GPS RECEIVER

PERFORMANCE

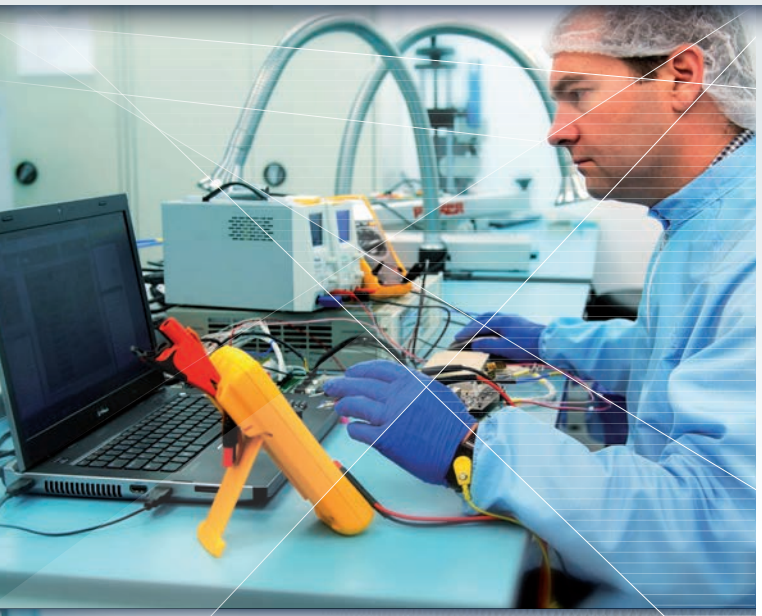
	Receiver
FUNCTIONAL CHARACTERISTICS	
Position accuracy	<50m (3D rms)
Velocity accuracy	< 1m/s (3D rms)
Update rate	1 Hz
Operating frequency	L1 (1575.42 MHz)
PHYSICAL CHARACTERISTICS	
Dimensions	155mm x 76mm x 34mm (excluding connectors)
Mass	490 grams
Power	1.3W (including active antenna)
ENVIRONMENTAL CHARACTERISTICS	
Thermal (operational)	-10°C to +50°C
Vibration (qualification)	14g rms (qualification levels)
Radiation (TID)	10krad (component level)
INTERFACES	
Power supply	24 to 36V unregulated (isolated)
Data	RS422 UART
Connector	SMA female (antenna), D-Sub standard density 9 pin (power) and D-Sub high density 26 pin (communication)
Mechanical	4 x M4 mounting holes

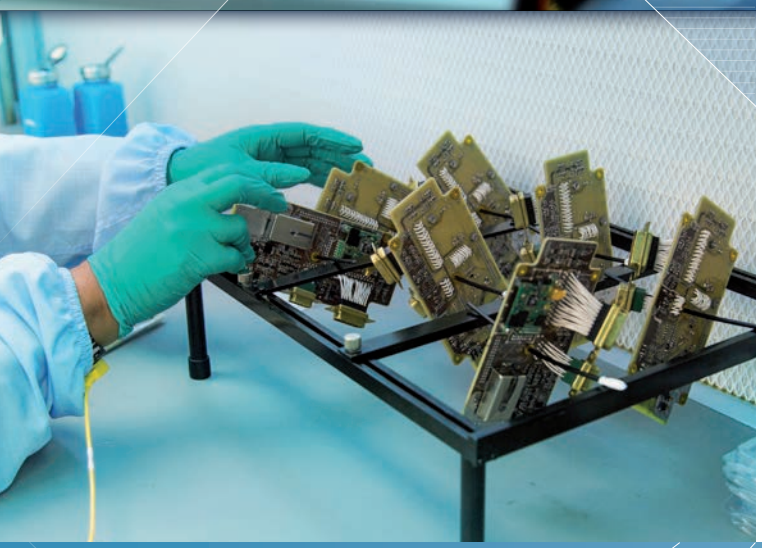
ACCEPTANCE TESTING: *All parts undergo random vibration (10 rms) as well as thermal cycling (four cycle ambient pressure) to five degrees beyond operational thermal specifications. However, NewSpace can perform additional environmental testing if required by a client.*

	Antenna
FUNCTIONAL CHARACTERISTICS	
Frequency	1575.42 MHz
Bandwidth	86 MHz
-3 dB Beamwidth	126˚(phi = 0˚) 122˚(phi = 90˚)
Return Loss	-14.5 dB
VSWR	< 1.46:1
Impedance	50 Ω
Active Gain (RHC)	17 dBi
Polarization	Right Hand Circularized (RHC)
Noise Figure	< 2 dB
Supply Voltage	+5 Vdc (over RF cable)
PHYSICAL CHARACTERISTICS	
Dimensions	54 mmx 54 mmx 14.1 mm
Mass	78g
Power	43 mW
Axial Ratio	< 11 dB
ENVIRONMENTAL CHARACTERISTICS	
Thermal (operational)	-20˚C to +65˚C operating, -30˚C to +75˚C non-operating
Vibration (qualfication)	14g rms in all axis, 1000g shock
Radiation (TID)	10krad total dose (component level)
INTERFACES	
Power supply	5V DC nominal (5V to 50V)
Data	UART RS-485/422
Connector	50 Ω SMA female
Mechanical	4 x M3 through hole

NEWSPACE SYSTEMS

GPS RECEIVER





FEATURES

- Hardware receiver
- 12 channel L1 receiver
- Small size and low mass
- Radiation tolerant COTS
- Simple to interface

APPLICATIONS

- Accurate determination of orbital position
- Accurate knowledge of time
- Orbit maneuvers
- Time and/or position stamping of payload data

QUALIFICATION

The COTS chipset utilised in the NewSpace GPS Receiver has been flying for more than a decade. Fifteen flight model units have been commissioned for build and launch in 2016/17.

UTILITY

The NewSpace GPS Receiver is a 12 channel hardware-based receiver utilising a well-established GPS chipset.

This GPS chipset has been successfully flown by a number of organisations over many years. It has been adapted for space altitude and velocity through the use of custom software modifications; the unit is targeted towards small, low cost satellites.

The NewSpace GPS Receiver includes an unregulated, isolated 28V power input and differential interfaces. It employs latch-up detection/ protection and a watchdog timer for increased reliability and robustness.

If required by the client, NewSpace can also supply an active GPS patch antenna with the receiver. Additionally, the GPS circuitry at the heart of the receiver can also be deployed as a mezzanine board to accompany the CubeSat ACS board.

T: +27 (0)21 300 0160
E: mark@newspacesystems.com
www.newspacesystems.com

NewSpace Systems (Pty) Ltd.
12 Cyclonite Street, The Interchange
Somerset West 7130, South Africa

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