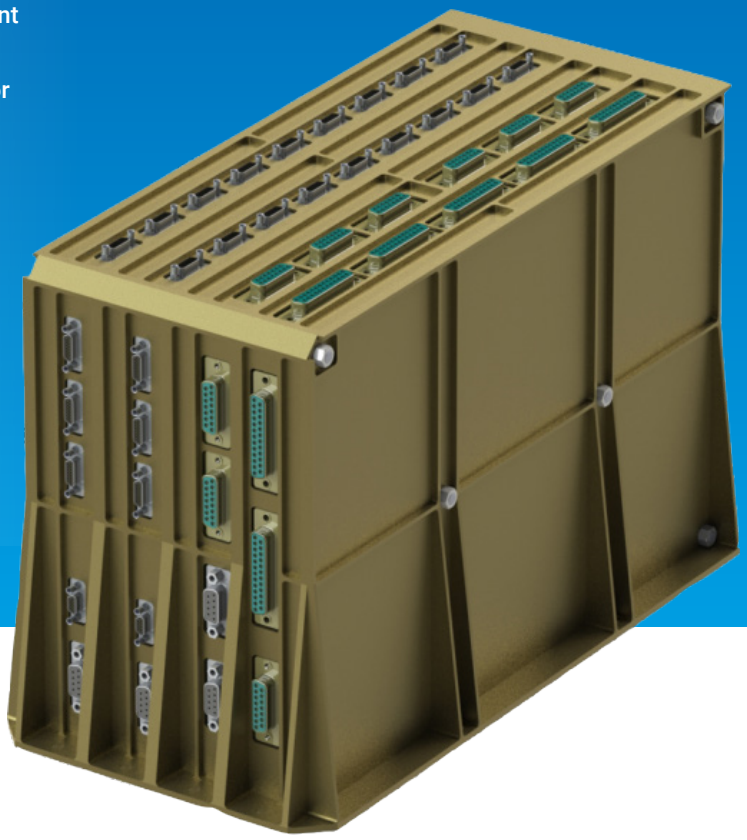
PS-MS02

Mini PCDU

ÅAC-Clyde has developed a modular microsatellite PCDU (Power Conditioning and Distribution Unit) concept with focus on high reliability, resiliency and performance. The PCDU is scalable depending on the features and interface requirement of the specific mission. It provides high power 28 V outputs and redundancy for power distribution as well as command and control via CAN or RS485. A rigorous testing and extended qualification campaign compliments an innovative design approach that combines COTS and radiation hardened components and optimizes the reliability and performance characteristics of the system.

Main Features

- Reliable high-performance power solution for micro satellite platforms
- Modular design approach delivers scalability and easy tailoring of interfaces to mission requirements
- High power 28 V outputs
- Reliability and qualification levels suitable for many different mission types
- All outputs protected by Latching Current Limiters (LCLs) or Retriggerable LCLs (RLCLs)
- Support for redundant power supply to consumers
- FPGA based control and monitoring of all switches and interfaces through redundant CAN or RS485
- COTS components with verified space performance combined with radiation hardened components.
- MPPT or S3R battery charge regulation
- ITAR free equipment
- 1200 W peak power
- 28 V nominal bus and battery voltage
- Power converter for isolated auxiliary output



Modular design

The PCDU adopts a modular design approach which enables easy customization. Integration of interfaces for deployment mechanisms, magnetic torquers, payloads and other equipment can be accommodated through the addition of modular design elements. This approach minimizes the risk of failure and, reduces the additional qualification requirements.

Technical Specifications

General

Design life	5 years in LEO
System power (average)	500 W
System power (peak)	1200 W
Primary bus voltage	28 V
Auxiliary bus voltage	5-12 V isolated
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	5900 g

Electrical interfaces

Primary bus high power outputs	6 individual protection (LCL or RLCL)
Primary bus nominal outputs	22 individual protection (LCL or RLCL)
Auxiliary bus output	10 individual protection (LCL or RLCL)
Solar array interface	700 W triple junction panels (nominal)
Battery	1300 Wh

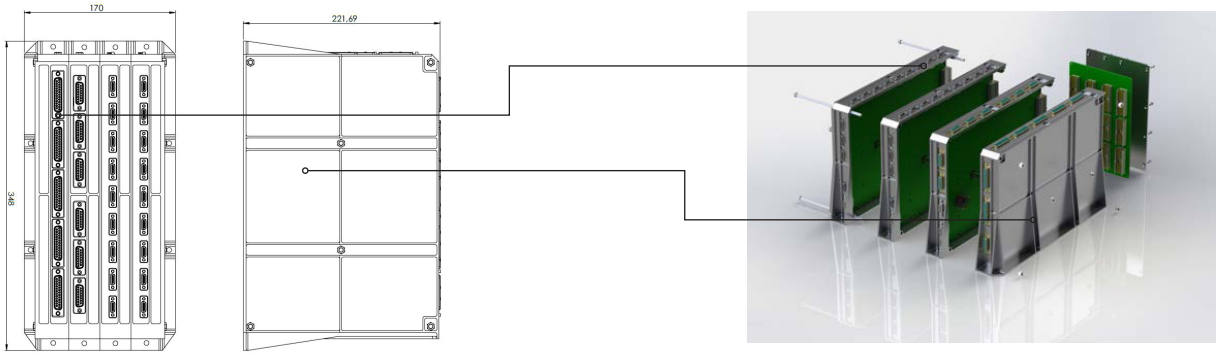
1) All technical specifications are provisional and subject to change without notice.
2) Available as add-on module upon request

Telemetry and control interfaces

TM/TC	CAN or RS485 serial interface (redundant) Flash-based FPGA controller
Telemetry	Bus voltage Bus current Batter curryent Internal unit temperature Internal unit voltages LCL status Current in each LCL
Pulse command reset	RS422 levels
Thermistor input	20
Actuators and thermal knives	Arm and fire actuation strategy
Separation detection from launch vehicle	Triple redundancy with majority voting
Magnetorquer driver control[2]	3 precision current controlled outputs
Propulsion control[2]	H-bridges, instrumentation amplifiers and LCLs for valves, thrusters and heaters. Analog signal conditioning for thermistors.

Dimensions

Length	348 mm
Width	170 mm
Height	222 mm



For more information, please contact:

ÅAC Microtec AB
Uppsala Science Park
Dag Hammarskjölds väg 48
SE-751 83 Uppsala, Sweden
+46 (0) 18 560 130
info@aacmicrotec.com

AAC Microtec North America, Inc.
5 Berry Patch Ln Columbia
Illinois 62236
USA
+1 (602) 284 79 97
info@aacmicrotecus.com

AAC Microtec UK Ltd
Atlas Building, Harwell Campus
Oxfordshire OX11-0QX,
United Kingdom
+44 (0) 7500 93 48 29
info@aacmicrotec.com

Clyde Space
Skypark 5
45 Finnieston Street
Glasgow G3 8JU,
United Kingdom
+44 (0) 141 946 4440
info@clyde.space