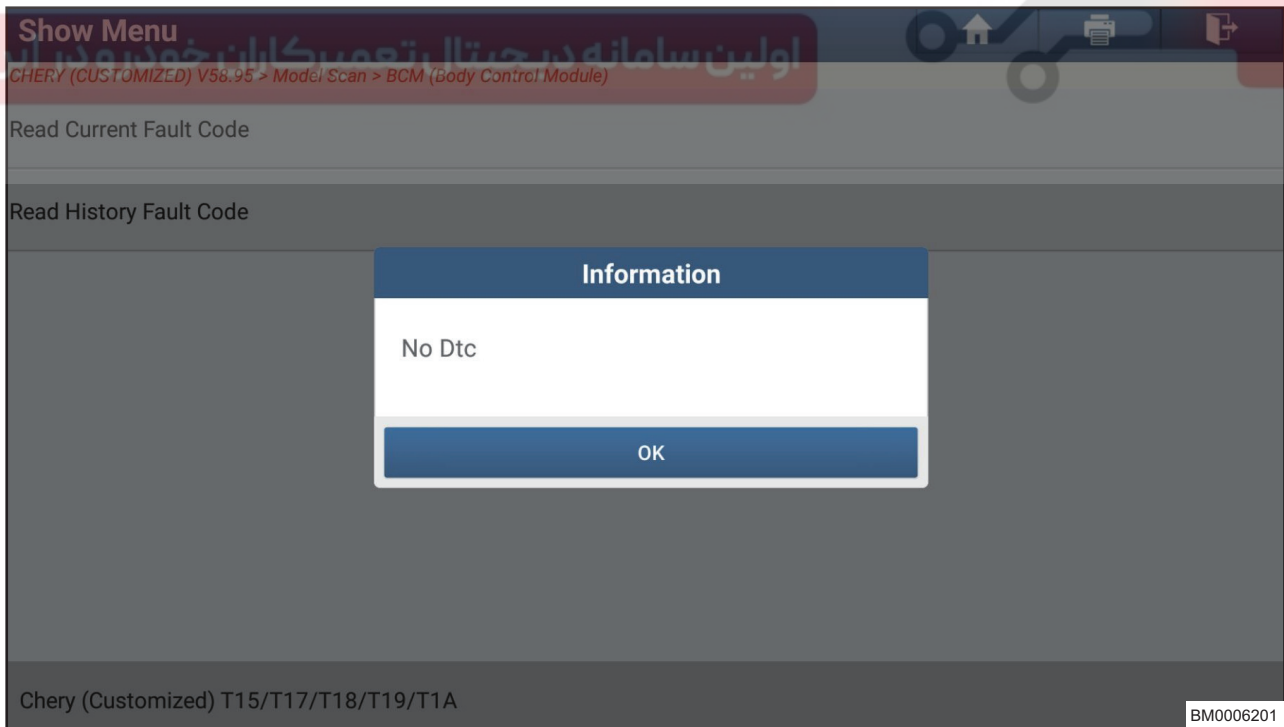
1. Read Fault Code



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- (a) Read current DTC
- (b) Read history DTC

2. Display malfunction information



Read data stream

Caution:

Turn ignition switch to ON before reading certain data stream.

Show Menu	
CHERY (CUSTOMIZED) V58.95 > Model Scan > BCM (Body Control Module)	
Input Status (Light)	Input Status (Wiper)
Input Status (Window)	Input Status (Lock)
Input Status (Door & Hood & Trunk)	Input Status (Key)
Input Status (Mirror Folder)	Input Status (Defrost& Heater)
Input Status (Washer)	Input Status (Wiper Intermission)
Input Status (Park In)	Window State Signal (APM To BCM)
Input Status(Heating)	Vehicle Software Configuration Code(188 Bits)
Chery (Customized) T15/T17/T18/T19/T1A	
BM0007101	

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Caution:

These switch signal input status can be checked by the following data streams which can help you to determine these input signals or malfunctions related to these signals.

