

T3AFG200/T3AFG350/T3AFG500 Data Sheet

Function/Arbitrary Waveform Generators

Debug with Confidence 200 MHz – 500 MHz

Teledyne Test Tools T3AFG200 / T3AFG350 / T3AFG500 range of function/arbitrary generators are a series of dual-channel waveform generators with specifications of up to 500 MHz maximum bandwidth, 2.4 GSa/s maximum sampling rate and 16-bit vertical resolution. The proprietary Arbitrary & Pulse techniques used in the T3AFG200 / T3AFG350 / T3AFG500 models helps to solve the weaknesses inherent in traditional DDS generators when generating arbitrary, square and pulse waveforms. With the above advantages the T3AFG200 / T3AFG350 / T3AFG500 generators can provide users with a variety of high fidelity and low jitter signals, which can meet the growing requirements of a wide range of complex applications.



Tools for Improved Debugging

- Deep Memory 20 Mpts/Ch.
- Wide Range of Modulation Types AM, DSB-AM, FM, PM, FSK, ASK, PWM, Sweep, Burst, and PSK.
- High Resolution 16 bit resolution.
- Bandwidth Models up to 500 MHz.
- Built In Arbitrary Waveforms.
- PRBS, I/Q and user Defined Waveform capability.
- Single and dual channel models also available, starting from 5 MHz.

- Generate complex arbitrary waveforms.
- Quickly set up modulated waveforms.
- Generate waveforms with low noise, low spurious signal content and high dynamic range.
- Wide choice of bandwidths.
- Load and replay built in Arbitrary Waveforms.
- Support for complex applications.
- Inquire about the T3AFG5, T3AFG10, T3AFG40, T3AFG80 and T3AFG120.

Key Specifications

| 200 MHz, 350 MHz, 500 MHz |
|-------------------------------|
| 2 Independent Channels |
| 20 Mpts/Ch |
| 2.4 GS/s (2x Interpolation) |
| 4.3 inch Touch Screen TFT LCD |
| USB Host, USB Device, LAN |
| 3 Years |
| |

PRODUCT OVERVIEW

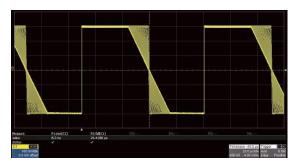
Ordering Information

| Model | Bandwidth | Channel | Memory per Ch | Sample Rate per Ch |
|----------|-----------|---------|---------------|-----------------------------|
| T3AFG200 | 200 MHz | 2 | 20 Mpts | 2.4 GS/s (2x Interpolation) |
| T3AFG350 | 350 MHz | 2 | 20 Mpts | 2.4 GS/s (2x Interpolation) |
| T3AFG500 | 500 MHz | 2 | 20 Mpts | 2.4 GS/s (2x Interpolation) |

| Function | T3AFG200, T3AFG350, T3AFG500 |
|-------------------------|---|
| Built-in Waveforms | 7 Standard (Sine, Square, Pulse, Ramp, DC, Noise, PRBS), 196 Arbitrary, optional IQ (option T3AFG-IQ) |
| Input/Output | 2 Waveform Outputs, Frequency Counter Input, Aux In/Out, 10 MHz Reference Clock In/Out |
| Modulation Functions | AM, DSB-AM, FM, PM, FSK, ASK, PSK, PWM, Sweep, Burst, Harmonic |
| Vertical D/A Resolution | 16 Bits |
| Additional Functions | Sweep, Burst, Waveform Combining, Channel Coupling, Channel Copying, Channel Tracking |
| Frequency Counter | Built-in high precision Frequency Counter (up to 8 digit resolution) |
| TrueArb and EasyPulse | Yes |
| Display Size | 4.3" Touch Screen |

Excellent Performance

- Bandwidths from 200 MHz to 500 MHz
- All Models have 2 Channels
- 20 Mpts/Channel memory



The rise/fall times can be set independently to a minimum of 1 ns (2 ns on T3AFG200) at any frequency and to a maximum of 75 s.

| CH1:Si | ne.OFF.HiZ | Burst | CH2:Squa | are.OFF.Hi | Z Mod |
|-----------------|--|----------------|---|---|------------------|
| Start Pha | | | Frequency Amplitude Offset Phase | 10.00000 6.000 Vp 0.000 Vd 0.0 ° | р |
| Cycles | 100000 <mark>0 (100000</mark> 0) iod 100.0000 | | Load Output | HiZ OFF | 6 <mark>8</mark> |
| NCycle Gated | Cycles Infinite | Start Phase | Burst Period | Source Internal | Page 1/2 ► |

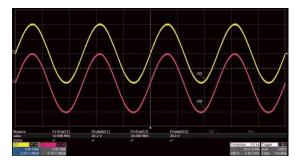
Burst mode supports 'N Cycle' and 'Gated' modes with the Burst source being configured as 'Internal', 'External' or 'Manual'.

