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2018 Nissan 370Z Service and Repair Manual

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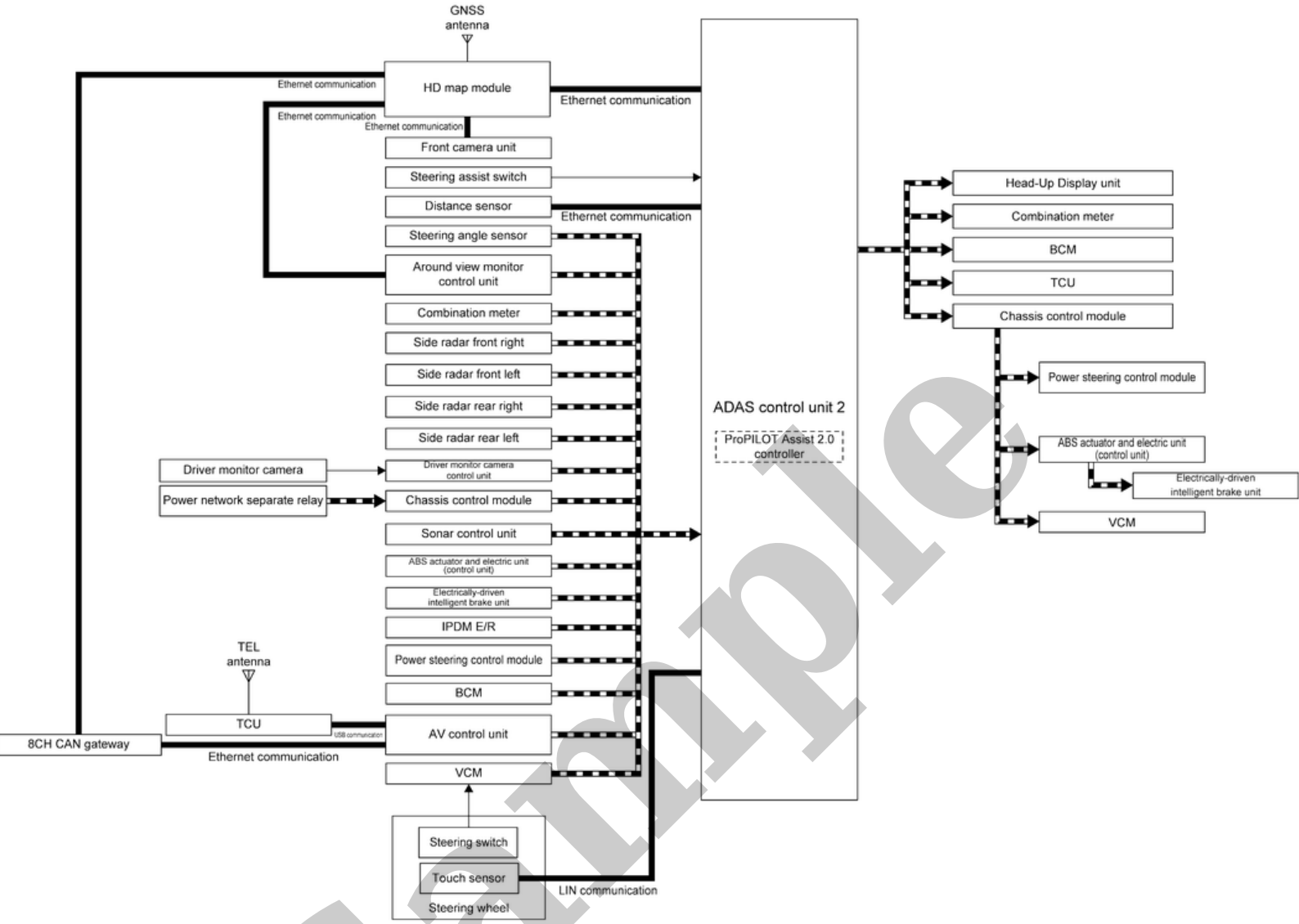
SIEMD-7109075

