

Section 1 - Specification

(All specifications apply after warm-up in an ambient temperature range 18°C-28°C.)

OPERATING RANGE

Frequency Range: .0005Hz to 5MHz in 7 overlapping decade ranges with fine adjustment by calibrated vernier.

Internal Mode:

Vernier Range: 1000:1 within each range in LIN mode, 10,000:1 within each range in LOG mode.

Vernier Accuracy: Better than +/-5% of full scale.

Sweep Mode:

Sweep Range: 1000:1 within each range in LIN mode, 10,000:1 within each range in LOG mode.

FUNCTIONS

(Specifications apply for vernier between 0.5 and 5.0 and output 10V peak-to-peak into 50Ohm termination).

Sine

Distortion: Less than 0.5% to 50kHz, less than 1% to 500kHz; all harmonics >30dB below fundamental on 1M range.

Amplitude Flatness: +/-0.2dB to 500kHz; +/-1dB to 5MHz.

Triangle

Linearity: Better than 99% to 500kHz.

Squarewave

Rise and Fall Times: <45ns.

Mark: Space Ratio: 1:1 +/-1% to 100kHz; +/-5% to 5MHz.

DC

Range: +/-10V from 50 Ohm.

OPERATING MODES

Run

Generator runs continuously at the selected frequency.

Triggered

Generator is quiescent until triggered by an external input at TRIG IN or by pressing MANUAL. One complete cycle is then generated at the selected frequency, starting and stopping at the phase set by the START/STOP PHASE control.

Gated

Generator is quiescent until gated by an external signal at TRIG IN or by pressing MANUAL. Generator then runs continuously at the selected frequency for duration of gate signal, starting and stopping at the phase set by the START/STOP PHASE control. Last waveform started is completed.

Manual

Manually operates generator as described in Triggered and Gated sections.

Start/Stop Phase

The START/STOP PHASE control varies the triggered and gated signal start/ stop point from approximately -90° to $+90^{\circ}$ up to 500kHz.

Symmetry

When SYM is selected the SYMMETRY control varies the duty cycle from 1:19 to 19:1 to produce sawtooth and variable pulse-width waveforms. The indicated frequency is divided by 10 with SYM selected.

Sweep

Repetitive low to high to low frequency change. Mode, limits and rate selectable, see SWEEP section.

Single Sweep

One sweep and hold at STOP frequency.

SWEEP SECTION

Sweep Control

ON/OFF: Sets main generator under control of sweep section.

Sweep Mode: LOG/LIN selects logarithmic or linear sweep mode for both internal and external sweep.

Sweep limits: START and STOP set lower and upper limits of sweep to frequency dial setting.

Reset: RST holds sweep at START frequency until released.

Single Sweep: SNGL selects single sweep mode. Releasing RST initiates a single sweep between the set limits.

Hold: The sweep is halted at its instantaneous position whilst HOLD is selected.

Drift in Hold Mode: Typically 0.25%/minute of full scale

Sweep Rate: The TIME control varies the sweep speed from approximately 20ms to 120s.

Marker

When the marker is selected the sweep ramp is halted for the set duration. If the sweep output is used to drive the X-axis of an oscilloscope then the electron beam is also halted for the marker duration and the display will have a bright "mark" on the trace at that point.

Marker Duration: The MARKER DURATION control switches the marker on and sets the duration for which the sweep is halted between 1ms and 10s.

Marker Frequency: When marker is selected the frequency dial sets the marker frequency.

Sweep Annunciators

Reset: Lit whilst sweep is reset (held at start).

Hold: Lit whilst sweep is halted by HOLD button.

End: Lit when sweep is held at the end of a single sweep.

Marker Off Scale: Lit when marker position (set by frequency dial) is outside sweep limits.

INPUTS

Sweep Input

Input Impedance: 10kOhm.

Input Sensitivity: 0 to 4V for 1000:1 LIN or 10,000:1 LOG sweep (1V/decade).

Maximum Allowable Input Voltage: +/-10V.

Sweep Linearity: Better than 1%.

Maximum Slew Rate of Input Voltage: 0.1V/us LIN, 0.2V/ms LOG.

Trigger Input

Frequency Range: DC - 5MHz.

Signal Range: TTL compatible levels; maximum input 20V.

Minimum Pulse Width: 50ns.

Input Impedance: Typically 2kOhm.

External Sweep Reset

TTL low or switch closure returns sweep to start frequency and holds until TTL high or switch opens. Rear panel input.

External Sweep Hold

TTL low or switch closure halts sweep at its instantaneous position until TTL high or switch opens.

OUTPUTS

50 Ohm

Amplitude Control: >20dB vernier control within each attenuator range. Maximum output 20V peak-to-peak from 50Ohm (10V into 50Ohm).

Attenuator: Additional switch-selectable attenuation of 0, -20 or -40dB. Minimum output <20mV peak-to-peak from 50Ohm (<10mV into 50Ohm).

DC Offset Control Range: +/-10V from 50Ohm. DC offset plus signal peak limited to +/-10V (+/-5V into 50Ohm). DC offset plus waveform attenuated proportionally in -20dB and -40dB positions.

TTL

Amplitude: Fixed TTL level output at frequency and symmetry of main output. Capable of driving 20 TTL loads.

Sweep Out

Output Level: 0 to 4V ramp from internal sweep generator. Zero slope for duration of marker.

Output Impedance: 600Ohms.

Pen Lift

TTL high at end of single sweep and momentary TTL high at reset. Rear panel output.

GENERAL

Power Requirements

Input Voltage: 110/120 volts AC nominal 50/60Hz or 220/240 volts AC nominal 50/60Hz, adjustable internally. The TG502 will operate safely and meet specification within normal AC supply variations viz. 100-130 volts AC and 200-260 volts AC respectively.

Power Consumption: 30VA max.

Environmental Operating Range:

+5°C to +40°C, 20% to 80% RH.

Storage Temperature Range: -40°C to +70°C.

Size: 300mm wide x 145mm high x 230mm deep.

Weight: 4.2kg