

# LIQUID-COOLED POWER SUPPLIES

*Patented Liquid-Cooling Technology that  
Enables Cutting Edge Power Solutions*

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# WHO WE ARE

Astrodyne TDI manufactures dependable Power and EMI Filter solutions that enhance, protect, and save lives. As a global leader in demanding power conversion applications, where reliability is critical, we are known for delivering high-precision variable DC sources, resolving EMC & RF issues, and delivering quick-turn and integrated power distribution units. With over 60 years in the power industry and over 1000 employees worldwide, we guarantee unmatched U.S. ENGINEERING SUPPORT to the medical, industrial, and semiconductor equipment market.

## WORLD LEADER IN LIQUID-COOLED POWER CONVERSION SYSTEMS

Environmental and cooling requirements are very significant factors to consider when selecting a power solution. Astrodyne TDI's patented cooling technology has undergone extensive testing over five generations of liquid-cooled power products. Liquid-cooled power solutions by Astrodyne TDI utilize pressure-tested, leak-resistant anodized connections that enable the use of liquid-cooling with confidence in demanding applications. The world's most advanced liquid-cooled power solutions, with power modules from 5kW to 16kW. These wide-range DC power supplies feature voltages up to 1kV and provide power up to 500kW.

### ***Benefits of liquid-cooled power solutions:***

- ▶ **Increased Power Density:** Greater heat transfer coefficient (10-100x compared to air cooling)
- ▶ **Environment:** Ultra-clean or ultra dirty with ingress protection (from dust, debris, etc.)
- ▶ **Superior Temperature Control:** the greater heat capacity of liquid creates a smaller temperature gradient within the unit
- ▶ **Scalable Power:** Parallel compatible power for solutions upwards of 500kW
- ▶ **Minimize Audible Noise:** No fan wear out



## ASTRODYNE TDI CAPABILITIES

### ***Programmable AC-DC Power Supplies***

Standard AC/DC rectifier modules range from **1kW** to **16.5kW** with custom options available upon request. Programmable solutions provide a fully adjustable, wide-range DC output **0 - 2000V**.

### ***AC-DC & DC-DC Adapter and Embedded Power Supplies***

Standard adapters and embedded power supplies are available from **5W** to **1kW**, with customizations available upon request.

### ***EMI, EMC and RF Filter Solutions***

Medium to high current and voltage EMI Filter options are available in single phase, three-phase, and DC configurations selectable Y-capacitors for leakage current optimization. Select from a broad range of standard products that cover full performance spectrum and come with many interconnection options OR request a mod-standard or fully custom solution

