

# MODULAR INSTRUMENTS SELECTION GUIDE

*Nobody  
puts it together  
like Tek.*

**Tektronix**  
COMMITTED TO EXCELLENCE



## TM 500/TM 5000: The first family of modular instruments.

The Tektronix TM 500/TM 5000 Family is the world's most accepted source for modular, multi-purpose test instruments — proven in an installed base of well over half a million units. Each plug-in instrument can function either individually, with just a mainframe, or as part of an integrated, computer-controlled network. Either way, you get cost-effective performance and exceptional versatility through Tek's modular, standardized design.

With over fifty plug-ins to choose from, you can create a compact test set for bench, rack or field. Multiple performance levels within each instrument classification give you the flexibility to configure the most functional measurement system for your application. Literally hundreds of configurations are possible — programmable, manual or a combination of the two.

When you need to reconfigure, simply interchange the appropriate modules — up to six in a mainframe. Adherence to standard fit and form eliminates the uncabbling, restacking and rebuilding necessary with other systems, so you can be up and running again in minutes instead of hours.

Tek's modular approach saves you time — and space. TM 500/TM 5000 instruments and mainframes take up less than half the space of comparable test equipment. Rear panel interface connections help reduce cable clutter and simplify operation. And you can easily interface any plug-in instrument with devices external to the mainframe.



**TM 5000 programmable plug-in modules offer an economical entree to automated test.** Whether it's a single instrument or package, they offer the benefits of advanced programming capability and compact size —without the need for complex interfacing.

Programming is simple and straightforward because TM 5000 instruments meet all requirements of the IEEE-488 standard. They include Tek Standard Codes and Formats, which ensures that the language and syntax between instruments are consistent and easy to use.

Plus, just because you're automating doesn't mean your manual equipment is outdated. TM 500 manual plug-ins are electrically and mechanically compatible with TM 5000 programmable plug-in modules. They can be used in TM 5000 mainframes, side-by-side with the programmable plug-ins.

**The TM 500/TM 5000 Family opens the door to unmatched economy — and high levels of performance.** Flexibility, ease of use and low cost for best-in-class performance have all been part of Tek's modular concept from the start. Which means you don't pay for more capability than you need or can use. Since fixed packaging costs for frames, covers, primary power circuits and other items are shared by a number of plug-ins, their cost is typically much lower than that of comparable monolithic instruments.

In addition, compatibility between the TM 500 and TM 5000 lines make it possible to upgrade to a higher-performance system while protecting your current investment. Reduced cabling costs, the need for fewer GPIB cables, and the ease which which a system can be reconfigured all contribute to increased economy as your test and measurement needs evolve and grow.

**We'll support you all the way.** You can depend on Tek for sales assistance, applications engineering, service technicians, trainers and other expertise you need to optimize your test and measurement results. We provide clear, comprehensive documentation with every instrument, plus ready access to a lengthy list of application and construction notes that communicate up-to-date technical information and short-cuts to custom circuits.

Take time to evaluate your needs — and our unique solutions. We're sure you'll find the right measure of performance, right within your reach.

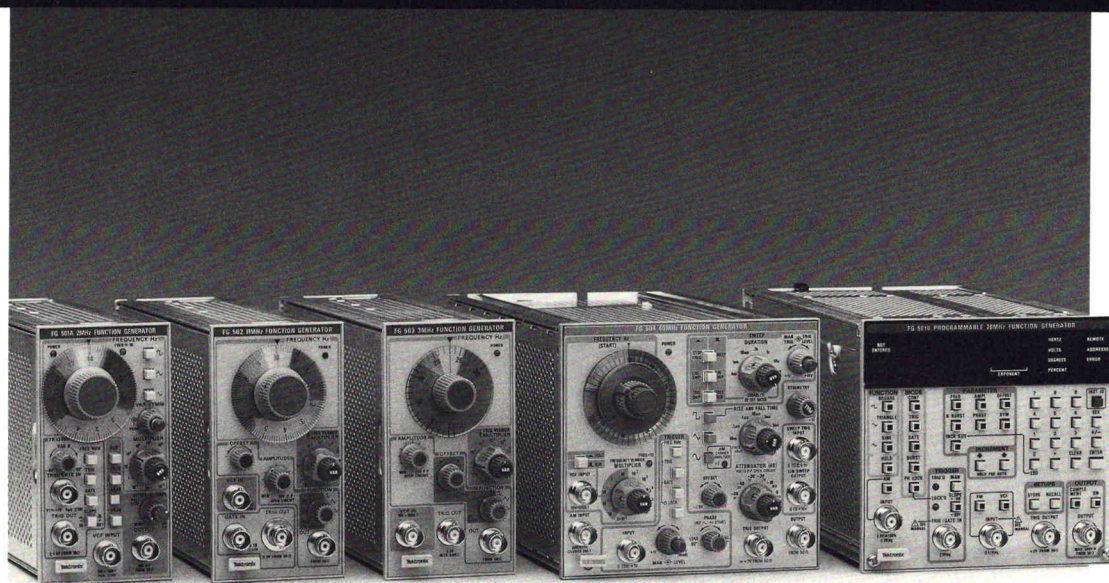
For further information or a demonstration, contact your local Tektronix Sales Engineer.

**The last word in fast, flexible test.**

## CONTENTS

Function Generators.....	4
Arbitrary/Function Generators.....	5
Pulse/Function Generators.....	5
Pulse Generators.....	6
Power Supplies .....	7
Digital Multimeters.....	8
Digital Counter/Timers .....	9
Modular Oscilloscopes .....	10
Oscilloscope Calibration Instruments .....	11
Audio Analysis .....	12
Interface Tools .....	13
Signal Conditioners .....	13
Mainframes .....	14
Special Purpose Plug-Ins .....	15
Accessories .....	15





FG 501A • FG 502 • FG 503 • FG 504 • FG 5010

## Function Generators

Function Generators stimulate devices and circuits under test by simulating typical waveforms. Several levels of performance give you the flexibility to configure the most cost-effective, functional system for your application.

