05HKV–01

SYSTEM DESCRIPTION

1. PARTS DESCRIPTION

Components	Function
Automatic light control sensor	Detects the brightness around and sends the information to the driver side J/B ECU.
Hazard warning switch	Its on or off state is sent to the driver side J/B ECU.
Stop lamp switch	Sends the brake pedal state to the driver side J/B ECU.
Ignition switch	Its ON/ACC/OFF state is sent to the driver side J/B ECU.
Head relay	Turns the headlamp on when it is actuated by the headlamp ON demand signal via the driver side J/B ECU.
Door courtesy switch	Detects the door open/close state and sends the information to the respective door ECU.
Door lock signal	Detects the door lock/unlock state and sends the information to the respective door ECU.
Alternator	Detects the engine start/stop state and sends the information to the ECM.
Park neutral position switch	Detects the shift position and sends the information to the ECM.
Swivel motor	Moves the headlamps laterally according to the information from the AFS ECU, and sends the corresponding information to the AFS ECU.
Headlamp leveling actuator	Moves the headlamps up and down according to the information from the AFS ECU.
AFS OFF switch	The information corresponding to the AFS OFF switch state is sent to the AFS ECU. The AFS ECU controls the operation permit signal accordingly.
Height sensor	Detects the vehicle height and sends the corresponding information to the AFS ECU.
Steering sensor	Detects the steering wheel direction and sends the corresponding information to the AFS ECU.

2. OPERATION DESCRIPTION

(a) Manual lighting system

(1) The driver side J/B ECU receives the following:

- Light SW tail signal
- Light SW head signal
- Light SW high beam signal
- Front fog SW signal
- Rear fog SW signal
- Lighting system passing signal

(2) The driver side J/B ECU controls the following based on the signals listed in (1):

- Headlamp ON demand signal
  Sent when light SW head signal is received.
- Taillamp ON demand signal
  Sent when light SW tail signal and light SW head signal are received.
- High beam ON signal
  Sent when light SW high beam signals is received.
- Front fog light ON signal
  Sent when light SW tail and front fog SW signals are received.
- Rear fog light ON signal
  Sent when light SW tail and rear fog SW signals are received.

(3) The driver side J/B ECU controls the on/off operation of the following based on the signals listed in (2):
- Headlamp (low)
- Headlamp (high)
- Clearance lamp
- Front fog lamp
- Rear fog lamp
- Taillamp
- License plate lamp

(b) Automatic light control system
(1) The driver side J/B ECU receives the following:
- Light SW auto signal
- Light control SW signal

(2) The driver side J/B ECU controls the following based on the signals listed in (1):
- Headlamp ON demand signal
  Sent according to the illuminance information from the light control signal when the light SW auto signal is received.
- Taillamp ON demand signal
  Sent according to the illuminance information from the light control signal when the light SW auto signal is received.

(3) The driver side J/B ECU controls the on/off operation of the following based on the signals listed in (2):
- Headlamp (low)
- Clearance lamp
- Taillamp
- License plate lamp

(c) Turn signal lamp system
(1) The driver side J/B ECU receives the following:
- Right turn signal
- Left turn signal
- Hazard warning signal

(2) The driver side J/B ECU controls the following based on the signals listed in (1):
- Right turn ON demand signal
  Sent when the right turn signal or hazard warning signal is received.
- Left turn ON demand signal
  Sent when the left turn signal or hazard warning signal is received.

(3) The driver side J/B ECU controls the on/off operation of the following based on the signals listed in (2):
- Right turn signal lamp
- Left turn signal lamp

(d) Daytime running light system
(1) The driver side J/B ECU receives the following:
- Light SW tail signal
- Light SW head signal
- Light SW auto signal
- Light control signal
- Alternator L terminal signal

(2) The driver side J/B ECU controls the following based on the signals listed in (1):
- DRL ON demand signal
  Sent when the alternator L terminal signal is received but the light SW tail and head signals are not received or when the light SW auto signal and alternator L terminal signal are received but illuminance information from the light control signal is not received.

(3) The driver side J/B ECU controls the on/off operation of the following:
- Headlamp (low)
- Clearance lamp
- Taillamp
- License plate lamp

(e) Light auto cut delay system

(1) The driver side J/B ECU receives the following:
- Light SW tail signal
- Light SW head signal
- Light SW auto signal
- Front fog SW signal
- Rear fog SW signal
- Ignition SW signal
- Light control signal
- Driver's seat courtesy SW signal

