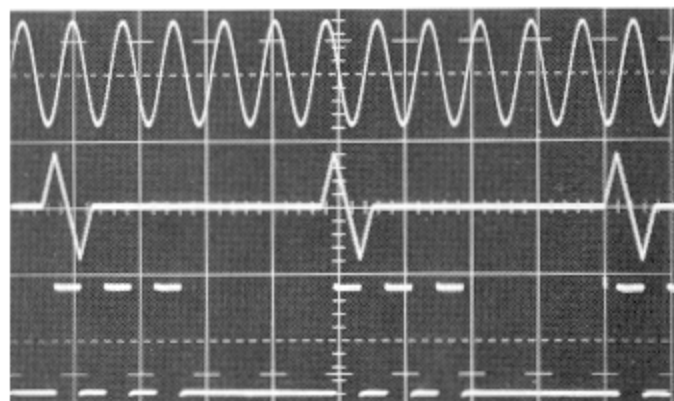


2 MHz Function Generator



- Multiple Power Operation
- 0.002 Hz to 2.1 MHz Frequency Range
- Triggered and Gated Modes
- 20 Volt Peak-to-Peak Output with Protection
- TTL Pulse Output

Wide Frequency Range

Wavetek's Model 20 covers a wide 0.002 Hz to 2.1 MHz frequency span in seven overlapping ranges. Each multiplier setting gives you a full 1000:1 frequency range. Frequency may be set with the calibrated dial or externally modulated or swept over the three decades available per range.

Triggered and Gated Waveforms

Triggered and gated modes give the

instrument additional flexibility. In triggered mode, the output is a dc baseline until a manual or external signal initiates a single cycle of the selected waveform. Gated mode is similar to triggered except that the generator produces a burst of waveform cycles for the duration of the external triggering signal.

