

# T3DSOH1000/T3DSOH1000-ISO

## Handheld Oscilloscope

**100 MHz/200 MHz, Isolated, CAT III**  
**Dedicated 6000 Count DMM**  
**Data logger 1 Sa/s to 25 kSa/s**



### Multifunctional tool suitable for harsh environments

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• 1000-ISO series offers two independent floating isolated inputs.</li> </ul>                  | <ul style="list-style-type: none"> <li>✓ Ideal for simultaneous measurement of independently floating signals and to reduce accidental short circuits.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Large bright 5.6-inch TFT -LCD display with 640 * 480 resolution.</li> </ul>                 | <ul style="list-style-type: none"> <li>✓ Large bright display makes it easy to view data in the field.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• IP51 rated dust and drip-proof housing.</li> </ul>   | <ul style="list-style-type: none"> <li>✓ Safety rated for industrial environments.</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Long Capture – 6 Mpts/Ch and 12 Mpts interleaved.</li> </ul>                                 | <ul style="list-style-type: none"> <li>✓ Capture more time and show more waveform detail.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• True-RMS measurements – All AC Voltage and Current ranges give True-RMS readings.</li> </ul> | <ul style="list-style-type: none"> <li>✓ Excellent accuracy regardless of the waveform shape.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Serial Bus Decoders for I<sup>2</sup>C, SPI, UART, CAN, LIN as standard.</li> </ul>          | <ul style="list-style-type: none"> <li>✓ Debug serial buses directly in your Oscilloscope at no extra cost.</li> </ul>  |
| <ul style="list-style-type: none"> <li>• 3 Years Warranty as standard.</li> </ul>   | <ul style="list-style-type: none"> <li>✓ Reliable product gives peace of mind.</li> </ul>   |

The Teledyne Test Tools DSOH1000 and DSOH1000-ISO handheld oscilloscopes integrate oscilloscope, recorder and multimeter functions into a convenient and portable design. Weighing only 1.7 kg (3.8 lb), the battery-powered DSOH series can be used for field testing, automotive, R&D, and industrial maintenance.

**Superb Performance**

- 100 MHz and 200 MHz Bandwidth models
- Max Sample rate of 1 GSa/s
- Waveform capture rates up to 100,000 wfms/s
- Vertical range of 2 mV/div to 100 V/div
- Up to 12 Mpts of Acquisition memory
- Sequence acquisition mode (up to 80,000 segments)
- History waveform record (History) function with up to 80,000 frames
- 38 Automatic measurement parameters
- Supports 256-level intensity grading and color temperature display modes
- Intelligent trigger: Edge, Slope, Pulse Width, Window, runt, Interval, Time out (dropout), Pattern
- Serial bus triggering and decoding (Standard) for IIC, SPI, UART, CAN and LIN protocols
- Video trigger/HDTV

Oscilloscope inputs  
CAT III 600 V/CAT II 1000 V  
Isolated channels\*

5.6-inch TFT-LCD display  
with 640 × 480 resolution

1 Mpts FFT. Support  
Peaks and Markers

Three dedicated buttons  
to switch between different  
instrument modes

Dust and water resistant  
outer case

Function keys to perform  
corresponding functions  
displayed above each  
softkey

Multifunctional wheel for  
easier and faster operation  
in the field

Default key can be  
customized for user settings  
or factory "defaults"

Multimeter inputs



- Robust design**
- UL2054 certified lithium battery pack, 6900 mAh capacity, external charger
  - Sealed IP51 dust and drip-proof housing
  - Rubberized surface with large keys makes it easy to use with gloves

**Excellent connectivity**

- Interface types: Isolated USB Host, USB Device (MicroUSB – TMC)
- Supports SCPI remote control commands

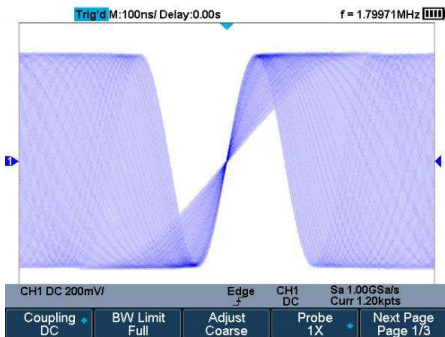
**True RMS Digital Multimeter**

- CAT III 600V/CAT II 1000V rated isolated inputs
- 6000 counts Digital Multimeter supports DCV, ACV, DCI, ACI, Resistance, Diode, Capacitance, Continuity test.
- True RMS AC Voltage/Current measurement multimeter
- Included current adaptors helps in current measurement up to 10 A

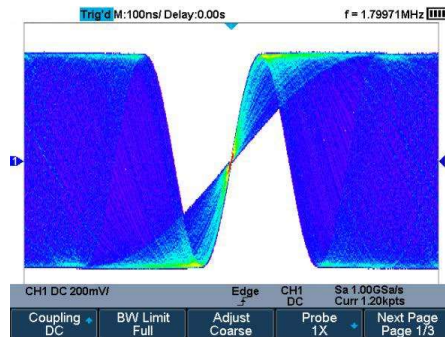
\* Isolated channel is only available on T3DSOH1000-ISO Series

# FUNCTIONS & CHARACTERISTICS

## 1 256-Level Intensity Grading and Color Temperature Display



SPO display technology provides fast refresh rates. The resulting intensity-graded trace is brighter for events that occur with more frequency and dims when the events occur with less frequency.