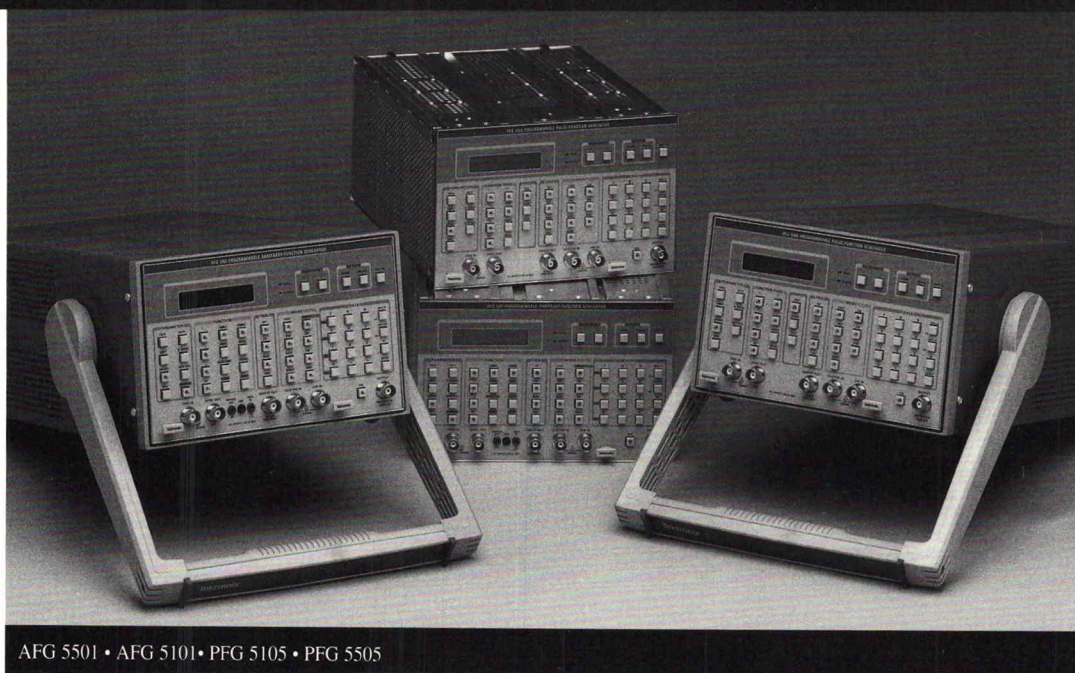
The FG 5010 provides full function generator capabilities to 20 MHz, GPIB programmability, excellent accuracy, variable symmetry and complementary output for use in automated systems.

The FG 504 generates three basic waveforms from 0.001 Hz to 40 MHz, plus a wide range of shaping with variable rise/fall times and symmetry controls.

The FG 503, FG 502 and FG 501A are lower-frequency generators offering low-cost alternatives for straightforward applications in biological, geophysical and mechanical simulations, as well as traditional test and measurement applications.

	FG 501A	FG 502	FG 503	FG 504	FG 5010
Frequency Range (Hz)	0.002 to 2M	0.1 to 11 M	1 to 3 M	0.001 to 40 M	0.002 to 20 M
Sine, Square, Triangle Waveforms	Yes	Yes	Yes	Yes	Yes
Pulse & Ramp	Yes	Yes	No	Yes	Yes
Symmetry	<5% to >95% Variable	5%, 50%, 95%	No	7% to 93% Variable	10% to 90% Variable
Amplitude (Vpp)					
Open circuit	30	10	20	30	20
Into 50 $\Omega$	15	5	10	15	10
Offset (V dc)					
Open circuit	$\pm 13$	$\pm 5$	$\pm 7.5$	$\pm 7.5$	$\pm 7.5$
Into 50 $\Omega$	$\pm 6.5$	$\pm 2.5$	$\pm 3.75$	$\pm 3.75$	$\pm 3.75$
Peak signal + Offset (V dc)					
Open circuit	$\pm 15$	$\pm 10$	$\pm 15$	$\pm 20$	$\pm 15$
Into 50 $\Omega$	$\pm 7.5$	$\pm 5$	$\pm 6$	$\pm 11.25$	$\pm 7.5$
Sinewave Amplitude	$\pm 0.1$ dB, 20 to 20 k;	$\pm 1.5$ dB, 0.1 to 11 M;	$\pm 2$ dB, 1 to 3 M	$\pm 0.5$ dB, 0.001 to 40 k;	$\pm 0.25$ dB, 0.002 to 1 k;
Flatness (Hz)	$\pm 0.5$ dB, 20 k to 1 M			$\pm 2$ dB, 40 k to 40 M	$\pm 0.3$ dB, 1 k to 1 M;
(10-kHz ref, 50 $\Omega$ load)	$\pm 1$ dB, 1 M to 2 M				$\pm 0.42$ dB, 1 M to 10 M;
					$\pm 0.8$ dB, 10 M to 20 M
Sinewave Distortion (Hz)	$\leq 0.25\%$ , 20 k to 20 k	$\leq 0.5\%$ , 10 to 50 k	$\leq 0.5\%$ , 1 to 30 k	$\leq 0.5\%$ , 20 to 40 k	$< 0.5\%$ , 20 to 19.99 k
(Maximum Output, 50 $\Omega$ load)	$\leq 0.5\%$ , 20 k to 100 k		$\leq 1.0\%$ , 30 k to 300 k		
Modulation	VCF	VCF	VCF	AM, FM, VCF	AM, FM, VCF
IEEE STD 488.1-1987	No	No	No	No	Yes
Module Size	1 wide	1 wide	1 wide	2 wide	2 wide





AFG 5501 • AFG 5101 • PFG 5105 • PFG 5505

## Arbitrary/Function Generators Pulse/Function Generators

The AFG 5501/AFG 5101 Arbitrary/Function Generators combine the capabilities of standard analog and arbitrary waveform generation with the ability to generate virtually any sweep shape to allow accurate simulation of real-world functions.

Arbitrary waveforms can be defined point by point, generated mathematically, transferred from computer graphics, or captured from an analog source and stored into one of two independently selectable 12 bit by 8K waveform memories for later use.

The PFG 5505/PFG 5105 Programmable Pulse/Function Generators add pulse capabilities to all the features found in a high-performance function generator.

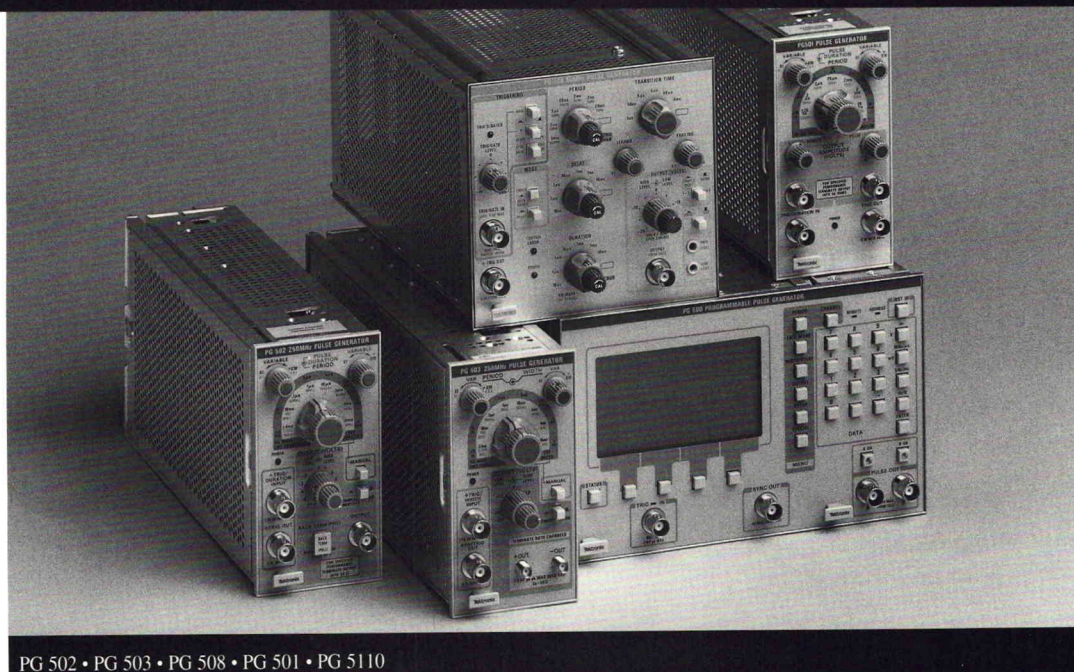
All four models can store up to 99 front-panel settings which can be called up from the front panel or through the GPIB.

