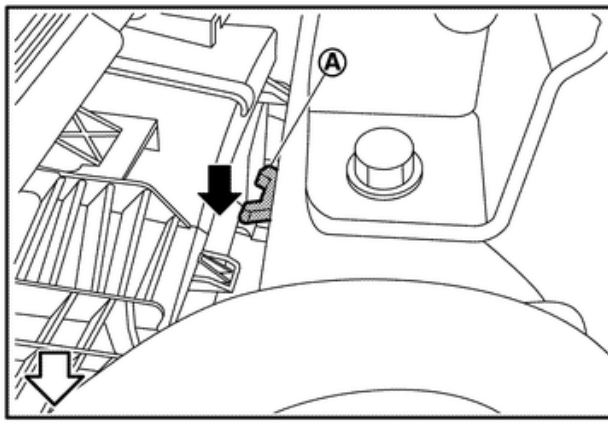


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2010 NISSAN Micra 5 Doors OEM Service and Repair Workshop Manual

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SIEMD-7307255-05-000354186



: Vehicle front

CHARGE PORT LIGHT CONTROL

DESCRIPTION

The charge port light control which automatically turns ON the LED illumination inside the port to improve workability while charging.

VCM supplies power to the charge port light and turns ON the LED illumination base on vehicle conditions such as charge port connect /disconnect, door lock/ unlock, driver approach/non-approach, etc.

LIGHT ON CONDITION

When the following all conditions are satisfied, VCM turns ON the charge port light.

- Vehicle is READY
- Shift position : P position
- When ON conditions of the following timer table are satisfied.

LIGHT OFF CONDITION

When the following any condition is satisfied, VCM turns OFF the charge port light.

- Vehicle is READY
- Shift position : Except P position
- When the timer time in the following timer table has passed.



NOTE:

The timer time is overwritten at any time with the timer time established later.

CHARGE PORT LIGHT TIMER TABLE

Control	Description
When the charge connector is unlocked	3 min.
When the charge lid lock is unlocked (When the vehicle door lock is unlocked, when entering unlock operation condition at approaching)	
When the door is opened from closed state.	
When the charge connector is removed. *1	30 sec.
When entering auto lock operation condition at getting out from the vehicle	
When connecting the charge connector	1.5 sec.
When the vehicle door is locked during connecting the charge port connector	
When the charge connector is locked	

*1 : If the charging connector is unplugged without holding the intelligent key, the port light may not turn on.



NOTE:

For unlocking when approaching and auto-locking when getting off, Refer to [System Description](#).

CHARGE PORT LOCK/UNLOCK CONTROL

DESCRIPTION

The VCM receives the door lock status signal from the BCM via CAN communication, activates the charge port lid actuator in conjunction with the door lock / unlock switching, and locks / unlocks the charge port lid.

CHARGE PORT LID LOCK OPERATION CONDITION

When all of the following conditions are satisfied, the VCM locks the charge port lid.

- When the charge port lid is closed
- The one of the followings is satisfied.
 - When the vehicle door is locked
 - When entering the auto lock operation condition at getting out the vehicle.

CHARGE PORT LID UNLOCK OPERATION CONDITION

When the following any condition is satisfied, the VCM unlocks the charge port lid.

- When the vehicle door is unlocked.
- When entering the unlock operation condition at approaching to the vehicle.

