



# GSG-52

## GPS 4-channel Simulator

- Versatile 4-channel GPS signal generator with pre-configured test scenarios
- 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-52 is a GPS constellation simulator that provides the basic set of features for testing GNSS systems. With four channels, it can provide navigational fix and position testing, for in-line product testing or basic engineering and development testing.

### Easy to Use

The GSG-52 user 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 optional StudioView™ software facilitates easily created scenarios via a Google Maps interface.

### Flexibility

As the base model of the popular Series 5 GNSS Simulator family, this affordable unit can be upgraded at any time after purchase to increase the channel count up to 16, add receiver trajectory control, add advanced features such as SBAS (WAAS, EGNOS, MSAS, or GAGAN), white noise generation, or multipath simulation. Or even adding other GNSS system simulation such as

GLONASS. Some restrictions apply. Your investment is protected as you can purchase now, and upgrade later, as needed, when your requirements change.

### Connectivity Extends Ease of Use and Flexibility

The GSG-52 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 optional GSG StudioView™ PC Software, you can build, edit, and manage the most complex scenarios, independent of the GSG-52, for later upload.

### The Affordable Test Solution

The GSG-52 is a perfect fit for a wide-variety of test cases including:

- Test of receivers' sensitivity to loss of satellites, leap seconds, 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 L1

**Connector:** Type N female

**DC Blocking:** internal, up to 7 VDC;  
470  $\Omega$  nominal load

**Frequency:** 1575.42 MHz (L1)

**Number of output channels:** 4

**Data format:** 50 bits/s, GPS frame structure

**PRN codes:** 1 to 210

**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:**  $\pm 1.0$  dB

**Pseudorange accuracy:** 1mm

**Inter-channel bias:** Zero

**Inter-channel range:** >54 dB

#### Limits:

- Altitude: 18,240 m (60,000 feet)
- Acceleration: 4.0 g
- Velocity: 515 m/s (1000 knots)
- Jerk: 20 m/s<sup>3</sup>

### External Frequency Reference Input

**Connector:** BNC female

**Frequency:** 10 MHz nominal

**Input signal level:** 0.1 to 5Vrms

**Input impedance:** >1k $\Omega$

### Frequency Reference Output

**Connector:** BNC female

**Frequency:** 10 MHz sine

**Output signal level:** 1Vrms in to 50  $\Omega$  load

## Built-in Timebase

### Internal Timebase – High Stability OCXO

**Ageing per 24 h:** <5x10<sup>-10</sup>

**Ageing per year:** <5x10<sup>-8</sup>

**Temp. variation 0...50°C:** <5x10<sup>-9</sup>

**Short term stability (Adev @1s):** <5x10<sup>-12</sup>

## Auxiliary Functions

### Interface

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

### Settings

**Predefined scenarios:** 12; User can change date, time, position, trajectory, number of satellites, satellite power level and atmospheric model

**User defined scenarios:** Unlimited

## 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:** 1575.42  $\pm$ 2MHz

**Impedance:** 50  $\Omega$

**VSWR:** <2:1 (typ)

**Connector:** SMA male

**Dimensions:** 12 mm diameter x 38 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-52:** GPS 4-channel simulator; with high stability OCXO timebase

#### Included with instrument

- User manual and GSG StudioView software (30-day trial) on CD
- RF cable, 1.5 m
- SMA to Type N adapter
- USB cable
- Certificate of calibration
- 3-year warranty<sup>1</sup>

<sup>1</sup>The warranty period may be dependent on country.

### Built-in Options

**Option A:** Wideband response for the ability to upgrade to GLONASS L1 in the future

### Optional Accessories

**Option 01/70:** Helix Antenna

**Option 22/90:** Rack-mount kit

**Option 27H:** Heavy-duty hard transport case

**Option 90/54:** Calibration Certificate with Protocol

**Option 95/05:** Extended warranty to 5 years

**OM-54:** Users Manual (printed)

**GSG StudioView PC Software:** License key enables full functionality, one key required per machine (file transfer functionality is available without a key)