TELEDYNE TEST TOOLS
Everywhereyoulook™

Product Line Card 2018

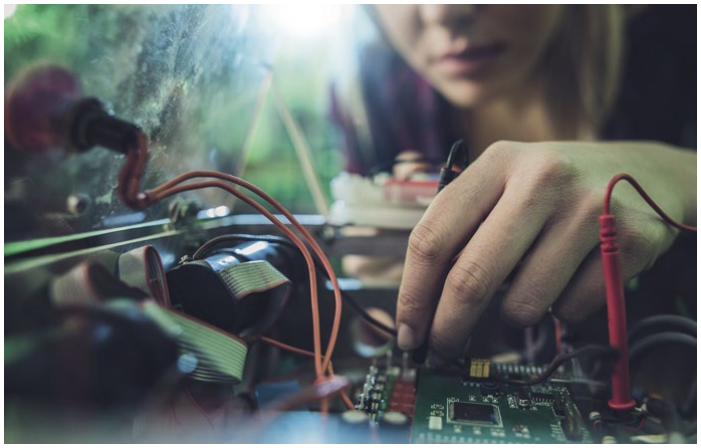
ABOUT TELEDYNE TEST TOOLS

TELEDYNE TEST TOOLS
Everywhereyoulook™

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-to-market. 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.

Arbitrary Waveform Generators 4

T3AFG
5 MHz – 120 MHz, 14-bit/16-bit, up to 8 Mpts memory

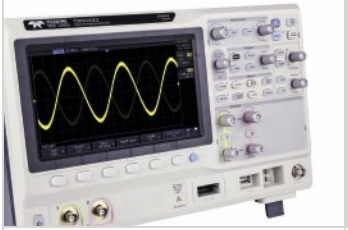
T3AFG40 / T3AFG80 / T3AFG120
40 MHz – 120 MHz, 16-bit, 8 Mpts memory

Digital Multimeters 6

T3DMM4-5
DC: 1000 Volts, AC: 750 Volts, Current: 10A, 4.5 Digit DMM

T3DMM5-5
DC: 1000 Volts, AC: 750 Volts, Current: 10A, 5.5 Digit DMM

T3DMM6-5 / T3DMM6-5-S
DC: 1000 Volts, AC: 750 Volts, Current: 10A, 6.5 Digit DMM with optional Scanner



Oscilloscopes 8

T3DSO1000
100 MHz – 200 MHz, 2/4 Ch, 1 GS/s, 14 Mpts, 7“ Display, MSO Option

T3DSO2000
100 MHz – 300 MHz, 2/4 Ch. 2 GS/s, 140 Mpts, 8“ Display, MSO Option

Programmable DC Power Supply 12

T3PS3000
32 Volts – 3.2 Amps – 220 Watts, 3 Independent isolated Outputs, High Resolution, High Precision Output, Series, Parallel and Independent Output Modes

Spectrum Analyzers 14

T3SA3100 / T3SA3200
Frequency Range: 9 kHz to 2.1 GHz / 3.2 GHz

High Definition Dual Channel Arbitrary Waveform Generator 16

T3AWG3252
2 Ch, 250 MHz, 16 bit, 128 Mpts/Ch, 6 V_{pp} Output, AFG/AWG, Wave Sequencing

T3AWG3352
2 Ch, 350 MHz, 16 bit, 128 Mpts/Ch, 6 V_{pp} Output, AFG/AWG, Wave Sequencing

Time Domain Reflectometers 18

T3SP10D / T3SP15D
- True Differential TDR up to 15 GHz
- Small Form Factor and Battery Powered for Mobile Use
- Pre-Compliance for Emerging Serial Data Standards – USB, BroadR-Reach, HDBaseT.

T3AFG

Function / Arbitrary Waveform Generators

Debug with Confidence

5 MHz – 120 MHz

Tools for Improved Debugging

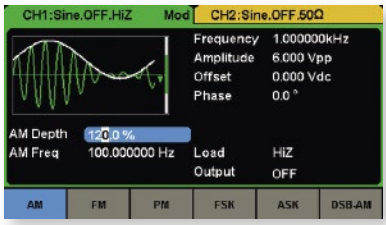
• **Deep Memory** – up to 8 Mpts/Ch on 40 MHz to 120 MHz models. 16 kpts on 5 MHz and 10 MHz models.	✓ Generate complex arbitrary waveforms.
• **Wide Range of Modulation Types** – AM, DSB-AM, FM, PM, FSK, ASK, PWM, Sweep, Burst, and PSK on 2 Ch models.	✓ Quickly set up modulated waveforms.
• **High Resolution** – 14 Bit on 5 MHz and 10 MHz models, 16 bit on 40 MHz to 120 MHz models.	✓ Generate waveforms with low noise and spurious signal content.
• **Bandwidth Models up to 120 MHz**	✓ Wide choice of bandwidths.
• **Built In Arbitrary Waveforms**	✓ Load and replay built in Arbitrary Waveforms.
• **User Defined Waveforms**	✓ Store and recall user defined waveforms.