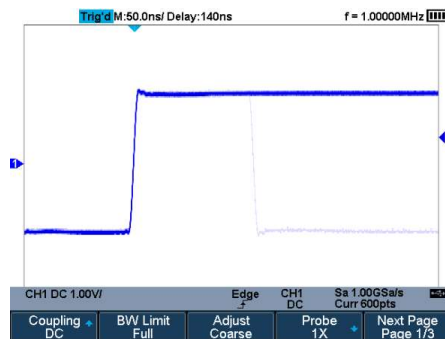
The color temperature display is similar to the intensity-graded trace function, but the trace occurrence is represented by different colors (color "temperature") as opposed to changes in the intensity of one color. Red colors represent events that occur more frequently, while blue is used to mark points that occur less frequently.

## 2 Record Length of up to 12 Mpts



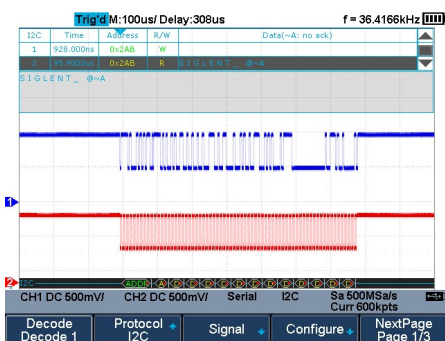
Using hardware-based Zoom technologies and max record length up to 12 Mpts, users can oversample to capture for longer periods at higher resolution and use the zoom feature to see more details within each signal.

## 3 Waveform Capture Rate up to 400,000 wfm/s



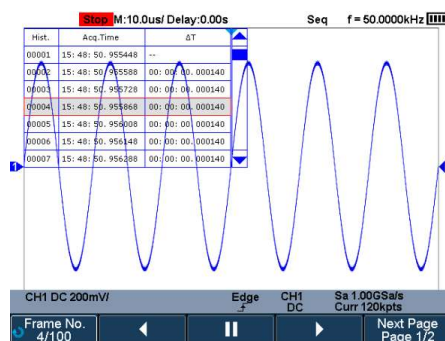
With a waveform capture rate of up to 400,000 wfm/s (sequence mode), the oscilloscope can easily capture unusual or low-probability events.

## 4 Serial Bus Decoding Function



The T3DSOH displays the decoding through the events list. Bus protocol information can be quickly and intuitively displayed in a tabular format.

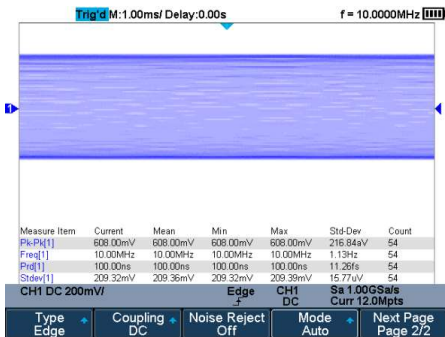
## 5 History Waveforms (History) Mode and Segmented Acquisition (Sequence)



Playback the latest triggered events using the history function. Segmented memory collection will store trigger events into multiple (Up to 80,000) memory segments, each segment will store triggered waveforms and timestamps for each frame.

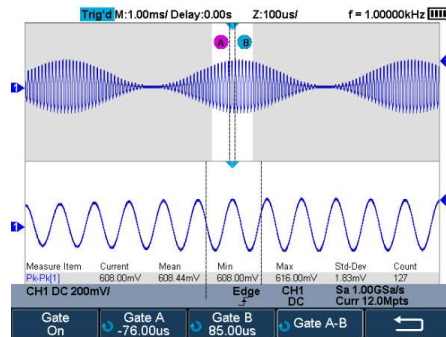
# FUNCTIONS & CHARACTERISTICS

## 6 True measurement to 12 M points



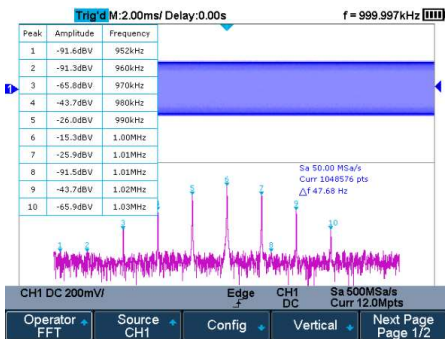
The T3DSOH series can measure all sampled data points up to 12 Mpts. This ensures the accuracy of measurements while the math co-processor decreases measurement time and increases ease-of-use.

## 7 Gate and Zoom Measurement



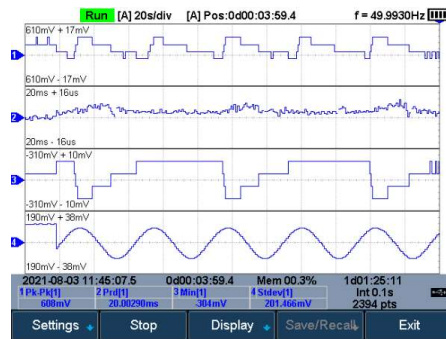
Through Gate and Zoom measurement, the user can specify an arbitrary interval of waveform data analysis and statistics. This helps avoid measurement errors that can be caused by invalid or extraneous data, greatly enhancing the measurements' validity and flexibility.

