

Acute

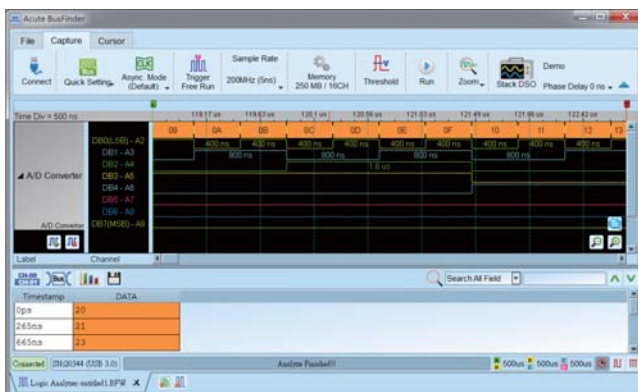
LA4000 logic analyzer

- PC-based
- 68 / 136 channels
- USB 3.0 interface, 12V power adaptor
- 4GHz Timing Analysis / 400MHz State Analysis
- 32Gb Memory
- Active Probes (4GHz x1, 2.4GHz x2/x4)
- Logic, State and Protocol triggers
- Stackable with a DSO to form an MSO
- Protocol Decode : 10BASE-T1S¹, CAN 2.0B/CAN FD, DP_Aux¹, eMMC 4.5, I²C, MIPI I3C 1.1.1, SD 3.0, SPI, SVID², SWD, UART (RS232), USB1.1, USB PD 3... (100+)
- Protocol Trigger I : 10BASE-T1S¹, I²C, MIPI I3C 1.1.1, SPI, UART (RS232), USB PD 3, ...
- Protocol Trigger II : eMMC 4.5, eSPI, NAND Flash, SD3.0, Serial Flash, SVID³, ...
- Protocol Analyzer I : 10BASE-T1S¹, CAN 2.0B/CAN FD, I²C, MIPI I3C 1.1.1, SPI, USB PD 3, ...
- Protocol Analyzer II : DALI, eSPI, MDIO, PMBus, Profibus, PWM, SVID³, ...

270 x 175 x 55 (mm³)

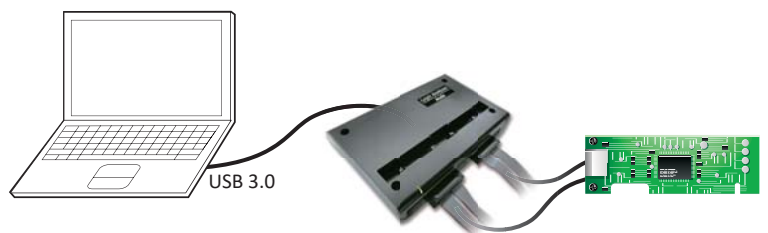
Model	Channel	Protocol Trigger	Protocol Analyzer
LA4068E	68	I	I
LA4136E	136	I	I
LA4068B	68	I, II	I, II
LA4136B	136	I, II	I, II

Software Window



System Requirements

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



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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
Trigger	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	10BASE-T1S ¹ , BiSS-C, CAN2.0B/CAN FD, DP_Aux ¹ , HID over I2C, I2C, I2S, LIN2.2, MIPI I3C 1.1.1, SENT, SPI, UART (RS232), USB PD 3			
	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 ³ , USB1.1			
	Trig-In / Out (for Stack)	TTL 3.3V			
	Ref. Clock Input	10MHz, Vpp=3.3 to 5V			
	Range	±15V			
Threshold	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	10BASE-T1S ¹ , BiSS-C, CAN2.0B/CAN FD, DP_Aux ¹ , HID over I2C, I2C, I2S, LIN2.2, MIPI I3C 1.1.1, SPI, UART (RS232), USB PD 3			
	II	--- DALI, eSPI, MDIO, MII, MIPI RFFE 3, MIPI SPMI 2, Modbus, PMBus, Profibus, RGMII, RMII, SMBus, SVID ³ , USB1.1			
Software Features	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			
	Protocol Decode	1-Wire, 3-Wire, 7-Segment, 8b10b decoding, 10BASE-T1S ¹ , A/D Mux Flash, AccMeter, ADC, APML, AVSBus, BiSS-C, BSD, BT1120, CAN 2.0B/FD, Close Caption, CODEC_SSI, DALI, DMX512, DP_Aux ¹ , EDID, eMMC 4.5, eSPI, FlexRay, HD Audio, HDLC, HDQ, HID over I2C, HID over SPI, HTSensor, HyperBus, I2C EEPROM, I2C, I2S, I80, IDE, IrDA, ISELED, ITU-R BT.656 (CCIR656), J1850, JTAG, JVC IR, LCD1602, LED_Ctrl, LIN 2.2, Line Decoding, Line Encoding, Lissajous, LPC, LPT, Math, M-Bus, MCTP over I2C/ I3C/ SMBus ⁴ , MDDI, MDIO, MHL CBUS, Microchip SWI, Microwire, MII, Mini/Micro LED, MIPI CSI LP, MIPI DSI LP, MIPI I3C 1.1.1, MIPI RFFE 3, MIPI SoundWire 1.2, MIPI SPMI 2, Modbus, NAND Flash, NEC IR, OA3p, OATC6, PCM, PECI 3.0, PDM, 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 ² , SWD, SWIM, SWP, TDM, 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 ³)	270 x 175 x 55			
	Weight Device / Accessories	800g / 1500g			
	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