Key Specifications

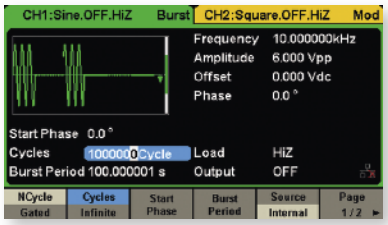
Bandwidth	5 MHz, 10 MHz, 40 MHz, 80 MHz, 120 MHz
Channels	1 and 2 Channel Models
Memory	16 kpts/Ch, 8 Mpts/Ch
Sample Rate	up to 1.2 GS/s
Display	3.5" – 4.3"
Connectivity	USB Host, USB Device, LAN

T3AFG

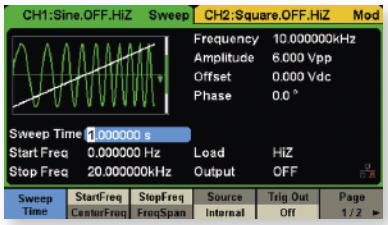
Function / Arbitrary Waveform Generators



The T3AFG range of Function / Arbitrary Waveform Generators support a wide range of modulation types.



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



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

Ordering Information

Model	Bandwidth	Channel	Memory per Ch	Sample Rate per Ch
T3AFG5	5 MHz	1	16 kpts	125 MS/s
T3AFG10	10 MHz	1	16 kpts	125 MS/s
T3AFG40	40 MHz	2	8 Mpts	1.2 GS/s
T3AFG80	80 MHz	2	8 Mpts	1.2 GS/s
T3AFG120	120 MHz	2	8 Mpts	1.2 GS/s

Function	T3AFG5, T3AFG10	T3AFG40, T3AFG80, T3AFG120
Built-in Waveforms	5 Standard, 46 Arbitrary	5 Standard, 196 Arbitrary
Input / Output	1 Waveform Output, Synchronous Signal Out, External Trigger In	2 Waveform Outputs, Counter Input, Aux In/Out, 10 MHz Clock In/Out
Modulation Functions	AM, DSB-AM, FM, PM, FSK, ASK, PWM, Sweep, Burst	AM, DSB-AM, FM, PM, FSK, ASK, PSK, PWM. Sweep, Burst, Harmonic
Maximum Amplitude Output	10 Vpp at 50 Ohms, 20 Vpp at HiZ	< 20 MHz: 10 Vpp at 50 Ohms, 20 Vpp at HiZ > 20 MHz: 5 Vpp at 50 Ohms, 10 Vpp at HiZ
Display Size	3.5" TFT-LCD	4.3" Touch Screen

Excellent Performance

- Bandwidths from 5 MHz to 120 MHz
- 1 or 2 Channel Models
- Up to 8 Mpts / Channel memory

Great Connectivity

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

Smart Capabilities

- Sweep output carrier can be Sine, Square, Triangle and Arbitrary waveforms
- Burst output under internal or external signal control
- Waveforms types include DC
- Frequency Resolution 1 µHz
- DSB-AM: Double Sideband AM modulation Function
- Harmonic Function on 2 channel models
- Multi-Language User Interface

T3DMM4-5 / 5-5 / 6-5

Digital Multimeters

Debug with Confidence

DC: 1000 Volts
AC: 750 Volts
Current: 10 A

Tools for Improved Debugging

• **Wide range of measurements** – DC/AC voltage and Current, Resistance, Capacitance, Frequency, Period, Temperature, and more.	✓ More application coverage from a single Digital multimeter.
• **True-RMS measurements** – All AC Voltage and Current ranges give True-RMS readings.	✓ Excellent accuracy regardless of the waveform shape.
• **Low level measurement, high sensitivity ranges** – Voltage ranges as low as 200 mV full scale, DC Current 200 µA, AC Current 200 µA full scale.	✓ High sensitivity ranges give greater accuracy of small signal measurements.
• **Advanced measurement features** – Min, Max, Average, Standard Deviation dBm/dB, Pass/fail, Histogram, Trend, Relative measurements.	✓ Advanced features for today's measurement needs.
• **Built-in cold terminal thermocouple compensation.**	✓ Accurate Temperature measurements.
• **4.3 inch (10.92 cm) color TFT-LCD 480 x 272 display.**	✓ Clear and flexible display aids ease of use.

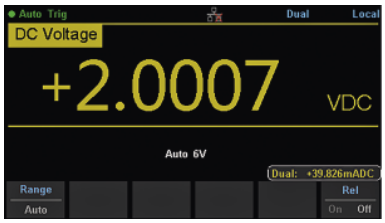
Key Specifications

DC Voltage	200 mV to 1000 V
DC Current	200 µA to 10 A
True RMS AC Voltage	200 mV to 750 V
True RMS AC Current	200 µA to 10 A
2/4 Wire Resistance	200 Ohms to 100 MOhms
Connectivity	USB Device, LAN

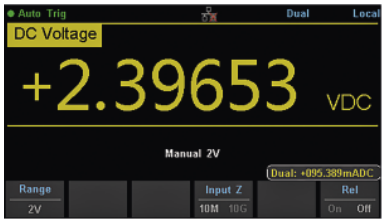
T3DMM4-5 / 5-5 / 6-5

Digital Multimeters

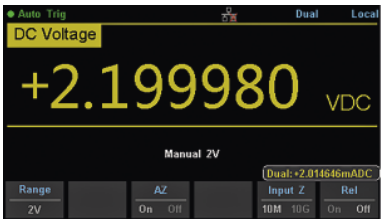
The T3DMM range gives a choice of 4.5, 5.5 or 6.5 digit display



The T3DMM4-5 display.



The T3DMM5-5 display.