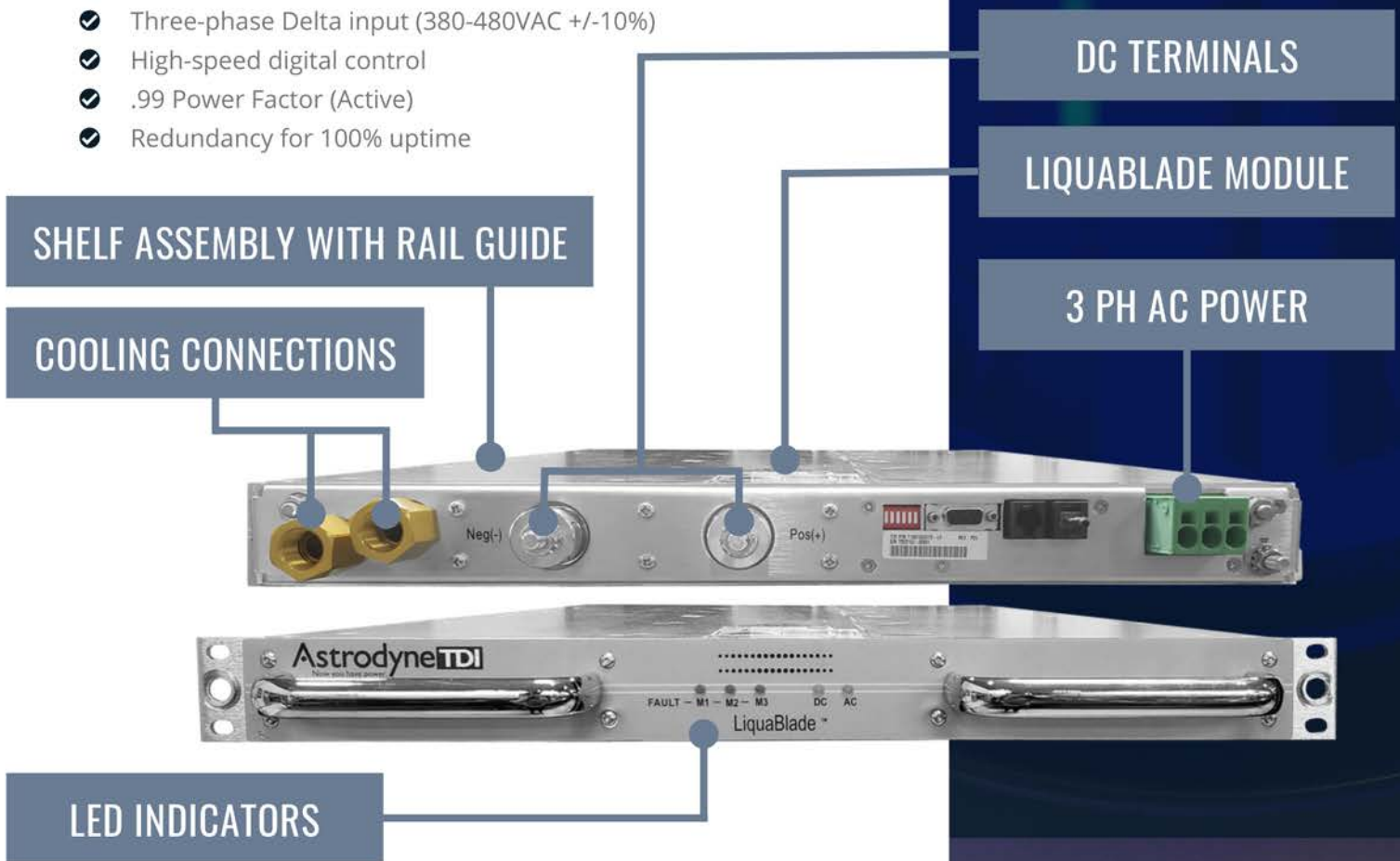
# LIQUABLADE™

## The World's ONLY 1U High-Power Water-Cooled Power Supply

The LiquaBlade™ Series are the latest breed of industrial-grade, high-power three-phase AC-DC power supplies engineered by Astrodyne TDI. These rectifiers combine advanced DC power processing, the latest silicon carbide semiconductors, patented liquid cooling, and sophisticated microprocessor controls, resulting in up to 16.5 kilowatts of power in a single 1U (1.75" height) rack style package. The high-frequency switch-mode design employed in LiquaBlade™ offers full active power factor correction, near unity power factor, and excellent output responsiveness. These rectifiers operate from a wide-range AC input of 380-480V 50/60Hz permitting global usage without the need for an external step-down transformer. LiquaBlade is fully programmable - a perfect solution for applications that require a flexible power supply solution for their unique requirements.

### Features & Benefits

- ✔ 16.5 kW in a single 1U rackmount solution
- ✔ Programmable outputs: 0-500V
- ✔ Parallel series compatible for increased power needs
- ✔ CV. CC. CP control models
- ✔ Three-phase Delta input (380-480VAC +/-10%)
- ✔ High-speed digital control
- ✔ .99 Power Factor (Active)
- ✔ Redundancy for 100% uptime



# KODIAK

## 6kW Liquid-Cooled Power Supply

Providing high-operating efficiency along with excellent reliability, compact size, and easy maintainability, Kodiak power supplies are the ideal solution for embedded DC systems in demanding semiconductor, industrial, and military applications. A fully adjustable, wide-range DC output is configurable via a digital interface with real-time feedback. This AC-DC liquid-cooled power supply will deliver up to 6kW from a three-phase input with full power factor correction.

