Increasing payload capability and flight times of commercial UAVs

Modular solutions for your power system

VICOR

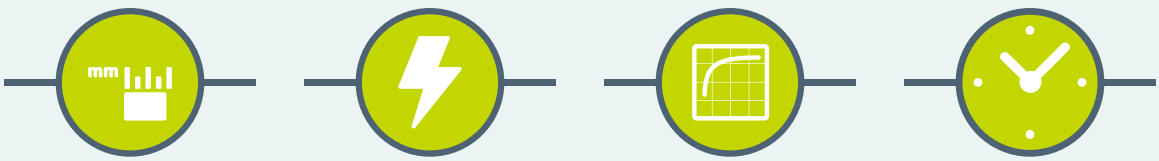
Size and weight make the difference

UAVs and drones are changing the way we see the world, deliver life saving supplies, and keep us safe. Commercial and defense UAVs are taking on new applications that require more functionality to meet these needs. The best UAVs are distinguished by a combination of range, flight time, payload capacity, and the ability to maintain fast communications. These defining characteristics need increasing levels of power that add weight and take up valuable payload space. Whether it's a tethered drone, a vertical take off and landing (VTOL) drone, or a high-altitude long-endurance (HALE) drone, UAV developers are looking for ways to achieve highly efficient, lightweight and compact power solutions.

Longer range and flight time with more payload and functionality

A better way to deliver power: Power delivery networks based on Vicor high-performance power modules enable innovative designs for UAVs. More flexible than a brick and easier to implement than a discrete solution, each power module is optimized for high-efficiency, density and overall performance. Vicor modules are also lightweight compared to competitive solutions, enabling UAVs to take on larger and heavier payloads. Power modules can also be paralleled, allowing for designs to easily scale in power as UAV power demands increase and also allow for the same power architecture to be deployed within a platform of various sized UAV systems.

Benefits of Vicor modules



High density of 1000W/in^3

Power to weight ratio 16.7W/gram

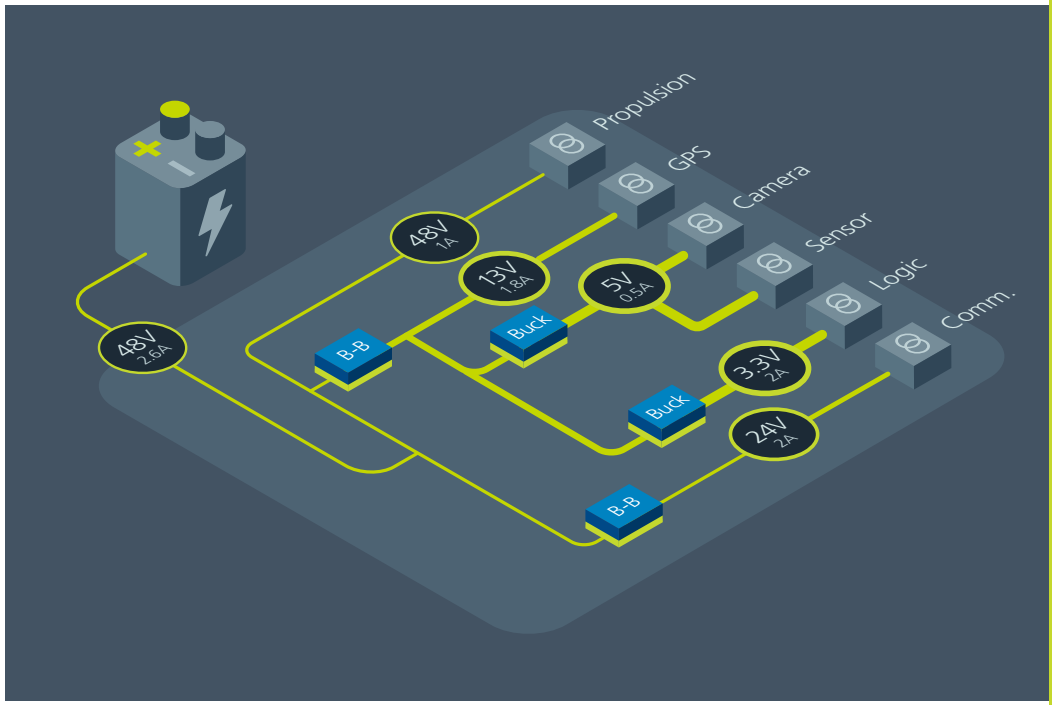
Efficiency up to 98%

Rapidly design and deploy PDNs

Delivery

Lightweight and efficient power modules extend delivery missions and save space to deliver greater payloads.

vicorpower.com/ uavs-delivery



Agriculture

Efficient, lightweight, power-dense solutions enable greater function-ality for reliability and productivity.