(2) The driver side J/B ECU controls the following based on the signals listed in (1):
- Headlamp ON demand signal (G.C.C. Countries, Singapore, Thailand, Hong Kong, China, Taiwan)
  Terminates communication when the ignition SW signal terminates and the driver's seat courtesy SW signal is received while sending the headlamp ON demand signal. The headlamp ON demand signal results from receiving the light SW head signal or the illuminance information from the light control signal.
- Headlamp ON demand signal (Europe)
  Terminates communication when the ignition SW signal terminates and the driver's sear courtesy SW signal is received while sending the headlamp ON demand signal. The headlamp ON demand signal results from receiving the illuminance information from the light control signal.
- Headlamp ON demand signal (Europe)
  Terminates communication when the ignition SW signal terminates while sending the headlamp ON demand signal. The headlamp ON demand signal results from receiving the light SW head signal.
- Taillamp ON demand signal (G.C.C. Countries, Singapore, Thailand, Hong Kong, China, Taiwan)
  Terminates communication when the ignition SW signal terminates and the driver's seat courtesy SW signal is received while sending the taillamp ON demand signal. The taillamp ON demand signal results from receiving the light SW tail signal or illuminance information from the light control signal.
- Taillamp ON demand signal (Europe)
  Terminates communication when the ignition SW signal terminates and the driver's seat courtesy SW signal is received while sending the taillamp ON demand signal. The taillamp ON demand signal results from receiving the illuminance information from the light control signal.

- Front fog lamp ON demand signal (G.C.C. Countries, Singapore, Thailand, Hong Kong, China, Taiwan)
  Terminates communication when the ignition SW signal terminates and the driver's seat courtesy SW signal is received while sending the front fog lamp ON demand signal. The front fog lamp ON demand signal results from receiving the light SW tail signal, the light SW head signal, and the front fog SW signal, or from receiving the front fog SW signal and the illuminance information from the light control signal.
- Front fog lamp ON demand signal (Europe)
  Terminates communication when the ignition SW signal terminates and the driver's seat courtesy SW signal is received while sending the front fog lamp ON demand signal. The front fog lamp ON demand signal results from receiving the front fog SW signal and the illuminance information from the light control signal.
  Terminates communication when the ignition SW signal terminates while sending the front fog lamp ON demand signal. The front fog lamp ON demand signal results from receiving the light SW tail signal, the light SW head signal and the front fog SW signal.
- Rear fog lamp ON demand signal (Europe)
  Terminates communication when the ignition SW signal terminates and the driver's seat courtesy SW signal is received while sending the front fog lamp ON demand signal. The front fog lamp ON demand signal results from receiving the front fog SW signal and the illuminance information from the light control signal.
- Light reminder prohibit signal
  Sent while sending the headlamp ON demand signal and taillamp ON demand signal during delay operation.

(3) The driver side J/B ECU controls the on/off operation of the following:
- Headlamp (low)
- Headlamp (high)
- Clearance lamp
- Front fog lamp
- Rear fog lamp
- Taillamp
- License plate lamp

(f) Stop light system

(1) The luggage room J/B ECU receives the following:
- Stop lamp ON demand signal
- Brake control signal

(2) The luggage room J/B ECU controls the following based on the signals listed in (1):
- Stop lamp ON demand signal
  Sent when the stop lamp ON demand signal from another ECU is sent and during brake control.

(3) The luggage room J/B ECU controls the on/off operation of the following:
- Stop lamp
- High–mounted stop lamp

(g) Back–up lamp system

(1) The luggage room J/B ECU receives the following:
- Shift position R signal

(2) The luggage room J/B ECU controls the following based on the signal in (1):
- Back–up lamp ON demand signal
  Sent when the shift position R signal is received.

(3) The luggage room J/B ECU controls the on/off operation of the following:
- Back–up lamp

(h) Illuminated entry system
  (1) The passenger side J/B ECU receives the following:
    • D/P/RR/RL door courtesy SW signal
    • D/P RR/RL door lock signal
    • Ignition SW signal
  (2) The passenger side J/B ECU controls the following based on the signals listed in (1):
    • Illumination ON demand signal
      Sent when the respective door courtesy SW signal, door lock signal or ignition SW signal is received.
  (3) The passenger side J/B ECU controls on/off and fade–in/fade–out operations of the following based on the signals listed in (2):
    • Ignition key cylinder lamp
    • Front room lamp

(i) Rear room lamp
  (1) The passenger side J/B ECU receives the following:
    • RR/RL door courtesy SW signal
    • D/P/RR/RL door lock signal
  (2) The passenger side J/B ECU controls the following based on the signals listed in (1):
    • RR room lamp ON demand signal
      Sent when the respective door courtesy SW signal or door lock signal is received.
    • RL room lamp ON demand signal
      Sent when the respective door courtesy SW signal or door lock signal is received.
  (3) The passenger side J/B ECU controls the fade–in/fade–out operation of the following based on the signals listed in (2):
    • RR room lamp
    • RL room lamp

(j) Center console spot illumination system
  (1) The passenger side J/B ECU receives the following:
    • Ignition SW signal
  (2) The passenger side J/B ECU controls the following based on the signals listed in (1):
    • Center console lamp ON demand signal
      Sent when the ignition SW signal is sent.
  (3) The passenger side J/B ECU controls the fade–in/fade–out operation of the following based on the signals in (2):
    • Center console lamp