## 8 1 M points used to calculate the FFT



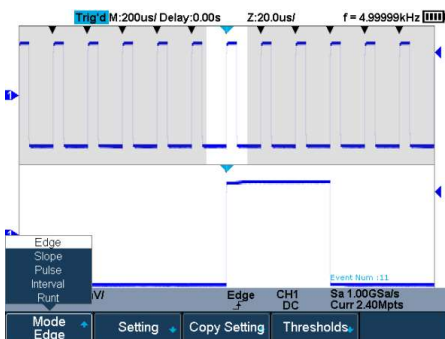
The new math co-processor enables FFT analysis of incoming signals using up to 1 M samples per waveform. This provides high-frequency resolution with a fast refresh rate. The FFT function also supports a variety of window functions so that it can adapt to different spectrum measurement needs. Support Peaks, Markers, a variety of numbers.

## 9 Measurement Logger



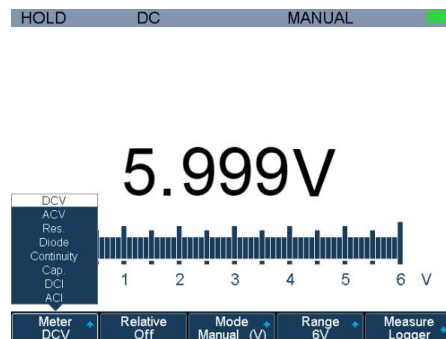
The measurement Logger is the mode of logging the measurement value for a long time. If the amount of measurement data is relatively small, to process quickly, the data is logged in memory. After stopping logging, the data can be saved into the internal flash or external U disk.

## 10 Search and Navigate



The T3DSOH series can search events specified by the user in a frame. It can also navigate by time (delay position) and historical frames.

## 11 6000 Counts Digital Multimeter



6000 count digital multimeter featured function of DCV, true RMS ACV, DCI, ACI, Diode, Resistance, Capacitance, and Continuity.

# FUNCTIONS & CHARACTERISTICS

## 12 Adapter/Battery



**Wall power using the supplied adapter**

T3DSOH supports adapter power supply and battery power supply. After connecting the adapter, the battery enters into charging mode. The adapter provides a maximum 4 A output current.



**Battery powered**

T3DSOH uses a UL2054 certified lithium battery package. The battery capacity of 6900 mAh can guarantee long-term operation without an external power supply for up-to 5.5 hours (T3DSOH1000 series) and 4 hours (T3DSOH1000-ISO series). The battery supports an external charger to further meet the requirements of portability.

## 13 Connectivity



**Right side of the T3DSOH series**



**Left side of the T3DSOH series**

T3DSOH supports USB Host, USB Device (Micro USB – TMC).

# SPECIFICATIONS

## OSCILLOSCOPE

| Model | T3DSOH1000 | T3DSOH1000-ISO |
|-------|------------|----------------|
|-------|------------|----------------|

### Acquisition System

|                        |   |  |
|------------------------|---|--|
| Sampling Rate (Max.)   | 1 GSa/s (single channel), 500 MSa/s (two channels)        |  |
| Memory Depth (Max.)    | Max 12 Mpts/Ch (single channel), 6 Mpts/Ch (two channels) |  |
| Peak Detect            | 2 ns  |  |
| Average                | Averages: 4, 16, 32, 64, 128, 256, 512, 1024              |  |
| ERES                   | Enhance bits: 0.5, 1.5, 2, 2.5, 3                         |  |
| Waveform interpolation | Sin(x)/x, Linear  |  |

### Input

|                                  |  |  |
|----------------------------------|--|--|
| Channels                         | 2 channels   |  |
| Coupling                         | DC, AC, GND  |  |
| Impedance                        | DC: (1 M $\Omega$ $\pm$ 2 %)    (14 pF $\pm$ 2 pF)   | DC: (1 M $\Omega$ $\pm$ 2 %)    (14 pF $\pm$ 2 pF)   |
| Max. Input voltage <sup>1)</sup> | CAT II 300 Vrms Between BNC Signal and Protecting Earth<br>CAT II 30 Vrms Between BNC GND and Protecting Earth<br>CAT II 300 Vrms Between BNC Signal and BNC GND | CAT III 600 Vrms, CAT II 1000 Vrms Between BNC Signal and Protecting Earth<br>CAT III 600 Vrms, CAT II 1000 Vrms Between BNC GND and Protecting Earth<br>CAT III 300 Vrms Between BNC Signal and BNC GND |
| CH to CH Isolation               | DC-Max BW: >40 dB  |  |
| Probe attenuation                | 0.1X, 0.2X, 0.5X, 1X, 2X, 5X, 10X.....1000X, 2000X, 5000X, 10000X, Custom  |  |

