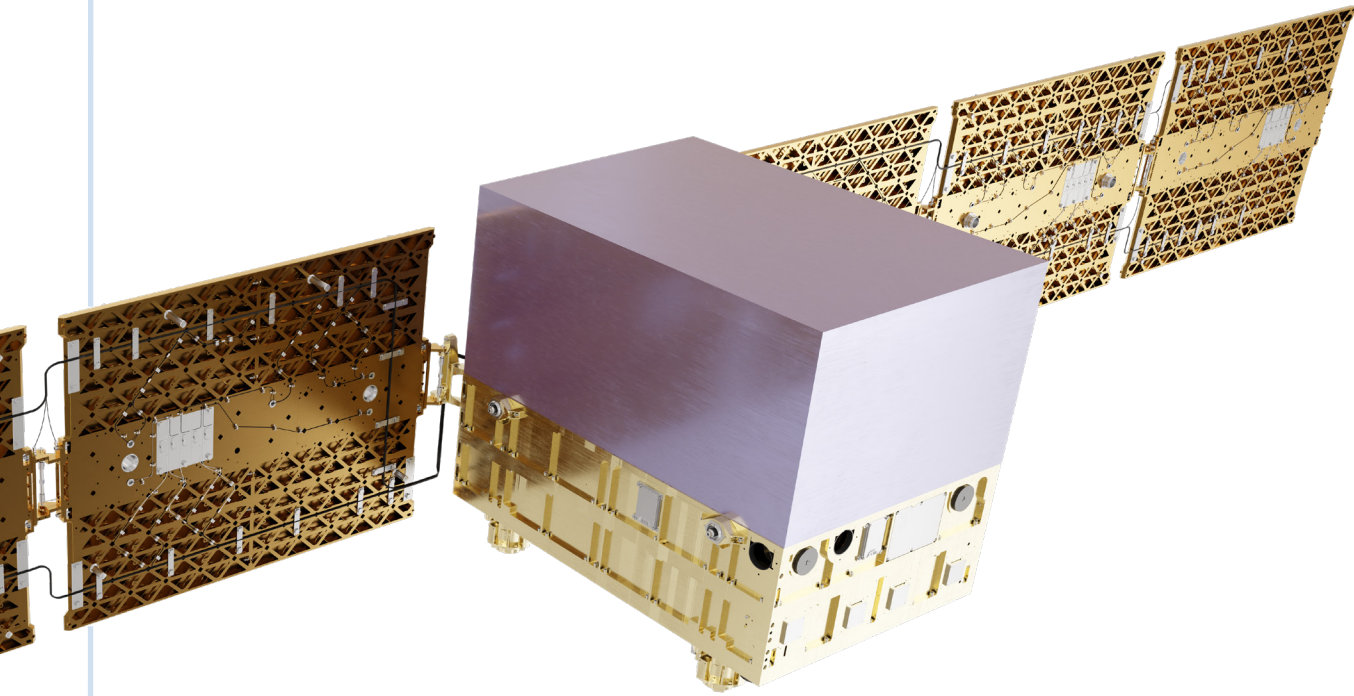
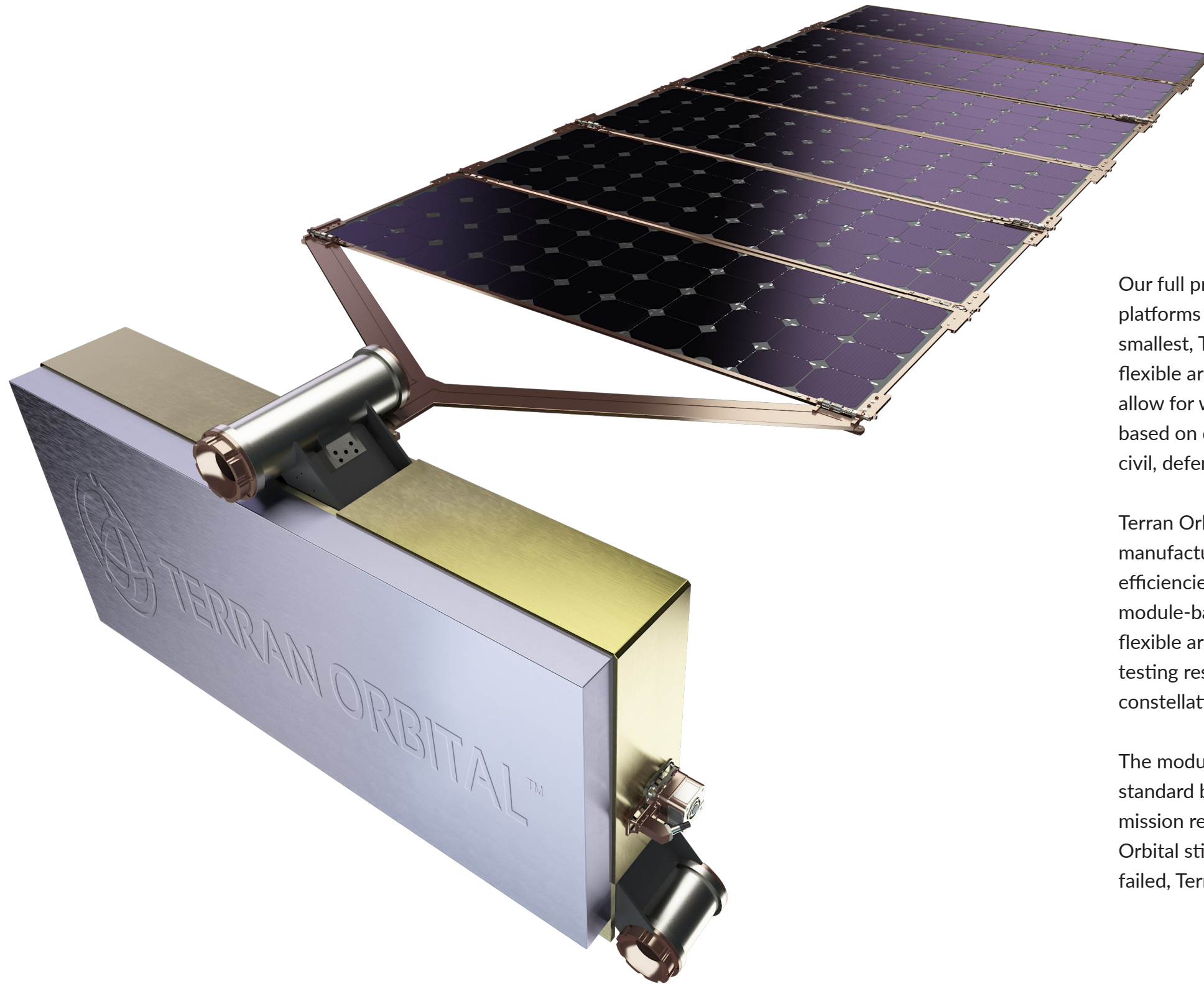




TERRAN ORBITAL™



STANDARD SPACECRAFT PLATFORMS



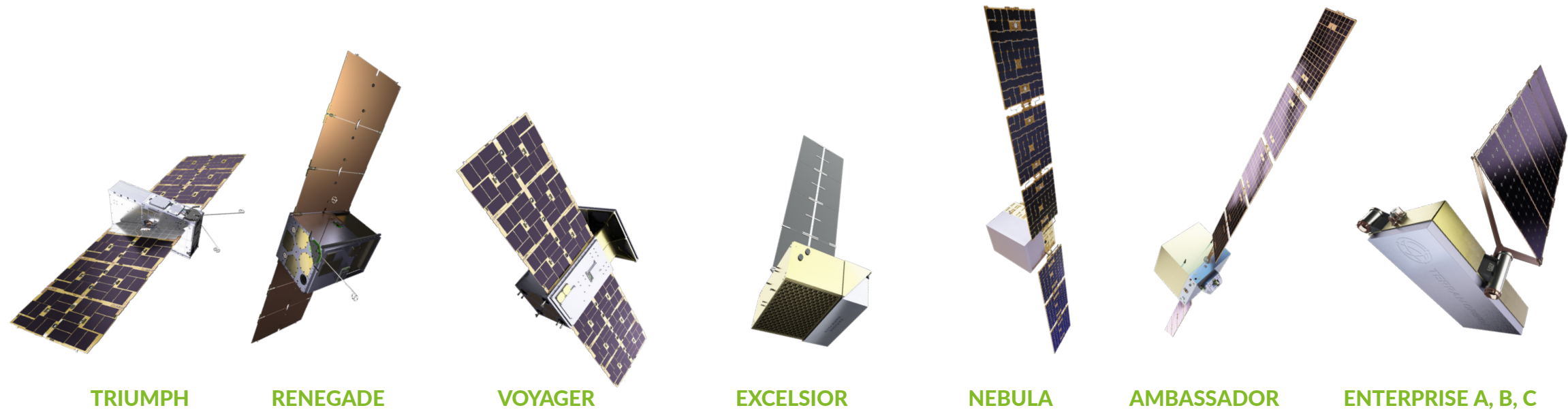
Our full product line of seven ITAR-compliant spacecraft platforms ranges from the largest, Enterprise, to the smallest, Triumph. These reference platforms feature flexible architecture using common building blocks and allow for wet launch masses of 14 to 1250 kg. They are based on designs with extensive flight heritage for various civil, defense, and commercial customers.

