

# MODEL ORX-350

## SYNTHESIZED FUNCTION GENERATOR

- \* **20 MHz Frequency Range**
- \* **Sine, Square, Triangle and Arbitrary Waveforms**
- \* **AM, FM and Lin or Log Sweep**
- \* **RS-232C Interface**



### Capabilities

The MODEL 350 can generate standard or user-defined waveforms with crystal controlled sampling rates of up to 50MHz, 12 bit vertical resolution and up to 1,000 points. All waveforms are internally generated with amplitudes to 10Vp-p into 50 Ω. An offset generator allows generation of signals with large offsets. A full range of triggering capabilities is available, including internal-external trigger source, gated and burst modes of operation.

### Easy Operation

A menu-driven front panel operation with an easy-to-read graphic LCD display makes the MODEL 350 easy to operate. Parameter changes and data entry can be made using the rotary knob. Waveform editing can be done from scratch or by modifying standard waveforms. A PC software program, **Wave-X** Arbitrary Waveform Editor allows you to easily create, edit and download complex waveforms. Waveforms can be stored in the instrument flash memory.

### Standard Waveforms

The wide choice of build-in standard waveforms gives instant access to frequently used test signals. The standard waveforms are: sine, triangle, square, ramps and pulses. AM and FM modulation are available with programmable internal or external signals.

### Programming

The instrument can be remotely controlled by the build-in RS-232C interfaces. All parameters, modes and functions are programmable.

# MODEL 350 - SPECIFICATIONS

## DESCRIPTION

The **MODEL 350** is a Programmable **Synthesized Function Generator**, generating Sine, Square, Triangle, Ramp up and down or user defined waveforms.

## OPERATING MODES

**Continuous:** Output continuous at programmed parameters.

**Triggered:** Output quiescent until triggered by an internal, external or manual trigger, then one waveform period is generated at the programmed point rate, amplitude and offset. . Up to 10MHz trig rate for ARB waveforms and 1MHz in DDS mode.

**Gated:** Same as triggered mode except waveform is executed for the duration of the gated signal. The last waveform period started is completed.

**Burst:** Same as triggered mode for programmed number of waveform periods from 2 to 65,535.

## ARBITRARY CHARACTERISTICS

**Horizontal Resolution:** 1,000 points.

**Vertical Resolution:** 12 bits (-2047 to +2047).

**Point Execution Rate:** 20ns to 50s with 4 digits resolution (limited to 10ps) and 0.005% accuracy .

## FREQUENCY CHARACTERISTICS

**Sine:** 0.01 Hz to 20 MHz.

**Square:** 0.01 Hz to 20 MHz.

**Triangle:** 0.01 Hz to 2 MHz.

**Accuracy:** 0.005 % (50 ppm).

**Resolution:** 6 digits or 10mHz.

## OUTPUT CHARACTERISTICS

**Amplitude Range:** 10mV-10Vp-p into 50  $\Omega$

**Resolution:** 3 digits (1000 counts)

**Accuracy:**  $\pm 2\%$   $\pm 20\text{mV}$  of the programmed output.

**Flatness:** 0.5dB at 1MHz  
1dB at 20 MHz

**Offset Range:**  $\pm 4.5\text{V}$  into 50 $\Omega$  in the 1.01V-10V amplitude range.

**Offset Resolution:** 3 digits, 10 mV.

**Offset Accuracy:**  $\pm 2\%$   $\pm 10\text{mV}$ .

**Output Impedance:** 50 $\Omega$ .

**Protection:** The instrument is protected against short circuit to ground or to any voltage practically available in electronic laboratories.

## WAVEFORM CHARACTERISTICS

### Harmonic Distortion:

DC -20KHz -55dBc

20KHz-100KHz -50dBc

100KHz-1MHz -40dBc

1MHz-20MHz -30dBc

**Spurious:** DC-1MHz, -60dBc

**Square Rise/Fall Time:** < 18 ns (10% to 90%) at full amplitude into 50  $\Omega$ .

### Variable Duty Cycle:

Square: 20% to 80% to 2MHz

Triangle: 10% to 90% to 2MHz.

**Symmetry:** at 50% < 1%.

## MODULATION CHARACTERISTICS

**Amplitude Modulation:** Internal 0.1Hz-20KHz sine wave, square or triangle, variable depth from 0% to 100%.

External: 5 Vp-p for 100% modulation.

**Frequency Modulation:** Internal : 0.1Hz-20KHz sine wave, square or triangle. External: 5 Vp-p for 100% deviation.

## SWEEP CHARACTERISTICS

**Sweep Shape:** Linear and Log.

**Sweep Time:** 10 ms to 100 s.

**Sweep trigger:** internal, external, continuous or burst

## INPUTS AND OUTPUTS

**Sync Output:** Positive TTL pulse at selected frequency, 50  $\Omega$  impedance.

**Trigger Input:** TTL compatible, 1K $\Omega$  nominal impedance. Max. rate 10MHz, Minimum width 50ns.

**Modulation Input:** 5 Vp-p for 100% modulation, 10 K $\Omega$  input impedance, DC to >20 KHz bandwidth.

## INTERNAL TRIGGER

**Repetition:** 0.1Hz - 1MHz

**Resolution:** 4 digits

**Accuracy:**  $\pm 0.005\%$

## INTERFACE

RS-232

## GENERAL

**Store memory:** 20 full panel settings at power-off

**Arbitrary memory:** 1000 points in flash memory

**Power Requirements:** 90V-264V, 30 VA max.

**Dimensions:** Height: 88 mm (3.5 in)

Width: 213 mm (8.4in)

Length: 210 mm (8.3 in)

Weight: 2.5 Kg net.

**Operating Temperature:** 0  $^{\circ}\text{C}$  to 50  $^{\circ}\text{C}$

**Humidity:** to 95% RH, 0  $^{\circ}\text{C}$  to 30  $^{\circ}\text{C}$

**EMC:** EN55011, EN55082.

**Safety:** EN61010.

**CE Labeled**

## NOTES

Specifications are verified according to the performance check procedures in the technical manual. Specification not verified in the manual are either explanatory notes or general performance characteristics only.

12/2006



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