

## FUNCTION GENERATORS

### Function Generators

# FG-275/FG-273A

#### OUTLINE

The FG-275/FG-273A are function generators which generates sine wave, triangle wave, square wave and pulse wave, etc. It covers a wide ranges of 0.5 Hz to 5 MHz for the FG-275 and 0.2 Hz to 2 MHz for the FG-273A, while the digital display enables accurate frequency settings. Furthermore, the VCF, DC offset, sweep function and other features enable the FG-275/FG273A to be used in a wide variety of applications including analogue circuits as well as digital circuits.

#### FEATURES

##### Wide frequency range

From an extreme low frequency up through above audible band of 7 ranges (FG-275 : 0.5Hz to 5MHz, FG-273A : 0.2Hz to 2MHz).

##### Various output wave forms

In addition to sine wave, triangle wave, square wave, TTL level square wave and CMOS level square wave output are provided for the digital circuit experiment had been made possible.

##### LOG/LIN sweep function

The logarithm and liner sweep are provided. Especially the FG-275 has ability of an independent start and stop frequency setting.

##### Frequency Counter function

An external counter input terminal can be measured from 1 Hz to 10MHz signal.

##### VCF (External frequency control terminal)

An external voltage (0 to 10V) can control the output frequency.



SPECIFICATIONS		
Item	FG-275	FG-273A
Output waveform	Sinewave, squarewave, trianglewave, TTL-Level/CMOS-level squarewave, pulse waveform and sawtooth waveform	
Frequency range	0.5Hz to 5MHz	0.2Hz to 2MHz
Frequency accuracy	$5 \times 10^{-5} \pm 1$ digit	$2 \times 10^{-5} \pm 1$ digit
Sinewave characteristics		
Distortion	1% or less (10 Hz to 100kHz)	
Frequency characteristics	$\pm 1.0\text{dB}$ (50Ω Load)	
Squarewave characteristics		
Symmetry	$\pm 3\%$ max. (at 100Hz)	
Rise and fall time	40ns max. (maximum output)	100ns max.
Trianglewave characteristics		
Linearity	1% or less (at 5kHz to 100kHz)	1% or less (at 100kHz)
TTL output characteristics		
Rise and fall time / output	25nsec or less / TTL Level	
CMOS output characteristics		
Rise and fall time / output	80nsec or less / 5V to 15V continuously variable	
Sweep characteristics		
Internal sweep	Linear or logarithm sweep	
Sweep speed	0.2Hz (5sec) to 100Hz (10msec)	
Sweep width	1:1 to 500: 1/continuously variable	1:1 to 1000:1/continuously variable
Sweep output	0 to 10V / frequency increase at right direction	
External sweep		
Input voltage	0 to 10V frequency increase at right direction	
Frequency variable range	500 :1 max.	1000:1 max.
Maximum input	$\pm 20\text{V}$ (DC/AC peak)	
Input impedance	Approx. 13 kΩ	
Frequency counter characteristics		
Display	5 digit display (LED)	6 digit display (LED)
Frequency range /Gate time	5Hz to 10MHz /0.01 sec, 0.1 sec, 1 sec, 10 sec.	
Accuracy	$\pm 5 \times 10^{-5} \pm 1$ count	$\pm 2 \times 10^{-5} \pm 1$ count
Input sensitivity	30mVrms	
Maximum input voltage	42Vp-p	
Input impedance	0dB : Approx. 500kΩ / -20dB : approx. 1 MΩ	
Output characteristics		
Output voltage	20Vp-p (open circuit) / 10Vp-p (50Ω load)	
Attenuator	-10dB/-20dB/-40dB steps with continuously variable	-20dB/-40dB steps with continuously variable
Output impedance	50 Ω ± 10%	
Logarithmic variable range	1:1 to 40:1 or more	
DC offset	$\pm 10\text{V}$ (open circuit) / $\pm 5\text{V}$ (50Ω Load) / continuously variable	
Environmental condition		
Temperature/humidity for operation	0°C to 40°C, 80% max	
Temperature/humidity for spec	23°C ± 5°C, 70% max.	
Others		
Power source	AC 100/120/220/230V ± 10 % 50/60Hz, Approx. 20W	
Dimensions / weight	240 (W) × 64 (H) × 190 (D) mm / 1.8 kg	
Accessories	Instruction manual (1), power code (1)	

# FUNCTION GENERATOR

## Function Generator **FG-272**

### OUTLINE

The FG-272 is function generators featuring sinewave, triangle wave, square wave and pulse waveform outputs. It covers a wide range of 0.2Hz to 2MHz. In addition, it has built-in VCF, DC offset and sweep functions and many more features making it useful in a wide range of applications, including analog circuit and digital circuit test and measurement.