SYSTEM DIAGRAM



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Component	Description
ADAS control unit 2	Component Description
GNSS antenna	Component Description
HD map module	Component Description
Front camera unit	Component Description
Steering assist switch	Component Description
Distance sensor	Component Description
Steering angle sensor	Component Description
Around view monitor control unit	Component Description
Combination meter	Component Description
Side radar front right	Component Description
Side radar front left	Component Description
Side radar rear right	Component Description
Side radar rear left	Component Description
Driver monitor camera control unit	Component Description
Chassis control module	Component Description
Sonar control unit	Component Description
ABS actuator and electric unit (control unit)	Component Description
Electrically-driven intelligent brake unit	Component Description
IPDM E/R	Component Description
Power steering control module	Component Description
BCM	System Description
AV control unit	Component Description
VCM	Component Description

Component	Description
Driver monitor camera	Component Description
Power network separate relay	Component Description
ProPILOT Assist 2.0 steering switch	Component Description
Steering wheel touch sensor	Component Description
Head-Up Display unit	Component Description
TCU	Component Description
TEL antenna	Component Description
8CH CAN gateway	Component Description

ADAS CONTROL UNIT 2 INPUT/OUTPUT SIGNAL ITEM

Input Signal Item

Transmit unit	Signal name		Description
HD map module	Ethernet communication	HD map data signal	Receives HD map data to grasp accurate road information
		GNSS signal	Receives GNSS signal to identify current vehicle position
Front camera unit	Ethernet communication (via HD map module)	Vehicle ahead signal	Structure detection signal vehicle ahead
		Pedestrian ahead signal	Receives pedestrian detection results in front of vehicle
		Detected lane condition signal	Receives lane marker detection results
		Traffic sign detection signal	Receives detection results of no-entry sign and speed sign
		Structure detection signal	Receives structure detection results in front of vehicle
		Free space detection signal	Receives information of occupied or unoccupied zone in front of vehicle
Steering assist switch	Steering assist switch signal		Receives on operational state of the steering assist switch
Distance sensor	Ethernet communication	Distance sensor signal	Receives detection results of leading vehicle and distance from it
Steering angle sensor	CAN communication	Steering angle sensor malfunction signal	Receives a malfunction state of steering angle sensor
		Steering angle sensor signal	Receives the number of revolutions, turning direction of the steering wheel
		Steering angle speed signal	Receives the turning angle speed of the steering wheel
Around view monitor control unit	CAN communication	Camera image signal (Side camera)	Receives detection results of lane marker and nearby motorcycle
Combination meter	CAN communication	System selection signal	Receives a selection state of each item selected with the steering switch
Side radar front right	CAN communication	Vehicle detection signal	Receives vehicle detection results within vehicle detection area of the front right side radar
		Free space detection signal	Receives detection results of occupied or unoccupied zone within vehicle detection area of the front right side radar
Side radar front left	CAN communication	Vehicle detection signal	Receives vehicle detection results within vehicle detection area of the front left side radar
		Free space detection signal	Receives detection results of occupied or unoccupied zone within vehicle detection area of the front left side radar
Side radar rear right	CAN communication	Vehicle detection signal	Receives vehicle detection results within vehicle detection area of the rear right side radar
		Rear vehicle approach signal	Receives detection results of vehicle approaching at high speed from the rear right side
		Free space detection signal	Receives detection results of occupied or unoccupied zone within vehicle detection area of the rear right side radar
Side radar rear left	CAN communication	Vehicle detection signal	Receives vehicle detection results within vehicle detection area of the rear left side radar
		Rear vehicle approach signal	Receives detection results of vehicle approaching at high speed from the rear left side
		Free space detection signal	Receives detection results of occupied or unoccupied zone within vehicle detection area of the rear left side radar
Driver monitor camera control unit	CAN communication	Inattentive warning signal	Receives driver's inattentive state
		Doze warning signal	Receives driver's doze state
Chassis control module	CAN communication	Power supply state signal	Receives power supply state
		Brake control permission signal	Receives necessary brake control permission status in the control of ProPILOT Assist 2.0
Sonar control unit	CAN communication	Vehicle detection signal	Receives vehicle detection results within sonar sensor detection area
		Obstacle signal	Receives detection results of obstacle and distance from it
ABS actuator and electric unit (control unit)	CAN communication	ABS malfunction signal	Receives a malfunction state of ABS
		ABS operation signal	Receives an operational state of ABS
		ABS warning lamp signal	Receives an ON/OFF state of ABS warning lamp
		TCS malfunction signal	Receives a malfunction state of TCS
		TCS operation signal	Receives an operational state of TCS
		VDC OFF signal	Receives an ON/OFF state of VDC
		VDC malfunction signal	Receives a malfunction state of VDC
		VDC operation signal	Receives an operational state of VDC
		Vehicle speed signal (ABS)	Receives wheel speeds of four wheels
		Yaw rate signal	Receives yaw rate acting on the vehicle
		Side G sensor signal	Receives front G and side G acting on the vehicle