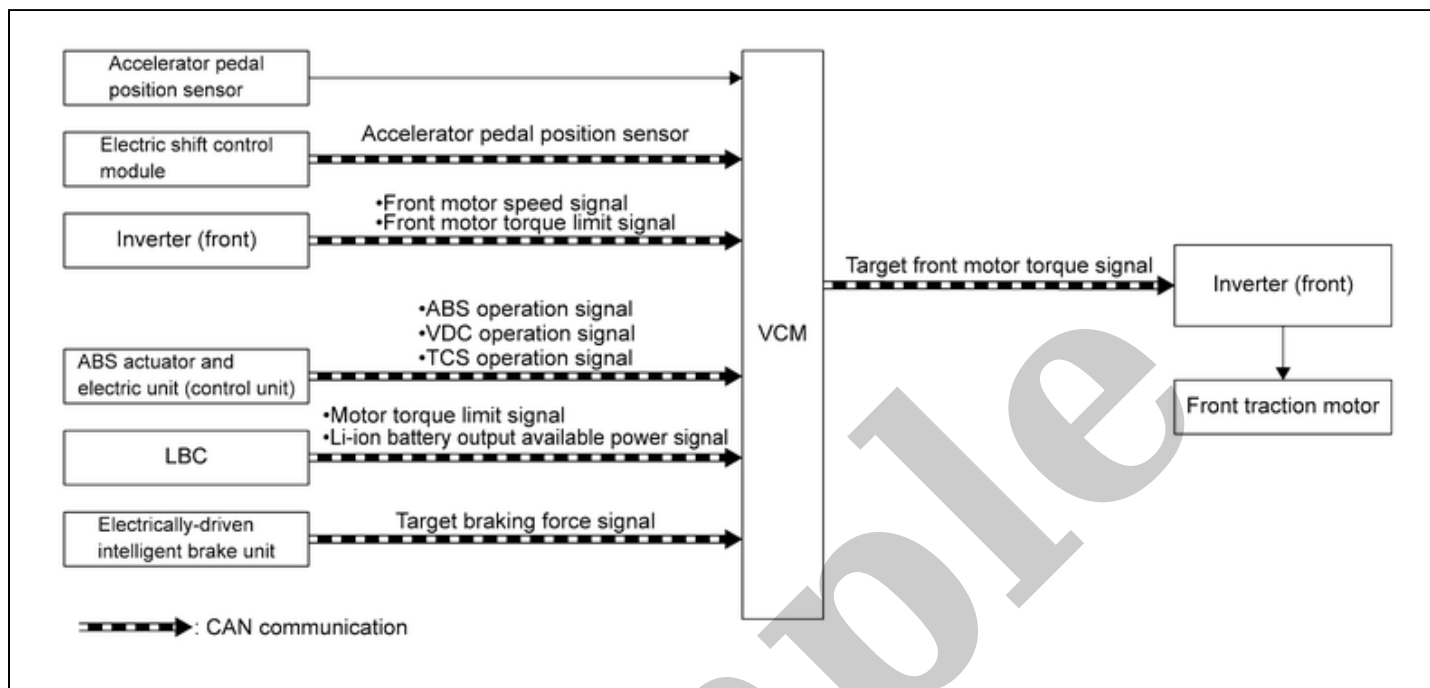


NOTE:

- When the lock cannot be unlocked due to a dead battery or a malfunction of the charge port lid opener actuator, the lock is unlocked manually. Refer to [Unlocking](#).
- For unlocking when approaching and auto-locking when getting off the vehicle refer to [System Description](#).

2WD models

SYSTEM DIAGRAM



SIEMD-7196736-01-000391591

Component parts	Function
Accelerator pedal position sensor	Accelerate pedal position sensor signal is transmitted to VCM
Electric shift control module	Electric shift control module transmits shift information to VCM
Inverter (front)	<p>Inverter (front) transmits the following signals to VCM</p> <ul style="list-style-type: none"> • Front motor speed signal • Front motor torque limit signal <p>Front traction motor receives target front motor torque signal from VCM</p>
ABS actuator and electric unit (control unit)	<p>ABS actuator transmits the following signals to VCM</p> <ul style="list-style-type: none"> • ABS operation signal • VDC operation signal • TCS operation signal
LBC	<p>LBC transmits the following signals to VCM</p> <ul style="list-style-type: none"> • Motor torque limit signal • Li-ion battery dischargeable power signal
Electrically-driven intelligent brake unit	Electrically-driven intelligent brake unit transmits target braking force signal to VCM.
VCM	Refer to Component Description .



NOTE:

DESCRIPTION

The EV system generates traction force by converting the direct current from the Li-ion battery to an alternating current by the inverter (front).

VCM calculates target traction force, based on an accelerator pedal position, vehicle speed, and shift position. After that, VCM adds creep force to the calculated target traction force. Moreover, VCM performs torque limit processing according to the torque limit request from each system, determines target front motor torque signal, and transmits it to the inverter (front) via CAN communication. The inverter (front) applies a current to the motor corresponding to the signal and generates traction force.

In addition, VCM always determines whether the creep force is required to output from the vehicle speed and braking force.

