Mobile DC Power Solutions:

- DC UPS
- Battery Chargers
- Power Supplies
- Inverters
- DC Converters
- DC Power Stabilizers
- Distribution
- Low Voltage Disconnects
- Power Timer
- Battery Integrators & Isolators
- Noise Filters
- Automatic Power Selectors
- Solar Panels
- Custom Electrical Panels
- Meters
- Accessories
Powering The Mobile Network

Solutions

DC UPS
Input: 12 & 24 VDC
Output: 12 & 24 VDC, 5 - 20 Amps

Battery Chargers
Input: 120 & 240 VAC
Output: 12 & 24 VDC, 7 - 95 Amps

AC-DC Power Supplies
Input: 115 & 230 VAC
Output: 12 & 24 VDC, 8 - 35 Amps

DC-AC Inverters
Input: 12 & 24 VDC
Voltage/Power Range:
Output: 12 & 24, 1,000 - 4,800 Watts

DC-DC Converters
Input: 12, 24, & 32 VDC
Output: 12 & 24, 3 - 35 Amps

DC Power Conditioners
Input: 12 & 24 VDC
Output: 12 & 24 VDC, 3 - 10 Amps

DC Power Distribution
Input: 12 VDC
Output: 12 VDC, 100 Amps

Low Voltage Disconnects
Input: 12, 24 & 48 VDC
Current Rating: 30 - 75 Amps

Power Control
Power Timer, Battery Isolators & Integrators, Noise Filters, Automatic Power Selectors

Solar Panels
Output: 12 & 24 VDC, 1.2 - 7.1 Amps

Custom Panels
AC, DC, & AC/DC

Meters
AC, DC, Generator & Engine

Accessories
Junction Boxes, Thru-Dex Fittings, Bus Bars, Terminal & Connector Strips, Emergency Relay/Charger, Phone-Com Systems
The Mobile Data Power, model MDP-25.0, is a DC UPS that solves the common problem of lengthy reboot sequences, system crash, data and hard drive corruption in mobile computer work stations due to a low voltage and loss of power as a result of intermittent or poor vehicle battery condition. In addition, the MDP provides a low voltage output warning signal to terminals (such as Motorola® MW 800 series work stations) allowing orderly automatic shutdown of the powered device, protecting data and preventing hard drive corruption.

Utilizing a high speed sensor circuit, when primary vehicle voltage drops below a critical point, the internal 9AH battery is switched on-line in milli-seconds, assuring no interruption to the powered device(s). The MDP-25.0 has an internal 3 step, temperature compensated charger that maintains its reserve battery at full charge, ready to go on-line when a fault or degradation of primary vehicle battery occurs. This functionality assures continued operation of mobile computers under a variety of adverse vehicle battery conditions. An optional timed load feature (TMR), when activated, begins timing when the vehicle battery drops to a 12.0 VDC or less for added battery protection.

Housed in a rugged aluminum case and heavy duty mounting plate, the unit is designed for installation in service and other utility vehicles that require a steady source of voltage for mobile computers, work stations, and electronics. Protects mobile computers against system crash, lengthy reboot sequences, and loss of data due to:
- Voltage dip during engine cranking
- Voltage drop and decay due to loading high power accessories, and aging batteries
- Voltage loss due to cycling of master disconnect switch and battery failure.
- Noise, interference or voltage spikes

Provides supplemental voltage in milli-seconds to mobile electronics when low vehicle battery is sensed.

Optional timed load disconnect feature (TMR)

Provides output warning signals to mobile computers (such as Motorola® MW 810 work stations and MVX 1000 video recorders)
- Initiates low voltage shut down sequence in mobile computer, protecting data and hard drive.
- Alerts when system is operating on battery back-up

Internal 3 stage, temperature compensated charger maintains back-up battery in fully charge stand-by state
- Provides reserve (isolated) power source, 12 volts @ 5 amps for 60 minutes, 10 amps for 20 minutes, 25 amps for 8 minutes

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Range</th>
<th>Output Voltage</th>
<th>Maximum Load Current</th>
<th>Standby Current Draw</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDP-25.0</td>
<td>10.2 - 15.5V (start-up @ 11.5V)</td>
<td>12VDC</td>
<td>25A</td>
<td>&lt;50mA - operating mode, &lt;30mA - sleep mode</td>
<td>5.75</td>
<td>6</td>
</tr>
</tbody>
</table>
Mobile communication electronics such as programmable two-way radio and data transceivers, vehicle location systems and other microprocessor-controlled devices require clean and steady DC input power. Their sensitive circuitry is highly vulnerable to voltage drop from engine start, noise and line spikes from alternators and motors, and conducted noise from various other electronic devices. NAV-PAC prevents all of these problems and is in use by thousands of Emergency Vehicles nationwide.

**Features**
- Prevents voltage “drop-out” during engine start
- Absorbs line “spikes”
- Filters out electrical interference
- Provides supplemental voltage/battery back-up for up to 15 min.
- Remote monitor panel provided (12V unit only)

**Specifications**
**Battery:** Sealed Rechargeable 5.0 Amp-Hour, 5-7 years typical life, can be replaced. Low-voltage disconnect circuit protects battery from total discharge. Certified by DOT and IATA for shipment by air.

**Noise Filtering:** Audio through 200 MHZ

**Voltage Spike Protection:** Transient energy capability: 100 Joules, 4,000 amps Max (8 x 20 micro seconds)

**Panel Dimensions:** 3.5” W x 2” H (8.9 x 5.1 cm); US Patent #: 5172292

**Provides Continuous Voltage Protection**

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage</th>
<th>Output Voltage</th>
<th>Output Amps</th>
<th>Inches</th>
<th>Centimeters</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nav-Pac-20</td>
<td>13.8 - 14.8 VDC Nom., 15.5 VDC Max.</td>
<td>12 VDC</td>
<td>20 Amps</td>
<td>5.25</td>
<td>6.2</td>
<td>7.4</td>
</tr>
<tr>
<td>Nav-Pac-24V</td>
<td>27.6 - 29.6 VDC Nom., 31.0 VDC Max.</td>
<td>24 VDC</td>
<td>15 Amps</td>
<td>6.0</td>
<td>6.75</td>
<td>7.5</td>
</tr>
</tbody>
</table>
The abrupt DC system voltage drop that accompanies engine starting can cause microprocessor-based voice and data transmitters to "dump" programmed memory.

StartGuard solves this problem by providing supplemental voltage to sensitive electronics while the engine is cranked. It contains a sealed rechargeable battery which is switched on-line to electronics when the starter switch or solenoid is engaged. When the engine is running StartGuard automatically goes off-line and the internal battery is recharged by the alternator.

**Specifications**

- **Input Voltage:** 13.8 - 14.8 VDC nominal, 15.5 VDC max.
- **Relay Activation Input Voltage:** 7-15 VDC
- **Output:** 20 amps max.
- **Battery:** 12 VDC, sealed rechargeable, 5-7 year life (typical), 5 amp-hour capacity, Certified by DOT and IATA for shipment by air.

**Back-Up Power**

- 12V
- 8A for 15 minutes
- 12A for 8 minutes
- 18A for 2 minutes
- 20A for 1 minute

---

**DC UPS: StartGuard**

Provides Voltage Protection During Engine Start

<table>
<thead>
<tr>
<th>Model</th>
<th>Input</th>
<th>Relay Activation Input Voltage</th>
<th>Back-Up Capacity 1 Minute</th>
<th>Back-Up Capacity 2 Minutes</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS-12-20</td>
<td>13.8 - 14.8 VDC Nom. 15.5 VDC Max.</td>
<td>7 - 15 VDC</td>
<td>20 Amps</td>
<td>18 Amps</td>
<td>8.25 x 4.9 x 3.5</td>
<td>20.1 x 12.5 x 8.9</td>
</tr>
</tbody>
</table>
Phase Three "Smart" battery charging technology is now available in a wide range of power levels, allowing you to select the right size, features and flexibility you require for virtually any application from providing quick recharge of auxiliary batteries in vehicles parked in the station house, to powering continuous loads and maintaining peak charge in battery systems in mobile as well as industrial generator applications. These chargers interact with batteries to put them through the optimum three stage charge process which provides for fastest recovery and ideal conditioning, maximizing battery performance and extending battery life.

A selector switch adjusts output voltage to adapt for gel-cell, flooded lead-acid/AGM battery types. An optional temperature compensation sensor also adjusts output for ideal voltage based on changes in the batteries' ambient temperature. All models are housed in a rugged stainless steel case with a durable white powder coat finish (except PT-7), and the internal circuitry is polyurethane coated for maximum corrosion resistance.

