



# Power Specialists *for* Mobile Computing



LIND ELECTRONICS, INC.  
MINNEAPOLIS, MN 55426 USA

[www.lindelectronics.com](http://www.lindelectronics.com)

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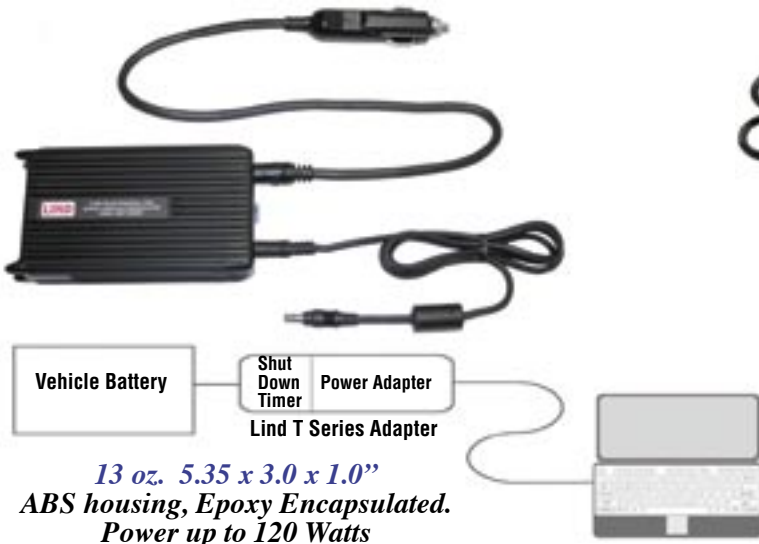
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# Lind Family of Automobile/Air Laptop Power Adapters

Maintain your power while traveling in your car, or on your flight so your notebook can work as long as you do. Lind DC-DC power adapters fit the full range of notebook models and user application needs. We feature **Ruggedized** power adapters for all types of users from Lind Lite power adapters for the budget minded, to the Lind high output power series adapters for the 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.

## *Lind T (Timer) series laptop adapters*

The Lind T Series Adapter is an ideal 12VDC power adapter for laptops that are permanently mounted in fleet or public safety vehicles. An internal timer will shut off power to the laptop at a factory-set time after the vehicle has been turned off, protecting the vehicle battery from excessive voltage drain.



## *Lind Auto & Auto/Air Adapters feature:*

- Low input voltage shut-off
- Output short circuit protection
- Internal over temperature shut-off
- Automatic fault reset
- Ruggedized ABS or Aluminum housing
- Low EMI
- Field replaceable cables



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# Lind Timer Series (T) Laptop Power Adapters

The Lind Timer Series of laptop power adapters come with an integral protective vehicle battery shut down timer built into the adapter.

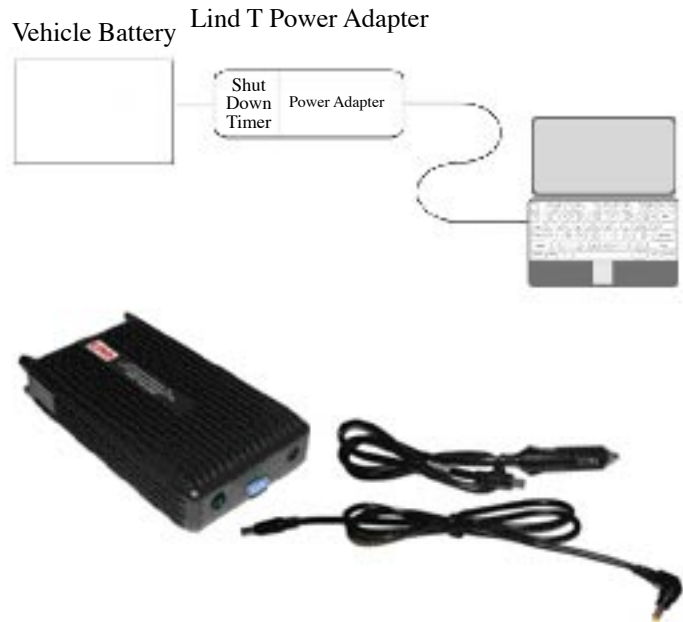
Excessive drain on a vehicle battery can ultimately degrade or ruin it. This problem intensifies when installed mobile equipment such as laptops are left on and not turned off.

The Lind T Series Adapter is an ideal adapter 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 limit after the automobile has been turned off, thus protecting the vehicle battery from excessive voltage 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, this function being part of the adapter eliminates the need for the additional wiring and installation time of a separate voltage timer device.

Lind Laptop Power Adapters are designed especially for laptops that are used in tough mobile environments. The adapter sets and regulates the output power to the necessary level to allow the laptop to be operated and its internal battery to be recharged from the vehicle's DC voltage source.

The rugged design of Lind laptop power adapters make them ideally suited for use in harsh mobile environments. The adapter electronics is protected by an ABS or Aluminum housing which is filled and sealed with epoxy that protects the internal circuits from damage due to shock, vibration and spilled liquids. Efficient power conversion circuits with extensive protection circuitry provide reliable and continuous laptop power conversion in the most demanding military, commercial and public safety environments. Field replaceable cabling makes servicing easy and efficient.



## Technical Information

INPUT VOLTAGE	12 or 24 VDC version
OUTPUT VOLTAGE	As required by laptop
OUTPUT CURRENT	As required by laptop
SHUT DOWN TIMER	Factory set one or two hour
WEIGHT	13 Ounces
SIZE	5.00 x 3.0 x 1.0 in
AUTO INPUT CABLE	18" to 72" lengths
BARE WIRE INPUT CABLE	18" to 72" lengths
OUTPUT CABLES	36 to 72" lengths
INPUT FUSE	15 Amp
WARRANTY	1 Year

## Environmental Specifications

TEMP. RANGE(operating)	-20°C to +45°C
(Unit is thermally protected by shutdown circuit)	
TEMP. RANGE(non-operating)	-40°C to +85°C
HUMIDITY RANGE	0 to 95%, non-condensing
(Circuitry inside unit is potted)	
ALTITUDE RANGE	0 to 10,000 meters
Circuitry in case is potted for shock/vibration/dust resistance.	

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# LIND<sup>®</sup>

## Modular Designed DC-DC Adapter

The Lind Modular DC-DC Power Adapter provides a regulated DC voltage output to power laptops and other devices from any 9-42 Vdc source. Voltage spikes or surges occurring on the input voltage line is filtered by the adapter eliminating the possibility of damage to the laptop due to supply voltage variations. The adapters are housed in rugged aluminum extrusions for durability and the internal components are epoxy sealed for shock, vibration and dust resistance.

- Full continuous rated power output
- Output short circuit protection.
- Safety current limiting.
- UnderVoltage & OverVoltage protection.
- Automatic Reset after cut-off conditions return to normal.
- 1 year warranty.



Rugged modular design DC to DC converter.  
Terminal screws for connecting input/output cabling.  
User defines Input/Output cabling that best suits his installation.  
Flanged ends for easy solid mount installation.  
Wide input voltage range of 9-42VDC.

### Technical Information

Input Voltage: 9 to 42 Vdc  
Output Voltage: See below  
Output Current: up to 8 amps (max)  
Connectors: Screw Terminals  
Fuse: Internal resettable  
Temp. Range: 0°C to +45°C (operating)  
-55°C to +85°C (non-operating)  
Humidity Range: 0 to 95%, non-condensing  
Altitude Range: 1 to 10,000 meters  
Size: 6.0 x 3.00 x 1.45 in  
Weight: 16 ounces

There are a wide variety of cable combinations available from Lind for this adapter. Please contact your Lind representative for assistance.