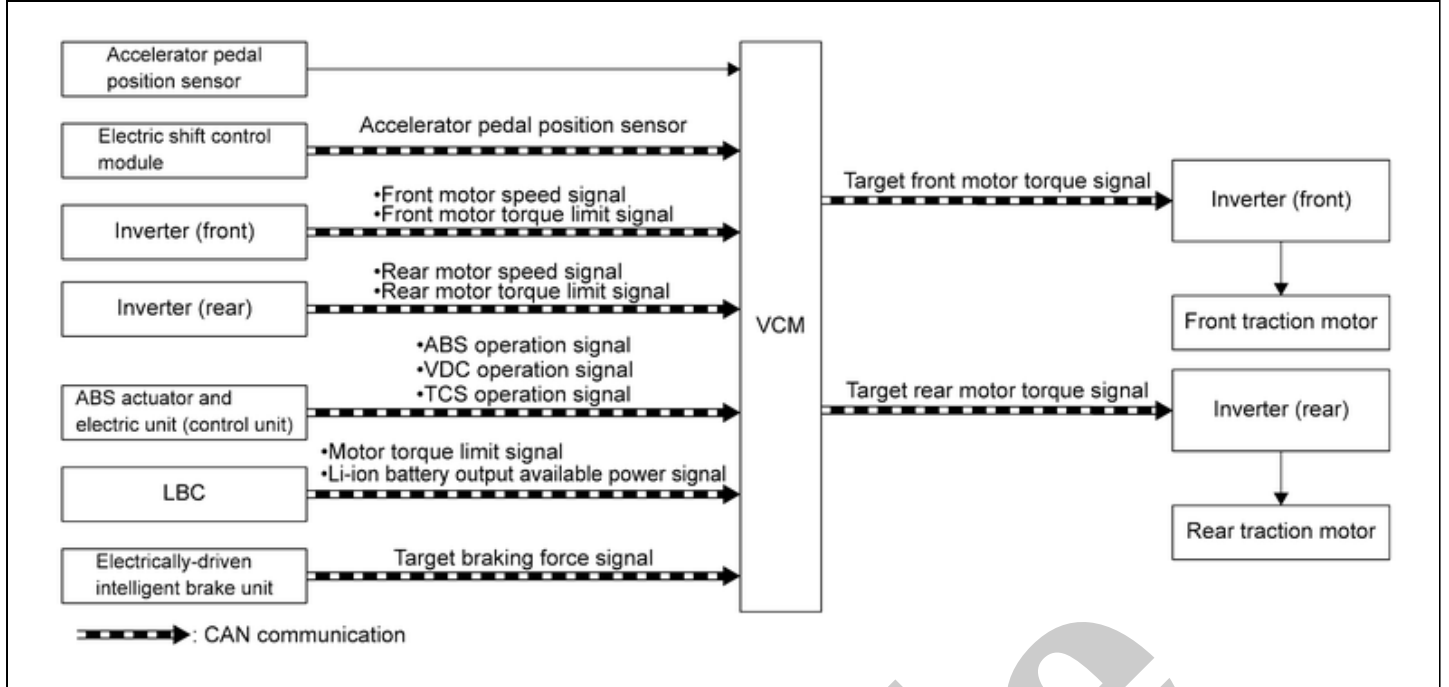
For the operation principle of the motor, Refer to [System Description](#).

OUTPUT LIMIT AND OUTPUT STOP REQUEST LIST

Request ECU	Output limit cause	Power limitation indicator lamp	Condition
Inverter (front)	Front traction motor temperature high	ON	When front traction motor or inverter (front) reaches abnormally high temperature
	Input power low	ON	When high voltage power supply input to inverter (front) is 270V or less.
	DTC detected	ON	Refer to Fail-safe .
Li-ion battery controller (LBC)	Li-ion battery remained energy low	ON	When Li-ion battery cell voltage is low
	Li-ion battery temperature high	ON	When Li-ion battery reaches abnormally high temperature.
	Li-ion battery temperature low	ON	When Li-ion battery reaches an abnormally low temperature.
	DTC detected	ON	Refer to Fail-safe (66kWh LI-ION BATTERY), Fail-safe (91kWh LI-ION BATTERY).
	Others	ON	When none of the above
VCM	Accelerator pedal position signal / stop lamp switch signal input error	ON	When accelerator pedal and brake pedal are judged depressing at the same time
	Power train system protection function	ON	—
	DTC detected	ON	Refer to Fail-safe .

