

High-performance power supplies to solve the toughest problems

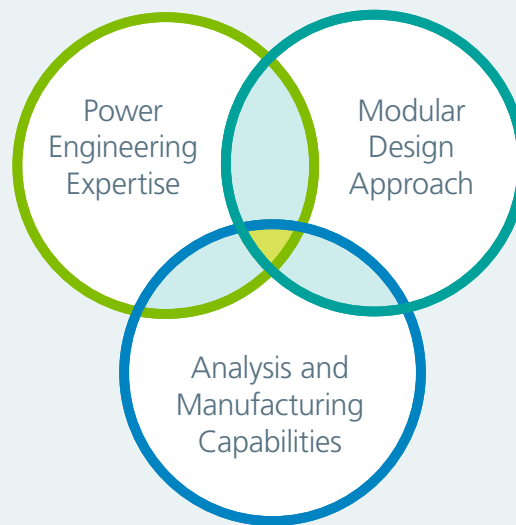
Vicor Power Systems

VICOR

A need for custom and standard, high-density solutions

Increasing requirements for higher-power, higher-efficiency, higher-density solutions are demanding more expertise from power engineers. Manufacturers are unlikely to have the in-house expertise to implement a state-of-the-art power solution while meeting shrinking time-to-market schedules. They need to augment core competencies with outside expertise to design, prototype and develop a reliable power system they can incorporate into their product quickly and easily.

Delivering turnkey solutions quickly and reliably



Vicor Power Systems (VPS) offers more than 30 years of engineering experience developing efficient solutions for customers who do not have the time or expertise to do it themselves. Leveraging exceptional Vicor technologies, our engineers will work closely with you during the full process from definition and design through manufacturing to ensure you get the most efficient and flexible power supply from source to point-of-load. When a deadline is looming and you need to quickly implement a power system to meet your exacting needs, Vicor Power Systems will design and deliver a complete, cost-effective solution that solves your toughest challenges.

A team dedicated to system performance



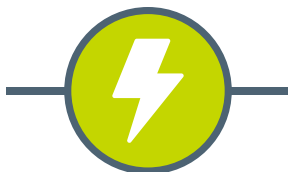
Decades of experience



Experts at leveraging high performance Vicor modules



In-house mechanical, electrical, and firmware design expertise



System power levels from 100W to Megawatts

Benefits of Vicor Power Systems



Rapid concept definition and prototyping



Expertise and support from a trusted engineering partner



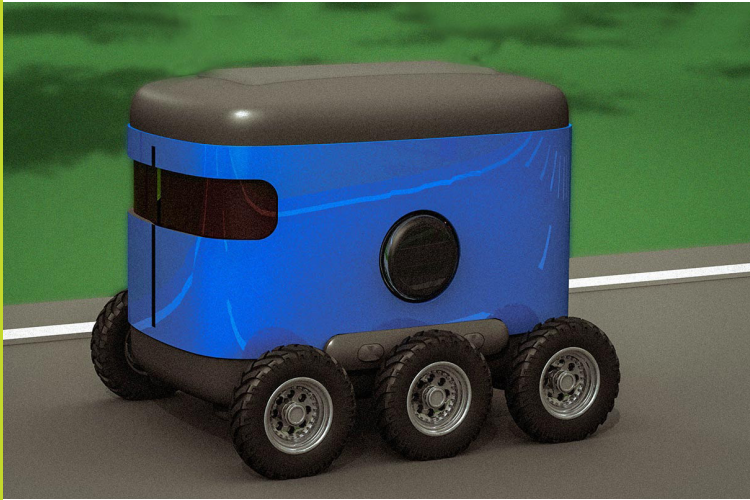
A full spectrum of in-house testing



Performance only available with a modular approach

Commercial solution examples

Autonomous AI vehicle



Autonomous vehicles are requiring higher power, higher efficiency, small size and more dense power conversion products in order to drive multiple sensors and computer cards. Standard ATX supplies no longer meet these new higher power requirements and consume valuable payload space.

The Vicor PRM/VTM combination provided the regulation and isolation from the onboard battery in order to deliver the required sensor voltages. This solution also met the high-efficiency requirements in order to conserve battery life for longer operation in the field.