**Features**
- "Smart" circuitry provides three stage charging: bulk, absorption, float
- Wide model range covers battery system ratings from 14 - 950 amp-hours
- Gel-Cell/Flooded Lead-Acid/AGM battery type switch selects optimum charge/float voltages
- Multiple isolated output banks; ammeter indicates total output current (except PT-7)
- Optional sensor adjusts output voltage based on battery temperature (except PT-7)
- Current limiting prevents damage from overloading
- Charger status clearly displayed with LED and/or audible indicators or optional remote panel
- Use as a power supply - can power loads without a battery in line
- Built to last - rugged stainless steel case with a durable white powder coat finish with drip shield and polyurethane coated internal circuitry
- Numerous safety and EMC compliances
- Two year parts and labor warranty

**Temperature Compensation:**
- 5 mV per cell per °C. Sensor supplied with 25’ cable and plug-in connector

**Protection (all models):**
- Input/Output Fuses, Current Limiting, Thermal Protection, Forced Air Cooling, Drip Shield

**Optional Remote Panel, Model RP:**
- LED's indicate charger output stage. Button allows manual reinitialization of three stage charge cycle. Supplied with 25’ cable and plug-in connector. Panel dimensions: 3” H x 4.75” W

**Temperature Compensation Sensor, model TCS-12/24**
- 5 mV per cell °C. 25’ of cable provided (40’ cable optional)

**Options**
- Remote Panel, model RP, for use with all models except PT-7
  - LED's indicate charger output stage. Manual reinitialization of three stage charge cycle. 25’ of cable provided. Panel dimensions: 3” H x 4.75” W
Battery Chargers - Phase Three Series

### 12 Volt Models

<table>
<thead>
<tr>
<th></th>
<th>PT-7</th>
<th>PT-14W</th>
<th>PT-25W</th>
<th>PT-40U</th>
<th>PT-80</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input VAC (50-60 Hz.)</strong></td>
<td>88-132 or 176-264</td>
<td>85-132 or 180-264</td>
<td>90-132 or 180-264</td>
<td>90-264</td>
<td>90-264</td>
</tr>
<tr>
<td><strong>Input Amps @ Full Load @ 115 VAC</strong></td>
<td>2</td>
<td>2.8</td>
<td>6.5</td>
<td>6.8</td>
<td>12</td>
</tr>
<tr>
<td><strong>P.F. Rating</strong></td>
<td>&gt; .65</td>
<td>.93 @ 230V</td>
<td>.95 @ 230V</td>
<td>.95 @ 230V</td>
<td>.95 @ 230V</td>
</tr>
<tr>
<td><strong>Max Output Amps</strong></td>
<td>7</td>
<td>14</td>
<td>25</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td><strong>Output Banks</strong></td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Battery Capacity (Amp-Hours)</strong></td>
<td>14-70</td>
<td>28-140</td>
<td>50-250</td>
<td>80-400</td>
<td>160-800</td>
</tr>
<tr>
<td><strong>Operating Temp.</strong></td>
<td>T-1</td>
<td>T-2</td>
<td>T-4</td>
<td>T-5</td>
<td>T-7</td>
</tr>
</tbody>
</table>

### 24 Volt Models

<table>
<thead>
<tr>
<th></th>
<th>PT-24-8W</th>
<th>PT-24-13W</th>
<th>PT-24-20U</th>
<th>PT-24-45U</th>
<th>PT-24-60U</th>
<th>PT-24-95U</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input VAC (50-60 Hz.)</strong></td>
<td>85-264</td>
<td>90-32 or 180-264</td>
<td>90-264</td>
<td>90-264</td>
<td>207-253</td>
<td>90-264</td>
</tr>
<tr>
<td><strong>Input Amps @ Full Load @ 115 VAC</strong></td>
<td>2.8</td>
<td>6.5</td>
<td>6.8</td>
<td>12</td>
<td>NA</td>
<td>26</td>
</tr>
<tr>
<td><strong>P.F. Rating</strong></td>
<td>&gt; .65</td>
<td>.93 @ 230V</td>
<td>.95 @ 230V</td>
<td>.95 @ 230V</td>
<td>.95 @ 230V</td>
<td>.95 @ 230V</td>
</tr>
<tr>
<td><strong>Max Output Amps</strong></td>
<td>8</td>
<td>13</td>
<td>20</td>
<td>45</td>
<td>60</td>
<td>95</td>
</tr>
<tr>
<td><strong>Output Banks</strong></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Battery Capacity (Amp-Hours)</strong></td>
<td>16-80</td>
<td>26-130</td>
<td>40-200</td>
<td>90-450</td>
<td>120-600</td>
<td>180-950</td>
</tr>
<tr>
<td><strong>Operating Temp.</strong></td>
<td>T-2</td>
<td>T-3</td>
<td>T-5</td>
<td>T-8</td>
<td>T-6</td>
<td>T-8</td>
</tr>
</tbody>
</table>

### Temperature Rating References

<table>
<thead>
<tr>
<th>Ref</th>
<th>Temperature</th>
<th>Derate linearily from 100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-1</td>
<td>-10° C to +45° C</td>
<td>100% @ 0° C to 80% @ -10° C</td>
</tr>
<tr>
<td>T-2</td>
<td>-10° C to +60° C</td>
<td>100% @ 40° C to 60% @ 60° C</td>
</tr>
<tr>
<td>T-3</td>
<td>-10° C to +60° C</td>
<td>100% @ 50° C to 60% @ 60° C</td>
</tr>
<tr>
<td>T-4</td>
<td>-10° C to +60° C</td>
<td>100% @ 40° C to 60% @ 60° C</td>
</tr>
<tr>
<td>T-5</td>
<td>-20° C to +60° C</td>
<td>100% @ 50° C to 75% @ 60° C</td>
</tr>
<tr>
<td>T-6</td>
<td>-20° C to +50° C</td>
<td>Full Output</td>
</tr>
<tr>
<td>T-7</td>
<td>-20° C to +70° C</td>
<td>100% @ 45° C to 50% @ 70° C</td>
</tr>
<tr>
<td>T-8</td>
<td>-20° C to +70° C</td>
<td>100% @ 50° C to 50% @ 70° C</td>
</tr>
</tbody>
</table>

### Output Indicator References

- **M-1**: Total output ammeter
- **M-2**: Charge/Float LED
- **M-3**: Total Output Ammeter and charger status LED’s/Alarms

### Compliance References*

* See matrix for applicable models

- **UL**: UL 1950 (Per DNB report)
- **CG**: USCG CFR 183.410 (Ignition protected)
- **EN**: EN 60335-1, EN 60335-2-29
- **CE**: Carries the CE Mark

* Numerous other Safety and EMC compliances may also apply. Contact factory if further compliance information is required.

### Case Size

<table>
<thead>
<tr>
<th>Ref</th>
<th>Inches</th>
<th>Centimeters</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>10.5</td>
<td>26.7</td>
</tr>
<tr>
<td>A-2</td>
<td>12.5</td>
<td>31.8</td>
</tr>
<tr>
<td>A-3</td>
<td>13.85</td>
<td>35.2</td>
</tr>
<tr>
<td>A-4</td>
<td>13.8A</td>
<td>35A</td>
</tr>
<tr>
<td>A-5</td>
<td>14.8B</td>
<td>37.6B</td>
</tr>
<tr>
<td>A-6</td>
<td>17.5C</td>
<td>44.5C</td>
</tr>
</tbody>
</table>

* Add .75” (1.9 cm) to height and 1.35” (3.4 cm) to depth

### Nominal Output Voltages at Gel/Flooded Switch Settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>12 Volt Models</th>
<th>24 Volt Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge @ 50% load</td>
<td>14.2 VDC</td>
<td>14.0 VDC</td>
</tr>
<tr>
<td>Float @ .5 amp load</td>
<td>13.4 VDC</td>
<td>13.6 VDC</td>
</tr>
<tr>
<td>Charge @ 50% load</td>
<td>28.0 VDC</td>
<td>28.4 VDC</td>
</tr>
<tr>
<td>Float @ .5 amp load</td>
<td>27.2 VDC</td>
<td>26.8 VDC</td>
</tr>
</tbody>
</table>

Without Temperature Compensation option installed or at 22.2˚ C (72˚ F) with Temperature Compensation option installed.
These super-rugged DC supplies are ideal for powering 12 and 24 volt communication equipment in mobile communication applications where reliability is essential. The proven linear circuit design provides pure noise free output and long service life.

