

SMART ACCEL CONTROLLER

Instruction Manual

Thank you for purchasing the A' PEXi Smart Accel Controller. Please read through this Instruction Manual thoroughly to operate this product correctly and keep it near the product so that you may refer to it whenever necessary. If you transfer the product to another customer, be sure to attach this Instruction Manual and the warranty information to the product.

Product Name	Smart Accel Controller
Product Code	410-A001
Application	Vehicle Acceleration Controller
Applicable Vehicle	DC12V Body Earth Vehicle Not recommended to be installed on vehicles not

Before Installation and Use This product is designed to control the acceleration pedal position signal of vehicles equipped with Electric Throttle Control Systems. Actual throttle position angle and acceleration can vary based on the driver pressing down on the accelerator. This product supports sporty driving and economical driving, which does not necessarily result in higher performance of the vehicle.

CAUTION When transferring a vehicle equipped with this product, please be sure to notify the transferee that the product is installed on the vehicle accompanied with this instruction manual.

Version Information

No.	Date of Issue	Instruction Manual Ver.	#	Notes
1	June 7, '11	7407-0550-00	1	
2	Jan 1, '14	7407-0550-01	2	

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1 Safety Precautions

Please read "Safety Precautions" carefully to operate the product with safety. Keep the instruction manual in hand and refer to it whenever needed. The instruction manual describes the items that you must observe prior to installation and use of this product to avoid possible problems and damage which would be caused by improper installation and use. The meanings of pictorial indications by caution marks (signal words) are as shown to the right. Please understand their contents correctly before starting to read the text of this instruction manual.

GLOSSARY

Display	Meanings
WARNING	Potential hazard that can result in death or serious injury of the operator or a third person if the product is wrongly operated in disregard of this indication.
CAUTION	Potential hazard that can result in slight injury or medium damage to the operator, third person, or vehicle if the instruction manual is not followed correctly.
NOTICE	Failure in obtaining the full performance of the product, or a product failure, or a faulty function item if the product is wrongly operated in disregard of this indication.

WARNING

Discontinue use of this product immediately if any unusual odor or smoke comes from the unit.

Failure to do so may result in electrical shorts and potential engine fire.

Always wire the unit up according to the instruction manual.

Failure to do so may result in electrical fire, improper unit / vehicle operation.

Never disassemble or tamper with this unit.

This could lead to serious injury.

Do not use this product for any other purpose than the one listed in this manual.

We are not responsible for any damages or injuries incurred from improper usage of this product.

Never operate this unit while driving.

Failure to do so may lead to accidents.

Be sure to secure this unit in a safe location away from the driver .

Failure to do so may lead to accidents.

CAUTION

This product should ONLY be installed by a professional installer.

Installation requires past experience to prevent damage to the unit and vehicle.

Keep this unit away from direct sunlight and direct water.

Failure to do so may lead to electrical shorts and unit damage.

Do not expose the unit to excessive shock.

This could lead to unit malfunction.

Please Use authorized Harness on our separate harness list

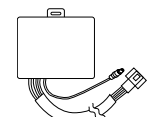
If you have any inquiry for the harness please contact to your shop.

Do not use this under extremely high temperatures or under direct sunlight.

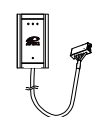
Failure to do so may lead to improper unit operation and vehicle damage.

2 Parts List

● Before installing this product, be sure to check all the parts enclosed in the package to confirm that there are not any foreign or missing parts. Please contact the dealer of purchase if you found any discrepancy of the parts with the list.