### Vertical System

|  |  |  |
|--|--|--|
| Bandwidth (-3 dB) <sup>2)</sup>            | $\geq$ 200 MHz (T3DSO1202)<br>$\geq$ 100 MHz (T3DSO1102)   | $\geq$ 200 MHz (T3DSO1202-ISO)<br>$\geq$ 100 MHz (T3DSO1102-ISO) |
| Vertical Resolution                        | 8-bit  |  |
| Vertical Scale (Probe 1X)                  | 2 mV/div–100 V/div (1-2-5 sequence)  | 5 mV/div–100 V/div (1-2-5 sequence)                              |
| Offset Range (Probe 1X)                    | 2 mV – 296 mV: $\pm$ 5 V<br>302 mV – 7.5 V: $\pm$ 80 V<br>7.6 V – 100 V: $\pm$ 400 V                 |  |
| Bandwidth limit <sup>2)</sup>              | 20 MHz $\pm$ 40 %  |  |
| Bandwidth Flatness <sup>2)</sup>           | DC – 10 % (BW): $\pm$ 1 dB<br>10 % – 50 % (BW): $\pm$ 2 dB<br>50 % – 100 % (BW): + 2 dB/-3 dB        |  |
| Low-frequency response (AC coupling -3 dB) | $\leq$ 2 Hz (at input BNC)   |  |
| Noise/SNR                                  | 2 mV/div: > 24 dB<br>5 mV/div: > 25 dB<br>$\geq$ 10 mV/div: > 35 dB<br>P-P Noise $\leq$ 15 SDEV Spec |  |
| SFDR including harmonics                   | $\geq$ 30 dB   | $\geq$ 28 dB   |
| CMRR                                       |  | > 100 dB DC<br>> 50 dB to AC 1 MHz                               |
| DC Gain Accuracy                           | $\leq$ $\pm$ 3 %: $\geq$ 10 mV/div<br>$\leq$ $\pm$ 4 %: < 10 mV/div                                  |  |
| Offset Accuracy                            | $\pm$ (1.5 % * Offset + 1.5 % * 8 * div + 5 mV)  |  |
| Rise time <sup>2)</sup>                    | Typical 1.7 ns (T3DSO1202)<br>Typical 3.5 ns (T3DSO1102)   | Typical 2.0 ns (T3DSO1202-ISO)<br>Typical 3.5 ns (T3DSO1102-ISO) |
| Overshoot (500 ps Pulse) <sup>2)</sup>     | typical 12 %   | typical 18 %   |

<sup>1)</sup> According to IEC61010-1, a voltage higher than 30 Vrms is a dangerous voltage, necessary protection must be taken to prevent personal injury. Please read the user's manual for details.

<sup>2)</sup> The T3DSOH series handheld oscilloscope featured 1 M $\Omega$  input impedance. Bandwidth and pulse response must be verified with an external 50  $\Omega$  adapter, to guarantee signal integrity at higher frequency.

# SPECIFICATIONS

## Horizontal System

|                       |  |
|-----------------------|--|
| Timebase Scale        | 1.0 ns/div – 100 s/div   |
| Channel Skew          | < 300 ps   |
| Waveform Capture Rate | Up to 100,000 wfm/s (normal mode), 400,000 wfm/s (sequence mode) |
| Intensity grading     | 256 Levels   |
| Display Format        | Y-T, X-Y, Roll   |
| Timebase Accuracy     | ±25 ppm  |
| Roll Mode             | 50 ms/div-100 s/div (1-2-5 sequence)                             |

## Trigger System

|                             |  |
|-----------------------------|--|
| Mode                        | Auto, Normal, Single   |
| Level                       | Internal: ±4.5 div from the center of the screen   |
| Hold off range              | 80 ns – 1.5 s  |
| Coupling                    | AC<br>DC<br>LFRJ<br>HFRJ<br>Noise RJ   |
| Coupling Frequency Response | DC: Passes all components of the signal<br>AC: Blocks DC components and attenuates signals below 8 Hz<br>LFRJ: Blocks the DC component and attenuates the low-frequency components below 2 MHz<br>HFRJ: Attenuates the high-frequency components above 1.2 MHz |
| Accuracy (typical)          | Internal: ± 0.2 div  |
| Sensitivity                 | DC – Max BW: 0.8 div   |
| Jitter                      | < 100 ps   |
| Displacement                | Pre-Trigger: 0 – 100 % Memory<br>Delay Trigger: 0 to 10,000 div  |

## Edge Trigger

|        |                                   |
|--------|-----------------------------------|
| Slope  | Rising, Falling, Rising & Falling |
| Source | All channels                      |

## Slope Trigger

|             |                 |
|-------------|-----------------|
| Slope       | Rising, Falling |
| Limit Range | <, >, <>, ><    |
| Source      | All channels    |
| Time Range  | 2 ns – 4.2 s    |
| Resolution  | 1 ns            |

## Pulse Width Trigger

|             |              |
|-------------|--------------|
| Polarity    | +wid, -wid   |
| Limit Range | <, >, <>, >< |
| Source      | All channels |
| Pulse 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            | All channels  |
| Sync              | Any, Select   |
| Trigger condition | Line, Field   |

## Window Trigger

|             |                    |
|-------------|--------------------|
| Window Type | Absolute, Relative |
| Source      | All channels       |

## Interval Trigger

|             |                 |
|-------------|-----------------|
| Slope       | Rising, Falling |
| Limit Range | <, >, <>, ><    |
| Source      | All channels    |
| Time Range  | 2 ns – 4.2 s    |
| Resolution  | 1 ns            |

