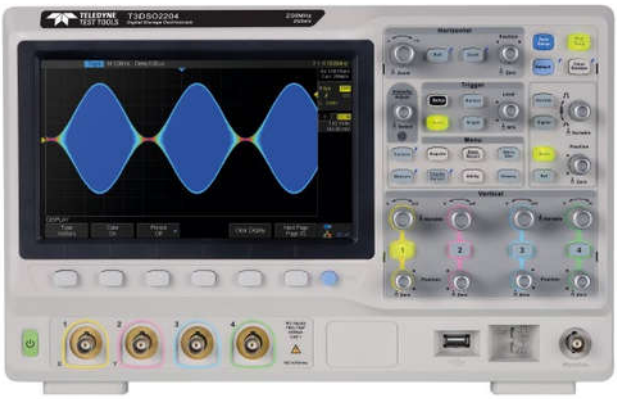
TELEDYNE TEST TOOLS
Everywhereyoulook™

T3DSO2000 Data Sheet

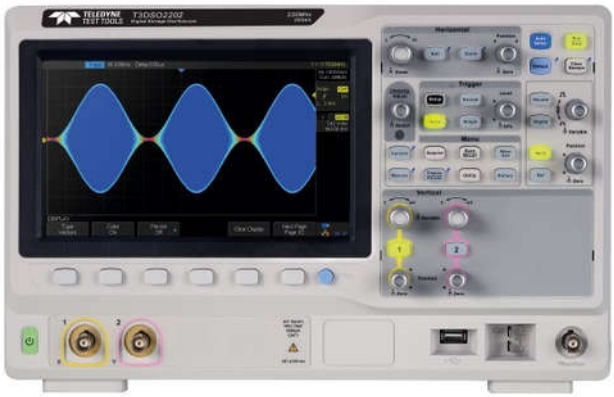
Oscilloscopes

Debug with Confidence

100 MHz – 300 MHz



Front panel of the four channel series



Front panel of the two channel series

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.
• **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.
• **Optional 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	✓ Add mixed signal debugging to your Oscilloscope.

Key Specifications

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

T3DSO2102: 2 Channel 100 MHz
T3DSO2104: 4 Channel 100 MHz
T3DSO2202: 2 Channel 200 MHz
T3DSO2204: 4 Channel 200 MHz
T3DSO2302: 2 Channel 300 MHz
T3DSO2304: 4 Channel 300 MHz

Teledyne Test Tools new T3DSO2000 Oscilloscopes feature two channel and four channel models with analog bandwidth options from 100 MHz to 300 MHz. Each model offers a maximum sample rate of 2 GSa/s, and a maximum memory depth of 140 Mpts in half channel mode. The four channel models incorporates two 2 GSa/s ADCs and two 140 Mpts memory modules. When all channels are enabled, each channel has sample rate of 1 GSa/s and a standard record length of 70 Mpts. When only a single channel per ADC is active, the maximum sample rate is 2 GSa/s and the maximum record length is 140 Mpts. For ease-of-use, the most commonly used functions can be accessed with its user-friendly front panel design.

The T3DSO2000 series employs a new generation of high speed display technology that provides excellent signal clarity, fidelity and performance. The system noise floor is also lower than similar products in the industry. It comes with a minimum vertical input range of 1 mV/div, an innovative digital trigger system with high sensitivity and low jitter, and a waveform capture rate of 500,000 waveforms/sec (sequence mode). The T3DSO2000 also employs a 256-level intensity grading display function and a color temperature display mode which complement the high speed update rate. Teledyne Test Tools latest oscilloscope offering supports multiple powerful triggering modes including serial bus triggering. There is a low cost option for serial bus decoding of IIC, SPI, UART, CAN, LIN bus types. The models also include History waveform recording, and sequential triggering that enable extended waveform recording and analysis. Other options available include the 25 MHz function / arbitrary waveform generator and the 16 channel MSO option. Both are field up gradable options. The new digital design also includes a hardware co-processor that delivers measurements quickly and accurately without slowing acquisition and front-panel response. The features and performance of Teledyne Test Tools new T3DSO2000 offers outstanding value for money.

