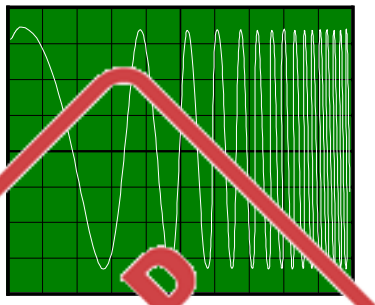
20MHz Communications Testing

1404A

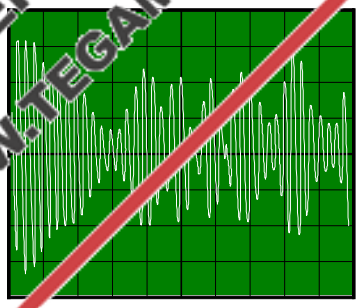
only *$1,295*

US List



Logarithmic sweep from 2 Hz to 20 MHz

Suppressed carrier Modulation or 200 % modulation AM



16QAM with PRS noise as data

Sinewaves - 10 mHz to 20 MHz
Linear and log sweeps
AM, FM, and FSK and more...
External modulation port
Direct digital synthesis

Filter and Component Testing

For your filter and component testing, the 1404A offers linear and log sweep in either direction up to 20 MHz. Both continuous and trigger modes are included for flexibility.

Modulation Testing

For your modulation testing, you can simply define the digitally synthesized AM and FM signal from the front panel or remote programming ports. Versatile FSK up to 1 MHz rate with local or external control will meet your binary digital transmission testing needs.

Complex Modulation Testing

For your modern modulation testing, we offer an external modulation port under direct digital control. You can program the amplitude (I and Q), phase, and frequency with 32-bit resolution. Multiple FSK, FM, AM, PM, multiple QAM, multiple PSK and more may be implemented to test your circuits up to 20 MHz.

Multiple Phase Testing

For your I and Q phase sensitivity testing, you may phase-lock two standard units to generate quadrature outputs up to 20 MHz. You can null the phase differences and adjust the phase with 0.1° resolution.

All-inclusive Standard Interfaces

You get full programmability using Standard Commands for Programmable Instruments (SCPI) with standard GPIB, RS-232, plus the external modulation port. Maximum flexibility is yours without sacrificing ease-of-programming.

Technical Staff Support

We have eliminated all road blocks! No voice-mail maze. No phone tag. Our factory direct toll-free number and 24-hour fax are ready to serve you and assist with technical questions. Call ***1-800-PRAGMATIC*** or ***1-800-772-4628*** and put us to the test.

PRAGMATIC® INSTRUMENTS, INC.

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20 MHz DDS Function Generator

1404A

Waveforms
Carrier: sinewave
Sync: TTL clock (in-phase with carrier)
Modulation: sine, square, triangle

Frequency
Range: 100 mHz to 20 MHz
Resolution: 8 digits or 10 mHz
Accuracy: 10 ppm ± 10 mHz @ +23 ± 5° C
Stability: < 2 ppm / °C T_A = 0 to +50° C
Aging: < 10 ppm / Year T_A = 0 to +50° C

Amplitude: (into 50Ω load)

Range	Resolution	Accuracy
1.00 Vpp to 10.00 Vpp	10 mV	±1% + 20 mV
100 mVpp to 999 mVpp	1 mV	±2% + 4 mV

Flatness: referenced to 1 kHz 7.5 Vp-p sinewave into 50Ω load

< 100 kHz	±2%	(±1% typ.)
100 kHz to 1 MHz	±3%	(±2% typ.)
1 MHz to 10 MHz	±4%	(±3% typ.)
10 MHz to 20 MHz	±6%	(±5% typ.)

Output Impedance: 50Ω fixed
Resolution: 3 digits
Output Units: Vpp, Vp, Vrms, dBm, dBv

Spectral Purity
Harmonic Distortion:

100 mHz to 100 kHz	< -55 dB
100 kHz to 1 MHz	< -45 dB
1 MHz to 10 MHz	< -40 dB
10 MHz to 20 MHz	< -35 dB

Total Harmonic Distortion (THD):

100 mHz to 100kHz	0.14% (0.1% typ)

Spurious:

< 500kHz	< -60 dB
500 kHz to 2 MHz	< -55 dB
2 MHz to 10 MHz	< -50 dB
10 MHz to 20 MHz	< -45 dB

Sync Out:
Front panel TTL signal, BNC connector

Modulation / Sweep Sync Out:
Rear panel TTL signal, BNC connector

Phase Lock
Multiple units may be connected to a master clock. Manual phase null and phase offset controls are provided in each unit.
Phase Lock Frequency Range: 100 mHz to 20 MHz

Sweep
Mode: continuous, trigger
Profile: linear and logarithmic
Direction: up or down
Rate: 1 ms to 500 sec
Frequency Range: 100 mHz to 20 MHz

Modulation Characteristics
AM Modulation
- Carrier: 100 mHz to 20 MHz
- Frequency: 10 mHz to 20 kHz
- Depth: 0 % to 200 %
- Source: Internal

FM Modulation
- Carrier: 100 mHz to 20 MHz
- Frequency: 10 mHz to 20 kHz
- Peak Deviation: 0 to 10 MHz
- Source: Internal

FSK Modulation
- Frequency: 100 mHz to 20 MHz
- Internal Rate: 1 kHz, 10 kHz, 50 kHz
- External Rate: 1 MHz max
- Source: Internal / External

External Modulation Port:
- Amplitude (I and Q), Phase, Frequency (direct digital modulation control), FSK, 4FSK, FM, AM, PM, QAM, BPSK, QPSK, 8PSK may be implemented.

Interface
GPIB
- Standard: IEEE 488.2-1987, SCPI compatible
- Programmable Controls: All front panel control except POWER switch
- Subsets: SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0, E1

Serial Port
- Standard: RS-232C
- Baud Rate: up to 9.6 kBaud

Rear Panel Inputs / Outputs
Trig In (TTL): Sweep / modulation trigger and FSK modulation control
50 MHz Ref In/Out (TTL): 50 MHz Reference Clock (available for phase-lock operation)
Mod Sync Out (TTL): Sweep / modulation sync signal
Modulation Port (TTL): External data input

Environmental
Operating Temperature: 0° to +50° C, ambient
Specified Accuracy: +18° to 28° C
Storage Temperature: -40° to +70° C
Humidity Range: 80 % R.H.

General
Display: 2 line, 16 characters, back-lit LCD
Power: 115/230 Vac, 50/60 Hz, 40 VA max.
Stored Setting: one complete front panel setup
Dimensions: 3.5" x 8.3" x 15.4" (H x W x L)
Weight: Approximately 9 lbs. (4.1 kg)
Warm-up Time: 1 hour
Warranty: 1 year standard
Accessories Included: Operation Manual and power cord

Weight and dimensions are approximate.
Errors and omissions excepted.
Prices and specifications subject to change without notice.
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