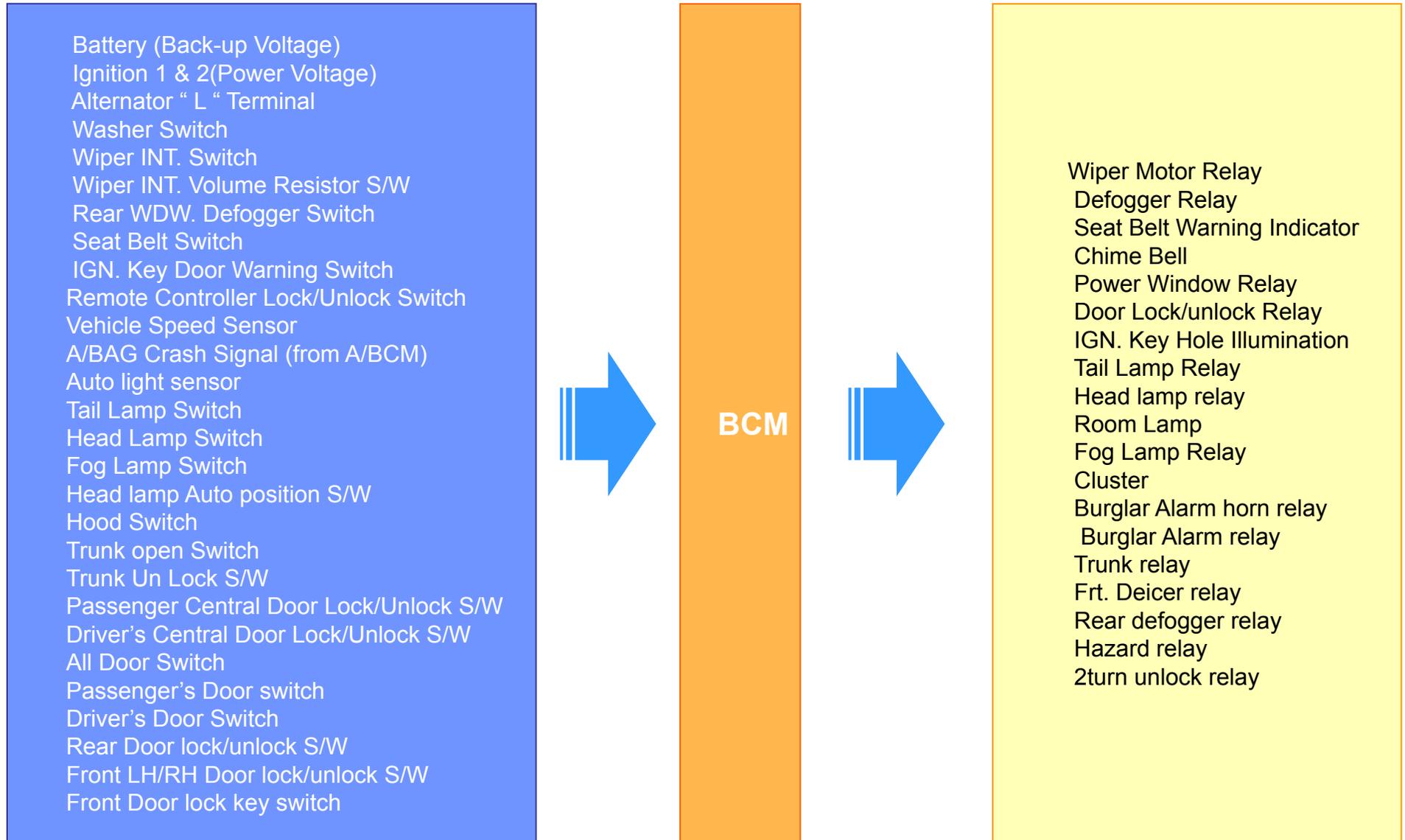


# HD Body Electrical



Function		XD	HD	Remarks
<b>Wiper Control</b>	Washer & Wiper Linkage	○	○	If rain sensor is installed, intermittent wiper function is controlled by rain sensor
	VSS sensing INT . Wiper	○	○	
<b>Timer Control</b>	Rear Defogger	○	○	Operate with outside mirror
	Front Windows Deicer Timer	○	○	Operating time : 20 minutes
	Power Window Timer	○	○	Operating time : 30 seconds
	Room Lamp Decay	○	○	
	Room lamp 20minutes on/off		○	Room lamp goes off after 20minutes with switch room position of room lamp switch
<b>Buzzer Warning Control</b>	S/Belt Warning Timer	○	○	
	S/Belt Reminder Timer	○	○	
	Key Operated Warning	○	○	
	Over Speed Warning	○	○	For middle east
<b>Lamp Control</b>	Key Hole Illumination	○	○	
	Tail Lamp Auto Cut	○	○	
	Rear Fog lamp	○	○	
	Auto Lighting (for head & tail lamp)		○	XD : Independence control HD : Control by BCM via auto light sensor signal

	Function	XD	HD	Remarks
<b>Door Lock/Unlock Control</b>	Central Door Lock/Unlock	O	O	
	2 - turn Unlocks for NAS		O	
	IGN . Key Reminder	O	O	
	Crash Door Unlock	O	O	
	Auto Door Lock/Unlock	O	O	
	Keyless Entry	O	O	
<b>Anti-theft Function Control</b>	Arm	O	O	
	Disarm	O	O	
	Alarm	O	O	
	Arm Wait		O	Arm wait time : 30seconds
	Horn Answer Back for NAS		O	
	Panic	O	O	
	Arm Reservation	O	O	
	User option Mode		O	
<b>Diagnosis</b>	Scan Tool Communication		O	Current data read & actuation test
	Code saving	O	O	Transmitter learning



