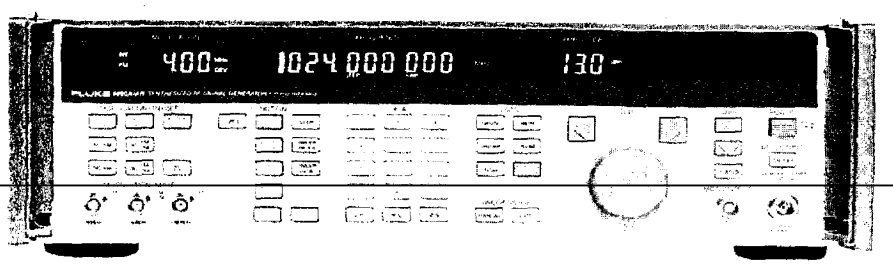
Synthesized RF Signal Generators

6080A/AN

GPIB IEEE-488



(NSN 6625-01-285-9218) **6080A/AN**

The Fluke 6080A/AN is a high performance RF signal generator designed to meet government defense needs for maintenance of RF communications equipment. It combines the latest features and technology and can be used as an upgraded replacement for many existing RF signal generators, including the Hewlett-Packard 8640B. A full one-year warranty is provided and optional extended warranty and provisioning are available to meet the needs of the defense user.

Outstanding Spectral Purity

- -100 dBc spurious, for offsets >15 kHz
- -130 dBc/Hz phase noise, 20 kHz offset, F <512 MHz

The 6080A/AN is a strong match to your most demanding AM, FM, SSB and other receiver measurement requirements. Excellent spectral purity and spurious performance provide an extra margin of measurement confidence and assure that the signal generator does not limit critical testing, such as off-channel measurements. Low residual FM assures accurate sensitivity and distortion testing for on-channel measurements as well.

Versatile Modulation

The 6080A/AN includes a digitally synthesized, programmable function generator that provides multiple waveforms with precise frequency control for internal modulation. Sine, square and triangle waveforms are available with variable amplitude and frequency. Simultaneous AM, FM, phase, and pulse modulation may be combined for complex signal simulation. FM deviation up to 1 MHz combined with rates from dc to 100 kHz provide you with the versatility you need to cover a wide range of communications receiver and surveillance equipment testing, on the bench or in an ATE system.

A high performance pulse modulator with <1 µs rise/fall time for receiver AGC response or IF and related testing is also provided with the 6080A/AN. And features like digital sweep extend its capabilities still further.

Designed for Reliability and Ease of Maintenance

Solid construction, low parts count and extensive testing assure high reliability for the 6080A/AN. The instrument is divided into functional modules that are housed in two RF cavity plate castings to assure low RF leakage. A full self-test is run at power-up and all results are stored in non-volatile memory for easy access. In the event of a component failure, internal diagnostics assist in isolating the problem to the module level. Modules can be replaced quickly through the Fluke Module Exchange Program.

Closed-case calibration via the GPIB/IEEE-488* bus or the front panel simplifies the periodic calibration of the 6080A/AN and minimizes the calibration turn-around time.

Specifications

Technical Specifications

Frequency

Range: 0.5 to 1024 MHz
Resolution: 1 Hz
Display: 10 digit
Accuracy and Stability: Same as Reference Oscillator

Supplemental Characteristics:
Switching Speed: <100 ms to be within 100 Hz of final frequency

Reference Oscillator

Internal Reference Oscillator Characteristics (25°C ±5°C)

Frequency	10 MHz
Type	Temperature Controlled Crystal Oscillator (TCXO)
Stability	<5 x 10^{-9}/h at 25°C ±5°C after 2-hour warmup
	10 ppm p-p (0 to 50°C)

*The terms GPIB and IEEE-488 may be used interchangeably throughout this catalog.