The AFG 5101 and PFG 5105 are three-wide plug-in modules which fit in TM 5000 mainframes, and the AFG 5501 and PFG 5505 are the same instruments mounted in a three-wide GPIB power module for stand-alone use.

	AFG 5101/AFG 5501	PFG 5105/PFG 5505
Sine, Square, Triangle Waveforms	Yes + DC	Yes + DC
Pulse Waveforms	No	Yes*
Arbitrary Waveforms	Yes	No
Frequency Range (Hz)	1 $\mu$ to 12M	0.012 to 12 M
Amplitude (Vpp): Open circuit	19.98	19.98
Into 50 $\Omega$	9.99	9.99
Offset (V dc): Open circuit	$\pm 8.98$	$\pm 8.98$
Into 50 $\Omega$	$\pm 4.49$	$\pm 4.49$
Peak signal + Offset (V dc): Open circuit	$\pm 9.99$	$\pm 9.99$
Into 50 $\Omega$	$\pm 4.99$	$\pm 4.99$
Sinewave Amplitude Flatness (Hz)	0.5 dB, 0.012 to 120 k $\pm 2.0$ dB, to 1.2 M	0.5 dB, 0.012 to 120 k $\pm 2.0$ dB to 1.2 M
(10-kHz ref, 50 $\Omega$ load)	$\pm 3$ dB, to 12 M, 1 kHz ref	$\pm 3$ dB to 12 M, 1 kHz ref
Sinewave Distortion (Hz, Maximum Output, 50 $\Omega$ load)	< 0.6% 121 to 120 k	< 0.6% 121 to 120 k
Modulation	AM, VCO/FM	AM, VCO/FM
IEEE STD 488.1-1987	Yes	Yes
Module Size	3 wide	3 wide

\* For pulse capabilities of this product refer to page 6.





PG 502 • PG 503 • PG 508 • PG 501 • PG 5110

## Pulse Generators

Testing wideband systems, simulating data transmission signals, driving a laser — it's all within the scope of TM 500/TM 5000 Pulse Generators.

The GPIB-programmable PG 5110 delivers maximum functionality for requirements from 0.1 Hz to 50 MHz and is available in single and dual channel versions. Extremely good timing accuracies are achieved through internal self-calibration, and the majority of parameters can be varied independently for each output channel.

In manual instrumentation, the general-purpose PG 508 has features similar to the PG 5110, including independently variable rise and fall times for close approximations of real-world events. The PG 503 offers periods down to 4 ns and fast 200 ps transition times for testing high-speed ECL and GaAs logic families. Finally, the PG 502 and low-cost PG 501 provide repetition rates, amplitudes and transition times compatible with common TTL, DTL and ECL circuits.

	PG 501	PG 502	PG 503	PG 508	PFG 5105/PFG 5505*	PG 5110
<b>Pulse Period</b>	≤20 ns to ≥200 ms 50 MHz to 5 Hz	≤4 ns to ≥100 ms 250 MHz to 10 Hz	≤4 ns to ≥100 ms 250 MHz to 10 Hz	≤20 ns to ≥200 ms 50 MHz to 5 Hz	83 ns to 83.3 s 12 MHz to 0.012 Hz	20 ns to 10 s 50 MHz to 0.1 Hz
<b>Pulse Duration</b>	≤10 ns to ≥100 ms	≤2 ns to ≥50 ms	≤2 ns to ≥50 ms	≤10 ns to ≥100 ms	40 ns to 99.9 ms	10 ns to 10 s
<b>Duty Factor</b>	Up to 70% to 0.2 μs period Up to 50% at 20 ns period	Up to 50%	Up to 50%	Up to 70% to 0.2 μs period Up to 50% at 20 ns period	Up to 85%	Up to 99%
<b>Pulse Delay</b>	No	No	No	≤10 ns to ≥100 ms	40 ns to 99.9 ms	0 ns to 10 s
<b>Double Pulse</b>	Yes	No	No	Yes	Yes	Yes
<b>Transition Times</b>	Fixed, ≤3.5 ns	Fixed, ≤1 ns	Fixed, ≤200 ps (20 to 80% @ 1V range)	≤5.5 ns to ≥50 ms ind. variable	Fixed < 15 ns At Full Output	≤6 ns to 10 ms ind. variable
<b>Aberrations (into 50 Ω)</b>	±3.5%	±5% (duration ≥ 5 ns)	±10% for p-p voltages ≥ 1.25V	≤5% ±50 mV	≤8% ±20 mV from 3.4 V to 9.99 V output	≤5% + 50 mV
<b>Amplitude (Vp-p into 50 Ω)</b>	5 V	5 V, ±5 V window	2.5 V, ±2.5 V window	10 V, ±10 V window	9.99 V, ±4.99 V window	10 V, ±10 V window
<b>IEEE STD 488.1-1987</b>	No	No	No	No	Yes	Yes
<b>Module Size</b>	1 wide	1 wide	1 wide	2 wide	3 wide	3 wide

\* For more information on PFG 5105/5505 refer to page 5.





PS 5010 • PS 5004 • PS 503A • PS 501-1

## Power Supplies

Four TM 500/TM 5000 power supplies provide for most measurement situations you'll encounter. For ATE, where it is routinely necessary to observe a test system's performance at the limits of the supply voltage, the three power supplies, three digital displays and full programmability of the PS 5010 are required. On the other hand, the manual PS 503A, with three power supplies, is well suited for development breadboarding.

For applications requiring precise voltages, the programmable PS 5004 and manual PS 501-1 should be considered. The PS 5004 offers a 4 1/2 digit display and remote sensing for precise control.