1. Input status (light):

- Left turn signal light: Inactive/Active. When combination light switch assembly is operated in left position, Active is displayed, otherwise Inactive is displayed.
- Right turn signal light: Inactive/Active. When combination light switch assembly is operated in right position, Active is displayed, otherwise Inactive is displayed.
- Front fog light: Not Activated
- Rear fog light: Inactive/Active. When light switch is operated in rear fog light position, Active is displayed, otherwise Inactive is displayed.
- Position light: Inactive/Active. When light switch is operated in position light position, Active is displayed, otherwise Inactive is displayed.
- Low beam light: Inactive/Active. When light switch is operated in low beam light position, Active is displayed, otherwise Inactive is displayed.
- High beam light: Inactive/Active. When light switch is operated in high beam light position, Active is displayed, otherwise Inactive is displayed.
- Hazard warning light: Inactive/Active. When hazard warning light switch is operated, Active is displayed, otherwise Inactive is displayed.
- Overtake light: Inactive/Active. When light switch is operated in overtake light position, Active is displayed, otherwise Inactive is displayed.
- Back-up light: Inactive/Active. When the vehicle is shifted to R position, Active is displayed, otherwise Inactive is displayed.
- Brake light: Inactive/Active. When braked pedal is depressed, Activated is displayed, otherwise Not Activated is displayed.

2. Input condition (wiper):

- Front wiper (high speed): Inactive/Active. When wiper switch is operated in this position, Activated is displayed, otherwise Not Activated is displayed.

- Front Wiper (Low Speed/Mist): Inactive/Active. When wiper switch is operated in this position, Activated is displayed, otherwise Not Activated is displayed.
- Front Wiper (Auto/Interval): Inactive/Active. When wiper switch is operated in this position, Activated is displayed, otherwise Not Activated is displayed.
- Rear wiper: Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.

3. Input status (window):

1. Driver side input status (window):

- (a) Driver side front left window up: Inactive/Active. When this switch is operated in up position, Active is displayed, otherwise Inactive is displayed.
- (b) Driver side front right window up: Inactive/Active. When this switch is operated in up position, Active is displayed, otherwise Inactive is displayed.
- (c) Driver side rear left window up: Inactive/Active. When this switch is operated in up position, Active is displayed, otherwise Inactive is displayed.
- (d) Driver side rear right window up: Inactive/Active. When this switch is operated in up position, Active is displayed, otherwise Inactive is displayed.
- (e) Driver side front left window down: Inactive/Active. When this switch is operated in down position, Active is displayed, otherwise Inactive is displayed.
- (f) Driver side front right window down: Inactive/Active. When this switch is operated in down position, Active is displayed, otherwise Inactive is displayed.
- (g) Driver side rear left window down: Inactive/Active. When this switch is operated in down position, Active is displayed, otherwise Inactive is displayed.
- (h) Driver side rear right window down: Inactive/Active. When this switch is operated in down position, Active is displayed, otherwise Inactive is displayed.

2. Passenger side input status (window):

- (a) Passenger side front right window up: Inactive/Active. When this switch is operated in up position, Active is displayed, otherwise Inactive is displayed.
- (b) Passenger side rear left window up: Inactive/Active. When this switch is operated in up position, Active is displayed, otherwise Inactive is displayed.
- (c) Passenger side rear right window up: Inactive/Active. When this switch is operated in up position, Active is displayed, otherwise Inactive is displayed.
- (d) Passenger side front right window down: Inactive/Active. When this switch is operated in down position, Active is displayed, otherwise Inactive is displayed.
- (e) Passenger side rear left window down: Inactive/Active. When this switch is operated in down position, Active is displayed, otherwise Inactive is displayed.
- (f) Passenger side rear right window down: Inactive/Active. When this switch is operated in down position, Active is displayed, otherwise Inactive is displayed.

3. Glass lock switch: Inactive/Active. When hazard warning light switch is operated, Active is displayed, otherwise Inactive is displayed.

4. Input status (lock):

- Central lock: lock/unlock. (Used to indicate central lock button status signals of front left door glass regulator switch).
- Key lock: lock/unlock. (Used to indicate front left door lock status signals, such as unlock/lock).

5. Input Status (Door, engine compartment, back door):

- Front left door is ajar: Inactive/Active. This signal is sent from door lock state switch. When door lock is in half-locked or open position, Active is displayed, otherwise Inactive is displayed.
- Front right door is ajar: Inactive/Active. This signal is sent from door lock state switch. When door lock is in half-locked or open position, Active is displayed, otherwise Inactive is displayed.
- Rear left door is ajar: Inactive/Active. This signal is sent from door lock state switch. When door lock is in half-locked or open position, Active is displayed, otherwise Inactive is displayed.
- Rear right door is ajar: Inactive/Active. This signal is sent from door lock state switch. When door lock is in half-locked or open position, Active is displayed, otherwise Inactive is displayed.