\* Commonness input signal : Battery back up voltage, Ignition2 Power voltage, Ground

Function		Connection signal
<b>Wiper Control</b>	Washer & Wiper Linkage	- Washer switch ON/Off
	VSS sensing INT . Wiper	- Vehicle speed sensor (PWN signal) - Intermittent Wiper Switch ON/Off - Intermittent wiper motor volume S/W variable voltage
<b>Timer Control</b>	Rear Defogger	- Alternator "L" terminal signal Lo/High - Rear defogger switch ON/Off
	Front Deicer Timer	- Alternator "L" terminal signal Lo/High - Front deicer switch ON/Off
	Power Window Timer	- Ignition Key power ON/Off - Driver's door switch ON/Off (Door open/close)
	Room Lamp Decay	- Room lamp "-" control - Transmitter unlock signal - Door switch ON/Off (Door open/close)

\* Commonness input signal : Battery back up voltage, Ignition2 Power voltage, Ground

Function		Connection signal
<b>Buzzer Warning Control</b>	S/Belt Warning Timer	- Ignition switch ON - Seat belt buckle switch ON/Off
	S/Belt Reminder Timer	- Ignition switch ON-Seat belt buckle switch ON/Off - Seat belt reminder switch for passenger's seat
	Key Operated Warning	- IG . Key door warning switch ON/Off (Key inserted/removed) - Driver's door switch (open/closed)
	Over Speed Warning	- Ignition switch ON - Vehicle speed signal (PWM signal)
<b>Lamp Control</b>	Key Hole Illumination	- Ignition switch ON - Door switch ON/Off (Open/Close)
	Tail Lamp Auto Cut	- Tail lamp switch ON/Off (Low/High signal) - Driver's door switch ON/Off (Open/Close) - IG . Key door warning switch ON/Off (Key inserted/removed)
	Rear Fog lamp	- Tail lamp switch ON/Off (Low/High signal) - Fog lamp switch
	Auto Lighting	- Ignition key ON/Off (Low/High) - Auto light switch ON/Off (Low/High) - Auto light sensor (Variable voltage)

\* Commonness input signal : Battery back up voltage, Ignition2 Power voltage, Ground

Function		Connection signal
<b>Door Lock/Unlock Control</b>	Central Door Lock/Unlock	- Front LH/RH door key lock/unlock switch ON/Off - Front LH/RH door central door lock/unlock switch ON/Off
	2 - turn Unlock For NAS	- Front LH/RH door key lock/unlock switch ON/Off - Transmitter unlock signal
	IGN . Key Reminder	- IG . Key door warning switch ON/Off (Key inserted/removed) - Front LH/RH door lock/unlock switch (Built in actuator) - Front LH/RH central door lock/unlock switch
	Crash Door Unlock	- Crash signal from A/Bag module Lo (crash signal)/High
	Auto Door Lock/Unlock	- Vehicle speed sensor (PWN signal) : Signal using PG-B of Auto T/A
	Keyless Entry	- Transmitter lock/unlock signal
<b>Diagnosis</b>	Scan Tool Communication	- "K" line

\* Commonness input signal : Battery back up voltage, Ignition Power voltage, Ground

Function		Connection signal
<b>Anti-theft Function Control</b>	Arm Arm Wait Horn Answer Back	- All door trunk hood switch close (switch off : High signal) - All door trunk lock/unlock switch lock (switch off : High signal) - Frt . LH/RH door lock/unlock switch lock (switch off : High signal) - Transmitter lock signal
	Disarm	- Transmitter unlock signal
	Alarm	- All door switch (Open : Low signal) - Hood & trunk switch (Open : Low signal)
	Panic	- Transmitter panic signal
	Arm Reservation	- Trunk unlock signal in Arm state
	User option Mode	
<b>Code Saving</b>	Scan Tool Communication	- DLC code saving (Connector pin No12)
<b>Diagnosis</b>	Scan Tool Communication	- DLC "K" line (Connector pin No13)

No	Signal	Condition	ON/OFF Voltage range level (V)	Remarks
1	B+ Back-up voltage	Battery volt	9V~16V	
2	IGN1 power voltage	Key ON = Battery volt	7volts higher, 4volts lower	
3	IGN2 power voltage	Key ON = battery volt	7volts higher, 4volts lower	
4	Alternator "L" terminal	Engine ON = Charging volt	7volts higher, 4volts lower	
5	Key In Switch	In key (ON) = Battery volt	7volts higher, 4volts lower	
6	4 Door switch	Door open = Ground volt	Open : lower than 1vot	
7	Driver's door switch	Door open = Ground volt	Open : lower than 1vot	
8	Passenger's door switch	Door open = Ground volt	Open : lower than 1vot	
9	Driver's door unlock switch	Lock = 5volts, Unlock = 0volt	Unlock : lower than 1volt	Built in door actuator
10	Passenger's door unlock S/W	Lock = 5volts, Unlock = 0volt	Unlock : lower than 1volt	Built in door actuator
11	Tail Gate Key Unlock switch	Door open = Ground volt	open : lower than 1volt	Built in trunk latch
12	Front door lock S/W(LH/RH)	Lock = 5volts, Unlock = 0 volt	Unlock : lower than 1volt	Built on the door trim
13	Front door unlock S/W(LH/RH)	Lock = 5volts, Unlock = 0 volt	Unlock : lower than 1volt	Built on the door trim
14	Trunk switch	Open = 0volt, Close = 5 volts	Open : lower than 1volt	
15	Hood switch	Open = 0volt, Close = 5 volts	Open : lower than 1volt	
16	Driver's door key lock switch	Lock (ON) = 0 volt	Lock : lower than 1volt	Built in door actuator

