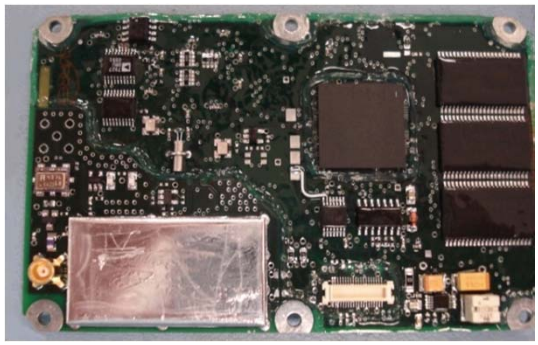
Space GPS Receiver – SGR-05P

(Navigation and Timing)

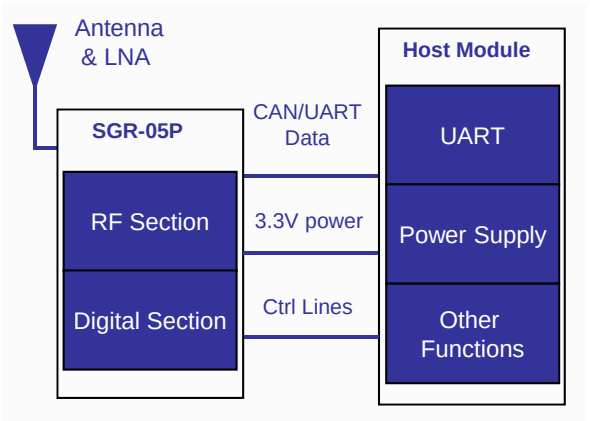
Applications

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



SGR-05P

Positioning and timing information can be processed to obtain orbital information. Surrey can provide expertise on orbit determination solutions using the Surrey space GPS receiver



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

Features

- 12 Channel L1 C/A code Space GPS Receiver
- Low Power and Mass
- Radiation Tolerant Design
- Triple Modular Redundant RAM
- Non-volatile RAM Initialization
- Active Patch Antenna Included

Interfaces

- Power and control
- 50 Ohm antenna interface (MCX)
- Serial data and CAN bus interface
- Pulse-per-second

Typical Performance

- Position to 10 m (95%)
- Velocity to .15 m/s (95%)
- Time to 500 ns
- Typical Time To First Fix 90 to 180 s
- 3.3 V supply, 1 W
- 105 x 65 x 12 mm, 60 g

Heritage

- Software derived from SGR-10/20
- UKDMC (2003)
- In manufacture for additional programs

Options

- Provided packaged with interface (SGR-07)

Other SSTL Navigation Products

- SGR-05U (1 Antenna, 12 channels)
- SGR-07 (1 Antenna, 12 Channels)
- SGR-10 (2 Antennae, 24 Channels)
- SGR-20 (4 Antennae, 24 Channels)
- SGR Orbit Determination Solutions
- SGR Attitude Determination Solutions
- SGR-GEO Receiver for GEO

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SGR-05P – Space GPS Receiver

Navigation and Timing

Radiation: Core components tested to TID greater than 10 kRads(Si)

Antenna: Active patch antenna weighing 50 g with 45 x 45 x 20 mm dimensions

Non-Volatile Initialization: Almanacs and orbital elements stored for rapid TTFF

Performance: Based on circular polar low earth orbit with typical ionospheric and ephemeris error levels on signals

Surrey is ISO9001:2008 certified

Subsystems are manufactured to:

- ECSS Q-ST-70-08C
- ECSS Q-ST-70-38C
- All work overseen by ESA-trained assembly staff

Standard delivery service includes:

- Compliance testing
- Vibration test
- Thermal cycling
- User manual
- Test results
- Export license and shipping
- Thermal vacuum testing available

Specifications

	Typical (95%)	Max (95%)
Orbital Position (3-D)	10 m	20 m
Orbital Velocity (3-D)	0.15 m/s	0.25 m/s
Time	0.5 µs	1 µs
Typical Time to First Fix (NVRAM)	90 s	180 s
Mass	60 g	
Dimensions	100 x 65 x 12 mm	
Power	1 W at 3.3 V	
Temperature	-20º C to +50º C (operating)	
Random Vibration	15 g_{rms} in all axis	
Radiation Tolerance	10 kRad (Si)	

Typical Measurement Precision

Pseudorange	0.9 m
Carrier-Smoothed Range	0.15 m
Carrier Phase Noise	2 mm
Doppler Velocity	0.5 m/s
Carrier Range Rate Velocity	0.03 m/s

Surrey Satellite Technology

Surrey Satellite Technology (SST) has launched 34 satellites gaining almost 200 years in-orbit experience. SST draws on its world-class expertise in both small satellite platform technology and high and medium resolution imagers. SST provides complete turnkey system solutions: spacecraft, ground station, launch, operations, and image data processing.

SST is unique in the space industry—able to design, manufacture, and integrate multiple satellites in-house in its three specifically designed facilities in the United Kingdom, with this capability soon to be replicated in the U.S.A.

Changing the economics of space

www.sst-us.com

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