FREQUENCY COUNTER/TIMER

External signals can be measured using the TRIG IN or REF IN Sockets.

Functions:	Frequency, Period, Positive Width, Negative Width, Duty Cycle
Frequency Range:	AC coupled 3Hz to >125MHz
	DC coupled 100mHz to >125MHz
Input Source:	AC coupled REF IN / COUNT (AC) IN socket
	DC coupled TRIG IN / COUNT (DC) IN socket
Frequency Resolutuion:	Up to 7 digits displayed
Measurement Time:	Automatic
Input Range and Sensitivity:	AC coupled 100mVpp – 5Vpp, maximum input ±10V
	DC coupled Threshold typically 1.2V; sensitivity 100mVpp; maximum input +5V/-1V.
Accuracy:	±1 digit ± timebase accuracy.

INTER-CHANNEL OPERATIONS

Inter Channel Characteristics

Relative phase:	-360.000 to 360.000 degrees, 0.001 degree resolution (Phase offset cannot be set for Noise)
Channel to channel Skew (typical):	<1ns (when performing identical operations)
Crosstalk (typical):	<-80db

Channel Tracking	Standard on TGF3162		Optional on TGF3082 with GU3082
Independent (Off):	The channels are independent of each other.		
Equal:	The two channels are identical and behave identically.		

Channel Coupling	Standard on TGF3162		Optional on TGF3082 with GU3082
Frequency coupling:	The frequencies of the two channels can be coupled. Changing the frequency of one channel changes the frequencies of both channels.		
Amplitude (and DC Offset) coupling:	Amplitude (and DC offset) of the two channels can be coupled. Changing the amplitude and offset on one channel changes the amplitude and offset of both channels.		
Output coupling:	Output On/Off can be coupled. Switching the output On/Off on one channel switches the output On/Off of both channels.		

OUTPUTS

MAIN OUTPUTS

Output Impedance:	50Ω
Amplitude:	≤ 50MHz 20mV to 20Vp-p open circuit (10mV to 10Vp-p into 50Ω)
	≤ 125MHz 20mV to 10Vp-p open circuit (10mV to 5Vp-p into 50Ω)
	≤ 160MHz 20mV to 5Vp-p open circuit (10mV to 2.5Vp-p into 50Ω)
	Amplitude can be specified open circuit (hi Z) or into an assumed load of 1Ω to 10kΩ in Vp-p.
Amplitude Accuracy:	1.5% ±5mV at 1kHz into 50Ω
DC Offset Range:	≤ 50MHz ±10V. DC offset plus signal peak limited to ±10V from 50Ω.
	≤ 125MHz ±5V. DC offset plus signal peak limited to ±5V from 50Ω.
	≤ 160MHz ±2.5V. DC offset plus signal peak limited to ±2.5V from 50Ω.
DC Offset Accuracy:	Typically 1% ±50mV.
Resolution:	3 digits or 1mV for both Amplitude and DC Offset.

SYNC OUTPUT

Channel 2 can be configured to output Channel 1 sync from its MAIN OUT 2 socket. Sync is a multi function output which is automatically selected to be any of the following. Alternatively, user can choose Sync to always be carrier referenced, to output the currently used trigger signal or turn it off.

Carrier Waveform Sync:	Sine ≤ 50MHz: A square wave with 50% duty cycle at the waveform frequency.
	Sine >50MHz ≤ 160MHz: A sine wave at the waveform frequency.
	Square / Ramp / Pulse / Arbs: A square wave with 50% duty cycle at the waveform frequency.
	Pattern: A positive pulse which is 1 bit rate wide at the beginning of the sequence
	Noise: No sync associated with noise.
Modulation Sync:	AM/FM/PM/SUM/PWM: A square wave with 50% duty cycle referenced to the internal modulation waveform when modulation source is internal, or a square wave referenced to the carrier waveform when modulation source is external. No sync is associated with Noise and DC waveforms as the modulation source .
	FSK: A square wave referenced to the trigger rate. The sync is a TTL high when hop frequency is the output frequency and TTL low when carrier frequency is the output frequency for positive slope and vice versa for negative slope.
	BPSK: A square wave referenced to the trigger rate. The sync is a TTL high when the hop phase is the output phase and TTL low when carrier phase is the output phase for positive slope and vice versa for negative slope.
Sweep Sync:	A square wave that is a TTL high from the beginning of the sweep and a TTL low from the midpoint of the sweep
Burst Sync:	Internal Trigger: A square wave with 50% duty cycle at the trigger frequency.
	External Trigger: A square wave with same duty cycle and frequency as the external source.
	Manual Trigger: A positive pulse which is approximately 18us wide at the beginning of the event.
Trigger:	Selects the current trigger signal.
Output Signal Level:	Logic level nominally 3V
Output Impedance:	50Ω

REF CLOCK OUTPUT

Buffered version of the 10MHz clock currently in use (internal or external)