Great Connectivity

- USB host port for mass storage
- USB device port (USBTMC)
- LAN port on 2 channel models



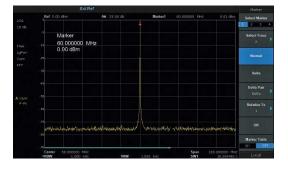
The T3AFG range of Function/Arbitrary Waveform Generators support a wide range of modulation types including AM, FM, PM, FSK, ASK, PSK, PWM and DSB-AM.



Output amplitude into a high impedance load can be as high 20 Vpp depending on frequency and waveform type.

| CH1:S | ine.OFF.HiZ | Sweep | CH2:Squa | are.OFF.Hiz | Z Mod |
|-----------|-------------|----------|---|---|-------|
| | | # | Frequency Amplitude Offset Phase | 10.00000 6.000 Vp 0.000 Vd 0.0 ° | p |
| Sweep T | ime 1.00000 | 00 s | | | |
| Start Fre | q 0.00000 | 00 Hz | Load | HiZ | |
| Stop Fre | q 20.0000 | 000kHz | Output | OFF | 古콜 |
| Sweep | StartFreq | StopFreq | Source | Trig Out | Page |
| Time | CenterFreq | FregSpan | Internal | Off | 1/2 - |

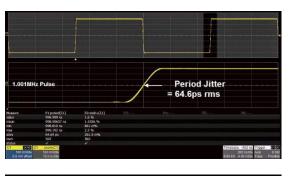
Sweep mode supports 'Linear' and 'Log' sweep, with 'Up' and 'Down' direction, and Sweep source can be configured as 'Internal', 'External' or 'Manual'.



High Fidelity output with 80 dB dynamic range. Sine wave non-harmonic spurious artifacts are -60 dBc \leq 350 MHz and -55 dBc > 350 MHz.

| | | Counte | er:ON | | |
|---------|----------------|-------------|---------|-----------|-------|
| | Frequency | Pwidth | Duty | Freg Dev | |
| Value | 9.999 997 OMHz | | 50.2 % | -0.300ppm | |
| Mean | 9.999 996 8MHz | 50.2ns | 50.2 % | -0.322ppm | |
| Min | 9.999 996 6MHz | 50.1ns | 50.1 % | -0.340ppm | |
| Max | 9.999 997 OMHz | 50.2ns | 50.2 % | -0.300ppm | |
| Sdev | 0.000 000 0 Hz | 0.000 000 s | 13 m% | 0.010ppm | |
| Num | 122 | 122 | 122 | 122 | |
| Ref Fre | eq 🚺 | 000 000MHz | | | 6 |
| State | Frequency | Pwidth | RefFreq | Cotum | Clear |
| On | Period | Nwidth | TrigLev | Setup | Clear |

The counter functionality, accessed via the rear panel BNC, gives a DC or AC coupled counter capability from 100 mHz to 400 MHz.





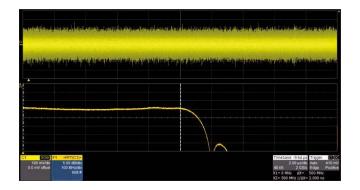
The Teledyne Test Tools T3AFG200, T3AFG350 and T3AFG500, with its low jitter design, can generate waveforms with exceptional edge stability. With better jitter performance comes better edge stability, and higher confidence in your circuit design.

Smart Capabilities

- Sweep output carrier can be Sine, Square, Ramp and Arbitrary waveforms. Linear or Log sweep.
- Burst output under internal or external signal control
- Waveforms types include PRBS (PRBS3 PRBS32)
- Frequency Resolution 1 µHz
- DSB-AM: Double Sideband AM modulation Function
- 10 Order Harmonic Function
- Optional IQ Modulation (T3AFG-IQ)
- Multi-Language User Interface

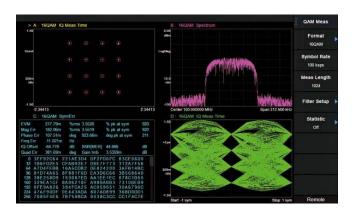


PRODUCT OVERVIEW



Gaussian noise with adjustable bandwidth up to 500 MHz, depending on model. Wide bandwidth Gaussian noise can be added to other waveforms to simulate real-world scenarios in which the signal contains a large degree of noise.

