

UHF/VHF Radio

Cassiopeia Cubesat Modules



Electrical Interface

The UHF/VHF communication module utilizes a standard PC104 Cubesat bus interface compatible with products from most major nanosatellite component manufacturers. The module is powered by one 3.3V input and communicates through an UART interface. The RF interface utilizes one 50 ohm MMCX connectors on the transmit and receive paths respectively.

Qualification and Options

The modules have passed thermal cycle, thermal vacuum, outgassing, and random vibration tests. Each unit is tested prior to shipment and packed in a clean container under ISO Class 5 environments. Contact Aphelion for alternate configurations and interfaces, as well as to inquire for compatibility with other products.

Direct Integration with Aphelion Modules

The PBM is an integrated EPS and OBC solution designed for mission-critical, volume constrained environments. Features such as maximum power point tracking, individually switchable and monitored output rails, high discharge battery compatibility, and a high-performance Cortex M4 processor allow the PBM to be adaptable for multiple mission scenarios.



Price: \$3500
(+ Battery Module: \$900)

Overview

The Aphelion UHF transmitter/VHF receiver system is a highly configurable, full duplex communication system designed for Cubesat applications. The module offers selectable data rate, OOK, FSK, and GFSK modulation, and is compatible with the AX.25 protocol. A dedicated 32 bit Cortex M4 processor is user-configurable and allows a selectable data rate. It is compatible with most Cubesat platforms and full support is provided with our Primary Bus Module.

Features

- Dedicated 168MHz Cortex M4 processor with customer-configurable software
- Built-in 1MB Flash memory and 192kB of SRAM
- Automatic thermal monitoring and protection
- Low standby power consumption
- IPC 610 Class 3 Assembly
- Gold plated and shielded FR4 PCB
- Individually tested with output calibration report and outgassing/random vibration qualification

Specifications

Mass	72g
Dimensions	95.9mm X 90.1mm X 15mm
Downlink Frequency	430-438MHz
Uplink Frequency	143-146MHz
Supported Protocols	AX.25, HDLC
Modulation Types	OOK, FSK, GFSK
Power Consumption (receive only)	0.18W
Power Consumption (transmitting)	3.1W
Maximum RF output	33dBm
Sensitivity	-118dBm
Selectable Data Rates	1200, 2400, 4800, 9600 bps
Temperature range	-40 to 85°C
Price	\$1800