Applied Power Systems

"the Driving Force in Power Electronics"

Power Products for Traction and Motive Applications

For over 20 years Applied Power Systems has designed and manufactured power products for the most demanding applications. From basic power assemblies to complete motor drives and power systems, APS has the experience and expertise to solve any power challenge.

APS has helped Municipal Rail systems extend car life for years by replacing obsolete technology with the latest and most advanced technology available. APS has also helped save millions of dollars for these municipalities by:

Lowering installation time by insuring the product is form-fit-function identical to the original equipment being replaced and is typically lighter than the OEM equipment.

Lowering operating costs with improved efficiency, APS replacements run cooler and require less power than the original equipment being replaced.

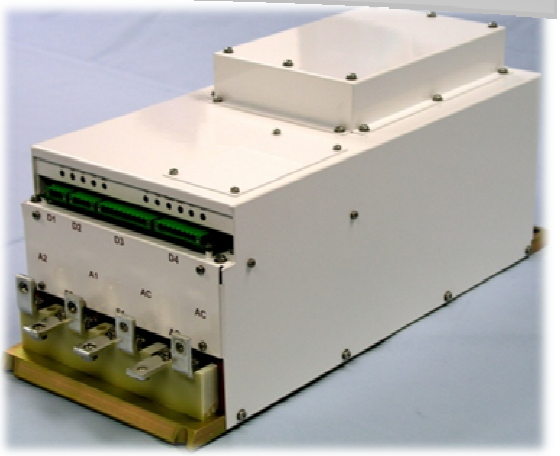
Lowering repair costs - with longer MTBFs and shorter MTTRs than the original equipment being replaced. In addition, APS products are typically lighter, more efficient and run cooler than the equipment being replaced.

APS is certified to ISO9001-2008.

APS supplies products to many Municipal Rail systems including New York City Transit Authority, MARTA, MBTA, BART, Metro North, LIRR and others. In addition, we have worked with several new car manufacturers.

Rev 160520

Motor Drives for Harsh Environments



The AP-6674 shown at right is an IGBT based traction motor drive designed for use in a series of Continuous Miners pictured below, that are used in underground mining applications. Liquid cooled and housed in an explosion proof enclosure, these drives are designed for years of maintenance free operation to eliminate costly downtime.

Advanced RF controls allow the operator to remotely control the miner from a safe distance for maximum productivity.

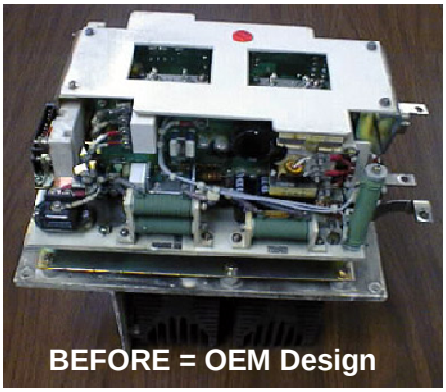
A series of the world's largest off-road mining bulldozers and front end loaders are powered by APS SR900T120H switch reluctance motor drives. Four of these rugged 500hp motor drives power SR motors on each wheel. They are designed to operate in harsh environments with DC bus voltages up to 800VDC and switching frequencies above 10kHz.

Rev 160520

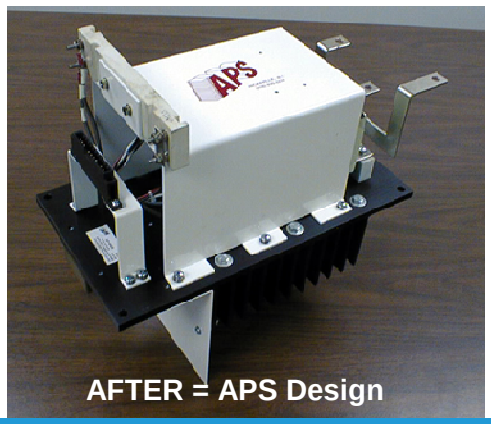
Rail Products

The AP-6612 LVPS/BC is a custom power supply / battery charger designed for the LIRR for use on Kawasaki C-3 bi-level commuter railcars. The AP-6612 is one of a series of rugged high reliability battery chargers manufactured by APS. These battery chargers seamlessly transition from voltage to current mode and offer complete fault protection features and communication capabilities, making it ideal for a variety of applications.

With a proven reputation as an industry leader in power electronics, APS is often called upon to solve problems for transit authorities. Metro North RR contracted APS to redesign the problematic GTO based inverter shown below.


