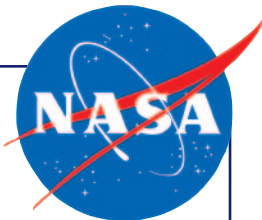


SA-200S Spacecraft Series

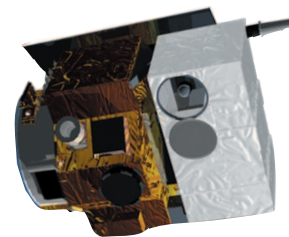


The SA-200S spacecraft is an affordable platform designed for missions with solar inertial, sun synchronous near-6am orbits, or missions which require duty cycled high accuracy point tracking. Configured for a Pegasus, Taurus, Athena, Delta, or Med-Lite launch, this platform provides a full capability monopropellant hydrazine RCS for orbit acquisition and precision control, and offers substantial pointing control and agility with 3 reaction wheels. Options are available for articulated arrays, full C&DH and sensor redundancy, and high data rate storage and downlinks.

The SA-Series spacecraft supports a wide range of science and technology missions through the use of a flight proven, adaptive architecture. The basic spacecraft provides 3-axis controlled, autonomous operations using reaction wheels, stellar attitude knowledge and standard communications interfaces (SGLS, STDN, and DSN, with CCSDS protocols). Standard operating modes include solar, nadir, inertial point tracking and safe-hold, in addition to rotational and other mission unique modes. In previous and ongoing programs, the adaptive architecture has proven its ability to increase capability, such as GPS position, mass memory storage, and high rate communication; to reduce capability, such as pitch bias ACS or simple UHF communications; and to incorporate mission specific redundancy approaches with minimal development impact. The SA-200S supports payload systems up to 200 kg with a balance of technical performance and reliability features appropriate to the needs of each mission.

Successfully applied to DoD and NASA space flight programs

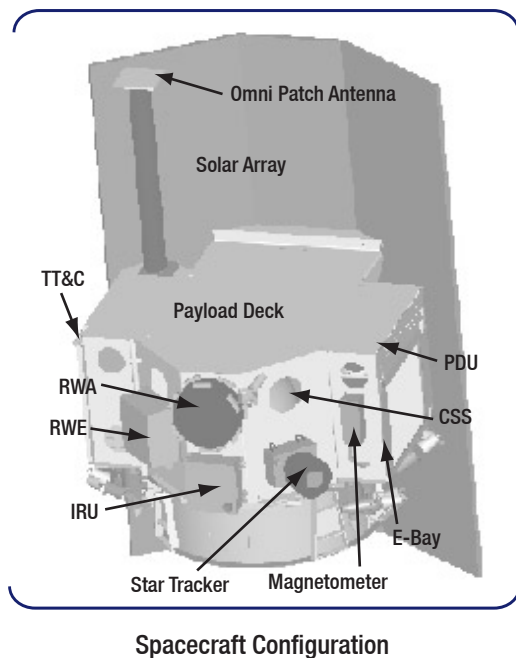
The SA-Series spacecraft architecture, developed over a seven year period, has been successfully applied to both DoD and NASA space flight programs. In all cases, Spectrum Astro has worked within integrated teams of government and industry partners to produce a platform with the proper heritage, technical performance and system interface to best perform the mission. The SA-200S Series are mature platforms providing reasonable margins within current and emerging launch vehicle capabilities. Combined with Spectrum Astro's effective production, launch and operations infrastructure, the SA-Series spacecraft provides a low-risk, affordable platform for today's science, technology and demonstration missions.



For more information contact the Rapid Spacecraft Development Office
NASA Goddard Space Flight Center • Mail Code 456 • Greenbelt, MD 20771 • USA
Phone 301-286-1289 • Web <http://rsdo.gsfc.nasa.gov>

SA-200S Spacecraft Specifications

Many operating orientations are available from the basic platform, based on mission specific needs. The platform operates in any attitude while maintaining thermal control and attitude sensing capability. The SA-200S provides a large, unencumbered payload volume with simple bolt-on structural and open architecture electrical interfaces. The payload and the platform elements incorporate external mounting, enabling schedule effective integration and test. The validated integration and test infrastructure uses the built-in hardware-in-the-loop provisions to enable rapid software development and early interface verification. When combined with Spectrum Astro's cooperative, team oriented program management culture, the SA-200S provides the best balance of low-cost and high performance for high confidence of mission success.



Mission & Program

Launch Mass 200 - 350 kg
 Sunlit Array Power (BOL) 280 Watts (body mounted)
 Launch Vehicle Pegasus, Taurus, Athena, Delta, Titan II & Atlas

Mission/Orbit Any LEO sun-synchronous
 Any LEO, HEO or GEO with power upgrade option

Lifetime 1 - 3 years
 Mission Effectiveness > 0.73 @ 2 years

Redundancy Architecture Single string w/ selected & functional redundancy

Parts Program 883B / JAN TXV; upscreened B; space materials

Product Assurance Tailored 9858/NHB 5300.4 (1D-2)

Payload Accommodations

Payload Mass Up to 200 kg

Payload Power, Avg/Peak 66/225 W

Payload Field of View 2π steradian

Payload Data Handling 5 Mbps RS422; 300 kbps 1553;
 20 Mbps VME

Payload Data Storage 2 Gbit

Data Downlink Rate 2.5 Mbps

Guidance & Control

Attitude Control 3-Axis, zero momentum bias wheel control;
 RCS back-up

Pointing Control ± 38 Arcsec (3σ inertial)

Pointing Knowledge (RMS) ± 2.8 Arcsec (3σ , roll & pitch inertial)

Pointing Modes Sun, nadir, off-set, point track, inertial

Pointing Stability < 0.1 arcsec/sec

Orbit Knowledge ± 90 m GPS

Orbit/Trajectory Control $< \pm 0.5$ km, 21.3 kg-N₂H₄

Momentum Management Magnetic, RCS back-up

Command and Data Handling

Ground Control I/F S-Band

Data Interface CCSDS STDN/DSN

S/C & Payload Telemetry 2.5 Mbps main carrier or 128 kbps subcarrier

Commands 2 kbps

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SPECTRUMASTRO



AFFORDABILITY THROUGH INNOVATION