LIND ELECTRONICS PROFILE

ABOUT LIND ELECTRONICS

Lind Electronics, Inc. is a leading manufacturer of power adapters, auxiliary power packs, Shut Down Timers, battery chargers and other laptop accessories designed to meet the needs of mobile computer users.

Lind Electronics is a direct support OEM supplier for leading mobile computer manufacturers including Panasonic, Dell, Motion Computer, General Dynamics/Tridentx, Trimble and others. Established in 1975, Lind Electronics engineers and manufactures power products available for all leading brands of laptop and notebook computers.

Lind Electronics is located in Minneapolis, MN. Our Engineering, Sales, Production and Design teams are dedicated to solve your mobile power application needs.

Lind Electronics’ product lines include but are not limited to:

- Auto & Auto/Air Adapters
- VDC Range Adapters
- Stock And Custom Cables

AUTO & AUTO/AIR ADAPTERS

Lind’s automobile and airline power adapters charge your laptop’s internal battery by providing the proper voltage to your specific computer from any 11 to 16 VDC source. Output filtering, tight regulation and short circuit protection keep your computer safe from power fluctuations which can occur at the source.

Various adapters operate from an automobile’s cigarette lighter socket or an airplane’s in-seat adapter. Quality design, a durable enclosure and three year warranty ensure your complete satisfaction.

AUTO/AIR AC POWER ADAPTER

The Lind Auto/Air AC Power Adapter will power your laptop from an AC wall outlet, automobile cigarette lighter socket, or airline in-seat adapter.

These adapters are made of quality components and are guaranteed to meet the power specifications of your computer. In addition, each adapter has a USB port that can be used to charge devices such as cell phones, PDAs, digital cameras and more.

REPLACEMENT AC ADAPTERS

These AC Adapters from Lind Electronics are designed to replace the AC Adapters originally shipped with laptop and notebook computers. These replacement adapters provide all of the functionality provided by the original adapter.

SHUT DOWN TIMERS

Also known as a delay timer, the Lind Shut Down Timer (SDT) is designed to protect your vehicle’s battery and connected communications equipment from over-discharge, and low and/or high voltage fluctuations. The Shut Down Timer deactivates electrical loads up to 30amps at an adjustable preset time after the vehicle ignition is turned off or if the vehicle’s battery becomes over-discharged.

STOCK AND CUSTOM CABLES

If you need a hard to find cable assembly it may be available from Lind Electronics. If it is not listed, contact Lind’s Sales department to request how a custom cable assembly can be manufactured to suit your needs.

12 - 32 VDC EXPANDED INPUT VDC RANGE ADAPTERS

These DC/DC Adapters simultaneously power your laptop and charge the laptop’s internal battery. Each adapter provides the proper voltage for your specific computer from any 12 to 32 VDC source. Output filtering, tight regulation and short circuit protection keep your computer safe from power fluctuations which can occur at the source.

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Lind Electronics offers DC/DC power adapters, specialized cables, laptop accessories, Rugged and Low Profile Shut Down Timers and replacement AC power adapters for laptops. Custom mobile power and other product solutions may be engineered and manufactured for specific public safety applications.
Maintain power while traveling in your car or on your flight so your laptop can work as long as you do.

Lind’s Auto/Air Laptop Power Adapters fit the full range of PC notebook models and your application needs. Ruggedized power adapters are available for many types of users, including Lind high output power series adapters for many desktop replacement notebooks requiring 80 to 200 watts of power.*

All Lind adapters incorporate the highest degree of circuit protection for your laptop and the adapter itself. Most adapters feature field replaceable input/output cables with snap-in connections to make servicing easy and efficient. The robust design of Lind’s Auto/Air Laptop Power Adapters make them ideally suited for use in harsh mobile environments. The adapter’s electronics are protected by a rugged case that is epoxy sealed to protect the internal circuits from damage caused by shock and/or vibration. Efficient power conversion circuits with extensive protection circuitry provide reliable and continuous power to laptops in the most demanding warehouse environments.

* The power requirements for 80 to 200 watt higher performance laptops exceed the power provided on commercial flights (airline in-seat power is limited to 75 watts and is further subject to availability on aircraft). As a result, 80 to 200 watt laptops cannot be powered via the in-seat power port on commercial flights. For laptops requiring 75 watts of power or less, contact your airline to find out if in-seat power is available for your flight.

**FEATURES: AUTO/AIR LAPTOP POWER ADAPTERS**
- Low Input Voltage Cut Off
- Internal Over Temperature Protection
- Ruggedized PC/ABS plastic or aluminum housing
- Automatic Fault Reset
- Field replaceable cables

**TECHNICAL INFORMATION: AUTO/AIR LAPTOP POWER ADAPTERS**
- POWER INPUT: Noted on label
- POWER OUTPUT: Noted on label
- POWER INPUT: Auto Mini (noted on label)
- OUTPUT VOLTAGE: As required by laptop
- OUTPUT CURRENT: As required by laptop
-conj: POWER OUTPUT: LED on automobile plug (input present); LED on adapter (output present)

**FEATURES: AUTO/AIR AC POWER ADAPTER**
- Charge several types of devices using either an AC or DC power source.
- Provides protection against over-voltage, over-temperature, over-current, and short circuits
- Powers electronic devices from a standard auto cigarette lighter, airline seat, or AC wall outlet
- The USB ports can charge additional devices using a USB cable (cable not included)
- Includes storage pouch and user guide

