

Nanosatellite missions with solar power generation up to 300W need advanced power systems. The P80 Power system is designed to be scalable in terms of power inputs, power outputs and battery capacity. This new design builds on the successful flight heritage and knowledge gained from our P31 and P60 power units.

The system features both a scalable high-power solution, multiple input and output channels and battery protection system.

The **NanoPower P80** is a power supply module for large nanosatellites or small microsatellites capable of handling solar arrays with up to 300 W output power - in a very mass and volume efficient package. It contains three submodules housed in protective shielding:

- Power Management Unit which is the primary power controller of the system.
- The Array Conditioning Unit which controls the power flow from the solar panels to the battery and the rest of the power system.
- The Power Distribution Unit which controls the power flow out towards the satellite subsystems.

The **NanoPower BP8** 86Wh nominal watt high capacity lithium ion battery pack offers an integrated protection system, cell balancing, cell fault detection and a heating system. The BP8 is designed as the perfect complement to the P80.



## Technical Information

### NANOPOWER P80 - KEY FEATURES:

|                               |   |
|-------------------------------|---|
| Power Supply Module           |   |
| Power Management Unit (PMU)   | <ul style="list-style-type: none"> <li>• Handling up to 4 battery packs</li> <li>• EPS master and kill switch logic</li> <li>• Deployment device control</li> <li>• Max current: 12 A at battery voltage</li> </ul>   |
| Array Conditioning Unit (ACU) | <ul style="list-style-type: none"> <li>• 12 MPPT boost converters (12 x 1 A)</li> <li>• Killswitch/RFB inhibit switch</li> </ul>  |
| Power Distribution Unit (PDU) | <ul style="list-style-type: none"> <li>• 12 x 2 A low voltage LUP channels, fed by 4 converters. All low voltage channels can be configured to an arbitrary converter, in hardware.</li> <li>• 12 high voltage LUP channels - raw battery voltage</li> <li>• Max current: 12A input to PDU</li> </ul> |
| Compatibility                 | <ul style="list-style-type: none"> <li>• Compatible with 6U or larger structures utilizing standard PC-104 mounting holes</li> </ul>  |

### NANOPOWER BP8 - KEY FEATURES:

|                              |  |
|------------------------------|--|
| Battery:                     | <ul style="list-style-type: none"> <li>• Lithium ion battery pack for space applications</li> </ul>  |
| Power specifications:        | <ul style="list-style-type: none"> <li>• Utilizes 18650 lithium ion cells, 3000 mAh cell (Nominal)</li> <li>• Nominal voltage: 28.8 V</li> <li>• Max current discharge: 4 A</li> </ul>   |
| Battery system functionality | <ul style="list-style-type: none"> <li>• Possible to put battery packs in parallel through the 2 on-board connectors</li> <li>• 8S1P configuration</li> <li>• Cell balancing and monitoring for battery longevity</li> <li>• Over- and under voltage protection</li> <li>• Over current protection</li> <li>• State of charge (SOC) estimation</li> <li>• Autonomous/manual heater system included</li> <li>• Two stage battery pack passivation system</li> </ul> |