**Output: 12VDC @ 7a, Adapter #MD1270-1655**  
**Output: 13.8VDC @ 8a, Adapter #MD1480-2023**  
**Output: 15.6VDC @ 6a, Adapter #MD1560-1662**  
**Output: 19VDC @ 5a, Adapter #MD1950-\_\_\_\_\_**  
**Output: 24VDC @ 5a, Adapter #MD2450-1661**

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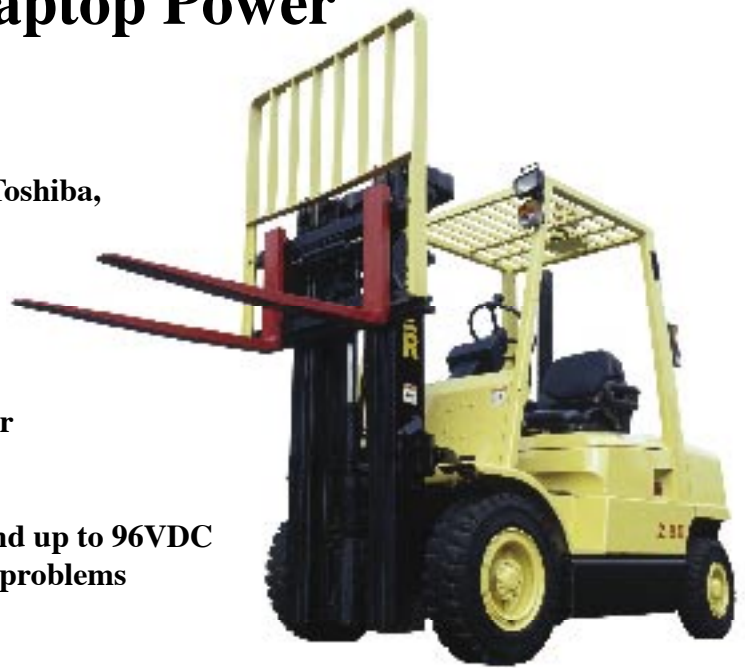
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# Tough Environments Need Rugged, Reliable Laptop Power

- Specially designed for all popular laptops including: Panasonic, Dell, Motion, Xplore, HP, IBM-Lenovo, Toshiba, Fujitsu, Gateway and most others.
- No customer configuration required (no tips to lose, no charts, no mistakes)
- Cables are detachable and field replaceable and are available in long input or output cable lengths
- Electrical safeguards that protect laptop and adapter
- Dependable, continuous operation at rated power
- Rugged packaging - Impervious to harsh elements
- Adapters available for 12, 24, 36 & 48VDC inputs and up to 96VDC
- Available with isolated outputs to solve ground loop problems



Lind Electronics has designed and manufactured laptop power accessories since 1990. Almost as long as there have been laptops. All of our ruggedized adapters are housed in aluminum extruded or ABS plastic cases with the circuitry protected from shock and moisture by epoxy encapsulation. The most efficient conversion circuits are used with extensive protection circuits that provide reliable and continuous operation in the most demanding military, commercial and law enforcement environments.

Our goal is to design adapter circuits and packaging that can be quickly and easily adapted to a wide variety of customer needs. Special packaging and power requirements are produced quickly from our U.S.A. based design and production facilities. Our in house cable molding capability allow us to install mating connectors on various cable lengths as required for special mobile installations.

At Lind Electronics we take pride in our ability to solve the power problems with some of the most demanding requirements. Your satisfaction is our satisfaction.



Lind  
Spike and  
Reverse Polarity  
Filter



Lind DC-DC  
Power  
Adapter



Lind DC-DC  
Isolated Output  
Power  
Adapter



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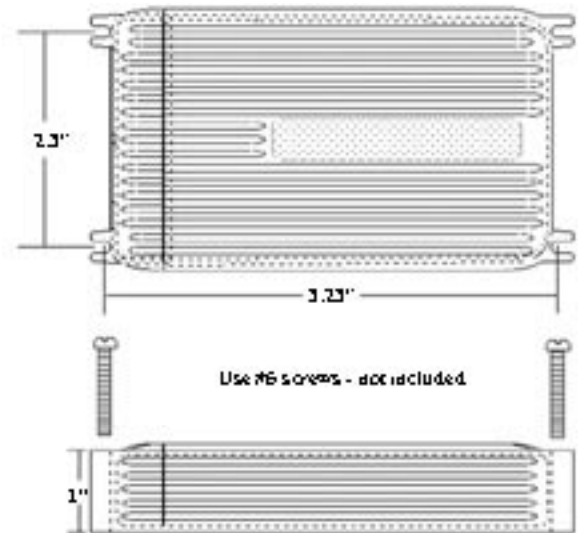
# Lind Mountable Laptop Power Adapters

## Available in 80-120 Watt Adapter Series

Lind Mountable Power Adapters are designed to allow users to mount the adapter to a flat surface area without the use of clamps, brackets or tiewraps. Slotted screw holes are molded in each corner for easy installation.

The adapter adjusts, conditions and regulates the power from the input to the correct DC voltage required for proper operation of the laptop. Voltage spikes or surges occurring on the voltage line will be filtered by the adapter eliminating the possibility of damage to the laptop due to supply voltage variations. The laptop will be powered as if it were plugged directly into an AC wall outlet. Interchangeable input/output cables are provided in standard lengths of 36" or can be supplied with user defined cable lengths and connector options. The Lind Power Adapter has an LED that indicates that the output voltage is available when properly connected.

The rugged design of Lind laptop power adapters make them ideally suited for use in harsh mobile environments. The adapter electronics is protected by a rugged ABS housing which is filled and sealed with epoxy that protects the electronics from damage due to shock, vibration and spilled liquids. Efficient power conversion circuits with extensive protection circuitry provide reliable and continuous laptop power conversion in the most demanding military, commercial and public safety environments. Field replaceable cabling makes servicing easy and efficient.



### Technical Information

INPUT VOLTAGE	12 to 32 VDC
OUTPUT VOLTAGE	As required by laptop
OUTPUT CURRENT	As required by laptop
CONNECTORS	As used by laptop
WEIGHT	13 Ounces
SIZE	5.4 x 2.65 x 1.15 in
AUTO INPUT CABLE	18" or 36" Standard
OUTPUT CABLES	36" Standard
INPUT FUSE	15 Amp
WARRANTY	3 Years

### Environmental Specifications

TEMP. RANGE(operating)	-20°C to +45°C
(Unit is thermally protected by shutdown circuit)	
TEMP. RANGE(non-operating)	-40°C to +85°C
HUMIDITY RANGE	0 to 95%, non-condensing
(Circuitry inside unit is potted)	
ALTITUDE RANGE	0 to 10,000 meters
Circuitry in case is potted for shock/vibration/dust resistance.	