High-power LED lighting



As LED displays become the size of buildings, the power challenges multiply and require innovative solutions. Being able to convert $480V_{AC}$ 3-phase coming into the building directly down to the LED panels with a single supply simplifies the power architecture and allows for more complex designs.

In order to deliver enough power to run large panels of LEDs efficiently, this supply takes in the $480V_{AC}$ 3-phase line, rectifies it, then using advanced ultra-high voltage BCM bus converters and PRM regulators, provides multiple 52V outputs to power the various loads in an extremely dense package.

Electric vehicle charging

Electric vehicles in the future will need to be able to accept different voltage chargers to meet their specific battery charging requirements. $800V_{DC}$ batteries are being considered in future vehicles, and in order to charge them from the existing 400V infrastructure, an up converter is required.

The application requires a highly efficient step-up converter that will double the charging voltage without interfering with charging current control. Using 2:1 fixed-ratio NBM bus converter modules that can reach 98% efficiency, a compact, lightweight power supply was developed that is able to seamlessly step up the standard charging voltage to the required 800V.



Tethered surveillance drone

As payloads and UAV power requirements increase, the only way to deliver enough power up the tether is with a high voltage DC source on the ground. This high voltage, low current solution reduces the diameter, weight, drag and line losses of the tether.

In order to deliver enough power to the drone, 3-phase power is required. This VPS solution delivers 8kW up the tether and has the unique ability to produce “extra voltage” as the current demand increases compensating for tether losses maintaining regulation at the UAV. The use of high voltage BCM6123s stacked delivered.



Aerospace and defense solution examples

Defense actuators



Life-threatening situations require dependable power solutions to make sure failure is not an option. The ability of the power supply to react quickly to dynamic loads is critical during these situations.

The power system has five discrete and isolated $33V_{DC}$ outputs at various currents. It is conduction-cooled and accepts a nominal $50V_{DC}$ input. The total output power is $\sim 1200W$ at 86% efficiency in a 62 square inch footprint. It weighs 3 pounds.

Critical mobile communications



Soldiers need the ability to communicate real-time while in the field and cannot be limited by power sources. Having the ability to either use vehicle power or a generator is essential in the field.

This AC-DC converter provides both an isolated, always-on 24V output and an isolated, switchable 24V output to the field radios. These radios need to be able to run off of field generators or vehicle power, so the power supply is designed to accept both. The AC input is nominally $115/230V_{AC}$ 60Hz, and the DC input must be in the range of $9 - 50V_{DC}$. The total output power is 400W max. It weighs about 5 pounds and occupies an 11.5 x 5.58in footprint. Its operating temperature range is $-20 - 85^{\circ}C$.

UAV power supply

Large drones require a lot of power in order to drive all of the electronics onboard. The source of this power comes from a 3-phase generator that must be converted over to lower DC voltage.

This MIL-STD-704 compliant power supply provides 2kW of power at 28VDC to the load along with a 270V_{DC} 200W output. It weighs 18 pounds and measures 11.0 x 16.0 x 6.4in.



Autonomous ground vehicle

Delivering supplies to troops in the field autonomously keeps soldiers out of harm's way. The ability to convert the existing vehicle bus voltage down to sensor voltages while also keeping in mind SWaP-C requirements are key attributes.

This rugged, MIL-compliant device provides the bus voltage conversion needed to power critical sensors and single-board computers. It offers 21 discrete outputs of 12, 24 and 54V_{DC} from a MIL-STD-1275E compliant source. The total output power is 2.6kW. Forced convection cooling allows the device to operate in the harshest environments.



A better way to deliver power

Vicor is the leader in high-performance power modules, enabling customer innovation with easy-to-deploy modular power system solutions for power delivery networks that provide the highest density and efficiency from source to point-of-load. We continuously advance the density, efficiency and power delivery capabilities of our power modules by staying on the forefront of distribution architectures, conversion topologies and packaging technology. Vicor serves customers in enterprise and high-performance computing, industrial equipment and automation, robotics, UAVs, vehicles and transportation, satellites, and aerospace and defense.

To discuss your project requirements with a Vicor Power Systems engineer, go to vicorpower.com/vicor-power-systems

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