

## TL4000 series

Model	TL4134E	TL4134B	TL4234B
Power	Power Source	USB bus-power (+5V)	
	Static Power Consumption	0.8W	
	Max Power Consumption	3W	
Hardware Interface	USB 3.0		
Timing Analysis (Asynchronous, Max. Sample Rate)	2GHz		
State Clock Rate (Synchronous, External Clock)	250MHz		
Storage	Conventional Timing, Transitional Timing		
Channels (Data / Clock / Ground)	32 / 2 / 2 / 4		
Total Memory	4 GB		8 GB
Timing vs. Channels vs. Memory	Timing Analysis	Available channels (Conventional / Transitional Timing) - Memory per channel	
	2GHz	(8/7) - 512Mb	(8/7) - 1Gb
	1GHz	(16/14) - 256Mb	(16/14) - 512Mb
	500MHz	(32/28) - 128Mb	(32/28) - 256Mb
250MHz	(32/32) - 128Mb	(32/32) - 256Mb	
Channel to channel skew	< 1ns		
Threshold	Group	4 (ch0~7, ch8~15 & clk0, ch16~23, ch24~31 & clk1)	
	Range	+5V ~ -5V	
	Resolution	50mV	
	Accuracy	±100mV + 5%*Vth	
Input Voltage	Non-Destructive Operation	±30V DC, 12Vpp AC	
	Sensitivity	0.25Vpp @50MHz, 0.5Vpp @150MHz, 0.8Vpp @250MHz	
	Data channels	200KΩ//<7pF	
Impedance	Analog channels	20KΩ//<3pF	
	Temperature	Operating / Storage: 5°C~40°C (41°F~104°F) / -10°C~65°C (14°F~149°F)	
I/O port	Trig-In	TTL 3.3V level (Rising / Falling)	
	Trigger pulse approval	> 8 ns	
	Trig-Out	TTL 3.3V, Pulse Width	
	Ref. Clock Input	10MHz, Vpp=3.3 to 5V	
	Ref. Clock Output	10MHz, TTL 3.3V	
	Connector type	MCX jack / female	
	Resolution	500ps	
	Channels	32	
	States	16	
	Events	16	
Trigger	Pre / Post	Yes	
	Pass Counter	Yes (0~1048575 times)	
	Types	Channel, Pattern, Single / Multi Level, Width, Time-out, External	
	Bus I	BiSS-C, CAN2.0B/CAN FD, DP_Aux <sup>1</sup> , HID over I2C, I2C, I2S, LIN2.2, SPI, UART, USB PD 3.0	
	Bus II	--- DALI, I3C, LPC, MDIO, Mini/Micro LED, MIPI RFFE, MIPI SPMI 2, Modbus, PMBus, Profibus, SMBus, SVI2, USB1.1	
	Bus III	--- eMMC 4.5, eSPI, MII, NAND Flash, RGMII, RMII, SD 3.0 (SDIO), Serial Flash (SPI NAND), SVID <sup>3</sup>	
	Protocol Analyzer / Protocol Logger / Protocol Monitor	I: BiSS-C, CAN2.0B/CAN FD, DP_Aux <sup>1</sup> , HID over I2C, I2C, I2S, LIN2.2, SPI, UART, USB PD 3.0	
		II: --- DALI, I3C, LPC, MDIO, Mini/Micro LED, MIPI RFFE, MIPI SPMI 2, Modbus, PMBus, Profibus, SMBus, SVI2, USB1.1	
		III: --- eSPI, MII, RGMII, RMII, SVID <sup>3</sup>	
	Zoom In / Out	Yes	
Language	English / Simplified Chinese / Traditional Chinese		
Waveform Height	Adjustable		
Zoom / Report Window	Yes		
Quick Cursor-positioning	Yes		
Import Label(s)	Yes		
Quick Bus Decode Setup	Yes		
Trigger / Auxiliary cursors	1/25		
Software Features	Data Logger: Saved to Hard Disk Drive		
	1-Wire, 3-Wire, 7-Segment, A/D Mux Flash, AccMeter, ADC, APML, AVSBus, BiSS-C, BSD, BT1120, CAN 2.0B/FD, Close Caption, CODEC_SSI, DALI, DMX512, DP AUX <sup>1</sup> , EDID, eMMC 5.1/MMC, eSPI, FlexRay, HD Audio, HDLC, HDQ, HID over I2C, I2C, I2C EEPROM, I2S (PCM, TDM), I3C, I80, IDE, IrDA, ITU-R BT.656 (CCIR656), JTAG, JVC IR, LCD1602, LED_Ctrl, LIN 2.2, Line Decoding, Line Encoding, Lissajous, LPC, LPT, Math, M-Bus, MDDI, MDIO, MHL CBUS, Microwire, MII, RGMII, RMII, Mini/Micro LED, MIPI CSI LP, MIPI DSI LP, MIPI RFFE, MIPI SPMI 2.0, Modbus, NAND Flash, NEC IR, PECL, PMBus, Profibus, PS/2, PWM, QEI, QI, RC-5, RC-6, RGB Interface, S/PDIF, SD 3.0 (SDIO), Serial Flash, Serial IRQ, SGPIO, Smart Card, SMBus (SBS, SPD), SMI, SoundWire, SPI, SPI-NAND, SSI, ST7669, SVI2, SVID <sup>2</sup> , SWD, SWIM, SWP, UART, ULPI, UNI/O, USB 1.1, USB PD 3.0, Wiegand, ...		
Line Decoding	Biphase Mark, Differential-Manchester, Manchester (Thomas, IEEE802.3), Miller, Modified Miller, NRZI, ...		
Line Encoding	AMI(Standard, B8ZS, HDB3), Biphase Mark, CMI, Differential-Manchester, Manchester (Thomas, IEEE802.4), MLT-3, Miller, Modified Miller, NRZI, Pseudoternary, ...		
Dimension	L x W x H (mm <sup>3</sup> ): 123 x 76 x 21 (mm <sup>3</sup> )		
Lead Cable	(Data / CLK / Analog / GND): A 40-pin lead cable (32 / 2 / 2 / 4)		
Grippers	40		

<sup>1</sup> Optional DP AUX adapter needed.

