



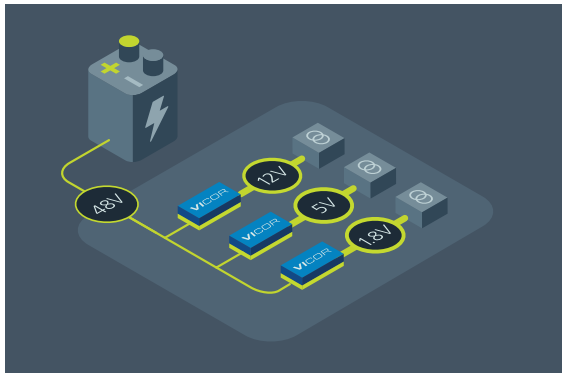

High density power conversion

Increase flight time and functionality with highly efficient power delivery

VICOR

High performance power modules optimized for 48V power delivery





Kilowatts of power in a small space

Vicor high performance power modules require dramatically less space than traditional discrete power solutions while providing high efficiency and power density, whether going from HV to SELV or SELV to PoL. This enables increased run time and productivity without sacrificing navigation, sensing and safety features.

Advanced power architectures

By adopting the modular approach power modules can be paralleled or swapped, allowing designs to accommodate new loads or changes in power. Easily scale power to meet increasing requirements in UAV systems, while allowing the same power architecture to be deployed across diverse UAV platforms.

Improved thermal management

Vicor high-efficiency and thermally adept power modules significantly reduce the heat generated and effectively remove it from the UAV, increasing its reliability and agility without taking up additional space or adding weight.

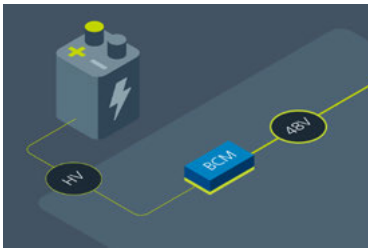
Quickly implement a power solution

Vicor provides tested and qualified power modules to build power delivery networks that can be designed quickly without all the wasted time and effort to test and certify a new discrete design. This enables our customers to get to market faster, giving them a distinct advantage over their competition.

Benefits of Vicor modules

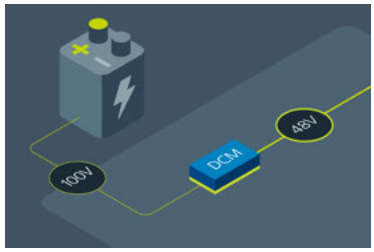
- Low height
- Scalable to higher power
- High density and efficiency
- Lightweight

The 48V power delivery network



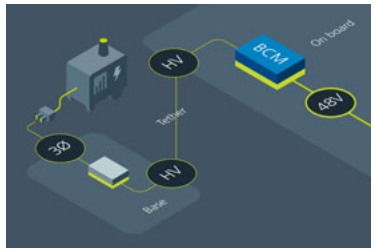
Converting 800V or 400V to 48V

For UAVs powered by high voltage batteries Vicor high-density BCM fixed-ratio, isolated converters safely convert a high-voltage input into standard SELV output to power a 48V bus. BCM power modules are the most efficiently way to convert high voltage to SELV voltages.



Converting non-SELV batteries to 48V

For UAVs powered by lower voltage batteries such as 100V, Vicor DCM power modules provide regulated 24 or 48V (as shown) distribution from the battery for payloads and downstream converters. The Vicor DCM is a highly efficient, DC-DC converter operating from an wide input range to generate an isolated output.

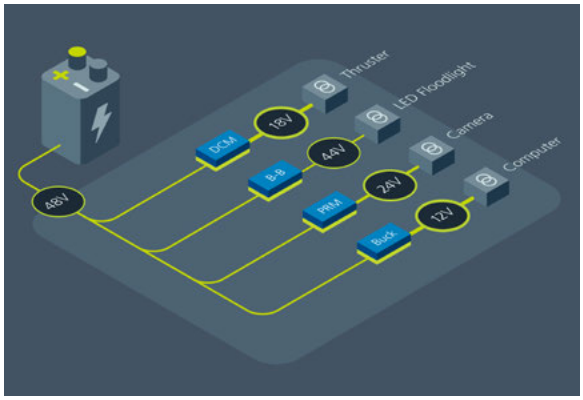


Converting a high-voltage tether to 48V

On board a remote operated vehicle, Vicor BCM power modules isolate and step-down the high voltage from the tether to a 48V SELV. The compact, lightweight BCM reduces the size and weight of the UAV, as well as to dramatically reduce the diameter and weight of the tether itself to reduce weight, size and drag.