Main Unit ... 1



Operating Switch ... 1



Reverse gear Harness ... 1



Splice ... 1



Zip Ties ... 3



Double Sided Tape ... 1



Instruction Manual ... 1



Applicable Vehicle List ... 1

3 Procedure before installing and wiring this product

CAUTION

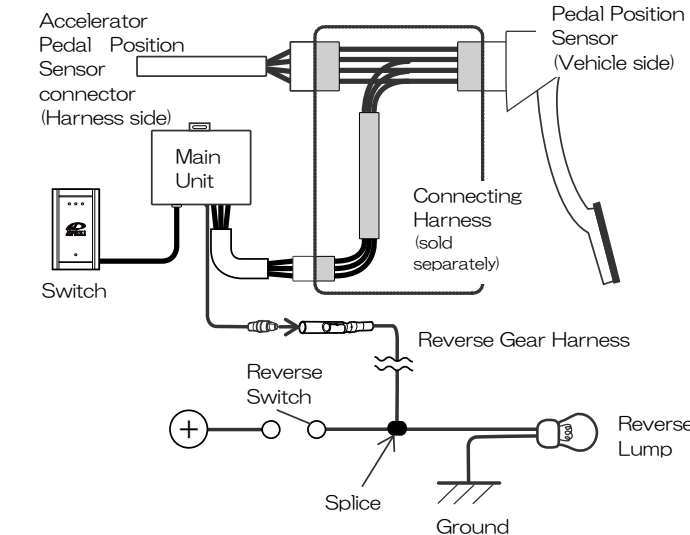
- Do not use on vehicles that are not equipped with DC12V.
- Use the included vehicle specific harness list to ensure proper installation.
- Refer to separate Harness Instruction Manual for installation of the Harness.
- Do not use harnesses manufactured by other parties.
- Remove acceleration pedal position connector at least 15 minutes after the vehicles' "IGNITION OFF" . Otherwise, some vehicle might throw a "Check Engine Light" (CEL).
(Please refer to the FAQ section in this manual for this case).
- We recommend to install this product with the battery terminals connected. If installation is preceded with the battery terminals disconnected, recorded ECU memory, idling learning system, anti-theft systems, vehicle radio security systems, etc. may be reset. In this case please refer to your vehicle' s factory owner' s manual for further information.

1. Confirm the location of the Accelerator Position Sensor
In most vehicles, the sensor is located at the base of the accelerator pedal. Some sensors may be hard to find as they are covered.
2. Confirm the connector position of the Reverse-Gear Harness and make sure that the Reverse Gear Harness can be connected properly.
The reverse gear harness is used by wiring into the Reverse Gear Signal so that the vehicle can be driven under normal "Stock" setting when in the Reverse Gear position.
(Note: The Reverse Gear Signal wire will show 12V when the key is in the "Ignition ON" position and in the reverse gear position. The signal wire will show 0V in other gear positions.)
Be sure to confirm connections prior to installation as the key cannot be in the "Ignition On" position during the installation process.
3. Be sure to prevent the male splice fitting on the end of the grey colored wire that comes out of the Main Unit from coming in contact with other parts during the installation process. Temporarily use electrical tape to prevent this occurrence.

4 Wiring Procedures

- Refer to the below wiring diagram. 【5. Accelerator Pedal Position Sensor Connector Removal】 Connect the following according to the below description: Vehicle Specific Harness, Main Unit, Operating Switch, Accelerator Pedal Position Sensor Connector and Reverse Gear Harness according to drawing.

【Standard Wiring Diagram】



How to use the Splices

- ① Remove 5mm of the wire cover from the connecting wire
 - ② Strip 10mm from the other connection wire
 - ③ Wrap the two wires together
 - ④ Securely fasten together other connection wire
- * be sure to cover the connection with electrical tape

5 Accelerator Pedal Position Sensor Connector Removal

1. Set the gear into the neutral position or park position and engage the emergency-brake.
2. Make sure the connectors at both the vehicle and product sides are the same shape. If the shapes are different from each other, do not connect and find another harness connector with a suitable shape.
3. Make sure to remove the accelerator positioning sensor connector after ignition has been "off" for 15 minutes or more. If the sensor connector cannot be disconnected, remove the accelerator pedal if necessary.