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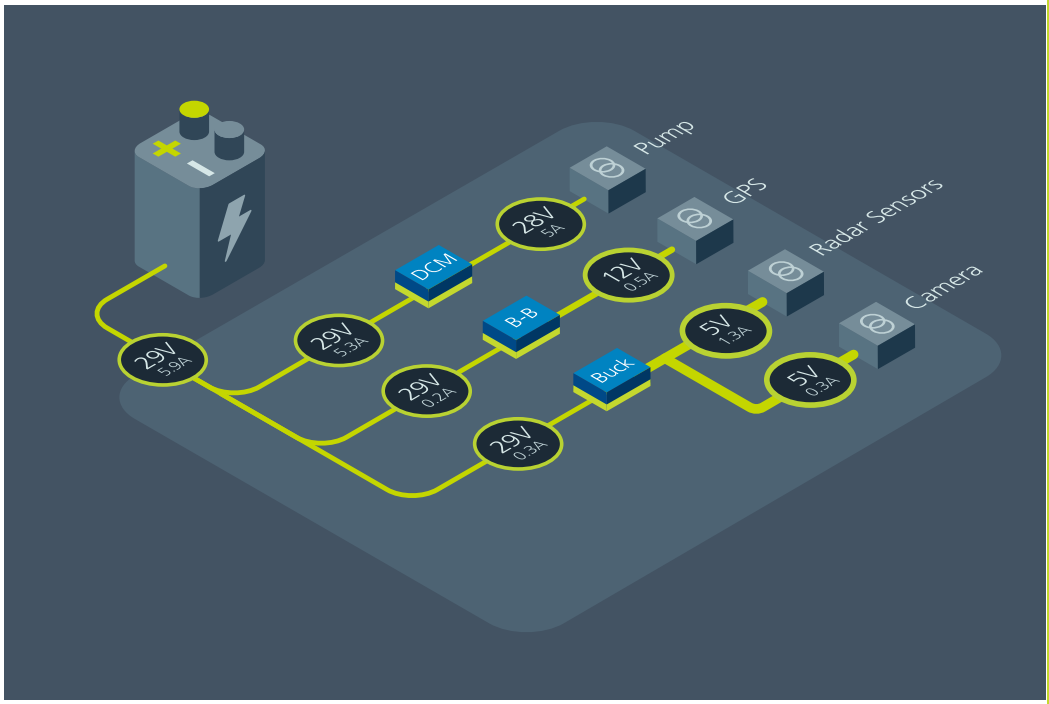
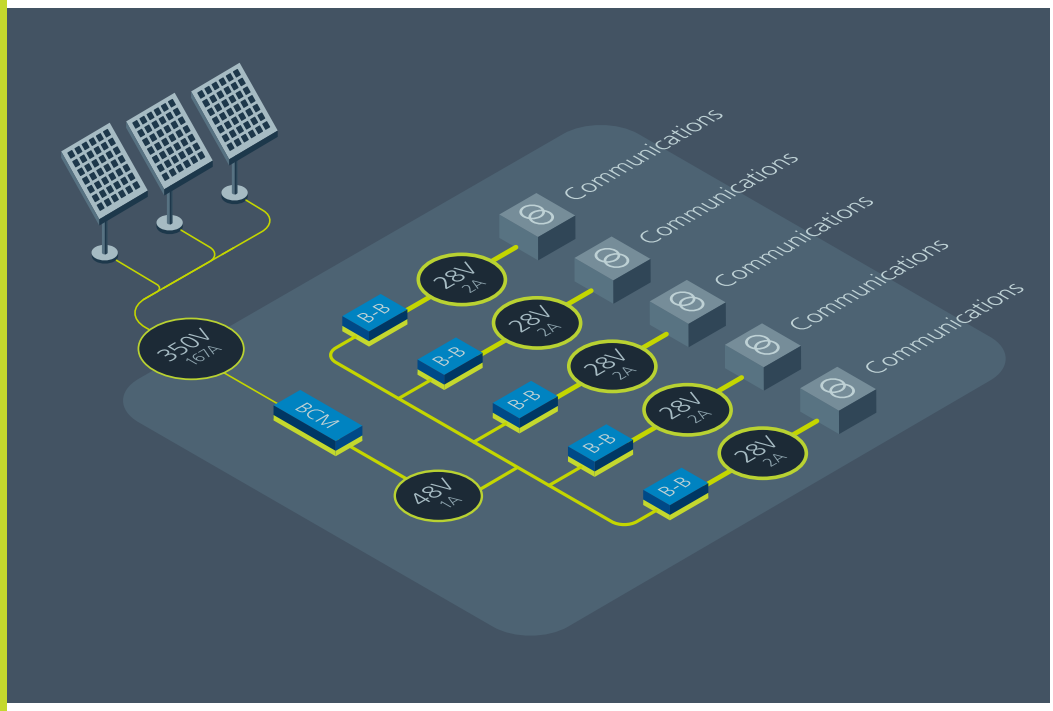


