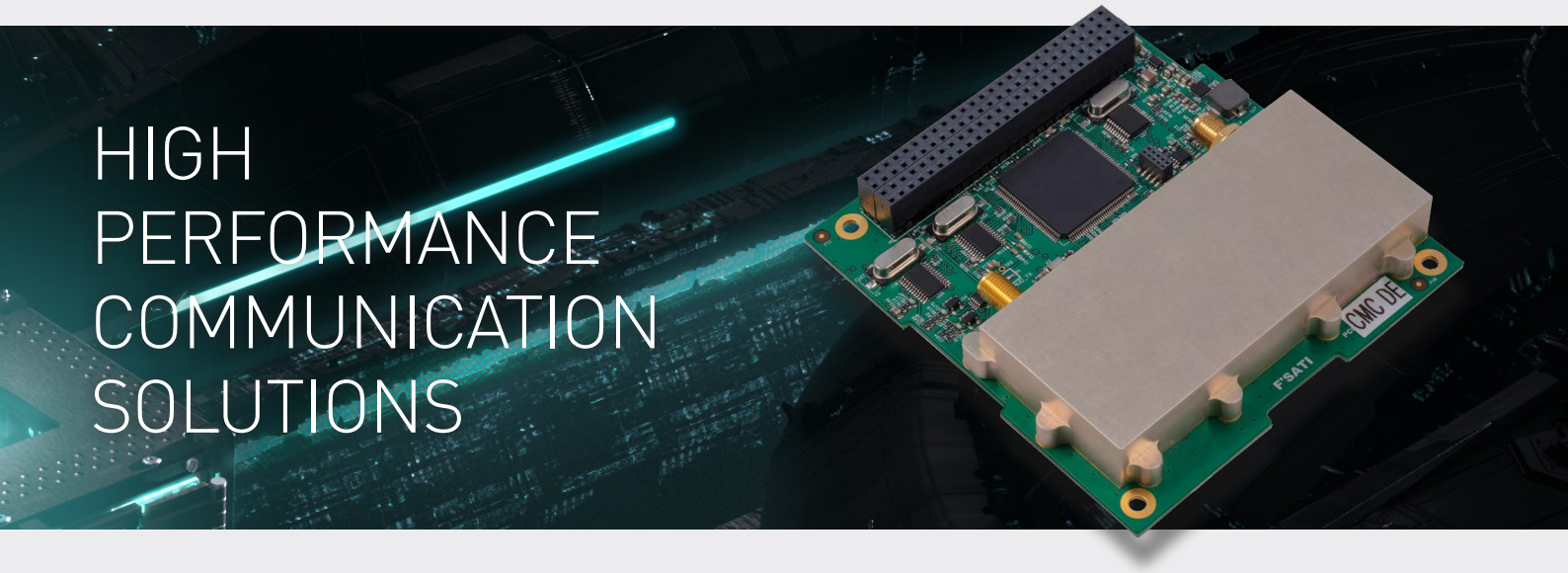
AAC CLYDE SPACE

Communications

PULSAR-UTRX



HIGH PERFORMANCE COMMUNICATION SOLUTIONS

The PULSAR-UTRX and PULSAR-UTRXC are compact single port telemetry and command radios designed for nanosatellite missions, compatible with the CubeSat standard with a CubeSat kit PC/104 form factor. They operate UHF uplink and downlink serving both commercial (UTRXC) and amateur (UTRX) frequencies.
The transceivers are ideal for space missions where reliable uplink and downlink is required and can be used as a robust lower data-rate back-up radio for a higher data-rate radio. The AX.25 protocol implemented is popular among amateur radio enthusiasts. A transparent downlink mode is available with a CCSDS compatible ½ rate convolutional encoder.

PULSAR-UTRX/C implements 9600 bps GMSK, 1200 bps AFSK and operates in half-duplex mode. A combination of AFSK and GMSK is configurable for transmit and receive. These modes are selected as an I2C command and the default mode will be selected if a reset occurs. The default mode can be requested at time of production.

FREQUENCIES

With UHF uplink & downlink the PULSAR-UTRXC and PULSAR-UTRX serve both commercial and amateur frequencies respectively.

PERFORMANCE

With 9600 bps GMSK and 1200 bps AFSK data rates. Transmit output power adjustable from 27 to 33 dBm. Implements AX.25 protocol encoding/decoding with transparent mode with optional convolutional encoder. With DTMF backdoor and low-power receiver, <240 mW, Flash-based FPGA.

RELIABILITY

Featuring a single event upset (SEU) immune Flash based FPGA for superior reliability and a beacon and DTMF backdoor, the PULSAR-UTRX/C offers unparalleled reliability in flight.

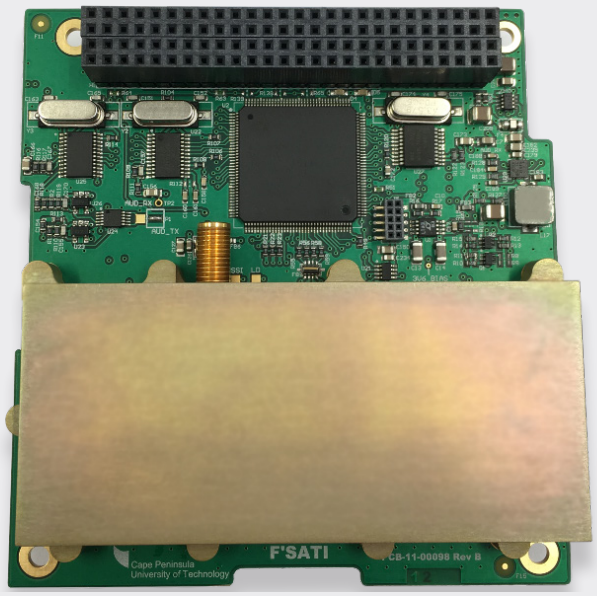
TECHNICAL SPECIFICATIONS

General	
Operating Temperature	-25°C to +61°C
Mass	< 100 g
Voltage	3.3 V, 5 V
Frequency	
UHF	400 – 420 MHz (UTRXC) 430 – 440 MHz (UTRX)
Transmit	
DC Power	3– 5.1 W (27–33 dBm)
RF Power	27– 33 dBm (3 dB steps)
Channel Spacing	25 kHz
Spurious Responses	< -65 dBc
Frequency Deviation	3 kHz (FM)
Frequency Stability	± 2.5 ppm
Receive	
DC Power	<240 mW
Sensitivity	-115 dB dBm for 12 dB SINAD
Channel Spacing	12.5 kHz
Noise Figure	<2.5 dB
Dynamic Range	-115 to -70 dBm
Frequency Stability	± 2.5 ppm

Performance	
Processing	• Low-power Flash based FPGA • CRC-16-CCITT (AX.25) • Scrambling (GMSK) • Transparent downlink mode • ½ Rate CCSDS convolutional encoding (k=7) available in transparent mode
Interfaces	• I2C Bus – 400 kHz (telemetry, command and user data) • Receive Ready output line • Transmit Ready output line
Modulation & Protocol	• GMSK (9600 baud) • AFSK (1200 baud) • AX.25 Protocol • Transparent mode

Dimensions	
Length	96 mm
Width	90 mm
Height*	16.51 mm

*Height from top of enclosure to lowest component on bottom.



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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