

## SWEEP / FUNCTION GENERATORS WITH 100MHz INTELLIGENT FREQUENCY COUNTER



### PUT TWO AND TWO TOGETHER

#### FUNCTION GENERATOR

**FREQ 309.2 Hz**  
**CONT ▶ SINE**

#### FUNCTION COUNTER

**EXT 309.197 Hz**  
**Att: x20 ◀ LPF:ON**

The FG-506 and FG-513 each provide two powerful instruments in one package for the price of one: a 6 or 13 MHz sweep/function generator and an intelligent 100 MHz frequency counter. The FG-500 series incorporates concurrent engineering design with unsurpassed innovation to ensure high quality and reliability. The microprocessor based instruments provide menu driven operations for setting waveform outputs and operation modes. Thus, setting of outputs is quick, simple and rational. Additionally, a bright 16 character by 2 line LCD display presents clear and unambiguous readout of generation (4 digit resolution) and frequency counter (6-1/2 digit resolution). A self-test is performed upon powering up to ensure all components operate correctly.

### KEY FEATURES

- Sine, Square, Triangle, Ramp, Synchronous Clock and DC Outputs
- Frequency Ranges:
  - 2 Hz to 6 MHz (FG-506)
  - 2 Hz to 13 MHz (FG-513)
- Synchronous Clock Frequencies:
  - 2 Hz to 12 MHz (FG-506)
  - 2 Hz to 24 MHz (FG-513)
- 6-1/2 Digit Frequency Counter with attenuation (x1, x20) and low pass filter
- Linear and Logarithmic Sweeps
- Adjustable Symmetry/Duty Cycle
- Continuous, Triggered, Gated, Clock & External Frequency Modes
- Period or Frequency Readout
- TCXO Crystal Stabilized Time Base (option)

## ADVANCED FEATURES-GO THE EXTRA MILE

A wide variety of modes (Continuous, triggered, gated, clock and external frequency) and waveforms deliver the maximum amount of benefits and applications. Additionally, several advanced features offer extended capabilities. For instance, duty cycle/symmetry adjustment modifies a waveform from 10% to 90%. Or, TTL outputs may be either inverted or non-inverted, at frequencies as high as 12 MHz for the FG-506 and 24 MHz for the FG-513. Plus, amplitude can be attenuated from 0 to 40dB at three selectable levels of 0, 20 or 40dB. Moreover, linear or logarithmic sweeps have variable rates and widths. The variation of sweep width in either linear or logarithmic is up to 100:1. The rate is adjustable from 5 sec to 10 msec.

## INTELLIGENT FREQUENCY COUNTER

The FG-500 Series of sweep/function generators incorporate a 6-1/2 digit, 100 MHz intelligent frequency counter for added flexibility. This autoranging frequency counter reads external frequencies from 5Hz to 100MHz. Plus, signal measurement may be in frequency or period, a capability usually found on much more expensive units. Period mode offers greater accuracy and resolution at low frequencies. Also, a built-in low pass filter (LPF) gives an accurate measurement of a low slew rate triangle signal, and reduces interference of noise, spikes, glitches etc. Thus, false triggering of the frequency counter is prevented. All signals may be attenuated at x1, x20.

### PERIOD DISPLAY

**EXT 498.623  $\mu$ s**  
**Att: x20 ◀ LPF: ON**

## TCXO-500: TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR

The TCXO option stabilizes a frequency counter's 10MHz time base by a built-in temperature compensated circuit. This feature dramatically improves aging rate, stability and temperature coefficient of the time base. Accordingly, the frequency counter has a high accuracy frequency count for a longer period of time. The TCXO-500 is an indispensable selection if the frequency counter is utilized in calibration purposes.