- Engine compartment is ajar: Inactive/Active. This signal is sent from engine hood contact switch. When engine hood is not closed properly, Active is displayed, otherwise Inactive is displayed.
 - Back door is ajar: Inactive/Active. This signal is sent from lock state micro switch. When door lock is in open position, Active is displayed, otherwise Inactive is displayed.
 - Back door release switch: Inactive/Active. When vehicle is in fortifying deactivation status, press back door opener switch, Active is displayed, otherwise Inactive is displayed.
6. Input status (key):
- Key is inserted (without PEPS): Inactive/Active. This signal is sent from key contact micro switch of ignition cylinder. When key is inserted, Active is displayed, otherwise Inactive is displayed.
 - ACC: Not Inactive/Active. This signal is sent from ACC power supply. When ACC is powered on, Active is displayed, otherwise Inactive is displayed.
 - IGN: Not Inactive/Active. This signal is sent from IGN power supply. When IGN is powered on, Active is displayed, otherwise Inactive is displayed.
7. Input status (rear view mirror folding)
- Rear view mirror folding: Inactive/Active. When the vehicle is shifted to R position, Active is displayed, otherwise Inactive is displayed.
8. Input status (rear defroster/heating):
- Rear defroster: Inactive/Active. Operate rear defroster switch, If rear defroster signal is received, Active is displayed, otherwise Inactive is displayed.
9. Input status (washer):
- Front washer: Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.
 - Rear washer: Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.
10. Input status (wiper intermittent):
- 1st level (13 s): Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.
 - 2nd level (8 s): Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.
 - 3rd level (4 s): Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.
 - 4th level (2 s): Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.
11. Input status (stop position):
- Front wiper: Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.
 - Rear wiper: Inactive/Active. When wiper switch is operated in this position, Active is displayed, otherwise Inactive is displayed.
12. Window status signal (only used on the vehicle equipped with jam protection): (See Chapter "Windshield, Window Glass")
13. Software configuration information: The configuration code that BCM is written to is some number.

Active Test

Caution:

Diagnostic tester provides operation test function for the 25 parts. It is used to test whether these parts and the related circuits are functioning properly.

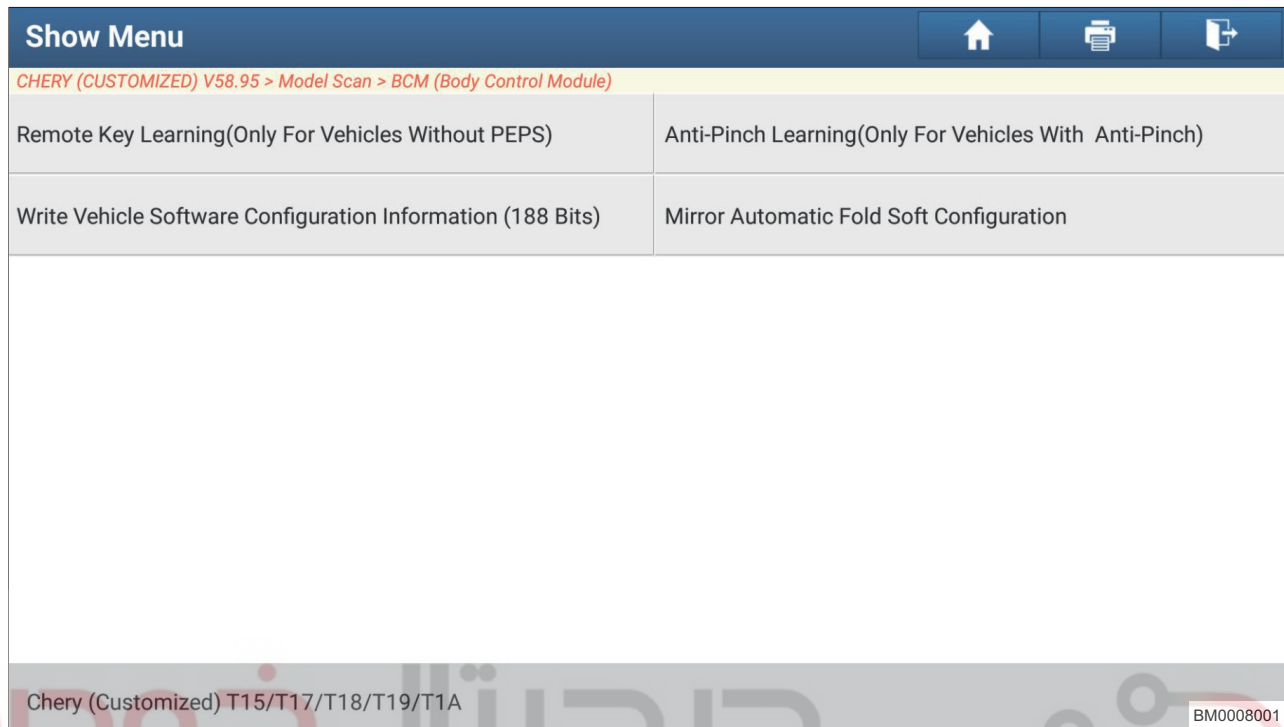
No.	Part	No.	Part
1	Left Turn Signal Light	14	Front Washer
2	Right Turn Signal Light	15	Front Wiper (Low Speed Range)
3	Position Light	16	Front Left Window
4	Low Beam Light	17	Front Right Window
5	High Beam Light	18	Rear Left Window
6	Rear Fog Light	19	Rear Right Window
7	Daytime Running Light	20	Central Lock
8	Dome Light	21	Luggage Compartment Lock
9	Security Indicator Light	22	Anti-theft Alarm
10	Hazard Warning Light	23	Rear View Mirror Folding
11	Window Regulator Disabled Switch Indicator Light	24	Defroster
12	Luggage Compartment Light	25	Brake Light
13	Front Wiper (High Speed Range)		