BEFORE = OEM Design

APS designed a replacement IGBT inverter that outperformed the OEM inverter, while reducing weight by 30%, providing lower cost replacements, improving efficiency and reliability and extending car life an additional 20 years.


AFTER = APS Design

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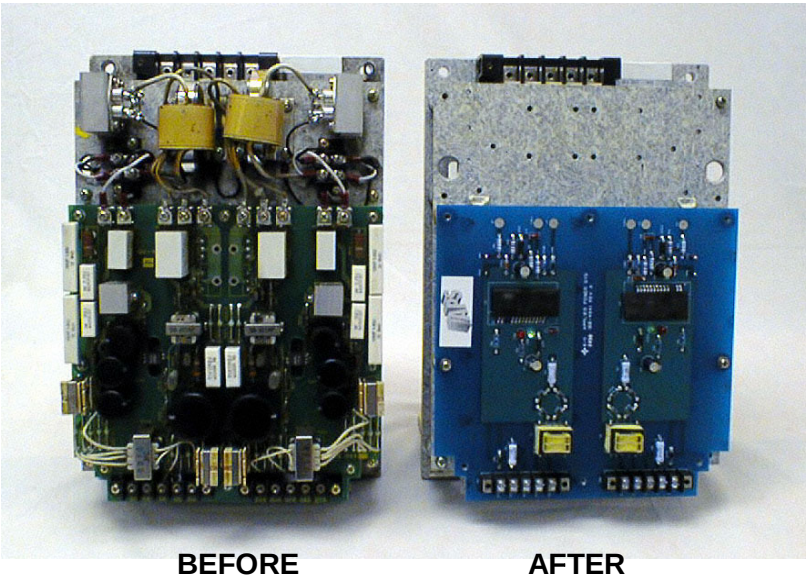
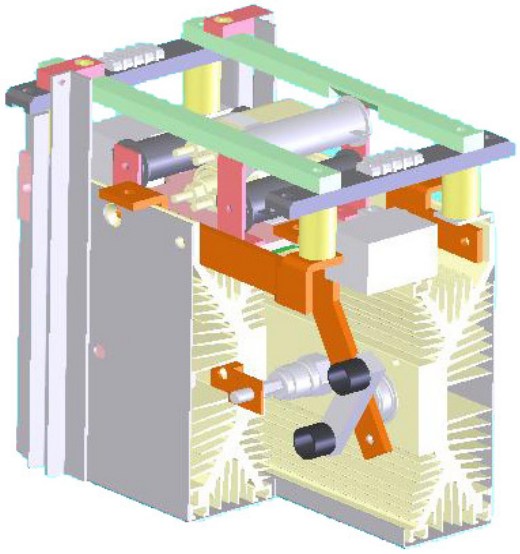
Rail Products



BEFORE AFTER

When NYC Transit Authority needed to extend the life of their aging R33 'Redbird' cars, they contracted APS to design a replacement for the aging GTO inverter shown at far left. We designed a drop-in , form, fit and function replacement using newer IGBT technology that outperformed the original inverter, while reducing cost and weight and extending car life an additional 10 years.



All APS rail products are thoroughly engineered, modeled, simulated and tested to industry standards. The 3D model and power semiconductor assembly shown above were designed by APS to replace an obsolete primary traction power switch for MBTA Green Line rail cars.

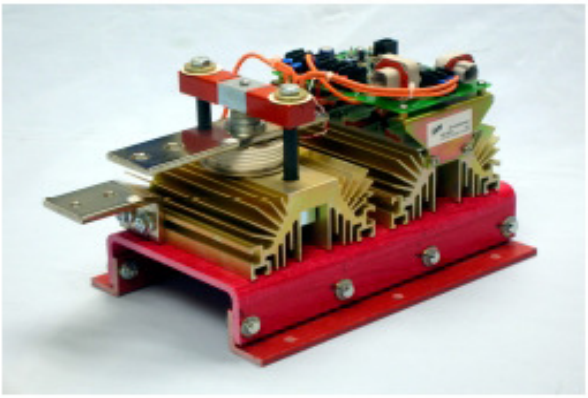
Rev 160520

Crowbar Assemblies

APPLIED POWER SYSTEMS, INC.