NOTICE

- In some vehicles, the accelerator position sensor connector can be located under a cover, please remove the cover and find the connector carefully.
- In some cases it' s not easy to remove the connector. If so, we recommend you to warm the connector using a dryer or heat gun in order to avoid possible damage of the connector.

6 Installation of Vehicle Specific Harness

- Install Vehicle Specific Harness according to the Harness Instruction Manual. The shape of the Harness connector differs by vehicle. Be sure to cross reference the Harness with the vehicle and the separate Harness Instruction Manual.
1. Push in the Vehicle Specific Harness into the connector of the Accelerator Position Sensor Connector.
 2. Harness connectors for both the Product side and Vehicle side has 6 terminals, be sure to properly confirm the shape and direction of each connector.

WARNING

- Ensure the shape and direction of each sides of the Harness Connectors. If the shape and/or direction are not correct, it can cause possible damage to the Product and/or sensor which can result to a "check engine light" to come on.

7 Reverse Gear Harness Installation Procedures

- The Grey colored wire coming out of the main unit of the product is used to cancel the throttle control settings while driving in Reverse.
※ At this time remove any protective tape or cover you may have put on the male connector. Be careful not to remove the male splice connector.
1. Connect the Reverse Gear Harness wire to the Reverse Lamp Signal wire using a splice. (Refer to: Std. Installation Diagram) (Confirm that the reverse lamp signal wire is 12V when the Ignition is "On" and in reverse gear and 0V when in other gear positions).
 2. Connect the female connector of the Reverse Gear Harness with the male connector of the control unit side tightly.

WARNING

- Failure to connect the Reverse Gear Harness may cause difficulty in fine tune throttle adjustments, as well as, result in sudden movements of the vehicle that can lead to dangerous accidents. Please be sure to install the reverse gear harness so that throttle control can return back to normal "stock" settings.

8 Mounting the Product

1. Mount the operating switch in a location that will not interfere with driving with the supplied double-sided tape.
2. Be sure to check the connection between the operating switch and main unit.
3. Mount the main unit and harnesses in a location that will not interfere with driving. Use supplied zip ties to wrap harnesses.
4. Return the Accelerator Pedal to the original position if removed during the installation of the Accelerator Pedal Position Sensor Connector.
5. Return any covers or components to the original position after installation.

WARNING

- Ensure that all wiring is not tangled and in the way of driving safely.
- Mount the Operating Switch in a location that will not affect your driving. Ensure the operation and function of the Products to be working. Otherwise, may cause serious injury or accident.

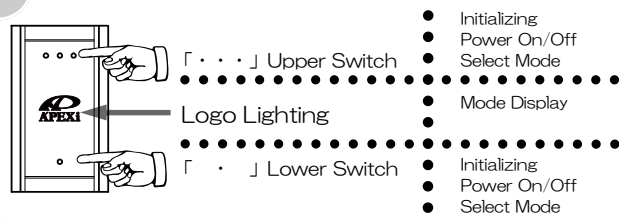
9 How to Operate

Definition of Terms

- How To Push The Switch
 - Short Pushing . . . Push the Switch less than 0.7 sec.
 - Long Pushing . . . Push the Switch over 0.7 sec.
 - Push. Continue to push down until completion of a particular operation.

- Logo Lighting  logo LED is lit and/or Blinking



Explanation of Controls



Initialization

- After the installation of the product is complete, proceed to the Initializing of the settings for Fully Open Throttle and Fully Closed Throttle.

Proceed with the Initialization of Accelerator Position Setting process as follows.

- Set the Ignition to the "OFF" position. Shown to the right: Key-Cylinder in the "LOCK" position. Same for push-start type ignitions. 
 - Set the Ignition to the "ON" position. Shown to the right: Key-Cylinder in the "ON" position. Same for push-start type ignitions. 
- ※Do not start the engine yet.

WARNING

- After installation, be sure to initialize the throttle settings. Also, re-initialize the unit when re-installing the product onto another vehicle.

