

SGLS Signal Generator

Model 784

Features

- Accepts Tertiary or Dabit Encoded Data
- Generates Selectable SGLS Tri-Tone Signals
- SGLS Command Rates
 - 1kbps, 2kbps, 5kbps, 10kbps
- Low Phase Noise Digital Frequency Synthesizer
- Selectable Modulations
 - FSK
 - FSK/PM
 - FSK/AM
 - FSK/AM/PM
- Internal PRN Data Generator
 - Selectable Taps
 - $2^{11} - 1$
- Remote Control
 - ASCII Commands
 - RS-232, IEEE-488

General Description

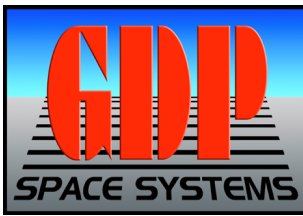
The Model 784 SGLS Signal Generator is a high performance FSK/AM/PM Modulator which produces

Space Ground Link System (SGLS) compatible command sub-carriers. A tri-tone Frequency Shift Keyed subcarrier is either output directly or Amplitude Modulated. The resultant FSK or FSK/AM signal may be used to Phase Modulate a second subcarrier. The sub-carrier output power level is adjustable from -30 dBm to +20 dBm, or can be turned off. An adjustable rate clock source drives a selectable tap PRN data generator which is available to be used as a modulation source. Both the clock and PRN data are output to the rear panel. Direct Digital Synthesis is used to generate FSK and PM subcarriers, and the PRN clock.

The Model 784 performs binary (two tone) and ternary (three tone) FSK modulation using either internally generated data or an external data source. The FSK frequencies are selectable as a set of 65 kHz (S), 76 kHz (0), and 95 kHz (1); 355 kHz (S), 366 kHz (0), and 385 kHz (1); or 975 kHz (S), 1024 kHz (0), and 1073 kHz (1). Other frequencies sets can be provided. Ternary FSK requires external data and clock as the modulation source. The format of the data is either frame formatted dibit encoded serial data, or ternary (three signals- S, 0, and 1). For binary FSK, either the internal PRN data generator or the external auxiliary (SERIAL) data and clock input can be used. In binary FSK mode, any two of the three FSK tones can be selected. Internal PRN data rates of 1 kbps, 2 kbps, 5 kbps and 10 kbps are selectable (other rates to 100 kbps are optional).



In addition to FSK modulation, the Model 784 also performs amplitude and phase modulation. The FSK signal can be amplitude modulated by a triangle wave running at one-half the data rate. Fixed data rates of 1 kbps, 2 kbps, 5 kbps and 10 kbps are supported in the AM mode. The PM subcarrier frequency is tunable in discrete steps up to 6 MHz. PM modulation index is adjustable from 0 to 3.14 radians.



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DATA AND CLOCK INPUTS

(TTL levels into 100 Ohms, unbalanced. BNC Connectors)

Selectable Input:

DiBit Data and Clock

SGLS defined 48-bit frame

Ternary Data 1, 0, S and Clock

1K, 2K, 5K or 10K with AM ON.

Variable rates up to 100K with AM OFF

Serial Data and Clock (Binary FSK only)

(1K, 2K, 5K 10K) -AM ON, +/- 200 ppm

Variable data rate, up to 100K -AM OFF

Int Prn Data And Clock (Binary FSK only)

Pattern: 2047(N=11); taps 2,11

Data Rates 1K, 2K, 5K or 10K bps

SGLS TERNARY TONE SET FOR 1,0,S :

95 KHz, 76 KHz, 65 KHz; or

385 KHz, 366 KHz, 355 KHz; or

1073 KHz, 1024 KHz, 975 KHz.

(Other tone-sets can be provided.)

Frequency Accuracy: +/- 100 ppm,

SIGNALING MODES

Binary Selectable:-1-0, 0-S, or S-1

Force 1 Selectable: 1, 0, or S

AMPLITUDE MODULATION

AM ON/OFF

AM Triangular Waveform: 500 Hz,
1000, 2500 Hz and 5000 Hz for 1K, 2K,
5K and 10K bps.

AM Modulation Index:

Selectable: 0.33 to 1.00 in 0.01 steps

AM Synchronization (Sync Delay):

Selectable: 0.00 to 1.00 in 0.01 steps

PHASE MODULATION

PM ON/OFF(BYPASS) selectable

PM Subcarrier Tunable to 6 MHz, 0.01 Hz steps

Modulation Index: 0.00 to 3.14 radians, 0.01 steps

Frequency Accuracy: 100 ppm. Optional 1 ppm.

Phase Imbalance: 0.5 degrees

Residual AM: -55 dBc

Unmod. Phase Noise vs. Offset Freq. (5 MHz):

Low Phase Noise Option (1 ppm Frequency);

95 dBc/Hz @ 10 Hz

105 dBc/Hz @ 100 Hz

125 dBc/Hz @ 1 KHz

128 dBc/Hz @ 10 KHz

MODULATOR OUTPUT SIGNAL

Adjustable Amplitude: -30.0 dBm to +20.0 dBm (75 Ohm), in 0.1 dBm steps

ON/OFF control

PRN DATA AND CLOCK

TTL Levels, 50 Ohm drive capability

MODULATOR OUTPUT TEST (FRONT PANEL)

fixed level at 2 Vpp (75 Ohm) .

LOCAL FRONT PANEL CONTROL

VF Display and Keypad

VF display; 2-line by 40-characters.

Twenty (20) position momentary-action keypad

Front Panel LED Indicators:

DIBIT LOCK; POWER

REMOTE CONTROL

RS232 Serial Interface (Standard):

IEEE STD 488 GPIB Interface (Optional):

MISCELLANEOUS

AC Input: 115 VAC, +/- 10%

Single phase, 57-63 Hz; 100 watts, max.

Size: 3.5 in. (H) x 20 in. (D) x 19 in. (W)

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Ordering Information

MD784-00	Basic Unit
OP784-10	IEEE-488
OP784-11	1ppm

Recognizing that no standard product can meet all the needs of all users, GDP stands ready to provide units tailored to unique applications.

The statements in this data sheet are not intended to create any warranty, expressed or implied. Equipment specifications are subject to change without notice.

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