

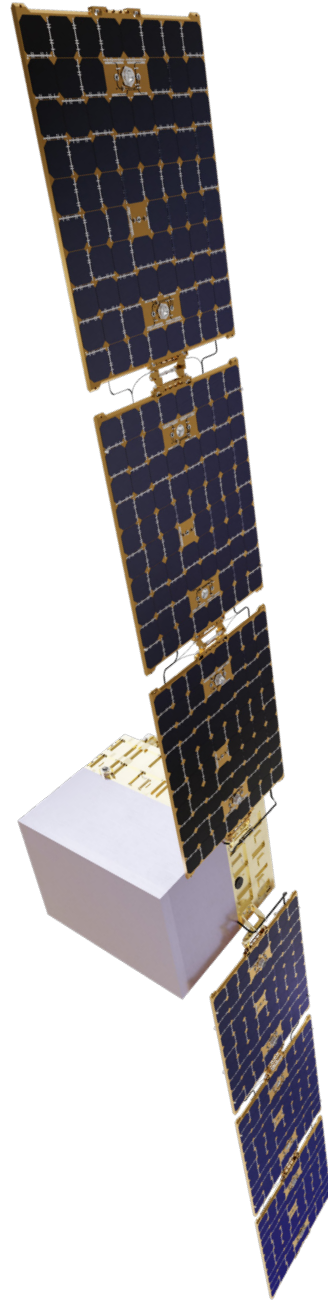
NEBULA

Terran Orbital is proud to present the Nebula-class spacecraft platform, a standard point of departure that accommodates the largest payload mass available on a standard 15" ESPA port, as well as the flexibility to use a 24" ESPA Grande instead (or similar interface). It is ideal for small satellite constellations for commercial customers or defense applications due to the option for Type 1 encryption.

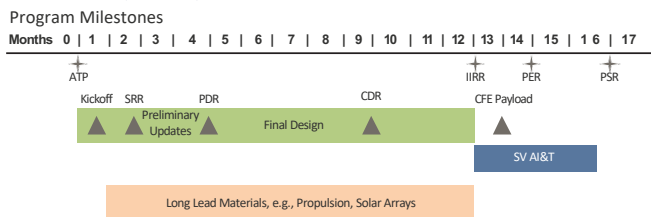
Nebula comes with Terran Orbital's standard microsat EPS architecture and builds on the entire product line of spacecraft and common modules for avionics and GNC algorithms. The reaction wheels on this platform have been sized to allow the spacecraft to maintain agility, and the platform is designed from the ground up to be compatible with rideshare requirements.

Nebula supports commercially available custom payloads, and easily accommodates those with odd shapes. It includes a propulsion system ideal for phasing a constellation into its mission orbit, station keeping, and disposal. The previous-generation Nebula, called Zuma, was used to fulfill the platform requirement for the Space Development Agency's Tranche 0 Transport Layer.

Terran Orbital employs top-of-the-line automation and modern manufacturing processes to support the delivery of hundreds of spacecraft annually. From order to launch, in quantities from one to a constellation of one hundred, Terran Orbital accelerates the delivery of mission solutions.



NEBULA (ESPA)



KEY BENEFITS

- Flexible launch configuration on 15" ESPA or 24" ESPA Grande (or equivalent)
- Optional Type 1 encryption (DoD/Intel)
- Open deck plan allows for easy accommodation of oddly shaped payloads



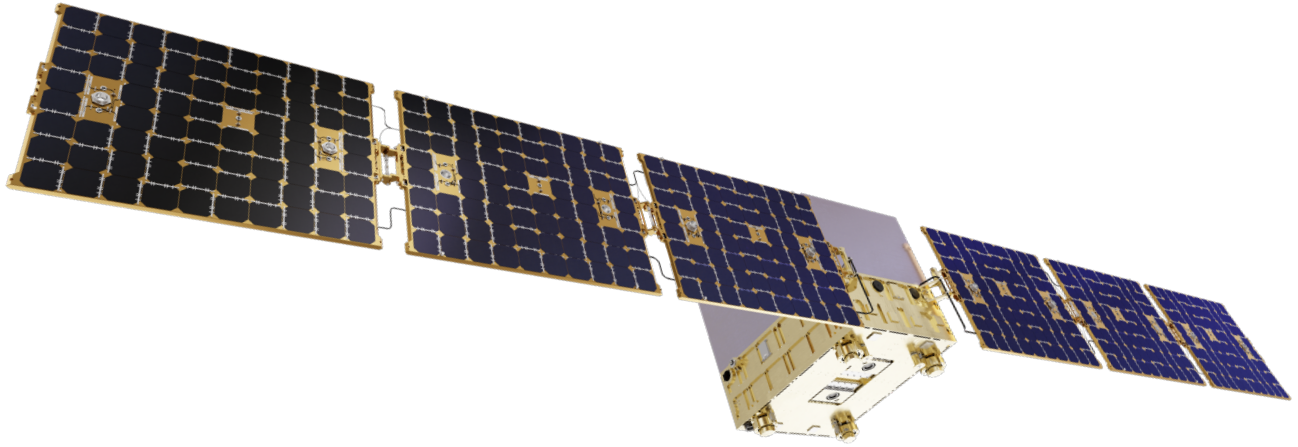
JULY 2024



15330 Barranca Parkway, Irvine, CA 92618

www.terranorbital.com
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NEBULA