**Features**

- Excellent Regulation and Ripple Spec: Output voltage maintained within 1% under all rated line and load line and load conditions
- Polyurethane conformal coated PC board and corrosion resistant heavy duty aluminum case with integral shock mounts assures survival in hostile environments
- Heat generated by semi-conductors is extracted and dissipated by large heat sink fins for cool operation
- Protection: over-voltage, current limit; (set @ 105% of intermittent rating), thermal overload and input/output fusing
- Thermally activated cooling fan on “CD” units

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Input/VAC</th>
<th>Output Amperage</th>
<th>Dimensions (H x W x D)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Intermittent</td>
<td>Continuous</td>
<td></td>
</tr>
<tr>
<td>12 Volt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115-12-8</td>
<td>115/230</td>
<td>8</td>
<td>5</td>
<td>6.0</td>
</tr>
<tr>
<td>115-12-20A</td>
<td>115/230</td>
<td>20</td>
<td>8</td>
<td>5.7</td>
</tr>
<tr>
<td>115-12-35CD</td>
<td>115/230</td>
<td>35</td>
<td>35</td>
<td>6.5</td>
</tr>
<tr>
<td>24 Volt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115-24-10</td>
<td>115/230</td>
<td>10</td>
<td>4</td>
<td>5.7</td>
</tr>
<tr>
<td>115-24-18CD</td>
<td>115/230</td>
<td>18</td>
<td>18</td>
<td>6.5</td>
</tr>
<tr>
<td>115-24-35CD</td>
<td>115/230</td>
<td>35</td>
<td>35</td>
<td>6.5</td>
</tr>
</tbody>
</table>

**Specifications**

**Input Range**
105-125 / 210-250 VAC (selectable), 50 - 60 Hz; Derate to 50% output below 110 and 220 VAC

**Operating Temperature**

- **Standard Units**
  0-50°C, Derate Linearly From 100% @ 40°C To 50% @ 50°C
  Thermal shutdown @ 85°C Case temperature
- **C.D. Units**
  0-65°C, Derate Linearly From 100% @ 50°C To 50% @ 65°C Thermal Shutdown @ 85°C Case temperature

**Duty Cycle**
Intermittent: 20 minutes max on time, 20% duty
Continuous: 24 Hours/Day 100% Duty

**Options**

- Modify for use as a Battery Charger
- Output voltage adjust (see Output Voltage for range)
- Transfer relay for back-up battery in event of power failure (ERC option)

**Output Voltage**

- **12 V Models:**
  13.6 VDC (Internally adjustable 12.6-14.5 VDC)
  Ripple: 40mV P-P (@ 110-125 / 220-250 VAC input)
- **24 V Models:**
  24.5 VDC (Internally adjustable 21-27.5 VDC)
  Ripple: 70mV P-P (@ 110-125 / 220-250 VAC input)

**Regulation All Models:**
1% Line and Load (@ 110-125 / 220-250 VAC input)
IC Series Inverter-Chargers

These inverter-chargers deliver pure, sinusoidal AC for flawless operation of all appliances and sensitive electronics and contain charger to replenish battery when AC is present.

- Generates "Perfect Wave" 120 VAC for powering highly input-sensitive computers, electronic controllers/processors
- Built-in high output three stage, temperature compensated charger for rapid battery bank replenishment - programmable for gel-cell, lead-acid or AGM battery type with amp-hour capacity selector
- UL Listed

<table>
<thead>
<tr>
<th>Model</th>
<th>12-1800IC</th>
<th>12-3000IC</th>
<th>24-2200IC</th>
<th>24-4800IC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inverter Output:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watts (Surge)</td>
<td>4000</td>
<td>6500</td>
<td>6,500</td>
<td>14,000</td>
</tr>
<tr>
<td>Watts (Cont.)</td>
<td>1,800</td>
<td>3,000</td>
<td>2,200</td>
<td>4,800</td>
</tr>
<tr>
<td>Wave Type</td>
<td>PS</td>
<td>PS</td>
<td>PS</td>
<td>PS</td>
</tr>
<tr>
<td>Inverter Input:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VDC</td>
<td>11 - 14</td>
<td>11 - 14</td>
<td>22 - 28</td>
<td>22 - 28</td>
</tr>
<tr>
<td>Max. Amps</td>
<td>180</td>
<td>300</td>
<td>110</td>
<td>240</td>
</tr>
<tr>
<td>Charger Input:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Amps</td>
<td>15</td>
<td>20</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>Charger Output:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max Amps @ V</td>
<td>85A@12V</td>
<td>105A@12V</td>
<td>40A@24V</td>
<td>105A@24V</td>
</tr>
<tr>
<td>Case (H x W x D):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case Size Ref.</td>
<td>7.5&quot; x 16&quot; x 15.5&quot;</td>
<td>10&quot; x 17&quot; x 16&quot;</td>
<td>7.5&quot; x 16&quot; x 15.5&quot;</td>
<td>10&quot; x 17&quot; x 16&quot;</td>
</tr>
<tr>
<td>Weight (Lbs.)</td>
<td>54</td>
<td>75</td>
<td>54</td>
<td>75</td>
</tr>
</tbody>
</table>

PS Series Inverters

The PS Series inverters produce high efficient, pure sine wave output from 12 or 24 volt battery input with high surge power for motor start making it ideal for mobile applications. A power saving mode, with user friendly adjustable set points, conserves batteries when not in use. A remote control/display panel and front panel indicator lights allows for easy analysis and control.

- 1000, 1500, 2000W models
- Pure sine wave 115V output
- High efficiency ~ 90%
- Power saving mode conserves battery when not in use, user adjustable set points
- AC duplex outlet on front panel
- Status indicators lights on front panel: input voltage, output power level, power mode, fault status
- Remote control/display included
- Protection: low input voltage, overload, short circuit, overtemp
- Rugged compact case, ideal for mobile and industrial applications

### Optional Remote Control and Indicator Panel

Model: ICR-2
Specify 25 or 50 feet or wire length
Convert 20–50 VDC to 12 or 24 VDC negative ground output for powering communication/navigation equipment, on negative ground systems. Ideal for powering voice and data transceivers in mobile applications.

**Features**

- Excellent Regulation: Output voltage maintained within 1% under all line and load conditions within rating
- Heat generated by semi-conductors is extracted and dissipated by large heat sink fins that maximize air contact for cool operation and long life of components
- Polyurethane conformal coating on PC boards and corrosion-resistant anodized aluminum case with heavy duty shock mounts assure survival in hostile environments
- Numerous converter and load protection circuits: Current limiting*: automatic thermal shutdown; short circuit proof*; reverse polarity and over-voltage protection.

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage</th>
<th>Output Voltage</th>
<th>Output Amps</th>
<th>Dimensions (H x W x D)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-12-3</td>
<td>17-32</td>
<td>13.6</td>
<td>3</td>
<td>3.5 x 3.5 x 1.75</td>
<td>1 lb</td>
</tr>
<tr>
<td>32-12-6</td>
<td>20-50</td>
<td>13.6</td>
<td>6</td>
<td>5 x 3.5 x 1.75</td>
<td>2.5 lb</td>
</tr>
<tr>
<td>32-12-10</td>
<td>20-50</td>
<td>13.6</td>
<td>10</td>
<td>5 x 5 x 1.75</td>
<td>4 lb</td>
</tr>
<tr>
<td>32-12-15</td>
<td>20-50</td>
<td>13.6</td>
<td>15-15</td>
<td>5 x 5 x 1.75</td>
<td>5 lb</td>
</tr>
<tr>
<td>32-12-15</td>
<td>20-50</td>
<td>13.6</td>
<td>15-15</td>
<td>5 x 5 x 1.75</td>
<td>5 lb</td>
</tr>
<tr>
<td>32-12-15</td>
<td>20-50</td>
<td>13.6</td>
<td>15-15</td>
<td>5 x 5 x 1.75</td>
<td>5 lb</td>
</tr>
<tr>
<td>32-24-25</td>
<td>20-50</td>
<td>13.6</td>
<td>25-20</td>
<td>5.0 x 4.7 x 1.40</td>
<td>7.5 lb</td>
</tr>
<tr>
<td>32-24-25</td>
<td>20-50</td>
<td>13.6</td>
<td>25-20</td>
<td>5.0 x 4.7 x 1.40</td>
<td>7.5 lb</td>
</tr>
<tr>
<td>32-24-25</td>
<td>20-50</td>
<td>13.6</td>
<td>35-30</td>
<td>6.0 x 4.7 x 1.60</td>
<td>12 lb</td>
</tr>
<tr>
<td>32-24-25</td>
<td>20-50</td>
<td>13.6</td>
<td>35-30</td>
<td>6.0 x 4.7 x 1.60</td>
<td>12 lb</td>
</tr>
<tr>
<td>32-24-25</td>
<td>20-50</td>
<td>13.6</td>
<td>50-40</td>
<td>6.2 x 6.8 x 1.81</td>
<td>16 lb</td>
</tr>
<tr>
<td>32-24-25</td>
<td>20-50</td>
<td>13.6</td>
<td>50-40</td>
<td>6.2 x 6.8 x 1.81</td>
<td>16 lb</td>
</tr>
</tbody>
</table>