¹ Optional 10BASE-T1S / DP_Aux adapter needed. ² Upon request ONLY by users who have signed CNDA with Intel, SVID decode supported by all LA4000 models.

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

⁴ MCTP over I2C/I3C/SMBus decode supports analysis of Ethernet / MCTP Control / NC-SI / PLDM packets.

LA4068B/LA4136B can be additionally equipped with the following options.

NAND Flash Option

weight : 450g

Use 32Gb RAM as the buffer to stream all NAND Flash data into the SSD/ HDD to record all data flow from the Low-Speed Mode to the High-Speed Mode. It supports both x8 and x16 configurations for Data(I/O) pins and offers both logic analyzer and protocol analyzer modes. Additionally, it is compatible with multiple brands and allows for custom data settings.



LVDS Option

weight : 450g

LVDS Probe can be applied to logic signal and low voltage differential signal (LVDS) measureme.



Tip specification

Model		LA4K/LA4G	LA08/09	NAND	LVDS
Number of Channels		8 / 8+1 (Data+CLK)	8 / 8+1 (Data+CLK)	4+2 (Data+Analog)	8-Diff.
Threshold of Data	Range	±15V	-0.5V ~ +4.8V		---
	Resolution	10mV	21mV		---
	Accuracy	±100mV + 5% *Vth			---
Input Voltage of Data	Max. (Non-destructive)	±40V DC+ AC peak	±15V DC+AC peak		-0.5V~+4.6V DC+AC peak
	Operation	±15V	-1V ~ 8V		0V ~ 3.3V
	Sensitivity	~300mV			~100mV
Impedance of Data		~ 55KΩ <2pF to 1Vdc	1MΩ 5pF		75K Ω 3pF
Input Voltage of Analog	Max. (Non-destructive)	---		-0.5V ~ +8V DC+AC peak	---
	Operation	---		0V ~ 4V	---
	Resolution	---		~1mV	---
	Sampling Rate	---		1M	---
Impedance of analog		---		1MΩ 100pF	---