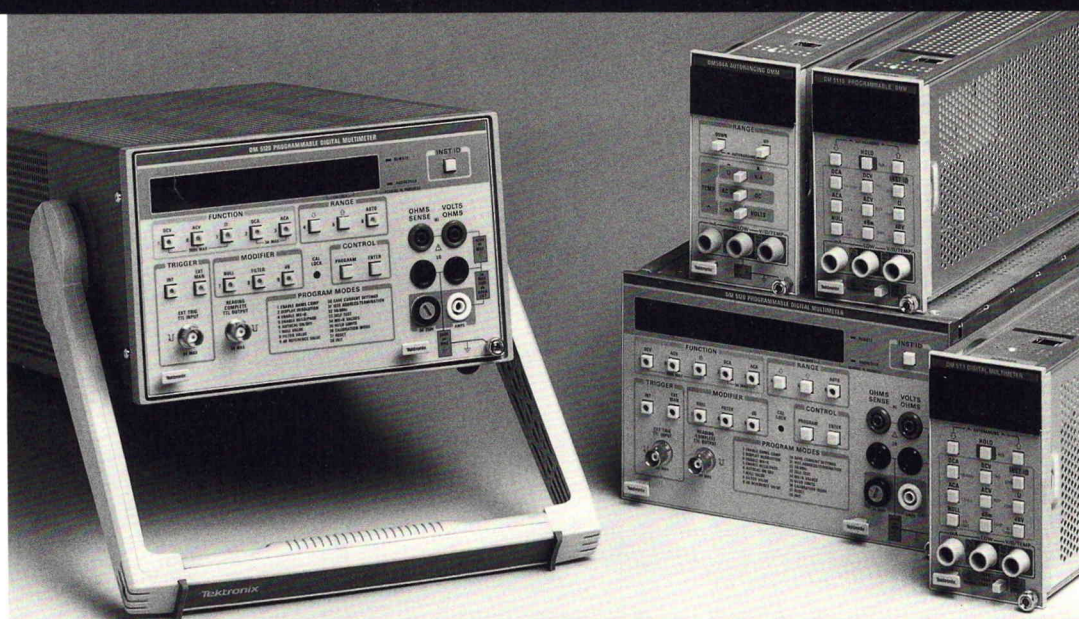
Tek's modular approach offers versatility and convenience. Each power supply can be rear interfaced with other TM 500/TM 5000 instruments to reduce front-panel clutter, while floating outputs can be connected in series or parallel configurations.

	PS 501-1	PS 503A	PS 5004	PS 5010
Number of Supplies	2	3	1	3
Floating Supplies	0 to 20 V 0 to 400 mA	0 to +20 V 0 to -20 V 100 mA to 1A <sup>2</sup>	0 to 20 V 10 mA to 305 mA	0 to +32 V 0 to -32 V 50 mA to 1.6 A <sup>1</sup>
Logic Supply	+4.75 to +5.25 V 1A Max	+4.5 to +5.5 V 1A Max	No	+4.75 to +5.5 V 3A Max
IEEE STD 488.1-1987	No	No	Yes	Yes
Module Width	1	1	1	2

1. Limited to 48W in high-current compartment or 24W in standard compartments.

2. Limited to 40W in high-current compartment or 15W in standard compartments.





DM 5520 • DM 504A • DM 5110 • DM 5120 • DM 511

## Digital Multimeters

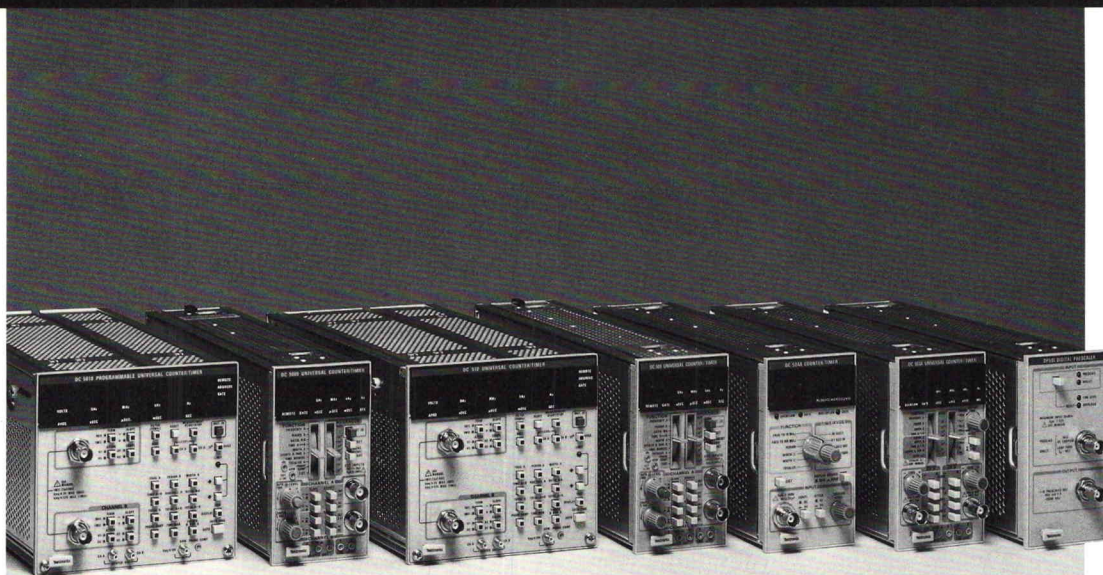
Five TM 500/TM 5000 digital multimeters offer the broad selection of performance, modular size and price to match most applications.

The DM 5120 is the highest performance digital multimeter in the line with advanced features including  $6\frac{1}{2}$  digit resolution, 1000 readings per second (in the  $3\frac{1}{2}$  digit mode) and four-wire resistance measurements. The DM 5520 is a monolithic version of the same instrument, with its own power housing and power cord.

The DM 5110 represents an optimum choice for programmability, small size, performance and features, all at a competitive price. The DM 511 extends the capabilities of the low-cost DM 504A by offering dBV, dBm and rear interfacing with a new, easy-to-use front panel.

	DM 504A	DM 5110/DM 511	DM 5120/DM 5520
Number of digits	4 $\frac{1}{2}$	4 $\frac{1}{2}$	6 $\frac{1}{2}$ (DC & Ohms)
DC Volts Ranges	200 mV to 1000 V	200 mV to 1000 V	300 mV to 300 V
DC Volts Best Accuracy	$\pm(0.05\% \text{ rdg} + 0.02\% \text{ FS})$	$\pm(0.05\% \text{ rdg} + 0.01\% \text{ FS})$	$\pm(0.003\% \text{ rdg} + 20 \text{ counts})$
DC Volts Best Resolution	10 $\mu\text{V}$	10 $\mu\text{V}$	0.1 $\mu\text{V}$
AC Volts Ranges	200 mV to 500 V	200 mV to 500 V	300 mV to 300 V
AC Volts Best Accuracy	$\pm(0.6\% \text{ rdg} + 0.06\% \text{ FS})$	$\pm(0.3\% \text{ rdg} + 0.05\% \text{ FS})$	$\pm(0.15\% \text{ rdg} + 100 \text{ counts})$
AC Volts Best Resolution	10 $\mu\text{V}$	10 $\mu\text{V}$	1 $\mu\text{V}$
Resistance Ranges	200 $\Omega$ to 20 M $\Omega$	200 $\Omega$ to 20 M $\Omega$	300 $\Omega$ to 300 M $\Omega$
Resistance Best Accuracy	$\pm(0.05\% \text{ rdg} + 0.01\% \text{ FS})$	$\pm(0.05\% \text{ rdg} + 0.01\% \text{ FS})$	$\pm(0.005\% \text{ rdg} + 20 \text{ counts})$
Resistance Best Resolution	10 $\mu\Omega$	10 $\mu\Omega$	100 $\mu\Omega$
AC and DC Current Ranges	200 $\mu\text{A}$ to 2 A	200 $\mu\text{A}$ to 2 A	300 $\mu\text{A}$ to 3 A
dB Ranges	No	+ 54 dB to - 60 dB	+ 49 dB to - 54 dB
Temperature Measurement Range (Optional)	- 62 to + 230°C	- 62 to + 230°C	No
True RMS	Yes	Yes	Yes
Autorange	Yes	Yes	Yes
4 Wire Ohms	No	No	Yes
Math Functions/Limits	No	Limits only	Yes
IEEE STD 488.1-1987	No	DM 5110 Only	Yes
Module Size	1 wide	1 wide	3 wide





