Function Generators/Frequency Counters — con-

TGA1230 Universal Signal Source
30MS/s Synthesised Arbitrary Waveform Generator

T T i

H = 130, W = 212, L = 330

- 30MHz clock speed and 12-bit vertical resolution
- 65,536 point waveform memory fitted as standard
- Sophisticated waveform creation/editing tools built-in
- Complex waveform sequencing and looping capability
- WaveCad arbitrary waveform PC software included
- Multiple "standard" waveforms including sine, square, triangle, haversine, ramp, pulse and sin(x)/x

- Pulse train pattern generation for up to 10 pulses
- Wide range sweep, AM tone switching, signal summing
- Tone switching facilitates precision DTMF generation
- Multiple generators can be easily phase locked
- Built-in trigger generator, gated and triggered burst modes
- Fully interfaceable via RS-232 (standard)

Standard Waveforms

Sinewave	0.0001Hz to 10MHz	THD<0.1% to 100kHz

Cosine, Haversine and Havercosine waveforms are also available

Squarewave	0.001Hz to 15MHz	Rise/fall times <25ns
Triangle Wave	0.0001Hz to >100kHz	Linearity better than 0.1% to 30kHz
Positive/Negative Ramp	0.0001Hz to >100kHz	Linearity better than 0.1% to 30kHz
Sine(x)/x	0.0001Hz to >100kHz	Linearity better than 0.1% to 30kHz
Pulse and Pulse Train	0.01Hz to 7.5MHz	Trains of up to 10 pulses can be defined with independent width, delay and level.

Arbitrary Waveforms

Up to 50 user defined waveforms may be stored in RAM. Arbitrary waveforms can be defined by front panel editing controls or by downloading of waveform data via the RS232 interface.
Up to 4 waveforms may be linked. Each waveform can have a loop count of up to 32768.
A sequence of waveforms can be looped up to 1048575 times or run continuously.

Memory Size	64K points
Vertical Resolution	12 bits (4096 points maximum)
Sample Clock Range	0.1Hz to 30MHz
Resolution/Accuracy	4 digits/±1 digit
Output Filter	10MHz Elliptic, 10MHz Bezel, or None

Main Output

Amplitude Range	5mV to 20V pk-pk from 50Ω or 600Ω
Amplitude Accuracy	±2% ±1mV at 1kHz, terminated or unterminated
DC Offset	±10V
Resolution	3 digits or 1mV for Amplitude and Offset

Modulation

Sweep	30ms to 999s phase continuous, Lin or Log, Marker
Amplitude Modulation	0 to 100%, External only, DC to 1MHz
Triggered Burst	1 to 1048575 cycles, dc to 50kHz internal, dc to 1MHz external
Gated	DC to 50kHz internal, DC to 1MHz external
Tone	16 frequencies can be set up. Switching from external trigger
Signal Summing	Signal can be summed with the output of an external generator

Inputs/Outputs

Trigger In, VCA In, Sum In, Hold, Ref Clock In/Out, Sync Out, Cursor/Marker Out

Interfaces

RS-232 (Standard)	Variable Baud rate, 9600 maximum

General

Display	Alpha-numeric LCD, 4 rows of 20 characters
Data Entry	Via Spin-wheel or Keyboard
Sored Settings	Up to 9 complete instrument set-ups can be stored
Power	230V or 115V nominal 50/60Hz, internally adjustable
Safety	Complies with **EN6010-1**
EMC	Complies with **EN50081-1** and **EN40082-1**

T379

	Price Each			
Mftrs. List No.	Order Code	1+	3+	5+
TGA1230	**892-774**			

TGA1240 Series Arbitrary Generators
TGA1241, TGA1242, TGA1244

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New

The TGA1240 series includes single channel, two channel and four channel generators. The single channel TGA1241 is housed in a half rack width case. The two channel TGA1242 and four channel TGA1244 are housed in a wider case, as illustrated. The following specifications apply to each channel.

