Geodetic Surveyor SSi *Series 4000*

Economical, fully integrated dual-frequency GPS survey unit

Key features and benefits

- **Centimeter accurate positions**
- **Rugged, lightweight, power-thrifty**
- **Improved performance in poor RF conditions**
- **Super-track™ signal processing technology**
- **Upgradeable to RTK with Everest™ multipath removal technology**
- **Fully upgradeable**

Trimble

The Geodetic Surveyor SSi™ offers the highest productivity and accuracy available in a dual frequency GPS receiver for post-processed land surveying and mapping applications. Incorporating Trimble's Super-trak™ technology, the Geodetic Surveyor SSi acquires low power satellite signals, maintains a firm lock on signals once acquired, and provides *further improved tracking under conditions of high radio interference*. These further improvements are derived from miniaturizing complex RF circuitry onto a single chip and using state-of-the-art surface acoustic wave (SAW) filter technology.

High-accuracy GPS receiver, upgradeable to real-time GPS surveying, includes Everest™ multipath removal technology.

The Geodetic Surveyor SSi offers high productivity in many environments traditionally marginal for GPS. These environments include under power lines, around airports, near radio and TV transmitters, and on radio-intensive construction sites. With advanced satellite signal acquisition and tracking, site occupation times are minimized, the ability to survey near trees is enhanced, and downtime due to loss of signal lock is minimal.

The Geodetic Surveyor SSi provides the highest quality measurements for static, FastStatic™, and kinematic surveys with improved accuracy over long baselines. Using full cycle L1/L2 carrier phase, L1/L2 P-code, and L1 C/A-code, the Geodetic Surveyor SSi provides reliable and accurate measurements, even during encryption.

High field productivity is also derived from high reliability. The Geodetic Surveyor SSi features a fully functional, integrated control panel and built-in memory to reduce the risk of damage to data from water, dirt, and dust. Handheld control of the receiver and data storage are optional.

The further reduced power consumption of the Geodetic Surveyor SSi translates directly into even less battery weight and fewer battery changes. When the camcorder batteries do need changing, the unique triple battery system lets you do it without interrupting the survey. With new options of up to 80Mb of internal data storage, the Geodetic Surveyor SSi can further ensure continuous operation, even for data intensive post-processed kinematic or remote monitoring surveys.

The Geodetic Surveyor SSi is fully upgradeable to real-time GPS surveying for cm-accurate positions while occupying a point. Other upgradeable features include RTCM input/output, 1PPS output, event marker input, and an NMEA navigation interface for hydrographic or aerial applications.

Combined with Trimble's powerful GPSurvey™ post-processing software, the Geodetic Surveyor SSi delivers significant gains in survey productivity. The combined system enables you to survey over longer baselines with shorter occupations and reap the full productivity advantages of kinematic techniques.

Geodetic Surveyor SSi

Economical, fully integrated dual-frequency GPS survey unit

STANDARD FEATURES

- Millimeter accuracy, geodetic quality measurements
- Super-trak signal processing technology
- 1.0 Mbyte protected internal memory
- Rugged, lightweight, power thrifty
- Office Support Module (OSM II) charges up to 5 batteries simultaneously
- Uses lightweight camcorder batteries (4 standard)
- Fully functional, integrated control panel
- Fully upgradeable to real-time GPS surveying with Everest multipath removal technology
- Fully upgradeable to RTCM and event marker inputs, 1 PPS utput, and NMEA navigation
- CE Mark compliance

OPTIONS AND ACCESSORIES

Traverse option: Includes backpack, Micro-centered L1/L2 GPS kinematic antenna with carry bag, 5m antenna cable, dual power cable and quick-release clamp with bayonets

Geodetic option: L1/L2 ground plane dual-frequency antenna with 10 m cable, height rod, carry bag.

Antenna options: Micro-centered L1/L2 antenna with removable ground plane
Choke ring antenna

Datalogging options: Internal receiver memory upgrades: 2.5, 4, 10, 20, 40, and 80 MBytes
TSC1 handheld Survey Controller (1 or 4 Mb)

Tracking: 12-channel upgrade

Receiver firmware options: Real-time GPS surveying (RTK)
RTCM SC-104 output Versions 1, 2, 2.1
RTCM SC-104 input Versions 1, 2, 2.1
1PPS output
Event marker input
NMEA navigation interface

Reference: External frequency input

Batteries: 6 Ah, 10 Ah, or spare camcorder batteries

Cables: 30 m or 10 m antenna cables

Support: Extended hardware warranty
Firmware and Software update services
Training at factory or on-site

Software: GPSurvey software for mission planning, automatic data processing, quality control, database managment, network adjustment (TRIMNET Plus™) and outputs to mapping software.

