

# Acute LA4000 logic analyzer

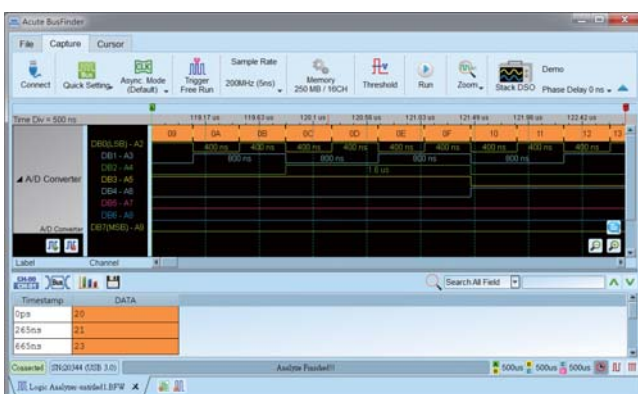
- PC-based
- 68 / 136 channels
- USB 3.0 interface, 12V power adaptor
- 4GHz Timing Analysis / 400MHz State Analysis
- 32Gb Memory
- Active Probe
- Logic, State and Protocol triggers
- Stackable with a DSO to form an MSO
- Protocol Decode : CAN 2.0B/CAN FD, DP\_Aux<sup>1</sup>, eMMC 5.1, I<sup>2</sup>C, MIPI I3C 1.1, Profibus, SD 3.0, SPI, SVID<sup>2</sup>, SWD, UART (RS232), USB1.1, USB PD 3... (100+)
- Protocol Trigger I : I<sup>2</sup>C, MIPI I3C 1.1, SPI, UART (RS232), USB PD 3, ...
- Protocol Trigger II : eMMC5.1, eSPI, NAND Flash, SD3.0, Serial Flash, SVID<sup>3</sup>, ...
- Protocol Analyzer I : CAN 2.0B/CAN FD, I<sup>2</sup>C, MIPI I3C 1.1, SPI, UART (RS232), USB PD 3, ...
- Protocol Analyzer II : DALI, eSPI, MDIO, PMBus, Profibus, PWM, SVID<sup>3</sup>, ...



270 x 175 x 55 (mm<sup>3</sup>)

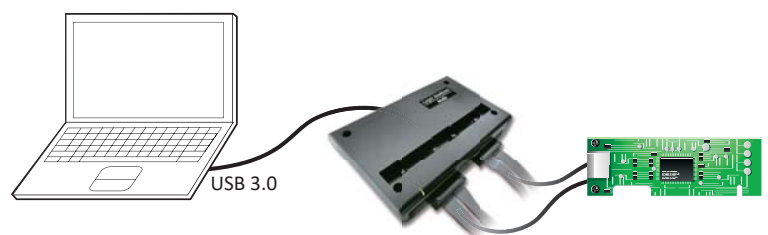
Model	Channel	Protocol Trigger	Protocol Analyzer
LA4068E	68	I	I
LA4136E	136	I	I
LA4068B	68	I, II	I, II
LA4136B	136	I, II	I, II

## Software Window



## System Requirements

- USB 3.0 port
- Win 7, Win 8, Win 10, Win 11
- PC RAM 16GB (recommended) or 8GB at least



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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

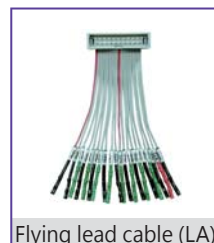


### Protocol Monitor

Like dash cameras, record protocol data by the device's memory only

Application timing: trigger event only happens in very long time

## Packing List :



## Logic Analyzer:

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

### Parallel Clause triggers (Logic) :

**State 0**

```

IF (Bus_[A7:A0] = 55h
AND CH-08 )Edge Rising
OR (Bus_[A7:A0] = AAh
AND CH-08 )Edge Rising
Start Timer 0 AND Reset Timer 0
Goto Next
        
```

**State 1**

```

IF CH-08 Edge Falling
AND Timer/Counter 0 Condition Matched
Set Triggered
        
```

16-States parallel IF Clause settings for 128/64 channel value compare combined with AND/OR logic condition and 4 Timer/Counter conditions.

### Quick View

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

Clear setting

Single or repetitive captures

Fast DSO stack setting

The screenshot shows the Logic Analyzer interface with the following elements:

- Top Panel:** Includes 'Quick Setting' (highlighted with a red box), 'Sample Rate' (50MHz (20ns)), 'Run' and 'Repeat' buttons (highlighted with a red box), and 'Stack DSO' (highlighted with a red box).
- Waveform Area:** Shows a bus decode for SCL-0 and SDA-1. A yellow box highlights a section of the SCL-0 waveform. A 'User note' dialog box is open over the waveform, containing the text 'Acute Note' and 'User note Editable text or graphic in waveform window'.
- Data Table:** A table at the bottom displays captured data points.
 