DC 5010 • DC 5009 • DC 510 • DC 509 • DC 504A • DC 503A • DP 501

## Digital Counter/Timers

The 350 MHz DC 5010/DC 510 and 135 MHz DC 5009/DC 509 are four universal counter/timers offering reciprocal frequency measurements with an especially wide range of measurement functions. The DC 5010 and DC 5009 are GPIB-programmable, making them ideally suited for ATE applications.

The 25 MHz DC 503A Universal Counter/Timer features eight measurement functions including period, width and time-interval averaging.

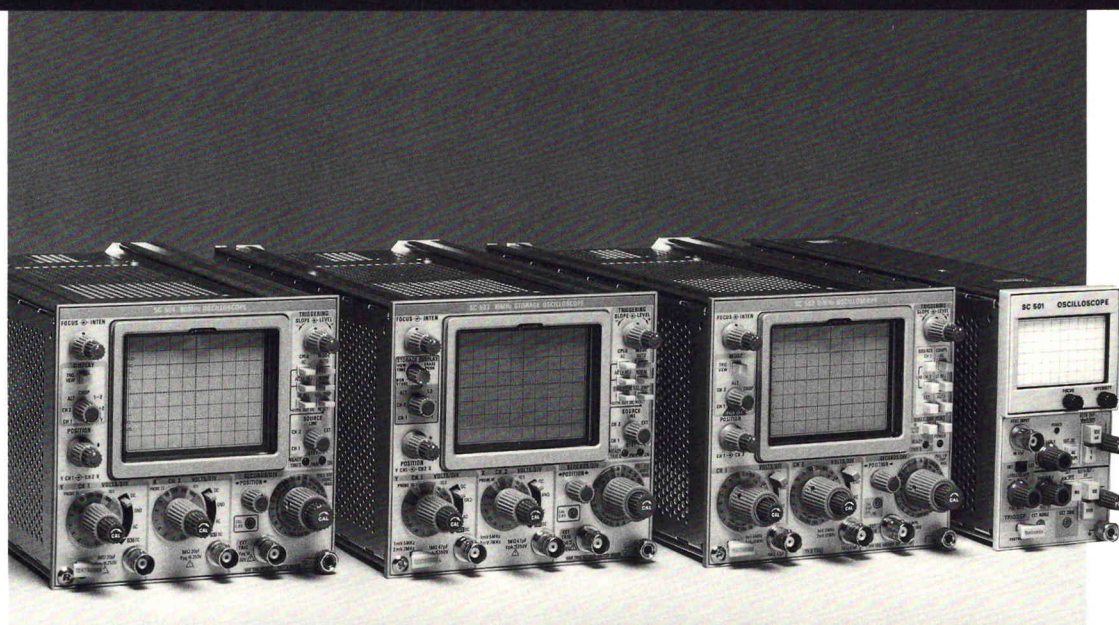
The low-cost 100 MHz DC 504A includes autorange, period and width averaging, plus an internal 100X multiplier for high resolution of low frequency signals.

To achieve high accuracy performance, all Tek TM 500 and TM 5000 counter/timers use an oven-controlled-crystal time base.

The DP 501 Digital Prescaler can be used to extend the frequency measurement capability of all counters to 1.3 GHz.

	DC 503A	DC 504A	DC 509/DC 5009	DC 510/DC 5010
Frequency Range with DP 501	125 MHz 1.3 GHz	100 MHz 1.3 GHz	135 MHz 1.3 GHz	350 MHz 1.3 GHz
Number of Digits	8	6	8	9
Number of Channels	2	1	2	2
Frequency	Yes	Yes	Yes	Yes
Period & Period Averaging	Yes	Yes	Yes	Yes
Width & Width Averaging	Yes	Yes	Yes	Yes
Time Interval & Time Interval Averaging	Yes	No	Yes	Yes
Gated Events	No	No	Yes	Yes
Gated Events Averaging	Yes	No	Yes	Yes
Totalize	Yes	Yes	Yes	Yes
Time Manual	Yes	No	Yes	Yes
Ratio	No	No	Yes	Yes
Ratio Averaging	Yes	No	Yes	Yes
Rise Time, Fall Time & Av.	No	No	No	Yes
Autotrigger	No	No	Yes	Yes
IEEE STD 488.1-1987	No	No	DC 5009 only	DC 5010 only
Module Size	1 wide	1 wide	1 wide	2 wide
Other	High stability time base, trigger level and shaped outputs, time manual, totalize.	Autorange, 100X resolution multiplier.	High stability time base, trigger level and shaped outputs, self-test, phase modulated clock, probe compensation time manual, totalize.	





SC 504 • SC 503 • SC 502 • SC 501

## Modular Oscilloscopes

Each of four TM 500 modular oscilloscopes provides waveform capture and viewing capabilities in an ultra-compact, plug-in package.

The SC 504 is an 80 MHz general-purpose, dual-trace, nondelayed-sweep oscilloscope with a high writing speed, enhanced automatic triggering and true X-Y modes.