Reference Output

Frequency: 10 MHz, sinewave
Level: >0 dBm into 50Ω
Source Impedance: 50Ω nominal, BNC female connector

External Reference

Input Frequency: 5 or 10 MHz
Input Level: >0.5V rms and <2.0V rms into 50Ω *termination*

Spectral Purity

Spurious Signals

Harmonics (Output <+7 dBm)	<-30 dBc
Subharmonics	none
Non-Harmonic (For offsets >15 kHz from the carrier, cw mode)	<-100 dBc
Power Line (For spurious within 15 kHz of the carrier)	<-40 dBc

SSB Phase Noise (dBc/Hz)

Frequency Range	20 kHz offset
0.5 to 512 MHz	<-130 dBc/Hz
512 to 1024 MHz	<-124 dBc/Hz

Residual FM: <20 Hz rms (50 Hz to 15 kHz bandwidth)
Residual AM: <-80 dBc (50 Hz to 15 kHz bandwidth)
RF Leakage: <1 µV of output carrier signal. Two turn loop, 1" in diameter held 1" away from the surface into a 50Ω receiver.

Output

Range: +13 dBm to -137 dBm
Resolution: 0.1 dB

Absolute Accuracy

Amplitude Range	Accuracy
+13 dBm to -117 dBm	±1.5 dB
-117 dBm to -137 dBm	±3 dB

Flatness: ±1.0 dB (measured at +10 dBm)
Output Impedance: 50Ω nominal
VSWR: <1.5:1 Level <-10 dBm
<2.5:1 Level >-10 dBm
Reverse Power Protection: Up to 50 watts of RF power from a 50Ω source over 500 kHz to 1024 MHz range. Will withstand up to 50V dc. Pushing *the RF ON/OFF button will reset generator.*
Connector: Type N Female
Display Units: dB, dBm, V, mV, µV, V, dBf, dB µV, V, dB mV, EMF

Amplitude Modulation

(For outputs <0 dBm)
Depth: 0% to 99.9%
Resolution: 0.1%
Display: 3 digit
Accuracy: ±7% AM @ 1 kHz

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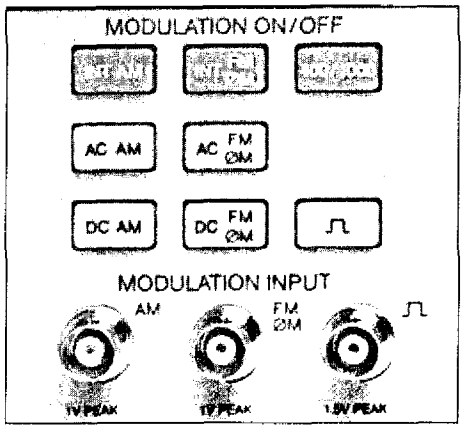


Distortion: <5% THD @ 50% depth; 0.1, 1.0, 10 kHz rate
Incidental FM: <200 Hz at 50% depth, 1 kHz rate
Internal Rate: 10 Hz to 100 kHz
Bandwidth (3 dB): AC-coupled, 10 Hz to 100 kHz
Sensitivity: 1V peak into 600Ω produces indicated depth ±10%

Frequency Modulation

Maximum Deviation (at 0.1, 1, 50 kHz rates)

Carrier Frequency	Peak Deviation
<1 MHz	0 to 1 kHz min.
1 MHz to 32 MHz	0 to 10 kHz min.
32 MHz to 128 MHz	0 to 100 kHz min.
>128 MHz	0 to 1 MHz min.

Accuracy: ±(5% + 10 Hz) at 1 kHz rate
Distortion: <5% at 0.1, 5, 50 kHz rates; <2% at <20 kHz deviation, 1 kHz rate
Incidental AM: <1% AM at 1 kHz rate and 100 kHz deviation
Internal Rate: 10 Hz to 100 kHz
Bandwidth: AC-coupled, 10 Hz to 100 kHz; dc-coupled, dc to 100 kHz
Sensitivity: 1V peak into 600Ω produces indicated deviation ±10%
Input Impedance: 600Ω ±10%

Pulse Modulation

(For RF frequencies >10 MHz)
Rate: 50 Hz to 50 kHz minimum
Pulse Width: ≤5 µs
On/Off Ratio: ≥35 dB
Rise/Fall Time: <1 µs
Input Impedance: Nominal 50Ω with internal pull-up. Can be driven directly by TTL. Maximum input ±10V.