**TECHNICAL INFORMATION: AUTO/AIR AC POWER ADAPTER**
- INPUT VOLTAGE: 100 - 240 VAC (50 - 60Hz @ 2.5A) or 11.5 - 16 VDC
- OUTPUT VOLTAGE: As required by laptop
- OUTPUT CURRENT: As required by laptop
- CONNECTORS: As used by laptop
- WEIGHT: 1.3 lbs.
- DIMENSIONS: 5.0 x 3.0 x 1.0 in (L x W x H)
- WARRANTY: 1 Year
24 WATT DC/DC POWER ADAPTERS

Charge low-power devices using these compact mobile power adapters.

The Lind 24 Watt DC/DC Power Adapters are designed to power devices requiring a maximum of 24 watts of power or less. These adapters offer the highest degree of circuit protection for low-powered devices and often include field replaceable input/output cables with snap-in connections.

The robust design of Lind’s 24 Watt DC/DC Power Adapters makes them ideally suited for use in harsh mobile environments. The adapter’s electronics are protected by a rugged case that is epoxy sealed to protect the adapter’s internal circuits from damage caused by shock and/or vibration.

The adapters offer efficient power conversion circuits with extensive protection circuitry to provide reliable and continuous power to laptops in the most demanding public safety environments.

40 WATT DC/DC POWER ADAPTERS

Charge your ultra-portable netbook from a DC power source.

Lind features ruggedized 40 Watt DC/DC Power Adapters that are designed to power your mobile netbook and other low to mid-powered devices. These adapters incorporate the highest degree of circuit protection and feature field replaceable input/output cables with snap-in connections.

The rugged design of Lind’s 40 Watt DC/DC Power Adapters makes them ideally suited for use in harsh mobile environments. The adapter’s electronics are protected by an aluminum extrusion that is epoxy sealed to protect the internal circuits from damage caused by shock and/or vibration.

The adapter offers efficient power conversion circuits with extensive protection circuitry to provide reliable and continuous power to laptops in the most demanding public safety environments.

FEATURES: 24 WATT DC/DC POWER ADAPTERS:
- Output Short Circuit Protection
- Input and Output Noise Filtering
- Output Current Limit
- Internal Over Temperature Shut Down

FEATURES: 40 WATT DC/DC POWER ADAPTERS:
- Output Short Circuit Protection
- Output Current Limit
- Internal Over-temperature Shut Down
- Low and/or High Input Voltage Cut Off
- Automatic Reset of Safety Shut Down

MOUNTABLE POWER ADAPTERS (80 - 120 WATT SERIES)

Molded extrusions make the mounting of these adapters to public safety vehicles easy and efficient.

Lind’s Mountable Power Adapters (80 - 120 watt series) are designed to mount the adapter to a flat surface area without the use of clamps, brackets or tie wraps. Studded screw holes are molded in each corner to make mounting the adapter to your public safety vehicles fast and easy.

Lind’s Mountable Power Adapters adjust, condition and regulate the power from the input to the correct DC voltage required for proper operation of the laptop. The adapter filters voltage spikes or surges occurring on the voltage line, thus eliminating damage to the laptop caused by supply voltage variations.

The Mountable Power Adapter’s electronics are protected by a rugged case that is epoxy sealed to protect the electronics from damage caused by shock and/or vibration. Efficient power conversion circuits with extensive protection circuitry provide reliable and continuous laptop power in the most demanding public safety environments.

Interchangeable input/output cables are provided in standard lengths of 36” or can be supplied with user defined cable lengths and connector options. Field replaceable cables make servicing easy and efficient.

FEATURES: MOUNTABLE POWER ADAPTERS (80 - 120 WATT SERIES)
- Low Input Voltage Cut Off
- High Input Voltage Cut Off
- Automatic Reset of Safety Shut Down
- Mountable extrusion using #8 screws (not included)

TECHNICAL INFORMATION: MOUNTABLE POWER ADAPTERS (80 - 120 WATT SERIES)
- POWER INPUT: Noted on label
- POWER OUTPUT: Noted on label
- INPUT FUSE: Auto Mini - noted on label [replace with same fuse as in adapter]
- INDICATOR: LED on adapter [output power present]
**MODULE DC/DC POWER ADAPTER**

Charge your laptop and other devices using any 9 - 42 VDC power source.

The Lind Module DC/DC Power Adapter provides a regulated DC voltage output to power laptops and other devices from any 9 - 42 VDC power source. Voltage spikes or surges occurring on the input voltage line are filtered by the adapter to eliminate the possibility of damage to the laptop caused by supply voltage variations.

The Module DC/DC Power Adapter is housed in a rugged aluminum extrusion for durability and the internal components are epoxy sealed to resist shock, vibration and dust. The screw terminal input and output jacks allow you to connect each incoming and outgoing cable's bare wire leads directly to the adapter. The pre-drilled holes in each flanged end allow you to easily secure the adapter to a flat surface.

**NOTE:** There are a wide variety of cable combinations available from Lind Electronics for this adapter. Please contact your Lind Sales Representative for more information.

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**REPLACEMENT AC LAPTOP ADAPTERS**

Replace missing or damaged power cords with a new AC power supply.