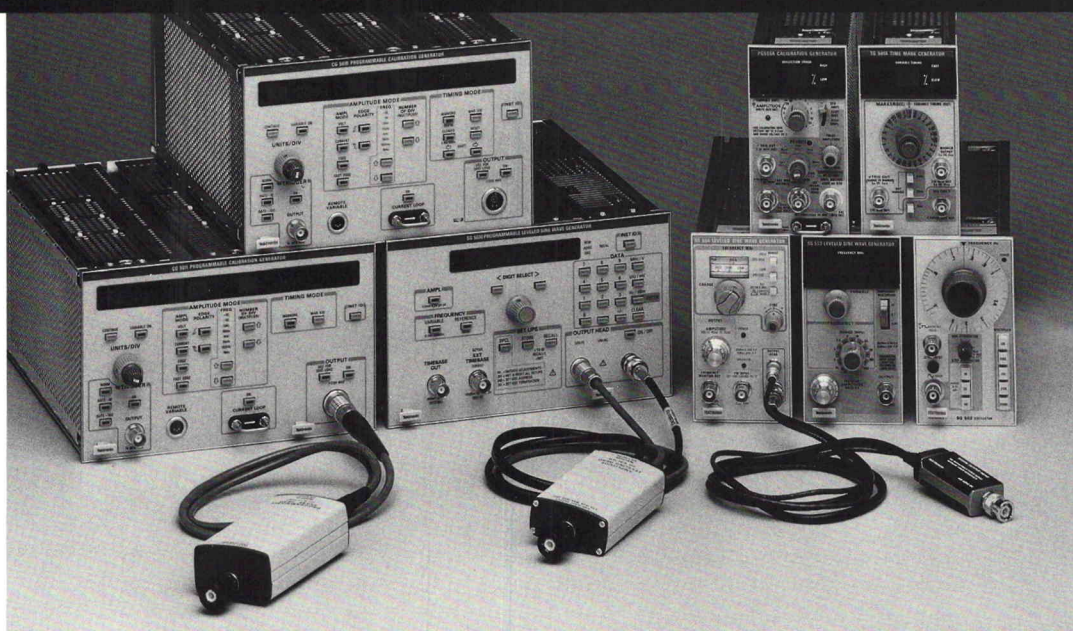
The SC 503 is a 10 MHz, dual-channel, analog storage scope especially useful for viewing non-repetitive or low-repetitive signals. Waveforms can be stored and displayed after an input signal is removed.

The 15 MHz dual-trace SC 502 is a powerful tool for field servicing of digital equipment. The CRT's high writing speed enhances the display of digital information.

Finally, the single-channel SC 501 with its 2½ inch CRT occupies a single plug-in compartment in any TM 500 or TM 5000 series mainframe — a low-cost solution for bench, rack or field.

	SC 501	SC 502	SC 503	SC 504
Bandwidth (MHz)	5	15	10	80
Number of Channels	1	2	2	2
Sensitivity (mV/div)	10	1	1	5
Vertical Accuracy	±3%	±2%	±3%	±2%
Max Input Voltage: V (dc + peak ac) V (p-p at 1 kHz)	350	350 700	350 700	250 500
Sweep Rate (/div) With x10 Mag	1 ms to 100 ms NA 20 Steps Decade Steps	200 ns to 0.5 s 20 ns 21 Steps 1-2-5 Sequence	500 ns to 0.2 s 50 ns 21 Steps 1-2-5 Sequence	50 ns to 0.2 s 5 ns 1-2-5 Sequence
Module Size	1 Wide	2 Wide	2 Wide	2 Wide





CG 5011 • CG 5010 • SG 5030 • SG 504 • PG 506A • SG 503 • TG 501A • SG 502

## Oscilloscope Calibration Instruments

Two fully programmable calibration generators, the CG 5011/CG 5010, can be used in computerized systems for calibration and verification of all major oscilloscope parameters. The CG 5011 is the preferred choice for calibrating both analog and digital oscilloscopes up to 1 GHz. The CG 5010 can be configured in applications where analog scopes are being calibrated. Both are complemented by the 550 MHz SG 5030 Programmable Leveled Sinewave Generator for oscilloscope bandwidth calibration.

Five manual calibration instruments can be configured into a compact test set for bench, rack or field. They offer a wide range of standard amplitude square waves, plus the fastest rise times, lowest aberrations, fastest time marks and widest leveled sinewave frequency range of any equipment in its class.

### CG 5011/CG 5010 Calibration Generators

- 40  $\mu$ V to 200 V Square Waves for Vertical Amplifier Calibration
- 1 mA to 100 mA Square Waves for Current Probe Calibration
- 0.5 ns to 5 s Time Markers (CG 5011)
- 0.5 ns to 100 ns Slew Edges and 10 ns to 5 s Time Markers for Calibrating Analog Scopes (CG 5010)
- < 150 ps Risettime Pulses for Calibrating Vertical Amplifier Bandwidth
- Next-Cal-Date Tracking
- GPIB Programmable

### SG 5030 Leveled Sinewave Generator

- Oscilloscope Bandwidth Calibration
- 0.1 Hz to 550 MHz
- 4.5 mV to 5.5 V Amplitude Range
- Amplitude Flatness from  $\pm 1.5\%$  to  $\pm 4\%$  of 50 kHz Reference Frequency
- 20 Stored Front Panel Settings
- GPIB Programmable

### PG 506A Calibration Generator

- Amplitude Calibration 200  $\mu$ V to 100 V
- Direct Readout of Oscilloscope Deflection Error
- 10 Hz to 1 MHz
- 5 mA Current Loop for Current Probe Calibration

- Three Square Wave Output Modes
- Selectable dc Outputs

### TG 501A Time Mark Generator

- Marker Outputs, 1 ns to 5 s
- Direct Readout of Oscilloscope Timing Error
- Timing Error Readout Range to  $\pm 7.5\%$

### SG 502 Oscillator

- 5 Hz to 500 kHz Sinewaves and Square Waves
- Low-Distortion Sinewaves
- 5 V RMS Open Circuit — 600  $\Omega$  Source
- 0 to 40 dB Output Variable plus 0 to 70 dB in 10 dB Steps

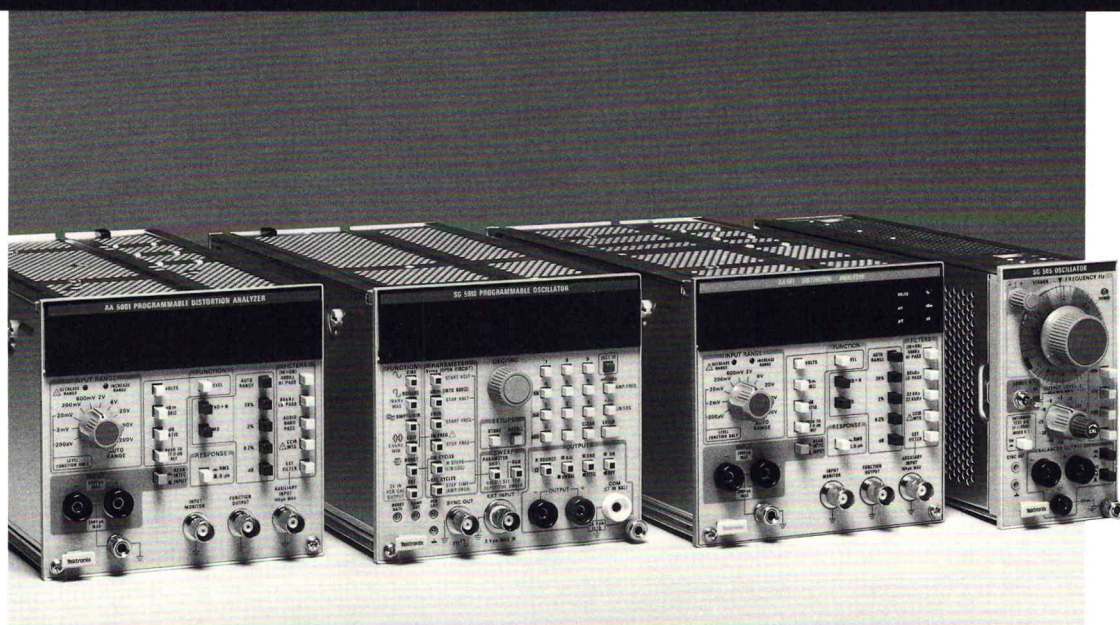
### SG 503 Leveled Sinewave Generator

- 250 kHz to 250 MHz
- Leveled, Variable Output
- Digital Readout of Frequency
- 5 mV to 5.5 V p-p into 50  $\Omega$  Amplitude Range
- Frequency Accuracy within  $\pm 0.7$  of One Count of the Least Significant Display Digit

