Sharpe XR6 GPS

Meeting the Requirements of Today's Military

The NavSync Sharpe XR6 provides the ultimate in rugged, high performance GPS. The Sharpe XR6 provides real time, unaided position accuracy of better than 10 m and can output this as a rate of up to 10 times per second. In addition, raw measurements or position information can be stored in the internal memory for subsequent post-mission analysis. For high dynamic platforms, this position information is provided to the host with a delay of only 100 ms.

Aided, using Real Time Kinematic solutions, survey position accuracies at the centimeter level are achieved. Using specially developed Relative Positioning System algorithms, the Sharpe XR6 can provide high accuracy positions between two moving platforms.

Higher Levels of Accuracy, Reliability, and Output

Whatever mode of operation, the NavSync Sharpe XR6 offers the highest possible levels of accuracy. In survey operations, the NavSync Sharpe XR6 will output Real Time Kinematic (RTK) positions to an accuracy of 2cm once per second with a delay of 2-3 seconds. In addition, in High Dynamic mode, the Sharpe XR6 provides 5cm accuracy positions at 10 Hz with a delay of only 0.1 second. This can be achieved even with gaps of several seconds in the receipt of base station data.

This excellent performance stems from the quality of our raw range and phase measurements. In addition, our own proprietary fault detection and elimination software ensures reliable position information is maintained even in the toughest conditions.

These advantages make the NavSync Sharpe XR6 particularly suitable for Time / Space / Position Information (TSPI) applications such as range tracking systems and battle assessments.

Built to be More Rugged from Start to Finish

The success of NavSync Sharpe XR6 stems from a total rethink in both hardware and software. Starting with our extremely robust RF front-end, we have added advanced extra processing power to provide fast update rates and improved positioning performance.

These qualities along make the Sharpe XR6 one of the most advanced GPS units on the market, suitable for use in unmanned and rotary wing aircraft, as well as all terrain vehicles.

To protect this advanced precision, the housing case is rugged and fully sealed to stop the infiltration of sand and dust, and will even withstand immersion.

NAVSYNC

Faster Position Fixing and Information Exchange

The NavSync Sharpe XR6 offers 2 way communication on all three ports for transfer of information at up to 20 Hz, thus providing the speed of data exchange necessary to meet the most stringent requirements for real-time data.

Satellite tracking is equally impressive with reacquisition at under 1 second, even when accelerating up to 4g, thanks to the processing power of our hardware and the efficiency of our 12 channel receiver architecture.

More Options on the Test Range

Unlike most GPS receivers, NavSync Sharpe XR6 not only outputs accurate timing and position information on a fixed time scale, it also incorporates an event marker allowing other equipment to demand position information.

The event marker is activated in one of two ways, either by the arrival of a pulse or an ASCII sting. In the latter case, the position information is incorporated with the ASCII string and either output on a data port or stored in the internal memory.

Uplink of Ephemeris information is also possible via a datalink using RTCM messages thus ensuring the best performance in high masking environments such as high dynamic aircraft, or ground operations in high masking terrain.

Memory Options

NavSync Sharpe XR6 can be supplied with a number of memory options for the storage of position information or raw measurements. Options available are 12, 20, or 32MB. The data can be subsequently downloaded to a PC either for mission analysis or high accuracy post processing purposes.

More Adaptable System Architecture

NavSync Sharpe XR6 has been designed with open system architecture, offering access to many types of raw data for system integration purposes. The XR6 can also be used as a base station for the provision of RTCM messages.

This ability makes the Sharpe XR6 possibly the most versatile self-contained GPS receiver available for use with other high precision military hardware.

NavSync Antennas

Oval Patch Antenna

This antenna is specifically designed for avionic use and can withstand the external temperatures usually encountered during use of -55°C to +85°C. Its low profile offers little wind resistance.

Volute Antenna

This antenna is used primarily for marine applications when the antenna is often located on a moving mast. Due to radiation pattern of the antenna, satellites can be tracked even below the antenna's artificial horizontal plane. Consequently, in a marine environment, satellites can be tracked even when the mast is no longer vertical.

Lightweight Survey Antenna

This antenna is light and compact and includes an integral ground plane to reduce multipath effects. It is easily mounted on a roof top.

Magnetic Patch Antenna

This antenna is used for temporary installations or when a portable system is required. The high power magnet ensures that the antenna remains attached even in the harshest of conditions. It is therefore, particularly useful in military and vehicle applications.

Choke Ring Antenna

This antenna system is designed to be used in base station locations and greatly reduces the detrimental effects of multipath on the GPS signals. The design includes a series of circular vertical walls, attached to the ground plane which effectively cuts out the interfering signals. This allows the receiver to see the cleanest possible signals from the satellites and accordingly produce the best possible measurements. The choke ring antenna should be used on all base station installations where accuracy is of paramount importance.

Copyright ©2005 Navsync Ltd. All Rights Reserved Specifications subject to change without notice.