Key Features

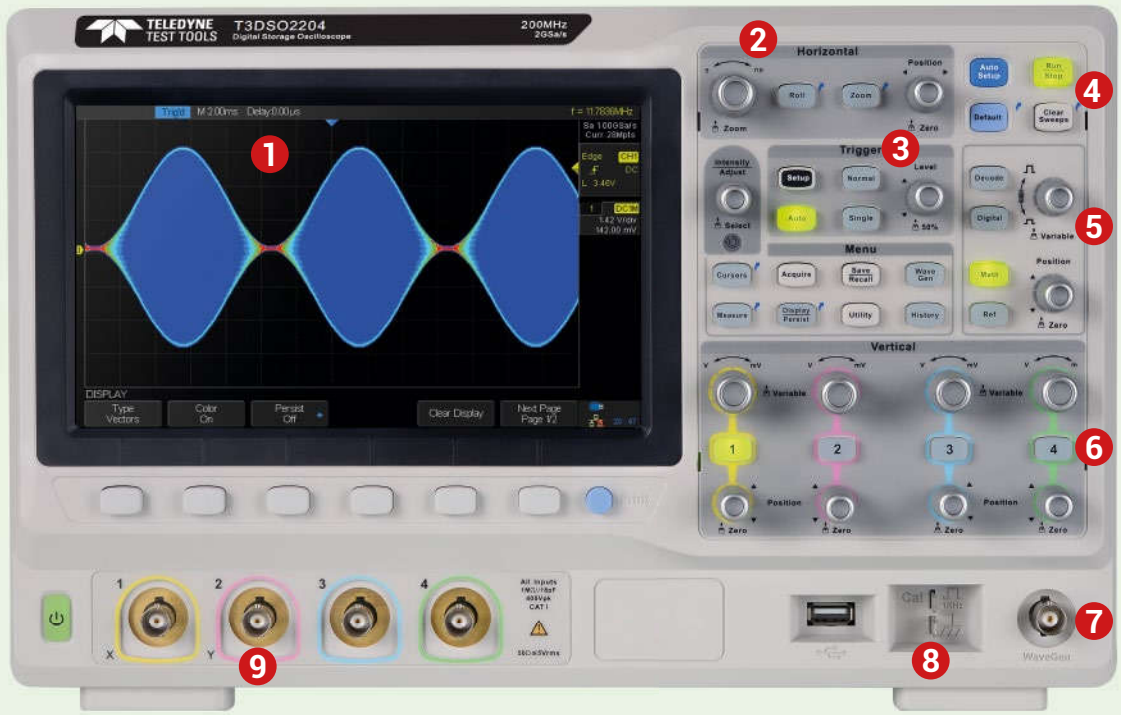
- 100 MHz, 200 MHz and 300 MHz bandwidth models
- Real-time sampling rate up to 2 Gsa/s
- New generation of high speed display technology
  - Waveform capture rate up to 140,000 wfm/s (normal mode), and 500,000 wfm/s (sequence mode)
  - Supports 256-level intensity grading and color display modes Record length up to 140 Mpts
  - Digital trigger system
- Intelligent trigger: Edge, Slope, Pulse Width, Window, Runt, Interval,
- Time out (Dropout), Pattern and Video
- Serial bus triggering and decoding (Standard), supports protocols IIC, SPI, UART, RS232, CAN, LIN
- Video trigger, supports HDTV
- Low background noise with voltage scales from 1 mV/div to 10 V/div
- 10 types of one-button shortcuts, supports Auto Setup, Default, Cursors, Measure, Roll, History, Display/Persist, Clear Sweep, Zoom and Print
- Segmented acquisition (Sequence) mode, divides the maximum record length into multiple segments (up to 80,000), according to trigger conditions set by the user, with a very small dead time segment to capture the qualifying event.

Models and key Specification

Model	T3DSO2102 T3DSO2104	T3DSO2202 T3DSO2204	T3DSO2302 T3DSO2304
Bandwidth	100 MHz	200 MHz	300 MHz
SamplingRate (Max.)	Two channel series have a single 2 GSa/s ADC, four channel series have two 2 GSa/s ADCs. When all channels are enabled, each channel has a maximum sample rate of 1 GSa/s. When a single channel per pair is active, that channel has sample rate of 2 GSa/s		
Channels	4 + EXT (four channel series) 2 + EXT (two channel series)		
Memory Depth (Max.)	70 Mpts/Ch (not interleave mode); 140 Mpts/Ch (interleave mode)		
Waveform Capture Rate (Max.)	140,000 wfm/s (normal mode), 500,000 wfm/s (sequence mode)		
Trigger Type	Edge, Slope, Pulse Width, Window, Runt, Interval, Dropout, Pattern, Video		
Serial Trigger and decoder (Optional)	IIC, SPI, UART/RS232, CAN, LIN		
16 Digital Channels (MSO option)	Maximum waveform capture rate up to 500 MSa/s, Record length up to 140 Mpts/Ch		
Waveform Generator (optional)	One channel, 25 MHz, sample rate of 125 MHz, wave length of 16 kpts		
I/O	USB Host, USB Device, LAN, Pass/Fail, Trigger Out		
Probe (Std)	1 for each Channel		
Display	8 inch TFT-LCD (800 x 480)		

- History waveform record (History) function, maximum recorded waveform length is 80,000 frames.
- Automatic measurement function for 37 parameters as well as Measurement Statistics, Zoom, Gating, Math, History and Reference functions
- 8 Math functions (FFT, addition, subtraction, multiplication, division, integration, differential, square root)
- High Speed hardware based Pass/Fail function
- MSO, 16 digital channels. Record Length up to 140 Mpts/Ch
- 25 MHz function/arbitrary waveform generator, built-in 10 waveform types
- Large 8 inch TFT-LCD display with 800 x 480 resolution
- Multiple interface types: USB Host, USB Device (USB-TMC), LAN, Trigger Out
- Supports SCPI remote control commands
- Supports Multi-language display and embedded online help