T3AFG-IQ, Optional IQ Signal Generation



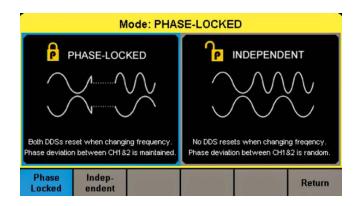
The T3AFG200, T3AFG350 and T3AFG500 optionally supports IQ signal generation with symbol rates between 250 Symbols/s to 37.5 MSymbols/s, providing ASK, PSK, QAM, FSK, MSK and multi-tone signals.

The built-in quadrature modulator provides the possibility to generate IQ signals from baseband to 500 MHz intermediate frequency (depending on T3AFG model).

The EasyIQ software is necessary to generate an IQ waveform when using the T3AFG-IQ option.

The EasyIQ software is a PC program used to download IQ baseband waveform data to the T3AFG200, T3AFG350 or T3AFG500 through a USB or LAN device interface.

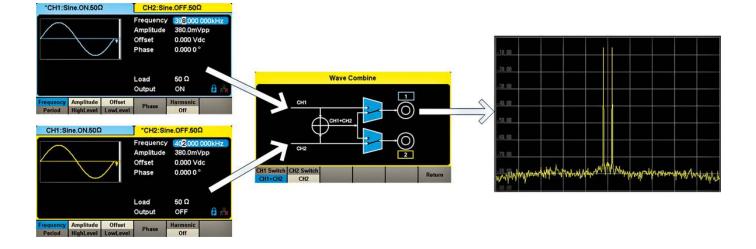
Phase Locked Operation Mode



The 'Phase-Locked' mode automatically aligns the phases of each output. While 'Independent' mode permits the two output channels to be used as two independent waveform generators.

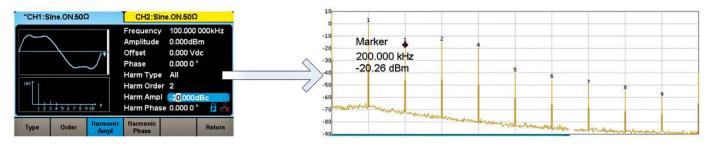
Waveform Combining

The T3AFG200, T3AFG350 and T3AFG500 have waveform combining capability whereby Channel 1 and Channel 2 can be combined to a user selected output. The combined waveform can be output on both Ch 1 and Ch 2 simultaneously, or just on a single output, Ch 1 or Ch 2, whilst the other channel outputs the uncombined waveform for that channel. Easily combine basic waveforms (sine, square, ramp, pulse, etc), random noise, modulation signals, burst signals and Arb waveforms.



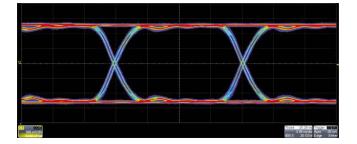
Harmonic Function

The harmonics function gives the user the ability to add higher-order elements to the signal being generated.

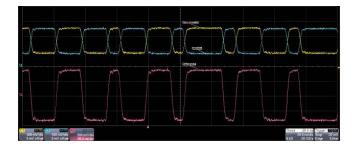


PRBS

The PRBS capability gives the flexibility to generate PRBS waveforms from PRBS3 to PRBS32 at up to 300 Mbps with edge rates from 1 ns to 1 μ s. An added differential mode provides an easy way to generate



differential PRBS signals using both output channels. Easily set outputs to common logic levels such as TTL, ECL, LVCMOS, LVPECL and LVDS using built-in presets.