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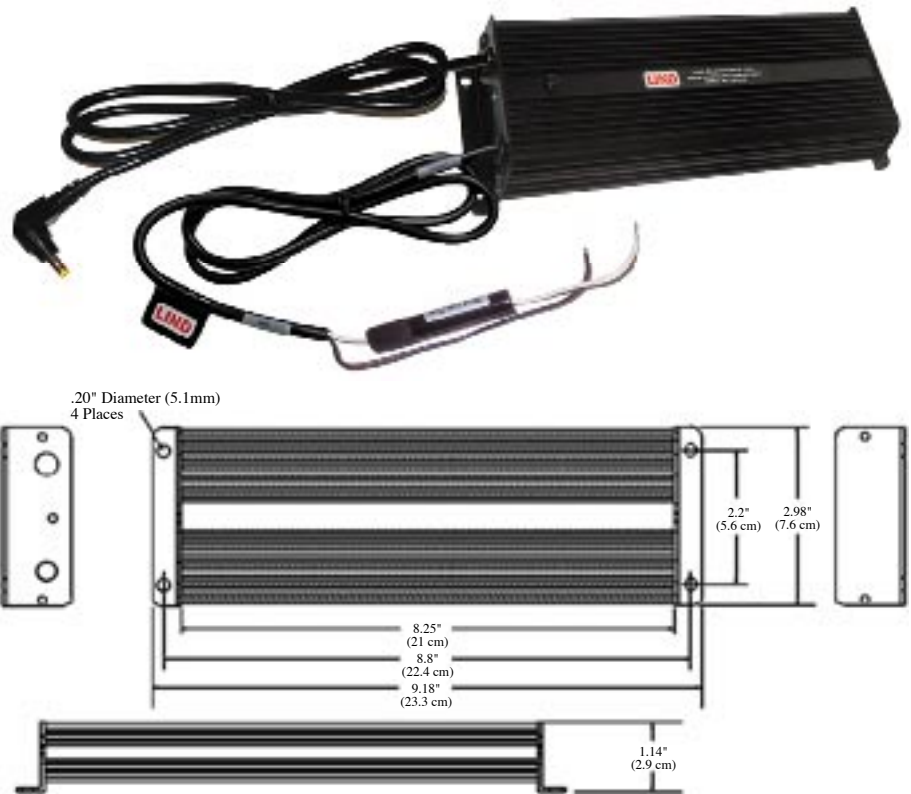


# Lind Isolated Output Series DC/DC Power Adapters

This Lind DC-DC Power Adapter provides a regulated DC output to power laptops and peripherals from a DC voltage source (see adapter label for acceptable DC voltage range). The adapters are housed in rugged aluminum extrusions for durability and the internal components are epoxy sealed for shock, vibration and dust resistance. Voltage spikes or surges occurring on the input voltage line will be filtered by the adapter eliminating potential damage to the powered device. Electrical isolation between input and output prevents ground loops and allows the output to be used as a negative voltage if required.

The rugged design of Lind laptop power adapters make them ideally suited for use in harsh mobile environments. The adapter electronics is protected by a rugged Aluminum housing which is filled and sealed with epoxy that protects the electronics from damage due to shock, vibration and spilled liquids. Efficient power conversion circuits with extensive protection circuitry provide reliable and continuous DC/DC power conversion in the most demanding military, commercial and industrial environments.

- Full continuous rated power output.
- Power adapters available for most laptop models and other mobile electronics.
- Sealed and potted in aluminum extrusions for the harshest operating environments.
- Multiple power connection options available.



## Technical Information

### DC Input Characteristics:

Input	Noted on adapter label
Low Input Voltage Shutdown:	Auto Recovery
High Input Voltage Shutdown:	Auto Recovery
Reverse Polarity:	Auto Recovery

### DC Output Characteristics:

Output Voltage	Noted on adapter label
Short Circuit Protection:	Auto Recovery
Isolation Voltage:	Input to Output Isolated 500 VDC Input - Output 500 VDC Input - Chassis 100 VDC Output - Chassis

### Indicators:

LED on Adapter	
On Steady:	Output Power OK
1 Flash:	Over Temperature Shutdown
2 Flashes:	Over Current Shutdown
3 Flashes:	Over Voltage Shutdown

### Physical and Environmental Specifications:

Operating Temperature:	-40 to +40° C (-40 to +104° F)
Storage Temperature:	-40 to +80° C (-40 to +176° F)

### Enclosure:

Finish:	Extruded Aluminum
Weight:	Black Anodized
Dimensions:	25 ounces (.7kg)
Mounting Hole Size:	9.18 x 2.98 x 1.14 inches (23.3 x 7.6 x 2.9 cm)
	.20 inch (5.1 mm)

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# The Lind Shut Down Timer



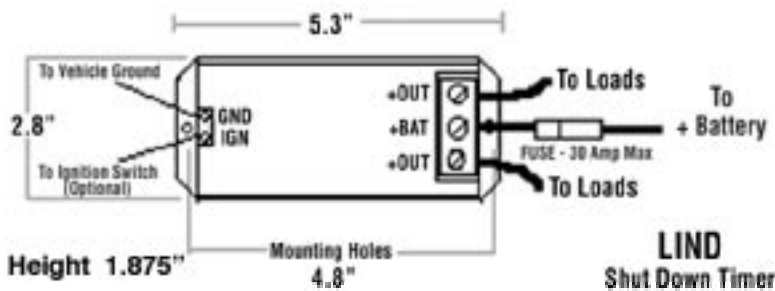
The Shut Down Timer protects the automobile battery from over discharge by shutting OFF up to 30 (20)amp loads at a preset time after the engine is shut down or when the battery is discharged to a low voltage level. The SDT also protects radio or computer equipment from damage due to low or high input voltage as experienced with alternator failure or improper voltage jump-starts.

An emergency switch allows 12 minutes of operation after the SDT shuts down the equipment. An ignition switch input is provided as an optional activation method but is not necessary for most vehicles. The SDT is normally activated by sensing the alternator charge voltage level applied to the battery. When the alternator goes OFF the timed sequence is started.

A unique feature of the Lind SDT 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

- Easily programmable
- Settable shut down delay time from 12 minutes to 18 hours.
- 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 battery voltage sensing (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).
- Override switch for 12 minute emergency operation after time out or failure of the engine to start.
- Protected against automotive load dump.



Model #SDT 1230-022 (12 VDC input)  
Model #SDT 2420-010 (24 VDC input)  
(Screw Terminal Output)

Model #SDT 1230U-023 (12 VDC input)  
Model #SDT 2420-038 (24VDC input)  
(Terminal Block Output)

Other Available Options:

-Splashproofing    -Replaceable Output Fuses

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# Lind Ruggedized Timer/Relay Driver Vehicle Battery Protection Unit



The Lind Ruggedized Shut Down Timer (RSDT) protects the automobile battery from over discharge by shutting OFF loads 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.

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. 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 can be factory set to any desired delay from seconds to many hours.

## Features

- Low voltage shutdown at 10.5 [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.



