



HIGH PRECISION HIGH PERFORMANCE

The CubeCAT lasercom module enables a bidirectional space-to-ground communication link between a CubeSat and an optical ground station, with downlink speeds of up to 1 Gbps and uplink data rate of 200 Kbps. Using optical communication circumvents tedious radio licensing procedures and enables high performing payloads on small platforms. CubeCAT is a compact, high performance laser communication terminal for use in CubeSats and small satellites. CubeCAT is designed with simplicity and ease of use in mind. The CubeCAT is part of the CubeCAT Lasercom system and is the result of a joint effort by AAC Clyde Space and TNO.

KEY HIGHLIGHTS:

- 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



ROBUST

AAC Clyde Space's proven iADCS technology, digital processing technology and experience in electronic systems for space in general has been 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.



PERFORMANCE

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.



MODULAR

Featuring a large data storage buffer, the CubeCAT terminal has a built-in data coding and synchronization. This makes the CubeCAT module a plug-and-play integrated communications subsystem.

TECHNICAL 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	mrاد/deg/arcsec (3-sigma)
Low frequency vibration velocity ¹ (<20Hz)	< 2.445	mrاد/s (3-sigma)
High frequency vibration/jitter amplitude (>20Hz)	< 15 / 0.86 / 3.1	μrad/mdeg/arcsec (3-sigma)
Pointing knowledge ² error	< 0.3 / 17.2 / 61.9	mrاد/mdeg/arcsec (3-sigma)

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	TBC	Q

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.

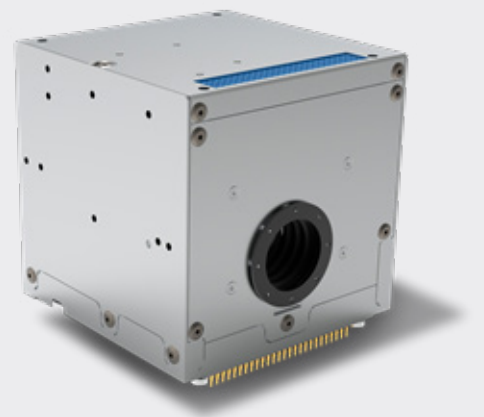
3 VREF can range from 1.8 to 5.1V for I²C and UART applications.

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

5. While downlinking data during ground station passover.

To make an enquiry, request a quotation or learn about AAC Clyde Space's other products and services, please contact:

enquiries@aac-clydespace.com



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