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1. Left turn signal light: Click "ON" to turn on the light. And click "OFF" to turn off the light
2. Right turn signal light: Click "ON" to turn on the light. And click "OFF" to turn off the light
3. Position light: Click "ON" to turn on the light. And click "OFF" to turn off the light
4. Low beam light: Click "ON" to turn on the light. And click "OFF" to turn off the light
5. High beam light: Click "ON" to switch the solenoid to high beam position. And click "OFF", the solenoid returns to low beam position
6. Daytime running light: Click "ON" to turn on the light. And click "OFF" to turn off the light
7. Rear fog light: Click "ON" to turn on the light. And click "OFF" to turn off the light
8. Dome light: Click "ON" to turn on the light. And click "OFF" to turn off the light
9. Security indicator light: Click "ON" to turn on the light. And click "OFF" to turn off the light
10. Hazard warning light: Click "ON" to turn on the light. And click "OFF" to turn off the light
11. Window regulator disabled switch indicator light: Click "ON" to turn on the light. And click "OFF" to turn off the light
12. Luggage compartment light: Click "ON" to turn on the light. And click "OFF" to turn off the light
13. Front wiper (high speed range): Click "ON" to operate wiper at high range. Click "OFF" to stop operation
14. Front washer: Click "ON" to operate washer motor. Click "OFF" to stop operation
15. Front wiper (low speed range): Click "ON" to operate wiper at low range. Click "OFF" to stop operation
16. Front left window: Click "Up" to raise the glass. And click "Down" to lower the glass.
17. Front right window: Click "Up" to raise the glass. And click "Down" to lower the glass.
18. Rear left window: Click "Up" to raise the glass. And click "Down" to lower the glass.
19. Rear right window: Click "Up" to raise the glass. And click "Down" to lower the glass.
20. Central lock: Click "LOCK" to lock the central lock. And click "UNLOCK" to unlock the central lock.
21. Trunk lock: Click "UNLOCK" to unlock the trunk lock
22. Anti-theft alarm: Click "Activated" to alarm anti-theft horn. And click "OFF" to stop alarming
23. Rear view mirror folding: Click "Folding", click "Unfolding" and click "Return" to exit
24. Defroster: Click "ON" to operate the rear defroster. And click "OFF" to stop the rear defroster
25. Brake light: Click "ON" to turn on the light. And click "OFF" to turn off the light

Special Operation

1. Special operation menu



(a) Remote Key Learning (Only for models without PEPS)

Hint:

- The whole series configuration PEPS for Tiggo 8 model.
- (b) Jam Protection Learning (Only for models with APM)
- (c) Software Configuration Write-in
- (d) Rear View Mirror Auto Folding Function

2. Jam protection (Only for models with APM)(See page 40-8)

Write vehicle software configuration information automatically

3. If electronically controlled injection ECU is installed on vehicle originally and can perform data communication, click this menu to write software configuration information automatically

Caution:

- During operation, it is necessary to click "Confirm VIN code is consistent with vehicle VIN code" which is to ensure that ECU is original and the software configuration information is never modified.