Transmit unit	Signal name		Description
		Electric parking brake operation signal	Receives an operational state of the parking brake
		Brake pedal position switch signal	Receives an operational state of the brake pedal
		Brake control permission signal	Receives necessary brake control permission status in the control of ProPILOT Assist 2.0
Electrically-driven intelligent brake unit	CAN communication	Driver brake detection signal	Receive the brake operation status by the driver
IPDM E/R	CAN communication	12V battery (Li-ion battery) status signal	Receives 12 V battery (Li-ion battery) status
Power steering control module	CAN communication	Pinion angle signal	Receives pinion angle of steering angle actuator
		Steering torque signal	Receives steering torque generated by driver
		Steering control permission signal	Receives necessary steering control permission status in the control of ProPILOT Assist 2.0
BCM	CAN communication	Front wiper request signal	Receive the front wiper operation status
		Turn indicator signal	Receives an operational state of the turn signal lamp and the hazard lamp
		Door switch signal	Receives an operational state of the each doors
		Driver's seat belt buckle signal	Receive driver's seatbelt fastening status
		Stop lamp switch signal	Receive the brake operation status by the driver
		Stop lamp status signal	Receive the lighting status of the stop lamp
AV control unit	CAN communication	Curve signal	Receives forward curve information
		Vehicle speed signal	Receives vehicle speed calculated by AV control unit
		Road information signal	Receives forward road information
		Navigation status signal	Receives navigation status
		Route guide status signal	Receives whether vehicle is on the route or not during route guide driving
VCM	CAN communication	Steering switch signal	Receives the operational state of the steering switch
		Accelerator pedal position signal	Receives accelerator pedal position (angle)
		Driving force control permission signal	Receives necessary traction force control permission status in the control of ProPILOT Assist 2.0
		READY status signal	Receives READY status
		Shift position signal	Receives the shift position
		Power supply state signal	Receives power supply state
		Motor speed signal	Receives the traction motor speed
Steering wheel touch sensor	LIN communication	Steering wheel touch sensor signal	Receives driver's steering wheel holding or not holding status