Terran Orbital builds all spacecraft in our advanced manufacturing facilities in California, USA, achieving efficiencies in manufacturing by using plug-and-play module-based components and subsystems. The flexible architecture and automation in production and testing result in quick delivery timetables for single and constellation orders, even when customization is requested.

The module-based approach allows for the tailoring of all standard baseline platforms to meet each customer's unique mission requirements. When that is not enough, Terran Orbital still offers full custom solutions.* While others have failed, Terran Orbital is bringing Responsive Space to reality.

*For configuration, please contact one of our sales professionals

STANDARD PLATFORMS



	TRIUMPH	RENEGADE	VOYAGER	EXCELSIOR	NEBULA	AMBASSADOR	ENTERPRISE A, B, C
Satellite Class	Nano			Micro		Mini	Small
Configuration	6U	12U (16U option)	16U	HALF-ESPA	ESPA	ESPA-Grande	Flat Packing
Applications (MEO/GEO Options Available)*	LEO		GEO, MEO, Cislunar	LEO			LEO, LEO, MEO/GEO
Spacecraft Launch Mass (Wet)^T	up to 14kg	up to 25kg	up to 30kg	up to 125kg	up to 250kg	up to 500kg	500, 1000, 1250kg
Available Payload Mass	5kg	10kg	8kg	50kg	130kg	200kg	Up to 200, 650, 750kg
Pointing Accuracy	30 to 75 arcseconds higher accuracy available			10 to 50 arcseconds higher accuracy available			
Max Solar Array Power	100W			500W	1kW	1.5kW	5kW
CDH Configuration	Single		Dual	Single	Dual		
Communication Data Rate	UHF: 9.6 Kbps (U/L & D/L) S-band: 125 Kbps U/L, 2 Mbps D/L X-Band: 50 Mbps D/L		Deep Space X-Band U/L D/L	S-band:125 Kbps uplink 2 Mbps downlink X-Band:650 Mbps downlink			

NOTE: Each is based on the same core set of Terran Orbital modules and optimized for each mission

*Multiple configurations are available to address mission needs

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

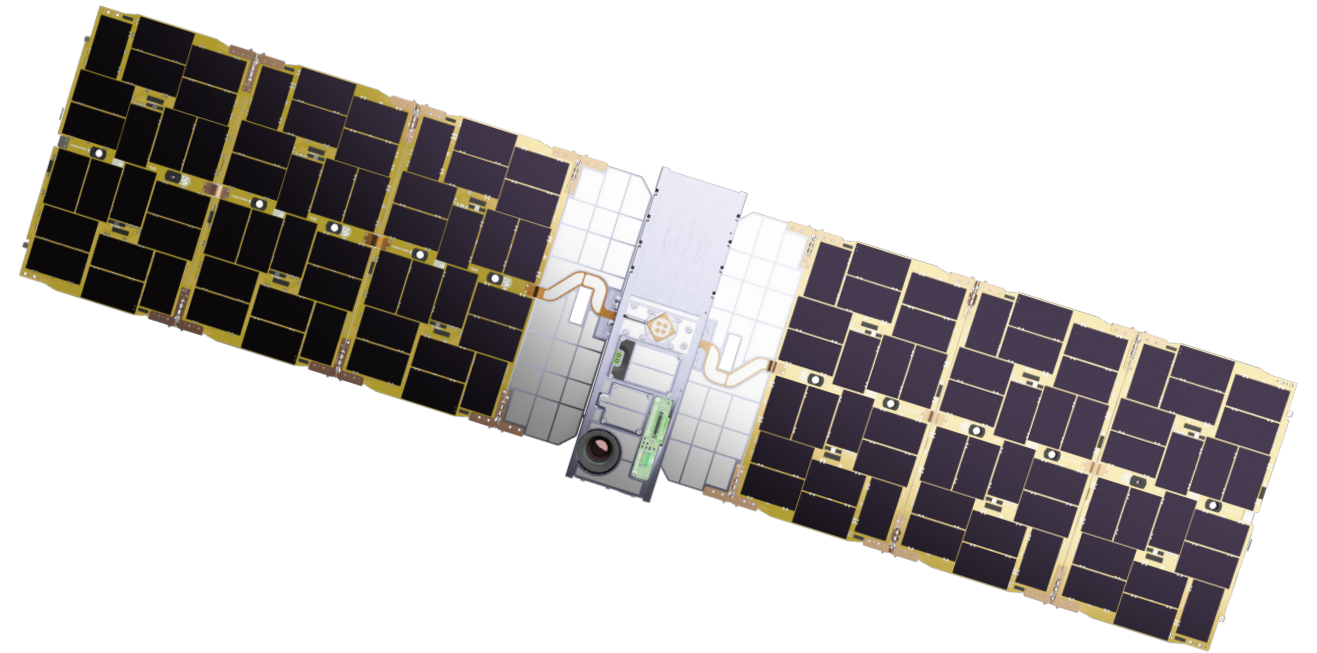
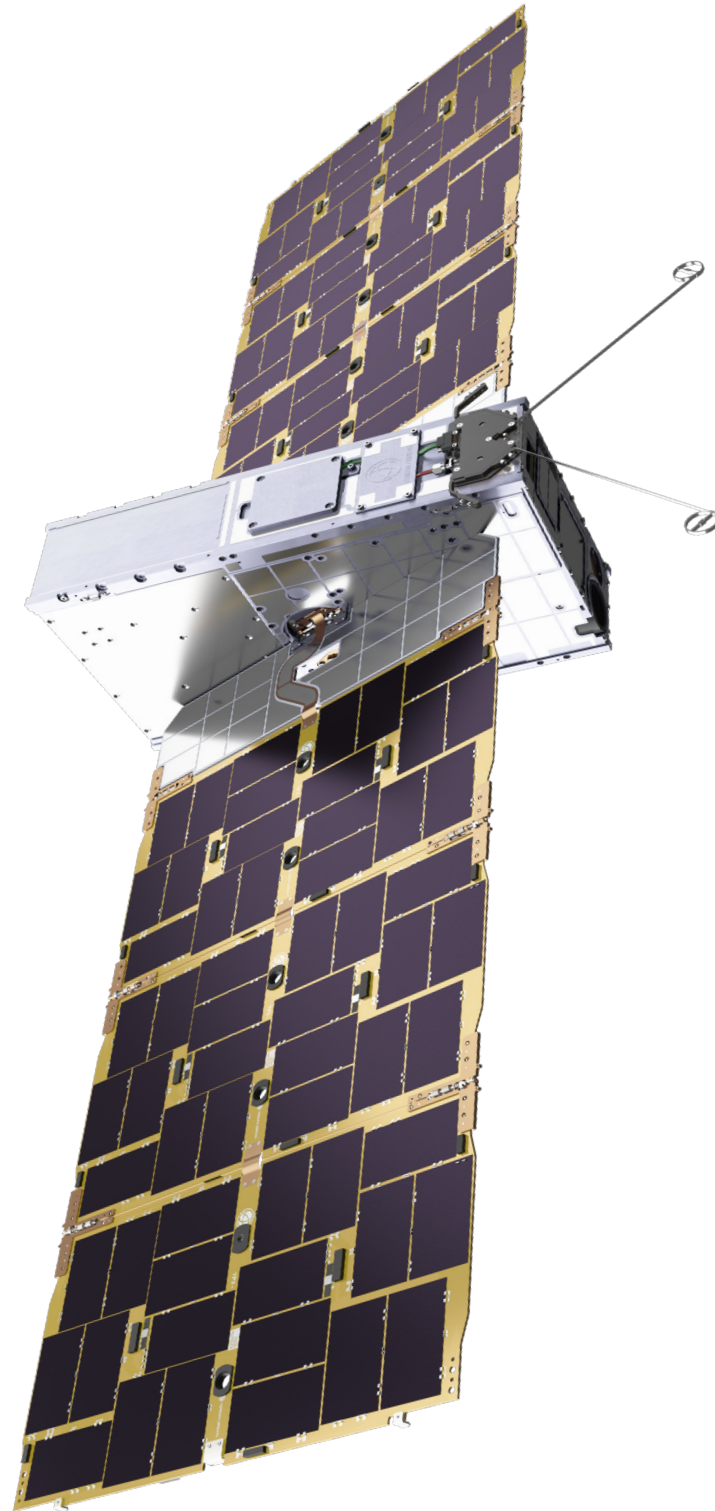
TRIUMPH

