



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



### Customer's challenge

This class of UAV depends on solar power to meet its long flight time requirements. Solar power systems rely on the use of maximum power-point tracking (MPPT) circuitry to ensure that solar energy is harvested at the optimum voltage before conversion to a voltage suitable for charging a secondary battery, or delivery to the power system's intermediate bus network. The key goals were:

- Efficient high voltage to SELV conversion
- A compact and lightweight solution to keep the drone as light as possible
- A robust and reliable solution



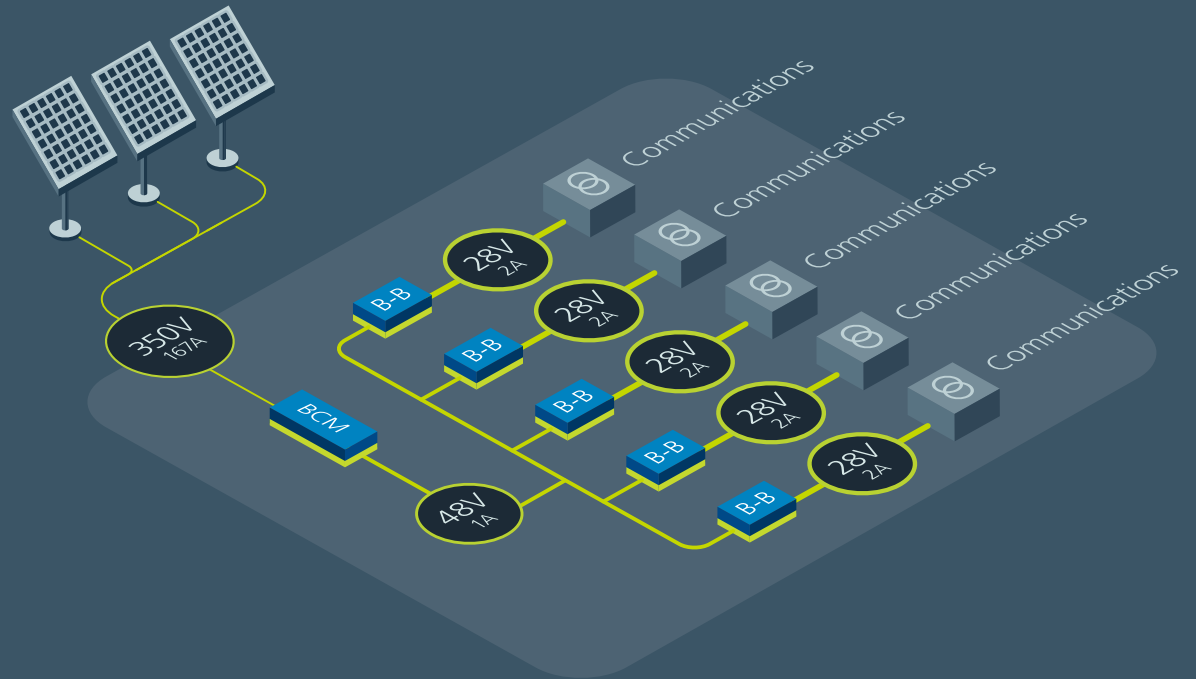
### The Vicor solution

As this class of UAVs develops, high-efficiency power-conversion topologies such as Zero-Voltage Switching and Zero-Current Switching (ZVS/ZCS) which are used in Vicor BCMs® are important to enable the widening variety of fuel sources and applications with increasing power challenges. Key benefits were:

- Efficiently convert high voltages to SELV
- Lightweight power delivery network
- Wide input range at point-of-load conversion

# The Power Delivery Network

A combination of the BCM6123 providing the isolated conversion of the 350V to a 48V intermediate bus and the PI3741 ZVS Buck-Boost regulator with a very wide range input voltage operating capability provides a tightly regulated 28V output for various UAV loads.



BCM® bus converter

Isolated fixed-ratio

Input: 800 – 48V

Output: 2.4 – 55.0V

Current: Up to 150A

Peak efficiency: 98%

As small as  
22.0 x 16.5 x 6.7mm

[vicorpower.com/bcm](http://vicorpower.com/bcm)



ZVS buck-boost  
regulator

Non-isolated regulated

Input: 8 – 60V

Output: 10 – 54V

Power: Up to 150W continuous

Peak efficiency: 97%

10 x 14 x 2.56mm

[vicorpower.com/buck-boost](http://vicorpower.com/buck-boost)