IGN Module User Manual

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2018/10/31

※ ※ MODIFIED HISTORY ※ ※

Rev..	Modified Description	Date	Remark
1.0	First Release	2018/10/31	

Contents

1. Overview for IGN Function

1.1 The IGN function is used to protect vehicle battery from over-discharging which may result in failure for engine startup. It makes system shutdown timely when vehicle battery works beyond the range of effective working voltage.

Fig 1. IGN Module for Model DS-1100

▪ 2. Preparations for IGN Module Application

2.1 Wire Connection for IGN Module

Connect the positive pole of vehicle battery's power cord to the left hole of the power connector, as shown by V + in the figure below. Connect the ground wire of the battery's power cord to the right hole of the power connector, as shown by V - in the figure below. Connect the vehicle power ignition signal wire to the middle hole of the power connector, as shown by IGN in the figure below.

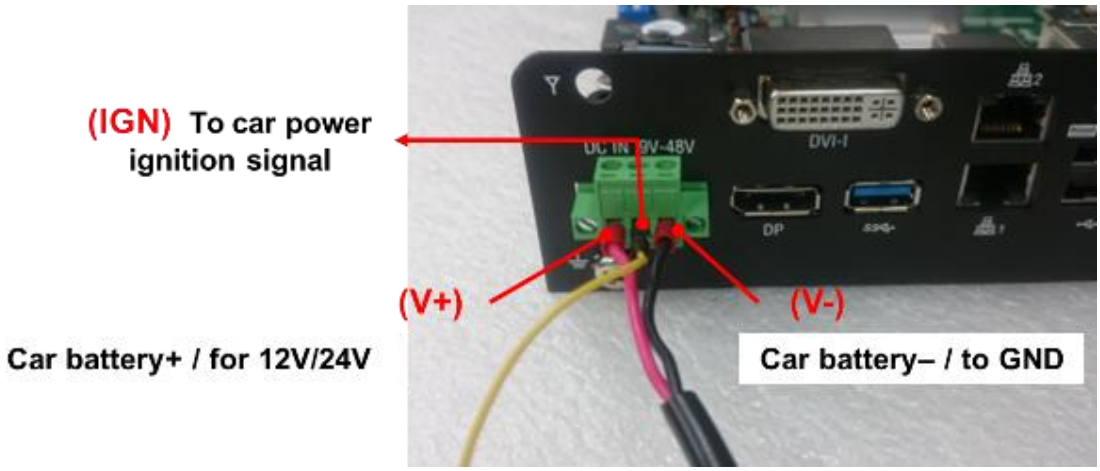


Fig 2. **The wire connection about IGN Module**

2.2 Vehicle Battery Switch Setting

There are kinds of voltages used for vehicle batteries. User needs to setup the correct voltage on the DIP switch of IGN module. The following figure is an example about setting a working voltage as 24V for DS-1100.

Fig 3. Location of vehicle Battery Switch

Pin	Definition
1-2	24V Car Battery Input
2-3	12V Car Battery Input

Fig 4. Vehicle Battery Switch Setting

2.3 Delay timer Setting

User can set delay time for system shutdown after vehicle engine gets turned off (ACC OFF Mode). The following figure is an example about setting delay time as 1 minute for DS-1100. As indicated on Fig 5, the PINs on the Delay timer should be set as: PIN 1: ON / PIN 2 : ON / PIN 3: ON / PIN 4 : OFF.

(Default Setting: PIN 1: OFF / PIN 2 : OFF / PIN 3: OFF / PIN 4 : OFF)

Fig 5. Location of Delay timer

Pin 1	Pin 2	Pin 3	Pin 4	Definition
OFF / ON	ON	ON	ON	0 second
	ON	ON	OFF	1 minute
	ON	OFF	ON	5 minutes
	ON	OFF	OFF	10 minutes
	OFF	ON	ON	30 minutes
	OFF	ON	OFF	1 hour
	OFF	OFF	ON	2 hours
	OFF	OFF	OFF	Reserved (0 second)

Fig 6. Delay timer setup table

2.4 System Shutdown setting in Operation System

- Operation System：Windows

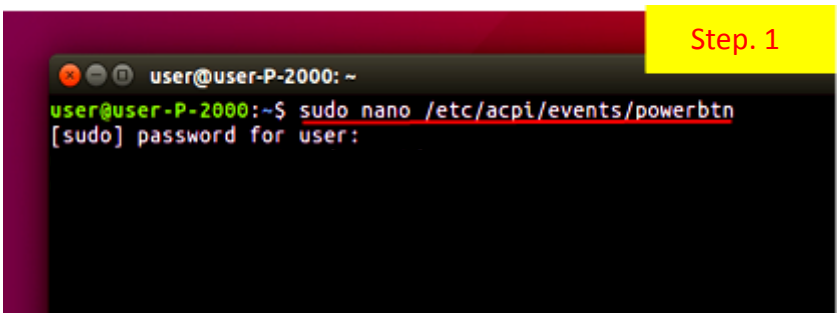
  To ensure Windows Operation System can be shut down successfully by IGN module, user should get into “Control Panel → Hardware and Sound→ Power Options→ System Settings”, and change the status at “When I press the power button” to “Shut down “as indicated in the figure below.