Terran Orbital presents the Triumph-class spacecraft platform, our smallest and most agile spacecraft platform. The platform is the standard point of departure for technology demonstrator missions, where minimizing launch costs is critical.

Triumph is Terran Orbital's most flown spacecraft platform and was previously referred to as Trestles. It shares common modules with the entire spacecraft product line. It incorporates the same avionics and GNC algorithms as Terran Orbital's larger platforms. Terran Orbital minimized the power storage volume and structure to allow Triumph to fit on almost any launch vehicle.

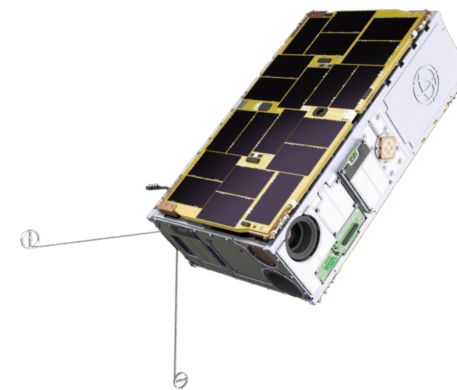
Triumph meets the requirements for 'rail' based dispensers, including those sold by Terran Orbital. It has a compact tri-fold solar array, providing more power to a payload than is often available in this form factor. The platform is built for unrivaled agility, quickly able to maneuver between targets and target modes.

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.



BASELINE MODULES INCLUDED

- Flight Computer
- Backplane
- 12V Battery Modules (2)
- 12V MPPT
- 12V Load Controller
- Coarse Sensors (2)
- Star Trackers (2)
- GPS
- Magnetorquers (3)
- Reaction Wheels (3)
- LDRR Radio
- MDR Radio
- IMU



SPECIFICATIONS*

Configuration	6U
Applications	LEO
Native Orbits	400km - 1200km
Launch Mass (Wet)**	up to 14kg
Available Payload Mass	5kg
Max Solar Array Power	100W
Redundancy	Single-string
Power System	12V Unreg, 3.3V, 5V rails available
Communication Data Rate	UHF: 9.6 Kbps (U/L & D/L) S-band: 125 Kbps U/L, 2 Mbps D/L X-Band: 50 Mbps D/L
Propulsion	None standard, options available
Pointing Accuracy	30 to 75 arcseconds higher accuracy available

KEY BENEFITS

- Small size to allow integration onto almost any launch vehicle
- Based on hardware with significant flight heritage on missions including NASA Pathfinder Technology Demonstrator and GeoStare SV2
- Unparalleled spacecraft agility

* 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.

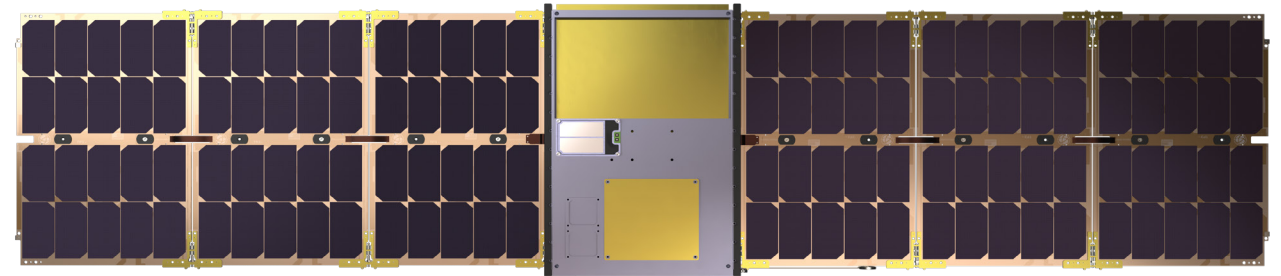
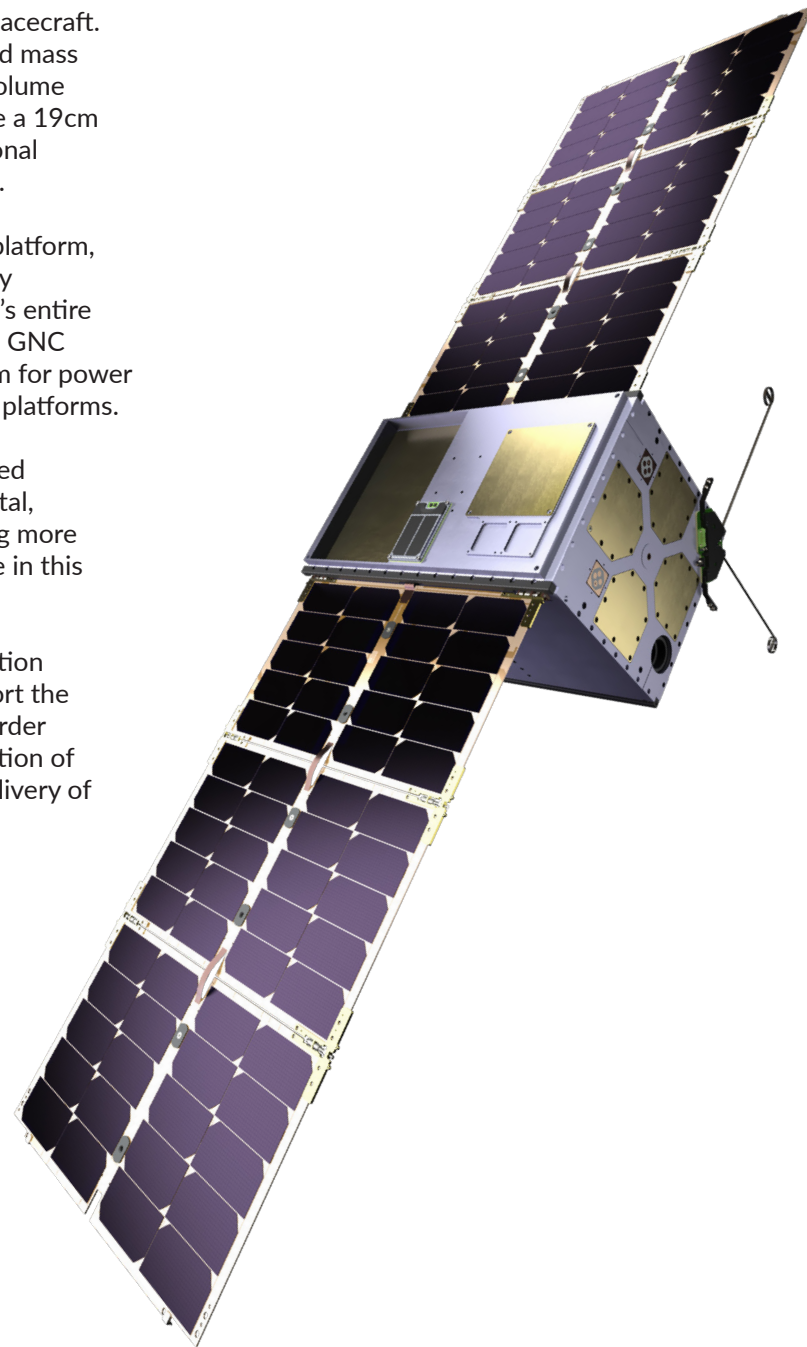
RENEGADE

Terran Orbital presents the Renegade-class spacecraft platform, a standard point of departure 12U spacecraft. The Renegade has the best platform-to-payload mass ratio in the product line, leaving tremendous volume for capable instruments, and can accommodate a 19cm diameter optical imager. It proves that operational missions can be performed on a small platform.