# SPECIFICATIONS

| <b>Dropout Trigger</b>        |  |
|-------------------------------|--|
| Timeout Type                  | Edge, State  |
| Source                        | All channels   |
| Slope                         | Rising, Falling  |
| Time Range                    | 2 ns – 4.2 s   |
| Resolution                    | 1 ns   |
| <b>Runt Trigger</b>           |  |
| Polarity                      | +wid , -wid  |
| Limit Range                   | <, >, <>, ><   |
| Source                        | All channels   |
| Time Range                    | 2 ns – 4.2 s   |
| Resolution                    | 1 ns   |
| <b>Pattern Trigger</b>        |  |
| Pattern Setting               | Invalid, Low, High   |
| Logic                         | AND, OR, NAND, NOR   |
| Source                        | All channels   |
| Limit Range                   | <, >, <>, ><   |
| Time Range                    | 2 ns – 4.2 s   |
| Resolution                    | 1 ns   |
| <b>Serial Trigger</b>         |  |
| <b>I<sup>2</sup>C Trigger</b> |  |
| Condition                     | Start, Stop, Restart, No Ack, EEPROM, 7-bits Address & Data, 10-bits Address & Data, Data Length |
| Source(SDA/SCL)               | All channels   |
| Data format                   | Hex  |
| Limit Range                   | EEPROM: =, >, <  |
| Data Length                   | EEPROM: 1 byte<br>Addr & Data: 1–2 byte<br>Data Length: 1–12 byte                                |
| R/W bit                       | Addr & Data: Read, Write, Do not care  |
| <b>SPI Trigger</b>            |  |
| Condition                     | Data   |
| Source(CS/CL/Data)            | All channels   |
| Data format                   | Binary   |
| Data Length                   | 4-96-bit   |
| Bit Value                     | 0, 1, X  |
| Bit Order                     | LSB, MSB   |
| <b>UART Trigger</b>           |  |
| Condition                     | Start, Stop, Data, Parity Error  |
| Source(RX/TX)                 | All channels   |
| Data format                   | Hex  |
| Limit Range                   | =, >, <  |
| Data Length                   | 1 byte   |
| Data Width                    | 5, 6, 7, 8-bits  |
| Parity Check                  | None, Odd, Even, Space, Mark   |
| Stop Bit                      | 1, 1.5, 2-bits   |
| Idle Level                    | High, Low  |
| Baud Rate (Selectable)        | 600 / 1200 / 2400 / 4800 / 9600/19200 / 38400 / 57600 / 115200 / Custom bit/s                    |
| Baud Rate (Custom)            | 300 – 5000000 bit/s  |



# SPECIFICATIONS

| <b>CAN Trigger</b>                 |   |
|------------------------------------|---|
| Condition                          | Start, Remote, ID, ID + Data, Error   |
| Source                             | All channels  |
| ID                                 | STD (11-bits), EXT (29-bit)   |
| Data Format                        | Hex   |
| Data Length                        | 1–2 byte  |
| Baud Rate                          | 5 k / 10 k / 20 k / 50 k / 100 k / 125 k / 250 k / 500 k / 800 k / 1 M / Custom bit/s |
| <b>LIN Trigger</b>                 |   |
| Condition                          | Break, Frame ID, ID + Data, Error   |
| Source                             | All channels  |
| ID                                 | 1 byte  |
| Data Format                        | Hex   |
| Data Length                        | 1–2 byte  |
| Baud Rate (Selectable)             | 600 / 1200 / 2400 / 4800 / 9600 / 19200 / Custom bit/s                                |
| Baud Rate (Custom)                 | 300 bit/s – 20 Mbit/s   |
| <b>Search</b>                      |   |
| Event                              | Edge, Slope, Pulse, Interval, Runt  |
| Event Number                       | Y-T: 600<br>ROLL: No limitation<br>Stop After ROLL: 600                               |
| <b>Serial Decoder</b>              |   |
| Decoders                           | 2   |
| <b>I<sup>2</sup>C</b>              |   |
| Signal                             | SCL, SDA  |
| Address                            | 7, 10 bits  |
| Threshold                          | -4.5 – 4.5 div  |
| List                               | 1–7 lines   |
| <b>SPI</b>                         |   |
| Signal                             | SCL, MISO, MOSI, CS (2 channel scopes can only use 2 signal) identifiers              |
| Edge Select                        | Rising, Falling   |
| Idle Level                         | Low, High   |
| Bit Order                          | MSB, LSB  |
| Threshold                          | -4.5 – 4.5 div  |
| List                               | 1–7 lines   |
| <b>UART</b>                        |   |
| Signal                             | RX, TX  |
| Data Width                         | 5, 6, 7, 8 bits   |
| Parity Check                       | None, Odd, Even, Space, Mark  |
| Stop Bit                           | 1, 1.5, 2 bits  |
| Idle Level                         | Low, High   |
| Threshold                          | -4.5 – 4.5 div  |
| List                               | 1–7 lines   |
| <b>CAN</b>                         |   |
| Signal                             | CAN_H, CAN_L  |
| Source                             | CAN_H, CAN_L, CAN_H-CAN_L   |
| Threshold                          | -4.5 – 4.5 div  |
| List                               | 1–7 lines   |
| <b>LIN</b>                         |   |
| LIN Specification Package Revision | Ver1.3, Ver2.0  |
| Threshold                          | -4.5 – 4.5 div  |
| List                               | 1–7 lines   |

