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2018 NISSAN Altima Sedan OEM Service and Repair Workshop Manual

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- ProPILOT Assist 2.0 has back up function that performs when system error is occurred while driver drives without holding steering wheel with blue display of ProPILOT Assist 2.0.
- The backup function has the following 9 items.
 - When power supply system is abnormal:BACKUP FUNCTION FOR POWER SUPPLY SYSTEM ERROR
 - ADAS control unit 2 error:ADAS CONTROL UNIT 2 BACKUP FUNCTION MALFUNCTION
 - When buzzer (combination meter) system is abnormal:BUZZER (COMBINATION METER) SYSTEM MALFUNCTION BACKUP FUNCTION
 - When steering control system is abnormal:STEERING CONTROL SYSTEM MALFUNCTION BACKUP FUNCTION
 - When brake control system is abnormal:BACKUP FUNCTION FOR BRAKE SYSTEM MALFUNCTION
 - When stop lamp operation system is abnormal:BACKUP FOR STOP LAMP OPERATION SYSTEM ERROR
 - When stop holding control system is abnormal:BACKUP FOR STOP HOLDING CONTROL SYSTEM ERROR
 - When distance sensor is abnormal:BACKUP FUNCTION FOR DISTANCE SENSOR MALFUNCTION
 - When front camera unit is abnormal:BACKUP FUNCTION FOR FRONT CAMERA UNIT MALFUNCTION

CAUTION:

As long as driver always pays attention to the front and is always ready to operate steering wheel reliably immediately according to conditions of road, traffic, and own vehicle, driver can take hands off steering wheel.

- If driver's steering operation is not detected, emergency warning sounds and "Deceleration" is displayed in the head-up display and combination meter to decelerate and make emergency stop.
- After making emergency stop of vehicle, connect to SOS call service operator and then operator requests rescue from public organization (police, fire, medical institutions).

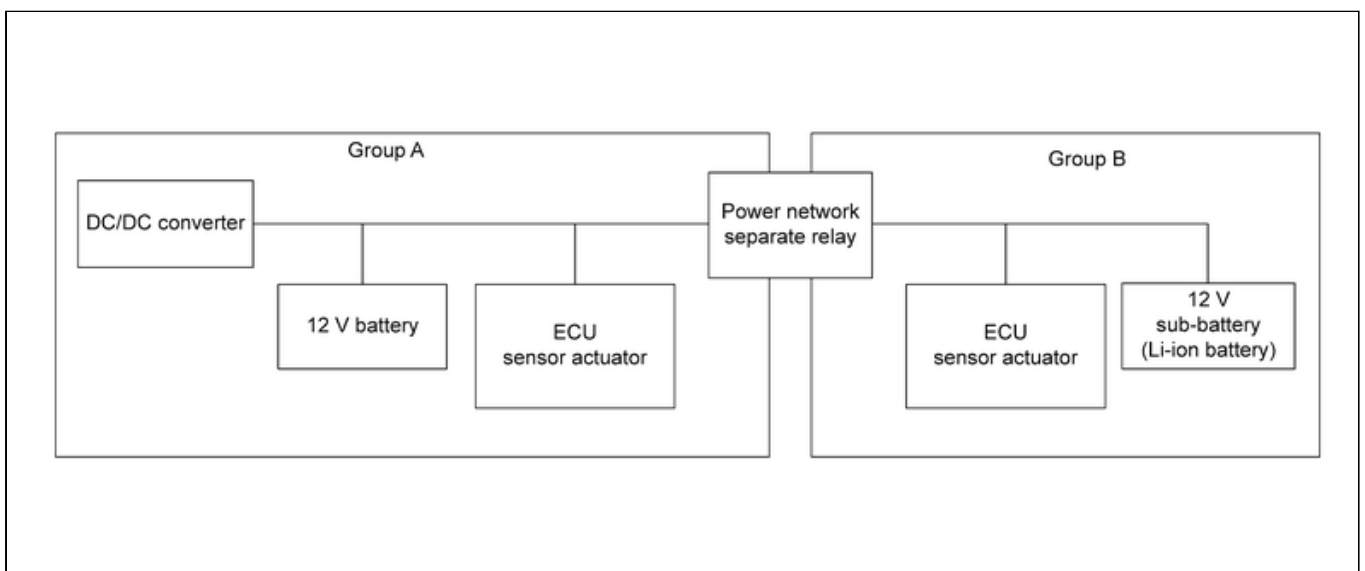


NOTE:

When emergency warning sound is activated, vehicle slows down below 65 km/h (40 MPH) approx., the hazard lamps automatically turn ON. When steering is operated, hazard lamps turn off automatically.