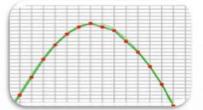




14 Bit Resolution

Less accurate waveform generation

16 Bit Resolution



16 Bit Resolution

- T3AFG200 / T3AFG350 / T3AFG500 are all 16 bit resolution
- 4 x higher resolution than 14 bit systems
- Lower levels of Harmonic Distortion
- Lower levels of non-harmonic spurious signals
- Improved dynamic range
- Enhanced signal fidelity



I/O Connectivity

- LAN and USB connection
- 10 MHz Reference Input and Output
- The Aux Input/Output BNC Connector supports the Trigger Input, Trigger/Sync Output, external modulation input, external sweep/burst trigger input and external gate input
- External Counter input

Frequency Specification

| Model | T3AFG200 | T3AFG35 | 50 | T3AFG500 | |
|--------------------------------|---|----------------------|---------------|-----------------------------------|--|
| Waveform | Sine, Square, Ramp, Puls | se, Noise, Arbitrary | / | | |
| Sine | 1 µHz – 200 MHz | 1 µHz – 3 | 350 MHz | 1 µHz – 500 MHz | |
| Square | 1 µHz – 80 MHz | 1 µHz – 1 | 20 MHz | 1 µHz – 120 MHz | |
| Pulse | 1 µHz – 80 MHz | 1 µHz – 1 | 50 MHz | 1 µHz – 150 MHz | |
| Ramp/Triangular | 1 µHz – 5 MHz | | | | |
| Gaussian white noise | 200 MHz (-3 dB) | 350 MHz | (-3 dB) | 500 MHz (-3 dB) | |
| Arbitrary | 1 µHz – 50 MHz | | | | |
| Resolution | 1 µHz | 1 µHz | | | |
| Accuracy | 10-year aging +/- 3.5 ppm at 25 Degrees C | | | | |
| Sine Wave | | | | | |
| Harmonic Distortion (0 dBm) | DC - 1 MHz ≤ - | 65 dBc | | | |
| | 1 MHz − 60 MHz ≤ - | | | | |
| | 60 MHz − 100 MHz ≤ - | | | | |
| | 100 MHz − 200 MHz ≤ - | | | | |
| | 200 MHz − 300 MHz ≤ - | | | | |
| | > 300 MHz ≤ - | 28 dBc | | | |
| Total harmonic distortion. | 0.075 %, 0 dBm, 10 Hz - | 20 kHz | | | |
| Spurious signal (non-harmonic) | DC ≤ 350 MHz ≤ -60 dBc | ; | | | |
| | > 350 MHz ≤ - 55 dBc | | | | |
| Maximum Amplitude Output | ≤ 40 MHz: | 10 Vpp at 50 Ω, | 20 Vpp at HiZ | (Minimum amplitude output | |
| | 40 MHz – 120 MHz: | 5 Vpp at 50 Ω, | 10 Vpp at HiZ | 1 mVpp at 50 Ω , | |

| Harmonic Distortion (0 dBm) | $DC - 1 MHz \le -65 dBc$ | | | | |
|--------------------------------|--|--|--|--|--|
| | $1 \text{ MHz} - 60 \text{ MHz} \le -60 \text{ dBc}$ | | | | |
| | 60 MHz − 100 MHz ≤ -50 dBc | | | | |
| | 100 MHz − 200 MHz ≤ -40 dBc | | | | |
| | 200 MHz − 300 MHz ≤ -30 dBc | | | | |
| | > 300 MHz ≤ -28 dBc | | | | |
| Total harmonic distortion. | 0.075 %, 0 dBm, 10 Hz – 20 kHz | | | | |
| Spurious signal (non-harmonic) | DC ≤ 350 MHz ≤ -60 dBc | | | | |
| , | > 350 MHz ≤ -55 dBc | | | | |
| Maximum Amplitude Output | \leq 40 MHz: 10 Vpp at 50 Ω , 20 Vpp at HiZ (Minimum amplitude output | | | | |
| | 40 MHz – 120 MHz: 5 Vpp at 50 Ω, 10 Vpp at HiZ 1 mVpp at 50 Ω, | | | | |
| | 120 MHz – 160 MHz: 2.5 Vpp at 50 Ω, 5 Vpp at HiZ 2 mVpp at HiZ, all ranges) | | | | |
| | 160 MHz – 350 MHz: 1.5 Vpp at 50 Ω, 3 Vpp at HiZ | | | | |
| | > 350 MHz: 640 mVpp at 50 Ω, 1.28 Vpp at HiZ | | | | |

Square Wave

| Rise/Fall Time (10 % – 90 %) | 2.4 ns (1 Vpp, 50 Ω Load) | |
|------------------------------|---|----------------------------|
| Overshoot | 3 % (typical, 100 kHz, 1 Vpp, 50 Ω Load) | |
| Duty Cycle | 10 % – 90 %, Limited by frequency setting | |
| Jitter (rms) cycle to cycle | 100 ps, 1 Vpp, 50 Ω Load | |
| Maximum Amplitude Output | ≤ 20 MHz: 10 Vpp at 50 Ω, 20 Vpp at HiZ | (Minimum amplitude output |
| | > 20 MHz: 5 Vpp at 50 Ω, 10 Vpp at HiZ | 1 mVpp at 50 Ω, |
| | | 2 mVpp at HiZ, all ranges) |