Powering loads on the 48V bus

Once a 48V bus is established – from either a 48V battery or a higher voltage source converted to 48V – Vicor power modules at the point-of-load deliver high performance with the smallest footprint. The Vicor DCM is an isolated, regulated DC-DC converter that provides superior power density. The non-isolated Vicor ZVS buck and buck-boost regulators provide an efficient, lightweight and compact solution for supporting a wide range of loads from 2.2V to 54V. When high power is required, the PRM 48V to 48V voltage regulator has an extremely wide output range to conform to point-of-load requirements.



Case studies



Agricultural UAVs

Enabling greater functionality for reliability and productivity

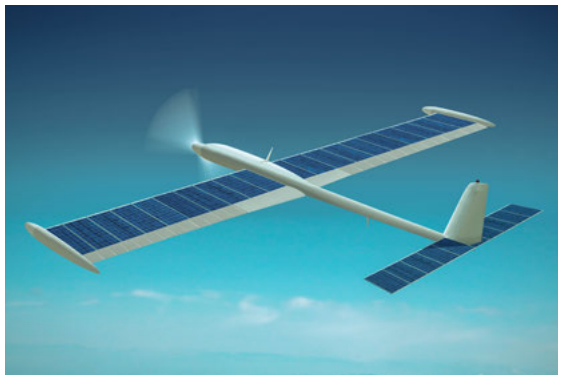
Read case study



Surveillance UAVs

Extending flight times and supporting high-performance surveillance equipment to ensure safety and security

Read case study



Unmanned aircraft for communications

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

Read case study



Tethered aerial vehicles

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

Read case study



Delivery UAVs

Extending delivery missions and saving space for greater payloads

Read case study



Inspection UAVs

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

Read case study



Media and entertainment UAVs

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

Read case study



HALE UAVs

DCM DC-DC converters double the internal bus power and help keep the aircraft as light as possible

Read case study

Products used in UAV power delivery networks



BCM bus converter modules

Isolated fixed-ratio

Input: 800 – 48V

Output: 2.4 – 55.0V

Current: Up to 150A

Efficiency: Up to 98%

As small as 22.0 x 16.5 x 6.7mm

vicorpower.com/bcm



DCM DC-DC converters

Isolated regulated

Input: 9 – 420V

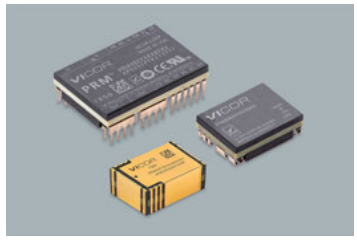
Output: 3.3, 5, 12, 13.8, 15, 24, 28, 36, 48V

Power: Up to 1300W

Efficiency: Up to 96%

As small as 24.8 x 22.8 x 7.21mm

vicorpower.com/dcm



PRM pre- and post-transformation regulators

Non-isolated regulated

Input: 48V (36 – 75V)

Output: 48V (5 – 55V)

Power: Up to 600W

Efficiency: Up to 97%

As small as 22.0 x 16.5 x 6.73mm

vicorpower.com/prm



ZVS Buck regulator

Non-isolated regulated

Inputs: 12V (8 – 18V), 24V (8 – 42V), 48V (30 – 60V)

Output: 2.2 – 16V

Current: Up to 22A

Peak efficiency: Up to 98%

As small as 10.0 x 10.0 x 2.56mm

vicorpower.com/buck



ZVS buck-boost regulators

Non-isolated regulated

Input: 8 – 60V

Output: 10 – 54V

Power: Up to 150W continuous

Efficiency: Over 98%

10.5 x 14.5 x 3.05mm

vicorpower.com/buck-boost

Powering Innovation

Explore how our customers are changing the world



Fukaden's tethered drone launches a communication base station that delivers immediate mobile phone services to support relief efforts of first responders.

vicorpower.com/fukaden



Doosan Mobility Innovation has developed world's first commercialized hydrogen fuel cell power pack that delivers 4x the energy of battery power.

vicorpower.com/doosan



Dragonfly Picture's tethered helicopter drones are an essential element for today's communication and surveillance that can extend maritime radio line of sight from 8 to 30 miles.