The throttle settings are different for different Vehicle Models: the performance of the product can be interfered with negative driving performance and/or a Check Engine Light (CEL) can come on. Therefore re-initializing the unit is necessary when installed from one car to another.

10 Operation Mode

Controller Setting Modes (see below)

Normal Mode

- All of the throttle settings of the Product are set at factory settings and the performance of the Vehicle is same as STOCK.

Eco Mode

- "SOFT" Acceleration of throttle angle at the start of driving and/or immediate throttle pushing that converts throttle response into "Soft" acceleration that can result in energy-saving driving. ※The throttle response depends on how the accelerator pedal is pushed.

Normal Mode Eco Mode 1 Eco Mode 2 Eco Mode 3
 low performance medium performance high performance

Low Throttle Mode

- Throttle open/closed angle is controlled to get less response and performance compared with Normal Mode. But Throttle performance at Fully Open Acceleration is the same as Normal Mode.

Boost Mode

- Throttle open/closed angle is controlled to get better response and performance according to the throttle pedaling. But when throttle performance reaches Fully Open Acceleration it's the same as Normal Mode.

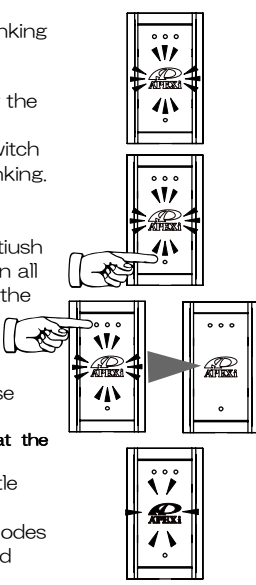
※The performance varies by Throttle Pedaling of Acceleration.
Boost Mode 1 Boost Mode 2
 Low Performance High Performance

High Throttle Mode

- Increased Throttle response and performance compared with Normal Mode. But when throttle performance reaches Fully Open Acceleration, its the same as Normal Mode.

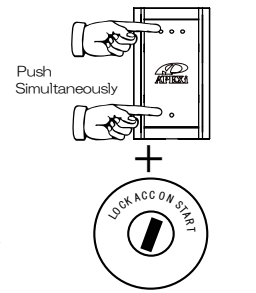
Initialization (continued)

- Confirm the "A PEXI" Logo to be blinking rapidly in White color. **※Do not start the engine yet.**
- Push Down the " " switch while leaving the accelerator pedal position alone in the "OFF" position. (Throttle Fully Closed) Release the Switch when the lighting changes to a Rapid Blue Blinking. Then the Logo lighting will change to a Rapid White Blinking.
- Continue to push " " switch at the position down the " " switch while pushing down all the way on the accelerator pedal keeping it in the "ON" position. (Throttle Fully Open). Logo lighting will change to Red Blinking, and then the Logo Lighting will turn off. This is the completion of the Initializing of Throttle. Release the Accelerator Pedal and Switch. **※ If the Blinking does not turn off, Please Repeat the procedures starting from Step 1.**
- After the completion of the Initializing of throttle setting, Short Push on the " " and/or " " Switches to confirm that different modes with different logo lighting can be selected, and use the Product at each mode.