Output Signal Item

Reception unit	Signal name		Description
Head-Up Display unit	CAN communication	Display signal	Transmits a signal to display a state of the system on the Head Up Display
Combination meter	CAN communication	Meter display signal	Transmits a signal to display a state of the system on the information display
		Buzzer output signal	Transmits a signal to activate buzzer
BCM	CAN communication	Hazard lamp request signal	Transmits a signal to blink the hazard lamp
		Turn signal lamp request signal	Transmits a signal to blink the turn signal lamp
ABS actuator and electric unit (control unit)	CAN communication	Electric parking brake operation request signal	Transmits the electric parking brake operation request
		Decelerate control command signal	Transmits necessary decelerate control command in the control of ProPILOT Assist 2.0
TCU	CAN communication	SOS call request signal	Transmits signal for connection request with SOS call service, after making an emergency stop of the vehicle if necessary
Power steering control module	CAN communication (via chassis control module)	Steering angle command signal	Transmits a signal to steer the steering wheel
VCM	CAN communication (via chassis control module)	ProPILOT Assist 2.0 operation signal	Transmits an ProPILOT Assist 2.0 operation signal necessary for ProPILOT Assist 2.0
		Target wheel end torque signal	Transmits a target wheel end torque necessary for ProPILOT Assist 2.0

DESCRIPTION

ProPILOT Assist 2.0 system has the following functions.

CAUTION:

- **ProPILOT Assist 2.0 is not an automatic driving device. The driver is responsible for always paying attention to the surroundings, operating the steering, brakes, and accelerator pedal according to the road, traffic and vehicle conditions, and driving safely.**
- **ProPILOT Assist 2.0 controls the steering to drive near the center of the lane. Even if the vehicle approaches from the side, it does not react.**

VEHICLE SPEED/VEHICLE-TO-VEHICLE DISTANCE CONTROL MODE FUNCTION

- When vehicle is not detected ahead, the vehicle speed set by the driver is controlled to maintain.
- When vehicle is detected ahead, the vehicle-to-vehicle distance is controlled to be maintained according to the vehicle speed of the vehicle ahead. But the vehicle speed set by driver is the upper limit.

- When there is a curve ahead, decelerate according to the size of the curve.
- The speed detected by the road sign detection function can be set as the set vehicle speed.
- For details on the vehicle speed / vehicle-to-vehicle distance control mode function. Refer to System Description.

LANE KEEPING FUNCTION

- Controls the steering to travel the vehicle near the center of the lane for assisting driver's steering operation.
- The driver always pay attention to the front and can take hands off the steering wheel as long as the driver can operate the steering wheel immediately according to the road, traffic, and vehicle conditions.
- For more information on the lane keeping feature. Lane change support function. Refer to System Description.

LANE CHANGE SUPPORT FUNCTION

- When the driver operates the turn signal switch, necessary steering operation is assisted for lane change by controlling steering.
- For details on the lane change support function. Refer to System Description.

OVERTAKING SUPPORT FUNCTION

- When a vehicle slower than the set vehicle speed is detected ahead, the driver is suggested to overtake.
- When the driver presses the lane change support switch, the overtaking operation is assisted by controlling steering.
- For details on the overtaking support function. Refer to System Description.

ROUTE DRIVING SUPPORT FUNCTION

- The driver is suggested a lane change during setting destination by the driver, when vehicle reaches the lane change point required to travel along the route.
- When the driver presses the lane change support switch, the lane change operation is assisted by controlling steering.
- For details on the route driving support function. Refer to System Description.

FUNCTION

OPERATION DESCRIPTION

- When pressing ProPILOT Assist 2.0 switch for less than 1.5 seconds, ProPILOT Assist 2.0 is ON.
- Accelerate or decelerate to the set speed desired.
- Press the SET switch (downward).
  - When driving on the main lane of a highway or motorway, the speed detected by the road sign detection function becomes the set vehicle speed, and ProPILOT Assist 2.0 starts operating.
  - When driving on other than the main road of a highway or motorway, the set vehicle speed is upon pressing SET switch, and ProPILOT Assist 2.0 starts operating.