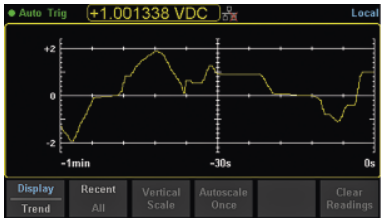
The T3DMM6-5 and T3DMM6-5-SC display.

Smart Capabilities as Standard

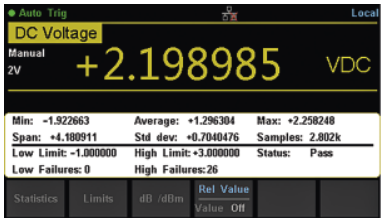
- In addition to DCV, DCI, ACV, ACI, 2/4 Wire Ohms the T3DMM range can also measure Capacitance, Frequency, Period,Temperature, Diode Test and Continuity.
- True RMS ACV and ACI measurements.
- T3DMM6-5-SC includes a 16 channel scanner, 4 current channels, 12 multi-purpose.
- Temperature support for TC and RTD sensors with built-in cold terminal compensation.
- Remote control via USB or LAN connection.

Function	T3DMM4-5	T3DMM5-5	T3DMM6-5	T3DMM6-5-SC
DC Voltage	600 mV – 1000 V	200 mV – 1000 V	200 mV – 1000 V	200 mV – 1000 V
DC Current	600 µA – 10 A	200 µA – 10 A	200 µA – 10 A	200 µA – 10 A
True RMS AC Voltage	600 mV – 750 V	200 mV – 750 V	200 mV – 750 V	200 mV – 750 V
True RMS AC Current	60 mA – 10 A	20 mA – 10 A	200 µA – 10 A	200 µA – 10 A
2/4 Wire Resistance	600 Ohms – 100 M Ohms	200 Ohms – 100 M Ohms	200 Ohms – 100 M Ohms	200 Ohms – 100 M Ohms
Max Readings/Sec	150	150	10,000	10,000*
Digits Displayed	4.5	5.5	6.5	6.5
Built in Scanner	No	No	No	Yes

*10,000 on an individual channel. Scanner switching time 5 ms channel to channel.



Trend Chart mode shows how the data changes over time in a value verses time strip chart display.



Statistics mode quantifies the data being captured whilst the Pass/ Fail mode can can quickly test, and instantly indicate if there is a problem.

The T3DMM6-5-SC includes a built in scanner supporting 4 current channels and 12 multi-purpose channels. The multi-purpose channels can be configured to measure DCV, ACV, DCI, ACI, 2 Wire Ohms, 4 Wire Ohms, Capacitance, Frequency, Diode, Continuity and Temperature.

T3DSO1000
Oscilloscopes

Debug with Confidence
100 MHz – 200 MHz

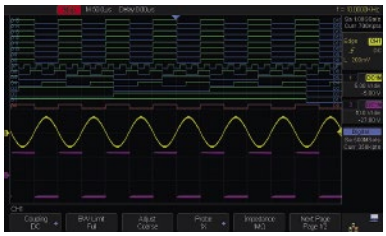
Tools for Improved Debugging

• **Long Capture** – 7 Mpts/Ch and 14 Mpts interleaved.	✓ Capture more time and show more waveform detail.
• **Math and Measure** – 7 basic math functions plus FFT and 38 automatic measurement parameters.	✓ Extract results from waveforms and measurements.
• **Connectivity** – USB for mass storage, printing and PC control, plus LAN for fast data transfer.	✓ Save data for external analysis and screen images for reports.
• **Serial Bus Trigger and Decode** – I²C, SPI, UART, RS232, CAN, LIN.	✓ Debug serial buses directly in your Oscilloscope.
• **Waveform Sequence Recorder** – record and play back up to 80,000 waveforms.	✓ Replay the changing waveform history.
• **Optional MSO** – 16 Digital Channels (4 channel series only).	✓ Add mixed signal debugging to your Oscilloscope.

Key Specifications

Bandwidth	100 MHz, 200 MHz
Channels	2 or 4
Memory	up to 7 Mpts/Ch (14 Mpts interleaved)
Sample Rate	up to 500 MS/s / 1 GS/s interleaved
Display	7" Bright TFT LCD (800 x 480)
Connectivity	USB Host, USB Device, LAN

T3DSO1000
Oscilloscopes



Optional MSO – 16 Digital Channels enables users to debug mixed signal applications (4 channel series only).

Bode Plot – The T3DSO1000 can control the USB AWG module, to scan an object's amplitude and phase frequency response, and display the data as a Bode Plot.

Protocol Trigger and Decode – The T3DSO1000 displays the waveform decoding and events list. Bus protocol information can be quickly and intuitively triggered and displayed.

Ordering Information

Model	Bandwidth	Channel	Memory (per Ch/interleaved)	Sample Rate (per Ch/interleaved)
T3DSO1102	100 MHz	2	7 Mpts / 14 Mpts	500 MS/s / 1 GS/s
T3DSO1104	100 MHz	4	7 Mpts / 14 Mpts	500 MS/s / 1 GS/s
T3DSO1204	200 MHz	4	7 Mpts / 14 Mpts	500 MS/s / 1 GS/s

Standard Configuration

- One passive probe per channel
- Getting Started Manual
- USB Cable
- Calibration and Performance Verification Certificate
- Multi-language User Interface
- Power Cord

Optional Accessories

- 16 Channel MSO
- Waveform Generator
- Optional Wifi

Recommended Probes

Differential Voltage
T3DP7000 7000 V, 100 MHz High-Voltage Differential Probe, /100, /1000.

