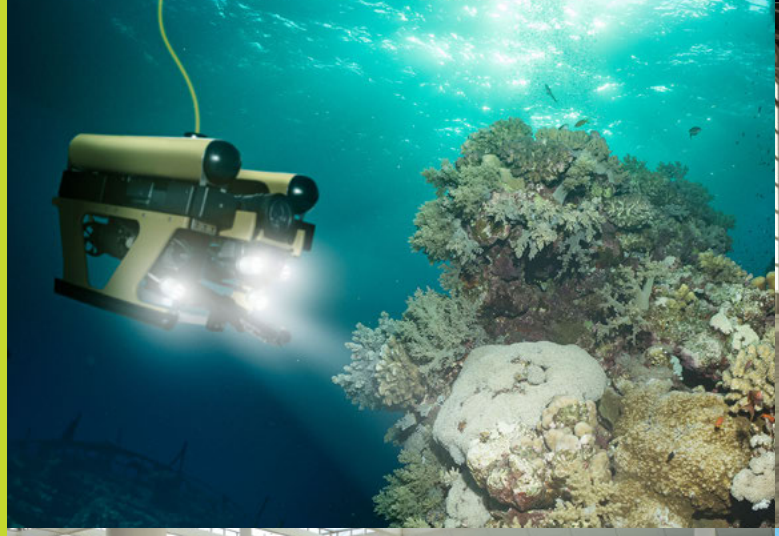
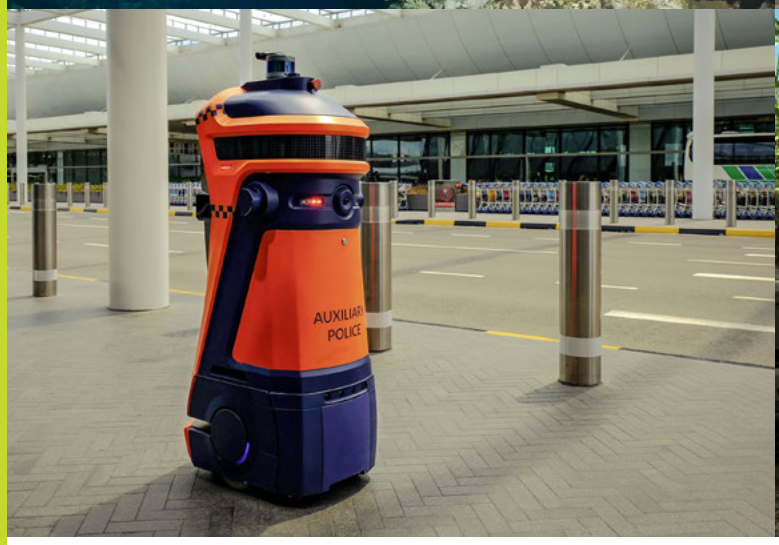
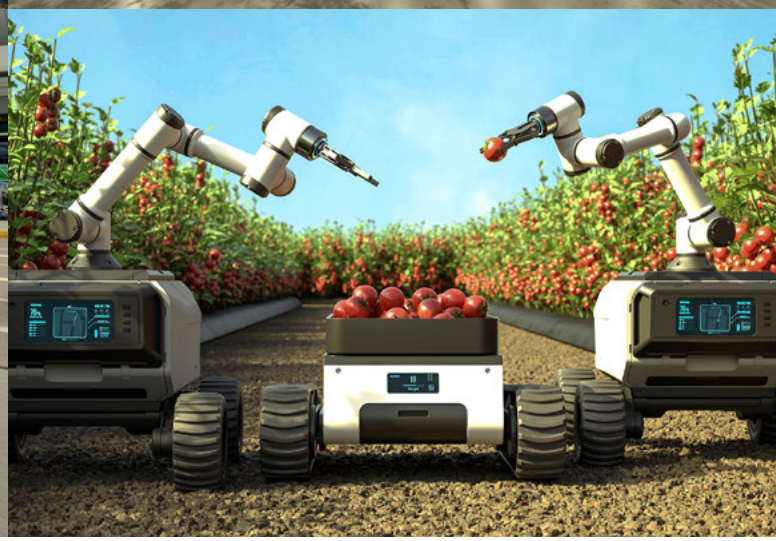