Unmanned aircraft for communications



High-efficiency, high-density modules free up space for advanced communications and extend range.

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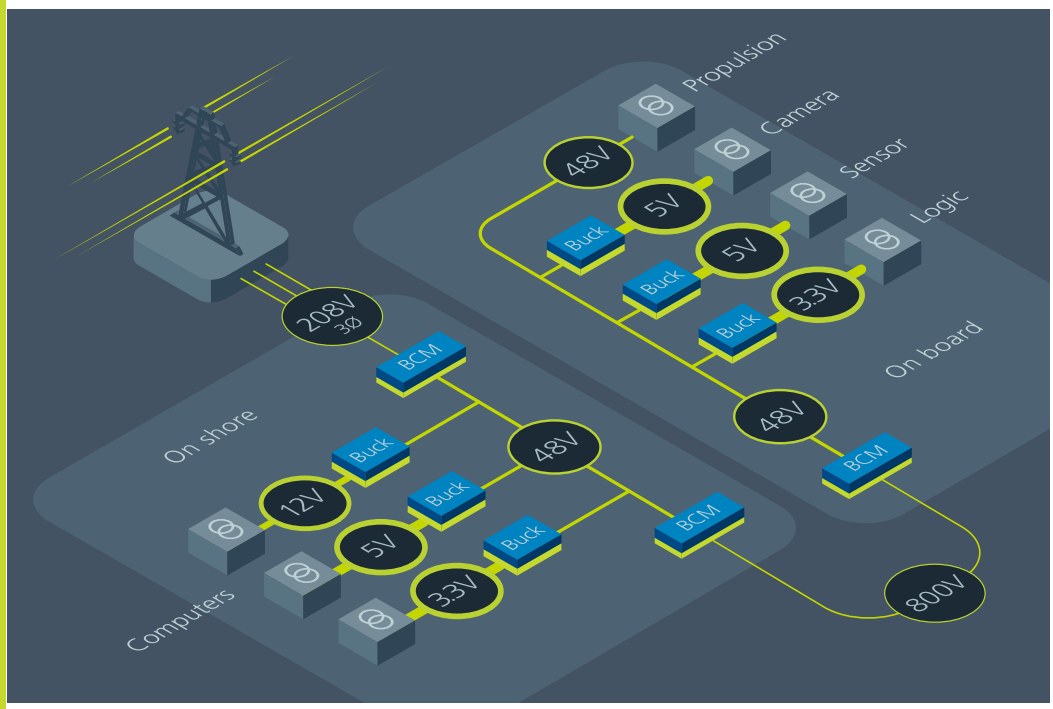
Tethered, aerial/underwater vehicles



High-density, high-power modules enable lighter, safer, lower cost tether cables to extend missions.

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Inspection

Lightweight power delivery networks enable maneuverable UAVs to inspect remote, wide operations.