Single Ended High Voltage
T3HVP100 10 kV, 40 MHz High-Voltage Probe, /1000.

Current
T3CP50 50 MHz, 30 A rms continuous, 50 A peak.

Full list of Optional Accessories can be found in the Data Sheet

Excellent Performance

- 100 and 200 MHz bandwidths
- 1 GS/s maximum sample rate
- Up to 7 Mpts/Ch memory, 14 Mpts interleaved

Great Connectivity

- USB host port for mass storage
- USB device port for printing and PC control
- LAN port on all T3DSO1000 oscilloscopes

Smart Capabilities

- Averaging, Peak Detect and Equivalent Time
- Advanced Triggering
- Measurement Statistics
- Built-in Help
- Multi-Language User Interface

T3DSO2000

Oscilloscopes

Debug with Confidence

100 MHz – 300 MHz

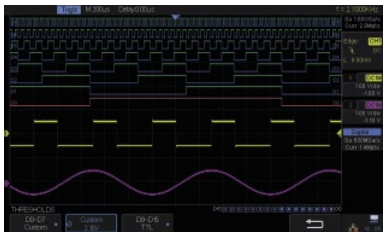
Tools for Improved Debugging

• **Long Capture** – 70 Mpts/Ch and 140 Mpts interleaved.	✓ Capture more time and show more waveform detail.
• **Math and Measure** – 7 basic math functions plus FFT and 37 automatic measurement parameters.	✓ Extract results from waveforms and measurements.
• **Low Noise Architecture** – Supports channel sensitivity as low as 1 mV / Div.	✓ Clearly view small waveforms in detail.
• **Bandwidth Models to 300 MHz** – Choice of 100 MHz, 200 MHz or 300 MHz models.	✓ Choose the bandwidth you need with 2 or 4 channels.
• **Waveform Sequence Recorder** – record and play back up to 80,000 waveforms.	✓ Replay the changing waveform history.
• **Low cost system enhancement options** – Optional MSO (16 Digital Channels), Serial Bus Decoders, and Arbitrary/Function Generator.	✓ Customize your oscilloscope to your application and needs by adding low cost options.
• **Connectivity** – USB for mass storage, printing and PC control, plus LAN for fast data transfer.	✓ Save data for external analysis and screen images for reports.

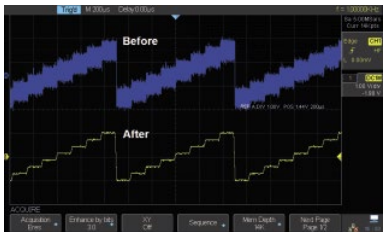
Key Specifications

Bandwidth	100 MHz, 200 MHz, 300 MHz
Channels	2 or 4, 50 Ohm / 1 MOhm Input Impendence
Memory	up to 70 Mpts/Ch (140 Mpts interleaved)
Sample Rate	up to 2 GS/s
Display	8" Bright TFT LCD (800 x 480)
Connectivity	USB Host, USB Device, LAN

T3DSO2000
Oscilloscopes



Optional MSO – 16 Digital Channels with colour coded display enables users to more intuitively debug mixed signal applications.



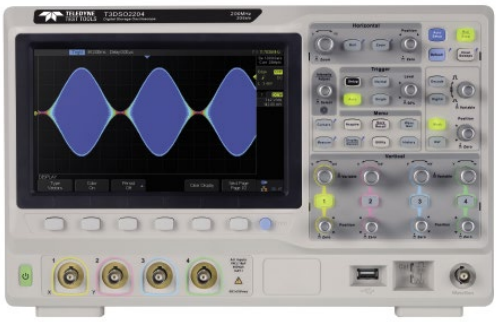
Enhanced Resolution (Eres) mode can improve the SNR without needing a repetitive waveform. Extra resolution bits can be added 0.5 bits at a time up to +3 bits.

Optional Protocol Trigger and Decode – The T3DSO2000 displays the waveform decoding and events list. Bus protocol information can be quickly and intuitively triggered and displayed.

Ordering Information

Model	Bandwidth	Channel	Memory (per Ch/interleaved)	Sample Rate (per Ch/interleaved)
T3DSO2102	100 MHz	2	70 Mpts / 140 Mpts	1 GS/s / 2 GS/s
T3DSO2104	100 MHz	4	70 Mpts / 140 Mpts	1 GS/s / 2 GS/s
T3DSO2202	200 MHz	2	70 Mpts / 140 Mpts	1 GS/s / 2 GS/s
T3DSO2204	200 MHz	4	70 Mpts / 140 Mpts	1 GS/s / 2 GS/s
T3DSO2302	300 MHz	2	70 Mpts / 140 Mpts	1 GS/s / 2 GS/s
T3DSO2304	300 MHz	4	70 Mpts / 140 Mpts	1 GS/s / 2 GS/s

Standard Configuration	Recommended Probes	
• One passive probe per channel • Getting Started Manual • USB Cable • Calibration and Performance • Verification Certificate • Multi-language User Interface • Power Cord	**Differential Voltage**	
	T3DP7000	7000 V, 100 MHz High-Voltage Differential Probe, /100, /1000.
	Single Ended High Voltage	
	T3HVP100	10 kV, 40 MHz High-Voltage Probe, /1000.
	Current	
	T3CP50	50 MHz, 30 A rms continuous, 50 A peak.