Lind’s Replacement AC Laptop Adapters meet or exceed the laptop manufacturer’s original specifications. They feature a power-on LED and universal switching 100 - 240 VAC input voltage. Each replacement adapter has a 48 long inch attached output cable and is supplied with a 60 inch long AC input cord. Taps are available for most laptop models.

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**Mounting Bracket**

Keep your power adapter securely fastened to your public safety vehicle for extended mobile use.

The Lind Mounting Bracket mounts Lind DC/DC Power Adapters to public safety vehicles and other mobile installations. The Mounting Bracket is available as either an aluminum extrusion (for use with 70 watt Lind aluminum power adapters and 40 Watt Lind netbook power adapters) or a plastic extrusion (for use with Lind 70 watt plastic extruded power adapters or 90 - 120 watt power adapters).

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**Features: Module DC/DC Power Adapter**

- Thermal Protected to 84º C, Auto Reset
- Output Over Current Shut Down
- Internal Over Temperature Shut Down
- Input Under or Over Voltage Cut Off

**Technical Information: Module DC/DC Power Adapter**

- **Power Input:** noted on label
- **Power Output:** noted on label
- **Input Fuse:** External 15 - 20 A required
- **Connectors:** Screw terminals

- **Installation:** flanged ends with pre-drilled holes
- **Temperature Range:** -20º C to +65º C operating; -40º C to +85º C storage
- **Humidity:** 0% to 95% non-condensing

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**Features: 90 Watt Replacement AC Laptop Adapters**

- **Weight:** 16 ounces
- **Dimensions:** 5.0 x 2.25 x 1.25 in (L x W x H)
- **Features:**
  - Up to 90 watts
  - UL and CE listed

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**Features: 120 Watt Replacement AC Laptop Adapters**

- **Weight:** 20.8 ounces
- **Dimensions:** 6.875 x 2.375 x 1.5 in (L x W x H)
- **Features:**
  - Up to 120 watts
  - UL and CE listed

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**Features: 150 Watt Replacement AC Laptop Adapters**

- **Weight:** 1763 ounces
- **Dimensions:** 6.81 x 2.36 x 1.5 in (L x W x H)
- **Features:**
  - Up to 150 watts
  - UL and CE listed
RUGGEDIZED AC/DC & AC/DC/DC COMBO POWER ADAPTERS

Power your laptop using VAC or VDC sources.

Lind’s line of Ruggedized AC/DC and AC/DC/DC Combo Power Adapters allow you to power and charge your laptop from either an AC or DC voltage source. Each ruggedized combo power adapter comes standard in a durable case or housing that is designed to withstand harsh operating conditions, making it an ideal choice to power your laptop in demanding physical environments. Most of these ruggedized combo power adapters feature field replaceable input/output cables with snap-in connections to make servicing easy and efficient.

FEATURES: RUGGEDIZED AC/DC & AC/DC/DC COMBO POWER ADAPTERS

- Withstands extreme shock and vibration
- Operation over wide temperature range
- Sealed and potted to resist moisture and high humidity
- Output over voltage and over current protection
- Replaceable input and output cables
- Short circuit protection
- The combo adapter can accept power from AC or DC voltage sources
- Optional 400 Hz AC adapters available

AC INPUT VOLTAGE SPECIFICATIONS: RUGGEDIZED AC/DC & AC/DC/DC COMBO POWER ADAPTERS

- INPUT VOLTAGE: 90 - 264 volts AC
- FREQUENCY: 47 - 63 Hz (400 Hz AC adapters available)
- INPUT CURRENT: 1.5 amperes maximum
- OUTPUT VOLTAGE: Per user requirement
- Low Input Voltage Cut Off (DC input only)
- Automatic reset of safety Cut Offs

DC INPUT VOLTAGE SPECIFICATIONS: RUGGEDIZED AC/DC & AC/DC/DC COMBO POWER ADAPTERS

- INPUT VOLTAGE: Noted on adapter label.
- INPUT FUSE: Noted on input cable label; replace only with same type and rating of fuse
- OUTPUT VOLTAGE: As required by laptop
- OUTPUT CURRENT: As required by laptop
- AUTO INPUT CABLE: 36” length
- OUTPUT CABLES: 36” to 72” lengths
- WEIGHT: 13 ounces
- WARRANTY: 1 Year

TECHNICAL INFORMATION: TIMER SERIES (T) LAPTOP POWER ADAPTERS

- INPUT VOLTAGE: 11 - 16 VDC
- OUTPUT VOLTAGE: As required by laptop
- OUTPUT CURRENT: As required by laptop
- AUTO INPUT CABLE: 36” length
- OUTPUT CABLES: 36” to 72” lengths
- DIMENSIONS: 6.0 x 3.0 x 1.15 in (L x W x H)
- INPUT FUSE: 15 Amp

TIMER SERIES (T) LAPTOP POWER ADAPTERS

Protect your power sources using timer functionality built directly into the adapter.

The Lind Timer Series (T) of Laptop Power Adapters come with an integral protective vehicle battery Shut Down Timer built directly into the adapter. Excessive drain on a vehicle battery can ultimately degrade or ruin it. This problem intensifies when installed mobile equipment such as laptops are left on and are not turned off. The Lind Timer Series (T) Laptop Power Adapters are ideal adapters for laptops that are permanently mounted in fleet or public safety vehicles. The integral timer will shut off power to the laptop within a factory set time after the automobile has been turned off, thus protecting the vehicle battery from excessive current drain.