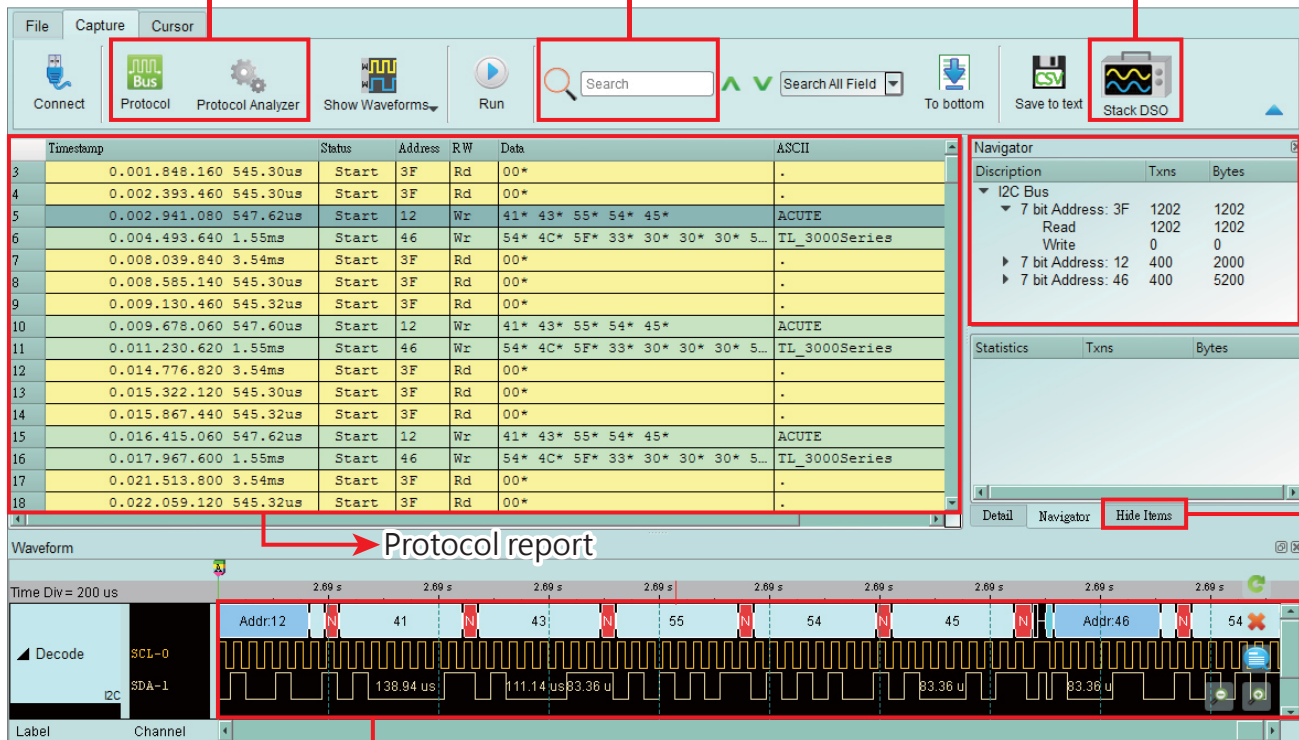
Protocol Analyzer: リアルタイムでデコードしたプロトコルデータをキャプチャしながら順次表示するプロアナモード。キャプチャを止めずにそれまでのデータを表示できる。キャプチャ先は内部メモリ、PC RAM、SSDを選択。

It is hardware decoding and streaming protocol data into SSD hard drive for a long time without waveforms.

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

Show waveforms with bus decodes



Protocol Analyzer

Show real-time protocol data

Application timing: view real-time protocol data if many idles in between



Protocol Logger

Like data logger, save massive data into SSD hard drive

Application timing: save massive protocol data if not many idles in between



Protocol Monitor

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

Application timing: trigger event only happens in very long time

Standard Equipment List for LA4000 Series:



Logic Analyzer: キャプチャ停止後に波形表示とプロトコルデコード結果を表示するロジアナモード。100種類以上のプロトコルをサポート。Acute製またはサポートしている各社のDSOやMSOを併用して、その波形データをGUI上で表示することができる。

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

Parallel Clause triggers (Logic) :

State 0

Description...
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

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

16-States parallel IF Clause settings for 128/64 channel value comparisons 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. At the top, there are tabs for File, Capture, Adv. Capture, and Cursor. Below these are various settings like Connect, Quick Setting, Trigger I2C, Sample Rate (50MHz (20ns)), Memory (2000 M - 24CH), Threshold, Run, Repeat, Zoom, and Stack DSO. The main area displays waveforms for SCL-0, SDA-1, DSO CH1, and DSO CH2. A yellow box highlights a section of the SCL-0 waveform with a right-click context menu showing 'Decode(SCL) Transition=10 Interval=133us Freq.(avg)=35.99KHz'. A 'User note' window is open, showing 'Note 1' and 'Acute Note'. Below the waveforms is a table with columns for Sample, Status, Address, and data bytes D0-D15, along with an ASCII column. The table shows four samples of data.