Excellent Performance

- 100, 200 and 300 MHz bandwidths
- 2 GS/s maximum sample rate
- Up to 70 Mpts/Ch memory, 140 Mpts interleaved

Great Connectivity

- USB host port for mass storage, USB device port for printing and PC control
- LAN port on all T3DSO2000 oscilloscopes

Smart Capabilities

- Averaging, Peak Detect and Enhanced Resolution modes
- Advanced Triggering
- Measurement Statistics
- Optional Protocol Trigger and Decode
- Optional Built-in Function/Arbitrary Waveform Generator
- Optional Built-in 16 Channel MSO
- Multi-Language User Interface and Help

T3PS3000

Power Supply

Debug with Confidence

32 V Triple Output DC Power Supply

Tools for Improved Debugging

• **3 Independent isolated outputs** – 32 V / 3.2 A x 2, 2.5 V / 3.3 V / 5 V / 3.2 A x 1. Total 220 W.	✓ More application coverage from a single power supply.
• **High resolution, high precision output** – 5 digit voltage, 4 digit current display. Minimum resolution 1 mV / 1 mA.	✓ Excellent setting and read back accuracy improves precision.
• **3 output modes** – series, parallel and independent operation.	✓ Combine two channels into one for greater power output flexibility.
• **4.3 inch (10.92 cm) color TFT-LCD 480 x 272 pixel display.**	✓ A clear and flexible display aids ease of use.
• **Graphical display interface with numeric, waveform and table display functions.**	✓ View waveform shape and timing settings.
• **Intelligent temperature controlled cooling fan reduces fan speed during low load usage.**	✓ Quieter less intrusive operation.

Key Specifications

Number of Outputs	3
DC Voltage	0 V to 32 V x 2, 2.5 V / 3.3 V / 5 V x 1
DC Current	3.2 A x 3
Maximum Output Power	220 W
Series / Parallel Output	Yes
Connectivity	USB Device, LAN

T3PS3000
Power Supply

Configurable Outputs:

Output channels 1 and 2 can be configured as independent, parallel or series operation. In parallel and series modes channel 1 and 2 are linked internally to give a single output with up to double the independent voltage or current out.

The independent output mode gives three outputs, two from 0 V to 32 V and one switchable between 2.5 V, 3.3 V and 5 V. All at up to 3.2 A each.

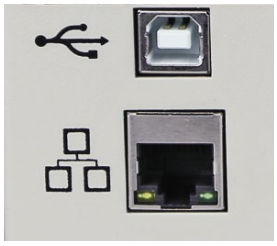
The Parallel output mode gives a single channel with a maximum current output of double that of the independent output mode, therefore 0 A to 6.4 A at up to 32 V.

The Series output mode gives a a single channel with a maximum voltage output of double that of the independent voltage output mode, therefore 0 V to 64 V at 3.2 A.

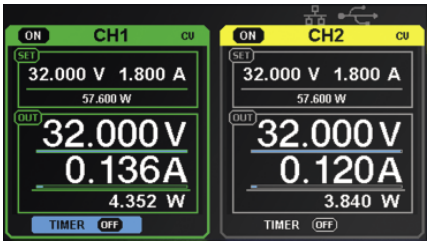
Smart Capabilities as Standard

- Three independent outputs.
- Configure main outputs as independent, series or parallel.
- Output 0 V to 64 V at 3.2 A in series mode.
- Output 0 V to 32 V at 6.4 A in parallel mode.
- Third output switchable between 2.5 V / 3.3 V and 5 V at up to 3.2 A.
- High performance Voltage mode specification.
  Line Regulation < 0.01 % + 3 mV
  Load Regulation < 0.01 % + 3 mV
  Ripple and Noise < 1 mV rms (5 Hz – 1 MHz)
- High performance Constant Current specification.
  Line Regulation < 0.2 % + 3 mA
  Load Regulation < 0.2 % + 3 mA
  Ripple and Noise < 3 mA rms
- More specification details in the T3PS3000 Data Sheet.

Function	T3PS3000
Independent Output Operation	0 V – 32 V, 3.2 A x 2, 2.5 V / 3.3 V / 5 V, 3.2 A x 1
Parallel Output Operation	0 V – 32 V, 6.4 A x 1, 2.5 V / 3.3 V / 5 V, 3.2 A x 1
Series Output Operation	0 V – 64 V, 3.2 A x 1, 2.5 V / 3.3 V / 5 V, 3.2 A x 1
Maximum Output Power	220 Watts
Display	4.3 inch (10.92 cm) color TFT-LCD 5 Digits Voltage, 1 mV Resolution 4 Digits Current, 1 mA Resolution



The T3PS3000 includes built in USB Device and LAN for remote control via SCPI or LabView.



The T3PS3000 Display is 4.3 inch (10.92 cm) color TFT-LCD, with 5 Digits Voltage with 1 mV Resolution and 4 Digits Current with 1 mA resolution.

The display can also show output waveforms and data tables.

