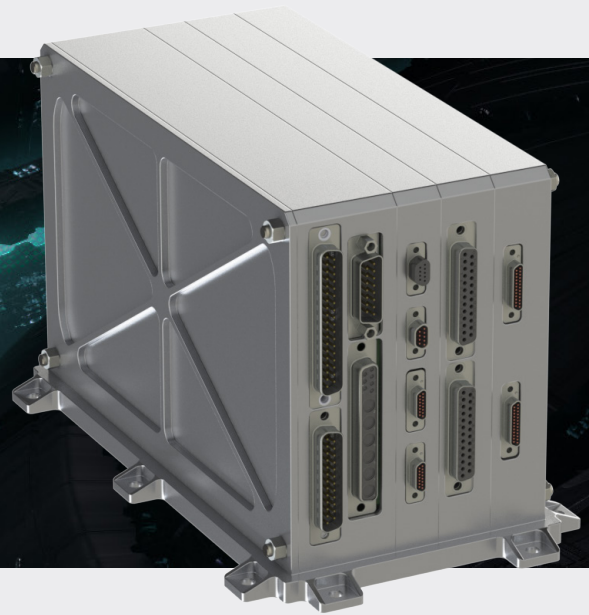


RELIABILITY, RESILIENCE & PERFORMANCE



AAC Clyde Space's small satellite PCDU (Power Conditioning and Distribution Unit) solutions have demonstrated impressive space-based capabilities stretching across a range of applications, gaining a market reputation for reliability, resiliency and performance. STARBUCK-MINI provides high power 28 V outputs and redundancy for power distribution, as well as redundant command and control interfaces via CAN or RS422. Its innovative design combines COTS and radiation hardened components to optimize the reliability and performance characteristics of the ITAR free system.

The STARBUCK-MINI adopts a modular design approach which enables easy customization. The adaptable system utilizes flexible add-ons to meet the required number of power output interfaces for payloads on each specific mission and can be quickly adapted to customer product specifications.

Integration of interfaces for deployment mechanisms, magnetic torquers and other equipment can also be accommodated through the addition of custom modules.



POWER

With 1500 W system power, 28 V nominal bus and battery voltage with power converters for isolated auxiliary output. High-power 28V outputs & redundancy for power distribution, as well as FPGA based control & monitoring of all switches & interfaces through redundant CAN or RS485.



PERFORMANCE

High-performance power solution for small satellite platforms. Modular design approach delivers scalability and easy tailoring of interfaces to mission requirements. With MPPT or S3R battery charge regulation for advanced power management.



RELIABILITY

Reliability and qualification levels suitable for many different mission types. COTS components with verified space performance combined with radiation hardened components. All outputs protected by Latching Current Limiters (LCLs) or Retriggerable LCLs (RLCLs), with support for redundant power supply to consumers.

Designed for optimized reliability with performance fail-safes, the state-of-the-art STARBUCK-MINI offers advanced power management with 1500W system power.



TECHNICAL SPECIFICATIONS

General	
Design Life	5-7 years in LEO
System Power	1500 W
Primary Bus Voltage	22-34 V
Secondary Bus Voltage	5, 8, 12 or 15V with isolated ground
Battery Regulation	MPPT or S3R
Idle Power Consumption	10W
Operating Temperature Range	-30°C to +60°C
Radiation (TiD)	20 kRAD (qualified >30 kRAD,Si)
Mass	3300 g

Electrical Interfaces (baseline configuration)	
Primary Bus High Power (up to 10 A) Outputs	4 individual protection (LCL)
Primary Bus Nominal (up to 3A) Outputs	12 individual protection (LCL or RLCL)
Secondary Bus Outputs	12 individual protection (LCL or RLCL)
Solar Array Interface	4 x 120 W triple junction panel strings (expandable to 12 strings)
Battery	Current handling up to 60 A

General	
Design Life	5-7 years in LEO
System Power	1500 W
Primary Bus Voltage	22-34 V

All technical specifications are subject to change without notice.

Telemetry and Control Interfaces	
TM/TC	CAN or RS422 serial interface (redundant) Cold redundant flash based FPGA controllers.
Telemetry	Bus voltage Battery current Internal unit temperature Internal unit voltages LCL status Individual LCL currents
Pulse Command Reset	RS422 levels – triggers system-wide power cycle.
Actuators and Thermal Knives	Arm and fire actuation (bus voltage)

Baseline configuration (4 modules) and module functionality

Module	Function	Handling
BCR/APR	Battery connection point and charge regulator. Array power regulator.	60A battery connector Umbilical connection Up to 4 S/A groups at 120 W each
CTRL	Control unit with redundant FPGAs	Redundant CAN or RS422 interfaces Separation detection Pulse command input
PPD	Primary power distribution (std. option)	4 class 10 main bus LCL outputs 10 class 3 main bus LCL outputs 2 class 3 main bus RLCL outputs (Optional configuration 20 class 3 LCL outputs)
SPD	Secondary power distribution	2 x 30 W low voltage buses 2 x 6 LCLs (up to class 2)

TECHNICAL SPECIFICATIONS

Example expanded configuration (11 modules)

Module	Function	Handling
BCR/APR	Battery connection point and charge regulator. Array power regulator.	60A battery connector up to 12 S/A groups at 120W max each.
APR	Array power regulator.	
APR	Array power regulator.	
CTRL	Control unit with redundant FPGAs	Redundant CAN or RS422 interfaces Separation detection Pulse command input
PPD	Primary power distribution (std option)	8 class 10 LCL outputs
PPD	Primary power distribution (std option)	56 class 3 LCL outputs
PPD	Primary power distribution (20 channel option)	8 class 3 RLCL outputs
PPD	Primary power distribution (20 channel option)	
SPD	5V and 12V Secondary power distribution	2 x 30W low voltage outputs 6 LCLs for 5V (up to class2) 6 LCLs for 12V (up to class2)
SPD	5V and 12V Secondary power distribution	2 x 30W low voltage outputs 6 LCLs for 5V (up to class2) 6 LCLs for 12V (up to class2)
CUSTOM	Custom functionality add-on module	High power outputs with fuses Magnetorquer control with precision current controlled outputs. Propulsion control with H-bridges, instrumentation amplifiers and LCLs for valves, thrusters and heaters. Analog signal conditioning for thermistors.

To make an enquiry, request a quotation or learn about AAC Clyde Space's other products and services, please contact:
enquiries@aac-clydespace.com



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www.aac-clyde.space

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