Re-Initializing Settings and/or Installation on other Vehicles

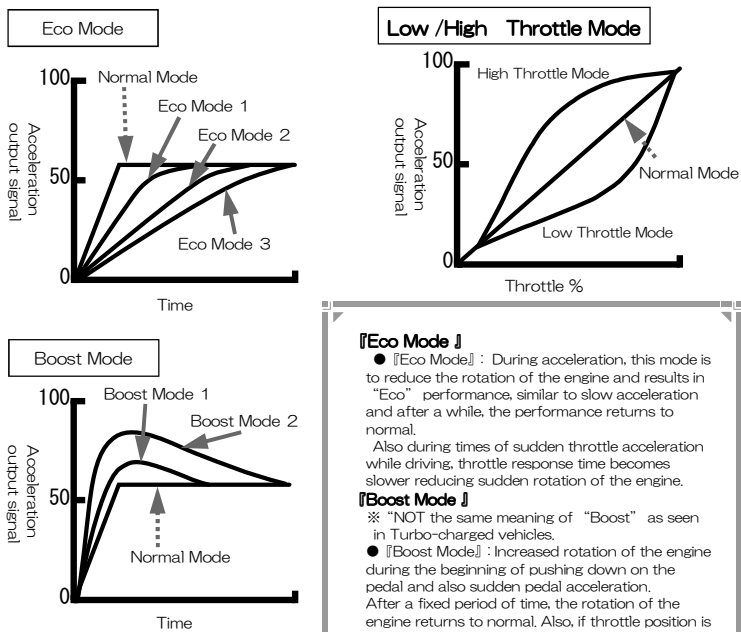
- While pushing down the " " & " " switches, turn the ignition key to the "ON" position. **※Do not start the engine.**
 - Logo Lighting will start to blink rapidly in White which shows the completion of Initializing. After doing so, proceed to Step 3 of the Initializing of Throttle Setup.
- [Initializing means]
 The Product has been reset back to Factory Default Settings.



NOTICE

- There may be cases where the Logo Lighting will not turn off when turning the ignition to the "OFF" position. This is NOT a malfunction; please wait a moment until the lighting turns off.
- Initializing can only be complete when the power of the Product is turned off. If you are not sure that the Product is turned off or not, turn the Product On and then turn Off, the Lighting should turn Off, which means the Product has turned Off.

Acceleration Control Graph (imaged)



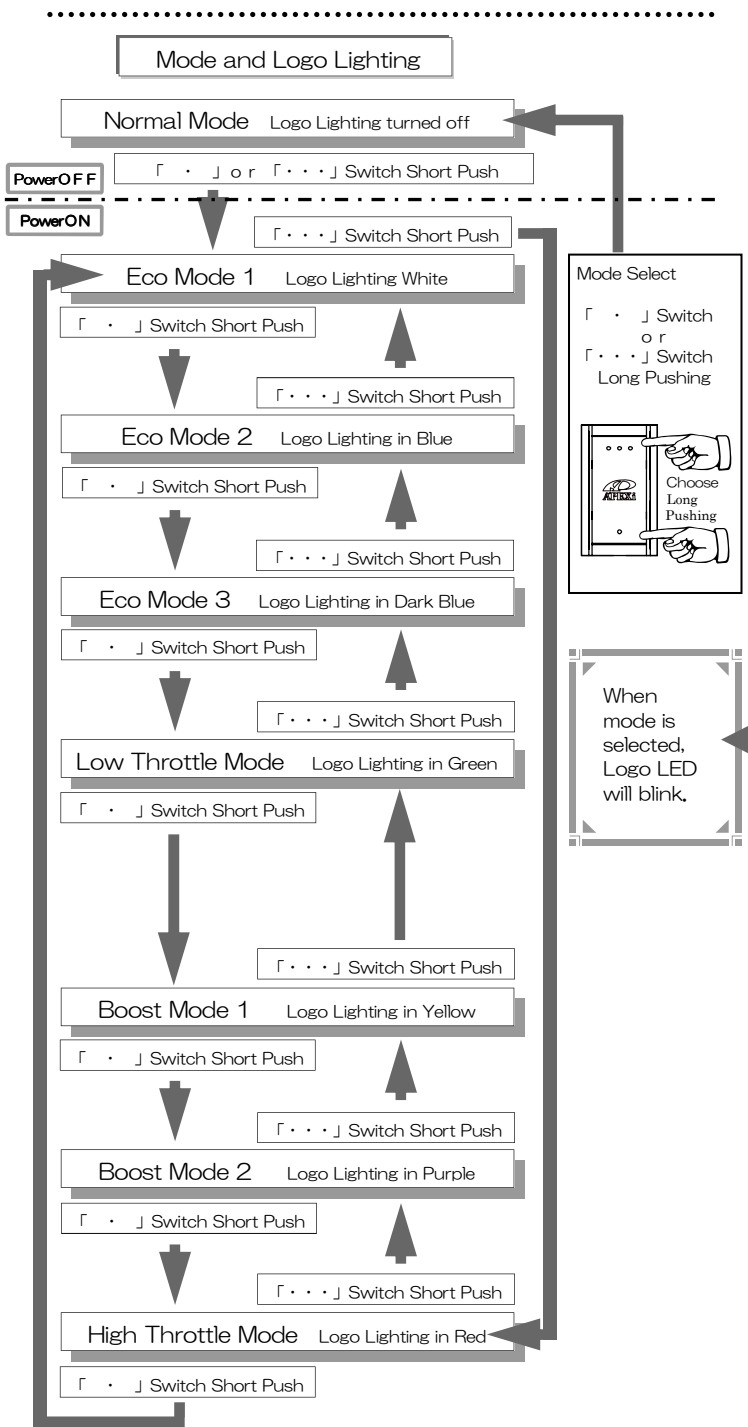
Normal Mode
 ● [Normal Mode]: During acceleration, this mode is to reduce the rotation of the engine and results in "Eco" performance, similar to slow acceleration and after a while, the performance returns to normal. Also during times of sudden throttle acceleration while driving, throttle response time becomes slower reducing sudden rotation of the engine.