# MOTECH

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## SPECIFICATIONS:

| FUNCTION GENERATORS: FG-506 and FG-513 |   |
|--|---|
| <b>Waveforms</b>                       | SINE, SQUARE, TRIANGLE, RAMP, TTL PULSE, DC   |
| <b>Range</b>                           | FG-506: 2Hz to 6MHz; FG-513: 2Hz to 13MHz   |
| <b>Ranges of Frequency</b>             | 2-20, 20-200, 200-2K, 2K-20K, 20K-200K, 200K-2M, 2M-6M(FG-506), 2M-13M(FG-513)  |
| <b>Attenuation</b>                     | 0dB, 20dB, 40dB ; variable 0 to 20dB  |
| <b>Resolution</b>                      | 4 Digits  |
| <b>Impedance</b>                       | 50 ohms $\pm$ 2%  |
| <b>Amplitude</b>                       | -10Vp to +10Vp into open circuit ; -5Vp to +5Vp into 50 ohms  |
| <b>Frequency Accuracy</b>              | $\pm$ 0.01% up to 100KHz  |
| <b>SQUARE WAVE</b>                     | <b>Rise or Fall Time:</b> <25ns at full amplitude (50 ohms)*  |
|  | <b>Aberrations:</b> <10% of p-p at full amplitude (50 ohms)*  |
| <b>Triangle Linearity Error</b>        | <1% up to 100KHz  |
| <b>Sine Wave Distortion</b>            | <1% when f<100KHz ; <30dB when f>100KHz ; <25db when f>2MHz   |
| <b>Sync Output (TTL Pulse)</b>         | <b>Source Impedance:</b> 50 ohms $\pm$ 2%   |
|  | <b>Frequency Range:</b> 2Hz to 12MHz (FG-506) ; 2Hz to 24MHz (FG-513)   |
| <b>Symmetry/ Duty Cycle</b>            | 10% to 90% ; up to 1 MHz  |
| <b>DC Offset</b>                       | -10V to +10V into open circuit ; -5V to +5V into 50 ohms  |
| <b>SWEEP</b>                           | <b>Width:</b> Lin or Log Up to 100:1  |
|  | <b>Rate:</b> 0.2Hz - 100Hz (5sec-10msec)  |
| <b>VCO CHARACTERISTICS</b>             | <b>Input Impedance:</b> 10K ohms ( $\pm$ 5%)  |
|  | <b>Frequency Range:</b> 0 to 10V input causes 1:100 frequency change  |
| <b>Trigger In (TTL Pulse)</b>          | <b>Signal Pulse Width:</b> 50 nsec minimum  |
|  | <b>Repetition Rate:</b> 5 MHz maximum   |
| FREQUENCY COUNTER & TCXO               |   |
| <b>RANGE</b>                           | <b>Frequency:</b> 5Hz to 100MHz   |
|  | <b>Period:</b> 0.2 sec to 10nsec  |
| <b>Resolution</b>                      | 6-1/2 digits  |
| <b>Accuracy</b>                        | $\pm$ 1 Count + time base error   |
| <b>Time Base</b>                       | 10MHz +/-10ppm(0° to 50°C)  |
| <b>Attenuation</b>                     | x1, x20 nominal   |
| <b>Sensitivity</b>                     | 50mVrms sinewave to 50MHz ; 100mVrms sinewave to 100MHz   |
| <b>TCXO</b>                            | Supply voltage : $\pm$ 0.5ppm for $\pm$ 5% variation ; Aging Rate : 1ppm/yr.<br>Frequency : 10MHz ; Temp : $\pm$ 1ppm/°C, 0-40/°C |
| GENERAL                                |   |
| <b>Weight</b>                          | 6 lb. 15.5ozs ; 3.5kgs  |
| <b>Dimensions</b>                      | 8.66"(W) x 3.39"(H) x 11.81"(L) ; 200mm x 86mm x 300mm  |
| <b>Operating Temp.</b>                 | 0° to 40°C  |
| <b>Storage Temp.</b>                   | -40° to 55°C  |
| <b>Power</b>                           | 115/220VAC ; 50/60Hz  |

\*Applicable when load impedance is 50 ohms

Contact:

Specifications subject to change without notice