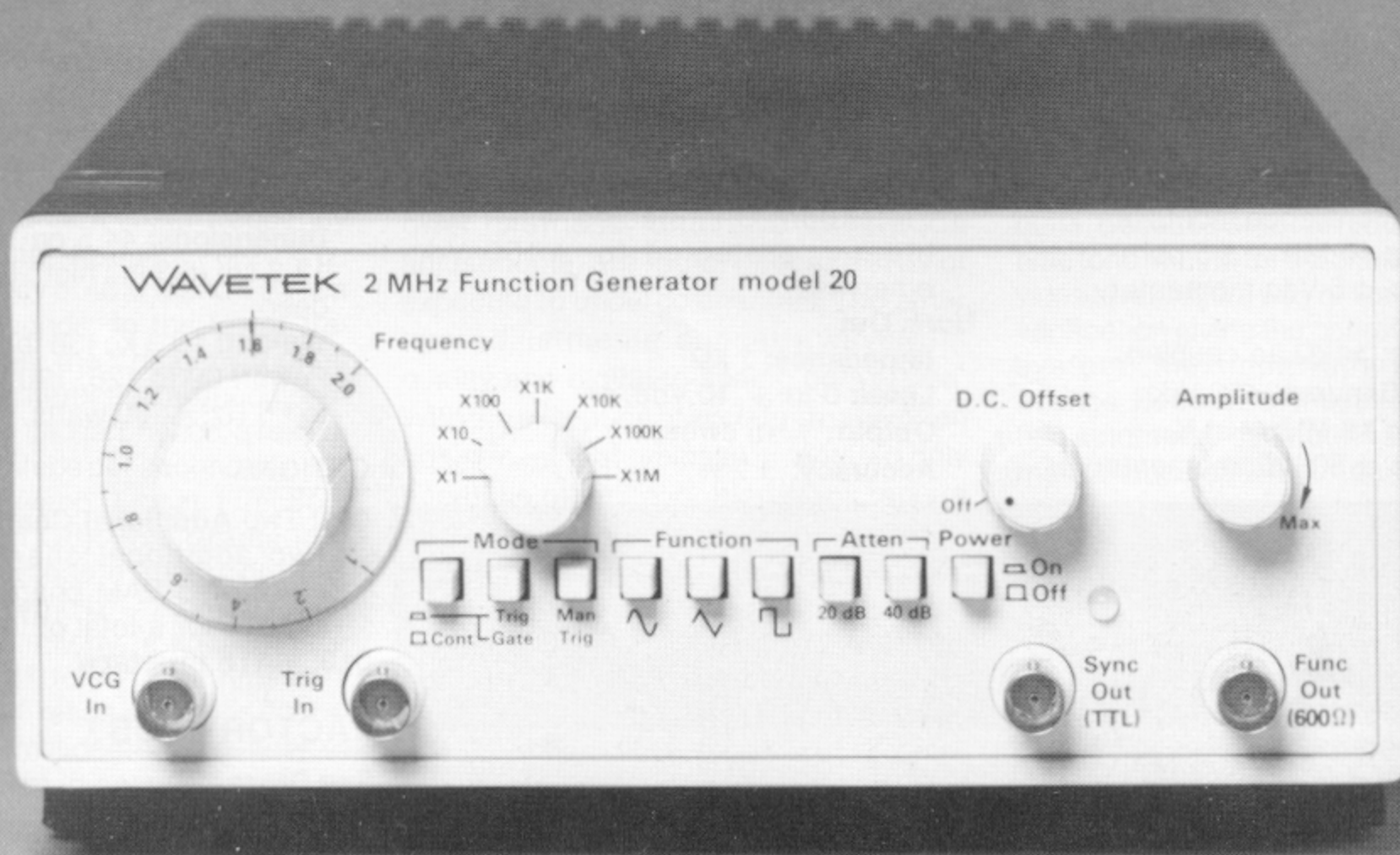
Output Protection

Model 20 produces high level outputs to 20 volts peak-to-peak (10V p-p

into 600 Ω termination). Attenuation is 0 dB, -20 dB or -40 dB selectable with 20 dB variable for a total 80 dB of amplitude range. The function output is fuse protected against accidental connection to power line potentials.

Multiple Power Operation

The generator operates directly from the line using external transformer/battery charger, from an external dc or ac source, or internally from Nicad batteries. (Batteries not included.)



VERSATILITY**Waveforms**

Sine \sim , triangle \wedge , square \square and dc.

Operational Modes

Continuous: Generator runs continuously at selected frequency.

Triggered: Generator is quiescent until triggered by external signal or manual trigger, then generates one complete waveform cycle at selected frequency.

Gated: Similar to triggered mode, except output continues for duration of gate signal. Last waveform cycle started is completed.

Frequency Range

0.002 Hz to 2.1 MHz in 7 overlapping ranges.

Function Output

\sim , \wedge , \square , selectable and variable to 20V p-p (10V p-p into 600 Ω) at Function Out BNC connector. Step and vernier attenuators provide complete amplitude control down to 2 mV p-p (1 mV p-p into 600 Ω). Peak output current is 8.3 mA maximum. Source impedance is 600 Ω .

DC Offset and DC Output

Waveform offset and dc output selectable and variable thru Function Output. DC output obtainable by not selecting a waveform function. DC offset control has a continuous range of $\pm 10V$ ($\pm 5V$ into 600 Ω) with a calibrated zero offset OFF position. DC offset plus signal peak limited to $\pm 10V$ ($\pm 5V$ into 600 Ω) and both attenuated proportionally by the output attenuator.

TTL Pulse Output

TTL pulse (50% duty cycle) at generator frequency. Drives up to 20 TTL loads.

VCG — Voltage Controlled Generator

BNC input, up to 1000:1 frequency change with external 0 to $\pm 2.1V$ signal. Upper and lower frequencies limited to maximum and minimum of selected range.

Slew Rate: 2% of range per μs .

Linearity: $\pm 0.5\%$ thru X 100K range; $\pm 2\%$ on X 1M range.

Input Impedance: 2k Ω .

Trigger and Gate

BNC input accepts analog or TTL compatible external signal to trigger or gate the generator. Input impedance is 10k Ω shunted by 10 pF. Trigger threshold is +0.7V, generator triggers on positive-going transition and gates on during positive portion of triggering signal. External signal can have maximum repetition rate of 2 MHz and minimum pulse width of 50 ns.

FREQUENCY PRECISION**Dial Accuracy**

$\pm 5\%$ of full scale.