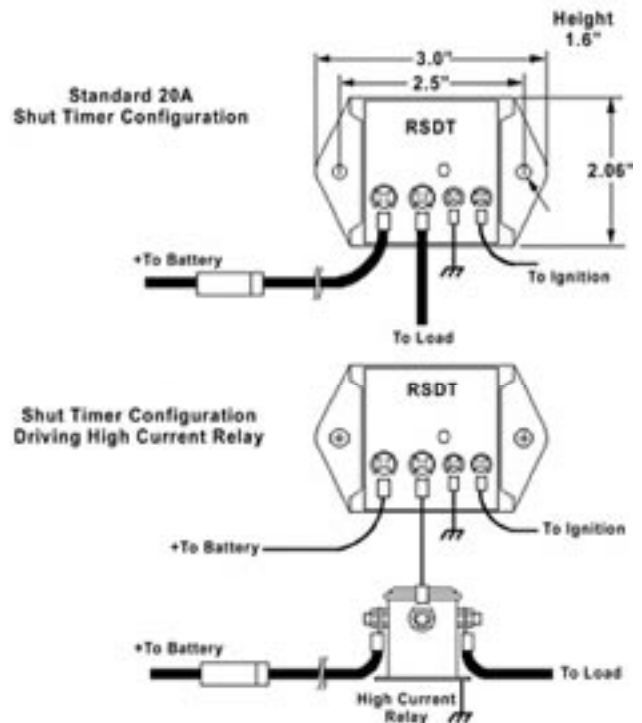
## SHUT DOWN TIMER SPECIFICATIONS

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]Volts
Ignition OFF threshold(if used):	<2.5 [5]Volts
LED Flash rate in timing mode:	2 seconds
High Battery Voltage disconnect threshold:	>18[36]Volts
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

Specifications are listed for 12 VDC input systems  
Specifications are in brackets for [24 VDC input systems]

### 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



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# When Powering Laptops and Sensitive Electronic Loads, Eliminate 12 VDC Input Voltage Problems with Lind Voltage Correction Modules.

## Lind Shut Down Timer



The Shut Down Timer protects your vehicle's battery from over discharge and equipment from low voltage and high voltage damage. This device turns OFF electrical loads at a preset time after the car engine is shut down.

- Easy time set and check.
- Speed-up time test switch.
- Wide delay time (5 seconds to 4 hours).
- Low voltage shut down.
- High voltage shut down.
- Loads up to 30amps at 12 (24)VDC.
- Reverse polarity protected.
- LED indicators for ON, OFF and Timing.
- Over-ride switch for emergency operation.
- Rugged ABS case with screw hole mounts.

## 12VDC Battery Back Up Module



*Typical Back Up Module Connection*

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

- Can be used with Lind adapters or other 12VDC loads up to 8 amps.
- Built in trickle charger for Lead Acid battery.
- (Low Input Voltage Cut Off) circuitry protects backup battery from being damaged due to over-discharge.
- Housed in rugged Aluminum housing.

Module is not shipped with SLA battery. User must provide. Module can use a variety of sealed batteries from small to large. The higher the amp-hour rating of the battery, the longer module will keep load backed up.

## Low Input Voltage Booster to provide continuous 12VDC at input



*Typical Voltage Booster Connection*

The Voltage Booster maintains 12VDC to sensitive electronic loads when and if the source voltage drops below 11VDC, even during vehicle starting.

- Maintains 12VDC output at up to 8A, when input drops down as low as 6VDC for up to 10 seconds.
- Can be used with Lind DC-DC adapters.
- Housed in a rugged Aluminum case.
- Shown with cable jack connections.
- Can also be provided with terminal block connections.

The (Low Input Voltage Cut Off) circuitry will shut the adapter off if the input voltage is low for more than 10 seconds, protecting the source and the adapter.

## Lind LIVCO (Low Input Voltage Cut Off) Module



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

- Disconnects at 10.5VDC. Reconnects at 12.0VDC.
- LED indicates when outputs are on.
- Dual 15A fused terminal block outputs.
- Cigarette lighter (10Amps max.).
- Rugged ABS case with screw hole mounts.

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# Inverters

## Modified and Pure Sine Wave

### 12VDC & 24VDC Inputs

These inverters are evaluated and tested by LIND engineers and are from the best suppliers available. Modified Sine Wave Inverters offer an economical means of providing AC power from a 12 VDC source and are suited for most uses. Pure Sine Wave Inverters provide an output voltage wave form that has a true sine wave with very low harmonic distortion and clean power like utility-supplied electricity. These Inverters are more suited for sensitive electrical or electronic items such as laptop computers, laser printers and certain specialized medical, communications and military equipment.



**INV1215US1M:** 150W mod. sine wave  
Soft Start, 12VDC input, 120VAC output  
**INV1215EU2M:** 150W mod. sine wave  
Soft Start, 12VDC input, 220VAC output  
\*European style outlets  
6 x 3.15 x 1.8" 1.1 lbs.



**INV1230US1M:** 300W mod. sine wave, dual outlets  
12VDC input, 120VAC output  
**INV2430US1M:** 300W mod. sine wave, dual outlets  
24VDC input, 120VAC output  
9.1 x 4.1 x 2.3" 2 lbs.

#### Modified Sine Wave Inverter Specifications

- Over 90 % Energy Efficient
- Output: 120 VAC @ 60Hz or 220 VAC @ 50Hz
- Convection Cooled - 150 Watt,  
Fan cooled - 300Watt
- Low Battery Alarm at 10.5VDC (12VDC Input)  
Low Battery Alarm at 21VDC (24VDC Input)  
Low Battery Shutdown at 10VDC (12VDC Input)  
Low Battery Shutdown at 20VDC (24VDC Input)
- Alarm & Thermal Shutdown: 55° C



**INV1215US1P:** 150W pure sine wave,  
dual outlets, 12VDC input, 120VAC  
output  
8 x 4 x 2.5" 2 lbs.



**INV1230US1P:** 300W pure sine wave, dual outlets  
12VDC input, 120VAC output  
**INV2430US1P:** 300W pure sine wave, dual outlets  
24VDC input, 120VAC output  
9.5 x 8 x 3.2" 4.4 lbs.

#### Pure Sine Wave Inverter Specifications

- 90% Energy Efficient under full load  
95% Energy Efficient under 1/3 load
- Output: 120 VAC @ 60Hz or  
(220 VAC @ 50Hz, Special Order)
- Fan cooled
- Low Battery Alarm at 10.5VDC (12VDC Input)  
Low Battery Alarm at 21VDC (24VDC Input)  
Low Battery Shutdown at 10VDC (12VDC Input)  
Low Battery Shutdown at 20VDC (24VDC Input)
- Regulation + or - 6%
- Total Harmonic Distortion (max.): 4%
- Alarm & Thermal Shutdown: 55° C

## Inverters for Military Applications



**Item: INV1215US1P-1207:** 150W pure sine wave inverter  
dual outlet, 12-16VDC input with BA5590 battery input connector.



**Item: INV2430US1P-1208:** 300W pure sine wave inverter  
dual outlet, 24VDC input with NATO Slave input connector.

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LIND ELECTRONICS, INC. 6414 CAMBRIDGE STREET MINNEAPOLIS, MN 55426 USA TELE: +1 952-927-6303 FAX +1 952-927-7740



# Replacement AC Laptop Adapters

These rugged AC adapters meet or exceed the laptop manufacturer's original specifications. They feature a power on LED; universal switching 100-240VAC input voltage. The adapter has a 4 foot attached output cable and is supplied with a 5 foot AC input cord.

Tips available for most laptop models.

16 ounces,

Size: 5 x 2.25 x 1.25"

UP to 90 Watts

UL and CE listed



## Medical Grade Replacement AC Laptop Adapters



- Overload and Short Circuit Protection
- Complies with EMI/RFI Regulations
- Dimensions: (170 x 84 x 40 mm)
- Input Cord: 60 in. (152.4 cm)
- Output Cable: 72 in. (183 cm)
- Replaceable 2.5 x 5.5mm connector
- Weight: 31 oz. (.89 kg)
- CE Compliant, RoHS Compliant
- Warranty: 1 Year
- Input voltage: 100-240 V 50-60 Hz  
Input current: max. 1.7A
- Output voltage: 15V  
Output current: 8.67A Max.  
Output power rating: 130W max
- Operating temperature: 0 to 40°C  
Storage Temperature: -20° to 85°C
- Typical efficiency is 80-85%  
Power Factor Correction: 0.98 is minimum at full load 115 VAC input.