- Operation System：Linux（Ubuntu Linux as example）

  To ensure Linux Operation System can be shut down successfully with IGN module, user should open the terminal window and enter the commands as listed in the following steps.

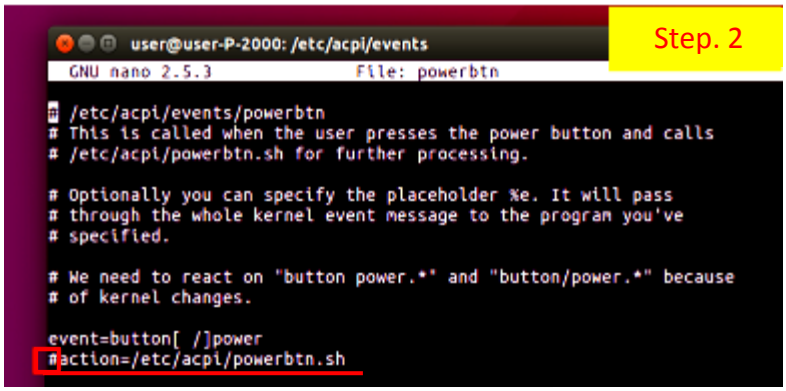
  (1) Open nano editor to edit powerbtn file

  sudo nano /etc/acpi/events/powerbtn



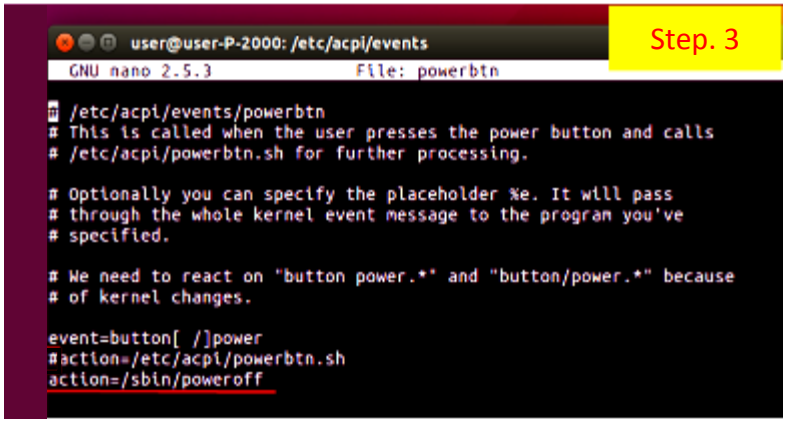
(2) Add # to comment line:

#action=/etc/acpi/powerbtn.sh



(3) Add a new line:

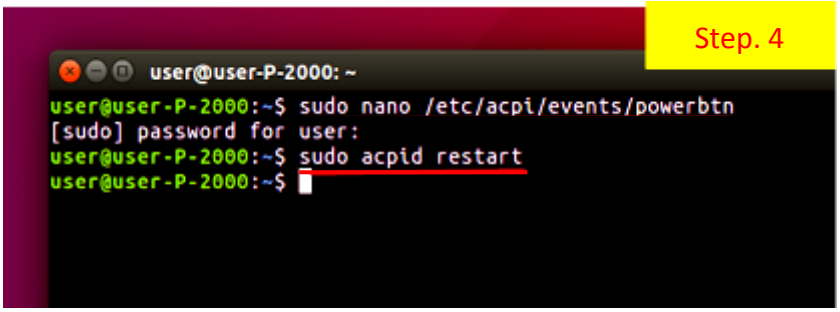
action=/sbin/poweroff



(4) Save file: (Ctrl+O, Ctrl+X)

(5) Restart ‘acpid’ process.

sudo acpid restart



▪ 3. Description of IGN Workflow

The figure below is a switch diagram for vehicle engine start-up.

