Acute TravelScope
Digital Storage Oscilloscope

150 x 123 x 33 mm³
Device Weight: 400g

- PC-based, USB3.0 interface / powered (Type-A / Type-C)
- Record length : 128Mpts/ch
- Channel : 4
- Sample rate : 1 GS/s
- Bandwidth : 200 MHz
- Data Logger (HDD / SSD Storage)
- Digital Voltmeter : 3 digits
- Frequency Counter : 5 digits
- DSO Trigger I : Edge, Either, External, Falling, Rising, Video, Width
- DSO Trigger II : Runt, Pattern/State, Timeout, Transition, Setup/Hold, B-Trigger, B-Event, Window
- Protocol Trigger/ Decode I : BiSS-C, CAN 2.0B/CAN FD, DALI, DP_Aux[1], MIPI I3C 1.1, USB PD 3, ...
- Protocol Trigger/ Decode II : SVI3[2], SVID[3]

Model	Vertical Resolution	Cascade	DSO Trigger	Protocol Trigger/ Decode	Electrical Validation[*]
TS3124E	8 bits	-	I	-	-
TS3124B	8 bits	-	I, II	I	-
TS3124H	8, 12~16 bits	16 Ch (4x Device)	I, II	I	-
TS3124V	8, 12~16 bits	16 Ch (4x Device)	I, II	I, II	I2C, I3C, ...

Software Window

System Requirements
- USB 3.0 port
- Windows 7/8/10/11 (64-bit)
  Linux Ubuntu (64-bit)*
  macOS*
- PC RAM 16GB (recommended) or 8GB at least

[*] Free update from time to time.
* Free update by year end 2023.

Acute ®
PC-based T&M Instruments
Acute Technology Inc.
Tel: +886-2-2999-3275   E-mail: service@acute.com.tw   http://www.acute.com.tw