Renegade was based on the previous Trestles platform, with significant heritage in orbit. It can be easily customized as a 16U spacecraft. Terran Orbital's entire line of spacecraft shares the same avionics and GNC algorithms, though Renegade allows more room for power storage than the other nano and microsatellite platforms.

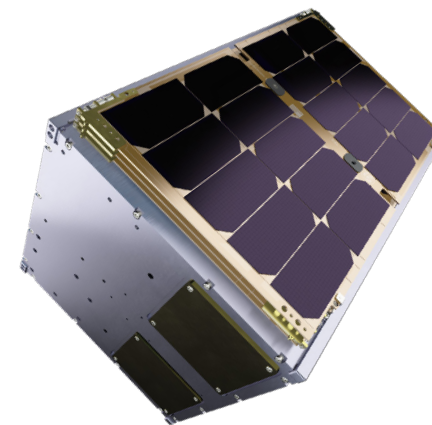
Renegade meets the requirements for 'rail' based dispensers, including those sold by Terran Orbital, and has a compact tri-fold solar array, providing more power to a payload than what is often available in this form factor.

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



BASELINE MODULES INCLUDED

- Flight Computer
- Backplane
- 12V Battery Modules(3)
- 12V MPPT (2)
- 12V Load Controller (1)
- Coarse Sensors (2)
- Star Trackers (2)
- GPS
- Magnetorquers (3)
- Reaction Wheels (3)
- LDRR Radio
- MDR Radio
- IMU (1)



SPECIFICATIONS*

Configuration	12U (16U option)
Applications	LEO
Native Orbits	400km - 1200km
Launch Mass (Wet)**	up to 25kg
Available Payload Mass	10kg
Max Solar Array Power	100W
Redundancy	Single-string
Power System	12V Unreg, 3.3V, 5V rails available
Communication Data Rate	UHF: 9.6 Kbps (U/L & D/L) S-band: 125 Kbps U/L, 2 Mbps D/L X-Band: 50 Mbps D/L
Propulsion	None standard, options available
Pointing Accuracy	30 to 75 arcseconds higher accuracy available

KEY BENEFITS

- Exceptional available payload volume for size, allowing for complex operational systems
- Platform extendable from 12U to 16U for exceptionally long payloads
- Can accommodate up to a 19cm diameter optical imager
- Based on hardware with significant flight heritage

* 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.

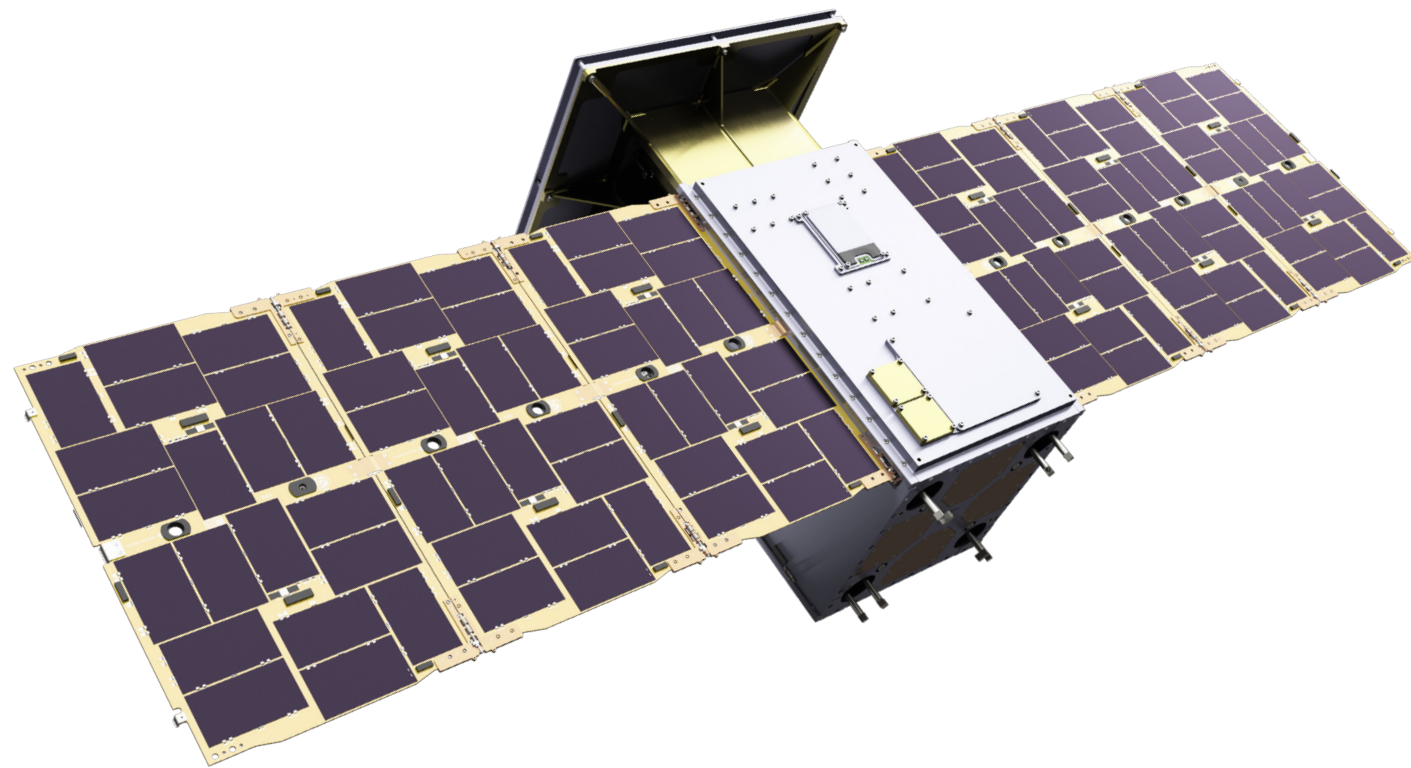
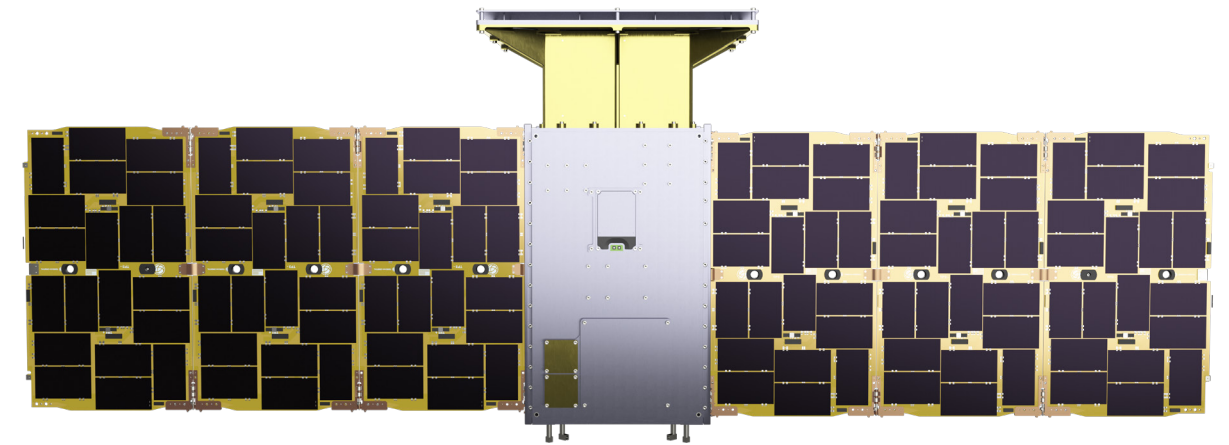
VOYAGER

Terran Orbital presents the Voyager-class spacecraft platform, a deep-space 16U spacecraft platform. Voyager is the standard point of departure for mission requirements necessitating operation beyond Earth orbit, providing a low-cost method to perform experiments beyond LEO.