BACKUP FUNCTION FOR POWER SUPPLY SYSTEM ERROR

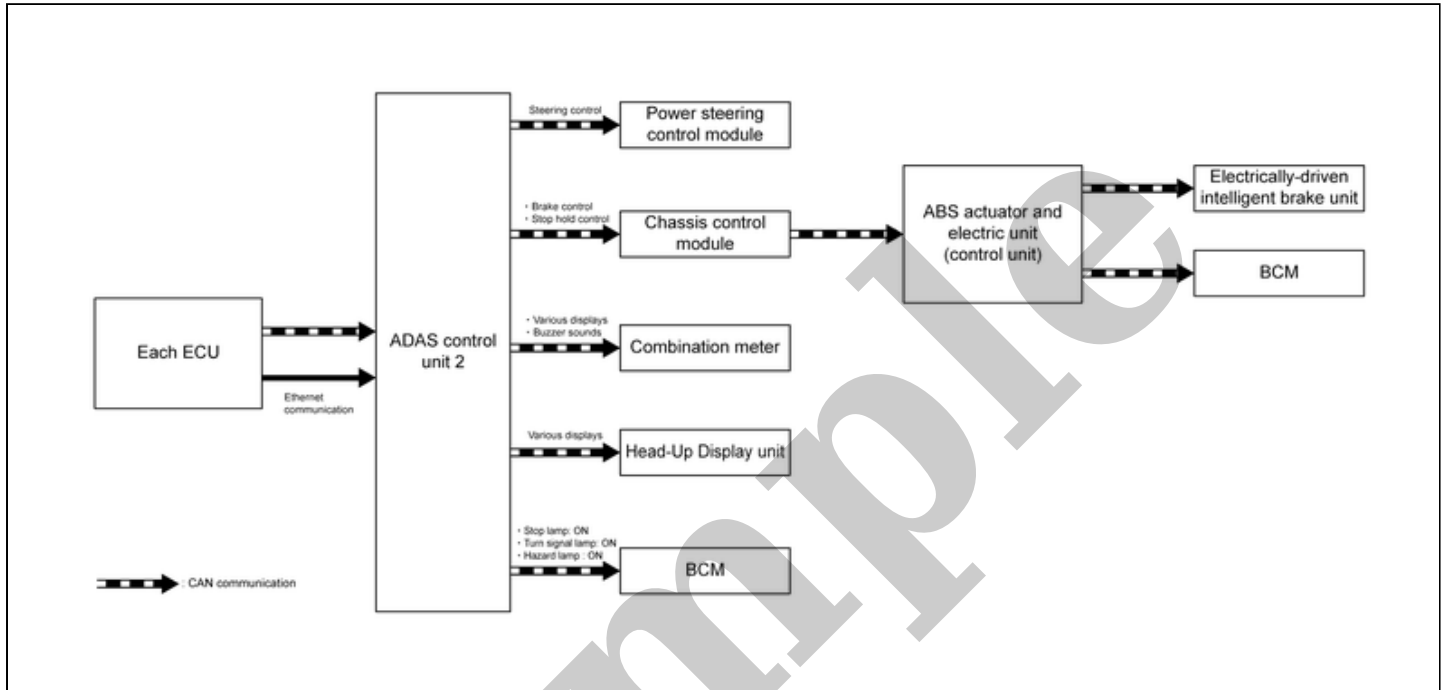
- Each functional component is divided into two power supply groups, DC/DC converter side (group A) and 12V sub-battery (Li-ion battery) side (group B), so that the function can be continued even if the power supply system is abnormal.



- Under normal conditions, ADAS control unit 2 (Group A) controls ProPILOT Assist 2.0 in cooperation with each ECU, each sensor, and each actuator of the whole (Group A and Group B).
- In case of power supply system error, power network separate relay cuts off connection between group A and group B, and function is maintained by normal power supply group.

NORMAL POWER SUPPLY SYSTEM

When power supply system is normal, ADAS control unit 2 that receives signal from each sensor transmits signals to each ECU and controls ProPILOT Assist 2.0 system.