TS3000

Model			TS3124E	TS3124B	TS3124H	TS3124V
Power	Power source		USB bus-power (+5V)			
	Static power consumption		4.5W			
	Max power consumption		7.7W			
Acquisition	Mode		Sample, Average, Envelope[*], Peak detect[*], High resolution[*]			
	Sampling (8｜12｜≥14 bits)	@ 1Ch	1 GS/s		1 GS/s｜500 MS/s｜100 MS/s	
		@ 2Ch	500 MS/s		500 MS/s｜250 MS/s｜100 MS/s	
		@ 4Ch	250 MS/s		250 MS/s｜125 MS/s｜100 MS/s	
	Record length (8｜≥12 bits)	@ 1Ch	512 Mpts		512 Mpts｜256 Mpts	
		@ 2Ch	256 Mpts		256 Mpts｜128 Mpts	
		@ 4Ch	128 Mpts		128 Mpts｜64 Mpts	
Input	Input channels		4			
	Input coupling		AC/DC			
	Input impedance		1 MΩ ‖ <19 pF			
	Overvoltage protection		± 100 V (DC+AC peak)			
	Ch-Ch isolation		50dB @DC to 100MHz; 40dB @ 100MHz to 200MHz			
	Ch-Ch skew		100 ps between two channels with the same scale & coupling settings			
Temperature	Operating / Storage		5℃~40℃ (41℉~104℉) / -10℃~65℃ (14℉~149℉)			
I/O port	Trig-In		Workable：2.5V to 5V / Typical：TTL 3.3V (Rising/Falling)			
	Trigger pulse approval		> 8 ns			
	Trig-Out		TTL 3.3 V			
	Ref. Clock input		10MHz, Vpp=3.3 to 5V			
	Ref. Clock output		10MHz, TTL 3.3V			
	Connector type		MCX jack / female			
Vertical	Bandwidth		200 MHz			
	Rise time		1.75 ns @ 200 MHz; 3.5 ns @ 100 MHz; 7 ns @ 50 MHz			
	Resolution		8 bits		8, 12, 14, 15, 16 bits	
	Input sensitivity		2 mV/div to 10 V/div (Full-Scale: ±4 div/screen, ±1 div beyond screen)			
	Offset range		±150 V @ 2, 5, 10 V/div; ±1.5 V @ 0.2, 0.5, 1 V/div; ±1.5 V @ 2, 5, 10, 20, 50, 100 mV/div			
	DC accuracy		±3% of Full-Scale			
	Bandwidth limit		20 MHz, 100 MHz or Full			
Horizontal	Time scale		1 ns/div to 100 s/div (10 div/screen)			
	Time resolution		125 ps			
	Time accuracy		±10 ppm			
	Delay range		Pre-trigger: 0 to 100% of 1 screen; Post-trigger up to 50 sec.			
Trigger	Trigger mode		Auto, Normal, Single, Roll*			
	Source		Ch1, Ch2, Ch3, Ch4, Ext. (TTL only)			
	Coupling		DC, LF reject (50kHz), HF reject (50kHz), Noise reject			
	Trigger range		±4 div from window center			
	Vertical sensitivity		1 div or 5 mV @ <10 mV/div; 0.6 div @ ≧ 10 mV/div			
	Hold off range		~60 ns to 10 sec.			
	DSO I		Edge, Either, External, Falling, Rising, Video, Width			
	DSO II		---	Runt, Pattern/State, Timeout, Transition, Setup/Hold, B-Trigger, B-Event, Window		
Protocol Trigger / Decode	I		---	BiSS-C, CAN 2.0B/CAN FD, DALI, DP_Aux[1], HID over I2C, I2C, I2S, LIN2.2, MDIO, Mini/Micro LED, MIPI I3C 1.1, MIPI RFFE 3, MIPI SPMI 2, Modbus, PMBus, ProfiBus, SENT, SMBus, SPI, SVI2, UART, USB PD 3, USB1.1		
	II		---			SVI3[2], SVID[3]
Measurement/ Processing	Measurement		Frequency, Period, ±Duty, ±Period, Rise/ Fall Time, Delay, Phase; VMax, VMin, VHigh, VLow, Vpp, VAmp, VMid, VMean, VRMS, ±Overshoot, Rise/ Fall Preshoot; Edge Count, ±Pulse Count			
	Cursor		Time difference, Voltage difference			
	Math		+, -, x, ÷, XY, lAl, √A, Log(A), Ln(A), ∫Adt, e^A			
	FFT		Rectangular, Blackman, Hann, Hamming, Harris, Triangular, Cosine, Lanczos, Gaussian. (Vertical Scale: dBm RMS, dbV RMS, Linear RMS)			
	Export data		WORD, EXCEL, CSV, TEXT, HTML, MATLAB			
Electrical Validation (Protocol)[*]			---			I2C, I3C, SPI, UART, ...
Cascade	Max. channels expand		---		16 Ch (4x Device, 1 Master & 3 Slaves)	
	Trigger source		---		Main device only	
	Skew between Master & Slave		---		±2ns @ 1 GS/s ±4ns @ 500 MS/s ±8ns @ 250 MS/s	
Packing List	Device (150x123x33 mm³)		1			
	USB3.0 Y cable (1.8M)		1			
	Type-C OTG Adapter		1			
	250 MHz Probe		4			
	Stack cable (30cm)		2			
	Handbag		1			
	Total Weight		1200g			

[1] Optional DP_Aux adapter needed.

[2] Upon request by user who is approved by AMD. SVI3 Protocol Trigger / Decode are supported ONLY by TS3124V.

[3] Upon request by user who has signed CNDA with Intel. SVID Protocol Trigger / Decode are supported ONLY by TS3124V.

[*] Free update from time to time.

Functions :

Multiple Devices Stack Mode :

