MPPT-6

6 Channel Maximum Power Point Tracker and Battery Charger

For Micro- and Nano-Satellites

Features

- 4-12 Solar cells per string
- 1-2 solar cell strings per channel (using external combiner diodes)
- 6 Variable frequency DC-DC buck converters with maximum power point tracking controller
    - Up to 94% Efficiency
- Protected battery output to panel mounted peripherals
    - Up to 2A output
    - Programmable overcurrent and latch-up protection
    - Advanced power metering
- Microcontroller for housekeeping and control
- CAN bus with CSP protocol
- High-reliability Micro-D connectors
- 2 Battery Bus connectors
- Reliability
    - Thermal heat sinking by flush-mounted PCB on 2.5mm Al
    - Radiation total dose tested EEE parts
    - Vibration rated for all launch vehicles
- High-quality Enclosure
    - Min. 1.5 mm Al Shielding in all directions
    - PC-104 compatible mounting holes

Description

The MPPT-6 is a six channel maximum power point tracker and battery charger module, designed for durable, simple and robust satellite integration. The system consists of six variable frequency DC-DC converters that ensure optimal operating voltage for each solar cell array at all temperatures and irradiance levels. After conversion, the channels are combined through ideal diodes to minimize loss, and connected to the battery output.

A configurable end-of-charge setting, will stop charging at a certain voltage level in order to prolong battery life. When components reach end-of-life, a pass-through mechanism will route the solar output directly to the battery bus, whereby functionality is not entirely lost. Likewise, if the on-board MCU is disabled, each MPPT channel has a fixed voltage fallback.

Housekeeping data for all channels are available through CSP telemetry. Appreciating that the solar panels are often combined with external sun and temperature sensors, each solar panel connector are equipped with a protected battery connection and CAN bus interface.