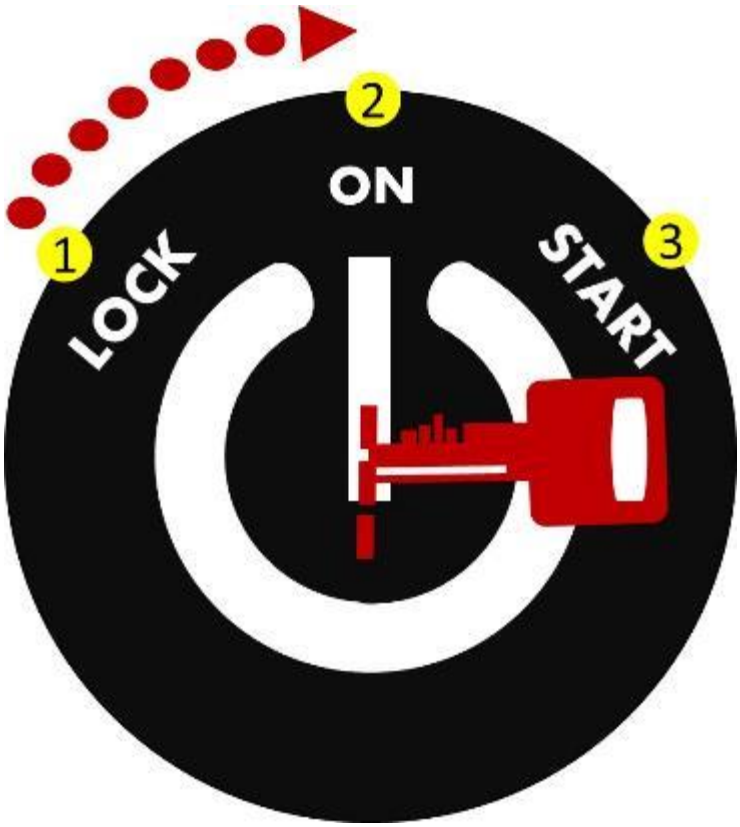


Fig 7. Diagram for vehicle engine start-up

(1) LOCK Mode： Steering wheel be locked.
(2) ACC ON Mode： Steering wheel unlock and vehicle power on
(3) Start Mode： Switch to this mode to start vehicle engine up.

3.1 Workflow Chart of IGN Module (Normal Battery Voltage)

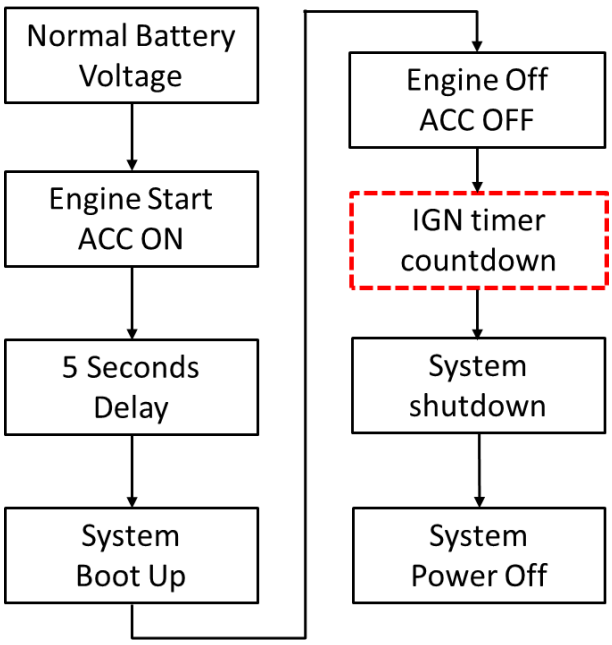


Fig 8. Workflow Chart of IGN Module (Normal Battery Voltage)

(1) When IGN Module detects the normal battery voltage and the vehicle engine startup (ACC ON), IGN module will wait 5 seconds and then boot the system up.

(2) When vehicle engine is turned off (ACC OFF), IGN module will start to count down based on the Delay timer. (Please refer to section 2.3 to see more details.) At the end of countdown, IGN module informs Operation System to log out (i.e. system shutdown), and then system power off.

(3) When vehicle engine is turned off (ACC OFF), switching back to ACC ON by the end of countdown will make Delay timer cancel the countdown, and the system remains operating.

Note：Switching back to ACC ON will not cancel the IGN countdown if Delay timer is setup as zero second.