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# Ruggedized Military & Industrial AC/DC and AC/DC/DC Combination Adapters

Lind Electronics line of Ruggedized AC/DC and combination AC/DC and DC/DC adapters withstand the harsh operating conditions encountered in many military and industrial applications.

## Features:

- Withstands extreme shock and vibration.
- Operation over wide temperature range.
- Sealed and potted to resist moisture and high humidity.
- Output overvoltage and overcurrent 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

Input voltage: 90 - 264 volts AC

Frequency: 47-63 hertz

*(400 hertz AC adapters also available)*

Input current: 1.5 amperes maximum

Output voltage: Per user requirement

Output power: Up to 80 Watts

Ripple & noise: 2% maximum

Load regulation: +/-5% maximum

Size & Weight

AC - DC: 4.7 x 2.7 x 1.7 inches, 22 ounces

Combo: 5.25 x 2.62 x 2.62 inches, 31.5 ounces

### DC Input Voltage Specifications

Input voltage: As specified (12-32VDC typical)

Indicators: LED on automobile plug if equipped

(Input present)

LED on adapter

(Output power present)

Output voltage: Per user requirement

Output power: Up to 90 Watts

Features: Output Short Circuit Protected

Output Current Limit

Internal Overtemp Cut-Off (DC input only)

Low Input Voltage Cut-Off (DC input only)

Automatic Reset of Safety Cut-Offs

### Environmental

Operating ambient temp.\* -40°C to +40°C

Storage temperature -40°C to +85°C

Operating rel. humidity 5 - 95% non-condensing

\*Operation below 0°C may result in higher ripple voltage until adapter has warmed.



RuggedAC PowerAdapter



AC/DC Combo  
Power Adapter

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# Lightweight Li-Ion Auxiliary Power Packs MaxPower 60 & MaxPower 90

The MaxPower Li-Ion Auxiliary Battery Packs are designed for laptop users who need to operate their computers for extended periods of time before recharging. The Power Pack can add up to *10 additional hours\** of portable productivity anywhere long laptop runtimes are needed.

The slim, lightweight pack is composed of Li-Ion prismatic batteries with high energy density. The five LED "Fuel Gauge" allows you to check the remaining capacity. Package includes AC Adapter for recharging.

**Select the right pack for your laptop model. Contact your Lind representative.**

## Technical Information

Typical Capacity: MP60 - 95 WH  
MP90 - 140 WH  
Output Voltages: 16V, 20V {Selection of SmartTip determines output voltage}  
LED Indicators: - Remaining capacity  
- Charge status  
- Fault indication  
Typical Runtime: 6 to 10 hours\*  
Size and Weight: 11.4 x 8.7 x .47 in.  
MP60 - 2.4 pounds  
MP90 - 3.4 pounds  
Charge Time: 3 - 4 hours, 4 - 5 hours  
AC Recharger: 19VDC, 60W AC/DC  
Includes: MaxPower battery pack  
AC Adapter  
Output cable  
SmartTip for selected laptop model  
User manual



Replacement SmartTips Replacement output cable: #PROEM-20000

#PROEM-20001 - Tip #1 (2.5 x 5.5mm 19-20VDC)  
#PROEM-20002 - Tip #2 (2.1 x 5.5mm 19-20VDC)  
#PROEM-20003 - Tip #3 (MP205 19-20VDC)  
#PROEM-20005 - Tip #5 (1.7 x 4.7mm 19-20VDC)  
#PROEM-20006 - Tip #6 (IBM 4 PIN 16VDC)  
#PROEM-20007 - Tip #7 (3.0 x 6.3mm 15.16VDC)  
#PROEM-20008 - Tip #8 (MP205 15-16VDC)  
#PROEM-20009 - Tip #9 (2.5 x 5.5mm 15-16VDC)  
#PROEM-20010 - Tip #10 (2.1 x 5.5mm 15-16VDC)

Replacement AC charger: #PROEM-75000

#PROEM-20011 - Tip #11 (3.0 x 6.3mm 19-20VDC)  
#PROEM-20012 - Tip #12 (MP204 19-20VDC)  
#PROEM-20013 - Tip #13 (Apple G4 20VDC)  
#PROEM-20017 - Tip #17 (Dell Hirose A 20VDC)  
#PROEM-200G3 - Cable/Tip (Apple G3 20VDC)  
#CBLIO-00100 - Cable/Tip (Dell Insp. M & Lat. D series)  
#CBLIO-00140 - Cable/Tip (Panasonic CF18, CF29)

## Lind MP280 Extreme Capacity Auxiliary Power System



The Lind MP280 System combines the output power capacity of two MP90 LiIon batteries into a single complete and easy to use auxiliary power assembly. It is designed to provide users with the maximum amount of runtime for laptops and many other mobile devices. The MP280 can be used with just a mating cable connection to a laptop or custom modules can be added for very specific applications. This system is especially suited for IT mobile cart applications or use in remote areas where normal AC power sources are not available. The high powered AC adapter supplied with the unit allows battery charging and laptop operation at the same time.

- Capacity - 280 WattHours
- Output power factory set to users need
- Compact and versatile
- Expandable
- Pass through run & charge
- LED Power Remaining Indicators
- Power on/off switch

Please contact your Lind representative to assist in providing the system that best meets your needs.

*\* Moderate use of power conservation techniques is assumed. Actual operating time is a function of the operating system, program in use and the power consumed by the CPU as well as the charge state of the internal battery of the laptop being powered. Estimated runtime is based upon the amount of time obtained from both the battery pack and the internal laptop battery.*

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# Lind® Power Case

The Lind Power Case is specifically designed to provide auxiliary DC power for laptops and other peripheral devices. The Power Case comes equipped with up to four high energy density 100 Watt Hour NiMH battery packs. The advanced battery charger provides safe and rapid charging of the battery packs under all conditions. The DC -DC converter will provide an output from 5-24 VDC, 6A max., 80Watts. The Power Case can charge and run from AC or 11-32VDC power sources. Up to 130 Watts of total load can be obtained from the 12 VDC batteries or from the integral DC-DC converter.



*Some laptops can  
run up to 24 hours*

- High energy density NiMH batteries, charger, and adapter all in one case
- Watt Hour capacity selectable in increments of 100 Watt Hours
- Charge and run from AC or 11-32VDC power sources
- Power up to 130W of total load directly from 12VDC batteries or integral DC-DC converter
- Converter output from 5-24VDC, 6A, 80W maximum
- Charging status and Power-On indicators available
- Various AC and DC input and output cables available

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# The Lind LPC-2000 Battery Power System

The Lind PowerCenter 2000 (LPC-2000) is a three piece (Battery-AC Adapter-Power Controller) solution designed for flexible mounting on a mobile IT cart. The LPC-2000 uses a 33 AH sealed lead acid (SLA) battery that can provide up to 8 hours of operation for a typical IT system. If desired, larger or multiple SLA batteries can be used. The PowerCenter has an advanced, 3 stage battery charger circuit that provides safe and rapid charging of the battery under all conditions. Installed in the Power Controller are the charger and either one or two DC to DC converters. Each DC to DC converter module is factory programmed to the specific requirements of the laptop or other IT devices used on the cart. The output cables are matched to the needs of the device they are powering and are field replaceable as necessary. Front panel LED indicators operate as a gas gauge and show the charging and output status of the system. When the AC adapter is connected for battery recharge, the controller will allow the battery to charge while at the same time powering the IT devices. The LPC-2000 Power Control unit is designed to be mounted under the IT cart tray. There is an on/off power switch and a jack to connect an optional remote battery status indicator. The battery compartment is mounted to a lower part of the cart to provide a stable center of gravity. The rugged construction of the LPC-2000 makes it an ideal power source for many industrial, hospital and warehouse IT cart applications.