T3SA3100 / T3SA3200

2.1 GHz and 3.2 GHz Spectrum Analyzers

Broad Measurement Range

Frequency Range Up to 3.2 GHz

Tools for Improved Debugging

• Frequency Range from 9 kHz to 3.2 GHz.	✓ More application coverage from a single Spectrum Analyzer.
• -161 dBm/Hz Displayed Average Noise Level (Typ.)	✓ View and measure very small signals.
• -98 dBc/ Hz @10 kHz Offset Phase Noise (1 GHz, Typ.)	✓ Improved specification gives more accurate measurement results.
• Optional Tracking Generator • Optional EMI Pre-compliance Test Kit • Optional Reflection Measurement Kit	✓ Make fast and simple transmission measurements Make EMI Receiver measurements to CISPR 16-1-1 Measure VSWR, Return Loss, Reflection Coefficient
• Built-in switchable pre-amplifier.	✓ Integrated pre-amplifier allows higher sensitivity measurements.
• 10.1 inch (25.65 cm) color WVGA 1024 x 600 display.	✓ Clear and flexible display aids ease of use.
• USB Device, USB Host and LAN support.	✓ Remote control your measurements.

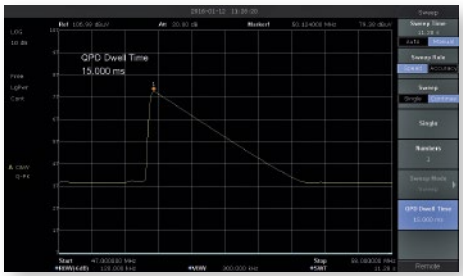
Key Specifications

Model	T3SA3200	T3SA3100
Frequency Range	9 kHz ~ 3.2 GHz	9 kHz ~ 2.1 GHz
Resolution Bandwidth	1 Hz ~ 1 MHz, in 1-3-10 sequence	1 Hz ~ 1 MHz, in 1-3-10 sequence
Displayed Average Noise Level	-161 dBm/Hz, Normalize to 1 Hz (typ.)	-161 dBm/Hz, Normalize to 1 Hz (typ.)
Phase Noise	< -98 dBc/Hz@1 GHz, 10 kHz offset	< -98 dBc/Hz@1 GHz, 10 kHz offset
Amplitude Precision	< 0.7 dB	< 0.7 dB

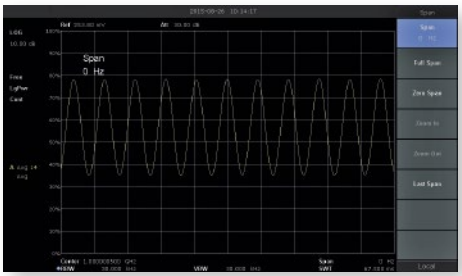
T3SA3100 / T3SA3200

2.1 GHz and 3.2 GHz Spectrum Analyzers

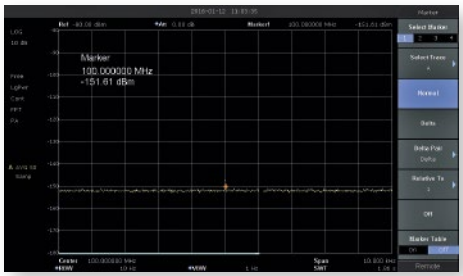
Supports four independent traces and cursors



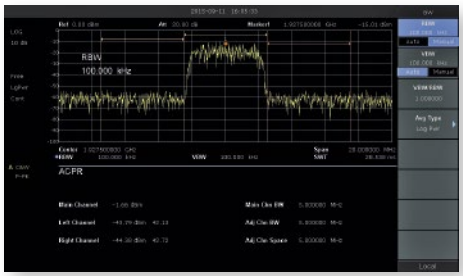
EMI filter and Quasi-Peak detector following CISPR 16-1-1 (T3SA3000-EMI)



Zero span and demodulation capabilities



-151 dBm Displayed Average Noise Level (RBW = 10 Hz)



Advanced measurement kit (T3SA3000-ADM) includes onscreen ACPR measurements

Smart Capabilities as Standard

- High performance specification as standard (see T3SA3000 data sheet for detailed specifications).
- Built-in preamplifier as standard. Enhances your measurement capability and sensitivity when measuring small signals.
- "Preset" and "Auto Tune" for quick set up.
- All-Digital IF Technology.
- Large, bright 10.1 inch (25.65 cm) color WVGA 1024 x 600 display.
- Built-in front panel accessible help system.
- File management (support for U-disc and local storage).
- Lightweight, small footprint, easy to transport.

Options to expand your measurement capabilities

- Customize and expand your measurement capabilities further with options
  - › Optional Tracking Generator. Add tracking generator capabilities to your Spectrum Analyzer to make transmission measurements on back planes, cables, filters, amplifiers, etc.
  - › Optional EMI Pre-compliance test kit. Add EMI Receiver Measurements following CISPR 16-1- 1.
  - › Optional Reflection Measurement Kit. Add VSWR, Return Loss and Reflection Coefficient measurements.
  - › Optional Advanced Measurement kit. Add channel power, adjacent channel power ratio, time domain power, occupied bandwidth, third order intercept, etc, to further enhance the measurement capability of your spectrum analyzer.
- More specification details in the T3SA3000 Data Sheet.

T3AWG3252 / T3AWG3352

High Definition Dual Channel Arbitrary Waveform Generator

Accurate and Versatile Waveforms Generation

• 16 Bit Vertical Resolution	✓ Exceptional signal fidelity for developing quality products with a reduced design cycle.
• 24 V_{pp} Output Voltage and ±12 V HW Baseline Offset for a total output voltage window ±24 V or 48 V (50 Ohm into High Impedance)	✓ Unmatched wide output voltage window enables generating challenging in amplitude large-signal waveforms.
• Waveform memory up to 1 Gpoint @Ch	✓ Unmatched deep memory depth allows to store and reproduce complex pseudo-random waveforms for long play time testing.
• Mixed Signal Generation	✓ Combining the 2 analog channels with 8 synchronized Digital Channels for debugging and validating digital design.
• Multifunctional solution instrument (AFG/AWG/DPG)	✓ Arbitrary Function Generator, Arbitrary Waveform Generation and Digital Pattern Generation functionalities combined into one instrument.