Many installations need a separate protective timer device wired into the input voltage circuit to shut off peripherals. When a timer is needed only to shut off power to the laptop adapter, this function being part of the adapter eliminates the need for additional wiring and the installation time of a separate voltage timer device.

TECHNICAL INFORMATION: TIMER SERIES (T) LAPTOP POWER ADAPTERS

- INPUT VOLTAGE: 11 - 16 VDC
- OUTPUT VOLTAGE: As required by laptop
- OUTPUT CURRENT: As required by laptop
- AUTO INPUT CABLE: 36” length
- OUTPUT CABLES: 36” to 72” lengths
- INPUT FUSE: 15 Amp
- WARRANTY: 1 Year
SHUT DOWN TIMER

Protect your vehicle’s battery from over-discharge and shield your equipment from damage caused by low and/or high voltage.

The Lind Shut Down Timer protects your public safety vehicle’s battery from over discharge by shutting OFF up to 30 amp loads at a preset time after the engine is shut down or when the battery reaches a low voltage level.

An emergency switch allows 12 minutes of operation after the timer shuts down the equipment. The Shut Down Timer is normally activated by sensing the electrical system voltage. When the alternator goes OFF the timed sequence is started.

A unique feature of the Shut Down Timer is that it allows 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.

**FEATURES: SHUT DOWN TIMER**

- Adjustable shut down timer delay settings: 0 seconds to 4 hours; 5 seconds to 8 hours; or 12 minutes to 16 hours (dependent on SDT model)
- Low voltage shutdown at 10.5 (21) VDC
- High voltage shut down at 18 (36) VDC with auto reset
- Loads up to 30 (20) amps at 12 (24) VDC. Two output connections (optionally fused at 15 amps each)
- Reverse polarity protected
- Automatic activation by sensing the battery voltage (battery not charging = Timer ON)
- Optional alarm output if ignition option is not used (consult Lind for alarm options)
- LED indicators for ON, OFF and Timing
- Speed-up time test switch (set delay divided by 100)
- Override switch for 12 minute emergency operation after time out or failure of the engine to start
- Protected against automotive load dump
- Operating temperature: -50° to 75° C

**TECHNICAL INFORMATION: SHUT DOWN TIMER**

- Battery voltage sensing turn on threshold: > 13.5 (27) V
- Battery voltage sensing start threshold: < 13.0 (28) V
- Ignition on threshold (if used): > 5 (10) volts
- Ignition off threshold (if used): < 2.5 (5) volts
- LED flash rate – normal timing: 2 seconds
- LED flash rate – test mode timing: 0.5 seconds
- High battery voltage disconnect threshold: > 18 (36) Volt
- Low battery voltage disconnect threshold: < 10.5 (21) V
- Low battery voltage disconnect delay: > 10 sec.
- Input voltage range: 9 - 18 (15 - 36) V
- Maximum load (2 output connections): 30A (15A ea) and 20A (10A ea).
- Current draw in off mode: 9 mA
- Current draw in on timing mode: 95 mA
- Time delay adjustment range: 0 sec. to 4 hrs.; 5 sec. to 2 hrs.; 12 min. to 18 hrs. (dependent on SDT model)
- Over-ride mode timing setting: 15 minutes (overrides time adjustment setting)
- Test mode speed-up rate: > 100
- Operating temperature: -50° to 75° C

LOW PROFILE SHUT DOWN TIMER

This timer’s compact design allows for easy installation in vehicles.

The Lind Low Profile Shut Down Timer protects your public safety vehicle’s battery from over discharge by shutting OFF up to 30 amp loads at a preset time after the engine is shut down or when the battery reaches a low voltage level.

An emergency switch allows 12 minutes of operation after the timer shuts down the equipment. The Low Profile Shut Down Timer is normally activated by sensing the electrical system voltage. When the alternator goes OFF the timed sequence is started.

A unique feature of the Low Profile Shut Down Timer is that it allows 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.

**FEATURES: LOW PROFILE SHUT DOWN TIMER**

- More compact design via reduced height profile
- Adjustable shut down delay time from 5 seconds to 4 hours (other delays possible, consult factory)
- Low voltage shut down at 10.5 VDC
- High voltage shut down at 18 VDC with auto reset
- Loads up to 30 amps
- Reverse polarity protection
- Automatic activation by sensing the battery voltage (battery not charging = Timer ON)
- Optional alarm output if ignition option is not used
- LED indicators for ON, OFF and Timing
- Speed-up time test switch (set delay divided by 100)
- Over-ride switch for 12 minute emergency operation after time out or engine fails to start
- Protected against automotive load dump

**TECHNICAL INFORMATION: LOW PROFILE SHUT DOWN TIMER**

- Battery voltage sensing turn on threshold: > 13.5 volts
- Battery voltage sensing start threshold: < 13.0 volts
- Ignition on threshold (if used): > 5 volts
- Ignition off threshold (if used): < 2.5 volts
- LED flash rate in timing mode: 95 mA
- Time delay adjustment range: 5 sec. to 4 hours (other delays possible, consult factory)
- Current draw in off mode: 9 mamps
- Maximum output current: 30 amps
- Current draw in on timing mode: 95 mamps
- Time delay adjustment range: 5 seconds to 4 hours
T2 SHUT DOWN TIMER

Protect 2 separate electrical loads using 2 separate time delays.