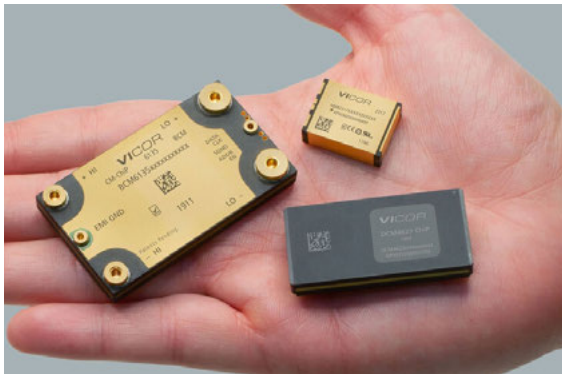


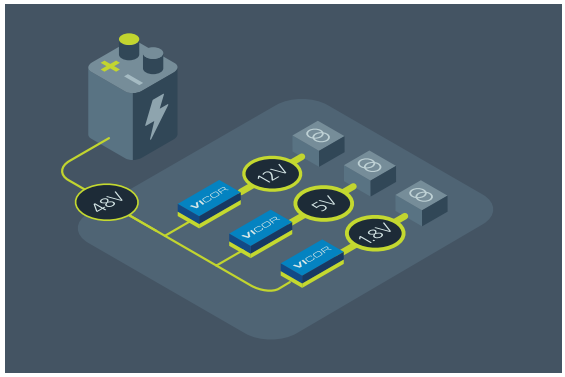
High density power conversion

Increase run 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 48V or 48V 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 robotic systems, while allowing the same power architecture to be deployed across diverse robotic platforms.

Improved thermal management

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

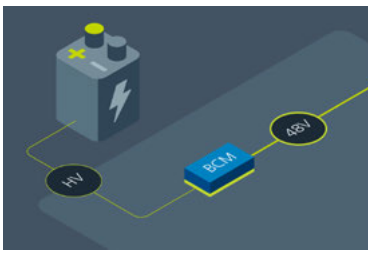
Quickly implement a power solution

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

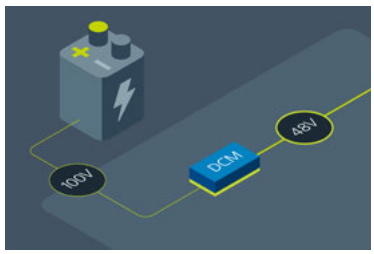
- Low height
- Scalable to higher power
- High density and efficiency
- Lightweight

The 48V power delivery network



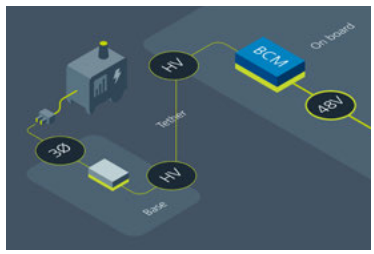
Converting 800V or 400V to 48V

For robots 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 robots 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.

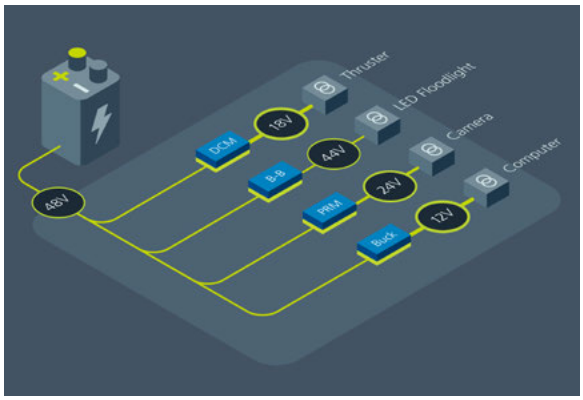


Converting a high-voltage tether to 48V

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 robot, 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



Autonomous warehouse robots

High efficiency converters help maximize run-time

Read case study



Harvesting robots

Rugged, reliable, and efficient power modules maximize uptime in harsh environments

Read case study



Logistics robots

High efficiency power modules maximize system run-time and improve productivity

Read case study



Disinfecting robots

Flexible, scalable modular solutions support multiple systems for healthier and cleaner spaces

Read case study



Security robots

More patrolling, less recharging

Read case study



Tethered ROVs

Modular ROVs quickly adapt to today's most risky underwater missions

Read case study



Delivery robots

Lightweight and efficient power modules extend delivery routes and save space to carry more goods

Read case study



Security and inspection robots

Compact power modules save space for advanced sensors to improve security and performance

Read case study

Products used in robotics 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

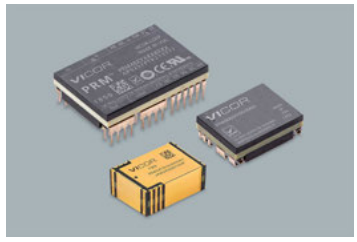
Output: 3.3, 5, 12, 13.8, 15, 24, 28, 36, 48V

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

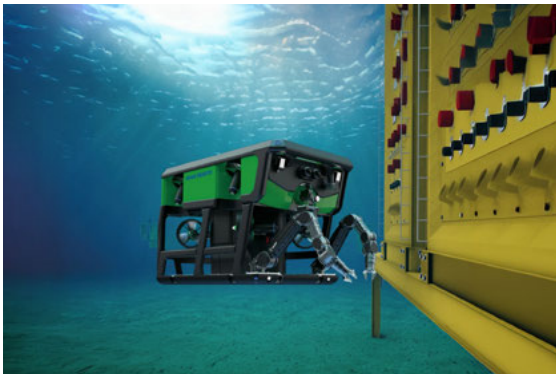
Efficiency: Over 98%

10.5 x 14.5 x 3.05mm

vicorpower.com/buck-boost

Powering Innovation

Explore how our customers are changing the world



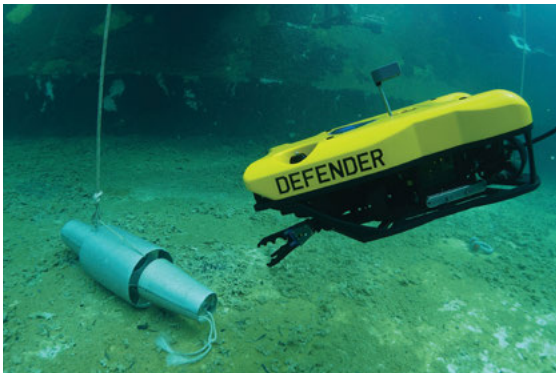
Saab UK introduces versatile, environmentally-friendly eWROV that achieves world class performance using compact, thermally-adept power modules.