17	Driver's door key unlock S/W	Unlock (ON) = 0 volt	Unlock : lower than 1volt	
18	Passenger's door key unlock S/W	Unlock (ON) = 0 volt	Unlock : lower than 1volt	
19	Trunk key unlock switch	Unlock (ON) = 0 volt	Open : lower than 1volt	
20	Washer switch	Switch ON = 0 volt	7volts higher, 4volts lower	
21	Intermittent wiper switch	Switch ON = 0 volt	7volts higher, 4volts lower	
22	Mist switch	Switch ON = 0 volt	7volts higher, 4volts lower	
23	Wiper volume switch	0V (Min.) ~ 2.5V(Max.)		0Ω~ 50KΩ
24	Rear defogger switch	Switch ON = 0 volt	ON : lower than 1volt	
25	Tail lamp switch	Switch ON = 0 volt	ON : lower than 1volt	
26	Seat belt switch	Fasten seat belt : 5 volts (switch off)		
27	Crash input	Crashed : 0 volt	Crash ON : lower than 1volt	
28	Vehicle speed sensor	PWM pulse : 0~5 volt	4volts higher, 1volts lower	
29	Head lamp switch	Switch ON = 0 volt	ON : lower than 1volt	
30	Front fog lamp switch	Switch ON = 0 volt	ON : lower than 1volt	
31	Trunk release switch	Switch ON = 0 volt	ON : lower than 1volt	
32	Code saving terminal	Off = 5 volts		

\* Input signal senses using 2 kind of voltage.

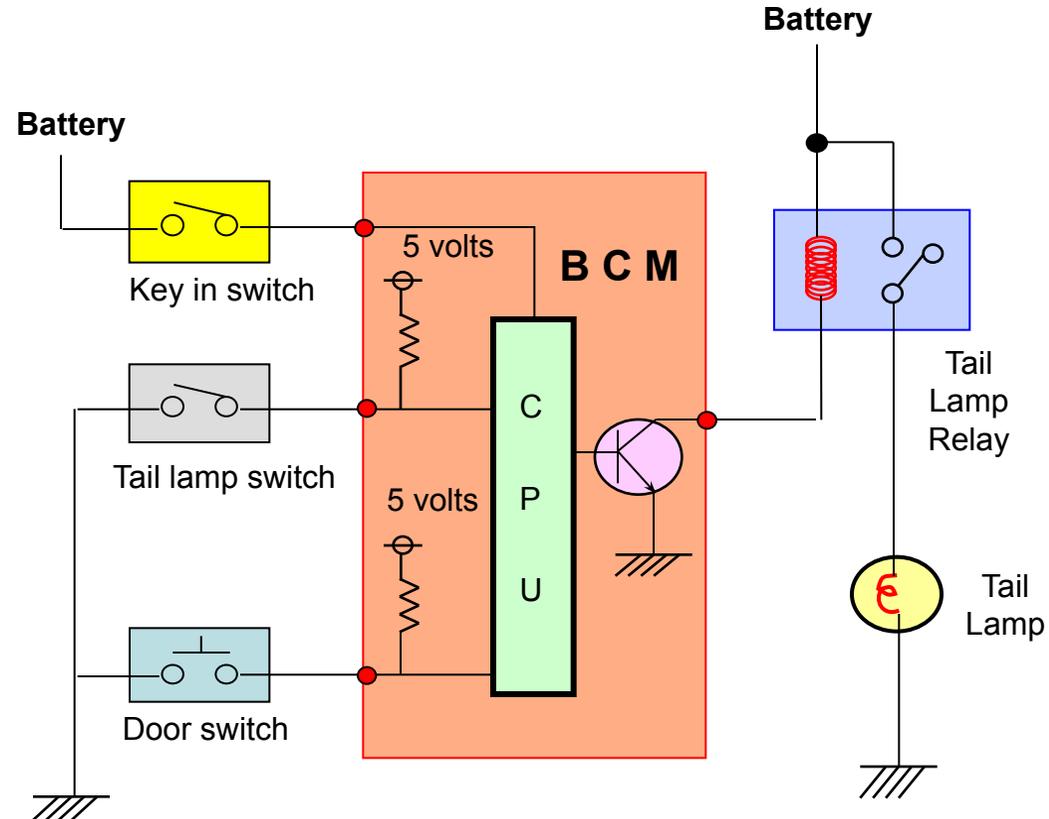
- 5 volts
- 12 volts

- ◆ In case of recognize signal using 5 volts.
  1. Awareness voltage of switch are output from BCM  
If switch turned ON, output voltage drop to 0 volts .  
And, tail lamp relay turn "ON"
  2. At this time, when switch turned ON  
BCM recognizes switch signal though voltage  
Are below than 1volt (Low signal)
  3. If switch turned off, the voltage going up to high lever.  
This time, voltage level that recognize switch off  
signal is higher than 4volts.
  4. Thus, the switch signal is not recognize voltage  
between 1.1 volts and 3.9 volts.