Write vehicle software configuration information manually

4. Write the front 32 digits of vehicle software configuration information manually
5. Write the rear 16 digits of vehicle software configuration information manually

Rear View Mirror Auto Folding Function

6. Click the menu to set ON/OFF of rear view mirror auto folding function

Diagnostic Content

Common Problem Symptoms Table

Symptom	Probable Cause and Recommended Countermeasures
Remote controller failure or distance of remote control is close	(For PEPS model, remote controller failure has nothing to do with BCM. BCM cannot be replaced) <ul style="list-style-type: none"> Battery voltage of remote controller is low - Replace the battery. (Voltage of new replaced battery should more than 2.9 V), it needs to rematch. Metallic films are attached to windows, which causes signal to be shielded and vehicle is malfunctioning without any reason. Peel off the metallic films to solve the problem. There is electromagnetic interference. Perform the test at another place. If remote controller is damaged, replace and rematch it.
Rear Defroster Not Operate	Refer to operation principle (control logic). Check the input and output signal. For diagnosis please refer to "Perform Diagnosis According to Symptoms".
Turn signal light does not come on	
Small light does not come on	
High beam light does not come on	
Fog light does not come on	
Daytime running light does not come on	
Glass cannot rise up and down	
Door lock cannot lock/unlock/trunk cannot open	
Wiper washer dose not operate or operate abnormally	
Only horn alarms or only turn signal light flashes when it fortifies	It can be set on DVD/navigation interface, refer to On-vehicle Service section.

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DTC Chart

DTC	Description
B1000-16	Power Supply
B1000-17	Power Supply
B1001-11	Left Side Turn Lamp Control Circuit
B1001-13	Left Side Turn Lamp Control Circuit
B1002-11	Right Side Turn Lamp Control Circuit
B1002-13	Right Side Turn Lamp Control Circuit
B1003-11	Left Park Light Output Control Circuit
B1003-13	Left Park Light Output Control Circuit
B1004-11	Right Park Light output Control Circuit
B1004-13	Right Park Light output Control Circuit
B1005-11	Front Park Light output Control Circuit
B1005-13	Front Park Light output Control Circuit
B1006-11	Rear Park Light output Control Circuit
B1006-13	Rear Park Light output Control Circuit
B1008-11	Rear Fog Control Circuit
B1008-13	Rear Fog Control Circuit
B1008-71	Rear Fog Control Circuit
B1009-71	Rear Wiper Control Circuit
B1009-71	Rear Wiper Control Circuit
B100C-13	Front Left Window Up Control Circuit
B100C-71	Front Left Window Up Control Circuit
B100D-13	Front Left Window Down Control Circuit
B100D-71	Front Left Window Down Control Circuit
B100E-13	Front Right Window Up Control Circuit

DTC	Description
B100E-71	Front Right Window Up Control Circuit
B100F-13	Front Right Window Down Control Circuit
B100F-71	Front Right Window Down Control Circuit
B1010-13	Rear Left Window Up Control Circuit
B1010-71	Rear Left Window Up Control Circuit
B1011-13	Rear Left Window Down Control Circuit
B1011-71	Rear Left Window Down Control Circuit
B1012-13	Rear Right Window Up Control Circuit
B1012-71	Rear Right Window Up Control Circuit
B1013-13	Rear Right Window Down Control Circuit
B1013-71	Rear Right Window Down Control Circuit
B1014-71	Front Wiper Low Speed Control Circuit
B1015-71	Front Wiper High Speed Control Circuit
B1016-71	Rear Washer Control Circuit
B1017-71	Front Washer Control Circuit
B101D-11	Siren output Control Circuit
B101D-13	Siren output Control Circuit
B101E-11	L-DRL Control Circuit
B101E-13	L-DRL Control Circuit
B101F-11	R-DRL Control Circuit
B101F-13	R-DRL Control Circuit
B1021-17	Anti-pinch Module Power Supply
B1021-16	Anti-pinch Module Power Supply
B1022-71	FL Window Button
B1023-71	FR Window Button
B1024-71	Trunk Lock Control Circuit
B1025-71	RR Window Button
B1026-71	Passenger FR Window Button
B1027-11	Battery Saver output Control Circuit
B1028-71	Passenger RR Window Button Short
B1029-71	FL Window Relay
B102A-71	FR Window Relay
B102B-71	RL Window Relay
B102C-71	RR Window Relay
B102D-96	Anti-pinch Module Controller
B102E-86	FL Window Motor Position Signal
B102F-86	FR Window Motor Position Signal
B1030-86	RL Window Motor Position Signal
B1031-86	RR Window Motor Position Signal
B1032-87	Lost Communication With Anti-pinch Module MCU
B1033-71	RL Window Button
B1034-71	Passenger RL Window Button
B1035-11	Brake Light Control Circuit
B1035-13	Brake Light Control Circuit
B1036-11	H-Brake Light Control Circuit
B1036-13	H-Brake Light Control Circuit
U0100-87	Lost Communication With Engine Control System Module
U0101-87	Lost Communication With Transmission Control Unit