The T2 Shut Down Timer protects your public safety vehicle's battery from over-discharge by shutting OFF up to 50 amp loads at a preset time after the engine is shut down or when the battery is discharged to a low voltage level. The T2 Shut Down Timer 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 emergency switch allows 15 minutes of operation after the T2 Shut Down Timer shuts down the equipment. An ignition switch input is provided as an optional activation method but is not necessary. The T2 Shut Down Timer is normally activated by sensing the alternator charge voltage level applied to the battery. When the alternator goes OFF the timed sequences are started.

A unique feature of the T2 Shut Down Timer is that it allows 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.

FEATURES: T2 SHUT DOWN TIMER

- Adjustable shut down delay time from 0 seconds to 4 hours (other delays possible, consult factory)
- Low voltage shut down at 10.5 VDC
- High voltage shut down at 18 VDC with auto reset
- Loads up to 50 amps total (30A max each output)
- Reverse polarity protection
- Automatic activation by sensing the battery voltage (battery not charging = Timer ON)

Optional activation by ignition switch connection (ignition OFF = Timer ON)
- LED indicators for ON, OFF and Timing
- Speed-up time test switch (set delay divided by 100)
- Over-ride switch for 15 minute emergency operation after time out or engine fails to start
- Protected against automotive load dump

TECHNICAL INFORMATION: T2 SHUT DOWN TIMER

BATTERY VOLTAGE SENSING TURN ON THRESHOLD: > 135 volts
BATTERY VOLTAGE SENSING START THRESHOLD: < 130 volts
IGNITION ON THRESHOLD (If Used): > 5 volts
IGNITION OFF THRESHOLD (If Used): < 2.5 volts
LED FLASH RATE IN TIMING MODE: NORMAL TIMING: 2 seconds
TEST MODE TIMING: 6 seconds
HIGH BATTERY VOLTAGE DISCONNECT THRESHOLD: > 18 volts
LOW BATTERY VOLTAGE DISCONNECT DELAY: > 105 volts
LOW BATTERY VOLTAGE DISCONNECT THRESHOLD: > 105 volts
LOW BATTERY VOLTAGE DISCONNECT DELAY: > 30 seconds
INPUT VOLTAGE RANGE: 9-16 volts

MAXIMUM OUTPUT CURRENT (30A MAX TOTAL LOAD): OUT 1: 30 amps
OUT 2: 30 amps
NOTE: Maximum load current limited to 30A on units with output terminal blocks.

CURRENT DRAW IN OFF MODE: 18 mAmps
CURRENT DRAW IN ON/TIMING MODE: 80 mAmps
TIME DELAY ADJUSTMENT RANGE: 0 seconds to 4 hours
OVER-RIDE MODE TIME SETTING: 15 Minutes
(over-rider time adjustment setting)
TEST MODE SPEED UP RATE: x 100

OVER-RIDE MODE TIME SETTING: 15 Minutes
(ignition OFF = Timer ON)

RUGGEDIZED SHUT DOWN TIMER

Protect your vehicle's battery from over-discharge and use as a Relay Driver for up to 200 amps.

The Lind Ruggedized Shut Down Timer (RSDT) protects your public safety vehicle's battery from over-discharge by shutting OFF loads at a preset time after the engine is shut down or when the battery is discharged. The RSDT also protects radio or computer equipment from damage caused by low or high input voltage experienced with alternator failure or improper voltage jump-starts.

The RSDT is normally activated by sensing the voltage of the battery. When the alternator stops charging, the timed sequence is initiated. An ignition input switch is provided as an optional activation method.

Used as a Shut Down Timer, the RSDT can be used for loads up to 20A. As a Relay Driver, the RSDT will drive relays up to 200 Amps. The RSDT can be factory set to any desired delay from a few seconds to several hours.

FEATURES: RUGGEDIZED SHUT DOWN TIMER

- Low voltage shut down at 105 [21] VDC
- High voltage shut down 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

SOME SUGGESTED 12V EXTERNAL RELAYS: RUGGEDIZED SHUT DOWN TIMER

- 40A TYCO ELECTRONICS, #VF7-11F11 OMRON, #G8HE-1A7TR-DC12
- 80A AMERICAN ZETTLER, #A2979-1A-12D WHITE-RODGERS, #70-1112625

SPECIFICATIONS: RUGGEDIZED SHUT DOWN TIMER (NOTE: CUSTOM DESIGNED UNITS MAY HAVE DIFFERENT SPECIFICATIONS)

- BATTERY VOLTAGE SENSING TURN ON THRESHOLD: < 105 [21] V
- BATTERY VOLTAGE SENSING START THRESHOLD: < 130 [20] V
- IGNITION ON THRESHOLD (If Used): > 5 [15] 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: < 105 [21] V
- LOW BATTERY VOLTAGE DISCONNECT DELAY: > 10 seconds
- MAXIMUM OUTPUT CURRENT: 20 A
- CURRENT DRAW IN OFF MODE: 6 mA
- CURRENT DRAW IN ON/TIMING MODE: 60 mA
**Solar Charge System**

*Use this alternative mobile power solution to power your mobile devices in different public safety environments.*

The Lind Solar Charge System is used in conjunction with the BB-2590 (not included) rechargeable battery. The system consists of the combination charge/controller DC output module, a foldable solar panel and the related cabling for complete connection between the battery, laptop and solar panel.