- ◆ In case of recognize signal using 12 volts.
 

Extent that recognize switch's on/off signal is

  - ON : lower than 4 volts
  - OFF : higher than 7 volts



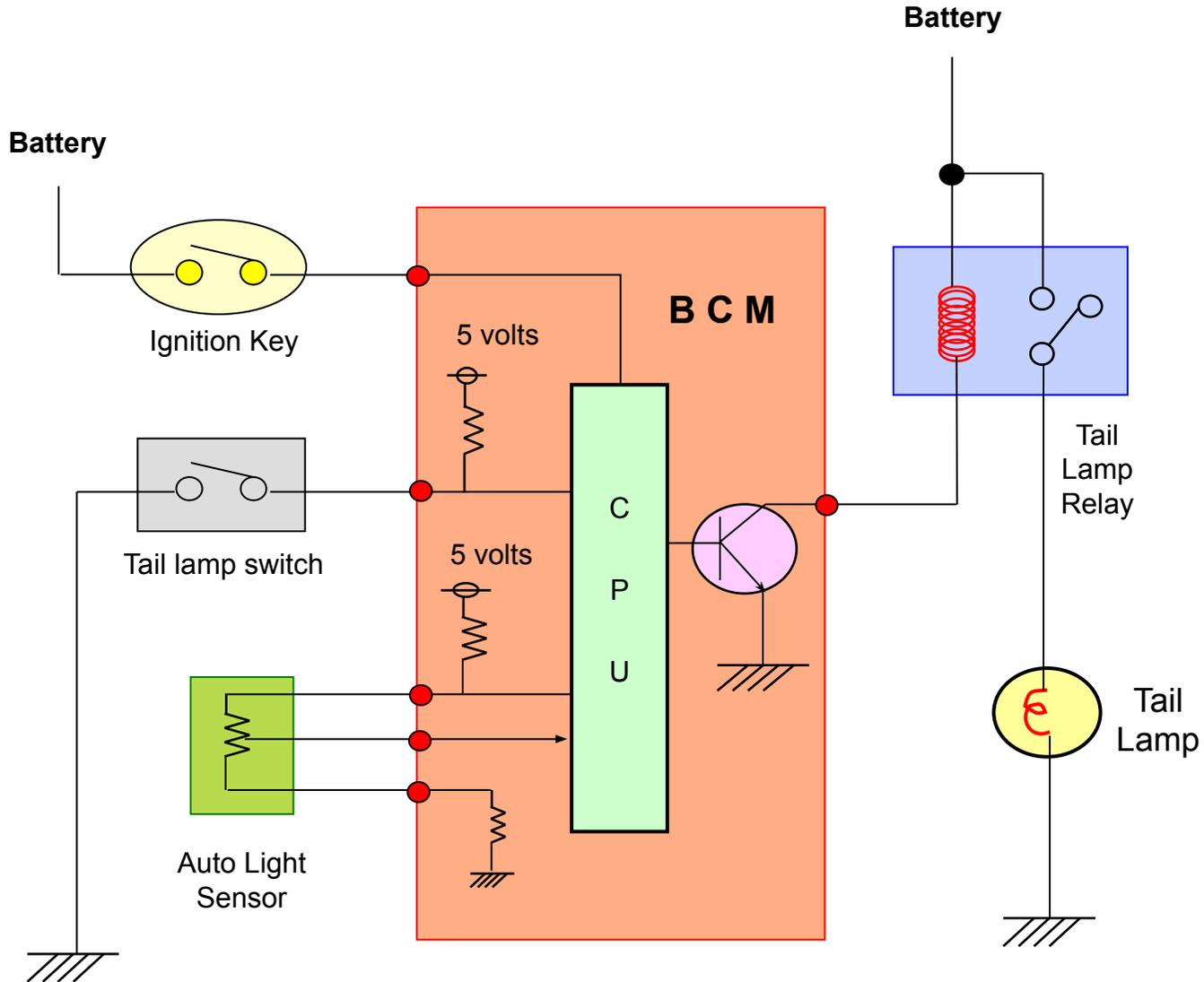
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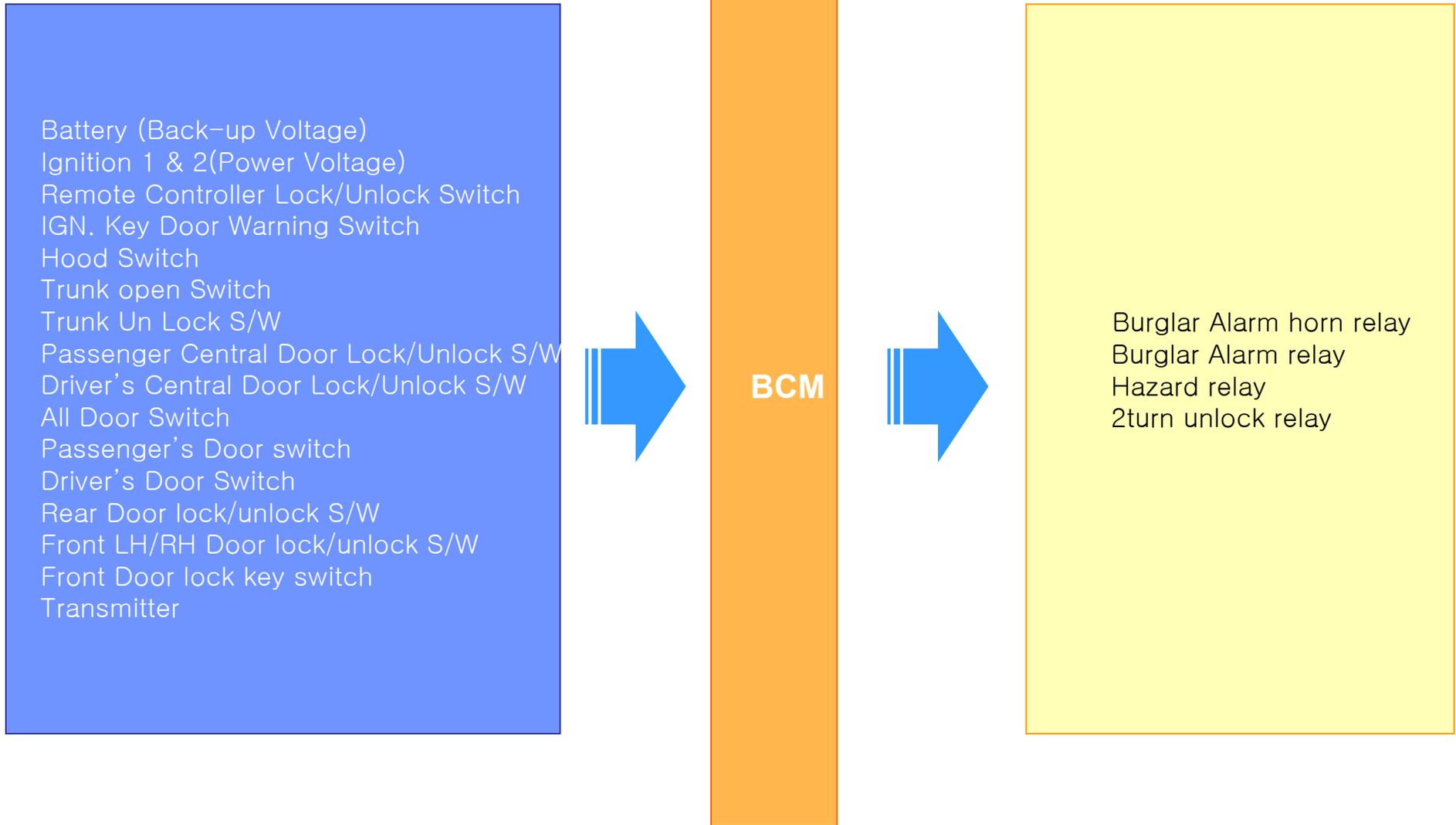
By adopting the auto light sensor, the tail lamp and head lamp will be turned ON or OFF automatically according to the surrounding brightness.