FUNCTION & CHARACTERISTICS

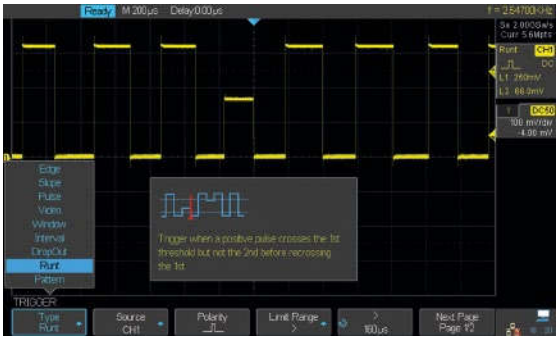


1. High Resolution 8-inch TFT-LCD display for clear images.
2. Horizontal controls of Timebase, Zoom, Roll and trigger position.
3. Advanced Triggering controls including Edge, Pulse, Interval, Window, Slope, DropOut, Runt and Pattern trigger types.
4. Easy to use Auto Setup, Run / Stop and Default Controls.
5. Multi-functional controls for Serial Decode, Math and Digital inputs.
6. Individual color coded channels and display for ease of use.
7. Optional 25 MHz built in arbitrary waveform generator.
8. Probe compensation calibrator.
9. Color coded input channels.

8 inch TFT-LCD display and 10 one-button menus

- 8-inch TFT-LCD display with 800 x 480 resolution
- Most commonly used functions are accessible using 10 different one-button operation keys: Auto Setup, Default, Cursor, Measure, Roll, History, Persist, Clear
- Sweep, Zoom, Print

A Wide Range Of Trigger Functions



A wide rage of powerful triggering functions including Edge, Slope, Pulse, Video, Window, Runt, Interval, Dropout, Pattern, etc, allows users to debug complex hardware issues with ease.

256-level Intensity Grading and Color Temperature Display



256-level intensity graded waveform display is ideal for viewing modulated and changing waveforms.



The Color temperature display clearly shows noise and jitter with infrequently occurring waveforms shown in blue through to the most frequently occurring waveforms shown in red.

Record Length of up to 140 Mpts



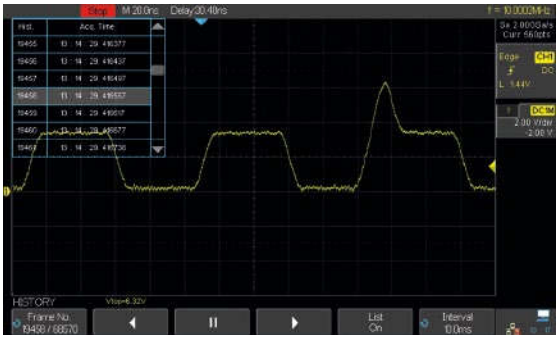
The record length of up to 140 Mpts allows use of a higher sampling rate to capture more signal detail. The hardware-based Zoom then allows quick zoom in to any area of interest.

Waveform Capture Rate up to 500,000 wfm/s



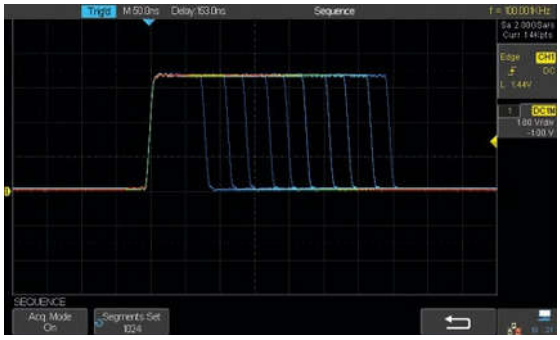
With a waveform capture rate of up to 500,000 wfm/s (sequence mode) and 140,000 wfm/s (standard mode) the T3DSO2000 can easily capture glitches, infrequent anomalies and other low-probability events.

History Mode



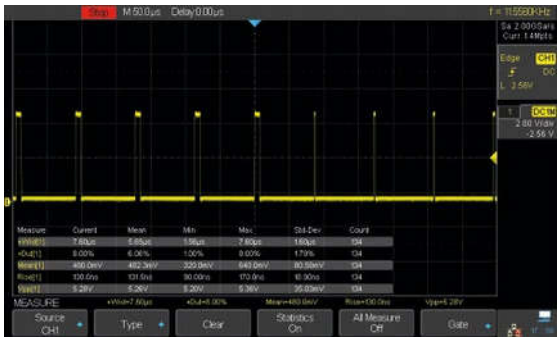
The always enabled History mode records up to 80,000 waveforms allowing users to scroll back through previous acquisitions to observe past events and locate anomalies quickly.