## Technical Information

- AC Supply: 100-240 VAC, 50-60Hz, input, 16VDC output  
Medical grade AC supply (optional)  
Size: 4.75 x 9.5 x 2.6", Weight: 3.5 lbs.
- Power Control: On/Off switch for battery charger & DC outputs.  
Contains battery charger and one or two DC/DC power converters. Integral battery charge status and charge complete indicators. Output jack for Remote Battery Status Indicator. Designed for under cabinet mounting. Convection cooled. (Optional cart lift motor control switch)
- Charger: Size: 10 x 6.5 x 1.6", Weight: Appr. 2.75 lbs.  
Simultaneous battery charging and DC output to loads. Charge rate up to 8 amps. (Charge rate decreases as DC/DC converter loads increase). Three stage battery charge method. Typical charge time is 5 hours at maximum charge rate.
- DC/DC Converters: Primary output:  
Factory set 5 - 24VDC up to 120 Watts.  
Auxiliary output:  
Factory set 5 - 24VDC up to 85 Watts.  
Output indicator for each output. Outputs are fault protected. Low battery voltage disconnect removes DC/DC converters from battery circuit when source battery voltage is low to prevent damage to battery.
- Battery Box: Battery: 12VDC 33AH Sealed Lead Acid.  
20A fuse in series with battery cable to protect battery. Mount box low to keep center of gravity low.  
Size: 9.75 x 8 x 5.3", Weight 32 lbs.

Batteries approved for use with the Battery Box are:  
Power Sonic #PS-12330 NB  
Panasonic #LC-R1233P or LC-LA1233P

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# Lind DC Backup Power UPS System for use in Mobile Applications



## Applications

- Private aircraft.
- Automobiles and trucks.
- Military.
- Marine.
- Public Safety vehicles
- Mobile computers.
- Communication equipment.
- Electronic gaming devices.
- Video equipment

The Lind DC Backup Power UPS (Uninterruptible Power Supply) 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 system will automatically provide backup power when power is interrupted.

Ruggedized construction makes the DC UPS System well suited for most mobile environments. The compact design occupies minimal space so it is easy to install in a flight bag or 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 us to find the right system for your application.

## Features and Benefits

- Up to 1 hour of back up time.
- Automatically reverts to backup during input power loss.
- Charges battery and powers output at the same time.
- Charger will charge battery even when the output is off.
- Regulated output with on/off switch.
- Can be used with 12VDC or 24VDC input systems.
- Charging and Output status indicators.
- Includes Battery, charger, transfer switch, DC regulator.

## Specifications

- Input Voltage: 12 to 32 VDC
- Max. Input Current: 10 Amps.
- Output Voltage: 9-24 VDC Factory Set
- Output Power: 60 Watts Maximum
- Input Protection: 15 Amp Replaceable Fuse
- Operating Temperature: +5° to +35°C
- Humidity: 5% - 100% Non-condensing
- Altitude: Sea level to 10,000 feet
- Battery Type: Internal NiMH (Replaceable)
- Battery Capacity: Approx. 60 Whrs
- Physical Dimensions: 7.25"W x 1.75"H x 10" L
- Weight: 5.5 Pounds
- Warranty: 1 Year Electronics  
6 Months Battery

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## Mil-Std Laptop Power Adapters

Rugged laptop power adapters designed to meet electrical and environmental standards of  
MIL-STD461E  
MIL-STD1275B  
MIL-STD810F

Full continuous rated power output.

Power adapters available for most laptop models.

11 to 32 VDC input power range.

Sealed and potted in aluminum extrusions for harshest environments.

Power connectivity via NATO Slave, BA5590, cigarette lighter or specific connection.

Standard cable lengths available or custom lengths made to order.



## Battery Caddy & DC-DC Adapter for use with Military Batteries



Durable aluminum construction provides rugged support for transporting and carrying Military BA5590 style batteries. The Lind Battery Caddy can be used with most military battery types. The side mounted DC-DC power adapter provides regulated DC output voltage for a laptop or other device. The electronics are sealed and potted in an aluminum extrusion for use in harsh operating environments. A short molded cable provides the power connection from the battery to the adapter. Standard adapter to laptop output cable lengths of 36" or 72" are available and custom lengths can be made to order. Input cables for the adapter are available for NATO Slave, cigarette lighter, direct wiring or a customer specified connection.

## Rugged, Dependable, Laptop Power Adapters

Maintain your power while traveling in your vehicle, or on your flight so your notebook can work as long as you do. Lind DC-DC power adapters fit the full range of laptop models and user application needs. We feature Ruggedized power adapters for all types of users from Lind Lite power adapters for the budget minded, to the Lind high output power series adapters for the 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. Lind adapters have the power and are built specifically for your notebook so it will perform at its maximum capability.



- Rugged construction.
- Sealed and potted.
- 12 - 32 VDC input ranges.
- Field replaceable cables.
- Protects your laptop.
- Continuous power output.
- Commercial - Industrial use

## Lind DC Backup Power UPS System for Mobile Applications

Specifications  
Input Voltage: 12 to 32 VDC  
Max. Input Current: 10 Amps.  
Output Voltage: 9-24 VDC Factory Set  
Output Power: 60 Watts Maximum  
Input Protection: 15 Amp Replaceable Fuse  
Operating Temperature: +5° to +35°C  
Humidity: 5% - 100% Non-condensing  
Altitude: Sea level to 10,000 feet  
Battery Type: Internal NiMH (Replaceable)  
Battery Capacity: Approx. 60 Whrs  
Physical Dimensions: 7.25"W x 1.75"H x 10" L  
Weight: 5.5 Pounds  
Warranty: 1 Year Electronics  
6 Months Battery



### Features and Benefits

- Up to 1 hour of back up time.
- Automatically reverts to backup during input power loss.
- Built-in charger recharges battery.
- Charges battery and powers output at the same time.
- Regulated output with on/off switch.
- Can be used with 12VDC or 24VDC input systems.
- Charging and Output status indicators.
- Includes Battery, charger, transfer switch, DC regulator.

The Lind DC Backup Power UPS (Uninterruptible Power Supply) 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 system will automatically provide backup power when power is interrupted.

Ruggedized construction makes the DC UPS System well suited for most mobile environments. The compact design occupies minimal space so it is easy to install in a flight bag or 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.

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# Ruggedized Military & Industrial AC/DC and AC/DC/DC Combination Adapters

Lind Electronics line of Ruggedized AC/DC and combination AC/DC and DC/DC adapters withstand the harsh operating conditions encountered in many military and industrial applications.

- Features:**
- Withstands extreme shock and vibration.
  - Operation over wide temperature range.
  - Sealed and potted to resist moisture and high humidity.
  - Output overvoltage and overcurrent protection.
  - Replaceable input and output cables.
  - Short circuit protection.
  - The combo adapter can accept power from AC or DC voltage sources.