DTC	Description
U0126-87	Lost Communication With Steering Angle Module
U0129-87	Lost Communication With Brake System Module
U0131-87	Lost Communication With Electronic Power Steering Module
U0151-87	Lost Communication With Air Bag Module
U0155-87	Lost Communication With Instrument Cluster Module
U0164-87	Lost Communication With Climate Module
U0214-87	Lost Communication With Passive Entry Passive Start Unit
U0231-87	Lost Communication With Rain Sensor Module
U0245-87	Lost Communication With Radio Receiver Module
U0128-87	Lost Communication With Electric Park Brake
U0291-87	Lost Communication With Gear Shift Mode
U1300-55	Software Configuration Error
B100A-11	Fixed part of the Rear Left Park Light output Control Circuit
B100A-13	Fixed part of the Rear Left Park Light output Control Circuit
B101A-11	Movable part of the Rear Left Park Light output Control Circuit
B101A-13	Movable part of the Rear Left Park Light output Control Circuit
B100B-11	Fixed part of the Rear Right Park Light output Control Circuit
B100B-13	Fixed part of the Rear Right Park Light output Control Circuit
B101B-11	Movable part of the Rear Right Park Light output Control Circuit
B101B-13	Movable part of the Rear Right Park Light output Control Circuit
B1037-11	Left Brake Light Control Circuit
B1037-13	Left Brake Light Control Circuit
B1038-11	Right Brake Light Control Circuit
B1038-13	Right Brake Light Control Circuit
B1039-11	Reversing Light Control Circuit
B1039-13	Reversing Light Control Circuit
B103A-62	Signal compare failure
U0230-87	Lost Communication With PLG
U0073-88	Control Module Communication Bus Off
U1162-87	Lost Communication With Front Camera Module
B103A-11	Front Washer Heating Control Circuit
B103A-13	Front Washer Heating Control Circuit
B103B-11	Reversing Lamp Control Circuit
B103B-13	Reversing Lamp Control Circuit
B103C-01	Right Side Turn Lamp Failure
B103D-01	Left Side Turn Lamp Failure
B103E-01	Rear Right Fixed Side Turn Signal Fault
B103F-01	Rear Left Fixed Side Turn Signal Fault
B1040-01	Rear Right Moving Side Turn Signal Fault
B1041-01	Rear Left Moving Side Turn Signal Fault
B1042-11	Backlight adjustment
B1043-11	Blue Mood Light
B1044-11	Red Mood Light
U0142-87	Lost Communication With AVM
C1403-29	Front Left Hand Sensor
C1403-55	Front Left Hand Sensor
C1403-96	Front Left Hand Sensor
C1404-29	Front Right Hand Sensor

DTC	Description
C1404-55	Front Right Hand Sensor
C1404-96	Front Right Hand Sensor
C1405-29	Rear Left Hand Sensor
C1405-55	Rear Left Hand Sensor
C1405-96	Rear Left Hand Sensor
C1406-29	Rear Right Hand Sensor
C1406-55	Rear Right Hand Sensor
C1406-96	Rear Right Hand Sensor
C1413-98	Front Left Hand Tire Temperature
C1414-98	Front Right Hand Tire Temperature
C1415-98	Rear Left Hand Tire Temperature
C1416-98	Rear Right Hand Tire Temperature
C1417-16	Front Left Hand Sensor Voltage
C1418-16	Front Right Hand Sensor Voltage
C1419-16	Rear Left Hand Sensor Voltage
C141A-16	Rear Right Hand Sensor Voltage
C142A-49	Receiver
B130000	Internal Control Module EEPROM Error
B130100	Immobilizer and ECM Authentication Failed
B130200	VIN Not Programmed
B130300	The Antenna Communication is Disturbed
B130400	None Transponder Was Detected
B130500	Immobilizer has None Key was Storage
B130600	Security Code Was Not Programmed
U010000	Lost Communication With ECM Authentication Frame
U010100	Lost Communication With TCU Authentication Frame
U007300	Control Module Communication Bus Off
B130700	Immobilizer and Transponder Authentication Failed