Sequence Mode



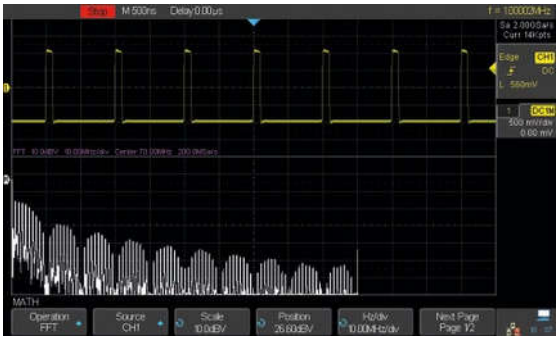
Segmented memory mode can store up to 80,000 waveforms into memory segments for capturing fast pulses in quick succession. Combine Sequence Mode with advanced triggers to isolate rare events. All the segments can be play back using the History function.

Comprehensive Statistical Functions



Parametric statistical data for 5 parameters can be displayed simultaneously. The statistical measurements include: Current Value, Mean Value, Minimum Value, Maximum Value, Standard Deviation, and the measurement count.

Advanced Math Function



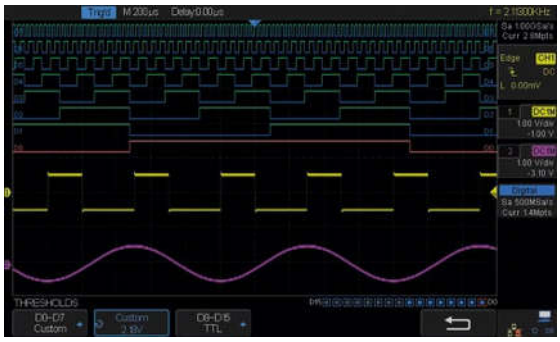
The standard Math operations include Plus, Minus, Multiply, Divide, FFT, integration, differential, and square root for quick insight into waveform characteristics.

Eres Mode



Enhanced Resolution (Eres) mode reveals hidden waveform detail by using a linear average filter to reduce waveform noise, even on single acquisition waveforms.

16 Digital Channels / MSO (Optional)



The MSO option adds 16 digital channels to the T3DSO2000 analog channels enabling users to trigger and acquire digital as well as analog waveforms in a mixed signal debug environment.

Serial Bus Decoding Function (Optional)



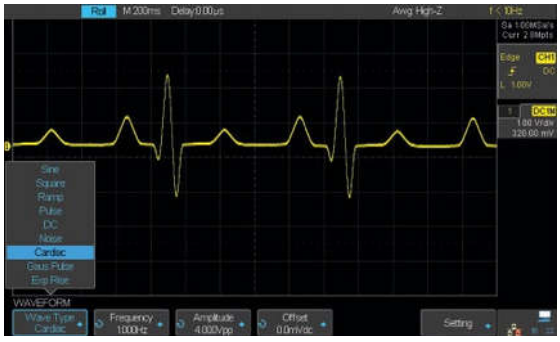
Trigger and decode up to 2 common embedded and automotive serial buses (I^2C, SPI, UART/RS232, LIN and CAN) simultaneously with the T3DSO2000-TD option. Bus protocol information can be quickly and intuitively displayed time aligned with the waveform and in table format.

Complete Connectivity



Connectivity includes External Trigger Input, Pass/Fail and Trigger Out, USB Device (USBTMC) and LAN(VXI-11) for remote control, and a Kensington Lock security point.

Built-in 25 MHz Function/Arbitrary Waveform Generator (Optional)



The optional built-in 25 MHz function generator (T3DSO2000-FG) comprises 10 built-in waveforms. 4 of your own arbitrary waveforms can be created and downloaded via PC waveform editing software.

SPECIFICATIONS

All specifications are not guaranteed unless the following conditions are met:

- The oscilloscope calibration period is valid
- The oscilloscope has been working continuously for at least 30 minutes at the specified temperature (18～28)

Acquire System

Sampling Rate	2 GSa/s (single-channel[1)]), 1 GSa/s (dual-channel)
Memory Depth	140 Mpts (single-channel), 70 Mpts (dual-channel)
Peak Detect	1 ns
Average	Averages: 4, 16, 32, 64, 128, 256, 512, 1024
Eres	Enhance bits: 0.5, 1, 1.5, 2., 2.5, 3 selectable
Interpolation	Sinx/x, Linear

Input

Channels	2/4 + EXT
Coupling	DC, AC, GND
Impedance	DC: (1 MΩ ± 2 %) || (22 pF ± 3 pF) 50 Ω: 50 Ω ± 2 %
Max.Input voltage	1 MΩ ≤ 400 Vpk (DC + Peak AC <= 10 kHz) 50 Ω ≤ 5 Vrms
CH to CH Isolation	DC ~ Max BW > 35 dB
Probe Attenuation	0.1X, 0.2X, 0.5X, 1X, 2X, 5X, 10X, 20X, 50X, 100X, 200X, 500X, 1000X, 2000X, 5000X, 10000X