### FEATURES

#### Three Functions in One

Three functions - sweep generator, function generator and pulse generator - are included in a single compact instrument.

#### Oscillation of Frequency Range: 0.2Hz to 2MHz

Coverage ranges from ultra-low frequency up through above the audible frequency range in seven ranges.

#### Versatile Complement of Output Waveforms

In addition to sinewave, triangle wave and square wave, TTL-level square wave for testing digital circuitry are provided.

#### LIN Sweep

Linear sweeping is possible with a sweep a width of up to 100:1. Sweep time can be set from 2 seconds down to 0.2 seconds.

#### Asymmetrical Waveform Output

By changing the duty cycle, it is possible to generate a ramp (sawtooth) waveform, or a pulse waveform. In addition, the polarity of the waveform can be switched instantaneously.

#### DC Offset

A DC component of 0 to 10V can be superimposed on the AC output waveform. If the AC component is set to zero, it is also possible to obtain a DC output.

#### VCF Function

By applying an external voltage of 0 to +10V, it is possible to control both the sweep and the oscillation frequency externally.

#### - 20dB Attenuator

The output level can be attenuated by 20dB and finely adjusted.

#### Compact Design

This function generator is highly compact, weigh just 1.8kg and feature a carrying handle for high portability.



**SPECIFICATIONS**

<b>MODEL</b>	FG-272
<b>Frequency characteristics</b>	
Output waveform	Sinewave, squarewave, trianglewave, TTL-level squarewave, pulse waveform and sawtooth waveform
Frequency range	0.2Hz to 2MHz, 7 ranges (1/10/100/1k/10k/100k/1M)
Frequency accuracy	± 0.5% of Full scale
Remote Frequency Control (VCF)	
Input voltage	0 to + 10VDC, frequency increase in positive polarity, ± 20V max. (DC + AC peak)
Frequency variable range	Max. 100 : 1
Maximum input voltage	VCF in ± 20V peak (DC + AC peak)
Input impedance	13kΩ
Symmetry variable range	1 : 1 ~ 5 : 1 or more
DC offset/polarity	± 10V (open circuit), ± 5V (50Ω load), continuously variable /reverse /non-reverse
Squarewave characteristics	
Symmetry	± 3% max. (at 100Hz)
Rise and fall time/output	100ns max. (maximum output)/variable
Sinewave characteristics	
Distortion	1% or less (10Hz to 100kHz)
Output frequency response/output	± 1.0 dB or less (50Ω load, maximum output), limited 100kHz /variable
Trianglewave characteristics	
Linearity/output	1% or less (at 100Hz)/variable
TTL output characteristics	
Rise and fall time/output	25ns or less/ TTL-level
Sweep characteristics	
Internal sweep	Linear sweep
Frequency sweep speed	0.5Hz (2sec) to 50Hz (20msec) continuously variable
Sweep width	1:1 to 100:1 variable max. to max./continuously variable
External sweep	VCF input (input impedance:13kΩ)
Output characteristics	
Output voltage	open circuit      20Vp-p min. (open circuit) loaded            10Vp-p min. (50kΩ load)
Attenuator	- 20dB step or continuously variable
Impedance	50Ω ± 10%
Environmental condition	
Temperature/humidity for operation	0°C to 40°C, 80% max.
Temperature/humidity for characteristics in spec.	23°C ± 5°C, 70% max.
Power source	100/120/220/240V AC, 50/60Hz, Approx. 20W
Dimensions/weight	240 (W) × 64 (H) × 190 (D) mm/1.8kg
Accessories	Instruction manual (1), power cord (1)