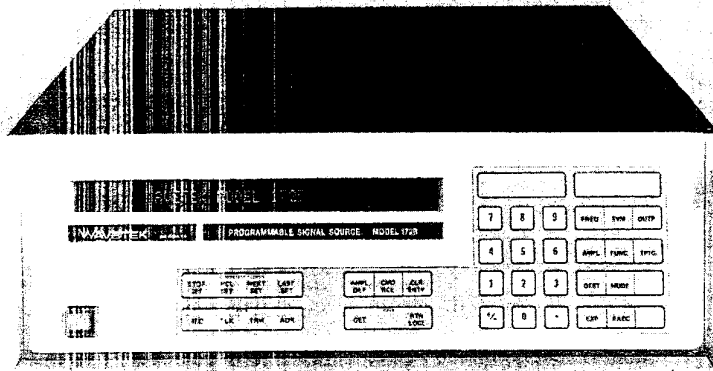


## SYNTHESIZED FUNCTION GENERATORS MODEL 172B



# Programmable Signal Source

- 0.0001 Hz to 13 MHz Frequency Range
- GPIB Compatibility
- 500 Settings Per Second
- 5½ Digit Synthesizer Option

### VERSATILITY

**Waveforms:** Sine, square, triangle, pulses, ramps, haversine, havertriangle and dc.

**Operational Modes:** Continuous, Triggered Gated, Synthesized and Phase Lock.

**Synthesizer:** (Option 002.)

**Phase Lock:** When within 2% of the external frequency.

**Frequency Range:** 0.0001 Hz to 12.99 MHz.

**Resolution:** 3 digit standard. Also ref Option 002

**Main Output:** 30 Vp-p (15 Vp-p into 50Ω load) with 3 digit resolution. Composite waveform/offset to ±7.5V peak into 50Ω load.

**DC Offset and DC Voltage Output:** 0 to ±7.5 Vdc into 50Ω. 3 digit resolution.

**Auxiliary Output:** TTL pulse.

**Phase Lock Input:**

Input: TTL level.

Range: 10 Hz to 13 MHz.

**VCG—Voltage Controlled Generator:** Up to 1000:1 frequency change for sweep on FM.

**Input Signal Bandwidth:** 50 kHz for small signal ( $\Delta V = 0.5V$ ).

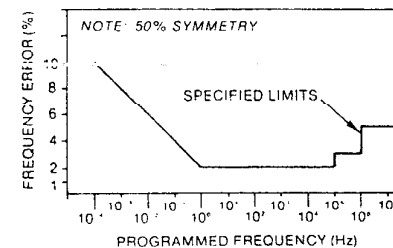
**Input Impedance:** 5 kΩ.

**Symmetry Control:** Waveform symmetry 10 to 90% in 10% steps to 999,990 Hz.

**Data Entry:** GPIB remote programming, optional keyboard/display (Option 001).

### FREQUENCY PRECISION

#### Open Loop Accuracy



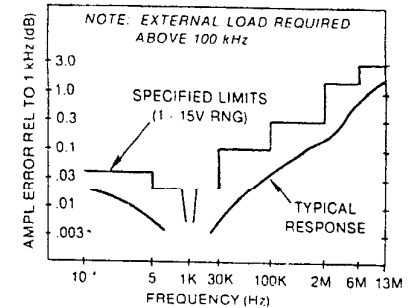
### AMPLITUDE PRECISION

**Accuracy:** (1 kHz sine wave or DC voltage output, internal 50Ω load and 1 MΩ external impedance.) ±0.2 dB at -56 dBm; <±0.05 dB at >4 dBm.

**Ampl Res:** 3 digits to 9.99 V, 4 digits ≥10.00 V.

**Ampl Output Conversion:** Vp-p, Vrms, dBm.

### Frequency Response



### WAVEFORM CHARACTERISTICS

**Sine Distortion:** Total harmonics referenced to carrier are -46 dB to 30 kHz.

<-40 dB to 1 MHz, -30 dB to 13 MHz

**Square Wave Rise and Fall Time:** <20 ns (15 ns typical).

### GENERAL

**GPIB Programming:** IEEE Standard 488-1978.

**Stored Settings and Sweep:** Up to 240.

**Stability (Measured at 25 ±1°C)**

#### Amplitude and DC Offset

Short Term: 0.025 dB for 15 min.

Long Term: 0.05 dB for 6 months.

#### Frequency

Short Term: 0.3% for 15 min.

Long Term: 1.0% for 8 hrs (to 1 MHz).

See Option 002 for synthesizer.

**Environmental:** Specifications apply for 25° ±10°C after 1 hr unless otherwise noted. Operates from 0° to 45°C, to 10,000 ft altitude.

**Dimensions:** Fits standard 48.3 cm (19 in.) rack.

43.2 cm (17 in.) wide; 13.3 cm (5¼ in.) high;

58.4 cm (23 in.) deep. Has rack mount adapters.

**Weight:** 26.3 kg (58 lb) net; 30.8 kg (68 lb) shipping.

**Power:** 90 to 110V, 105 to 125V, 180 to 220V or 210 to 250V; 48 to 67 Hz; <200 watts.

### OPTIONS

**001: Display and Control Front Panel.** Keyboard entry, 40 character display.

**002: 5½ Digit Synthesizer.** Synthesizer accuracy for any waveform selected.

**Frequency:** 10 Hz to 12.9999 MHz.

**Freq Res:** 5 digits <10 MHz, 6 digits >10 MHz.

**Accuracy:** Better than 0.0005% of setting.

#### Frequency Stability

Short Term: ±1 × 10<sup>-7</sup> of freq/day.

Long Term: ±1 × 10<sup>-6</sup> of freq/month.

Temperature: 1.2 × 10<sup>-7</sup> per °C.

**Spurious:** For spurious of 400 Hz to 110 MHz, the greater of:

< 1 MHz: -60 dB or 40 μV.

< 5 MHz: -55 dB or 40 μV.

≥ 5 MHz: -50 dB or 40 μV.

**Internal Reference Output:** 10 MHz TTL compatible signal.

**External Reference Input:** 10.0 MHz, 1 to 10 Vrms.

### FACTORY/FOB

San Diego, CA