## AC Input Voltage Specifications

Input voltage: 90 - 264 volts AC  
Frequency: 47-63 hertz  
(400 hertz AC adapters available also)  
Input current: 1.5 amperes maximum  
Output voltage: Per user requirement  
Output power: Up to 80 Watts  
Ripple & noise: 2% maximum  
Load regulation: +/-5% maximum  
Size & Weight  
AC - DC: 4.7 x 2.7 x 1.7 inches, 22 ounces  
Combo: 5.25 x 2.62 x 2.62 inches, 31.5 ounces

## DC Input Voltage Specifications

Input voltage: As specified (12-32VDC typical)  
Indicators: LED on automobile plug if equipped  
(Input present)  
LED on adapter  
(Output power present)  
Output voltage: Per user requirement  
Output power: Up to 90 Watts  
  
**Features:** Output Short Circuit Protected  
Output Current Limit  
Internal Overtemp Cut-Off (DC input only)  
Low Input Voltage Cut-Off (DC input only)  
Automatic Reset of Safety Cut-Offs



## Environmental

Operating ambient temp.\* -40°C to +40°C  
Storage temperature -40°C to +85°C  
Operating rel. humidity 5 - 95% non-condensing  
\*Operation below 0°C may result in higher ripple voltage until adapter has warmed.

## Military Connection Cables

The BA5590 Battery Cable allows Lind adapters to connect to these battery packs.  
36 inch #CBLBA-00100

BA5590 Battery Cable connection to female cigarette lighter socket.  
15 inch #CBLBA-00150



Connect together 3 BA5590 batteries for a single output for longer runtime or higher Watthours with this triple connector cable.  
Cable #CBLBA-00250



The NATO Slave Connector will allow Lind (12-32VDC input) adapters to connect directly to the NATO receptacles installed on military HUMVEE vehicles. Cable length is 36 inches. #CBLHV-00010

**High Amperage NATO Slave Connector.**  
Lind designed connector can draw up to 50 Amps. Lightweight Heavy Duty construction. Easy screwdriver lug wire terminals for cable connections. Can accept up to 2 AWG copper strand wire. Easy to tighten compression fit wire strain relief connectors. #CBLHV-50000



**24VDC to 12VDC Converter.** The converter input connects to the NATO Slave input on military vehicles and outputs 12VDC up to 6 amps through 2 female cigarette lighter sockets. #DD1260-1236

Additional military cable configurations and cable length options are available. Contact your sales representative.

## Lind Power Case

The Lind Power Case is specifically designed to provide auxiliary DC power for laptops and other peripheral devices. The Power Case comes equipped with up to four high energy density 100 Watt Hour NiMH battery packs. The advanced battery charger provides safe and rapid charging of the battery packs under all conditions. The DC-DC converter will provide an output from 5-24 VDC, 6A max., 80Watts. The Power Case can charge and run from AC or 11-32VDC power sources. Up to 130 Watts of total load can be obtained from the 12 VDC batteries or from the integral DC-DC converter.



## Some laptops can run up to 24 hours

- High energy density NiMH batteries, charger, and adapter all in one case
- Watt Hour capacity selectable in increments of 100 Watt Hours
- Charge and run from AC or 11-32VDC power sources
- Power up to 130W of total load directly from 12VDC batteries or integral DC-DC converter
- Converter output from 5-24VDC, 6A, 80W maximum
- Charging status and Power-On indicators available
- Various AC and DC input and output cables available

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# Lind Products for use with Panasonic laptops

## Toughbook CF-18, CF-19

### Rugged, Laptop Power Adapters

Adapter #PA1555-655 for 11-16VDC input systems.

36" Cigarette lighter input, 36" output cabling.

Adapter #PA1650-1253 for 12-32VDC input systems.

36" Cigarette lighter & bare wire input, 36" output cabling.

- Rugged construction.
- Sealed and potted.
- Field replaceable cables.
- Protects your laptop.
- Continuous power output.



### Mil-Std Laptop Power Adapters

Adapter #MIL1650-1540 is provided with 72" input/output cabling.

NATO Slave power connector is attached. 12-32VDC input power.

Rugged power adapters designed to meet electrical and environmental standards of MIL-STD461E, MIL-STD1275B, MIL-STD810F. Sealed and potted in aluminum extrusions for harshest environments. Full continuous rated power output.

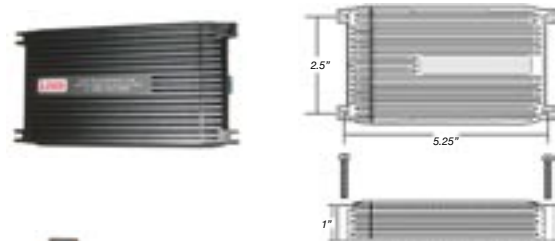


### Mountable Laptop Power Adapters

Adapter #PA1555-2123 for 11-16VDC input systems.

36" Bare wire input, 36" output cabling.

Same rugged construction with field replaceable cabling as our laptop power adapters listed above.



### Desktop Battery Chargers

Charger #PACH118-1870, 1 Bay Charger.

Charger #PACH318-1860, 3 Bay Charger.

Charger #PACH518-1858, 5 Bay Charger.



The single bay charger uses the laptop's AC adapter for power. The 3 and 5 bay chargers are provided with an AC adapter for power. These chargers recharge Panasonic CF-VZSU30 or CF-VZSU48 batteries.

### Shut Down Timer

Model #SDT1230-022, 12VDC systems, timer with screw terminals.

Model #SDT1230U-023, 12VDC systems, timer with terminal blocks.

The Shut Down Timer or sometimes referred to as a Delay Timer, protects your vehicle's battery from over discharge and equipment from low voltage and high voltage damage.



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# Lind Products for use with Panasonic laptops

## Toughbook CF-29, CF-30, CF-51

### Rugged, Laptop Power Adapters

Adapter #PA1555-655 for 11-16VDC input systems.

36" Cigarette lighter input, 36" output cabling.

Adapter #PA1650-1253 for 12-32VDC input systems.

36" Cigarette lighter & bare wire input, 36" output cabling.

- Rugged construction.
- Sealed and potted.
- Field replaceable cables.
- Protects your laptop.
- Continuous power output.



### Mil-Std Laptop Power Adapters

Adapter #MIL1650-1540 is provided with 72" input/output cabling.

NATO Slave power connector is attached. 12-32VDC input power.

Rugged power adapters designed to meet electrical and environmental standards of MIL-STD461E, MIL-STD1275B, MIL-STD810F. Sealed and potted in aluminum extrusions for harshest environments. Full continuous rated power output.

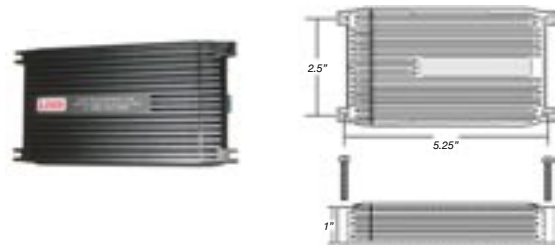


### Mountable Laptop Power Adapters

Adapter #PA1555-2123 for 11-16VDC input systems.

36" Bare wire input, 36" output cabling.

Same rugged construction with field replaceable cabling as our laptop power adapters listed above.



### Desktop Battery Chargers

Model #PACH129-1874, 1 Bay Charger.