Internal Modulation Oscillator

Modulation Source: Synthesized from reference oscillator
Waveform: Sinewave
Frequency Range: 10 Hz to 100 kHz
Resolution: 0.1 Hz or 3 digits
Output Level: 0 to 1V rms into 600Ω
Output Impedance: 600Ω ±10%
Distortion: <2% THD

Remote Programming

Interface: IEEE-488 (Std. 488-1987)
Functions Controlled: All controls except power switch and internal/external reference switch
Data Output: Instrument status, stored memory content, instrument settings, instrument ID, uncal/reject entry status, operating time
Interface Functions: SH1, AH1, T5, TEO, L3, LEO, SR1, RL1, PPO, DC1, DT1, CO, and E2

Supplementary Performance Information

The information below describes additional performance capabilities of the 6080A/AN beyond those described in the Specifications.

Internal Modulation Oscillator

Waveforms: Sinewave, square, triangle
Modulation Rates: (Synthesized from reference oscillator)

Waveform	Rate
Sinewave	0.1 Hz to 100 kHz
Square	10 Hz to 100 kHz
Triangle	0.1 Hz to 1 kHz

Preset Frequencies: 400 Hz and 1000 Hz
Frequency Accuracy: 0.1 Hz
Modulation Modes: Any combination of AM and FM or PM internal or external, may be used. External Pulse modulation is completely independent and can be used with all other modulation modes. Internal Pulse modulation is not compatible with any other internal modulation but can be used with other forms of external modulation.

Phase Modulation

Range: 0 to 400 radians
Display: 3 digit
Bandwidth (3 dB): AC-coupled, 20 Hz to 15 kHz; dc-coupled, dc to 15 kHz
Incidental AM: ±0.5% AM @ 1 kHz rate peak dev <5 rad, valid for F >1 MHz

Note: Phase Modulation specifications are valid where RF frequency-mod frequency >150 kHz.

Digital Frequency Sweep

Modes: Auto, single, manual
Functions: Symmetrical Sweep, Asymmetrical Sweep, Sweep Speed
Entry Parameters: Sweep Width, Sweep Increment
Speed: Minimum 40 msec per increment selectable as (minimum + dwell time) where dwell time can be 0, 20, 50, 100, 200 or 500 msec at each increment

Amplitude Sweep

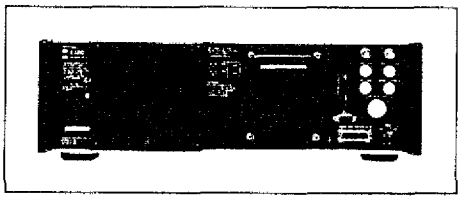
Mode: Auto, single, manual, Linear (volts), Log (dB)
Function: Symmetrical Sweep, Asymmetrical Sweep, Sweep Speed
Entry Parameters: Sweep Width, Sweep Increment
Speed: Minimum 30 msec per increment selectable as (minimum + dwell time) where dwell time can be 0, 20, 50, 100, 200 or 500 msec at each increment
Sweep Output ("X"): 0 to +10V into >2 kΩ. Up to 4096 points in a stepped ramp.
Penlift ("Z"): TTL, high for retrace into >2 kΩ

Non-Volatile Memory

Size: 50 complete front panel settings will be stored in battery backed-up RAM for up to 2 years (typical) with power off
Features: Store, Recall, Sequence Up, Sequence Down, Memory Divider Function [SPCL] [8] [0] [2] allows the memory to be divided into five subsets, Remote Footswitch through rear panel 'AUX' connector

General Specifications

Operating Temperature: 0°C to 50°C
Storage Temperature: -40°C to +70°C
Humidity (operating): 0-95% non-condensating up to 30°C to 40°C, 0-45% 40°C to 50°C
Altitude (operating): 10,000 ft
Warm-Up Time: Two hours
Calibration Interval: 12 months
Environmental: Meets MIL-T-28800C, Type III, Class 5, Style E, Color R
Power: 115, 230V ac ±10%, 50, 60, 400 Hz ±10%, 200 VA max
Size: 13.3 cm H x 43.2 cm W x 59.1 cm D (5.25 in H x 17 in W x 23.25 in D)
Weight: 27.3 kg (<60 lb)



6080A/AN rear panel

Ordering Information

Model

6080A/AN Synthesized Signal Generator $19,000

Included with Instrument

One-year product warranty, line cord, Operators manual, Service manual, and Certificate of Calibration Practices.

Manuals

6080A/AN Operator* (PN 857748) ..... $ 33
6080A/AN Service* (PN 868906) 57

**No charge with purchase of unit*