Pulse

| Pulse width | 3.4 ns | 3.3 ns | 3.3 ns |
|--------------------------------------|--|---------------------|----------------------------|
| (Accuracy +/- (0.01 % + 0.3 ns)) | | | |
| Rise/Fall Time (10 % ~ 90 %,typical) | 2 ns – 75 s | 1 ns – 75 s | 1 ns – 75 s |
| Pulse Width Adjustment | 100 ps | | |
| Resolution | | | |
| Duty Cycle | 0.001 % ~ 99.999 %, 0.001 % Resolution, Limited by frequency setting | | |
| Overshoot | 3 % (typical, 100 kHz, 1 Vpp, 50 Ω Load, 2 ns edge) | | |
| Jitter (rms, cycle to cycle) | 100 ps, 1 Vpp, 50 Ω Load | | |
| Maximum Amplitude Output, | ≤ 20 MHz: 10 Vpp at | 50 Ω, 20 Vpp at HiZ | (Minimum amplitude output |
| ≥ 10 ns width, 2 ns edge | 20 MHz - 120 MHz: 5 Vpp at | 50 Ω, 10 Vpp at HiZ | 1 mVpp at 50 Ω, |
| | > 120 MHz: 2.5 Vpp at | 50 Ω, 5 Vpp at HiZ | 2 mVpp at HiZ, all ranges) |

Ramp/Triangle Wave

| Linearity | ≤ 1% of Vpp (typical, 1 kHz, 1 Vpp, 50 % symmetry) | |
|--------------------------|--|--|
| Symmetry | 0% - 100% | |
| Maximum Amplitude Output | 10 Vpp at 50 Ω, 20 Vpp at HiZ | (Minimum amplitude output 1 mVpp at 50 Ω, 2 mVpp at HiZ, all ranges) |

Harmonic Output

| Order | 10 Maximum |
|-------|----------------|
| Туре | Even, Odd, All |

| Model | T3AFG200 | T3AFG350 | T3AFG500 |
|------------------------------|---|----------|--|
| Arbitrary Wave | | | |
| Waveform length | 2 – 20 M points | | |
| Vertical resolution | 16 bits | | |
| Sample rate | 300 MSa/s Arb Mode, 1.2 GSa/s DDS Mode | | |
| Min. Rise/Fall Time | 2.6 ns, 10 % – 90 %, 1 Vpp step signal, DDS mode | | |
| Jitter (rms), cycle to cycle | 100 ps, 1 Vpp, 50 Ω Load, TrueArb Mode | | |
| Frequency Setting Range | 1 μHz – 50 MHz | | |
| Maximum Amplitude Output | ≤ 20 MHz: 10 Vpp at 50 Ω, 20 V > 20 MHz: 5 Vpp at 50 Ω, 10 V | | (Minimum amplitude output 1 mVpp at 50 Ω, 2 mVpp at HiZ, all ranges) |

PRBS

| Bit Rate | 1µbps – 160 Mbps | 1µbps – 300 Mbps | 1µbps – 300 Mbps |
|--------------------------|--|------------------|--|
| Rise/Fall Time | 2 ns – 1 µs | 1 ns – 1 µs | 1 ns – 1 µs |
| Sequence Length | 2 ^{m-1} , m = 3, 4, 5,, 32 | | |
| Maximum Amplitude Output | ≤ 40 Mbps: 10 Vpp at 50 Ω, 20 Vpp at HiZ 40 Mbps - 240 Mbps: 5 Vpp at 50 Ω, 10 Vpp at HiZ > 240 Mbps: 2.5 Vpp at 50 Ω, 5 Vpp at HiZ | | (Minimum amplitude output 1 mVpp at 50 Ω, 2 mVpp at HiZ, all ranges) |

Noise Characteristics

| -3 dB bandwidth | Bandwidth of the waveform generator |
|-------------------------|---|
| Bandwidth Setting Range | 1 mHz – Bandwidth of the waveform generator |
| Amplitude Output Range | 1 mVrms – 542 mVrms at 50 Ω, 2 mVrms – 1.084 Vrms at HiZ (Mean = 0, BW Limit = Off) |