Option: Operation as battery charger or parallel redundant operation* – derate to continuous duty rating (contact factory)
Except Model: 24-12-3

**Specifications**

- Output: 13.6 VDC (internally adjustable 12.6-14.5) or 24.5 VDC (or specify)
- Ripple: 150 mV P-P maximum
- Regulation: 1% Line/Load
- Duty Cycle Ratings*: Intermittent - 20 minutes max on time, 20% duty. Current limit set at approx. 105% of intermittent rating. Continuous - 24 hours, 100% duty
- *24-12-3: 2 minute max on time
- Idle Current: Less than 100 mA (including power “ON” light)
- Operating Temp: 0-50° C. Derate linearly from 100% @ 40° C to 50% @ 50° C. Thermal shutdown: @ 70° C Case Temperature
- Model 24-12-3: Full output -25°C to + 30°C; Derate linearly from 100% @ +30°C to 45% @ +50°C
- Switching Frequency: 40 Khz
- Efficiency: 85% - Typical
- Isolation – Output/Chassis; Input/chassis: 250 VDC
- Certification: Carries the CE mark

**Option: Extreme Vibration Mounting Kit**

The Extreme Vibration Mounting Kit is available to protect NEWMAR power converters from the extreme stresses of shock and vibration when mounted on high-vibration vehicles.

The kit replaces the standard vibration kit provided with the unit and fits into the unit’s mounting flange to act as a “super shock absorber” for electronics in high-vibe applications. It is available to fit all NEWMAR units from 2 to 70 lbs. Specify KIT–L for units which weigh 2–15 lbs. and Kit–H for units which weigh 16-70 lbs. (Except model 24-12-3).
**DC Converter - Isolated & ISP Series**

**Isolated Series**
This series provides voltage conversion as well as input/output isolation, allowing use of negative ground electronics on off-highway vehicles which typically employ positive ground battery systems. May also be used as a voltage stabilizer and filter for sensitive equipment.

**Features**
- Wide range of input voltage
- Precise output voltage regulation
- Reverse polarity protection
- Input fuse/Output fuse
- Total input/output isolation, pos. or neg. ground
- Current limiting, short circuit proof output
- Automatic re-setting thermal shutdown
- High/low input voltage shutdown
- Power "ON" light
- Polyurethane conformal coating on PC board
- Rugged case designed for high vibration applications

**Performance Specifications: Isolated and ISP Series**

**Output:** 13.6 VDC (internally adjustable 12.6-14.5) or 24.5 VDC (or specify)

**Ripple:** 150 mV P-P Regulation: +/- 2% Line/Load Duty

**Cycle Ratings**: Intermittent - 20 minutes, max on time, 20% duty. Continuous - 24 hours, 100% duty. *Current limit set at approximately 105% of intermittent rating

**Idle Current**: (including power "on" indicator light) approx. 50 mA

**Operating Temp:**
- **Isolated Series:** 0-50°C; derate linearly from 100% @ 40°C to 50% @ 50°C
- **ISP Series:** -40°C to +80°C
- Thermal shutdown @ 85°C
- Efficiency: 85% - typical.

**DC Isolation:** Input/Output, Input/Chassis, Output/Chassis:
- **Isolated Series:** 250 VDC
- **ISP Series:** 1,400 VDC

**Options - ISP and Isolated**
- Operation as a battery charger or parallel/redundant operation (contact factory)
- High vibration mounting kit (page 8)
- 24 VDC output (contact factory)

---

**Isolated Model**

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage</th>
<th>Output Voltage</th>
<th>Output Amps</th>
<th>Dimensions (H x W x D)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intermittent</td>
<td>Continuous</td>
<td></td>
<td>Inches</td>
<td></td>
</tr>
<tr>
<td>12-12-12I</td>
<td>10 - 16**</td>
<td>13.6</td>
<td>12</td>
<td>8</td>
<td>4.25 x 5.9 x 14.0</td>
</tr>
<tr>
<td>12-12-35I</td>
<td>10 - 16**</td>
<td>13.6</td>
<td>35</td>
<td>20</td>
<td>6.0 x 6.8 x 16.5</td>
</tr>
<tr>
<td>48-12-6I</td>
<td>20 - 56</td>
<td>13.6</td>
<td>6</td>
<td>6</td>
<td>4.25 x 5.9 x 7.7</td>
</tr>
<tr>
<td>48-12-18I</td>
<td>20 - 56</td>
<td>13.6</td>
<td>18</td>
<td>10</td>
<td>4.25 x 5.9 x 14.0</td>
</tr>
<tr>
<td>48-12-35I</td>
<td>20 - 56</td>
<td>13.6</td>
<td>35</td>
<td>20</td>
<td>6.0 x 6.8 x 16.5</td>
</tr>
</tbody>
</table>

**ISP Series**

The ISP series offers the benefits of an isolated converter (above) plus protection against line transients and voltage spikes typically caused by large DC motors and switching transients often encountered on fork lifts, locomotives and light rail. A special circuit clamps input spikes to a safe level, protecting both the converter and the powered equipment.

**ISP Model**

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage</th>
<th>Output Voltage</th>
<th>Output Amps</th>
<th>Dimensions (H x W x D)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intermittent</td>
<td>Continuous</td>
<td></td>
<td>Inches</td>
<td>Lbs.</td>
</tr>
<tr>
<td></td>
<td>Lbs.</td>
<td>Centimeters</td>
<td></td>
<td>Kgs.</td>
<td></td>
</tr>
<tr>
<td>36-12-6ISP†</td>
<td>18 - 65</td>
<td>13.6</td>
<td>6</td>
<td>6</td>
<td>4.25 x 5.9 x 7.7</td>
</tr>
<tr>
<td>36-12-18ISP</td>
<td>20 - 65</td>
<td>13.6</td>
<td>18</td>
<td>10</td>
<td>6.0 x 6.8 x 13.7</td>
</tr>
<tr>
<td>36-12-35ISP*</td>
<td>20 - 65</td>
<td>13.6</td>
<td>35</td>
<td>20</td>
<td>6.0 x 6.8 x 16.5</td>
</tr>
<tr>
<td>72-12-6ISP</td>
<td>42 - 90</td>
<td>13.6</td>
<td>6</td>
<td>6</td>
<td>4.25 x 5.9 x 7.7</td>
</tr>
<tr>
<td>72-12-18ISP</td>
<td>42 - 90</td>
<td>13.6</td>
<td>18</td>
<td>10</td>
<td>6.0 x 6.8 x 13.7</td>
</tr>
<tr>
<td>110-12-18ISP</td>
<td>80 - 140</td>
<td>13.6</td>
<td>18</td>
<td>10</td>
<td>6.0 x 6.8 x 13.7</td>
</tr>
</tbody>
</table>

† This model EMC and safety CE certified for sales within the European Union.
*Build to order only – 10 unit minimum

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**NEWMAR**

**Powering the Network**

Newport Beach, CA USA

www.newmartelecom.com • 800-854-3906
These "UP" converters produce 24 volts from 12 volt systems and are ideal for managing dual voltage applications on mobile applications without having to install a 24 volt battery and dedicated charging system. Choose from two types depending on your application:

In the Standard, Non-Isolated Series the 12V input and 24V output share a common negative ground and are ideal when installing certain electronics that operate better on 24 volts when a robust 12 volt system exists. Models available in outputs of 7, 16 and 25 amps.

The Isolated Series allows compatibility between positive and negative ground systems, for example installing negative 24V electronics on a 12V floating ground aluminum vessel. The isolated series is also a good choice for dual voltage system where noise and interference is an issue. Its input/output partitioning circuit prevents noise on the 12 volt system from being transmitted to the 24 volt side.

