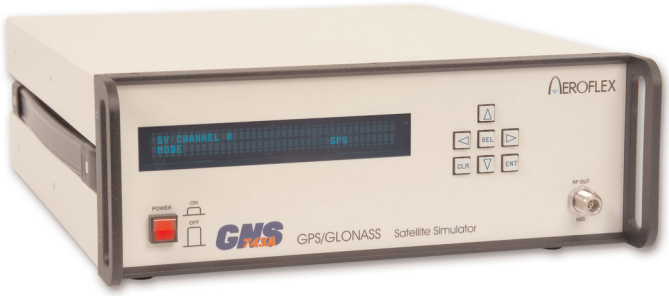
Avionics

GNS-743A GPS/GLONASS SATELLITE SIMULATOR



The answer to RF leakage, calibration and RF controllability problems in receiver test applications

- Simulation of any GPS or GLONASS (L1 frequency, K=1-24) satellite
- Low noise RF output from -158 dBm to -88 dBm
- User uploadable NAV data with dynamic z-count for exact satellite simulation
- User control of Doppler velocity, acceleration and jerk
- Outputs C/A code, code chip clock, epoch sync, NAV data and NAV data clock
- Complete technical manual provided with calibration and maintenance procedures
- Provision for external frequency reference
- Single channel or dual channel models available

The GNS-743A is a navigation satellite simulator capable of producing combined, code-synchronized GPS and GLONASS L1 C/A satellite RF signals. It is designed for precision production and engineering testing of GPS receivers, particularly those that must meet exacting certification requirements. Carrier-to-noise ratio, acquisition and tracking tests, pseudo-range measurements, inter-channel bias, and almanac downloading can be accomplished readily and cost effectively with this unit. Completely programmable for automated production testing, it is available in a single-channel or a dual-channel configuration. The dual-channel version(GNS-743A-2L) can simulate any combination of two GPS and/ or GLONASS space vehicles.

Each channel can be independently configured as a GPS or a GLONASS space vehicle. The RF signals are summed and output to a single RF port. The design of the GNS-743A has produced a very low noise RF output with negligible RF leakage, enabling the output level to be held within ±1 dB down to -158 dBm. It is calibrated to within ±0.5 dB at -130 dBm. The instantaneous RF frequency is precisely controlled through advanced DDS (direct digital synthesis) techniques, allowing control of Doppler frequency, acceleration, and jerk to within 0.01 Hz. Pseudorange measurements are facilitated by the ability to enter, to within 1 ns, the delay of the C/A epoch relative to an internally generated or externally supplied 1 PPS sync pulse. Comprehensive calibration procedures, traceable to NIST, are provided in the maintenance manual.

GENERAL SPECIFICATIONS

RF OUTPUT

GPS

1575.4200 MHz

GLONASS

1602.0000 MHz

+K X 0.5625 MHz, K=1 to 24

Frequency Stability

<(5 X 10-10 / day drift rate)

Level

-158 to -88 dBm; controllable

in 0.1 dB steps

Accuracy

±1.0 dB RSS; ± 0.5 dB RSS @

-130 dBm

VSWR

<1.25:1 @ 50 ohm output

Spurious

<-35 dBc

Harmonics

<-49 dBc

RF CALIBRATION OUTPUT

Nominal

-21 dBm

Accuracy

+0.5 dB

Code Outputs (GPS & GLONASS)

L1 C/A code, code chip clock and code epoch sync (TTL)

NAV data code and NAV data clock (TTL)

Input Signals

External 10.00 MHz standard reference frequency source

External 1 PPS synchronization pulse

Output Signals

10.00 MHz frequency reference source

1 PPS synchronization pulse

***CONTROLLABLE FUNCTIONS** (via front panel or GPIB interface)*

Space vehicle number

GPS or GLONASS mode

Doppler frequency

±80 kHz (15000 m/s) in 0.01 Hz steps

Acceleration

±1500 Hz/sec (± 285 m/sec2 or

29.4g) in 0.01 Hz/sec steps

Jerk

±1500 Hz/sec2 (± 285 m/sec3 or 29.4g/s) in 0.01 Hz/sec2 steps

RF output level

C/A code modulation ON/OFF

NAV data modulation ON/OFF

GPIB address

Delay between 1 PPS sync & RF code modulation in 1 ns

increments

GPS Almanac via GPIB upload commands

GLONASS Almanac

PHYSICAL CHARACTERISTICS

Height

6.0 in (15.25 cm)

Width

15.3 in (38.85 cm)

Depth

17.5 in (44.45 cm)

Weight

Single channel

25.4 lbs (11.5 kg)

Dual channel

31.9 lbs (14.5 kg)

Operating Temperature

100°C to 350°C

Input power

100 - 130 VAC

200 - 250 VAC

47 - 63 Hz

VERSIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

ORDERING INFORMATION

Versions

GNS743A-1L-110	Single Channel Satellite Simulator (110V)
GNS743A-1L-220	Single Channel Satellite Simulator (220V)
GNS743A-2L-110	Dual Channel Satellite Simulator (110V)
GNS743A-2L-220	Dual Channel Satellite Simulator (220V)

Included:

Windows™ GUI Software for use with PC and National Instruments GPIB card.

OPTIONAL ACCESSORIES

AC50057400	GNS 743A Rack Mount Kit

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