The charge/controller uses power obtained from the solar panel to recharge the BB-2590 battery. Power is drawn from the battery to operate the laptop. A green LED is on when the DC output is on. The yellow LED flashes while the battery pack is being charged and is on continuously when the battery is charged, and is off when no input power is present.

**Features: Solar Charge System**

- Lightweight portable solar power solution for powering laptops
- Over-temperature shut down with auto reset
- Over current shut down after 10 seconds if input is present
- Low battery disconnect: At 12 VDC output turns off
- Low input voltage cutoff: At 10 VDC input battery stops charging
- Automatic Maximum Power Point Tracking gets the most power possible from the solar panel

**Technical Information: Solar Charge System**

- **Input Voltage:** From solar panel is 15.6 VDC @ 3.6 amps typical with full illumination
- **Output Voltage:** As required by laptop
- **Output Current:** As required by laptop
- **Charge Time:** 5 hours from complete discharge, no load and full power from solar panel

  **Dimensions (Charge Module):** 9.25 x 3 x 1.25 in (L x W x H)
  
  **Solar Panel (Typical):** 60 x 42 x .06 inches open (L x W x H) and 10.3 x 8.9 x 2.8 inches folded (L x W x H)
  
  **Weight:** Complete system weight approx. 5 lbs.
  
  **Warranty:** 1 Year

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**12 VDC Battery Backup Module**

*Keep devices powered using external power.*

The Lind 12 VDC Battery Back Up Module uses an external sealed lead acid battery (not included) to maintain 12 VDC power to sensitive electronic loads when the source 12 VDC drops too low or is lost entirely (as may occur when turning the key during vehicle starts).

The module can use a variety of sealed batteries, from small to large. The higher the amp-hour rating of the battery, the longer the module will keep the load backed up.

**Features: 12 VDC Battery Backup Module**

- Trickle charging keeps the battery backup charged without over-charging
- UVCO (Low Input Voltage Cut Off) circuitry protects the backup battery from being damaged due to over-discharge
- Can be used with Lind DC power adapters or other 12 VDC loads up to 8 Amps

**Technical Information: 12 VDC Battery Backup Module**

- **Main Power Input:** 12 - 16 VDC
- **Battery Input:** 11 - 16 VDC
- **Battery Cable Fuse:** 10 A, 250 V, 3 AG

  **Replace with same type fuse and rating**

  **Transfer at 11.5 VDC**

  **Backup battery disconnect at 10.4 VDC**

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**Typical Backup Module Connection**

- Trickle charging keeps the battery backup charged without over-charging
- LIVCO (Low Input Voltage Cut Off) circuitry protects the backup battery from being damaged due to over-discharge
- Choice of jacks or terminal block connections

  **Housed in a rugged aluminum case**

  **Very low loss in pass-through mode (normal operation)**
LOW INPUT VOLTAGE CUT OFF (LIVCO) MODULE

Protect your public safety vehicle’s battery and connected devices from over-discharge.

The Lind LIVCO Module provides protection for both sensitive loads and batteries in 12 VDC electrical systems. The module disconnects the attached loads when the system voltage drops below 10.5 volts, thus protecting your public safety vehicle’s battery from becoming over-discharged.

- INPUT VOLTAGE: 10 – 16 VDC
- OUTPUT VOLTAGE: Tracks input
- OUTPUT CURRENT: 30A Total
- OUTPUT 1 (TERM. BLOCK): 15A Max.
- OUTPUT 2 (CIG. SOCKET): 15A Max.
- FUSE TYPE: 15A ATO Auto fuse (blue)
- DISCONNECT VOLTAGE*: 10.1 – 10.5 VDC
- RECONNECT VOLTAGE: 11.8 – 12.2 VDC
- INDICATORS: Green LED

* This is the disconnect voltage as measured at the module. The actual battery voltage will be higher due to voltage drop in the wiring.

TECHNICAL INFORMATION: LOW INPUT VOLTAGE CUT OFF (LIVCO) MODULE

FEATURES: LOW INPUT VOLTAGE (LIVCO) BOOSTER

Maintain power to your connected devices in the event of low input voltage cut off.

The Low Input Voltage (LIVCO) Booster maintains 12 VDC to sensitive electronic loads when the power source voltage drops below 11 VDC, even during vehicle starts.

The voltage will boost to 12 VDC for up to 10 seconds to continue powering your device. The Low Input Voltage (LIVCO) Booster is designed to help you avoid unnecessary reboots or restarts (due to voltage drop) that take additional time to complete.

- Maintains 12 VDC output at up to 8 amps, down to 6 VDC input voltage, for up to 10 seconds
- Available with DC power jacks or with terminal block connections
- Can be used with Lind DC/DC power adapters or other 12 VDC loads
- Housed in a rugged aluminum case
- LIVCO (Low Input Voltage Cut Off) circuitry shuts the adapter off if the input voltage is low for more than 10 seconds, thus protecting the source voltage and the adapter
DC BACKUP UNINTERRUPTABLE POWER SUPPLY (UPS) SYSTEM

Keep your mobile devices running continuously should unexpected power interruptions occur.