Auto Light function condition.

1. Ignition Key S/W "ON"
2. Light S/W "Auto Position"

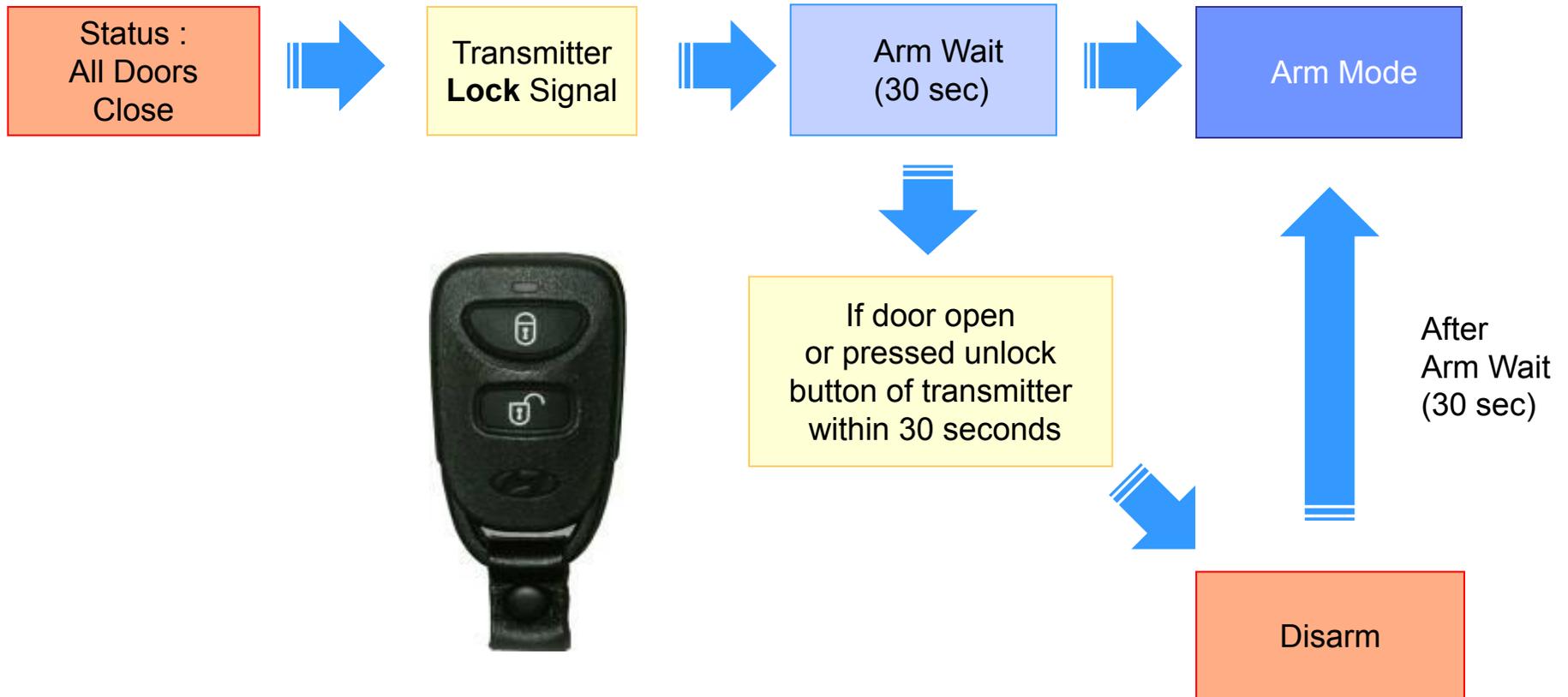
	Tail Lamp	Headlamp
ON	0.81V±0.08V	0.36V±0.06V
OFF	1.41V±0.10V	0.51V±0.06V

