

TG300 Series - 3MHz Function Generators

- ▶ 0.03Hz to 3MHz frequency range
- ▶ Simultaneous display of frequency & amplitude
- ▶ External seven digit 120MHz counter (not TG315)
- ▶ High waveform quality at all frequencies & levels
- ▶ 2mV to 20V pk-pk from 50 Ohms or 600 Ohms
- ▶ Variable symmetry with constant frequency
- ▶ Auxiliary TTL/CMOS output
- ▶ 1000:1 frequency change by vernier or sweep voltage
- ▶ Precision internal lin/log sweep (TG330 only)
- ▶ Internal/external AM up to 100% (TG330 only)

[Larger image - all three models](#) 



Three models meeting a variety of needs

The **TG315** includes dual digital display of frequency and amplitude, along with the basic generator functions of sine, square & triangle waveforms, variable DC offset, variable symmetry and an external sweep input.

The **TG320** adds an external frequency counter with up to seven digits of resolution covering 5Hz to 120MHz.

The **TG330** has all the features of the TG320 plus an internal sweep generator with linear or log sweep, variable sweep rate and a sweep output socket. It also offers internal or external amplitude modulation.

Exceptional waveform quality

The TG300 series provides very high waveform quality under all conditions. That means low sinewave distortion, low aberration triangle waves and fast-edged square waves with low overshoot.

Unlike many competitive products good waveform quality is maintained throughout the frequency range, and at low output levels.

All models have bi-directional variable symmetry at constant frequency from 1:9 to 9:1.

Wide range level control

The main output has a maximum emf of 20V pk-pk from a 50 Ohm or 600 Ohm source. An amplitude vernier with a range of 40dB is combined with a -20dB switched attenuator to provide levels down to 20mV pk-pk. Variable DC offset of +/-10V is available via a centre detent control.

An auxiliary output provides a fixed 0V to +5V level suitable for driving both TTL and CMOS loads.

Digital display for precision and convenience

All the TG300 series generators incorporate a large dual-section digital display. Unlike competitive products the display provides a readout not just of frequency, but of amplitude or offset simultaneously. Auto-ranging reciprocal measurement gives 4-digit resolution with rapid update right down to Hz levels, below this an alternative technique is used to retain fast display update a sub-hertz frequencies.

The output level display can be selected to show any of three values: volts pk-pk, volts rms, or dc offset.

External counter with seven digit resolution

The TG320 and TG330 have an external counter mode which utilises the full width of the display to provide up to seven digits of resolution.

The frequency range is from 5Hz up to 120MHz in two ranges, and the input sensitivity is better than 50mV rms.

A measurement period of 0.5 or 5 seconds can be selected. A reciprocal counting measurement system is used which ensures high resolution regardless of input frequency.

Wide sweep range

Each range can be swept by at least 1000:1 either manually or via the sweep control input. The TG330 incorporates a versatile internal sweep generator capable of providing linear or logarithmic frequency sweeps.

The TG330 provides further versatility by adding AM facilities. The modulation can be external or internal (via a 400Hz internal generator) with modulation levels fully variable between 0% and 100%.

FREQUENCY

Frequency Range: 0.03Hz to 3MHz in 7 overlapping decade ranges with fine adjustment by a vernier.

Vernier Range: 1000:1 on each range.

OPERATING MODES

Specifications apply for the top decade of each frequency range and maximum output into 50 Ohm termination.

SINE

Distortion: <0.5% on 300, 3k and 30k ranges; <1% on 3, 30 and 300k ranges; all harmonics >25dB below fundamental on 3M range.

Amplitude Flatness: ± 0.2 dB to 200kHz; ± 2 dB to 3MHz.

TRIANGLE

Linearity: Better than 99% to 200kHz

SQUARE WAVE

Rise/Fall Times: <100ns

Mark - Space Ratio: 1:1 $\pm 1\%$ to 100kHz

DC

Range: ± 10 V unterminated

SYMMETRY

Symmetry Range: Variable typically 1:9 to 9:1 (on top decade of each range), frequency divided by 10.