# SPECIFICATIONS

## Measurement

|                        |  |   |   |
|------------------------|--|---|---|
| Source                 | All channels, All channels in Zoom, Math, All References, History                              |   |   |
| Number of Measurements | Display 4 measurements at the same time. 5 measurements are displayed in the statistics table. |   |   |
| Measurement Range      | Screen or Gate region  |   |   |
| Measurement Parameters | 38 Types   |   |   |
| Vertical               | Max  | Highest value in input waveform   |   |
|                        | Min  | The lowest value of the input waveform  |   |
|                        | Pk-Pk  | Difference between maximum and minimum data values  |   |
|                        | Ampl   | Difference between top and base in a bimodal signal, or between max and min in a unimodal signal  |   |
|                        | Top  | Value of most probable higher state in a bimodal waveform   |   |
|                        | Base   | Value of most probable lower state in a bimodal waveform  |   |
|                        | Mean   | Average of all data values  |   |
|                        | Cmean  | Average of data values in the first cycle   |   |
|                        | Stdev  | Standard deviation of all data values   |   |
|                        | Cstd   | 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   | Period  | Time between the middle threshold points of two consecutive, like-polarity edges              |
|                        |  | Freq  | Reciprocal of period  |
|                        |  | +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  |   |
| +Duty                  |  | Time difference between the 50 % threshold of a rising edge to the 50 % threshold of the next falling edge of the pulse   |   |
| -Duty                  |  | Time difference between the 50 % threshold of a falling edge to the 50 % threshold of the next rising edge of the pulse   |   |
| Delay                  |  | Time from the trigger to the first transition at the 50 % crossing  |   |
| Time@Level             |  | Time from the trigger to each rising edge at the 50 % crossing.<br>When Statistics is Off, it shows the time from the trigger to the last rising edge at the 50 % crossing.<br>When Statistics is On, it shows the Mean, Min, Max, Standard Deviation of time from the trigger to each rising edge at the 50 % crossing in multiple frames (number = Count). The Current shows the time of the current frame from the trigger to the last rising edge at the 50 % crossing. |   |
| Delay                  |  | Phase   | Phase difference between two edges  |
|                        |  | FRFR  | Time from the first rising edge of channel A to the following first rising edge of channel B  |
|                        |  | FRFF  | Time from the first rising edge of channel A to the following first falling edge of channel B |
|                        | FFFR   | Time from the first falling edge of channel A to the following first rising edge of channel B   |   |
|                        | FFFF   | Time from the first falling edge of channel A to the following first falling edge of channel B  |   |
|                        | FRLR   | Time from the first rising edge of channel A to the last rising edge of channel B   |   |
|                        | FRLF   | Time from the first rising edge of channel A to the last falling edge of channel B  |   |
|                        | FFLR   | Time from the first falling edge of channel A to the last rising edge of channel B  |   |
|                        | FFLF   | Time from the first falling edge of channel A to the last falling edge of channel B   |   |
|                        | Skew   | Time of source A edge minus time of nearest source B edge   |   |

# SPECIFICATIONS

|            |  |
|------------|--|
| Cursors    | Manual: Time X1, X2, (X1–X2), (1/ΔT)<br>Voltage Y1, Y2, (Y1–Y2)<br>Track: Time X1, X2, (X1–X2) |
| Statistics | Current, Mean, Min, Max, Stdev, Count  |
| Counter    | Hardware 6-digit counter (channels are selectable)   |

## Math

|             |  |
|-------------|--|
| Operation   | +, -, *, /, FFT, d/dt, ∫dt, √                    |
| FFT window  | Rectangular, Blackman, Hanning, Hamming, Flattop |
| FFT display | Full Screen, Split, Exclusive                    |

## Recorder

|   |   |
|---|---|
| <b>Sample Logger</b>                    |   |
| Source                                  | CH1, CH2, CH1 & CH2   |
| Sample Rate                             | 1 Sa/s – 25 kSa/s (1-2-5 sequence)  |
| Memory Depth                            | Internal memory 50 MB, Support External memory to 2 GB  |
| Log Time with Max sample rate           | Approx. 23 mins in single-channel mode, 11 mins in two-channels mode with internal memory<br>Approx. 22 hours in single-channel mode, 11 hours in two-channel mode with external memory |
| Data Format                             | Binary  |
| <b>Measurement Logger</b>               |   |
| Source                                  | Measurement, Meter, Measurement & Meter   |
| Log Interval                            | 0.1 s – 10min   |
| Number of simultaneous logging channels | 4   |
| Memory Depth                            | Approx. 3.6 Msamples in single-channel mode, 900 ksamples in four-channel mode  |
| Log Time with Minimum Interval          | Approx. 100 hours   |
| Data Format                             | Binary  |
| Export Data Format                      | Binary, csv, MATLAB   |

## Multimeter (DMM) <sup>1)</sup>

|  |                                      |                   |                              |
|--|--------------------------------------|-------------------|------------------------------|
| Maximum Resolution                                   | 6000 Counts                          |                   |                              |
| Maximum Input Voltage (T3DSOH1000)                   | CAT III 300 Vrms<br>CAT II 600 Vrms  |                   |                              |
| Maximum Input Voltage (T3DSOH1000-ISO)               | CAT III 600 Vrms<br>CAT II 1000 Vrms |                   |                              |
| Maximum Input Voltage (For adapter SCD10A, SCD600MA) | CAT III 60 Vrms                      |                   |                              |
| <b>Function</b>                                      | <b>Range</b>                         | <b>Resolution</b> | <b>Accuracy<sup>4)</sup></b> |
| DC Voltage   | 60.00 mV                             | 10 μV             | (± 1 % ± 15 digit)           |
|  | 600.0 mV                             | 100 μV            |                              |
|  | 6.000 V                              | 1 mV              |                              |
|  | 60.00 V                              | 10 mV             |                              |
|  | 600.0 V                              | 100 mV            |                              |
| AC Voltage (45 Hz 400 Hz)                            | 1000 V <sup>3)</sup>                 | 1 V               | (± 1.5 % ± 5 digit)          |
|  | 60.00 mV                             | 10 μV             |                              |
|  | 600.0 mV                             | 100 μV            |                              |
|  | 6.000 V                              | 1 mV              |                              |
|  | 60.00 V                              | 10 mV             |                              |
| DC Current <sup>2)5)</sup>                           | 600.0 V                              | 100 mV            | (± 1 % ± 5 digit)            |
|  | 750 V <sup>3)</sup>                  | 1 V               |                              |
|  | 60.00 mA                             | 10 μA             |                              |
|  | 600.0 mA                             | 100 μA            |                              |
|  | 6.000 A                              | 1 mA              |                              |
|  | 10.00 A                              | 10 mA             | (± 5 % ± 5 digit)            |

<sup>1)</sup> The spec for DMM functions are calibrated and verified in Battery-Power mode, Temperature range [23 °C ± 5 °C], warm-up for 0.5 hour.