Output Level:	Nominally 3V logic level from 50Ω

INPUTS

TRIG IN / COUNT (DC) IN

For ASK, FSK, BPSK, triggered sweep, gated burst, triggered burst and DC coupled external frequency measurement

Frequency Range:	DC- 1MHz for Trigger, 100mHz to >125MHz for Counter
Signal Range:	Threshold typically 1.2V; 100mVpp sensitivity; maximum input +5V /-1V.
Minimum Trigger Pulse Width:	50ns
Trigger Polarity:	Selectable as high/rising edge or low/falling edge.
Input Impedance:	10kΩ

EXTERNAL MODULATION INPUT

For AM, FM, PM, SUM and PWM

Voltage Range:	± 2.5V full scale
Input Impedance:	5kΩ typical
Bandwidth:	DC to 5MHz

REF IN / COUNT (AC) IN

Input for an external 10MHz reference clock and AC coupled external frequency measurement

Voltage Range:	100mVpp – 5Vpp
Maximum Voltage:	+5V
Minimum Voltage:	-1V

INTERFACES

Full digital remote control facilities are available through LAN, USB and optional GPIB interfaces.

LAN Interface	Ethernet 100/10base – T hardware connection. 1.4 LXI Core 2011
USB Interface	Standard USB 2.0 hardware connection. Implemented as virtual-COM port.
USB Flash Drive	For waveform and set-up storage/recall.
GPIB (optional)	Conforming with IEEE488.1 and IEEE488.2

GENERAL

Display:	256 x 112 pixel monochrome graphics display. White LED backlight with adjustable brightness and contrast. Black-on-white or inverse modes.
Data Entry:	Keyboard selection of mode, waveform etc.; value entry direct by numeric keys or by rotary control.
Stored Settings:	Up to 9 complete instrument set-ups may be stored and recalled from non-volatile memory.
Size:	Bench Top: 97mm height; 250mm width; 295mm long Rack mount: 86.5mm (2U) height; 213.5mm (½-rack) width; 269mm long
Weight:	3.2kg
Power:	110-240VAC ±10% 50/60Hz; 100-120VAC ±10% 400Hz; 60VA max. Installation Category II.
Operating Range:	+5°C to 40°C, 20-80% RH.
Storage Range:	-20°C to + 60°C.
Environmental:	Indoor use at altitudes up to 2000m, Pollution Degree 2.
Options:	19 inch rack mounting kit.
Safety & EMC:	Complies with EN61010-1 & EN61326-1.

For details, request the EU Declaration of Conformity for this instrument via http://www.aimtti.com/support (serial no. needed).

OPTIONS

GPIB Interface TG-GPIB:	User installable GPIB (IEEE-488) interface module.
Features Upgrade GU3082	User installable software enhancement that adds Inter-channel functions, PRBS generator, Harmonics generator and Sum modulation to the TGF3082.
Rack Mount Kit RM200A:	2U high rack mount for one or two generators.

Product Reference	
TGF3162	160MHz two channel generator 110V to 240V AC input, supplied with: 　AC power cable appropriate to country of sale 　Printed quick-start manual in English, French, German, Italian and Spanish 　Printed full operating manual in English 　Waveform Manager Plus software on CD 　Large number of pre-built arbitrary waveform on CD 　IVI driver, combined LabView/LabWindows CVI driver, and USB driver on CD
TGF3082	80MHz two channel generator 110V to 240V AC input, supplied with: 　AC power cable appropriate to country of sale 　Printed quick-start manual in English, French, German, Italian and Spanish 　Printed full operating manual in English 　Waveform Manager Plus software on CD 　Large number of pre-built arbitrary waveform on CD 　IVI driver, combined LabView/LabWindows CVI driver, and USB driver on CD
TG-GPIB	User installable GPIB interface module
GU3082	User installable features upgrade for TFG3082 only
RM200A	2U high rack mount kit for one or two instruments

OTHER WAVEFORM GENERATORS FROM AIM-TTI

The TGF3000 Series is just part of an extensive range of generators from Aim-TTi ranging from simple analog function generators through to four channel true variable clock arbitrary generators. RF signal generators are also available.

Function Generators

TG300 Series	3MHz analog function generators with digital display of frequency and level
TG1006	10MHz DDS function generator with sweep, modulation and counter
TG2000 Series	10MHz/20MHz DDS function generators with full digital control

Arbitrary Function Generators

TGxx11/12A	25MHz/50MHz generators with one and two channel and extensive features

Pulse Generators

TGP110	10MHz analog pulse generator
TGP3100 Series	25MHz/50MHz digital pulse and universal generators with one or two channel and jitter free aysynchronous operation

True Arbitrary Generators

TGA1240 Series	40MHz variable clock Arbs with 1, 2 or 4 channels
TGA12100 Series	100MHz variable clock Arbs with 1, 2 or 4 channels
TGA12200 Series	(coming 2018) 2 or 4 channel true Arbs with up to 500MS/s clock rate and very extensive features

Available from:

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