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## RUGGEDIZED SHUTDOWN TIMER/RELAY DRIVER

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### *Vehicle Battery Protection Unit*

The Ruggedized Shutdown Timer (RSDT) protects the automobile battery from over discharge by shutting OFF loads at a preset time after the engine is shut down or when the battery is discharged to a low voltage level. The RSDT also protects radio or computer equipment from damage due to low or high input voltage as experienced with alternator failure or improper voltage jump-starts.

An ignition switch input is provided as an optional activation method. This method is recommended for emergency vehicles or when the vehicle may be idling for long periods with heavy electrical loads. The RSDT is normally activated by sensing the alternator charge voltage level applied to the battery. When the alternator stops charging, the timed sequence is started.



For assistance call Lind Technical Support at (800) 659-5956 or (952) 927-6303.

# SHUTDOWN TIMER START

The timer contacts will close when the engine is started and the alternator is charging the battery (battery voltage exceeds 13.5 [27] volts). Shutdown timing will start when the engine is turned OFF and the battery voltage decreases to below 13 [26] volts.

Optional connection of the IGN terminal will result in the timer starting when the ignition switch is opened.

**NOTE:** 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.

**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 timer operation will occur.

# SHUTDOWN TIMER SETTINGS

The RSDT delay time is factory set and is not adjustable. Models with delay times from seconds to hours are available, contact Lind to discuss your needs.

# FEATURES

- Low Voltage Shutdown at 10.5 [21] VDC
- High Voltage Shutdown at 18 [36] VDC (with auto reset)
- Loads up to 20 amps at 12 [24] VDC (higher loads possible with external relay)
- Automatic Activation by Sensing the Battery Voltage (battery not charging = timer ON)
- Optional Activation by Ignition Switch Connection (ignition OFF = timer ON)
- LED Indicator for Timing

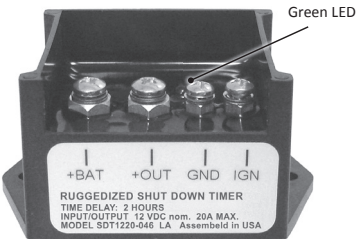
# SHUTDOWN TIMER SPECIFICATIONS

Battery Voltage Sensing Turn-on Threshold:	>13.5 [27] V
Battery Voltage Sensing Timer Start Threshold:	<13.0 [26] V
Ignition ON Threshold (if used):	>5 [10] V
Ignition OFF Threshold (if used):	<2.5 [5] V
LED Flash Rate (in timing mode):	2 seconds
High Battery Voltage Disconnect Threshold:	>18 [36] V
Low Battery Voltage Disconnect Threshold:	<10.5 [21] V
Low Battery Voltage Disconnect Delay:	>10 seconds
Input Voltage Range:	9-18 [18-36] V
Maximum Output Current:	20 A
Current Draw in OFF Mode:	6 mA
Current Draw in ON/TIMING Mode:	60 mA

*\* Custom units may have different specifications.*

# SOME SUGGESTED 12V EXTERNAL RELAYS

40A	TYCO ELECTRONICS, #VF7-11F11 OMRON, #G8HE-1A7T-R-DC12
80A	AMERICAN ZETTLER, #AZ979-1A-12D WHITE-RODGERS, #70-1112252
150A	TYCO ELECTRONICS, #V23132-A2001-A100
200A	WHITE-RODGERS, #586-10511



# INSTALLATION

- Mount the RSDT using #8 screws. The RSDT is connected between the vehicle electrical system and the loads to be controlled. The loads may be radios and computers or other electrical loads (lights and flashers).
- The RSDT terminal marked +BAT must be connected to the vehicle electrical system through a fuse with a value of 20 amps or less. This connection can be made to a fuse panel or directly to the battery. If the RSDT is connected directly to the battery the fuse must be located within 5 inches of the battery's positive terminal. Remove fuse until installation is complete. Use the table below to select the appropriate wire gauge.

Amps	Length (ft)				MINIMUM WIRE GAUGE (AWG)
	5	10	15	20	
10	16	14	12	10	
20	14	10	8	8	

- Loads are connected to the +OUT terminal. Additional protection can be provided by inserting manufacturer recommended fuses for each load connected to the +OUT terminal.
- Connect the GND terminal to a good, clean chassis ground. The RSDT is powered from the +BAT input and this ground.
- Activation of the RSDT timing period may be automatic by sensing the battery voltage drop when the engine is turned OFF or by the optional IGN connection to the ignition switch.
- Ignition Switch Activation option - connect the IGN terminal of RSDT to the ignition switch terminal that 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.
- Use #6 (GND, IGN) and #8 (+BAT, +OUT) ring or spade terminals for connection to the RSDT.

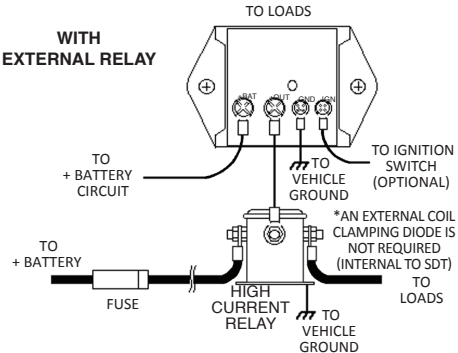
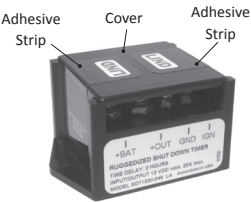
**NOTE:** When using ignition switch option, the RSDT period will not start if the engine dies.

# TO TEST

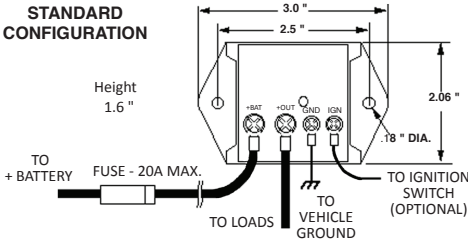
- Re-install input fuse.
- With the engine running the Green LED should be ON and power is applied to the loads.
- Turn the engine OFF and the Green LED will flash at a 2 second rate to indicate that the unit is timing out.
- The case cover (shown below) is optional. If used, install cover and secure on two sides with supplied adhesive strips as shown.

## NOTES:

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



## STANDARD CONFIGURATION



## LIMITED WARRANTY

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Lind Electronics, Inc. (LIND) warrants the circuit assembly portion of products manufactured by it to be free of defects in material and workmanship for a period of 3 years from the date of purchase under normal use. During this warranty period, LIND will, at its option, repair or replace the product at no charge for parts or labor when the product is returned postage paid as a complete unit to LIND. Proof of purchase and a letter explaining the problem must accompany the returned unit.

This warranty does not apply if any part of the adapter, its cables or connection jacks have been altered, subjected to abuse, accident or misuse. This warranty excludes incidental or consequential damage resulting from the product or the use of the product. This warranty is in lieu of all other warranties expressed or implied and no person is authorized to assume for LIND any other liability in conjunction with this product. The warranty gives you, the purchaser, specific legal rights and you may have other rights which may vary from state to state and country to country.

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**Lind Electronics, Inc.**

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