DTC Confirmation Procedure

1. Diagnostic tester can be connected to diagnostic interface and communicate with the vehicle via vehicle data link.
2. Confirm the current malfunction, and carry out diagnostic test and repair procedures.
3. If DTC cannot be deleted, malfunction indicated by DTC is current.
4. Measure electrical system voltage with a digital multimeter.
5. Visually check the related wire electrical harness
6. Check and clear all DTCs related to BCM ground.
7. If lots of DTCs are set, use circuit diagram to check any common ground circuit or power supply circuit and find the cause of DTCs.

Intermittent DTC Troubleshooting

If malfunction is intermittent, perform the followings:

- Check if connector is loose.
- Check if wire harness is worn, pierced, pinched or partially broken.
- Monitor the diagnostic tester data related to this circuit.
- Wiggle related wire harness and connector and observe if signal in related circuit is interrupted.
- If possible, try to duplicate conditions under which DTC was set.
- Look for data that has changed or DTC to reset during wiggle test.
- Check for broken, bent, protruded or corroded terminals.

- Inspect sensors and mounting areas for damage, foreign matter, etc. that will cause incorrect signals.
- Use data recorder and/or oscilloscope to help diagnose intermittent malfunctions.

Ground Inspection

Ground points are very important to the proper operation of circuits. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) may increase load resistance. This situation may change the way in which a circuit operates. Circuits are very sensitive to proper grounding. A loose or corroded ground can severely affect the control circuit. Check the ground points as follows:

1. Remove ground bolt or nut.
2. Check all contact surfaces for tarnish, dirt and rust, etc.
3. Clean as necessary to ensure that contact is in good condition.
4. Reinstall ground bolt or nut securely.
5. Check if any additional accessories interfere with ground circuit.
6. If several wire harnesses are crimped into one ground terminal, check for proper crimp condition. Make sure that all wire harnesses are clean and securely fastened while providing a proper ground path.

Malfunction Diagnosis Repair Flow

Warning/Caution/Hint

When reading DTCs, some DTCs are not related to trouble symptom. And these functions are normal and not affect vehicle use, clear them.

1. Check if DTC occurs again
If malfunction does not occur, check and repair the suspected wire harness and electrical connector. Proceed to the next step if malfunction occurs again.
2. Check for DTCs
Perform reading to check whether there is any DTC. Proceed to the diagnostic procedures based on malfunction symptoms when there is no DTC. Proceed to the next step when DTC is found:
3. Clear and read DTCs again
Record DTCs and clear them. Perform test and read DTC again to check whether there is any DTC. Proceed to the diagnostic procedures based on malfunction symptoms when there is no DTC. Proceed to the next step when DTC related to malfunction symptom is found.
4. Deal with the malfunction symptom according to DTC
5. After inspection and repair, perform test again according to DTC strategy
Check and repair it again if malfunction has not been solved.
6. After malfunction has been solved, prevent the malfunction from reoccurring according to malfunction causes.
7. Malfunction diagnosis ends.

Trouble Symptom Diagnosis

Warning/Caution/Hint

- If a function of BCM is failed, but there is no DTC, perform diagnosis according to trouble symptom.
 - This diagnosis needs to combine with control logic (see Operation section). Check input/output signal of BCM for normal operation. If input/output is normal, there is a malfunction in BCM. Otherwise, check the input or output part.
1. Check if DTC occurs again
If malfunction does not occur, check and repair the suspected wire harness and electrical connector. Proceed to the next step if malfunction occurs again.
 2. Check if power supply and ground of controller are normal
If it is abnormal, repair the power supply and ground based on the electronic diagram. Proceed to the next step if it is normal.