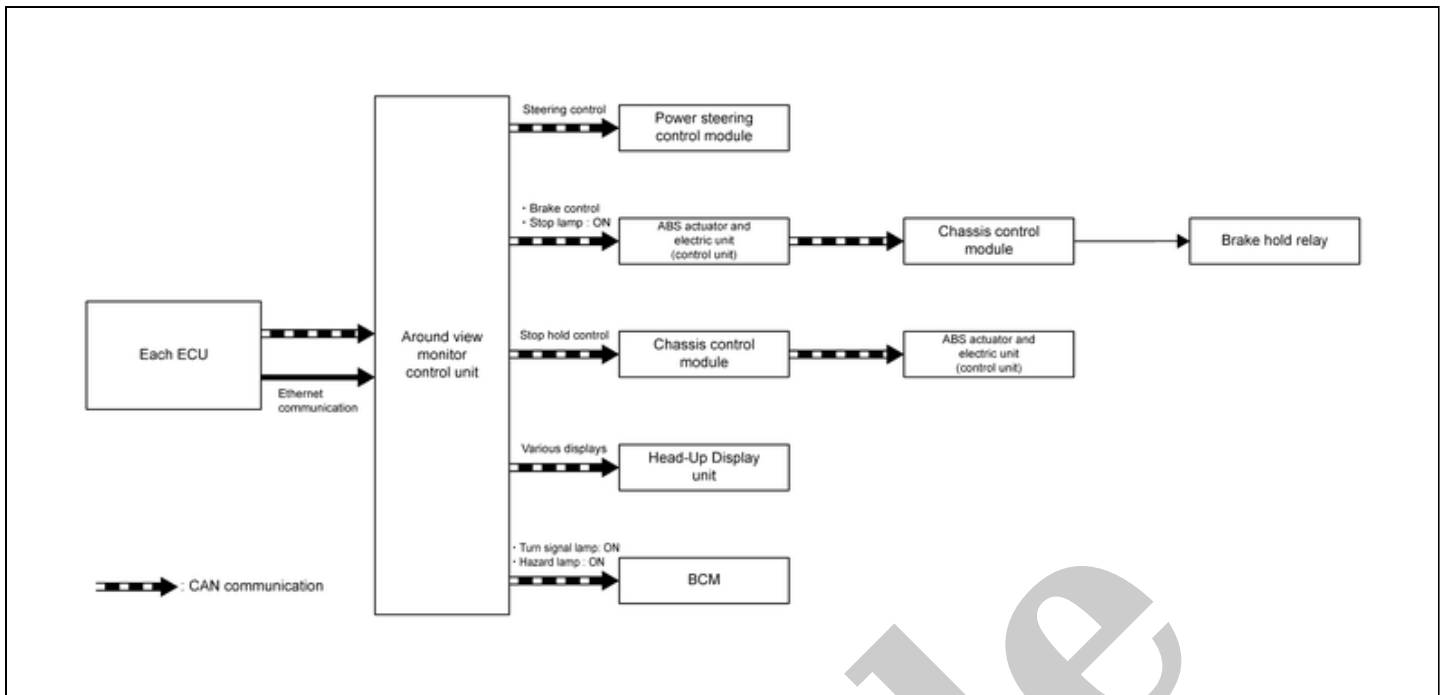
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Control/Operation	Control unit/Component	Description
Steering control	Power steering control module	Controls steering based on signal from ADAS control unit 2.
Brake control	Chassis control module → ABS actuator and control unit (control unit) → Electric control brake unit	Controls brake based on signal from ADAS control unit 2.
Stop lamp ON	Chassis control module → ABS actuator and control unit (control unit) → BCM	Turns ON stop lamp during deceleration based on signal from ABS actuator and control unit (control unit).
Stop holding control	Chassis control module → ABS actuator and control unit (control unit)	Operates electric parking brake based on signal from ADAS control unit 2.
Displays	Combination meter	Displays ProPILOT Assist 2.0 status based on signals from ADAS control unit 2.
	Head-up display unit	
Buzzer	Combination meter	Operates buzzer based on signal from ADAS control unit 2.
Turn signal lamp & hazard lamp ON	BCM	Operates turn signal lamp & hazard lamp based on signals from ADAS control unit 2.

DC/DC CONVERTER SIDE MALFUNCTION

- Power network separate relay cuts off circuit of DC/DC converter side and ProPILOT Assist 2.0 system is controlled by power supply group of the 12 V sub-battery (Li-ion battery) side.
- When malfunction occurs on DC/DC converter side, around view monitor control unit controls ProPILOT Assist 2.0 system.

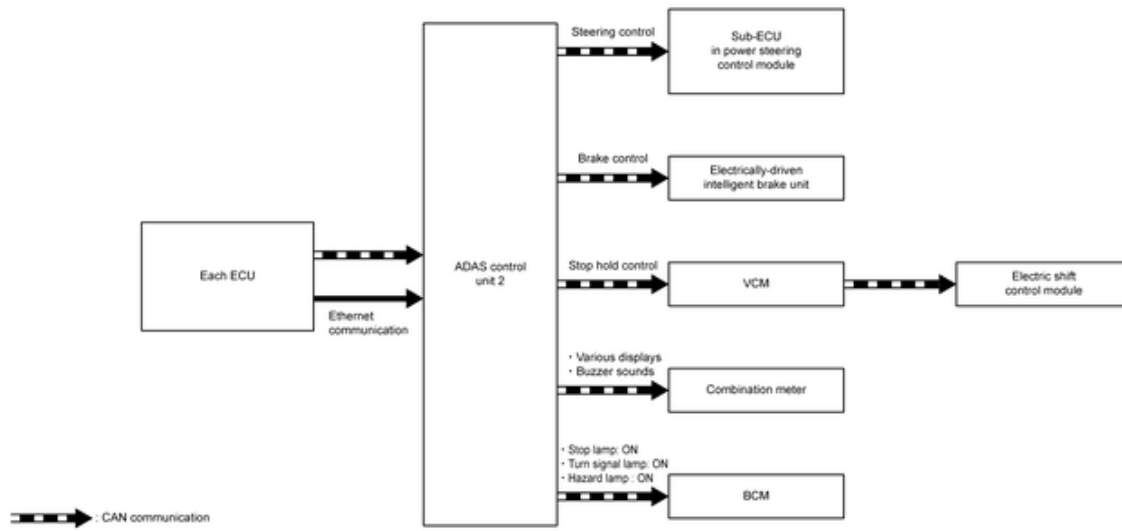
- When around view monitor control unit judges that driver operates steering wheel, it cancels backup function.



Control/Operation	Control unit/Component	Description
Steering control	Power steering control module	Controls steering based on signal from around view monitor.
Brake control	ABS actuator and control unit (control unit)	Controls brake based on signal from around view monitor.
Stop lamp ON	ABS actuator and control unit (control unit) → Chassis control module → Brake holding relay	Turns ON stop lamp during deceleration based on signal from around view monitor.
Stop holding control	Chassis control module → ABS actuator and control unit (control unit)	Operates electric parking brake based on signal from around view monitor.
Displays	Head-up display unit	Displays ProPILOT Assist 2.0 status based on signals from around view monitor.
Turn signal lamp & hazard lamp ON	BCM	Operates turn signal lamp & hazard lamp based on signals from around view monitor.