CAUTION:

- **ProPILOT Assist 2.0 is designed for use on straight and gentle curves on highways and motorways.**
  - **Do not use on public roads because it may lead to unexpected accidents.**
- **Do not use under the following conditions because proper control may be lost and may lead to an unexpected accident.**
  - **When driving on sharp curves or winding roads**
  - **When driving on slippery roads such as icy roads and snowy roads**
  - **During bad weather (rain, fog, snow, etc.)**
  - **When driving on a steep uphill or downhill**
  - **In traffic conditions where it is difficult to maintain the distance between vehicles due to frequent acceleration and deceleration**

NOTE:

- **When the power switch is turned off, ProPILOT Assist 2.0 is automatically turned off.**
- **Press and hold ProPILOT Assist 2.0 switch for 1.5 seconds approx. to switch to constant speed control function.**

CANCELLATION DESCRIPTION

ProPILOT Assist 2.0 is cancelled by one of the followings:

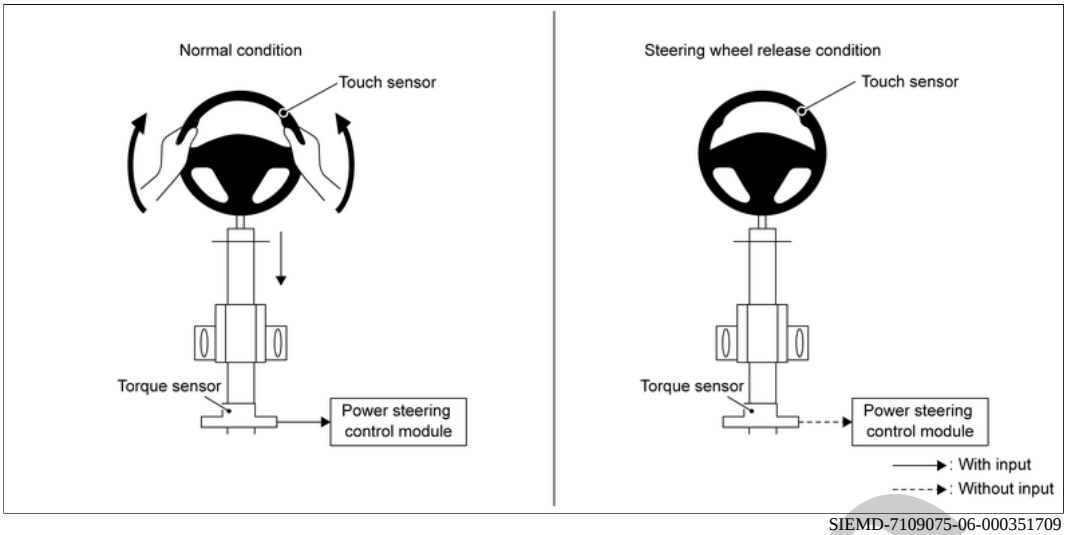
- When CANCEL switch is pressed
- When brake pedal is depressed (Except when the vehicle is stopped due to the vehicle speed/Vehicle-to-vehicle distance control function)

When starting again at the set vehicle speed cancelled before, press RES + switch (upward).

NOTE:
The electric parking brake is activated when the system is cancelled while the vehicle is stopped by the vehicle speed /vehicle-to-vehicle distance control.

STEERING OPERATION MONITOR FUNCTION

While the lane keeping function, lane change support function, overtaking support function, and route driving support function are in control, the driver's steering operation is detected based on that ADAS control unit 2 receives information from the steering touch sensor and steering torque signal received from the power steering control module via CAN communication.



