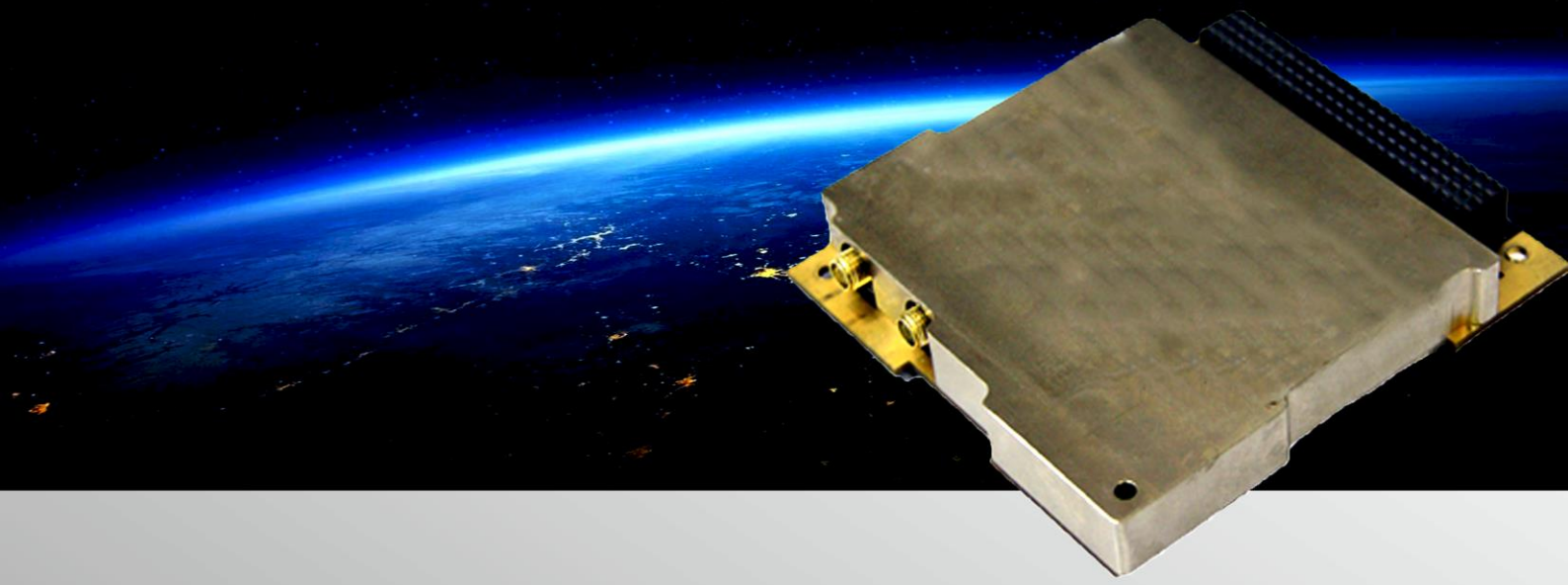
COMMUNICATIONS

UV-TRX 120

UV-TRANSMITTER & RECEIVER MODULE



Description

Due to the small size of CubeSats one of the main challenges is low consuming equipment, especially for radios communication links. V/U TRX answers to this demand using an efficient power amplifier and controlling the power consumption of power amplifier section.
A temperature automatic shutdown mechanism is used to protect the module from high temperature conditions. Also, the power consumption is optimized for each power level. V/U TRX is designed for Low Earth Orbit mission with two years lifetime.
V/U TRX is designed and manufactured using high quality electronic components and it has been under mechanical and thermal stress tests according to ECSS on QM Unit.

KEY HIGHLIGHT

- Qualified COTS in a detailed design
- Link budget optimization, by in-flight configuration
- Low consumption & high-efficiency amplifier
- High operating temperature range -30 to 60°C
- AES 256 Encryption

FREQUENCIES

The transmitter and Receiver module is suitable for the Low-Earth-Orbit missions.This module has the ability to send data in the frequency band of 401 MHz and receive data in the frequency band of 148 MHz.

POWER

The UV-TRX 120 for RX only have 350 mW and for RX+TX 7.5 mW power consumption.

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TECHNICAL SPECIFICATION

Functional and Performance Characteristics	
Operating Life Time in Orbit	2 Years in LEO Missions
Useful data Rate	1.2, 2.4, 4.8, 9.6, 19.2 Kbps
Frequency Range	Tx: 401.5 MHz RX: 148.5 MHz
Modulation	FSK, MSK
Framing	HDLC
Control Command and Telemetry	I2C, CAN
Antenna	SMA
RF Output Power	>33 dBm adjustable from 27-33 with 1 dB step
Advanced Features	Low consumption high-efficiency amplifier Data encryption CubeSat form factor / PC 104
Data Interface	CAN
RF Output Power Stability	0.5 dB

Environmental and Mechanical Characteristics	
Storage Temperature Range	-40 °C to +80°C
Operating Temperature Range	-30 °C to +65°C
Mass	120 gr
Dimensions	90 mm x 96 mm x 19 mm
Random vibration	15 grms