### Standard, Non-Isolated Series
- Intended for use on negative ground systems
- 10 - 15 VDC input range
- Available in 7, 16 and 25 amp outputs
- Current limited, voltage spike suppression, automatic thermal shutdown and recovery

### Options for Standard, Non-Isolated
- Operation as a battery charger (contact factory)
- Parallel/redundant operation (contact factory)
- High vibration mounting kit (page 8 for more information)
- Non-standard output voltage (contact factory)

### Isolated Series
- Allows positive/negative ground compatibility between 12V battery and 24V accessories
- Wide range input, 10 - 16V, regulates to 24.5V
- Superior noise reduction
- Input/output isolation 250VDC
- Heavy duty powder coated aluminum case
- Available in 6 and 18 amp outputs
- Anodized aluminum case
- Available on special order as battery charger

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage</th>
<th>Output Voltage</th>
<th>Output Amps</th>
<th>Dimensions (H x W x D)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Intermittent</td>
<td>Inches</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Continuous</td>
<td>Centimeters</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lbs.</td>
<td>Kg.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard - Non-Isolated</th>
<th>12-24-7</th>
<th>10 - 15</th>
<th>27.2</th>
<th>7</th>
<th>7</th>
<th>3.5 x 3.5 x 1.75</th>
<th>8.9 x 8.9 x 4.5</th>
<th>1.4</th>
<th>.64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard - Non-Isolated</td>
<td>12-24-16</td>
<td>10 - 15</td>
<td>27.2</td>
<td>16</td>
<td>16</td>
<td>3 x 5 x 9.25</td>
<td>7.62 x 12.7 x 23.5</td>
<td>3.35</td>
<td>1.51</td>
</tr>
<tr>
<td>Standard - Non-Isolated</td>
<td>12-24-25</td>
<td>10 - 15</td>
<td>27.2</td>
<td>25</td>
<td>25</td>
<td>6.0 x 6.8 x 16.5</td>
<td>15.2 x 17.3 x 41.9</td>
<td>4.1</td>
<td>1.86</td>
</tr>
<tr>
<td>Isolated</td>
<td>12-24-6I</td>
<td>10 - 16*</td>
<td>24.5</td>
<td>6</td>
<td>4</td>
<td>4.25 x 5.9 x 14.0</td>
<td>10.8 x 15.0 x 35.6</td>
<td>6</td>
<td>2.7</td>
</tr>
<tr>
<td>Isolated</td>
<td>12-24-18I</td>
<td>10 - 16*</td>
<td>24.5</td>
<td>18</td>
<td>10</td>
<td>6.0 x 6.8 x 16.5</td>
<td>15.2 x 17.3 x 41.9</td>
<td>12</td>
<td>5.5</td>
</tr>
</tbody>
</table>

*11.5 VDC min. start-up voltage, then operates @ 10-16 VDC from 1 amp min. to full load
DC Power Conditioners

12 & 24 Volt Stabilizing Converters

Feed sensitive electronics with proper voltage regardless of battery condition. These stabilizing converters provide continuous, precisely regulated output over the entire range of a battery's usable voltage. This prevents subjecting loads to fluctuating input voltage which can cause shutdown, diminish performance and possibly damage sensitive circuitry.

These converters provide total input/output isolation, virtually eliminating conducted line noise and permitting connection of negative ground loads to positive or floating ground systems, or vice versa. They can also be modified for use as battery chargers, allowing maintenance of a battery at a great distance from the charging source, providing reserve power if the main source fails. The rugged anodized aluminum case is ideal for mobile applications.

Application Benefits Include

- Operate electronics at optimal input voltage, even from nearly drained batteries
- Boost voltage to compensate for voltage drops in long wire runs from batteries
- Eliminate voltage drops during momentary high current drain from batteries, as during engine start
- Eliminate voltage fluctuation from charge sources
- Eliminate voltage overshoot due to sudden removal of high current load

Options/Factory Modifications (contact factory for details)

- Operation as a battery charger
- Parallel/redundant operation
- Non-standard output voltage

Model Input Voltage | Voltage | Output Voltage | Amps Intermittent | Amps Continuous | Dimensions (H x W x D) | Weight
--- | --- | --- | --- | --- | --- | ---
12-12-3I | 10 - 16 | 13.6 | 3 | 3 | 3.5 x 3.5 x 1.75 | 8.9 x 8.9 x 4.5 | 1.45
12-12-6I | 10 - 16 | 13.6 | 6 | 6 | 3.5 x 3.5 x 1.75 | 8.9 x 8.9 x 4.5 | 1.45
12-12-12I | 10 - 16* | 13.6 | 12 | 8 | 4.25 x 5.9 x 14.0 | 10.8 x 15.0 x 35.6 | 6.27
12-12-35I | 10 - 16* | 13.6 | 35 | 20 | 6.0 x 6.8 x 16.5 | 15.2 x 17.3 x 41.9 | 12.55
24-24-3I | 20 - 32 | 27.2 | 3 | 3 | 6.0 x 6.8 x 16.5 | 15.2 x 17.3 x 41.9 | 12.55
24-24-7I | 20 - 32 | 27.2 | 7 | 7 | 7.0 x 3.5 x 1.75 | 7.0 x 3.5 x 1.75 | 2.9
48-24-9I | 20 - 56 | 24.5 | 9 | 5 | 4.25 x 5.9 x 14.0 | 10.8 x 15.0 x 35.6 | 3.6
48-24-18I | 20 - 56 | 24.5 | 18 | 10 | 10.6 x 6.8 x 16.5 | 15.2 x 17.3 x 41.9 | 5.5

* 115 VDC minimum start-up voltage, then operates @ 10 - 16 VDC from 1 amp minimum to full load

Powering the Network
Newport Beach, CA USA  www.newmartelecom.com  • 800-854-3906
Multi-TimerFuse Distribution System

- Simplifies installation and wiring of vehicle electronics
- 6 fused circuits with multiple timers provide independent circuit deactivation and conserve battery power:
  - Programmable timers disconnects selected loads after ignition is off
  - Programmable Low Battery Voltage Disconnect points
- Modular design - compact 6 circuit modules easily bus together providing expansion to meet load requirements

Features
- Quick and easy way to connect, protect, and program power to emergency and service vehicle accessories
- Provides 6 dedicated fused circuits configured in 3 load group to power radios, emergency lights, siren, video, MDT, radar, and more
- 3 independent timers provide flexible circuit activation/deactivation allowing installer to set battery power use priority for each 2 circuit Load Group:
  - Powered Only With Ignition
  - Timed Disconnect
  - Always On With Load Group LVD
  - Always On, No Load Group LVD
- Each circuit is fuse protected with LED indicator which identifies the blown fuse position, simplifying trouble shooting
- Master Low Voltage Disconnect protects batteries from extreme discharge
- Heavy duty studs for battery connections
- Screw terminals for secure load connections
- Increase circuit capacity by wiring multiple units using parallel busing kit
- Sum two fused circuits into one high power (40A) circuit using parallel kit

Expanded System Example: 3 x MT-FD-6, 18 Circuits

<table>
<thead>
<tr>
<th>Model</th>
<th>Circuits</th>
<th>Timers</th>
<th>Max Loads</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT-FD6</td>
<td>6</td>
<td>3</td>
<td>100A Total, 20A per position</td>
</tr>
</tbody>
</table>

General Specifications

Input: 12V, neg. ground
Power Consumption: Idle: 8mA, Active: 180 mA/circuit
Maximum Load: Module: 100A, 20A max. per fuse position
Maximum Load: Per System: 3 modules wired in parallel, 18 circuits
Fuse Type: ATC/ATO (not included)
Programmable Shutdown per Load Group: 2 min. – 13 hours
Programmable Disconnect Range: 11.8 - 10.6V DC
Master Low Voltage Disconnect: @ 10.5V (factory programmable 10.0 - 11.8V)

Mechanical
Dimensions/Weight: 2.0” H x 5.2” W x 6.2” D/2 Lbs.
Case: Powder coated aluminum
Bus: Nickel plated copper
Protective Cover: Top panel connections and switches
Options:
- Parallel Bus Kit (PBK) for circuit expansion
- Parallel Terminal Kit (PTK) for summing two fused circuits into one
Low Voltage Disconnects

Discharging batteries beyond a critical low voltage can damage the batteries as well as sensitive electronic loads, and require a longer recharge interval. A low voltage disconnect prevents this condition. The LVD contains a sense and control circuit housed in a compact, rugged, vinyl-clad aluminum case. It is installed in-line between the battery and the load. The unit continually monitors battery voltage and if it falls below a preset voltage threshold, the load is automatically disconnected. When batteries are recharged past another pre-set voltage the load is reconnected. Connect and disconnect points are user adjustable.