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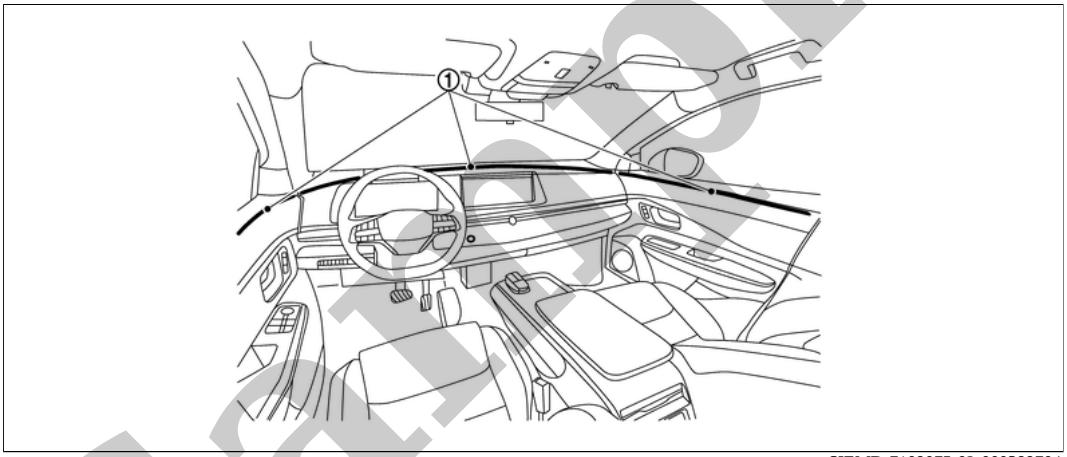
ADVANCED AMBIENT LIGHTING SYSTEM

- According to ProPILOT Assist 2.0 operation status, ADAS control unit 2 transmits ProPILOT Assist 2.0 operation status signal to BCM, and BCM turns on or off, or changes the lighting color of the line lights ① located around the interior.



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ProPILOT Assist 2.0 control status	Lighting color
OFF	White
Set standby state	OFF
Vehicle speed only ON	White
Lane keeping function ON*1	Green
Lane keeping function ON*2	Blue
Warning lamp ON in combination meter	OFF

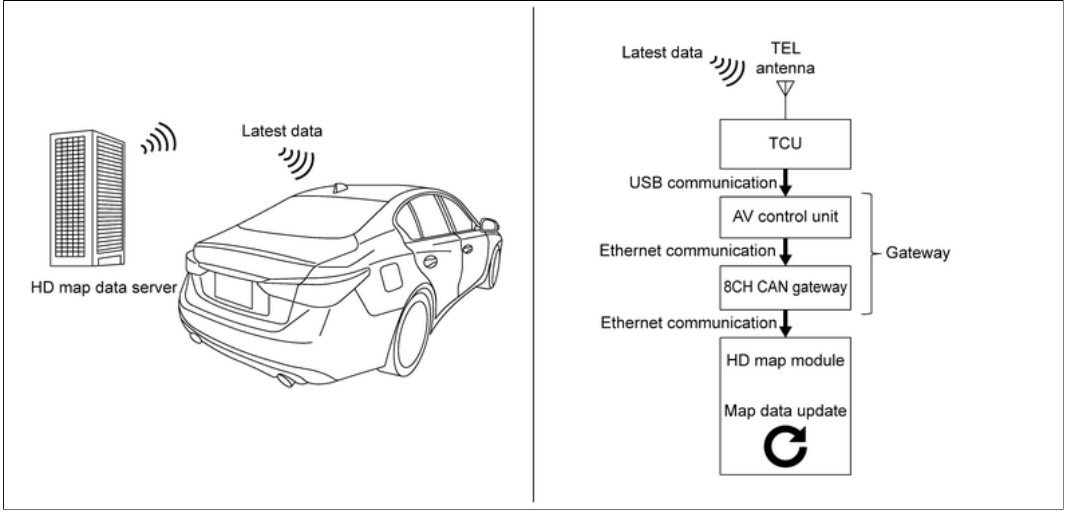
*1: Display of ProPILOT Assist 2.0 is green state

*2: Display of ProPILOT Assist 2.0 is blue state

- For BCM control regarding advanced ambient lighting, Refer to System Description.

HD MAP DATA

- If the HD map license is contracted and there is new data for HD map, when the power switch is turned on, the latest difference map data is received and the map data in HD map module is automatically updated.



