

DEFENCE AND SPACE
Space Products

PSR 100V MKII

A single integrated & modular
unit to power your Satcom
up to 23kW



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AIRBUS Defence and Space's PSR 100V MKII is a fully qualified fault tolerant off the shelf unit developed by AIRBUS Defence and Space for telecom satellites under ESA initiative.

Its power handling capacity ranges up to 23kW at 100V. The PSR design is based on a modular approach in order to cope with specific mission requirements by minimizing the non-recurring costs. Its internal architecture is designed to comply with the reliability target with a single unit per spacecraft. It also provides an option for up to 2 fault tolerant secondary buses (50V or 28V).

On board on Alphabus, E3000, E3000-NEO and Galileo, selected by major operators but also on board with other spacecrafts manufacturers, the PSR 100V MKII takes legacy heritage from PSR 50V with more than 80 units in flight on several platforms in the world.

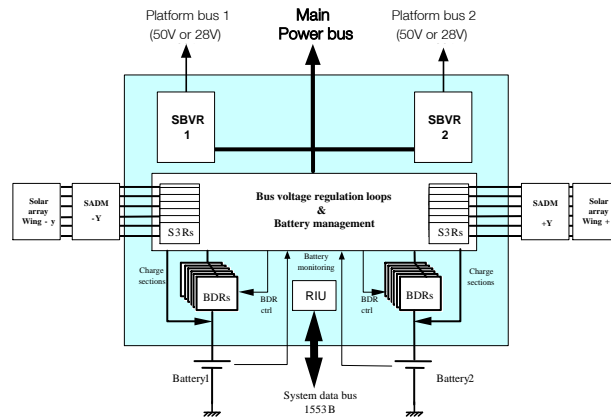
Today the PSR 100V MKII is in recurring production with 30 units ordered and 14 models cumulating over 30 years in orbit.

Main application fields:

- Telecommunication and navigation satellites
- GEO Earth Observation satellites

The PSR 100V MKII is designed to cope with standard EPS architectures as described hereafter. It provides up to 3 power buses:

- A regulated 100V \pm 1% regulated bus that deliver the main power.
- One to two optional independent secondary buses that allow to supply the platform electronics and sensitive instruments.



KEY FEATURES

- Provides a centralized low impedance point for power distribution (payload & platform)
- Provides one or two optional reliable & regulated secondary buses (50V/700W, 28V/400W)
- Combines power sources from the solar arrays (Si & AsGa technologies) and batteries in a controlled and high efficiency manner
- The PSR is directly plugged to solar generator and battery from one side and payload & platform from the other side, without any additional interface/management box
- Achieves the bus regulation under all spacecraft operating conditions
- Provide to the OBC the battery TM (voltage, current) necessary for charge management. Regulate the battery charge current according to OBC consign
- The design is fully segregated to guarantee the high reliability, robustness and design rules demanded by Telecom customers
- Ps > 99% @ 15 years
- The PSR also provides relays TC, analogue telemetries and bilvel telemetries for equipment management

INTERFACES

- Power bus: 100V regulated \pm 1V
- Battery: Single Li-Ion (or dual)
- Dialog: MIL STD 1553 Bus
- Relay TC: 87 internal, 169 external
- Analogue TM: 176 internal, 16 external
- Bi-level TM: 62 internal, 34 external

ENVIRONMENTS

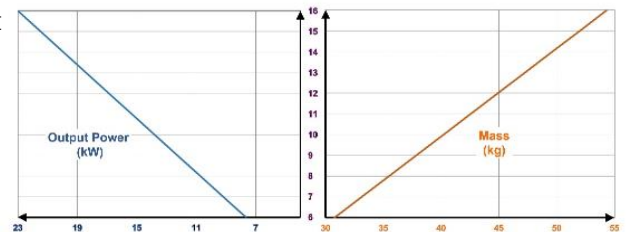
- Thermal: -35°C to +70°C (operation and performance)
- Vibrations: 20g sine, 17g rms in plane and 13g rms out of plane random
- Shocks: 800 to 1100g over 1kHz to 10kHz
- Radiation: 15 years in GEO orbit, SEP tolerant, latchup immune
- EMI/EMC: MIL-STD-461

BUDGETS

- Mass: 54kg @ 23kW - 31kg @ 7.7kW
- Volume: 500 to 750 x 247 x 348mm³
- Power: up to 23kW @ 100V (option 25kW on request)

Performances of the PSR 100V MKII

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|---------------------------------------|---|
| Regulated voltage accuracy: | Fault tolerant 100V Regulated \pm 1% |
| Sunlight power conversion efficiency: | 98.8% |
| Eclipse power conversion efficiency: | 97% @BDR Pmax |
| Bus impedance | 50mOhm up to 100kHz (16PMs) |
| Bus voltage ripple | <0.5Vrms with no load transient |
| Max transient voltage | <110V for less than 40ms |
| Max output power | 23kW/16PMs-7.7kW/6PMs- 1.5kW/Steps |
| Battery operating range | 55V to 95.7V |
| Battery management | Up to 2 batteries Charge up to 40A (20A in bi batteries configuration) |
| Solar Array sections: | S3R principle (1 per module) Up to 21.25A/21.8A @ 100V per section (Shunted/Direct) |



Number of power modules