<sup>2)</sup> For rank A (ampere) range, the measurement time should be less than 10s, the interval time should be more than 15 minutes.

<sup>3)</sup> This spec is for T3DSO1000-ISO only, The maximum input voltage is 600V (DC/AC) for the T3DSO1000 series.

<sup>4)</sup> ± of reading % ± range error. For AC signals, the input signal should be greater than 10 % of range.

<sup>5)</sup> 60 mA, 600 mA specification along with adapter SCD600MA; 6 A, 10 A specification along with adapter SCD10A.

# SPECIFICATIONS

| Function                                       | Range   | Resolution    | Accuracy <sup>4)</sup>    |
|--|---|---------------|---------------------------|
| AC Current <sup>2) 5)</sup><br>(45 Hz – 400Hz) | 60.00 mA                                      | 10 $\mu$ A    | ( $\pm 4\% \pm 10$ digit) |
|  | 600.0 mA                                      | 100 $\mu$ A   |                           |
|  | 6.000 A                                       | 1 mA          | ( $\pm 5\% \pm 5$ digit)  |
|  | 10.00 A                                       | 10 mA         |                           |
| Resistance                                     | 600.0 $\Omega$                                | 0.1 $\Omega$  | ( $\pm 1\% \pm 5$ digit)  |
|  | 6.000 k $\Omega$                              | 1 $\Omega$    |                           |
|  | 60.00 k $\Omega$                              | 10 $\Omega$   |                           |
|  | 600.0 k $\Omega$                              | 100 $\Omega$  |                           |
|  | 6.000 M $\Omega$                              | 1 k $\Omega$  |                           |
|  | 60.00 M $\Omega$                              | 10 k $\Omega$ |                           |
| Capacitance                                    | 40.00 nF                                      | 0.01 nF       | ( $\pm 5\% \pm 50$ digit) |
|  | 400.0 nF                                      | 0.1 nF        |                           |
|  | 4.000 $\mu$ F                                 | 1 nF          | ( $\pm 5\% \pm 5$ digit)  |
|  | 40.00 $\mu$ F                                 | 10 nF         |                           |
|  | 400.0 $\mu$ F                                 | 100 nF        |                           |
| Diode  | 0 ~ 2 V                                       |               |                           |
| Continuity                                     | Continuous beep when resistance < 50 $\Omega$ |               |                           |

## I/O

|                           |  |
|---------------------------|--|
| USB Host                  | 1 port, isolated type A plug, Full/Low speed, memory sticks only |
| USB device                | 1 port, Micro USB-B, remote control only                         |
| Probe compensation output | 1 kHz, 0 ~ 5 V Square wave output                                |

## Display (Screen)

|                    |                  |
|--------------------|------------------|
| Display Type       | 5.6-inch TFT LCD |
| Display Resolution | 640 × 480 pixels |
| Display Color      | 24-bit           |
| Contrast(Typical)  | 500:1            |
| Backlight          | 200 nits         |

## Display (Waveform)

|               |   |
|---------------|---|
| Range         | 8 x 12 divisions  |
| Display Mode  | Dot, Vector   |
| Persist Time  | Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite   |
| Color Display | Normal, Color   |
| Screen Saver  | 1 min, 5 min, 10 min, 30 min, 1 hour, Off   |
| Language      | Simplified Chinese, Traditional Chinese, English, French, Japanese, Korean, German, Spain, Russian, Italian, Portuguese |

## Environmental

|             |                |                          |
|-------------|----------------|--------------------------|
| Temperature | Operating:     | 0 °C – +40 °C            |
|             | Non-operating: | -20 °C – + 60 °C         |
| Humidity    | Operating:     | 85 % RH, 40 °C, 24 hours |
|             | Non-operating: | 85 % RH, 65 °C, 24 hours |
| Height      | Operating:     | ≤ 2000 m                 |
|             | Non-operating: | ≤ 5000 m                 |

<sup>1)</sup> The spec for DMM functions are calibrated and verified in Battery-Power mode, Temperature range [23 °C  $\pm$  5 °C], warm-up for 0.5 hour.

<sup>2)</sup> For rank A (ampere) range, the measurement time should be less than 10s, the interval time should be more than 15 minutes.

<sup>3)</sup> This spec is for T3DSO1000-ISO only, The maximum input voltage is 600V (DC/AC) for the T3DSO1000 series.

<sup>4)</sup>  $\pm$  of reading %  $\pm$  range error. For AC signals, the input signal should be greater than 10 % of range.

<sup>5)</sup> 60 mA, 600 mA specification along with adapter SCD600MA; 6 A, 10 A specification along with adapter SCD10A.