AWD models

SYSTEM DIAGRAM



SIEMD-7196736-MD-7321712-01-000415267OnOff-E4BA880C-000415267

Component parts	Function
Accelerator pedal position sensor	Accelerate pedal position sensor signal is transmitted to VCM
Electric shift control module	Electric shift control module transmits shift information to VCM
Inverter (front)	Inverter (front) transmits the following signals to VCM <ul style="list-style-type: none"> • Front motor speed signal • Front motor torque limit signal Front traction motor receives target front motor torque signal from VCM
Inverter (rear)	Inverter (rear) transmits the following signals to VCM. <ul style="list-style-type: none"> • Rear motor speed signal • Rear motor torque limit signal Rear traction motor receives target rear motor torque signal from VCM.
ABS actuator and electric unit (control unit)	ABS actuator transmits the following signals to VCM <ul style="list-style-type: none"> • ABS operation signal • VDC operation signal • TCS operation signal
LBC	LBC transmits the following signals to VCM <ul style="list-style-type: none"> • Motor torque limit signal • Li-ion battery dischargeable power signal
Electrically-driven intelligent brake unit	Electrically-driven intelligent brake unit transmits target braking force signal to VCM.
VCM	Refer to Component Description .



NOTE:

VCM calculates vehicle speed, based on a motor speed.

DESCRIPTION

The EV system generates traction force by converting the direct current from the Li-ion battery to an alternating current by the inverter (front) and inverter (rear).

VCM calculates target traction force, based on an accelerator pedal position, vehicle speed, and shift position. After that, VCM adds creep force to the calculated target traction force. Moreover, VCM performs torque limit processing according to the torque limit request from each system, determines target motor torque signal, and transmits it to the inverter (front) and inverter (rear) via CAN communication. The inverter (front) and inverter (rear) applies a current to the motor corresponding to the signal and generates traction force.

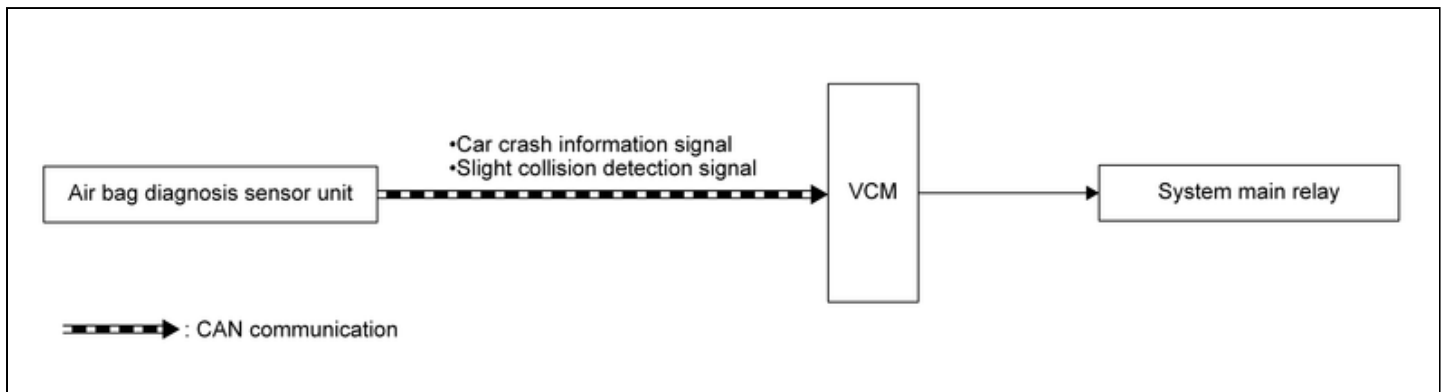
In addition, VCM always determines whether the creep force is required to output from the vehicle speed and braking force.

For the operation principle of the motor, Refer to [System Description](#)(Front traction motor), [System Description](#)(Rear traction motor).

