ISIS EPS

Flight heritage since 2018





DESCRIPTION

The ISIS Electrical Power Subsystem (iEPS) is a compact power system designed and manufactured by ISIS. It is designed as a single solution EPS, ideal for 1U up to 3U Cubesats. Applying new technologies, the GaN-FETs used in the solar panel interface improve power conversion efficiency and performance. The system is equipped with hardware based Maximum Power Point Tracking (MPPT) and battery voltage management. The iEPS provides 3.3V and 5 V regulated buses, as well as an unregulated bus. An add-on daughter board allows multiple configurations and customizations as needed to suitably power your system and payload instruments.

FEATURES

- Compact single PC/104 form factor board solution
- FRAM based MCUs for improved radiation tolerance
- · Hardware voltage, over-current protection and hardware based maximum power point tracking
- Designed for low (idle) power consumption
- Solar Panel interface utilizes GaN-FETs
- · Allows customizations through mountable daughter-board

PRODUCT PROPERTIES

Mass	Type A 200 grams (2 Li-Ion cell battery pack) Type B 330 grams (4 Li-Ion cell battery pack) Type C 70 grams (PCB only)
Volume	Type A 96 x 92 x 27 mm (PCB and top battery) Type B 96 x 92x 38 mm (PCB + DB + bottom battery) Type B 96 x 92x 11 mm (PCB only)
Operating temperature range	-20°C to +60°C
Power delivered	20W @ 5V over 4 channels
Energy storage	6400mAh (Type A), 12800mAh (Type B)

CONFIGURATIONS AND OPTIONS

Type A: iEPS board and a pack of 2 batteries

Type B: iEPS board, daughter board and a pack of 4 batteries

Type C: iEPS board only

• Allows customization through mountable daughterboard, provides the following voltage domains:

- ----> VD10: Unregulated voltage with one output channel
- VD11: Custom voltage lower than VD10, one output channel
- Daughter board enables ISIS AntS2.0 interface and ISIS solar panel data interface and readout

PERFORMANCE

Output voltage domains	VDO: 5V VD1: 3V3 VD2: user selectable (model B with Daughter board)
Main bus organization	Unregulated bus
Functional protection	Emergency Low Power Mode (when Bus voltage low) Hardware Supervisor including Watchdog Firecode stack reset capability On board housekeeping measurement
Electrical protection	Overcurrent/thermal limit on Unit input on each output bus channel: - overcurrent/thermal protection - reverse current protection
Communication interface	I ² C

QUALIFICATION AND ACCEPTANCE TESTING

Test	QT	AT
Functional	\checkmark	\checkmark
Vibration	\checkmark	-
Mechanical Shock	\checkmark	-
Thermal Cycling	\checkmark	\checkmark
Thermal Vacuum	\checkmark	-

*QT is performed on the design/qualification model *AT is performed on the unit to be shipped





ISIS - Innovative Solutions In Space B.V. Motorenweg23, 2623CR, Delft, The Netherlands T: +31 152569018 sales@isispace.nl www.isispace.nl

