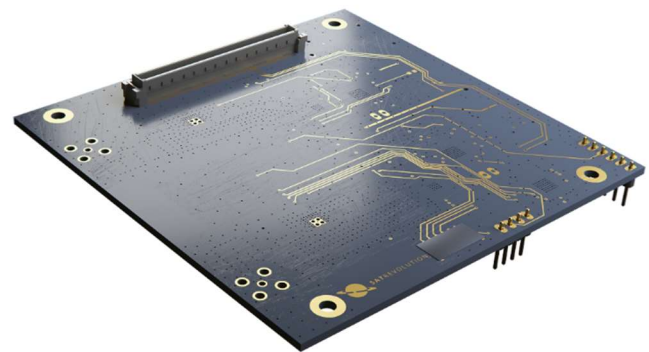


Communication Module

Description	RF communication module is responsible for TT&C uplink and downlink. The communication module enables the change of data with the ground station. CM consists of two Sub-GHz redundant transceiver modules and a microcontroller for external S-Band transmitter.
Features	<ul style="list-style-type: none"> • Processor: up to 16MHz, 256kB FRAM, Ultra-Low-Power Modes • Low Power Consumption: 2.8W at 30dBm RF, output power on UHF • 2x UHF half-duplex • Modulations: (G)FSK, 2(G)MSK, OOK • Automatic Frequency Control: +/- 25kHz • High receiver's sensitivity: minimum -105dBm at 9.6kbps • UHF/VHF operational frequency 142 – 146 MHz, 432.5 – 438 MHz • Data interface: RS485 with configurable frequency, data rate up to 64kbps, modulation, RF connector (type, position, orientation – 60bit synchronization • Forward Error correction: Reed-Solomon ¼ with downlink protocols APRS AX.25 1.2kbps or custom binary protocol 9.6-64kbps • Uplink protocol: custom binary protocol 9.6kbps • 128/256 hardware AES encryption/decryption with time coding and digital signature coding schemes • Safety watchdog • Single PCB radio • Single board Telemetry, Telecommand, and Beacon capabilities
Details	<ul style="list-style-type: none"> • Supply voltage: 12 V, 3.3 V • UHF max RF power output: 29 dBm • Max current consumption at RX*: 20 mA • Normal current cons. at TX*: 0.117 A • Connectors: SMA, FX10A-168
Properties	<ul style="list-style-type: none"> • Mass: 55 g • Size: 96 x 96 x 1.6 mm³
Tests	<ul style="list-style-type: none"> • Thermal-vacuum • Random vibration • EMC


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