

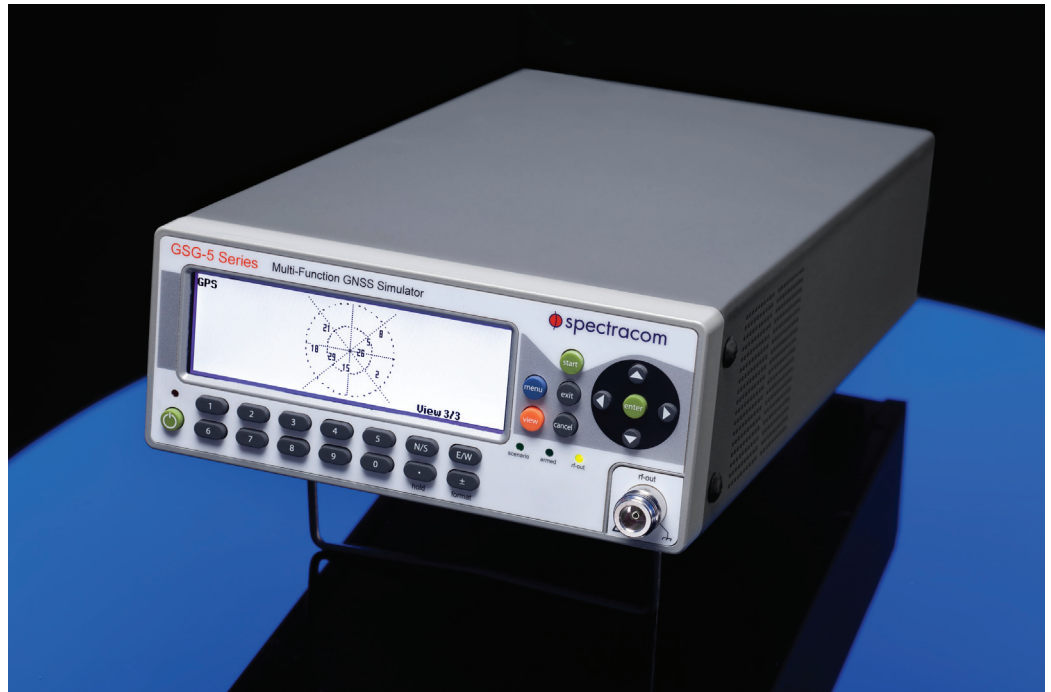
GSG-5 Series

Advanced GNSS Simulator



Upgradable to all constellations and signals

- Versatile multi-channel GNSS signal generator with pre-configured test scenarios
- Includes advanced features such as SBAS (WAAS, EGNOS, MSAS, or GAGAN), white noise generation, multipath simulation
- Operates with StudioView™ for easy scenario creation and file management
- Fully operational via front-panel, web-based remote control, or SCPI protocol
- Multiple interfaces for remote control
- Affordable, powerful, and easy-to-use
- SW upgradeable to more channels, more features, and other GNSS systems



The GSG-5 series is a GPS, GLONASS, Galileo, and BeiDou constellation simulator that provides the basic set of features for testing GNSS systems. With a base of four channels, upgradable to 8, 16, or more, it provides navigational fix and position testing, for in-line product testing or basic engineering and development testing.

Easy to Use

GSG-5 users can configure scenarios on-the-fly without the need for an external PC and pre-compilation phase. Via the front panel, the user can swiftly modify parameters such as user position, time and power output. And using the StudioView™ software facilitates easily created scenarios via a Google Maps interface.

Flexibility

As the base model of the popular 5 Series GNSS Simulator family, this affordable unit can be upgraded at any time after purchase to increase the channel count, add new GNSS constellations and advanced simulation capabilities. Some restrictions apply. Your

investment is protected as you can purchase now, or upgrade later, as needed, when your requirements change.

Connectivity Extends Ease of Use and Flexibility

The GSG-5 can be controlled via an Ethernet network connection, USB or GPIB. A built-in web interface allows complete operation of the instrument through front panel controls. With the GSG StudioView™ PC Software, you can build, edit, and manage the most complex scenarios, independent of the unit, for later upload.

The Affordable Test Solution

The GSG-5 is a perfect fit for a wide-variety of test cases including:

- Test of receivers' sensitivity to loss of satellites, multipath, interference, and atmospheric conditions.
- Fast production test of sensitivity and positioning receivers' accuracy (conducted or over-the-air).
- Test of receivers' dynamic range.
- Test of leap second transition.