Horizontal System

Time Scale	1.0 ns/div ~ 50 s/div
Channel Skew	< 100 ps
Waveform Capture Rate	Up to 140,000 wfm/s (normal mode), 500,000 wfm/s (sequence mode)
Intensity grading	256-level
Display Format	Y-T, X-Y, Roll
Time base Accuracy	± 25 ppm
Roll Mode	50 ms/div ~ 50 s/div (1-2-5 Step)

Vertical System

Bandwidth (-3dB)	300 MHz (SDS2304X / SDS2302X) 200 MHz (SDS2204X / SDS2202X) 100 MHz (SDS2104X / SDS2102X) 70 MHz (SDS2074X / SDS2072X)
Vertical Resolution	8 bit
Vertical Range	8 divisions
Vertical Scale (Probe 1X)	1 mV/div – 10 V/div (1-2-5 step)
Offset Range (Probe 1X)	1 mV/div ~ 100 mV/div: ±1 V 102 mV/div ~ 1 V/div: ±10 V 1.02 V/div ~ 10 V/div: ±100 V
Bandwidth Limit	20 MHz ± 40 %
Bandwidth Flatness	DC ~ 10 % (BW): ± 1 dB 10 % ~ 50 % (BW): ± 2 dB 50 % ~ 100 % (BW): + 2 dB/–3 dB
Low Frequency Response (AC Coupling –3 dB)	≤ 10 Hz (at input BNC)
Noise	stdev ≤ 0.2 div (< 2 mV/div) stdev ≤ 0.5 div (≥ 2 mV/div)
DC Gain Accuracy	5 mV/div ~ 10 V/div: ≤ 3.0 % ≤ 2 mV/div: ≤ 4.0 %
Offset Accuracy	≥ 2 mV/div: ± (1 % * offset + 1.5 % * 8 * div + 2 mV) < 2 mV/div: ± (1 % * offset + 1.5 % * 8 * div + 1 mV)
Rise Time[1)]	(Typ.) < 1.2 ns (SDS2304X / SDS2302X) (Typ.) < 1.7 ns (SDS2204X / SDS2202X) (Typ.) < 3.5 ns (SDS2104X / SDS2102X) (Typ.) < 5.0 ns (SDS2074X / SDS2072X)
Overshoot (500 ps Rise Edge)	< 10 %

Trigger System

Mode	Auto, Normal, Single
Level	Internal: ± 4.5 div from the center of the screen EXT: ± 0.6 V EXT/5: ± 3 V
Holdoff Range	100 ns ~ 1.5 s
Coupling	AC, DC, LFRJ, HFRJ, Noise RJ (CH1 ~ CH4)
Coupling Frequency Response (CH1 ~ CH4)[2]	DC: Passes all components of the signal AC: Blocks DC components and attenuates signals below 8 Hz LFRJ: Attenuates the frequency components below 900 kHz HFRJ: Attenuates the frequency components above 500 kHz
Coupling Frequency Response (EXT)[2]	DC: Passes all components of the signal AC: Blocks DC components and attenuates signals below 8 Hz LFRJ: Attenuates the frequency components below 400 kHz HFRJ: Attenuates the frequency components above 1 MHz
Accuracy[2]	CH1 ~ CH4: ± 0.2 div EXT: ± 0.3 div
Sensitivity	CH1 ~ CH4: 0.6 div EXT: 200 mVpp (DC ~ 10 MHz) 300 mVpp (10 MHz ~ BW) EXT/5: 1 Vpp (DC ~ 10 MHz) 1.5 Vpp (10 MHz ~ BW)
Jitter	< 100 ps (CH1 ~ CH4)
Displacement	Pre-Trigger: 0 ~ 100 % memory Delay-Trigger: 0 ~ 2,000 div

Edge Trigger

Slope	Rising, Falling, Rising & Falling
Source	CH1 ~ CH4/EXT/(EXT/5)/AC Line

Slope Trigger

Slope	Rising, Falling
Limit Range	<, >, < >, > <
Source	CH1 ~ CH4
Time Range	2 ns ~ 4.2 s
Resolution	1 ns

Pulse Width Trigger

Polarity	+wid , -wid
Limit Range	<, >, < >, > <
Source	CH1 ~ CH4
Pulse Width Range	2 ns ~ 4.2 s
Resolution	1 ns

Video Trigger

Signal Standard	NTSC, PAL, 720p/50, 720p/60, 1080p/50, 1080p/60, 1080i/50, 1080i/60, Custom
Source	CH1 ~ CH4
Sync	Any, Select
Trigger condition	Line, Field

Window Trigger

Window Type	Absolute, Relative
Source	CH1 ~ CH4

[1] Single-channel: one channel in CH1/CH2 (or CH3/CH4) is ON and another is OFF
Dual-channel: both channels in CH1/CH2 (or CH3/CH4) are ON