vicorpower.com/saab-seaeye



Public safety risks are on the rise, and better robotic surveillance and interdiction is the answer. Knightscope provides a safer environment for the community at large.

vicorpower.com/knightscope



VideoRay tethered, underwater Remotely Operated Vehicles (ROVs) are used for today's toughest aquatic missions, from mine countermeasures to port security and surveillance.

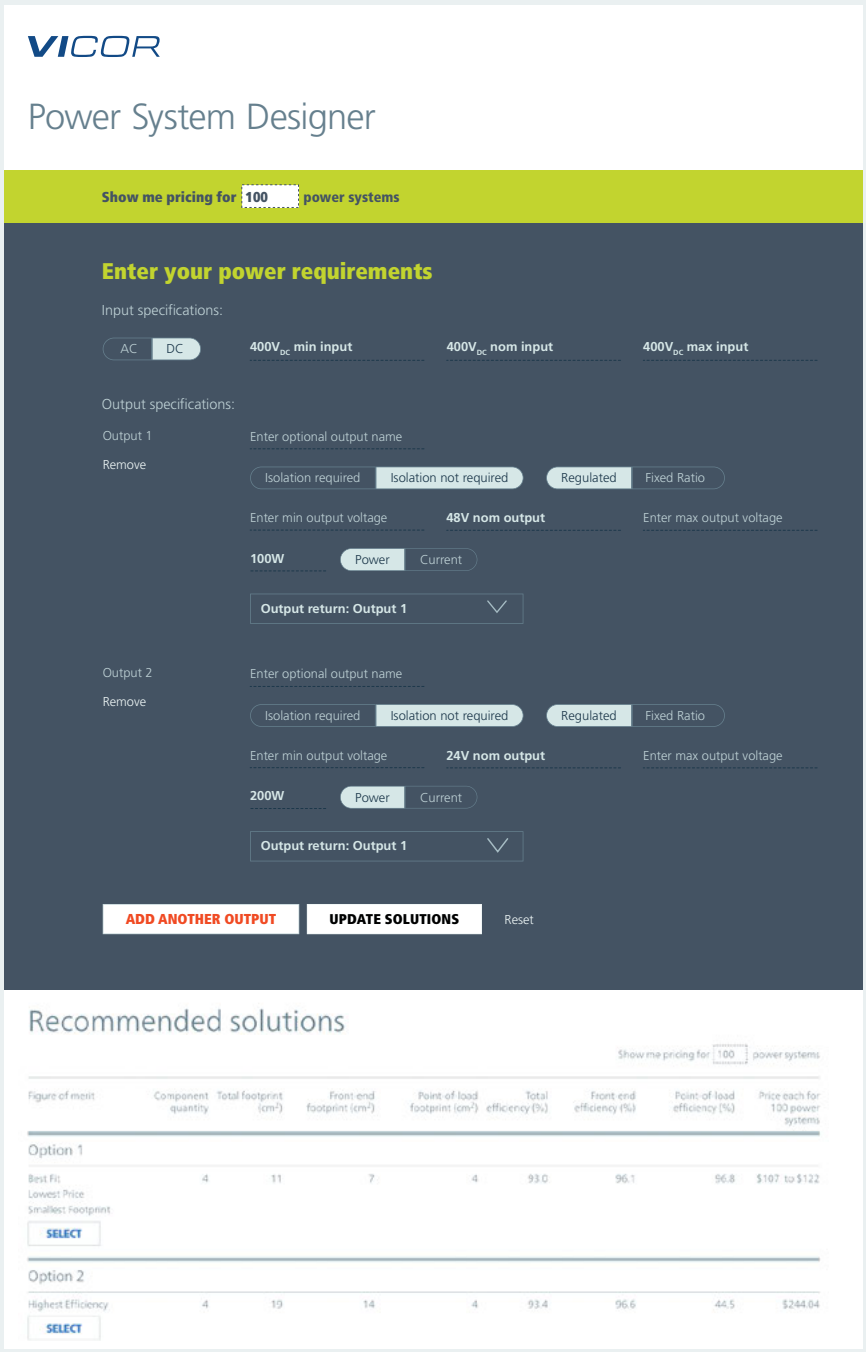
vicorpower.com/videoray



High-density power modules from Vicor are the key to driving a new generation of mobile robot innovation.

vicorpower.com/ologic

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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