

EYES OF GARUDA

Reconnaissance satellite constellation to monitorize Indonesian territory



Overall Specifications

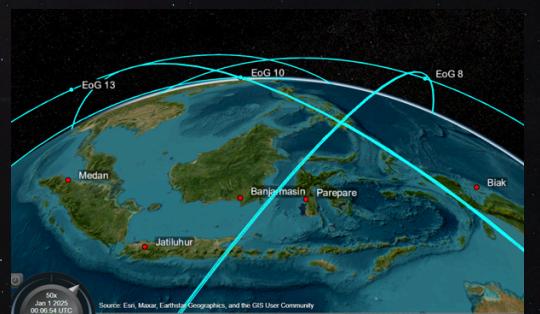
Dimensions	: 456x456x1368 mm
Mass	: 95 kg
Design Life	: 5 years
Delta V	: 386 m/s
GSD	: 1.3 m (operational), 0.5 m (special case)
Revisit Time	: 2 hours
Numbers of Satellite	: 24
Orbital Height	: 525 km
Spectral Resolutions	: 450-900 nm

Constellation

24 satellite is arranged to **8 orbital plane** with **3 satellite per orbital plane**.

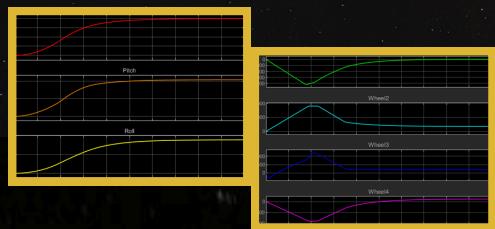
Each plane has **50° inclination** and has different longitude of ascending node.

Eyes of Garuda utilizing **5 ground station** in Indonesia.

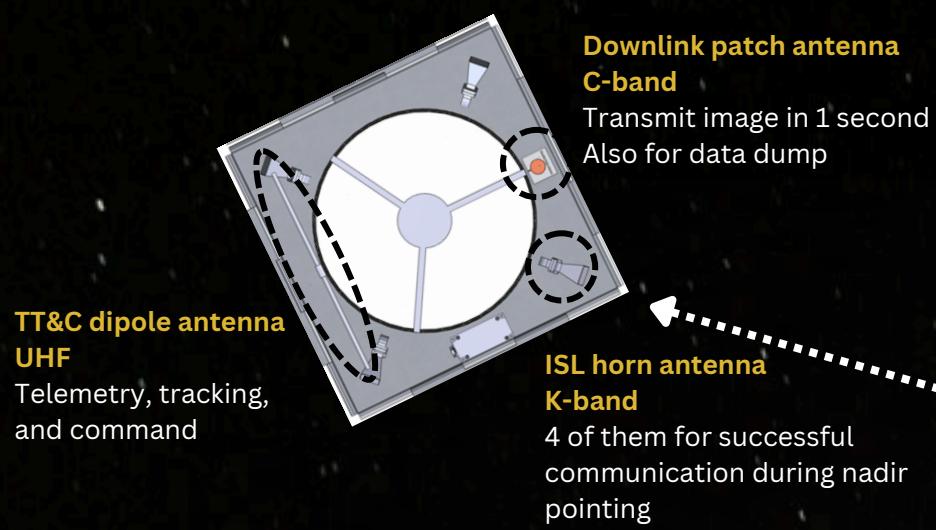


High Rates, High Accuracy

Equipped with **60 degrees** per second measurement range gyroscope, **30 arcseconds** star tracker and **<0.3 degree** sun sensor accuracy, providing the satellite **3σ accuracy**



Pyramidal configuration reaction wheels with speed range ± 9000 rpm and 3 for every axis magnetorquers empower satellites to navigate the dynamic environment of low Earth orbit, maintaining **precise control** and overcoming disturbances. These advanced actuators deliver **high slew rates** at **low cost**, ensuring optimal satellite performance.



Intersatellite Com for Fast Command

By sending command via **inter-satellite link (ISL)**, we **skip** the needs for target satellite to receive command directly from ground station. Therefore, **reducing delay time** from user request to image taken and overall reducing delay time from user request to image transmission.

Space and Launch	
(3 Sat)	USD 54.95 Million *
5 years life cycle cost	
(24 Sat)	USD 196.79 Million *
Ground	
(3 Sat and 24 Sat)	USD 18.80 Million *
Operations and Maintenance (5yrs)	
(3 Sat)	USD 8.99 Million *
(24 Sat)	USD 9.64 Million *
3 Satellites	
USD 147.86 Million	USD 413.21 Million
24 Satellites	
IDR 2.296 Trillion	IDR 6.417 Trillion

Cost Analysis

5 years life cycle cost

Space and Launch	(3 Sat) USD 54.95 Million *	(24 Sat) USD 196.79 Million *
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3 Satellites	USD 147.86 Million	USD 413.21 Million
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Safety At All Cost...

- Material Safety:** Al-6061 T6, non hazardous
- Static Load Endurance:** Small deformation under extreme acceleration (11.8G)
- Vibrational Frequency:** Far higher than rocket requirements (175.6 Hz, compared to 22 Hz)
- Harmonic Load Tolerance:** Minimum Deformation at 8-100 Hz



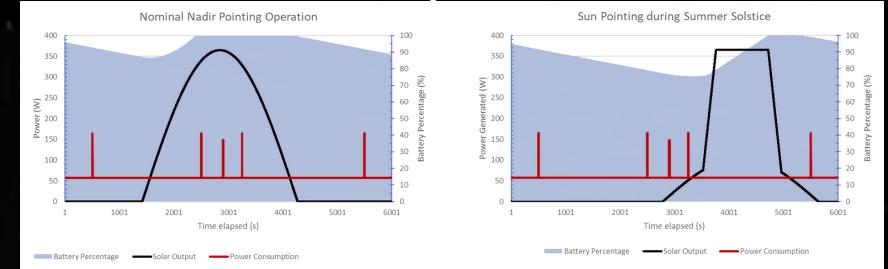
Normal Operations



Eyes of Garuda will provide picture by **request** from the user.

The image typically will given back to the user approximately after **4 hours**.

Uninterrupted Power



Eyes of Garuda uses **Triple-Junction Gallium Arsenide Solar Panels** with energy conversion efficiency of **30%**.

Maximum power output of **370 W**

Maximum nominal power usage **153 W**

Energy storage is done using lightweight and high energy-density **Lithium Ion battery**.

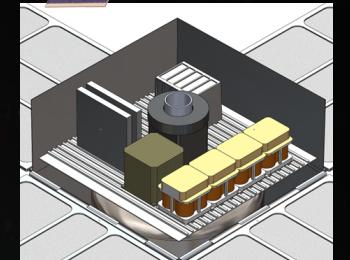
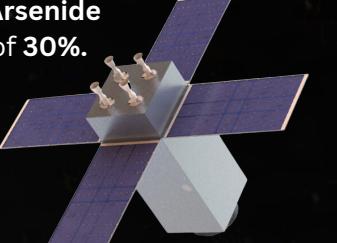
Arranged in **8S2P Configuration**

Supplies

28.4 V (Nominal)

9 Ah

256 Wh Capacity



Special Operations



Eyes of Garuda will lower its altitude to greatly enhance its imaging resolution.

This operation allow imaging resolution up to **0.5 m/px**.

This operation is limited to 24 times over 5 years.