

C3S EPS2000 DATASHEET

Description

The EPS2000 from C3S is an all-in-one high performance CubeSat and NanoSat power supply solution offering uncompromised customizability without sacrificing size, cost and reliability. The EPS can be configured to have up to 20 independent MPPT channels, a customer configurable battery pack and LCL output channels.

Thanks to the wide 6 – 60 V solar input voltage range the EPS2000 is a perfect choice for missions with larger, but fragmented solar arrays.

The EPS2000 utilizes state-of-the art Gallium Nitride transistor technology in combination with conventional SI-based power semiconductors for the MPPT converters, which ensures high efficiency and thus minimal heat dissipation over the entire operating range with high reliability.

The single point failure tolerant control and power electronics segments ensure reliable operation, while handling

EPS 2000 is currently in TR4 and will reach TRL7 by Q3 2025 in one of our ongoing contracted projects.

Solar cell inputs

Solar cell type Triple junction solar cells, $\eta \approx 30\%$

Total number of MPPT channels 20

Input voltage range 6 - 60V

Low-power MPPT peak input power 12 W

Low-power MPPT series solar cells 3-7S

High-power MPPT peak input power 50 W

High-power MPPT series solar cells 16-19S

Peak solar input power 1 kW*

Converter stability According to ECSS-E-ST-20C

Peak efficiency 97%

Energy storage

Battery pack series configuration 7-8 series 18650 cells

Battery pack parallel configuration 3 or more parallel strings

Battery pack stored energy 200+ Wh

Integrated battery heater Yes

Power distribution

Output voltage 23 - 33 V (28 V unregulated)

Number of LCL channels Configurable based on the mission requirements

LCL output current Configurable based on the mission requirements, min. 5 A

Peak output power 950 W*

Communication

Primary interface Redundant CAN

Secondary interface UART

Mechanical

Mass up to 6.8 kg

Volume up to 7 L

Material Precision milled T-7070 aluminium

Environmental

Qualification temperature -40°C to 60°C

Shelf-life up to 6 months

Special features

SDM End-of-life battery passivation

Soldering Sn63Pb37 based soldering process

* if a sufficient number of battery strings are available