[2] Typical Value refers to the tested value under specific conditions. It might vary with the ambient temperature or other conditions

Interval Trigger

Slope	Rising, Falling
Limit Range	< , > , < > , > <
Source	CH1 ~ CH4
Time Range	2 ns ~ 4.2 s
Resolution	1 ns

Dropout Trigger

Timeout Type	Edge, State
Source	CH1 ~ CH4
Slope	Rising, Falling
Time Range	2 ns ~ 4.2 s
Resolution	1 ns

Runt Trigger

Polarity	+wid , -wid
Limit Range	< , > , < > , > <
Source	CH1 ~ CH4
Time Range	2 ns ~ 4.2 s
Resolution	1 ns

Pattern Trigger

Pattern Setting	Invalid, Low, High
Logic	AND, OR, NAND, NOR
Source	CH1 ~ CH4
Limit Range	< , > , < > , > <
Time Range	2 ns ~ 4.2 s
Resolution	1 ns

Serial Trigger

IIC Trigger	
Condition	Start, Stop, Restart, No Ack, EEPROM, Address&Data, Data Length
Source (SDA/SCL)	CH1 ~ CH4
Data format	Hex
Limit Range	EEPROM: =, >, <
Data Length	EEPROM: 1 byte Address & Data: 1 ~ 2 byte Data Length: 1 ~ 12 byte
R/W bit	Address & Data: Read, Write, Do not care
SPI Trigger	
Condition	Data
Source (CS/CL/Data)	CH1 ~ CH4
Data format	Binary
Data Length	4 ~ 96 bit
Bit Value	0, 1, X
Bit Order	LSB, MSB

UART / RS232 Trigger	
Condition	Start, Stop, Data, Parity Error
Source (RX/TX)	CH1 ~ CH4
Data format	Hex
Limit Range	=, >, <
Data Length	1 byte
Data Width	5 bit, 6 bit, 7 bit, 8 bit
Parity Check	None, Odd, Even
Stop Bit	1 bit, 1.5 bit, 2 bit
Idle Level	High, Low
Baud Rate (Selectable)	600/1200/2400/4800/9600/19200/38400/57600/115200 bit/s
Baud Rate (Custom)	300 bit/s ~ 334000 bit/s
CAN Trigger	
Type	All, Remote, ID, ID + Data, Error
Source	CH1 ~ CH4
ID	STD (11 bit), EXT (29 bit)
Data format	Hex
Data Length	1~2 byte
Baud Rate (Selectable)	5 k/10 k/20 k/50 k/100 k/125 k/250 k/500 k/800 k/1 M bit/s
Baud Rate (Custom)	5 kbit/s ~ 1 Mbit/s
LIN Trigger	
Type	Break, Frame ID, ID+Data, Error
Source	CH1 ~ CH4
ID	1 byte
Data format	Hex
Data Length	1 ~ 2 byte
Baud Rate (Selectable)	600/1200/2400/4800/9600/19200 bit/s
Baud Rate (Custom)	300 bit/s ~ 20 kbit/s

Serial Decoder (Optional)

No. of Decoder	2
IIC Decoder	
Signal	SCL, SDA
Address	7 bit, 10 bit
Threshold	-4.5 ~ 4.5 div
List	1 ~ 7 lines
SPI Decoder	
Signal	CLK, MISO, MOSI, CS
Edge Select	Rising, Falling
Idle Level	Low, High
Bit Order	MSB, LSB
Threshold	-4.5 ~ 4.5 div
List	1 ~ 7 lines
UART / RS232 Decoder	
Signal	RX, TX
Data Width	5 bit, 6 bit, 7 bit, 8 bit
Parity Check	None, Odd, Even
Stop Bit	1 bit, 1.5 bit, 2 bit
Idle Level	Low, High
Threshold	-4.5 ~ 4.5 div
List	1 ~ 7 lines
CAN Decoder	
Signal	CAN_H, CAN_L
Source	CAN_H, CAN_L, CAN_H-CAN_L
Threshold	-4.5 ~ 4.5 div
List	1 ~ 7 lines
LIN Decoder	
LIN Specification Package Revision	Ver1.3, Ver2.0
Threshold	-4.5 ~ 4.5 div
List	1 ~ 7 lines