DC Characteristics

| Range | -10 V to +10 V HiZ Load -5 V to + 5 V 50 Ω Load |
|----------|--|
| Accuracy | +/- (1 % + 2 mV) HiZ Load |

IQ Signal Generator (Option T3AFG-IQ)

| | · · · · · · · · · · · · · · · · · · · | | | |
|---------------------------|--|---------------------------------|---------------------------------|--|
| Maximum Carrier Frequency | 200 MHz | 350 MHz | 500 MHz | |
| Symbol Rate | 250 Symbols/s – 37.5 MSymbo | 250 Symbols/s – 37.5 MSymbols/s | | |
| Vertical Resolution | 16 Bits | 16 Bits | | |
| Output Range | 1 mVrms – 0.5 Vrms, 50 Ω Load ($\sqrt{l^2 + Q^2}$) | | | |
| Modulation Type | 2ASK, 4ASK, 8ASK, BPSK, QPSK, 8PSK, DBPSK, DQPSK, D8PSK, 8QAM, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 2FSK, 4FSK, 8FSK, 16FSK, MSK, MultiTone, CustomSupported by EasyIQ software | | | |
| Pattern | PN7, PN9, PN15, PN23, User file | e, Custom | Supported by EasyIQ software | |

General Output Characteristics

| Accuracy | +/- (1% + 1 mVpp) 10 kHz sine wave, 0 V offset | |
|-----------------------------------|--|--|
| Amplitude Flatness | +/- 0.3 dB, 50 Ω load, 0.5 Vpp (reference 1 MHz Sine wave) | |
| Output impedance | 50 Ω +/- 0.5 Ω at 100 kHz Sine wave | |
| Output current | +/- 200 mA | |
| Channel to channel Crosstalk | -60 dBc, Sine, 50 Ω load | |
| Current Limit Threshold | +/- 200 mA | |
| Over-Voltage protection threshold | +/- 3.5 V: For generator amplitude output < 3.2 Vpp and DC offset < 2 VDC | |
| | +/- 10.5 V: For generator amplitude output \geq 3.2 Vpp and DC offset \geq [2 VDC] | |

Modulation Characteristics – AM

| Carrier | Sine, Square, Ramp, Arb |
|----------------------|---|
| Modulation Source | Internal/External |
| Modulation Wave | Sine, Square, Ramp, Noise, Arb |
| Modulation Depth | 0 - 120 % |
| Modulation Frequency | 1 mHz – 1 MHz, Modulation source "internal" |

| Model | T3AFG200 | T3AFG350 | T3AFG500 |
|-------------------------------|---|------------------------------|----------------------------|
| Modulation Characteris | tics – FM | | |
| Carrier | Sine, Square, Ramp, Arb | | |
| Modulation Source | Internal/External | | |
| Modulation Wave | Sine, Square, Ramp, No | ise, Arb | |
| Modulation Depth | 0 – 0.5 * BW (BW is the | max output frequency limited | by the frequency settings) |
| Modulation Frequency | 1 mHz – 1 MHz, Modul | ation source "internal" | |
| Modulation Characteris | stics – PM | | |
| Carrier | Sine, Square, Ramp, Art |) | |
| Modulation Source | Internal/External | | |
| Modulating Waveform | Sine, Square, Ramp, Art | o, Noise | |
| Phase Deviation | 0 Deg - 360 Deg | | |
| Modulation Frequency | 1 mHz – 1 MHz, Modul | ation source "internal" | |
| Modulation Characteris | stics – ASK | | |
| Carrier | Sine, Square, Ramp, Ark |) | |
| Modulation Source | Internal/External | | |
| Modulating Waveform | Square with 50 % duty of | cycle | |
| Keying Frequency | 1 mHz – 1 MHz, Modulation source "internal" | | |
| Modulation Characteris | stics – FSK | | |
| Carrier | Sine, Square, Ramp, Ark |) | |
| Modulation Source | Internal/External | | |
| Modulating Waveform | Square with 50 % duty cycle | | |
| Modulation Frequency | 1 mHz – 1 MHz, Modul | ation source "internal" | |
| Modulation Characteris | stics - PSK | | |
| Carrier | Sine, Square, Ramp, Ark |) | |
| Modulation Source | Internal/External | | |
| Modulating Waveform | Square with 50 % duty cycle | | |
| Modulation Frequency | 1 mHz – 1 MHz, Modulation source "internal" | | |
| Modulation Characteris | stics – PWM | | |
| Carrier | Pulse | | |
| Modulation Source | Internal/External | | |
| Modulating Waveform | Sine, Square, Ramp, Noise, Arb | | |
| Madulatian Fragmanau | | | |