OUTPUT LIMIT AND OUTPUT STOP REQUEST LIST

Request ECU	Output limit cause	Power limitation indicator lamp	Condition
Inverter (front)	Front traction motor temperature high	ON	When front traction motor or inverter (front) reaches abnormally high temperature
	Input power low	ON	When high voltage power supply input to inverter (front) is 270V or less.
	DTC detected	ON	Refer to Fail-safe .
Inverter (rear)	Rear traction motor temperature high	ON	When rear traction motor or inverter (rear) reaches abnormally high temperature
	Input power low	ON	When high voltage power supply input to inverter (rear) is 270V or less.
	DTC detected	ON	Refer to Fail-safe .
Li-ion battery controller (LBC)	Li-ion battery remained energy low	ON	When Li-ion battery cell voltage is low
	Li-ion battery temperature high	ON	When Li-ion battery reaches abnormally high temperature.
	Li-ion battery temperature low	ON	When Li-ion battery reaches an abnormally low temperature.
	DTC detected	ON	Refer to Fail-safe (66kWh LI-ION BATTERY), Fail-safe (91kWh LI-ION BATTERY).
	Others	ON	When none of the above
VCM	Accelerator pedal position signal / stop lamp switch signal input error	ON	When accelerator pedal and brake pedal are judged depressing at the same time
	Power train system protection function	ON	—
	DTC detected	ON	Refer to Fail-safe .

SYSTEM DIAGRAM



SIEMD-7196738-01-000384989

Component parts	Function
Air bag diagnosis sensor unit	The following signals are transmitted to VCM <ul style="list-style-type: none"> • Vehicle collision detection information • Vehicle light collision detection signal
System main relay 1	Refer to Component Description .
System main relay 2	Refer to Component Description .

DESCRIPTION

Because EV uses high voltage power, there is a risk of electric shock if the high voltage circuit is shorted to a body ground during a collision. To avoid such risks, if VCM detects a car crush information signal, VCM deactivates the system main relay to cut off the Li-ion battery from the high voltage circuit so that the risk of electric shock is reduced.

When detecting a serious collision

When receiving a car crash information signal from the air bag diagnosis sensor unit, VCM turns OFF the system main relay and quickly interrupts the high voltage circuit. When DTC clear signal is received, restart becomes possible.



NOTE:

The collision detection level of VCM may differ from an actual vehicle damage state.

When detection a minor collision

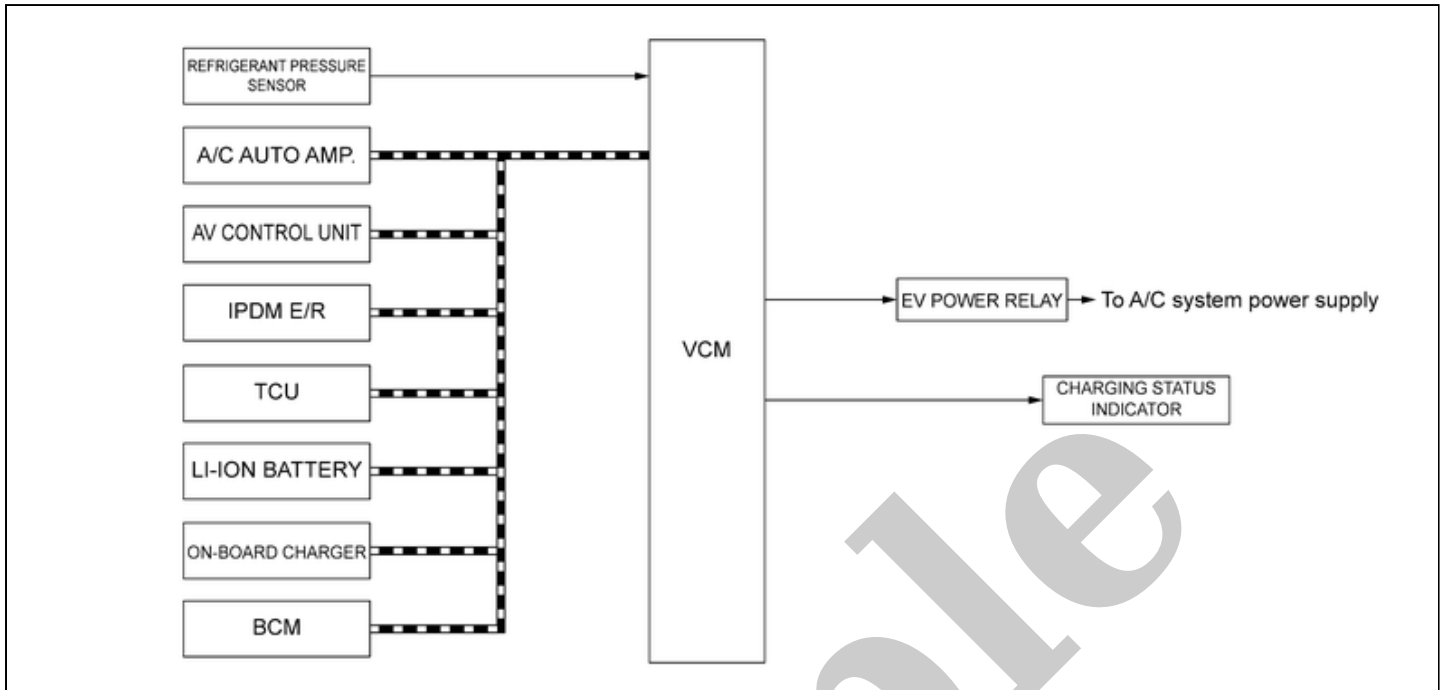
When receiving a slight collision detection signal from the air bag diagnosis sensor unit, VCM turns OFF the system main relay and quickly interrupts the high voltage circuit. In this case when the power switch is turned OFF, restart becomes possible.



