

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
Launch Services, Missions, Operations, and Facilities (2)

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INDIA'S POLAR SATELLITE LAUNCH VEHICLE (PSLV): A RELIABLE AND PROVEN LAUNCH  
SERVICE PROVIDER FOR NANO, MICRO, MINI AND MAIN SATELLITE MISSIONS

**Abstract**

**ABSTRACT**

Towards achieving self-reliance in accessing space, Indian Space Research Organization (ISRO) initiated the development of rocket systems. In the process, it has evolved four generations of launch vehicles viz., SLV-3, ASLV, PSLV and GSLV. Polar Satellite Launch Vehicle (PSLV), the workhorse of ISRO's space transportation system, has had a string of successful missions, with a track record of 24 successive successful flights, till date. With the capability to perform low inclination LEO missions, SSO, Geo-synchronous Transfer Orbit (GTO), sub-GTO missions, PSLV has time and again demonstrated its versatility of the navigation, guidance and control system, propulsion system, on-board computer systems software and most importantly the robust vehicle design.

PSLV presently has two variants (i) PSLV-Core alone (PSLV-CA) without the use of six solid strap-on motors and (ii) PSLV high-end version (PSLV-XL) with six solid strap-on boosters. The capability of PSLV for these configurations varies from 1000 – 1750 kg into 600 km SSO. Over the years, in addition to launching national satellites, PSLV has successfully launched 35 satellites belonging to international customers, on commercial basis, into various orbits ranging from planar to SSO. In order to utilize the spare capacity, whenever available, various satellite accommodation options have been evolved. These include provision for carrying up to two micro satellites on the vehicle equipment bay, or two satellites of mass around 500–600 kg using the Dual Launch Adaptor (DLA), or a possible mix of micro mini satellites either inside or on top of DLA. The multiple satellite mounting configurations and their safe separations in orbit have all been demonstrated.

This paper highlights, in brief, the success story of PSLV towards carrying out international customer satellite missions. In addition, also covers the details of the interfaces, envelopes, environmental levels and the possible future launch opportunities. Antrix Corporation Limited (Antrix), the commercial arm of Indian Space Research Organisation (ISRO), acts as the nodal agency for providing end-to-end PSLV launch services, from the state-of-the-art launch base facility located at Sriharikota, for the international customer satellites.