Support DSO stack mode, up to 4 devices (16 channels) can be stacked together in the same time.
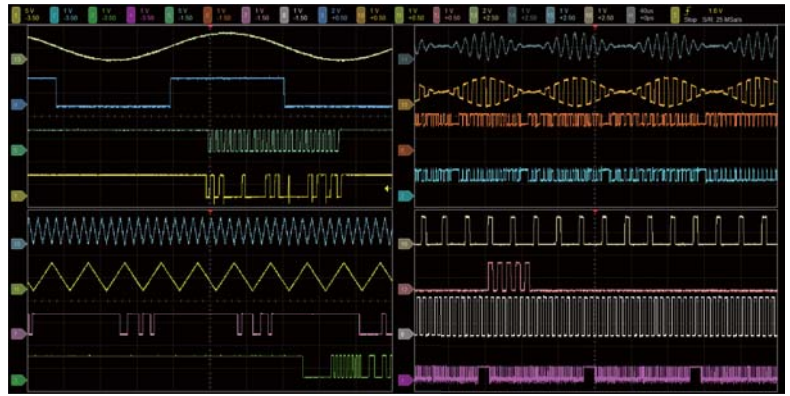
- **Runt Trigger** : Use 2 voltage thresholds and pulse width to trigger on either/ ±runt signals.
- **Timeout Trigger** : Trigger when no pulse is detected within a specified time, range from 2ns to 50s.
- **Pulse Width Trigger** : Pulse width range from 8ns to 50s.

Positive Runt

Negative Runt

Hold off

Width
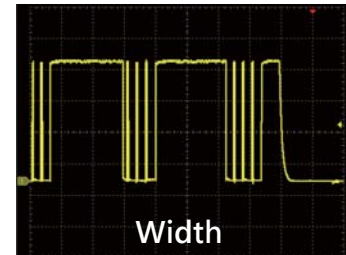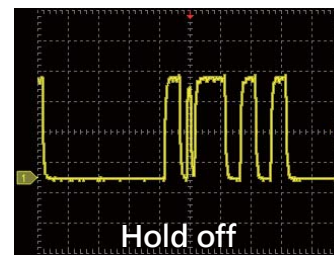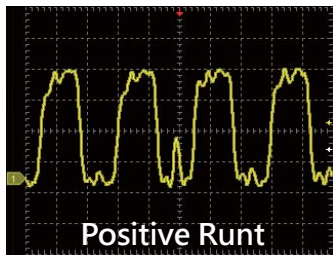
- **Vertical Offset & Zone View**

  Voltage division from 2mV/Div - 10V/Div combined with the channel independent Vertical Offset settings, which can be used for glitch measurement and analysis on DC power, and observing the ripple and overshooting voltage on DC offseted voltage. It is also possible to use 16Bit high vertical resolution mode (TS3124H/V) with the Zone View feature to observe the DC voltage and ripple signal together in the same time.
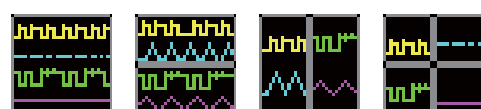

- **Spectrum analysis (Fast Fourier transform, FFT)**

  Apply FFT to the selected channel.
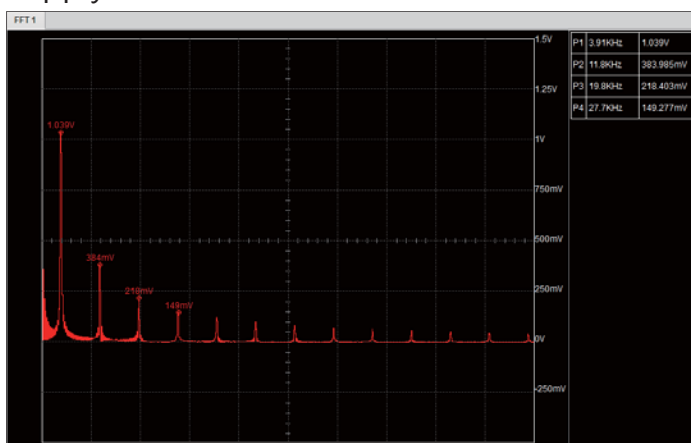
- **Multiple Windows**

  Multiple Window feature provides 4 display types (1x1, 2x1, 1x2, 2x2), which could displays 16 channels in maximum 4 different windows, provides clear waveform readability without lower the vertical resolution.

• Measurement：

More than 20 types of waveform measurements with customized threshold settings features, provides real-time update for vertical, time and channel to channel timing measurements with statistic features.