# SPECIFICATIONS

## Standards

|  |   |   |
|--|---|---|
| Electromagnetic compatibility                  | Meets EMC directive (2014/30/EU), meets or exceeds IEC 61326-1:2012/EN61326-1:2013 (Basic)  |   |
| Conducted disturbance                          | CISPR 11/EN 55011   | CLASS A group 1, 150 kHz – 30 MHz   |
| Radiated disturbance                           | CISPR 11/EN 55011   | CLASS A group 1, 30 MHz – 1 GHz   |
| Electrostatic discharge (ESD)                  | IEC 61000-4-2/EN 61000-4-2  | 4.0 kV (Contact), 8.0 kV (Air)  |
| Radio-frequency electromagnetic field Immunity | IEC 61000-4-3/EN 61000-4-3  | 10 V/m (80 MHz to 1 GHz);<br>3 V/m (1.4 GHz to 2 GHz);<br>1 V/m (2.0 GHz to 2.7 GHz)  |
| Electrical fast transients (EFT)               | IEC 61000-4-4/EN 61000-4-4  | 2 kV (Input AC Power Ports)   |
| Surges   | IEC 61000-4-5/EN 61000-4-5  | 1 kV (Line to line)   |
| Radio-frequency continuous conducted Immunity  | IEC 61000-4-6/EN 61000-4-6  | 3 V, 0.15 – 80 MHz  |
| Voltage dips and interruptions                 | IEC 61000-4-11/EN 61000-4-11  | Voltage Dips:<br>0 % UT during 1 cycle<br>40 % UT during 10/12 cycles<br>70 % UT during 25/30 cycles<br>Voltage interruptions: 0 % UT during 250/300 cycles |
| Safety   | UL 61010-1:2012/R:2018-11; CAN/CSA-C22.2 No. 61010-1:2012/A1:2018-11.<br>UL 61010-2-030:2018; CAN/CSA-C22.2 No. 61010-2-030:2018.<br>UL 61010-2-033:2020. |   |

## Power Supply/Battery

| Model                    | T3DSOH1000                                   | T3DSOH1000-ISO                               |
|--------------------------|--|--|
| <b>Power Adapter</b>     |  |  |
| Input                    | 100 ~ 240 Vrms 50/60 Hz, 1.2 A               | 100 ~ 240 Vrms 50/60 Hz, 1.1 A               |
| Output                   | 9 V, 4 A                                     | 12 V, 4 A                                    |
| <b>Battery</b>           |  |  |
| Operating time           | 5.5 hours                                    | 4 hours                                      |
| Charging time            | 4 hours while the instrument is switched off | 4 hours while the instrument is switched off |
| Capacity                 | 6900 mAh                                     |  |
| Charging Protection      | ≥ 55 °C at Battery                           |  |
| <b>Power Consumption</b> |  |  |
| Battery Mode             | 9 W  | 11 W   |

## Mechanical

|                     |  |
|---------------------|--|
| IP Rating           | IP51   |
| Dimensions          | Length: 276 mm<br>Width: 168 mm<br>Height (Depth): 68 mm |
| Weight with Battery | Without package 1.75 Kg, With package 3.5 Kg             |

# ORDERING INFORMATION

|                             |                                      |                  |   |
|-----------------------------|--------------------------------------|------------------|---|
| <b>Product Name</b>         | <b>T3DSOH1202</b>                    | 200 MHz          |   |
|                             | <b>T3DSOH1102</b>                    | 100 MHz          |   |
|                             | <b>T3DSOH1202-ISO</b>                | 200 MHz          | Isolated Input  |
|                             | <b>T3DSOH1102-ISO</b>                | 100 MHz          | Isolated Input  |
| <b>Standard Accessories</b> | USB Cable                            |                  | 1   |
|                             | Quick Start                          |                  | 1   |
|                             | Multimeter Test Lead                 |                  | 2   |
|                             | Certification                        |                  | 1   |
|                             | Power Adapter                        |                  | 1   |
|                             | Battery                              |                  | 1   |
|                             | SCD600MA Current Measurement Adapter |                  | 1   |
|                             | SCD10A Current Measurement Adapter   |                  | 1   |
|                             | Carrying Bag                         |                  | 1   |
| <b>Standard Probes</b>      | <b>T3DSOH1102</b>                    | 2 x <b>PP510</b> | (100 MHz, 1X/10X, 1 M $\Omega$ /10 M $\Omega$ , 1X CATII 150V, 10X CATII 300 V)                 |
|                             | <b>T3DSOH1202</b>                    | 2 x <b>PP215</b> | (200 MHz, 1X/10X, 1 M $\Omega$ /10 M $\Omega$ , 1X CATII 150V, 10X CATII 300 V)                 |
|                             | <b>T3DSOH1102-ISO</b>                | 2 x <b>PB925</b> | <b>(Staubli 68.9871-12028)</b> (250 MHz, 10X Fixed, 10 M $\Omega$ , CATIII 600 V, CATII 1000V)  |
|                             | <b>T3DSOH1202-ISO</b>                | 2 x <b>PB925</b> | <b>(Staubli 68.9871-12028)</b> (250 MHz, 10X Fixed, 10 M $\Omega$ , CATIII 600 V, CATII 1000V)  |
| <b>Replacement Probes</b>   | <b>T3DSOH1102</b>                    | <b>PP020-1</b>   | (500 MHz, 10X Fixed, 10 M $\Omega$ , CATII 400 V)   |
|                             | <b>T3DSOH1202</b>                    | <b>PP020-1</b>   | (500 MHz, 10X Fixed, 10 M $\Omega$ , CATII 400 V)   |
|                             | <b>T3DSOH1102-ISO</b>                | <b>PB925</b>     | <b>(Staubli 68.9871-12028)</b> (250 MHz, 10X Fixed, 10 M $\Omega$ , CATIII 600 V, CATII 1000 V) |
|                             | <b>T3DSOH1202-ISO</b>                | <b>PB925</b>     | <b>(Staubli 68.9871-12028)</b> (250 MHz, 10X Fixed, 10 M $\Omega$ , CATIII 600 V, CATII 1000 V) |

Warranty: 3 Years return to Teledyne LeCroy.

# 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-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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