Sample	Status	Address	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	ASCII
1	Ops	Rd 3F	00																
2	547.62us	Start	Wr 12	41	43	55	54	45											ACUTE
3	2.10016ms	Start	Wr 46	54	4C	5F	33	30	30	30	53	65	72	69	65	73			IL_3000Series
4	5.64638ms	Start	Rd 3F	00															

Display digital and analog waveforms at the same phase

Report window

### Flow chart bus triggers (Protocol) :

The screenshot shows the flow chart bus trigger configuration with the following elements:

- Flow Chart:** A diagram showing a sequence of states (State 1, State 2, State 3) leading to a 'Counter 1' which triggers. A red box highlights the flow chart.
- State 1 Configuration:** A detailed view of State 1 settings, including 'Event 1', 'Address' (Mode: 7-Bit Addressing, Value: 12h), and 'Data' (Any Position, Fix Offset, Value: 0). A red box highlights the data configuration.

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

Detail parameters for each states

# LA4000 series

Model		LA4068E	LA4136E	LA4068B	LA4136B
Power	Power Source	12V Power adapter			
	Static Power Consumption	18W	30W	18W	30W
	Max Power Consumption	45W	75W	45W	75W
Hardware Interface		USB 3.0			
Timing Analysis (Asynchronous, Max. Sample Rate)		4 GHz			
State Clock Rate (Synchronous, External Clock)		400 MHz			
Storage		Conventional Timing, Transitional Timing			
Channels (Data / Clock)		64 / 4	128 / 8	64 / 4	128 / 8
Total Sample Memory		32Gb			
Available channels vs. Memory per channel	Timing Analysis	Available channels (Conventional / Transitional Timing) - Memory per channel			
	4GHz	(16 / 16) - 2Gb			
	2.4 / 2GHz	(32 / 32) - 1Gb			
	1GHz	(64 / 64) - 500Mb			
500 / 250 / 200MHz		(64 / 64) - 500Mb	(128 / 128) - 250Mb	(64 / 64) - 500Mb	(128 / 128) - 250Mb
Resolution		250 ps			
Channels		64	128	64	128
Pre / Post Trigger		Yes			
Pass Count		Yes (1 ~ 1000000 times)			
Event Types		Channel, Pattern, Single / Multi Level, Parallel Clause, Width, Time-out, External			
Protocol Triggers I		BiSS-C, CAN2.0B/CAN FD, DP_Aux <sup>1</sup> , HID over I2C, I2C, I2S, LIN2.2, MIPI I3C 1.1, SENT, SPI, UART (RS232), USB PD 3			
Trigger	Protocol Triggers II	---		DALI, eMMC 4.5, eSPI, HyperBus, LPC, MDIO, MII, Mini/Micro LED, MIPI RFFE 3, MIPI SPMI 2, Modbus, NAND Flash, PMBus, Profibus, RGMII, RMII, SD 3.0 (SDIO 2.0), SENT, Serial Flash (SPI NAND), SMBus, SVI2, SVID <sup>3</sup> , USB1.1	
	Input (for Stack)	TTL 3.3V			
	Output Port (for Stack)	TTL 3.3V			
	Ref. Clock Input	10MHz, Vpp=3.3 to 5V			
Threshold	Range	±15V			
	Resolution	10mV			
	Accuracy	± 100mV + 5%* Vth			
Input Voltage	Non-destructive (Max.)	±40V			
	Sensitivity	~300mV			
Impedance		~ 55KΩ    <2pF to 1Vdc			
Temperature	Operating / Storage	5°C~45°C (41°F~113°F)/-10°C~65°C (14°F~149°F)			
Channel to channel skew		250 ps			
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, MIPI I3C 1.1, SPI, UART (RS232), USB PD 3			
	II	---		DALI, eSPI, MDIO, MII, MIPI RFFE 3, Modbus, PMBus, Profibus, RGMII, RMII, SMBus, SVID <sup>3</sup> , USB1.1	
Zoom In / Out		Yes			
Languages		English / Traditional Chinese / Simplified 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	Protocol 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, HTSensor, HyperBus, I2C EEPROM, I2C, I2S (PCM, TDM), I80, IDE, IO-Link, IrDA, ISELED, 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, Microchip SWI, Microwire, MII, Mini/Micro LED, MIPI CSI LP, MIPI DSI LP, MIPI I3C 1.1, MIPI RFFE 3, MIPI SoundWire 1.2, MIPI SPMI 2, Modbus, NAND Flash, NEC IR, PDM, PECL 3.0, PMBus, Profibus, PS/2, PWM, QEI, QI, QSPI, RC-5, RC-6, RGB Interface, RGMII, RMII, S/PDIF, SD 3.0 (SDIO 2.0), SENT, Serial Flash, Serial IRQ, Serial PSRAM, SGPIO, Smart Card, SMBus (SBS, SPD), SMI, SPI, SPI-NAND, SSI, ST7669, SVI2, SVID <sup>2</sup> , SWD, SWIM, SWP, UART (RS232), ULPI, UNI/O, USB 1.1, USB4/TBT3 SB Channel, USB PD 3, 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> )	270 x 175 x 55		
Weight	Device / Accessories	800g / 1500g			
Lead Cable (LA-Pod 2/ LA4G-POD/ Flying lead cable)		2 / 1 / 10	4 / 1 / 18	2 / 1 / 10	4 / 1 / 18
Grippers		100	180	100	180

<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 LA4000 models.

<sup>3</sup> Upon request ONLY by users who have signed CNDA with Intel, SVID trigger & PA supported by LA4068B/LA4136B ONLY.