The Lind DC Backup Power Uninterruptable Power Supply (UPS) System is a reliable DC power source that will operate electronic equipment for a short time when emergency power is needed. When 12 or 24 VDC input power is unavailable, the internal battery in this backup system can provide DC output power for up to 1 hour depending on the power requirements of the load. This alternative power system will automatically provide backup power when the main power source is interrupted. Ruggedized construction makes the DC UPS System well suited for most mobile public safety environments. The unit’s compact design occupies minimal space so it is easy to install in a flight bag or public safety vehicle. The front mounted power jacks and switch allow easy access in any installation. These units are easily customized based on the available power source and devices requiring power, so please call Lind Electronics to find the right system for your specific application.

FEATURES: DC BACKUP UNINTERRUPTABLE POWER SUPPLY (UPS) SYSTEM

- Up to 1 hour of backup time
- Automatically reverts to backup during input power loss
- Input protection: 15 amp replaceable fuse
- Charger will charge battery even when the output is off
- Regulated output with on/off switch
- Can be used with 12 VDC or 24 VDC input systems
- Charging and output status indicators
- Includes battery, charger, transfer switch, DC regulator

TECHNICAL INFORMATION: DC BACKUP UNINTERRUPTABLE POWER SUPPLY (UPS) SYSTEM

- INPUT VOLTAGE: 12 - 32 VDC
- MAX. INPUT CURRENT: 10 amps
- OUTPUT VOLTAGE: 9 - 24 VDC factory set
- Chages battery and powers output at the same time
- Changes battery when power is off
- ALTITUDE: Sea level to 10,000 feet
- BATTERY TYPE: Internal NiMH (replaceable)
- BATTERY CAPACITY: Approx. 60 watt hours
- WIGHT: 5.5 lbs.
- DIMENSIONS: 10 x 7.25 x 1.75 in (L x W x H)
- WARRANTY: 1 year electronics, 6 months battery

MODIFIED SINE WAVE INVERTERS

Run basic AC-powered devices using a single DC power source.

Modified Sine Wave Inverters convert power supplied from a 12 or 24 VDC power source to AC power for operating conventional AC-powered devices. Modified Sine Wave Inverters are well-suited for powering lights, televisions, power tools, microwave ovens, and other basic electrical devices. Lind Electronics offers both 150 watt and 300 watt DC/AC versions of its Modified Sine Wave Inverters.

SPECIFICATIONS: MODIFIED SINE WAVE INVERTERS

- ENERGY EFFICIENT OUTPUT: 120 VAC @ 60 Hz / 220 VAC @ 50 Hz
- CONVENTION COOLED: 150 W; FAN-COOLED: 300 W
- LOW BATTERY ALARM: 21 VDC (24 VDC Input)
- LOW BATTERY ALARM: 10.5 VDC (12 VDC Input)
- CONVECTION-COOLED: 150 W; FAN-COOLED: 300 W
- LOW BATTERY SHUT DOWN: 10 VDC (12 VDC Input)
- ALARM & THERMAL SHUT DOWN: 55ºC

PURE SINE WAVE INVERTERS

Run select AC-powered devices using a single DC power source.

Pure Sine Wave Inverters convert power supplied from a 12 or 24 VDC power source to AC power for operating sensitive AC-powered devices. Pure Sine Wave Inverters provide an output voltage wave form with very low distortion and clean power like that supplied by a utility. Pure Sine Wave Inverters are well-suited to power sensitive electrical or electronic devices such as laptop computers, laser printers and specialized communications equipment.

Pure Sine Wave Inverters offer higher efficiency ratings than Modified Sine Wave Inverters. Lind Electronics offers both 150 watt and 300 watt DC/AC versions of its Pure Sine Wave Inverters.

SPECIFICATIONS: PURE SINE WAVE INVERTERS

- 90% energy efficient under full load, 95% energy efficient under 1/3 load
- OUTPUT: 120 VAC @ 60 Hz / 220 VAC @ 50 Hz
- Fan cooled
- LOW BATTERY ALARM: 10.5 VDC (12 VDC Input)
- LOW BATTERY ALARM: 10 VDC (12 VDC Input)
- TOTAL HARMONIC DISTORTION (MAX.): 4%
- ALARM & THERMAL SHUT DOWN: 55ºC

LIND ELECTRONICS, INC.
Power Specialists for Mobile Computing

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**150 - 180 WATT DC/DC POWER ADAPTERS**

*Operate and charge laptops that require additional power for public safety applications.*

Lind’s 150 - 180 Watt DC/DC Power Adapters provide full power output to laptops requiring 12 - 32 VDC input power in public safety vehicle applications. The 150 -180 Watt DC/DC Power Adapters are hard-wired directly to the public safety vehicle’s battery source.

**NOTES:**

- A cigarette lighter input cable option is not available because of the amount of amperage required by the laptop.

