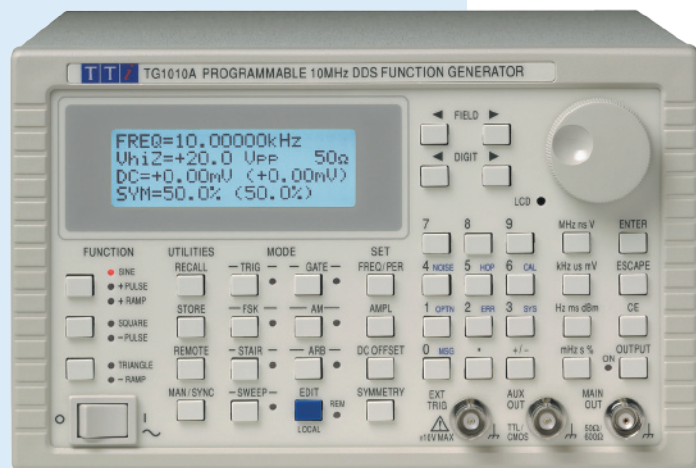## TG1010A

- ▶ 10MHz DDS function generator
- ▶ Arbitrary waveform capability
- ▶ Wide range of modulations
- ▶ RS-232 and optional GPIB

Full details are available on the web site.

The TG1010A is a high performance 10MHz DDS function generator with extensive modulations and the added benefit of basic arbitrary waveform capabilities.

It can produce frequencies down to 0.0001 Hz and has a built-in trigger generator. Triggered bursts with variable start-stop phase is available for all waveforms.

Wide range phase-continuous sweep is available at rates from 10ms to 15 minutes. Amplitude modulation is provided for all waveforms and an internal AM source is incorporated. The frequency agility of the DDS system is used to provide FSK and Frequency Hop facilities.

Arbitrary waveforms can be loaded via the digital interfaces and then used in a similar way to the standard waveforms. In addition, the TG1010A offers numerous "complex" waveforms pre-defined in ROM. These include commonly used wave-shapes such as sine x/x, decaying sinewave, exponential rise and fall etc.

- ▶ 0.1mHz to 10MHz frequency range, 7 digit resolution.
- ▶ Eight standard waveforms, plus multiple "complex" waveforms, true arbitrary waveforms and noise.
- ▶ Powerful modulation modes including Sweep, AM, Gating, Trigger/Burst, FSK and Hop.
- ▶ Variable symmetry, variable start/stop phase.
- ▶ 20V pk-pk output from 50Ω or 600Ω (switchable).
- ▶ Storage for five Arbitrary waveforms (1024 x 10-bits).
- ▶ Fully programmable via RS-232 or optional GPIB interfaces

Digital Function Generators

Digital function generators can be divided into three broad categories:

1. DDS* Function Generators without Arbitrary - these perform a similar function to an analog function generator, but with the advantages of DDS based stability, resolution, and sinewave purity. The TG2000 falls into this category.

2. DDS Function/Arbitrary Generators - these have the ability to produce arbitrary waveforms in addition to standard waveforms, but within the limitation imposed by using a DDS system. The TG1010A and TG5011 fall into this category.

3. Universal Arbitrary Waveform Generators - these combine a DDS function generator with a variable-clock* arbitrary generator. Typically these generators incorporate more sophisticated systems for the production of arbitrary waveforms. The TGA1240 and TGA12100 series (see page 19) fall into this category. The TG4001 also has a similar architecture.

Digital Function and Function/Arbitrary Generators - comparison table (see also TGA series - page 18)				
	TG1006	TG1000/2000	TG2511A/5011A	TG2512A/5012A
Number of Channels	One	One	One	Two
Dual Channel Operation	-	-	-	Full Independent, Coupled or Tracking modes
Frequency Range (sine)	0.001Hz to 10MHz	0.001Hz to 10/20MHz	0.001mHz to 25/50MHz	
Frequency Resolution (sine)	6 digits or 1mHz	6 digits or 1mHz	14 digits or 0.001mHz	
Waveform Generation System	DDS	DDS	DDS	
Multi-Generator Phase Lock	No	No	Yes	
Frequency Accuracy	Better than ±10ppm		Better than ±1ppm	
Waveform Functions	Sine, Square, Triangle,	Sine, Square, Triangle, +ve/-ve Pulse	Sine, Square, Ramp, Pulse, Noise, PRBS, sinx/x, exponential rise, logarithmic rise	
Variable Symmetry Range	20% to 80% square	20% to 80% square/pulse	0.1% - 99.9% ramp, 20% to 80% square	
Additional Pulse Generator Features			Independent period, delay, width. Variable rise/fall times	
Arbitrary Waveforms (Size)	None	None	Yes - 2 to 128K words	
Arbitrary Vertical Resolution		-	14 bits	
Arbitrary Waveform Clock		-	125MHz (DDS)	
ARB Waveform PC Software		-	Waveform Manager Plus	
Frequency Sweep (Rate/Mode)	50ms to 999s, lin or log	50ms to 999s, lin or log	1ms to 500s, lin or log	
Internal/External Modulations	FSK, AM	Tone, FSK, External AM	Internal/External AM, FM, PM, PWM, Sum, BPSK, FSK	
Internal Trigger Generator	0.001Hz to 10kHz	0.001Hz to 5kHz	0.005 Hz to 1MHz	
Gated/Triggered Burst	No	Yes/No	Yes/1 to 1048575 cycles	
Amplitude Range (pk-pk EMF)	2mV - 20V from 50/600Ω	5mV - 20V from 50/600Ω	20mV - 20V from 50Ω	
DC Offset Range	±10V EMF.	±10V EMF.	±10V EMF unattenuated	
Sinewave Purity	Typically 0.1% to 20kHz <-30dBc at 10MHz	Typically 0.1% to 20kHz <-40dBc at 20MHz	<0.15% to 100kHz, typically <-35dBc at 50MHz	
Output Flatness	±0.5dB to 500kHz; ±2dB to 10MHz	±0.2dB to 500kHz; ±2dB to 20MHz	±0.15dB to 5MHz; ±0.5dB to 50MHz	
Auxiliary Output	Sync	Multi-function output for Waveform Sync, Trigger Out, Sweep Sync., Marker (not TG2000)		
Display	8 digit LCD	Dot-matrix backlit LCD	Full Graphic backlit LCD	
Digital Interfaces	None	RS232/USB (TG2000 only)	USB/LAN (GPIB option)	
Power: 230V or 115V AC nominal 50/60Hz, Size & weight: TG1006 and TG1000/2000: 260 x 88 x 235 mm (WxHxD) 2.0 kg (4.4lb) . TG2511A/5011A: 2U half-rack: 212 x 87 x 335 mm (WxHxD). 2.6 kg (5.7 lb); TG2512A/5012A: 2U half-rack: 212 x 87 x 360 mm (WxHxD). 2.7 kg (6 lb)				

N.B. The TG1010A and TG4001 are older legacy products and are not included within the comparison table above.

* For an explanation of DDS (direct digital synthesis) and of DDS and variable-clock architectures for generators go to our web site: www.aimtti.com/go/arb

for more complete information:
www.aimtti.com/generator