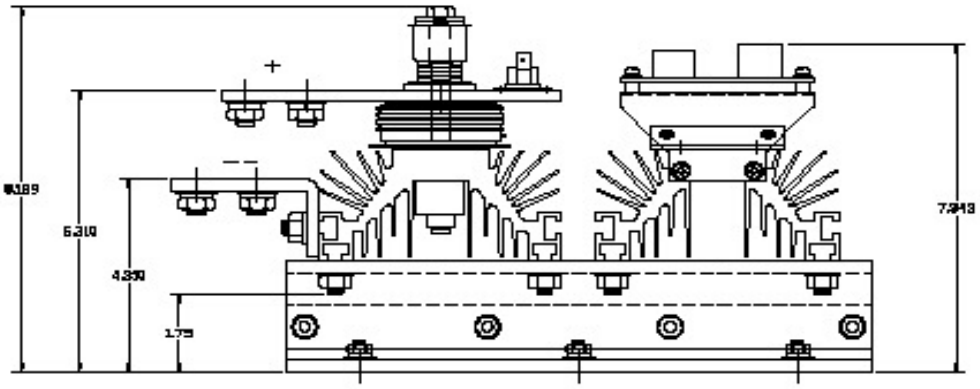
CAP-6696
Solid State CrowBar

- High Power Crowbar Assembly
- Output: 5000A Pk up to 1500 VDC
- Rugged Traction-Duty Design
- Self Triggered at Preset Threshold
- Additional Isolated External Trigger
- Self Powered
- No External Power Supply Required
- Isolated Baseplate
- Low Leakage Current
- Factory Selectable Trip Point
- Auxiliary Status Output Contacts and 100C Snap Action Thermal Switch Connection



The CAP-6696 solid state Crowbar assembly is capable of conducting over 5000A peak at voltages up to 1500 VDC. The unit requires no external power supply, drawing minimal power from the voltage source being sensed. When the voltage sensed exceeds the factory selectable trip point, the output SCR is triggered, activating the crowbar. The CAP-6696 requires an external current limiting resistor for energy absorption.

The **power connections** are made at copper busbars across the single capsule SCR (labeled "+" and "-" in Figure below). An **auxiliary trigger signal** may be applied by a customer supplied external 24V signal at control board connector. A factory programmable **Auxiliary Status** contact and the N.C. contacts of a 100C **thermal switch** are provided for customer interface on connectors. The auxiliary trigger input, status contact output and thermal switch are all electrically isolated from the crowbar circuit.



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Rev 111811

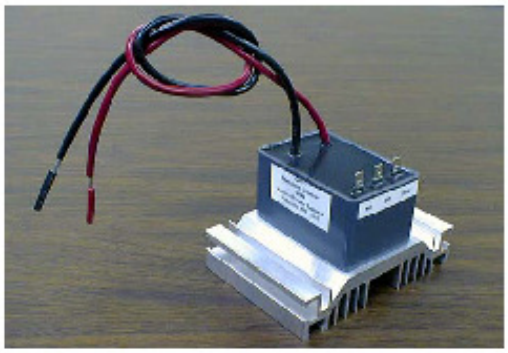
Rev 160520

Crowbar Assemblies

APPLIED POWER SYSTEMS, INC.

APS-CB

HIGH POWER CROWBAR ASSEMBLIES



- High Power Crowbar Devices
- Self Powered Sensing / Gating Circuit
- Ultra-Low Leakage Current (< 50 uA)
- No External Power Supply Required
- Fully Encapsulated with Integral Heatsink
- Isolated Baseplate
- Factory Selectable Trip Point
- Optional Fault Output Contacts Available

