



CUBECAST

Laser communication terminal

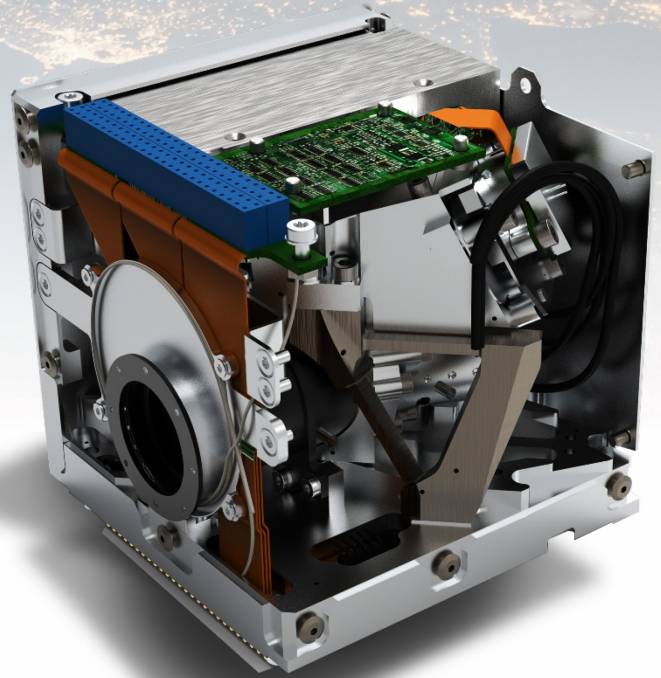
CubeCAT is a compact, high-performance lasercommunication terminal for use in CubeSats and small satellites.

CubeCAT is designed with simplicity and ease of use in mind. This system suits commercial CubeSat applications well, with modest size- and power requirements and no licensing requirements, but also meets the increasing need for high data rates in small satellites, through offering a large data rate with a small volume terminal.

The CubeCAT is part of the CubeCAT Lasercom system and is the result of a joint effort by Hyperion and TNO.

Hyperion Technologies' proven iADCS technology, digital processing technology and experience in electronic systems for space in general will be applied in the CubeCAT system to create a system that is efficient, robust and easy to use both for the satellite developer and the satellite operator.

TNO is a research institute with a strong heritage in optics for space applications, including laser communication.



HIGHLIGHTS

- Fully integrated Lasercom module
- Data rate:
 - Downlink: 1 Gbps
 - Uplink: 200 kbps
- On-module data buffering
- Interfaces to Cubesat: USB 3.0, I²C
- No regulatory certification requirements for both space segment and ground station
- ITAR-free
- Small size: <1U
- Low power:
 - Peak: ~15W
 - Orbit average: <1W
- Low cost-per-bit





SPECIFICATIONS

Performance				
Raw datarate modes (downlink)	100/300/1000			Mbps
Raw datarate (uplink)	200			kbps
On-board buffer size	>64			GB
Maximum slant range	1000			km
Host satellite platform constraints				
Pointing accuracy	< 8.7 / 0.5 / 1800			mrad/deg/arcsec (3 σ)
Low frequency vibration velocity ¹ (<20Hz)	< 2.445			mrad/s (3 σ)
High frequency vibration/jitter amplitude (>20Hz)	< 15 / 0.86 / 3.1			μ rad/mdeg/arcsec (3 σ)
Pointing knowledge ² error	< 0.3 / 17.2 / 61.9			mrad/mdeg/arcsec (3 σ)
Dimensions				
Outer dimensions	96 x 96 x 96			mm
Mass	<1.33			kg
Environmental				
Operating temperature	-20 - +40			°C
Electrical				
	Min.	Typ.	Max.	
Supply voltage digital	4.75	5	5.25	V
Supply voltage Vbat	9.6		21	V
Bus logic level voltage	1.8	Referenced to VREF ³	5.1	V
Power consumption (total)	TBD ⁴	15 ⁵	TBD	W

¹ This is equivalent to the low-frequency pointing/tracking error and describes, together with the high frequency jitter below, the pointing stability of the platform.

² Pointing knowledge provided by the ADCS is defined as knowledge about the actual orientation of the CubeCat mounting plane w.r.t. the line-of-sight towards the ground station.

³ VREF can range from 1.8 to 5.1V for I²C and UART applications.

⁴ While receiving data from the satellite at 30Mbps average transfer rate.

⁵ While downlinking data during a ground station passover.



For pricing, delivery, configuration and ordering information please contact us at sales@hyperion.space or call us at +31(0)15-5160905