### SG 504 Leveled Sinewave Generator

- 245 MHz to 1050 MHz
- Leveled, Variable Output
- Frequency Modulation Capability
- 0.5 V to 4.0 V p-p Amplitude Range
- Frequency Accuracy  $\pm 2\%$  of Dial Indication





AA 5001 • SG 5010 • AA 501A • SG 505

## Audio Analysis

The AA 5001 Distortion Analyzer and SG 5010 Low-Distortion Oscillator, along with their manual counterparts, the AA 501A and SG 505, offer the industry-leading performance and flexibility to maintain and enhance signal quality in applications ranging from baseband testing of satellite, microwave and wire-line communications to manufacturing of consumer audio products.

### AA 5001/AA 501A Distortion Analyzers

- Fully Automatic: No Level Setting, Tuning or Nulling
- Level, Total Harmonic Distortion and dB Ratio Measurements
- Total System Harmonic Distortion plus Noise (THD+N) 0.0025% (with Companion SG 5010/SG 505 Oscillators)
- Residual Noise  $\leq 3.0 \mu\text{V}$
- Digital Readout plus Analog-Like Bar Graph for Peaking and Nulling
- IMD to SMPTE, DIN and CCIF (Standard with AA 5001; Option 01 Required for AA 501A)
- Fully programmable with AA 5001

### SG 5010 Programmable Oscillator

- 10 Hz to 163.8 kHz Sinewave Frequency Range
- Sinewave, Squarewave, SMPTE/DIN, CCIF, Sinewave Burst, IHF Burst

- Ultra Low Distortion: 0.001% THD
- Floating or Grounded Output
- Selectable Source Impedance: 50  $\Omega$ , 150  $\Omega$ , 600  $\Omega$
- Intermodulation Test Signal
- Sweep in Frequency or Amplitude
- Fully Programmable

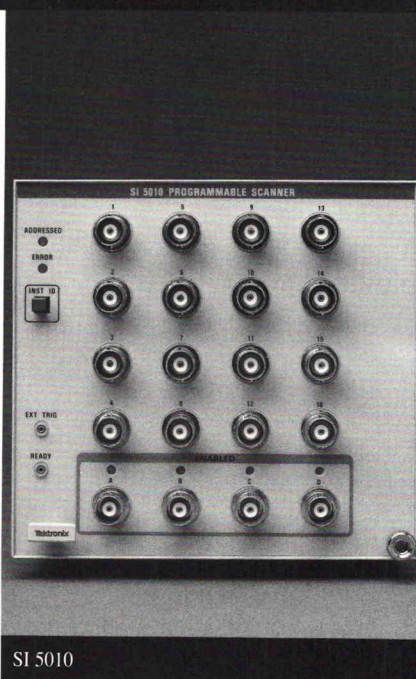
### SG 505 Low-Distortion Oscillator

- 10 Hz to 100 kHz Sinewave Output
- Ultra-Low Distortion: 0.0008% THD (Typically 0.0003%)
- Floating or Grounded Output
- 600  $\Omega$  Source Impedance
- Vernier Frequency Control
- Fully Balanced Output to 28 dBm (SG 505 Option 02)
- Selectable Source Impedance (SG 505 Option 02)
- Intermodulation Test Signal (Options 01 and 02)





AM 503 • AM 502 • AM 501



SI 5010

## Signal Conditioners

TM 500 signal conditioners offer unique capabilities for solving electrical measurement and analysis problems. The compact size and flexibility of plug-in modules make them applicable to a broad range of measurement needs including preamplification of low-level signals, addition or removal of dc offset, integration, differentiation, filtering and current probe amplification.

### AM 501 Operational Amplifier

- $\pm 40$  V, 50 mA Output
- Open-Loop Gain 10,000
- 50 V/ $\mu$ s Slew Rate
- Symmetrical Differential Design
- Optional Circuit Board to Customize Function

### AM 502 Differential Amplifier

- Differential Gain
- 2% Gain Accuracy

- 100 dB CMRR to 50 kHz
- Selectable Upper and Lower -3 dB Points
- Adjustable DC Offset
- DC to 1 MHz Maximum Bandwidth

### AM 503/AM 503S Current Probe Amplifier

- Displays Current Signals on an Oscilloscope
- 1 mA to 20 A, DC to 50 MHz
- 20 mA to 100 A, DC to 15 MHz
- Peak Pulse Measurements to 500 A

## Interface Tools

### SI 5010 Programmable Scanner/Multiplexer

The SI 5010 switches and routes up to 16 high-frequency input and/or output signals. The software-configurable basic four-channel arrangement is useful for point-to-point switching (any connector to any other connector) and in a wide variety of fan-in and/or fan-out configurations.