Typical LVD Installation

Specifications

- Operating Temperature: 0 - 50°C
- Mechanical Case: Powder coated aluminum
- Dimensions (H x W x D): 5.25” x 5.25” x 3.5”
- Weight: 2 Lbs. All Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Input Voltage</th>
<th>Contact Current Rating</th>
<th>Factory Set Actuation Points</th>
<th>Adjustment Range</th>
<th>Dimensions (H x W x D)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVD 12-30</td>
<td>12V (Neg Ground)</td>
<td>30 Amps</td>
<td>10.4 VDC</td>
<td>9 - 15 VDC</td>
<td>5.25” x 5.25” x 3.5” (Mounted Vertically, All Models)</td>
<td>2 Lbs. All Models</td>
</tr>
<tr>
<td>LVD 12-75</td>
<td>12V (Neg. Ground)</td>
<td>75 Amps</td>
<td>10.4 VDC</td>
<td>9 - 15 VDC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LVD 24-50</td>
<td>24V (Neg. Ground)</td>
<td>50 Amps</td>
<td>21.0 VDC</td>
<td>18 - 30 VDC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LVD 48-30</td>
<td>48V (Pos. Ground)</td>
<td>30 Amps</td>
<td>42.0 VDC</td>
<td>38 - 60 VDC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Power Timer

Eliminate dead vehicle batteries caused by power drain from radios and data terminals that must operate while the engine is off. Allows use of accessory loads per programmed time limit while preserving battery for engine start.

Features

- Programmable disconnect time limit, 15 minutes to 8 hours, so that you can match your auxiliary load use to battery capacity, providing maximum run time yet still ensuring adequate reserve for engine start
- Prevents dead batteries due to accessories being left on and forgotten
- Once power off circuit is activated, power to auxiliary circuits is automatically restored when engine started. Optional ignition sense input resets power ‘on’ without having to start engine; no delay in use of equipment
- Low and High Voltage Disconnect
- Simple 3 wire installation: 1) Power in from battery, 2) power out to loads, 3) chassis ground.
- Rugged construction, powdered coated case with epoxy potted components with waterproof time-out setting switches. Designed to withstand 80°C and vibration of engine compartment applications, and perform in demanding specialty vehicle applications
- 30 amp rating: can be applied to multiple auxiliary loads/circuits. Multiple devices can be left on during emergency calls without running engine

Timer Circuit Configurations

Range: 15 min. - 8 hours
Increments:
Minutes: 6, 15, 18, 24, 30, 45
Hours: 1, 1.5, 2, 3, 4, 8
Programming: Dip switches on top of unit

Wiring

Input
- + DC (fuse provided)
- - DC
- Ignition sense

Output
- + DC to loads

LED’s Indicate Output Status

Present, Ok
Present, On Timer
Disconnected, Timed Out
Disconnected, Low Voltage

Model Description

TMR-30N 12VDC Power Timer
Dimensions (H x W x D): 1.25” x 4.25” x 2”
Weight: 1 Lb.
Battery Integrators

Charging multiple battery banks without use of diode isolators dictates that the batteries be connected or “integrated” only whenever a charge voltage is present so that they may be charged simultaneously, then disconnected or “isolated” when in use to allow for selective discharge and avoid having the secondary or standby battery drain into the primary battery.

Battery Integrators perform this function automatically, acting as a “smart” switch to connect independent battery banks only when a charging voltage is present. Otherwise, they are isolated, and discharge between banks is prevented.

The Battery Integrator causes no voltage drop in the charging system, while the multiple batteries are charged as a single bank whenever a charging source of approximately 13.2 VDC or 26.4 VDC or greater is present (depending on model).

When the alternator or charger is off or a large load causes the voltage to drop below the disconnect point the unit breaks the common tie between the banks. This allows selective battery discharge and prevents “dumping” of a higher-charged bank into a lower charged bank. The unit may also be remotely activated to connect other batteries through the key starter or a manual switch to provide an added “boost” from the secondary battery whenever the starter is engaged and the unit senses there is sufficient voltage in that battery to provide an assist.

Battery Isolators

Heavy duty isolators allow charging multiple batteries automatically from one or two alternators and prevent discharge from one battery bank to another. Each battery is charged according to need without overcharging. Rated for 12-48 volt negative ground systems.

NOTE: These battery isolators are not compatible with self exciting alternators. Please consult the manufacturer of your alternator if you are unsure of your configuration.

<table>
<thead>
<tr>
<th>Model</th>
<th>Alternator Sources</th>
<th>Battery Bank Outputs</th>
<th>Max. Alternator Input Capacity</th>
<th>Dimensions (L x W x H)</th>
<th>Weight Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2-70</td>
<td>1</td>
<td>2</td>
<td>70 Amps</td>
<td>3.25” x 4.5” x 3.1”</td>
<td>2</td>
</tr>
<tr>
<td>1-3-70</td>
<td>1</td>
<td>3</td>
<td>70 Amps</td>
<td>3.25” x 4.5” x 3.1”</td>
<td>2</td>
</tr>
<tr>
<td>1-2-120</td>
<td>1</td>
<td>2</td>
<td>120 Amps</td>
<td>6.5” x 4.5” x 3.1”</td>
<td>4</td>
</tr>
<tr>
<td>1-3-120</td>
<td>1</td>
<td>3</td>
<td>120 Amps</td>
<td>6.5” x 4.5” x 3.1”</td>
<td>3</td>
</tr>
<tr>
<td>2-3-70</td>
<td>2</td>
<td>3</td>
<td>70 Amps</td>
<td>6.5” x 4.5” x 3.1”</td>
<td>3</td>
</tr>
<tr>
<td>2-3-120</td>
<td>2</td>
<td>3</td>
<td>120 Amps</td>
<td>12.5” x 4.5” x 3.1”</td>
<td>5</td>
</tr>
<tr>
<td>1-3-165</td>
<td>1</td>
<td>3</td>
<td>165 Amps</td>
<td>9” x 4.5” x 3.1”</td>
<td>5</td>
</tr>
</tbody>
</table>

Specifications

Operating Temperature: -40 to 80° C
Duty Cycle: Continuous rating to 50° C. Derate linearly to 70% @ 80° C
Temp. Rise: 5° C at full rated current (mount vertically for optimum cooling)
Voltage Drop: 0.7V @ 50% load, 0.9V @ full load

Typical Installation

Inverter-Charger, Charger or Alternator

Battery Integrator

Primary Battery Bank

Secondary Battery Bank
Noise Filters

The interference or electronic “noise” generated by alternators, ignition systems, motors, etc., can render a vehicle’s radio, data receivers or other electronic equipment making them virtually useless. This interference takes the form of popping or static on radios or audio gear and garbled images or “hash” on video displays.

These specialized filters can be used singly or in combination to attenuate conducted line noise, either at the affected equipment or at the noise source. The “PC” models feature inductor and capacitor circuit that filters both the “+” and “−” leads.

Features

- Heavy duty construction
- Operate on 6-48 VDC systems
- Integral mounting flanges for secure installation
- Nickel-plated brass stud connectors on alternator filter (model 150A) accommodate high current cables and terminals
- Color coded wire leads on all other models make in-line installation easy

<table>
<thead>
<tr>
<th>Model</th>
<th>Rating</th>
<th>Installation Location</th>
<th>Filtered Frequencies</th>
<th>Dimensions (Inches)</th>
<th>Weight (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150A</td>
<td>150 Amp</td>
<td>At alternator</td>
<td>70 kHz. - 100 MHz.</td>
<td>3.25 x 5.75 x 3.25</td>
<td>3</td>
</tr>
<tr>
<td>PC-10</td>
<td>10 Amp</td>
<td>At affected equipment in “+” and “−” leads</td>
<td>Audio - 200 MHz.</td>
<td>1.25 x 4.25 x 3.0</td>
<td>1</td>
</tr>
<tr>
<td>PC-25</td>
<td>25 Amp</td>
<td>At affected equipment in “+” and “−” leads</td>
<td>Audio - 200 MHz.</td>
<td>2.0 x 4.25 x 3.25</td>
<td>2</td>
</tr>
</tbody>
</table>

Automatic Power Selector

The Automatic Power Selector (APS) is a solid state device which enables installation of a seamless, redundant power system for critical electronic loads. It selects the higher voltage of two isolated DC power sources and routes power to the load. Should one source falter or fail, the other will automatically supply the load with no transfer delay, operation continues uninterrupted.

Easy installation, two independent power sources are wired to the APS and routed in a single output to the vital load. Rugged, rust-proof anodized aluminum case.

