MISSION CONTROL™

Space Heritage

LUNAR RADIOS

Mission Control's Lunar Radios are a pair of electronic interface modules that provide a bidirectional wireless communication channel between two communication nodes. It is designed to integrate on lunar landers and rovers and enable lunar surface operations.

Since 2022, our lunar radios have been a part of multiple lunar rover missions to enable mission-critical communications for our customers.

Core Features

- Low power consumption
- Qualified for lunar missions
- Customizable for your needs
- Message acknowledgement
- Reliable radio channel

Optional Features

- Wired communication with rover prior to deployment
- Rover battery charging and on/off control
- HDRM control and deployment detection, temperature monitor, and other functions.
- Customizable architecture to support multiple communication nodes
- Custom data processing, compression, and downlink prioritization routines, with AI algorithms

MISSION CONTROL™

Software for Earth, Moon and Mars.

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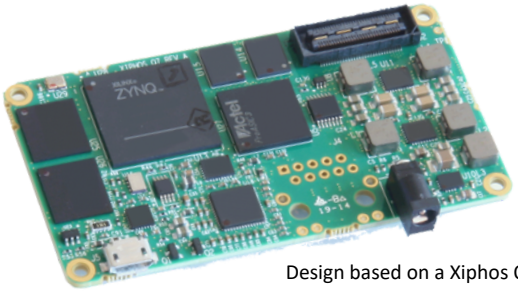


Design based on a Xiphos Q7S processor. Contact us for customization.

Space Qualified

- TVAC tested (10^{-5} torr)
  - Storage: -40 to +70°C
  - Operational: -35 to +65°C
- Vibration tested
- Radiation assessment completed for lunar surface

Specifications

	Rover Module	Lander Module
Power	< 2 W @ 5 VDC	< 3.5W @ 28 VDC
Mass	< 120 g	< 320 g
Size	94.5 x 88.1 x 23.3 mm	120 x 93.3 x 25.8 mm
Enclosure	None	Aluminum
Wired Data Interface	1x CAN 2.0B @ 1Mbps *	1x CAN 2.0B @ 1Mbps * 2x RS-422 @ 921.6 kbps
Frequency Range	2.40 - 2.48 GHz	
Network Protocol	Uses CubeSat Space Protocol. A software update to use another option can be made upon request.	

Mode	Max Effective Data Rate†	Sensitivity
GFSK	335 kbps	-84 dBm
FLRC	312 kbps	-96 dBm
LoRa	127 kbps	-99 dBm

* Effective data rates for the CAN interface can vary and may typically be 40% of the max capacity.

† These results were based on real-world tests conducted under a certain configuration. Actual results for your operational configuration may vary.

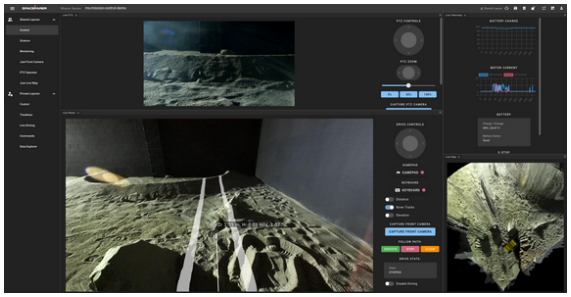
Leverage other Mission Control offerings with our Lunar Radios

SPACEFARER™

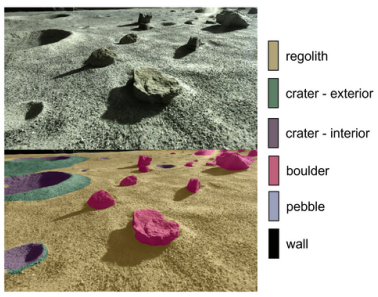
Spacefarer is a web-based operations software platform designed for space robotics and payloads. It is built on years of heritage of robotics operations and is being used for multiple upcoming lunar rover missions.

SPACEFARER AI™

Deploy AI algorithms to your flight CPU or FPGA using our AI Deployment Toolkit. Or let us help you develop custom AI solutions to enable onboard autonomy.



Example of our Spacefarer robotic control interface integrated with user-friendly visualization and query tools.



Example output from MoonNet, our AI Deep Learning model that launched to the Moon as a technology demonstration payload on December 11, 2022.

Contact us to add radios to your next mission!

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