Model #PACH329-1857, 3 Bay Charger.

The single bay charger uses the laptop's AC adapter for power.  
The 3 bay charger is provided with an AC adapter for power.  
These chargers recharge Panasonic CF-VZSU29 & CF-VZSU46 batteries.



### Shut Down Timer

Model #SDT1230-022, 12VDC systems, timer with screw terminals.

Model #SDT1230U-023, 12VDC systems, timer with terminal blocks.

The Shut Down Timer or sometimes referred to as a Delay Timer, protects your vehicle's battery from over discharge and equipment from low voltage and high voltage damage.



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# Lind Products for use with Panasonic laptops

## Toughbook CF-T4, CF-T5, CF-T7

### Rugged, Laptop Power Adapters

Adapter #PA1555-655 for 11-16VDC input systems.

36" Cigarette lighter input, 36" output cabling.

Adapter #PA1650-1253 for 12-32VDC input systems.

36" Cigarette lighter & bare wire input, 36" output cabling.

- Rugged construction.
- Sealed and potted.
- Field replaceable cables.
- Protects your laptop.
- Continuous power output.

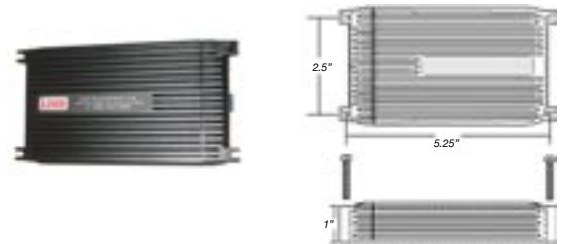


### Mountable Laptop Power Adapters

Adapter #PA1555-2123 for 11-16VDC input systems.

36" Bare wire input, 36" output cabling.

Same rugged construction with field replaceable cabling as our laptop power adapters listed above.



### Desktop Battery Chargers

Model #PACH1T5-2083, 1 Bay Charger for CF-T4 & CF-T5.

Model #PACH3T5-2084, 3 Bay Charger for CF-T4 & CF-T5.

\*These chargers will NOT work with the CF-T7 series.

The single bay charger uses the laptop's AC adapter for power.

The 3 bay charger is provided with an AC adapter for power.

These chargers recharge Panasonic CF-VZSU37 & CF-VZSU39 batteries.



### Shut Down Timer

Model #SDT1230-022, 12VDC systems, timer with screw terminals.

Model #SDT1230U-023, 12VDC systems, timer with terminal blocks.

The Shut Down Timer or sometimes referred to as a Delay Timer, protects your vehicle's battery from over discharge and equipment from low voltage and high voltage damage.



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# Lind Products for use with Panasonic laptops

## Toughbook CF-51mk3, CF-52, CF-74

### Rugged, Laptop Power Adapters

Adapter #PA1580-1745 for 11-16VDC input systems.

36" Cigarette lighter input, 36" output cabling.

Adapter #PA1580-1642 for 12-32VDC input systems.

36" Cigarette lighter & bare wire input, 36" output cabling.

- Rugged construction.
- Sealed and potted.
- Field replaceable cables.
- Protects your laptop.
- Continuous power output.



Laptop computers are normally supplied with a power adapter that converts 115 to 230 volt AC power into the DC power required by the laptop. Lind adapters similarly convert the DC Voltage vehicle power into the DC power required by the laptop. Operation and battery charging is identical with either power source.

Input cables are available in a standard length of 36 inches for cigarette lighter, military or direct battery power connections. Special cable lengths and connections are available as well. The adapter body has a replaceable fuse and an LED output indicator.

The adapter converts, and regulates the input voltage to precisely the voltage required for proper laptop operation. Voltage spikes, surges and electrical noise are filtered and rejected by the adapter to prevent damage to the laptop under all operating conditions.

The rugged design and packaging of the Lind adapters make them ideally suited for use in the harsh mobile environments of military, utility service and emergency vehicles. Special models designed to meet full military specifications are also available.

The adapter is housed in a rugged ABS package which is epoxy filled to seal and protect the circuitry from damage from shock, vibration and spilled liquids. Field replaceable input and output cables make servicing easy and efficient in case of loss or accidental damage.

### Technical Information

INPUT VOLTAGE	See above
OUTPUT VOLTAGE	15.6VDC
OUTPUT CURRENT	up to 8.0 amps
CONNECTORS	2.5 x 5.5mm
WEIGHT	13 Ounces
SIZE	5.00 x 3.0 x 1.15 in
AUTO INPUT CABLE	36"
OUTPUT CABLES	36"
INPUT FUSE	15 Amp
WARRANTY	3 Years

### Environmental Specifications

TEMP. RANGE(operating)	0°C to +45°C
(Unit is thermally protected by shutdown circuits)	
TEMP. RANGE(non-operating)	-55°C to +85°C
HUMIDITY RANGE	0 to 95%, non-condensing
ALTITUDE RANGE	0 to 10,000 meters

### Shut Down Timer

12VDC systems, Timer with screw terminals, Lind Model #SDT1230-022

12VDC systems, Timer with terminal blocks, Lind Model #SDT1230U-023

The Shut Down Timer or sometimes referred to as a Delay Timer, protects your vehicle's battery from over discharge and equipment from low voltage and high voltage damage.



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## **The Lind DC/C power adapters have many features that make it a superior adapter.**

Here is a descriptive explanation of our model's features.

(Features vary with model – consult factory for particular model's features)

### **Input Power Limit**

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

### **Low Input Voltage Cut Off**

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 shutdown feature has a delay to allow the adapter to ride through momentary dips such as typically occur during vehicle starting and a quicker shutdown if there is a large dip in the battery voltage.

### **Reverse Input Protection**

Most of the adapters have a cigarette plug which prevents miss-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.

### **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.

### **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.

### **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.

### **Overtemperature 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.

### **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.

### **LED Indicator**

The adapter has an LED 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 shutdown mode.

### **EMI**

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

### **Shutdown Timing Delay**

The adapter 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 (up to a few hours) and then turn off so it does not keep draining the battery in a vehicle left unattended overnight.

### **Wide Input Operating Range**

Many of the adapters can operate from 12VDC and 24VDC battery systems allowing the customer to buy one unit to handle both types of systems.

### **Isolation**

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

### **Rugged**

The electronics in the adapter are sealed in a potting material which helps distribute the heat generated in the adapter and helps make them resistant to shock and vibration

### **Flexibility**

Many of the thresholds and features can be adjusted for individual customer needs.

# Message to our Customers

We at Lind Electronics have designed and manufactured laptop power accessories since 1990. Almost as long as there have been laptops. All of our ruggedized adapters are housed in aluminum extruded or ABS plastic cases with the circuitry protected from shock and moisture by epoxy encapsulation. The most efficient conversion circuits are used with extensive protection circuits that provide reliable and continuous operation in the most demanding military, commercial and law enforcement environments.

The goal of our engineers is to design adapter circuits and packaging that can be quickly and easily adapted to a wide variety of customer needs. Special packaging and power requirements are produced quickly using our extensive inventory of parts and our U.S.A. based design and production facilities. Lind also has the capability to mold power connectors on the cable lengths required for special mobile installations.

The Lind Electronics engineers take pride in their ability to solve customer problems with tough engineering requirements. Our sales, production and shipping departments take pride in fast, accurate delivery of small or large quantities of our products to all parts of the world.

I take personal pride in the Lind Electronics team.

LeRoy Lind

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