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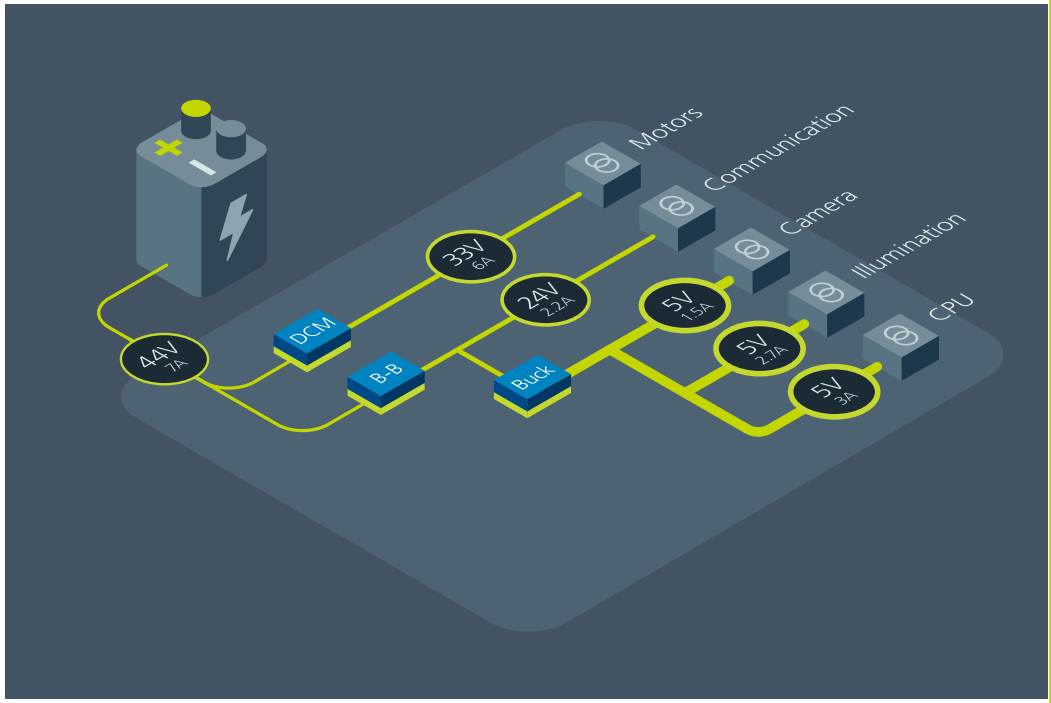
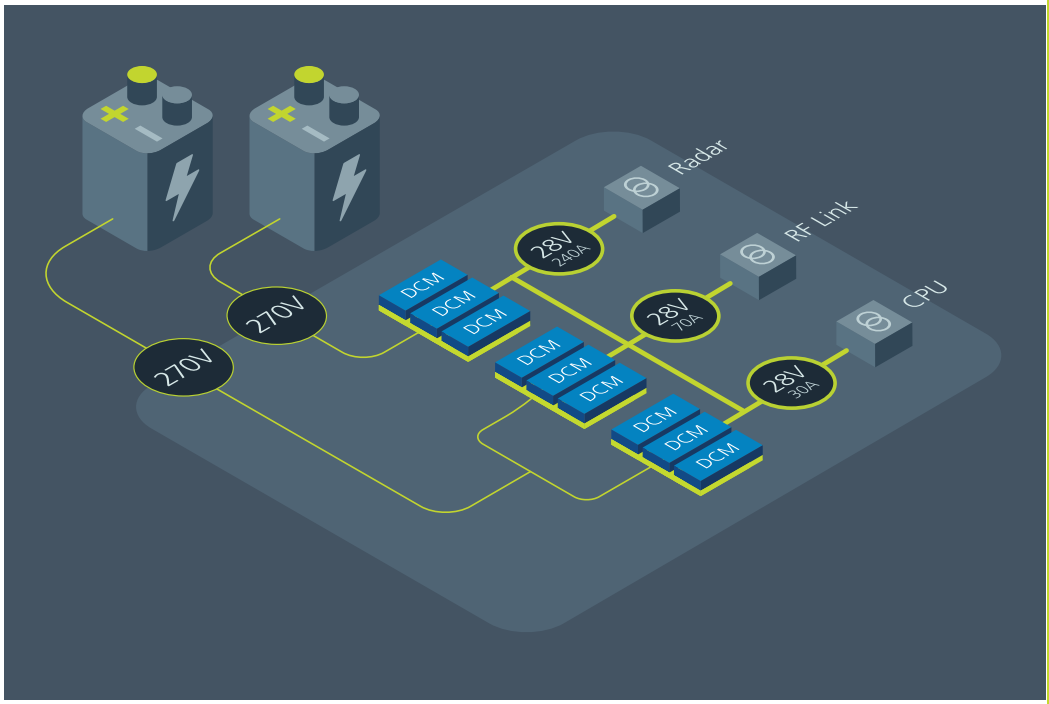


