VICOR

Case study: Surveillance UAVs



Extend flight times and support high-performance surveillance equipment to ensure safety and security

Customer's challenge

Effective surveillance requires uninterrupted sensing and communication to ensure the safety and security of valued property, equipment, and assets. UAVs are used to surveille wide areas that may be hard to reach or when those spaces are not in a fixed location. The best surveillance UAVs stay in the air for as long as possible and are equipped with high-resolution cameras, thermal imaging sensors and communication links. The key goals were:

- Increase flight time
- Support power-hungry functions without adding size and weight
- High-efficiency and simplified thermals

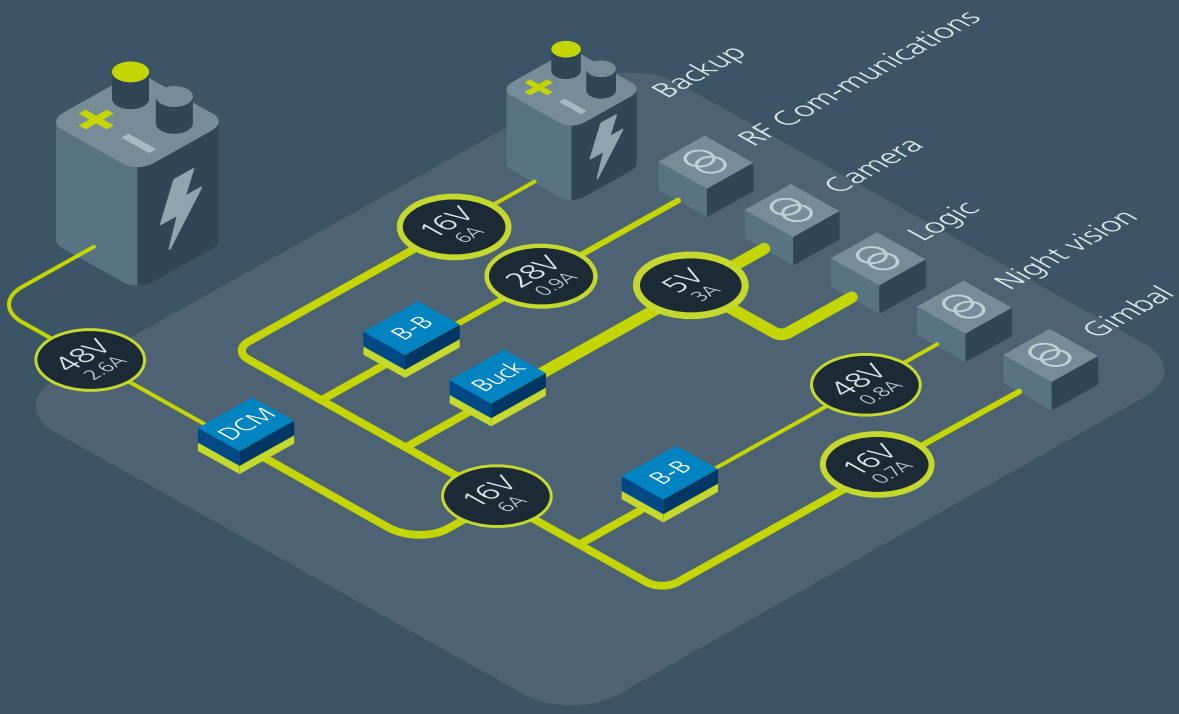
The Vicor solution

A surveillance drone must maximize productivity while also being able to carry high-performance cameras and sensors. Vicor high-density power modules support all these power-hungry functions without adding unnecessary size and weight to the UAV, extending flight time allowing for more functionality. Key benefits were:

- DCM™ best-in-class power density
- High efficiency extends flight time
- Keeps backup battery charged

The Power Delivery Network

Power dense Vicor DCM™ DC-DC converter modules are ideal for surveillance UAVs. They convert the 48V battery to a manageable voltage that can be matched to the UAV system loads using compact Zero-Voltage Switching (ZVS) buck and buck-boost regulators. The DCM converter modules can also keep the UAV backup battery charged to ensure safety through redundancy.





DCM™ DC-DC converter

Isolated regulated

Input: 9 – 420V

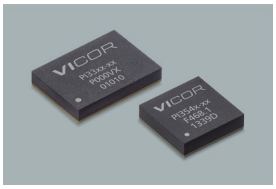
Output: 3.3, 5, 12, 13.8, 15, 24, 28, 36, 48V

Power: Up to 1300W

Peak efficiency: 96%

As small as
24.8 x 22.8 x 7.21mm

vicorpower.com/dcm



ZVS buck regulator

Non-isolated regulated

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

Output: 2.2 – 16V

Current: Up to 22A

Peak efficiency: 98%

As small as
10.0 x 10.0 x 2.56mm

vicorpower.com/buck



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

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