

Space GPS Receiver

SGR-05P

The SGR-05P is a miniaturised single antenna space GPS receiver for providing position, velocity and time in an OEM configuration for the tightest integration requirements on professional small satellites. The SGR-05P comprises of the GPS receiver “engine” from within the SGR-07, and makes use of the host’s regulated power supply and TTL interfaces. The integrator must account for power, EMC, latch-up protection and shielding against radiation, but with the result of a highly compact solution.

Features

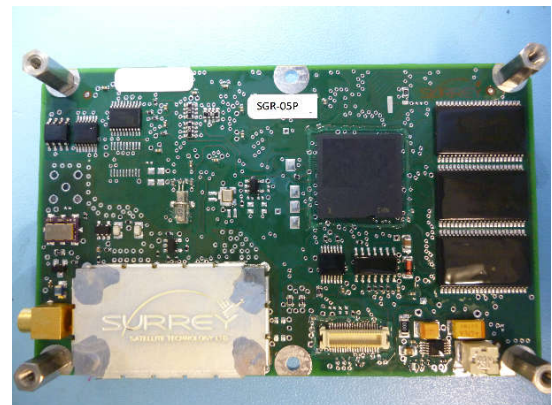
- 12 Channel L1 C/A Code Space GPS Receiver
- Flight Heritage
- Manufactured by ECSS trained staff
- Fast NVRAM-Aided Start-up
- Low Mass and Power
- Active Patch Antenna Included

Interfaces

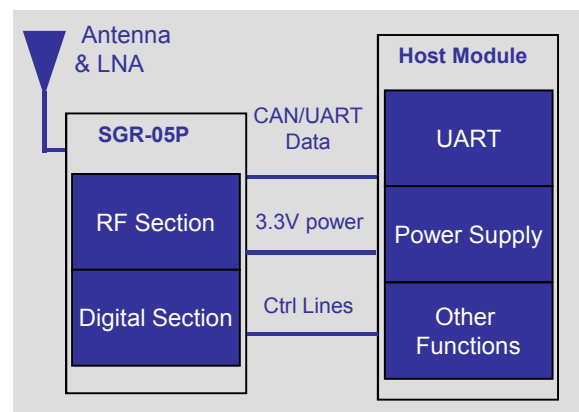
Power & Control
50 Ohm Antenna Interface (MCX)
Serial Data & CAN Bus Interface
Pulse-Per-Second

Typical Performance

- Position to 10m (95%)
- Velocity to 15cm/s (95%)
- Time to 200ns
- Typical Time to First Fix (TTFF) 90 - 180s
- 3.3V Regulated Supply, 1 W
- 105 x 65 x 12 mm, 60 g



SGR-05P GPS Space Receiver



Typical Mission Application: Host Module Interfacing to SGR-05P

APPLICATIONS

- Navigation for LEO Missions
- Position, Velocity, Time Determination
- Post-Manoeuvre Orbit Determination
- Accurate Timing and Synchronisation
- Payload Data Time Stamping
- OEM Suitable for Tight Integration on Professional Platforms

Space GPS Receiver – SGR-05P

Radiation: Core components tested to TID greater than 10 kRads (Si). SEE mitigation from TMR memory and electronic fuse protection.

Antenna: Active patch antenna weighing 50g with 45x50x20mm dimensions

Physical Characteristics	
Dimensions (mm)	105 x 65 x 12 mm
Power	1 W (Regulated 3.3V)
Mass	55 g
Temperature	-20° C to +50° C operating -30° C to +85° C non-operating
Random vibration	Tested to 15 Grms in all axes (within SGR-07)
Radiation	Near identical SGR-GEO unit tested to > 11 kRad (Si)
Performance Properties	
Number of channels	12
Number of antennas	1
Frequencies & signals	GPS L1 C/A Code
PPS outputs	TTL
SEE mitigation	Yes (SEE & SEL) EDAC protected memories
Typical position*	10 m
Typical velocity *	15 cm/s
TTF (NVRAM)*	90 s
Time (UTC)*	200 ns
TM/TC interface(s)	TTL UART, TTL CAN

**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.

Non-Volatile Memory: Almanacs and Orbital Elements also stored in flash memory to enable fast Time to First Fix (TTFF)

Flight Software: Extensive flight heritage software used on many missions

User Interface: PC software provided for receiver monitoring, control and data processing

Flight Heritage: First flown in 2009 as part of SGR-07. In orbit on 9 satellites, with 8 further launches expected.

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



GNSS L1 Patch Antenna