Sample	Status	Address	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	ASCII
1	Ops	Start	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			TL_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 'Clause Trigger' settings window. It has a 'Simple Trigger' section on the left with checkboxes for Frame Start, Repeat Start, Frame Stop, ACK, and NACK. The main area is a flow chart with states (State 1, State 2, State 3) and a counter (Counter 1). A red box highlights the flow chart. To the right, there are settings for 'Event 1', including Mode (7-Bit Addressing), Value (12h), R/W, ACK, and Data (Any Position, Fix Offset, 0 Byte(s)). A red box highlights the data settings.

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

Detail parameters for each states

Automation & SDK

Acute LAVISA provides an interface where users can operate the software for capturing, stopping, or dynamically reading the current software's measurement and decoding analysis data (such as I2C, eSPI, SPI, QSPI,...) through self-written programs using textual commands.

Connect

Protocol

Configuration

Waveform

Run

Search All Field

1501 / 14126

To bottom

Window

Save to text

Stack EXT DSO

	Timestamp (h:m:s.ms.us.ns d)	Status	Address(7RW)	Data	ASCII	Error	Information
1496	16:25:09.973.475.100...	Start	50	Wr	17	.	
1497	16:25:09.973.573.260...	Repeat Start	50	Rd	3E*	>	
1498	16:25:09.973.976.180...	Start	79*	Wr	02* F3* BE*	...	10-bit slave addre...
1499	16:25:09.974.477.100...	Start	79*	Wr	03* 66* BB*	.f.	10-bit slave addre...
1500	16:25:09.974.978.220...	Start	79*	Wr	52*	R	10-bit slave addre...
1501	16:25:09.975.076.560...	Repeat Start	79*	Rd	77* A7*	w.	10-bit slave addre...
1502	16:25:09.975.479.340...	Start	79*	Wr	53* BE* EB*	S..	10-bit slave addre...
1503	16:25:09.975.669.600...	Repeat Start	79*	Rd	BE* EB*	..	10-bit slave addre...
1504	16:25:09.976.982.120...	Start	54*	Rd	7A* 7B* 7C*	z{	
1505	16:25:09.977.199.900...	Start	54*	Wr	7A* 7B* 7C*	z{	
1506	16:25:09.978.484.780...	Start	00*	Wr			general call addre...
1507	16:25:09.978.985.280...	Start	50	Wr	00	.	
1508	16:25:09.979.083.420...	Repeat Start	50	Rd	10*	.	
1509	16:25:09.979.486.260...	Start	50	Rd	12*	.	
1510	16:25:09.979.987.200...	Start	50	Rd	14 16*	..	
1511	16:25:09.980.488.160...	Start	50	Rd	18 1A 1C*	...	
1512	16:25:09.980.989.280...	Start	50	Rd	1E 20 22 24*	. " \$	
1513	16:25:09.981.490.100...	Start	50	Rd	26 28 2A 2C*	& (* ,	

CH:00 CH:01

BUS_I2C(I2C)

Search All Fields

Text includes

EX

Measurement Type	Label Name A	Label Name B	From	To	Minimum	Maximum	Average	Total
Positive Pulse Width	BUS_I2C (Ch 0)		Begin	End	5us	13.340us	5.219us	341.281ms
Negative Pulse Width	BUS_I2C (Ch 0)		Begin	End	3.740us	7.500us	5.044us	329.802ms
Positive Pulse Width	BUS_I2C (Ch 1)		Begin	End	20ns	80.020us	10.176us	252.298ms
Negative Pulse Width	BUS_I2C (Ch 1)		Begin	End				418.775ms

Command	Parameter	Read Back
1 *PA:CAPTURE:START		
2 SLEEP	3000	
3 *PA:REPORT:ROWCOUNT?		1724
4 *PA:REPORT:COLUMNCOUNT?		8
5 *PA:REPORT:DATA?	1500 4	77* A7*

Command	Parameter	Read Back
1 *LA:MEASUREMENTREPORT:DATA?	0 5	5us
2 *LA:MEASUREMENTREPORT:DATA?	1 5	3.740us
3 *LA:MEASUREMENTREPORT:DATA?	2 5	20ns
4 *LA:MEASUREMENTREPORT:DATA?	3 5	20ns

Remote Control

AqLAVISA can be further integrated with gRPC or TCP/IP connections, allowing remote software to conduct data analysis.

