

## TL4000 series

Model	TL4134E	TL4134B	TL4234B
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 / CLK / Analog / GND)	32 / 2 / 2 / 4		
Total Memory	4 Gb		8 Gb
Timing vs. Channels	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		
Group	4 (ch0~7, ch8~15 & clk0, ch16~23, ch24~31 & clk1)		
Range	+5V ~ -5V		
Resolution	50mV		
Accuracy	±100mV + 5%*Vth		
Non-Destructive Operation	±30V DC, 12Vpp AC		
Sensitivity	0.25Vpp @50MHz, 0.5Vpp @150MHz, 0.8Vpp @250MHz		
Data channels	200KΩ//<7pF		
Analog channels	20KΩ//<3pF		
Maximum (Non-destructive) Operation	-0.5V ~ +8V DC+AC peak		
Resolution	0V ~ 4V		
Sampling Rate	12 bits		
Temperature	250KHz		
Operating / Storage	5°C~40°C (41°F~104°F) / -10°C~65°C (14°F~149°F)		
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		
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		
Bus Decode	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, ULP, 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, CML, 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.

Specifications marked in BLUE are different from TL3000 series.

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2020.07

# Acute TravelLogic Logic Analyzer & Protocol Analyzer

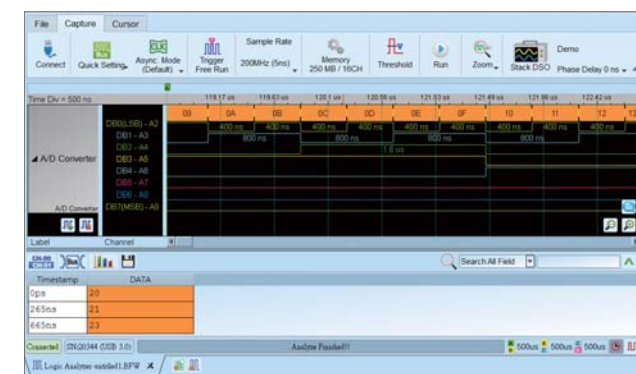


123 x 76 x 21 mm<sup>3</sup>

- PC-based
- USB 3.0 Interface
- 34 Channels
- 2 GHz Timing / 250MHz State Analysis
- 8Gb Memory (Max.)
- Data logger saved to hard disk drive
- Analog Inputs (2) for Protocol Analyzer
- 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>

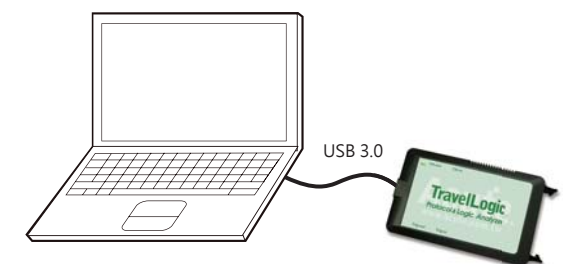
Model	Channels	Sample Rate	Memory	Bus Trigger	Protocol Analyzer
TL4134E	34	2GHz	4Gb	I	I
TL4134B	34	2GHz	4Gb	I, II	I, II
TL4234B	34	2GHz	8Gb	I, II, III	I, II, III

## 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

Acute Technology Inc.

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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

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 :

### Quick View

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