Voyager is based on the previous Trestles platform and shares common hardware modules with the Triumph-class. It adds redundant components of major systems, allowing extended lifetime in harsh environments and a standard hydrazine propulsion system Terran Orbital's entire line of spacecraft shares the same avionics and GNC algorithms.

Voyager's radios are designed for compatibility with NASA's Deep Space network. The platform also meets the requirements for 'rail' based dispensers, including those sold by Terran Orbital, and has a compact tri-fold solar array, providing more power to payload than what is normally available in this form factor.

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.

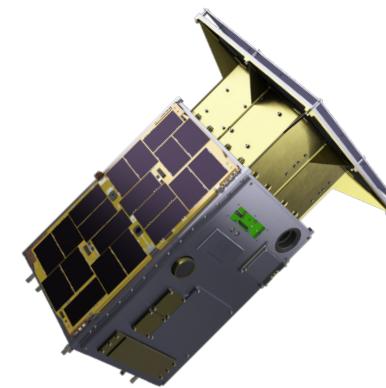


KEY BENEFITS

- Multiple redundant components allowing significant utility in harsh environments such as MEO, GEO, and Cislunar orbits.
- Radios designed for compatibility with NASA's Deep Space Network
- Based on hardware with GEO and Cislunar flight heritage, including NASA's CAPSTONE mission

BASELINE MODULES INCLUDED

- Flight Computers (2)
- Watchdog
- Backplane
- 12V Battery Modules (3)
- 12V MPPT (2)
- 12V Load Controller (2)
- Coarse Sensors (2)
- Star Trackers (2)
- Magnetorquers (3-if needed)
- Reaction Wheels (4)
- IMU (2)



SPECIFICATIONS*

Configuration	16U
Applications	GEO, MEO, Cislunar
Native Orbits	> 30,000km
Launch Mass (Wet)**	up to 30kg
Available Payload Mass	8kg
Max Solar Array Power	100W
Redundancy	Dual-string
Power System	12V Unreg, 3.3V, 5V rails available
Communication Data Rate	Deep Space X-Band U/L D/L
Propulsion	200s Isp standard
Pointing Accuracy	30 to 75 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.

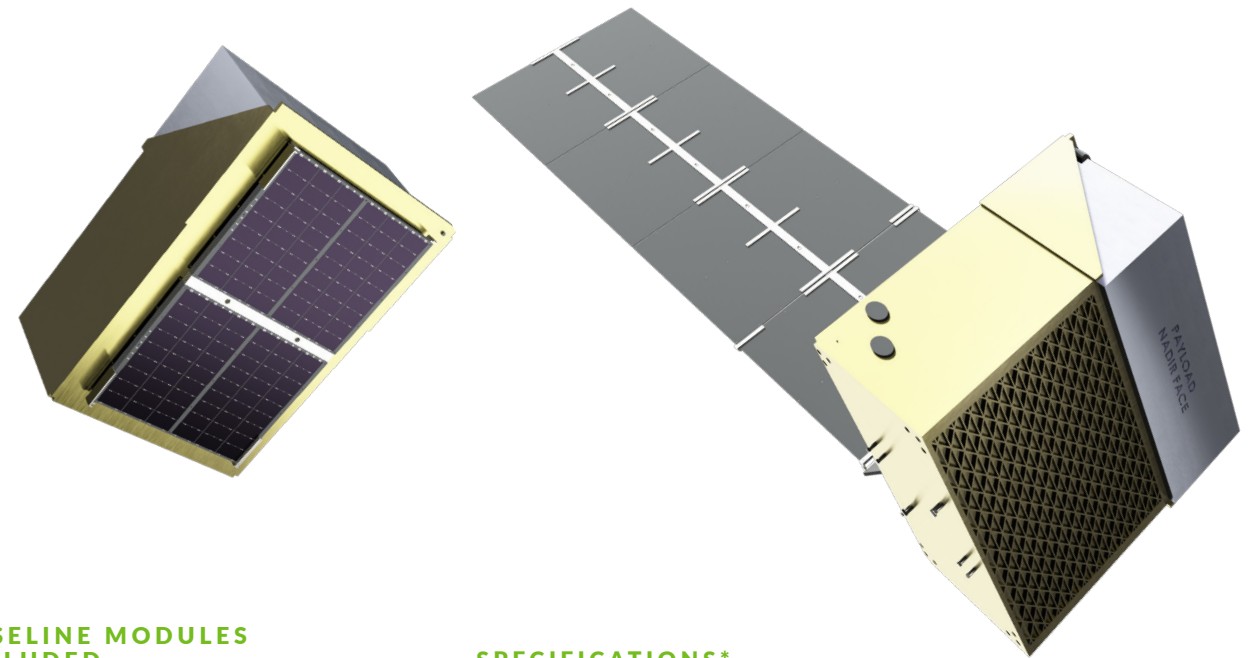
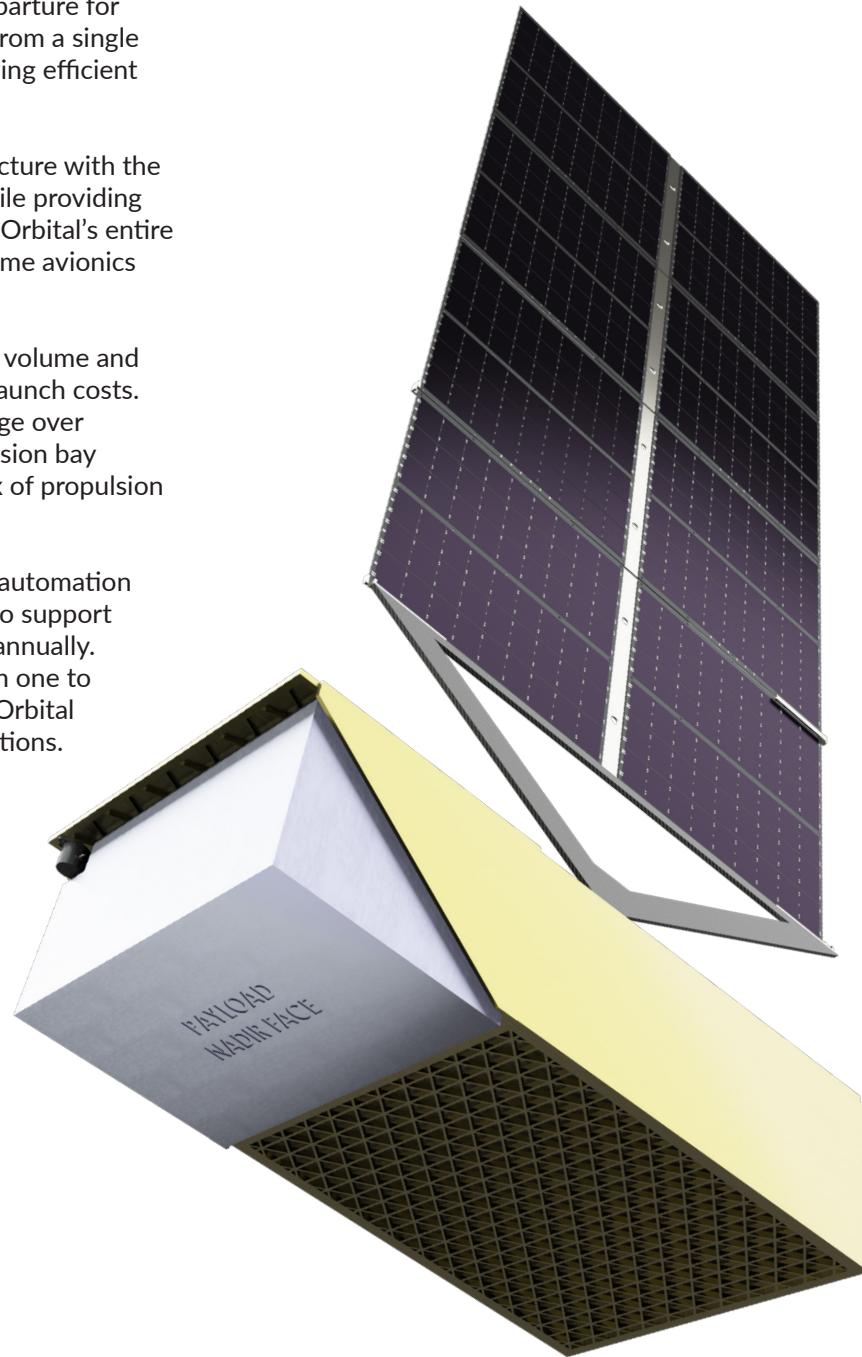
EXCELSIOR

Terran Orbital presents the Excelsior-class spacecraft platform, the entry-level microsat platform. Excelsior is designed as the standard point of departure for missions necessitating two spacecraft from a single 15-inch ESPA or similar interface, allowing efficient build-out of constellations.

