



LK-290-12/24VT

- ※ Be sure to read this manual carefully to ensure proper usage.
- ※ Some functions can be changed without notifying users in order to improve product performance.
- ※ This manual is written based on LK-290-12/24VT of Qrontech Co., Ltd. and may include technical or editorial errors and/or omissions.
- ※ When using blackboxes of other companies that have low voltage cut-off function, disable low voltage cut-off function or set to lowest cut-off voltage so as to make efficient use of power safety device.
- ※ Make sure ACC wire is connected to ACC power supply of the vehicle; if it is used together with B+ wire (continuous power voltage), continuous power may not be cut off. Make sure to separate ACC power supply. (Qrontech takes no responsibility for malfunctions arising from wire connection errors.)

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## 1. Precautions for Use

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This product went through strict quality management and inspection processes. However, misuse of electrical products could cause fire or human casualties. Observe precautions written before use.

- ※ Check operation status of the product regularly.
- ※ Set input voltage according to season and battery status.  
(e.g., Spring, Summer – 12.0V / Winter – 12.4V)
- ※ Battery efficiency may fall dramatically as battery is sensitive to external environments (temperatures). Therefore, operation status of the connected external device may not be constant due to battery.
- ※ When the vehicle is left for a long time with the switch on, battery discharge may take place due to dark current. Qrontech takes no responsibility for battery discharge.
- ※  $\pm 5\%$  errors in input/output voltage may occur due to surrounding environments (temperatures) and component errors.
- ※ Use fuse with rated capacity. Otherwise, a danger of fire exists.
- ※ In case of other malfunctions and long-term parking, turn off the switch and stop using the device.
- ※ Qrontech takes no responsibility for customer mistakes/carelessness.

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## 2. Product Package

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- Make sure that all of the following items are present when you receive your product.
- Product Package is subject to change for improving product performance or quality.



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## 3. Product Characteristics

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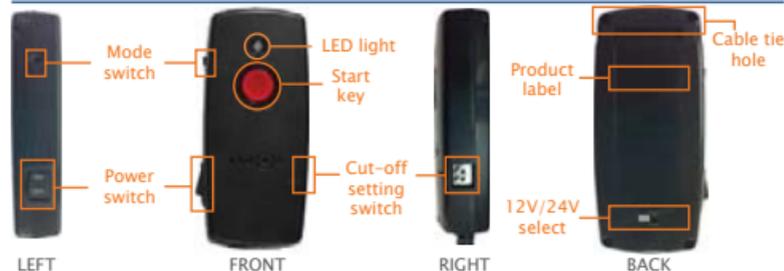
- Power safety device is for users who use the device by connecting power supply directly to the vehicle battery and prevents battery discharge in advance by shutting off power when battery voltage is lowered below the pre-set voltage.
- Connect the blackbox and the vehicle battery and use the device when continuous power supply is needed (e.g., parking monitoring).
- After connecting the power safety device, power supply/automatic low voltage cut-off/timer functions can be used even when the engine is off.
- ACC function added to LK-290-12/24VT enables normal supply of output voltage even when input voltage(continuous power voltage) fluctuates and drops below cut-off voltage.
- The product has less than 100 $\mu$ A leakage current using optimized circuit.
- When the power switch is off, no leakage current occurs  
(If the device is not in use for a long time, turn off the switch).
- This device passes through input voltage; it is not possible to set output voltage. Input voltage is used as output voltage.  
e.g., Input Voltage: 12V → Output Voltage: 12V / Input Voltage: 24V → Output Voltage: 24V

## 4. Parts Names & Functions



[ Type A Product Structure ]

※ Composition of input/output cable may differ according to the specification of product.



### ■ Power Switch



It is a switch to completely cut off or enable to supply input power(continuous power voltage), so when you first install it, please ensure that the power switch should be in the On position and be installed, and when not in use for a long time, please make the power switch be in the Off position to protect the vehicle battery safely.

### ■ Mode Switch



It is a switch to select volt mode and time mode, so if you lift up the switch to the top, it becomes VOLT mode and lift down the switch to the bottom, it becomes TIME mode.