Eco Mode
 ● [Eco Mode]: During acceleration, this mode is to reduce the rotation of the engine and results in "Eco" performance, similar to slow acceleration and after a while, the performance returns to normal. Also during times of sudden throttle acceleration while driving, throttle response time becomes slower reducing sudden rotation of the engine.

Boost Mode
 ● [Boost Mode]: Increased rotation of the engine during the beginning of pushing down on the pedal and also sudden pedal acceleration. After a fixed period of time, the rotation of the engine returns to normal. Also, if throttle position is controlled for a while it will return back to the normal.

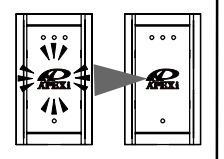
11 Mode Setting

- Upper Switch " " and Lower Switch " " Mode Select Settings.



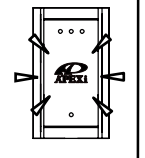
Display Opening Ceremony

- In both, Eco or Boost mode, Logo lighting will blink in colors of each mode. The Blinking will stop after the opening ceremony of the unit is complete. **※Blinking duration of time varies based on acceleration pedaling.**



Display during Reverse Driving



- During reverse driving, the unit returns to Normal "Stock" Mode automatically and Logo Lighting will blink slowly. **※No Blinking in Normal Mode while in other gear positions.** **※This function is not available if Reverse Gear Harness is not installed.**



12 Other Settings



Ignition Start Settings

- Unit Settings can be set in the Ignition "ON" position.
- | Defining Normal Mode in Ignition On position. | Defining Selected Mode in Ignition On Position. |
|---|--|
| <ul style="list-style-type: none"> When Ignition is in the "ON" position and is in normal mode (Factory default setting) | <ul style="list-style-type: none"> When Ignition is in the "ON" position and reverts back to the mode that was last set (User settings) |
- NOTICE**
 ● Complete settings using Logo Lighting Colors for each mode.
 ● For some vehicles, Logo Lighting will not turn off right away when ignition is turned "OFF," please wait a moment as this is not a malfunction of the unit.

- Set the Ignition to "OFF". For both Key-Cylinder and Push Start ignition types, set to "LOCK" position. 
- Turn the Ignition to "ON" while pushing " " Switch. **※ Do not start the engine yet.** 
- Setting is complete when the Logo Lighting blinks White rapidly twice. If you need to change the Mode, repeat steps 1 & 2.

Setting of Control Start Display

- You can select "ON" or "OFF" for Eco Mode and Boost Mode Control during display startup when the Ignition is turned "ON".