Input and Output Specifications

RF Signal GPS/GLONASS L1

Connector: Type N female

DC Blocking: internal, up to 7 VDC; 470 Ω nominal load

Frequency: L1/E1/B1/SAR: 1539 – 1627 MHz

Number of output channels: 4 to 16
Constellations: GPS, GLONASS, Galileo, BeiDou

Modulations: BPSK, QPSK, BOC(all)

SBAS: WAAS, EGNOS, GAGAN, MSAS, LUCH (2014)

Spurious transmission: <-40 dBc

Harmonics: <-40 dBc

Output signal level: -65 to -160 dBm;

0.1 dB resolution down to -150 dBm;

0.3 dB down to -160 dBm.

Power accuracy: ±1.0 dB

Pseudorange accuracy: 1 mm

Inter-channel bias: Zero

Inter-channel range: >54 dB

Limits:

	Standard	Extended
Altitude	18,240 m (60,000 feet)	20,200,000 m (66,273,000 feet)
Acceleration	4.0 g	No limits
Velocity	515 m/s (1000 knots)	20,000 m/s (38,874 knots)
Jerk	20 m/s ³	No limit

External Frequency Reference Input

Connector: BNC female

Frequency: 10 MHz nominal

Input signal level: 0.1 to 5Vrms

Input impedance: >1kΩ

Frequency Reference Output

Connector: BNC female

Frequency: 10 MHz sine

Output signal level: 1Vrms in to 50 Ω load

External Trigger Input

Connector: BNC female

Frequency: TTL level, 1.4V nominal

TPPS Output

Connector: BNC female

Output signal level:

approx. 0V to +2.0V in 50 Ω load

Accuracy: Calibrated to ±10 nSec of RF timing mark output

Built-in Timebase

Internal Timebase – High Stability OCXO

Ageing per 24 h: <5x10⁻¹⁰

Ageing per year: <5x10⁻⁸

Temp. variation 0...50°C: <5x10⁻⁹

Short term stability (Adev @1s): <5x10⁻¹²

Auxiliary Functions

Interface

GPIO (IEEE-488.2), USB 1.X or 2.X (USBTMC-488), Ethernet (100/10 Mbps)

Settings

Predefined scenarios: User can change date, time, position, trajectory, number of satellites, satellite power level and atmospheric model

User defined scenarios: Unlimited

Trajectory data: NMEA format (GGA or RMC messages, or both), convert from other formats with GSG StudioView™ (see separate datasheet)

General Specifications

Certifications

Safety: Designed and tested for Measurement Category I, Pollution Degree 2, in accordance with EN/IEC 61010-1:2001 and CAN/CSA-C22.2 No. 61010-1-04 (incl. approval)

EMC: EN 61326-1:2006, increased test levels per EN 61000-6-3:2001 and EN 61000-6-2:2005

Dimensions

WxHxD: 210 x 90 x 395 mm

(8.25" x 3.6" x 15.6")

Weight: approx. 2.7 kg (approx. 5.8 lb)

Optional Antenna

Frequency: 1000MHz to 2600MHz

Impedance: 50 Ω

VSWR: <2:1 (typ)

Connector: SMA male

Dimensions: 15 mm diameter x 36 mm length

Environmental

Class: MIL-PRF-28800F, Class 3

Temperature: 0°C to +50°C (operating);

-40°C to +70°C non-condensing @ <12,000 m (storage)

Humidity:

5-95 % @ 10 to 30°C

5-75 % @ 30 to 40°C

5-45 % @ 40 to 50°C

Power

Line Voltage: 90-265 Vrms, 45-440 Hz

Power Consumption: <25 W

Ordering information

Basic Models

GSG-5: 4-channel advanced GNSS simulator; with high stability OCXO timebase

Included with instrument

- User manual and GSG StudioView software (one license per unit) on CD
- RF cable, 1.5 m
- SMA to Type N adapter
- USB cable
- Certificate of calibration
- 3-year warranty¹

Optional Accessories

Option 01/71: Passive GNSS Antenna

Option 22/90: Rack-mount kit

Option 27H: Heavy-duty hard transport case

OM-54: User Manual (printed)

Additional StudioView licenses are available

Optional Upgrades

Option GLO: GLONASS Constellation

Option GAL: Galileo Constellation

Option BDS: BeiDou Constellation

Option 8: 8 Channel Upgrade

Option 16: 16 Channel Upgrade (requires 8 channel upgrade)

Option 32/2²: 32 channel, dual-frequency upgrade (to GSG-62)

Option RSG: Real-time Scenario Generator (requires 16 channel configuration)

Option HV: High Velocity Upgrade (requires 16 channel configuration)

Option RP: Record and Playback (requires 16 channel configuration)

Optional Services¹

Calibration/GSG: GSG Calibration Service

Option 95/05: Extended warranty to 5 years

GSG-ASP: GSG Annual Service Plan

GSG-INST: User Training and Installation.

¹The warranty period and available services may vary dependent on country.

²Option may require the unit to be returned to factory for upgrade