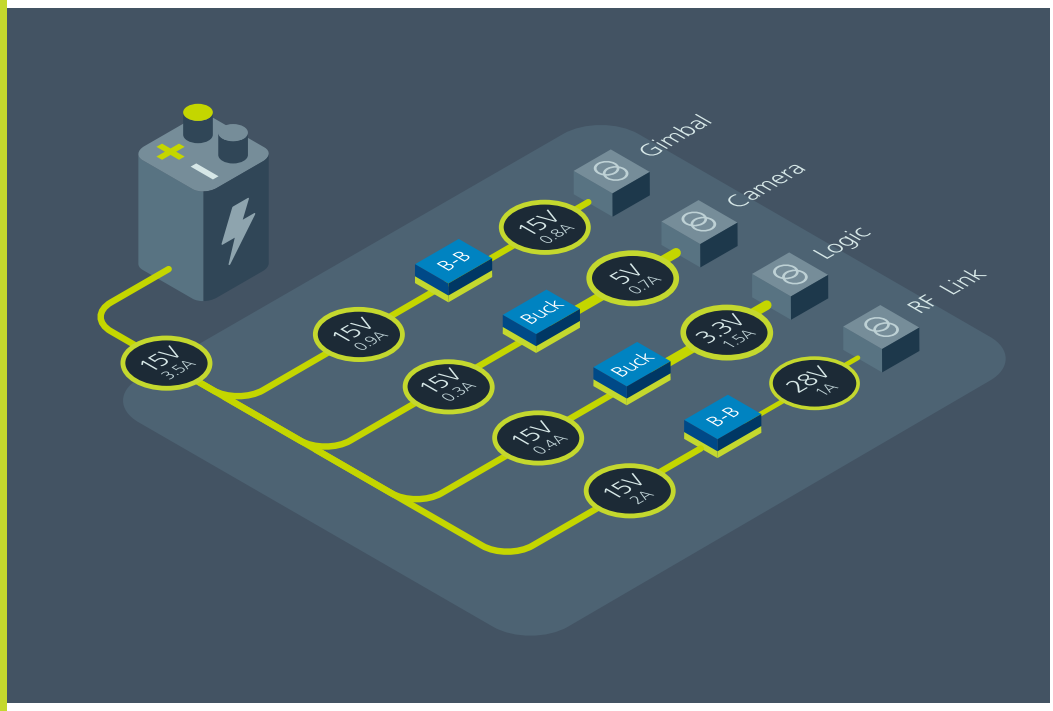
HALE UAVs

High-efficiency, high-density DCM DC-DC converters double the internal bus power and keep the aircraft light.

vicorpower.com/uavs-hale



Media and entertainment



Flexible, scalable power delivery networks can adapt to the right audio and video equipment needed to capture the scene.

