

IMS-1

IMS-1, previously referred to as TWSat (Third World Satellite), is a low-cost microsatellite imaging mission of ISRO (Indian Space Research Organization). ISRO has established a space-based system to reap the benefits of remote sensing technology to the society by launching a series of IRS satellites under the Indian Remote Sensing (IRS) Programme. With the experience and expertise gained over the last two decades in the remote sensing technology, India is playing a lead role in the world and would like to extend this role in providing access to the remote sensing data from an Indian satellite to students / scientists in the developing countries. Keeping this in view, ISRO has launched the Indian Mini Satellite - 1(IMS-1) on April 28, 2008 as an auxiliary satellite on PSLV-C11. IMS-1 is a mini satellite weighing 83 kg and has a mission life of two years.

Specifications

Mission Category	Operational Remote Sensing
Orbit	635 km Polar Sun Synchronous
Physical Dimensions	0.604x0.980x1.129 m
Mission Life	2 Years
Mass	83 Kg
Power	wo deployable sun pointing solar panels generating 220 W power, 105 Ah Lithium ion battery
Telemetry, Tracking and Command	S Band
Attitude & Orbit Control System	Star Sensor, Miniature Sun Sensors, Magnetometers Gyros, Miniature Micro Reaction Wheels, Magnetic Torquers, single 1 N Hydrazine Thruster
Data Handling	S-band
Data Storage	16 Gb Solid State Recorder

Indian Mini Satellite IMS-1 Sensors

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Specifications

Specifications	Mx Payload	HySI Payload
Swath (km)	151	130
Spatial resolution (m)	37	505.6
Number of bands	4	64
Bands (μm)	B1 0.45 – 0.52 B2 0.52 – 0.59 B3 0.62 – 0.68 B4 0.77 – 0.86	-
Quantization (bits)	10	11
Repetivity (days)	24	24

Two types of stations exist for IMS-1 - Master station and User Terminal (UT). The Indian ground station at Shadnagar (SAN) is identified as the master station, which can acquire both HySI and Mx data. By default, SAN station is programmed for HySI payload operations for all the passes in its visibility with an antenna elevation of 5 degrees. This station can also acquire Mx data - both in near real time and as playback. SAN station is the only station that is allowed to place a request to acquire HySI data - both real time and recorded. All the recorded data are dumped at SAN during night passes. A low cost User Terminal (UT) provides comprehensive services right from data reception to data processing and product generation. The UT is in its final stages of testing. User terminals can place requests for Mx for a desired period. If there are multiple user terminals over a path, all the standing requests are sorted according to decreasing order of latitude. Based on past history (previous cycles), those user terminal standing requests that are earlier serviced are not considered. User terminal calendars for any cycle can be accessed from NRSC website. The payload programming activities are carried out at NRSC; the command sequence generator (CSG) files are sent to ISTRAC and the pass schedule files are sent to the respective UTs through website file upload and e-mail for acquiring the scheduled data. For further details on UT please contact ANTRIX cell, BANGALORE.

Products and Services

IMS-1 Satellite is originally meant for providing data to third world countries mainly for academic users through their ground stations. Since no ground station materialized, NRSC started acquiring both HySi and MX data. MX data helped data needs of many users in view of constraints of P6. HySi data is provided to all Global Users as free downloads.

Applications

The remote sensing data from this micro satellite is planned to be used for Natural resources monitoring / management like agriculture (crop condition assessment and crop acreage yield estimation), forest coverage and deforestation, urban infrastructure development, land use and waste land mapping, coastal features mapping, coral reef mapping and land slide studies.