TS3124シリーズ

4ch,1GHzサンプル(max),200MHz帯域のDSO。50種類以上のバスプロトコル解析ができ USBバスパワーで動作するポータブルなTS3124B,H,V。
最上位のTS3124VはI2C,I2S,I3C,SPI,UART等のValidation機能を標準搭載。
AcuteのUSB接続DSOは日本市場で20年近いOEM実績があります。

Acute TravelScope Digital Storage Oscilloscope

TS3124に16ch, 2GHzサンプリングのデジタル入力を加えたMSO3124シリーズも2022年から販売中。

- 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 : BiSS-C, CAN 2.0B/CAN FD, DALI, DP_Aux[1], MIPI I3C 1.1, USB PD 3, ...

150 x 123 x 33 mm³
Device Weight: 400g

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

PCのUSB3.0以上のポートに接続してバスパワーで動作します。3A給電可能なType-Cなら1ポートでOKですが、それ以外は付属のY型ケーブルの予備電源用USBコネクタも併用します。

[*] Free update from time to time.

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TS3000

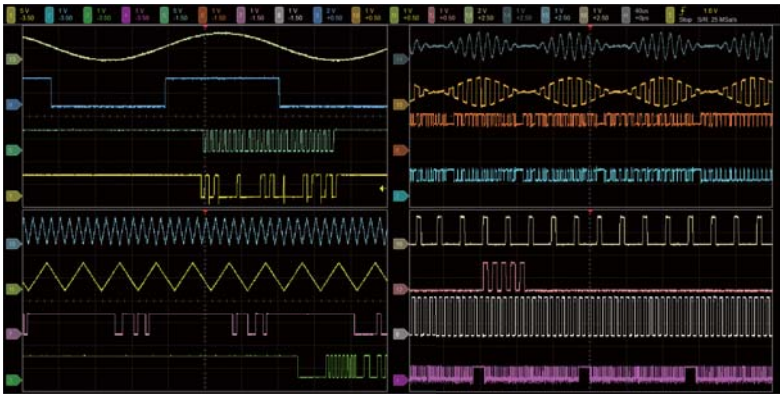
Model		TS3124E	TS3124B	TS3124H	TS3124V
Power	Power source	USB bus-power (+5V)			
	Static power consumption	4.5W			
	Max power consumption	7.7W			
Acquisition	Mode	Sample, Average, Envelope[*], Peak detect[*], High resolution[*]			
	Sampling (8 | 12 | ≥14 bits) @ 1Ch	1 GS/s		1 GS/s | 500 MS/s | 100 MS/s	
	Sampling (8 | 12 | ≥14 bits) @ 2Ch	500 MS/s		500 MS/s | 250 MS/s | 100 MS/s	
	Sampling (8 | 12 | ≥14 bits) @ 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	
	Record length (8 | ≥12 bits) @ 2Ch	256 Mpts		256 Mpts | 128 Mpts	
	Record length (8 | ≥12 bits) @ 4Ch	128 Mpts		128 Mpts | 64 Mpts	
Input	Input channels	4			
	Input coupling	AC/DC			
	Input impedance	1 MΩ ǁ <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		---	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		
Protocol Decode		---	1-Wire, 3-Wire, AccMeter, APML, AVSBus, BSD, CEC, Closed Caption, CODEC_SSI, DDC(EDID), DMX512, FlexRay, HD Audio, HDLC, HDQ, HTSensor, I2C(EEPROM), IrDA, ISELED Digital RGB LED, JVC IR, LED_CTRL, M-Bus, MDDI, MHL CBUS, Microchip SWI, MICROWIRE, MIPI CSI LP, MIPI DSI LP, MIPI SoundWire, NEC IR, PCM, PDM, PECI, PS/2, PWM, QEI, QI, RC-5, RC-6, RT_SWI, S/PDIF, SDQ, Serialized IRQ, SGPIO, Smart Card (ISO7816), SMI, SSI, ST7669, SWIM, SWP, UNI/O, USB4/TBT3 SB, Wiegand		
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, I2S, MIPI I3C, MIPI RFFE, MIPI SPMI, PDM, SPI, UART(RS232)
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	

[1] Optional DP_Aux adapter needed.
[2] To measure RS422/485, need to optional the ADP high-voltage differential probe.
[*] Free update from time to time.

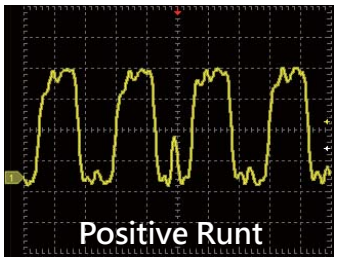
Functions：

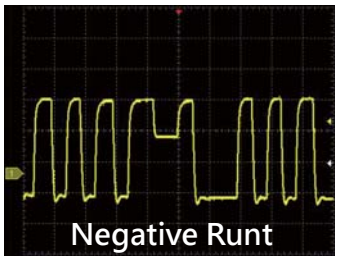
Multiple Devices Stack Mode：

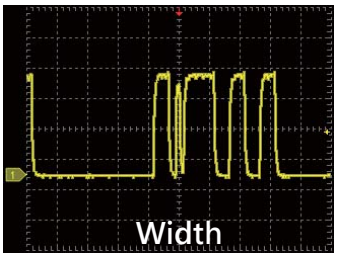
Support DSO stack mode, up to 4 devices (16 channels) can be stacked together in the same time.

