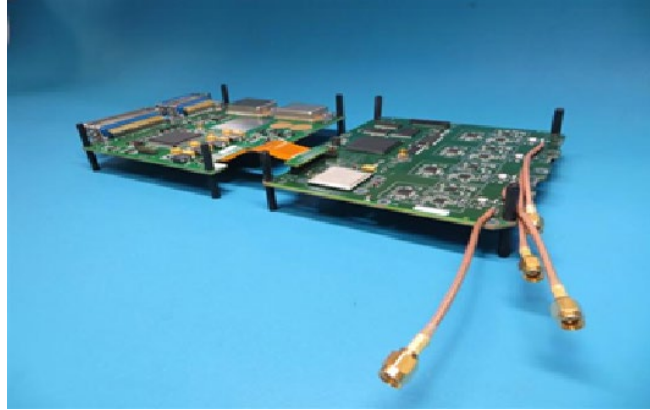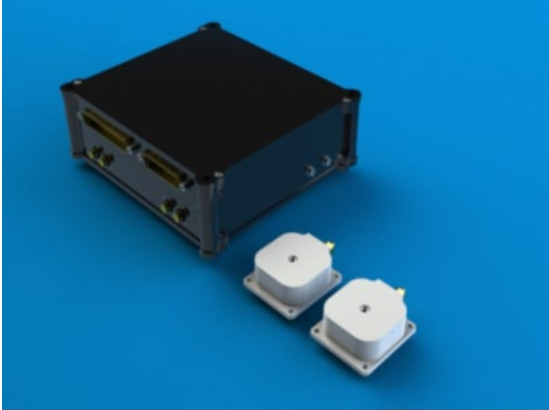# Space GNSS Receiver SGR-Axio

The SGR-Axio is SSTL's Space GNSS (Global Navigation Satellite System) Receiver suitable for many smaller and larger satellites, and delivers position, velocity and time to Low Earth orbit satellites. It replaces the heritage SGR-10, having dual antennas and supporting 24 GPS C/A code channels. There are options for Glonass, and Galileo positioning, and an option for dual frequency L1 / L2C GPS and can support from 1 to 4 dual frequency antennas.

The SGR-Axio makes use of advanced COTS components with appropriate radiation mitigation for the space environment. Its architecture, software and autonomous operation draws upon SSTL's long experience in spaceborne GPS receiver design and development. The SGR-Axio retains the flexibility for reconfiguration of FPGA-based channels and signal processing schemes even once in space.

BENEFITS

➢ Position, Velocity, Time Determination for LEO Missions
➢ Replacement for SGR-10
➢ Reduced power
➢ COTS-based design

FEATURES

➢ 28 V power bus
➢ 1 to 4 active antennas
➢ Fast Time to First Fix
➢ 24 channels
➢ Multi GNSS & Dual frequency options

CHANGING THE ECONOMICS OF SPACE

Space GNSS Receiver SGR-Axio

Physical Characteristics

Dimensions (mm)	160 x 180 x 50
Power at 5V	4 W in baseline mode
Mass (kg)	1
Radiation	>=5 kRad (Si) (core components tested to 10krads)
Temperature	-20° C to +50° C operating -30° C to +80° C non-operating

Performance Properties

Number of channels	24
Number of antennas	1-4
Frequencies & signals	GPS L1 C/A Code GLONASS G1 (option) Galileo E1 (option) GPS L2C (Option)
PPS outputs	RS485, LVDS (Option TTL)
SEE mitigation	Yes (SEE & SEL) EDAC protected memory
Typical position*	5 m
Typical velocity *	10 cm/s
TTFF (NVRAM)*	120 s
Time (UTC)*	100 ns
TM/TC interface(s)	CAN-SU or RS422 (SpaceWire Support)

*Under defined 680km polar orbit, Earth pointing conditions
Product specification may be subject to change without notification*

SSTL designs, manufactures and operates high performance satellites, subsystems and ground systems for space agencies, international governments, and commercial customers worldwide. Our satellite platforms are designed to fly remote sensing, navigation and communication payloads in LEO, MEO and GEO orbits and beyond. Our innovative approach to low cost spacecraft engineering is changing the economics of space.

SSTL#0185343

Antennas and LNAs

28V
PPS
RS422 or CAN bus

SGR-Axio

Typical application
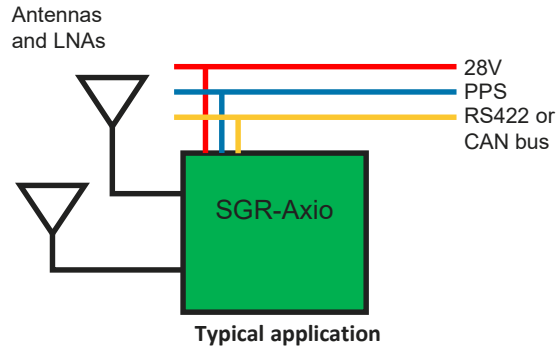
Interface configuration for SGR-Ligo

Additional features/options:

- Supports up to 4 antennas for redundancy and extra visible mode
- Multiple frequencies (L1 and L2C)
- Glonass & Galileo capability
- FPGA co-processor reconfigurable in orbit with up to 100 extra channels
- CSAC Clock Module for improved hold-over and reduced jitter
- Support for Spacewire interface

Flight Heritage

- In orbit on 4 satellites, first launch 2018
- Derived from SGR-ReSI, in orbit since 2014

SSTL is ISO9001/14001:2015 certified

All work overseen by ESA certified assembly staff

Standard delivery service includes:

- compliance testing
- vibration test
- thermal cycling
- user manual
- test results
- export license and shipping
- thermal vacuum testing available

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