12 V SUB-BATTERY (LI-ION BATTERY) SIDE MALFUNCTION

- Power network separate relay cuts off circuit of 12 V sub-battery (Li-ion battery) side and ProPILOT Assist 2.0 system is controlled by power supply group of DC/DC converter side.
- When ADAS control unit 2 judges that driver operates steering wheel, it cancels backup function.



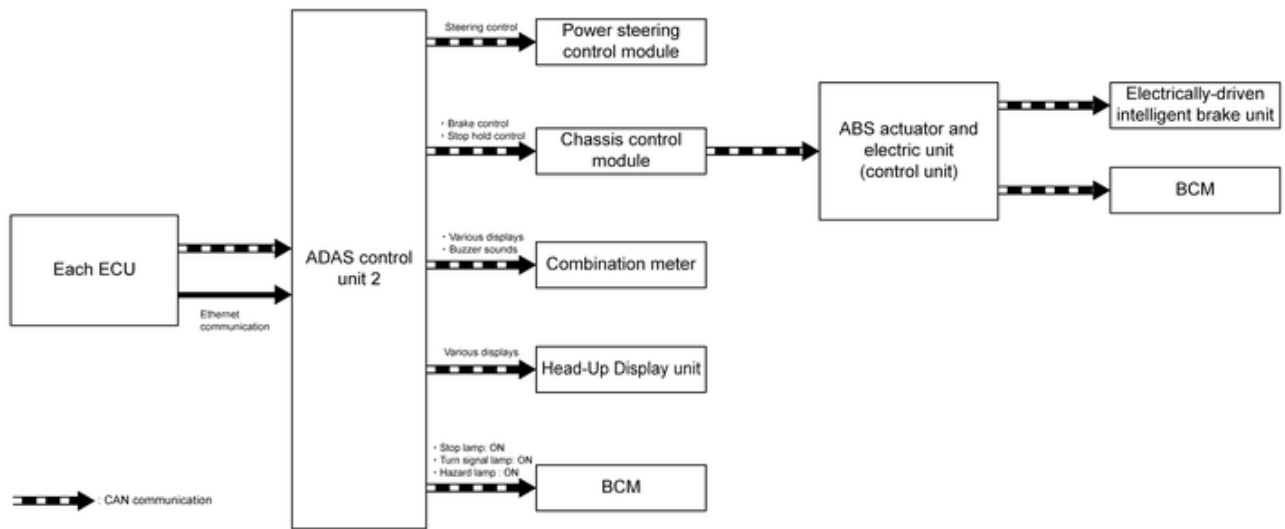
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Control/Operation	Control unit/Component	Description
Steering control	Sub-ECU in power steering control module	Controls steering based on signal from ADAS control unit 2.
Brake control	Electric control brake unit	Controls brake based on signal from ADAS control unit 2.
Stop lamp ON	BCM	Turns ON stop lamp based on signal from ADAS control unit 2.
Stop holding control	VCM → Electric shift control module	Shift position is "P" based on signal from ADAS control unit 2.
Displays	Combination meter	Displays ProPILOT Assist 2.0 status based on signals from ADAS control unit 2.
Buzzer	Combination meter	Operates buzzer based on signal from ADAS control unit 2.
Turn signal lamp & hazard lamp ON	BCM	Operates turn signal lamp & hazard lamp based on signals from ADAS control unit 2.

ADAS CONTROL UNIT 2 BACKUP FUNCTION MALFUNCTION

ADAS CONTROL UNIT 2 NORMAL

When ADAS control unit 2 is normal, ADAS control unit 2 that receives signals from each sensor transmits signals to each ECU and controls ProPILOT Assist 2.0 system.