- NOTICE**
 ● Complete settings using Logo Lighting Colors for each mode.
 ● For some vehicles, Logo Lighting will not turn off right away when ignition is turned "OFF," please wait a moment as this is not a malfunction of the unit.
- Set the Ignition to "OFF". For both Key-Cylinder and Push Start ignition types, set to "LOCK" position. 
 - Set the Ignition to "ON" while pushing down the " " switch. **※Do not start the engine yet.** 
 - Setting is complete when the Logo Lighting blinks White rapidly twice. If you need to change the Mode, repeat steps 1 & 2.

13 Frequently Asked Question

Symptoms	Troubleshooting
Switch does not Display at Key Switch ON.	<ul style="list-style-type: none"> Setting of Ignition Start Setting is in Normal Mode. ⇒Reset Ignition Start Settings to Previous mode. Switch is not connected. ⇒Be sure to connect Switch.
Abnormal Idling	<ul style="list-style-type: none"> Initializing Throttle Setting is not completed. ⇒Complete Accelerator Position Setting for "Fully Open" and "Fully Closed," refer to this Instruction Manual. Installation was done with battery disconnected. ⇒Some vehicles need Liding Self Learning. Refer to original Vehicle Instruction Booklet or contact Dealership.
No throttle feel difference after setting Modes.	<ul style="list-style-type: none"> Incomplete Initializing Accelerator Position Setting ⇒Be sure to complete Accelerator Position Setting according to this Instruction Manual. Some vehicles are not easy to get actual change of throttle "feel" ⇒Try different modes. See if you can get actual feeling change for one of the settings so product operates. Please understand some vehicles, might be difficult to get actual feeling change.
No change in fuel efficiency in "Eco" Mode	<ul style="list-style-type: none"> Incomplete Initializing of Accelerator Position Setting. ⇒Complete Accelerator Position Setting according to the Initializing Accelerator Position Setting in this Instruction Manual. Eco mode is to support a function of energy saving driving.
Check Engine Light (CEL) is ON	<ul style="list-style-type: none"> Within 15 min, after the Ignition was turned off, Accelerator Position Sensor Connector was removed. During Ignition On, Accelerator Position Sensor Connector was removed. During the Installation, Ignition was set to On. Follow to the description of "How to Turn off the Check Engine Light" hereunder. Incomplete Initializing of Accelerator Position Setting. ⇒Follow: How to set Accelerator Position Setting in Initialization in this Instruction Manual.
Logo Lighting started to Blink rapidly in White.	<ul style="list-style-type: none"> Incomplete Initializing of Accelerator Position Setting. ⇒Complete Initializing Setting in this Instruction Manual. Initializing Settings Error ⇒Irregular data saved in Full and Released Accelerator Position Setting data. Park the vehicle in a safe place and reset the unit with Re-Initializing Setting.
During driving, Logo Lighting started to blink in Yellow and Red alternately	<ul style="list-style-type: none"> Check Wiring and Connectors. ⇒Abnormal voltage entered into Product and the Product was initialized. Park the vehicle in a safe place and reset starting from Re-Initializing Setting. If the Product does not work properly, remove the Product and Harnesses from the vehicle. ⇒Contact your dealer.
Incompletion of all settings.	<ul style="list-style-type: none"> Settings were not done in the Ignition "OFF" position. ⇒Be sure settings to be done in the Ignition "OFF" position. Turn on the Logo Lighting of Switch with Ignition ON. Then turn the Ignition to "OFF," Logo Lighting will also turn off which means Power is "OFF"
How to turn off a Engine Check Light (CEL)	<ol style="list-style-type: none"> Reset settings back to factory. Then turn on/off engine repeatedly. If problem persists after Step ①, remove the Negative Battery Terminal, wait 15 minutes. Re-connect the Battery Terminal again and repeat Step ①. ※ Write down necessary data on document since it might be erased during the above process. (e: Anti-theft codes, stereo codes, etc.) If problem still exists after steps ① & ②, contact your vehicle dealer to turn off the check engine light.