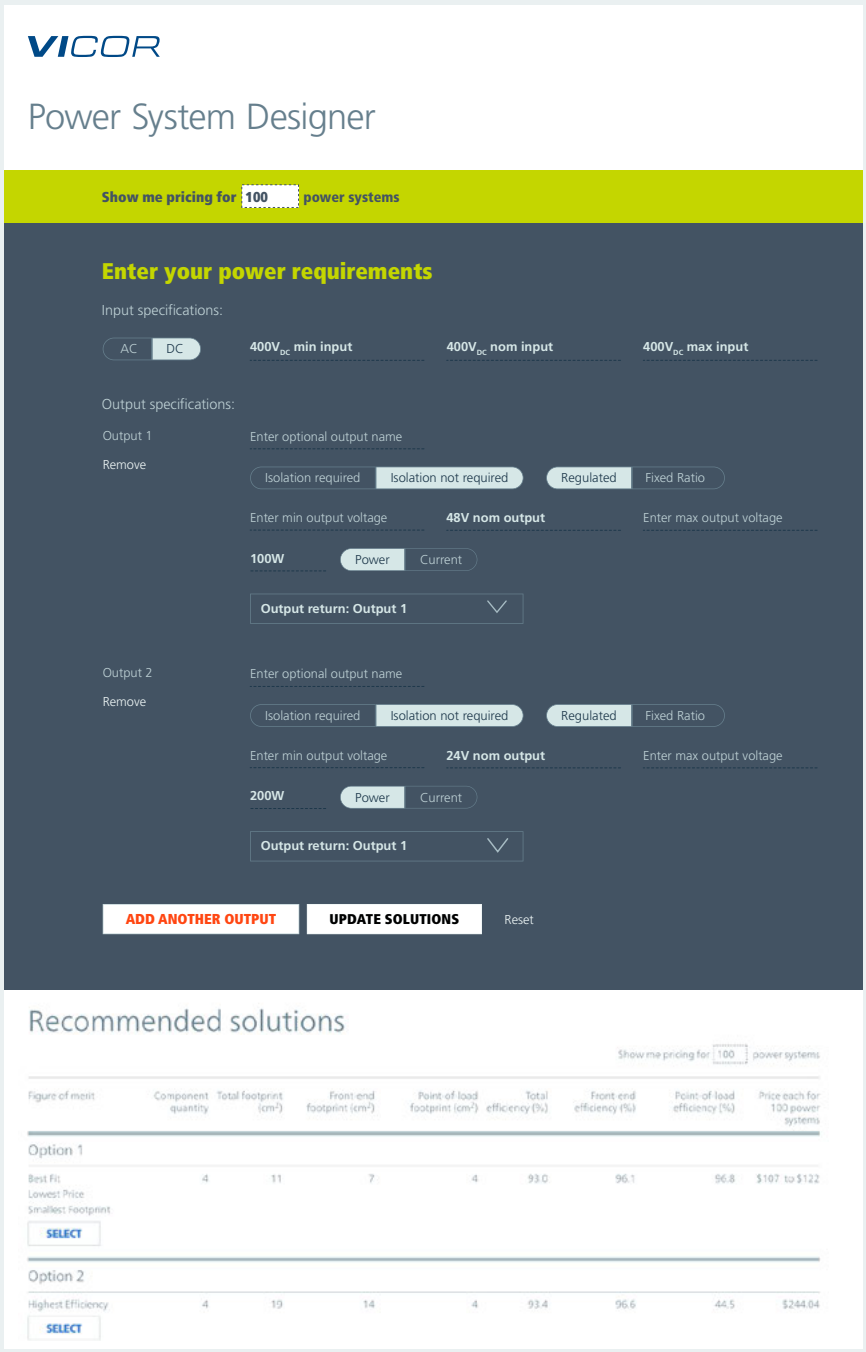
vicorpower.com/dragonfly



WiBotic provides wireless charging solutions that support the rapidly growing ecosystem of aerial, mobile, marine and industrial robots.

vicorpower.com/wibotic

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**

VICOR

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