SELECTION GUIDE

MODEL NO.	TRIP VOLTAGE RANGE	MAX CURRENT
APS-CB-XXX	XXX = 005 to 200 Volts	100 A

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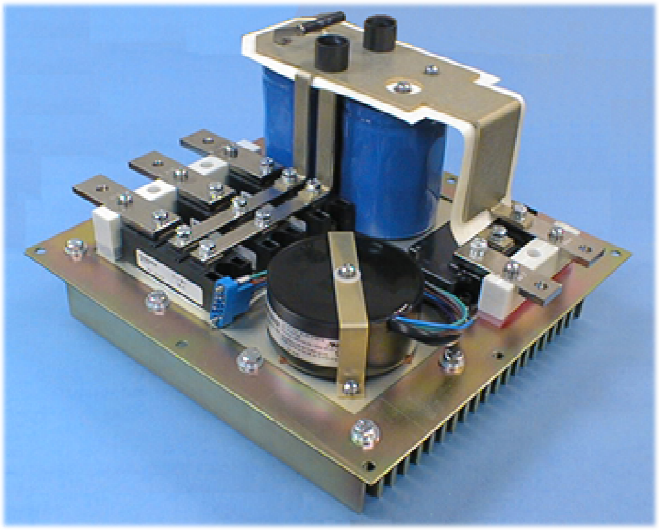
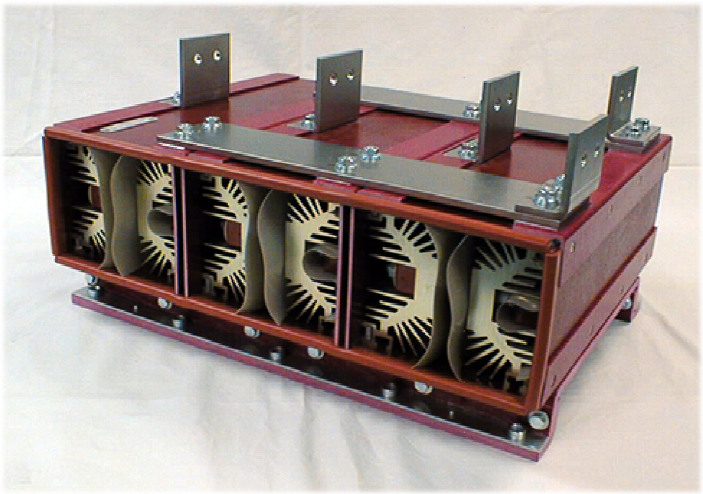
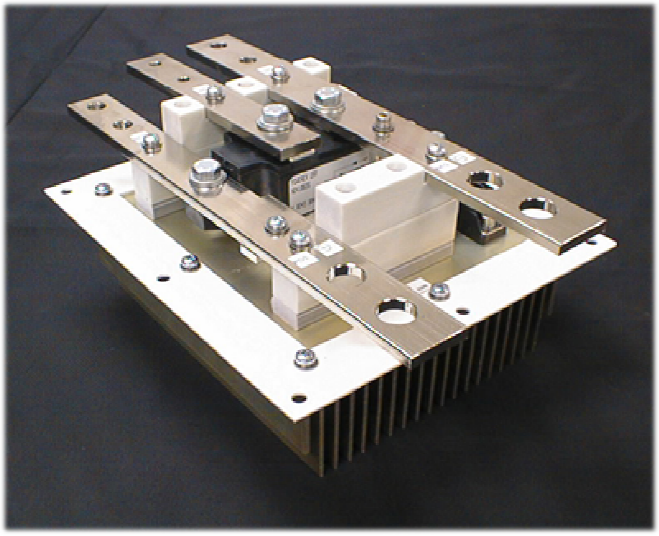
Locomotive Power Products



CHP1L
LOCOMOTIVE IGBT CHOPPER ASSEMBLY
FOR GENERATOR FIELD CONTROL



TR3PL
LOCOMOTIVE THREE PHASE 1500 AMP
TRACTION RECTIFIER
WITH ISOLATION SHROUD



APCD1
LOCOMOTIVE 250 AMP DIODE
ASSEMBLY

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Fully Encapsulated Modules

SNUBBERS

DSNUB: 3200PIV HV DIODE SNUBBER MODULE
AP6803: OEM PN TSBD3C404JN3A
AP6804: OEM PN TSBD3C404JN4A

VSENS

HIGH VOLTAGE SENSOR MODULE

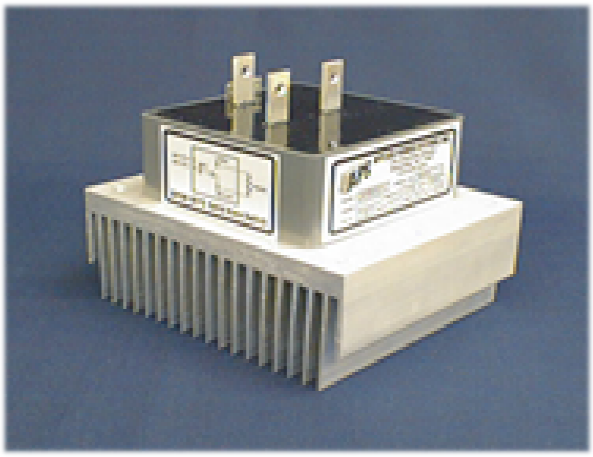
OVM

OVER-VOLTAGE SENSOR MODULE WITH CROWBAR

SCR GATE PULSE TRANSFORMER

AP6632: SCR GATE PULSE TRANSFORMER MODULE
OEM PN 4682C22G01

APSW75



THIRD RAIL RATED SOLID-STATE SWITCH
750VDC / 75AMP OUTPUT WITH10-24VDC CONTROL
DC CONTACTOR REPLACEMENT FOR HEATER CONTROL

Designed for years of continuous operation, APS offers a variety of encapsulated products for demanding environments. All assemblies are constructed with the highest quality components and are thoroughly tested before and after encapsulation.