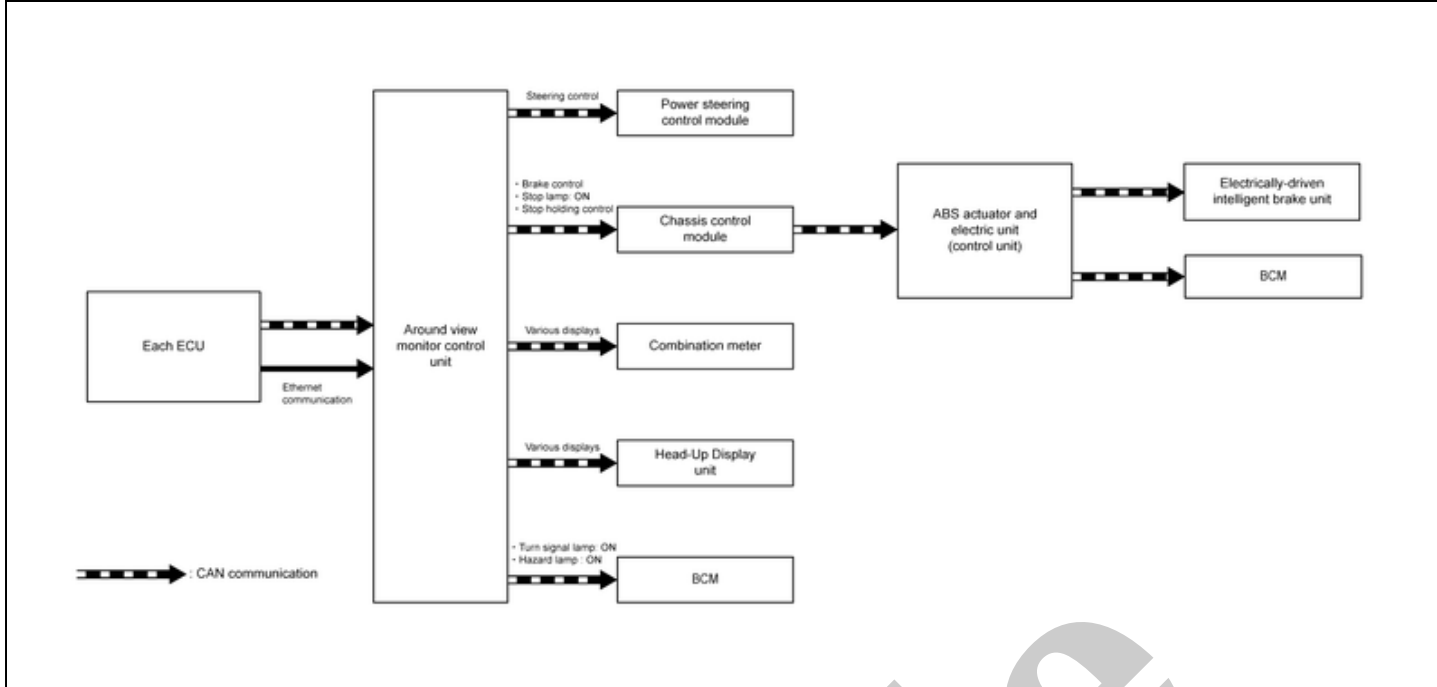


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Control/Operation	Control unit/Component	Description
Steering control	Power steering control module	Controls steering based on signal from ADAS control unit 2.
Brake control	Chassis control module → ABS actuator and control unit (control unit) → Electric control brake unit	Controls brake based on signal from ADAS control unit 2.
Stop lamp ON	Chassis control module → ABS actuator and control unit (control unit) → BCM	Turns ON stop lamp based on signal from ADAS control unit 2.
Stop holding control	Chassis control module → ABS actuator and control unit (control unit)	Operates electric parking brake based on signal from around view monitor.
Displays	Combination meter	Displays ProPILOT Assist 2.0 status based on signals from ADAS control unit 2.
	Head-up display unit	
Buzzer	Combination meter	Operates buzzer based on signal from ADAS control unit 2.
Turn signal lamp & hazard lamp ON	BCM	Operates turn signal lamp & hazard lamp based on signals from ADAS control unit 2.

ADAS CONTROL UNIT 2 MALFUNCTION

- Around view monitor control unit performs brake control and steering control for a few seconds, and controls vehicle until emergency stop.
- When around view monitor control unit judges that driver operates steering wheel, it cancels backup function.



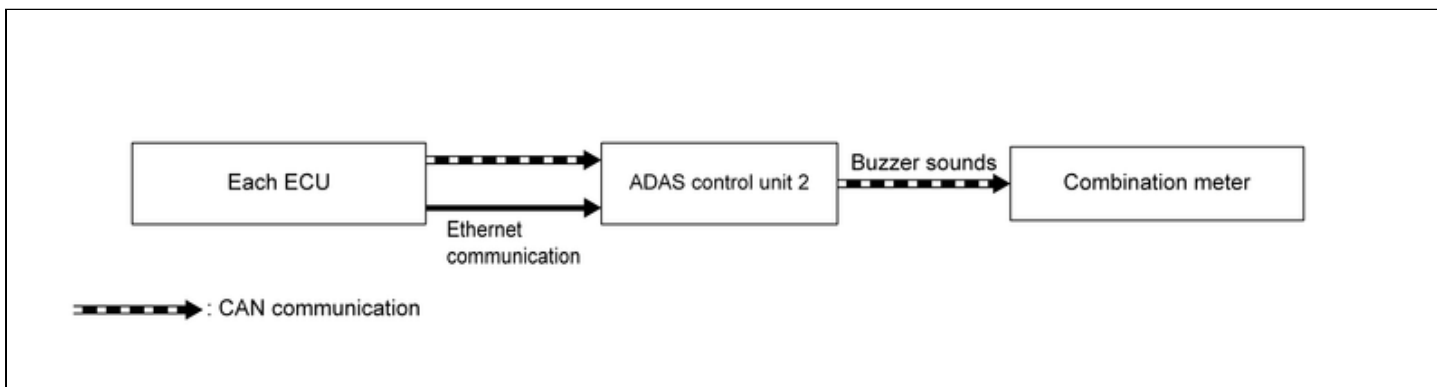
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Control/Operation	Control unit/Component	Description
Steering control	Power steering control module	Controls steering based on signal from around view monitor.
Brake control	Chassis control module → ABS actuator and control unit (control unit) → Electric control brake unit	Controls brake based on signal from around view monitor.
Stop lamp ON	Chassis control module → ABS actuator and control unit (control unit) → BCM	Turns ON stop lamp during deceleration based on signal from around view monitor.
Stop holding control	Chassis control module → ABS actuator and control unit (control unit)	Operates electric parking brake based on signal from around view monitor.
Displays	Combination meter	Displays ProPILOT Assist 2.0 status based on signals from around view monitor.
	Head-up display unit	
Turn signal lamp & hazard lamp ON	BCM	Operates turn signal lamp & hazard lamp based on signals from around view monitor.