<table>
<thead>
<tr>
<th>Model</th>
<th>Max Loads</th>
<th>Voltage Rating</th>
<th>Stud Size</th>
<th>Dimensions (Inches)</th>
<th>Weight (Lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>APS-70</td>
<td>70 Amps</td>
<td>6 - 50 VDC, neg. ground</td>
<td>6mm</td>
<td>3.25 x 4.5 x 3.1</td>
<td>2</td>
</tr>
<tr>
<td>APS-160</td>
<td>160 Amps</td>
<td>6 - 50 VDC, neg. ground</td>
<td>6mm</td>
<td>9.0 x 4.5 x 3.1</td>
<td>5</td>
</tr>
</tbody>
</table>
Features

- Industrial grade panel, components and heavy duty mounts
- Numerous size panels match available space (1.2 to 7+A); panels can be wired for higher output
- Voltage controller adapts to properly charging different battery types
- Kits contain parts needed for various types of installations
- 12 and 24VDC systems

Kit Includes

Detailed instructions and parts assuring professional installation, eliminates installer guess work and parts sourcing.

- Industrial grade solar panel with 10 year warranty
- Charge controller with temperature compensated, three step output and battery type selection (Flooded/AGM)
- Heavy duty mounting system
- 20 foot duplex wire, terminals and cable ties
- Waterproof wire feed-through fitting
- Mounting hardware included for various installations

Standard Systems

<table>
<thead>
<tr>
<th>Model</th>
<th>Electrical</th>
<th>Dimensions</th>
<th>Weight Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC Volts</td>
<td>DC Amps</td>
<td>H</td>
</tr>
<tr>
<td>SOL 20</td>
<td>12</td>
<td>1.2</td>
<td>0.98”</td>
</tr>
<tr>
<td>SOL 45</td>
<td>12</td>
<td>2.5</td>
<td>1.38”</td>
</tr>
<tr>
<td>SOL 65</td>
<td>12</td>
<td>3.7</td>
<td>1.38”</td>
</tr>
<tr>
<td>SOL 80</td>
<td>12</td>
<td>4.9</td>
<td>1.38”</td>
</tr>
<tr>
<td>SOL 100</td>
<td>12</td>
<td>5.9</td>
<td>1.38”</td>
</tr>
<tr>
<td>SOL 120</td>
<td>12</td>
<td>7.0</td>
<td>1.97”</td>
</tr>
<tr>
<td>SOL-24-40</td>
<td>24</td>
<td>1.2</td>
<td>1.38”</td>
</tr>
<tr>
<td>SOL-24-60</td>
<td>24</td>
<td>1.7</td>
<td>1.38”</td>
</tr>
<tr>
<td>SOL-24-85</td>
<td>24</td>
<td>2.5</td>
<td>1.38”</td>
</tr>
<tr>
<td>SOL-24-120</td>
<td>24</td>
<td>3.6</td>
<td>1.97”</td>
</tr>
<tr>
<td>SOL-24-210</td>
<td>24</td>
<td>7.1</td>
<td>1.97”</td>
</tr>
</tbody>
</table>

Solar Panel Kit

<table>
<thead>
<tr>
<th>Model</th>
<th>Electrical</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC Volts</td>
<td>DC Amps</td>
</tr>
<tr>
<td>SC-12-10</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>SC-12-20</td>
<td>12</td>
<td>20</td>
</tr>
</tbody>
</table>

Custom Systems

Use the following selection guide to configure the components needed for a custom system.

Process:

1) Select number and sizes of 12 or 24V solar panels from list above to meet your power and space requirements. Note, you may mix sizes of panels within voltage range.

2) Add up the amperage of the selected panels.

3) Select controller that exceeds the total DC amp output of the panels selected.

4) Specify the part numbers of the panels and controller selected on your order. Note, mounting hardware, wire, and wire feed through fitting is included with each panel.
Custom Panels

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Send to salesPTN@newmarpower.com

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- Any Size, Shape, Graphics, Lettering
- Meters, Breakers, Switches, Alarms, & Custom Components
- Fiber Optic Back Lighting Option
- Pre-Wired and Ready for Installation

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Examples:
These highly versatile digital instruments enable continuous and comprehensive monitoring of mobile AC and DC electrical systems. They provide quick easy-to-read and accurate information on all important aspects of electrical system status: voltage, current, power consumed, power available and AC frequency. In addition, abnormal system conditions such as high/low voltage trigger user-adjustable alarms.

All read-outs and programming are controlled via touch pads on the instrument face. LCD displays are easily read, even in bright sunlight. Backlighting is provided for use at night or in low-light installations. Instruments mount in 2 1/8” diameter hole and standard instrument faces are available 2 1/2” square.

### ACE Displays

- Displays volts, amps, frequency and wattage of 115/230 VAC systems.
- High/low volt/frequency alarms. Current transformer included.

### ACE-VAF-100

- ACE meter, same as above
- Operating Voltage: 9 - 33VDC
- Input Signal: J1939

### DCE Displays

- Displays DC volts, amps, energy used/remaining in battery system; 500 amp shunt included.
- High/low voltage, low amp-hour alarms.

### DCE-VAH-110

- DCE Meter, same as above
- Operating Voltage: 9 - 33VDC
- Input Signal: J1939

### DCV Displays

- Displays DC volts for three battery banks.
- High/low voltage alarms.

### Generator Power Monitor

- This versatile and compact, 4” x 4” color LED display instrument provides simultaneous read out of generator and shore power data: AC Voltage, Frequency, Amperage of two 120V legs of 240V circuit. Programmable alarm settings on each function produces 85 db audio alert as well as visual red blinking display. In addition, the Generator Monitor logs cumulative generator operation hours with programmable service interval hour settings and notification.

### Engine Function Monitor

- The Engine Monitor is a compact, 4” x 4” color LED display that provides simultaneous read out of vital engine data including: DC Voltage, Oil Pressure, Temperature, and Tachometer from J1939 can bus. Programmable alarm settings on each function produces 85 db audio alert as well as visual red blinking display.

---

**Model** | **Description** | **Meter Face Dimension**
---|---|---
ACE | Displays volts, amps, frequency and wattage of 115/230 VAC systems. High/low volt/frequency alarms. Current transformer included. | 2-1/2” x 2-1/2”
ACE-VAF-100 | ACE meter, same as above | 4-1/4” x 4-1/4”
DCE | Displays DC volts, amps, energy used/remaining in battery system; 500 amp shunt included. High/low voltage, low amp-hour alarms. | 2-1/2” x 2-1/2”
DCE-VAH-110 | DCE Meter, same as above | 4-1/4” x 4-1/4”
DCV | Displays DC volts for three battery banks. High/low voltage alarms. | 2-1/2” x 2-1/2”

---

**Model** | **Electrical** | **Dimensions**
---|---|---
VAAFH | Operating Volts: 9 - 33VDC | H: 4.0” W: 4.0” D: 2.7”

---

**Model** | **Electrical** | **Dimensions**
---|---|---
VOTT | Operating Volts: 9 - 33VDC, Input Signal: J1939 | H: 4.0” W: 4.0” D: 2.7”
Thru-Dex PX Series Junction Boxes
- Waterproof junction box with terminal strip for electronic connections in areas subject to spray, washdowns, etc.
- Rugged, non-corrosive polypropylene housing
- “Universal” cut-to-fit cable entries, diameter range: .14 - .81”
- Brass compression screw terminals
- Wire gauge: 16 AWG

<table>
<thead>
<tr>
<th>Model</th>
<th>Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>PX-1</td>
<td>6 pair</td>
</tr>
<tr>
<td>PX-2</td>
<td>12 pair</td>
</tr>
<tr>
<td>PX-3</td>
<td>18 pair</td>
</tr>
</tbody>
</table>

EX Series Electrical Boxes
- Protective enclosure for wire connectors, terminal blocks, relays, solenoids, fuses, etc.
- Instruments, switches and panels can be surfaced mounted, ample room for rear projection and wiring
- Corrosion resistant polycarbonate case with gasket covers provides water resistance up to IP68
- Knock-outs in numerous sizes on all sides

<table>
<thead>
<tr>
<th>Model</th>
<th>Size L x W x D</th>
<th>Knock-Outs Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX-373</td>
<td>7.09” x 3.7”  x 3.19”</td>
<td>14 ea. PG-16</td>
</tr>
<tr>
<td>EX-474</td>
<td>7.09” x 4.33” x 4.37”</td>
<td>16 ea. PG-16, 4 ea. PG-21, 2 ea. PG-29</td>
</tr>
<tr>
<td>EX-1074</td>
<td>7.09” x 10.0” x 4.37”</td>
<td>24 ea. PG-16, 8 ea. PG-21, 4 ea. PG-29</td>
</tr>
</tbody>
</table>

BX Series Splashproof Junction Boxes
- Splash proof junction box with terminal strip
- Rugged cast aluminum box and cover with enamel finish
- Multiple rubber grommet cable entries
- Brass compression screw terminals