3. According to the control logic, read related data stream with diagnostic tester and check if it is normal (refer to data stream part of diagnostic tester)
If it is abnormal, repair the related input signals based on the circuit diagram. Proceed to the next step if it is normal.
4. Perform operation test using diagnostic tester to see if there is any related operations performed by diagnostic tester. (refer to operation test part for diagnostic tester)
If it is normal, input part has no malfunction. Otherwise, proceed to the next step.
5. Check if actuator is normal (refer to diagnostic chapter of each actuated part)
If result is abnormal, replace the actuator.
6. If above diagnostic results are normal, replace BCM

Body Control Module

Removal

Warning/Caution/Hint

Before replacing BCM, read configurations of the original software. After replacing it, write the original configuration codes.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the Body Control Module.

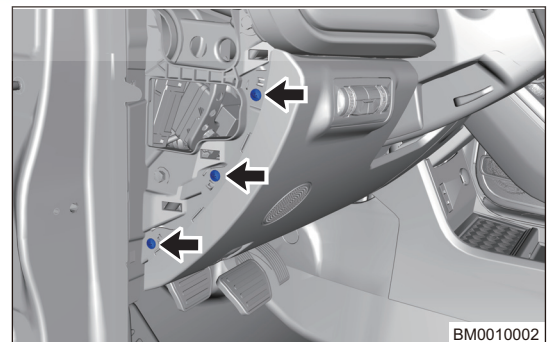
- (a) Remove the instrument panel left end panel assembly.



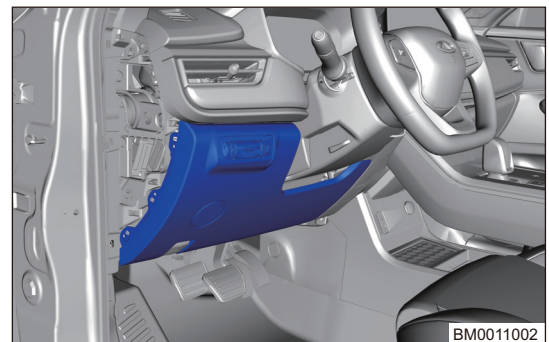
- (b) Remove 3 fixing screws (arrow) from instrument panel lower left protector assembly.

Tightening torque

$1.5 \pm 0.5 \text{ N.m}$



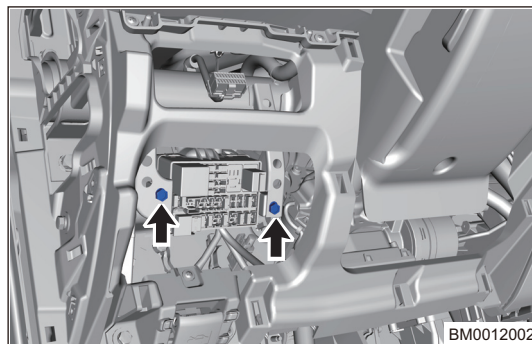
- (c) Remove the instrument panel left lower protector assembly.



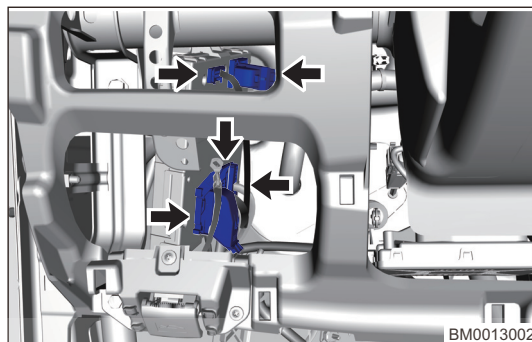
- (d) Remove 2 fixing bolts (arrow) from instrument panel fuse box.

Tightening torque

7 ± 1 N.m



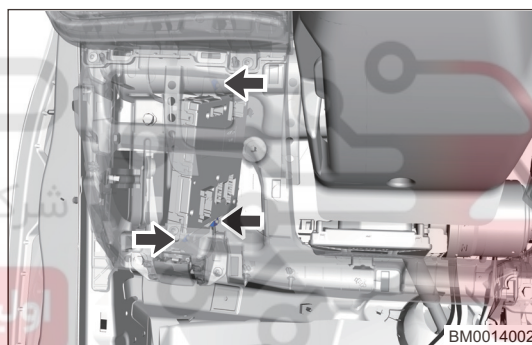
- (e) Disconnect the Body Control Module (BCM) connector (arrow).



- (f) Remove 3 fixing nuts (arrow) from Body Control Module bracket.

Tightening torque

7 ± 1 N.m



- (g) Remove the Body Control Module.

Installation

1. Installation is in the reverse order of removal.

Caution:

If controller bracket has been removed, install the bracket first, then install BCM to the bracket.