## ■ Start Key

If you hold the key for more than 2 seconds while connected to power, the power will be turned On. If the input power(continuous power voltage) is above the cut-off voltage after the power is turned On, it operates normally and if the input power is below the cut-off voltage, the action will automatically be cut off after 30 seconds.

## ■ 12V/24V Selector Switch



It is a selector switch according to the vehicle battery voltage, so please select 12V for normal passenger cars and 24V for large cars (battery voltage is 24V).

## ■ Cut-off Setting Switch

It is a cut-off setting switch that user can set to stop input power(continuous power voltage) supply according to the environment, and in 12V mode, 12.4V / 12.2V / 12V / 11.8V can be set up and in 24V mode, up to 24.2V / 24V / 23.8V / 23.6V can be set up.



	12V mode	24V mode
VOLT MODE	11.8V	23.6V
TIME MODE	12 Hours	



	12V mode	24V mode
VOLT MODE	12V	23.8V
TIME MODE	24 Hours	



	12V mode	24V mode
VOLT MODE	12.2V	24V
TIME MODE	36 Hours	



	12V mode	24V mode
VOLT MODE	12.4V	24.2V
TIME MODE	48 Hours	

- ※ □ white part is protruding one of the switch.
- ※ Initial 12V/24V selector switch position : 12V
- ※ Input voltage cut-off setting is based on the load of 300mA.

## ■ LED Light Operating Status

 RED	VOLT MODE	<p>If the input voltage(continuous power voltage) is more than 12.8V(12V car) or 24.8V(24V car), the LED will blink quickly and it indicates normal operating conditions. If the input voltage goes down to 12.6V(12V car) or less, or 24.6V(24V car) or less, the LED will blink at about 0.5-second intervals, and when it reaches the cut-off voltage, the LED will blink at 0.25-second intervals and it will block the action after approximately 30 seconds.</p>
 GREEN	TIME MODE	<p>If the input voltage(continuous power voltage) is more than 12.8V(12V car) or 24.8V(24V car), the LED will blink quickly and it indicates the normal operating status. If the input voltage goes down to 12.5V(12V car) or less, or 24.5V(24V car) or less, the LED will blink at about 1 second intervals to start the timer count operation. After 12 hours / 24 hours / 36 hours / 48 hours under setting time, the operation will be blocked.</p> <p><b>However, if the input voltage becomes less than 11.8V or 23.6V, the operation will be cut off regardless of the time mode.</b></p>

## 5. How To Install



1. Open the fuse box inside of the vehicle, choose the connection point and connect the continuous power supply wire and ACC wire.



2. First, pull out the fuse (e.g. cigarette lighter, audio etc.) to connect with the red ACC wire and insert together.

※ Location of ACC power supply may differ depending on the vehicle.



3. Pull out the fuse (e.g. emergency lamp, indoor lamp, tail lamp etc.) to connect with the yellow B+ wire (Battery voltage) and insert together.

※ Location of ACC power supply may differ depending on the vehicle.



4. Connect the black GDN wire to vehicle steel body(metal parts or screws etc.) and check whether the LED light works properly with the engine on to ensure normal operation of the device.



5. Fix the device on the vehicle using adhesive tape or cable tie and connect it to the blackbox.

※ If power is cut off by voltage mode/time mode operations, input voltage when the engine starts should be higher than 13V(12V mode), 25V(24V mode) to enable automatic reset for a normal operation of the device.

## 6. Product Specification

Product Name	Power Safety Device
Model Name	LK-290-12/24VT
Input Voltage	11V ~ 30V
Output Voltage	BYPASS (11V ~ 30V)
Output Current	Less than Max. 1A
Operating Temperatures	-20°C~70°C
Leakage Current	Less than 100μA

- ※ ±5% errors may occur due to component errors.
- ※ Product Specification may change without prior notification in accordance with environments and circumstances.
- ※ Normal operation may not be possible when ACC input voltage is below 9V.

VER. 02



Power Safety Device  
LK-290-12/24VT

### Customers Service Information

- Customers Center: (+82) 2-2093-1257
- Address: A-1201 Woorim-Bluenine, 240-21 Yeomchang-dong,  
Gangseo-gu, Seoul 157-811, Korea
- Website: [www.lukashd.com](http://www.lukashd.com)
- Inquiry: [lukas@qrntech.com](mailto:lukas@qrntech.com)