<table>
<thead>
<tr>
<th>Model</th>
<th>Terminals</th>
<th>Wire Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td>BX-1</td>
<td>6 pair</td>
<td>16 AWG</td>
</tr>
<tr>
<td>BX-2</td>
<td>12 pair</td>
<td>16 AWG</td>
</tr>
<tr>
<td>BX-3</td>
<td>22 pair</td>
<td>14 AWG</td>
</tr>
</tbody>
</table>

RA Series Right Angle Waterproof Feed-Thru Fittings
- Route 90° through vertical and horizontal surfaces with wall hugging low profile design, securing cables close to the surface
- Molded of nylon, the Sculpted shape has no sharp edges, providing radiused 90° feed-thru bend in cables without damage
- Easy installation: slide silicone compression rings on cable, mount base piece with waterproof gasket, then attached sealing end cap to create IP-65 waterproof seal

<table>
<thead>
<tr>
<th>Model</th>
<th>Cable Diameter Range (Inches)</th>
<th>Dimensions (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA-1</td>
<td>0.1 - 0.25</td>
<td>2.17 x 1.65 x 0.63</td>
</tr>
<tr>
<td>RA-2</td>
<td>0.27 - 0.35</td>
<td>3.23 x 2.44 x 0.95</td>
</tr>
<tr>
<td>RA-3</td>
<td>0.39 - 0.47</td>
<td>3.23 x 2.44 x 0.95</td>
</tr>
</tbody>
</table>

CCX Series Feed-Thru Fittings
- Create 100% waterproof seal when routing cables in mobile applications
- Allow installation/removal with connector still attached
- Rugged weatherproof nylon with neoprene seal
- Entry Hole pre-drilled

<table>
<thead>
<tr>
<th>Model</th>
<th>Cable Dia. Range</th>
<th>Max. Conn. Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCX-R</td>
<td>.47” - .59”</td>
<td>1.57”</td>
</tr>
<tr>
<td>CCX-S</td>
<td>.35” - .55”</td>
<td>.83”</td>
</tr>
<tr>
<td>CCX-T</td>
<td>.18” - .35”</td>
<td>.83”</td>
</tr>
</tbody>
</table>

DX Series
Similar to CCX Series except installer drills holes in seal to accommodate cable(s) Multiple cables may be routed through a single fitting

<table>
<thead>
<tr>
<th>Model</th>
<th>Drill-Thru Aperture</th>
<th>Max. Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX-2</td>
<td>1.2”</td>
<td>1.2”</td>
</tr>
<tr>
<td>DX-3</td>
<td>1.65”</td>
<td>1.65”</td>
</tr>
<tr>
<td>DX-5*</td>
<td>2.0”</td>
<td>2.0”</td>
</tr>
</tbody>
</table>
### Bus Bars

Heavy duty 500 amp nickel-plated copper bus with 5/16" studs on insulating base (re-inforced nylon resin) with clear protective cover.

<table>
<thead>
<tr>
<th>Model</th>
<th>Qty. of 5/16&quot; Studs</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB-2</td>
<td>3</td>
<td>1/16&quot; x 1-1/2&quot;</td>
</tr>
<tr>
<td>BB-2/8</td>
<td>2 plus 8 - #8 screws</td>
<td>6-1/16&quot; x 1-1/2&quot;</td>
</tr>
<tr>
<td>BB-5</td>
<td>5</td>
<td>6-1/16&quot; x 1-1/2&quot;</td>
</tr>
<tr>
<td>BB-8</td>
<td>8</td>
<td>9-1/16&quot; x 1-1/2&quot;</td>
</tr>
</tbody>
</table>

### Terminal Strips

- Use as a common negative/neutral bus for AC or DC systems. Dual terminal strips in 4 or 8 screw positions on 3/4" centers are secured to a high density insulated base.
- Interlocking bases allow use of multiple terminal strips and bus bars to produce secure and neat wiring assemblies. The terminal strip bases have provisions for either #8 or #10 mounting screws, and no conductive parts in the base are exposed to the mounting surface.
- Bus bars rated to 100 amps

<table>
<thead>
<tr>
<th>Model</th>
<th>Total # of Base Terminals</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-2x4</td>
<td>8</td>
<td>3-1/16&quot; x 1-1/2&quot;</td>
</tr>
<tr>
<td>TS-2x8</td>
<td>16</td>
<td>6-1/16&quot; x 1-1/2&quot;</td>
</tr>
</tbody>
</table>

### Connector Strips

Molded nylon encases 6 or 12 pairs of connectors that use screw compression to secure wires without use of lugs ideal for electronic installations. Brass barrels capture wires and are held in place with a stainless steel “finger” compressed by a screw. The screw does not make contact with the wires, protecting the copper strands from cuts and breakage. Same connector strip used in BX Series boxes.

<table>
<thead>
<tr>
<th>Model</th>
<th># of Terminal Pairs</th>
<th>Max Wire Gauge</th>
<th>Max Amps</th>
<th>Size (L X W X H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS-1</td>
<td>12</td>
<td>16</td>
<td>6</td>
<td>3.75&quot; x .675&quot; x .5&quot;</td>
</tr>
<tr>
<td>CS-2</td>
<td>12</td>
<td>14</td>
<td>10</td>
<td>4.5&quot; x .75&quot; x .75&quot;</td>
</tr>
<tr>
<td>CS-3</td>
<td>12</td>
<td>12</td>
<td>16</td>
<td>5.5&quot; x .875&quot; x .8&quot;</td>
</tr>
</tbody>
</table>

*Per set of terminals*

### Emergency Relay/Charger

The ERC allows emergency battery tie-in to a radio system that is normally operated by a power supply.

Under normal conditions the radio is connected through the ERC to the power supply and the back-up battery receives only a trickle charge to keep it in peak condition.

In the event of AC power failure a relay automatically connects the radio to the back-up battery, restoring the system within one second. When AC power is restored the radio is automatically reconnected to the power supply and the trickle charge resumes to the battery.

<table>
<thead>
<tr>
<th>Model</th>
<th>Amps</th>
<th>Int.</th>
<th>Cont.</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-15</td>
<td>15</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>12-35</td>
<td>35</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>24-35*</td>
<td>35</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

*Built to order*

### Phone-Com Systems

The Phone-Com intercom system provides direct, wired, point-to-point communication, operates on 12 VDC, constructed of high-impact plastic and are available in either classic white or traditional black. Mounting brackets are provided.

- **PI-2**: Two station phone with single call button; sold individually
- **PI-2 SET**: Two station phone set, 40’ interconnect wire, fuse, lugs, mounting hardware
- **PI-10**: Multi-station phone with 10 call buttons, sold individually
Powering The Mobile Network

Public Safety
Mass Transit
Mining
Material Handling
Railroad/Positive Train Control
Industrial
Transportation
Communication
Land Mobile Radio
Mobile Data Computers
Construction
Logistics
Warehouse Fulfillment
Fleets
Government
Utility

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<table>
<thead>
<tr>
<th>Description</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC UPS: MDP-25.0</td>
<td>1</td>
</tr>
<tr>
<td>DC UPS: Nav-Pac &amp; Start-Guard</td>
<td>2 – 3</td>
</tr>
<tr>
<td>Batter Chargers: PT Series</td>
<td>4 - 5</td>
</tr>
<tr>
<td>Heavy Duty Power Supplies</td>
<td>6</td>
</tr>
<tr>
<td>Inverter-Chargers</td>
<td>7</td>
</tr>
<tr>
<td>DC Converters: Standard Series</td>
<td>8</td>
</tr>
<tr>
<td>DC Converters: Isolated &amp; ISP Series</td>
<td>9</td>
</tr>
<tr>
<td>DC Converters: Step-Up Series</td>
<td>10</td>
</tr>
<tr>
<td>DC Power Stabilizers</td>
<td>11</td>
</tr>
<tr>
<td>Multi-Timer Fuse Distribution</td>
<td>12</td>
</tr>
<tr>
<td>Low Voltage Disconnects &amp; Power Timer</td>
<td>13</td>
</tr>
<tr>
<td>Battery Integrators &amp; Isolators</td>
<td>14</td>
</tr>
<tr>
<td>Noise Filters &amp; Automatic Power Selectors</td>
<td>15</td>
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<tr>
<td>Solar Panels</td>
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<tr>
<td>Custom Panels</td>
<td>17</td>
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<tr>
<td>Meters</td>
<td>18</td>
</tr>
<tr>
<td>Accessories</td>
<td>19 - 20</td>
</tr>
</tbody>
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