TM 500 / 5000

MODULAR TEST INSTRUMENTS

- PG 506A Calibration Generator
- TG 501A Time Mark Generator

Manual Scope Calibration Instruments

Accurate calibration depends on quality instrumentation.

A range of simple plug-in instruments, all part of the TM 500 family, allow the calibration or performance verification of a multitude of types of electronic equipment.

At TEGAM, our scope calibration instruments are built with meticulous attention to quality and performance. Our scope calibration instruments have inherent design accuracy and features that make them ideal for verifying and calibrating scopes.

TM 500 Oscilloscope Calibration equipment sets the standard of oscilloscope calibration. TM 500 instruments provide a wide range of standard amplitude square waves, the fastest rise times, the lowest aberrations, the fastest time marks, and the widest frequency range of leveled sine waves available from any oscilloscope calibration equipment.

PG 506A Calibration Generator

- **Three square wave output modes**
- **10 Hz to 1 MHz**
- **Direct readout of oscilloscope deflection error**

The PG 506A Calibration Generator provides three modes of square wave output, selectable dc outputs, and a variable amplitude output with front panel digital indication of oscilloscope deflection error. Simultaneous, plus and minus low-level, fast rise (1.0 ns) square waves or high-amplitude (60V), extremely clean square waves are available at frequencies from 10 Hz through 1 MHz for checking oscilloscope transient response. A 5 mA calibration current loop is useful for current probe calibration. A 1 kHz square wave can be generated in the amplitude-calibration mode. Its amplitude can be varied around the calibrated level until the square wave aligns with the oscilloscope graticule divisions. Scope deflection error can then be read directly off the PG 506A digital display in percentage high or low, permitting rapid verification of oscilloscope performance.

An optional Tunnel-Diode Pulser provides a clean, fast rise pulse for adjusting the transient response of high frequency oscilloscopes and other instruments. It can be driven by the PG 506A at repetition rates exceeding 50 Hz. Output amplitude of the pulse is approximately 250 mV into 50 Ω, while rise time is less than or equal to 125 ps; aberrations are less than 1% in a 1 GHz system.

The optional Precision Voltage Divider is designed for use with the PG 506A in the Standard Amplitude mode. This .4 divider allows your oscilloscope to display a constant four divisions when checking amplitude calibration from 20µ V/div through 1 V/div. It also allows more convenient use of the PG 506A with oscilloscopes that cannot display five divisions of amplitude. The input limit on the instruments is 5 V RMS. The output is 0.4X the PG 506A amplitude with a voltage accuracy of 0.4%. The input capacitance requirement is 50 Ω with an output greater than or equal to 100 kΩ.

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Prices and specifications subject to change without notice.

PG 506A Specifications

Amplitude — Calibrator Mode

Period — Fixed at ≈ 1 ms or dc.

Amplitude — From 200 µ V p-p to 100 V p-p in 1-2-5 sequence, accurate within 0.25% into 1 MΩ; 100 µ V p-p to 5 V p-p into 50Ω.

Error Readout — Range ±7.5%; resolution: 0.1%.

Pulse Modes

Period — 1 µs to 10 ms (within 5%) in decade steps with the variable control in Cal position. Variable extends period to at least 100 ms.

Symmetry — ≈ 50% duty cycle.

High Amplitude Output

Rise Time — Unterminated: 100 ns or less; Terminated into 50 Ω; 10 ns or less.

Amplitude Range — Unterminated: 60 V or less to at least 60V; Terminated into 50 Ω: 0.5 B or less to at least 5V.

Leading-Edge Aberrations — Within 2% or 50 mV p-p, whichever is greater, when terminated into 50 Ω.

TG 501A Time Mark Generator

- **Marker outputs, 1 ns to 5 s**
- **Direct readout of oscilloscope timing error**
- **External trigger output**

The TG 501A Time Mark Generator provides marker outputs from one nanosecond to five seconds. A unique feature of the TG 501A is a variable timing output with a front panel two-digit LED display.
The display indicates percentage of timing error between the normal time interval and a variable interval that lines up the marker pulse with graticule or division marks on the display. This feature not only provides direct readout in terms of percent error, but also helps eliminate errors associated with visually estimating error from a display.

TG 501 A Specifications

Markers — 1 ns through 5 s in a 1-2-5 sequence.

Marker Amplitude — ≥1 V peak into 50 Ω on 5 s through 10 ns markers; ≥750 mV p-p into 50 Ω on 5 ns and 2 ns markers; ≥200 mV p-p into 50 Ω on 1 ns markers.

Trigger Output Signal — Slaved to marker output from 5 s through 100 ns; remains at 100 ns for all faster markers.

Internal Time Base — Crystal frequency 5 MHz; stability (0° to 50°C within 5 parts in 10^7 after 1/2 hour; long-term drift 1 part or less in 10^7 per month; setability adjustable to within 5 parts in 10^8).

External Reference Input — Available with internal changes; acceptable frequencies, 1 MHz, 5 MHz, or 10 MHz. Input amplitude must be TTL-compatible.

Timing Error Readout Range — to 7.5%

Timing Error Measurement Accuracy — Device under test error is indicated to within one least significant digit (to within one displayed count).

Ordering Information

PG 506A	Calibration Generator
TG 501A	Time Mark Generator
012-0482-00	Precision 50 ohm cable
015-0265-00	Precision Voltage Divider
067-0681-01	Tunnel Diode Pulser
TM 503B	3 Wide Power Module Mainframe
TM 5003	3 Wide Power Module Mainframe
TM 5003/RI	TM 5003 w/Rear Interface
TM 5006A	6 Wide Power Module Mainframe
TM 5006A/R	TM 5006A w/Rack Mount
TM 5006A/RI	TM 5006A w/Rear Interface
TM5006A/R/RI	TM 5006A w/ Rack Mt & Rear Interface
TM 5006A/EMC	TM 5006A w/EMC Shielding

Mainframe Power Plug Options

Standard	120V North American
UE220	220V Universal Euro & Switzerland
UK240	240V United Kingdom
A240	240V Australian
NA240	240V North American
S220	220V Switzerland

Warranty

One year on materials and workmanship.

Calibration Documentation

Contact TEGAM for OPTION Z540 NIST Traceable Compliance Certificate and Test Data.

Calibration & Technical Services

For warranty and remedial repair, calibration services and spare parts, or for additional information on TEGAM sales and service offices around the world, contact us at 440-466-6100 (ph) or 440-466-6110 (fx).

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