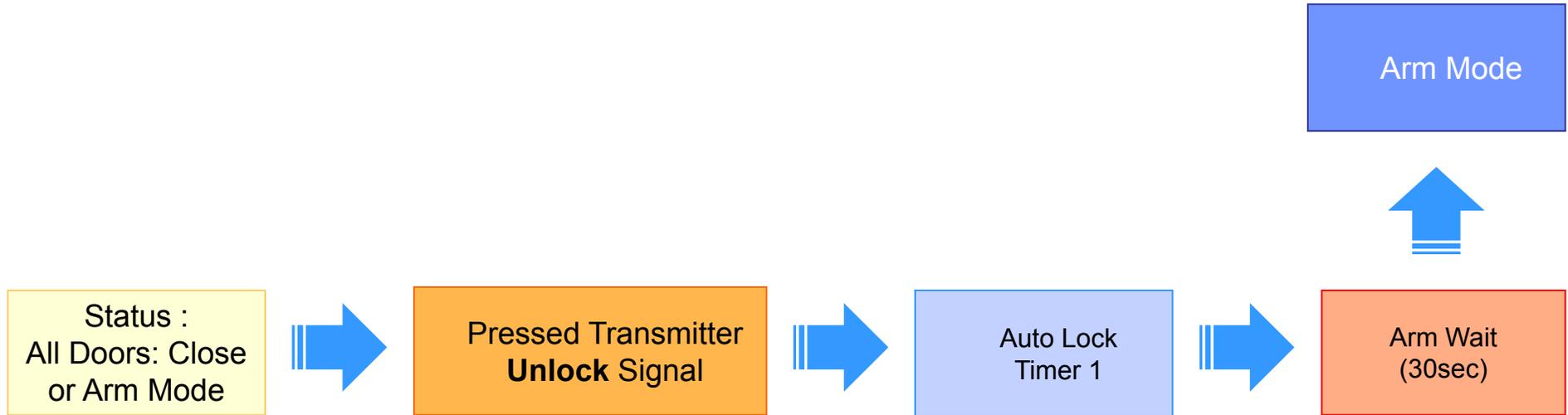


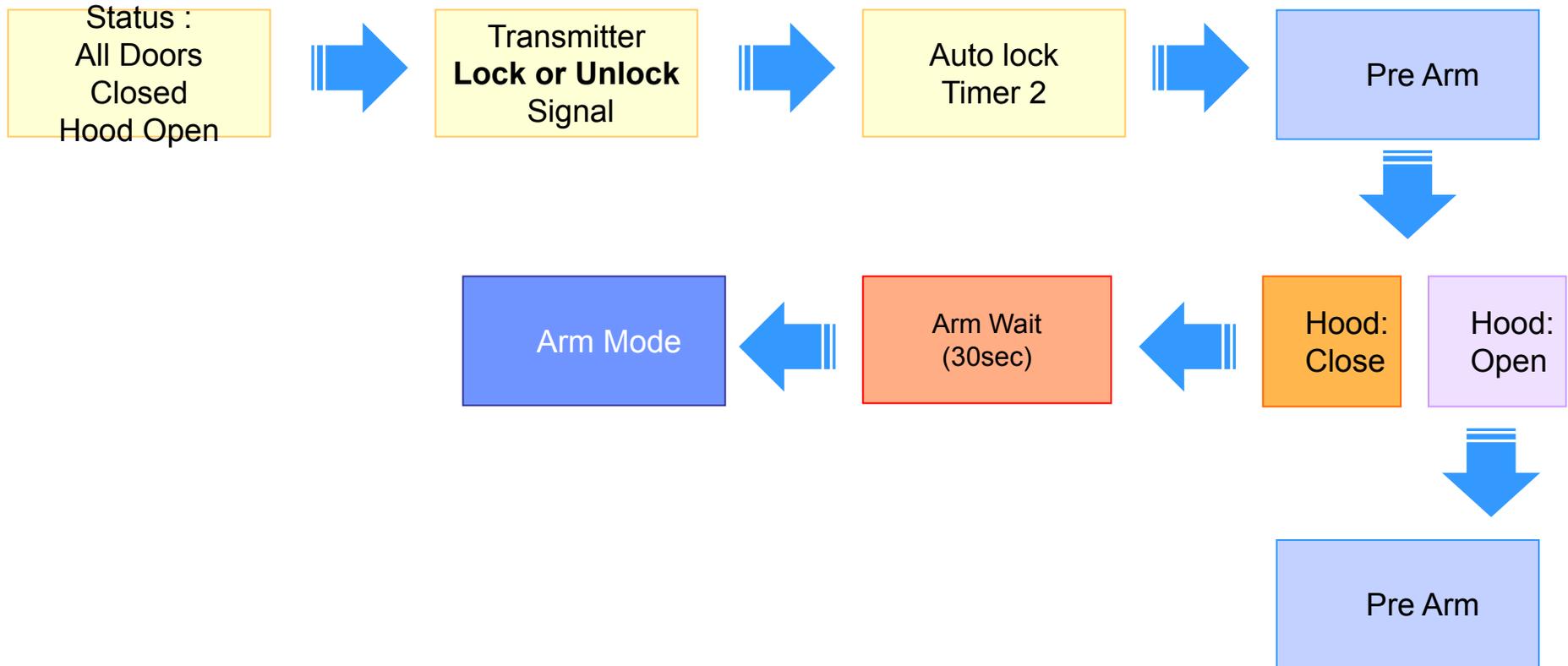


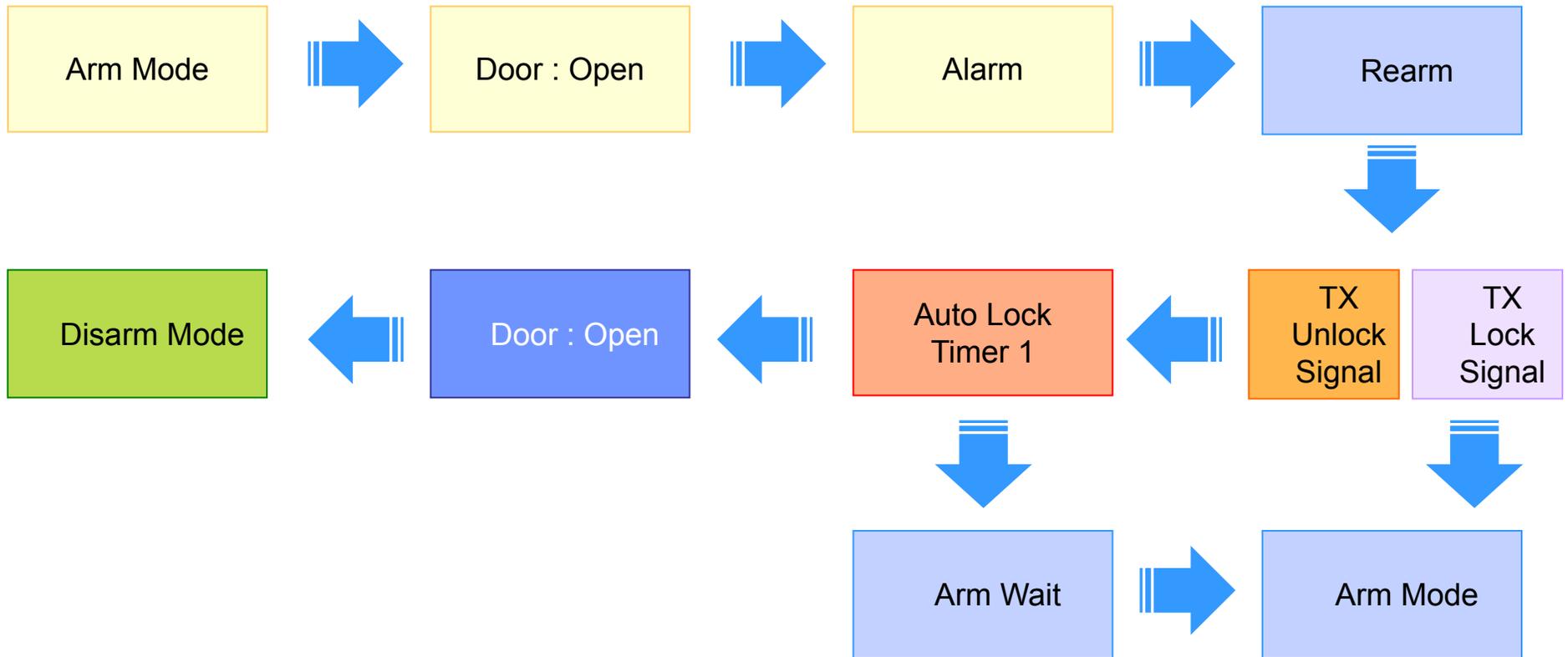
Relation signal	Arm	Disarm	Alarm	Remarks
Ignition key	Off	ON		
IGN. Key Door Warning Switch	Off			Off : Key removed, ON : Key insert
Hood Switch	Off		ON	Off : Close, ON : Open
Trunk open Switch	Off		ON	Off : Close, ON : Open
Trunk Unlock S/W	Off			Off : Lock, ON : Unlock
Passenger Central Door Lock/Unlock S/W	Off			
Driver's Central Door Lock/Unlock S/W	Off			
All Door Switch	Off		ON	Off : Close, ON : Open
Passenger's Door switch	Off		ON	Off : Close, ON : Open
Driver's Door Switch	Off		ON	Off : Close, ON : Open
Rear Door lock/unlock S/W	Off			Off : Lock, ON : Unlock
Front LH/RH Door lock/unlock S/W	Off			Off : Lock, ON : Unlock
Front Door lock key switch	Off	ON		Off : Lock, ON : Unlock
Transmitter	Lock Button	Unlock Button		