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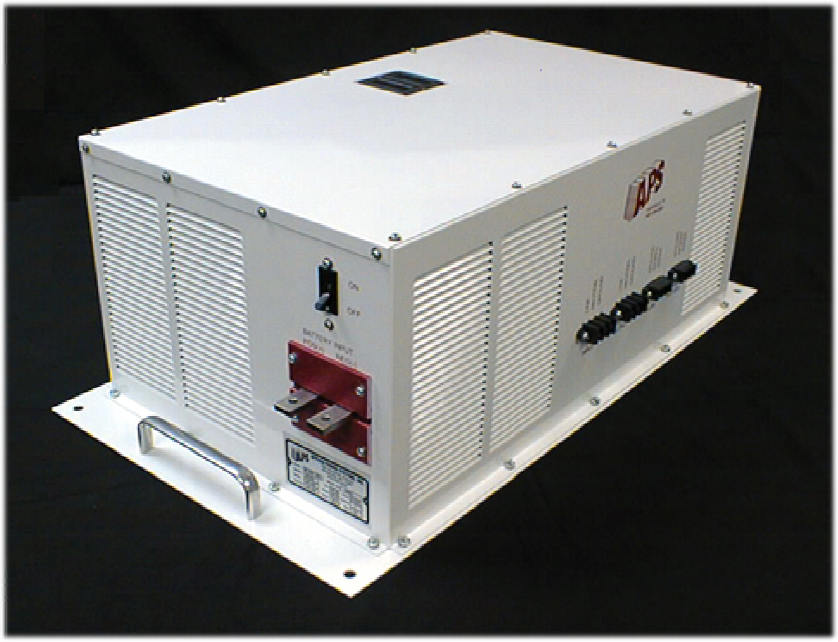
Trackside / Maintenance Products



UPS3KA
RIGHT OF WAY POWER SYSTEM 3KW UNINTERRUPTABLE POWER SUPPLY (UPS)