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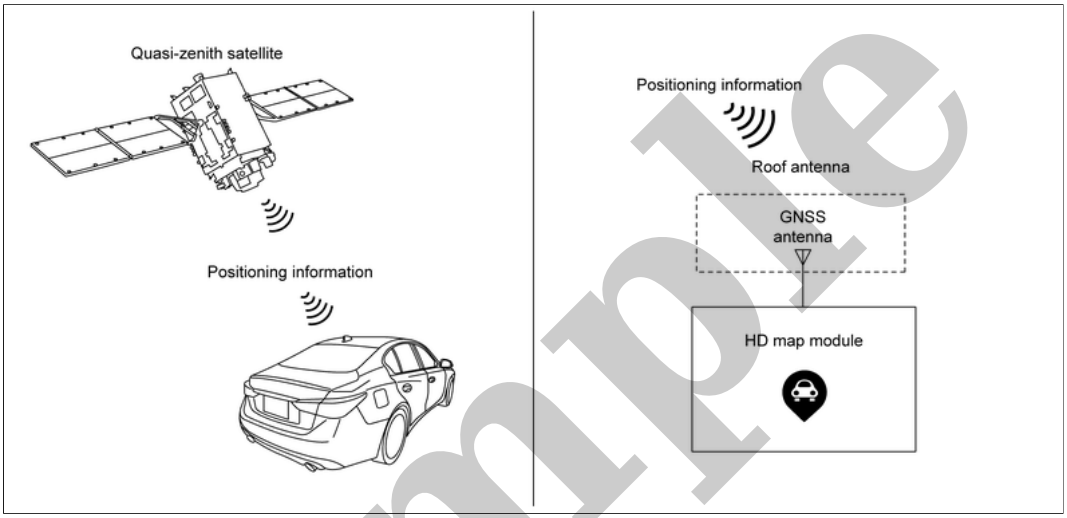
- HD map module improves the accuracy of grasping the position of own vehicle by receiving signals from HD map data server and positioning information from the quasi-zenith satellite system.



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- If the HD map license contract is canceled, the following functions are restricted.
  - Speed sign detection function
  - Some steering wheel support functions of ProPILOT Assist 2.0

NOTE:
- **The map update for the navigation system is done by the telematics system.Refer to System Description.**
- **In addition, HD map data and the map data of the navigation system use different data. Therefore, the update time of the latest map data may be different between HD map data and the navigation system.**
- **When using the ProPILOT Assist 2.0 system after cancelling the HD map license contract, "Some steering wheel support functions are restricted (HD map license expired)" is displayed.**

RECORDING AND ACCUMULATION OF VEHICLE DATA

RECORDING AND COLLECTING VEHICLE DATA

ProPILOT Assist 2.0 has a function to record and store the following vehicle data in the controller in the vehicle and the server for data recording.

- Operation status of accelerator pedal, brake pedal, steering, etc.
- Detection status such as the driver's face orientation and eye open/close state
- ProPILOT Assist 2.0 operation status
- Information of vehicles ahead and surrounding , lane markers, and road structures
- Vehicle information such as vehicle speed and GPS
- Front camera unit image information (When SRS airbag or intelligent emergency brake is activated)

NOTE:
Conversation voice or image information of the driver monitor camera is not recorded.

DATA HANDLING

Nissan Motor and third parties contracted by Nissan Motor may acquire and use the recorded and collected data for the purpose of improving Nissan vehicles.

In addition, Nissan Motor and third parties contracted by Nissan Motor shall not disclose or provide the acquired data to other third parties except in the following cases.

- With the consent of the vehicle user
- Based on a legally enforceable request, such as a court order
- After the data is processed, such as by statistical processing not to identify the user or vehicle, the data is provided to research institutes or similar body

Circuit Diagram

Refer to Circuit Diagram.

Fail-safe (HD Map Module)

If a malfunction occurs, the system will be canceled.