Key Specifications

Model	T3AWG3252	T3AWG3352
Frequency Range (Sinewave, AFG mode)	1 µH to 250 MHz	1 µH to 350 MHz
Sample Rate (AWG mode, not interpolated)	1.0 GS/s	1.2 GS/s
Vertical Resolution	16 Bits	
Memory	Up to 1 Gpoint/Ch.	
Output Voltage V_{pp} (peak to peak)	12 V_{pp} (50 Ohm into 50 Ohm), 24 V_{pp} (50 Ohm into High-Impedance)	
Digital Pattern Generator (DPG)	8 Channels @ 1.0 Gbps	8 Channels @ 1.2 Gbps

T3AWG3252 / T3AWG3352

High Definition Dual Channel Arbitrary Waveform Generator

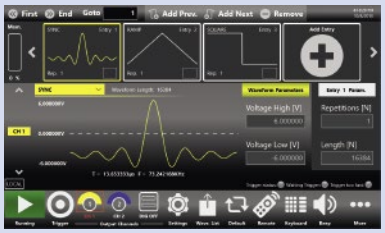
AFG Operational Mode

- Improved Direct Digital Synthesis (DDS) based technology
- Fixed sampling clock

Arbitrary Function Generation (AFG functionality)

AWG Operational Mode

- Variable Clock True-Arbitrary Technology
- Variable Sampling Clock
- Mixed Signal Generation: 2 Analog Channels and 8 Digital Channels



Arbitrary Waveform Generation (AWG functionality)

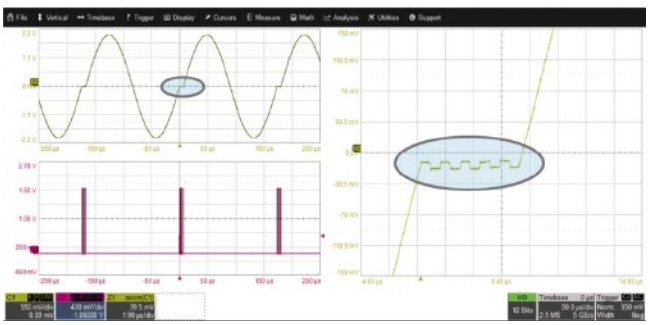
Digital Pattern Generation (DPG functionality)

Ordering information

Product Description	Product Code
Arbitrary Waveform Generator, 2 Ch, 250 MHz, 16 bit, 128 Mpts/Ch, 6 V_{pp} output, AFG/AWG, Wave Sequencing	T3AWG3252
Arbitrary Waveform Generator, 2 Ch, 350 MHz,16 bit, 128 Mpts/Ch, 6 V_{pp} output, AFG/AWG, Wave Sequencing	T3AWG3352
256 Mpt/Ch Memory Option for T3AWG3K-C	T3AWG3-M
512 Mpt/Ch Memory Option for T3AWG3K-C	T3AWG3-X
1024 Mpt/Ch Memory Option for T3AWG3K-C	T3AWG3-XL
High Voltage (12 V_{pp} on 50 Ohm) for T3AWG3K-C	T3AWG3-HV
Digital 8 Ch. Output (incl. Mini-SAS cable)	T3AWG3-8 DIG
LVDS to LVTTL adapter. (Requires T3AWG3-8 DIG)	T3AWG3-8DIG-TTL
Mini-SAS HD to 16x SMA cable (8 LVDS output). (Requires T3AWG3-8 DIG)	T3AWG3-8DIG-SMA
3U - 19" RACKMOUNT KIT for T3AWG3K-C	T3AWG3-RACKMOUNT
Warranty extended to 3 Years	T3AWG3-W3
Cable Mini SAS HD 1m for 8-DIG (spare cable). (Requires T3AWG3-8 DIG)	T3AWG3-8DIG-MSCAB

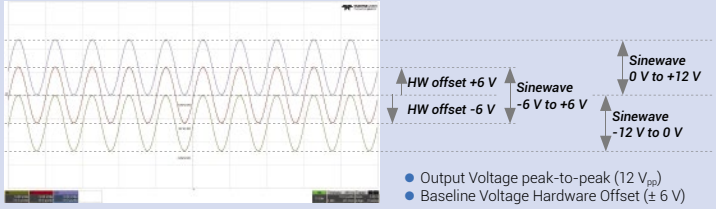
A multifunctional generator with an innovative architecture

Exceptional Signal Fidelity with 16-bit Vertical Resolution



4V_{pp} Sine Wave and 5 x 10 mV_{pp} Square Wave Sequencing

Output Voltage Window: ± 12 V (50 Ω into 50 Ω)

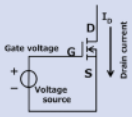


- Output Voltage peak-to-peak (12 V_{pp})
- Baseline Voltage Hardware Offset (± 6 V)

12 V_{pp} waveform can be shifed of ±6 V from -12 V to 0 V to 0 V to +12 V

Output Voltage Window: ± 24 V (50 Ω into High Impedance)

