



## Tethered UAV

# HVDC Facilitates Higher Performance



HVDC



Small Size,  
Low Profile



Low  
Weight



High  
Power

### The Customer's Challenge

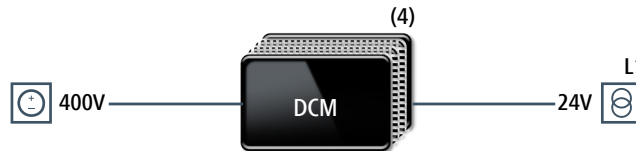
Tethered UAV manufacturers are competing to maximize the payload within a given airborne vehicle's weight budget. One customer was designing a UAV, powered from a multi-kilowatt vehicle-based power system via a tether. By removing the onboard battery, the UAV was able to carry a larger payload. However, the customer needed to find a way to reduce the weight of the tether itself, to further reduce the system weight.



### The Solution

To minimize transmission losses due to the resistance of the cable, and reduce the size and weight of the cable itself, a high voltage (400V) transmission solution was selected. To achieve the high power required by the UAV (24V at 75A), four 300V<sub>IN</sub> DCM DC-DC Converter Modules were used in parallel with an integrated heat sink for improved thermal management. Each of these DCMs weighed just 29.2g, and measured 47.91 x 22.8 x 7.26mm.

[Link to Whiteboard »](#)



### The Results

DCMs have a unique design, allowing the devices to be connected in parallel simply, acting like a single high output current DCM, and with no need to derate the outputs. With a footprint area for the complete 1.8kW solution of just 43.69cm<sup>2</sup>, the high power requirements were met in the small and lightweight package necessary for this application. In addition, the high input voltage capability of the DCMs allowed the customer to use a smaller and lighter tether than originally envisioned.

#### Product Family Key Specifications

##### DCM™ DC-DC Converter Module

<b>Input Voltages</b>	9 – 50V <sub>DC</sub> , 16 – 50V <sub>DC</sub> , 18 – 36V <sub>DC</sub> , 36 – 75V <sub>DC</sub> , 120 – 420V <sub>DC</sub> , 160 – 420V <sub>DC</sub> , 200 – 420V <sub>DC</sub>
<b>Output Voltages</b>	5V, 12V, 13.8V, 15V, 24V, 28V, 36V, 48V
<b>Output Power</b>	4623 ChiP: Up to 600W 3623 ChiP: Up to 320W 3714 VIA: Up to 600W 3414 VIA: Up to 320W
<b>Efficiency</b>	Up to 93%
<b>Dimensions</b>	4623 ChiP: 47.91 x 22.8 x 7.26mm 3623 ChiP: 38.72 x 22.8 x 7.26mm 3714 VIA: 95.3 x 35.6 x 9.4mm 3414 VIA: 85.9 x 35.6 x 9.4mm