BUZZER (COMBINATION METER) SYSTEM MALFUNCTION BACKUP FUNCTION

BUZZER (COMBINATION METER) SYSTEM NORMAL

When buzzer (combination meter) system is normal, ADAS control unit 2 transmits buzzer sound request signal to combination meter and buzzer sounds the operation sound and warning sound required for ProPILOT Assist 2.0.

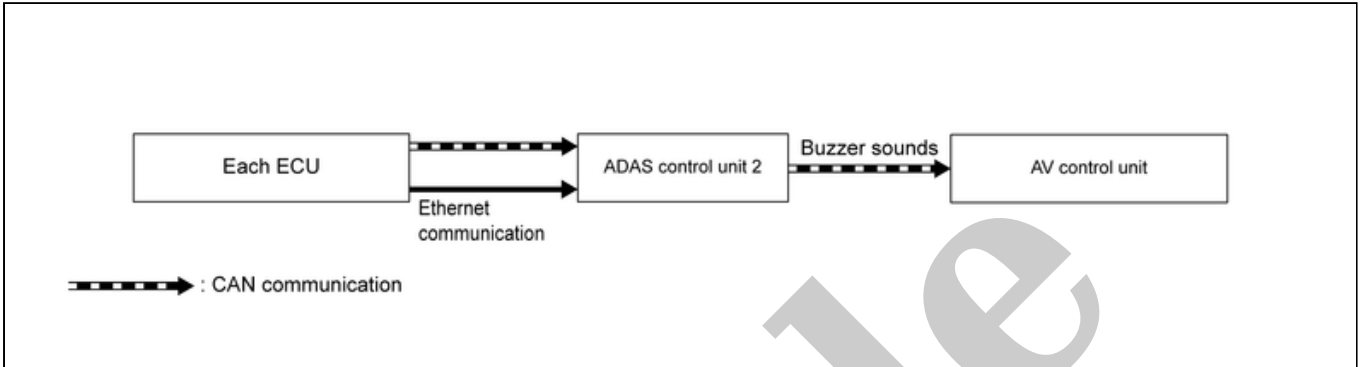


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Control/Operation	Control unit/Component	Description
Buzzer	Combination meter	Operates buzzer based on signal from ADAS control unit 2.

BUZZER (COMBINATION METER) SYSTEM MALFUNCTION

- ADAS control unit 2 transmits buzzer output signal to AV control unit to sound the operating/warning sounds required for ProPILOT Assist 2.0.
- When ADAS control unit 2 judges that driver operates steering wheel, it cancels backup function.



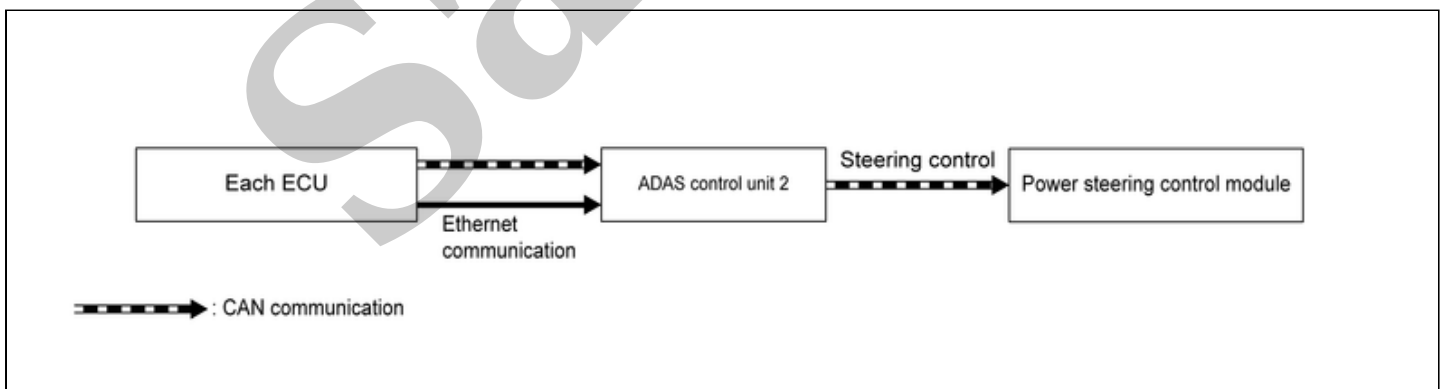
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Control/Operation	Control unit/Component	Description
Buzzer	AV control unit	Operates buzzer based on signal from ADAS control unit 2.

STEERING CONTROL SYSTEM MALFUNCTION BACKUP FUNCTION

STEERING CONTROL SYSTEM NORMAL

When steering control system is normal, ADAS control unit 2 transmits steering control signal to power steering control module to control steering.