NOTE:

- The collision detection level of VCM may differ from an actual vehicle damage state.
- When a collision occurs more than twice during the same trip (no history of turning OFF the power switch), VCM judges “detection of serious collision” and prohibits the READY operation.

SYSTEM DIAGRAM



SIEMD-7196726-02-000381489

Component parts	Function
IPDM E/R	<ul style="list-style-type: none"> • Power switch ON signal is transmitted to VCM • Cooling fan speed request signal is received from VCM
On-board charger	EVSE connection signal is transmitted to VCM
TCU	The following signals are transmitted to BCM <ul style="list-style-type: none"> • A/C request signal before getting in • A/C setting signal before getting in
AV control unit	Timer A/C set signal is transmitted to BCM and A/C auto Amp.
BCM	<ul style="list-style-type: none"> • The following signals are transmitted to VCM. <ul style="list-style-type: none"> ◦ Wake up request signal ◦ Timer A/C request signal ◦ A/C setting signal before getting in • The following signals are transmitted to A/C auto. Amp. <ul style="list-style-type: none"> ◦ Timer A/C setting time signal ◦ A/C request signal before getting in ◦ A/C setting signal before getting in
Li-ion battery controller	HV battery charge level signal to the VCM.
A/C auto amp.	<ul style="list-style-type: none"> • The following signals are received from VCM. <ul style="list-style-type: none"> ◦ Refrigerant pressure signal

Component parts	Function
	<ul style="list-style-type: none"> ◦ Wake up request signal ◦ Timer A/C request signal ◦ Deice permission signal ◦ A/C maximum power consumption signal • The following signals are transmitted to VCM. <ul style="list-style-type: none"> ◦ Cooling fan speed request signal ◦ Timer A/C operation time signal ◦ Deice request signal
Charging status indicator	Charge state signal is received from VCM
VCM	Refer to Component Description .
EV power relay	Refer to Component Description .
Refrigerant pressure sensor	Refer to Component Description .

DESCRIPTION

In EV, the EV power relay is controlled by VCM so that the air conditioner system can be operated even when the power switch such as timer air conditioner, air conditioner before getting in, and deice control is turned off.

When VCM determines to need starting the air conditioner system by the driver's operation based on timer air conditioner, air conditioner before getting in, and deice control, VCM turns on the EV power relay and supplies power to the air conditioner system.

In addition, VCM calculates the power that can be used by the air conditioner system from the state of Li-ion battery and the state of the vehicle, and transmits it to A / C auto amp.

For more information of A/C control, refer to [System Description](#).



NOTE:

When the empty lamp of Li-ion battery is turned ON, A/C does not operate.

DESCRIPTION

TIMER A/C CONTROL

- When the timer of the timer A/C is ON, BCM reaches the set temperature inside the vehicle* by the scheduled departure time* and activates the timer A/C.
- While operating time of the timer A/C, two hours before the scheduled departure time, BCM sends a wake up request signal to VCM, VCM activates EV system, and A / C auto amp determines the required operating time from 0 to 1 within the time range based on the outside air temperature and the temperature inside the vehicle, and send to BCM. BCM calculates the required operation time sent back from the scheduled departure time and determines the timer A/C start time.
- For more information on the timer A/C control function, refer to [Climate Ctrl. Timer \(A/C-Heater Timer\)](#).



NOTE:

- If the power switch is turned on during timer A/C, it switches to normal A/C control.