Burst Characteristics

Modulation Frequency

| Carrier | Sine, Square, Ramp, Noise, Pulse, Arb |
|-------------------|---------------------------------------|
| Туре | Count (1–1 M cycles), Infinite, Gated |
| Carrier Frequency | 2 mHz – Maximum output frequency |
| Stop/Start phase | 0 Deg to 360 Deg |
| Internal Period | 1 µs – 1000 seconds |
| Trigger Source | Internal, External, Manual |
| Gated Source | Internal, External |
| Trigger Delay | Maximum of 100 seconds |

1 mHz – 1 MHz, Modulation source "internal"

Sweep Characteristics

| Carrier | Sine, Square, Ramp, Arb |
|-------------------|--|
| Туре | Linear, Log |
| Direction | Linear: Up, Down, Up and Down. Logarithmic: Up, Down |
| Carrier Frequency | 1 µHz – Maximum output frequency |
| Sweep Time | 1 ms – 500 seconds |
| Trigger Source | Internal, External, Manual |

| Model | T3AFG200 | T3AFG350 | T3AFG500 | |
|-----------------------------------|------------------------|--|----------|--|
| Frequency Counter Characteristics | | | | |
| Function | Frequency, Period, Pos | Frequency, Period, Positive / Negative Pulse Width, Duty Cycle | | |
| Coupling | DC, AC, HF REJ | | | |
| Frequency Range | DC: 100 mHz – 400 M | Hz, AC: 1 Hz – 400 MHz | | |
| DC Input Amplitude | 200 mV rms - +/- 2.5 | 100 mV rms - +/- 2.5 V < 100 MHz 200 mV rms - +/- 2.5 V 100 MHz - 200 MHz 500 mV rms - +/- 2.5 V > 200 MHz | | |
| AC Input Amplitude | 200 mV rms – 5Vpp 1 | 100 mV rms – 5Vpp < 100 MHz 200 mV rms – 5Vpp 100 MHz – 200 MHz 500 mV rms – 5Vpp > 200 MHz | | |
| Input Impedance | 1 ΜΩ | 1 ΜΩ | | |
| Reference Clock Input | | | | |
| Frequency | 9.999 MHz - 10.001 N | 1Hz | | |
| Amplitude | Minimum 1.4 Vp-p inte | Minimum 1.4 Vp-p into high impedance load | | |
| Input Impedance | 5 kΩ | 5 kΩ | | |
| Reference Clock Outp | ut | | | |
| Frequency | 10 MHz Synchronized | 10 MHz Synchronized to the internal reference clock | | |
| Amplitude | Minimum 2 Vp-p into | Minimum 2 Vp-p into high impedance load | | |
| a | 50.0 | | | |

Output Impedance 50 Ω

| External mgger mput (Auxiliary m/out) | | |
|---------------------------------------|--------------------------------|--|
| V in Low | -0.5 V to +0.8 V | |
| V in High | 2 V to 5.5 V | |
| Input Impedance | 100 kΩ | |
| Minimum Pulse Width | 100 ns | |
| Maximum Response Time | 100 ns – Sweep, 600 ns – Burst | |

Trigger Output (Auxiliary In/Out)

| | · · · · · · · · · · · · · · · · · · · |
|-------------------|---------------------------------------|
| V out Low | Maximum 0.44 V at 8 mA |
| V out High | Mimimum 3.8 V at -8 mA |
| Output Impedance | 100 Ω |
| Maximum Frequency | 1 MHz |

Sync Output (Auxiliary In/Out)

| V out Low | Maximum 0.44 V at 8 mA |
|-------------------|------------------------|
| V out High | Mimimum 3.8 V at -8 mA |
| Output Impedance | 100 Ω |
| Maximum Frequency | 10 MHz |
| Pulse Width | 26.7 ns |
| Jitter | 3.3 ns Peak to peak |

Modulation Input (Auxiliary In/Out)

| Frequency | 0 Hz to 50 kHz |
|--|---------------------------------------|
| Input Impedance | 10 κΩ |
| Amplitude at 100 % Modulation Depth | Min 11 Vp-p, Тур 12 Vp-p, Max 13 Vp-p |

