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LOW PROFILE SHUTDOWN TIMER

Vehicle Battery Protection Unit

The Low Profile Shutdown Timer protects your vehicle battery from over discharge, and protects communications and other sensitive equipment from low and high voltage damage. This device turns off electrical loads at a pre-set time after the car engine is shut down. The timer starts when the ignition is turned off.



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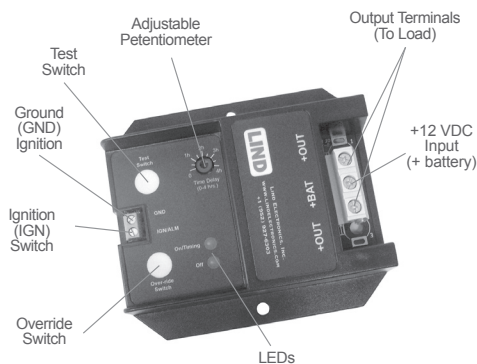
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FEATURES

- Adjustable Shutdown Delay Time
- High and Low Voltage Shutdown
- Loads up to 30 amps for 12V Timer and 20 amps for 24V timer
- Reverse Polarity Protected
- Automatic Battery Voltage Sensing Activation (battery not charging = timer ON)
- Optional Ignition Switch Activation (ignition OFF = timer ON)
- LED Indicators for ON, OFF and TIMING
- Speed-Up Time Test
- Override Emergency Operation Switch
- Automotive Load Dump Protection



TECHNICAL INFORMATION

Battery Voltage Sensing Turn-on Threshold:	> 13.5 volts [27 volts]
Battery Voltage Sensing Timer Start Threshold:	< 13.0 volts [26 volts]
Optional Ignition On (Off) Thresholds:	> 5 volts (< 2.5 volts) [10/5 volts]
LED Flash Rate - Normal (Test Mode) Timings:	2 seconds (0.5 seconds)
High (Low) Battery Voltage Disconnect Threshold:	> 18 volts (< 10.5 volts) [36/21 volts]
Low Battery Voltage Disconnect Delay:	> 10 seconds
Input Voltage Range:	9 - 18 volts [18 - 36 volts]
Maximum Load:	30 amps [20 amps]
Current Draw in OFF and ON/TIMING Modes:	9 mA OFF, 95mA ON/TIMING
Adjustable Shutdown Delay Time:	5 sec — 4 hrs
Override Mode Time Setting:	12 min. (over-rides time setting)
Speed-Up Time Test Switch:	Set delay divided by 100
Operating Temperature:	-50° — 75° C (-58° — 167° F)
Dimensions:	1.2" H x 4.3" L x 3.8" W
Mounting Hole Dimensions:	3.3" (center-to-center)

* Specifications in brackets [] are for 24 VDC models.

OPERATING INSTRUCTIONS

The Low Profile Shutdown (LPS) Timer is activated by sensing the alternator charge voltage level applied to the battery. When the alternator stops, the timed sequence starts. An emergency switch on the timer allows for an additional 12 minutes of operation beyond the timed sequence. An ignition switch input is provided as an option.

A unique feature of the timer is that it allows for full testing of the system after installation. Momentary closure of the test switch reduces the delay time by a factor of 100 to allow a quick test of the system timing function.

TIMER START: The LPS timer contacts close when the engine is started and the alternator is charging the battery (battery voltage exceeds 13.5 volts). The timer will start when the engine is turned OFF and the battery voltage drops below 13 volts.

Optional connection of the ignition (IGN) terminal will result in the timer starting when the ignition switch is opened. If the IGN terminal is connected to the accessories position of the ignition switch, the loads will be energized with the key in the accessories position.

TIMER AND DELAY TIME SETTINGS: The LPS Timer (after engine shut off) is set with the potentiometer on the top of the unit. A small screwdriver or key can be used to set the potentiometer. Pointing the arrow on the potentiometer to the desired delay sets the time delay.

NOTE: If the vehicle electrical system does not exceed 13.5 VDC with the vehicle running, the IGN terminal connection must be used or incorrect shutdown timer operation will occur.

INSTALLATION

- Mount the LPS Timer in a cool, dry place using #10 bolts, nuts, washers and lock washers. The timer is connected between the +12 volts of the vehicle electrical system and the loads to be controlled. The loads may be radios, computers or other electrical loads such as lights and flashers.
- The input wire must be connected to the system +12 volts through maximum size 30 amp fuse. This connection can be made to a fuse panel or directly to the battery. If the LPS Timer is connected directly to the battery the fuse must be located within five (5") inches of the battery's positive terminal. Use the table below to select the appropriate wire gauge.

Amps	Length					Minimum Wire Gauge (AWG)
	5	10	15	20		
10	16	14	12	10		
20	14	10	8	8		
30	10	8	6	6		

- Loads are connected to either (or both) of the +OUT terminals. Inserting manufacture recommended fuses for each load to the +OUT terminals could provide additional protection.
 - Models with the high current terminal block, strip back the wire 0.35" prior to insertion.
 - Connect the ground (GND) terminal to a good, clean chassis ground. The LPS Timer is powered from the +BAT input and the ground.
 - Activation of the LPS Timer's timing may be automatic by sensing the battery voltage drop when the engine is turned OFF or by the optional ignition (IGN) connection to the ignition switch.
 - The ignition switch activation option connects the IGN terminal of the LPS Timer to the ignition switch terminal (which goes to zero volts when the engine is turned OFF).
 - The GND and IGN connections carry very little current (< 0.1 amp). Wire gauge is determined by mechanical suitability. Strip back wires 0.25" prior to installation.
- NOTE:** When using the ignition switch option, the timer will not start if the engine dies.

TESTING

- While the engine is running the green LED on the LPS Timer will be ON, and power will be applied to the loads.
- Turn the engine OFF. The green LED will flash at 2 second intervals to indicate normal timing mode.
- Momentarily close the Test Switch on the LPS Timer. The green LED will flash rapidly indicating fast test timing. Shutdown will occur in 1/100 of the normal time set (i.e. set to one hour the LPS Timer will time out in 36 seconds). The red LED on the LPS Timer will come ON when the outputs turn OFF.
- Momentarily close the Override Switch. The green LED will flash at the normal rate indicating normal timing in override mode. The Override Switch will provide 12 minutes of additional operation even with battery voltage lower than 10.5 volts. The Override Switch does not work if the output is already on.
- Momentarily close the Test Switch. The green LED will blink rapidly indicating fast test timing. Shutdown will occur in about eight (8) seconds and the red LED will come ON.

NOTES:

1. The LPS Timer outputs will turn ON if the automobile battery is charged from an external source. The output loads should be turned OFF when externally charging.
2. The low voltage detection circuit has a 10 second delay to avoid load disconnection when starting the automobile.
3. This product has not been evaluated for its effects on equipment within emergency vehicles.