3.2 Workflow Chart of IGN Module (Battery Voltage fail)

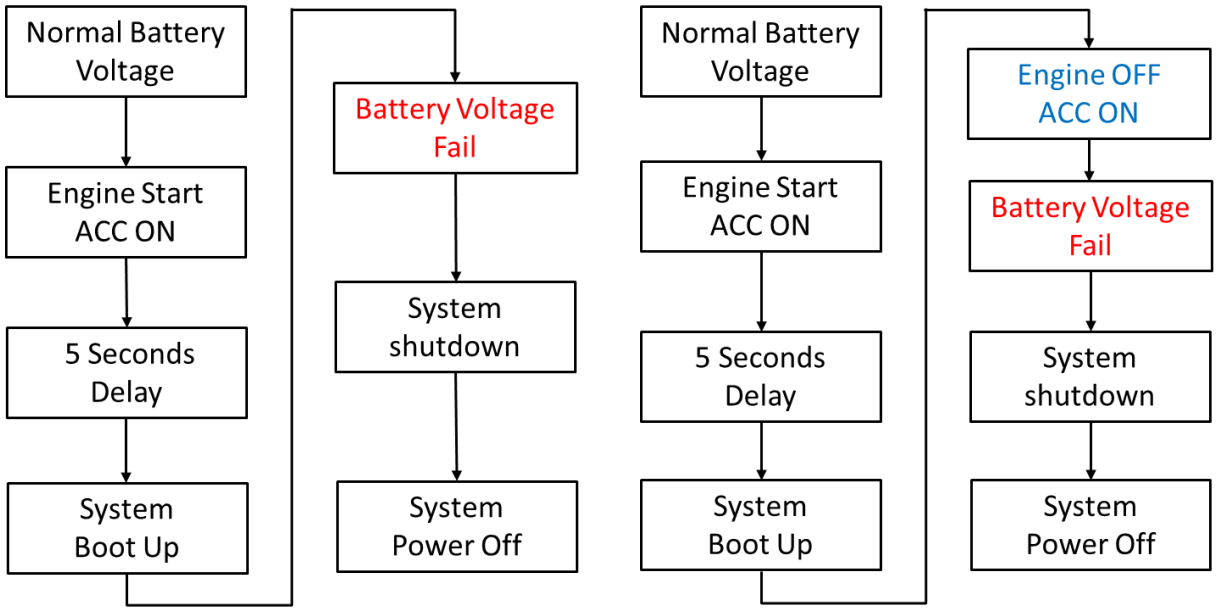


Fig 9. Workflow Chart of IGN module (Battery Voltage fail)

(1) L.H.S.：When IGN module detects the fail battery voltage, IGN module will inform Operation System to shutdown immediately, and then system power off.

(2) R.H.S.：When vehicle engine is turned off but vehicle power keeps on (keep ACC ON Mode), the vehicle battery will keep discharging in this condition. When vehicle battery voltage drops below the effective working voltage (i.e. Battery Voltage Fail), IGN module will inform Operation System to shut down immediately, and then system power off.

Note：Battery Voltage Failure means the vehicle battery voltage is out of effective working range. Take 24V as example, when the battery voltage drops below 20V, it will be detected as fail battery voltage by IGN module.

3.3 Workflow Chart of IGN Module (System Shutdown Incomplete)

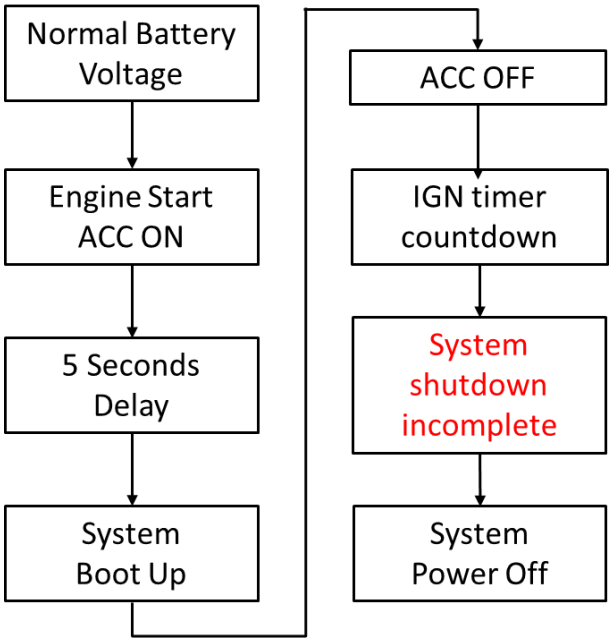


Fig 10. Workflow Chart of IGN Module (System Shutdown Incomplete)

(1) If Operation System can not be shut down completely by the end of the countdown time, IGN module will wait for extra 60 seconds and then execute system power off without any notice.

▪ 4. Note

- In order to make IGN module work functionally, the Power Mode Switch must be setup as ATX mode. Switching to AT mode may result in some unpredictable failure.

Pin	Definition
1-2 (Left)	AT Power Mode
2-3 (Right)	ATX Power Mode (Default)

Fig 11. Power Mode Switch setup

- When IGN module is enabled, the vehicle power system remains unpowered during the five seconds after ACC ON gets started. Therefore, there will be no response if the power button on system is pressed during the period.

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