General Characteristics

| Power | | |
|--------------------------------|--|--|
| Voltage | 100 V to 240 V (+/-10 %) at 50 Hz / 60Hz 100 V to 120 V (+/-10 %) at 400 Hz | |
| Power Consumption | Typical 32.5 W, Maximum 50 W, Dual channel, Sine, 1kHz, 10 Vpp, 50 Ω load | |
| Display | | |
| Color Depth | 24 bit | |
| Contrast Ratio | 350:1 | |
| Luminance | 300 cd/m ² | |
| Touch panel type | Resistive | |
| Environment | | |
| Operating Temperature | 0 Deg C to 40 Deg C | |
| Storage Temperature | -20 Deg C to 60 Deg C | |
| Operating Humidity | 5 % to 90 % \leq 30 Deg C 5 % to 50 % > 30 Deg C | |
| Non-Operating Humidity | 5 % to 95 % | |
| Maximum Operating Altitude | 3048 m ≤ 30 Deg C | |
| Maximum Non-Operating Altitude | 15000 m | |
| Calibration | | |
| Calibration Interval | Annually | |
| Mechanical | | |
| Dimensions | W x D x H = 260.3 mm x 107.2 mm x 295.7 mm | |
| Net Weight | 3.5 kg | |
| Gross Weight | 4.6 kg | |
| Compliance | | |
| LVD | IEC 61010-2:2010 | |
| EMC | EN61326-1:2013 | |

Ordering information

| Models | T3AFG200 200 MHz |
|----------------------|---------------------------------------|
| | T3AFG350 350 MHz |
| | T3AFG500 500 MHz |
| Standard Accessories | Quick Start Guide |
| | USB Cable |
| | BNC Cable |
| | Calibration Certificate |
| | Power Cord |
| Optional Accessories | T3AFG-IQ IQ Signal Generator Function |

ABOUT TELEDYNE TEST TOOLS



Company Profile

Teledyne LeCroy is a leading provider of oscilloscopes, protocol analyzers and related test and measurement solutions that enable companies across a wide range of industries to design and test electronic devices of all types. Since our founding in 1964, we have focused on creating products that improve productivity by helping engineers resolve design issues faster and more effectively. Oscilloscopes are tools used by designers and engineers to measure and analyze complex electronic signals in order to develop high-performance systems and to validate electronic designs in order to improve time to market.

The Teledyne Test Tools brand extends the Teledyne LeCroy product portfolio with a comprehensive range of test equipment solutions. This new range of products delivers a broad range of quality test solutions that enable engineers to rapidly validate product and design and reduce time-tomarket. Designers, engineers and educators rely on Teledyne Test Tools solutions to meet their most challenging needs for testing, education and electronics validation.

Location and Facilities

Headquartered in Chestnut Ridge, New York, Teledyne Test Tools and Teledyne LeCroy has sales, service and development subsidiaries in the US and throughout Europe and Asia. Teledyne Test Tools and Teledyne LeCroy products are employed across a wide variety of industries, including semiconductor, computer, consumer electronics, education, military/aerospace, automotive/industrial, and telecommunications.

Distributed by:

Teledyne LeCroy (US Headquarters)

700 Chestnut Ridge Road Chestnut Ridge, NY. USA 10977-6499

800-553-2769 or 845-425-2000 Phone: Fax Sales: 845-578-5985 Phone Support: 1-800-553-2769 Email Sales: contact.corp@teledynelecroy.com Email Support: support@teledynelecroy.com Web Site: http://teledynelecroy.com/

Teledyne LeCroy (European Headquarters)

Teledyne LeCroy GmbH Im Breitspiel 11c D-69126 Heidelberg, Germany

| Phone: | +49 6221 82700 |
|----------------|-----------------------------------|
| Fax: | +49 6221 834655 |
| Phone Service: | +49 6221 8270 85 |
| Phone Support: | +49 6221 8270 28 |
| Email Sales: | contact.gmbh@teledynelecroy.com |
| Email Service: | service.gmbh@teledynelecroy.com |
| Email Support: | tlc.t3.appsupport.eu@teledyne.com |
| Web Site: | http://teledynelecroy.com/germany |

World wide support contacts can be found at: https://teledynelecroy.com/support/contact/#

teledynelecroy.com

© 2020 Teledyne Test Tools is a brand and trademark of Teledyne LeCroy Inc. All rights reserved. Specifications, prices, availability and delivery subject to change without notice. Product brand or brand names are trademarks or requested trademarks of their respective holders T3 stands for Teledyne Test Tools.

lin