Excelsior shares a common EPS architecture with the larger spacecraft in the product line while providing redundancy in key components. Terran Orbital's entire line of satellite spacecraft shares the same avionics and GNC algorithms.

The Excelsior allows maximum payload volume and a large solar array while providing low launch costs. This class also gives it a power advantage over the nano platforms. It includes a propulsion bay accommodating EP, Hydrazine, or a mix of propulsion systems.

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.



BASELINE MODULES INCLUDED

- Watchdog
- Backplane
- Flight Computers (2)
- 66V Battery Modules (2-4)
- 66V MPPT (1-2)
- 66V Load Controller
- 28V Low-power Point-of-Load (varies)
- 28V High-power Point-of-Load (varies)
- Coarse Sensors (2)
- Gyro Assembly
- Star Trackers (3)
- GPS (2)
- Magnetorquers (3)
- Reaction Wheels (3)
- LDRR (2)
- MDR (2)

SPECIFICATIONS*

Configuration	Half-ESPA
Applications	LEO
Native Orbits	400km-1200km
Launch Mass (Wet)**	up to 125kg
Available Payload Mass	50kg
Max Solar Array Power	500W
Redundancy	Single-string
Power System	66V sys power, 28V, 12V, and 9V rails available
Communication Data Rate	S-band: 125 Kbps uplink 2 Mbps downlink X-Band: 650 Mbps downlink
Propulsion	400s Isp standard
Pointing Accuracy	10 to 50 arcseconds higher accuracy available

KEY BENEFITS

- Build-out constellations faster with the ability to launch two satellites per ESPA port
- Delivers higher power-to-payload ratio than nano-class platforms
- Based on hardware with significant flight heritage

* 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.

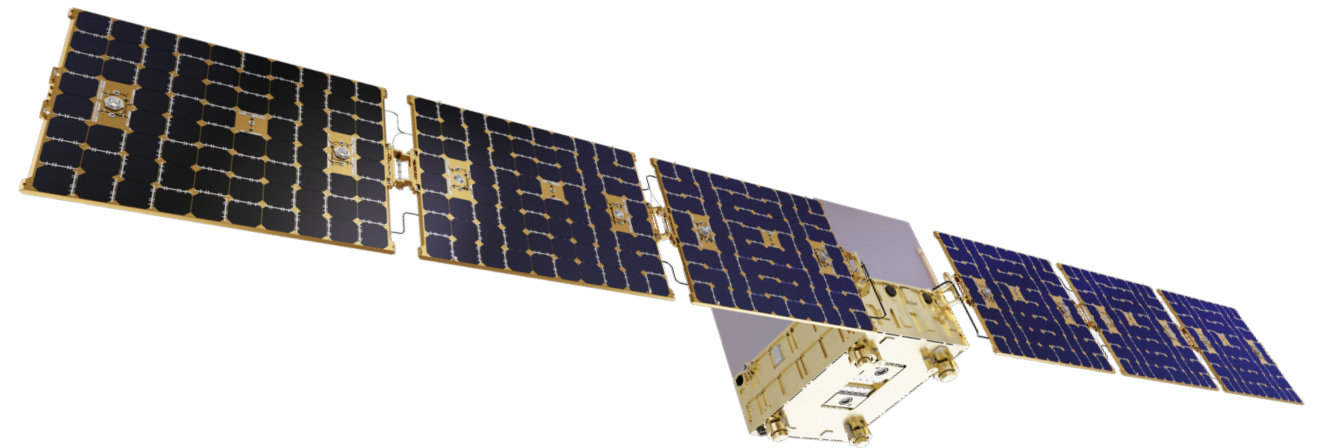
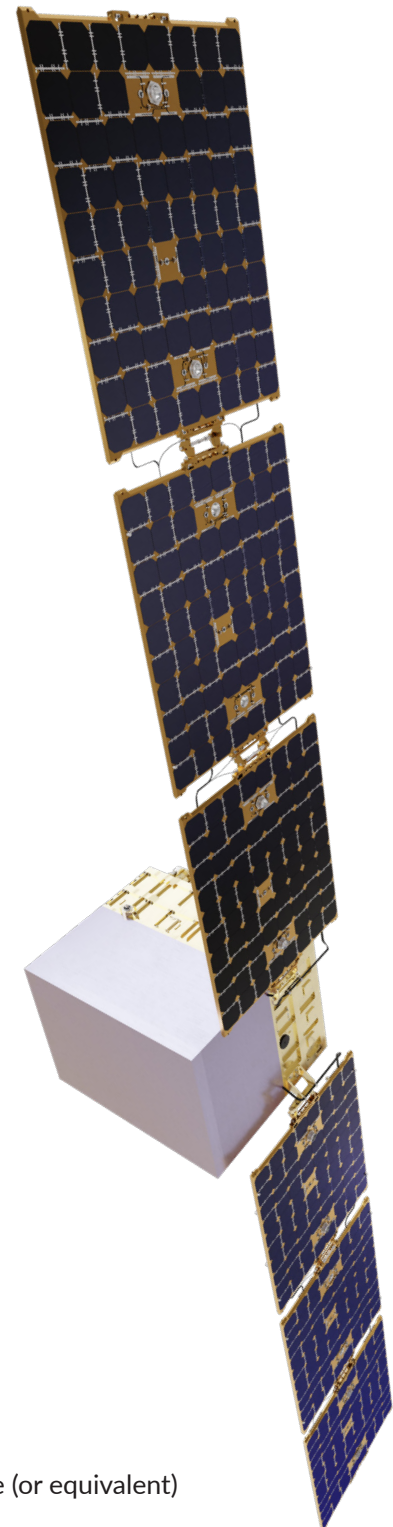
NEBULA

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 Nebula, 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.



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

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

* 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.