TECHNICAL SPECIFICATIONS

Physical

Size: 9.8″ (24.8 cm) W x 11″ (28 cm) D x 4″ (10.2 cm) H

Weight: 6.8 lbs (3.1 kg) without batteries
8.2 lbs (3.7 kg) with 1 camcorder battery

Electrical

Memory: 1.0 Mb

Power: Nominal 10.5–35 VDC, 9 watts; Triple DC power inputs. Office Support Module for AC operations

Signal processing: Multibit; Maxwell architecture; very low-noise C/A code processing; multipath suppression

Battery: 8 hours operation provided by four camcorder batteries; Auto-timer (sleep mode) for extended battery life; 90 day battery warranty.

Display: Backlit LCD, four lines of 40 large, easy-to-read alphanumeric characters.

Keyboard: Alphanumeric, function and softkey entry

Antenna: External input (Lemo)

Communication: Dual RS-232 ports for radio input and data collector control. Up to 38,400 baud rate on port 1 and 57,600 baud on port 2.

Certification: FCC & CE Mark approved

Environmental

Operating temp: –20°C to +55°C

Storage temp: –30°C to +75°C

Humidity: 100%, fully sealed, buoyant

Static Survey Performance

Modes: Quick-start, Planned survey, Auto-timed survey, Static survey, FastStatic survey

Accuracy:
- **Horizontal:** 5 mm + 1 ppm (times baseline length)
- **Vertical:** 10 mm + 1 ppm (times baseline length)
- **Azimuth:** 1 arc second + 5/baseline length in kilometers

Assumes five satellites (min) tracked continuously with the geodetic antenna using the recommended static surveying procedures utilizing the L1 and L2 signals at all sites; precise ephe–merides and meteorological data may be required. FastStatic accuracy is a function of occupation time and observation conditions.

Kinematic Survey Performance

Modes: Continuous, Stop & go

Accuracy:
- **Horizontal:** 1 cm + 2 ppm (times baseline length ≤10 km)
  2 cm + 1 ppm (times baseline length >10 km)
- **Vertical:** 2 cm + 1 ppm (times baseline length)

Accuracies typical with L1/L2 kinematic antenna.

Occupation: Continuous: 1 second measurement time
Stop & go: 2 second (min) with 5 satellites

Real-time Survey Performance (Optional)

Modes: Real-time stop-and-go, Real-time continuous

Accuracy:
- **Fine:** ±1 cm + 2 ppm horizontal
  ±2 cm + 2 ppm vertica
  Based on favor able atmospheric conditions and proper antenna alignment
- **Coarse:** <0.5 m RMS; assumes continuous tracking of 5 or more satellites and PDOP <4

Measurement time: 0.5 second per independent measurement (default meas. time: 1.0 sec)

Position latency: 1 second

Range: Up to 10 km, depending on radios used

Initialization:
- **Mode:** Automatic while stationary
  Automatic while moving (optional)
  Two known points or RTK initializer
- **Time:** <1 min. (typical after all satellites obscured)
  <10 sec. (typical for two points or RTK initializer).
- **Reliability:** >99.9%
  Performance criteria are a function of the number of satellites visible, obstructions, baseline length and environmental effects.

General Performance

Start-up: <2 minutes from power-on to start survey
<30 seconds with recent ephemeris

Tracking: 9 channels L1 C/A code, L1/L2 P-code, L1/L2 full-cycle carrier. Fully operational during P-code encryption.

Datalogging: Kinematic or static at 0.5 second to 15 minute intervals. 26 hours of 5-satellite L1/L2 data at a 15 second measure–ment time (typ) or 1.8 hours at 1.0 second (min). Optional memory expansion is available.

Downloading: Less than 1 minute to download one hour of 5-satellite L1/L2 data, logged at 15-second measurement time: 38,400 baud.

ORDERING INFORMATION

Geodetic Surveyor SSi **Part Number 24840-00**

Includes Geodetic Surveyor SSi receiver, OSM II with power cord, 4 camcorder batteries, dual camcorder battery module, DB9/DB9 cable, Lemo 5-pin/DB9 cable, Lemo 7-pin/DB9 cable, connector dust cap kit, transport case and operator's manual.

System Option **Part Number 29865-10**

Adds RTCM input, Event Marker input, 1PPS output, NMEA output, and a memory upgrade to 2.5 MBytes.

ADVISORY NOTICE: This receiver uses the GPS P-code signal, which by U.S. policy may be switched off without notice.

Specifications and descriptions subject to change without notice.

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THE GPS SOLUTION

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