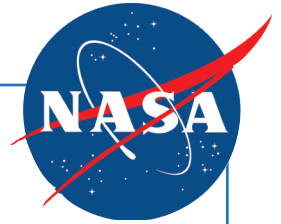




## SA-200B Spacecraft

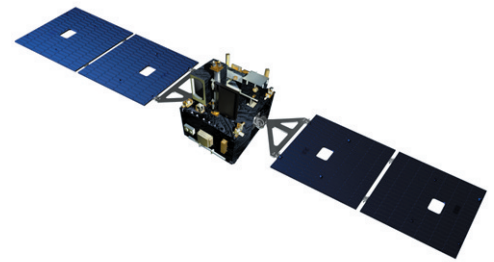


The SA-200B spacecraft provides an affordable, robust platform for data collecting space missions at LEO, MEO, HEO, and GEO orbits. The spacecraft maximizes both technical and programmatic performance by combining proven high capability space components with an open architecture designed for concurrent development and early interface and functional test. The SA-200B provides the right size, heritage and cost value for the success of today's science, technology and demonstration missions.

The SA-200B supports a wide range of missions and payloads through the use of 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, and high rate communications; 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-200B supports payload systems up to 100 kg with a balance of technical performance and reliability features appropriate to the needs of each mission.

### Supports a wide range of missions and payloads

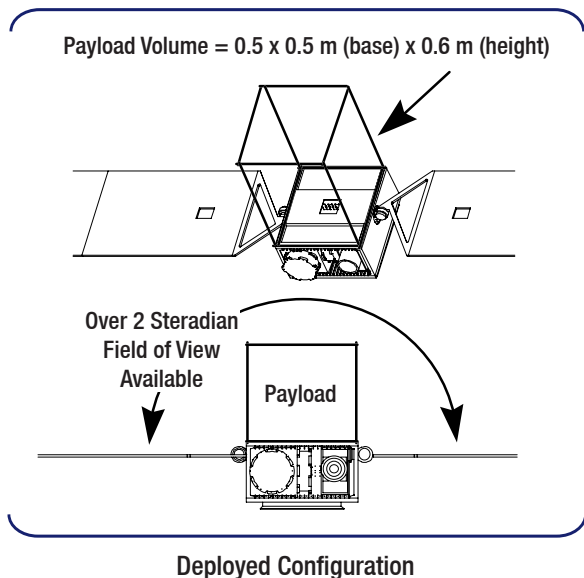
The SA-Series spacecraft architecture, developed over a seven year period, has been successfully applied to both DoD and NASA space flight programs. In all cases, Spectrum Astro has worked within integrated teams of government and industry partners to produce a platform with the proper heritage, technical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



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

# SA-200B Spacecraft Specifications

The basic platform offers many operating orientations based on mission specific needs. The platform operates in any attitude while maintaining thermal control and attitude sensing capability. The SA-200B 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 early software development and interface verification. When combined with Spectrum Astro's cooperative, team oriented program management culture, the SA-200B provides the best balance of low cost and high performance for high confidence of mission success.



## Mission & Program

|                          |  |
|--------------------------|--|
| Launch Mass              | 120 - 190 kg                                       |
| Sunlit Array Power (BOL) | 300 - 500 Watts                                    |
| Launch Vehicle           | Pegasus, Taurus, OSP, Shuttle hitchhiker           |
| Mission/Orbit            | Any LEO, MEO, HEO, GEO and planetary (stellar ACS) |
| Lifetime                 | 1 year   |
| Mission Effectiveness    | 0.81   |
| 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)                    |
| Delivery Schedule        | 36 months to launch                                |

## Payload Accommodations

|                         |                     |
|-------------------------|---------------------|
| Payload Mass            | Up to 100 kg        |
| Payload Power, Avg/Peak | 86/225 W            |
| Payload Field of View   | $2\pi$ steradian    |
| Payload Data Handling   | >24 Mbps            |
| Payload Data Storage    | 2 Gbit              |
| Data Downlink Rate      | 2.5 Mbps            |
| Structure Type          | Space frame/bolt on |

## Guidance & Control

|                          |  |
|--------------------------|--|
| Attitude Control         | 3-axis, zero momentum                      |
| Pointing Control         | 0.10°                                      |
| Pointing Knowledge (RMS) | 0.088°                                     |
| Pointing Modes           | Sun, nadir, off-set, point track, inertial |
| Pointing Stability       | < 0.1° per sec                             |
| Orbit Knowledge          | $\pm 1$ km ground ephemeris                |
| Orbit/Trajectory Control | Pulse plasma thruster                      |
| Momentum Management      | Magnetic                                   |

## Command and Data Handling

|                         |                           |
|-------------------------|---------------------------|
| Ground Control I/F      | S-band (X-band available) |
| Bus Architecture        | VME based                 |
| Data Interface          | SGLS/STDN/DSN             |
| S/C & Payload Telemetry | 2.5 Mbps                  |
| Commands                | Up to 2 kbps              |

## Power

|                   |                |
|-------------------|----------------|
| Array Type        | Silicon        |
| Battery Type      | Nickel-cadmium |
| Operating Voltage | 28V $\pm$ 6V   |

## For more information contact:

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