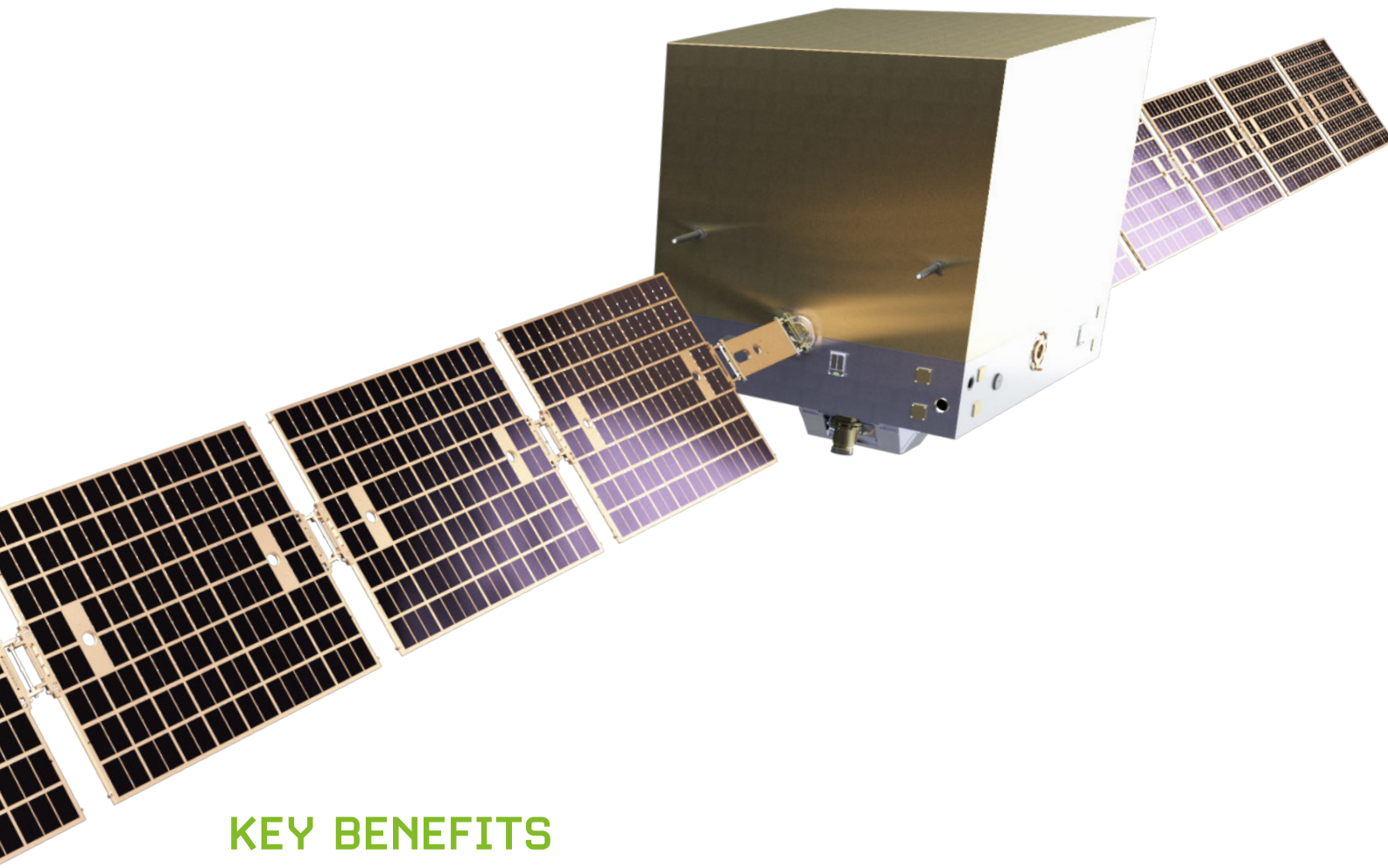
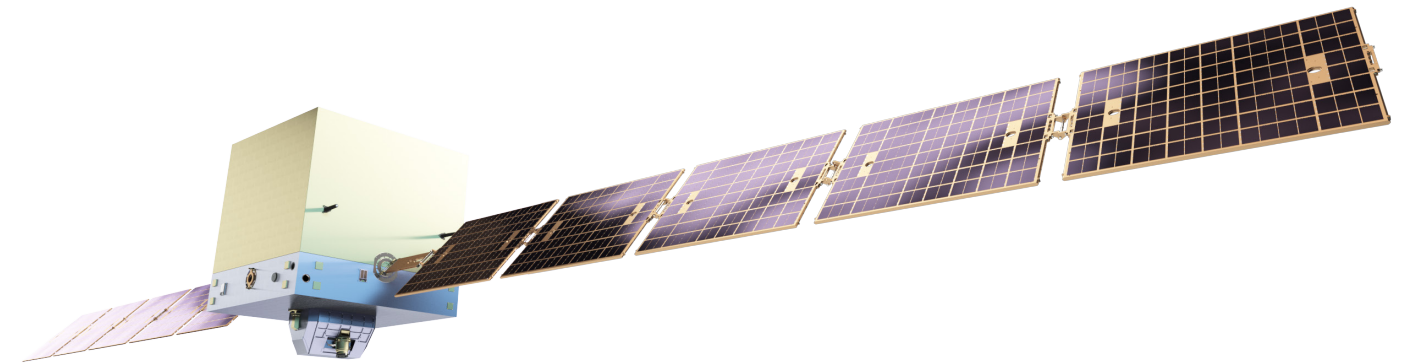
AMBASSADOR

The Ambassador is Terran Orbital's premier ride-share platform supported by the ESPA-Grande or similar interface. This spacecraft offers increased deck area to accommodate the largest payloads with a total spacecraft mass of up to 500kg.

Ambassador comes with Terran Orbital's standard mini satellite EPS architecture and builds off the entire product line of spacecraft platforms with the same avionics and GNC algorithms. The reaction wheels on the Ambassador have been sized to allow the spacecraft to maintain agility. The platform is designed from the ground up to be compatible with rideshare requirements.

Ambassador supports commercially available or custom payloads and offers optional Type 1 encryption for military-grade security. It includes a propulsion system ideal for phasing a constellation into its mission orbit, station keeping, and disposal. The Ambassador was designed for the Space Development Agency's Tranche 1 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.



BASELINE MODULES INCLUDED

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

SPECIFICATIONS*

Configuration	ESPA-Grande
Applications	LEO
Native Orbits	400km-1200km
Launch Mass (Wet)**	up to 500kg
Available Payload Mass	up to 200kg
Max Solar Array Power	1.5kW
Redundancy	Dual-string
Power System	66V System Power, 12V, and 9V rails available
Communication Data Rate	S-band: 125 Kbps uplink 2 Mbps downlink X-Band: 650 Mbps downlink
Propulsion	1150s hall effect standard options available
Thrust	17mN
Payload Deck Area	104 cm x 112 cm
Pointing Accuracy	10 to 50 arcseconds higher accuracy available

KEY BENEFITS

- The largest deck area allowed by an ESPA-Grande interface for rideshare missions
- Top offering for the DoD/Intel community with our largest available payload and optional Type 1 encryption

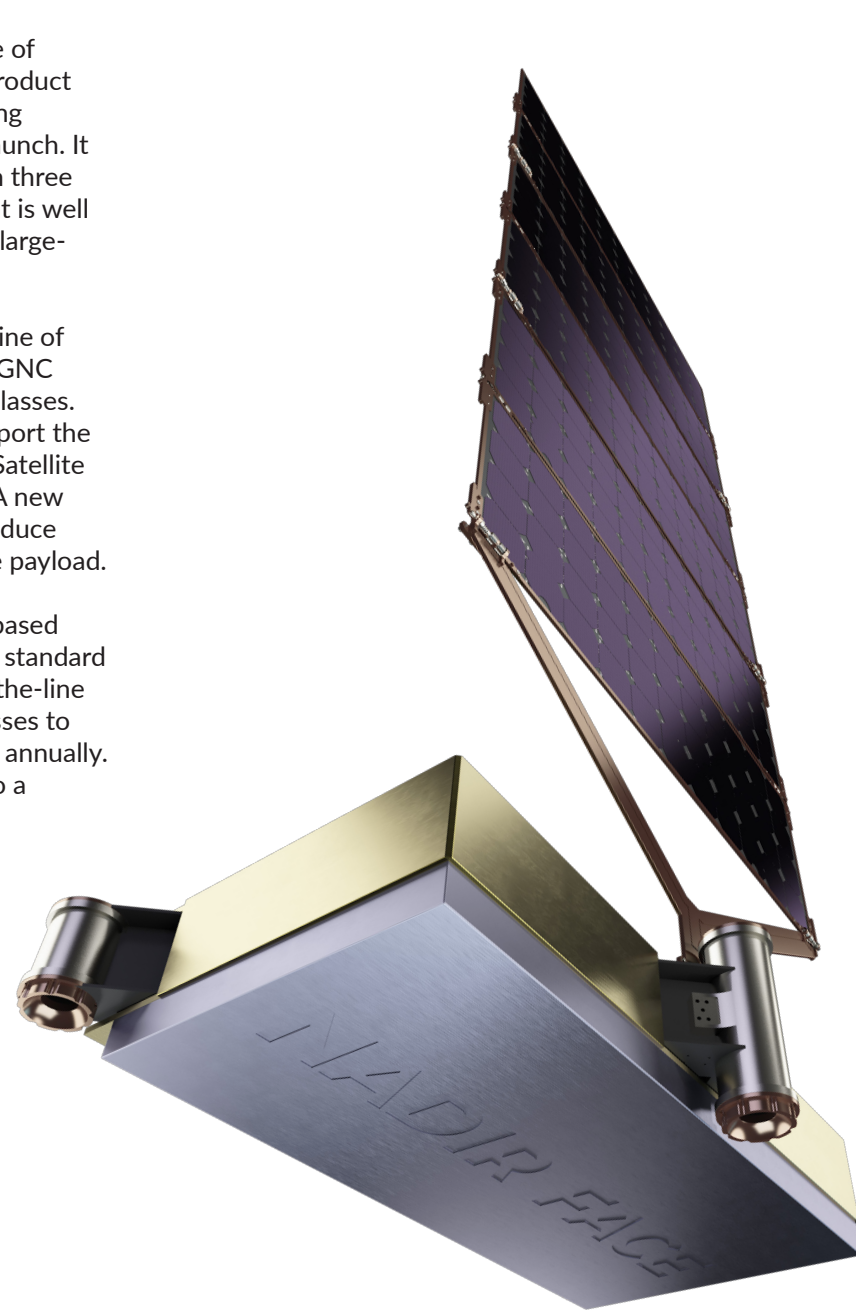
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ENTERPRISE