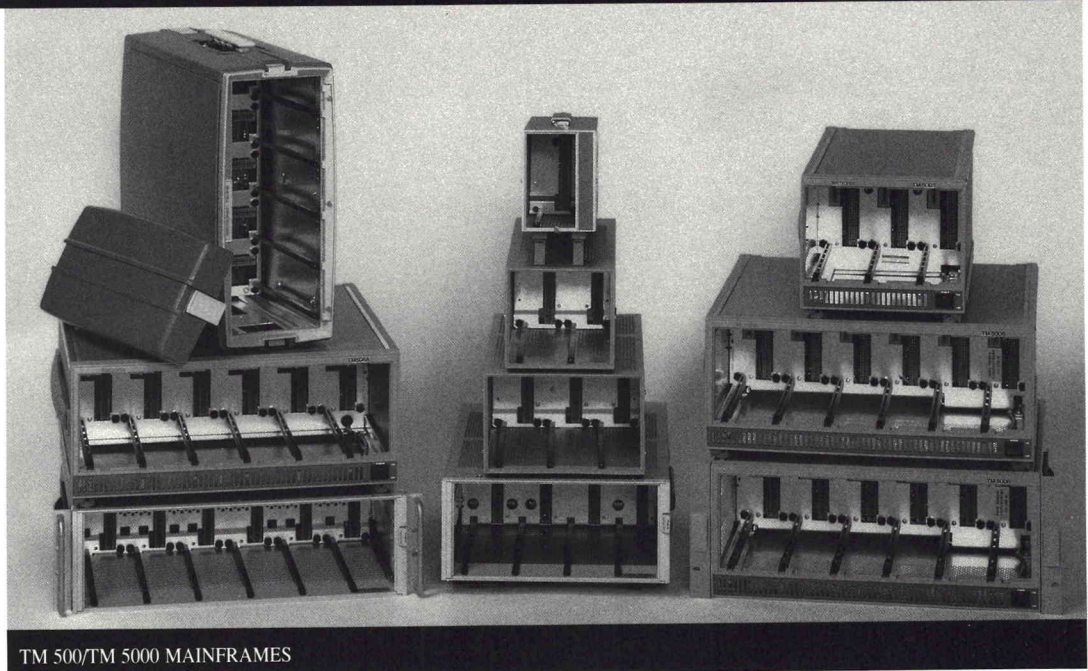
- Command Buffer for Controller-Free Operation, Stores up to 300 GPIB System Commands
- Software Configurable as: 1 Group of 16 Channels 2 Groups of 8 Channels 4 Groups of 4 Channels
- 350 MHz Bandwidth in 4-Channel Configuration
- External Handshake Lines
- Built-in Time-of-Day and Pacing Clock

### Custom Plug-In Kits

Custom plug-in kits supply low-cost circuit construction tools for use in prototype design, automated manufacturing, production test and education. The kits provide a mechanical package and development boards that allow rapid construction of circuits. The plug-ins are compatible with TM 500 and TM 5000 mainframes.

- Proven Mechanical Package
- Variety of Configurations
- Versatile Assortment of Power Sources
- Access to Rear Interface System for Customized Multi-Instrument Systems
- Extender Cables for Debugging





## Mainframes

Nine power module mainframes provide the framework for Tek's modular instrument architecture. TM 500 manual instruments operate in all nine models and are interchangeable with TM 5000 program-mable plug-in modules in the six-wide TM 5006A and three-wide TM 5003.

A range of choices allows you to combine your instruments with the mainframe that best fits your environment. The TM 5006A, TM 5003, TM 506A, TM 504, TM 503B, TM 502A and TM 501A are convenient benchtop mainframes. The rugged, five-wide TM 515 Traveler Mainframe is designed for applications which require exceptional portability. Finally, the RTM 506, TM 5006A Option 10 and TM 506A Option 10 are rackmount mainframes for production and test.

	TM 501A	TM 502A	TM 503B	TM 504	RTM 506	TM 506A	TM 515	TM 5003	TM 5006A
Compartments	1	2	3	4	6	6	5	3	6
Dimensions	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in	mm in
Width	96.7 3.87	145 5.7	214 8.4	305 12	483 19	445 17.5	381 15	230 9	445 17.5
Height	156 6.25	140 5.5	140 5.5	152 6	152 6	194 7.6	173 6.8	194 7.6	194 7.6
Depth	416 16.6	407 16.6	452 17.8	508 20	508 20	488 19.2	508 20	488 19.2	488 19.2
Weight ≈	kg lb	kg lb	kg lb	kg lb	kg lb	kg lb	kg lb	kg lb	kg lb
Net	239 5.4	4.0 8.75	4.7 10.3	8.4 18.5	14.5 32	14.5 32	10.2 22.5	8.6 19	14.5 32
Shipping	5.22 11.4	6.75 14.75	7.45 16.3	11.2 24.5	20.9 46	20.9 46	13.6 30	12 26.5	20.9 46
Line	48 to 440	48 to 400	48 to 400	48 to 66	48 to 66	48 to 66	48 to 66	48 to 66	48 to 66
Frequency Hz									
Power	≈ 120VA	≈ 120VA	≈ 250VA	≈ 460VA	≈ 650VA	≈ 650VA	≈ 500VA	≈ 300VA	≈ 650VA
Consumption									
VA maximum									

(Actual power consumption depends on plug-in selection and operating modes)



## Special Purpose Plug-ins and Accessories

In addition to TM 500/TM 5000 plug-in modules and mainframes, Tektronix offers a selection of special purpose plug-ins and accessory products designed to extend the value of your instrument system. They all share designed-in compatibility with your TM 500/TM 5000 equipment. Plus, you can be sure that any products you order, from top-of-the-line plug-ins to simple extender cables, are backed by full product warranties and an unparalleled worldwide service network.

### TVC 501 Time-Voltage Converter

- Real-Time Scope Display of Time-Interval Variations vs. Time
- Time Delay, Pulse Width and Period Measurements
- >2 Million Uninterrupted Event-by Event Measurements/Second

### TR 503 Tracking Generator

- Works with All 2750 and 490 Series Spectrum Analyzers
- Swept Measurements to 1.8 GHz
- Enhances Dynamic Range to Better Than 110 dB
- Very Stable — Useful as a CW Signal Source
- Auxiliary, Constant Level Output for Frequency Counter Measurements — Even of Signals at the Noise Floor

### OCP 5002/OCP 5502\* Optical Converter/Power Meter

- 1100 to 1650 nm Range
- DC to 2 GHz Bandwidth
- Extinction Ratio Measurements
- Low DC Drift
- TEKPROBE™ Interface
- LED and Laser Characterization

\* The OCP 5502 is a functionally equivalent instrument packaged as a standalone monolithic unit with integral power supplies.

### OIG 501/OIG 502 Optical Impulse Generator

- OIG 501 Operates at 850 nm; OIG 502 at 1300 nm
- 35 ps Laser Impulse
- Calibration for High Speed Photodiodes
- Impulse Source for High Resolution Optical Time Domain Reflection
- Fiber Bandwidth/Dispersion

### Plug-In Extender Cables

Designed to couple TM 500/TM 5000 plug-ins with the rear interface of a mainframe or a GPIB board outside the mainframe for calibration or custom plug-in design.

### TM 500 Carrying Case

High-strength, luggage-type carrying case for protection in transport.

### Rain Covers

Weather-proof, vinyl-coated covers fit several mainframe sizes.

### Plug-In Toolbox

Provides space within mainframes for storing probes, cables, small tools, "tees" and accessories.

### Protective Front Cover

Snap-on cover molded of high-impact plastic for TM 503B and TM 504 mainframes.

### Mainframe Plug-In Retainers

Retainer bar kits provide the mechanism for securing plug-ins within multi-compartment mainframes.

### Accessory Pouch

Soft vinyl, snap-on pouch for carrying probes, cables and other accessories.

### Lab Instrument Carts

Rolling test equipment work stations enhance instrument transportability and free valuable bench space.

### Blank Plug-In Panels

Designed to cover unused compartments in a mainframe operating without a full complement of plug-ins.

### Rear Interface Data Book

Provides diagrams and related interface information for most TM 500/TM 5000 plug-ins.



**For further information, contact:**

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