Sharpe XR6 GPS Specifications

Specifications

Performance Characteristics	Receiver	12 Channel C/A code, L1 frequency
	Update Rate	Position and raw measurement output at up to 10 Hz (selectable)
	Maximum Speed	1000 knots (after initial acquisition)*
	Altitude	Continuous operation to 60,000 feet above MSL*
	Acceleration	Maximum acceleration before loss of lock, 12g
	Jerk	4g/s
	Time to first fix	20 seconds (with current ephemeris)
	Radio Control	Timing control of attached radio modem, up to 12 players per second
Accuracy RMS (PDOP<3)	Position	<10m stand alone*
		<2m Beacon DGPS
		5-50 cm DGPS RTCM type 18/19
		5-10 cm RTK more-long baseline
		<5 cm RTK +OTF -short baseline
		<2 cm RTK +OTF -survey mode
	Velocity	0.03 meters / second -Differential Mode
	Pseudorange	20 cm RMS
	Carrier Phase	0.7mm RMS
	Time Output	1PPS ±100 ns*
Latency	Navigation Mode	80 milliseconds
	Survey Mode	2 - 3 seconds
Operating Modes		Static / RTCM Base Station
		Self Survey
		Geodetic Survey Mode
		Manpack
		Vehicle
		Dynamic
	Relative Positioning	Accurate position determination between two points, even when both are moving
Options	Internal Memory	12, 20, or 32MB options for raw measurement or position storage
	Size	175mm x 80mm x 57mm
Mechanical	Weight	<1 Kg
	Finish	Stove enamel
	Enclosure	Pressure die cast aluminum box
Power	Power Supply Voltage	11 - 32V DC-3 way miniature 723/IP67
	Power Consumption	<8W at 25°C
Interfaces	CDU	RS 232D, CDU, Data Monitor, 1PPS
	CDU/RCDR	RS 422A, Data Monitor, NMEA 0183, UTM/Geog Status message, 1pps
	RTCM / RCDR	RTCM (Output), Time of Day Message RS 232D, 1pps, RTCM (input/output), NMEA 0183, UTM/Geog status message, Time of Day message
	Baud Rates (all ports)	300-115, 200 software selectable, bi-directional
	RTCM v 2.1	Output: Messages 1, 2, 3, 9, 17, 18, 19, 20, 21
		Input: Messages 1, 2, 3, 9, 17, 18, 19, 20, 21
	Event Marker	Position and time marking of events (ASCII or pulse driven)
Environmental	Temperature — Operating	-40°C to +65°C (acquisition only to -20°C)
	— Non Operating	-40°C to +85°C
	Humidity	MIL-STD-810, method 507.2, procedure 11.1 cycle
	Sand and Dust	MIL-STD-810, method 510.2, procedure 1
	Altitude	Continuous operation to 60,000 feet above MSL
	Immersion	IP67. No leakage when immersed in water for 30 minutes to a depth of 34 cm.
	Vibration	Operational during MIL-STD-810, method 514.3 cats 6 (helicopter), 8 (ground mobile), procedure 1
	Shock	Withstands MIL-STD-810, method 516.3 procedure 1, figure 516.3-4, amplitude b and time d
	Rain	MIL-STD-810D method 506.2 procedure 1
	EMI/EMS	MIL-STD-461B/462 methods E & ET, CS01, CS02, CE03, REO2, RS03, CE Approval EN55022:1987 Class A, and EN50082-2 -92 -9. FCC Part 15, subset B class A

* Subject to the US DoD policy on Selective Availability and accuracies quoted with PDOP<3
For operation above 60,000 feet and speeds in excess of 1,000 nautical miles per hour an export license will be required.

Copyright ©2005 Navsync Ltd. All Rights Reserved Specifications subject to change without notice.

NAVSYNC

Sharpe XR6 GPS System Characteristics

	Accuracy		
	Sub Meter	**<0.2m**	**<0.05m**
Delay	80 milliseconds	80 milliseconds	1 - 2 seconds
Output Rate	10 Hz	10 Hz	1 Hz
Initialization *	2 – 5 minutes	5 –15 minutes	10 – 30 minutes
Method	DGPS	RTK	RTK +OTF
Base Station Dynamics	High	Med / Low	High

* Initialization takes place while moving

Relative Position with Pinpoint Accuracy in the Air, On Land, or at Sea

When you need to establish positions of pinpoint accuracy between two moving objects; i.e., fueling in flight, formation flying, target acquisition, or even berthing a supertanker, there is simply no better system to turn to than the NavSync Sharpe XR6.

With this system, it is possible for the mobile station to calculate with centimeter accuracy the bearing, distance, height difference, and closing velocity relative to the moving base station. The RPS software is now available as standard.

The system is ideal for a wide range of applications. In addition to range tracking systems and battle assessments, it is also widely used for collision avoidance systems, buoy and acoustic sensor positioning, mine detection, and helicopters landing on moving platforms.

Contact Information

Please direct all questions or inquiries to either of our headquarters listed below.

NavSync Ltd. Headquarters

Bay 143
Shannon Industrial Estate
Shannon, Co. Clare, Ireland
Phone: +353 61 475 666
E-mail: sales@navsync.com

In North America

2111 Comprehensive Drive
Aurora, IL 60505, USA
Phone: 630.236.3026
E-mail: northamerica@navsync.com
www.navsync.com