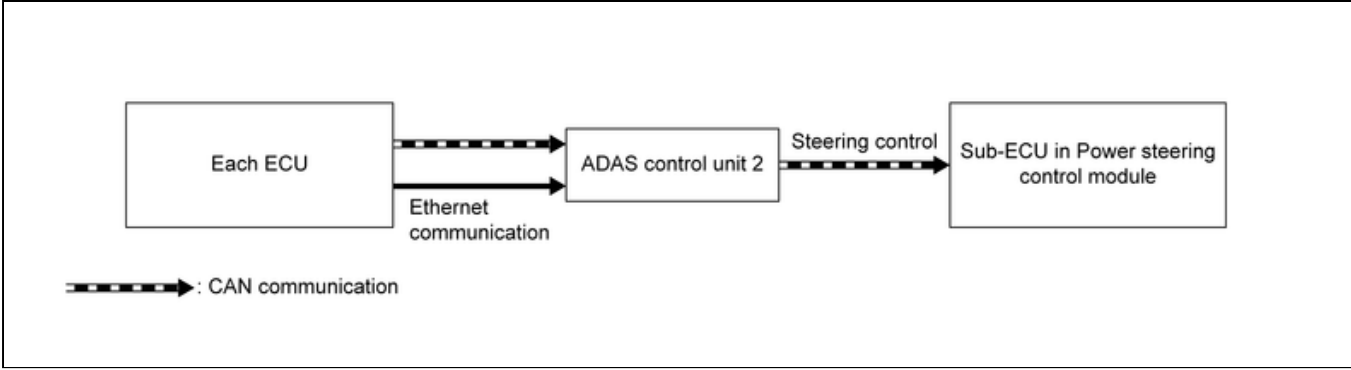


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Control/Operation	Control unit/Component	Description
Steering control	Power steering control module	Controls steering based on signal from ADAS control unit 2.

STEERING CONTROL SYSTEM ERROR

- ADAS control unit 2 transmits steering control signal to SUB-ECU in the power steering control module to control steering.
- When ADAS control unit 2 judges that driver operates steering wheel. It cancels backup function.



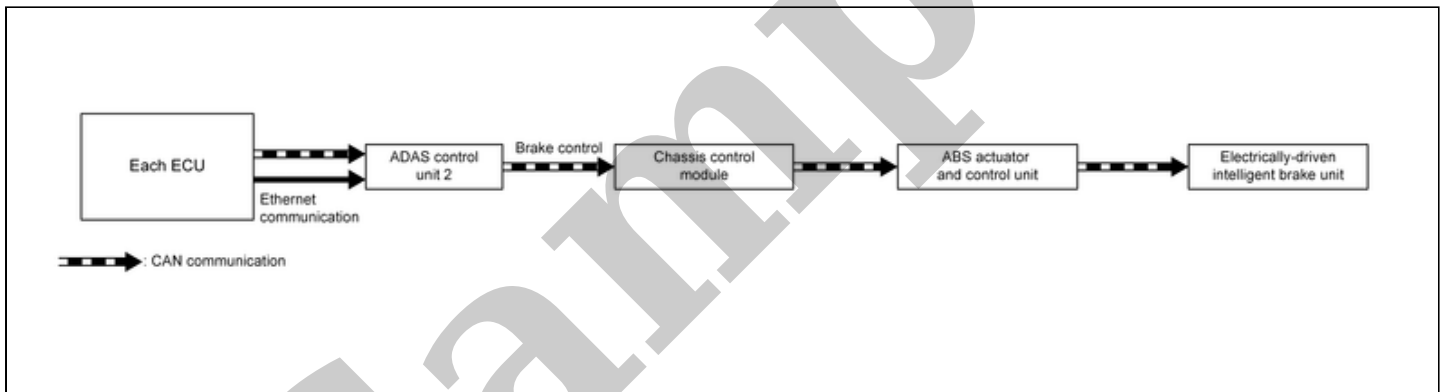
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Control/Operation	Control unit/Component	Description
Steering control	SUB-ECU in power steering control module	Controls steering based on signal from ADAS control unit 2.

BACKUP FUNCTION FOR BRAKE SYSTEM MALFUNCTION

BRAKE SYSTEM NORMAL

When brake system is normal, ADAS control unit 2 transmits brake control signal to electric control brake unit via chassis control module and ABS actuator and control unit (control unit).

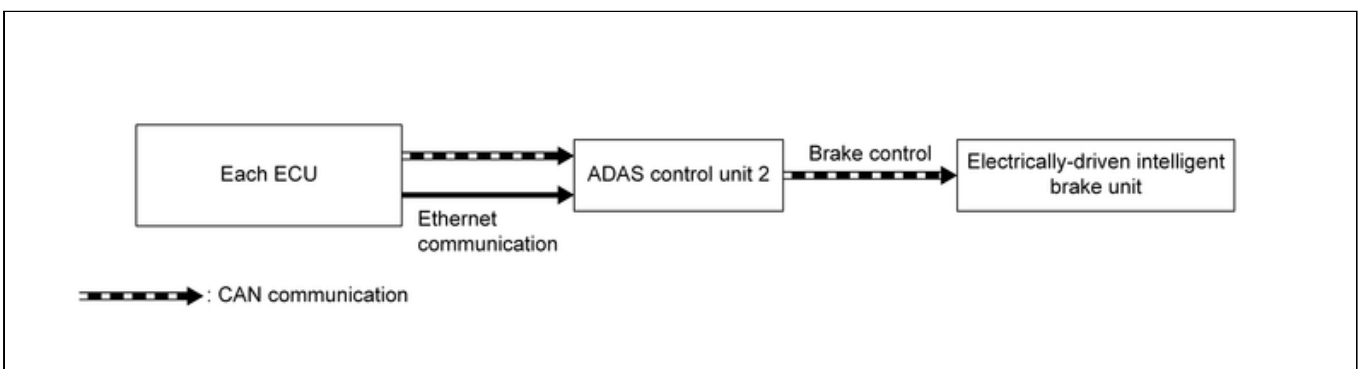


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Control/Operation	Control unit/Component	Description
Brake control	Chassis control module → ABS actuator and control unit (control unit) → Electric control brake unit	Controls brake based on signal from ADAS control unit 2.