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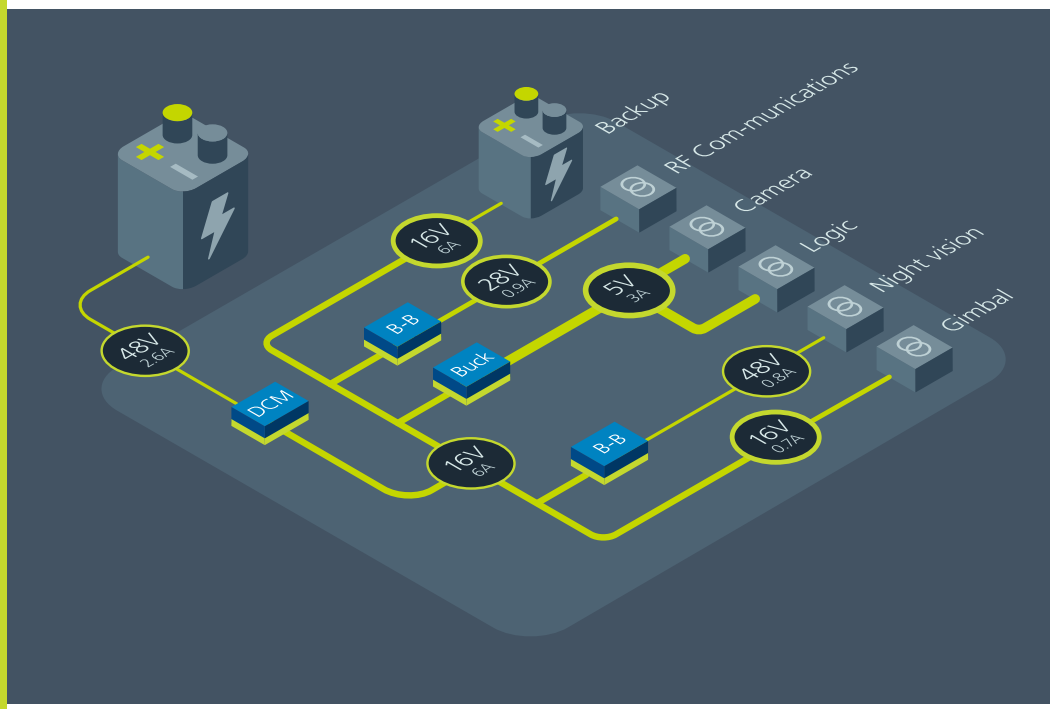
Surveillance



Modular power delivery networks extend flight times and support high performance surveillance equipment to ensure safety and security.

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Products used in UAV power delivery networks

BCM4414 fixed-ratio bus converter

Input: 500 – 800V

Output: 31.3 – 50.0V

Current: Up to 35A

110.6 x 35.5 x 9.4mm

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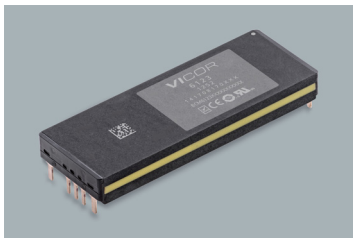

BCM6123 fixed-ratio bus converter

Input: 260 – 410V

Output: 32.5 – 51.3V

Current: Up to 25.7A

63.3 x 22.8 x 7.2mm

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ZVS Buck-Boost regulator

Input: 48V (8 – 60V)

Output: 10 – 54V

Power: Up to 150W

14.0 x 10.0 x 2.5mm

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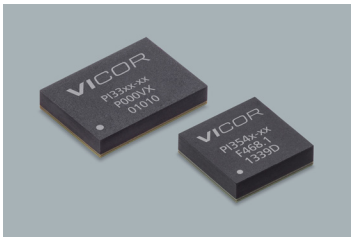

ZVS Buck regulator

Input: 12, 24, 48V

Output: 2.2 – 16V

Current: Up to 22A

As small as 10.0 x 10.0 x 2.5mm

vicorpower.com/buck

DCM isolated-regulated DC-DC converters

Input: 9 – 420V

Outputs: 3.3, 5, 12, 13.8, 15, 24, 28, 36, 48V

Power: Up to 1300W

As small as 24.84 x 22.80 x 7.21mm

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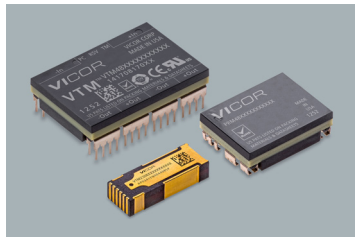