### Features & Benefits

- ✔ Industry Leading Power Density: 38W/in<sup>3</sup>
- ✔ DC Outputs Options: 0-60V (Adjustable)
- ✔ High-Speed Digital Controls
- ✔ Constant Voltage / Constant Current / Constant Power Control Modes
- ✔ High Efficiency: 93% power conversion efficiency
- ✔ Liquid Cooled – Water, DI Water, WEG compatible
- ✔ High Reliability: 100% HASS Tested
- ✔ Designed to NAVSO P-3641A
- ✔ 4.5kW at 220VAC / 6kW at 480VAC



# LIQUACORE

## 5.5kW Water-Cooled Power Supply

LiquaCore™ power supplies are the ideal solution for embedded DC systems in demanding industrial and military applications. Packaged in a 2U chassis, this AC-DC liquid-cooled power supply will deliver up to 5.5kW from a 380-480VAC, three-phase power input. LiquaCore modules can be connected in parallel to deliver increased power for ultimate scalability in industrial process applications.

### Features & Benefits

- ✔ DC Output Range: 0-60V (Adjustable)
- ✔ CANbus Control Interface
- ✔ Constant Voltage / Constant Current / Constant Power Control Modes



# LSM

## 5kW Water-Cooled Sealed Power Supply

The LSM power module is a high voltage liquid cooled DC-DC converter which steps down 400V/700V and provides 12V/24V output, common in hybrid and electric vehicle applications. The output voltage is electrically isolated from the input voltage and suits the conventional 24V accessories and HVAC system requirements of industrial and ecofriendly vehicles.

### Features & Benefits

- ✔ 150A Battery Charger
- ✔ 550-850VDC Input Voltage Range / 20-32VDC Output Voltage Range





## eLINK™ POWER SYSTEM CONTROL

The Astrodyne TDI eLink2 provides a versatile high-speed control interface for power system solutions. The eLink2 Controller Gateway enables seamless integration into the host system via Ethernet, EtherCAT, or other popular control protocols. Control latency of less than 10ms enables near real-time control of complex processes. The eLink2 provides comprehensive power system management features, such as power zone identification and control, interlocks, EMO monitoring, and more.

## LIQUABLADE™ RACK SYSTEMS

*Delivering complex power systems in record time by leveraging standard solutions!*

Astrodyne TDI's liquid-cooled power solutions can be used independently for stand-alone applications or easily paralleled for high-power solutions. For higher power applications, these rectifiers can be easily connected into parallel current sharing groups, enabling designs upwards of 500kW.

Astrodyne TDI designs and manufactures Custom Power Systems to support critical applications in the Medical, Semiconductor Capital Equipment, Military and Industrial Markets. Our team streamlines system design while simplifying manufacturing processes and reducing cost. Custom liquid-cooled systems offer effective and efficient implementation of power distribution, safety features, local or remote control, output monitoring, and power system management. To ensure low mean-time-to-repair quick-swap modules are available to increase your system's reliability. Astrodyne TDI's capabilities range from small systems delivering 1000's of watts to large-scale solutions delivering 100's of kilowatts.

- ✔ Rack Assemblies with complete bussing/plumbing/power distribution
- ✔ Power protection features include circuit breakers, fuses, safety interlocks, EMO, etc.
- ✔ System controller for set point controls and power system management
- ✔ Conforms with common agency standards for various markets
- ✔ Additional filtering available to meet industry EMI/EMC compliance





# POWER. EVERYTHING DEPENDS ON IT.

When the need for power conversion is at its most demanding... its most critical... for over 60 years, the solution has been Astrodyne TDI. Today, our unmatched experience across multiple industries enables us to deliver a wide range of power-based technology solutions for some of the most well-known companies in the world. From off-the-shelf power supplies to complete customized power systems, the solution is always as close as Astrodyne TDI.

*Partner up with the Astrodyne TDI team to bring your design to market, in record time, with international safety and EMC compliance certifications.*

**Developing Power Technologies & Products that People Depend Upon, to Enhance, Protect, and Save Lives.**

**Astrodyne****TDI**  
Now you have power.

**Astrodyne TDI**  
36 Newburgh Rd.  
Hackettstown, NJ 07840  
Phone: +1.908.850.5088  
[www.AstrodyneTDI.com](http://www.AstrodyneTDI.com)