- One, two or four independent waveform channels
- 40MHz clock speed and 12-bit vertical resolution
- Sinewaves and squarewaves up to 16MHz
- 64K points horizontal resolution per channel
- Interchannel triggering, summing and phase control
- Complex waveform sequencing and looping capability
- Storage for 100 waveforms and 9 set-ups
- Sophisticated waveform creation/editing tools built-in
- Windows based software supplied for waveform creation and editing
- Multiple "standard" waveforms including sine, square, triangle, haversine, ramp, pulse and sin(x)/x
- Pulse train pattern generation for up to 10 pulses
- Wide range sweep, AM, tone switching, signal summing
- Tone switching facilitates precision DTMF generation
- Built-in trigger generator, gated & triggered burst modes
- Fully interfaceable via RSS-232 and GPIB **(IEEE-488.2)**

Standard waveforms

Sinewave	0.0001Hz to 16MHz	THD <0.1% to 100kHz
Squarewave	0.001Hz to 16MHz	Rise/fall times <25ns
Triangle wave	0.0001Hz to >100kHz	Linearity better than 0.1% to 30kHz
Positive/negative ramp	0.0001Hz to >100kHz	Linearity better than 0.1% to 30kHz
Sine(x)/x	0.0001Hz to >100kHz	Linearity better than 0.1% to 30kHz
Pulse and pulse train	0.01Hz to 10MHz	Trains of up to 10 pulses can be defined with independent width, delay and level.

Cosine, Haversine and Havercosine waveforms are also available.

Arbitrary Waveforms

Up to 100 user defined waveforms may be stored in RAM. Arbitrary waveforms can be defined by front panel editing controls or by downloading of waveform data via digital interfaces. Up to 4 waveforms may be linked. Each waveform can have a loop count of up to 32768. A sequence of waveforms can be looped up to 1048575 times or run continuously.

Memory size	64K points
Vertical resolution	12 bits (4096 points maximum)
Sample clock range	0.1Hz to 40MHz
Resolution/accuracy	4 digits/±1 digit
Output filter	16MHz elliptic, 10MHz elliptic, 10MHz bezel, or none

Basic arbitrary waveform creation and editing tools are built into the instrument. Arbitrary waveforms can be built up using insertion of standard waveforms between points, point by point value setting, and straight line drawing between points. Windows based arbitrary waveform editing software for Windows 98/95/3.1 is supplied. The graphical environment uses drawing tools, mathematical expressions and insertion from waveform libraries to rapidly create or modify waveforms which are then downloaded using RS-232 or GPIB interfaces.

Specifications

Main output

Amplitude range	5mV to 20V pk-pk from 50W or 600W
Amplitude accuracy	±2% ±1mV at 1kHz, terminated or unterminated
DC offset	±10V
Resolution	3 digits or 1mV for amplitude and offset

Modulation

Sweep	30ms to 999s phase continuous, lin or log, marker
Amplitude modulation	0 to 100%, external only, DC to 1MHz
Triggered burst	1 to 1048575 cycles, dc to 50kHz internal, dc to 1MHz external
Gated	DC to 50kHz internal, DC to 1MHz external
Tone	16 frequencies can be set up. Switching from external trigger
Signal summing	Signal can be summed with the output of an external generator.

Inputs/outputs

Trigger In, VCA In, Sum In, Hold, Ref Clock In/Out, Sync Out, Cursor/Marker Out.

Inter-channel operation

Phase locking	Two or more channels can be phase locked with independent phase control to a resolution of 0.1 degrees.
Modulation	Channels can be used to modulate other channels AM or SCM or all channels can be modulated from external input.
Summing	Each channel can be analogue summed into the next channel. Any channel(s) can be summed with the SUM input.
Triggering	Any channel can be triggered from the previous or next channel.

Interfaces

RS-232	Variable Baud rate, 9600 maximum.
GPIB	Conforming to **IEEE-488.1** and **IEEE-488.2**

Software

Waveform Manager Plus software supplied on disk. Windows based program that provides full waveform creation, editing, management and transfer. Drawing tools, equation editor, waveform libraries. Built-in uploader for Textronix DSOs.

General

Display	Alpha-numeric LCD, 4 rows of 20 characters
Data entry	Via spin-wheel or keyboard
Stored settings	Up to 9 complete instrument set-ups can be stored
Power	230V or 115V nominal 50/60Hz, internally adjustable
Safety	Complies with **EN61010-1**
EMC	Complies with **EN50081-1** and **EN40082-1**.

T538A

	Price Each			
	Order Code	1+	3+	5+
TGA1241	**351-0876**			
TGA1242	**351-0888**			
TGA1244	**351-0890**			

Fully Synthesised 1GHz RF Generator
TGR1040

T T i

AUGUST *intro*

The TGR1040 is a low cost, synthesised RF signal generator which offers exceptional frequency accuracy and stability, wide dynamic range, low phase noise and low leakage. These are the essential features required for most RF development, test and service work.