   Time: Frequency, Period, ±Duty, ±Period, Rise/Fall Time, Delay, Phase

**Vertical:** VMax, VMin, VHigh, VLow, Vpp, VAmp, VMid, VMean, VRMS, ±Overshoot, Rise/Fall Preshoot

Counter: Edge Count, ±Pulse Count

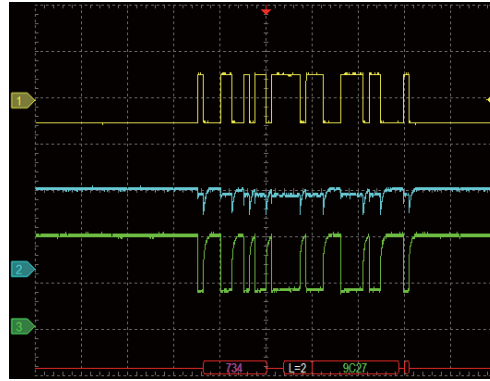   **Math:** Add, Subtract, Multiple, Divide, XY, Absolute, Square Root, LogA, LnA, Exponential, Integral
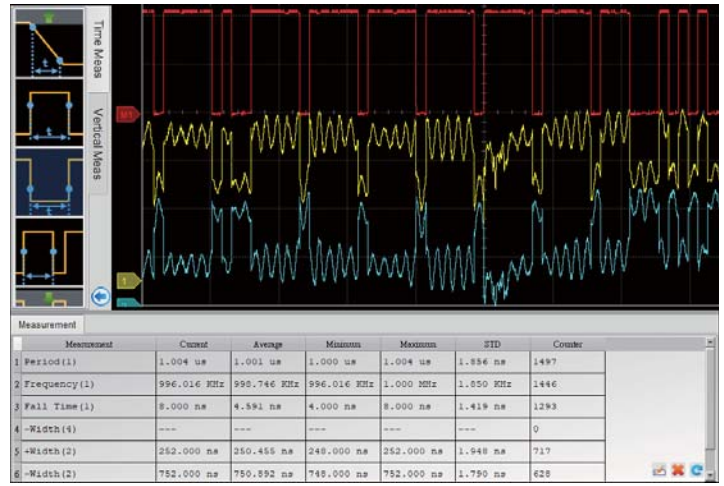
• Protocol Decode & Trigger Function

Provides, CAN/CAN-FD, I²C, LIN, MIPI I3C 1.1, ProfiBus, SPI, UART(RS232), USB1.1,... protocol decode and trigger function, which is able to trigger and decode on the specified Command/Address/Data...
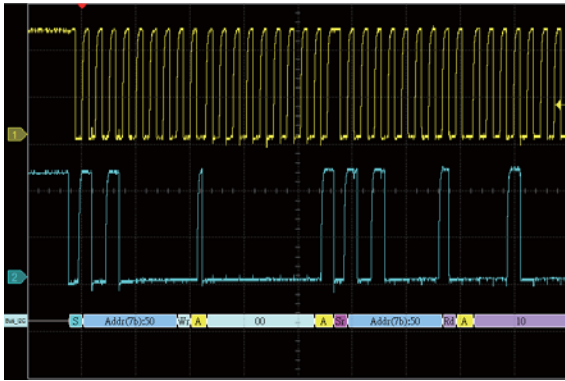

Decode the I²C waveforms

Decode the differential CAN signals with a differential probe. (CH1: Differential Probe, CH2: CAN H, CH3: CAN L)
※ Supports CAN-FD, CAN2.0

• Digital Voltmeter (DVM) & Frequency Counter

Provides voltage root-mean-square, voltage average and frequency counter function for the selected channel.

Measure 1 KHz, 2.5 Vpp square waveforms by the measurement function.
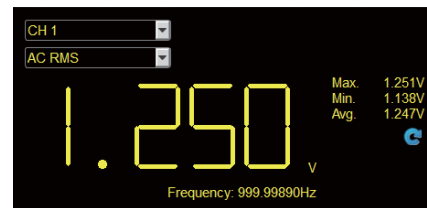
Measure 1 KHz, 2.5 Vpp square waveforms by the DVM function.

| Packing List

Device

USB3.0 Y cable (1.8M)
Type-C OTG Adapter

250 MHz Probe

Stack cable

Handbag