Electrical Characteristics	
Supply Voltage	5.5 to 4.5 v for Processing unit ; 6 to 14 v for RF unit
Power Consumption	RX only: 250 mw ; TX: 7 w for >2w output power

TEST SPECIFICATION

Qualification and Acceptance Testing (ECSS-E10-03A)		
Test Name	QT	AT
Functional	✓	✓
Random Vibration	✓	✓
Sinusoidal Vibration	✓	
Mechanical Shock	✓	
Thermal Cycling	✓	✓
Thermal Vacuum	✓	✓

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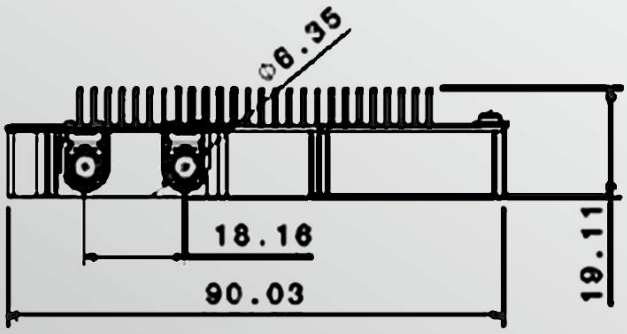
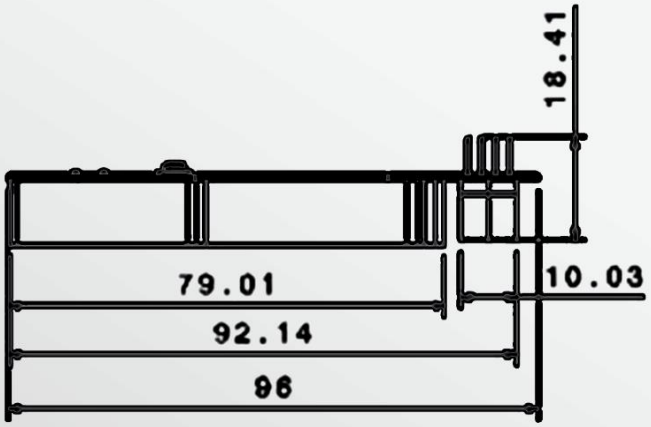
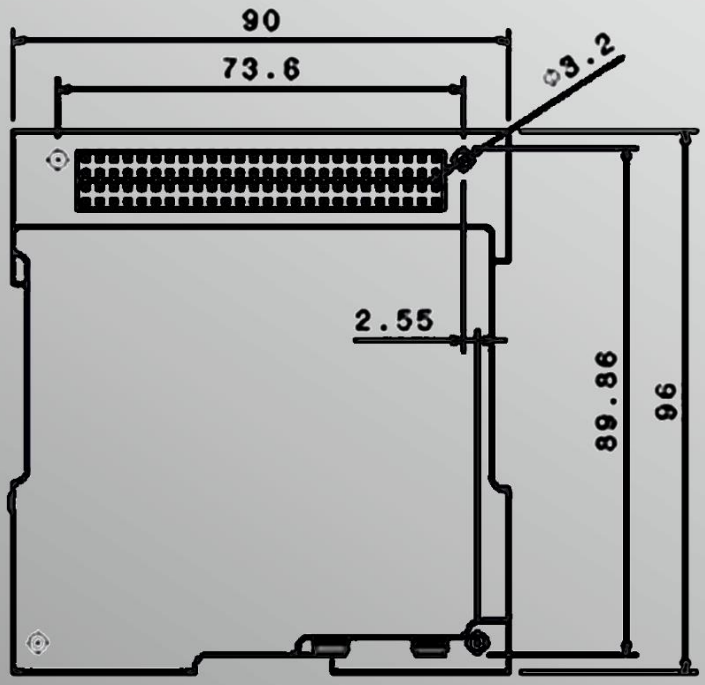
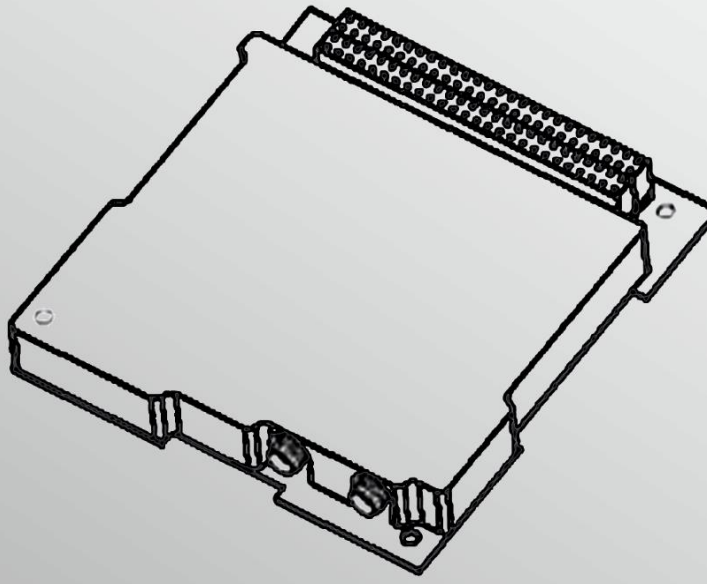
DRAWING









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