EyeStar-S4 Satellite Transceiver

Half-Duplex Space Based Communication System with Live, Global Coverage

NearSpace Launch, Inc®
Technology. Service. Education

Description

The EyeStar-S4 is a half-duplex transceiver radio with ground segment, intended for space use. This small form factor radio provides a live link to the spacecraft, with 24/7 connectivity and global coverage at only 5 s latency. An upgrade to the reliable NearSpace Launch EyeStar-S3, the S4 now includes uplink command capability through communicating with the established Iridium network. More than just a radio, the EyeStar-S4 is a full communication system, including the satellite radio, access to the Iridium network and ground station, NSL servers, and online live data terminal.

Key Features

- Command and Data Handling TRX Radio communicates Space-to-Space with Iridium Constellation
- 24/7 Global Coverage, livestreaming data directly to Online Console
- Simplex Downlink and Uplink capability with 5 s latency
- Includes full ground segment, using Iridium ground station, NSL servers, and Online Console
- 100% Mission Success for all EyeStar Radios (180+)

Figure 1 EyeStar-S4 Transceiver Radio

Performance

- 18 byte packet every 10 seconds, up to 150 Kbytes/day
- Excellent polar coverage, no significant dropout zones in orbit
- 100% guaranteed data throughput with handshaking enabled
- Latency of 5 s from S/C to Console
- Successfully communicated with up to 40 RPM tumble
- L-band frequency use

Basic Specs

SWaP	Spec	Units
Size	58x30x21	mm
Weight	29	g
TX Power	1.8	W
Idle Power	0.44	W
RF Power	1.4	W
Data Rate	<1.8	Bytes/s
Frequency	1622	MHz
Temperature	-30 to +60	^{O}C
Input	6 – 36	V

Reliability

- TRL 9
- Orbit tested up to 600 km
- Autonomous Health and Safety transmissions
- High Reliability mil-spec parts

- EyeStar-S2/S3/S4 heritage of over 180 successfully deployed in orbit
- Certifications/Qualifications
  - FCC Compliant, RE02, Vibe 14.1 GRms, Part 15
- Functional Testing
  - Burn in, Day-in-the-Life
- Environmental Testing
  - Vibe, Thermal, Vac, Bakeout

Data

- Ports
  - Serial: Simple TTL Serial Interface
  - Power + Analog Inputs: Up to 6 Analog and 4 Digital Inputs
- Data API accessible

Additional Features

- Small form factor patch antenna
- Interfaces directly with NSL GPS

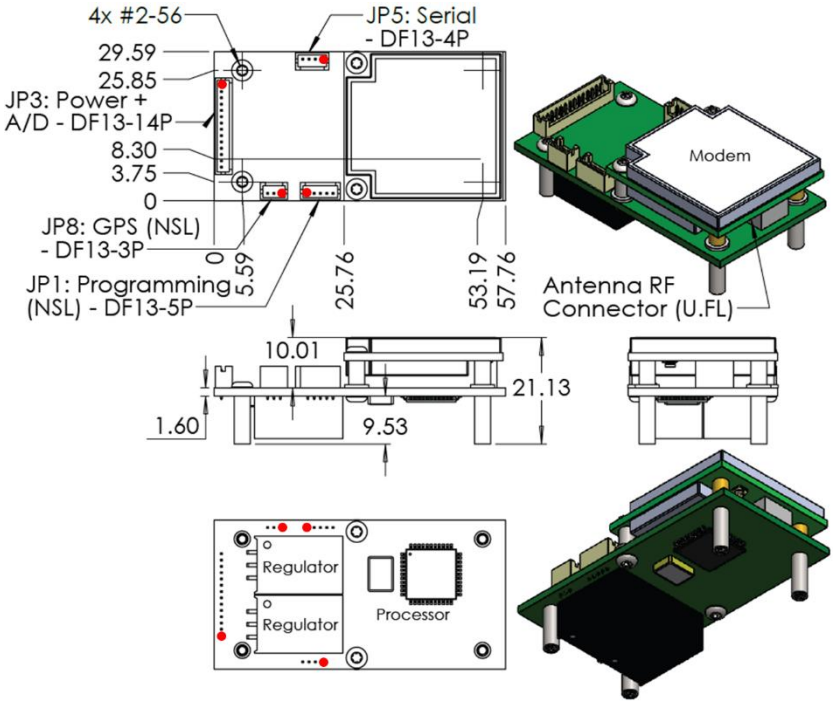

Figure 2 EyeStar-S4 Mechanical Drawing with connectors.

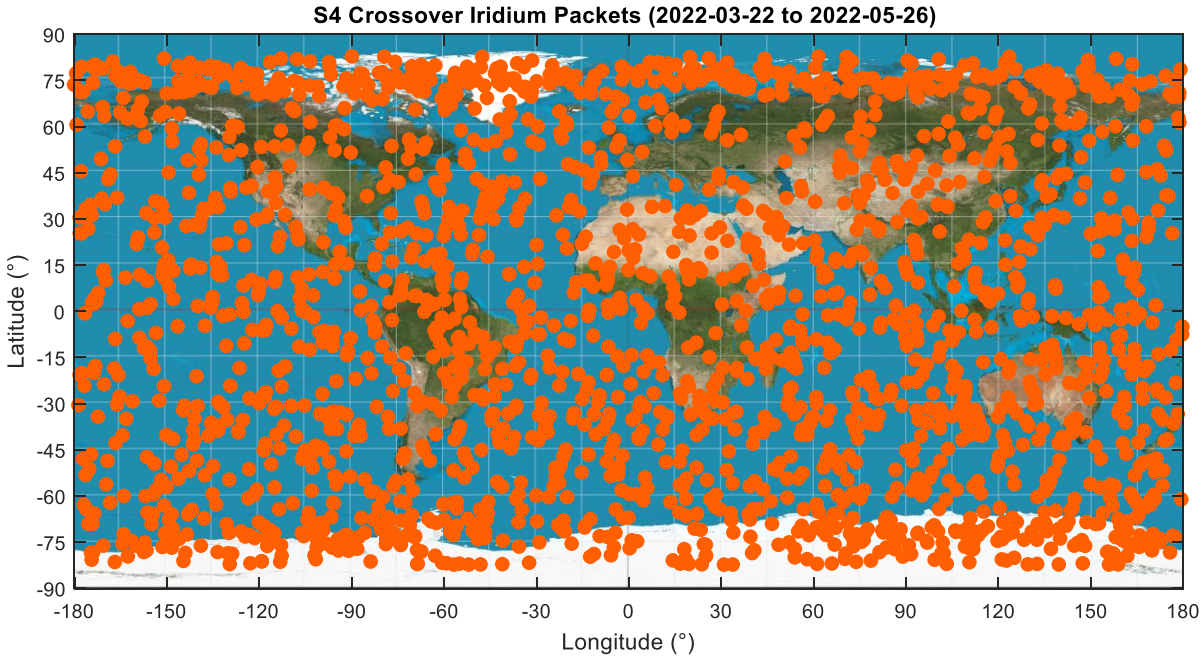

Figure 3 EyeStar-S4 on-orbit data showing the connectivity coverage. Note good polar coverage and no drop out zones.

NearSpace Launch, Inc.
79 E Railroad St.
Upland, IN, 46989, USA
www.nearspacelaunch.com
+1-765-998-8942