Measurement

Source	CH1 ~ CH4, Math, Ref, History	
No. of Measurements	Display 5 measurements at the same time	
Range	Screen, Gating	
Measurement Parameters (37 Types)		
Vertical (Voltage)	Vmax	Highest value in input waveform
	Vmin	Lowest value in input waveform
	Vpp	Difference between maximum and minimum data values
	Vamp	Difference between top and base in a bimodal signal, or between max and min in an unimodal signal
	Vtop	Value of most probable higher state in a bimodal waveform
	Vbase	Value of most probable lower state in a bimodal waveform
	Mean	Average of all data values
	Vmean	Average of data values in the first cycle
	stdev	Standard deviation of all data values
	Vstd	Standard deviation of all data values in the first cycle
	Vrms	Root mean square of all data values
	Crms	Root mean square of all data values in the first cycle
	FOV	Overshoot after a falling edge; (base-min)/Amplitude
	FPRE	Overshoot before a falling edge; (max-top)/Amplitude
	ROV	Overshoot after a rising edge; (max-top)/Amplitude
	RPRE	Overshoot before a rising edge; (base-min)/Amplitude
	Level@X	The voltage value of the trigger point
Horizontal (Time)	Period	Period for every cycle in waveform at the 50 % level, and positive slope
	Freq	Frequency for every cycle in waveform at the 50 % level, and positive slope
	+Wid	Width measured at 50 % level and positive slope
	-Wid	Width measured at 50 % level and negative slope
	Rise	Time Duration of rising edge from 10 – 90 %
	Fall	Time Duration of falling edge from 90 – 10 %
	Bwid	Time from the first rising edge to the last falling edge, or the first falling edge to the last rising edge at the 50 % crossing
	+Dut	Ratio of positive width to period
	-Dut	Ratio of negative width to period
	Delay	Time from the trigger to the first transition at the 50 % crossing
	Time@Level	Time from trigger of each transition at a specific level and slope
Delay	Phase	Calculate the phase difference between two edges
	FRR	Time between the first rising edges of the two channels
	FRF	Time from the first rising edge of channel A, to the first falling edge of channel B
	FFR	Time from the first falling edge of channel A, to the first rising edge of channel B
	FFF	Time from the first falling edge of channel A, to the first falling edge of channel B
	LRR	Time from the first rising edge of channel A, to the last rising edge of channel B
	LRF	Time from the first rising edge of channel A, to the last falling edge of channel B
	LFR	Time from the first falling edge of channel A, to the last rising edge of channel B
	LFF	Time from the first falling edge of channel A, to the last falling edge of channel B
Cursors	Manual: Time X1, X2, (X1-X2), (1/ΔT) Voltage Y1, Y2, (Y1-Y2) Track: Time X1, X2, (X1-X2)	
Statistics	Current, Mean, Min,	
Counter	± 1 Hz counter error	

Math

Operation	+, -, *, /, FFT, d/dt, ∫dt, square root
FFT window	Rectangular, Blackman, Hanning, Hamming
FFT display	Full Screen, Split

Built-in Function/Arbitrary Waveform Generator (Optional)

Channel	1
Max. Output Frequency	25 MHz
Sampling Rate	125 MSa/s
Frequency Resolution	1 μHz
Frequency Accuracy	± 50 ppm
Vertical Resolution	14 bits
Amplitude Range	2 mVpp ~ 3 Vpp (into 50 Ω) 4 mVpp ~ 6 Vpp (into HiZ)
Waveforms	Sine, Square, Ramp, Pulse, DC, Noise, Cardiac, Gaus Pulse, Exp Rise, Exp Fall, Arb
Output Impedance	50 Ω ± 2 %
Protection	Short-Circuit Protection

Sine

Frequency	1 μHz ~ 25 MHz
Offset Accuracy (100 kHz)	± (0.3 dB * offset setting value + 1 mVpp)
Amplitude Flatness (Compare to 100 kHz, 5 Vpp)	± 0.3 dB
SFDR	DC ~ 1 MHz -60 dBc 1 MHz ~ 5 MHz -55 dBc 5 MHz ~ 25 MHz -50 dBc
HD	DC ~ 5 MHz -50 dBc 5 MHz ~ 25 MHz -45 dBc

Square/Pulse

Frequency	1 μHz ~ 10 MHz
Duty Cycle	20 % ~ 80 %
Rise/Fall time	< 24 ns (10 % ~ 90 %)
Overshoot	< 3 % (typical, 1 KHz, 1 Vpp)
Pulse Width	> 50 ns
Jitter	< 500 ps + 10 ppm

Ramp

Frequency	1 μHz ~ 300 kHz
Linearity (Typical)	< 0.1 % of Pk-Pk (Typical, 1 kHz, 1 Vpp, 100 % Symmetry)
Symmetry	0 % ~ 100 %

DC

Offset range	± 1.5 V (into 50 Ω) ± 3 V (into HiZ)
Accuracy	± (|offset| * 1 % + 3 mV)

Noise

Bandwidth	> 25 MHz (-3 dB)

Arb

Frequency	1 μHz ~ 5 MHz
Wave Length	16 Kpts
Sampling Rate	125 MSa/s
Waveform Import	EasyWave, U-Disk

SPECIFICATIONS

Digital Channels

No. of Channels	16
Max. Sampling Rate	500 MSa/s
Memory Depth	14 Mpts/Ch
Min. Detectable Pulse Width	4 ns
Level Group	D0 ~ D7, D8 ~ D15
Level Range	-3 V ~ 3 V
Logic Type	TTL, CMOS, LVCMOS3.3, LVCMOS2.5, custom
Skew[2)]	D0 ~ D15: ± 1 sampling interval Digital to Analog: ± (1 sampling interval +1 ns)

