

PEARL

SPACECRAFT PLATFORM



The Space Dynamics Laboratory's (SDL) Pearl spacecraft platform delivers the performance, reliability, and mission flexibility needed for demanding small satellite missions. The Pearl platform architecture draws from common sets of components to build 3U, 6U, 12U, and custom size satellites with variations in mission capability, parts quality, and radiation tolerance. This flexibility enables our professional staff to develop systems specific to each mission while drawing on a common design to maintain reliability and costs.

SDL's state-of-the-art testing facilities, experienced staff, and high-performance systems provide assured performance and mission success. Mission support can be provided through the entire mission life cycle, from concept to end-of-life disposal.

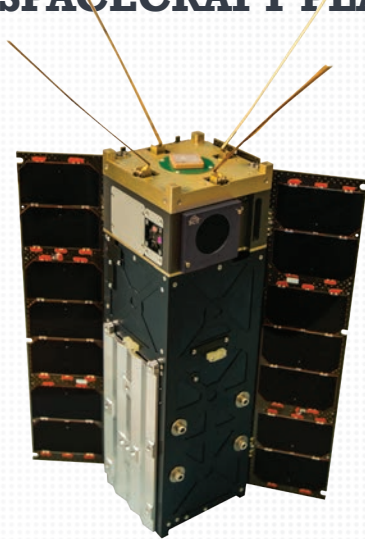
FEATURES:

- Parts quality can be scaled to the needs of the mission (full radiation hard options)
- Options available for type 1 encryption
- Supports a range of radiation requirements (LEO, HEO, GEO)
- Traceability from the requirements, through the design, test, and verification phases
- Comprehensive verification and validation of mission requirements with hardware-in-the-loop testing
- Flexible, customizable, and adaptable
- Full mission life cycle engineering support
- Facilities onsite to support all program phases

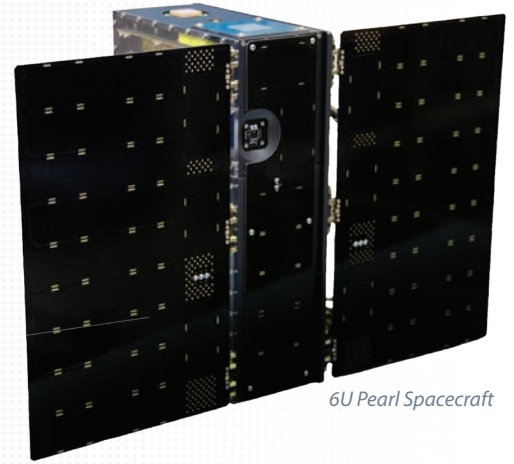
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3U Pearl Spacecraft



6U Pearl Spacecraft



SPECIFICATIONS	3U	6U, 12U, CUSTOM
PAYLOAD ACCOMMODATION		
VOLUME	Up to 1.7U	Up to 4U, 8U & custom
ORBIT AVERAGE/PEAK POWER	15 W OAP (orbit dependent) – higher power available for low-duty cycle events/35 W peak	30 W OAP (orbit dependent) – higher power available for low-duty cycle events/75 W peak (customizable for the 6U, 12U & custom)
POWER SWITCHES	One 5 V, two 12 V	One 5 V, four 12 V
COMMUNICATION PORTS	SpaceWire, PCI, RS-422 & other payload interfaces available	Support for up to 3 payloads, FPGA configurable: SpaceWire, UART, synchronous serial
PAYLOAD DATA STORAGE	Up to 64 GB on-board flash storage	16 GB radiation tolerant, EDAC protected
HEATER CIRCUITS	0	Up to 3
TEMPERATURE SENSORS	Up to 8	Up to 9
PAYLOAD DEPLOYMENT CIRCUITS	Up to 4	Up to 3, redundant drivers—6 total
BUS		
PROCESSOR	2 or 4 core LEON-III fault & radiation-tolerant, single board computer, 25 to 266 MHz	
RAM	256 MB on-board memory	
OPERATING SYSTEM	VxWorks, RTEMS, or Linux OS	
POSITION ACCURACY	<0.021° (3-sigma)	
POSITION KNOWLEDGE	<0.021° (3-sigma)	
ORBITS SUPPORTED	LEO	LEO, GEO & beyond. Fully radiation-tolerant options available
DOWNLINK CAPABILITIES	Up to 3.5 Mbps, with AES 256 encryption	Up to 40 Mbps, with AES 256 or TSAB encryption
FREQUENCIES SUPPORTED	UHF, USB, SGLS, X- & K-band options	