METER FUNCTIONS (generator mode)

Frequency: Auto-ranging reciprocal measurement giving 4 digit resolution for frequencies down to 1Hz; maximum resolution is 0.001Hz. Accuracy ± 1 digit for 0.2Hz to 3MHz. Below 0.2Hz accuracy is $\pm 1\%$ of range full scale (symmetry off).

Amplitude: Display shows peak-to-peak amplitude or rms value. Display corrected for attenuator setting. 3-digit resolution, accuracy typically 5% of range. Clipping indicator on display.

DC Offset: 3-digit resolution; accuracy typically $\pm 2\%$ of setting ± 1 digit. Display corrected for attenuator setting. Clipping indicator on display.

OUTPUTS

MAIN - 50 Ohm

Amplitude: 2mV to 20V peak-peak open circuit (1mV to 10V peak-peak into 50 Ohms) in four switch-selectable ranges with 20dB vernier control within each range

Attenuator Ranges: 0dB, -20dB, -40dB, -60dB

DC Offset Range: ± 10 V from 50Ohms. DC offset plus signal peak limited to ± 10 V (± 5 V into 50Ohms). DC offset plus waveform attenuated proportionally by the attenuator.

MAIN - 600 Ohm

Alternative output socket offering the same facilities as the 50 Ohms socket.

AUX OUT

0 to 5V TTL/CMOS logic levels capable of driving 2 standard TTL loads. Frequency, symmetry and phase as main outputs

SWEEP OUT

3V ramp from 600W (TG330 only)

EXTERNAL COUNTER (TG320 and TG330 only)

Frequency Ranges: 5Hz to 25MHz and 20MHz to 120MHz, fully autoranging to maximum resolution

Input Sensitivity: 50mV rms (sinewave)

Input Impedance: 1M/25pF

Measurement Time: Selectable 0.5s or 5s

Resolution: 6 digits in 0.5s; 7 digits in 5s (plus overflow to 8 digits)

Accuracy: ± 1 digit \pm timebase accuracy

Timebase Accuracy: ± 10 ppm initial error; ± 5 ppm/year ageing rate; typically less than 0.5ppm/oC. Adjustment point for closed-case recalibration

SWEEP MODES

EXTERNAL

Input Impedance: 10k Ohms

Input Sensitivity: 0 to 3V for 1000:1 sweep

Max. Input Voltage: ± 10 V

Sweep Linearity: Better than 1%

Max. Slew Rate: 0.1V/us

INTERNAL (TG330 only)

Sweep Range: 1000:1 within each range.

Sweep Rate: Adjustable, typically 20ms to 20 secs.

Sweep Mode: Linear or logarithmic. Sweep start and stop frequencies displayed at the press of a button.

Sweep Output: 3V ramp from 600Ohms.

AMPLITUDE MODULATION (TG330 only)

Depth: Variable 0 to 100% typical.

Frequency: 400Hz (internal). DC to 20kHz (external).

External Sensitivity: Approximately 2V peak-to-peak for 50% modulation. Input impedance 40k Ohms.

GENERAL

CASING

Moulded ABS case with tilt stand.

POWER REQUIREMENTS

Input Voltage: 220 to 240 volts AC nominal 50/60Hz or 110 to 120 volts AC nominal 50/60Hz by rear panel adjustment. Installation category II.

TEMPERATURE & ENVIRONMENTAL

Operating Temp. Range: +5oC to +40oC, 20% to 80% RH.

TG300 series function generators - specification and description

Storage Temp.Range: -10oC to +65oC

Environmental: Indoor use at altitudes up to 2000m. Pollution degree 2.

SIZE

260(W) x 88(H) x 235(D)mm (10.2 x 3.4 x 9.2"), excluding handle and feet.

WEIGHT

1.9kg (4.2lb)

SAFETY

Complies with EN61010-1.

EMC

Complies with EN61326.