Time Symmetry

Square wave variation from 0.1 to 2.1 on dial less than:
 $\pm 1\%$ to 100 kHz;
 $\pm 5\%$ to 2.1 MHz.

AMPLITUDE PRECISION

Sine variation with frequency less than:
 ± 0.2 dB on all ranges through 100 kHz, referenced to 1 kHz;
 ± 3 dB to 2.1 MHz terminated into 600 Ω and ≤ 3 ft of 50 Ω cable).

WAVEFORM CHARACTERISTICS**Sine Distortion**

Less than:
 0.5% on X 1K and X 10K ranges; 1% on X 1, X 10, X 100 and X 100K ranges, to 100 kHz.
 All harmonics 25 dB below fundamental from 100 kHz to 2.1 MHz.

Triangle Linearity

Greater than 99% to 210 kHz.

Square Wave Rise and Fall Time

At function output, less than 150 ns for 10V p-p output into 600 Ω termination, with ≤ 3 feet of 50 Ω cable.

GENERAL**Environment**

Temperature Range: 23° \pm 5°C for specified operation, operates 0° to +50°C, -40° to +75°C (+60°C max when batteries are installed) for storage.

Warm-up Time: 20 minutes for specified operation.

Altitude: Sea level to 10,000 ft for operation. Sea level to 40,000 ft for storage.

Relative Humidity: 95% up to 60°C storage; operating 45% to 50°C and 75% to 25°C at sea level (non-condensing).

Vibration: 5 to 55 Hz with maximum of 2g at 55 Hz.

Shock: 30g, 11 ms half sine.

Dimensions

211 mm (8.3 in.) wide; 85 mm (3.4 in.) high; 305 mm (12 in.) deep.

Weight

3 kg (6.6 lb) net; 4 kg (8.8 lb) shipping.

Power

Wall transformer/battery charger operates the generator from 90 to 110V, 48 to 66 Hz (Opt 001); from 105 to 128V, 48 to 66 Hz (Opt 002); or from 198 to 256V, 48 to 66 Hz (Opt 003). Either transformer is less than 10 VA.

Unit will also operate from any external AC source of 10 to 18 Vrms or any external dc source of +12 to +25 Vdc. Power consumption will be less than 10W at lower input values.

User supplied rechargeable batteries, six "C" size Nicads with standard 1800 mAhr rating will deliver approximately 4 hours continuous operation from a full charge. Recharge cycle is 15 hours from full drain (indicated by flashing power indicator) with unit on or off while connected to any of the external power sources described above.

NOTE: All specifications apply for dial between 0.1 to 2, amplitude at 10 Vp-p into 600 Ω termination.

OPTIONS

Model 20 must be ordered with option 001, 002 or 003. Batteries are not included.

001: Transformer/Batt Charger

90 to 110V, 48 to 66 Hz.

002: Transformer/Batt Charger

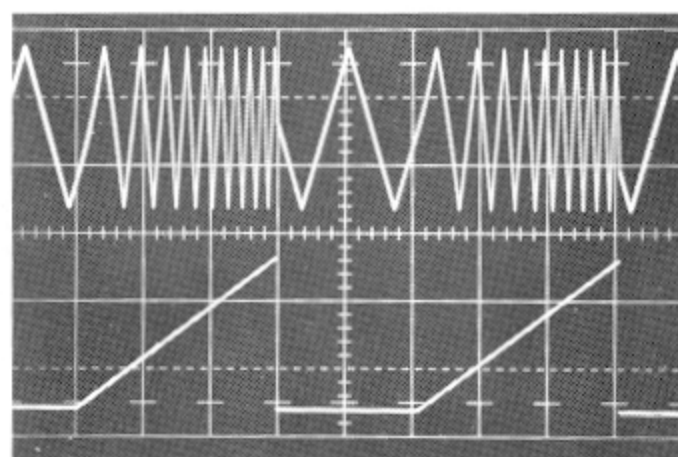
105 to 128V, 48 to 66 Hz.

003: Transformer/Batt Charger

198 to 256V, 48 to 66 Hz.

FACTORY/FOB

San Diego, CA



VCG Input (lower) and Generator Output