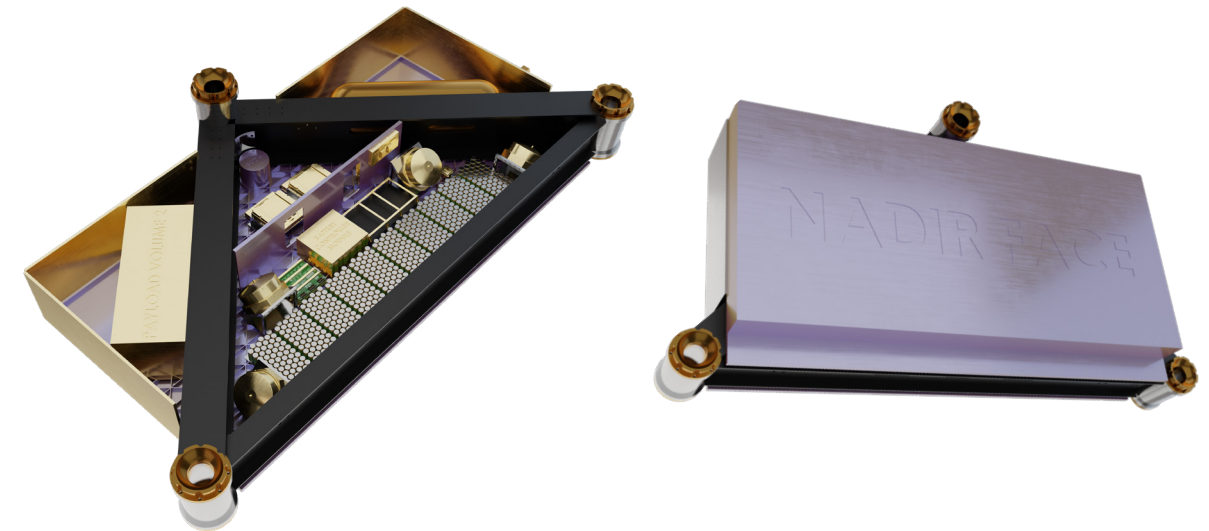
The Enterprise-class spacecraft platform is one of the largest platforms offered in the standard product line and is the point of departure for flat packing requirements carrying up to 24 satellites per launch. It is optimal for large constellations and comes in three configurations. All deliver a large deck area that is well suited for communications missions as well as large-area RF antenna systems.

The Enterprise builds on Terran Orbital's long line of SmallSat heritage, with the same avionics and GNC algorithms as the smaller spacecraft platform classes. Significant enhancements to the structure support the largest payloads, and it includes Optical Inter-Satellite Link (OISL) functionality for communications. A new power storage system has been designed to reduce weight and increase the power available to the payload.

Enterprise is scalable in thickness and weight based on customer payload requirements, with three standard configurations. 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.



CONFIGURATION B SHOWN



SPECIFICATIONS*

Configuration
Applications
Native Orbits
Launch Mass (Wet)**
Available Payload Mass
Available Payload Power
Redundancy
Power System
Payload Deck Area
Payload Electronics Volume
Communication Data Rate
Pointing Accuracy

CONFIGURATION A

CONFIGURATION B

CONFIGURATION C

	CONFIGURATION A	CONFIGURATION B	CONFIGURATION C
	Flat packing		
Applications	LEO	LEO	MEO/GEO
Native Orbits	400km-1200km		1200-35,000km
Launch Mass (Wet)**	500kg	1000kg	1250kg
Available Payload Mass	Up to 200kg	Up to 650kg	Up to 750kg
Available Payload Power	Up to 2kW	Up to 3kW	
Redundancy	Dual-string		
Power System	66, 28, 12, 9V Rails available		
Payload Deck Area	100cm x 200cm	114.3cm x 254cm	
Payload Electronics Volume	40cm x 20cm x 20cm	76.2cm x 30.5cm x 30.5cm	76.2cm x 30.5cm x 30.5cm
Communication Data Rate	S-band: 125 Kbps uplink 2 Mbps downlink X-Band: 650 Mbps downlink		S, X, and Ka TT&C options, high and low data rates available
Pointing Accuracy	10 to 50 arcseconds standard higher accuracy available		

KEY BENEFITS

- Flat packing design allows delivery of up to 24 satellites per launch (depending on the launch vehicle)
- Includes Optical Inter-Satellite Link (OISL) functionality
- Large, flat deck optimized for communications and RF payload
- Three configurations available

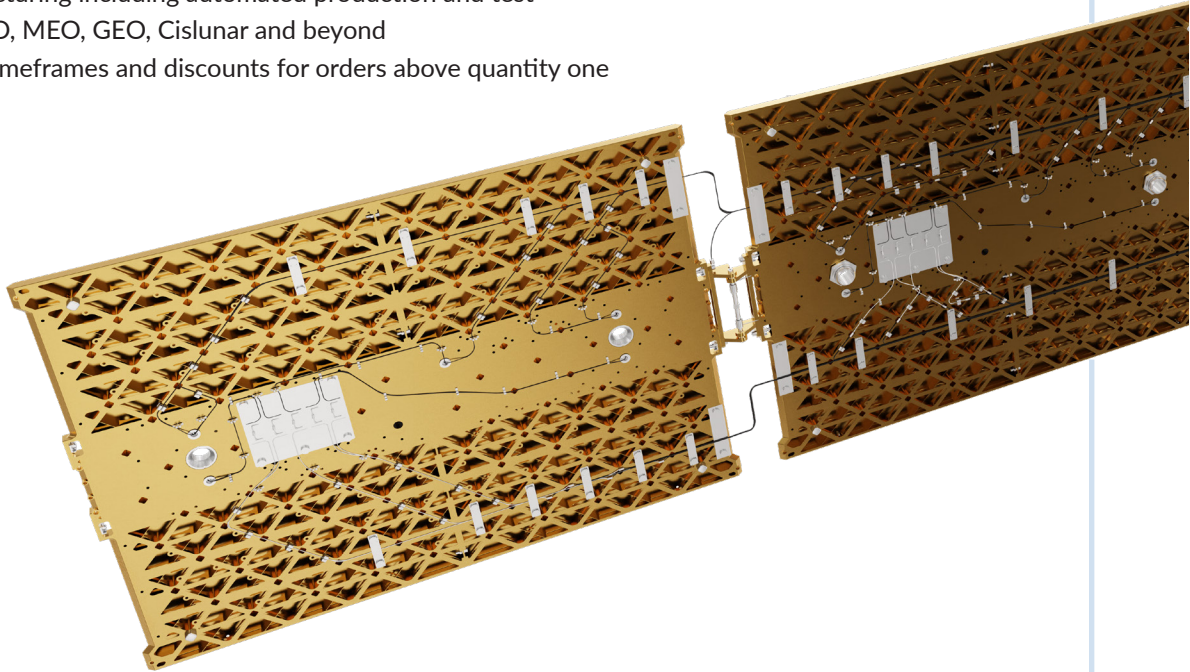
* For additional spacecraft specifications or to configure a platform for your requirements, please contact a sales professional.
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CUSTOM DESIGNED PLATFORMS

Terran Orbital's continues to provide custom mission solutions for all customers. When a product from our line of standard platforms does not meet your needs, let us design a spacecraft platform that both meets your requirements and budget.

Includes:

- Configuration to meet mission needs
- Standard avionics suite
- Standard modules, majority produced on-site
- Industry-leading proprietary software at all levels
- Modern manufacturing including automated production and test
- Solutions for LEO, MEO, GEO, Cislunar and beyond
- Faster delivery timeframes and discounts for orders above quantity one



**Contact a sales professional
to brainstorm your mission solution now!**

OCTOBER 2024



SCAN TO VISIT
terranorbital.com



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