## Arm wait & Arm Mode entry









1.6 USER OPTION	
AUTO DOOR LOCK STATUS	DISABLE
ARM/DISARM BY KEY(+RK)	DISABLE
HORN ANSWER BACK(+RK)	DISABLE
AUTO LIGHT CONTROL	DISABLE

DATA WRITE

**DISABLE**

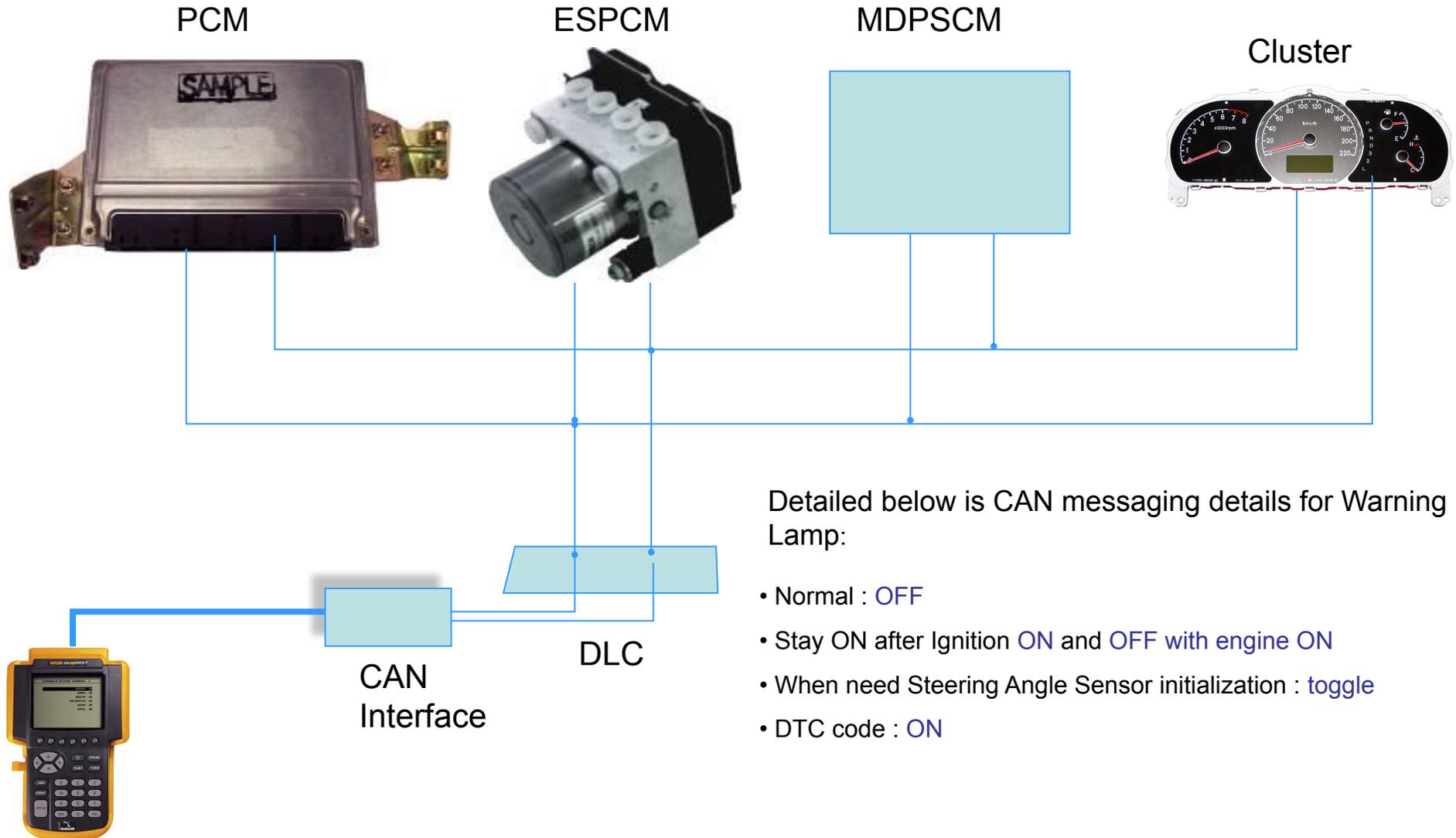
AFTER SELECT (◀/▶)KEY, PRESS [ENTER].

1.6 USER OPTION	
AUTO DOOR LOCK STATUS	DISABLE
ARM/DISARM BY KEY(+RK)	DISABLE
HORN ANSWER BACK(+RK)	DISABLE
AUTO LIGHT CONTROL	DISABLE

DATA WRITE

**20Km/h**

AFTER SELECT (◀/▶)KEY, PRESS [ENTER].



Detailed below is CAN messaging details for Warning Lamp:

- Normal : OFF
- Stay ON after Ignition ON and OFF with engine ON
- When need Steering Angle Sensor initialization : toggle
- DTC code : ON