**TECHNICAL INFORMATION: 150 - 180 WATT DC/DC POWER ADAPTERS**

- INPUT VOLTAGE: 12 - 32 VDC 24 28 24VDC 28VDC
- OUTPUT VOLTAGE: 20 VDC
- OUTPUT CURRENT: 7.5 amps (max)
- CONNECTOR: Special
- AUTO INPUT CABLE: 36 Inches, stripped and tinned
- AIRLINE INPUT CABLE: N/A
- OUTPUT CABLE: 36 Inches
- FUSE: 20 amps
- WEIGHT: 16 ounces
- DIMENSIONS: 6.25 x 3.20 x 1.26 in (L x W x H)
- WARRANTY: 1 year

**FEATURES:**

- Adapters are housed in rugged ABS cases and are epoxy sealed for durability and resistance to shock.
- Internal temperature limit cut-off circuitry. Automatic Reset after cut-off conditions return to normal.
- Under-voltage & over-voltage protection.
- 1 year warranty includes repair of damaged or broken plugs or cables.

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**SIREN DETECTOR CABLE**

*Use for triggering the Panasonic Arbitrator 360˚ to capture evidence on video.*

The Lind Siren Detector Cable is used specifically for the Panasonic Arbitrator 360˚, a video capture device used in the law enforcement field. The Lind Siren Detector Cable’s specialized circuitry triggers the Panasonic Arbitrator 360˚ to begin video capture when the police vehicle siren is engaged.

**TECHNICAL INFORMATION: SIREN DETECTOR CABLE**

- OVERALL LENGTH: 36 inches minimum, 18 AWG
- MAX INPUT VOLTAGE (SIREN LEADS TO ARBITRATOR RTN LEAD) +/-30V peak
- MINIMUM INPUT FREQUENCY: 400 Hz
- MAXIMUM OUTPUT VOLTAGE: 15 VDC
- OPERATING TEMPERATURE: 0°C to +65°C
- STORAGE TEMPERATURE: -40°C to +85°C

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**150 - 180 WATT DC/DC POWER ADAPTER**

**SIREN DETECTOR CABLE**
TERMINOLOGY

The Lind DC/DC power adapters have many features that make each model a superior adapter. Here is a descriptive explanation of our model’s features (features vary with model – consult factory for a particular model’s features).

AUTOMATIC RESTART OF ADAPTER
After approximately 10 seconds the adapter will restart if the fault is no longer present. No manual intervention is required to reset the adapter.

EMI
Standard Lind adapters are designed to meet the radiated limits of EN55022 and susceptibility limits of EN55024, meeting E-mark and the EMC Directive.

FLEXIBILITY
Many of the thresholds and features can be adjusted for individual customer needs. Shut down Timing Delay.

HIGH INPUT VOLTAGE CUT OFF
If the input rises above a preset threshold the adapter will turn off to protect itself and its load from damage. It will automatically restart when the input voltage returns to its normal operating range.

HIGH OUTPUT VOLTAGE LIMIT
The adapter will limit the output voltage to a safe level that will not damage the laptop in the rare case the adapter has an internal failure.

INPUT POWER LIMIT
The input power is limited to reduce the stress on the input fuse and wiring. Soft-start circuitry will also reduce the stresses in the system at adapter start-up.

ISOLATION
Some models have input to output isolation of 500 VDC for those customers who need this feature.

LED INDICATOR
The adapter has an LED (light emitting diode) indicator that is lit when its output voltage is present. Certain models can also have the LED flash to indicate the fault condition when the adapter is in its shut down mode.

LOW INPUT VOLTAGE CUT OFF (LIVCO)
The adapter will shut off if the input voltage goes too low. This will help prevent the vehicle battery from being discharged to a point where it will no longer start the vehicle. The adapter will automatically turn on again when the battery voltage rises back above a preset threshold such as after the car has started and the engine is running. The low voltage shut down feature has a delay to allow the adapter to ride through momentary dips that typically occur during vehicle starting and a quicker shutdown if there is a large dip in the battery voltage.

OUTPUT OVERLOAD PROTECTION
The adapter has current limiting circuitry to limit the amount of power fed into a faulty load (faulty laptop, shorted output cable, etc). The adapter has a short delay to allow it to operate through a momentary fault or current pulse. If the overload persists the unit will turn the output off, wait 10 seconds and try to restart. If the fault is still present it will repeat the 10 second off period before trying to start up again.

OVER-TEMPERATURE SHUTDOWN
If the adapter gets too hot it will shut down to prevent damage to itself and stay off until it has cooled down to a safe temperature and then automatically restart.

TERMINOLOGY (CONTINUED)

REVERSE INPUT PROTECTION
Most of the adapters have a cigarette plug which prevents mis-wiring its input. In certain hard-wired applications, if the adapter input wiring is reversed, the unit will blow its input fuse to protect itself.

RUGGED
The electronics in the adapter are sealed in a thermally conductive potting material which helps distribute the heat generated in the adapter and helps make them resistant to shock, vibration and moisture.

SHUT DOWN TIMING DELAY
The Shut Down Timer or Timer Series (T) Laptop Power Adapters will detect the battery voltage and based on preset thresholds determine when the vehicle is running and turn on then. Once it determines the vehicle engine is off the adapter will wait a preset period of time and then turn off so it does not keep draining the battery in a vehicle left unattended.

WIDE INPUT OPERATING RANGE
Many Lind adapters can operate from 12 VDC and 24 VDC battery systems allowing the customer to buy one unit to operate with either type of systems.
Available From

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