<sup>2</sup> Upon request ONLY by users who have signed CNDA with Intel, SVID decode supported by all TL4000 models.

<sup>3</sup> Upon request ONLY by users who have signed CNDA with Intel, SVID trigger & PA supported by TL4234B ONLY.

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# Acute TravelLogic

## Logic Analyzer & Protocol Analyzer

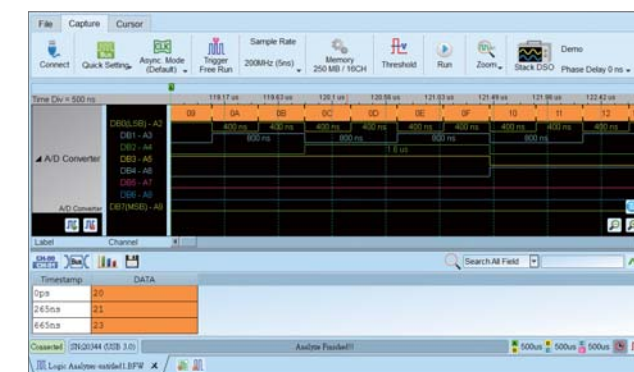


123 x 76 x 21 mm<sup>3</sup>

- PC-based
- USB 3.0 Interface
- 34 Channels (Max.)
- 2 GHz Timing (Max.) / 250MHz State Analysis
- 8Gb Memory (Max.)
- Stacks with Acute or another DSO to form as an MSO
- Bus Decode : BiSS-C, CAN 2.0B/CAN FD, DP\_Aux<sup>1</sup>, DMX512, EDID, eMMC 5.0, eSPI, I<sup>2</sup>C, I<sup>2</sup>S, I3C, MII, MIPI DSI LP, NAND Flash, NEC IR, Profibus, SD 3.0/SDIO, Serial Flash, SPI, SVID<sup>2</sup>, SWD, UART, USB1.1, USB PD 3.0... (90+)
- Bus Trigger I : BiSS-C, CAN2.0B/CAN FD, DP\_Aux<sup>1</sup>, I2C, I2S, LIN2.2, SPI, UART, USB PD 3.0, ...
- Bus Trigger II : DALI, I3C, LPC, Mini/Micro LED, PMBus, Profibus, SMBus, SVI2, USB1.1, ...
- Bus Trigger III : eMMC 4.5, eSPI, MII, RGMII, RMII, NAND Flash, SD 3.0, SVID<sup>3</sup>, ...
- Protocol Analyzer I : BiSS-C, CAN2.0B/CAN FD, DP\_Aux<sup>1</sup>, I2C, I2S, SPI, UART, USB PD 3.0, ...
- Protocol Analyzer II : DALI, I3C, LPC, Mini/Micro LED, Profibus, SMBus, SVI2, USB1.1, ...
- Protocol Analyzer III : eSPI, MII, RGMII, RMII, SVID<sup>3</sup>

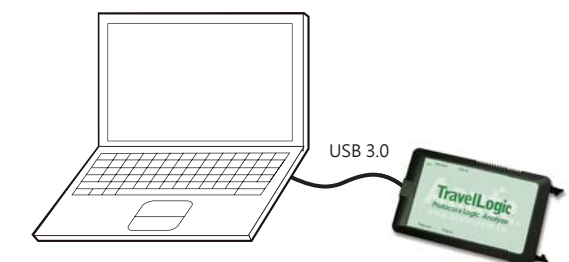
Model	Channels	Sample Rate	Memory	Bus Trigger	Protocol Analyzer
TL4134E	34	2GHz	4Gb	I	I
TL4134B	34	2GHz	4Gb	I, II	I, II
TL4234B	34	2GHz	8Gb	I, II, III	I, II, III

### Software Window



### System Requirements

- USB 3.0 port
- Win 7, Win 8, Win 10 (64 bit)
- PC RAM 16GB (recommended) or 8GB at least



# Acute

PC-based T&M Instruments

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## Protocol Analyzer:

It is hardware decoding, may log protocol data very long time if without waveforms.  
Application timing: Preliminary protocol debug.

Support multiple protocols with different operating modes

Real-time data search

Stack with a DSO as an MSO in logic analyzer mode

Real-time data statistics

Hide items for easy view

Protocol report

Show waveforms with bus decodes



### Protocol Analyzer

Show real-time protocol data  
Application timing: massive protocol data with some idles in between



### Protocol Logger

Like data logger, save massive data into SSD hard drive  
Application timing: massive protocol data



### Protocol Monitor

Like dash cameras, record protocol data by the device's memory only  
Application timing: trigger event only happens in very long time

## Packing List :



Software and Manual Download links at: <http://www.acute.com.tw>

## Logic Analyzer:

Capture digital waveforms and support bus decodes. Able to stack with a DSO to form as an MSO.

Provides multiple storage modes, users could select to have long time recording or precision acquisition.

### LA Storage mode

### Flow chart bus triggers :

Power trigger for serial bus, 8-states flow chart setting with Counter/Timer

Detail parameters for each states

### Quick View

Right-click and drag on the clock waveform to see the frequency and the number of transitions

Display digital and analog waveforms at the same phase

Report window