I/O

Standard	USB Host, USB Device, LAN, Pass/Fail, Trigger Out
Pass/Fail	3.3 V TTL Output

Display

Display Type	8-inch TFT LCD
Resolution	800 × 480
Color	24 bit
Contrast	500:1
Backlight	300 nit
Range	8 x 14 divisions

Waveform Display

Type	Dot, Vector
Persistence Time	OFF, 1 s, 5 s, 10 s, 30 s, infinite
Color Display	Normal, Color
Screen Saver	1 min, 5 min, 10 min, 30 min, 1 hour, OFF

Language

Language	Simplified Chinese, Traditional Chinese, English, French, Japanese, Korean, German, Russian, Italian, Portuguese

Environments

Temperature	Operating: 10 ~ 40 Non-operating: -20 ~ 60
Humidity	Operating: 85 % RH, 40 Deg C, 24 hours Non-operating: 85 % RH, 65 Deg C, 24 hours
Altitude	Operating: ≤ 3000 m Non-operating: ≤ 15,266 m
Electromagnetic Compatibility	2004/108/EC Execution Standard EN 61326-1:2006 EN 61000-3-2:2006 + A2:2009, EN 61000-3-3:2008
Safety	2006/95/EC Execution Standard EN 61010-1:2010 / EN 61010-2-030:2010

Power Supply

Input Voltage & Frequency	100 ~ 240 Vrms 50/60 Hz 100 ~ 120 Vrms 400 Hz
Power	25 W Max

Mechanical

Dimensions	Length * Width * Height = 352 mm * 128 mm * 224 mm
Weight	N.W 3.4 Kg (2-ch); 3.6 Kg (4-ch) G.W 4.9 Kg (2-ch); 5.2 Kg (4-ch)

[2)] Typical Value refers to the tested value under specific conditions. It might vary with the ambient temperature or other conditions

T3DSO2000 Probes

Probe type	Model	Picture	Description
Passive	**T3PP300**		300 MHz bandwidth, 1 Mohm 10X Probe 1 supplied per channel.
Logic Probe	**T3DSO2000-LS**		16 Channel Logic Probe. This probe REQUIRES that the Oscilloscope has option T3DSO2000-MSO
MSO Software	**T3DSO2000-MSO**[1)]		Software License for the MSO capability. Enables one T3DSO2000-LS 16 channel logic probe lead set to be shared amongst several licensed T3DSO2000 oscilloscopes. This software option does not come with a logic probe lead set.
Current	**T3CP50**		Bandwidth: 50 MHz, Max. continuous current: 30 Arms, Peak current: 50A Switch Ratio: 100 mV/A, 1 V/A, Accuracy: 1 V/A (±1 % ±1 mA), 100 mV/A (±1 % ±10 mA), DC 12 V / 1.2 A power adapter
High Voltage Differential	**T3DP7000**		Bandwidth: 100 MHz Differential Range: 7000 V (DC + Peak AC), 100X/1000X Accuracy: ±2 % DC 5 V/1 A USB adapter
High Voltage	**T3VP100**		Bandwidth: 40 MHz Differential Range: DC 10 KV, AC (rms): 7 KV (sine), AC (Vpp): 20KV (Pulse) 1000X Accuracy: ≤ 3 %

[1)] This probe REQUIRES that the scope has option T3DSO2000-MSO.

Ordering information

Description	300 MHz, 4 Ch, 2 GSa/s (Max.), 140 Mpts	T3DSO2304
	300 MHz, 2 Ch, 2 GSa/s (Max.), 140 Mpts	T3DSO2302
	200 MHz, 4 Ch, 2 GSa/s (Max.), 140 Mpts	T3DSO2204
	200 MHz, 2 Ch, 2 GSa/s (Max.), 140 Mpts	T3DSO2202
	100 MHz, 4 Ch, 2 GSa/s (Max.), 140 Mpts	T3DSO2104
	100 MHz, 2 Ch, 2 GSa/s (Max.), 140 Mpts	T3DSO2102
Standard Accessories	USB Cable -1	
	Passive Probe -2 (2-ch model); -4 (4-ch model)	
	Power Cord -1	
	Quick Start -1	
	Certificate of Calibration -1	
Optional Accessories	T3DSO2000-TD	IIC, SPI, UART/RS232, CAN, LIN Decoder
	T3DSO2000-FG	25 MHz Function/Arbitrary Waveform Generator
	T3DSO2000-MSO	16 Digital Channels Software, requires T3DSO2000-LS
	T3DSO2000-LS	16 Channel Logic Probe, requires T3DSO2000-MSO
	T3VP100	High Voltage Probe
	T3CP50	Current Probe
	T3DP7000	High Voltage Differential Probe

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.

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