

# HIGH DATA RATE LOW POWER CONSUMPTION



The PULSAR-STX-A and PULSAR-STX-C are compact S-Band transmitters designed for CubeSat missions operating at amateur and commercial frequencies respectively. The transmitters implement O/QPSK modulation with transmission data rates of up to 2 Mbps. The transmitters are ideal for space missions where a high data rate downlink is required. They implement an open network encoding scheme based on the IntelSAT IESS-308 specification which allows this product to be used with low-cost commercial satellite demodulators.

The PULSAR-STX solution is compatible with our S-Band Patch Antenna. A nadir facing S-Band patch antenna can also be incorporated into the CubeSat design. Its small size, low profile, rugged design and high directivity make it an excellent addition to the system. The S-Band patch antenna is designed to be mounted on the nadir facing side of a CubeSat. A wide beamwidth ensures satellite communication through a wide range of elevation angles. It is machined from solid aluminium.



## POWER

The PULSAR-STX-A and PULSAR-STX-C have a low power consumption and total power consumption of < 5 W (for maximum RF power output). With a selection of transmit output power levels from 24 dBm to 30 dBm in 2 dB steps makes the PULSAR-STX an attractive solution."



## FREQUENCIES

The PULSAR-STX-C and PULSAR-STX-A supports commercial (2.2 - 2.3 GHz) and amateur (2.4 - 2.45 GHz) bands respectively, and is user programmable within the bands.



## RELIABILITY

The PULSAR-STX solution has been tried, tested and trusted on an array of on-orbit missions proving to be not only reliable but efficient. The PULSAR-STX was part of the UKube-1 mission, the UK Space Agency's first national spacecraft.

# TECHNICAL SPECIFICATIONS

General	
Temperature	-25°C to +51°C
Power	< 5 W
Voltage	6 V – 12 V (5 V alternative)
Mass	< 100 g
TX SNR	20 dB
Frequency	2.2 GHz – 2.3 GHz (PULSAR-STX-C) 2.4 GHz – 2.45 GHz (PULSAR-STX-A)
RF Power	24 - 30 dBm (1 W RF) in 2 dB steps
Channel Spacing	500 kHz
Spurious Response	< -60 dBc
Design Life	2 years in LEO

Performance	
Processing	<ul style="list-style-type: none"><li>• Low-power Flash-based FPGA</li><li>• V.35 IntelSAT scrambler</li><li>• ½ rate convolutional encoding (K=7)</li><li>• Differential encoding</li><li>• Pulse shaping filter</li></ul>
Interfaces	<ul style="list-style-type: none"><li>• Low-speed I2C Bus – 400 kHz (telemetry and control)</li><li>• High-speed SPI Bus – 4 MHz (payload data)</li><li>• 50 Ω SMA connector</li></ul>
Modulation	<ul style="list-style-type: none"><li>• QPSK or OQPSK</li><li>• IntelSAT IESS-308</li></ul>

Dimensions	
Length	96 mm
Width	90 mm
Height	16.9 mm

\*Height from top PCB to lowest component

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

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