BASELINE MODULES INCLUDED

- Flight Computers (2)
- Watchdog
- Backplane
- 66V Battery Modules (8-12)
- 66V MPPT (2)
- 66V Load Controller
- 28V High Power Point of Load (varies)
- 28V Low Power Point of Loads (varies)
- Coarse Sensors (4)
- Gyro Assembly
- Star Trackers (3)
- GPS (2)
- Magnetorquers (3)
- Reaction Wheels (4)
- LDRR (2)
- MDR (2)

SPECIFICATIONS*

Configuration	ESPA or ESPA Grande
Applications	LEO
Native Orbits	400km-1200km
Launch Mass (Wet)**	250kg
Available Payload Mass	up to 130kg
Max Solar Array Power	1kW
Redundancy	Dual-string
Power System	66V system power 28V, 12V, 9V rails available for payload
Communication Data Rate	S-band: 125 Kbps uplink 2 Mbps downlink X-Band: 650 Mbps downlink
Propulsion	2150s hall effect standard, options available
Thrust	1.1mN
Dimensions without Solar Panels	82cm x 58cm x 39cm
Pointing Accuracy	10 to 50 arcseconds higher accuracy available

* For additional spacecraft specifications or to configure a platform for your requirements, please contact a sales professional.

** maximum mass may not be supported on all launch vehicles or with all deployers.

NEBULA

PRODUCTION FACILITIES

1288 MC COY



Fabrication and Machine Shop. Santa Maria, CA - 17,500 sf

50 TECHNOLOGY



Operated-Guided Subassembly/Satellite AI&T. Irvine, CA - 60,000 sf

Tyvak manufactures tight-tolerance mechanical parts for aerospace applications within its 17,500-ft² machine shop located in Santa Maria, CA, which boasts state-of-the-art CNC lathes and mills and precision metrology equipment. Once parts are machined and verified for tolerance, they are shipped to Tyvak's module and subassembly facilities in Irvine, CA, for bus/payload assembly, integration, and testing (AI&T) in our 60,000-ft² and 37,800-ft² state-of-the-art satellite manufacturing facilities. Within our 50 Technology facility, we house satellite bus assembly, satellite accessory fabrication, test labs with ESD-compliant lab benches, laminar flow benches, electronics and mechanical assembly areas,

15530 BARRANCA



Robotic Module AI&T. Irvine, CA - 37,800 sf

100 RIALTO



Payload AI&T. Melbourne, FL - 17,200 sf

a class 100,000 clean assembly area, thermal and thermal vacuum chambers, an electronics laboratory for module testing and verification, a large anechoic chamber, a dedicated RF laboratory, random vibration testing equipment, and extensive networking and computing infrastructure. In addition, Tyvak's 4,000-ft² dedicated ICD-705-compliant SCIF laboratory space enables assembly and integration of classified payloads at 50 Technology facility. This facility also features walled offices, open cubicle areas, and conference rooms to support over 100 engineering and administrative staff.



Satellite A&IT. Irvine, CA - 98,000 sf

4 GOODYEAR

WORLD'S LARGEST ROBOTIC SATELLITE ASSEMBLY FACILITY WILL INCREASE PRODUCTION CAPABILITIES ONCE LAUNCHED

In Q4 2024, Tyvak will bring online our new production facility that will significantly boost satellite production, increasing it from an estimated 10 satellites per month to more than 20 per month. This expansion includes two advanced Printed Circuit Board Assembly (PCBA) lines, a state-of-the-art testing facility equipped with a large shaker table and a Thermal Vacuum (TVAC) chamber, a wire harness facility, and new automated module testing facilities. All satellite assembly will be transitioned to the new 4 Goodyear facility enabling the dedication of Tyvak's existing facilities to the production of components and modules. This optimization will enhance the efficiency and capacity of Tyvak's entire production system.

NEBULA

ABOUT US

Tyvak Nano-Satellite Systems, Inc. ("Tyvak"), a wholly owned subsidiary of Terran Orbital Corporation ("TOC"), was founded in 2013. Tyvak and TOC are U.S. corporations with 100% U.S. ownership. TOC manages a portfolio of business that provides end-to-end small satellite solutions and services. Tyvak is an end-to-end satellite solution provider that designs, integrates, and tests space vehicles and provides deployment and on-orbit services to its customers. Trusted by civil, defense, and commercial organizations, Tyvak has a proven track record of mission success. As a leader in satellite miniaturization, Tyvak designs and builds custom-architecture spacecraft in the nanosatellite, microsatellite, and minisatellite classes, providing launch solutions and aerospace technologies for a myriad of defense, intelligence, and scientific programs. Past missions have included autonomous rendezvous, proximity operations and docking, radar systems, science instruments, space situational awareness, technology demonstrations, remote sensing imagers, Earth observation telescopes, and more.

Tyvak provides customers with a single organization to lead various missions and the advantage of agility, innovation and the adaptation of new technologies. Our rapid speed, comprehensive expertise, and proven past performance makes us an ideal partner for critical space programs.



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