BRAKE CONTROL [CHASSIS CONTROL MODULE AND ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)] SYSTEM ERROR

- ADAS control unit 2 transmits brake control signal to electric control brake unit and controls brake.
- When ADAS control unit 2 judged that driver operates steering wheel, it cancels backup function.

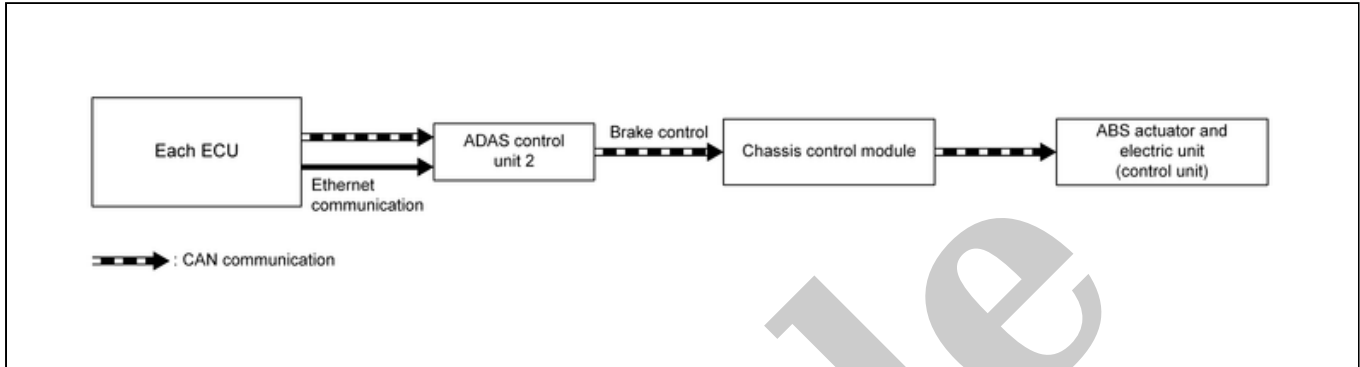


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Control/Operation	Control unit/Component	Description
Steering control	Electric control brake unit	Controls steering based on signal from ADAS control unit 2.

BRAKE CONTROL UNIT (ELECTRIC CONTROL BRAKE UNIT) SYSTEM ERROR

- ADAS control unit 2 transmits brake control signal to ABS actuator and control unit (control unit) via chassis control module, and controls brake.
- When ADAS control unit 2 judges that driver operates steering wheel. It cancels backup function.



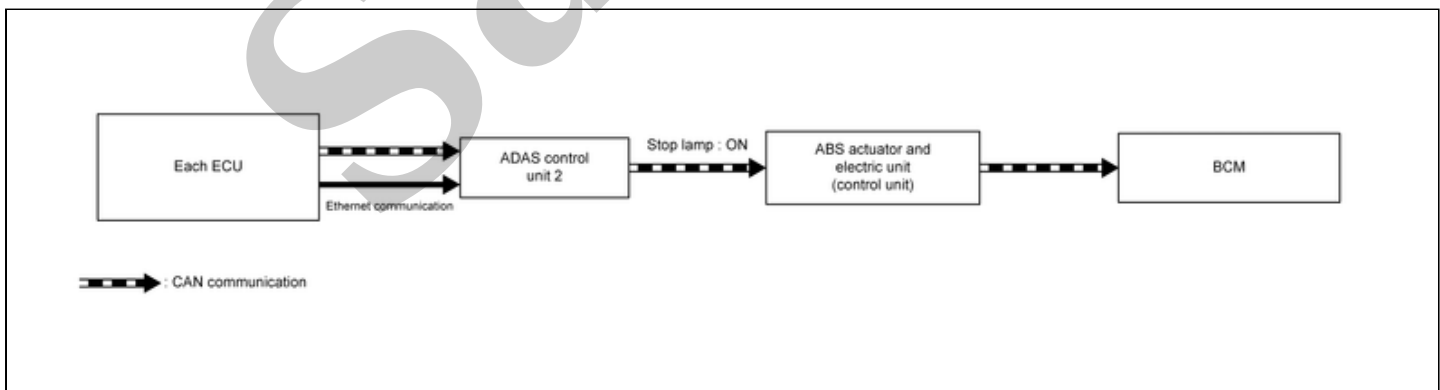
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Control/Operation	Control unit/Component	Description
Brake control	Chassis control module → ABS actuator and control unit (control unit)	Controls brake based on signal from ADAS control unit 2.

BACKUP FOR STOP LAMP OPERATION SYSTEM ERROR

STOP LAMP OPERATION SYSTEM NORMAL

When stop lamp operation system is normal, ADAS control unit 2 transmits stop lamp request signal to BCM via ABS actuator and control unit (control unit) and turns on stop lamps.



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Control/Operation	Control unit/Component	Description
Stop lamp ON	ABS actuator and control unit (control unit) → BCM	Turns on stop lamps based on signal from ADAS control unit 2.

STOP LAMP OPERATION [ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)] SYSTEM ERROR

- ADAS control unit 2 transmits stop lamp request signal to BCM and turns on stop lamps.
- When ADAS control unit 2 judged that driver operates steering wheel, it cancels backup function.