DC20KP
PROGRAMMABLE 1kV, 20kW POWER SUPPLY WITH REMOTE COMMUNICATION

DC20KM
MANUAL 1KV DC POWER SUPPLY

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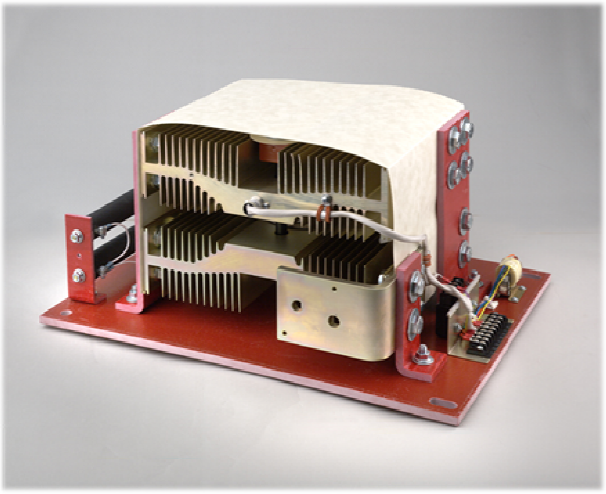
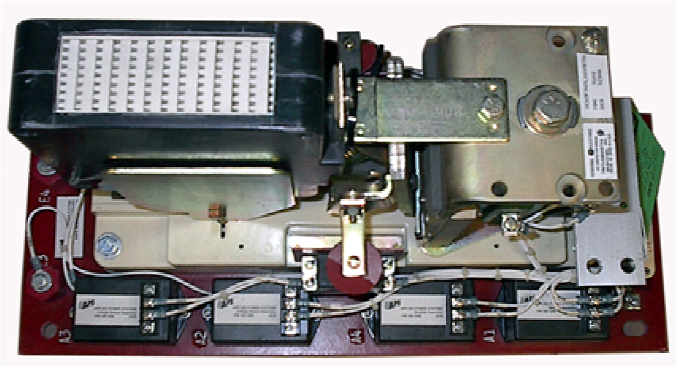
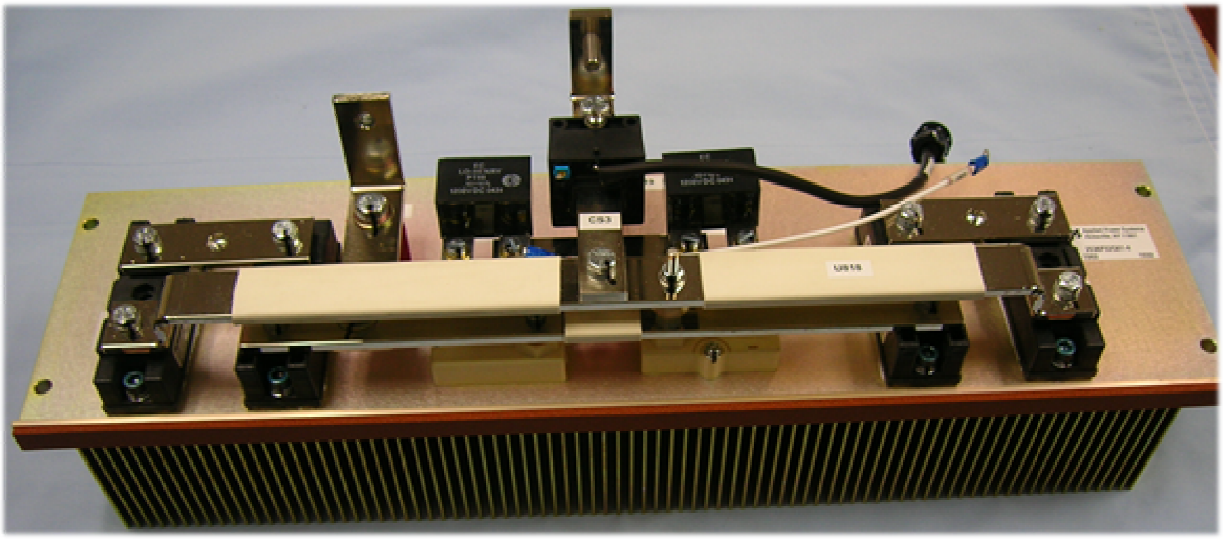
Passenger Rail Power Products



PTAAM
SINGLE THYRISTOR ASSEMBLY
WITH GATE DRIVE, SNUBBER &
THERMAL SENSOR

KDREM
KDR ELECTROMECHANICAL
CONTACTOR ASSEMBLY
WITH COIL SNUBBERS AND VOLTAGE
SENSORS





RECTIFIERER ASSEMBLY FOR LIGHT RAILCAR

Rail Power Battery Chargers

APS produces a complete line of Smart Chargers designed specifically for transit applications featuring advanced performance and offering rugged, reliable, field-proven construction.

The AP-6837 pictured at right is one of the series of compact, high frequency battery chargers that offer reduced weight and higher efficiency operation which combine to reduce lifetime operating costs.

Battery and charger conditions are displayed on an OLED front panel display and may be monitored remotely via USB interface.

APS Smart Chargers offer a complete suite of built-in diagnostics, fault detection and fault protection features.

AP-6612 LVPS/BC low voltage power supply / battery charger designed for the LIRR for use on Kawasaki C-3 bi-level commuter railcars.

The AP-6612 is one of a series of rugged, high reliability battery chargers manufactured by APS. These battery chargers seamlessly transition from voltage to current mode and offer complete fault protection features and communication capabilities, making it ideal for a variety of applications.

Rev 160520

TAKE CHARGE OF YOUR BATTERY POWER

APS Industrial Strength SMART CHARGERs Support Multiple Battery Chemistries for Stationary or Mobile Applications.

Compact, high frequency Battery Chargers from 12V to 300V, up to 1000 Amps.

FEATURES INCLUDE

>95% power factor, fault protection, seamless transition from CC to CV mode, and >90% efficiency.

STANDARD FEATURES INCLUDE

- Rugged, reliable, field proven construction.
- Models available to accept AC or DC input power.
- Digital display of charging voltage, current, operating status and fault indication.
- Customer selectable charge profiles.
- Built-in diagnostics & fault protection.
- Options include remote communication interfaces, bidirectional DC charging and internal data logger with nonvolatile storage of operating history.

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