PRM + VTM Factorized power solutions

Input: PRM: 36 – 75V; VTM: 0 – 60V

Output: PRM: 5 – 55V; VTM: 0 – 55V

Power: PRM: Up to 600W

Current: VTM: Up to 130A

As small as 22.83 x 8.52 x 4.9mm

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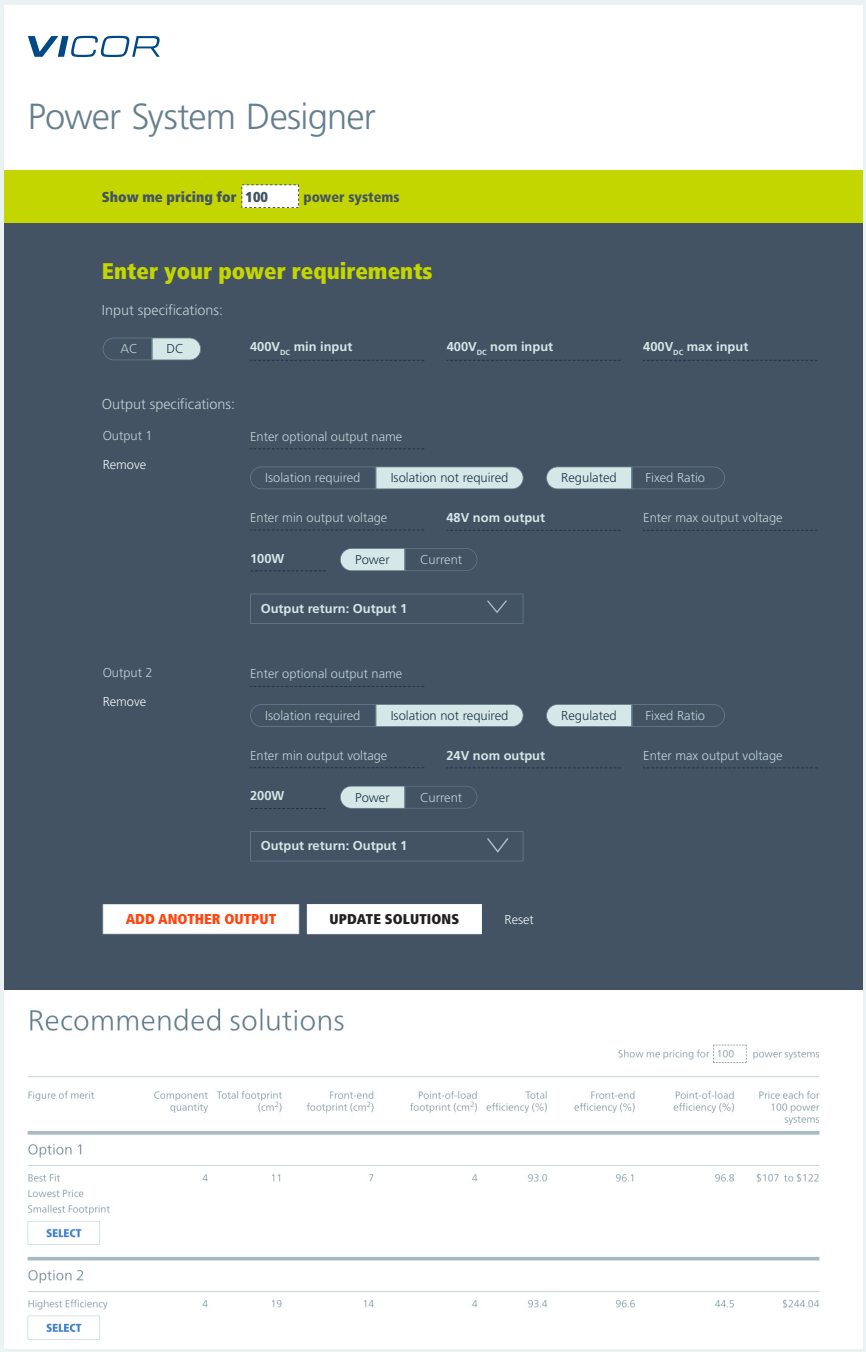
An easy solution for generating complete power systems



Just enter a few specs to design your next power system

Designing your power system in a single location — up to 75% faster than traditional methods — is as easy as entering your input and output power as well as your basic system requirements. The Power System Designer is one of the Vicor web-based tools that makes it easy for you to build flexible, efficient and cost-effective power systems that get you to market faster.

- Instant performance analysis for recommended solutions
- Access an infinite number of products and technical specs
- Evaluate power chains electrically and mechanically
- Prioritize solutions by efficiency, component count, cost, footprint and recommended best fit
- Save, export and share a final BOM or power system

Start your next design at **vicorpower.com/psd**

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