(k) Step light system
  (1) The passenger side J/B ECU receives the following:
    • D/P/RR/RL door courtesy SW signal
    • D/P/RR/RL door lock signal
    • Shift position P signal
    • Ignition key SW signal
  (2) The passenger side J/B ECU controls the following based on the signals listed in (1):
    • Step light ON demand signal
      Sent when the respective door courtesy SW signal or door lock signal is received or when the shift position P and ignition SW signals are received.
  (3) The passenger side J/B ECU controls on/off/fade–in/fade–out/light control operation of the following based on the signal in (2):
    • Step light

(l) Inside handle illumination system
  (1) The passenger side J/B ECU receives the following:
    • D/P/RR/RL door courtesy SW signal
    • D/P/RR/RL door lock signal
    • Shift position P signal
    • Ignition SW signal
  (2) The passenger side J/B ECU controls the following based on the signals listed in (2):
    • Illumination ON demand signal
      Sent when the respective door courtesy SW signal or door lock signal is received or when the shift position P signal and ignition SW signal are received.
  (3) The passenger J/B ECU controls the on/off and fade–in/fade–out operations of the following:
    • Inside handle illumination

(m) Buckle illumination system
  (1) The driver side J/B ECU and passenger side J/B ECU receive the following:
    • D/P/RR/RL door courtesy SW signal
    • D/P/RR/RL door lock signal
  (2) The driver side J/B ECU and passenger side J/B ECU control the following based on the signals listed in (1):
    • Buckle illumination ON demand signal
      Sent when the respective courtesy SW signal or door lock signal is received.
  (3) The driver side J/B ECU and passenger side J/B ECU control the on/off operation of the following:
    • Buckle illumination

(n) Door courtesy lamp lighting system
  (1) The driver side J/B ECU, passenger side J/B ECU, rear door RH ECU and rear door LH ECU receive the following:
    • D/P/RR/RL door courtesy SW signal
  (2) The driver side J/B ECU, passenger side J/B ECU, rear door RH ECU and rear door LH ECU send the following based on the signal is listed in (1):
    • Courtesy lamp ON demand signal
      Sent when the respective door courtesy SW signal is received.
  (3) The driver side J/B ECU, passenger side J/B ECU, rear door RH ECU and rear door LH ECU control the on/off operation of the following:
    • Courtesy lamp illumination

(o) Door mirror lamp (Outer foot lamp)
  (1) The driver side J/B ECU and passenger side J/B ECU receive the following:
    • D/P/RR/RL door courtesy signal
    • D/P/RR/RL door lock signal
  (2) The driver side J/B ECU and passenger side J/B ECU control the following based on the signals listed in (1):
    • Door mirror lamp ON demand signal
      Sent when the respective door courtesy SW signal or door lock signal is received.
  (3) The driver side J/B ECU and passenger side J/B ECU control on/off operation of the following:
    • Door mirror lamp

(p) Room illumination system
  (1) The driver side J/B ECU receives the following:
    - Light SW auto signal
    - Light SW tail signal
    - Light SW head signal
    - Light control signal
  (2) The driver side J/B ECU controls the following based on the signals listed in (1):
    - Taillamp ON demand signal
      Sent when the light SW tail or head signal is received or based on illuminance information from the light control signal when the light SW auto signal is received.
  (3) The driver side J/B ECU controls the on/off operation of the following based on the signal in (2):
    - Each room lamp
    - RR/RL ash–tray illumination

(q) AFS
  (1) The AFS ECU receives the following:
    - Headlamp ON demand signal
    - DRL ON demand signal
    - Alternator L terminal signal
    - Shift position signal
    - Zero point value stored in steering angle sensor
    - Steering angle sensor signal
    - Vehicle height sensor signal
    - Vehicle speed signal
    - AFS OFF SW signal
  (2) The AFS ECU controls the following based on the signals listed in (1):
    - Leveling actuator operation demand
      Drive based on the vehicle height sensor signal when the headlamp ON demand signal or alternator L terminal signal is received and the DRL on demand signal is not received.
    - Swivel motor operation demand
      Drive according to the vehicle speed signal and steering angle sensor signal when the headlamp ON demand signal, alternator L terminal signal and zero–point value stored in the steering angle sensor are received and the DRL ON demand signal, shift position R and N signals, and AFS OFF SW signal are not received.
    - AFS warning signal
      Sent when an abnormality is detected in the respective signal or system.
    - AFS OFF indicator signal
      Sent when the AFS OFF SW is pushed.
  (3) The AFS ECU controls the following based on the signals listed in (2):
    - Headlamp leveling actuator LH
    - Headlamp leveling actuator RH
    - Swivel motor RH
    - Swivel motor LH
    - AFS OFF indicator lamp