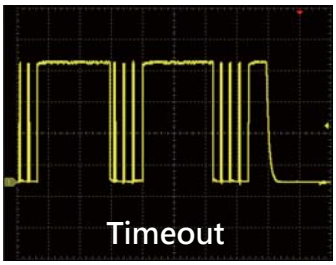


- **Runt Trigger**：Use 2 voltage thresholds and pulse width to trigger on either/ ±runt signals.
- **Timeout Trigger**：Trigger when no pulse is detected within a specified time, range from 2ns to 50s.
- **Pulse Width Trigger**：Pulse width range from 8ns to 50s.



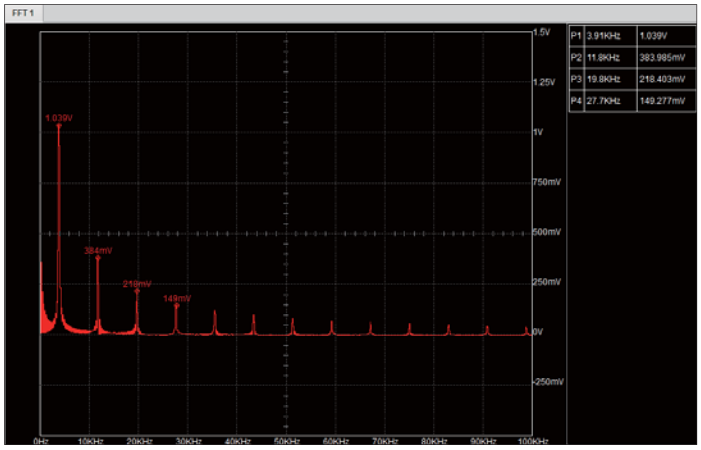




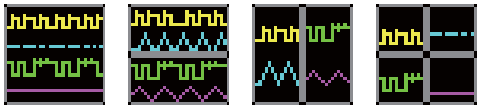


- **Vertical Offset & Zone View**
  Voltage division from 2mV/Div - 10V/Div combined with the channel independent Vertical Offset settings, which can be used for glitch measurement and analysis on DC power, and observing the ripple and overshooting voltage on DC offseted voltage. It is also possible 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 :**

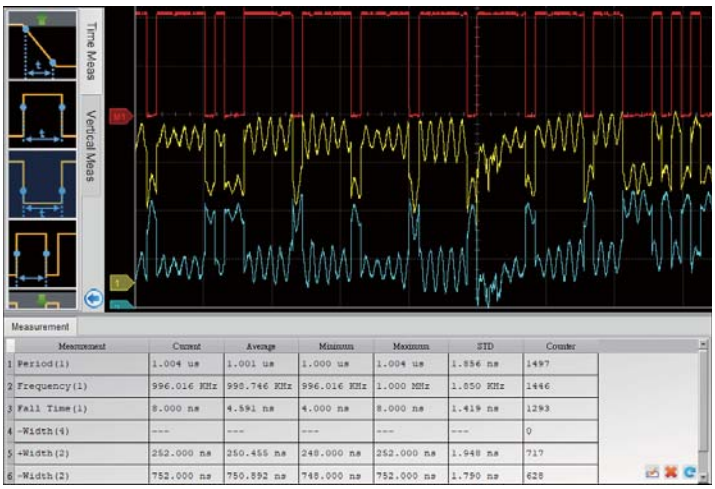
More than 20 types of waveform measurements with customized threshold settings features, provides real-time update for vertical, time and channel to channel timing measurements with statistic features.

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

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

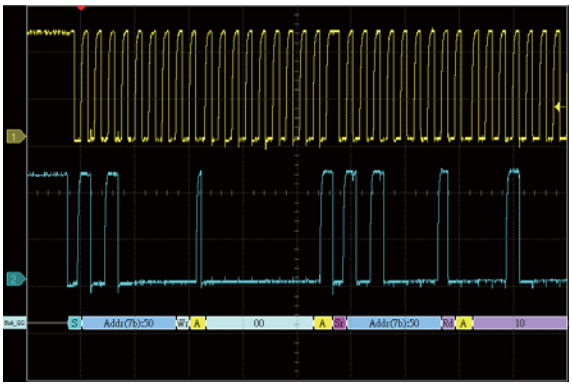
Counter: Edge Count, ±Pulse Count

Math: Add, Subtract, Multiple, Divide, XY, Absolute, Square Root, LogA, LnA, Exponential, Integral

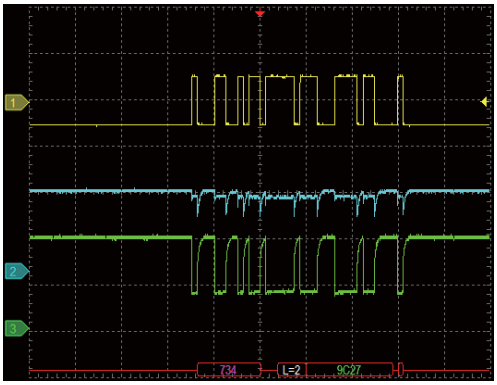


- **Protocol Decode & Trigger Function**

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

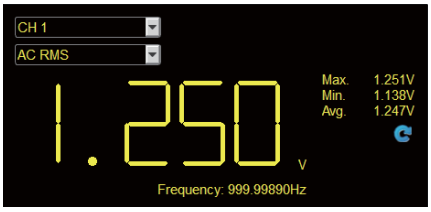


Decode the differential CAN signals with a differential probe.
(CH1: Differential Probe, CH2: CAN H, CH3: CAN L)
※ Supports CAN-FD, CAN2.0

- **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
(4set)

Stack cable

Handbag