- Output Voltage peak-to-peak (24 V_{pp})
- Baseline Voltage Hardware Offset (± 12 V)



Pulse from 0 V to 24 V

MOSFET gate voltage-driven

High Resolution Calibrated True Differential TDR
Time Domain Reflectometers

Debug with Precision
10 GHz – 15 GHz

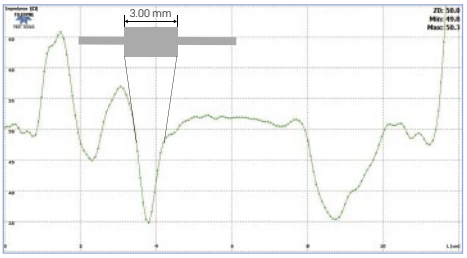
Affordable Tools for Precision Debugging

• **True Differential TDR up to 15 GHz** – Best for twisted pair and differential design	✓ No ground connection required.
• **Small Form Factor and Battery Powered** – Measure and analyze in the lab, factory floor or in the field.	✓ Measure and analyze everywhere you go without an AC requirement.
• **S Parameter – S11 Measurements** – Analyze transmission lines, cable, connectors and adaptors in the frequency domain.	✓ Precisely and rapidly identify any frequency related signal integrity impairments.
• **35 ps Rise Time (SP15D) 50 ps (SP10D)** – Achieve less than 3 mm fault resolution (SP15D).	✓ Precisely locate and identify with high resolution signal integrity artifacts.
• **Up to 50,000 points long memory** – Long TDR record capture with high resolution.	✓ Characterize up to 40 m long cables with more detailed measurement data.
• **Pre-Compliance for Emerging Serial Data Standards** – USB, BroadR-Reach, HDBaseT.	✓ Debug serial data standards easily.

Key Specifications

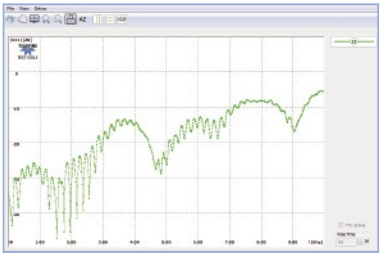
Model	T3SP10D	T3SP15D
Frequency	10 GHz	15 GHz
Measurements	TDR, DTDR, S-Parameter, Smith Chart	
Rise Time	50 ps	35 ps
Memory	Up to 50,000 points	
Battery Operated (option)	Yes	
Dimensions	220 x 210 x 82.5 mm	

High Resolution Calibrated True Differential TDR
Time Domain Reflectometers



OSL calibration in time domain avoid aberrations effects in impedance plots and let the user identify impedance anomalies with less than 3 mm resolution.

Based on the true differential design, there is no need for a physical ground connection if differential lanes are measured.



The T3SP1xD series offer full calibrated S-parameter (S11) measurements up to 15 GHz.

Ordering information

Product Description	Product Code
Differential TDR – 10 GHz, 50 ps Rise Time, ESD protection, 2 phase matched SMA cables	T3SP10D
Differential TDR – 10 GHz, 50 ps Rise Time, ESD protection, 2 phase matched SMA cables, SMA Cal. Kit	T3SP10D-Bundle
Differential TDR – 15 GHz, 35 ps Rise Time, ESD protection, 2 phase matched 3.5 mm cables	T3SP15D
Differential TDR – 15 GHz, 35 ps Rise Time, ESD protection, 2 phase matched 3.5 mm cables, 3.5 mm Cal. Kit	T3SP15D-Bundle
Phase Matched SMA cables (50 ± 1 Ohm, <1 ps skew)	T3SP-CABLE-SMA
Phase Matched 3.5 mm cables (50 ± 1 Ohm, <1 ps skew)	T3SP-CABLE-3.5MM
Differential TDR-Probe (high precision, 18 GHz, 0.5 – 5.0 mm variable pitch)	T3SP-DPROBE
Differential TDR-Probe (economic, 5 GHz, 2.5 or 5 mm fixed pitch)	T3SP-DPROBE-F
OSL Calibration Kit SMA with torque wrench, female	T3SP-CALKIT-SMA
OSL Calibration Kit 3.5MM with torque wrench, female	T3SP-CALKIT-3.5MM
Storage and Travel Case (aluminum suitcase for TDRs and accessories)	T3SP-CASE
Battery Internal	T3SP-ACCU
Battery Internal Accu Pack – Upgrade	T3SP-ACCU-UPGRADE
Demo and Verification Board	T3SP-BOARD

T3SP10D and T3SP15D offers great value being affordable, small, simple to use, portable and lightweight with unique specifications for differential lines and high accuracy in detecting and locating with high spatial resolution any signal integrity issue.

Ultra-portable and Battery operated

T3SP10D and T3SP15D are designed to be used wherever measurements have to be performed. The battery pack option allows up to 3 hours of operation.

Full calibrated

Using three calibration standards (open, short, load) in the time domain instead of using a simple normalization which is common in TDR-instruments offers the highest accuracy both in the impedance profile measurements as well as in the S-11 Return Loss frequency response.

ESD protected

The T3SP-Series is protected against electrostatic discharge (ESD) isolating the high-frequency front-end when connecting and during the set-up.

TDR-Probes

The differential TDR Probe provides an ideal solution for TDR circuit board impedance characterization.

TELEDYNE TEST TOOLS
Everywhereyoulook™

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T3 stands for Teledyne Test Tools.